

ENVIRONMENTAL ASSESSMENT

REAL PROPERTY MASTER PLAN FOR ARMY-CONTROLLED LAND AT AREAS A AND C OF FORT DETRICK IN FREDERICK COUNTY, MARYLAND



Prepared by:

**US Army Garrison
Fort Detrick, MD 21702**

With Technical Assistance from:

**BSA Environmental Services, Inc.
Beachwood, OH 44122**

18 March 2010

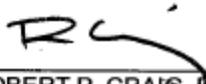
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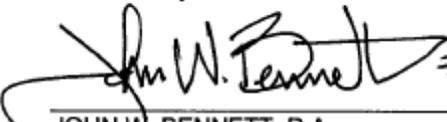
March 2010

Reviewed by:

 3/12/2010

ROBERT P. CRAIG, P.E.
Chief, Environmental Management Office
U.S. Army Garrison

Reviewed by:

 3.12.10

JOHN W. BENNETT, R.A.
Master Planner, Directorate of Installation Services
U.S. Army Garrison

Approved by:



JUDITH D. ROBINSON
COL, MS
Commanding

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA), as amended (Title 42, US Code [USC], 4321-4347), and regulations of the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1500-1508) and the Army NEPA Regulation, 32 CFR 651, by the US Army Garrison (USAG), Fort Detrick, Maryland, with technical assistance from BSA Environmental Services, Inc. This document has been printed on recycled paper.

The Proposed Action (Alternative I) and subject of this EA is the Implementation of the Real Property Master Plan (RPMP), including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland. This is comprised of a number of projects for the construction and operation of new facilities and infrastructural improvements, enhancement of recreational and educational opportunities, and ecological restoration within the Installation (the Proposed Projects), which will allow USAG and its Mission Partners to meet their respective mission requirements. These support projects include the following:

- Construction of new, energy efficient buildings and renovation of existing buildings to house new and expanded Mission Partner activities;
- Demolition of some buildings associated with Proposed Projects;
- Combined size of the new and renovated buildings will be approximately 250,000 gross square feet (gsf);
- Approximately 60 new personnel will be employed at Fort Detrick due to all Proposed Projects;
- Infrastructural improvements to Fort Detrick including a new boundary gate and truck inspection station on Opossumtown Pike located on the northern portion of Area A and road to the National Interagency Biodefense Campus (NIBC), extension of Veteran's Drive to the Nallin Farm area, construction of the NIBC truck inspection station and other internal roads. Additional parking lots and reconfiguration of some existing parking lots are included. These improvements to the gates and roadways will mitigate traffic congestion while providing improved security for the Installation workforce and residents of Fort Detrick;
- Additional infrastructure improvements to Fort Detrick including water main improvements, water storage and general infrastructure improvements to the Installation as a whole, including to the NIBC;
- Increased recreational opportunities for the workforce and residents of Fort Detrick;
- Enhancement of educational opportunities for children of Fort Detrick residents;
- Expansion of wetlands and increased reforestation; and the
- Redistribution of acreage in Land Use Classifications.

During the preparation of this EA, one alternative to the Proposed Action was identified. This alternative is Do Not Implement the Real Property Master Plan (RPMP), including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland (Alternative II, No Action).

This EA characterizes and analyzes the probable and possible environmental impacts associated with implementation of Alternative I (the Proposed Action) and Alternative II (the No Action Alternative) at Fort Detrick, Maryland. Any contemplated or likely action is considered a proposed activity. This analysis considers impacts expected from current and proposed Installation activities, cumulative impacts that might occur after several years, and impacts resulting from association with other activities in the area. Conceptual Projects are projects that are being considered, but not part of the Proposed Action. The potential environmental impacts, utility consumption, and waste stream disposal requirements of these projects are not identified in this EA. These projects would be evaluated in future NEPA analyses.

During the construction phase, the following impacts are anticipated: negligible impacts to the local climate, potential minor impacts to geology, potential minor impacts to soils, minor impacts to water resources, minor impacts to wetlands and floodplains, minor impacts to plants and animals, minor impacts to air quality, negligible impacts to historical and cultural resources, positive impacts to the local socioeconomic environment, minor impacts from noise and lighting, negligible to minor impacts from odors, minor impacts to traffic, negligible impacts to energy resources, negligible impacts to waste streams, minor impacts to hazardous materials management, negligible impacts to human health and safety, and minor cumulative impacts.

During the operational phase, the following impacts are anticipated: minor positive impacts to land use, negligible impacts to the local climate, potential minor impacts to geology, negligible impacts to soils, minor impacts to water resources, minor impacts to wetlands and floodplains, positive impacts to plants and animals, negligible impacts to air quality, negligible impacts to historical and cultural resources, positive impacts to the local socioeconomic environment, negligible impacts from noise, minor impacts from lighting, negligible impacts from odors, minor impacts to traffic, positive impacts to security, minor impacts to energy resources, negligible impacts to waste streams, minor impacts to hazardous materials management, negligible impacts to human health and safety, and minor cumulative impacts.

The principal conclusions of this EA are: (1) implementing Alternative I (the preferred alternative) would not result in significant adverse environmental impacts, provided that best management practices (BMPs) to mitigate these potential environmental impacts are adhered to during construction and operation of the Proposed Projects; (2) implementing the Proposed Action will provide Fort Detrick with much-needed infrastructural improvements which will increase efficiency and allow USAG and its Mission Partners to achieve their respective mission requirements; (3) implementing the RPMP for Army-controlled Land of Areas A and C of Fort Detrick (the Proposed Action) will increase recreational opportunities and security for the workforce and residents of Fort Detrick; (4) implementing Alternative I will increase employment by a total of 60 due to all Proposed Projects at Fort Detrick; (5) implementing Alternative I will expand and enhance the natural resources areas of the Installation; (6) implementing Alternative I is consistent with the land use planning objectives for Fort Detrick; (7) implementing Alternative II (No Action) would not provide Fort Detrick with much-needed infrastructure and facilities and would hamper the ability of USAG and its Mission Partners to meet their respective mission requirements; (8) implementing Alternative II (No Action) is not consistent with land use planning objectives for Fort Detrick; and (9) implementing the No Action alternative would eliminate the negligible to minor environmental impacts associated with the implementation of Alternative I, but would also eliminate the beneficial impacts of the Proposed Action.

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1.0 PURPOSE AND NEED FOR PROPOSED ACTION

The National Environmental Policy Act (NEPA) of 1969 requires all Federal agencies to give appropriate consideration to potential environmental effects of proposed major actions in planning and decision-making. The Council on Environmental Quality (CEQ) is responsible for issuing regulations (40 Code of Federal Regulations [CFR] 1500 *et seq.*) implementing the provisions of NEPA. CEQ regulations in turn are supplemented by procedures adopted on an agency-specific basis. For the Department of the Army (DA), the pertinent regulations are 32 CFR 650 *Environmental Protection and Enhancement*, and 32 CFR 651 *Environmental Analysis of Army Actions*. This Environmental Assessment (EA) was developed pursuant to these laws and regulations.

32 CFR 651 specifically includes changes to established installation land use that generate impacts on the environment in its list of Army actions that normally require an EA [32 CFR 651.33 (c)]. An EA is intended to assist agency planning and decision-making. While required to assess environmental impacts and evaluate their significance, it is routinely used as a planning document to evaluate environmental impacts, develop alternatives and mitigation measures, and allow for agency and public participation (32 CFR 651.20).

Fort Detrick includes six non-contiguous land parcels designated as Areas A, B, Area C Water Treatment Plant (WTP), Area C Waste Water Treatment Plant (WWTP), Forest Glen Annex, and Glen Haven Housing Area. Areas A, B, and C, are located within Frederick County, Maryland. Within Frederick County, Fort Detrick encompasses approximately 1212 acres. The US Army Garrison (USAG), Fort Detrick, has command and control of approximately 1143 of those acres, and the National Cancer Institute at Frederick (NCI-Frederick) has command and control of approximately 69 of those acres. The NCI-Frederick is “on” Fort Detrick, yet it is not on Army-controlled land. The 1143 acres of Army-controlled land are divided into four separate parcels identified as Areas A (728 acres), B (399 acres), Area C WTP (7 acres), and Area C WWTP (9 acres). USAG also recently assumed command and control of the Forest Glen Annex (132 acres) and Glen Haven Housing Area (20 acres) in Montgomery County, MD due to Base Realignment and Closure (BRAC) (see Figure 2-1).

The Proposed Action and subject of this EA is Implementation of the Real Property Master Plan (RPMP), including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland. The RPMP is required for Fort Detrick and its Mission Partners to advance their respective missions. The existing buildings that are separately slated for replacement are antiquated, poorly situated, energy and functionally inefficient, and maintenance intensive. Infrastructural improvements are needed to update or replace aging and partially deficient utility and transportation systems. Increased recreational and educational opportunities for the workforce and residents of Fort Detrick are needed to enhance the quality of life on the Installation. Environmental restoration initiatives are needed to improve the ecological quality of Fort Detrick and the surrounding environment.

The Proposed Action is comprised of a number of projects for the construction and operation of new facilities for USAG and its Mission Partners as well as other projects that will support these facilities. These support projects include the following:

- Construction of new, energy efficient buildings and renovation of existing buildings to house new and expanded Mission Partner activities;
- Demolition of some buildings associated with Proposed Projects;
- Combined size of the new and renovated buildings will be approximately 250,000 gross square feet (gsf);
- Approximately 60 new personnel will be employed at Fort Detrick due to all Proposed Projects;
- Infrastructural improvements to Fort Detrick including a new boundary gate and truck inspection station on Opossumtown Pike located on the northern portion of Area A and road to the National Interagency Biodefense Campus (NIBC), extension of Veteran's Drive to the Nallin Farm area, construction of the NIBC truck inspection station and other internal roads. Additional parking lots and reconfiguration of some existing parking lots are included. These improvements to the gates and roadways will mitigate traffic congestion while providing improved security for the Installation workforce and residents of Fort Detrick;
- Additional infrastructure improvements to Fort Detrick including water main improvements, water storage and general infrastructure improvements to the Installation as a whole, including to the NIBC;
- Increased recreational opportunities for the workforce and residents of Fort Detrick;
- Enhancement of educational opportunities for children of Fort Detrick residents;
- Expansion of wetlands and increased reforestation; and the
- Redistribution of acreage in Land Use Classifications.

These Proposed Projects, which are described in detail in Section 2.5, are required for Fort Detrick and its mission partners to advance their respective missions.

1.1 MISSION REQUIREMENTS

The USAG is realigning business units and practices to fully integrate over 40 Mission Partners, and multiple Joint and Interagency Missions, several with direct national security missions. These partners include five Cabinet-Level Agencies as well as 40 additional missions. Fort Detrick accomplishes the end state of Customer Focus and Mission Accomplishment by fulfilling its Vision and Purpose through its Core Values of Honesty, Integrity, Responsibility, Loyalty and Commitment. The Purpose, Vision, and Mission Statements for the US Army Garrison are:

Purpose – To protect and support our Soldiers and their families, our Mission partners, our Workforce, and our Communities, while being good stewards of the environment and the resources entrusted to our care and use.

Vision - Relevant, Respectful, Responsible, and Ready. Providing a safe, sustainable, and high quality of service to our families, workforce, and Mission Partners. Empowering our workforce to transform our processes to be more integrated and effective to set the conditions for a sustainable future.

Mission - The US Army Garrison, Fort Detrick, provides sustainable base operations support, quality of life programs, and environmental stewardship to facilitate the sustainment of vital national interests.

Endstate - Customer Focus and Mission Accomplishment.

Implementation of the RPMP, including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland (the Proposed Action) will allow USAG to meet the mission requirements described above.

1.2 STRATEGIC PLAN

The USAG recently developed a Sustainable Strategic Planning (SuSP) Structure that is anchored by teams aligned with its core competencies of Workforce, Business Process, Infrastructure and Utilities, Customer Services, and Analysis and Assessment. The SuSP facilitates open communication to provide input and assessments of the strategic, operational, and tactical plans, aligns tasks with these plans, and reduces duplication of effort. The SuSP is aligned with mission and Army Imperatives in providing a safe, environmentally respectful, and professional staff and services to a variety of high profile missions.

The SuSP is transforming Fort Detrick to an organization addressing the Triple Bottom Line Plus (TBL+) of Mission, Community, Environment + Economy. The workforce actively participates in developing action plans to achieve strategic goals. These goals evolve with mission requirements and are reviewed and updated as needed to ensure accuracy.

The *Fort Detrick Strategic Plan 2008* (USAG, 2007a) consists of four main components. These components will become an integral part of the USAG's planning and operations. They will guide how USAG conducts daily operations and plans for the future. These components can be described in four words: Change, Action, Values, and Balance. As further described in the *Fort Detrick Strategic Plan 2008*:

- Change, or transformation, consists of five overarching tenets, derived from higher authorities that shape our planning efforts and ensure our actions are aligned with not only the Army but also with DoD efforts to transform our Nation's Armed Forces.
- Action describes the concept of "Plan, Prepare, Execute, and Assess" that drives a continual effort to stay agile and responsive.
- Values component consists of a focus on the seven Army Performance Improvement Criteria categories.
- Balance component represents the Balanced Scorecard approach which ensures that we take a balanced view of our objectives and desired outcomes.

On the basis of the situational analysis, the Fort Detrick Board of Directors established goals and objectives. The goals, each of which contributes significantly to achieving the overall vision for the future of the Installation, while supporting Fort Detrick mission and the Army's tenets are as follows:

- Plan, sustain, and optimize services and infrastructure to enable customers to excel in their missions.
- Achieve DoD and stakeholder recognition as a leader in safety, security, and environmental stewardship.
- Provide and improve community well-being.

- Recruit, develop, and retain a workforce to meet current and future missions.
- Sustain financial accountability and respond to customers through effective and efficient business practices.

The USAG strategic planning process will use the "A-to-G" Strategic Planning Model. The model has seven steps in the process and each of the seven steps is further broken down into discrete actions. The main steps include: A - Creating Awareness; B - Identifying a Baseline; C - Developing Clear Vision and Mission statements, guiding principles and goals; D - Down to Action to create your objectives, initiatives, and associated action plans; E - Evaluating your plan; F - Giving and Getting Feedback on your plan; and lastly, G - systematically getting better and repeating the process again every year or two, starting at Step A. The Strategic Plan for Fort Detrick is a living document; it shall be annually reviewed and revised (USAG, 2007a).

The RPMP for Army-controlled land at Areas A and C identifies a number of projects for construction and operation of new facilities and infrastructural improvements and changes in existing land uses within Fort Detrick. It incorporates the objectives established in the *Fort Detrick Strategic Plan 2008* (USAG, 2007a). The RPMP for Army-controlled land at Areas A and C process is described in more detail in Section 2.4.

1.3 ASSESSMENT APPROACH

Fort Detrick includes six non-contiguous land parcels designated as Areas A, B, Area C WTP, Area C WWTP, Forest Glen Annex, and Glen Haven Housing Area as discussed in Section 1.0. Separate EAs will be completed on a site-by-site basis. This RPMP EA will cover Army-controlled land at Areas A and C with subsequent RPMP EAs on Area B and Forest Glen Annex. Cumulative impacts will be evaluated for Fort Detrick and the Forest Glen Annex in their respective EAs. NCI-Frederick is situated on an enclave that is totally surrounded by Army – controlled land. This EA does not assess the environmental impacts of NCI's activities and operations, or potential future projects planned for NCI-Frederick. The current operations of NCI-Frederick are included in the Installation baseline values for utilities and wastes.

This EA provides the best available information, as of January 2010, including guidance provided by Installation personnel on Proposed Projects that may impact land use. Data presented in Sections 2.0 and 4.0 were updated to reflect the current conditions at Fort Detrick. Where conditions have not changed or updated studies have not been accomplished, reference is made to the most recent available source.

This EA is based, in part, on earlier NEPA documentation. This approach entails referencing specific analyses, discussions, and conclusions of these documents without providing detailed discussion in the present EA. Consistent with CEQ guidance, the following NEPA studies relevant to Fort Detrick are incorporated by reference:

- *Environmental Assessment for the Frederick County Potomac Pipeline Interconnect to Fort Detrick via the Existing City of Frederick Water System* (USAG, 2009b);
- *Final Integrated Natural Resources Management Plan Environmental Assessment, U.S. Army Garrison, Fort Detrick, Maryland* (USAG, 2007b);
- *Final Environmental Impact Statement, Construction and Operation of New US Army Medical Research Institute of Infectious Diseases (USAMRIID) Facilities and*

Decommissioning and Demolition and/or Re-use of Existing USAMRIID Facilities at Fort Detrick, Maryland (US Army Medical Research and Materiel Command [USAMRMC] and USAG, 2006);

- *Environmental Assessment for the Construction and Operation of a Veterans Affairs Community-Based Outpatient Clinic (CBOC) at Fort Detrick, Maryland (USAG, 2006a);*
- *Environmental Assessment for the Construction and Operation of a Cogeneration Utility Plant (CUP) by Chevron Energy Solutions Company and Keenan Development (CK) on the East-Central Portion of Area A at Fort Detrick, Maryland (USAG, 2005a);*
- *Final Environmental Impact Statement, Construction and Operation of the National Biodefense Analysis and Countermeasures Center (NBACC) Facility by the Department of Homeland Security (DHS) at Fort Detrick, Maryland (DHS and USAG, 2004);*
- *Final Programmatic Environmental Impact Statement, Chemical and Biological Defense Program (USAMRMC, 2004);*
- *Final Environmental Impact Statement for the Construction and Operation of National Institute of Allergy and Infectious Diseases (NIAID) Integrated Research Facility (IRF) by the National Institutes of Health (NIH) at Fort Detrick, Maryland (NIH and USAG, 2003);*
- *Environmental Assessment, Installation Master Plan (IMP) for Fort Detrick, Maryland (USAG, 2003a);*
- *Environmental Assessment for the Construction and Operation of New Commissary and Post Exchange (PX) Facilities and Other Infrastructural Improvements on the South Central Portion of Area A - Fort Detrick, Maryland (USAG, 2002a);*
- *Environmental Assessment for the Construction and Operation of an Electrical Substation by Allegheny Power at Fort Detrick, Maryland. Revised (USAG, 2002b);*
- *Environmental Assessment for the Construction And Operation of Air Force Medical Evaluation Support Activity (AFMESA) Facilities on Area B - Fort Detrick, Maryland (USAG, 2002c);*
- *Environmental Assessment for the Construction and Operation of Family Housing Quarters at Fort Detrick, Maryland (USAG, 2002d);*
- *Environmental Assessment Fluoridation of the Fort Detrick Drinking Water System (USAG, 2002e);*
- *Environmental Assessment for the Construction and Operation of an Animal Facility (AF) on Area A - Fort Detrick, Maryland (USAMRMC, 2002);*
- *Environmental Assessment of the US Army Medical Research Institute of Infectious Diseases (USAMRMC, 2001);*
- *Environmental Assessment for the Construction of Two Sterilization Facilities, Conversion and Abandonment of the Laboratory Sewer System, and Deactivation of the Steam Sterilization Plant (USAG, 1997a);*
- *Realignment/Construction (BRAC 95) Supplemental Environmental Assessment, Fort Detrick, Maryland. March, (US Army Corps of Engineers [USACE] 1997a) and*
- *Installation Environmental Assessment (DA, 1991).*

1.4 OBJECTIVES OF THE REAL PROPERTY MASTER PLAN EA

The main objective of this EA is to describe potential areas that may be subjected to adverse environmental impacts, associated with development and implementation of Installation projects and long-term mission-based actions which comprise the Proposed Action (Implementation of the RPMP, including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland).

A secondary objective of this EA is to provide a reference document that future studies can use for descriptions of the baseline environment of Fort Detrick for subsequent project-specific analyses. As future actions subject to NEPA review arise at Fort Detrick, the appropriate NEPA document (i.e., Record of Environmental Consideration [REC], EA, or Environmental Impact Statement [EIS]) may incorporate this EA by reference for descriptions of the baseline environment (40 CFR 1502.20 and 1508.28).

There are three categories of actions that are discussed in this EA:

- **Approved Projects** - as described above in Section 1.3, a number of projects are occurring or will be occurring on Fort Detrick in the near future. These projects have previously undergone NEPA analyses and review (NEPA requirements complete). Although not part of the Proposed Action per se, their environmental impacts are described in this EA because the projects will be operational in the near future.
- **Proposed Projects** - projects that are discussed and evaluated in detail in this EA (the Proposed Action).
- **Conceptual Projects** - projects being considered, but not part of the Proposed Action. The potential environmental impacts, utility consumption, and waste stream disposal requirements of these projects are not identified in this EA. These projects would be evaluated in future NEPA analyses.

1.5 ORGANIZATION OF THIS ENVIRONMENTAL ASSESSMENT

Section 2.0 of this EA provides a complete description of the new facilities and infrastructural improvements that comprise the Proposed Action. This includes an overview of Fort Detrick and current Mission Partners. Section 3.0 outlines the alternatives considered, including the Proposed Action. Section 4.0 presents a history of the Installation and a description of the existing environment that would be affected by the Proposed Action. The consequences of the Proposed Action on the existing environmental attributes are described in Section 5.0. Overall conclusions of the effects of the Proposed Action on the environment are given in Section 6.0. Reference material for this document is provided in Section 7.0. A list of persons and agencies contacted during the preparation of this document is compiled in Section 8.0. The list of preparers is provided in Section 9.0. Section 10.0 provides the list of acronyms and abbreviations.

2.0 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action (Alternative I, the Proposed Projects) and subject of this EA is the Implementation of the RPMP, including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland. This is comprised of a number of projects for the construction and operation of new facilities and infrastructural improvements, enhancement of recreational and educational opportunities, and ecological restoration within the Installation which will allow USAG and its Mission Partners to meet their respective mission requirements.

This section provides background information on Fort Detrick, including the location, organization, and a discussion of current operations on the Installation (see Section 4.0 for detailed information on the Installation's existing environmental attributes). Following this introduction, Section 2.4 details master planning activities relevant to existing land use at the Installation. Section 2.5 describes changes in land use at the Installation, including the **Proposed Projects**, which comprise the Proposed Action. Section 2.5 also includes descriptions of additional projects that are not part of the Proposed Action: **Approved Projects** currently under construction or soon to be constructed (those projects which have completed NEPA requirements) and **Conceptual Projects** which are under study (see Section 1.4). Approximately 28 buildings will be demolished on the Installation as a result of implementation of Approved Projects. An additional 22 buildings to be demolished are associated with the implementation of Proposed Projects. Approximately 25 buildings to be demolished are a result of implementation of Conceptual Projects. Section 2.6 discusses regulatory requirements that provide mechanisms for mitigation of impacts during the construction and operational phases of the Proposed Projects.

All current and future development, including Approved and Proposed Projects, continues the ongoing development at the Installation. Descriptions of projects outside the Proposed Action are intended to provide a meaningful estimate of future baseline conditions, such that the collective environmental impacts (i.e., cumulative impacts) of all the projects can be determined.

2.1 LOCATION OF THE INSTALLATION

Fort Detrick is situated in Frederick County in central Maryland approximately 45 miles west-northwest of Baltimore and 45 miles northwest of Washington, DC. Interstate 70 (I-70), Interstate 270 (I-270), and US Route 15 are the three major routes which provide access to the Installation (see Figure 2-1). Fort Detrick is located in the northwest portion of the City of Frederick, Frederick County, Maryland (see Figure 2-1). The City of Frederick, the largest city in Frederick County and the second largest city in population and in land area in Maryland, serves as the county seat. The majority of the area surrounding Fort Detrick is urban. As the largest county in Maryland, Frederick County covers 665 square miles. Within Frederick County and the City of Frederick, Fort Detrick encompasses approximately 1212 acres. The USAG, Fort Detrick, has command and control of approximately 1143 of those acres, and the NCI-Frederick has command and control of approximately 69 of those acres. The 1143 acres of Army-controlled land is divided into four separate parcels identified as Areas A (728 acres), B (399 acres), Area C WTP (7 acres), and Area C WWTP (9 acres). This RPMP EA only covers Army-controlled land of Areas A and C.

2.2 ORGANIZATION OF THE INSTALLATION

Fort Detrick is a US Army Medical Department Installation under the command and control of the US Army Medical Command (MEDCOM), and is recognized as a “Special Installation” under the Installation Management Command (USAG, 2007a). Fort Detrick is home to the USAMRMC, NCI-Frederick, the NIBC, the National Interagency Confederation for Biological Research (NICBR), and over 40 on-site Mission Partners (USAG, 2007a; Fort Detrick Public Affairs Office [FDPAO], 2009). The USAG is responsible for providing daily operations support and infrastructure for the Mission Partners, who include five cabinet-level agencies: DoD, Department of Veteran Affairs (VA), Department of Agriculture (USDA), DHS, and the Department of Health and Human Services (DHHS) (USAG, 2007a).

NCI-Frederick is a legally separate entity that occupies approximately 69 acres and approximately over 100 structures on Area A. NCI-Frederick assumed the operation and maintenance of many former biological warfare research buildings in 1972 and currently employs approximately 2,765 contract and government employees. USAG has no jurisdiction over NCI-Frederick, however, USAG provides NCI-Frederick with the necessary utilities and waste management services through an Interagency Support Agreement.

USAG provides public affairs support, legal advice, chaplain services, equal employment programs, internal review and auditing, and military personnel services. Many other aspects of base operations are provided through Network Enterprise Center (NEC) (formerly Directorate of Information Management [DOIM]), Directorate of Family and Morale, Welfare, and Recreation (FMWR), Directorate of Community Support Programs (CSP), Directorate of Installation Services (DIS); Directorate of Emergency Services (DES), Directorate of Resource Management (DRM); Directorate of Plans, Training, Mobilization and Security (DPTMS); and the Directorate of Safety and Environment (DSE) (USAG, 2010c).

NEC provides command, control, communications, and computer information management support to the Installation. It is charged with support of the network infrastructure, telephone services, electronic mail, internet availability, helpdesk operations, server hosting and consolidation services, and information assurance. The Directorate also supports records management and visual/audio/graphics services for the Installation. FMWR is responsible for all the "well-being" programs and is designed to enhance morale and promote readiness. FMWR divisions include family readiness and Child and Youth Services. CSP provides services in the areas of military personnel, Army Substance Abuse Program and Detrick Center for Training and Education Excellence (FDPAO, 2008).

DIS is the largest customer service-oriented directorate at Fort Detrick and is responsible for public works and logistics at the Installation. DIS is dedicated to providing and maintaining Fort Detrick with the highest level of cost-effective engineering, maintenance, utilities, housing, transportation, mail, freight, hazardous materials, master planning, government vehicle and supply management. Buildings and grounds on the Installation are maintained by DIS, with the exception of NCI-Frederick. Support services and operations at Fort Detrick are primarily the responsibility of the DIS (FDPAO, 2008). DIS also manages Real Property and Master Planning.

DES protects people and property on Fort Detrick. Trained firefighters and police officers are available for response 24-hours-a-day and seven-days-a-week. A contract guard force mans Fort Detrick gates. DRM provides a full range of resource and management services for the

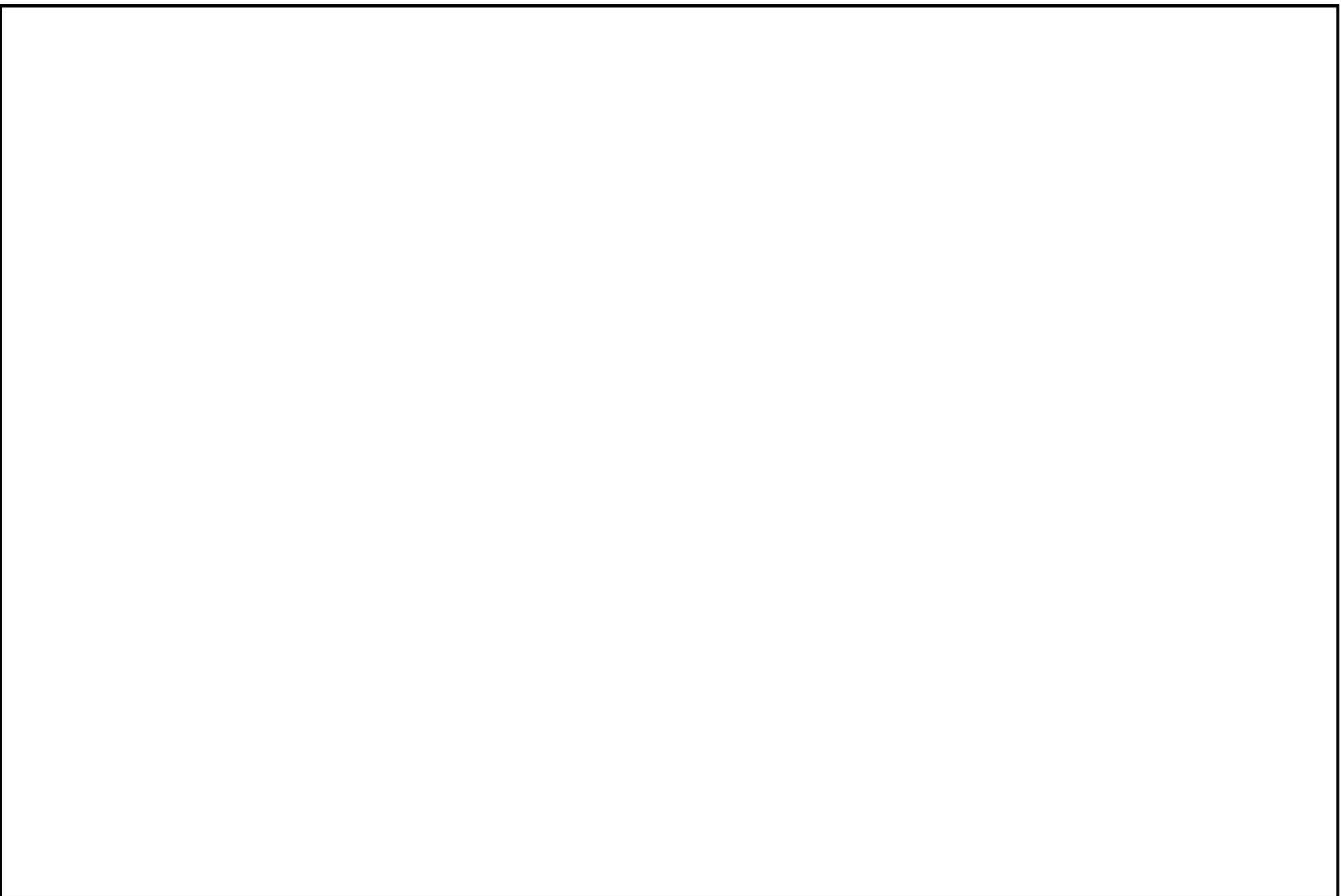


Figure 2-1. **Regional Location Map.**

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directorates and offices of USAG. This support includes budget formulation and execution; managerial accounting; development, documentation and maintenance of the manpower and equipment, table of distribution and allowances; management of the Commercial Activities program; BRAC support; strategic planning; and other management support programs. It is the coordinating office for all ISAs between USAG organizations and supported Mission Partners (FDPAO, 2008).

DPTMS provides assistance and planning to include security processing and management, USAG operations, planning and coordination, Force Protection measures, managing the Emergency Operations Center during crisis situations, and coordination of ceremonial support for Fort Detrick in order to enable USAG operations and support mission partners. The DSE, which includes the Installation Safety Management Office and the Environmental Management Office (EMO), manages the Installation's safety and environmental compliance programs. DSE ensures that all Federal, Army, state, Installation, and local regulations and policies concerning health, safety, and the environment are complied with and that necessary permits (Appendix A) are obtained (USAG, 2010b).

2.3 CURRENT OPERATIONS

The primary missions at Fort Detrick are biomedical research and development, medical logistics and materiel management, and global DoD telecommunications. Fort Detrick supports over 40 Mission Partners. Table 2-1 identifies all of the Mission Partners at Fort Detrick and provides a brief description of their associated missions and/or operations. A brief overview of the primary activities and operations conducted at or in association with Fort Detrick is provided in the following sections (FDPAO, 2009).

Table 2-1. Description of Current Fort Detrick Mission Partners.

<p><i>1st and 9th Area Medical Laboratory Det 1 (1st and 9th AML)</i> The mission of the 1st and 9th AMLs is to deploy world-wide as a unit, or by task-organized teams, to perform surveillance, confirmatory analytical laboratory testing and health hazard assessments of environmental, occupational, and endemic.</p>
<p><i>6th Medical Logistics Management Center (6MLMC)</i> The 6MLMC is a multi-component unit that provides centralized management of Class VIII materiel and medical equipment maintenance to supported forces conducting joint and simultaneous full spectrum operations.</p>
<p><i>21st US Army Signal Brigade</i> The Brigade provides global information services to enable Battle Command from the President of the United States to the Warfighter and other Federal Agencies.</p>
<p><i>114th Signal Battalion</i> The 114th Signal Battalion, plans, installs, operates, maintains, and defends information services to enable command and control for the National Military Command Center-Raven Rock Mountain Complex, combatant commanders, Department of Defense, and other Federal agencies.</p>
<p><i>302nd Signal Battalion</i> The 302nd Signal Battalion, provides and protects battle command and intelligence systems support for the President, Secretary of Defense, Joint Chiefs of Staff, Warfighting Combatant Commanders, the services, and other Federal agencies.</p>

53rd Signal Battalion

The 53rd Signal Battalion, provides continuous, reliable, robust, worldwide communications support to US Warfighting forces, strategic military users, the US intelligence community and the National Command Authority via the Defense Satellite Communications System (DSCS). The battalion is responsible for the daily command and control of the DSCS satellites and communications networks supported by these satellites.

B Company, 4th Light Armored Reconnaissance Battalion/Marine Corps

Company B, and 4th Light Armored Reconnaissance Battalion is responsible for supervising, instructing, and assisting the Reserve company and providing technical support in administration, maintenance, and logistics.

Air Force Medical Evaluation Support Activity (AFMESA)

The AFMESA is dedicated to advancing Air Force health care through independent operational testing of medical technologies and information systems.

Air Force Medical Operations Agency (AFMOA) – Air Force Medical Logistics (AFMLO)

The mission of the Medical Logistics Division, of the Air Force Medical Operations Office is to provide support to the Air Force Medical Service by enabling the efficient and effective procurement, sustainment and delivery of medical supplies, services and equipment for peacetime and expeditionary operations. The AFMLO maintains close liaison with the USAMMA, the US Naval Medical Logistics Command, the Defense Medical Standardization Board, and the Defense Logistics Agency (DLA).

Alpha Company, Detachment 1, 392nd Expeditionary Signal Battalion

Alpha Company is responsible for providing signal support with the latest communication equipment in the US Army. It equips Citizen Soldiers with skills that benefit them in their civilian careers.

Army & Air Force Exchange Service (AAFES)

The Post Exchange (PX) operates among a worldwide system of stores providing quality merchandise and services at competitively low prices to active-duty military members, retirees, members of the Reserve and National Guard and their families. The AAFES generates earnings which provide a dividend to support morale, welfare, and recreation programs.

Chemical Biological Medical Systems - Joint Project Management Office (CBMS-JPMO)

The CBMS-JPMO, provides Food and Drug Administration (FDA)-approved prophylactics, diagnostics and therapeutics to ensure the survival of US Warfighters against chemical, biological, radiological and nuclear (CBRN) threats.

Civilian Human Resources Agency (CHRA) Civilian Personnel Advisory Center (CPAC)

The CPAC's mission is to plan, manage and administer an effective and efficient civilian personnel program in response to the mission needs and goals of their serviced customers.

Congressionally Directed Medical Research Programs (CDMRP)

The CDMRP on the Installation find and fund the best research to eradicate diseases and support the Warfighter for the benefit of the American public.

Defense Commissary Agency - Fort Detrick

The Fort Detrick Commissary is a full-service commissary carrying more than 9,000 items for purchase to military personnel, retirees and their families in a safe and secure shopping environment.

Defense Contract Management Command (DCMC)

The mission of DCMC is to provide acquisition and focused logistics support to America's armed forces in peace and war around-the-clock and around-the-world.

Defense Medical Standardization Board (DMSB)

The major mission elements include: the joint selection and standardization of medical materiel with a special focus on operational medicine; manager of selective, clinically relevant, databases for materiel selection; life-cycle manager of all medical National Stock Numbers; clinical oversight of DoD's medical materiel complaint program; collaborative resource for the medical materiel testing community; clinical consultant resource for the DoD; and administrative manager for the DoD/FDA Shelf-Life Extension Program.

Industrial Hygiene

The Industrial Hygiene office works to promote a safe and healthful working and living environment for all military, civilian employees, and family members assigned to Fort Detrick, MD and Alternate Joint Communication Center, Raven Rock Mountain Complex.

Information Assurance Training Center (IATC)

The mission of the IATC is to provide the DoD a central point of access for information on Information Assurance emerging technologies in system vulnerabilities, research and development, models, and analysis to support the development and implementation of effective defense against Information Warfare attacks.

Joint Medical Logistics Functional Development Center (JMLFDC)

The mission of the JMLFDC is to be the development center for the Defense Medical Logistics Standard Support Program Office Family of Systems applications.

Medical Communications for Combat Casualty Care (MC4)

MC4 develops fields and supports a medical information management system for Army tactical medical forces, enabling a comprehensive, life-long electronic medical record for all Service members, and enhancing medical situational awareness for operational commanders.

National Cancer Institute at Frederick (NCI-Frederick)

The NCI-Frederick, a government-owned, contractor-operated facility, plays a vital role in NCI's accomplishments by housing research programs of the NCI Center for Cancer Research and the Division of Cancer Treatment and Diagnosis (Developmental Therapeutics Program).

National Center for Medical Intelligence (NCMI)

Formerly the Armed Forces Medical Intelligence Center, the NCMI is a field production activity of the Defense Intelligence Agency and the sole DoD producer of medical intelligence.

National Interagency Biodefense Campus (NIBC)

The NIBC is home to some of the most important scientific studies on disease such as malaria and cancer as well as studies on characterizing and protecting citizens from biological threats.

National Interagency Confederation for Biological Research (NICBR)

The NICBR is a loose confederation of research organizations that are located on Fort Detrick. The organizations work together to enhance public health, medical research, and biotechnology development, and are willing to discuss areas of common interest and, if of benefit to their organizations, work in collaboration to coordinate and synchronize scientific interaction in areas of mutual interest

Naval Medical Logistics Command (NMLC)

The NMLC mission is to fulfill requirements and facilitate processes to meet the medical materiel and service needs of the shore establishments and Operational Forces.

Technology Applications Office (TAO)

The TAO is a functionally integrated, task force organization designed to provide centralized, life-cycle management, engineering, fielding, and operation of information management programs supporting Headquarters, DA-approved missions.

Telemedicine & Advanced Technology Research Center (TATRC)

The TATRC is an organization composed of DoD military and civilian personnel, contractors, and staff from private industry and academia. TATRC manages a variety of medical projects in many areas of telemedicine, such as tele-radiology, medical informatics, tele-surgical robotics and mentoring, and tele-dentistry.

US Air Force Surgeon General Medical Logistics, Headquarters (USAF/SGML)

The Air Force Medical Service (AFMS) works in close coordination with the Assistant Secretary of Defense for Health Affairs, the major air command surgeons, the Departments of the Army, Navy and other government agencies to deliver medical service for more than 2.63 million eligible beneficiaries.

US Army Center for Environmental Health Research (USACEHR)

The USACEHR conducts research to protect US forces from environmental exposures to toxic industrial chemicals that may be present in the theater of operations.

US Army Corps of Engineers (USACE)

The USACE is an engineering force of highly disciplined people working with partners through disciplined thought and action to deliver innovative and sustainable solutions to the Nations engineering challenges.

US Army Dental Clinic

The Fort Detrick Dental Clinic provides dental services to active duty service members from all of the armed services and US Public Health Service located at Fort Detrick.

US Army Health Clinic

The health clinic at the Barquist Army Health Care Facility provides general medical care, including pharmacy, laboratory, and x-ray services, to active duty military, military retirees, and family members.

US Army Information Systems Engineering Command–Fort Detrick Engineering Directorate (USAISEC-FDED)

The USAISEC-FDED mission is to provide engineering, installation and testing of information systems and facilities throughout the Department of the Army as well as Defense Department agencies.

US Army Medical Materiel Agency (USAMMA)

The USAMMA is a unique, multifaceted organization globally managing strategic medical logistics contingency programs; medically equipping the active component, Army Reserve, and National Guard forces; and providing technical solutions at the medical treatment facilities.

US Army Medical Materiel Development Activity (USAMMDA)

The USAMMDA mission is to develop and manage medical materiel to protect and sustain the Warfighter on point for the Nation.

US Army Medical Research Acquisition Activity (USAMRAA)

USAMRAA provide business solutions to support its research, readiness, materiel development, information management/technology missions.

US Army Medical Research and Materiel Command (USAMRMC)

USAMRMC is responsible for lifecycle management of medical materiel, from basic laboratory research through advanced development, prototyping, procurement, delivery to units, maintenance and disposal.

US Army Medical Research Institute of Infectious Diseases (USAMRIID)

USAMRIID conducts basic and applied research on biological threats resulting in medical solutions to protect the Warfighter.

US Department of Agriculture Foreign Disease Weed Science Research Unit (USDA FDWSRU)

USDA FDWSRU identifies new, improved, and innovative methods for protecting crops against

plant diseases and weeds. Scientists emphasize studies of foreign plant diseases that pose potential threats to US agriculture, biological weed control with plant pathogens, weed biology, host-pathogen interaction and molecular genetics of fungal pathogens.

US Secret Service

The US Secret Service is mandated by Congress to carry out dual missions: protection of national and visiting foreign leaders, and criminal investigations. The US Secret Service at Fort Detrick office operates as liaison with the law enforcement community in Western Maryland.

Source: FDP AO, 2009

2.3.1 RESEARCH AND DEVELOPMENT

After termination in 1969 of the offensive biological warfare research program at Fort Detrick, the mission of some activities on the Installation shifted into other research and current development areas. USAMRIID, USDA, NCI-Frederick, and USACEHR conduct the majority of the research and development activities at Fort Detrick. USAG assists activities on the Installation in meeting the special engineering and safety requirements of research and development facilities.

US Army Medical Research and Materiel Command

USAMRMC is a major subordinate command of MEDCOM. The primary function of USAMRMC is the life cycle management of medical materiel for the DA. As a part of its mission, the command conducts research and development activities at military research facilities and through hundreds of contracts and agreements with universities, institutions, and industry. USAMRIID and USACEHR are subordinate activities of USAMRMC and are also headquartered at Fort Detrick. USAMRIID conducts biological and infectious defense research to develop strategies, products, information, procedures, and training for medical defense against biological warfare agents and naturally occurring infectious diseases of military importance. USAMRIID occupies a total of approximately 500,000 gsf in multiple facilities on the Installation. The research program at USAMRIID is conducted in two primary facilities: Building 1425 and Building 1412 (USAMRMC and USAG, 2006). The USAMRIID facility, over 10,000 square feet (sf) of Biosafety Level (BSL)-4 and 50,000 sf of BSL-3 laboratory space, is the largest biological containment laboratory in the United States (FDP AO, 2009). See Section 2.5.4 for a discussion of the new, replacement USAMRIID laboratories that will be constructed adjacent to the existing facility (USAMRMC and USAG, 2006).

USACEHR performs basic, exploratory, developmental and advanced non-systems developmental research in the areas of field medical materiel, vector control systems, health hazard assessments, and environmental health impacts. Research activities conducted by USACEHR include both laboratory and field experiments. USACEHR utilizes nine facilities at Fort Detrick. The types of laboratories operated by USACEHR for research and development activities include chemistry, microbiology, entomology, engineering, and aquatic toxicology. Other research facilities include fish holding tanks and a portable water-quality monitoring laboratory.

National Cancer Institute at Frederick

NCI-Frederick conducts research and development activities designed to prevent and cure cancer and AIDS. NCI-Frederick is a legally separate entity that owns and occupies

approximately 117 structures on approximately 69 acres of land in Area A. The NCI-Frederick facilities consist of laboratories (BSL-1 through BSL-3), laboratory animal breeding areas, and office/administrative space. Microbiology; molecular biology; biochemistry; the biology of oncogenes, viruses and retroviruses; genetics, and virology are among the research disciplines utilized in research activities at NCI-Frederick. The largest contractor to the NCI-Frederick is Science Applications International Corporation.

Agricultural Research

Agricultural research activities are performed by the USDA FDWSRU. USDA operates a microbial containment greenhouse and laboratory complex, agricultural fields, and a research and office complex to fulfill its mission. The research conducted by USDA has emphasis on foreign plant pathogens. USDA's mission is to develop fundamental information about foreign plant pathogens that either have potential to damage US crops or have potential beneficial use in biological control of weeds.

2.3.2 MILITARY MEDICAL PROGRAM SUPPORT

A number of Mission Partners provide medical service coordination, supply, standardization, information, and/or logistics support for all branches of the Armed Forces. These Mission Partners include the 6MLMC, AFMOA, AFMESA, NCMI, CBMS JPMO, DMSB, Integrated Clinical Systems, JMLFDC, Defense Contract Management Agency (DCMA), TAO, MC4, Naval Medical Logistics Command, and the TATRC.

Mission Partners conducting medical materiel support activities under USAMRMC at Fort Detrick include USAMMDA, USAMRAA and USAMMA. These mission partners provide planning, coordination, execution, and review of Army-wide medical research, development, testing, and evaluation (RDT&E) programs. USAMMDA assumes product management responsibility once a candidate product has advanced from the research phase to the development phase. The advanced development phase managed by USAMMDA includes obtaining necessary approvals from the FDA for new drugs, vaccines, and medical devices.

USAMRAA is responsible for procurement activities for USAMRMC and provides procurement support to most of the other tenant organizations on the Installation, the Office of the Surgeon General of the Army, and for laboratories outside the continental United States. USAMRAA also manages acquisition policies, procedures, and rules related to extramural research programs. All activities conducted by USAMRAA are administrative in nature.

USAMMA provides medical logistics management to USAMRMC through a worldwide network of logistics support organizations. Through the execution of medical logistics programs, USAMMA supports Army readiness and other critical health care missions. USAMMA also develops and initiates innovative logistics concepts and technological advances as well as managing procurement, fielding and maintenance of medical materiel and technology. All activities conducted by USAMMA are administrative in nature.

2.3.3 OTHER OPERATIONS

Other Mission Partners at Fort Detrick conduct activities which are unrelated to military medical programs and do not involve research. These Mission Partners include: the 21st US Army Signal

Brigade, 302nd Signal Battalion, 114th Signal Battalion, 53rd Signal Battalion, Company B, 4th Light Armored Reconnaissance Battalion 4th Marine Division Marine Forces Reserve, the US Secret Service, and the USAISEC-FDED. The activities of these Mission Partners include communications for the Armed Forces and intelligence communities, reserve support, administrative and logistical support, and law enforcement. Mission Partners that provide services to military personnel and the Installation community include: the AAFES; the US Army Dental Clinic; and the US Army Health Clinic. Merchandise and food products are provided to personnel and their families through the AAFES. Health and dental services are provided to military personnel and their families by the US Army Dental and Health Clinics, located in the Barquist Army Health Care Facility.

2.4 INSTALLATION MASTER PLANNING

In accordance with Army Regulation (AR) 210-20, *Real Property Master Planning for Army Installations*, dated 16 May 2005, Fort Detrick maintains an active planning program to manage current and future development at the Installation. DIS manages Real Property and Master Planning. AR 210-20 establishes and prescribes the Army's real property master planning process, and it assigns responsibilities and prescribes policies and procedures relating to the development, content, submission, and maintenance of a RPMP. The RPMP is an important element of the Installation strategic planning process. The RPMP depicts USAG's plan for orderly management and development of the Installation's real property assets, including land, facilities, and infrastructure, and documents the real property master planning process. The RPMP integrates all plans affecting or using real property into a comprehensive guidance document. The RPMP incorporates information from many sources to ensure that adequate real property support is provided to meet all assigned or projected missions for the Installation.

AR 210-20 requires that all Army installations maintain a planning board, known as the Real Property Planning Board (RPPB). According to AR 210-20, the Installation RPPB assists the USAG Commander in "managing, developing, and in some cases realigning, cleaning up, and closing the installation or area facilities and real estate." Two of the major functions of the RPPB are to: 1) act as the installation "city planning council" to ensure the orderly development and management of installation real property in support of missions, management processes, and achieving community objectives, and 2) guide the development and maintenance of all components of the RPMP. The Fort Detrick RPPB is comprised of representatives from the command, operational, engineering, and planning divisions of the Installation, as well as the mission partner activities. The RPPB-Working Group was created to act on behalf of the RPPB to resolve the day-to-day, non-controversial planning issues on the Installation and to advise the RPPB on major decisions.

2.5 CHANGES IN LAND USE AND PROJECT DESCRIPTIONS

While the RPMP covers all real property controlled by the USAG at Fort Detrick, this EA addresses only those portions of Area A and Area C that are controlled by the Garrison. Guidance for preparing the RPMP is provided in the 2006 Army's Master Planning Technical Manual (MPTM). The MPTM also serves as a reference manual and provides technical guidance in implementing the planning principles and systems of AR 210-20. The MPTM is a tool that allows Army master planners to realize an Installation's long term goals in a logical and systematic way. AR 210-20 established, and the MPTM describes, seven land use categories into which functional areas of all Army installations are divided. The existing and future land use

categories fit into these MPTM categories (see Figures 2-2 through 2-5). According to the MPTM, the Land Use Map is meant to reflect a generalized view of the Installation, and is not a precise reflection of what is on the ground. The seven categories of the Existing Land Use (see Figures 2-2 and 2-3) are as follows (as described in the MPTM):

- **Airfields** (Section 2.5.1)
- **Community** (Section 2.5.2)
- **Industrial** (Section 2.5.3)
- **Professional/Institutional** (Section 2.5.4)
- **Ranges and Training** (Section 2.5.5)
- **Residential** (Section 2.5.6)
- **Troop** (Section 2.5.7)

Land use changes in the form of new building construction, reconfigured roadway layout, infrastructural improvements, and enhanced recreational, educational, and ecological resources are proposed for Area A (see Figures 2-4 and 2-5). Potential future land use at Fort Detrick includes increasing the amount of land used for Professional/Institutional purposes from 239 acres to 299 acres and for Community purposes from 208 acres to 258 acres. Most of this acreage would be from eliminating ranges/training land use (81 acres) in the northern portion of Area A. Also the amount of land used for Troop purposes would be decreased from 113 acres to 75 acres to accommodate development of the northeast portion of the Installation for the Professional/Institutional and Community categories. Industrial land use category only increases by seven acres but does change in location. Industrial land use will move from the southwest corner of the Installation to the north central border due to Proposed and Conceptual Projects. Residential land use does not change in acreage or location.

Consolidation of like activities is also expected to result from implementation of the Future Land Use Plan (see Figures 2-4 and 2-5), which will benefit the workforce (administration, research and development) and residents (community facilities) of Fort Detrick.

Implementation of the Land Use Plan is consistent with the MPTM Land Use Map categories and will be instrumental in establishing the character of each distinct land use category at Fort Detrick. Consolidation of similar activities into the same land use category area is expected to result from implementation of the RPMP for Army-controlled land at Areas A and C, which will benefit the workforce and residents of Fort Detrick. Potential land use constraints are discussed in Section 4.17.

The following discussion of future land use changes on the Installation is organized by section into the seven MPTM Land Use Map categories. In each of the following sections, projects which are currently underway, soon to be underway, or are in the design and/or planning stages are referred to as **Approved Projects**. These projects have previously undergone NEPA review and most are expected to be completed within five years. The **Proposed Projects** (those included in the Proposed Action) involve construction of new facilities, infrastructure, or other amenity (see Table 2-2 and Figures 2-6 and 2-7). The time frame for the **Proposed Projects** assessed in this EA is generally five years. Although not part of the Proposed Action per se, the descriptions of **Approved** and **Conceptual Projects** are included. The **Approved Projects** will help provide a more meaningful baseline for assessing potential future environmental impacts (e.g., cumulative impacts), as well as for estimating utility demand and waste stream disposal

Legend

-  Existing Buildings
-  Approved Projects (1 - 19)
-  Proposed Projects (20 - 40)
-  Conceptual Projects (41 - 63)
-  NCI-Frederick Boundary
- EXISTING LAND USE 2010*
-  Airfields (Air)
-  Community (Com)
-  Industrial (Ind)
-  Professional / Institutional (P/I)
-  Ranges & Training (R&T)
-  Residential (Res)
-  Troop (Trp)

FORT DETRICK
 FREDERICK, MARYLAND

BSA ENVIRONMENTAL
 SERVICES, INC.

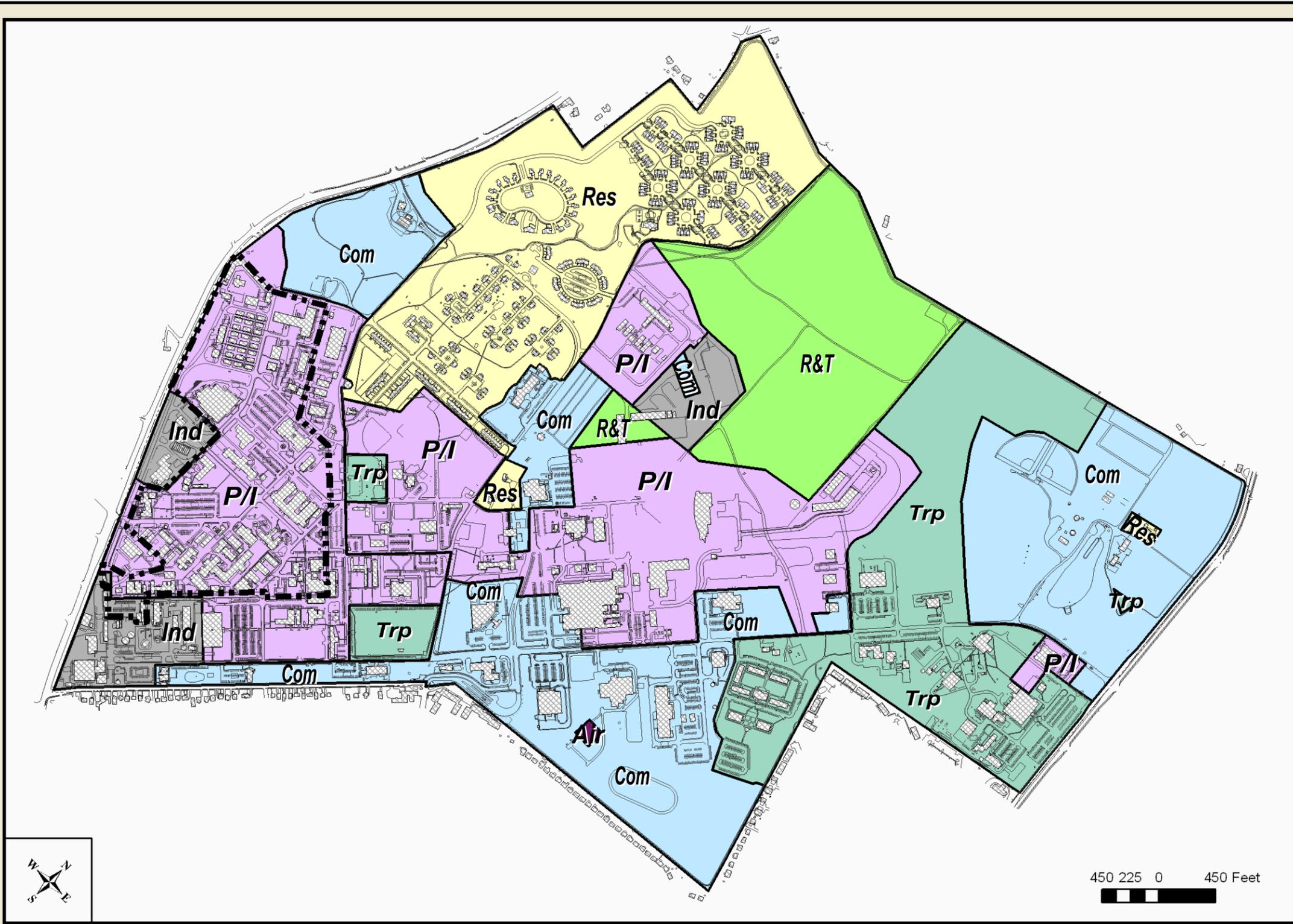
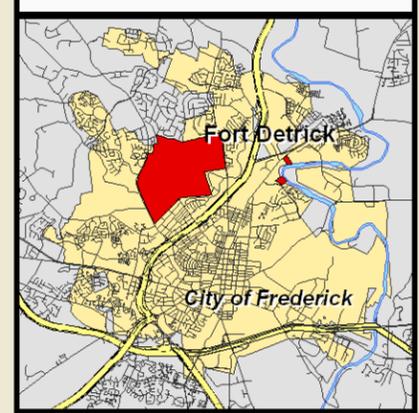


Figure 2-2. Area A Existing Land Use Map.

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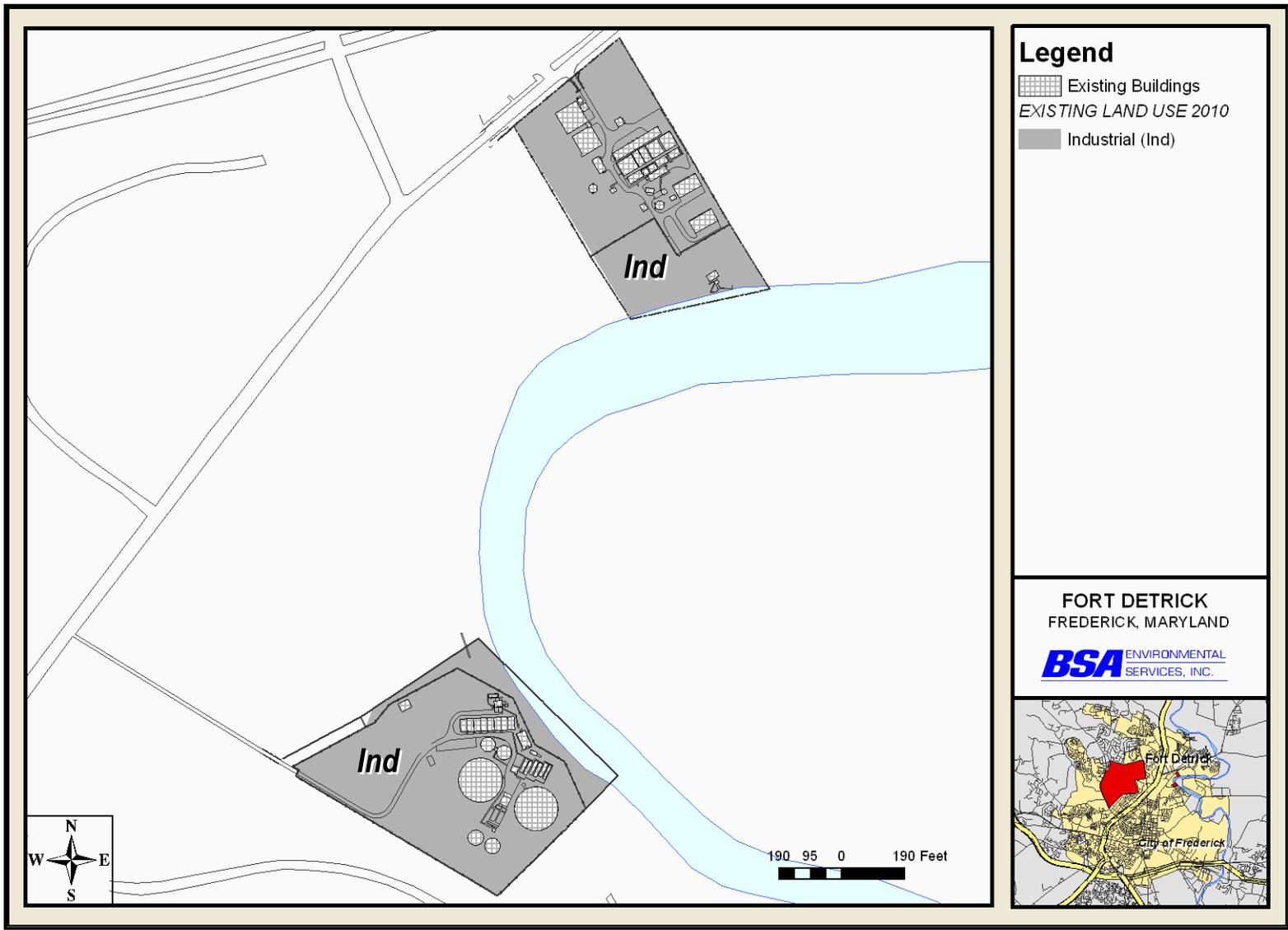


Figure 2-3. Area C Existing Land Use Map.

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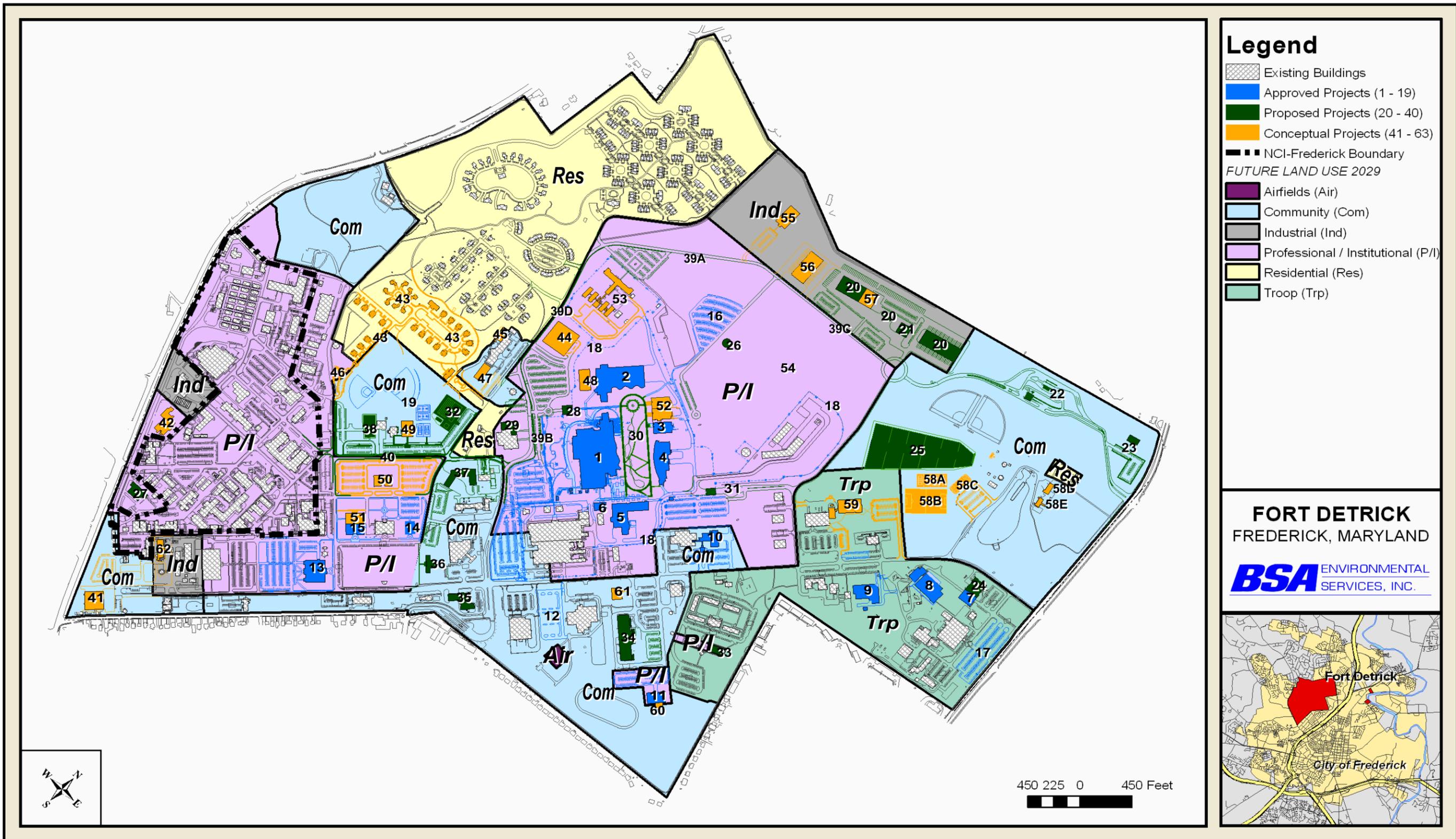


Figure 2-4. Area A Future Land Use Map.

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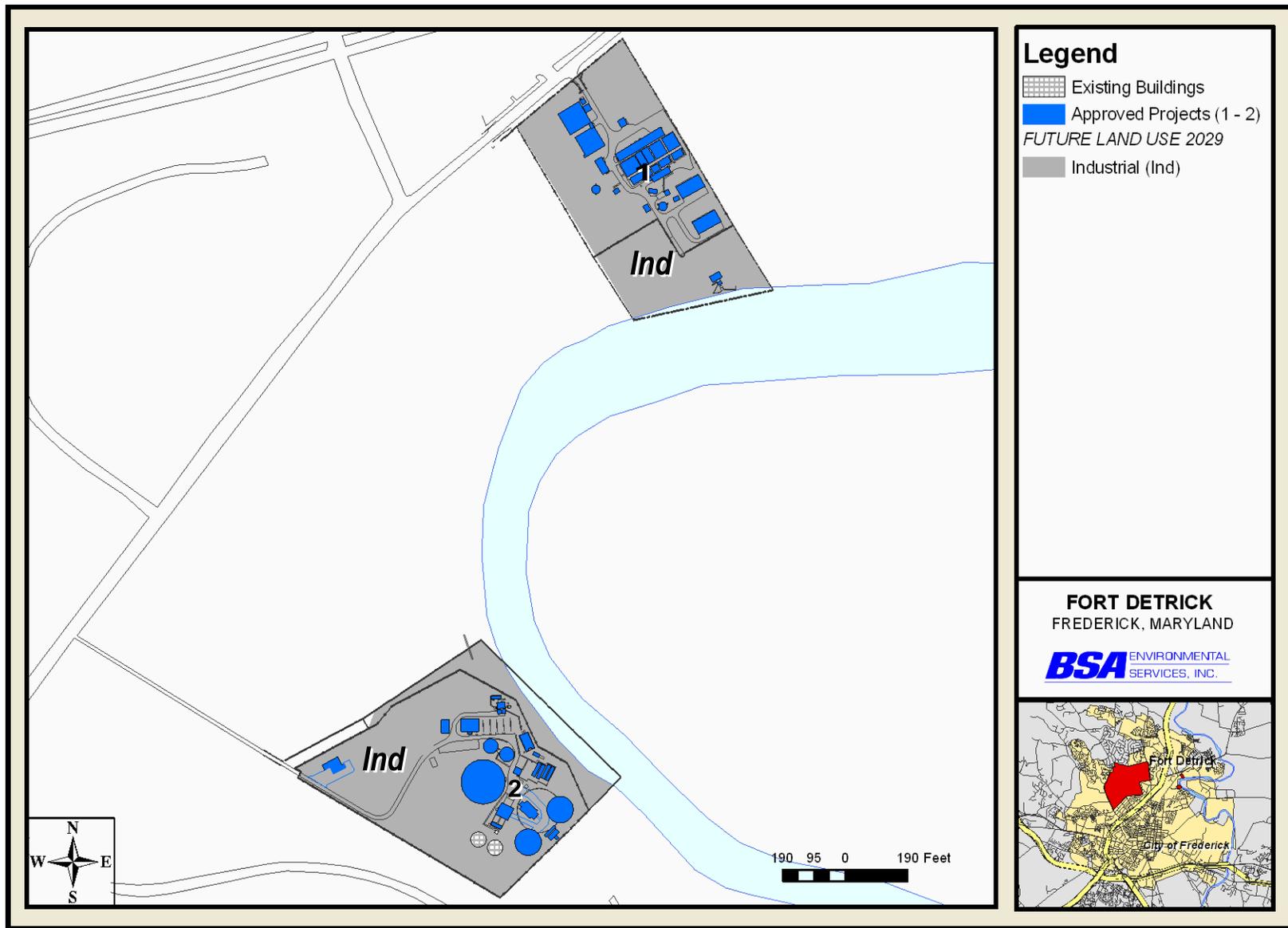


Figure 2-5. Area C Future Land Use Map.

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requirements. **Conceptual Projects** descriptions will be included but will not be assessed for potential future impacts or used in estimating utility demand and waste stream disposal because these projects are still under study and the level of detail is not available. These projects will need future NEPA documentation.

Table 2-3 lists buildings to be demolished as a result of Approved, Proposed and Conceptual Projects (see Figures 2-8 and 2-9). Approximately 28 buildings will be demolished on the Installation as a result of Approved Projects. An additional 22 buildings to be demolished are associated with Proposed Projects. Approximately 25 buildings to be demolished are a result of Conceptual Projects. The buildings to be demolished associated with conceptual projects are listed in Table 2-3 but are not analyzed in this EA. Those buildings will be discussed in further detail in the NEPA documentation for the associated conceptual project.

2.5.1 AIRFIELDS

As described in the previous section, only one area on Fort Detrick, the heliport, is designated under the Airfields land use category. The heliport is located in the southeast portion of Area A, directly south of Building 1507 (Physical Fitness Center). No Approved, Proposed, or Conceptual Projects are currently planned within the Airfields land use area on Fort Detrick.

2.5.2 COMMUNITY

The Community land use category fulfills an important function at the Installation. Facilities located within this category enhance the quality of life on the Installation and include religious, family support, personnel services, professional services, medical, community, commercial, and recreational services. The availability and abundance of community services at Fort Detrick are important to the well-being of employees and residents. Approved, Proposed, and Conceptual Projects for child and family services and the Community Park are located in the southwest central portion of Area A which is currently categorized as Troop and Professional/Institutional. The other Approved, Proposed and Conceptual Projects related to community services will be constructed on land already categorized as Community.

Veterans Affairs (VA) Community Based Outpatient Clinic (CBOC) (Approved Project, Figure 2-6)

An EA was completed in May 2006 for this project. The Department of VA is currently constructing a CBOC adjacent to the existing Fort Detrick Barquist Army Health Care Facility (Building 1434), located immediately southeast of the NIBC. The purpose of this CBOC is to improve efficiencies between agencies, share resources and increase access to health care for the regional military community (USAMRMC and USAG, 2006). The CBOC will benefit the surrounding area by increasing clinic space and medical personnel in the regional VA service area, reducing travel time for area veterans and providing enhanced medical services to Fort Detrick. The US Department of VA will run the Fort Detrick CBOC, which will provide primary care and mental health services like nutrition counseling and podiatry (Frederick News-Post, 2009a).

The new facility will consist of up to 35 new employees (average of 30 employees per day) including physicians, nurses, health specialists, and support staff to meet the increased health care demands. The CBOC will provide primary care, mental health care and selected specialty

services to veterans, and will be connected to the Barquist Army Health Care Facility via a new corridor. The CBOC will include a clinic facility, an adjoining corridor, and a parking lot. Future development plans include an ambulance loading dock and two building additions (USAMRMC and USAG, 2006). The CBOC will contain approximately 16,500 gsf. Construction is estimated to be complete by October 2010.

Parking Addition for Bldg 1507 (Approved Project, Figure 2-6)

This project involves the construction of a parking addition for Building 1507, the CPT Jennifer J. Shafer Odom Fitness Center. The fitness center includes a collegiate-sized basketball court, weight and aerobic room, lockers, saunas for men and women, laundry and supply rooms, and administrative space. The fitness center is free and open to all eligible Fort Detrick users, including retirees and family members. The parking addition should be complete by 2011.

Community Park Plan (Approved Project, Figure 2-6)

This project was evaluated in the 2003 IMP EA for its potential environmental impacts. The Community Park is located on approximately 15.2 acres from Doughten Drive east to Ditto Avenue and from Chandler Street north to the existing Military Construction Army (MCA) housing. Construction is already complete for the two lighted youth baseball fields. This park may include a youth soccer field, volleyball courts, basketball courts, tennis courts, a pavilion, a concession stand, picnic tables and benches, restrooms, and parking. Construction will be done in phases. Building 917 will be demolished as a result of the project. Construction is estimated to be complete by 2017.

Non Appropriated Funds (NAF) Youth Center –Modular Building (Proposed Project, Figure 2-6)

This project is being evaluated in this EA for its potential environmental impacts. A 19,875 gsf Youth Center with the capacity to service 150 youths is proposed. This project will provide a modern efficient facility to support the needs of middle school age children and teens thereby resulting in reduced duty time for soldiers due to conflict between parental responsibility and unit mission requirements. The Chief of Staff of the Army has approved acceleration of additional youth services for middle school youth and teens. USAG has a documented need for additional youth spaces to help meet the Army's goal of meeting 35 percent of the youth demand by the end of 2009. Increase in youth services at USAG will provide the needed additional spaces to help meet the increased Army demand. Included in the Youth Center project will be a canopy, shelters and a basketball court. Approximately four buildings will be demolished as a result of the project. Construction is estimated to be complete by 2011.

Golf Driving Range (Proposed Project, Figure 2-6)

This project is being evaluated in this EA for its potential environmental impacts. It involves the construction of a golf driving range to provide for additional recreational opportunities for US military personnel, authorized civilians, and their dependents. It will be approximately 300 yards long and provide approximately 10 tee-off boxes. The driving range will be located adjacent to the Nallin Farm Park baseball fields. The golf driving range is estimated to be complete by May 2010.

Emergency Services Center (Proposed Project, Figure 2-6)

This project is being evaluated in this EA for its potential environmental impacts. The Emergency Services Center is proposed to be located in the vicinity southeast of the intersection of Ditto Avenue and Sultan Drive, and will contain approximately 42,000 gsf. This project is required to consolidate DES functions into one contiguous location and to vacate Buildings 1500 and 1504 that do not meet current Anti-Terrorism/Force Protection (AT/FP) requirements. The new facility will consolidate the Installation's fire station, law enforcement, Provost Marshal Office, and administration. The estimated construction completion date is 2011.

Nallin Farm Gate/Campus Drive Extension (Proposed Project, Figure 2-6)

This project is being evaluated in this EA for its potential environmental impacts. The Nallin Farm Gate will support the required development and increased security requirements associated with the NIBC. Truck traffic to the NIBC will need a more direct access route that does not add to the traffic congestion due to development activities. The existing Opossumtown Pike Gate consists of one inbound lane and one outbound lane with a guardhouse for ID inspection and no large truck access. The Opossumtown Pike Gate access frequently congests traffic on Opossumtown Pike due to inadequate queuing capacity. Upgrading this gate in its current location is not possible due to physical constraints such as wetlands and nearby buildings. The boundary gate at Nallin will provide both car and truck inspection facilities and a proposed visitor's center. The Nallin Farm Gate will be located at the intersection of Amber Drive and will extend across the northern portion of the Installation. A traffic engineering study for the Nallin Farm Gate has been completed and the coordination with the City of Frederick is ongoing throughout the design of the project. Consultation with State Historic Preservation Office (SHPO) has already begun due to the proximity to the Nallin Farm Historic Area. The project also includes building a new road, Campus Drive. Nallin Farm Gate will connect to the proposed Veteran's Drive Segment 1 to the west and Campus Drive will extend south to connect the proposed NIBC Truck Inspection Station and Porter Street. The new gate and Campus Drive construction is estimated to be complete in 2011.

Auditorium and Training Center Expansion (Proposed Project, Figure 2-6)

The Auditorium and Training Center expansion is proposed as an alteration to the former Commissary space of the existing Community Support Center located in Building 1520. A portion of the building will become the Auditorium. Additional space will also be added to the existing Education Center. The project will directly support the NIBC in accordance with the designation by the National Security/National Homeland Security Council as a critical vital national homeland security facility for biodefense conferences, interagency employee education, and interagency coordination meetings. Alterations will include the renovation of the former commissary space for use as a 10,125 gsf, 350-seat community auditorium and an 18,500 gsf consolidated education center. The existing community auditorium and education center currently occupy less than optimal facilities. Buildings 611 and 718 will be demolished, Building 915 may be demolished and Buildings 1530 and 1531 are portable trailers and will be reassigned for other use on the Installation rather than be demolished as a result of this project. The estimated construction completion date for the Auditorium and Training Center Expansion is 2011.

Nallin Farm Gate Visitors Center (Proposed Project, Figure 2-6)

The Nallin Farm Gate Visitors Center is related to the Nallin Farm Gate project. This project will locate a 6,000 sf building in the northeast corner of the Installation, adjacent to the Nallin Farm Gate. The building will serve as a visitor registration and information center for those visiting the Installation. In addition, the Visitors Center will provide a meeting point for groups entering the Installation and mitigate traffic congestion within the Installation. Construction is estimated to be complete by 2012.

Education and Conference Center (Community Activities Center [CAC] replacement) (Proposed Project, Figure 2-6)

The proposed Education and Conference Center will be an administrative facility at Fort Detrick to support education and conferencing activities associated with the NIBC. The proposed Education and Conference Center will provide an adequate and appropriate replacement for a CAC. The existing CAC is a rapidly deteriorating and unsafe WWII era building. In support of the NIBC activities, this project will provide a modern, sustainable, and adequate facility which will support the future demands. All necessary primary and supporting facilities will be included to provide a complete and useable facility. Such as a large multi-purpose room with audio/video conferencing and stage, several classrooms/meeting rooms, catering service facilities, administrative office(s), toilet facilities; waiting area, communications and multiple storage areas. The Education and Conference Center will contain approximately 22,250 gsf and the estimated construction completion date is 2013.

Outdoor Swimming Pool (Proposed Project, Figure 2-6)

The proposed Outdoor Swimming Pool is being evaluated in this EA for its potential environmental impacts. The proposed project is required to provide a modern pool facility for US military personnel, authorized civilians, and their dependents. It will provide off-duty recreation and promote physical fitness. The existing outdoor swimming pool facility is over 50 years old, does not meet current standards and has reached the end of its life-cycle. Furthermore, the existing complex is located in an area that is needed for mission growth to support the NIBC. The new facility will be centrally located as part of the Fort Detrick Community Park, adjacent to the Residential Communities Initiative (RCI) housing areas between the Youth Center Complex and Child Development Center. The outdoor swimming pool will be approximately 5,355 gsf and the recreational shelter will be approximately 2,640 gsf. Building 941 will be demolished as a result of the project. The estimated construction completion date is 2012.

Convert Bldg. 1504 to FMWR Craft Shops Center (Proposed Project, Figure 2-6)

This project is being evaluated in this EA for its potential environmental impacts. Building 1504, currently the Emergency Services Center will be converted to a FMWR Craft Shops Center. The FMWR Craft Shops Center will offer a variety of classes for users of all ages. It will also contain a resale shop stocked with many of the items needed for classes and it is available to all authorized FMWR users. Group and individual instruction will be offered in matting and framing, ceramics, pertole, floral design, linoleum and woodcut relief printing, decorative (faux) tile art, child classes, and seasonal craft classes. The FMWR Craft Shops Center will also offer services in custom framing, sublimation, engraving, silk flower arrangements, and canvas stretching. The FMWR Craft Shops Center cannot be complete until current operations in Building 1504 are

relocated to the proposed Emergency Services Center. Construction is estimated to be complete by 2013.

Sultan Drive Realignment (Proposed Project, Figure 2-6)

The realignment of the existing Sultan Drive will improve internal circulation, traffic capacity, pedestrian and vehicular safety, and help remove the principle impediment to the redevelopment of land to support the Installation's mission. Existing vehicle traffic routes on Fort Detrick are poorly suited to accommodate the increased traffic anticipated with this growth. The development and relocation of facilities throughout the Installation requires that existing traffic routes be improved. The Installation RPMP designates Sultan Drive for realignment to help provide improved east-west vehicle circulation across the Installation. Adjacent uses are the Fort Detrick Community Park to the north, NIBC to the east, proposed POV parking to the south, and administrative, research, and industrial facilities to the west. Sultan Drive also serves as one of the primary truck routes to NIBC. Approximately four buildings will be demolished as a result of the project. The realignment of Sultan Drive is estimated to be complete by 2013.

Chapel Complex (Conceptual Project, Figure 2-6)

The Chapel Complex will provide a 400 seat sanctuary, 239 seat activity center and 17 religious education classrooms to accommodate a variety of different programs to support the soldiers and their families on the Installation. The activity center and religious education classrooms are required to provide a permanent facility for religious instruction, family support, and community support activities. Currently, existing religious activities are housed at the Installation's central chapel and religious education facility which is inadequate in size to meet the current and expected program requirements. The proposed Chapel Complex is to be located adjacent to the Child Development Center, Family Housing and the existing Chapel facility (Building 1776), northwest of the intersection of Ditto Avenue and Stark Street, and will contain approximately 22,600 gsf of space. The estimated construction completion date is 2018.

Nallin Farm Park (Conceptual Project, Figure 2-6)

The Nallin Farm Park will be redesigned to increase opportunities for diverse recreational programming, serve as a facility for all FMWR activities, and promote positive interaction with off-post community through various special events. Improvements to the Nallin Farm Park include two adult softball fields, a soccer field, tennis courts, roller hockey/ice skating rink, bleachers, concession stands, restrooms, an outdoor amphitheater and stage, a dog park, basketball courts, and sites for future fields and running track with room for community events. Conversion and renovation of the Nallin Bank Barn, a National Register of Historic Places (NRHP) property, into a multipurpose facility suitable for gatherings and outdoor recreation programs will also be included in the project. The milk barn adjacent to the Nallin Bank Barn will also be renovated and turned into a storage building. The estimated construction completion date for this project is 2018.

Child Development Center Addition (Conceptual Project, Figure 2-6)

Additional space at the Installation's Child Development Center is required to meet existing and anticipated demand for child care of soldiers and civilian DoD families working on-post. The Child Development Center project will be a standard design addition to the existing on-post

Child Development Center. This project will connect to energy monitoring and control system and also install an intrusion detection system. Construction of this project is estimated to be complete by 2019.

Building 924 Additional Administration and Storage Space (Conceptual Project, Figure 2-6)

The Family Child Care Office is located in the Child and Youth Services Welcome Center in Building 924. As Fort Detrick continues to grow, additional administration and storage will be required for this building. Construction is estimated to be complete by 2018.

Bowling Alley Replacement (Conceptual Project, Figure 2-6)

A 12-lane Bowling Center is needed to provide an adequate and appropriate bowling recreation center for the growing customer population at Fort Detrick, Maryland. This project will provide a modern state of the art facility (to meet demonstrated demand) that will greatly enhance the customer service program by providing a facility comparable to those that are commercially operated. Limited bowling opportunities are currently available in Building 915; which is scheduled for demolition in accordance with Fort Detrick Future Development Master Plan. This temporary building was not designed for its current use but was retrofitted with four lanes and food and beverage service equipment. This new bowling center will support the Army's goal of improving the quality of life for soldiers and their families by offering opportunities for self-fulfillment, social activity and leisure-time enjoyment. The Bowling Center will contain approximately 15,000 gsf and the estimated construction completion date is 2019.

School Age Services (SAS) Facility (Conceptual Project, Figure 2-6)

The 14,000 sf SAS Facility will be constructed adjacent to Building 949 (Youth Center) to meet all requirements of Fort Detrick SAS Program. The current Youth Center does not provide either adequate space or equipment to accommodate the SAS Program's required activity choices and operational functions. The current facility does not provide a homework center, commercial kitchen, demonstration kitchen, or basic required space to enable the staff to work on modules or conduct training. The Youth Center computer lab does not meet the requirements of the SAS Program. The estimated construction completion date is 2019.

National Microbiological Defense Museum (Conceptual Project, Figure 2-6)

The project will rehabilitate and restore Building 201 for reuse as a Department of Army Museum for Microbiological Defense. This project is required to save and preserve history and artifacts of the nation's microbiological research for future generations. Building 201 is the preferred location for the museum as it was built in the 1940s and served during WWII as the nation's first pilot plant for microbiological research. A historic tarmac is also located adjacent to the building. The museum will collect and hold the nation's historical artifacts depicting earlier periods in microbiological defense research. The museum will contain important historic information and artifacts as an option for preservation rather than deterioration and/or disposal. The museum will contain approximately 56,430 gsf and construction is estimated to be complete by 2020.

2.5.3 INDUSTRIAL

Industrial operations at Fort Detrick include maintaining Installation facilities by providing utilities, storing materials, and transporting and disposing of wastes. All Approved Projects related to industrial purposes are located in areas already categorized as Industrial land use. Proposed and Conceptual Projects related to industrial services on Area A will be constructed on land currently categorized as Ranges and Training. It is proposed that the current industrial services in the southwest corner of the Installation, except the Incinerator Plant, be consolidated to the north central border of Area A. Approved, Proposed and Conceptual Projects on Area C are all for industrial services and all of Area C is categorized as Industrial land use.

Waste Water Treatment Plant (WWTP) Sanitary Flow Structure (Approved Project)

A Sanitary Flow Structure is currently being constructed on Area C to improve operation of the WWTP. Excavation of the site will provide foundation for a new access road and building pad for the new flow handling structure. The new access road will branch off the existing access road leading to the WWTP. A trench will also be excavated to install new sewer piping. All mechanical equipment necessary for a fully functional sewage pump station will be provided. A new pre-cast reinforced concrete wet well vault will be provided and installed, as well as all electrical wiring and devices required for the new pumping facility. The sanitary flow structure project is currently 47 percent complete.

WWTP: Repairs (Approved Project, Figure 2-7)

The WWTP is currently being repaired and upgraded to improve its operating and environmental performance to meet the regulatory requirements of the Enhanced Nutrient Removal (ENR) policy. It involves replacement of processing components of the aging wastewater treatment plant to increase its capability to meet Fort Detrick current permitted discharge limits, and to achieve discharge water quality requirements to meet ENR Standards. The wastewater treatment plant has the operating capacity to handle the current flows, which are lower than the Maryland Department of the Environment (MDE) permitted discharge limits. ENR improvements to reduce discharge limits for nitrogen and phosphorus must be made to meet the new MDE regulatory requirements. A date of 1 July 2011 has been set for compliance with the ENR discharge limits. Additionally, hazardous materials (HAZMAT) abatement, utilities, secondary facilities, and temporary processing equipment will be provided. Buildings 1109, 1110, 1110A, 1114, 1116, and 1117 will be demolished as a result of the project. WWTP repairs are expected to be complete by the July 2011 deadline.

Water Treatment Plant (WTP) Repair (Proposed Project, Figure 2-7)

The WTP repairs are being evaluated in this EA for their potential environmental impacts. This project involves repairing and expanding the water treatment capability and connectivity to and from the City of Frederick system. The plant expansion includes a sludge handling/treatment upgrade, chemical treatment upgrade, testing laboratory, and administrative space. The existing infrastructure upgrades to the treatment containment tanks and transport pipes will improve the water distribution and connectivity system. Supporting facilities include utilities and site improvements. The project will be designed in accordance with applicable criteria, regulations and energy conservation legislation. Repairs to the WTP are expected to be complete by 2011.

Consolidated Logistics Facility (Proposed Project, Figure 2-6)

This project is being evaluated in this EA for its potential environmental impacts. Two buildings that make up this facility will support the required expansion and increased logistics and security requirements associated with the growth of the NIBC missions. One building will contain the Directorate of Public Works Operations and Maintenance building and the other building will contain conventional logistics operations such as shipping, receiving, storage, mail handling, and distribution. The consolidated logistics facility will allow for more direct routes to the NIBC. The three existing logistics facilities are inadequate and poorly located, and they do not lend themselves to modification to meet current security requirements. The existing logistics facilities are not AT/FP compliant, do not meet special local security requirements, and do not have sufficient space for the anticipated increase in logistic activity that will accompany the construction of the NIBC. The consolidated logistics facility will provide high bay storage, truck cargo transfer facility, administrative support, and facility engineering and maintenance shops. Supporting facilities will include utilities, site improvement, an access road, a paved apron for maneuvering of trucks, and parking. Seven buildings (100, 243, 258, 259, 263, 264 and 276) located in the southwest corner of the Installation, three of which are logistics facilities, will be demolished after functions are relocated into the new facilities in the northern boundary. The new consolidated logistics facility will contain approximately 82,000 gsf and construction is estimated to be complete in 2013.

NIBC Hazardous Material Handling Facility (Proposed Project, Figure 2-6)

The centralized NIBC hazardous waste facility will be located adjacent to the proposed Consolidated Logistics Facility along the northern boundary of the Installation. This facility will ensure Installation and community safety when disposing of hazardous waste. This facility will allow for cost effective consolidation of hazardous wastes before shipped off-site for final disposal. Buildings 261 and 262, the current hazardous waste storage buildings, will be demolished after the completion of this project. The NIBC Hazardous Material Handling Facility will contain approximately 12,500 gsf and construction is estimated to be complete in 2014.

Consolidated Maintenance Facility (Conceptual Project, Figure 2-6)

The consolidated maintenance facility will be located adjacent to the consolidated logistics facility in the northern part of Area A. The consolidated maintenance facility will support the required development and increased logistics and security requirements associated with the growth of the NIBC missions. The consolidated maintenance facility will be included in the Directorate of Public Works Operations and Maintenance building associated with the consolidated logistics facility project. The consolidated maintenance facility will be approximately 15,594 gsf and construction is estimated to be complete by 2018.

Consolidated Storage Facility (Conceptual Project, Figure 2-6)

The consolidated storage facility will be constructed to augment the new consolidated logistics facility in the northern part of Area A. This facility will provide dry storage divided into secure bays and a small administrative office. The building will support the NIBC in accordance with the designation by the national Security/National Homeland Security Council. Supporting facilities include utilities, site improvement, access road, paved apron for maneuvering of trucks, and parking. Currently, increased storage space is required and provided by containers, semi-

trailers, and sheds. The consolidated storage facility will be approximately 37,000 gsf and construction is estimated to be complete by 2019.

Central Engineering Complex (Conceptual Project, Figure 2-6)

The central engineering complex will contain the Directorate of Public Works administrative staff, division staffs, Engineering and Construction Division and the Master Planning Division. By the time this building is required other projects will have resulted in the relocation or closing of all the Directorate of Public Works functions in the west end of the Installation. All of the succeeding functions and infrastructure will be located in northern portion of Fort Detrick. This project will consolidate all of the administrative and technical staff to modern, sustainable, permanent facilities. The central engineering building will be located off of Veterans Drive in northern Area A and be approximately 23,420 gsf. Construction is estimated to be complete in 2019.

Demolition of Building 190 Boiler Plant (Conceptual Project, Figure 2-6)

Fort Detrick is currently studying the possibility of de-centralizing their steam heating facility, Building 190 Boiler Plant. This project will result in each building having modern high efficiency/low emission units which will eliminate distribution system losses. This will reduce noise, odors, emissions, and achieve significant energy conservation on the Installation. This project would include the demolition of the existing bulk above ground storage tanks associated with the Boiler Plant as well as Building 190.

2.5.4 PROFESSIONAL/INSTITUTIONAL

The Professional/Institutional land use category at Fort Detrick contains facilities that are essential to many Mission Partners on the Installation. This land use category includes research and development laboratories/facilities and administrative support functions. Many Approved, Proposed, and Conceptual projects related to Professional/Institutional purposes are proposed for land that is already designated as Professional/Institutional. Land use in the north central portion of Area A is currently open fields designated as Ranges and Training. Projects in the north central portion of Area A are related Professional/Institutional purposes. Professional/Institutional land use category will also replace Troop areas surrounding the USAMRMC Headquarters.

NIAID IRF (Approved Project, Figure 2-6)

An EIS was completed in December 2003 for this facility (NIH and USAG, 2003). Construction of the NIAID IRF has been completed at the southern end of the NIBC and commissioning is currently underway. This facility contains 144,000 gsf of floor space for research laboratories (BSL-2, BSL-3, and BSL-4), laboratory space for animal research, radiology equipment, mechanical space, administrative support, and a waste-handling area. This project is included in this EA even though it is complete because complete utility usage and waste production needs to be incorporated into the baseline consumption/generation.

DHS NBACC (Approved Project, Figure 2-6)

An EIS was completed in December 2004 for this facility (DHS and USAG, 2004). Construction of the NBACC facility has been completed on the NIBC and commissioning is currently underway. This facility contains 158,000 gsf of floor space for research laboratories (BSL-2, BSL-3, and BSL-4), laboratory space for animal research, radiology equipment, mechanical space, administrative support, and a waste-handling area. The NBACC facility provides the DHS with much-needed biological threat characterization and bioforensic operations and research laboratory facilities to fulfill its mission requirements. This project is included in this EA even though it is complete because complete utility usage and waste production needs to be incorporated into the baseline consumption/generation.

USAMRIID Steam Sterilization Plant (SSP) (Approved Project, Figure 2-6)

An EA was completed in February 1997 to assess the potential environmental impacts of this project (USAG, 1997a). Fort Detrick will replace the existing and antiquated Laboratory Sewer System (LSS) and SSP system with a new SSP prior to the scheduled completion of the proposed new Stage I USAMRIID facilities. The new SSP will provide a firm capacity for treatment of 126,000 gallons per day of potentially contaminated water. The new SSP will thermally treat all high containment waste generated by existing USAMRIID facilities and USAMRIID Stage I and is currently under construction. The new SSP will occupy approximately 21,000 gsf and will be located adjoining the northeast corner of Building 1425 and adjacent to the proposed USAMRIID Stage I facility on the NIBC (USAMRMC and USAG, 2006). Construction of the new SSP is currently about 25 percent complete and it is estimated to be complete in 2011.

USAMRIID Stage I (Approved Project, Figure 2-6)

An EIS was completed in December 2006 for replacement facilities for USAMRIID, to be completed in two stages (USAMRMC and USAG, 2006). The new facilities will be situated adjacent to the existing USAMRIID facilities and will be located on the NIBC. The new facilities will replace the existing outdated primary buildings used by USAMRIID researchers (Buildings 1425 and 1412). The new USAMRIID Stage I facility will include laboratories, aerobiology, vivarium, and administrative space. Stage I of the new USAMRIID will contain 835,390 gsf. Building 1412 (73,920 gsf) will be completely demolished and half of Building 1425 (250,000 gsf) will also be demolished. The 250,000 gsf of Building 1425 that will remain will be converted for other uses. Five additional buildings (1408, 1413, 1414, 1415 and 1420) will be demolished as a result of the project. Construction of Stage I is currently underway and will be completed in 2014.

USAMRIID Stage II (Approved Project, Figure 2-6)

An EIS was completed in December 2006 for replacement facilities for USAMRIID, to be completed in two stages (USAMRMC and USAG, 2006). The new facilities will be situated adjacent to the existing USAMRIID facilities and will be located on the NIBC. The new facilities will replace the existing outdated primary buildings used by USAMRIID researchers (Buildings 1425 and 1412). USAMRIID Stage II facility will provide additional space for the balance of USAMRIID's expanded mission and for additional capacity to meet requirements of biodefense research. Stage II will contain 376,488 gsf. Building 1412 (73,920 gsf) will be completely

demolished and half of Building 1425 (250,000 gsf) will also be demolished. The 250,000 gsf of Building 1425 that will remain will be converted for other uses. Stage II is expected to begin construction in fiscal year (FY) 2015.

Naval Medical Bio-Defense Research Laboratory (NMBDRL) (Approved Project, Figure 2-6)

An EA was completed in November 2006 to assess the potential environmental impacts of this project (USACE, 2006). A Medical Bio-Defense Research Laboratory and air conditioned warehouse support space will be constructed to provide facilities for consolidated defense research laboratory and administrative space to support BRAC-05 re-stationing actions at Fort Detrick. This project will establish the Joint Center of Excellence for Biological Defense Research in accordance with BRAC-05 recommendations. The medical biological defense research and supporting functions currently being conducted at Forest Glen Annex, Maryland, and in leased space within the National Capital Area will be relocated to Fort Detrick. The laboratory, currently under construction, will contain approximately 38,000 gsf and is scheduled for completion in 2011. The new laboratory will be constructed within the new NIBC and meet all necessary security requirements.

Joint Bio-Medical Research Development Activity (RDA) Management Center (CBMS and Navy) (Approved Project, Figure 2-6)

An EA was completed in November 2006 to assess the potential environmental impacts of this project (USACE, 2006). This project serves to correct deficiencies in the RDA project relating to CBMS and the Navy. Related medical administrative activities are currently located at various locations within Maryland and Washington, D.C. Currently there is no adequate, permanent, administrative space available at Fort Detrick to accommodate all of the required spaces for BRAC 2005's recommendation of relocation of the Naval Bureau of Medicine, Code M2 (from the Potomac Annex) and the Joint project Manager for CBMS to Fort Detrick. This project will accommodate these activities by the construction of a new permanent multi-story administrative facility at Fort Detrick within the planned administrative campus.

The building will be a new permanent multi-story administrative facility and contain 22,660 gsf and approximately 103 personnel. The project, which also includes 30,000 gsf of paving, utility relocations, storm drainage, site improvements and information systems, is scheduled for completion in January 2011 (USACE, 2006).

NIBC Security Fencing and Equipment (Approved Project, Figure 2-6)

The NIBC Security Fencing project will complete a controlled perimeter anti-vehicle fencing, security lighting, and access gate around the buildings of the NIBC. A threat assessment has determined the need for a continuous perimeter anti-vehicle security fence with security lighting, around the NIBC and an emergency access gate. The project will be designed in accordance with the National Security Council/Homeland Security Council assessment, as well as, the USACE Protective Design Center of Excellence, and applicable energy conservation legislation. Erection of the security fencing is expected to be completed in 2014.

Research Support Operations Center (ReSOC) (Approved Project, Figure 2-6)

This project was evaluated in the 2003 IMP EA for its potential environmental impacts. The ReSOC facility will be occupied by USAMRMC organizations, many of which are currently scattered throughout eight separate buildings and one trailer on the Installation. Most of these facilities are sub-standard, 60-year-old temporary and semi-permanent buildings. The collective USAMRMC facility inventory is functionally inadequate to support the many interrelated administrative and communication needs of the USAMRMC headquarters staff elements and major sub-organizations. Buildings 504, 505, 515, 525, and 722 will be demolished as a result of the project. The ReSOC facility, to be completed in 2018, will be a multi-story, 95,608 gsf building located northwest of the intersection of Porter Street and Doughnten Drive.

Staff Judge Advocate (SJA) (Approved Project, Figure 2-6)

This project was evaluated in the 2003 IMP EA for its potential environmental impacts. The Staff Judge Advocate (SJA) facility is being developed together with the ReSOC facility and will serve USAMRMC in the same manner by providing modern facilities for more efficient operations to support the legal mission. The SJA facility will be a multi-story, 19,061 gsf building located directly east of Building 810. Building 521 will be demolished as a result of the project. The facility will be ready for occupancy by 2018.

Research Acquisition Building (Approved Project, Figure 2-6)

This project was evaluated in the 2003 IMP EA for its potential environmental impacts. A Research Acquisition Building will be constructed to provide administrative space for the USAMMDA and USAMRAA. Currently, USAMMDA and USAMRAA occupy substandard relocatable buildings which are inefficient for the functional requirements of the organization and impede mission accomplishment. Existing temporary buildings are located in a redevelopment area scheduled for permanent facilities related to the development of the NIBC. Buildings 817, 818, and 820 will be demolished as a result of the project. The building will be constructed directly to the west of Building 810, contain approximately 33,500 gsf and be completed in 2018.

New Parking Lot Adjacent to New Supplement Water Storage (Approved Project, Figure 2-6)

A new parking lot will be constructed in the north central part of Area A. This project will provide a parking area to USAMRIID Stage II and the northern NIBC and it will be approximately 135,000 gsf in size.

USDA Lab and Greenhouse Renovation (Bldg 374) (Proposed Project, Figure 2-6)

The USDA will renovate their Effluent Decontamination System (EDS) (actually housed in bldg 390, next to 374). This project will allow USDA to decontaminate wastewater on site prior to the time USAMRIID completes their LSS in early 2011. Design of the EDS renovation is at 50 percent and the renovation will begin in 2010 and will be completed by FY 2011

NIBC Truck Inspection Station and Road (Proposed Project, Figure 2-6)

This project is being evaluated in this EA for its potential environmental impacts. The

construction of a NIBC Truck Inspection Station and Road will support the required development and increased security requirements associated with the NIBC based upon National Security/National Homeland Security Council's threat assessment. Current operations involving the inspecting and escorting of vehicles is manpower intensive and does not meet the special AT/FP requirements. The project will provide a truck inspection enclosure, vehicle overhead canopy, a guard house, rolling gates, and security barriers. Site improvements will include roadways to connect this facility to existing road network, utility trenching, curbs and gutters, paving, sidewalks, and a truck turnaround area. Construction is estimated to be complete in 2011.

Supplemental Water Storage (Proposed Project, Figure 2-6)

This project is being evaluated in this EA for its potential environmental impacts. The construction of a two-million gallon water storage facility is proposed. A utilities facility will house associated pumping station, back-up generators, and piping connections. Supporting facilities include utilities and site improvements. The expanded on-site water storage increases water storage capacity to fulfill the Installation's one day demand in accordance with Uniform Fire Code 3-230-4A domestic demand and fire protection requirements associated with the NIBC based on National Security/National Homeland Security Council's threat assessment. The NIBC and other mission expansions at Fort Detrick will increase water demand beyond current storage capacity. This project will double the Installation's storage capacity and provide a more reliable source of potable water for mission operations and fire protection. Building 725, a water storage tank, will be demolished as a result of the project. Construction of the supplemental water storage project is estimated to be complete in 2012.

Information Services Facility (Network Enterprise Center [NEC] [formerly DOIM]) Expansion (Bldg 1422) (Proposed Project, Figure 2-6)

This project is being evaluated in this EA for its potential environmental impacts. It involves the expansion of the existing NEC facility located in Building 1422. Information management/information technology services are currently provided from multiple widely separated facilities on Fort Detrick. Existing capacity is insufficient to support the additional requirements caused by mission expansion associated on the Installation. The information services facility expansion will contain approximately 11,000 gsf and construction is estimated to be complete on 2013.

Veteran's Drive Extension (Proposed Project)

This project is being evaluated in this EA for its potential environmental impacts. An extension of Veterans Drive is proposed to connect with Sultan Drive to the Nallin Farm Gate traffic circle in accordance with the RPMP and the Installation Design Guidelines. This roadway will include parallel walkways, street lighting, grading, grass, trees and storm water management features. This construction will be in direct support of the NIBC. This project is divided into four separate segments.

Veterans Drive Extension, Segment 1(USDA- NMBDRL) (Proposed Project, Figure 2-6)

The NMBDRL has been authorized under BRAC and there is no road to service this facility. The configuration of other projects, and of an Allegheny Power transmission line easement and

transmission station, requires that access to this site be provided by a new roadway. The siting of the NMBDRL on the last available parcel within the NIBC has resulted in accelerating the need for a roadway to service this parcel. Currently there is no paved road in this area. This portion of the Veteran's Drive Extension project is estimated to be complete by 2011.

Veteran's Drive Extension, Segment 3 (Navy Way - Campus Cir) (Proposed Project, Figure 2-6)

This road of the Veteran's Drive Extension Project will extend across the northern portion of Area A, connecting to the proposed Nallin Farm Gate. This roadway will provide access to the proposed Consolidated Logistics Facilities and other Industrial buildings on the northern boundary of the Installation. Segment 3 will also provide access to the Northern NIBC. This project is estimated to be complete by 2013.

Veterans Drive Extension, Segment 2 (NEC Bypass) (Proposed Project, Figure 2-6)

This segment of the Veteran's Drive Extension Project the roadway will bypass the NEC and provide access to parking for the NIBC and the proposed ACP-9. This project is estimated to be complete by 2014.

Veterans Drive Extension, Segment 4 (Ditto widening) (Proposed Project, Figure 2-6)

This segment of the Veteran's Drive Extension Project will widen Ditto Avenue north of the Chapel Complex and past the RCI housing. This will connect to Segment 1 of the Veteran's Drive Extension. This will mitigate traffic problems by providing a better flow of traffic through the Installation. This project is estimated to be completed by 2018.

NIBC Access Control Point (ACP)-9 (Proposed Project, Figure 2-6)

This project involves the construction of a new ACP and Visitors Center to meet ATFP and NIBC security requirements and anticipated increases in the number of personnel to be accessed into and out of the NIBC. The NIBC will experience a significant development of facilities and personnel in the near future. This expansion will result in the creation of a complex of multiple laboratories and open spaces. Each facility has individualized security protocols. The campus is being built within a secured perimeter. It is necessary to create a common level of security for access into the NIBC. It will also provide a single common point of entry for all visitors without a duplication of the services needed to screen them. The NIBC Entry Control Point will contain approximately 2,550 gsf and construction is estimated to be complete by 2012.

NIBC Green (Proposed Project, Figure 2-6)

This project is being evaluated in this EA for its potential environmental impacts. The project will be located in the center of the NIBC, surrounded by the Approved and Proposed laboratories. The NIBC Green will provide landscaped gathering places outside of NIBC laboratories that include sidewalks, trees, stormwater management (SWM) ponds, fountains, and a monument. The NIBC Green will provide an aesthetically pleasant atmosphere for employees to gather and relax. Construction of the NIBC Green project is estimated to be complete by 2018.

New National Center for Medical Intelligence (NCMI) (Conceptual Project, Figure 2-6)

The new NCMI facility will be located within the new NIBC adjacent to the new USAMRIID laboratories, the NIBC Green, and connected to the new NMBDRL. The new NCMI facility will meet all necessary security requirements to be located within the new NIBC. Construction of the new NCMI facility is estimated to be complete in 2015.

Joint Bio-Medical RDA Management Center Addition (Conceptual Project, Figure 2-6)

The Joint Bio-Medical RDA Management Center Addition will include the construction of one or more additions to the proposed Joint Bio-Medical RDA Management Center. The administration building addition will provide additional space for activities to be relocated to Fort Detrick in accordance with the directives of BRAC 2005. The medical administrative activities that will be relocated include the Naval Bureau of Medicine and the Joint Project Manager for CBMS. Currently, there is no adequate, permanent, administrative space available at Fort Detrick to accommodate all of the required spaces for CBMS. This project will adequately accommodate these activities by the construction of one or two new permanent multi-story administrative additions to the facility currently in design. Primary facilities will include the administrative facility, uninterruptible power supply, fire sprinkler system, stormwater regional pond, site utility relocations, loading dock, foundations, and building information systems. The administration building addition will be approximately 8,000 gsf and construction is estimated to be complete in 2018.

USAMRMC Headquarters (Conceptual Project, Figure 2-6)

The USAMRMC Headquarters will be constructed adjacent to USAMRIID Stage II on the NIBC. The building will be 95,000 sf and is estimated to be complete in 2019.

Vehicle Parking Garage (Conceptual Project, Figure 2-6)

This project involves the construction of a 300 car above ground Parking Garage on Area A. The parking garage will be located south of USDA laboratories and in association with NIBC operations.

Administration Building- USAMMDA (Conceptual Project, Figure 2-6)

This conceptual project includes the construction of a new Research Administration Building for the USAMRMC. This project will provide permanent adequate facilities for these subordinate units and elements of USAMRMC. These units and elements of USAMRMC occupy substandard relocatable buildings which are inefficient for the functional requirements of the organization. The current facilities lack essential elements (supply, file, and conference space) that impede mission accomplishment. Subordinate units and elements of USAMRMC occupy many small, dispersed and sub-standard facilities which are functionally inefficient. The new administration building will contain approximately 21,500 gsf and construction is estimated to be complete by 2022.

USDA Laboratory and Greenhouse Expansion (Conceptual Project, Figure 2-6)

The USDA laboratory expansion will contain approximately 48,000 gsf and be located adjacent to the existing USDA complex on the NIBC. USDA Lab Expansion will replace Building 374, to be relocated near 1301.

NIBC North Campus (Conceptual Project, Figure 2-6)

A number of long range conceptual projects are planned for construction on the northern portion of the NIBC. These potential buildings may be occupied by future Mission Partners. The exact locations, sizes, and configurations of these facilities on the northern NIBC are currently unknown.

Future Development of 800 Block (Administrative and Parking) (Conceptual Project, Figure 2-6)

The development of 800 block will provide up to 50,000 gsf of additional administration facilities and parking areas to support the headquarter area on Fort Detrick. The 800 block is considered the area surrounded by Doughten Drive, Sultan Drive, and Chandler Street.

2.5.5 RANGES AND TRAINING

Currently the Range and Training land use is located in open fields of the north and north central portion of Area A. This category will be eliminated in the future due to Fort Detrick being research oriented Installation and needing more area for Professional/Institutional and Industrial development.

2.5.6 RESIDENTIAL

As described in Section 2.5, the Residential land use category is found only on Area A, at RCI and at the Nallin Farm Complex area. The RCI is on the northwestern portion of the Installation and the Nallin Farm is on the northeastern portion of the Installation. All Approved, Proposed and Conceptual Projects in the Residential category are located on areas already designated for Residential land use.

RCI Phase II (Conceptual Project, Figure 2-6)

Fort Detrick offers limited on-Installation family housing for its military personnel. Currently, 354 housing units in seven neighborhoods are located on the Installation. Two new neighborhoods, Monocacy Meadows and Catocin View, were completed in 2006 as part of the RCI Phase I, providing 163 new on-post units in addition to the 191 existing family housing units. Monocacy Meadows consists of 21 new three or four bedroom single-family executive homes while Catocin View consists of 142 new three or four bedroom townhomes (Balfour Beatty Communities, 2009). The DoD selected Fort Detrick for the RCI, a public-private partnership program. Private development capital and expertise is combined with existing Army land, housing assets, and the income stream from military renters to quickly build additional housing or renovate existing housing without using appropriated tax dollars. RCI Phase II will replace existing housing, approximately 21 buildings, along Stark Street and Doughten Drive with housing that is modernized and architecturally compatible with the new housing. The housing

will offer many amenities that the existing housing lacks. The estimated construction completion date is 2018.

2.5.7 TROOP

The Troop land use category is located on Area A at the Unaccompanied Enlisted Personnel Housing (UEPH) complex/satellite communications area (east of the NIBC), and on Area B, in the vicinity of the Flair Memorial Reserve Center area. The amount of land dedicated to Troop activities on Fort Detrick is much less than what is found at typical Army Installations. All Approved, Proposed and Conceptual Projects related to Troop activities are located on areas already designated for Troop land use.

National Center for Medical Intelligence (NCMI) Addition (Approved Project, Figure 2-6)

In August 2007, a REC was completed for this project, which was deemed exempt from further NEPA review under 32 CFR 651. The new NCMI facility will be joined by an enclosed walkway to the existing NCMI facility at Building 1607. Landscaping, storm drainage, vehicle parking, utility connections, communications lines, a conference room, and special access rooms will be provided. The annex will contain 12,900 gsf, employ an additional 52 individuals, and it is currently 41 percent complete. Construction is estimated to be complete by 2010.

Signal Battalion Building 1671/1678 Parking Lot (Approved Project, Figure 2-6)

This project involves the expansion of a parking lot for Buildings 1671 and 1678 by approximately 31 spaces to accommodate a significant amount of recently hired staff. Construction is estimated to be complete by 2010.

Wideband Satellite Operations Center (WSOC) (Approved Project, Figure 2-6)

This project was evaluated in the 2003 IMP EA for its potential environmental impacts. The WSOC construction site will encompass five acres. The mission is currently being operated by the DSCS Operations Center at Fort Detrick, MD. This facility is a 25 year old, pre-engineered metal building that has come to the end of its useful life and is not large enough to support the current equipment while the new systems equipment is being installed and operated. The proposed project will provide space for operational equipment including operations rooms, an equipment room, a training and conference room, private offices, general administrative areas, storage and supply rooms, an equipment maintenance area, and personnel and security support areas. Buildings 1686, 1687, 1689, and 1692 will be demolished as a result of the project. The new WSOC will contain approximately 27,244 gsf and construction is anticipated to be complete in 2011.

Satellite Earth Terminal Station (SETS) (Approved Project, Figure 2-6)

In February 2009, a REC was completed for this project, which was deemed exempt from further NEPA review under 32 CFR 651. The project consists of constructing a SETS Facility to support the current and emerging Defense Satellite Communications missions. It will collocate the Satellite Communications Facility, currently operating in Building 1695 and the Primary Technical Control Facility, currently operating from Building 1671 in a new masonry building constructed on the site of the existing Building 1685. The project includes space for existing and

newly fielded equipment, network operations and maintenance support areas, and secure conference/training areas. This project is required to provide a functionally reliable, consolidated state-of-the-art satellite earth terminal communications facility to support Joint Chiefs of Staff command, control, communications, and intelligence requirements. The building will contain approximately 34,000 gsf and will be completed in 2011.

MC4 Logistics Addition for Bldg 1545 (Proposed Project, Figure 2-6)

This project is being evaluated in this EA for its potential environmental impacts. It involves a 600 sf addition to Building 1545 to store high value equipment. MC4 integrates, fields, and supports a comprehensive medical information system, enabling lifelong electronic medical records, streamlined medical logistics and enhanced situational awareness for Army tactical forces. Construction is estimated to be complete by 2011.

National Center for Medical Intelligence (NCMI) Renovation (Proposed Project, Figure 2-6)

This project is being evaluated in this EA for its potential environmental impacts. It involves the renovation of a 30,000 sf twenty year old sensitive compartmented information facility (SCIF). The renovation will consist of a new floor plan with an open office environment to the maximum extent possible. Any existing facility space and utility systems will match the expansion. The NCMI renovation cannot start until the NCMI Expansion is completed (estimated to be by 2010). The renovation is estimated to be complete by 2011.

Information Systems Engineering Command [ISEC] TAO Expansion (Conceptual Project, Figure 2-6)

The information technology engineering expansion is required to consolidate ISEC functions into one contiguous location and to replace the space for TAO that is inadequate both in quantity and quality. The information technology engineering expansion will contain approximately 35,000 gsf and construction is estimated to be complete in 2018.

2.5.8 ADDITIONAL PROJECTS

Additional projects are approved or proposed on Fort Detrick that do not fit into the discussion in the previous sections of siting by land use category. These projects either overlap two or more land use categories or are slated for multiple sites on the Installation. The two types of projects that fall into this “additional projects” category: infrastructure improvements and ecological and cultural enhancements.

Potomac Pipeline Interconnect (Approved Project)

An EA was prepared in 2009 to assess the potential environmental impacts associated with the construction and operation of this project. This project consists of Fort Detrick supplementing their current maximum water supply from the Monocacy River with additional water from the Potomac River via the existing City of Frederick water system. The Proposed Action will provide Fort Detrick with the flexibility to utilize water from both the Monocacy River and Potomac River up to a maximum of 2.66 million gallons per day (mgd). The Monocacy River has proven to be an unreliable resource during periods of drought. The Proposed Action will sustain existing Fort

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Table 2-2. Projects by Land Use Category.

PROJECT TITLE	Est. Start Date	Est. Comp. Date	NEPA Status	GSF
COMMUNITY				
VA CBOC	FY2009	FY2010	Approved	16,500
Parking Addition for Bldg 1507	FY2010	FY2011	Approved	83,294
Community Park Plan	FY2011	FY2017	Approved	n/a
NAF Youth Center	FY2010	FY2011	Proposed	19,875
Golf Driving Range	FY2010	FY2010	Proposed	n/a
Emergency Services Center	FY2010	FY2011	Proposed	42,000
Nallin Farm Gate/Campus Drive Extension	FY2010	FY2011	Proposed	238,000
Auditorium and Training Center Expansion	FY2010	FY2011	Proposed	28,625
Nallin Farm Gate Visitors Center	FY2011	FY2012	Proposed	6,000
Education and Conference Center (CAC) Replacement	FY2011	FY2013	Proposed	22,250
Outdoor Swimming Pool	FY2011	FY2012	Proposed	7,995
Convert Bldg. 1504 to FMWR Craft Shops Center	FY2013	FY2013	Proposed	20,130
Sultan Drive Realignment	FY2011	FY2013	Proposed	n/a
Chapel Complex	FY2017	FY2018	Conceptual	22,600
Nallin Farm Park	FY2017	FY2018	Conceptual	16,310
Child Development Center Addition	FY2017	FY2019	Conceptual	10,385
Bldg 924 Additional Admin and Storage Space	FY2017	FY2018	Conceptual	TBD
Bowling Alley Replacement	FY2017	FY2019	Conceptual	15,000
SAS Facility	FY2018	FY2019	Conceptual	14,000
National Microbiological Defense Museum	FY2018	FY2020	Conceptual	56,430
INDUSTRIAL				
WWTP Sanitary Flow Structure	FY2008	FY2010	Approved	205
WWTP Repairs	FY2009	FY2011	Approved	n/a
WTP Repair	FY2011	FY2011	Proposed	4,000
Consolidated Logistics Facility	FY2011	FY2013	Proposed	82,000
NIBC Hazardous Material Handling Facility	FY2012	FY2014	Proposed	13,100
Consolidated Maintenance Facility	FY2017	FY2018	Conceptual	15,594
Consolidated Storage Facility	FY2017	FY2019	Conceptual	37,000
Central Engineering Complex	FY2017	FY2019	Conceptual	23,420
Demolition of Building 190 Boiler Plant	LR	LR	Conceptual	-13,908
PROFESSIONAL/INSTITUTIONAL				
NIAID IRF	FY2005	FY2009	Approved	144,000
DHS NBACC	FY2006	FY2008	Approved	158,000
Joint Bio-Medical RDA Management Center	FY2009	FY2011	Approved	22,200
USAMRIID SSP	FY2009	FY2011	Approved	20,892

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PROJECT TITLE	Est. Start Date	Est. Comp. Date	NEPA Status	GSF
USAMRIID Stage I	FY2009	FY2014	Approved	835,390
NMBDRL	FY2010	FY2011	Approved	37,660
NIBC Security Fencing and Equipment	FY2011	FY2014	Approved	n/a
USAMRIID Stage II	FY2015	TBD	Approved	376,488
ReSOC	FY2016	FY2018	Approved	95,608
SJA	FY2016	FY2018	Approved	19,300
Research Acquisition Building	FY2017	FY2018	Approved	33,500
New Parking Lot Adjacent to Supplemental Water Storage	TBD	TBD	Approved	135,000
USDA Lab and Greenhouse Renovation (Bldg 374)	FY2010	FY2011	Proposed	n/a
NIBC Truck Inspection Station and Road	FY2010	FY2011	Proposed	54,808
Supplemental Water Storage	FY2011	FY2012	Proposed	1 Mgal
Information Services Facility (NEC) Expansion	FY2011	FY2013	Proposed	11,300
Veterans Drive Extension, Segment 1(USDA-NMBDRL)	FY2011	FY2011	Proposed	88,000
NIBC ACP-9	FY2011	FY2012	Proposed	2,550
Veteran's Drive Extension, Segment 3 (Navy Way - Campus Cir)	FY2013	FY2013	Proposed	38,000
Veterans Drive Extension, Segment 2 (NEC Bypass)	FY2014	FY2014	Proposed	48,500
NIBC Green	FY2015	FY2018	Proposed	n/a
Veterans Drive Extension, Segment 4 (Ditto widening)	FY2018	FY2018	Proposed	42,600
New NCMI/AFMIC	FY2014	FY15	Conceptual	80,000
USDA Lab and Greenhouse Expansion	FY2016	LR	Conceptual	48,000
Joint Bio-Medical RDA Management Center Addition	FY2017	FY2018	Conceptual	8,000
USAMRMC Headquarters	FY2017	FY2019	Conceptual	95,000
Vehicle Parking Garage	FY2017	LR	Conceptual	TBD
Administration Building - USAMMDA	FY2020	FY2022	Conceptual	21,500
NIBC North Campus	LR	LR	Conceptual	TBD
Future Development of 800 Block	LR	LR	Conceptual	TBD
RESIDENTIAL				
RCI Phase II	FY2016	FY2018	Conceptual	TBD
TROOP				
NCMI/AFMIC Addition	FY2009	FY2010	Approved	12,798
Signal Battalion Bldg 1671/1678 Parking Lot	FY2009	FY2010	Approved	97,126
WSOC	FY2009	FY2011	Approved	27,244
SETS	FY2009	FY2011	Approved	33,700
MC4 Logistics Addition for Bldg 1545	FY2010	FY2011	Proposed	600
NCMI/AFMIC Renovation	FY2010	FY2011	Proposed	n/a
ISEC TAO Expansion	FY2017	FY2018	Conceptual	35,000
ADDITIONAL				

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PROJECT TITLE	Est. Start Date	Est. Comp. Date	NEPA Status	GSF
Wetlands Expansion and Forestation Initiative	ongoing	ongoing	Approved	n/a
Potomac Pipeline Interconnect	TBD	FY2014	Approved	n/a
Perimeter Fence Maintenance	FY2010	FY2018	Proposed	n/a
Water Main Improvements	FY2017	FY2018	Conceptual	n/a
Decontamination, Decommissioning and Demolition of LSS and SSP	TBD	FY2019	Conceptual	-24,138

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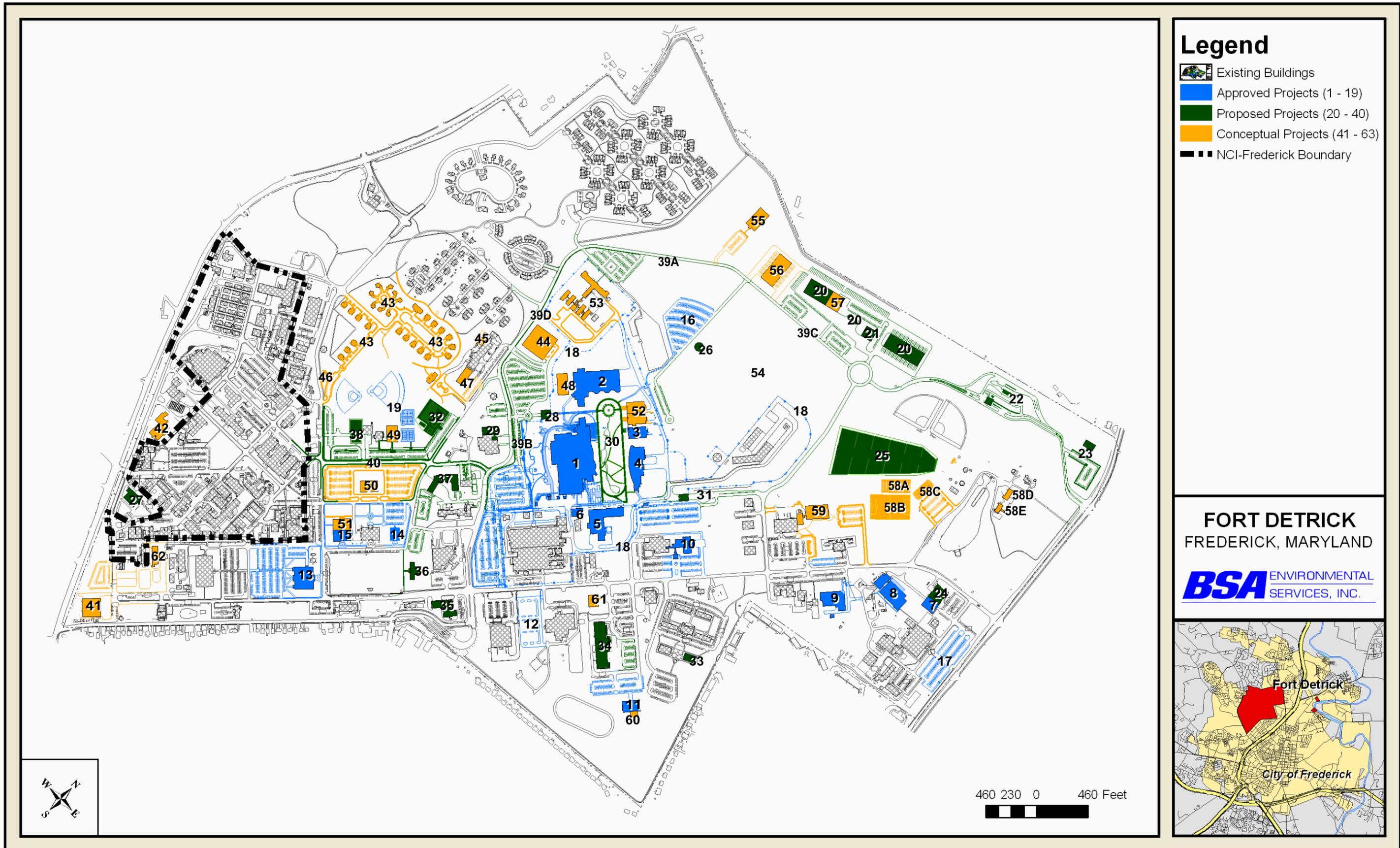


Figure 2-6. Area A Approved, Proposed, and Conceptual Projects Map. A more detailed version of this figure is available as a hardcopy only.

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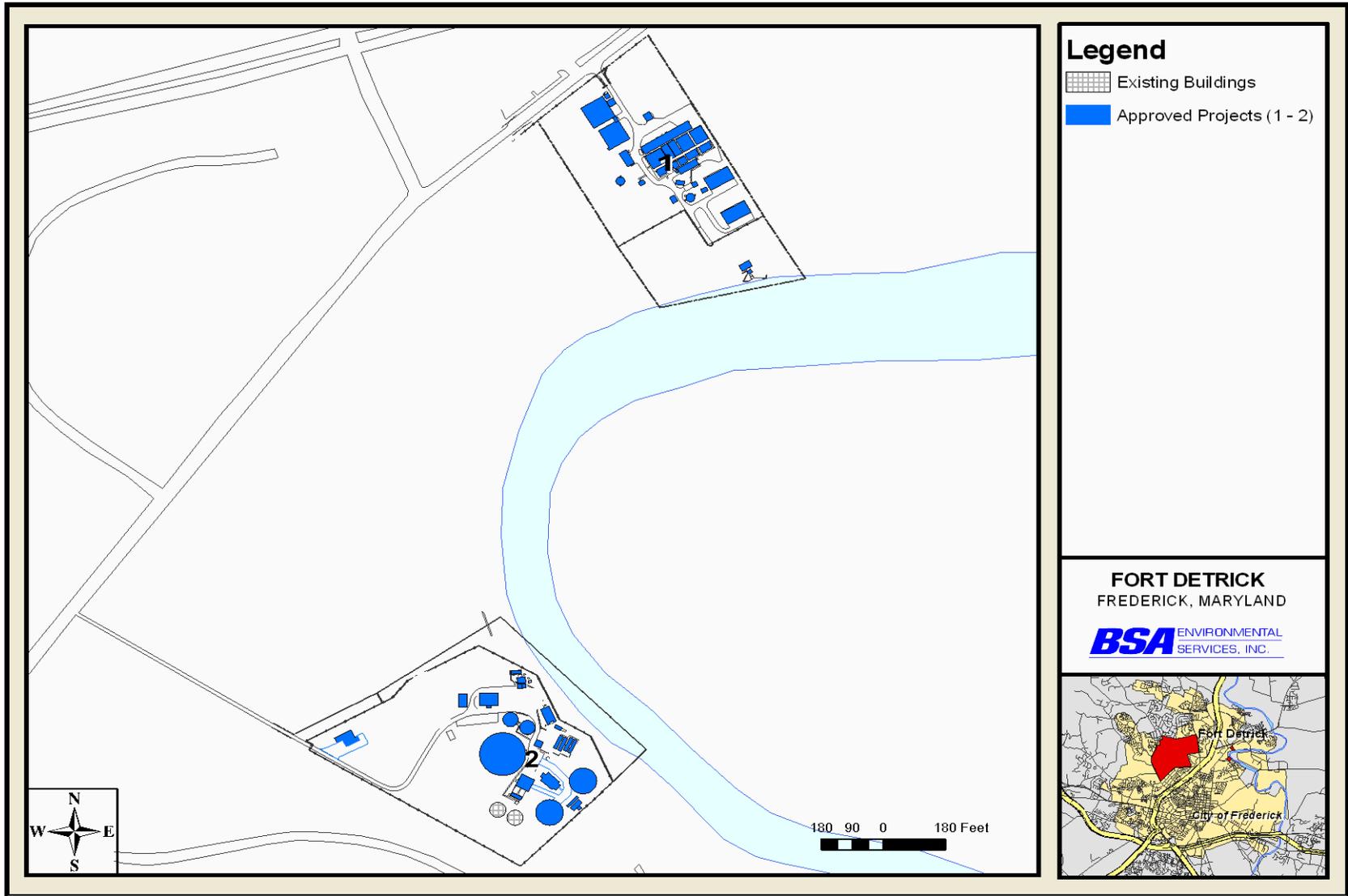


Figure 2-7. Area C Approved, Proposed, and Conceptual Projects Map.
A more detailed version of this figure is available as a hardcopy only.

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Table 2-3. Buildings to be Demolished.

Buildings to be Demolished				Project Association	
Bldg #	Year Const.	GSF	Tenants	Project Title	NEPA Status
100	1943	-5,320	USAG	Consolidated Logistics Facility	Proposed
189	1996	N/A	USAG	Demolition of Bldg 190 Boiler Plant	Conceptual
190	1952	-13,908	USAG	Demolition of Bldg 190 Boiler Plant	Conceptual
194	1967	N/A	USAG	Demolition of Bldg 190 Boiler Plant	Conceptual
243	1945	-6,529	USAG	Consolidated Logistics Facility	Proposed
258	1994	-2,122	USAG	Consolidated Logistics Facility	Proposed
259	1983	-2,122	USAG	Consolidated Logistics Facility	Proposed
261	1944	-2,263	USAG	NIBC Hazardous Material Handling Facility	Proposed
262	1943	-1,124	USAG	NIBC Hazardous Material Handling Facility	Proposed
263	1944	-14,786	USAG	Consolidated Logistics Facility	Proposed
264	1973	-189	USAG	Consolidated Logistics Facility	Proposed
276	1945	-602	USAG	Consolidated Logistics Facility	Proposed
375	1953	-24,138	USAG	Decontamination, decommissioning and demolition of LSS and Bldg 375 (part of USAMRIID SSP Project)	Conceptual
504	1943	-10,504	RCQ	ReSOC	Approved
505	1943	-3,937	CMD USA MED R&D	ReSOC	Approved
515	1943	-243	CMD USA MED R&D	ReSOC	Approved
521	1944	-10,738	SJA	SJA	Approved
525	1945	-6,424	DCSLOG/WAR-MED	ReSOC	Approved
611	1943	-5,888	USAG	Auditorium & Training Center Expansion	Proposed
718	1944	-10,449	USAG	Auditorium & Training Center Expansion	Proposed
722	1944	-9,687	Research Areas Dir.	ReSOC	Approved
725	1945		USAG	Supplemental Water Storage	Proposed
817	1944	-9,130	USAMRAA	Research Acquisition Building	Approved
818	1951	-2,027	USAMRAA	Research Acquisition Building	Approved
820	1944	-7,696	USAMRAA	Research Acquisition Building	Approved
832	1974	N/A	USAG	Sultan Drive Realignment	Proposed
839	1974	-5,746	USAG	Sultan Drive Realignment	Proposed
903	1944	-2,000	USAG	NAF Youth Center	Proposed
904	1944	-2,000	6MLMC	NAF Youth Center	Proposed
910	1990	-1,071	USACEHR	NAF Youth Center/Sultan Dr. Realign	Proposed
915	1944	-5,412	USAG	Auditorium & Training Center Expansion	Proposed
917	1944	-2,802	USAG	Community Park Plan	Approved
940	1949	-112	USAG	NAF Youth Center/Sultan Dr. Realign	Proposed
941	1950	-1,183	USAG	Outdoor Swimming Pool	Proposed
1012	1950	-14,971	USAG	RCI Phase II	Conceptual
1013	1950	-14,971	USAG	RCI Phase II	Conceptual
1014	1950	-14,971	USAG	RCI Phase II	Conceptual
1015	1950	-14,971	USAG	RCI Phase II	Conceptual

ENVIRONMENTAL ASSESSMENT – REAL PROPERTY MASTER PLAN FOR ARMY-CONTROLLED LAND
AT AREAS A AND C OF FORT DETRICK IN FREDERICK COUNTY, MARYLAND
18 MARCH 2010

Buildings to be Demolished				Project Association	
Bldg #	Year Const.	GSF	Tenants	Project Title	NEPA Status
1016	1951	-10,802	USAG	RCI Phase II	Conceptual
1017	1951	-10,802	USAG	RCI Phase II	Conceptual
1109	1945	N/A	USAG	WWTP Repair	Approved
1110	1982	N/A	USAG	WWTP Repair	Approved
1110A	1982	-492	USAG	WWTP Repair	Approved
1114	1981	N/A	USAG	WWTP Repair	Approved
1116	1981	N/A	USAG	WWTP Repair	Approved
1117	1981	N/A	USAG	WWTP Repair	Approved
1408	2004	-16,340	USAMRIID	USAMRIID Stage I	Approved
1412	1958	-73,920	USAMRIID	USAMRIID Stage I	Approved
1413	1969	-150	USAMRIID	USAMRIID Stage I	Approved
1414	1958	-2,643	USAMRIID	USAMRIID Stage I	Approved
1415	1969	-139	USAMRIID	USAMRIID Stage I	Approved
1420	1997	-728	USAG	USAMRIID Stage I	Approved
1425 (50%)	1969	-250,000	USAMRIID	USAMRIID Stage I	Approved
1530	1992	-2,400	USAG	Auditorium & Training Center Expansion	Proposed
1531	1993	-2,400	USAG	Auditorium & Training Center Expansion	Proposed
1685	1988	-16,277	CTR USAISC EC TELE	SETS	Approved
1686	1979	-14,033	SATCON/CONUS	WSOC	Approved
1687	1982	-1,920	USA SPACE CMD	WSOC	Approved
1689	1986	-1,800	CMD INF SYS TST	WSOC	Approved
1692	1984	-1,000	USA SPACE CMD	WSOC	Approved
1727	1965	-6,424	USAG	RCI Phase II	Conceptual
1728	1965	-6,424	USAG	RCI Phase II	Conceptual
1729	1965	-6,424	USAG	RCI Phase II	Conceptual
1736	1958	-2,414	USAG	RCI Phase II	Conceptual
1739	1958	-2,414	USAG	RCI Phase II	Conceptual
1742	1958	-2,414	USAG	RCI Phase II	Conceptual
1745	1958	-2,558	USAG	RCI Phase II	Conceptual
1748	1958	-2,558	USAG	RCI Phase II	Conceptual
1751	1958	-2,414	USAG	RCI Phase II	Conceptual
1754	1958	-2,558	USAG	RCI Phase II	Conceptual
1757	1958	-2,558	USAG	RCI Phase II	Conceptual
1760	1958	-2,414	USAG	RCI Phase II	Conceptual
1763	1958	-2,558	USAG	RCI Phase II	Conceptual
1766	1958	-2,558	USAG	RCI Phase II	Conceptual
1769	1958	-2,414	USAG	RCI Phase II	Conceptual

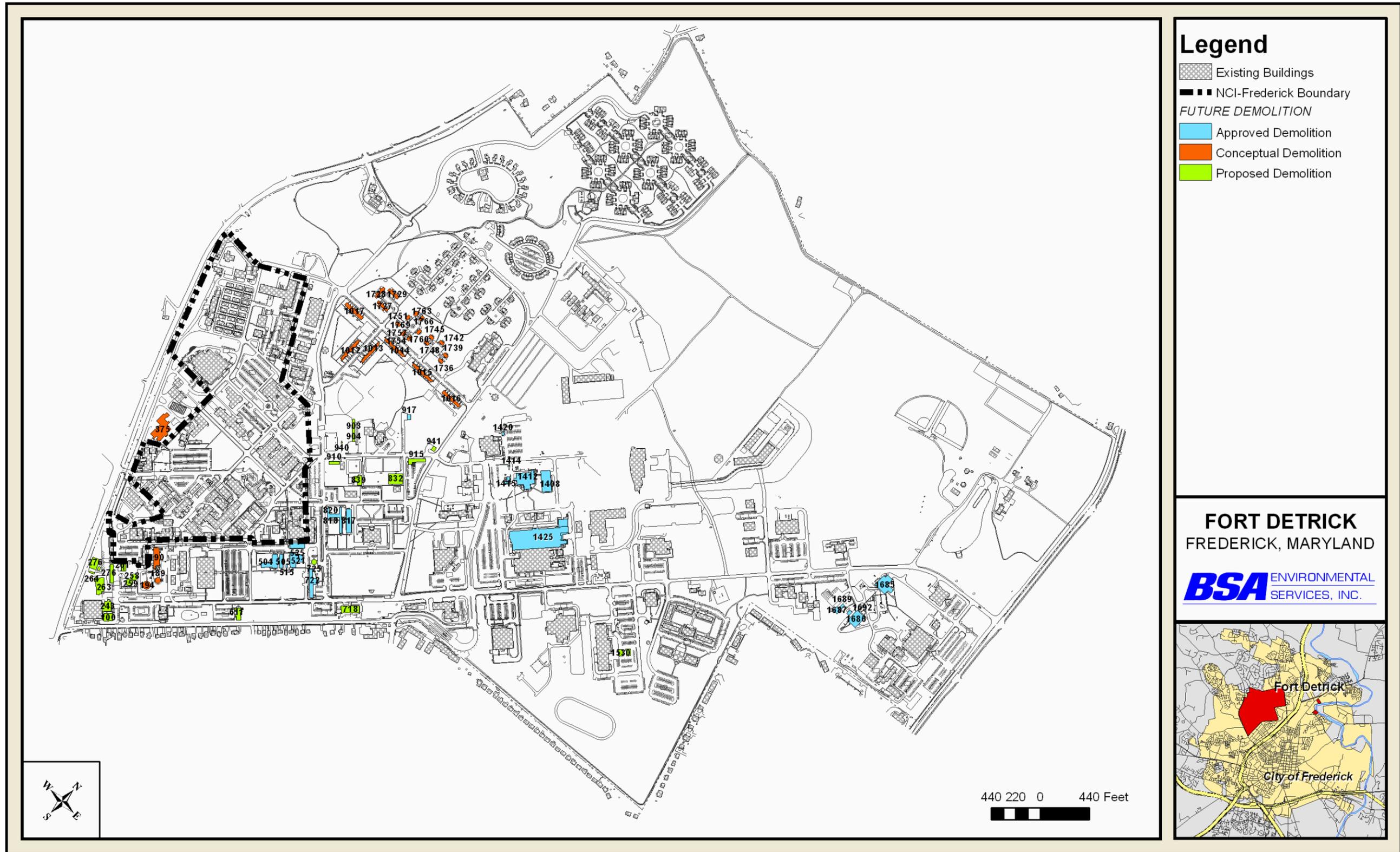


Figure 2-8. Area A Buildings to be Demolished Map.

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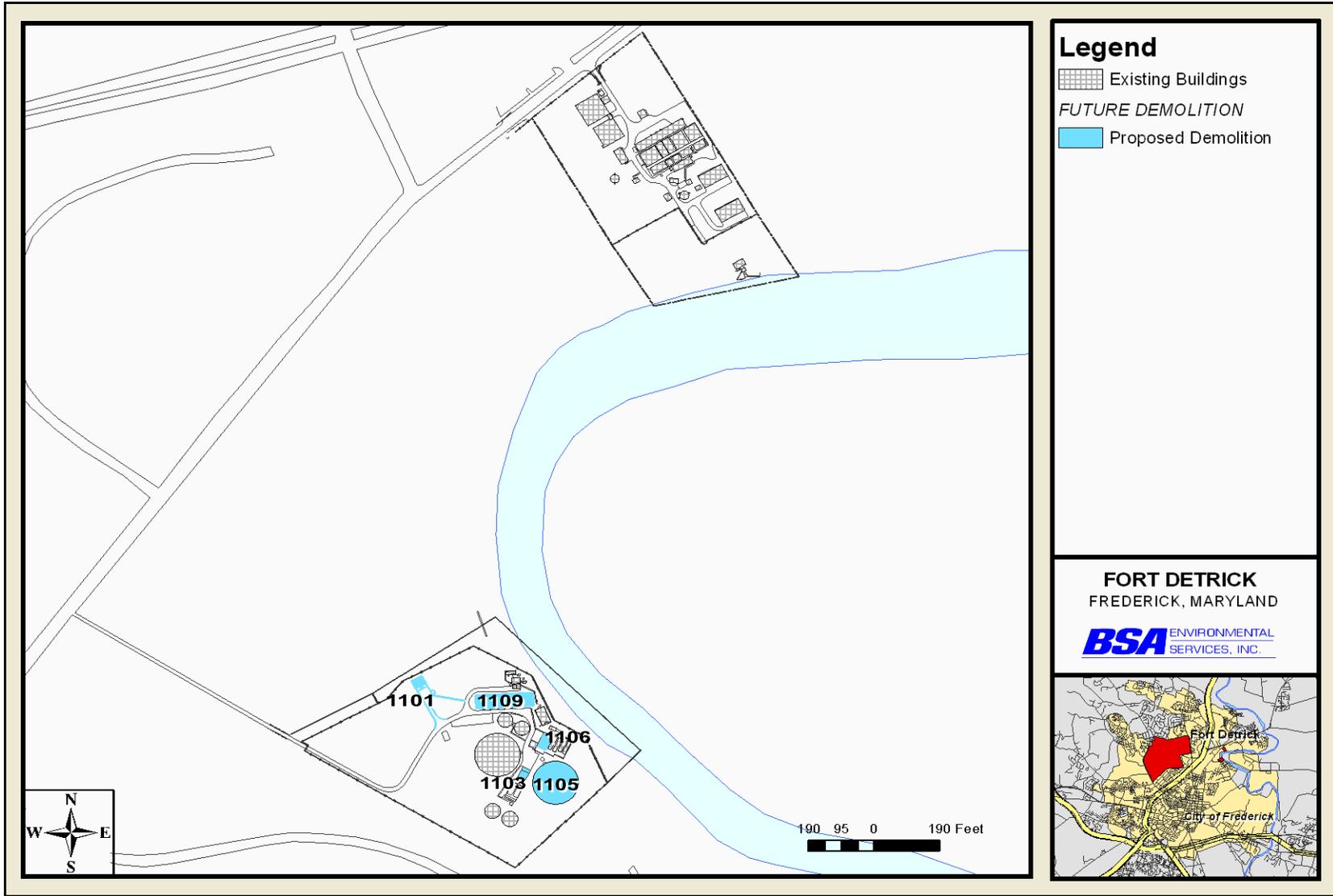


Figure 2-9. Area C Buildings to be Demolished Map.

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Detrick missions and anticipated future mission requirements. The pipeline interconnection is expected to be complete by 2014.

Ecological Enhancements: Wetlands Expansion and Forestation Initiative (Approved Projects)

The Wetlands Expansion and Forestation Initiative are ongoing projects that will continue to enhance the ecology of Fort Detrick and provide other environmental benefits. These projects are defined in the Fort Detrick Integrated Natural Resources Management Plan (INRMP) and were evaluated in a January 2007 EA for their potential environmental impacts (USAG, 2007b). The Wetlands Expansion will be achieved by assuring no net loss of existing wetlands and by enhancing existing wetlands size, function and health at different locations on the Installation. The INRMP states that Fort Detrick will create a series of shallow pools or wet areas along an existing drainage swale, continue monitoring and eradicating invasive wetland plants, replant control sites with native wetland plant species, and establish new and expand existing no-mow zones to buffer wetland sites (USAG, 2007b). For a detailed discussion, see Section 4.6.

As part of Fort Detrick ongoing Forestation Initiative, the INRMP calls for a 114-acre increase in forests on the Installation, which will increase total forest coverage to 193 acres; 79 acres in Area A (see Figures 2-10 and 2-11). The majority of the new forests in Area A will be located on the northern portion of the Installation, and along the southwest boundary fence along Military Road (USAG, 2007b). For a detailed discussion, see Section 4.7.

Perimeter Fence Maintenance (cable upgrade) (Proposed Project)

This project involves the improvement and upgrade to the perimeter security fence surrounding Fort Detrick. The cable upgrade consists of threading tensioned, high strength cables anchored through the fence to ensure the safety and security of the Installation. This project is estimated to start by 2010.

Water Main Improvements (Conceptual Project)

This project involves the repair and replacement of sections of one 16" and one 12" water main that connect the Fort Detrick WTP on the Monocacy River with Area A of Fort Detrick. The existing pipelines are over 50 years old and the water supply is limited by plant capacity, State of Maryland permits and local socioeconomic and political considerations. The estimated construction completion date for the improvements is 2018.

Decontamination, Decommissioning and Demolition of LSS and SSP (Conceptual Project, Figure 2-6)

Building 375 (the existing Steam Sterilization Plant [SSP]) will be decommissioned when the new USAMRIID SSP is completed. As a conceptual project, Building 375 is still up for consideration as a demolition project or renovation project for reuse by the Army or other Mission Partners. The demolition project will remove 24,138 gsf (the existing SSP) and approximately 5,440 linear feet of existing Laboratory Sewer System (LSS) piping. Building 375, all tanks, and the LSS will all be decontaminated prior to demolition. The demolition work will only be the main trunk line of the LSS between buildings 1425 and 375. The collection systems and laterals from NCI buildings that enter the LSS from the north and south will be

decontaminated, capped, and abandoned-in-place at the point where they meet the LSS trunk line. Once the new SSP is operational the existing plant will be decommissioned. Demolition of the LSS is estimated to be complete by 2019.

2.6 CONSTRUCTION REGULATIONS AND CONSTRAINTS

2.6.1 SITE SELECTION REGULATIONS

As described in Section 2.4, AR 210-20 establishes and prescribes the Army's real property master planning process, and it assigns responsibilities and prescribes policies and procedures relating to the development, content, submission, and maintenance of a RPMP. AR 405-80, *Management of Title and Granting Use of Real Property* (dated 10 October 1997), regulates granting use of real property controlled by the DA, including delegating authority to issue outgrants authorizing the use of such real property by non-Army users. The Secretary of the Army has the authority to grant the use of real property under his administrative control. The Assistant Secretary of the Army (Installations, Logistics and Environment) has the primary responsibility for DA real estate programs. The Assistant Chief of Staff for Installation Management makes a Determination of Availability prior to issuing outgrants, such as leases.

Site selection regulations at Fort Detrick are furthermore guided by Fort Detrick Policy Memorandum FD 01-09, *Fort Detrick Environmental Policy*. FD 01-09 is broadly applicable to most activities on the Installation, which states that "it is Fort Detrick's [environmental] policy that cost-effective common-sense stewardship of our environmental, cultural, and natural resources will be incorporated into all facets of operations at this Installation." Fort Detrick Regulation (FD REG) also commits USAG "to maintaining a sustainable environment while fully supporting mission readiness."

Adherence to construction design standards will assure that the proposed new structures will be safe, sound, and functional. Many of these design standards, which specify guidelines for features such as layout, structural integrity, and aesthetics, are based on national codes [e.g., National Fire Protection Association and Building Officials and Code Administrators], which were established to ensure the durability of structures, and hence guarantee the safety of occupants and people in surrounding areas. Various contractors will perform the construction activities for the Proposed Projects.

2.6.2 CONSTRUCTION WASTE MANAGEMENT

All solid waste from the construction of the Proposed Projects and demolition of associated buildings, including construction and land clearing debris, will be managed in accordance with Federal, DA, USAG, and state requirements and properly disposed of at a permitted solid waste disposal facility. The Fort Detrick Municipal Waste Landfill on Area B (see Section 2.9.2) will not accept any wastes generated by the construction of new buildings. USAG has an established policy that dictates that all construction debris generated from buildings on the Installation must be disposed of at an off-post location.

The construction contractors will be responsible for the disposal of wastewater, MSW, and hazardous waste generated by their activities, as well as the construction debris, at permitted facilities off the Installation in accordance with Federal, state, and local regulatory requirements. In accordance with Army policy for *Sustainable Management of Waste in Military Construction*,

Renovation, and Demolition Activities (DA, 2006a) and Executive Order (EO) 13514, the contracts will include a performance requirement for 50 percent minimum diversion of construction and demolition waste by weight from landfill disposal. The contract specifications will include submission of a contractor's construction Waste Management Plan.

2.6.3 STORMWATER MANAGEMENT, EROSION, AND SEDIMENT CONTROL

Stormwater management measures are required for projects that disturb more than 5,000 sf (approximately 0.115 acres) of land area on Federal property according to Code of Maryland Regulations (COMAR) 26.17.02 and the *Maryland Stormwater Management Guidelines for State and Federal Projects*, July 2001. The stormwater management facilities will be designed consistent with the *2000 Maryland Stormwater Design Manual Volumes I and II* (MDE, 2000) and constructed in accordance with an MDE-approved project plan incorporating best management practices (BMPs) for stormwater management, including ponds, wetlands, infiltration, filtration, open channels, or a combination thereof. Furthermore, in compliance with EISA section 438, Proposed Projects with a footprint exceeding 5,000 sf shall incorporate site planning, design, construction, and maintenance strategies to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow. All projects that disturb 5,000 sf or more that are not approved by 10 May 2010 must be in compliance with the new regulations of the MDE Stormwater Management Act of 2007. The stormwater management facilities will be designed consistent with the *2000 Maryland Stormwater Design Manual Volumes I and II* (MDE, 2000), 2009 Model Standard Stormwater Management Plan and 2009 Model Stormwater Management Ordinance (MDE, 2009). The most feasible BMP options for stormwater management for the Proposed Projects are extended wet detention ponds, sand filtration and open channels, due to certain ecologic (West Nile Virus), geologic (karst geology), and climatic (drought) conditions at Fort Detrick.

An erosion and sediment control plan for land clearing, grading, or other earth disturbance approved by the MDE is required under COMAR 26.17.01 for construction activities involving more than 100 cubic yards or more than 5,000 sf. During construction, application of BMPs for construction will minimize soil erosion and potential airborne particulate matter, in compliance with COMAR 26.11.06.03D (*Particulate Matter from Materials Handling and Construction*) and the *Final 2010 Effluent Guidelines* published by the US Environmental Protection Agency (USEPA).

If the area disturbed is more than one acre, a general permit under the National Pollutant Discharge Elimination System (NPDES) is also required. Authority for Maryland's NPDES General Permit for Construction Activity is through the federal Clean Water Act Section 402 and 40 CFR 122.26, and the State Environment Article, Title 9, Subtitle 3: COMAR 26.08.04. All projects one acre or more must submit an individual permit application. The application requires a minimum 45-day public notification period. The preliminary estimate of disturbed area in Table 2-4 indicates total disturbance of approximately 72.65 acres, including approximately 33.66 acres of impervious surfaces, due to construction of the Proposed Projects.

Low Impact Development (LID) and Environmental Site Design sustainability features for stormwater management will be incorporated into the design of the Proposed Projects to the maximum practical extent and will help mitigate the impacts of stormwater runoff. Application of LID is required by EO 13423, dated 26 January 2007, *Strengthening Federal Environmental,*

Energy, and Transportation Management, which directs all agencies to incorporate the LID approach to land development and stormwater management into landscape programs, policies, and practices. Design of LID features will follow the DoD guidelines as set forth in the Unified Facilities Criteria 3-210-10, *Design: Low Impact Development Manual 25 October 2004*.

2.6.4 FOREST CONSERVATION REQUIREMENTS

Fort Detrick’s Forest Conservation Plan is based on the Maryland Forest Conservation Act which establishes the minimum standards for the amount of forest which must exist on a site at the completion of a development project(s). Parties applying to the local authority for public or private subdivision, project plan, grading permit, or sediment/erosion control permit on a unit of land 40,000 square feet or greater (approximately .93 acres) must comply with the Forest Conservation Act. A Forest Conservation Worksheet is used to calculate how many acres of forest to be planted on a site as a result of new construction or land conversion. The forestation requirement can be met by planting mitigating forestation trees on any portion of Ft. Detrick’s property holdings. Two types of thresholds exist for each land-use category (Institutional Development Areas – military installations): Conservation Thresholds and Afforestation Thresholds.

Fort Detrick’s Forestation Conservation Plan requires that any undertaking that disturbs 40,000 square feet or greater of non-forested land must afforest (plant trees on non-forested land) at a rate of 15 percent of the disturbed land area. Furthermore, any project that disturbs 40,000 square feet or greater of forested land must reforest the equivalent surface area at a 2:1 ratio (see Table 2-4). These plantings will contribute to the growth and development of Ft. Detrick’s forestation holdings (see Figures 2-10 and 2-11). In 2003, Fort Detrick, in coordination with the Maryland Department of Natural Resources (MDNR), developed a Forest Conservation Plan in accordance with the Maryland Forestation Conservation Act of 1991 and Forest Conservation Program (COMAR 08.19), following the Conservation Thresholds and Afforestation Thresholds. The plan calls for a total forestation cover of 193 acres on Fort Detrick property once all of Fort Detrick’s projected projects are completed.

Table 2-4. Forestation Requirements .

Project	Project Total GSF	Total Impervious Area	Total Disturbed Area	Forestation Requirement
		Square Feet (acres)	Square Feet (acres)	Square Feet (acres)
NEPA Approved Projects (a) (b)	3,009,260	2,277,146 (52.28)	4,973,374 (114.17)	743,134 (17.06)
Proposed Projects (b)	1,340,136	1,466,407 (33.66)	3,164,654 (72.65)	645,124 (14.81)
Total All Projects	4,349,396	3,743,553 (85.94)	8,138,028 (186.82)	1,388,257 (31.87)

a) Projections from previous NEPA documentation, see Section 1.3.

b) When disturbed area was unavailable for a particular project, it was assumed that disturbed area would be equal to double the amount of impervious surface area.

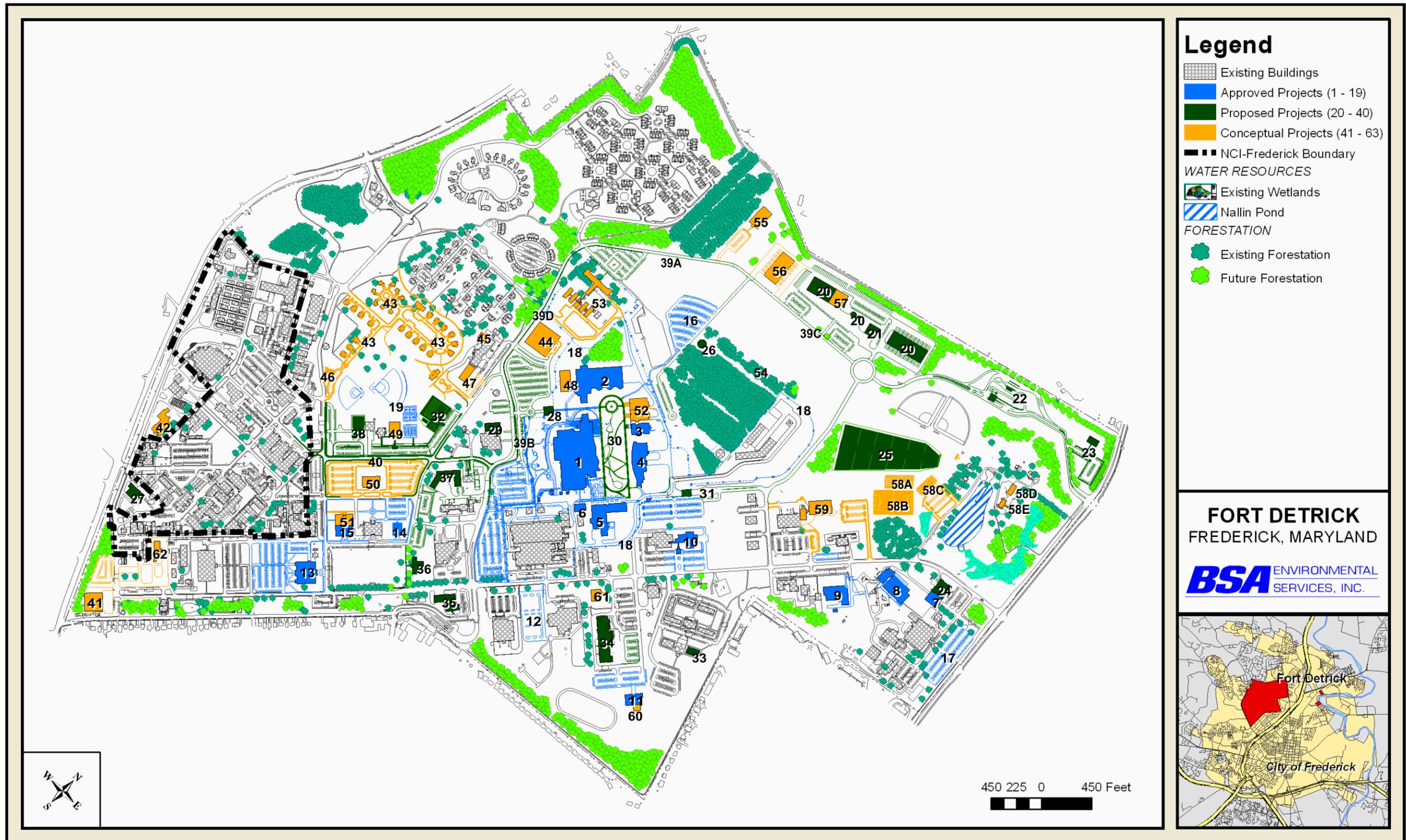


Figure 2-10. Area A Forestation and Wetlands Map.

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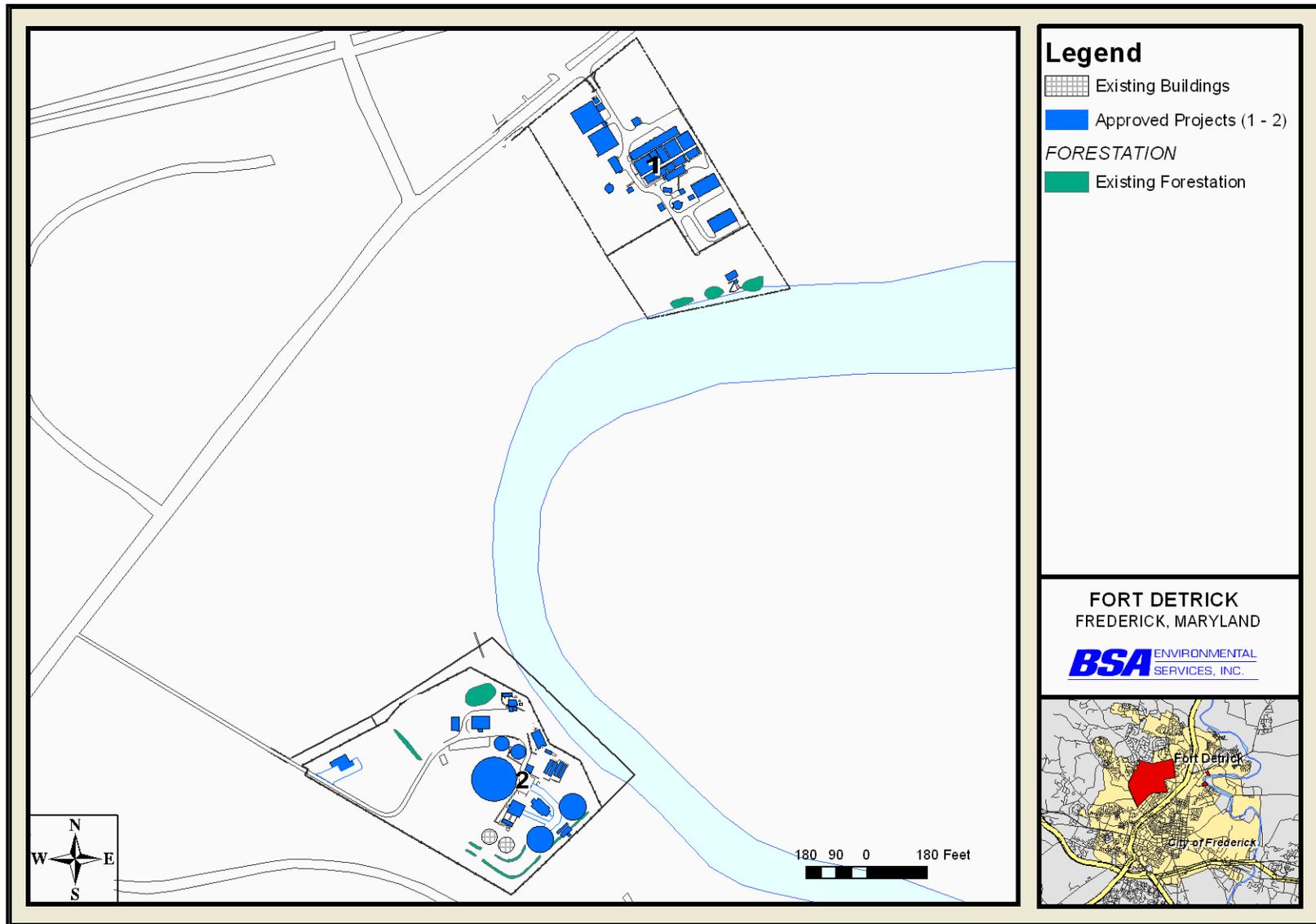


Figure 2-11. Area C Forestation Map.

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Construction activities related to the Proposed Action will result in an estimated total land disturbance of approximately 72.65 acres (3,164,654 sf) including taking down 2.2 acres of forested land due to the proposed Veteran's Drive Extension Segment 1, necessitating afforestation of a total of 14.81 acres (see Table 2-4). A detailed list of forestation requirements by project is provided in Appendix B. In accordance with Fort Detrick's INRMP (under revision), tree plantings will consist of a minimum of five (5) different hardwood species which are native to Maryland (MDNR, 2002) and/or the Northeast forest region (USDA, 2007) of the United States. The recommended size of trees to be planted for hardwood are 1-inch caliper trees (1-inch caliper at 6 inches above root collar/ground level) and planted at a rate of 200 per acre or 2-inch caliper trees (2-inch caliper at 6 inches above root collar/ground level) planted at a rate of 100 per acre. A warranty for a survival rate of 100 % for newly planted trees must be offered for the first year of planting and any dead trees during this warranty period must be replaced with like size and kind. Tree plantings or replacements will only be allowed during the late winter or early spring months (March to May) or late summer to early fall (October to December). The MDNR Forest Service can conduct an onsite visit to Fort Detrick at any time to inspect for compliance. Site visits should be coordinated through the Natural Resource Manager, EMO, at least one week prior to the visit to allow time for proper security clearance.

2.6.5 CULTURAL RESOURCE REQUIREMENTS

The *National Historic Preservation Act of 1966* (NHPA), as amended (16 USC 470), mandates national policy for protection and restoration of significant historic, architectural, archeological, or cultural resources. The 1980 amendments to the NHPA provide for historic preservation costs to be included in project planning and budgeting. The SHPO has primary responsibility for ensuring adherence to the NHPA. In accordance with AR 200-1, *Environmental Protection and Enhancement*, Fort Detrick maintains an Integrated Cultural Resources Management Plan (ICRMP) that serves as a guide for compliance with the NHPA of 1966 and other applicable Federal laws and regulations (USAG, 2006b).

Under Section 106 of the NHPA, historic properties include buildings that are eligible for listing in the NRHP. Three buildings that will be demolished (not part of the Proposed Action) were previously declared eligible for listing in the NRHP (see Table 2-3). Buildings 1412, 1414, and 1415 will be demolished as part of development of the new USAMRIID facilities. USAG has completed the Section 106 review process for these three buildings, which resulted in a Memorandum of Agreement (MOA) between USAG and SHPO (USAMRMC and USAG, 2006). Building 375 (SSP) will be decommissioned when the new USAMRIID SSP is completed. Building 375 may be demolished or renovated for reuse by the Army or other Mission Partners. See Section 4.9.2 for an expanded discussion.

2.6.6 AIR QUALITY REQUIREMENTS

Air quality permits to construct are required for generators greater than 500 horsepower or 373 kilowatts and for fuel burning equipment greater than or equal to 1 Million British Thermal Units (MMBtu) per hour. Air quality permits to operate are required for fuel burning equipment and hot water heaters with maximum rated capacities of 50 MMBtu per hour or more (COMAR 26.11.02). As noted in Section 4.8.1, Fort Detrick is located in an air quality nonattainment area for ozone and fine particulate matter. Because Fort Detrick has actual emissions of nitrogen

oxides (NO_x) greater than 100 tons per year (tpy) and sulfur dioxide (SO₂) greater than 100 tpy, it is a major source for *Clean Air Act* (CAA)/Title V permit purposes.

In conjunction with the permitting process and in accordance with the CAA and COMAR 26.11.17, a New Source Review (NSR) and/or a Prevention of Significant Deterioration (PSD) evaluation will be required if any air pollutant emissions resulting from the operational phase of the Proposed Projects surpass their threshold levels. A NSR evaluation must be prepared before construction and installation of any new permitted major sources or any major modifications of permitted major sources in nonattainment areas that have the potential to cause significant increases of the criteria pollutants (carbon monoxide [CO], lead [Pb], NO_x, particulate matter, SO₂, and volatile organic compounds [VOCs]). A PSD evaluation must be prepared before construction and installation of certain types of listed sources in attainment areas that have the potential to emit certain threshold quantities of criteria pollutants.

Energy demand on Fort Detrick is supplied by both natural gas and fuel oil which emit greenhouse gases (GHG) and affect both air quality and the atmosphere. Implementation of the Proposed Action will require additional energy. Concurrently, reductions in energy consumption and directly and indirectly related GHG emissions are required by Energy Independence and Security Act (EISA) and EOs 13423 and 13514. In compliance with these regulations, Fort Detrick must consider an alternate energy source emitting reduced GHG emissions to supply a portion of their future energy demand. Consequently, energy intensity for new buildings will be decreased.

2.7 UTILITY REQUIREMENTS FOR ROUTINE OPERATIONS

Utility consumption for the current Installation baseline and future Installation baseline are provided in Table 2-5 and Appendix C. These computations sum actual utility consumption by Fort Detrick (FY 2009) with estimated utility consumption by Approved and Proposed Projects to provide a new estimated utility consumption baseline. An accurate quantitative determination of the impact on requirements for electricity, water supply, natural gas, and steam is not feasible at the current state of design and planning for these projects. Therefore, the projections presented in Table 2-5 are based on the currently best-available preliminary design data.

During the operational phase of the Proposed Projects, demand on Installation utilities is projected to increase. At least 54 energy inefficient buildings (approximately 585,000 gsf) (see Table 2-3) associated with Approved and Proposed Projects will be demolished and replaced by energy efficient buildings. Energy management practices during the operational phase of the Proposed Projects will follow guidelines set forth in EO 13423, EO 13514, and EISA (see Section 2.8). Efforts to promote energy conservation will also follow measures included in the Army memorandum, Interim Policy Guidance - Army Energy Conservation, 27 December 2005. Additionally, all Army vertical building construction projects must be evaluated using the Leadership in Energy and Environmental Design (LEED)-New Construction (LEED-NC) scoring system (see Section 2.8)

2.7.1 WATER SUPPLY

Fort Detrick has an excellent record of meeting water quality standards, as set by Federal (Safe Drinking Water Act), state (COMAR 26.04.01), and DA criteria. Details of the WTP treatment

Table 2-5. Projected Annual Utility Requirements and Waste Streams for the Installation.

Utility or Waste	Utility Usage			Wastes		
	Water	Electricity	Steam	Wastewater	Municipal	Medical
Units	million gallons	million kWh	million pounds	million gallons	thousand pounds	thousand pounds
Data and Projections Rounded to Nearest	100,000	100,000	100,000	100,000	1,000	1,000
CURRENT INSTALLATION BASELINE FY 2009 (a)	408.3	178.6	319.1	225.8	4,242	1,398
NEPA Approved Projects (b) (c) (d)	161.1	106.0	460.8	103.0	1,708	544
Approved Buildings to be Demolished (c) (d) (e)	-26.9	-26.0	-101.1	-17.9	-429	-119
TOTAL APPROVED PROJECTS UTILITY CONSUMPTION (f)	134.2	79.9	359.7	85.1	1,279	425
Proposed Projects (b) (c) (d) (g)	7.8	8.5	0	5.6	437	0
Proposed Buildings to be Demolished (c) (d) (e)	-1.8	-2.5	0	-1.1	-64	0
TOTAL PROPOSED PROJECTS UTILITY CONSUMPTION (f) (h)	6.0	6.0	0	4.4	374	0
PROJECTED INSTALLATION BASELINE FY 2018 (f) (h)	548.6	264.5	678.8	315.4	5,895	1,822
INSTALLATION FUTURE CAPACITY - FY 2018 (i)	730	N/A	4,100	730	40,560	12,480
Capacity Utilization of FY 2018 Infrastructure	75.1%	N/A	16.6%	43.2%	14.5%	14.6%

a) Baseline data from Energy Performance Data FY 09 (Potter, 2009).

b) Projections from previous NEPA documentation and from current admin and laboratory metrics.

c) Projections based on laboratory metrics for water (72 gal/gsf), electric (59 kWh/gsf), wastewater (45 gal/gsf), municipal waste (0.84 lbs/gsf), and medical waste (0.35 lbs/gsf) were developed by summing laboratory billing data for FY 2009 for each utility or waste, and dividing by the total laboratory building gsf (Hockensmith, 2010a). Steam metrics were developed by summing estimated laboratory consumption or generation for FY 2009 and then dividing by the total laboratory building gsf (Hockensmith, 2010b).

d) Projections based on admin metrics for water (25 gal/gsf), electric (34 kWh/gsf), wastewater (15 gal/gsf), and municipal waste (0.83 lbs/gsf) were developed by summing admin billing data for FY 2009 for each utility or waste, and dividing by the total admin building gsf (Hockensmith, 2010a). Steam is not required in admin operations; therefore, no steam admin metrics were developed.

e) Projections based on historic usage and generation, or current administration and laboratory metrics.

f) Due to rounding errors totals may be slightly different than the sum of individual rows.

g) Projections based on available information from DoD Form 1391. Submittance of DoD Form 1391 is required to justify to Congress the need for funding of proposed military construction.

h) Future utility consumption and wastes generation is anticipated to occur at the same unit rate as in the past. Energy/waste savings due to EO 13514, EO 13423, and EISA were not factored into the projections.

i) The water supply and WWTP annual capacities are both 2 mgd x 365 days and do not include any additional water sources or upgrades (i.e., Potomac Pipeline Interconnect). Steam capacity includes both the existing boilers (405 MMBTU/hour [hr] @ 1,500 BTU/pound of steam) and the CUP (200,000 pound/hr) x 8,760 hours. Steam capacity does not include steam generated at the Incinerator Plant (approximately 22,000 lbs/hr). The total incinerator capacity is based on the CAA Title V Part 70 Operating Permit (No. 24-021-00131) issued by MDE ARMA (see Section 2.9.2 for details).

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processes and operations are presented in Section 4.5.4.2. The Installation's Water Appropriation Permit FR43S001(02), effective through 1 March 2012, limits the WTP to an annual average of 2.0 mgd from the Monocacy River and a maximum daily withdrawal of 2.5 mgd. The withdrawal limits and the WTP peak instantaneous flow during FY 2009 of 1.7 mgd are well within its peak treatment capacity of 4.25 mgd (Lewis, 2009).

During FY 2009, Fort Detrick WTP produced an average of approximately 408 million gallons per year (mgy) of water (Potter, 2009). The future water baseline including Approved Projects and the associated buildings to be demolished will be approximately 543 mgy. Operation of the Proposed Projects is projected to consume approximately 7.8 mgy, which will be offset by approximately 1.8 mgy from demolition of existing facilities on the Installation (see Table 2-5). This results in a water baseline of 549 mgy by FY 2018, representing 75 percent capacity utilization of the WTP. The Proposed Projects will incorporate features that will lessen demand for water in accordance with LEED guidelines, EO 13514, and EO 13423 (see Section 2.8).

2.7.2 ELECTRICITY

The Potomac Edison DBA Allegheny Power provides electrical power to the Installation via two 34.5 kilovolt (kV) power lines. Due to the energy-intense nature of research activities conducted at Fort Detrick, the demand for electricity at the Installation is high. As indicated in Section 2.7, the Proposed Projects will be designed and constructed to minimize energy demand, in accordance with LEED guidelines.

During FY 2009, the annual electrical consumption for USAG was approximately 180 million kilowatt hours (kWh) (Hockensmith, 2009). The future electricity baseline including Approved Projects and the associated buildings to be demolished will be approximately 259 million kWh. Operation of the Proposed Projects is projected to consume approximately 8.5 million kWh, which will be offset by approximately 2.5 million kWh from demolition of existing facilities on the Installation (see Table 2-5). This results in an electricity baseline of 265 million kWh by FY 2018. The Proposed Projects will incorporate features that will lessen demand for electricity and utilize renewable energy sources; in accordance with LEED guidelines, Energy Policy Act (EPAct) 2005, EISA, EO 13514, and EO 13423 (see Section 2.8).

2.7.3 NATURAL GAS AND NO. 6 FUEL OIL

Natural gas is furnished by the Frederick Gas Company. Natural gas usage at Fort Detrick is primarily by the Building 190 Boiler Plant, the incinerators, and will increasingly be consumed by the CUP as NIBC Mission Partner facilities become operational. No. 6 fuel oil is used primarily by the Building 190 Boiler Plant. During FY 2009, the annual average natural gas consumption for the entire Installation in units of 100 cubic feet [ccf] was approximately 2.8 million ccf (Hockensmith, 2010a). During FY 2009, the No. 6 fuel oil consumption at the Boiler Plant was approximately 2.3 million gallons (Hockensmith, 2009). Natural gas and No. 6 fuel usage have fluctuated in inverse proportion to one another in recent years due to price fluctuations for each commodity. Use of the CUP, which recently began operations, will increase usage of natural gas and distillate fuels and will result in lower emissions and more efficient use of natural gas than the Boiler Plant (USAG, 2005a). Reducing energy intensity and the related GHG emissions produced by fossil fuels, such as natural gas and fuel oil, is required by Federal mandates (See Sections 2.6.6, 2.8.1). Utilization of alternative energy sources (e.g., solar, biofuel) which

replace fossil fuels will provide compliance with requirements for reduced energy intensity and GHG emissions.

2.7.4 STEAM

Until 2008, steam generation at Fort Detrick was produced exclusively by USAG at Building 190 (Boiler Plant) and at Building 393 (as waste heat recovered from the four solid waste combustors). Since 2008, three additional steam generation sources have come on line. The NCI-Frederick has constructed two natural gas fired steam generation facilities which now meet their entire steam requirement. The CUP has come on line, now meeting the steam requirements of NIAID and NBACC, soon to meet the steam requirements of existing USAMRIID and the new SSP, and later to meet the steam requirements of new USAMRIID and other partners at the NIBC.

As a direct result of these three new steam generation sources, the customer base of the steam generated by Building 190 and Building 393 has been dramatically reduced, and will continue to be reduced in the coming years. A feasibility study is currently underway, looking at the alternatives to meeting the heating needs of the remaining customer base. It is entirely possible, as discussed in Section 2.5.3, that Building 190 may be decommissioned and replaced by decentralized heating systems at the point of need.

During FY 2009, approximately 266 million lbs of steam was generated by the Boiler Plant, and an additional 53 million lbs was produced by the incinerators (Hockensmith, 2009). The future steam baseline including Approved Projects and the associated buildings to be demolished will be approximately 679 million lbs. Operation of the Proposed Projects is not projected to consume steam (see Table 2-5). This results in a steam baseline of 679 million lbs. by FY 2018, representing 15 percent capacity utilization.

2.8 SUSTAINABLE DESIGN AND OPERATION OF NEW FACILITIES

The *Army Strategy for the Environment: Sustain the Mission – Secure the Future*, signed 1 October 2004, proclaimed the importance of a healthy environment (i.e., land, water, and air) in carrying out current and future Army missions (US Army, 2008). This strategy outlines the importance of sustainability in connecting current and future activities, with sound business and environmental practices. More specifically, a sustainable Army works to simultaneously meet current and future requirements worldwide, safeguards human health, improves quality of life, and enhances the natural environment (US Army, 2008). The interrelationship of these concepts is known as the Army's TBL+ of sustainability: mission, community, environment, plus economy.

EO 13423 defines sustainability as creating and maintaining conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of the present and future generations of Americans. This has become a premise for Federal environmental legislation. Requirements stated in Federal legislation on the environment and sustainability extends mandates to Federal buildings (i.e., Army installations) for sustainable design, construction, and operation. Sustainability in Federal buildings is implemented through six fundamental principles: optimizing site potential, optimizing energy use, protecting and conserving water, using environmentally preferable products, enhancing indoor environmental quality, and optimizing operation and maintenance practices (Whole Building Design Guide, 2010).

It was acknowledged in the *Army Strategy for the Environment* that merely meeting environmental regulations will not ensure the ability of the Army to sustain its mission. Therefore, the Army strives to exceed Federal environmental mandates. For example DoD has recently announced that it will improve energy security by reducing GHG emissions from non-combat activities by 34 percent by 2020. This exceeds the 28 percent reduction standard set by CEQ.

Fort Detrick is characterized as a Sustainable Community of Excellence and will continue to excel in sustainability (USAG, 2010d). The SuSP will be a driving force for this achievement. The Infrastructure and Utilities Team has integrated and aligned sustainable design and operations into the SuSP and will continue to do so in the future.

It is Fort Detrick's policy to certify new buildings to the LEED-Silver standard. Currently, Fort Detrick is exceeding the Army standards by not only designing and the constructing new facilitates as LEED-Silver "certifiable", but will submit the new construction projects to the Green Building Certification Institute (GBCI) for LEED-Silver certification. Fort Detrick has identified 11 projects that will be submitted to the GBCI for formal certification. Additionally, Fort Detrick is embarking on an aggressive LEED-Existing Buildings (EB) program and has identified four existing buildings that will be submitted to GBCI under LEED-EB that will incorporate LEED, SDD, EISA, and EOs requirements.

Several additional milestones for sustainability have been met at Fort Detrick. Following nine years of environmental work, in January 2009 an EPAS audit found Fort Detrick in compliance with International Organization for Standardization (ISO) 14001 Environmental Management System (EMS) standards. This achievement was seven months ahead of the 31 December 2009 mandatory compliance date for implementation of the Installation-wide EMS program as stated in EO 13423 (FD Environmental Management Office [EMO], 2009a).

The main goal of Fort Detrick's EMS is to minimize the Installation environmental footprint by setting objectives and targets beyond compliance requirements (FD EMO, 2009b). Fort Detrick's EMS has taken an active role in supporting targets, goals, and objectives established by the sustainability and strategic planning process. To evaluate significant environmental aspects on the Installation, an Environmental Aspects Ranking report is frequently prepared and evaluates significant environmental impacts of new projects, modified activities, and future strategic planning. In July 2009, the Installation-wide Environmental Aspects Ranking were updated and revised. Listed below are the prioritized significant environmental aspects (FD EMO, 2009b):

- **Resource Consumption** - Includes the acquisition and use of all goods and materials used in association with installation operations.
- **Energy Consumption** – Includes electricity (renewable/nonrenewable), and fuels (petroleum-based fossil fuel and alternative fuel).
- **Air Emissions** – Includes Stationary Sources (boilers, incinerators, generators, chlorine gas storage, petroleum storage) and Mobile Sources (vehicle emission, government-owned and personally owned vehicles, and equipment).
- **Water Quality** – Includes all elements of sanitary wastewater management, stormwater management, and drinking water quality.
- **Waste Generation** – Includes all elements of solid waste, recycling, and hazardous waste management.

- **Spills, Leaks, or Releases to Soil or Water** – Includes spills, leaks or releases to soil or water or sewage, hazardous material, hazardous waste, or oil-based products.

Other environmental considerations evaluated within the Environmental Aspects Ranking that were not deemed to be significant are listed below:

- **Natural Resource Conservation**– Includes operations associated with the potential to impact natural resources including construction, demolition and installation restoration program activities. Also includes land management, wildlife management, and invasive species management.
- **Noise** – Includes noise associated with all installation operations.
- **Cultural Resource Preservation** – Includes historic properties, archeological sites, etc.
- **Odor** – Includes unpleasant or offensive odor associated with installation operations.

During construction and operation of the Proposed Projects, Fort Detrick will consider all environmental aspects listed above and abide by all Federal mandates on sustainability. Specific EMS targets to be achieved by 2018 are the reduction of energy consumption intensity by 33 percent, reduction of water consumption intensity by 22 percent (e.g., replacement of waste combustor scrubbers), increase fleet use of bio-based fuels to 50 percent (e.g., use of B-20 biodiesel), increase fleet fuel efficiency to 35 miles per gallon (e.g., purchase hybrid vehicles), increase LEED silver certifiable square footage to 20 percent, and increase Electronic Product Environmental Assessment Tool purchases to 95 percent (Mayles, 2009).

Described below are: the specific mandates and targets defined in recent Federal environmental legislation on sustainability; the Army's policies for Sustainable Design and Development; and implementation strategies for sustainable design (e.g., LEED, Green Globes, Laboratories for the 21st Century [Labs21]).

2.8.1 FEDERAL ENVIRONMENTAL AND SUSTAINABILITY LEGISLATION

2.8.1.1 *Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding*

With the signing of *Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (MOU)* in January 2006, a collective Federal effort was committed to “designing, locating, constructing, maintaining, and operating its facilities in an energy efficient and sustainable manner that strives to achieve a balance that will realize high standards of living, wider sharing of life’s amenities, maximum attainable reuse and recycling of depletable resources, in an economically viable manner, consistent with Department and Agency missions”. The specific goals and objectives of the *Guiding Principles* of the *MOU* were aimed to help Federal agencies and organizations: reduced the total ownership cost of facilities; improve energy efficiency and water conservation; provide safe, health, and productive built environments; and promote sustainable environmental stewardship.

Following the signing of EO 13423, compliance with the *MOU* became mandatory. Specifically (EO 13423, Section 2[f]), it is required that all new construction and major renovations of agency buildings comply with the *Guiding Principles* set forth in the *MOU*. Additionally, 15 percent of the existing Federal capital asset building inventory of the agency incorporates the sustainable practices in the *Guiding Principles* as of the end of fiscal year 2015. To comply with the *Guiding Principles*, Federal agencies may utilize programs described below (e.g., LEED, Green Globes,

Laboratories for the 21st Century [Labs21]). The *Guiding Principles* of the *MOU* includes the following five principles:

- Employ integrated design principles;
- Optimize energy performance;
- Protect and conserve water resources;
- Enhance indoor environmental quality; and
- Reduce the environmental impact of materials.

2.8.1.2 *Energy Independence and Security Act*

On 19 December 2007, President Bush signed Public Law 110-140, known as EISA. EISA intends to move the US toward greater energy independence and security through a series of measures and mandates that stand “to increase the production of clean renewable fuels, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy greenhouse gas capture and storage options, to protect consumers, and to improve the energy performance of the Federal Government.” Mandates within the law are far reaching and intend to change energy production and consumption patterns throughout the US economy. At the Federal level, EISA particularly targets energy and resource usage. These provisions emphasize efficiency and focus on building performance, contracting mechanisms, and purchasing requirements. Such provisions include:

- Stringent Energy Efficiency Performance Standards for Federal Buildings – EISA codifies the existing targets for energy use reduction under EO 13423: a three percent reduction per year for FY08-FY15 for a 30 percent reduction in energy intensity by 2015. All new Federal buildings costing more than \$2.5 million must reduce fossil fuel consumption by 55 percent by 2010, 65 percent by 2015, 80 percent by 2020; 90 percent by 2025, and 100 percent by 2030. Fossil fuel consumption of similar commercial buildings in 2003 will serve as the baseline for comparison. EISA allows the use of alternative criteria at military bases where utilities have been privatized but energy savings must still meet these targets;
- Energy Efficient Leasing – Federal agencies may only lease in Energy Star-rated buildings, effective 19 December 2010. The law grants exemptions for market availability and certain historic properties;
- Energy Efficient Heating, Cooling, and Hot Water – EISA requires Federal agencies to purchase the most energy efficient and cost-effective heating and cooling systems. During FY 2010-2012, increased use of renewable energy by five percent is required. After FY 2013, a seven percent increase in renewable energy is required. In addition, 30 percent of hot water demand in new Federal buildings must be supplied by solar hot water heaters, as deemed cost-effective;
- LID Controls – The design, construction, and maintenance of new Federal buildings with a footprint of 5,000 sf or more “are to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow.” This can be accomplished by using LID measures such as permeable pavement and rain gardens; and
- Easier Energy Savings Performance Contracts (ESPCs) – EISA permanently extends the authority for the Federal government to enter into ESPCs, and allows them to be financed with any combination of appropriated and private funds. In addition, EISA removes caps on total ESPC obligations and offers greater flexibility for use of the

savings. ESPCs may now cover cogeneration, renewable energy generation, and water savings.

2.8.1.3 *EO 13423 and EO 13514*

EO 13423, Strengthening the Federal Environmental, Energy and Transportation Management dated 24 January 2007, revises and strengthens previous environmental policies (i.e., Greening the Government EO's, EPO 2005, EISA 2007) and contains guidelines for utilizing resources sustainably in newly constructed, renovated, existing and leased Federal buildings. EO 13514, signed on 5 October 2009, expands upon, but does not replace, the energy reduction and environmental performance requirements of EO 13423.

In accordance with EOs 13423 and 13514, it is the policy that United States Federal agencies conduct business mindful of the environment, while being economically and fiscally sound and by integrating efficiency and sustainability. Federal agencies are directed to implement sustainable practices in:

- Energy efficiency and reduction in greenhouse gas emissions;
- Use of renewable energy;
- Reduction of water consumption intensity;
- Acquisition of green products and services that are environmentally preferable, non-ozone depleting, contain recycled content, and are non-toxic or less toxic than alternatives;
- Pollution prevention, including reduction or elimination or the use of toxic and hazardous chemicals and materials;
- Cost-effective waste prevention and recycling programs;
- Increased diversion of solid waste;
- Sustainable design/high performance buildings;
- Vehicle fleet management, including the use of alternative fuel vehicles and alternative fuels and the further reduction of petroleum consumption; and
- Electronics stewardship.

Goals and targets from EO 13514, EO 13423, and existing statutes guide federal managers in establishing installation sustainability requirements. Major requirements are itemized and described below:

Greenhouse Gas Emissions

- Reduce GHG emissions by 28 percent¹ by FY 2020 relative to the FY 2008 baseline for:

¹ The CEQ set the 28 percent reduction for GHG emissions; however, DoD announced it will increase reduction of GHG emissions to 34 percent by 2020 for non-combat activities. This percent reduction was set as a broader effort by DoD to improve energy security.

- Scope 1 GHG emissions: direct GHG emissions from sources owned or controlled by Federal agencies; and
- Scope 2 GHG emissions: direct GHG emissions resulting from the generation of electricity, heat, or steam purchased by a Federal agency
- Establish agency-wide GHG emission percentage reduction targets by FY 2020 relative to the FY 2008 baseline for Scope 3 GHG emissions by 2 June 2010; these are indirect GHG emissions from sources not owned or directly controlled by a Federal agency, but related to agency activities such as vendor supply chains, delivery services, and employee travel and commuting;
- Pursue opportunities with vendors and contractors to reduce GHG emissions; and
- Report comprehensive GHG emissions inventory by 5 January 2011 and annually thereafter.

Building Energy

- Reduce building energy intensity by three percent annually through FY 2015, or 30 percent total reduction by FY 2015 relative to the 2003 baseline;
- Achieve by 2030 zero-net-energy in buildings entering the planning process after 2020; and
- Reduce energy intensity in buildings to achieve GHG reductions.

Renewable Energy Consumption & Generation

- Implement new renewable energy generation projects on agency property for agency use.

Potable Water Consumption and Stormwater Management

- Reduce potable water consumption intensity by two percent annually through FY 2020 or 26 percent total reduction by the end of FY 2020 relative to the FY 2007 baseline;
- Identify, promote, and implement water reuse strategies that reduce potable water consumption; and
- Achieve EPA's stormwater management objectives and maintain or restore pre-development hydrology for Federal properties over 5,000 square feet.

Industrial, Landscaping, and Agricultural Water Consumption

- Reduce industrial, landscaping, and agricultural water consumption by 2 percent annually or 20 percent total reduction by the end of FY 2020 relative to the FY 2010 industrial, landscaping, and agricultural water consumption baseline.

Fleet Petroleum Use

- Reduce vehicle petroleum consumption by two percent annually through the end of FY 2020 relative to the FY 2005 baseline;
- Achieve ten percent increase in non-petroleum fuel consumption annually by 2015 relative to the FY 2005 baseline; and
- Optimize the number of vehicles in fleet while using low-GHG-emitting vehicles.

Solid Waste Diversion and Pollution Prevention

- Divert 50 percent of non-hazardous solid waste from disposal by the end of FY 2015;
- Minimize waste and pollutant generation through source reduction and recycling programs;
- Divert 50 percent of construction and demolition materials and debris from disposal by the end of FY 2015; and
- Use paper containing at least 30 percent postconsumer fiber.

Energy Efficiency in New Construction and Major Renovations

- Achieve by 2030 zero-net-energy in buildings entering the planning process after 2020.

High Performance Sustainable Buildings

- Ensure all new construction, major renovation, or repair and alteration complies with the *Guiding Principles*;
- Ensure 15 percent of existing facilities and building leases (above 5,000 gsf) meet the *Guiding Principles* by FY 2015; and
- Make annual progress towards 100 percent conformance with the *Guiding Principles*.

Environmental Management Systems

- Sustain EMS by continuing implementation of EOs 13423 and 13514.

Additional goals have been stated in both EOs for reducing hazardous chemicals and materials; increasing use of acceptable alternative chemicals and processes; increasing diversion of compostable and organic materials from waste streams; and implementing pest management and other landscaping management practices. However, specific targets for these components have not been explicitly stated in these legislative mandates.

2.8.2 SUSTAINABLE DESIGN AND DEVELOPMENT (SDD)

Initiating the consideration of sustainable design and development in Army operations and facilities, on 26 April 2000, the Office of the Assistant Secretary of the Army for Installations and Housing established a policy to incorporate SDD principles into installation planning and infrastructure projects. SDD is the systematic consideration of current and future impacts of a

facility on the environment, energy use, natural resources, the economy, and quality of life. The Army policy for SDD requires that the Proposed Projects integrate the principles and practices of sustainability into the design to minimize the impacts and total ownership costs of the associated systems, materials, equipment, and operations.

In accordance with the Army's SDD policy, the Proposed Projects will be designed to be efficient from an environmental and energy consumption perspective, and will adhere to the tenets of sustainable design. Sustainable design includes efficient use of natural resources, better performing, more desirable, and more affordable infrastructure and buildings. Sustainable design incorporates current concerns about energy efficiency, the natural environment; emissions of greenhouse gases and ozone depleting chemicals; use of limited material resources; management of water as a limited resource; reductions in construction, demolition and operational waste; indoor environmental quality; and occupant/worker health, productivity, and satisfaction.

In the past, the Sustainable Project Rating Tool (SPiRiT) was mandated as the method for evaluating sustainability for all Army projects. Effective with the FY 2008 Military Construction program, the Army transitioned from SPiRiT to the US Green Building Council (USGBC) LEED rating system (DA, 2006b). The USACE produced a LEED Implementation Guide that provides guidance on meeting SDD goals (USACE, 2008b).

2.8.3 SUSTAINABILITY RATING SYSTEMS AND HIGH PERFORMANCE DESIGN

Sustainability policy is set forth in the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding*, Army SDD, and other sustainability guidelines specific to other Federal agencies. The majority of Federal agencies are allowed to utilize rating systems such as LEED, Green Globes, or the Green Guide for Health Care for determination of sustainability rating and requires projects to meet a minimum level for certification in these systems. However, utilization of these rating systems is not required by Federal legislation.

One of the primary missions at Fort Detrick is biomedical research and development. Mission Partners conducting this research within these laboratories have an opportunity to improve building performance and energy efficiency through implementation of Labs21 design for high performing buildings. Improvements in building performance and energy efficiency are several requirements stated in the *Guiding Principles of the MOU*.

2.8.3.1 US Green Building Council (USGBC) LEED

The LEED Green Building Rating System is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. LEED was created to define green building by establishing a common standard of measurement. LEED also seeks to: promote integrated, whole-building design practices; recognize environmental leadership in the building industry; stimulate green competition; raise consumer awareness of green building benefits; and transform the building market. LEED provides a complete framework for assessing building performance and meeting sustainability goals. Based on well-founded scientific standards, LEED emphasizes state-of-the-art strategies for sustainable site development, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. LEED recognizes achievements and promotes expertise in green building through a comprehensive

system offering project certification, professional accreditation, training and practical resources. Green building practices can substantially reduce environmental impacts and improve existing unsustainable design, construction and operational practices. As an added benefit, green design measures reduce operating costs and increase worker productivity (USGBC, 2009).

As stated in a DA Memorandum dated 5 January 2006, military construction projects shall be evaluated for sustainability using criteria developed by the USGBC LEED program and no longer the SPiRiT rating tool (DA, 2006b). In 2008, USACE produced a LEED Implementation Guide for guidance in meeting the Army's SDD policy (USACE, 2008b). All military vertical building construction projects must be evaluated using the LEED-New Construction scoring system and are required to construct "Silver" certifiable buildings (DA, 2006b). Horizontal construction such as ranges, roads and airfields shall continue to incorporate SDD features to the maximum extent possible. In April 2007, an update to the SDD policy required all new Army Family Housing construction projects to adopt the LEED for Homes rating when available. The LEED Homes rating system has been launched and the Army has committed to adopting this program for residential construction projects.

Silver certification currently requires at least 50-59 points out of 100 total points within the five LEED strategies. Ten additional bonus points may be awarded for Innovation in Design and Regional Priority (USGBC, 2009). All major renovations to existing buildings or repair projects exceeding certain monetary values (see Section 2.8.7) shall incorporate sustainable design features where applicable and shall achieve the "Certified" level for the LEED Existing Buildings rating system. The Certified level of LEED requires 40-49 points out of the 100 points total.

2.8.3.2 *Green Building Initiative® (GBI) - Green Globes™*

The Green Globes sustainability rating system is licensed by the GBI and is a third-party verification and certification tool for assessing building environmental design and management (Green Globes 2009). Green Globes is a rating system alternative to LEED which meets the *Guiding Principles* of the MOU. The GBI promotes building practices that emphasize energy efficiency, healthier and environmentally sustainable buildings in residential and commercial construction. This program offers opportunities for recognition and certification in design, construction and/or operation of the building. Utilization of the Green Globes software tools and ratings/certification system ensures that environmental impacts are comprehensively assessed on a 1,000 point scale for the following categories: energy, indoor environment, site, water, resources, emissions, and project/environmental management. After achieving a threshold of at least 35 percent of the total number of 1,000 points, new and existing buildings can be certified for their environmental achievements and sustainability by pursuing Green Globes certification that assigns a rating of one to four globes (Green Globes, 2009)

2.8.3.3 *Green Guide for Health Care*

The Green Guide for Health Care (Green Guide) serves as a voluntary, self-certifying metric toolkit that designers, owners, and operators of health care facilities can utilize to guide and evaluate the progress made towards high performance healing environments (Green Guide for Health Care, 2008). Medical office buildings, clinics, and other buildings where health care concerns are dominant can utilize the Green Guide for construction or operation of a sustainable health care facility. The Green Guide has collaborated with the USGBC, and with USGBC permission has developed a credits rating system similar to LEED. Some credits for

Green Guide are identical to LEED and some have been modified to better suit requirements of health care facilities. The Green Guide may be used where applicable for future building on Fort Detrick.

2.8.3.4 Laboratories for the 21ST Century

Currently, the LEED and Green Globes rating systems do not have specifications directly addressing sustainability features in laboratory buildings or animal facilities. Guidance on sustainability in laboratories was developed by Labs21 and can be applied to animal facilities. Although not a partner of Labs21, the Army can utilize principles set forth in the Labs21 approach for improving energy efficiency and environmental performance in laboratories. Labs21 is co-sponsored by the US EPA and the US Department of Energy and seeks to improve energy efficiency and environmental performance of the nation's labs on a voluntary basis (Labs21, 2008). This program provides strategies for implementation of sustainable design for laboratories and animal facilities not addressed in other rating systems (e.g., LEED, Green Globes, Green Guide for Health Care).

Although laboratories and animal facilities are currently located on the Installation, USAG does not operate these activities. These buildings are occupied and utilized by various mission partners who obtain guidance on sustainability through their parent agency according to the specifics of each application.

Labs21 incorporates and encourages the utilization of multiple sustainable design considerations, but focuses primarily on energy efficiency improvements. The primary guiding principle of the Labs 21 approach is that improving the energy efficiency and environmental performance of these facilities requires examining the entire facility from a "whole building" perspective. Adopting this perspective allows owners to improve the efficiency of the entire facility, rather than focusing only on specific building components (Labs21, 2008).

Labs21 provides the following tools to enhance the sustainable laboratory design skills and knowledge of stakeholders and professionals: a) training (design courses) and other educational sources such as a design guide, case studies and best management practice guides; b) roundtables; c) conferences; and d) the Labs21 Environmental Performance Criteria system. These tools facilitate laboratory stakeholders in achieving LEED or Green Globes certification. Membership in the Labs21 Partnership Program offers national recognition, as well as the opportunity for technical assistance and other benefits for improving the performance of member laboratories (Labs21, 2008).

2.9 WASTE STREAM MANAGEMENT AND POLLUTION PREVENTION

During the construction and operation phases of the Proposed Projects, pollution prevention will be practiced through reduction or elimination of wastes and emissions of toxic materials to the environment, in accordance with the *Pollution Prevention Act of 1990* (42 USC 133); EO 12856, *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements* (August 1993); EO 13423, and EO 13514. As noted in Section 2.6.2, the construction contractors will be responsible for the disposal of construction debris at permitted facilities off the Installation. The contractors must abide by the DA's and EO 13514's performance requirement for 50 percent minimum diversion of construction and demolition waste by weight from landfill disposal (DA, 2006a).

Waste streams for the current Installation baseline (FY 2009) and projected future Installation baseline are provided in Table 2-5 and Appendix C. These computations sum actual average annual waste streams at Fort Detrick with estimated waste streams from the Approved and Proposed Projects minus the waste streams from the demolished facilities to provide a projected new estimated utility consumption and waste generation baseline. An accurate quantitative determination of the impact of the Proposed Projects on waste generation is not feasible at the current state of design and planning for these projects. Therefore, the projections presented in Table 2-5 are based on the currently best-available preliminary design data.

The nature of activities currently conducted at Fort Detrick will remain the same under the Proposed Action. As a result, implementation of the Proposed Action is not expected to result in qualitatively different waste streams than what is currently generated on the Installation. Waste generated from the Proposed Projects will include wastewater, MSW, regulated medical waste, hazardous chemical waste, and radiological waste.

2.9.1 WASTEWATER

The Fort Detrick WWTP, located in Area C, provides secondary treatment through the use of trickling filters. Treated effluent from the WWTP discharges into the Monocacy River, downstream from both the City of Frederick and Fort Detrick WTP water intakes. The daily sanitary wastewater flows are well within the maximum WWTP capacity (2.0 mgd average daily flow) under NPDES Permit No. MD0020877, effective through 30 November 2014 (USAMRMC and USAG, 2006). See Section 4.15.1 for details.

During FY 2009, the WWTP treated an average of approximately 226 mgd (Hockensmith, 2010a). The future wastewater baseline including Approved Projects and the associated buildings to be demolished will be approximately 311 mgd. Operation of the Proposed Projects is projected to generate approximately 5.6 mgd, which will be offset by approximately 1.1 mgd from demolition of existing facilities on the Installation (see Table 2-5). This results in a wastewater baseline of 315 mgd by FY 2018, representing 43 percent capacity utilization of the WWTP.

In accordance with FD REG 200-7 and *Biosafety in Microbiological and Biomedical Laboratories* (BMBL) guidelines (Center for Disease Control [CDC] and NIH, 2007), Fort Detrick requires that all “biologically contaminated materials” from Installation laboratories must be sterilized before being discharged into the Installation’s sanitary sewer system. Current requirements mandate primary decontamination treatment of “biologically contaminated materials” at the point of generation, i.e., the laboratory, prior to release into the existing LSS-SSP system. The existing LSS is an underground sewer system, entirely separate from the sanitary sewers, for collection of potentially contaminated wastewater and conveyance to the existing SSP for sterilization using process steam. The decontaminated effluent from the existing SSP is discharged into the Installation sanitary sewer system for conventional wastewater treatment at the WWTP. Details on the existing LSS-SSP system are presented in Section 4.15.1.4. As described in Section 2.5.4, Fort Detrick will construct the USAMRIID SSP prior to the scheduled completion of USAMRIID Stage 1.

2.9.2 INCINERATED WASTE

The overall operation of the incinerators is subject to conditions of Refuse Disposal Permit (No. 2005-WIN-0341) issued by the MDE Waste Management Administration (WMA), effective through 29 June 2010. Operation of the two municipal waste and two medical waste incinerators is also subject to conditions of the CAA Title V Part 70 Operating Permit (No. 24-021-00131) issued by MDE Air and Radiation Waste Management Administration (ARMA) effective through 31 March 2014 (Benson, 2009). Both permits set capacity limits on the incinerators.

The MDE WMA Refuse Disposal Permit sets capacity limits based on the average amount of waste projected to be incinerated in the next five consecutive years. Currently, the Refuse Disposal Permit sets a total combined limit of all incinerators at 8,400,000 lbs per year. MDE has indicated that the refuse disposal permitted capacity may be increased when/as needed by submitting a formal request to the Department (Dressler, 2010).

The MDE ARMA CAA Title V Part 70 Operating Permit sets capacity limits based on the design of the incinerators and their combustion process, and the discharges produced. This permit does not specify the number of days a year the incinerators can burn. For purposes of this EA, calculations were based on the incinerators typical operation of five days a week (260 days a year). The CAA Title V Part 70 Operating Permit states capacity for each municipal waste incinerator is 78,000 lbs per day; therefore during a 260 day operating year the combined capacity is 40,560,000 lbs. The permit states the capacity for each medical waste incinerators capacity is 24,000 lbs per day; therefore the combined medical waste incinerator capacity is 12,480,000 lbs per year. In summary, the Refuse Disposal permit capacity is a projection that can be revised when necessary while the CAA Title V Part 70 Operating Permit defines incinerator capacity based on design. Therefore, the Operating Permit capacity is used throughout the EA when calculating capacity utilization. Further details of the incinerators appear in Section 4.15.2.1

2.9.2.1 *Solid Waste*

The generators of MSW at Fort Detrick sort the recyclable materials from waste prior to collection by USAG DIS. During FY 2009, DIS recycled approximately 3.64 million lbs of solid waste that were generated on the Installation (Adkins, 2009). The recycled materials included paper, plastic, metals, and glass (see Section 4.15.2 for details). Combustible waste materials that cannot be recycled are transported to the Incinerator Plant for processing in the two municipal waste incinerators. Residual ash from the incinerators is transported by USAG DIS to the Fort Detrick Municipal Landfill (located in Area B) for ultimate disposal. Further details of the existing MSW management system appear in Section 4.15.2.2

During FY 2009, approximately 4.24 million lbs of MSW was generated on the Installation. The future MSW baseline including Approved Projects and the associated buildings to be demolished will be approximately 5.52 million lbs. Operation of the Proposed Projects is projected to generate approximately 437 thousand lbs per year, which will be offset by approximately 64 thousand lbs per year from demolition of existing facilities on the Installation (see Table 2-5). This results in a MSW baseline of 5.90 million lbs by FY 2018, representing 15 percent capacity utilization of the municipal waste incinerators. All MSW generated by the Proposed Projects will be managed and disposed of in accordance with Federal, DA, USAG, and state regulatory requirements.

2.9.2.2 *Medical Waste*

All medical waste generated at Fort Detrick is managed in accordance with BMBL guidelines (CDC and NIH, 2007) and applicable Federal, DA, USAG, and state regulations for the protection of transporters and the public from potential hazards associated with potential contaminants. Special Medical Waste, as defined under COMAR 26.13.11.02 includes anatomical material, blood, blood-soiled articles, contaminated material (microbiological laboratory waste, feces of an individual diagnosed as having a disease that may be transmitted to another human being through the feces, articles soiled with feces of an individual diagnosed as having a disease that may be transmitted to another human being through the feces, or articles that have come into contact with a known infectious agent), microbiological laboratory waste (containing an infectious agent and including cultures or stocks of infectious agents and associated biologicals), and sharps (syringes, needles, surgical instruments, or other articles capable of cutting or puncturing human skin). Treatment (disinfection) of special medical waste and disposal by incineration at Fort Detrick are in accordance with COMAR 10.06.06.04 and 10.06.06.06, respectively. Further details of the existing medical waste management system appear in Section 4.15.3.

During FY 2009, the Installation incinerated an annual total of approximately 1.40 million lbs of special medical waste (Potter, 2009). The future special medical waste baseline including Approved Projects and the associated buildings to be demolished is approximately 1.82 million lbs per year. Operation of the Proposed Projects is not projected to generate special medical waste (see Table 2-5). A special medical waste baseline of 1.82 million lbs by FY 2018 represents 15 percent capacity utilization of the medical waste incinerators.

2.9.3 HAZARDOUS WASTE

Under the provisions of the Resource Conservation and Recovery Act (RCRA), Area A of Fort Detrick is registered as a large quantity generator of hazardous wastes (USEPA Identification [USEPA ID] No. MD8211620267). This USEPA ID No. applies only to hazardous waste generated on the Army-owned portion of Area A. Separate USEPA ID numbers have been issued by the USEPA to the USAG for Area B, and to NCI-Frederick. In addition, the NIAID IRF is separately registered. RCRA is administered in Maryland by the MDE Hazardous Waste Program through regulatory requirements for Controlled Hazardous Substances (COMAR 26.13). Except where noted, the section as follows applies only to the Fort Detrick USAG and tenant activities covered under USEPA ID No. MD8211620267. NIAID's waste disposal procedures are independent of USAG.

Hazardous wastes may not be disposed of through the Fort Detrick municipal trash, sanitary sewers or to the LSS. This applies to all generators on Fort Detrick including USAG and tenant activities, CUP, NCI and the NIAID.

With rare exceptions, hazardous waste or spent hazardous material that is generated in laboratories on the Installation (subject to USAG's USEPA ID number for Area A) is accumulated by the generator within Satellite Accumulation Points (SAP). Wastes collected from the SAPs are transported to a 90 day collection site to await shipment off site.

There are two 90-day hazardous waste storage sites on the Army-owned portion of Area A. The 90-day site at Building 262 is operated by USAG's Hazardous Materials Management Office

(HMMO). Within 90 days after the accumulation start date (the date that a hazardous waste leaves a SAP or the date the waste is generated if not stored in a SAP); the hazardous waste must be removed from the Installation for shipment to a properly permitted offsite treatment storage disposal facility (TSDF). USAG contracts with the Defense Reutilization Marketing Office for the packing, transportation, and disposal of hazardous waste. The hazardous waste must be packaged in accordance with the US Department of Transportation (DOT) regulations (49 CFR 171-179), Federal, state, and TSDF requirements.

With the exception of hazardous waste generated at USAMRIID, hazardous waste is transported from a SAP directly to USAG's Building 262, 90-day hazardous waste storage site, prior to being transported from Fort Detrick. Within USAMRIID, hazardous waste is transported from the USAMRIID SAPs and is temporarily held at the 90-day site at Building 1425 prior to transport to the 90 day facility at Building 262.

2.9.4 RADIOLOGICAL WASTE

Management of radiological waste is subject to US Nuclear Regulatory Commission (NRC) regulations (10 CFR 20, *Standards for Radiation Protection, Subpart K, Waste Disposal*). Packaging and shipment of all radiological waste material must also be in accordance with DOT regulations (49 CFR 172, *Hazardous Materials Table—Special Provisions* and 49 CFR 173, *Shippers – General Requirements for Shipments and Packaging*) and other applicable Federal, DoD, and state regulations, as well as disposal facility requirements.

Radiological wastes cannot be disposed of through the Fort Detrick municipal trash, sanitary sewers or the LSS. Commercial carriers transport all radiological waste from Fort Detrick to a contracted facility. The USAG DIS, no longer having a NRC Broker's license to receive and store radiological waste, can only accept "instruments and articles (smoke detectors, exit signs, compasses, etc.)" at Building 261. Mission partners holding NRC licenses have the responsibility for proper storage and disposal of low-level radiological waste that they generate.

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3.0 ALTERNATIVES CONSIDERED

In accordance with AR 210-20, *Real Property Master Planning for Army Installations*, dated 16 May 2005, Fort Detrick maintains an active planning program to manage current and future development at the Installation. AR 210-20 establishes and prescribes the Army's real property master planning process, and it assigns responsibilities and prescribes policies and procedures relating to the development, content, submission, and maintenance of a RPMP. The RPMP is an important element of the Installation strategic planning process. The RPMP depicts USAG's plan for orderly management and development of the Installation's real property assets, including land, facilities, and infrastructure, and documents the real property master planning process. The RPMP integrates all plans affecting or using real property into a comprehensive guidance document. The RPMP incorporates information from many sources to ensure that adequate real property support is provided to meet all assigned or projected missions for the Installation (see Sections 2.4 *Installation Master Planning* and 2.6.1 *Site Selection Regulations* for details).

An EA must identify and explain the existing "range of alternatives" to the Proposed Action, which includes all reasonable alternatives to the Proposed Action that would avoid or minimize adverse impacts. Reasonable alternatives must be rigorously explored and objectively evaluated before being eliminated from detailed study with a brief discussion of the reasons for their elimination (40 CFR 1502.14[a]). In addition, consideration of a no action alternative is required.

The Proposed Action (Alternative I, the Proposed Projects) and subject of this EA is the Implementation of the RPMP, including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland as described in Section 2.0 and developed in accordance with AR 210-20, *Real Property Master Planning for Army Installations*. During the preparation of this EA, a reasonable alternative to the Proposed Action was identified and evaluated. Alternative II, No Action, is Do Not Implement the RPMP, including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland. Both of these alternatives are deemed to be reasonable. The No Action alternative has been included in accordance with CEQ regulations [40 CFR 1502.14(d)]. Although it would not satisfy the purpose of and need for the project, the No Action alternative does establish the baseline to which the action alternative can be compared.

These alternatives are briefly discussed in Sections 3.1 and 3.2 below. Environmental analyses of the alternatives are comprised of detailed discussion of the existing (baseline) environment in Sections 4.1 through 4.17, review of the environmental consequences of the Proposed Action in Section 5.2, and comparison of the two alternatives in Section 5.3 and Section 5.4.

3.1 ALTERNATIVE I – IMPLEMENT THE RPMP FOR ARMY-CONTROLLED LAND AT AREAS A AND C OF FORT DETRICK IN FREDERICK COUNTY, MARYLAND

The Proposed Action (Alternative I, the Proposed Projects) and subject of this EA is the Implementation of the RPMP, including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland. This is comprised of a number of projects for

the construction and operation of new facilities and infrastructural improvements, enhancement of recreational and educational opportunities, and ecological restoration within the Installation (as described in Section 2.5) which will allow USAG and its Mission Partners to meet their respective mission requirements.

This alternative will replace antiquated, poorly situated, energy inefficient, and maintenance intensive existing buildings, consolidating related administrative, communications, and community services activities with new modern facilities, and providing much-needed infrastructural improvements that will enable Fort Detrick and its Mission Partners to advance their respective missions, as established in Section 1.1. The potential adverse environmental impacts of this alternative were found to be negligible to minor and mitigable for all environmental attributes. The potential adverse impacts may be offset to some extent by beneficial impacts (see Section 5.2).

3.2 ALTERNATIVE II – DO NOT IMPLEMENT THE RPMP FOR ARMY-CONTROLLED LAND AT AREAS A AND C OF FORT DETRICK IN FREDERICK COUNTY, MARYLAND – (NO ACTION)

Alternative II, the No Action Alternative, is Do Not Implement the RPMP, including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland. Alternative II would discontinue the Proposed Projects for construction and operation of new facilities and infrastructural improvements, enhancement of recreational and educational opportunities, and ecological restoration (as described in Section 2.5), that otherwise would enable Fort Detrick and its Mission Partners to advance their respective missions, as established in Section 1.1. This alternative would avoid the potential adverse environmental impacts associated with Alternative I, but it would eliminate the beneficial impacts.

Alternative II would continue to operate administrative, communications, and community services activities in functionally inefficient separate facilities. Much-needed infrastructural improvements would be postponed or abandoned. The recreational and educational opportunities and ecological restoration initiatives would not enhance quality of life on the Installation. If the Proposed Action is not implemented, USAG and its Mission Partners would not be as effective at meeting their respective mission requirements. Other benefits of the Proposed Action described in Section 1.0 would not be achieved.

This No Action Alternative is included in accordance with the CEQ regulations. Although Alternative II is not the preferred alternative, it does establish the baseline to which Alternative I can be compared.

4.0 AFFECTED ENVIRONMENT

4.1 LOCATION AND LAND USE

4.1.1 FREDERICK COUNTY LAND USE

Frederick County is divided into eight planning regions that comprise geographically distinct land areas within the county. The City of Frederick and Fort Detrick are located in the Frederick Region, which is bordered by the Monocacy River to the east, the Catoctin Mountains to the west, Little Hunting Creek to the north, and Ballenger Creek to the south. Land use and development for the county is guided by eight regional plans. Fort Detrick is described in the *Frederick Region Plan*, which provides recommendations for land use through the year 2045 (Frederick County Department of Planning and Zoning, 2002).

Frederick County covers approximately 665 square miles, comprised of 79.7 percent agricultural land/woodland, 10.3 percent residential land, 5.4 percent parkland and open space, 2.5 percent institutional land, 1.3 percent general and limited industrial land, and 0.9 percent commercial land (Frederick County Department of Planning and Zoning, 2002).

4.1.2 CITY OF FREDERICK LAND USE

The City of Frederick covers 20.8 square miles. According to the 2004 *City of Frederick Comprehensive Plan*, land use within the city is distributed as follows: 29 percent is residential, 21 percent is institutional, 8 percent is commercial, 5 percent is industrial, 25 percent is vacant, and the remaining 11 percent includes mixed use, conservation, recreation, and rights of way. The City Planning Department has characterized all of Fort Detrick as institutional land. Areas adjacent to Area A of the Installation are predominately zoned as residential. Some of the land to the west of Area A is zoned as commercial. The land occupied by Frederick Community College (FCC), to the northeast of Area A, is also designated as institutional (City of Frederick, 2004).

4.1.3 FORT DETRICK AREAS A AND C LAND USE

Areas A and C of Fort Detrick are located in the central portion of Frederick County, Maryland, within the northwest portion of the City of Frederick (see Figure 2-1). As an Army installation, Fort Detrick maintains its own land use planning. Although the Installation is located within the city limits of Frederick, local land use regulations are not binding. Land use planning at Fort Detrick is designed to conform and complement local community planning to the maximum extent possible. With its own infrastructure, residential and commuter populations, and community services, Fort Detrick is largely an independent community within the City of Frederick (USAMRMC and USAG, 2006).

This EA only assesses Army-controlled land at Areas A and C. As discussed in Section 2.5, there are seven land use categories used to divide functional areas of all Army installations. These include: Ranges and Training, Airfields, Troop, Industrial, Professional/Institutional, Residential, and Community (see Figures 2-2 through 2-5). This section details the existing environment currently at Fort Detrick.

4.1.3.1 *Land Use on Area A*

Area A of Fort Detrick (approximately 797 acres) is the largest and most intensely developed of the four parcels. It currently contains all seven land use categories. The seven categories of the Existing Land Use (see Figures 2-2 and 2-3) are as follows (as described in the MPTM):

- **Airfields** – This land use is designated for flight operations including runways and taxiways, airfield support facilities including airfield operations, aviation refueling, aviation maintenance, and related test facilities. The only portion of Fort Detrick that falls into this land use category is the heliport on Area A, located east of the Veterans Gate area. The Airfields land use category currently occupies approximately one-half acre.
- **Community** – This land use encourages a mix of users. Facilities allowed include religious, family support, personnel services, professional services, medical, community, commercial, and recreational services. Users live both on- and off-post and may include soldiers, dependents, retirees, and other civilian personnel. This land use category is found on the northeast, southeast, and western portions of Area A. The Community land use category currently occupies approximately 208 acres.
- **Industrial** – This land use is designated for production, maintenance, depot, and other storage; activities that generate significant amounts of heavy vehicle traffic, loud outdoor equipment operations, noise, smoke, large amounts of steam or pollutants that must be processed on the site. This land use category is found at the southern corner of the Installation, south of NCI-Frederick and in the north central portion of Area A. The Industrial land use category currently occupies approximately 33 acres.
- **Professional/Institutional** – This land use provides for non-tactical organizations including military schools, headquarters, major commands, and non-industrial RDT&E. This land use category is found in the vicinity of USAG Headquarters and all of the NIBC Area A. The Professional/Institutional land use category currently occupies approximately 239 acres.
- **Ranges and Training** – This land use includes live fire ranges, non-live fire ranges, and special training areas such as confidence courses, drivers training, or land navigation. This land use category is found in the north central portion of Area A. The Ranges and Training land use category currently occupies approximately 81 acres.
- **Residential** – This land use provides space for family housing and senior unaccompanied personnel housing. It also includes family services and may have other neighborhood services associated with the Community land use cluster included in the area. This land use category is found only on Area A, at RCI and at the Nallin Farm Complex area. The Residential land use category currently occupies approximately 129 acres.
- **Troop** – This land use is designated for operational facilities for troops, organization, equipment units, basic combat training, and one station unit training complexes, and for selected initial entry training complexes. The goal is to provide contiguous facilities to related organizations to facilitate operational readiness, to support operations security for deployable units, and to improve circulation and movement of trainees between sleeping, eating, and training facilities. This land use category is found on Area A, at the

parade field, the northeast corner of Sultan Drive and Doughten Drive intersection, UEPH complex, satellite communications, and the north central portion of Area A. The Troop land use category currently occupies approximately 113 acres.

4.1.3.2 Land Use on Area C

Area C of Fort Detrick, which is exclusively used for Industrial land use operations, consists of two small tracts located along the west bank of the Monocacy River, approximately 1 mile east of Area A. The northern tract of Area C (approximately 7 acres) contains the Fort Detrick WTP. The southern tract (approximately 9 acres) lies ¼ mile downstream from the WTP and contains the Fort Detrick WWTP (See Section 2.5).

4.2 CLIMATE

Frederick County has a temperate, continental climate with four distinct seasons. Summers are usually short, warm, and occasionally humid. Winters are mostly mild with intermittent periods of cold. Local weather patterns are influenced by the Catoctin Mountains; a north-south trending mountain range located approximately five miles west of Fort Detrick (USAG, 1998). The City of Frederick's annual average temperature is 50.3 degrees Fahrenheit (°F), with average temperatures of 36.7 °F in the winter and 73.2 °F in the summer, and historical extreme temperatures of -10 °F in the winter and 106 °F in the summer. The average annual precipitation for Frederick is 40.17 inches (Southeast Regional Climate Center, 2009). During normal years, precipitation in the region is sufficient to provide an adequate water supply. However, the Central Region of Maryland was in a drought emergency for the greater part of 2002. The resulting Level I and Level II mandatory water usage restrictions were lifted in February 2003. As of September 2009, the hydrologic indicators of rainfall, stream flow, reservoirs, and groundwater in the central region of Maryland are classified as normal (MDE, 2009c).

The prevailing wind direction for the area is west-southwesterly with an annual average velocity of 7.4 miles per hour. Prevailing winds in the region influence seasonal climatic variations in the Fort Detrick area. In the winter months (October - April), prevailing winds are from the northwest and bring clear, cool weather. During the summer (May - September), a large high-pressure system in the Atlantic Ocean, known as the Bermuda High, frequently influences the region. This system brings warm, moist air into the region from a southwesterly direction (Maryland Office of Environmental Programs, 1986).

The storm events database of the National Climatic Data Center (NCDC) lists the following extreme weather events for Frederick County between 1 January 1950 and 31 October 2009: 11 droughts, 69 floods, 45 hail events, 21 heavy rain events, 101 heavy snow and ice events, 27 lightning events, 258 thunderstorms and high wind events, and 28 tornados (NCDC, 2009). All of Maryland and surrounding states received historic amounts of snow during a five day period in February 2010. On 5 February 2010, Governor Martin O'Malley issued a Declaration of Emergency as a major winter storm occurred in the Middle Atlantic region (Maryland Office of the Governor, 2010). President Jan Gardner of the Frederick Board of County Commissioners declared a Local State of Emergency due to another severe winter storm with blizzard conditions on 10 February 2010 (Frederick County Government, 2010).

4.3 GEOLOGY

4.3.1 PIEDMONT PLATEAU PHYSIOGRAPHIC PROVINCE

Fort Detrick lies in the western part of the Piedmont Plateau Physiographic Province (Appalachian Highlands) in a geologic subdivision known as Frederick Valley. The Piedmont Plateau extends from the Fall Line between the Coastal Plain and Piedmont Plateau Physiographic Province in the east to the Catoctin Mountains of the Blue Ridge Physiographic Province in the west. The Piedmont Plateau is characterized by rolling terrain and rather deeply incised stream valleys and comprises approximately 29 percent of Maryland's land area. Frederick Valley trends north to south, extending 26 miles, and is six miles wide. Directly west of Frederick Valley are the Catoctin Mountains. The Frederick Valley is known as the Frederick Syncline, and the Catoctin Mountains are part of an overturned anticline known as the South Mountain Anticlinorium (USACE, 2000b).

The Piedmont Plateau ranges in elevation from approximately 100 feet (ft.) to 1,000 ft. above sea level (MDNR, 1999). The elevation of Frederick County ranges from 294 ft. to more than 2,000 ft. above sea level, whereas elevations at Fort Detrick range from 320 ft. to over 400 ft. above sea level (USAG, 1997a).

4.3.2 REGIONAL GEOLOGY

The regional geology underlying Area A is the fractured limestone and dolomite of the Upper Cambrian Frederick Formation, which consists of the Lime Kiln, Rocky Springs Station, and Adamstown members (see Figure 4-1). The Frederick Formation has been known to develop karst features such as sinkholes. Area A consists mainly of the Rocky Springs Station Member. The Rocky Springs Station Member is a thinly-bedded limestone containing dolomite and layers of coarse quartz sand. Three small portions of the Rocky Springs Station Member, on the western part of Area A, are composed of thicker, more massive breccias beds.

The underlying geology of Area C is the Rocky Springs Station Member interlaid with portions that contain thicker, more massive, breccia beds (see Figure 4-2).

4.3.3 SINKHOLES AND DEPRESSIONS

Sinkholes are known to develop in the Frederick Formation. These circular depressions in the landscape are created when groundwater dissolves underlying limestone and the resulting cavity collapses. The potential for the formation of sinkholes increases in response to unnatural surface loading (e.g., building construction and stormwater retention) on enclosed topographic depressions (USAG, 2003a). Also, because sinkholes can accelerate surface water and contaminant entry into an aquifer, they can become gateways for groundwater contamination (USACE, 2002). The USACE prepared a map of sinkhole/depression and fracture trace/lineament features occurring on Fort Detrick using the US Geological Survey (USGS) 7.5 minute Frederick, Maryland topographic quadrangle map dated 1988 and aerial photographs of the Fort Detrick area dated 1937 (i.e., before significant development).

Sinkholes/depression features were identified based on topographic characteristics, vegetation, and soil tone indicators of subcircular depressions. On aerial photographs these features may have light signatures indicating dry conditions in the sinkholes or dark signatures indicating shallow, clay filled sinkholes containing moisture. Natural linear features observed using aerial

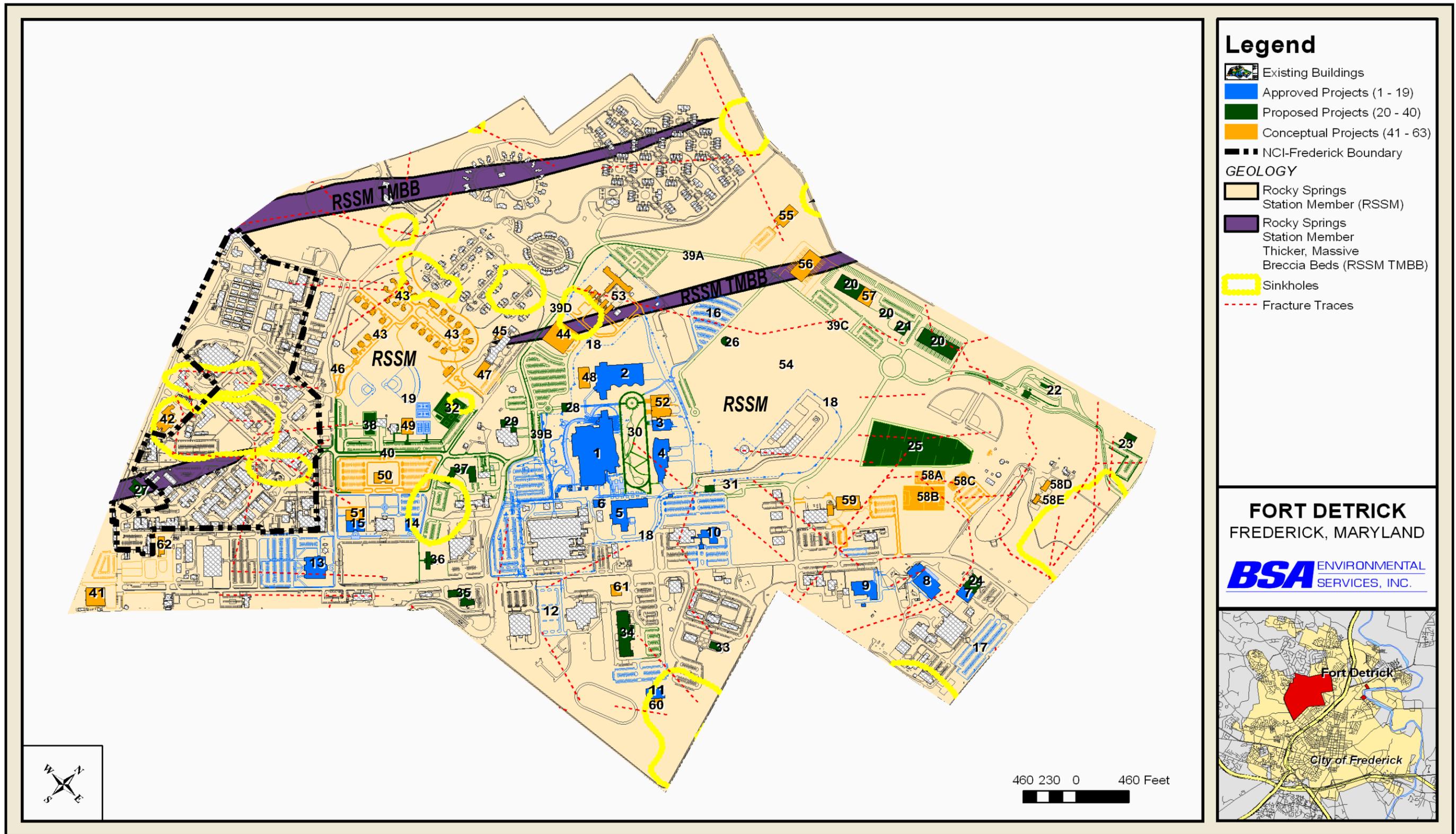


Figure 4-1. Area A Geology Map.

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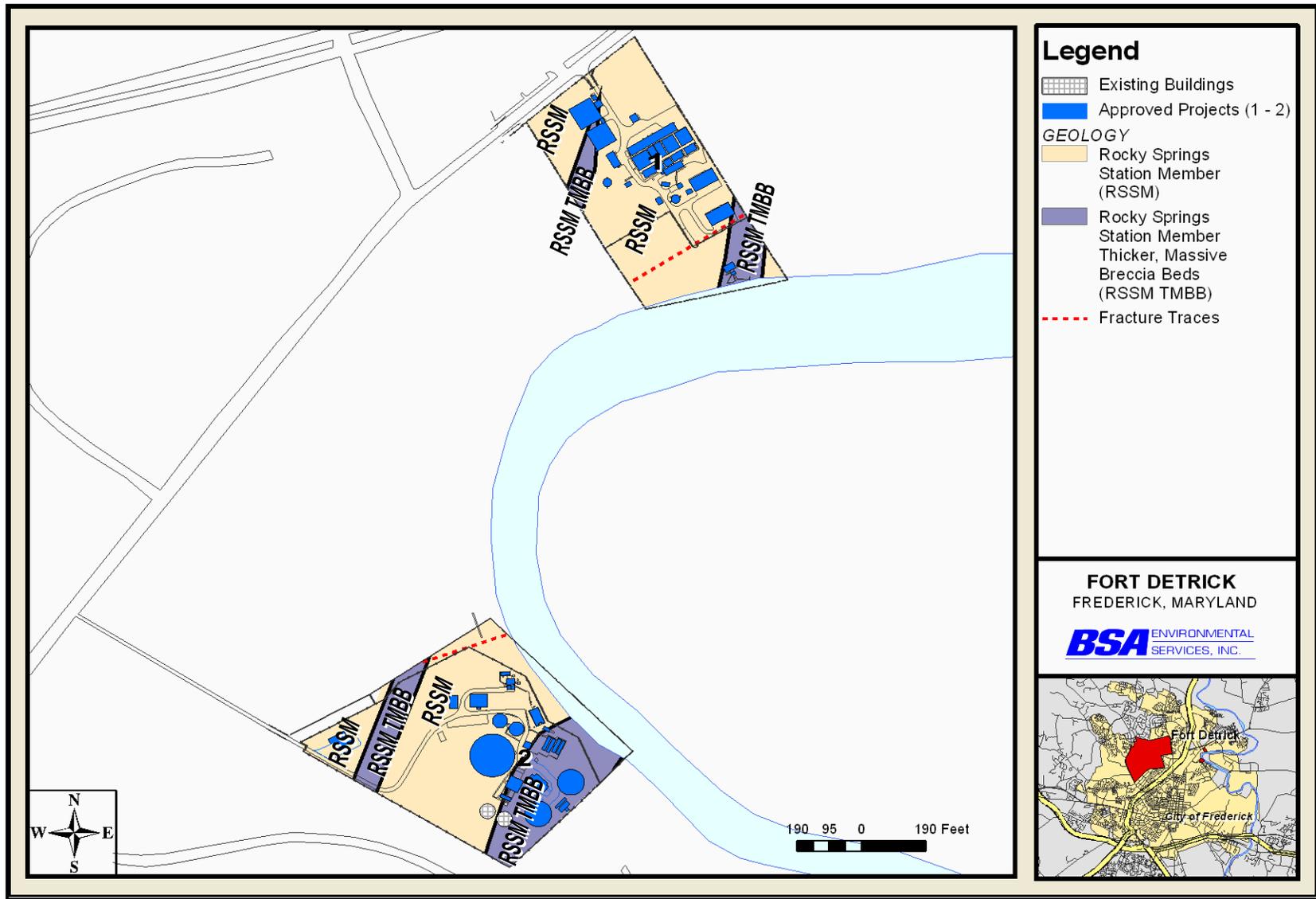


Figure 4-2. Area C Geology Map.

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photographs were identified using topographic characteristics (including straight stream segments), vegetation, or soil tonal alignments, which are continuous for less than one mile. Features that continued for more than a mile were termed lineaments. The linear features on aerial photography are reflective of geological features such as faults, joints, zones of weakness, or bedrock contacts but also may indicate man-made structures such as fence lines, buried pipeline, or drainage ditches. The sinkhole/depression and fracture trace/lineament features were verified by a ground-truthing field survey (USACE, 2001).

Based on previous interpretation of aerial photographs and USGS quadrangle maps for topographic characteristics, vegetation, and soil tone, several sinkholes/depressions have been identified on or near Area A of Fort Detrick. The interpretation of aerial photographs identified six regions on Area A containing sinkholes (see Figure 4-1). There are three sinkholes present on NCI-Frederick, one north of Veterans Gate along Ditto Avenue, one along the northeast boundary adjacent to Nallin Farm Pond, four in the west central portion near military housing, and sinkholes partially within the northwest and southeast boundaries (USACE, 2001). The combination of geological and soil units create different potentials for sinkhole development. In Area A, there are combinations of Adamstown geological unit with Adamstown soils and Duffield soils, both creating a moderate potential for sinkhole development. Also in Area A there are combinations of Rocky Spring Station-West geological unit with Adamstown soils and Duffield soils, both creating a high potential for sinkhole development. A study completed by the MDNR in 2004 concluded that both Rocky Springs Station and Adamstown members have a very low occurrence of active sinkholes. The bulk of both units are characterized by thin-bedded, shaly limestone which have few joints but abundant argillaceous layers. The argillaceous layers absorb strain during folding of the units, exhibiting fewer brittle fractures, and produce clay that dissolves, impeding water movement (Brezinski, 2004).

Sinkholes are not present in Area C. There is a moderate level of potential for sinkhole development in Area C due to the combination of Adamstown geological unit and Duffield soils (USDA, 2002).

4.3.4 FRACTURE TRACES AND LINEAMENTS

Fracture traces and lineaments are linear features that may suggest the presence of natural, geologic features, such as faults and joints; or they may reflect man-made structures, such as fence lines, or drainage ditches (see Figures 4-1 and 4-2). Subterranean fracture traces that are connected to the aquifer may represent pathways for groundwater flow and influence the regional groundwater flow regime (USACE, 2002). Aerial photographs and USGS maps identify fracture traces and lineaments in Areas A, B, and C (USACE, 2001).

4.3.5 SEISMIC CONDITIONS

Fort Detrick is located within a Seismic Zone 1 area with seismic coefficients ranging from 0.03 to 0.07. Seismic coefficients, in general, range from 0.0 to 0.27, with high values indicating high risk of earthquake. Seismic Zone 1 is characterized as an area that may receive minor damage due to distant earthquakes (USAG, 2003a). Nearly all of Maryland, including Frederick County, is classified as a “region of negligible seismicity with very low probability of collapse of the structure.” Between 1758 and 2009, 63 earthquakes occurred in the State of Maryland (Maryland Geological Survey, 2009).

4.4 SOILS

The soils of Frederick County consist of a combination of residual lime soils and wind-transported soils, and they are among the most agriculturally productive in the State of Maryland. Duffield series soils are found extensively throughout the Frederick Valley (USACE, 2000b). The subsurface material in Area A at Fort Detrick is predominantly reddish-brown sandy clay underlain by a hard limestone which is medium to dark gray in color (Soil Conservation Service, 1956). The soil series in Area A include the Duffield, Hagerstown, Adamstown, and Urban (see Figure 4-3; USDA, 2002).

The Duffield series is the most predominant series on Area A, covering two thirds of the land. Duffield soils consist of very deep, well-drained soils with moderate permeability. Available water capacity for the Duffield series soils is low to moderate (USDA, 2002). Hagerstown series, like Duffield, consist of very deep, well-drained soils with moderate permeability. Hagerstown soils are redder and more alkaline than the Duffield soils and average more than 35 percent clay throughout. Hagerstown soils are found in two parts of Area A, north of NCI-Frederick along Rosemont Avenue and a small area along the northern border, east of RCI. The Adamstown series consists of very deep, moderately well drained soils with slow or moderately slow permeability. These soils occur on slightly concave upland flats and swales, such as the strip of land that transects the southern portion of NCI-Frederick and serves as a swale for water exiting Area A through Outfall A-2. In the southeastern portion of Area A, Adamstown soils are found along the two swales for Outfall A-3 and A-4. These soils are also found surrounding the Nallin Pond and wetlands extending north and east into Outfall A-6. Adamstown soils are also found along Rosemont Road (USDA, 2002).

Additionally, Urban soil unit is present on Area A. Urban land is located at the central and southern portion of NCI-Frederick. Urban land is also found at and north of Veterans gate in the southwestern portion of NIBC and along Opossumtown Pike, south of Nallin Farm. Urban series consists mainly of areas that have been smoothed and where the original soil has been disturbed, filled over, or otherwise destroyed prior to construction. Soil designated as this unit has at least 90 percent of the surface covered by asphalt, concrete, or other impervious material that supports little or no vegetation (USDA, 2002).

Area C contains Duffield, Lindside, and Adamstown soil series (see Figure 4-4). Duffield soils are predominant in the northern and central portions of the WTP parcel. The southern border contains a portion of Lindside soils. The WWTP parcel mostly contains Duffield soils, with a small portion of the northern boundary containing Lindside soils and the western corner boundary containing a small portion of Adamstown soils (USDA, 2002).

4.5 WATER RESOURCES

4.5.1 SURFACE WATER

Fort Detrick is located within the Monocacy River drainage basin, a sub-basin of the Middle Potomac River Basin, which covers approximately 986 square miles (U.S. Environmental Protection Agency [USEPA], 2009a). Approximately 75 percent of this watershed area is located within the State of Maryland, with the remainder in Pennsylvania. The land use in the Monocacy River Basin is predominately agricultural but also includes many forested areas, and residential neighborhoods (Alliance for the Chesapeake Bay, Inc., 2006).

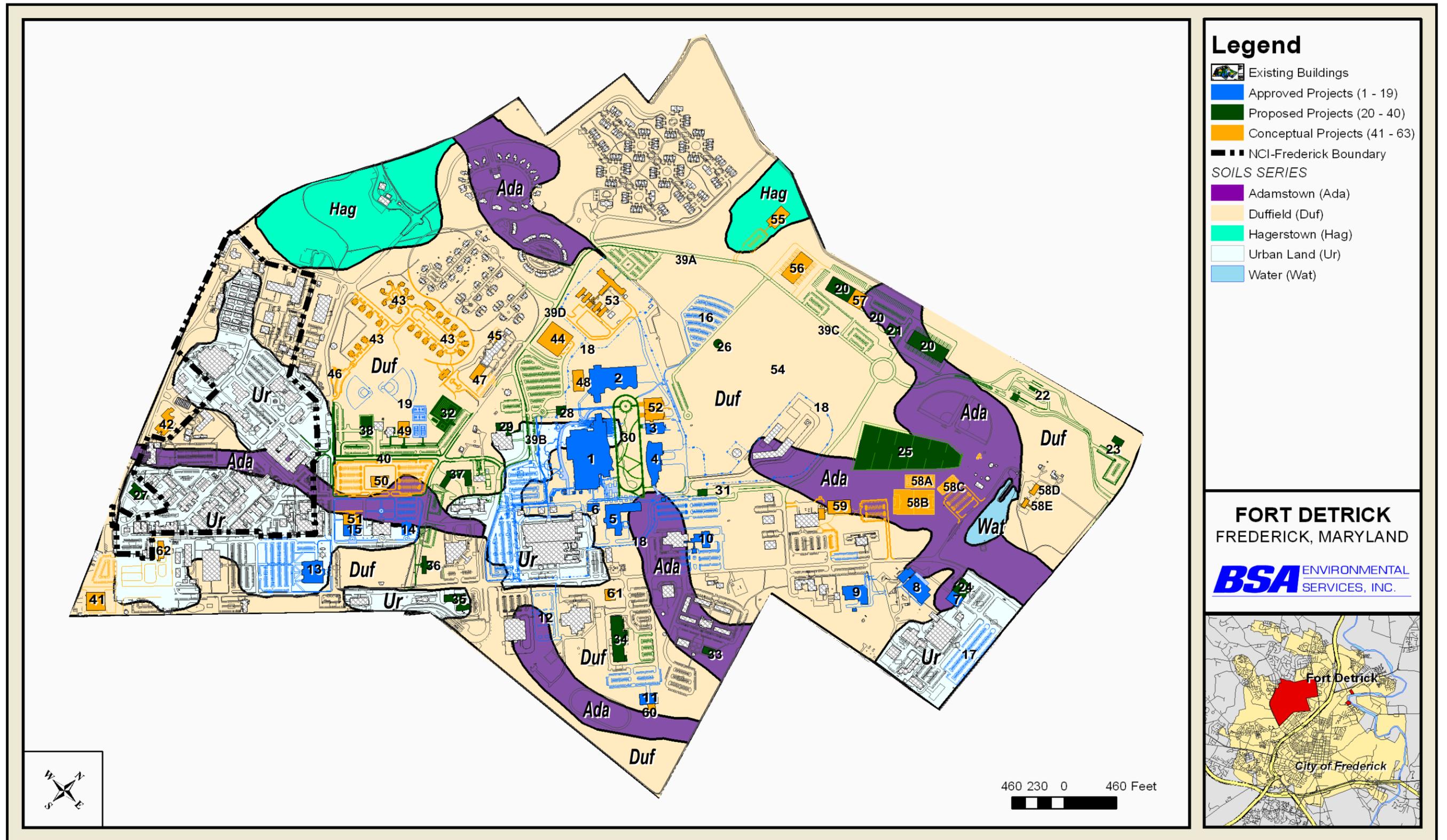


Figure 4-3. Area A Soils Map.

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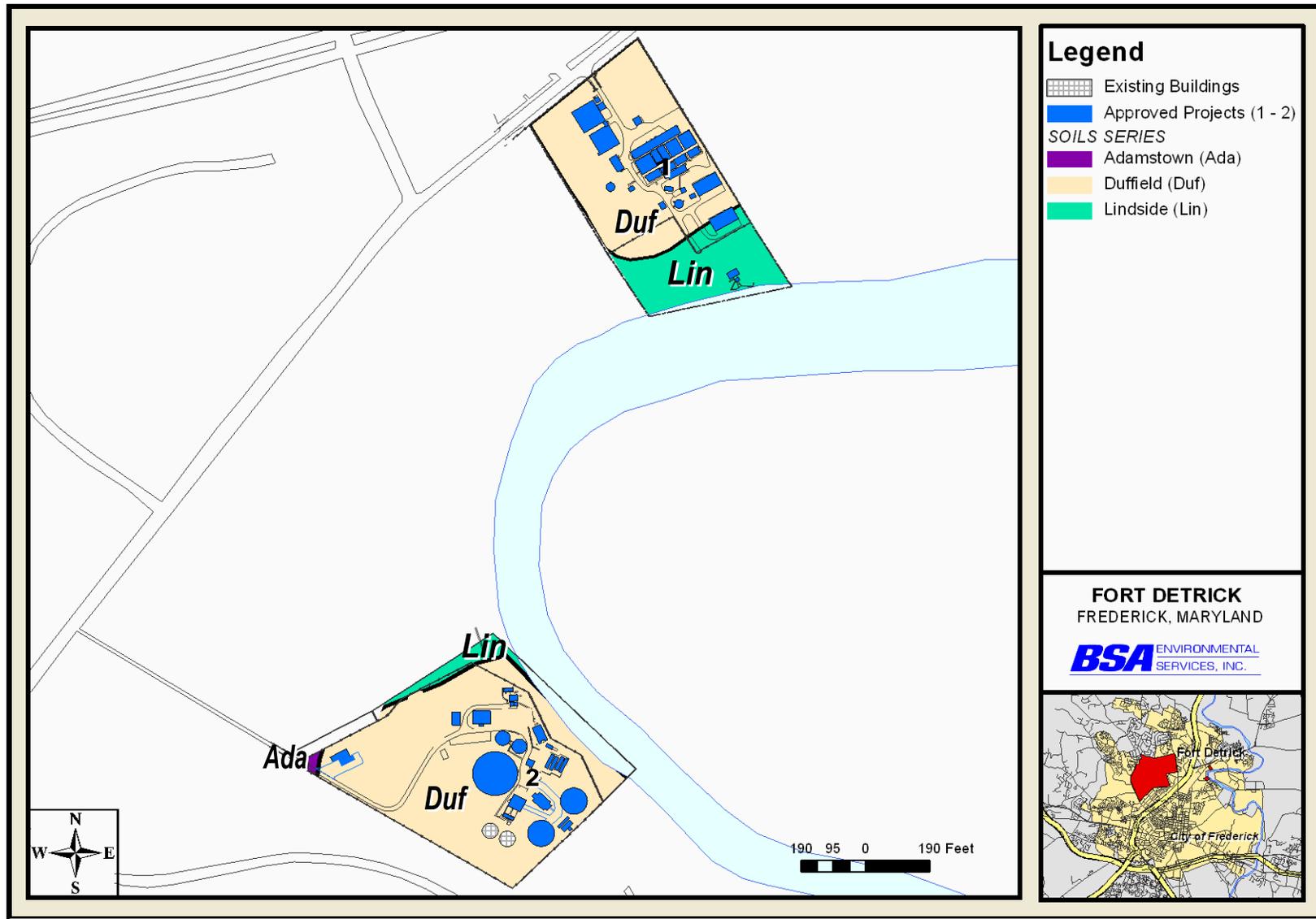


Figure 4-4. Area C Soils Map.

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The Monocacy River ranges from 40 ft to 375 ft in width and from 0.5 ft to 18 ft in depth. This major stream originates at the Maryland-Pennsylvania border and flows south, passing Fort Detrick and the City of Frederick to the east. The Monocacy River joins the Potomac River approximately 15 miles south of the City of Frederick and eventually discharges into the Chesapeake Bay. Area A of Fort Detrick is located approximately 1.5 miles to the west of the Monocacy River (USAMRMC and USAG, 2006). The Monocacy River streamflow is monitored by USGS at two stations along the River, the Jug Bridge station and the Monocacy Blvd station. The Jug Bridge station's period of record starts in 1929. The Monocacy Blvd station went into service in October 2003 (USGS, 2009).

The Jug Bridge gauging station is located approximately five miles southeast of Area A. This station drains approximately 817 square miles of the watershed above the City of Frederick. Based on the 79 years of complete data (1929 to 2008), the highest average monthly mean occurred in March averaging 1,810 cfs and the lowest average monthly mean occurred during August averaging 392 cfs (USGS, 2010a).

The State of Maryland experienced the worst drought conditions since the 1930s during 2002 (NCDC, 2008). The highest mean monthly discharge for the Monocacy River in calendar year (CY) 2000, the last year before the drought, was 2,040 cfs in March, and the lowest mean monthly discharge was 275 cfs in October. By contrast, the CY 2002 streamflow ranged from the highest mean monthly discharge of 1,750 cfs in December to the lowest mean monthly discharge of 63 cfs in August (USGS, 2009).

Discharge exceeding 15,500 cfs is considered flood conditions; therefore flood events are not uncommon. Based on 80 years of record (1930 to 2008) the maximum daily mean discharge of 74,000 cfs occurred on 23 June 1972, and the minimum daily mean discharge of 19 cfs took place on 7 September 1966 (USGS, 2008a). The current mean daily discharge was 953 cfs (USGS, 2010a).

The Monocacy Blvd gage is located on the downstream side of the Monocacy Blvd Bridge, 0.4 miles south Liberty Road (MD Route 26) and just over 1 mile east of Fort Detrick. An area of 703 square miles drains into the river at this location and is monitored by this gage. The highest monthly mean for the period of record (October 2003 – current) was 2,421 cfs during March 2007. The lowest monthly mean for the period of record was 86 cfs in August 2008. The average annual discharge was 880 cfs (USGS, 2010b). The maximum daily mean discharge of 18,300 cfs took place on 29 September 2004 and the minimum daily mean discharge was 35 cfs on 13 October 2007 for the period of record (see Figure 4-5; USGS, 2008b).

The Monocacy River is used as a source for drinking water, and it is also used for agricultural irrigation, boating, canoeing, and recreational fishing. It is a warmwater fishery and has been classified by the State of Maryland as Recreational Trout Waters and Public Water Supply (Use IV-P; COMAR 26.08.02). Use IV-P waters are managed as special fisheries by periodic stocking and seasonal catching and have the potential for supporting adult trout populations for put-and-take fishing. Tributaries to the Monocacy River that are not designated Use IV-P are designated as Use III-P (Natural Trout Waters and Public Water Supply). These tributaries must maintain water quality standards that ensure the growth and propagation of self-sustaining trout populations and their associated food organisms. Use III-P tributaries must provide a safe and effective public water supply source. Carroll Creek, the major tributary to the Monocacy River in the vicinity of Frederick, is classified for Use III-P. This creek originates in the wooded uplands

of the Catoclin Mountains (1.8 to 2.0 miles west of Frederick), flows southward between Area A and Area B, and discharges into the Monocacy River (USAG, 2003a).

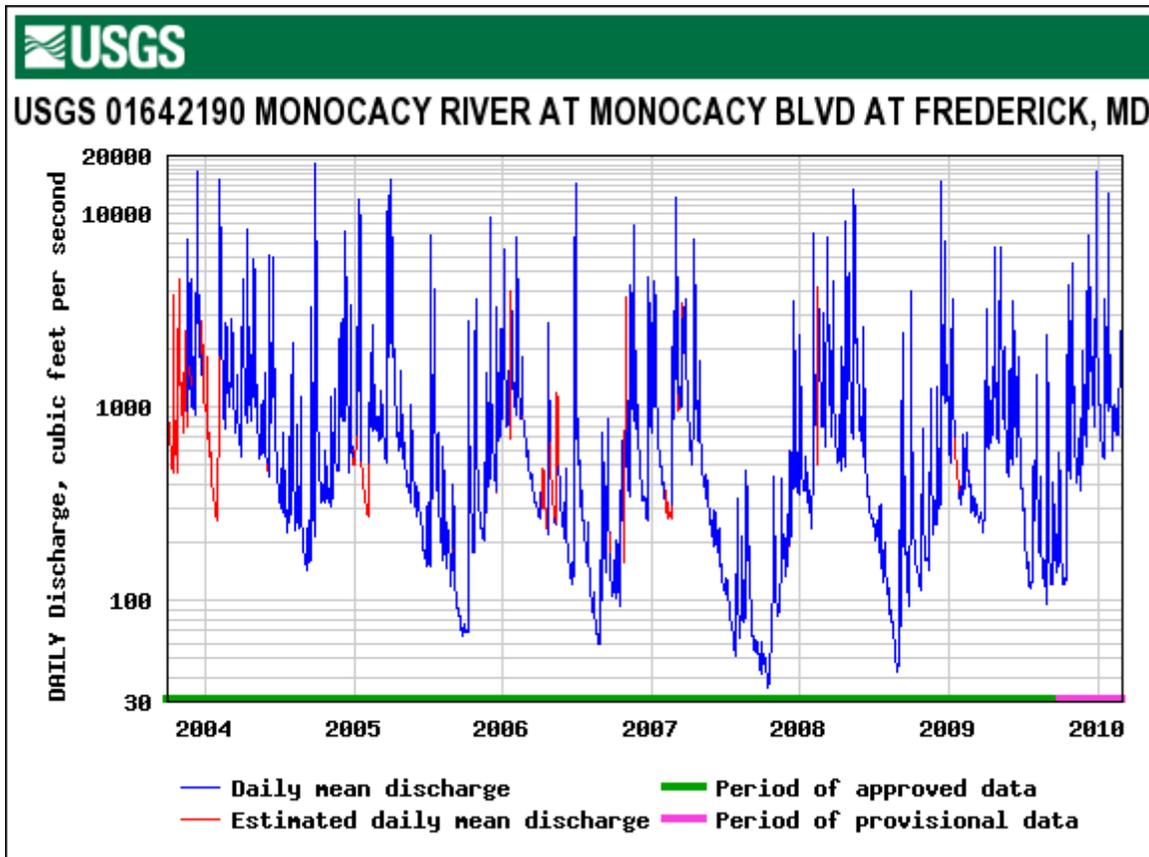


Figure 4-5. USGS Daily Mean Discharge of the Monocacy River at Monocacy Blvd.

The Monocacy River is a water supply source for both the City of Frederick and Fort Detrick (see Section 4.5.4). The City of Frederick draws approximately 29.3 percent of its drinking water (an average of approximately 1.58 mgd) from the Monocacy River (City of Frederick, 2008). Fort Detrick currently relies on the Monocacy River as a source for drinking water² and in FY 2009 withdrew water at an average rate of about 1.1 mgd (Lewis, 2009) (see Section 4.5.4.1). The Installation's WTP holds MDE Water Allocation Permit FR43S001(02), which authorizes withdrawal of water from the Monocacy River at rates up to a daily average of 2.0 mgd or 2.5 mgd daily maximum. This permit expires in 2012 (USAG, 2003a). The Monocacy River has the highest consumptive use in the Potomac River Basin. Fort Detrick has an excellent record of meeting water quality standards, as set by Federal (*Safe Drinking Water Act*), state (COMAR 26.04.01), and DA criteria (USAMRMC and USAG, 2006).

² Fort Detrick has a mutual agreement with the City of Frederick to provide water in the event of an emergency. The City's water supply sources include groundwater, Linganore Creek, Fishing Creek, and the Potomac River in addition to the Monocacy River.

In 2002, Frederick County, as well as the State of Maryland, experienced the worst drought conditions since the 1930s (NCDC, 2007). The highest mean monthly streamflow for the Monocacy River in calendar year (CY) 2000, the last year before the drought, was 2,040 cfs (1,319 mgd) in March, and the lowest mean monthly streamflow was 275 cfs (178 mgd) in October. By contrast, the CY 2002 streamflow ranged from the highest mean monthly streamflow of 1,750 cfs (1,131 mgd) in December to the lowest mean monthly streamflow of 63 cfs (41 mgd) in August (USGS, 2007). Level I Mandatory Water Use Restrictions were implemented after emergency drought conditions were declared by former Governor Parris N. Glendening. Restrictions included prohibitions on the use of water for residential landscaping, washing of paved surfaces, non-recycling water ornamental fountains, washing of vehicles, as well as unsolicited service of tap water in food service establishments. On 20 February 2003, the drought emergency in the central region of Maryland, including Frederick County, was lifted, removing Level I Mandatory Water Use Restrictions (Maryland Office of the Governor, 2003).

Primary surface water features in Area A include the 3.3-acre Nallin Farm Pond and two tributaries of the Monocacy River. The Nallin Farm Pond, located in the northeast portion of Area A, was formed by the diking of natural springs (USAG, 2003a). A permit issued by the MDE to use the Nallin Farm Pond for emergency consumptive uses (Water Appropriation and Use Permit FR43S101(01)) was inactivated on 24 April 2000. However, Fort Detrick can use the Nallin Farm Pond for emergency firefighting purposes, which does not require a permit (USAMRMC and USAG, 2006).

One of the aforementioned tributaries of the Monocacy River, Tributary #10 (Two Mile Run), extends south from the Nallin Farm Pond, then flows east, exiting the eastern portion of Area A at Outfall A-6 and discharging into the Monocacy River approximately one mile east of Area A (DA, DIS, 2001). This stream formerly originated on the FCC property. It entered the north-central boundary of Area A, flowing southeastward, then it turned toward the south and discharged into the Nallin Farm Pond. During a site visit conducted in April 2002, the upper stretch of the tributary was not seen. Agricultural activities involving the plowing and cutting of grass for hay bales may have contributed to the absence of this tributary (USAMRMC and USAG, 2006). Currently, Tributary #10 has a drainage area of approximately 0.38 square miles (243 acres), and three tributaries, named 10A, 10B, and 10C, that confluence with it at points east of Nallin Farm Pond. Tributary #10 and its tributaries are all clearly defined channels with running water (USACE, 2005b).

Formerly, Tributary #9 (Detrick Branch) drained stormwater from the central and eastern portions of Area A, into the SWM pond south of the UEPH. Currently, the stormwater flow in this region has been re-engineered due to construction that has occurred in this area. Stormwater now flows through a series of drainage ditches and culverts along Porter Street and along the side street southwest of the UEPH. The drained stormwater from this portion of the campus is retained in the two SWM ponds; one located south of the UEPH and the other located adjacent to the UEPH parking lot. Additional stormwater drains from the east through the green space adjacent to Building 1510 into the SWM pond adjacent to the UEPH parking lot. The water retained in the two wet detention SWM ponds exits through Outfall A-3 and Outfall A-4, eventually discharging into the Monocacy River approximately one mile east of Area A.

In total, there are eight distinct and separate surface water outfalls that drain from Area A. Four of these outfalls (A-1, A-2, A-7, and A-8) drain toward Carroll Creek. The other four outfalls (A-3, A-4, A-5, and A-6) drain toward the Monocacy River (General Physics, 2004; USAG, 2005b).

4.5.2 GROUNDWATER

The Frederick area of the Piedmont Plateau Physiographic Province has the most productive hard rock aquifers within the State of Maryland. These aquifers are generally of good water quality, and approximately 20 percent of these formations have the potential to yield at least 50 gallons per minute (gpm) of water (Maryland Office of Environmental Programs, 1986). Groundwater is transported through the carbonate aquifers via bedding planes, fractures, joints, faults, and other partings that have been enlarged by the dissolution of the carbonate bedrock (Trapp and Horn, 1997). The Fort Detrick Photogeologic Analysis (USACE, 2001) indicates numerous fracture traces and lineament features on Area A that could serve as potential conduits for groundwater contamination (see Section 4.3.4; Maryland Office of Environmental Programs, 1986). Groundwater underlying the Fort Detrick area flows generally to the southeast, towards the Monocacy River (USACE, 2000b).

Wells in the Frederick Limestone typically yield 120 to 170 gpm (Trapp and Horn, 1997). Portions of the aquifer underlying Area A have been compromised by three sources of groundwater contamination. These sources include underground gasoline storage tank leaks near Building 950 a trichloroethylene (TCE) spill near Building 568 and a No. 6 fuel oil plume near Building 190. However, groundwater underlying Area A is not used for human consumption. Fort Detrick residents and workers obtain their drinking water from the Monocacy River (USACE, 2000b).

In accordance with MDE Permit No. FR1943G101(05), Fort Detrick may withdraw an annual daily average of 9,000 gallons of groundwater and 9,500 gallons per day for the month of maximum use from one well near Building 568. Actual withdrawal rates are below this limit (USAMRMC and USAG, 2006). Groundwater withdrawn from this well is treated to remove TCE and utilized for research purposes by US Army Center for Environmental Health Research laboratories (USAG, 2003a). The remedial investigation (RI) and required response actions for the Building 568 TCE spill site are completed; however, long-term groundwater monitoring is to continue at this location (USAMRMC and USAG, 2006). For a more detailed description of the contamination present at Fort Detrick and the remedial steps being taken by the DA see Section 4.17. A groundwater pump near Building 350 is used to lower the shallow groundwater in the area. Water from this pump is discharged into the sanitary sewer system. A detailed discussion of this groundwater pump is presented in Section 4.15.1.1. Fort Detrick, under a Groundwater Appropriation Permit and Aquifer Testing Evaluation, is currently evaluating the potential to acquire groundwater for industrial use at the Central Utilities Plant.

4.5.3 STORMWATER

Fort Detrick is permitted to discharge stormwater runoff from land used for industrial operations in accordance with State Discharge Permit No. 02-SW-0124. This permit prohibits the discharge of non-stormwater into surface waters, requires annual site compliance evaluations, and mandates maintenance of a Stormwater Pollution Prevention Plan (SWPPP). Sampling of stormwater is not required; however, sampling may be conducted as a proactive measure. Fort Detrick SWPPP identifies potential sources of pollution associated with industrial activity on the Installation and outlines BMPs to minimize potential contamination of stormwater exiting Fort Detrick (USAG, 2003d).

In accordance with 40 CFR 122.26 and COMAR 26.17.01, *Water Management*, and 26.17.02, *Stormwater Management*, construction activities that disturb more than 5,000 square feet (ft²) (0.11 acre) of land area and/or more than 100 cubic yards of earth require a sedimentation and erosion control plan and a stormwater management plan consistent with the *2000 Maryland Storm Water Design Manual, Volumes I and II* (MDE, 2000). In addition, if the area disturbed is more than one acre, a general permit for construction activity under the NPDES would be required for the discharge of stormwater during construction.

Stormwater drains from the Installation through a system of surface ditches, culverts, inlets, and storm sewer lines into Carroll Creek and a tributary of the Monocacy River. Several of these culverts are designed to accept large quantities of water and have the flow from the stormwater ponds directed to them. Stormwater from the central and western portions of Area A drains west to Carroll Creek through outfall culverts A-1, A-2 and A-7. The remaining portion of Area A stormwater drains east towards the Monocacy River via A-3, A-4, A-5, and A-6 outfall culverts and various tributaries. Stormwater drains from Area C into three outfalls areas (C-1 through C-3) that discharge stormwater directly to the Monocacy River (USAG 2005b). There are currently sixteen sediment/SWM ponds on Area A.

The Carroll Creek watershed is designated as an interjurisdictional flood hazard watershed due to historic and documented flood damages. Development in the interjurisdictional flood hazard watershed may not increase the downstream peak discharge for the 100-year frequency storm event.

Four SWM ponds are located in the southeastern portion of Area A. The southernmost SWM pond is the regional SWM pond for the NIBC, a wet retention pond draining culverts A-3 and A-4. A wet retention pond located behind the UEPH complex empties into the A-4 outflow culvert. The third stormwater pond is located behind Building 1507 (Physical Fitness Center) and functions as a sediment trap. The fourth stormwater pond is located behind Building 1510 (Commissary) and is a dry detention pond.

Three SWM ponds are located in the central portion of Area A. One of these ponds exists as a wet detention pond southwest of Building 8200 (NIAID) and west of Building 1434 (Health Clinic). This pond used to be hydrologically connected to the groundwater and was filled with water year-round. Due to the Freedman Drive relocation, the spring was altered and it no longer flows into this SWM pond. The other pond is a dry retention pond and is located west of Buildings 1452 and 1453 and north of Porter Street. Both of these ponds funnel water into a swale located south of Porter Street which exits the Installation via a culvert adjacent to the UEPH stormwater pond and A-4 outflow. The third pond, a dry detention pond that drains towards the Monocacy River, is located directly east of the CUP.

Four SWM ponds are located in the southwestern portion of Area A. The first pond is a wet retention pond located adjacent to Building 1405. The other three SWM ponds are located adjacent to the perimeter fence-line along Military Road. The Veterans Gate pond is a wet retention pond, while the other two are dry detention ponds that direct water towards A-1 outflow and eventually out to Carroll Creek.

Five SWM ponds are located in the northwestern portion of Area A. One of these SWM ponds is located along the perimeter fence-line, adjacent to NCI-Frederick and Forest Block 3. This pond is a dry detention pond that directs water through a concrete channel to the outflow next to the

perimeter fence. The pond has a 100-year storm storage volume but may have to be reconfigured to comply with quantity and quality MDE regulations. Three of the ponds are located adjacent to the new MCA family housing complex and all exist as dry detention ponds. Water from these ponds exits Area A through a culvert along the northwestern perimeter fence. The fifth pond is a small dry detention pond located to the east of Building 1316 (Electrical Substation). All of these ponds eventually drain out to Carroll Creek.

4.5.4 DRINKING WATER

4.5.4.1 *Source Water*

The Monocacy River supplies drinking water to both Fort Detrick³ and the City of Frederick. The Monocacy River is a tributary to the Potomac River and is the most heavily utilized river in the Potomac River Basin. In FY 2009, Fort Detrick withdrew approximately 408.3 million gallons (1.12 mgd) from the Monocacy River (Potter, 2009). Additionally, the City of Frederick withdrew 29.3 percent of its drinking water (approximately 577 million gallons or 1.58 mgd) from the Monocacy River (City of Frederick, 2008).

The distribution of the source water withdrawn from the Monocacy River is processed through the Fort Detrick WTP located in Area C, approximately 1 mile to the east of Area A. The WTP has a maximum processing capacity of 4.25 mgd, but due to the size of the existing distribution pipes, the WTP can only provide a maximum of 3.1 mgd of finished water without exceeding the maximum pressure for distribution (USAMRMC and USAG, 2006). The MDE Water Management Administration has authorized Fort Detrick to withdraw a daily average of 2.0 mgd of water with a maximum daily withdrawal of 2.5 mgd from the Monocacy River under the current Water Appropriation and Use Permit No. FR43S001(02). This water allocation permit expires in 2012 (USAG, 2003a). Water obtained in accordance with the current Fort Detrick Water Appropriation and Use Permit No. FR43S001(02) is utilized as potable water, cooling water, and for sanitary facilities. Although Fort Detrick relies on the Monocacy River as a source for drinking water, in cases of emergency or if a plant is shut down for repair, Fort Detrick and the City of Frederick exchange water between their water distribution systems through a manual metered connection on Area A (USAMRMC and USAG, 2006).

Following construction of the NEPA Approved Potomac Pipeline Interconnect (sec. 2.5.8), Fort Detrick will be provided with an additional source of drinking water when required and the flexibility to utilize water from the Monocacy River up to a maximum of 2.5 mgd and from the Potomac River up to 2.66 mgd (USAG, 2009b). Withdrawal from both sources combined will not exceed 2.66 mgd.

This additional water will be withdrawn from the Potomac River and will be processed through Frederick County's New Design Water Treatment Plant. Water pumped from the WTP will be and wheeled through the City of Frederick to Fort Detrick via the Fort Detrick and the City of Frederick water connection. A new booster pump and improvements to the City of Frederick's water distribution infrastructure are required to withstand the increased water capacity and

³ Fort Detrick has a mutual agreement with the City of Frederick to provide water in the event of an emergency. The City's water supply sources include groundwater, Linganore Creek, Fishing Creek, and the Potomac River in addition to the Monocacy River.

pressure. To allow for the increase in withdrawal from the Potomac River, Frederick County has submitted a request to MDE to change their existing Water Appropriation and Use Permit FR1968S005(07). The permit must be increased from 16 mgd average daily withdrawal to 18 mgd and from 26 mgd maximum daily withdrawal to 28.6 mgd to supply water to Fort Detrick (Sheffer, 2009).

4.5.4.2 *Water Treatment*

The Fort Detrick WTP is located on Area C of the Installation and utilizes conventional treatment processes, and it is staffed and operated 24 hours a day. Source water from the Monocacy River is filtered and processed by prechlorination, chemical addition with flash mixing, filtration, sedimentation, and flocculation. Chemicals added during treatment include chlorine for disinfection, activated carbon for taste and odor control, lime for pH control, and aluminum sulfate and sodium aluminate for flocculation. Water is chlorinated to 1.5 to 1.8 parts per million (ppm) of free residual chlorine prior to distribution (see Table 4-1; Lewis, 2010). A polymer is added to the drinking water in the winter months. Sludge generated at the WTP is currently disposed by land application in Area B. The WTP sludge is certified as a soil conditioner by the Maryland Department of Agriculture, which allows for the land application of the accumulated sludge (USAMRMC and USAG, 2006).

Source water from the Monocacy River is first processed through a purity testing tank using bluegill sunfish as biomonitors of the quality of the intake water. The biomonitoring system continuously monitors the respiratory behavior and movement the fish. In May 2004, the Fort Detrick WTP noted deaths of some of the bluegill sunfish from the source (intake) water and alerted the City of Frederick WTP which lies immediately upstream of the Fort Detrick WTP. The City of Frederick WTP was shut down for 48 hours as a precaution. The contaminant in the Monocacy River was determined to be butyl carbitol acetate. MDE indicated there were no reports of fish kills on the Monocacy River during this time period. SOPs for raw water intake/polished water monitoring have been established for use in the event of future biomonitoring distress or mortality (USAMRMC and USAG, 2006).

Treated water exits from the system through four pipes, which merge into two 12-inch pipes. Subsequently, the water flows into one 16-inch pipe to the lime building where the water is chlorinated and lime is added to adjust pH. The pH of treated water is maintained at about 7.7. Finished water flows into the two clear wells with a 500,000-gallon capacity. The clear wells allow for sufficient contact time for disinfection during chlorination (USAMRMC and USAG, 2006).

Disinfected water is pumped into the water distribution system (USAMRMC and USAG, 2006). Treated water is used for human consumption, process water, irrigation, and fire protection. The WTP produced 400,506,000 gallons in FY 2007, 415,393,000 gallons in FY 2008, and 408,334,000 gallons in 2009 (Potter, 2009). Finished water is pumped into the water distribution system and used for human consumption, process water, irrigation, and fire protection (USAMRMC and USAG, 2006). In addition to normal operational water consumption uses listed above, the following activities also consume water: building sprinkler system and waterline flushing, fire hydrant testing, water pressure and flow testing, evaporation from the cooling towers, repairs to the water distribution system, and outside water usages in the family housing area. Currently, BMPs have been implemented to minimize water usage during testing and flushing (USAG, 2001). Fort Detrick has an excellent record of meeting water quality standards,

as set by Federal (*Safe Drinking Water Act*), state (COMAR 26.04.01), and DA criteria (USAMRMC and USAG, 2006).

A fluoridation system was activated at the WTP on 16 March 2005 after approval was obtained from the MDE. An EA concluded that fluoride would be beneficial as a preventative tooth decay measure if added to the drinking water on Fort Detrick (USAG, 2002e). The drinking water supply at Fort Detrick is fluoridated at a concentration of 0.9 ppm, utilizing the addition of hydrofluosilicic acid (USAMRMC and USAG, 2006; USAG, 2002a). The background level of fluoride in the Monocacy River is approximately 0.2 ppm (USAMRMC and USAG, 2006).

Table 4-1. Annual Chemical Additives (in pounds) During Water Treatment.

Chemical	2007	2008	2009
Chlorine	15,736	14,556	15,016
Activated carbon	11,945	15,190	15,649
Lime	30,800	38,650	41,250
Aluminum sulfate	164,973	162,030	178,322
Sodium aluminate	18,242	26,720	42,649
Polymer	369	355	363
Fluoride	11,483	8,645	12,416

Source: Lewis, 2010

4.5.4.3 Water Distribution System

Both the City of Frederick and Fort Detrick withdraw drinking water from the Monocacy River. The City of Frederick water intake is approximately 75 yards upstream from the Fort Detrick intake (USAMRMC and USAG, 2006). The City of Frederick uses approximately 5.4 million gallons of water per day, the majority of water is consumed from residential uses and the remaining water is consumed by commercial, industrial, and other uses (City of Frederick, 2008). Approximately 29.3 percent (1.58 mgd) of the City of Frederick’s drinking water is pumped from the Monocacy River (City of Frederick, 2008). During FY 2009, Fort Detrick withdrew an average of 1.12 mgd from the Monocacy River (Potter, 2009). Fort Detrick and the City of Frederick have a written agreement for the exchange of potable water through a metered manual connection on Area A in cases of emergency or if a plant is shut down for repair (USAMRMC and USAG, 2006).

Although there is ample capacity at the Fort Detrick WTP to fulfill water demand for future projects, the size of the existing pipes and the lack of water pressure in the distribution system are potential weaknesses of the system. Limitations of the Fort Detrick water supply system to support increased demands from Fort Detrick are: (1) the production capacity of the WTP; (2) line pressure and pipe size; (3) the limited volume of water available from the Monocacy River; and (4) the availability of source water during drought conditions (USAMRMC and USAG, 2006). In addition, the majority of the water distribution system is more than 40 years old, and it will likely require increased maintenance and repair to maintain its integrity. On 27 July, 2005, the main line conveying water from the WTP in Area C broke near the intersection of North Market Street and Schifferstadt Boulevard. This break was repaired by the following day.

The ability of the WTP to supply Fort Detrick with sufficient quantities of drinking water is also dependent upon the rate of flow and quality of water received from the Monocacy River. The WTP can provide 3.1 mgd of finished water to the Installation with the current distribution system without increase the water pressure in the distribution lines (USAMRMC and USAG, 2006). The Water Appropriation and Use Permit limitation of a 2.0 mgd average withdrawal of water on a yearly basis from the Monocacy River is also a limiting factor.

During FY 2004, the WTP produced an unusually high amount of water (589,956,000 gallons) for consumption at the Installation; this was due to major leaks in the system. As a result, USAG completed a survey that identified leaks in the water distribution system. Several leaks were repaired and a leak test is now conducted semi-annually. The repair of these leaks enabled the WTP to satisfy consumption demands with decreased production at the WTP for FY 2005 as compared with FY 2004. It is estimated that approximately 4 percent of the water losses at the Installation occur from leaks in the water distribution and wastewater collection systems (USAMRMC and USAG, 2006; DHS and USAG, 2004). Water losses at the Installation were approximately 500,000 gallons in FY 2006 (Potter, 2007).

Additional water capacity for Fort Detrick will be provided following completion of the NEPA Approved project for the Potomac River pipeline. A water alignment engineering study was requested and commissioned by Fort Detrick to analyze the connection options of the Potomac River water supply from Frederick County through the City of Frederick to Fort Detrick (Whitman, Requardt and Associates, 2007). This study evaluated water supply capacity issues and recommended wheeling water through the City of Frederick from Frederick County's New Design WTP along the Potomac River. This plan will provide adequate flow and pressure to Fort Detrick without negatively impacting the City or County systems.

Frederick County is currently making improvements to its system regardless of the Potomac Pipeline project. The County plans to ultimately provide 45 mgd for the service area starting with a major expansion of Frederick County's New Design Road WTP. The WTP expansion will provide an additional 10 mgd to the County's capacity and an additional 8 mgd for the City of Frederick. Frederick County will also expand the Potomac River Transmission System in phases. The first phase was completed in 2006, which provides a nominal 32 mgd conveyance capacity from the New Design WTP to the Ballenger Creek Service area. A second parallel transmission line from New Design WTP to MD Route 80 is projected to be necessary between 2025 and 2030. The City of Frederick is also in the process of making improvements to their water system to handle the increase in capacity (Potter, 2008).

Additionally, water consumption at Fort Detrick is anticipated to be reduced due to the recent improvements to the MWCs. The two new scrubbers installed at the MWCs are anticipated to improve air quality emissions and increase water efficiency. The reduction in water consumption due to the replaced scrubbers is expected to yield measureable results during CY 2010.

4.5.4.4 *Drinking Water Standards*

The Safe Drinking Water Act (SDWA) was instituted in 1974 and amended twice in 1986 and 1996 to protect the health of the nation's water sources which supply the public with drinking water. The Potomac and Monocacy Rivers are both protected under this legislation and ensure that the public receives safe water supplies. The USEPA has set standards on both naturally occurring and man-made contaminants potentially occurring in the drinking water supply.

The Safe Drinking Water Act, 40 CFR 141, sets forth Federal water quality standards for drinking water, and it is implemented by the DA through 32 CFR 650. The National Primary Drinking Water Standards of the SDWA establish Maximum Contaminant Levels (MCLs) for various contaminants in drinking water. These contaminants included microorganisms, disinfectants, disinfectant byproducts, inorganic chemicals, organic chemicals, and radionuclides. The Water Management Administration of the MDE monitors and enforces compliance with Federal drinking water standards. The drinking water quality is monitored by Fort Detrick personnel and by the MDE. Operators conduct daily testing at the WTP water quality laboratory. The WTP operators are properly certified in accordance with 40 CFR 141.70E, COMAR 26.05.A. (1) and 32 CFR 650.

MDE Water Supply Program issued several Notice of Violation (NOV) reports to the Fort Detrick WTP over the last several years. No violations were health based violations during the last five years and were due to late submittal of operating and monitoring reports.

Two NOVs were issued for August and September 2009 due to late submittal of Monthly Operating Reports which violates the Interim Enhanced Surface Water Treatment Rule (IESWTR) of the SDWA (USEPA, 2010a). Two violations were issued for July 2008 and June 2009 due to late submittal of Monthly Coliform Reports (USEPA 2010a). Lastly, a NOV was issued for late submittal of Lead and Copper Monitoring Report for June through September 2009. Compliance for all NOVs has been achieved.

4.6 WETLANDS AND FLOODPLAINS

Wetlands are jointly defined by the USEPA and the USACE as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (40 CFR 230.3(t) and 33 CFR 328.3(b)). Wetlands on Fort Detrick are beneficial to stormwater management, erosion control, and sediment control. They also provide habitat for ducks, geese, herons, shore birds, muskrat, mink, and beaver and support numerous species of annual and perennial herbaceous plants (USAG, 2001). Federal activities within floodplains and wetlands are restricted under EO 11988, 33 CFR 1977, EO 11990, and AR 415-15. The INRMP for Fort Detrick serves as a guide for the management and protection of wetlands at Fort Detrick (USAG, 2007c).

The wetlands on Fort Detrick are limited in size and number (see Figures 4-6 and 4-7). An April 2005 study conducted by USACE, *Wetland Delineation for Fort Detrick* (USACE, 2005a), included a thorough field reconnaissance of the Installation, including all of Areas A, B, and C. The study concluded that on Area A, “no wetland or potential wetland sites were found in any location other than the northeast corner.” The wetlands were differentiated and assigned “site” numbers based on standard wetland delineation methodology according to their dominant vegetative cover and landscape position. Five distinct wetland “sites” were identified in the northeast corner of Area A, all in the vicinity of Nallin Farm Pond. These five wetlands total 3.62 acres. The site reconnaissance identified 115 species of plants in the five wetland sites, consisting of 81 herbaceous plant species, 15 shrubs and vines, and 19 trees (USACE, 2005a).

The INRMP notes that there is great potential for development and expansion of the wetland habitat which can be achieved through Fort Detrick’s two wetland objectives. The objectives are

maintaining no net loss of existing wetlands and enhancing wetlands size, function and health. According to the INRMP, Fort Detrick proposes to implement actions in support of the objectives. The actions include creating a series of shallow pools or wet areas along an existing drainage swale; continual monitoring and eradicating of invasive wetland plants, particularly common reed (*Phragmites australis*) as part of the Fort Detrick Invasive Plant Management Plan; replanting control sites with native wetland plant species and establishing new and expand existing no-mow zones to buffer wetland sites (USAG, 2007c).

Wetland Site 1 is a wet meadow adjacent to Wetland Site 2, which are both located southwest of Nallin Farm Pond and west of Nallin Farm Pond Road. Wetland Site 2 is a palustrine-forested wetland containing pockets of scrub-shrub and emergent vegetation. Wetland Site 3, formerly a hayfield, is now a palustrine emergent wetland located approximately 150 ft. east of the Nallin Farm House bank barn (Building 1655) and directly north of the asphalt-paved pathway. Wetland Site 4 is a palustrine-forested wetland located below the Nallin Farm Pond outfall. Wetland Site 5, located south of the asphalt-paved pathway, is a large wetland “enhancement” planted with emergent shrub and tree wetland species (USACE, 2005a). Wetland Site 4 and Wetland Site 5 are considered floodplain wetlands since they are located along Tributary #10, which conveys water from Nallin Farm Pond to Outfall A-6 and into the Monocacy River (USACE, 2005a; 2005b).

Wetland Site 1 is consistently mowed and surrounded on three sides by mowed grass. Wetland Site 1 is of very low quality and provides little functional contributions to the adjacent wetland at Wetland Site 2. Wetland Site 2, while small, does provide a fairly high quality, wildlife habitat function. Wetland Site 1 and Wetland Site 2 are isolated and not contiguous to the other three wetland areas, and do not drain to a jurisdictional stream and are therefore not regulated by USACE. All other identified wetlands at Area A drain into Tributary #10 (USACE, 2005a).

Wetland Site 3 provides limited functional value for wildlife habitat and water quality as compared to Wetland Site 4 and Wetland Site 5. This wetland was created as a result of hydrology backup due to the construction of the asphalt-paved pathway that would have otherwise left the drainage swale. Wetland Site 3 is connected to the floodplain wetland area (Wetland Site 4 and Wetland Site 5) to the south of the asphalt-paved pathway via a culvert. As a result, Wetland Site 3, Wetland Site 4, and Wetland Site 5 are jurisdictional wetlands regulated by USACE (USACE, 2005a).

Because of a floodplain enhancement/wetland project at Wetland Site 4 and Wetland Site 5, these locations provide multiple functions, such as increased wildlife habitat and improved water quality. Wetland Site 4 and Wetland Site 5 are considered to have high functional value when compared to the other three wetland sites. Wetland Site 4 and Wetland Site 5 are a large wetland complex with ample microtopography (habitat) and multilevel vegetative structure. Wetland Site 4 and Wetland Site 5 also contain the highest stream to wetland edge ratio of any of the five wetland sites. Wetland and upland vegetation that was previously planted in this area was observed as thriving (USACE, 2005a).

Three approved and two proposed projects will be constructed in the vicinity of the wetland sites. The approved SETS will be built approximately 425 ft. south of Wetland Site 2. The approved NCM Addition will be constructed approximately 280 ft. south of Wetland Site 4, and the approved Signal Battalion Parking Lot will be constructed approximately 340 ft. south-southeast of Wetlands Site 4. The proposed soccer field will be built approximately 80 ft. west of

Wetlands Site 1, and the proposed Nallin Farm Gate entrance from Opossumtown Pike will be constructed approximately 315 ft. north of Wetland Site 3.

Investigation of Area C concluded there are no wetlands or potential wetland sites in either parcel. However, a 0.47 acre wetland site was identified adjacent to the northern boundary of the WWTP parcel. This palustrine forested wetlands drains into a jurisdictional unnamed tributary of the Monocacy River. Ten wetland plant species were identified during reconnaissance of this wetland site, consisting of two vine and eight tree species. Soils within the wetland area are hydric. The dynamic system of the wetland provides a moderate level of habitat diversity for wildlife species (USACE, 2005a).

A 5, 10, 25, 50, and 100 year floodplain study for Fort Detrick completed by the USACE in 2005 determined that the only floodplain in Area A is Nallin Farm Pond, Tributary #10 and its three adjacent tributaries (see Figures 4-6 and 4-7). Tributary #10 and its tributaries are the only identified intermittent and/or perennial streams. However, these tributaries do not contribute to any flooding at Area A because the runoff produced drains away from Area A. Located within the vicinity of but primarily outside of Area A, Carroll Creek and a tributary to Carroll Creek flow along the western and southwestern boundary of Area A. However, floodplains for both Carroll Creek and its Tributary lay outside of the Area A boundary, thus flooding from these creeks does not affect Area A (USACE, 2005b). The Nallin Farm springhouse (Building 1661) lies within the 100 year floodplain of the Nallin Farm Pond.

According to the USACE study, the Monocacy River is the primary source of flooding on Fort Detrick Area C. Backwater from the Monocacy River causes flooding on Tributary #11. Tributary #11 to the Monocacy River runs along the southwestern property boundary of the WTP. In the WTP parcel, building 1121 is located in the 10 year floodplain. The 50 year floodplain contains buildings 1134 and 1139. Buildings located in the 100 year flood plain are 1137, 1136, 1135, and 1133. Buildings 1138, 1132, 1126, and 1123 are found on both the 100 and 500 year floodplain. Buildings 1122, 1129, 1131B, 1131A, 1130, and 1140 are completely located in the 50 year floodplain and buildings 1125 and 1124 are partially outside of the floodplains. The WWTP parcel has five buildings within the floodplains. Building 1111 is in 100 year floodplain, building 1110 is in the 500 year floodplain, buildings 1109 and 1114 partially in the 500 year floodplain, and building 1101 partially is in the 10, 50 and 100 year flood plain (USACE, 2005b).

4.7 PLANT AND ANIMAL ECOLOGY

Most of the ecosystems at Fort Detrick have been highly altered due to urbanization and human activities. Much of the native vegetation has been destroyed or displaced by species that are more tolerant to disturbances. The three remaining types of natural communities on the Installation are upland forests, grasslands, and wetland/riparian communities. Fort Detrick maintains pastures, grassland, forested areas, and experimental agricultural fields (USAG, 2006c).

The INRMP for Fort Detrick (USAG, 2007c) describes the activities related to the remaining natural resources on the Installation and proposed a range of new projects and initiatives implemented in the years 2006-2010 for the future management of these resources. The plan was prepared in accordance with the Sikes Act Improvement Act (SAIA) and other applicable

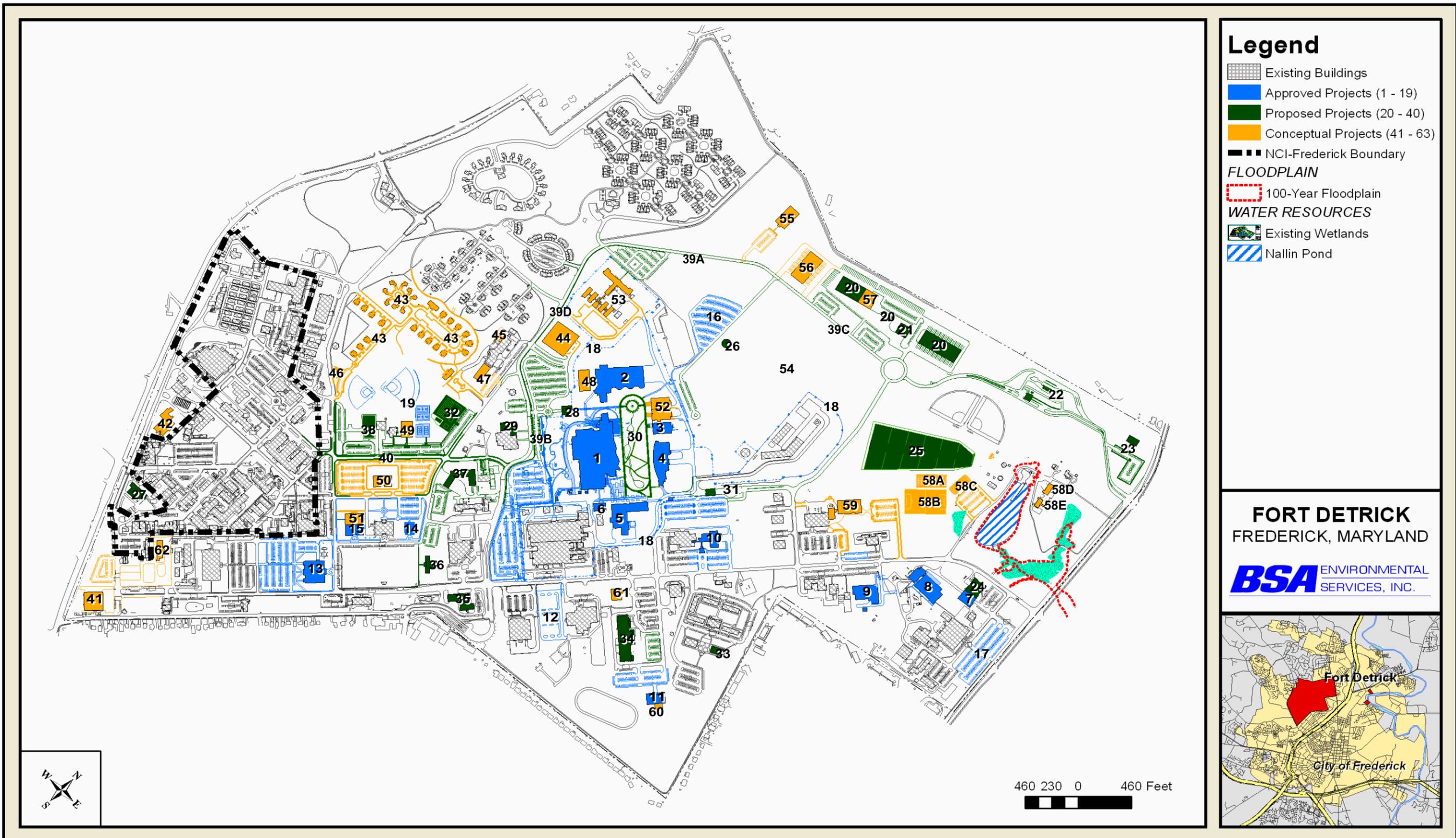


Figure 4-6. Area A Wetlands and Floodplains Map.

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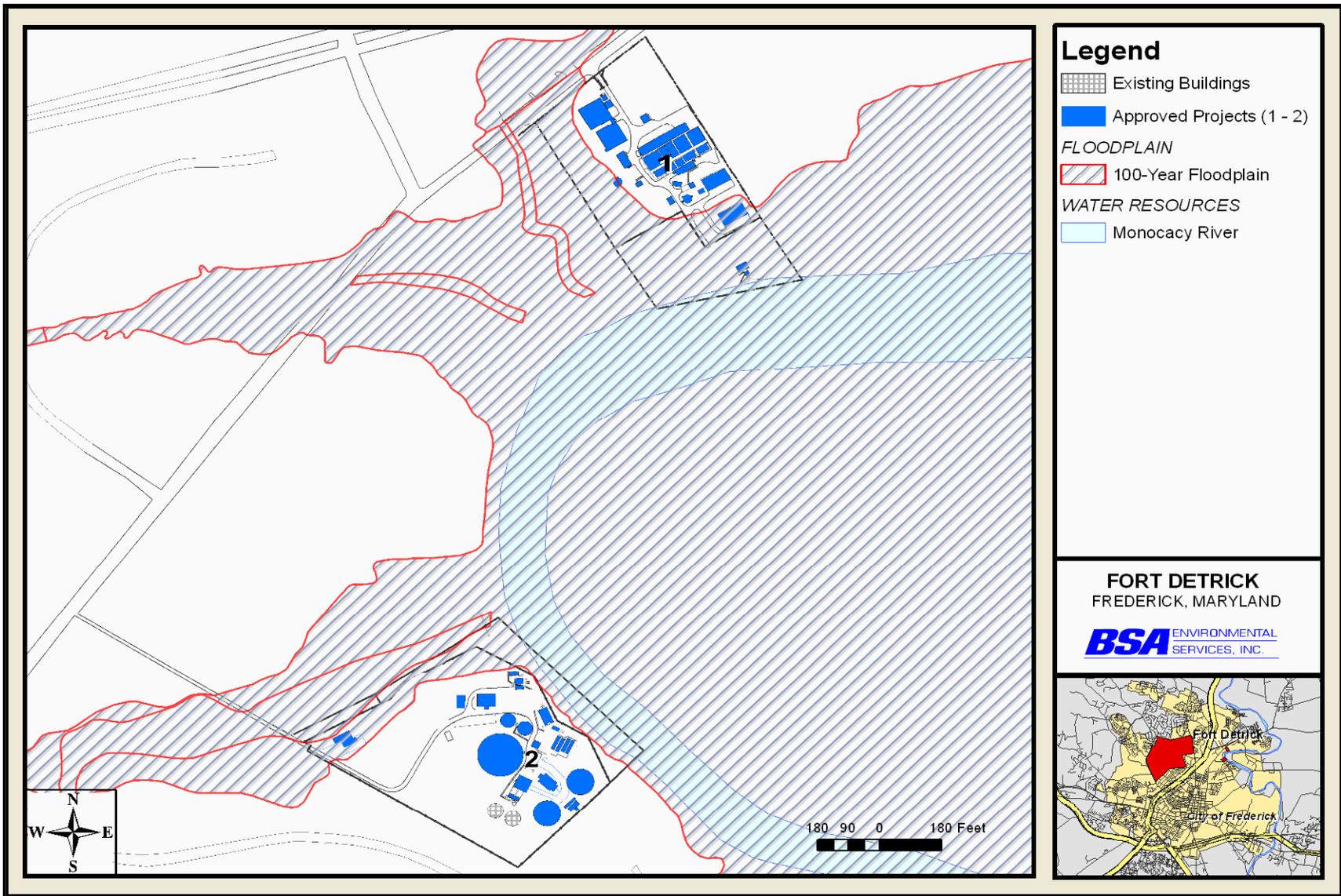


Figure 4-7. Area C Wetlands and Floodplains Map.

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laws and regulations. The SAIA requires that the INRMP be reviewed on a regular basis, and not less than every five years (USAG, 2007c). The goal of the previous INRMP (USAG, 2001) was to enhance biodiversity on a local and regional level. Implementation of this plan contributes to protecting the health of the ecosystem and the environmentally sensitive areas on the Installation and enables Fort Detrick to meet local, regional, state, and national goals for ecosystem management and enhancement of biodiversity (USAG, 2001). The current INRMP will allow the Installation to implement procedures that will improve on the previous INRMP by:

- Improving the integration of the INRMP with other Installation planning documents and USAG activities,
- Providing explicit goals and objectives to which ongoing and newly-proposed natural resources projects will contribute, and
- Providing an effective turnover document to facilitate program consistency (USAG, 2007c).

4.7.1 VEGETATION

The Fort Detrick area was originally covered by an oak-hickory hardwood forest. Trees characteristic of this forest type include northern red oak, black oak, scarlet oak, white oak, chestnut oak, and several species of hickories. Other trees associated with this forest type include yellow poplar, red maple, black walnut, and dogwood. Many species, including sassafras, sourwood, wild grape, Virginia creeper, and poison ivy, compose the understory of oak-hickory forests (USAG, 2001). Appendix D provides a list of the natural and introduced vegetative species at Fort Detrick (USAG, 2001).

In total, Fort Detrick currently contains approximately 79 acres of forest cover in discontinuous stands of various size and age (USAG, 2007c). Area A of Fort Detrick contains three forest blocks, which vary in size from 12 to 14 acres (USAG, 2001). There are also a considerable number of landscape trees throughout Area A (USAG, 2007c). In March 2009, Fort Detrick was deemed a “Tree City USA” by the Arbor Day Foundation for the ninth year in a row (Frederick News-Post, 2009b). To qualify for this title, a community must have a tree board or department, a tree care ordinance, a community budget at minimum of \$2 per person, and observe Arbor Day.

Forest Block 1 encompasses approximately 14 acres of even-aged planted trees in the central portion of Area A, northeast of the NIBC (see Figure 2-10). This is the largest and most florally diverse forest block in Area A, though it contains little developed understory. It consists of row plantings of red oak, yellow poplar, sycamore, pin oak, black walnut, white ash, red maple, flowering dogwood, red mulberry, black cherry, dawn redwood, tree of heaven, hackberry, Siberian elm, Norway Spruce, black locust, Norway maple, and Scotch pine (USAG, 2001; USAG, 2003a). A portion of this forested land was in the past monitored by the USDA for a growth regulator project (USAG, 2005a).

Forest Block 2 is located in the northern portion of Area A (see Figure 2-10). This forest block consists of two narrow strips of tree plantings, and includes cherry, black locust, dogwood, black walnut, and sycamore maple (USAG, 2001).

Forest Block 3 is the smallest of the three forested areas in Area A. It covers a small hill in the western portion of Area A (see Figure 2-10). This is the only forest block in Area A that is characterized by some natural growth and understory development. Forest Block 3 contains silver maple, sugar maple, black locust, black cherry, American elm, quaking aspen, and tree of heaven among others (USAG, 2001). A small riparian area consisting of planted willow, alder, and elderberry is located downstream from the Nallin Farm Pond spillway in Area A. These plantings are relatively recent and therefore little growth has occurred. The area has been fenced to prevent damage from mowing (USAG, 2003a).

Fort Detrick Forestation Plan

As part of Fort Detrick's ongoing forestation initiative, an estimated 15 acres has been planted on Fort Detrick Areas A and B since 2003 (Hoch, 2009). Recently, 675 pine trees were planted (Environmental Quality Control Committee [EQCC], 2009). In accordance with the State Forest Conservation Program (COMAR 08.19), described in Section 2.6.4, Fort Detrick developed a Forest Conservation Plan in 2003, which is continually updated. According to the INRMP, the current plan calls for a 114-acre increase in forests, which will increase total forest cover to 193 acres; 79 acres in Area A. The majority of the new forests in Area A would be located on the northern portion of the proposed NIBC, and along the southwest boundary fence along Military Road (see Figures 2-10 and 2-11).

The INRMP also describes Fort Detrick's plan to enhance forest ecosystem health. The overall health of the fragmented forest blocks is compromised by invasive species, insect pests and disease, and over browsing by white-tailed deer (*Odocoileus virginianus*). The impacts of invasive plant species on forest health have been and will continue to be addressed through aggressive implementation of the Fort Detrick Invasive Plant Management Plan (Invasive Plant Control, Inc. [IPC] 2004). Besides invasive species, there is increased concern about insect pests and disease in both forest blocks and landscaped areas (USAG, 2007c).

4.7.2 WILDLIFE

The number of wildlife habitats on Fort Detrick is limited due to human activities and urbanization. Faunal assemblages are predominantly composed of species that are adapted to the living conditions in urban, suburban, and agricultural habitats; though some species typical of the oak-hickory and northern hardwood forest associations are present in the forested areas of Fort Detrick (USAG, 2001).

4.7.2.1 Bird

Bird diversity on Fort Detrick is highly dependent on the availability of suitable, unfragmented avian habitats. The Installation encompasses a variety of ecosystems, including forests, riparian zones, and agricultural fields that can serve as habitat for a variety of bird species both during the breeding season and during the winter months. In the past, 225 species of birds were observed in Frederick County (data from Christmas Bird Count compiled in USAG, 2001). An avian census of all forested habitats at Fort Detrick, which was conducted in June 1997, found 52 species of birds on Area A. Forest Block 1, which is the largest forest in Area A, contained 40 different species and was the most diverse habitat on Fort Detrick (USAG, 2001). The most common birds identified at Area A during the 1997 census were: the house wren (*Troglodytes aedon*; 49 occurrences), the northern cardinal (*Cardinalis cardinalis*; 43 occurrences), the

American crow (*Corvus brachyrhynchos*; 34 occurrences), and the gray catbird (*Dumetella carolinensis*; 32 occurrences) (USAG, 2001). A detailed list of bird species observed in Frederick County, Maryland is provided in Appendix E.

4.7.2.2 Mammals

Fort Detrick lies in a geographic region that falls within the potential range of 57 mammal species (USAG, 2001). A detailed list of mammal species potentially inhabiting Fort Detrick is provided in Appendix D. However, due to a lack of suitable habitats on the Installation, the actual number of mammal species that inhabit Fort Detrick is much smaller. A mammalian survey based on live trapping, scent station track counts, and direct observations was conducted in June of 1997 and recorded a total of 12 mammals for Fort Detrick. The following species were identified during the survey: white-tailed deer (*Odocoileus virginianus*), meadow vole (*Microtus pennsylvanicus*), eastern cottontail (*Sylvilagus floridanus*), gray squirrel (*Sciurus carolinensis*), eastern chipmunk (*Tamias striatus*), fox squirrel (*Sciurus niger*), woodchuck (*Marmota monax*), white-footed mouse (*Peromyscus leucopus*), deer mouse (*Peromyscus maniculatus*), opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), and an unidentified species of bat. In addition, visual observations from resource management personnel suggest the presence of red foxes (*Vulpes vulpes*) on the Installation as well (USAG, 2001). Fort Detrick previously had a significant deer over-population problem which has been managed with a very aggressive deer herd management program. A detailed list of mammals observed in Frederick County, Maryland is provided in Appendix F.

4.7.2.3 Fishes

The Monocacy River, Carroll Creek, and the Nallin Farm Pond are the three major bodies of water in the vicinity of Fort Detrick that support freshwater fisheries (see Section 4.5.1). The Nallin Farm Pond covers approximately 3.3 acres. A 1994 assessment of the pond concluded that there were nine species of fish present in Nallin Farm Pond. Largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), bluegill sunfish (*Lepomis macrochirus*), pumpkinseed sunfish (*Lepomis gibbosus*), green sunfish (*Lepomis cyanellus*), rainbow trout (*Oncorhynchus mykiss*), yellow bullhead (*Ictalurus natalis*), golden shiner (*Notemigonus crysoleucas*), and carp (*Cyprinus carpio*) are the common species found in the pond (USAG, 2001). Nallin Farm Pond is stocked with trout several times a year as part of the Installation's recreational fishing program (USAG, 2007c). The stormwater retention pond south of Building 1434 (Health Clinic) is not a suitable habitat for aquatic species. The UEPH SWM pond will likely have the capacity to support certain aquatic species (USAMRMC and USAG, 2006).

Carroll Creek transects Area B of Fort Detrick and comes within approximately 300 ft. of the western boundary of Area A. This stream is designated as Use III-P (COMAR 26.08.02) by the State of Maryland, which indicates high water quality and the potential of the water body to support the growth and propagation of trout. Large variety of habitats found in the creek support a considerable variety of fish species including rosieside dace (*Clinostomus funduloides*), carp, blacknose dace (*Rhinichthys atratulus*), longnose dace (*Rhinichthys cataractae*), bluntnose minnow (*Pimephales notatus*), creek chub (*Semotilus atromaculatus*), pearl dace (*Margariscus margarita*), white sucker (*Catostomus commersoni*), yellow bullhead, redbreast sunfish (*Lepomis auritus*), bluegill sunfish, largemouth bass, fantail darter (*Etheostoma bellare*), Potomac sculpin (*Cottus girardi*), and rainbow trout (USAG, 2001).

The State of Maryland designated the Monocacy River as a Use IV-P (COMAR 26.08.02) warm water fishery. This designation is assigned to waters that can serve as recreational trout waters and public water supply. Water quality in a Use IV-P river must be high enough to support adult trout for put-and-take fishing. Fish populations are actively managed by periodic stocking and seasonal catching. Previous surveys identified at least 43 species of fish in the river. Common species in the middle segment of the Monocacy River include smallmouth bass, black crappie (*Pomoxis nigromaculatus*), redbreast sunfish, bluegill sunfish, catfish (*Ictalurus sp.*), shorthead redhorse (*Moxostoma macrolepidotum*), white sucker, and various species of shiners and minnows, with small populations of white crappie (*Pomoxis annularis*) and brown trout (*Salmo trutta*) (USAG, 1998).

4.7.2.4 Herpetofauna

Fort Detrick lies within geographical range of 60 species of reptiles and amphibians. Area A has a small number of potentially suitable habitats for herpetofauna; however, no formal herpetological survey has been conducted at the Installation. Incidental observations by personnel conducting the bird and mammal surveys in June 1997 and May 2001 suggest the presence of leopard frogs (*Rana pipiens*) and bull frogs (*Rana catesbeiana*), rough green snake (*Opheodrys aestivus*), as well as painted turtle (*Chrysemys picta*) on the Installation (USAG, 2002f; USAG, 2001).

A research study regarding the Eastern Box Turtle (*Terrapene carolina*) was started in Spring 2005 and continued through the end of 2006. The study included surveying the habitat of the box turtle on the Installation, which includes Forest Block 1. Since the number of box turtles is declining due to habitat fragmentation, this research was important to determine what means are needed for stabilization of this population. Fort Detrick is an attractive study area because the Installation has been effectively closed to the public for more than 50 years, thus the number of turtles intentionally released in the area should be very low to none (USAMRMC and USAG, 2006).

4.7.3 SPECIAL STATUS SPECIES

The altered environment of Fort Detrick provides little high-quality habitat for most species of wildlife. There are no records for Federal- or state-listed rare, threatened, or endangered species of plants or animals within the boundaries of the Installation (Boyland, 2007; USAG, 2001). A survey for rare, threatened, and endangered small mammals and a survey for rare, threatened, and endangered plants were prepared by the Maryland Natural Heritage Program of the MDNR in February 2002. Both surveys found no evidence of special status species on Fort Detrick. However, the presence of such species on the Installation cannot be precluded with certainty. For example, the open areas and fields of the Installation may provide sufficient habitat for endangered or declining bird species including the Savannah sparrow (*Passerculus sandwichensis*), listed as declining populations in Maryland, as well as the loggerhead shrike (*Lanius ludovicianus*) and upland sandpiper (*Bartramia longicauda*), listed as endangered in Maryland (USAMRMC and USAG, 2006; USAG, 2001). The status of species may change over time as a result of changes in listing status for Federal and state threatened and endangered species and as a result of new surveys of the Installation (USAG, 2001).

4.8 AIR QUALITY

4.8.1 REGIONAL AIR QUALITY

Fort Detrick lies within the Central Maryland Air Quality Control Region (Area II). MDE ARMA administers Federal and state air quality regulations statewide. Maryland has adopted USEPA National Ambient Air Quality Standards (NAAQS), as set forth under the CAA, to control a select group of widely occurring pollutants. These standards establish safe concentration levels for the six criteria pollutants: CO, Pb, NO_x, ozone, particulate matter less than 10 microns in aerodynamic diameter (PM₁₀), and SO₂. Particulate matter is divided into two classes, coarse particulate matter (PM₁₀), i.e., particles between 2.5 and 10 microns in diameter, and fine particulate matter (PM_{2.5}), i.e., particles less than 2.5 microns in diameter (MDE, 2010).

Under the CAA, an “attainment area” is defined as a geographic area where the level of a criteria air pollutant meets the primary or secondary NAAQS for the pollutant. A “nonattainment area” is a geographic area that has (or that contributes to) levels of a criteria air pollutant that is higher than allowed by the primary or secondary NAAQS. One single location may be in attainment for one pollutant and simultaneously have unacceptably high levels of another criteria air pollutant. The CAA requires that attainment areas implement a PSD plan to prevent degradation and to maintain attainment status. The 1990 CAA established five classification categories based on the severity of nonattainment and set new deadlines for each category to achieve attainment. The five categories are extreme, severe, serious, moderate, and marginal. One of the goals of the CAA is to set attainable goals/deadlines for air quality control regions to reach attainment status (MDE, 2010)

As of 8 October 2009, all of Maryland, including the Frederick region, was in attainment for all NAAQS criteria pollutants except for ozone (MDE, 2009b; USEPA, 2008). The Baltimore metropolitan region and the Washington metropolitan region, which includes Frederick County, were considered to have “severe ground level ozone nonattainment areas” and “serious ground level ozone nonattainment areas” respectively (MDE, 2009b). Though both lie in Area II, the Metropolitan Washington Area is classified as “serious” and Frederick County as “moderate” ozone nonattainment area. On 5 April 2005, USEPA officially designated Frederick County as being in a PM_{2.5} nonattainment area (USEPA, 2005b; USAMRMC and USAG, 2006). However, after review of the revised USEPA Area Designations for 2006 24-Hour PM_{2.5} Standards, the entire state of Maryland is now designated as unclassifiable/attainment for PM_{2.5} (USEPA, 2009).

On March 12, 2008, USEPA significantly strengthened its NAAQS for ground-level ozone and revised the 8-hour “primary” ozone standard to a level of 0.075 ppm. The previous standard, set in 1997, was 0.08 ppm. Because ozone is measured out to three decimal places, the standard effectively became 0.084 ppm as a result of rounding. USEPA also strengthened the secondary 8-hour ozone standard to the level of 0.075 ppm making it identical to the revised primary standard. USEPA decided to strengthen the secondary ozone standard after concluding that the 1997 secondary standard was not adequate to protect public welfare. In addition to changing the level of the standards from 0.08 ppm to 0.075 ppm, USEPA now specifies the level of the standard to the third decimal; therefore, an area will meet the revised standards if the three-year average of the annual fourth-highest daily maximum 8-hour average at every ozone monitor is less than or equal to the level of the standard (i.e., 0.075 ppm). Based on monitored air quality from 2006-2008, Frederick County is a nonattainment area that violates the NAAQS for ground-level ozone with a concentration of 0.082 ppm (USEPA, 2010b).

On 6 January 2010, USEPA proposed to strengthen the 8-hour primary standard for ground-level ozone to a level within the range of 0.060-0.070 ppm. USEPA is also proposing to establish a distinct cumulative, seasonal “secondary” standard, designed to protect sensitive vegetation and ecosystems, including forests, parks, wildlife refuges and wilderness areas. USEPA is proposing to set the level of the secondary standard within the range of 7-15 ppm-hours. The proposed secondary standard is a “cumulative peak-weighted index,” called W126. The W126 index is calculated by:

- “Weighting” each hourly ozone measurement occurring during the twelve daylight hours (8:00 am to 8:00 pm) each day, with more weight given to higher concentrations. This “peak weighting” emphasizes higher concentrations more than lower concentrations, because higher concentrations are disproportionately more damaging to sensitive trees and plants;
- Adding these 12 weighted hourly ozone measurements for each day, to get a cumulative daily value;
- Summing the daily values for each month, to get a cumulative monthly value;
- Identifying the three consecutive months during the ozone season with the highest index value, to get the cumulative seasonal index value, and;
- Averaging these maximum seasonal index values over three years.

An area would meet the proposed secondary standard if the three-year average of the cumulative seasonal index values is less than or equal to the level of the standard (i.e. 7-15 ppm-hours) (USEPA, 2010b).

As mentioned above, Frederick County is currently a nonattainment area for the current 8-hour primary standard for ground-level ozone with a concentration of 0.082 ppm. It will also be in nonattainment for the proposed 8-hour primary standard of 0.060-0.070 ppm. Frederick County will also be in nonattainment for the proposed secondary standard of 7-15 ppm-hours with a concentration of 17 ppm-hours. Furthermore, it is projected that Frederick County will violate the proposed 8-hour primary standard in the year 2020 with a concentration over 0.065 ppm but will be in attainment for the proposed secondary standard (USEPA, 2010b).

USEPA is proposing an accelerated schedule for designating areas for the primary ozone standard. Additionally, USEPA is taking comment on whether to designate areas for a seasonal secondary standard on an accelerated schedule or a 2-year schedule. The accelerated schedule would be:

- By January 2011: States make recommendations for areas to be designated attainment, nonattainment or unclassifiable.
- By July 2011: USEPA makes final area designations.
- August 2011: Designations become effective.
- December 2013: State Implementation Plans, outlining how states will reduce pollution to meet the standards, are due to USEPA.
- 2014 to 2031: States are required to meet the primary standard, with deadlines depending on the severity of the problem.

4.8.2 FORT DETRICK AIR POLLUTION SOURCES

The main stationary sources of air pollution at Fort Detrick are the Building 190 boilers, incinerators, and emergency diesel generators. Commuter and on-site traffic constitute the mobile sources of air pollution at the Installation (USAG, 2003a). According to Title V of the CAA, a stationary source is considered a “major source” of air pollution if its actual emissions exceed the regional threshold levels for regulated air pollutants. Regulated pollutants are the criteria air pollutants or their precursors (e.g., VOCs or NO_x as precursors to ozone), hazardous air pollutants (HAPs) as specified in Title III of the CAA, toxic air pollutants (TAPs) as specified in COMAR 26.11.15, and Class I and Class II ozone depleting substances as specified in Title V of the CAA. Potential emissions are those that would be emitted assuming a maximum operating schedule of 24 hours per day, 365 days per year, at the unit’s maximum capacity. By definition, potential emissions are equal to or greater than actual emissions. The threshold levels for a Title V major source located in Frederick County are:

- 100 tpy of CO
- 100 tpy of Pb
- 100 tpy of SO₂
- 10 tpy of any one HAP or 25 tpy of any combination of HAPs
- 100 tpy of NO_x
- 100 tpy of PM₁₀
- 100 tpy of VOCs

For permitting purposes, a group of stationary sources that lie within a contiguous area under common control, as is the case on Fort Detrick, are treated as a single stationary source. Title V of the CAA requires all “major sources” of criteria air pollutants or their precursors to file a Part 70 application for an operating permit. A Title V Part 70 permit application must be submitted to MDE for facilities located in Frederick County with emissions that exceed the threshold levels listed above. According to Title V of the CAA, Fort Detrick is considered a major source of air pollution because emissions of both NO_x and SO_x exceed the threshold of 100 tpy. Fort Detrick’s Title V Part 70 Operating Permit (No. 24-021-00131) was issued by MDE effective through 31 March 2014 (Benson, 2009).

On 7 December 2004, MDE ARMA issued a NOV to Fort Detrick for non-compliance with the Installation’s Title V Part 70 Operating Permit. The NOV cited a 23 November 2004 site visit by an ARMA representative to the incinerators, who noted that monitoring and record keeping requirements at the B-1 and B-4 solid waste incinerators was not being conducted in line with the operating permit. Specifically, monitoring of the scrubber liquor flow rates was not being performed and the measurement of pressure drops across the venturi scrubber was conducted at an incorrect frequency (USAMRMC and USAG, 2006).

On 5 May 2005, a plume of soot was accidentally discharged from the Building 190 Boiler Plant. Wind carried the soot in the direction of Military Road, Rosemont Avenue, Shookstown Road, and Baughman’s Lane. The incident was attributed to operator noncompliance with standing operating procedures, and the soot was determined to be non-hazardous (Herald-Mail, 2005).

An air pollution emission assessment was conducted on the two municipal waste incinerators (B-1 and B-4) to satisfy the requirements of Fort Detrick’s Title V Part 70 Operating Permit. The assessment, which was conducted by the US Army Center for Health Promotion and Preventive Medicine (USACHPPM), included stack testing for total suspended particulate (TSP) and opacity. The assessment concluded that both particulate matter emissions and opacity observations were within the limits specified by the permit (USACHPPM, 2006).

In 2003, the EPA issued a final regulation for small MWCs, to be effective 16 December 2005. Fort Detrick was informed by MDE that its two municipal solid waste incinerators would not meet the 35 tons per day minimum requirement to be classified as small MWCs, and would be classified as “Other Solid Waste Incinerators (OSWIs).” The EPA issued a final regulation for OSWIs, to be effective 16 December 2010. During 2004-2005, Fort Detrick worked with MDE to classify Fort Detrick’s incinerators as small MWCs under EPA’s requirements. On 22 October 2007, the State of Maryland issued a consent order between MDE and Fort Detrick that allowed Fort Detrick until 31 December 2009, to complete necessary work to bring its two units into compliance as small MWCs, and until 29 June 2010, to complete compliance stack testing. The necessary work included two scrubbers, charcoal filtration system, fiberglass exhaust stack, motor control center, breeching, and a continuous emissions monitoring system (CEMS). Due to Fort Detrick’s reclassification as small MWCs, opacity, carbon monoxide, oxides of nitrogen, sulfur dioxide and particulate matter emissions are more stringently regulated, which results in lesser emissions. All upgrades to the incinerators have been completed, and compliance stack testing will begin on 12 April 2010 (Wolf, 2010c).

Fort Detrick was ranked as the third largest source of NO_x in Frederick County in 2006 and the second largest in 2007 (latest data available, Wolf, 2010b; see Tables 4-2 and 4-3). The majority of the Installation’s NO_x emissions originate from the Building 190 Boiler Plant. This is evident in the “Boilers” columns summaries of Fort Detrick’s actual criteria air pollutant emissions from stationary sources in 2007 and 2008, presented in Tables 4-4 and 4-5, respectively (Wolf, 2010a). The criteria air pollutant emissions for 2009 are not available as of this date, but NO_x emissions from the Building 190 Boiler Plant are expected to continue to decline again by as much as 50 percent (Wolf, 2010c).

The Fort Detrick EMS set EQCC-approved environmental targets in place to assist with the reduction of air emissions. Identified as one of Fort Detrick’s major environmental aspects, air emissions contributors include stationary sources (boilers, incinerators, generators, chlorine gas storage, and petroleum storage) and mobile sources (vehicle emissions and equipment). Goals and targets from EO 13514, EO 13423 and existing statutes guide federal managers in establishing air emissions reduction requirements and reduction of GHGs related to different processes on Fort Detrick. A more detailed discussion of these actions is presented in Section 2.8.1.

Table 4-2. Major Air Pollutant Emissions Sources in Frederick County, Maryland in 2006.

Major Source	SO _x	NO _x	VOCs	PM ₁₀	TSP	HAPS	CO
	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
Lehigh Cement-Woodsboro	2104	130	1	0	230	0	96
EASTALCO-Frederick	0	3	0	0	0	0	0
ESSROC Materials, Inc.	834	1572	5	114	0	9	30
Redland Brick-Rocky Ridge Plant	2	9	1	1	0	9	30
Fort Detrick	92	78	5	28	0	0	28
George Weston Bakeries	0	3	35	0	0	0	3
Canam Steel	0	3	98	1	0	0	0
Reichs Ford Sanitary Landfill	2	23	12	6	0	1	15

Source: Wolf, 2010b

Table 4-3. Major Air Pollutant Emissions Sources in Frederick County, Maryland in 2007.

Major Source	SO _x	NO _x	VOCs	PM ₁₀	TSP	HAPS	CO
	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)	(tpy)
Lehigh Cement-Woodsboro	962	68	0	93	0	0	42
EASTALCO-Frederick	0	1	0	0	0	0	1
ESSROC Materials, Inc.	1279	2377	11	124	0	10	54
Redland Brick-Rocky Ridge Plant	0	8	1	0	0	8	26
Fort Detrick	120	91	5	38	0	0	29
George Weston Bakeries	0	3	34	0	0	0	3
Canam Steel	0	3	129	1	0	0	0
Reichs Ford Sanitary Landfill	2	18	12	3	0	1	11

Source: Wolf, 2010b

Table 4-4. Actual Criteria Air Pollutant Emissions (tpy) at Fort Detrick in 2007.

Pollutant	Boilers	Incinerators	Diesel Generators	Tanks	Total ¹
CO	25.42	0.36	2.76	0	28.54
NO _x	75.02	5.06	10.44	0	90.52
PM ₁₀				0	
SO _x	114.12	3.84	1.64	0	119.6
VOCs	1.62	1	0.28	2.6	5.5
HAPS		0.12		0.1	0.22
PM _{total}	34.2	2.3	0.42		36.92
CO ₂	60467.7	2997.22	537.73		64003
CH ₄	1.76	3.66	0.29		5.71
N ₂ O	0.61	0	0		0.61

¹ Totals may not add due to rounding.

Source: Wolf, 2010a

Table 4-5. Actual Criteria Air Pollutant Emissions (tpy) at Fort Detrick in 2008.

Pollutant	Boilers	Incinerators	Diesel Generators	Tanks	Total ¹
CO	14.48	1.64	2.86	0	18.98
NO _x	45.24	6.62	10.77		62.63
PM ₁₀					
SO _x	73.83	3.85	1.70		79.38
VOCs	0.81	0.19	0.28	2.61	3.89
HAPS		0.23		1.18	1.41
PM _{total}	10.09	2.79	0.15		13.03
CO ₂	39726.5	4172.00	498.78		44397.28
CH ₄	0.53	0.04	0.02		0.59
N ₂ O	0.76	0.03	0.05		0.84

¹ Totals may not add due to rounding.

Source: Wolf, 2010a

4.8.3 HAZARDOUS AND TOXIC AIR POLLUTANTS

HAPs, also known as TAPs in COMAR 26.11.16, are compounds that pose serious health hazards, such as cancer causing substances or mutagens that may cause birth defects. The USEPA controls 187 HAPs, as listed in Title I of the CAA, and the State of Maryland has established a complementing, more stringent emission standards program regulating all Title I HAPs and additional TAPs.

The primary sources of HAP emissions on the Installation are the incinerators and fuel storage and dispensing activities. Existing biomedical research facilities at Fort Detrick do not contribute significantly to overall HAP or TAP emissions on the Installation. The USAG emission inventories indicate that Fort Detrick is not required to meet emission control requirements for HAPs or TAPs because emissions are not more than 10 tpy for any single TAP or not more than 25 tpy for any combination of TAPs (USAMRMC and USAG, 2006).

4.9 HISTORICAL RESOURCES

4.9.1 REGIONAL AND INSTALLATION HISTORY

Settlement of the Frederick County area began during the early 1700s. The town of Frederick was chartered in 1735 and the County was created on 11 June 1748 by the Maryland Provincial Assembly. This region of the State of Maryland was important in many events throughout the history of the United States, including the French and Indian War, the Revolutionary War, and the Civil War (USACE, 2000a).

In 1929, Frederick County opened a small municipal airfield on 90 acres of land north of the City of Frederick. The airfield was leased to the Maryland National Guard in 1931 for a summer training camp. The field was named Detrick Field in honor of Major Frederick Lewis Detrick, a Frederick native and World War I veteran. The Army Air Corps leased the property to train its military pilots in 1940 and abandoned the airfield after mobilization for WWII began. In 1941, President Franklin D. Roosevelt established the US Biological Warfare Program, and in 1943, the Army Chemical Warfare Service purchased Detrick Field from the City of Frederick. The Camp Detrick Biological Warfare Research Center was established for the research and development of biological warfare techniques and agents for offensive and defensive purposes. By 1945, Camp Detrick consisted of 245 buildings, including housing for 5,000 workers. Less than 100 of those buildings remain (USACE, 2000a).

Camp Detrick was designated a permanent installation for biological research and development shortly after WWII. In 1956, Camp Detrick was formally designated as "Fort Detrick" following the purchase of Area C (WTP and WWTP) and Area B (the outdoor testing area) in 1944 and additional portions of Area A (previously farmland) between 1946 and 1952. Following the discontinuation of the offensive biological warfare research program in 1969, former biological research facilities were converted to house biomedical research activities or administrative offices. In 1972, the NCI-Frederick arrived at Fort Detrick and brought with it a new mission that focused on cancer research (Covert, 2000).

4.9.2 CULTURAL RESOURCES

The DA must protect prehistoric and historic cultural resources on DA property according to the NHPA and other Federal laws and regulations. The NHPA, as amended (16 USC 470),

mandates national policy for protection and restoration of significant historic, architectural, archeological, or cultural resources. The 1980 amendments to the NHPA provide for historic preservation costs to be included in project planning and budgeting. The SHPO has primary responsibility for ensuring adherence to the NHPA (USACE, 2000a).

In accordance with AR 200-1, *Environmental Protection and Enhancement*, Fort Detrick maintains an ICRMP that serves as a guide for compliance with the NHPA and other applicable Federal laws and regulations (USAMRMC and USAG, 2006). Based on an inventory and evaluation of all Installation structures constructed prior to 1946 (USACE, 2000b; USACE, 1992), four structures on Area A are currently listed in the NRHP and several sites are eligible for a listing in the NRHP, as specified in the current ICRMP. Sites listed on the NRHP are The Nallin Farm House (Building 1652) and its associated bank barn (Building 1655) and springhouse (Building 1661) and the One-Million-Liter Test Sphere (Building 527). Structures that have been determined eligible for listing in the NRHP include Buildings 190, 375, 1301, 1302, 1304, 1305, 1306, 1412, 1414, 1415, 1653, and 1656 (see Sections 4.9.2.1 and 4.9.2.2) (USAMRMC and USAG, 2006). Three NRHP-eligible sites, Buildings 1412, 1414, and 1415 are approved for demolition associated with USAMRIID Stage 1 (see Section 4.9.2.2). One NRHP-eligible site, Building 375, is being considered for demolition or renovation as part of the conceptual decontamination, decommissioning, and demolition of the LSS/SSP project.

According to 36 CFR 800, *Protection of Historic Properties*, Federal agencies must allow the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on any Federal undertakings affecting historic properties. Federal undertakings include construction, demolition, rehabilitation, repair, licensing, permitting, financing, and planning. Under Section 106 of the NHPA, historic properties include buildings that are eligible for listing in the NRHP.

Building 375 may be demolished upon completion of the USAMRIID SSP at the NIBC. The Section 106 review will be undertaken between USAG and SHPO, (the Maryland Historical Trust), if the building will be demolished. The ACHP only takes an active role in the review process if certain criteria as defined in 36 CFR 800, Appendix A are met, such as in controversial or precedent-setting situations. Federal agencies are encouraged to incorporate the Section 106 review into the NEPA process (ACHP, 2007).

Demolition of Buildings 1412, 1414, and 1415 was proposed to provide parking areas that will be in critical demand on the NIBC. Buildings 1412, 1414, and 1415, although having been extensively modified from their original state over the years, had been designated by SHPO in the updated ICRMP as remaining eligible for listing on the NRHP. Consultation between USAG and SHPO resulted in SHPO consenting to the demolition of Buildings 1412, 1414, and 1415, as stipulated in a MOA between the interested parties dated 25 September 2006 (Maryland Historical Trust, 2006). USAG submitted a copy of the MOA and related documents to the ACHP and SHPO, which marks the formal completion of the Section 106 process (USAMRMC and USAG, 2006).

4.9.2.1 *Current NRHP-Listed Sites*

Three of the four NRHP-listed sites on Area A are located in the Nallin Farm Complex at the northeast corner of Area A (see Figure 4-8). The Nallin Farm House (Building 1652) and its associated bank barn (Building 1655) and springhouse (Building 1661) are listed in the NRHP for their local significance in 19th century architecture and agriculture. The Nallin Farm House

was constructed circa 1830 during the Agricultural-Industrial Transition Period (1815-1870) and possesses characteristics of both a typical regional farmhouse and Federal architecture (USAMRMC and USAG, 2006; Goodwin and Associates, 2002). The Federal architectural features of the Nallin Farm House include the rectangular-shaped, two-story house with sash windows and a low-pitched gable or hip roof. The house has a balanced composition with minimal projections. Classical, delicate ornamentation decorates the exterior of the house (Goodwin and Associates, 2002). The Nallin Spring House and the Bank Barn are representative of a construction period that dates before 1798. The Spring House is of fieldstone construction and is characterized by high walls and a wood-shingled roof. The Bank Barn exemplifies the typical characteristics of local Piedmont stone and timber construction of the late-18th century (Maryland Historical Trust, 2003). Structural improvements to the bank barn have been completed. The USACE repaired holes in the barn's roof, rehung some doors, and stabilized, repaired, and restored key components of the stone and timber bank barn. The bank was excavated and a concrete anchor on the outside wall was built then covered up (USACE, 2008a).

The One-Million-Liter Test Sphere (Building 527) is listed in the NRHP for its national significance in the scientific development of aerobiology and for its unique structural engineering. The One-Million-Liter test sphere is the largest such facility in the world, consisting of a 40-foot diameter, gas-tight, steel sphere that was used for aerobiological studies of pathogenic agents from 1951 to 1970 (Maryland Historical Trust, 2007). The One-Million-Liter Test Sphere is located on NCI-Frederick.

4.9.2.2 *NRHP-Eligible Sites*

As noted in Section 4.9.2, the following properties have been determined eligible for listing in the NRHP: Buildings 190, 375, 1301, 1302, 1304, 1305, 1306, 1412, 1414, 1415, 1653, and 1656. The Building 190 Boiler Plant was constructed in 1952 by the Army to supply steam heat to Fort Detrick facilities. Building 190 is an important component of the mechanical infrastructure at Fort Detrick (USACE, 2000b). This building is located in the southwestern corner of Area A, south of Miller Street.

Building 375 (SSP) was constructed by the Army in 1953 and functions as the central steam sterilization and decontamination plant, an important component of the Installation's infrastructure (USAMRMC and USAG, 2006). The building is an irregular-shaped brick building designed for utilitarian purposes. Building 375 is located at the western boundary of Area A.

Buildings 1301 through 1306 were constructed in 1956 to support research and testing by the Crops Research Division (USAMRMC and USAG, 2006). Research was aimed at developing more robust and productive crops, but research was also conducted to evaluate impacts of biological and chemical warfare agents on plants and crops. Building 1301, a large, two-story brick building, and Building 1302, a one-story wing extending from the rear of Building 1301, continue their original function as research laboratories (USAMRMC and USAG, 2006). Buildings 1301 and 1302 are currently permitted to the USDA. Buildings 1303, 1304, 1305, and 1306 are greenhouses located behind Buildings 1301 and 1302, which are also used by the USDA for its ongoing research programs. Building 1303 was demolished to the slab and reconstructed following consultation and recordation in 2005. This building complex is located in the central portion of Area A.

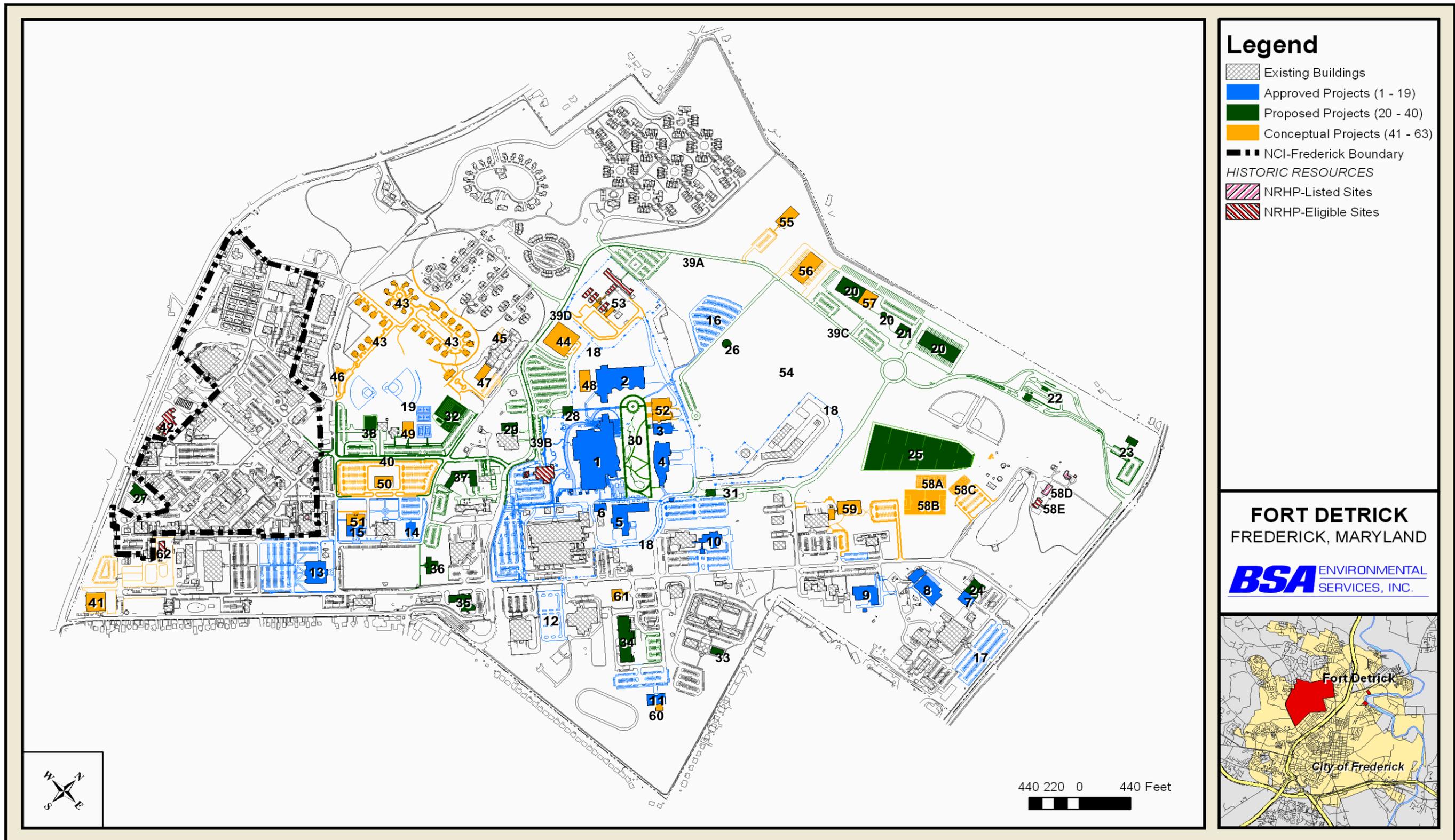


Figure 4-8. Area A Historical Sites Map.

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Buildings 1412 and 1414 were declared eligible for listing in the NRHP in 2001. Building 1412, constructed in 1958, was a special operations building designed specifically to support biological warfare research during the Cold War era. Building 1414 was an exhaust air incinerator sterilization building associated with Building 1412 (USAMRMC, 2001). Building 1412 is constructed with cinder block walls and concrete pillars. This building is still used as a laboratory with upgraded modern equipment. Building 1415, a square one-story brick building, was built in 1959 as a guard shack, and it is currently used for administrative purposes as a Union office (USAMRMC and USAG, 2006). This group of buildings is considered exceptionally significant as physical examples of the Army's Cold War policies, illustrating that aspect of American Military History (USAMRMC, 2001).

Building 1653 was previously used as the garage associated with the Nallin Farm House. Currently, it is used for storage purposes. Building 1656, the Dairy Barn, is located near the Bank Barn on the Nallin Farm Complex. It is now being used by FMWR for storage purposes. Both of these buildings were determined eligible for listing in the NRHP in 1992 (USACE, 2000a).

4.9.3 ARCHEOLOGICAL RESOURCES

Fort Detrick is located in the Monocacy River Drainage Basin of the Piedmont Province, which is part of Maryland Archeological Unit 17. The 1992 ICRMP for the Installation determined that approximately 625 acres in Areas A, B, and C might have high potential for archeological resources (USACE, 1992). A Phase I Archeological Survey was performed at Fort Detrick from October 1992 through January 1993 (Goodwin and Associates, 1993). This study was conducted in accordance with recommendations set forth in AR 420-40, *Historic Preservation (AR 420-40 was superseded by AR 200-4 which is superseded by AR 200-1, Environmental Protection and Enhancement)*, and the ICRMP for the Installation. This investigation was intended to assist the DA in carrying out responsibilities outlined in Section 106 and 110 of the NHPA.

Of the 625 acres investigated during the Phase I study, a total of eight sites were discovered and/or examined, six on Areas A and C: 18FR680, 18FR681, 18FR683, 18FR684, 18FR685, and 18FR74 (see Table 4-6). The survey documented one prehistoric site (18FR679) and redefined the boundaries of a previously identified prehistoric site on Area C (18FR74). Three historic sites: 18FR680, 18FR681, and 18FR682 were also documented. The Phase I study identified 3 sites that did not warrant further evaluation because they lacked integrity and archeological research potential. These sites are Prehistoric Archeological Site 18FR74 and Historic Sites 18FR680 and 18FR681. The Phase I archeological survey also identified five sites that may retain integrity and archeological research potential. Archeological evaluations were performed on the Stonewall Jackson Beall Site (18FR683) (USAG, 2007d), the Nallin Farm Site (18FR684), the Wide Pastures Farm Site (18FR685), and a prehistoric site on Area C (18FR74) (Ottery, 2005).

Nineteenth century artifacts and one piece of pearlware dated between 1780 and 1830 were found in the Stonewall Jackson Beall Site (18FR683), and remnants of historic activity were found in the adjacent yard (USAG, 2007d). Nineteenth and twentieth century artifacts were recovered from the Wide Pastures Site (18FR685), a 45 m x 91 m area. This site contained an Estate House and was destroyed in 1977 and the Carriage House (Building 1001), which was demolished in 2000 (USAG, 2003a).

The Nallin Farm Site (18FR684) is located in the general vicinity of the historic Nallin Farm buildings. Artifacts dating from the eighteenth and nineteenth century have been recovered from the yard. The presence of materials dated prior to construction of the farm complex may indicate that a previous establishment was present on the site (USACE, 1993).

Table 4-6. Archeological Site Summary.

Site Name	Site No.	Survey Level	Type of Site	Recommendation	Concurrence
Worman East	18FR74	Phase I	Prehistoric	Eligible	2000
Detrick #2	18FR679	Phase I	Prehistoric	Not Eligible	1993
Detrick #3	18FR680	Phase I	Historic	Not Eligible	1993
Detrick #4	18FR681	Phase I	Historic	Not Eligible	1993
Lime Kiln	18FR682	Phase II	Historic	Not Eligible	1995
Jackson Beall	18FR683	Phase II	Historic	Not Eligible	2007
Nallin Farm	18FR684	Phase II	Historic	Eligible	1993
Wide Pastures	18FR685	Phase II	Historic	Not Eligible	2000

Source: Craig, 2010

A Phase II Archeological Survey conducted for this site concluded that the Nallin Farm Site is eligible for inclusion on the NRHP.

Further evaluation has also been conducted on the Wide Pasture Site (18FR685). The Wide Pastures Farm Site is situated on a small hill partially within Forest Block 3. The site encompasses an area of 45 m x 91 m and was developed with a late nineteenth/early twentieth century revival-style mansion and a Carriage House. The principal structure, was the residence for Installation Commanders until it was demolished for safety reasons in 1977. The Carriage House (Building 1001) was demolished in 2000 (USAG, 2003a). A Phase I Archeological Survey recovered 19th and 20th century artifacts from the area and recommended formal evaluation of the site (Goodwin and Associates, 2002). A Phase II archeological survey of the Wide Pastures Site was conducted in 2002. Although the landscape was determined to adhere to the National Register’s integrity requirements, the Maryland Historical Trust deemed the Wide Pastures Site ineligible for listing in the NRHP. This decision was based on the removal of the estate and Carriage House and the significant assemblage of 19th and 20th century materials, which “does not add materially to our knowledge of rural upper class lifeways either locally or regionally” (Goodwin and Associates, 2003). No further work on this site was deemed necessary.

Historic site 18FR681, deemed lacking integrity and archeological research potential, was located on the area for the proposed NIAID IRF footprint. Items found on this site included domestic artifacts (e.g., kitchen and clothing), 18th century stoneware, 18th and 19th century creamware and pearlware, and 19th century whiteware and machine-cut nails. Because systematic shovel testing confirmed the site had been disturbed (site is confined to the disturbed modern plowzone) it was determined that this site lacked integrity and archeological research potential and did not warrant further evaluation (Goodwin and Associates, 1993).

A Phase II Archeological Evaluation of the Site 18FR74 at the Fort Detrick WTP was completed in 2005. Site 18FR74 overlooks the Monocacy River in the vicinity of the WTP in Area C of Fort Detrick. Historic and prehistoric artifacts were recovered from the floodplain and the terrace. Cultural features and concentrations of discrete artifacts were recovered immediately downstream from the site. Portions of the materials found upstream have archeological

research potential and the site is considered as eligible for listing on the NRHP (Ottery, 2005). This location may represent an isolated activity area downstream from the main portion of Site 18FR74.

Remnants of historic activity associated with Building 1401 could be located in the adjacent yard. Site 18FR683 is located in Area A at the northeast corner of Ditto Avenue and Sultan Drive (USACE, 1993). Building 1401 (the Beall House) on the Stonewall Jackson Beall Site (18FR683) no longer have historic value due to the many renovations to the building and the site.

4.10 SOCIOECONOMIC ENVIRONMENT

4.10.1 DEMOGRAPHICS

Fort Detrick is located in the City of Frederick, Frederick County, Maryland. The population of Frederick County was estimated at 234,444 as of 1 July 2009, a 20 percent increase from 2000 (Frederick County Division of Planning, 2009a). At the time of the 2000 census, the County's population was 195,277, a 30 percent increase from 1990 (US Census Bureau, 2006). Growth projections predict that the population will reach more than 243,220 by the year 2010 and 287,913 by the year 2020 (Frederick County Division of Planning, 2009b). Frederick County's population growth is fueled by competitive home prices, ample developable land, and its proximity to the Baltimore and Washington metropolitan areas. The City of Frederick contains approximately 27 percent of the County's total population with an estimated total of 62,217 residents as of 1 July 2009 (Frederick County Division of Planning, 2009a).

The civilian labor force for Frederick County in November 2009 was 124,983, of which an average of 117,397 were employed (Maryland Department of Labor, Licensing and Regulation, 2010). The private sector is the largest employment sector in Frederick County, comprising approximately 83.7 percent of all jobs in the county. Within the private sector, trade, transportation, and utilities industries provide 17.5 percent of jobs in the county, followed by professional and business services (15.1 percent), educational and health services (12.1 percent), construction (10.2 percent), and leisure and hospitality (9.7 percent). The government sector provides 16.3 percent of all jobs in the county, with 11.8 percent local government employees, 3.8 percent Federal employees, and 0.7 percent state employees (Maryland Department of Labor, Licensing and Regulation, 2009a). Employment projections as of 2006 estimated that the total labor force of Frederick County is projected to increase by 24.5 percent by 2016 (Maryland Department of Labor, Licensing and Regulation, 2009b). The November 2009 unemployment rate in Frederick County was 6.1 percent, which is less than the state and national averages of 7.4 percent and 10 percent, respectively (Maryland Department of Labor, Licensing and Regulation, 2010).

Fort Detrick is the largest employer in Frederick County. The number of Fort Detrick employees located on-post varies each month; however, as of December 2009, Fort Detrick employed 8,792 personnel, approximately 1,229 of which are active duty military personnel and 2,765 of which are employed at NCI-Frederick (LeClair, 2009). Fort Detrick's population growth due to all NEPA Approved Projects will result in approximately 1,006 additional employees by 2018 (see Table 4-7) and an additional 2,500 construction workers through 2017 (Starkoski, 2009). In addition, Proposed Projects are projected to add approximately 60 additional employees, resulting in a total of 1,066 additional employees by 2018 (see Table 4-8). Only approximately 5.6 percent of the future on-post employment growth would result from Proposed Projects.

The homes of Fort Detrick employees are located in approximately 546 different zip codes throughout Maryland, Pennsylvania, and Virginia. Eight zip codes in Maryland (21701, 21702, 21703, 21740, 21742, 21769, 21788, 21793) and one zip code in Pennsylvania (17268) are each home to over 100 Fort Detrick employees. The highest percentage of Fort Detrick employees (15 percent) are living in zip code 21702. Approximately 38 percent of Fort Detrick employees live in the zip codes directly adjacent to Fort Detrick (Wolf, 2008).

Table 4-7. Expected Fort Detrick On-Post Employment Growth Due To NEPA Approved Projects.

Year	Expected Employee Growth
2010	242
2014	364
2018	400
Total	1,006

Table 4-8. Projected Fort Detrick On-Post Employment Growth Total 2018.

Current Employees On-Post¹	8,792
NEPA Approved Projects Subtotal	1,006
Proposed Projects²	
NAF Youth Center	15
MC4 Renovation/Logistics Addition	2
NIBC Truck Inspection	5
Nallin Farm Gate	15
Information Services Facility (NEC) Expansion	20
FMWR Craft Shop	3
Nallin Farm Gate Visitors Center	0
Consolidated Logistics Facility	0
NIBC Hazardous Material Handling Facility	0
Emergency Services Center	0
Education and Conference Center (Bldg 718 CAC replacement)	0
Auditorium and Education Center Expansion (Bldg 1520)	0
Proposed Projects Subtotal	60
Potential Employment Growth Subtotal	1,066
Projected Installation Employment Total 2018	9,858

¹ As of Dec. 2009 Strength Profile Report (LeClair, 2009). Includes NCI-Frederick employees (2,765). Does not include construction workers.

² Estimates for the number of employees for each project based on gsf and project descriptions. The NIBC Truck Inspection and Nallin Farm Gate employee estimates were determined by calculating number of guards needed to man inspection lanes and hours of operation.

The estimated 2008 median household income for Frederick County was \$88,200, which is more than \$17,800 above the state average of \$70,400 (Maryland State Data Center, 2008). In

2009, Frederick County received an economic Fitch Rating of “AA+” due to “Frederick County’s sound economic base, focused in the bioscience and military sectors,” which “shows solid prospects for continued development and expansion and has performed relatively well during the current downturn” (Business Wire, 2009).

According to 2008 census estimates, the population of Frederick County is 85.3 percent Caucasian, 6.9 percent African-American, 4.6 percent Hispanic, 2.8 percent Asian, 0.4 percent American Indian and Alaska Native, and 2.3 percent reported as some other race. Census block group 7517-2 is a statistical area defined by Liberty Road on the north, the Monocacy River on the west, Linganore Creek and Linganore Lake on the south and McKaig Road on the east. The population of this census block group in 2000 was 94.6 percent Caucasian, 1.9 percent African-American, 2.4 percent Hispanic, 0.6 percent Asian, 1.8 percent Native American, and 0.1 other reported races (US Census Bureau, 2008a).

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low Income Populations*, requires that Federal agencies prepare NEPA documents to address any significant adverse impacts of Federal projects on minority or low-income populations. Within census block group 7517-2, as described above, 5.3 percent of all persons were living below the poverty level in 1999 (US Census Bureau, 2008b). A “poverty area” is defined by the US Census Bureau as an area in which at least 20 percent of the population lives below the poverty level. Therefore, the City of Frederick, including census block group 7517-2, is not considered to be a poverty area.

4.10.2 HOUSING

As of 2008, Frederick County had 87,298 housing units. This reflected a 19.6 percent increase in housing units since the 2000 US Census (US Census Bureau, 2010). Since January 2003, there has been an average annual increase in housing units of 1,370 new homes per year. The increase of 530 new housing units in the County from July 2006 to January 2007 was the lowest increase since the 2000 Census. In recent years Frederick County has experienced a slight decline in both population growth and housing unit growth. This decline can be due to a number of different factors, some of which include the housing market, growth policies and issues, and decline in supply. The future trend of this decline in both housing and population seems likely to carry on into the next couple of years (Frederick County Division of Planning, 2008).

Of the average 1,500 active duty personnel assigned to Fort Detrick, 321 are living on the Installation in both newly constructed and previously existing housing units. Approximately 683 family members of these personnel, including spouses and dependents, currently live on the Installation (Cole, 2009). Approximately 79 percent of the active duty personnel at Fort Detrick live off-post.

Fort Detrick offers limited on-Installation family housing for its military personnel. Currently, 354 housing units in seven neighborhoods are located on the Installation. Two new neighborhoods, Monocacy Meadows and Catoclin View, were completed in 2006 as part of the RCI, providing 163 new on-post units in addition to the 191 existing family housing units. Monocacy Meadows consists of 21 new three or four bedroom single-family executive homes while Catoclin View consists of 142 new three or four bedroom townhomes (Balfour Beatty Communities, 2009). On-post 104 soldiers are assigned to the UEPH, which consists of five 42-unit barracks (Buildings 1533, 1534, 1535, and 1538) and two new 36-unit barracks (Cole, 2009). The DoD selected

Fort Detrick for the RCI, a public-private partnership program in which private development capital and expertise is combined with existing Army land, housing assets, and the income stream from military renters to quickly build additional housing or renovate existing housing without using appropriated tax dollars (USAG, 2002d). Fort Detrick's collective housing installation team recently received the 2009 Military Service Outstanding Installation Housing Team Award (for privatized and traditional housing locations) for providing an outstanding living environment for military members and/or their families.

4.11 NOISE AND LIGHTING

Fort Detrick is considered a relatively quiet environment with no significant noise pollution sources on the Installation. Minor sources of noise at Fort Detrick include the Building 190 Boiler Plant, the generators in Buildings 1673 and 1677, vehicular traffic, the carpenter shop in Building 199, and military unit physical training (PT) activities in the mornings (usually 0630-0800 hours). In addition, noise is generated from current construction activities at Fort Detrick.

Surveys are conducted periodically to identify operations that expose workers to potentially harmful noise levels. Employees who work in areas with potentially harmful noise levels are enrolled in the Army's Hearing Conservation Program. Testing of emergency generators is limited to 1 minute weekly, during daylight hours. The bugle and cannon are exercised Monday through Friday at 1700 hours. Adverse impacts of PT activities on noise levels are currently mitigated by USAG Commander restrictions for "no cadence calling" on portions of routes that adjoin residential areas external to the post. Based on sound-level measurements performed on the Installation, the noise generated from operations is compatible with residential use (USAG, 2003a).

The State of Maryland (COMAR 26.02.03.02 and 26.02.03.03) and the City of Frederick (Ordinance G-02-9) have established environmental noise standards that set maximum allowable noise levels for receivers located in industrial, commercial, and residential districts. The regulatory limits for noise levels for receivers in residential areas are 65 decibels (Type A; dBA) during daytime hours (0700-2200 hours) and 55 dBA at night (i.e., 2200-0700 hours). The regulatory limit for noise levels for receivers in industrial areas is 75 dBA anytime. Noise levels exceeding maximum standards are not permitted beyond the property line of the source (USAMRMC and USAG, 2006).

Noise impacts on the health of construction/demolition workers will be mitigated by adherence to Occupational Safety and Health Act (OSHA) standards for occupational noise exposure associated with construction (29 CFR 1926.52). During a power outage, on-site emergency generators could run for hours. However, the regulatory noise standards would not apply during an emergency situation (COMAR 26.02.03.03 B).

Maximum noise level standards must be met for residential land use at the Installation boundary for all applicable activities within Fort Detrick. If warranted, a noise level monitoring system using an approved sound level analyzer may be located at or within the property line of the receiving property. The State of Maryland (COMAR 26.02.03.03 A(2)(a)) and the City of Frederick (Ordinance G-02-9) state that noise levels from construction or demolition activities must not exceed 90 dBA at the boundaries of the construction/demolition site during daytime hours (i.e., 0700-2200 hours). Maximum noise levels cannot exceed specified industrial and residential noise level standards during 1630-0700 hours (USAMRMC and USAG, 2006).

Construction activities must not permit prominent discrete tones and periodic noises (e.g. dump truck tail gate banging) that exceed a level that is 5 dBA lower than the noise level standard established in this requirement. Blasting operation associated with construction and demolition activities are exempt from COMAR and the City of Frederick regulatory requirements for noise during daytime hours. Any construction activities conducted outside the hours specified in this requirement or during the weekend must be pre-approved (USAMRMC and USAG, 2006).

Lighting at Fort Detrick is used for parking and security purposes and is not expected to create any nuisance to neighbors. Citizen complaints regarding lighting originating from Fort Detrick have rarely occurred. USAG is currently investigating ways of mitigating nuisance lighting in neighborhoods adjacent to Fort Detrick (USAMRMC and USAG, 2006).

4.12 ODORS

Odors emanating from Fort Detrick originate primarily from the Building 190 Boiler Plant, the Incinerator Plant (Building 393), and certain routine operations conducted at the Installation. Operation of the Building 190 Boiler Plant for process steam production and space heating purposes can create odorous byproducts. The Building 190 boilers burn natural gas as a primary fuel and No. 6 fuel oil as a backup fuel during normal operations. Natural gas and No. 6 fuel usage have fluctuated in inverse proportion to one another in recent years due to price fluctuations for each commodity. Use of the CUP and the two new NCI-Frederick boiler plants, which recently began operations, will increase usage of natural gas and distillate fuels will result in lower emissions and more efficient use of natural gas than the Boiler Plant (USAG, 2005a).

The Incinerator Plant at Fort Detrick includes two municipal waste incinerators and two medical waste incinerators, as discussed in Section 2.9.2 and 2.9.3. The municipal waste incinerators are used to reduce the volume of municipal waste load disposed of in the Fort Detrick Municipal Landfill and also to generate steam, which reduces the load on the Building 190 Boiler Plant. Stack emissions from the Building 190 Boiler Plant and/or the Incinerator Plant have been observed at ground level on rare occasions, when thermal temperature inversions occur in damp environments associated with the early morning hours. Operation of the incinerators includes the required emission control equipment. The stack height of the incinerators is designed to provide adequate dispersion of stack emissions under normal atmospheric conditions.

Transient offensive odors may result from autoclave and incineration processes; however, these are typically localized and rapidly dispersed in the ambient atmosphere. Steam sterilization processes at the NCI-Frederick Animal Production Area (Buildings 1021 through 1039 and Buildings 1044 through 1049), the existing USAMRIID laboratories (Buildings 1412 and 1425), and the existing SSP (Building 375) have resulted in odorous emissions. In 1989, an investigation into the likely cause of odors emanating from these facilities determined that the odors resulted from the degradation of protein-containing substances, such as animal feed materials (NCI-Frederick Animal Production Area), microorganisms (USAMRIID), and effluent discharges (SSP) (DA, 1991).

Other objectionable odors are produced during certain routine Installation operations. Petroleum odors occur during the transfer of fuel from the main delivery tank to the smaller Building 190 Boiler Plant tanks, which take place as often as six times per day. Garbage odors arise during the transport of MSW (USAMRMC and USAG, 2006). Minor odors may also originate from the

sewage treatment plant located in Area C of Fort Detrick (USAG, 2003a). Citizen complaints regarding objectionable odors originating from Fort Detrick have occurred only rarely (USAMRMC and USAG, 2006).

4.13 TRANSPORTATION

4.13.1 ACCESS TO FORT DETRICK

Fort Detrick is located in the northwestern portion of Frederick, Maryland, approximately 45 miles north of Washington, DC and 45 miles west-northwest of Baltimore. Fort Detrick can be reached via a number of interstate and US highways including I-70, I-270, US 40, and US 15. I-270 and other major roadways that converge in the City of Frederick provide convenient access to Washington, DC, Baltimore, and other employment centers in the region. Local access to the Installation is via the surrounding roadway network of city streets, county roads, and state highways. US 15 is a divided highway serving both regional and local commuter traffic in the City of Frederick. This highway is located approximately one-half mile south of Fort Detrick.

The I-270/US 15 corridor is a vital link to other highways in the Maryland and Washington, DC region. I-270 begins at the Capital Beltway (I-495) and extends north to I-70 in Frederick, MD. The corridor acts as an artery between Washington, DC and points north and west. In Maryland, US 15 extends from the Virginia state line to the Pennsylvania state line and provides a critical north-south route through the region. The corridor is heavily used by commercial vehicles, as well as commuters. The I-270/US 15 Corridor is currently served by a variety of transportation modes (including interstate highway, High-Occupancy Vehicle (HOV) lanes, commuter rail, and bus service), and intermodal opportunities (including park-and-ride lots and Metrorail). However, the level of performance for the roadway is currently sub-par, with daily vehicle loads resulting in severe traffic congestion in several locations.

Due to projected increases in population in Frederick County and Montgomery County, a corridor study was initiated to investigate options that could reduce congestion and improve safety conditions along the heavily traveled I-270/US 15 Corridor. The Corridor Study is a joint project planning study undertaken by the Maryland State Highway Administration (SHA) and the Maryland Transit Administration (MTA). The study area extends from the Shady Grove Metro Station in Montgomery County north to the US 15/Biggs Ford Road intersection area in Frederick County (approximately 30 miles). Currently, several alternatives have been evaluated in both a 2002 DEIS and 2009 Alternatives Analysis/Environmental Assessment (AA/EA). Alternatives included both highway components and transit components. Highway improvements include providing general-purpose lanes, auxiliary lanes, Express Toll Lanes, additional interchanges and improvements to existing interchanges. Transit improvements include new feeder bus routes, new premium bus routes, park-and-ride facilities, interactive transit information, and a shared use hiker-biker trail adjacent to the transit way. Public hearings on the AA/EA were held on 16 and 18 June 2009. Location approvals for the Locally Preferred Alternative are expected in spring 2010.

In addition to the I-270/US 15 corridor, traffic volumes on all parts of US 15 in Frederick County are experiencing increase traffic loadings as well. Traffic volumes on US 15 in Frederick County are greatest within the City of Frederick, where the 2008 average daily traffic volume for northbound and southbound vehicles is between 41,937-103,471 vehicles per day (vpd), a six percent to 10 percent increase, from 2004, respectively. Traffic volumes on US 15 are not as high near the northern and southern borders of Frederick County; however, traffic volumes have

also increased from 2004 volumes. Average daily traffic volumes for northbound and southbound vehicles are as low as 15,455 vpd near the southern border of Frederick County and 17,032 vpd near the northern border, a 10 percent to 20 percent increase from 2004, respectively (Maryland Department of Transportation, 2008).

Within the City of Frederick, US 15 interchanges with Rosemont Avenue, West Seventh Street, and Opossumtown Pike. Rosemont Avenue is a major artery serving north-south travel in Frederick, and it forms the western boundary of Area A. West Seventh Street is a minor north-south artery that provides access to Area A of Fort Detrick. The eastern border of Area A is formed by Opossumtown Pike, which is a major north-south artery that also provides access to Area A. Military Road, a southwest-northeast minor artery, runs along the southern boundary of Area A.

A large transportation project called the US 15/Monocacy Boulevard Interchange is currently planned to ease traffic flow by adding a new north-south connection on the east side of Frederick. The project includes the extension of Monocacy Boulevard from Hughes Ford Road north to Gas House Pike and Schifferstadt Boulevard south to Gas House Pike creating a route connecting I-70 to US 26 and US 15 (Frederick News-Post, 2008). The US 15/Monocacy Boulevard Interchange is a MDOT priority BRAC improvement. Project planning for the US 15/Monocacy Boulevard Interchange is complete. However, while city and county funding has been designated for the project, sufficient funding has yet to be secured from state or Federal sources (Frederick News-Post, 2009c)

There are currently three access gates to Area A on the Installation: the Veterans Gate, the Opossumtown Farm Gate, and the Old Farm Gate. All gates are guarded when open. The Veterans Gate is located at the intersection of West Seventh Street and Military Road, on the southeast side of Area A. This intersection is controlled by a stop light on the eastbound approach at Military Road, the southbound approach exiting the Installation, and for northbound traffic entering Fort Detrick from West Seventh Street. The Veterans Gate was renovated in 2005 and enables decaled vehicles to enter the Installation via multiple lanes for northbound traffic. The new design included the re-routing of the entrance road and additional guard booths, which allows about 75 vehicles to queue on Fort Detrick, providing better security and reducing congestion on West Seventh Street. Veterans Gate is the only gate open 24 hours a day, seven days a week, including holidays, to vehicles entering and exiting the Installation. Only DoD decaled vehicles are permitted entrance between the hours of 0600 and 1800, Monday through Friday. However, when all other gates are closed, non-decaled vehicles are permitted entrance to Area A through Veterans gate between the hours of 1800 and 0600, Monday through Friday and all day on weekends and holidays.

The Old Farm Gate is located at the intersection of Rosemont Avenue and Old Farm Road. Vehicles can enter the Installation using the Old Farm Gate from 0600 to 1800 hours, Monday through Friday. The Old Farm Gate is closed all other hours, including weekends and holidays. Currently, this gate is the primary daytime access point for both visitors and non-DoD decaled vehicles, as well as commercial and construction related trucking. The Old Farm Gate was closed from March 2007 to January 2008 for renovations. The gate was renovated to include a truck inspection station, which inspects all incoming deliveries. The truck inspection station uses gamma ray technology for security checks.

The eastern gate to Area A, the Opossumtown Gate, is located at the intersection of Porter Street and Opossumtown Pike. The Opossumtown Gate is open only for DoD decaled vehicles entering and exiting the Installation between the hours of 0500 and 1800, Monday through Friday. The gate is closed all other hours, including weekends and holidays. The Opossumtown Gate is scheduled to close 22 March 2010 through 23 June 2010 for construction.

A new gate, Nallin Farm Gate, at the Opossumtown Pike and Amber Drive intersection is planned for completion in 2012. The new gate will be the primary access point for trucks and visitor vehicles but will also have the capability to process DoD decaled vehicles and service vehicles. The purpose of the new Nallin Farm Gate is to replace non-compliant and capacity limited Opossumtown Gate with a new gate that meets current Army ACP design criteria, such as revised roadway geometry to improve traffic flow and the addition of an alternative roadway layout to improve threat detection. The new Nallin Farm Gate will also establish an east-west route for the northern part of Area A and provide a long term avenue for trucks to access the NIBC (USACE, 2009). When the new Nallin Farm Gate becomes operational, Opossumtown Pike Gate will be closed but not demolished. If in the future it is determined that internal traffic volume will require an additional exit, the current facility can be re-used for exiting only.

4.13.2 EXISTING TRAFFIC CONDITIONS

In September 2009, 24 hour gate counts were collected over a two week period at all three of Fort Detrick's access points, Opossumtown Gate, Veterans Gate, and Old Farm Gate. All vehicles, were counted as they entered Area A (USACE, 2009). The collected gate data indicated Area A is experiencing an increase of approximately 34 percent in vpd from December 2005. According to April 2008 gate counts, all trucks, including single unit trucks, buses, intermediate sized trucks, and interstate semi trucks, comprise less than one percent of the vehicles entering Area A. However, 92 percent of all trucks enter Area A during the morning rush hours of 0600 and 1000. During the morning rush, 6.5 percent of all vehicles entering Area A are trucks.

Due to the closing of Rosemont Gate, the rerouting of non-DoD decaled vehicles to Old Farm Gate, and the 34 percent increase in overall vehicles entering Area A, Veterans Gate, Old Farm Gate, and Opossumtown Gate have each experienced an increase in the number of vpd entering their gates compared to December 2005. As of September 2009, approximately 46.6 percent of the vehicles entering Fort Detrick Area A utilize the Veterans Gate. Veterans Gate receives 18.6 percent more vpd than it received in December 2005. Opossumtown Gate currently receives approximately 20.8 percent of the vehicles entering Fort Detrick Area A; 72.9 percent more vpd than it received in December 2005. Approximately 32.6 percent of all vehicles and the majority of all trucks entering Fort Detrick Area A utilize the Old Farm Gate. The closing of Rosemont Gate, Veterans Gate changing to a DoD decal only gate, and the opening of the new truck inspection station has resulted in Old Farm Gate now receiving approximately 299.1 percent more vpd than it received in December 2005. The additional vehicles entering Old Farm Gate have resulted in occasional queuing onto Rosemont Avenue.

Fort Detrick gates operate well with little delay during morning and afternoon peak traffic periods. However, in the past, traffic problems have occurred at the Veterans Gate due to its location. Since the 2005 gate improvements to Fort Detrick's primary access control gate, the new two lane entrance road curves to the northeast and branches into four inbound lanes providing an increased area for vehicles to queue within the perimeter of the Installation.

Throughout most of the day these intersections operate well with little delay. The highest potential for congestion currently exists at Old Farm Gate during the morning and evening peak hours when the flux of traffic is heaviest and one-sided (inbound-heavy during AM peak and outbound-heavy during PM peak). Congestion and occasional queuing will be alleviated when the new Nallin Farm Gate becomes operational.

Gate processing capacity is dependent on the number of lanes available and the level of scrutiny being applied to both visitor and decaled traffic. Military Traffic Management Command Design Guide specifies peak rush hour traffic to be used as the design capacity to avoid queuing on exterior roadways. The Veterans Gate at 7th Street and the Old Farm Gate at Rosemont Avenue have both been remodeled. The Nallin Farm Gate at Opossumtown Pike is expected to be in operation in 2012. Veterans Gate and Old Farm Gate were designed to receive morning gate processing capacities of 2,400 vehicles per hour (vph) and 1,200 vph, respectively and evening capacities of 1,200 vph for both gates. PM capacities are less because there are fewer exit lanes than entry lanes. When it becomes operational in 2012, Nallin Farm Gate is projected to have an AM gate processing capacity of 1,200 vph and a PM capacity of 1,200 vph (STV, Inc. and John Gallup, 2006). In general, the highest potential for congestion occurs at the Veterans Gate during the morning and evening peak hours when the flux of traffic is heaviest and one-sided (inbound-heavy during AM peak and outbound-heavy during PM peak). Based on the 2009 gate count data, Veterans Gate and Old Farm Gate are currently operating well within their designed capacity during their AM peak and PM peak hours.

The gates have no room available to expand their number of lanes and limited acreage prohibits the addition of any more gates. If increased capacity is required in the future, dedicated gate access during AM and PM rush hours should be investigated. Allocating gate assignments to functional area groups may also reduce overloading of gate facilities (STV, Inc. and John Gallup, 2006). In addition, the new Nallin Farm Gate will allow for an increase in traffic volume during peak periods while reducing the traffic flow at the Old Farm Gate.

As defined by the City of Frederick, an intersection is said to operate at adequate level of service LOS when a signalized intersection operates at a LOS of D or better. Currently, Opossumtown Pike and Amber Drive operate at a LOS of A during both the AM and PM peak based on Critical Lane Analysis (CLA) and a LOS of B during both the AM and PM peak based on Highway Capacity – Signalized Intersection Analysis. The new Nallin Farm gate will require three new outbound lanes and two new inbound lanes to and from Opossumtown Pike, respectively. The Opossumtown Pike and Amber Drive intersection will also require additional turning lanes from Opossumtown Pike into Area A, a new traffic signal, and re-phasing and re-timing of the traffic signal. The future four legged intersection will have a CLA and Highway Capacity – Signalized Intersection Analysis LOS of C during the AM peak and D during the PM peak.

Vehicular transportation within Fort Detrick is available on primary, secondary, and tertiary roadways, which are controlled by signs, striping, and occasional direction by security personnel. The primary roadways on Fort Detrick are Porter Street and Ditto Avenue. Porter Street, Veterans Drive and Doughten Drive provide access to the commercial areas on-post (STV, Inc. and John Gallup, 2006). Porter Street runs southwest-to-northeast across the Installation with one lane of traffic in each direction. Ditto Avenue is the primary access route to the residential area. Secondary roadways on the Installation include Randall Street, Freedman Drive, and Nelson Street. Previously, Randall Street, a two-lane street, located west of Building 1425, intersected with Porter Street approximately 900 ft. east of Ditto Avenue. This roadway is

approximately 30 ft. wide with curb, gutter, and sidewalks on both sides. Randall Street serves USAMRIID facilities between Porter Street and Sultan Drive at “T” intersections. Veterans Drive is located north of the security checkpoint for vehicles entering the Veterans Gate. It intersects with Porter Street, creating a 4-way intersection. Freedman Drive serves as an access road to Building 1520 (Community Support Center and Commissary; east of Porter Street), and the extension of Freedman Drive serves as an access road to Building 1434 (Barquist Army Health Clinic) and the NIBC (west of Porter Street). Nelson Street serves Building 1671 (1110th US Army Signal Battalion) and the surrounding facilities near the Opossumtown Gate.

As growth continues, an additional primary road will need to be added that connects Nallin Farm Gate to Porter Street. Veterans Drive will need to be extended north and east through the northern parcel of the NIBC, eventually connecting to the new roadway from Nallin Farm Gate. This will provide an additional east/west thoroughfare across the post and ease circulation around the Installation. A realignment of Ditto Avenue is recommended to segregate residential traffic from commercial traffic on-post, particularly near the NIBC (STV, Inc. and John Gallup, 2006).

4.13.3 PUBLIC TRANSPORTATION

Due to projected increases in population in Frederick County and Montgomery County, a corridor study was initiated to investigate options that could reduce congestion and improve safety conditions along the heavily traveled I-270/US 15 Corridor (see Section 4.13.1). Depending on the final Local Approved Alternative, transit improvements to the I-270/US 15 Corridor may include new feeder bus routes, new premium bus routes, park-and-ride facilities, interactive transit information, and a shared use hiker-biker trail adjacent to the transit way.

Fort Detrick is served by four Frederick County TransIT routes. The Frederick Towne Mall Connector (Route 30) provides hourly service between the Frederick Maryland Rail Commuter (MARC) Station Transit Center in downtown Frederick and the Frederick Towne Mall. Route 30 has three stops that provide convenient access to Fort Detrick. One stop is at the Veterans Gate on Military Road; the second stop is at the intersection of Military Road and Rosemont Avenue; and the third stop is at the Old Farm Station Shopping Center at Old Farm Road (west of the Old Farm Gate). The FCC Connector (Route 60) operates from the Transit Center to FCC with the closest bus access to Fort Detrick at the intersection of Seventh Street and Taney Avenue approximately 600 feet from Veterans Gate. The Midtown Connector (Route 70) operates from the Transit Center to Frederick Shopping Center and Monocacy Shopping Center with the closest bus access to Fort Detrick at the intersection of Seventh Street and Taney Avenue approximately 600 feet from Veterans Gate. The North West Connector (Route 80) operates from the Frederick Towne Mall Shopping Center to the FCC and serves both Rosemont Gate and Veterans Gate (Jacobs and AECOM, 2009).

4.13.4 RAILWAYS

The City of Frederick was connected to the MARC Brunswick Rail Line on 17 December 2001. Service from Frederick includes three trains each morning into Union Station, just outside downtown Washington, DC, and three returning trains in the evening. Trains head for Washington, DC on the Brunswick Line from Point of Rocks. The MARC lines also provide service to Washington, DC, Baltimore, Maryland, and West Virginia. The Meet the MARC Shuttles are a network of three shuttle services that provide weekday feeder service to the

MARC train, two of which serve Fort Detrick. The Point of Rocks Shuttle which operates from the Point of Rocks MARC Rail Station to the Frederick Shopping Center via Fort Detrick's Veterans Gate and the Frederick Shuttle which operates from the Frederick MARC Rail Station via Veterans Gate and the Frederick Towne Mall (Jacobs and AECOM, 2009). The CSX Railroad system provides rail freight service in Brunswick, Maryland, and Harpers Ferry, WV. The Norfolk Southern Railroad system provides rail freight service in Hagerstown, MD.

4.13.5 AVIATION

The Baltimore/Washington International Thurgood Marshall Airport, Dulles International Airport, and Reagan National Airport provide commercial airline service and are located approximately 54 miles to the east, 43 miles to the southeast, and 50 miles to the southeast, respectively, from the Frederick area. The Hagerstown Municipal Airport provides cargo air service and is located 36 miles northwest of Fort Detrick. Commercial passenger service was suspended on 30 September 2007 when Hagerstown Municipal Airport's last carrier, Air Midwest, declined to renew its Essential Air Service (EAS) contract with the US DOT. As of 8 April 2008, no new passenger airlines have responded to a US DOT EAS request to provide subsidized service to the airport (Herald-Mail, 2008). The Frederick Municipal Airport is located approximately three miles east of Fort Detrick. The helipad, located in Area A southwest of Building 1520, is used infrequently for emergency air evacuation of medical patients and for "very important person" visitors (USAG, 2003a).

4.14 ENERGY RESOURCES

Energy produced from both natural gas and fuel oil currently supplies Fort Detrick energy demands. These fossil fuels produce GHG emissions which are currently limited by reduction goals stated in EISA and EO 13514. In an effort to reduce energy consumption and GHG emissions, the Fort Detrick EMS has set EQCC-approved environmental targets aimed at reducing energy consumption. As discussed in Section 2.8.1, Fort Detrick will reduce building energy consumption by three percent annually through FY 2015, or have 30 percent total reduction by FY 2015 relative to the 2003 baseline. Fort Detrick will also increase use of renewable energy five percent in FY 2010-2012 and seven percent in FY 2013 and beyond. Furthermore, the installation will implement new renewable energy generation projects on agency property for agency use and ensure that half of statutorily required renewable energy comes from new (as of 1999) sources. In newly constructed Federal buildings and Federal buildings undergoing major renovations, a 55 percent reduction (relative to the 2003 baseline) in energy generated by fossil fuel will be achieved. Utilization of alternative fuel sources (e.g., solar, Biofuels) to generate energy may be a feasible method for achieving reduced fossil fuel requirements at Fort Detrick.

4.14.1 ELECTRICITY

The Allegheny Power Company provides electrical power to the Installation via two 35-kV power lines, primarily from the Monocacy substation and secondarily from the Frederick substation. A new substation (the Old Farm; 230-12.5 kV) was constructed in 2003 on an easement adjoining the USDA complex in the north-central portion of Area A, and provides electricity to the surrounding Frederick community.

The demand for electricity at the Installation is high due to the energy-intensive nature of research activities conducted at Fort Detrick. The total electrical power consumption for the entire Installation was 160,418,230 kWh in FY 2007, 172,796,600 kWh in FY 2008, and 180,322,684 kWh in FY 2009 (Potter, 2009). An old electrical substation located south of Building 1434 has been dismantled and replaced with a new, higher capacity substation. The new substation will be able to accommodate the anticipated new facilities located within the vicinity.

4.14.2 NATURAL GAS AND NO. 6 FUEL

The Frederick Gas Company furnishes natural gas to Fort Detrick. Natural gas consumption for the entire Installation was 4,443,142 ccf in FY 2007, 3,042,584 ccf in FY 2008, and 2,757,837 ccf in FY 2009 (Potter, 2009). The Building 190 Boiler Plant consumed approximately 71 percent of the natural gas supplied to the Installation in FY 2009 (Potter, 2009).

No. 6 fuel oil is used primarily by the Building 190 Boiler Plant. The consumption of No. 6 fuel oil has varied over the years: 2,586,541 gallons (FY07), 2,271,145 gallons (FY08), and 2,356,390 gallons (FY09) (Hockensmith, 2009).

Replacement of fossil fuels for energy production, reduction of energy intensity, and reduction of GHG emissions are required for compliance with Federal environmental mandates. Fort Detrick will abide by legislative requirements stated in these mandates (see Section 2.8.1).

4.14.3 STEAM

Approximately 70 percent of all the steam generated at the Building 190 Boiler Plant is process steam, which is used in the SSP and the laboratories for sterilization and humidification (USAG, 2003a). The CUP recently became operational; it will service end users on the NIBC. End users located west of Ditto Avenue will be provided steam by the Building 190 Boiler Plant/waste incinerators (with the exception of NCI-Frederick, which is currently serviced by their newly-commissioned steam plants). Steam is distributed throughout the Installation via an extensive network of overhead and underground steam lines. The steam pressure leaving the Building 190 Boiler Plant is 100 to 115 lbs per square inch gauge (USAG and USMRMC, 2006). As stated in Section 2.7.4, the annual amount of steam produced at the Boiler Plant was approximately 605 million pounds in FY 07, 461 million pounds in FY 2008, and 266 million pounds in FY 2009 (Potter, 2009).

4.15 POLLUTION PREVENTION AND WASTE MANAGEMENT

4.15.1 WASTEWATER

4.15.1.1 *Wastewater Collection System*

Fort Detrick maintains two sewer systems: the sanitary sewer system and the existing LSS. Wastewater originating from some of the laboratories on the Installation (i.e., USAMRIID and USDA) is considered to be potentially infectious and is therefore collected separately via the existing LSS for pretreatment at the existing SSP before discharge into the sanitary sewer system. The existing LSS-SSP system is discussed in Section 4.15.1.4.

Wastewater generated on the central and western portions of Area A travels by gravity flow through the sanitary sewer system to the pumping station adjacent to Building 201.

Groundwater pumping from the vicinity of Building 350 and leachate pumped from the Area B landfill also discharge into that portion of the sanitary sewer system. This wastewater is pumped northeastward approximately 2.4 miles to the WWTP, which is located on Area C, via two parallel 12 inch pipelines. Force mains conveying wastewater from the sources in the eastern portion of Area A discharge into the twin 12-inch pipelines at Manholes 60 and 61, on the southeastern boundary of Area A, and at Manholes 69 and 70, located at the crossing under Opossumtown Pike.

An engineering study conducted for DIS (URS, 2005) evaluated the surcharging (overflow) that has occurred at Manholes 60 and 61 during significant rain events. Fort Detrick has mitigated (but not entirely eliminated) the problem by raising these manholes to approximately 6 ft. above local grade level. Additionally, the wastewater pumps in Building 101 are throttled to alleviate surcharging. The Fort Detrick Roving Patrol is alerted prior to pending rainfall events to inspect Manholes 60 and 61 during and immediately after the storm and report any problems. The warning capability was recently automated by installation of level switches in Manholes 60 and 61 to initiate a warning message when either one or both of the manholes are half full. The study identified additional measures to alleviate the surcharging.

The engineering study also addressed the capacity of the Fort Detrick wastewater treatment system. The study identified a groundwater pumping station near Building 350 that is used to lower the shallow groundwater of the area by discharging groundwater to the sanitary sewer. The pump “contributes a constant and substantial amount of non-sewage groundwater to the sewer system.” This practice effectively reduces the available capacity of the sewer system by the amount of groundwater that is pumped daily (URS, 2005). USAG officials noted that discharge from this pumping station was initially released into the stormwater system, but subsequent testing in the mid-1990s revealed the presence of contaminants, at which point USAG elected to discharge the water to the sanitary sewer. USAG performed groundwater sampling at this location in March 2006. The analytical results indicated the existence of contaminants above surface water discharge regulatory limits. As a result, the groundwater will continue to be discharged to the sanitary sewer system. Periodic re-sampling will be conducted to determine if contaminant levels decrease below regulatory limits (USAMRMC and USAG, 2006).

USACHPPM recently characterized wastewater flows and characteristics within the sanitary sewer system at Fort Detrick (USACHPPM, 2005). The study involved sampling and flow monitoring at key manholes on Area A for streams identified as DIS effluent, NCI effluent, combined Area B and existing SSP effluent, combined housing areas and USAMMDA effluent, and USAMRIID effluent, as well as sampling and flow monitoring of the influent and effluent streams at the Installation WWTP. All samples underwent comprehensive analyses, including:

- Conventional wastewater parameters (5-day Biological Oxygen Demand, Chemical Oxygen Demand [COD], Total Suspended Solids, Ammonia Nitrogen, Total Kjeldahl Nitrogen, Nitrite and Nitrate Nitrogen, Total Phosphates, Orthophosphates, Sulfide, Oil and Grease, and Total Petroleum Hydrocarbons);
- Industrial wastewater parameters (cyanide, metals, and phenol);
- Toxic organic chemicals (VOCs, Semi-volatile Organic Compounds (SVOCs), and Pesticides/ polychlorinated biphenyl [PCBs]); and
- Water quality parameters (chloride).

The combined wastewater stream at the WWTP amounts to 60 percent to 80 percent of the Fort Detrick WTP production. It is estimated that 90 percent of the total wastewater generated at Fort Detrick is sanitary sewage; the remainder is industrial wastewater (USAMRMC, 2001). (Note: the wastewater includes inflow and infiltration in addition to the sources indicated above.)

4.15.1.2 Wastewater Treatment Plant

The Fort Detrick WWTP, located in Area C, provides secondary treatment through the use of trickling filters. The WWTP currently operates at 20 to 45 percent of its permitted capacity (2.0 mgd), treating 0.4 to 0.9 mgd of wastewater (Hockensmith, 2009). Influent wastewater at the current plant is treated using the following process: primary clarification, trickling filter biological treatment, secondary clarification, disinfection using chlorine, de-chlorination using SO₂ and oxidation prior to discharge into the Monocacy River. The WWTP outfall is downstream from both the City of Frederick WTP and Fort Detrick WTP water intakes (Lewis, 2010).

Sludge generated by the wastewater treatment process is thickened, dried, and sent to the Fort Detrick Municipal Landfill for disposal. The Sewage Sludge Utilization Permit No. 2009-SLD-5092 was issued on 20 October 2009, and provides guidance for sewage sludge disposal at the landfill. In April 2006, MDE approved a reduced radiological monitoring program for the WWTP sewage sludge. Under the reduced monitoring program, Fort Detrick is required to conduct annual radiological sampling of this sewage sludge (USAMRMC and USAG, 2006).

The WWTP is operated under NPDES Permit No. MD0020877, which allows an annual average flow of 2.0 mgd of treated wastewater to be discharged into the Monocacy River. This permit, which expires on 30 November 2014, specifies limits on the effluent from the Fort Detrick WWTP (MDE, 2009a). In addition to volume limitations, effluent characteristics are limited on both average concentration and loading rate basis (COMAR 26.08.03 and 26.08.04). Additionally, COMAR 26.08.02 requires that discharges to Use IV-P waters not elevate stream temperatures outside the mixing zone above either 75 degrees Fahrenheit (°F) or the ambient temperature of the surface waters, whichever is greater.

As required in the NPDES Permit, the WWTP operators utilize both on-site and off-site water quality laboratories to perform required bacteriological, chemical, and physical testing of effluent (USAG, 2003b). In addition, an effluent toxicity monitoring program was conducted at the WWTP during CY 2009. The evaluation revealed that the effluent did not affect the survival of cladocerans (*Ceriodaphnia dubia*) and fathead minnows (*Pimephales promelas*) (DIS, 2005a; 2005b; 2005c; 2005d). Results of the evaluation were submitted to MDE.

A recent evaluation of the WWTP characterized the facility as "...an extremely reliable, easy to operate system...." A review of monthly reports covering six years of operation found "only two borderline pH excursions." The report concluded that the "influent loadings are fairly low, and consistent on a monthly basis" (URS, 2005).

The WWTP has sufficient capacity under the NPDES permit to treat up to 730 million gallons per year of wastewater generated by activities at Fort Detrick. The WWTP treated approximately 254,405,000 gallons in FY 2007, 198,855,000 in FY 2008, and 214,275,000 in FY 2009 (Hockensmith, 2010a).

The Fort Detrick EMS has proposed actions to reduce wastewater impacts to water resources. As part of an overall goal to research the integrity of the sanitary sewer system, EMS has proposed to: evaluate the system for inflow, infiltration, and storm drain cross connections that may cause an increase in flow during rain events; and investigate and establish normal weather flows and rain event flows at the landfill leachate and utility pits. Further discussion regarding these actions is presented in Section 4.17.4.1.

4.15.1.3 *Enhanced Nutrient Removal Policy*

The Fort Detrick WWTP discharges treated wastewater into the Monocacy River, a tributary of the Potomac River, which eventually empties into the Chesapeake Bay. Deterioration of the water quality in the bay has occurred over the last 30 years. Former Governor Parris N. Glendening issued an EO, *Nutrient Pollution Reduction Goals for Chesapeake Bay*, instructing the MDE to develop and implement an ENR policy for WWTPs to meet the 2010 goal set in the new Chesapeake Bay Agreement. Maryland, Virginia, Pennsylvania, Delaware, West Virginia, New York, the District of Columbia, the USEPA, and the Chesapeake Bay Commission signed the historic Chesapeake 2000 Agreement to restore the water quality in the Chesapeake Bay and its tributaries, replacing the first agreement signed in 1987 (MDE WMA, 2008).

All significant WWTPs, federal facilities, and privately owned sewage treatment plants that have been identified by MDE are required to upgrade to ENR. Additionally, nutrient trading will not be available as a substitute for the upgrades. The Chesapeake 2000 Agreement set annual nutrient loading goals of 175 million pounds of nitrogen and 12.8 million pounds of phosphorus, of which Maryland's portion is 37.25 million pounds for nitrogen and 2.92 million pounds for phosphorus. These goals have been incorporated into Maryland's Tributary Strategy Statewide Implementation Plan (Point Source Tributary Strategy) and are being implemented as loading caps. Once Maryland and the other states achieve the necessary reductions, they must maintain that level to sustain improved water quality in the Bay (MDE WMA, 2008).

The Point Source Tributary Strategy is a two-part plan to (1) upgrade significant WWTPs (those with design capacities of 500,000 gallons per day or greater) with state of the art ENR technology to meet permit loading limits based on concentrations of 3.0 milligrams per Liter (mg/L) or less total nitrogen and 0.3 mg/L or less total phosphorus and (2) maintain the nutrient load caps for all point sources (MDNR, 2008).

As specified in the Point Source Tributary Strategy, existing significant municipal WWTPs in Maryland are those with the design capacity of 500,000 gallons per day or greater (66 WWTPs total), the combined flow of which accounts for more than 95 percent of the total sewage flow generated in Maryland and for approximately 30 percent of the nutrient loading of the Chesapeake Bay. Nutrient load caps apply to significant point source discharges of nutrients within the Chesapeake Bay Watershed. Annual nutrient load caps are based on "design capacity" as defined above and an annual average concentration of 4.0 mg/L total nitrogen and 0.3 mg/L total phosphorus (MDE WMA, 2008).

The Fort Detrick WWTP currently treats 0.4 to 0.9 mgd of wastewater (Lewis, 2009), which is above the threshold for the new nutrient loading goals. The Point Source Tributary Strategy has established specific nutrient load allocations for the Fort Detrick WWTP that will require state-of-the-art nutrient reduction capability. The ENR strategy total nitrogen load cap is 24,364 lbs/year and the phosphorus load cap is 1,827 lbs/year. The NPDES Permit has a "re-opener" provision

for adding the new nutrient allocations and the state government will incorporate the load caps into NPDES permits (MDE WMA, 2008).

The existing WWTP does not meet the MDE reduced discharge limits for nitrogen and phosphorus to satisfy ENR standards. The modified discharge permit issued to Fort Detrick in June 2008 requires Fort Detrick to bring the plant up to current standards. Per the modified permit, the construction completion date for the project must be by 30 June 2011. The plant will be required to meet all ENR standards starting 1 July 2011. This project is NEPA Approved and is discussed in Section 2.5.8.

4.15.1.4 Laboratory Sewer System-Steam Sterilization Plant

Current requirements mandate primary decontamination treatment of "biologically contaminated materials" at the point of generation, i.e., the laboratory, prior to release. The existing LSS conveys potentially infectious wastewater generated by laboratory activities at the existing USAMRIID facilities (Buildings 1408, 1412, and 1425) and the USDA Greenhouse to the existing SSP for secondary sterilization by injection of steam. This provides the required pretreatment in accordance with BMBL standards for USAMRIID laboratory activities involving dangerous and highly infectious etiologic agents. As noted in Section 2.9.1, the existing SSP provides a second sterilization for Animal BSL (ABSL)-3, BSL-3, ABSL-4, and BSL-4 wastewater from USAMRIID, which is initially decontaminated at the laboratory before discharge to the existing LSS. The USDA greenhouse complex is connected to the existing LSS-SSP system because research at this facility involves exotic and potentially invasive species (USAMRMC, 2001). The total amount of potentially infectious wastewater treated at the existing SSP was approximately 12,397,350 gallons in FY 2007, 13,178,000 gallons in FY 2008, and 11,572,000 gallons in FY 2009 (Hockensmith, 2010a).

4.15.2 MUNICIPAL SOLID WASTE AND RECYCLING

4.15.2.1 Fort Detrick Incinerator Plant

The Incinerator Plant consists of two MSW incinerators (B-1 and B-4) and two medical waste incinerators (B-5 and B-6) located in Building 393 at the western border of Area A, approximately 3,400 ft. southwest of the proposed USAMRIID Stage 1 and Stage 2 sites. The MSW units were installed in 1975. In 1995, the facility was expanded by 5,000 ft.² to accommodate the medical waste incinerators.

The overall operation of the incinerators is subject to conditions of Refuse Disposal Permit (No. 2005-WIN-0341) issued by the MDE Waste Management Administration (WMA), effective through 29 June 2010. Operation of the two municipal waste and two medical waste incinerators is also subject to conditions of the CAA Title V Part 70 Operating Permit (No. 24-021-00131) issued by MDE Air and Radiation Waste Management Administration (ARMA) effective through 31 March 2014 (Benson, 2009). Both permits set capacity limits on the incinerators.

The MDE WMA Refuse Disposal Permit sets capacity limits based on the average amount of waste projected to be incinerated in the next five consecutive years. Currently, the Refuse Disposal Permit sets a total combined limit of all incinerators at 8,400,000 lbs per year. MDE has indicated that the refuse disposal permitted capacity may be increased when/as needed by submitting a formal request to the Department (Dressler, 2010).

The MDE ARMA CAA Title V Part 70 Operating Permit sets capacity limits based on the design of the incinerators and their combustion process, and the discharges produced. This permit does not specify the number of days a year the incinerators can burn. For purposes of this EA, calculations were based on the incinerators typical operation of five days a week (260 days a year). The CAA Title V Part 70 Operating Permit states capacity for each municipal waste incinerator is 78,000 lbs per day; therefore during a 260 day operating year the combined capacity is 40,560,000 lbs. The permit states the capacity for each medical waste incinerators capacity is 24,000 lbs per day; therefore the combined medical waste incinerator capacity is 12,480,000 lbs per year. In summary, the Refuse Disposal permit capacity is a projection that can be revised when necessary while the CAA Title V Part 70 Operating Permit defines incinerator capacity based on design. Therefore, the Operating Permit capacity is used throughout the EA when calculating capacity utilization.

Each of the two MSW incinerators has the capacity to incinerate over 3,000 lbs per hour and can only accept residential, commercial, and mixed residential and commercial MSW from Fort Detrick. The refuse disposal permit restricts the operating hours to 6am - 10 pm Monday-Friday (Adkins, 2010). Currently the municipal waste incinerators are operating at approximately 11 percent of capacity (Potter, 2009).

The approximate composition of incinerated MSW at Fort Detrick consists of the following:

- 15 percent office waste (paper, magazines, Styrofoam cups, packing materials, drink containers, furniture, etc.)
- 30 percent clean laboratory waste (animal bedding, cages, animal shipping boxes, papers, cleaning supplies such as mops and buckets, gloves, drink containers, and non-salvageable equipment such as instruments, pumps, etc.)
- 15 percent industrial waste (unwanted unrecoverable materials including wire, plastic pipe and fittings, pallets, broken parts, broken equipment, etc.)
- 25-30 percent residential waste (household refuse, domestic garbage, etc.)
- 5 percent restaurant waste (from establishments serving food cooked on premises, grocery stores, convenience stores, etc.)
- 5 percent construction and demolition waste (building parts such as walls, doors, floors, and carpets, furniture, etc.)
- <5 percent recreational waste (from parks, sports fields, etc.)
- <5 percent seasonal waste (grass, leaves, plant trimmings, Christmas trees, etc.)

The amount of MSW incinerated at Fort Detrick was 4,800,000 pounds in FY 2007, 4,840,000 pounds in FY 2008, and 4,242,000 in FY 2009 (Potter, 2009). NCI-Frederick is the main contributor of MSW, accounting for approximately 45 percent of Fort Detrick's total MSW stream (Hockensmith, 2010a).

4.15.2.2 Fort Detrick Municipal Landfill

The Fort Detrick Municipal Landfill holds Refuse Disposal Permit (No. 2005-WMF-0327) issued by MDE WMA on 11 July 2005, and effective through 10 July 2010 (USMRMC and USAG, 2006). The permitted area consists of a 60.9-acre fill area within Area B. There is a separate gate for the landfill, which remains locked when landfill operators are not present, in accordance with the permit requirements (DHS and USAG, 2004). This landfill may only accept domestic, municipal, commercial, industrial, agricultural, silvicultural, and construction waste generated at

Fort Detrick. Types of waste that are not permitted for disposal at the Fort Detrick Municipal Landfill include controlled hazardous substances, liquid waste, special medical waste, radioactive materials, automobiles, large containers such as drums or tanks (unless flattened or crushed and empty of contents), animal carcasses, untreated sewage, truckloads of separately collected yard waste, and tires, unless otherwise specifically authorized by a valid permit issued under COMAR.

The landfill is constructed with compacted cell floors, synthetic geomembrane liners, and a leachate collection system. A cover of six inches of compacted earth is placed over exposed solid waste daily to prevent odor and particulate emissions, and to minimize infiltration of rainwater into active cells. Intermediate and final covers over completed lifts are installed to depths of one-foot and two-feet, respectively. The disposal site is graded to minimize runoff, to prevent erosion and ponding, and to drain surface water from the landfill area (USAMRMC and USAG, 2006).

In compliance with the permit to operate, the Fort Detrick Municipal Landfill has groundwater monitoring wells installed for leak detection, and a leachate disposal system to collect waste liquids percolating through the landfill, pump it to Area A for discharge into the sanitary sewer system and treatment at the Fort Detrick WWTP (See Section 4.15.1). Leachate volumes and local rainfall amounts are reported monthly to the MDE Solid Waste Program in accordance with the waste disposal permit (URS, 2005).

During the decommissioning of the DA's facilities using radioisotopes at Fort Detrick, the landfill leachate also was monitored for radioisotope contents. Analysis of periodic leachate samples from March 2003 to April 2004 showed a low-level concentration of tritium, on average below the drinking water standard set by USEPA (USAG, 2003b). The DA's independent audit report indicated that the tritium in the leachate might be from other non-licensed tritium sealed sources, such as compasses disposed at the landfill (USAG, 2003c). No tritium or other radioisotopes were detected in the groundwater monitoring wells around the landfill. The NRC and MDE allow the leachate to be pumped to the WWTP for treatment, and the discharge of tritium in the WWTP effluent to the Monocacy River was shown to have negligible environmental consequences (USAG, 2004).

Additionally, monitoring of the landfill leachate for bis (2-ethylhexyl) phthalate was conducted, as required under the landfill permit, from June 2000 through June 2005 and reported to MDE. This monitoring was done on a monthly basis from June 2000 to April 2002, and then revised to quarterly testing based on non-detects for all results from July 2001 through April 2002. Based on consistently negative results, the leachate monitoring program has been revised; beginning in Spring 2006, the landfill leachate is analyzed semi-annually, on the same schedule, and for the same parameters as the groundwater monitoring wells at the landfill (USAMRMC and USAG, 2006).

At the end of 2009, the remaining landfill capacity reported to MDE was 902,019 cubic yards (cu. yd.). From 2007 thru 2009, the Fort Detrick Municipal Landfill accepted 2,464 cu. yd. of material. Each year since 2005, a detailed topographical survey was completed of the landfill area and confirms records of the remaining capacity at the landfill. This survey is completed annually and compared to the site data to make acceptance totals as accurate as possible (Potter, 2009). The estimated average annual rate of waste disposal based on this three-year average is approximately 821 cu. yd., which includes ash, refuse, fill, sludge, and cover

material. Using this rate as an indication of future activity, assuming that solid waste quantities do not increase significantly, the Fort Detrick Municipal Landfill will reach its maximum permitted capacity in 437 years (Adkins, 2009).

4.15.2.3 *Recycling*

A variety of materials at Fort Detrick are recycled, including newspaper, white paper, cardboard, glass, aluminum cans, steel cans, and various scrap metals. Computer cards and scrap metal are shipped to the Defense Reutilization and Marketing Service (DRMS) at the Letterkenny Army Depot for recycling. Other DRMS facilities are located in Mechanicsburg, PA and Fort Meade, MD (USAG, 2003a). Waste oil is also recycled at Fort Detrick. A contracted recycling firm collects the waste oil from various points on the Installation (USAG, 2003a). The MSW recycling diversion rate at the Installation was approximately 46 percent during FY 2009 (Adkins, 2009).

4.15.3 SPECIAL MEDICAL WASTE

Medical waste is subject to Federal, state, and local regulations to protect transporters and the public from potential hazards that are associated with possible infectious agents in the waste. Medical waste at Fort Detrick is incinerated in accordance with BMBL guidelines (CDC and NIH, 2007). In general, special medical waste includes human and animal blood or materials soiled with blood, cultures and stocks of infectious agents or materials soiled with infectious agents, syringes, needles, and certain animal bedding.

All infectious medical waste must be properly packaged for transportation to the disposal site. Special medical waste is collected in 4-millimeter-thick, waterproof, tear-resistant, non-chlorinated, red plastic bags. Contaminated sharps are handled separately and are stored in combustible, impenetrable, and puncture-resistant containers. Packaging and handling procedures for medical waste must be followed precisely, as directed by immediate supervisors and the Installation Safety Officer. All medical waste is disposed of via the Fort Detrick medical waste incinerators in compliance with Federal, state, and local regulatory requirements (USAMRMC and USAG, 2006).

Fort Detrick operates the two medical waste incinerators under Refuse Disposal Permit (No. 2005-WIN-0341) issued by the MDE WMA on 29 June 2005, as noted in Section 4.15.2.1. The two medical waste incinerators have the capability to safely incinerate and decontaminate infectious materials generated from the Installation's research activities. Currently, the medical waste incinerators are operated 8 hours a day, 5 days a week, and dispose of an average of approximately 5,400 lbs of medical waste per day (Potter, 2009). Typically one medical waste incinerator is in operation while the other is down for routine maintenance, although both of them can be operated at the same time and up to 24 hours per day under the permit conditions (Adkins, 2010). The total amount of medical waste incinerated was 1,338,000 pounds in FY 2007, 1,352,000 pounds in FY 2008, and 1,398,000 pounds in FY 2009 (Potter, 2009). The major generators of medical waste at Fort Detrick are NCI-Frederick (the largest), USAMRIID, and the USDA.

Ash from the medical waste incinerators is sampled and analyzed, and the analytical results are submitted to MDE. A free liquids test is performed on a quarterly basis, and a Toxicity

Characteristic Leaching Procedure is conducted semi-annually (USAG, 2003a; USAMRMC and USAG, 2006).

Employees of facilities that generate or handle medical waste must be trained in the safe handling of infectious agents, associated equipment, and proper disposal procedures for medical waste. SOPs have been established to support and comply with the *Exposure Control Plan for the Occupational Exposure to Bloodborne Pathogens* (29 CFR 1910.1030). These policies and procedures are applicable to all DIS personnel of the Refuse Collection and Disposal Section who come into contact with blood or other potentially infectious medical wastes. All DIS personnel receive initial and annual training, which includes instructions for use of personal protective equipment (PPE). All DIS refuse personnel are offered the hepatitis B vaccine within 10 working days of their initial work assignment (USAG, 2003a).

4.15.4 HAZARDOUS WASTE

Under the provisions of RCRA, Area A of Fort Detrick is registered as a large quantity generator of hazardous wastes (USEPA ID No. MD8211620267). This USEPA ID No. applies only to hazardous waste generated on the Army-owned portion of Area A. Separate USEPA ID numbers have been issued by the USEPA to the USAG for Area B, and to NCI-Frederick. In addition, the NIAID IRF is separately registered. RCRA is administered in Maryland by the MDE Hazardous Waste Program through regulatory requirements for Controlled Hazardous Substances (COMAR 26.13). Except where noted, the section as follows applies only to USAG and tenant activities covered under USEPA ID No. MD8211620267. NIAID's waste disposal procedures are independent of USAG. Hazardous wastes, as defined in COMAR 26.13.02, and by the CFR Title Part 261 include a wide variety of substances and toxic materials, generated or used in a multitude of processes.

Biomedical research laboratories and infrastructural support activities are the major sources of hazardous waste on the Installation (subject to USAG's USEPA ID number for Area A). Laboratory research activities typically generate small quantities of many different types of hazardous waste, while other activities with more predictable waste streams usually generate larger quantities of a few types of hazardous waste. All hazardous waste generated at the Installation are managed and disposed of in accordance with applicable Federal, state, local, and DA regulations (USAG, 2003a).

With rare exceptions, hazardous waste or spent hazardous material that is generated in laboratories on the Installation is accumulated by the generator within a SAP. A generator may accumulate up to 55 gallons of hazardous waste or 1 quart of acutely hazardous waste (i.e., P-listed) at a SAP before it is required to be transported to a 90 day storage area to await disposal offsite. In compliance with the requirements of 40 CFR 262.34, a SAP is located "at or near" the point of generation, and "under the control of the operator" generating the hazardous waste. The number of SAPs at Fort Detrick varies from time to time depending on waste generation and collection needs (USMRMC and USAG, 2006). All containers in a SAP must be clearly marked with the words "Hazardous Waste" or "Waste" with the contents of the container.

The accumulation start date is either 1) the date on which hazardous waste reaches the quantitative limit within the SAP, or 2) the date on which a hazardous waste container leaves the SAP, which simultaneously starts the 90-day maximum time period that the container may remain on the Installation.

With the exception of hazardous waste generated at USAMRIID, hazardous waste is transported from a SAP directly to USAG's Building 262, 90-day hazardous waste storage site, prior to being transported from Fort Detrick. Within USAMRIID, hazardous waste is transported from the USAMRIID SAPs and is temporarily held at the 90-day site at Building 1425 prior to transport to the 90 day facility at Building 262.

Requirements for 90-day storage areas include secondary containment, chemical resistant and seamless floors, emergency equipment (e.g., phone, shower, fire protection), and appropriate warnings and signs indicating the potential hazards associated with the facility.

Once wastes are received at USAG's Building 262, 90-day storage area, they are separated according to their USEPA and US DOT hazard classification (i.e., ignitable, corrosive, toxic, and/or reactive). Workers prepare waste disposal documentation and secure the waste until it is packaged and shipped offsite. Hazardous waste is packaged for off-site disposal in accordance with all US DOT shipping requirements and shipped via a permitted hazardous waste transporter to a permitted off-Installation TSDF. The Defense Reutilization Marketing Office contracts for the removal and disposal of hazardous waste.

4.15.5 RADIOLOGICAL WASTE

Radiological waste generated by the Installation will be disposed of in accordance with all NRC requirements. All radiological waste will be shipped off-site for disposal. The US DOT specifies requirements for container safety, labeling, routing, and emergency response for low-level radiological waste. These requirements are described in 49 CFR Parts 171-179 (*Hazardous Materials Regulations*).

Low-level radiological waste generated on the Installation is shipped to a licensed low level disposal facility. USAG no longer holds a NRC license; rather each mission partner at Fort Detrick using radioisotopes is required to have its own NRC license. NRC requires a plan that identifies and shows how the licensed organization will use, store, and dispose of radioisotopes. The NRC licensee must also have a Decommission Plan and a Financial Plan in the event that decommissioning is necessary.

No organization is allowed to dispose of radiological waste in the Installation's municipal trash, sanitary sewer system or LSS-SSP. NRC considers Fort Detrick's sewer system to be a private sewer because USAG owns and operates the WWTP and the Area B landfill. The WWTP conducts monitoring for the presence of radiological isotopes. Samples of the sludge are collected once a year from the drying beds and are sent to a contractor for evaluation. If the level of radioisotopes present in the sludge is within regulatory limits, the sludge is taken to the Area B landfill for disposal (USAMRMC and USAG, 2006).

4.16 HAZARDOUS MATERIAL MANAGEMENT

32 CFR 650, *Environmental Protection and Enhancement*, provides guidance for the identification and management of hazardous materials at DA facilities. Mission partners and organizations at Fort Detrick are responsible for obtaining their own hazardous materials. Individual mission partners obtain hazardous materials from private manufacturers for shipment directly to their facilities. Hazardous materials are then stored in or near the users' laboratories typically in cabinets, refrigerators, or freezers. In addition to agency-specific SOPs, all Mission

Partners must comply with the requirements of Federal, DA, USAG, state, and local regulations with regard to the procurement, use, storage, and disposal of hazardous materials (USAMRMC and USAG, 2006).

The Fort Detrick Fire and Emergency Services Division (F&ESD) provides fire prevention and protection services to the Installation, which includes responding to emergencies involving hazardous materials. The F&ESD maintains and operates three fire engines, as well as a fully-equipped special operations vehicle. In addition to being a hazardous response unit, the special operations vehicle has the technology to detect chemical and biological agents, as well as the equipment necessary for decontaminating and medically treating people in the event of a terrorist attack (Frederick News-Post, 2004). Ambulance service is provided by Frederick County. DIS also maintains equipment and materials to assist in the cleanup of hazardous material spills. In accordance with the *Superfund Amendments and Reauthorization Act* (SARA), the F&ESD receives copies of all Material Safety Data Sheets (MSDSs) for hazardous materials stored in USEPA reportable quantities on the Installation and receives itemized lists of the hazardous materials stored in non-reportable quantities. F&ESD personnel and employees who manage or handle hazardous materials are trained in accordance with Federal, DA, USAG, state, and local regulations (USAMRMC and USAG, 2006).

4.16.1 HAZARDOUS LABORATORY CHEMICALS

29 CFR 1910.1450, *Occupational Exposure to Hazardous Chemicals in Laboratories*, sets forth procedures for the handling of hazardous chemicals in laboratories and describes the safety standards that must be applied in a laboratory setting in which a chemical hazard exists. In accordance with this regulation, laboratories must develop a written Chemical Hygiene Plan (CHP) that details work practices capable of protecting employees from the health hazards presented by hazardous chemicals used in that particular environment, as well as general procedures for the operation of equipment and PPE. The CHP and laboratory-specific procedures must provide information about handling controlled substances, chemical acquisition, chemical storage, potential health risks, environmental monitoring, PPE, use of fume hoods, safety procedures, inspections, and laboratory audits. The CHP and other written safety policies and procedures must be available for all laboratory personnel (USAMRMC and USAG, 2006).

Hazardous chemical storage facilities are constructed and operated in accordance with 29 CFR 1910, DoD Manual 4125.19M2, and other applicable regulations. The compatibility of chemicals, ventilation, firewalls, containment, and protection from the elements are required considerations for the storage of hazardous materials. Appropriate hazard communication information (e.g., warning signs and labels) must be posted to alert personnel to the presence of hazardous chemicals. PPE must be available for worker protection, and health and safety materials must be available for emergency response/cleanup, treatment, and decontamination. The Hazardous Materials Management Program specifies that all hazardous materials and their containers must be used and disposed of according to label instructions as described in 32 CFR 650. Finally, the HMMO is responsible for ultimate disposal of all excess and unserviceable hazardous chemical stocks (USAMRMC and USAG, 2006).

SARA establishes the reporting requirements for the storage and release of hazardous materials (i.e., threshold planning quantities and reportable quantities for hazardous materials). SARA requires that the owner or operator of any facility that stores hazardous materials in

reportable quantities must provide a list of all hazardous materials stored and their corresponding quantities and MSDSs to the appropriate State Emergency Response Commission, Local Emergency Planning Committee, and the local fire department (USAMRMC and USAG, 2006). Ten chemicals are stored in USEPA reportable quantities on the Installation: No. 2 fuel oil, No. 6 fuel oil, diesel fuel, gasoline fuels, used motor oil, chlorine, lead acid batteries with sulfuric acid, nitrogen, paraquat dichloride, sulfur dioxide, and sulfuric acid (USAG, 2009a).

4.16.2 PESTICIDE MANAGEMENT

4.16.2.1 *Integrated Pest Management Approach*

All pest management activities at Fort Detrick are implemented in accordance with the current Installation Pest Management Plan (IPMP) (USAG, 2006c). The IPMP is a framework through which pest management is defined and accomplished at Fort Detrick. The plan identifies elements of the program including health and environmental safety, pest identification, and pesticide storage, transportation, use, and disposal. The IPMP is used as a tool to reduce reliance on pesticides, to enhance environmental protection, and to maximize the use of integrated pest management techniques.

The Installation Pest Management Coordinator at Fort Detrick (PMC) maintains the IPMP. Changes are made to the plan throughout the fiscal year and it is reviewed and updated annually to reflect all changes made in the pest management program during the fiscal year. Per AR 200-5, *Environmental Quality Pest Management*, annual updates will be sent to the US Army Environmental Command Pest Management Consultant (PMC) not later than 1 September (USAG, 2006c). The IPMP is submitted for a formal, full-document review every five years. The current Fort Detrick IPMP was approved through 30 September 2009 and will be fully reviewed in 2011 (Hoch, 2009).

The goal of the pest management program at Fort Detrick is to safeguard human health, as well as structures and aesthetic features on the Installation, while providing maximum protection to the local ecosystem and environment. To achieve this goal, the IPMP sets forth principles for an integrated pest management (IPM) approach, which aims to significantly reduce the use of pesticides by applying non-chemical pest management techniques, including mechanical and physical, cultural, and biological control techniques, whenever possible. Chemical control is considered last to mediate a problem (USAG, 2006c). Lists of pesticides approved under the IPMP and associated targets are provided in Appendix G.

Mechanical and Physical control alters the environment in which a pest lives, traps and removes pests where they are not wanted, or excludes pests. This is the primary method for control at Fort Detrick. Cultural control involves the manipulation of environmental conditions by changing practices to suppress or eliminate pests. Biological control utilizes predators, parasites or disease organisms to control pest populations. Biological control may be effective in and of itself, but, is often used in conjunction with other types of control. Chemical control, the use of chemicals toxic to unwanted plants and animals (pesticides), is employed only when other pest control methods are ineffective or not practical (USAG, 2006c).

IPM strategies depend on surveillance to establish the need for control and to monitor the effectiveness of ongoing IPM efforts. While any one of these methods may solve a pest problem, often several methods are required and used concurrently, particularly if long-term

control is needed. Adherence to the IPM will ensure effective, economical, and environmentally acceptable pest management and will maintain compliance with the terms of Merit 2 in DoD instruction 4150.7, *DoD Pest Management Program* (USAG, 2006c).

4.16.2.2 Pesticide Storage, Mixing, and Transportation

Pesticide storage and mixing facilities are constructed to meet standards as outlined in Military Handbook 1028/8A. Pesticides, materials, and equipment used in pest management operations are stored in Building 122. A current (16 December 2009) pesticide inventory for Building 122 can be found in Appendix G. Pesticides are kept in flameproof safety cabinets in a climate-controlled room that features recessed, drain-less flooring for spill containment. Sufficient space and non-absorbent shelving is provided to allow a clear display of clearly labeled pesticide containers as well as spatial separation between pesticide classes. To reduce storage requirements, pesticides are purchased on an as-needed basis and in small quantities that do not exceed a one-year supply. Fort Detrick pest management technicians maintain a current inventory of stored pesticides. Copies of the inventory are sent to the PMC at Fort Detrick, and as requested, to the Fort Detrick fire departments every six months (USAG, 2006c).

Mixing of pesticides also takes place in Building 122. The mixing room is equipped with a deluge shower, eye lavage, and pesticide spill kit. In addition, it is also outfitted with recessed spill-containment flooring, a backflow prevention protected sink, and an exhaust hood. An outside water source, which is used to fill large spray tanks, also possesses a backflow prevention device. The building is equipped with an industrial fire suppression system, and both the pesticide storage room and mixing room contain a discrete ventilation system (USAG, 2006c).

Transportation of pesticides occurs in a designated pest management vehicle, which is equipped with lockable storage compartments, a portable eye lavage, a spill kit, and a fire extinguisher. Pesticides are secured in the storage compartments during travel and when the vehicle is unattended. At no time are pesticides or pesticide contaminated equipment transported in the cab of the vehicle. Care is taken to secure pesticides to prevent damage to containers that could result in spillage of chemicals. Fort Detrick pest management personnel are given the approved DoD Hazard Communication (HAZCOM) course relating to hazardous materials in the workplace. Following initial hazard communication classes, additional training is given when new hazardous materials are introduced into the workplace. Since pesticides are transported off the Installation on high-volume public roads when traveling, additional training in a 16 hour DOT level VIIB class on transport of regulated hazardous materials is provided by the HMMO at Fort Detrick. The Fort Detrick Safety Office coordinates the HAZCOM training (USAG, 2006c).

Contractor pesticide applicators, such as partners servicing RCI properties, must use vehicles and equipment which are clearly identified and used for only pest management activities. The IPMC must provide information on such markings or company logos to the Provost Marshall's Office. Vehicles must contain spill and decontamination kits, and the RCI contractor must provide documentation of spill prevention and cleanup training to the environmental and safety offices. The Installation must also provide a copy of the Installation Spill Prevention, and Control Countermeasure Plan to the RCI partner (USAG, 2006c).

4.16.2.3 *Pesticide Application*

The application of pesticides at Fort Detrick is carried out by trained and/or certified pest management personnel or by certified and licensed outside contractors. All pesticides are applied per USEPA and state approved label directions, and pesticide applications are conducted in a manner aimed to eliminate risks to human health and to limit potential, negative impacts on the environment. Precautions are taken during pesticide application to protect the public, on and off the Installation (USAG, 2006c).

Pesticides are not applied outdoors when the wind speed exceeds five miles per hour. Whenever pesticides are applied outdoors, care is taken to make sure that any spray drift is kept away from individuals, including the applicator. Individuals wearing the proper personal protective clothing and equipment accomplish indoor and outdoor pesticide application. At no time are personnel permitted in a treatment area during pesticide application unless they have met the medical monitoring standards and are appropriately protected. Public notification, using placards, is done when outdoor turf and ornamental vegetation treatments have been made (USAG, 2006c).

Sensitive areas listed on pesticide labels are considered prior to pest control operations. Pest control personnel are aware of the potential impacts associated with pesticide use within sensitive areas at Fort Detrick. A sensitive area is any place where pesticide use could cause great harm if not used with special care and caution. Examples of sensitive areas include barracks, residences, recreational areas, dining facilities, medical clinics, playgrounds, childcare facilities, and all surface water sources including wetlands. No pesticides are applied directly to wetlands or water areas unless use in such sites is specifically approved on the label (USAG, 2006c).

Pest management personnel maintain records of all pest management activities conducted on the Installation. The pest control shop is required to fill out a Decision Document (DD) Form 1532 (Pest Management Report) each month which indicates the target pest, pesticide, amount applied, date, and operation. In 2008, Fort Detrick applied a total of approximately 147 lbs of active ingredient. Government civilian personnel applied approximately 112.95 lbs and a private contractor applied approximately 34.05 lbs for invasive species control (Hoch, 2009).

4.16.2.4 *Occupational Health and Safety*

Protective measures to ensure the health and safety of workers involved in pest management activities include training and medical monitoring of personnel as required by Federal and state laws and regulations. All Fort Detrick pest management personnel participate in medical screening and surveillance, health education, and respiratory protection programs, which are administered through the Fort Detrick Occupational Health Clinic. Pest management personnel are given thorough, annual, physical exams to evaluate overall health and potential exposure to pesticides, especially cholinesterase inhibiting substances. This physical examination also includes liver and kidney function tests, a complete blood count and a respiratory evaluation. The US Army Center for Health Promotion and Preventive Medicine Technical Guide No. 114 is used as a guide for medical monitoring of pesticide applicators (USAG, 2006c).

Approved PPE is provided to Fort Detrick pest management personnel as well as the contracting officer's representative (COR) who performs quality assurance evaluations as

applicable. PPE includes items such as masks, respirators, mixing hoods, chemical resistant gloves and boots, and protective clothing. These items are used as required during the mixing and application of pesticides as required by law, regulation, and the pesticide label. Pesticide-contaminated protective clothing is not laundered at home and is laundered at the pest control shops. Severely contaminated clothing is not laundered, but is considered a pesticide-related waste and disposed of by the Defense Reutilization and Marketing Office (DRMO) in accordance with current Environmental Office requirements. Detailed instructions on proper use and handling of PPE, as well as disposal of pesticide contaminated PPE is provided in the IPMP (USAG, 2006c).

The awareness of human disease threat from hantaviruses associated with rodents, their excrement, bedding, or other rodent contaminated items, has placed emphasis on using appropriate respiratory protection in areas that may be rodent infested or contaminated. Specifically, respirators equipped with high-efficiency particulate air-filtered (HEPA) filter cartridges are used. Additional protective measures are followed (e.g. area ventilation, disinfecting procedures, wearing protective clothing). Guidance is provided by the Department of Army and the Centers for Disease Control and Prevention (USAG, 2006c).

4.16.2.5 Pesticide Disposal and Spill Clean-up

To minimize pesticide waste and to limit disposal needs, pesticides are purchased in small quantities that can be used within a season. Per AR 200-5 (chap 2), all excess pesticides must be returned to the DLA Materials Return Program or to the Defense Reutilization and Marketing Office. Pesticide waste, contaminated equipment, and pesticide spill residues, which are classified as HAZMAT, are disposed of in accordance with 32 CFR 650 and Armed Forces Pest Management Board Technical Information Memoranda No. 15 and No. 21. Non-HAZMAT pesticide materiel and pesticides are disposed of per the product's USEPA approved label (USAG, 2006b).

All accidental pesticide spill incidents are managed per procedures outlined in the Fort Detrick Spill Prevention Control and Countermeasure Plans (SPCCP) and the Installation Spill Contingency Plan (ISCP). In the event of a pesticide spill, personnel will notify proper authorities, provide first aid to injured workers, and contain, clean, and decontaminate the spill area. Pesticide spill clean-up kits are maintained in Building 122 and on the pest management vehicle (USAG, 2006c).

4.17 ENVIRONMENTAL RESTORATION AND IMPROVEMENT

4.17.1 ENVIRONMENTAL CONCERNS IN AREA A

Several sites in Area A were identified as areas of potential environmental concern through the Fort Detrick Installation Restoration Program (see Figure 4-9). The areas identified include the Water Tower Sites; the Area A Skeet Range; the Clean Fill Area and Combustible Burn Pit sites; the Simulant SM (*Serratia marcescens*) Testing Area; the Western Area A Landfill; a Landfill Near Building 535; the LSS; the Building 568 TCE Spill; the Building 190 #6 Oil Spill; and the Buildings 940/950 Gasoline Storage Tank Leaks (DA, 1977; USACE, 2000b; NCI and USAG, 2003). Army's Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) -based Installation Restoration Program, for both Area A and Area C, is at "Remedy in Place" or "Response Complete".

4.17.1.1 *Water Tower Sites (FTD 68)*

There are three water tower sites located in Area A, designated south, west, and north (see Figure 4-9). The water towers were painted with lead-based paints. Particles of dried paint were dispersed in the shallow soils surrounding the towers as a result of normal weathering and sandblasting of the towers. Three inorganic chemicals (Chromium total, lead and thallium) were detected in soil above background concentrations and were selected as chemicals of potential concern (COPC) for a Human Health Risk Assessment (HHRA). Based upon the HHRA, chromium, lead, and thallium did not result in an unacceptable risk under the current and anticipated future use scenarios. The Army has voluntarily implemented institutional controls at the site (USACE, 2000b).

4.17.1.2 *Area A Skeet Range*

A possible recreational skeet range in the southeast corner of Area A was identified in November 2002. The range was in operation from approximately the 1950s through the 1980s. The former skeet range was located at Building 1520 and extended out approximately 1,000 ft., in an arc southeast to north-northwest. Because lead contamination from firearm discharge in this area was a potential concern, a soil investigation was performed on this site in July 2003. Laboratory analytical results showed lead concentrations to be from 31 to 104 milligrams per kilogram (mg/kg), which are slightly above background levels for that area (i.e., 12 to 28 mg/kg). However, the levels were not higher than MDE residential and industrial risk-based concentration levels of 400 mg/kg and 1,000 mg/kg, respectively. Therefore, no remediation of the area was deemed necessary (USAMRMC and USAG, 2006).

4.17.1.3 *Clean Fill Area (Formally Const Debr Lf) (FTD 09)*

Another area of potential concern was the Cleanfill Area, which is located in the southeastern portion of Area A and encompasses approximately 421,950 sf (9.7 acres). The estimated fill depth increases from east to west, less than 3 ft. to 6 ft., respectively. Minor sinkholes were observed east of the heliport and are ascribed to the fill. This area received construction material such as rock, soil, asphalt, and concrete. No records of hazardous waste disposal in this area were found, and the geophysical survey confirmed this observation (USACE, 2000b).

A Phase I investigation incorporated a geophysical survey and soil investigation. Concentrations of a SVOC, benzo(a)pyrene, detected in two samples, and a polychlorinated biphenyl, Aroclor 1260, detected in one sample, exceeded residential RBCs. Arsenic was the only chemical detected that exceeded both maximum background levels and the USEPA Region III residential and industrial RBCs. The risk estimates for workers exposed to the detected chemicals were at the very low end of USEPA's target risk range. Due to the low risk estimate, no further action was taken (USACE, 2000b).

High concentrations of arsenic and lead were found at one soil boring location at the eastern edge of the cleanfill area (the new commissary site). These analytical results prompted further investigation by USAG. In Fall 2002, a laboratory retest of one soil boring sample was performed to determine if possibly a lead-based paint chip fragment from the fill material was included in the soil sample, which would misrepresent the heavy metal concentrations at this sample location. The concentrations were still found to be above MDE and USEPA action levels. Background levels for arsenic in Frederick, including Fort Detrick, naturally occur above

USEPA residential and industrial RBCs. Specifically, Area A has measured background levels of arsenic ranging from 5.31 to 71 mg/kg. The elevated arsenic level found at this soil boring location was within the background range for Area A, and no remediation was required (USAMRMC and USAG, 2006; Schnabel Engineering Associates, Inc., 2002).

In 2003, a test trenching investigation at this site revealed asbestos-containing material in one test trench. The buried asbestos-containing material and surrounding soil at this location were removed in May 2004 (USAMRMC and USAG, 2006).

4.17.1.4 Combustible Burn Pit (FTD 11)

A former combustible burn pit (150 ft. x 20 ft.) was reported to have been located in the southeast corner of Area A, approximately 500 ft. east of Building 1520 and approximately 140 ft. west of the A-3 outfall. The pit was reported to be used to burn scrap lumber, and it was also assumed that a petroleum product was used to ignite the material. The area is presently grass-covered. Surface soil samples reveal no evidence of past burning activities (USACE, 2000b).

A Phase I soil investigation of the combustible burn pit site consisted of a surface geophysical survey. A Phase II soil investigation of the pit included three soil borings to determine if soil contamination was present at the surface (depths 2 ft. below ground surface [bgs] or less) and subsurface (depths greater than 2 ft. bgs) of the burn pit area. Both organics (VOCs, SVOCs, pesticides, and PCBs), and inorganics (arsenic, beryllium, copper, iron, lead, magnesium, mercury, and cyanide) were detected at low levels in the soil samples. Concentrations of VOCs, SVOCs, pesticides, or PCBs did not exceed USEPA Region III residential RBCs. At 5 to 6 ft. bgs there was no burn evidence (debris or disturbed soil), indicating that past burning activities have not contaminated soils at this depth. Due to the low risk estimate, no further action was taken (USACE, 2000b).

4.17.1.5 Simulant SM Testing Area (1953-1955) (FTD 47)

During the time period of 1953-1955, DA records indicate that outdoor testing of a biological simulant (*Serratia marcescens*) was conducted on the southern portion of the NIBC. The DA records show the testing area to be approximately 5.7 acres in size, spanning a portion of the NIAID IRF site, the NBACC facility site, and Building 1434 (DA, 1977). *S. marcescens* is a common microbe that lives in soil, water, on plants, and in animals. It is a member of the family Enterobacteriaceae and a human pathogen responsible for a large percentage of nosocomial infections (nosocomial infections are those that originate or occur in a hospital or hospital-like setting). There has been no evidence that a hazardous condition exists at the site and anytime during the 50 plus years since the simulant testing ceased (Ko et al., 2000; Weiss et al., 1975; Cox et al., 1974; Riley and Kaufman, 1972).

4.17.1.6 Western Area A Landfill (FTD 08)

Historical records allude to possible landfill materials present to the south and east of Building 538. Landfill materials were encountered and documented during the construction of Chandler Road in 1952. This waste was possibly placed there prior to 1947 (USACE, 2000b). The location of this landfill was not confirmed through geophysical surveys, and wastes were not encountered during the installation of several underground utility lines. All anomalies encountered were attributed to buried utilities, geological features (such as shallow bedrock),

and interference from high magnetic field areas surrounding Building 538 (USACE, 2000b). Therefore, the *Fort Detrick RI Report, Area A, Revised Final* concluded that a buried landfill to the south and east of Building 538 does not exist due to the minimal historical documentation and lack of geophysical evidence (USACE, 2000b).

4.17.1.7 Landfill Near Building 535

Another landfill on NCI-Frederick was discovered during excavation for construction of Building 535 in 1992). Documentation for the site indicates that 518.93 tons of soil mixed with laboratory glassware, transite (non-friable asbestos-cement board), ash, and other building debris were removed from the landfill. USAG was fully informed about discovery of the landfill and participated in disposal of medical waste and clean soil excavated from the Building 535 site. An independent laboratory tested four representative samples of ash from the site for Toxicity Characteristic metals using appropriate USEPA methodology. No metals were detected, and the limit of detection was less than the regulatory level under USEPA and the State of Maryland hazardous waste regulations. NCI-Frederick, in cooperation with Fort Detrick, disposed of all excavated materials in full compliance with all Federal, state, local, and USAG regulations (USAMRMC and USAG, 2006).

4.17.1.8 Laboratory Sewer System (FTD 03)

The LSS underlying Area A is of potential environmental concern because of the possible contamination from past biological warfare liquid wastes and radioactive materials. The LSS is discussed in detail in Section 4.15.1.4 (see Figure 4-9).

4.17.1.9 Building 568 TCE Spill (FTD 66)

The Building 568 TCE spill site is located in the southwestern portion of Area A (see Figure 4-9; USACE, 2000b). TCE was used at this building as a refrigerant. The refrigeration system was removed between 1970 and 1971. There were no visible leaks upon removal. The quantity of TCE, which may have spilled during the filling, operation, or maintenance of the system, is unknown; however leaks of mechanical seals were documented as early as 1964. Currently, a TCE plume exists in the groundwater. A DD was signed in July 2001 requiring hydraulic containment of the plume and monitoring to verify that USEPA maximum containment level for groundwater are not exceeded at the facility boundaries.

A groundwater production well (with 1 backup well) is used to supply water for aquatic biological laboratories housed in Bldg 568. The current well usage is providing the required hydraulic containment. The Area A TCE plume is no longer migrating off-post above MCLs. (USAMRMC and USAG, 2006).

4.17.1.10 Building 190 #6 Oil Spill (CC FTD 73)

Separate from the RI at Area A, a No. 6 fuel oil plume near Building 190 is currently being remediated (see Figure 4-9). Building 190 houses the Fort Detrick boiler plant, which commenced operation in the 1950s. The plant operates six boilers, all of which are fueled by natural gas with No. 6 fuel oil for a backup fuel. A tank farm consisting of ten 53,000-gallon No. 6 fuel oil underground storage tanks (USTs) was installed adjoining Building 190 between 1954 and 1956 (Bentley et al., 2008)

When the site of the tank farm was characterized to select the location for a 250,000-gallon No. 6 fuel oil aboveground storage tank in 1994, traces of No. 6 fuel oil were found in three out of four boreholes. The ten USTs were removed in early 1995; and according to the MDE records, several of them were leaking and free-phase petroleum product was observed floating on the water surface. Following these observations, groundwater monitoring was initiated to assess the extent of free-phase No. 6 fuel oil in the aquifer, and a Corrective Action Plan (CAP) was established. Two fuel oil recovery skimmers were installed near Building 190 to meet MDE cleanup requirements (Bentley, Gortva, Robert, 2008). The recovery well has yielded over 217 gallons of No. 6 fuel oil as of December 2009 (Gortva, 2009). Fort Detrick will incorporate future MDE requirements into the CAP as needed. The CAP includes long term operation of the oil recovery skimmers, and monitoring of the groundwater. Five year type reviews will be performed to account for the need to review the site and develop reports and recommendations to MDE that may allow the Army to ramp down the use of the skimmers and groundwater testing and potentially close-out of the site early (Bentley et al., 2008).

A 2009 map shows that fuel oil contamination in the groundwater is stable and is not migrating off post (US Army Public Health Command, 2010).

4.17.1.11 Buildings 940/950 Gasoline Storage Tank Leaks

Fort Detrick's Buildings 940 and 950 were historically used for vehicle fueling operations. Groundwater at both locations is contaminated with gasoline products from former leaking USTs. Building 940, a former motor pool, had two 12,000-gallon single-wall steel USTs. The USTs were removed in December 1991 after one tank was discovered to have leaked 3,900 gallons of gasoline. Building 950, the former AAFES gas station, had five 8,000-gallon single-wall steel USTs. In June 1993, the five steel USTs were removed after the discovery of a 400 gallon gasoline leak. The USTs were subsequently replaced with three new 8,000-gallon double-wall fiberglass tanks. In November 2004, the Building 950 AAFES gas station was permanently closed. The three fiberglass USTs were removed in January 2005.

In 1992 and 1993, sampling results for groundwater monitoring wells in the vicinity of building 940/950 showed groundwater was highly contaminated with gasoline related compounds.

Based upon additional groundwater testing data collected from 1993 through 2005, it has been established that natural attenuation has significantly and successfully reduced groundwater contaminants for both Building 940 and 950 areas. Down-gradient monitoring (toward the southwest), has demonstrated that contamination is not migrating off Fort Detrick above USEPA or MDE action levels. In October 2006, MDE's Oil Control Program granted USAG's case close-out request for the Building 940 and 950 leak sites. No additional work or monitoring at the sites will be required (USAMRMC and USAG, 2006).

4.17.2 ENVIRONMENTAL CONCERNS IN AREA C

Area C was acquired in 1944 and is exclusively used for industrial operations. It includes two small tracts covering 16 acres of land located along the west bank of the Monocacy River, east of Area A. One 7-acre parcel of Area C contains the WTP, which serves the Fort Detrick population. The second parcel is a 9-acre tract of land one-quarter mile downstream from the WTP containing the Fort Detrick WWTP. Several areas of environmental concern are located on the Area C tract containing the WWTP, including Fill Area and Area Surrounding and Downwind

of the Former Incinerator Stack; Treatment Plant Process Water; Monocacy River and Unnamed Stream Sediment and Surface Water; Groundwater; and Former Ash Disposal Area (see Figure 4-10).

4.17.2.1 Fill Area and Area Surrounding and Downwind of the Former Incinerator Stack

The Fill Area and Area Surrounding and Downwind of the Former Incinerator Stack are located in the northern portion of Area C and downwind of this area. During a site visit in January 1999, it was observed that fill material (e.g., soil, glass and metal) was present in the northern portion of Area C. Mr. Ted Hahn, formerly of the DIS, indicated that the fill material was from a Frederick City or County road construction project.

A former incinerator was located on-site. Records indicate that this incinerator was installed between 1944 and 1950. In 1950, it was destroyed by fire and reconstructed. The building was certified as decontaminated in 1971 and was demolished in 1975. No records were found which describe the materials incinerated or the location of ash disposal.

The Fill Area and Area Surrounding and Downwind of the Former Incinerator Stack were investigated during the 1999 Expanded Site Inspection and Area C RI. Results from these investigations indicated that there were no elevated human or ecological risks.

4.17.2.2 WWTP Process Water

The WWTP process water in Area C was investigated due to the former presence of mercury seals in the trickling filters and due to the detection of mercury in water coming from the trickling filter distribution boxes. The influent and effluent mercury concentrations were compared to determine if a CERCLA release of mercury from the former seals of the trickling filters. Sample results from the Area C RI indicated that, due to the presence of mercury in pre-treated water at the entry point of the WWTP, it appears likely that water containing mercury within the plant is not from the former mercury seals that were installed at the trickling filter. Therefore, the WWTP process water was not further evaluated.

4.17.2.3 Monocacy River and Unnamed Stream Sediment and Surface Water

The Monocacy River is located east of the WWTP and the Unnamed Stream is located along the northern boundary of Area C. The treated process water from the WWTP is directed via an underground pipeline into the Monocacy River. The stream is spring fed and begins a short distance towards the northwest of Area C. It serves as a minor tributary to the Monocacy River. When the Monocacy River is at flood stage, water in the Unnamed Stream may back-up and cover the northern boundary of Area C. The floodwater may reach a depth of several feet or more above the land surface.

The sediment and surface water were investigated in these areas to determine if WWTP activities have negatively impacted these media. One COPC (iron) was identified for Unnamed Stream sediment. However, since minimal exposure to the sediment is expected, no COPC were identified in Monocacy River surface water. Therefore, these areas were eliminated from further evaluation.

4.17.2.4 Area C Groundwater

Groundwater is not used at Area C. Groundwater was investigated to assess potential contaminants originating at other Area C sites only. No COPC were identified in Area C groundwater.

4.17.2.5 Former Ash Disposal Area

A black ash-like material has been noted near a fill area in the northern portion of the Area C WWTP. The origin of this ash has not been confirmed; however, it was likely from the former incinerator located on-site.

In 1999, the Former Ash Disposal Area was evaluated as part of an Expanded Site Inspection of the WWTP. This work was conducted to assess the potential for contamination at the WWTP due to past activities. A surface sample and a subsurface composite sample were acquired to screen for the presence of contaminants in the ash. Concentrations of dioxin/furans and lead were detected in the subsurface ash at levels above the screening levels.

Following completion of the sampling event, a removal action was performed to address potential risks associated with the ash material. This action, which was performed from 14 January 2002 through 4 February 2002, entailed removal of all visible ash, to the extent practicable, with conventional excavation equipment. Approximately 1,020 cubic yards of overburden, ash and commingled soil were excavated and disposed at the Area B Active Landfill. The majority of ash was removed at that time; however, some residual ash material remains. Restoration activities were subsequently performed including backfilling the area with clean fill, grading, and seeding. A HHRA was performed to evaluate the potential human health risks and hazards associated with exposure to chemicals in residual ash material in this area. Potential risk is primarily driven by dioxins and arsenic via ingestion, chromium via inhalation, and dioxins via dermal absorption. The total hazard index (HI) for the construction worker exposures to ash is 39.3, which is greater than the acceptable target limit of 1. The HI is driven primarily by antimony, chromium, copper, iron, manganese, and nickel. Lead was evaluated using the USEPA Adult Lead Model, dated 19 May 2003. The model results indicate 45 percent of the receptors above a geometric mean blood lead level of 10.1 micrograms/deciliter (ug/dl). This value is above the blood lead goal of no more than 5 percent of children (i.e., fetuses of exposed women) exceeding 10 ug/dl blood lead, which is considered to be protective of human health.

A DD was signed on 15 December 2005 to implement institutional controls at the Former Ash Disposal Area. Institutional controls were selected as it had the best balance of features that protect human health and the environment, which will prevent contact with residual ash material buried on the site.

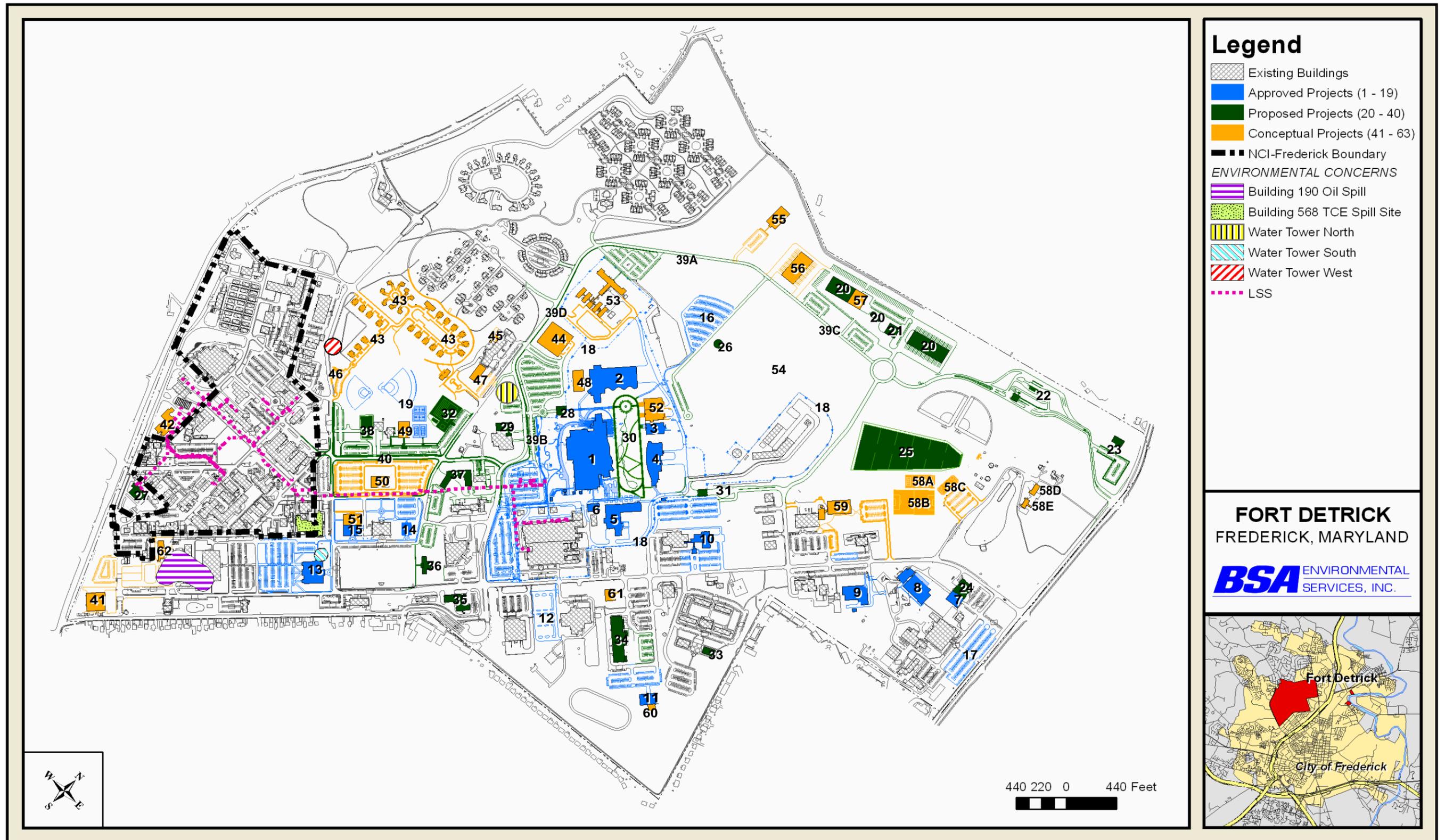


Figure 4-9. Area A Current Environmental Concerns Map.

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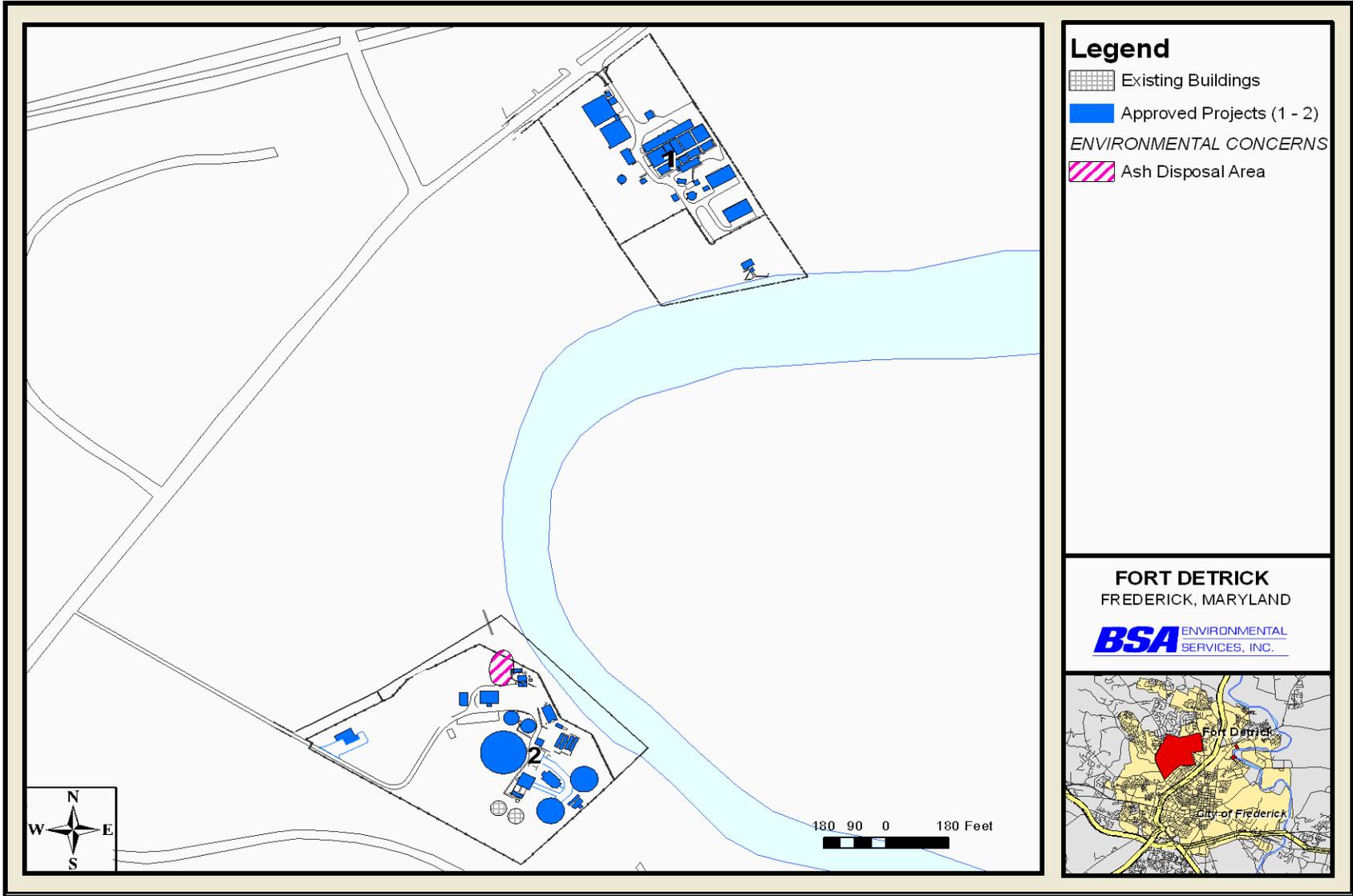


Figure 4-10. Area C Current Environmental Concerns Map.

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4.17.3 LAND USE CONSTRAINTS

As discussed above in Sections 4.17.1 and 4.17.2, the environmental concerns for Areas A, and C limit the type of development and land uses available for some parcels of Fort Detrick (see Figures 4-9 and 4-10).

Existing forestation and planned forestation of Areas A and C will influence compatible land uses and activities (see Figures 2-10 and 2-11). The forest stands found on both Area A are planted groves of trees with rows of pine, spruce, scarlet oak, red oak, and Siberian elm. One forest block is located on the western edge of Area A to the north of NCI-Frederick property. Another major forest block is situated on the northern side of Area A. The third forest block is located in the center of Area A. Other small stands of trees are located throughout Area A. A small riparian area is associated with wetland W-5 and is located downstream of the Nallin Farm Pond.

Water bodies and wetlands either prohibit development or restrict future development to compatible land uses (e.g., Nallin Farm area). Wetlands are afforded special protection under 32 CFR 650. Wetland area W-5 is the most productive wetland at Fort Detrick and is associated with the Nallin Farm Pond and its spillway.

The Nallin Farm House (Building 1652), the Bank Barn (Building 1655), the springhouse (Building 1661), and the One-million Liter Test Sphere (Building 527) are the four properties on Fort Detrick which are listed in the NRHP (see Figure 4-8). The first three structures are located in the northeast corner of Area A and are collectively referred to as the Nallin Farm Complex. These structures are listed in the NRHP (see Section 4.9.2). The One-million Liter Test Sphere is located on the eastern edge of NCI-Frederick property in the southwestern section of Area A. Listing or eligibility for listing indicates that these areas of Fort Detrick need to be protected (32 CFR 800).

Similarly, historic properties and archeological sites are provided special consideration under AR 200-2. Coordination with the SHPO would be required prior to the development of these areas or areas adjacent to these historic and archeological parcels. Adjacent land uses and associated activities should be consistent with maintaining these resources.

The following properties on Area A have been determined eligible for listing on the NRHP: Buildings 190, 375, 1301, 1302, 1304, 1305, 1306, 1412, 1414, 1415, 1653, and 1656. Building 190, the Boiler Plant, is located in the southwestern corner of Area A, south of Miller Street. Building 375, the SSP, is located at the western boundary of Area A. Buildings 1301-02 and 1304-06 constructed in 1956 to support research and testing by the Crops Research Division, are located in the central portion of Area A. Buildings 1412 and 1414, designed to support biological warfare research during the Cold War era, are located in the central portion of Area A, near Building 1520 (USAMRIID).

Limitations on the type of development and land uses for areas near the helipad, located in the south central portion of Area A, are related to the operational requirements for helicopter take-off and landing clearance. All of Area A is encircled by a security standoff buffer which restricts activities and land uses on the Installation boundaries.

4.17.4 ENVIRONMENTAL MANAGEMENT SYSTEM

The Fort Detrick EMS was established to comply with EO 13423, which required every governmental agency to implement an EMS. It is based on a “Plan-Do-Check-Act” concept that focuses on the management of the environmental aspects of Installation missions to minimize the environmental footprint of Fort Detrick. The Fort Detrick EMS is required to be conformant with the *ISO 14001 (2004), Environmental management systems – Requirements with guidance for use* (USAG, 2008). The most recent Environmental Performance Assessment System (EPAS) review at the Installation concluded that no major non-conformances were identified during the EPAS EMS audit and that it was conformant with ISO 14001. All minor non-conformances were addressed and a corrective action plan was approved (DA, 2009).

The Fort Detrick EMS includes procedures and policies used to identify, evaluate, and manage environmental impacts of ongoing activities and services. It is designed to minimize Fort Detrick’s environmental liabilities through continual planning and monitoring of environmental performance and to take corrective action to avoid or reduce negative environmental impacts when necessary (CEQ, 2007). The continual improvement of the Fort Detrick EMS is important to the Installation-wide integration of environmental requirements into daily operations. The Fort Detrick EMS is used as the primary management approach for addressing all environmental aspects of internal operations and activities. All USAG and mission partner activities that occur within Areas A, B, and C, as well as the Forest Glen Annex, are included within the scope of the Fort Detrick EMS, with the exception of the National Cancer Institute (USAG, 2008).

The Fort Detrick EMS is guided by the Fort Detrick Environmental Policy, which is responsible for the Installation’s environmental compliance, pollution prevention, and continual improvement (USAG, 2008). At a minimum, all individuals working at Fort Detrick are required to have knowledge of the EMS. An EMS Management Representative is responsible for maintaining the Fort Detrick EMS under the guidance of the EQCC and the commanders and directors (i.e., USAG Commander). The EMS Team (EMST) serves as experts and representatives from all areas of the Installation. The EMST organizes information, participates in procedures and program development, and reviews EMS efforts. It is led by the EMS Program Manager who develops and implements EMS training, guidance, and coordination. EMS Objective Teams are responsible for managing the achievement of specific environmental objectives and targets, including the development of management programs and the presentation of progress to the EQCC and EMST (USAG, 2008). The Fort Detrick EMS may be assessed both internally and externally. EMS Internal Assessments are conducted by Fort Detrick EMS Internal Assessors. EMS External Assessments are performed through the DA EPAS program.

Objectives and targets are often used to address significant aspects in an EMS. An objective is described as a “goal established for management of an aspect consistent with policy commitments.” Targets are “interim goals or milestones for achieving objectives.” Objectives and goals are considered the basis of an EMS (CEQ, 2007).

The Fort Detrick Strategic Planning program is currently being integrated with the implementation of the Sustainability program. Fort Detrick’s Sustainability program is based on a 25-year vision for the Installation. The Fort Detrick EMS will be integrated with the SuSP process through several main elements, including the development of targets, initiatives, and action plans used to achieve objectives. Measurements designed to monitor the progress made to the achievement of objectives will be developed. Documented links between the Fort Detrick

EMS and the Fort Detrick SuSP will occur in EMS documentation. This will include the finalization of strategic planning targets, initiatives, action plans, and measurements as they become available. The EMS Team will be transformed into an EMS Steering Committee and all requirements will be managed with the SuSP-Business Process Team.

4.17.4.1 Current Fort Detrick EMS Environmental Objectives

The Fort Detrick EQCC has approved six major EMS environmental objectives and various associated environmental targets based on Fort Detrick's significant environmental aspects, continual improvement, and legal requirements associated with EO's 13423 and 13514. The six environmental aspects aim to reduce air emissions, improve water quality, reduce energy consumption, increase resource conservation and recovery, reduce waste generation and increase recycling, and reduce/clean-up spills, leaks or releases to soil or water. The environmental objectives are divided into a number of environmental targets, which are detailed performance requirements of EOs 13423 and 13514. Section 2.8.7 lists the requirements of EOs 13423 and 13514 as they relate to the following significant environmental aspects of Fort Detrick:

Resource Consumption

This environmental aspect includes the acquisition and use of all goods and materials used in association with installation operations.

Energy Consumption

This environmental aspect includes electricity (renewable/nonrenewable), and fuels (petroleum-based fossil fuel and alternative fuel).

Air Emissions

This environmental aspect includes Stationary Sources (boilers, incinerators, generators, chlorine gas storage, petroleum storage) and Mobile Sources (vehicle emissions [government-owned and POVs], and equipment).

Water Quality

This environmental aspect includes all elements of sanitary wastewater management, stormwater management, and drinking water quality.

Waste Generation

This environmental aspect includes all elements of solid waste, recycling, and hazardous waste management.

Spills, Leaks or Releases to Soil or Water

This environmental aspect includes all spills, leaks, or releases to soil or water of sewage, hazardous material, hazardous waste, or oil-based products.

4.17.4.2 NEPA and EMS

Fort Detrick NEPA processes and the Fort Detrick EMS are designed to be used in conjunction with each other to improve Fort Detrick's environmental performance. In 2007, a guide entitled *Aligning National Environmental Policy Act Processes with Environmental Management Systems* was completed to provide information on how NEPA and EMS can be aligned. According to this guide, some elements of the Fort Detrick NEPA process could be included in the Fort Detrick EMS. Once NEPA forecasts the impacts of proposed actions during the proposal design and decision phase, the Fort Detrick EMS monitors and tracks these impact predictions and mitigation information in day-to-day operations. This tracking and monitoring leads to Fort Detrick EMS training, internal auditing, and the identification of corrective actions. As with the NEPA process, the Fort Detrick EMS focuses on the involvement of the public by providing information about current proposals (CEQ, 2007).

The Fort Detrick NEPA program manager is also a member of the EMST and works with the EMS Program Manager to ensure the integration of the NEPA program with the Fort Detrick EMS. EMS records, as well as NEPA documentation, are centrally archived within the Data Archival Retrieval Technology database so that records pertaining to either program may be accessed. In addition, the Environmental Management Office Environmental Tracking database is used by the EMS to manage corrective and preventive actions. This database includes NEPA mitigation tracking, which tracks the minimization of environmental impacts of projects that have already completed the NEPA process. As with the Fort Detrick EMS, the Fort Detrick NEPA program is also subject to internal and external compliance evaluations (USAG, 2008).

4.17.5 ENVIRONMENTAL PERFORMANCE ASSESSMENT SYSTEM REVIEW

The EPAS program was developed and implemented by headquarters in 1991-92 in response to the recommendations made by the USEPA in 1986. When the program was known as Environmental Compliance Assessment System, it assessed active Army installations for compliance with Federal, State, and DoD regulations. As per EO 13148, the EPAS program has since expanded and now includes environmental management performance auditing. The USAEC conducts risk-based scheduling to assess installations with greater environmental risk more frequently, while maintaining an assessment standard for installations with less environmental risk (USAEC, 2009).

The EPAS program assists all Army commanders in attaining, sustaining, and monitoring compliance with Federal, State, and local environmental laws and regulations, as well as DoD and Army compliance and performance requirements. EPAS external and internal multi-media assessments: identify non-compliance with environmental regulations and non-conformance with the ISO 14001 environmental performance standard used by Army EMS; provide suggestions for both immediate and long term corrective actions; and indicate resources needed for implementation (USAEC, 2009).

The most recent EPAS review was conducted at Fort Detrick on 5-9 January 2009. The USAEC EPAS review team determined that no major non-conformances were identified during the EPAS EMS audit (DA, 2009). The previous EPAS review conducted at Fort Detrick from 31 October to 9 November 2005 revealed three major concerns of non-conformance (DA, 2005). All minor non-conformances with the current EPAS review were addressed and a corrective action plan was approved. Based on the EPAS review, Fort Detrick formally declared that their

EMS is fully implemented in accordance with EO 13423 and Army policy. The next EPAS review is scheduled for FY 2012, followed by subsequent reviews every three years (DA, 2009).

4.17.6 RESTORATION ADVISORY BOARD

The Fort Detrick Restoration Advisory Board (RAB) was created in 1993 to communicate information to the general public regarding the environmental investigations and cleanup activities being conducted at Fort Detrick. The RAB is composed of members of the community and governmental representatives of DA, USEPA, and MDE. The RAB performs the following functions (RAB, 2006):

- Conducts regular meetings that are open to the public and facilitates the exchange of information between parties;
- Maintains a mailing list of interested parties and disseminates information about cleanup activities at the Installation;
- Reviews and discusses documents related to cleanup activities; and
- Assists and participates in the cleanup decision-making process.

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5.0 ENVIRONMENTAL CONSEQUENCES

5.1 INTRODUCTION

This section will identify and analyze potential environmental impacts that may result from implementation of the Proposed Action (Implementation of the RPMP, including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland) or the alternative (Do Not Implementation of the RPMP, including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland, No Action). Such an analysis entails detailing the potential impacts associated with the implementation of the Proposed Action or the alternative that are reasonably foreseeable, but may not necessarily occur. The term “consequence” refers to the results of an event or events without consideration of probability. Where possible and appropriate, potential events will be characterized both in terms of their potential consequence and the probability that they will occur. Consequences of the Proposed Action and the alternative on the public, on the workforce, and the environment will be considered. Direct, indirect, and cumulative effects also will be considered.

Section 5.2 discusses potential impacts to the affected environment associated with the implementation of the Proposed Action and the mitigation measures that would be applied. Section 5.3 and Section 5.4 present a comparison of the potential environmental impacts associated with the Proposed Action and the No Action Alternative.

5.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

5.2.1 LAND USE

Several changes to the land use patterns in Area A will result from the projects comprising the Proposed Action. As noted in Section 2.5, these changes will eliminate acreage of designated Ranges and Training (80 acres) on Area A and increase the acreages for Professional/Institutional (60 acres) and Community (50 acres). Also the amount of land used for troop purposes would be decreased by 37 acres to accommodate development of the northeast portion of the Installation for the Professional/Institutional and Community categories. Industrial land use category increases by seven acres but does change in location. There are no changes to Residential land use. These changes have been reviewed in accordance with the Army’s planning regulations and procedures, as discussed in Section 2.4. Implementation of the Proposed Action will collocate similar activities on Fort Detrick. As stated in Section 2.5, the MPTM describes seven land use categories into which functional areas of all Army installations are divided. New construction projects will be sited in the land use category area designated for that particular use. Therefore, the Proposed Projects will be compatible with their respective adjoining land uses.

Land use impacts related to construction activities could potentially occur from excessive erosion during this phase of the Proposed Action. These impacts would be temporary, site-specific, and minor. Application of BMPs during construction, as discussed in Section 2.6.3, will prevent excessive erosion from the designated project sites. Runoff from the construction sites may potentially impact those areas of the Installation due to erosion or sedimentation. During construction, compliance with erosion and sediment control and stormwater management

standards as determined by the MDE will be required for most of the facilities (see Section 2.6.3).

During the operational phase of the Proposed Action, land use impacts would be minor and site-specific. Implementation of the new construction projects comprising the Proposed Action would increase the area covered by impervious surfaces and increase the total volume of surface runoff in the immediate vicinity of the proposed new construction sites. The USEPA has prepared the *Final 2010 Effluent Guidelines* for surface runoff from new construction sites. Runoff resulting from the construction activities for the Proposed Projects will be sampled when necessary and adjustments to erosion, sediment, and pollution prevention will be made to comply with numeric limitations for effluent discharge under the Final 2010 Effluent Guidelines. During operations, compliance with stormwater management standards as determined by the MDE will be required for most of the facilities (see Section 2.6.3). In addition, FD REG 420-74, *Facilities Engineering - Storm Water Management*, requires that stormwater management practices and control measures must be implemented to mitigate any significant adverse impacts.

Implementation of Alternative II (No Action) would eliminate the minor impacts to land use associated with the Proposed Action, but would also eliminate the benefits resulting from implementation of the RPMP.

5.2.2 CLIMATE

Implementation of either action alternative will have negligible impact to climate. Potential impacts to air quality resulting from implementation of the Proposed Action are discussed in Section 5.2.8.

5.2.3 GEOLOGY

Geologic impacts of implementation of the Proposed Action will be negligible to minor and mitigable. Sinkholes, fracture traces, and lineaments must be considered for any development project at Fort Detrick because of underlying limestone formations, as noted in Section 4.3.3 and Section 4.3.4. In areas prone to potential sinkhole formation, uncontrolled development could result in significant consequences. Surface loading, surface drainage and subsurface flows, and soil conditions are among the considerations that should be addressed. The presence of sinkholes or fracture traces may also impact water resources by providing pathways for potential contamination of groundwater. During the construction of the Proposed Projects, the minor potential for sinkhole formation will be mitigated by adherence to good structural design practices. During the operational phase, the potential for groundwater contamination will be mitigated by engineering controls and adherence to SOPs.

Significant damage to the Proposed Projects resulting from earthquakes will be very unlikely. As noted in Section 4.3.5, Fort Detrick is located within an area that is subject to minor damage due to distant earthquakes.

Implementation of Alternative II (No Action) would eliminate the negligible to minor impacts on geology associated with the Proposed Action.

5.2.4 SOILS

The impact on soil resources during the construction phase of the Proposed Action will be minor. Some soils will be disturbed during excavation and installation of utility lines and regrading. As discussed in Sections 2.6.3, application of BMPs during construction will prevent excessive erosion from wind and precipitation events. LID sustainability features for stormwater management will be incorporated into the design of the Proposed Projects to the maximum practical extent and will help mitigate the impacts of stormwater runoff.

During the operational phase, the impact on soil resources will be negligible. The Proposed Action does not involve the handling of toxic or hazardous materials or other activities that would impact soil resources.

Implementation of Alternative II (No Action) would eliminate the minor impacts to soils associated with the Proposed Action, but would also eliminate the benefits resulting from implementation of the Proposed Action.

5.2.5 WATER RESOURCES

5.2.5.1 *Surface Water*

Potential impacts of implementation of the Proposed Action on surface waters will be minor and mitigable. Potential sedimentation in surface waters could occur during construction of the Proposed Action if excessive stormwater runoff results in erosion from the construction sites. Such sediment impacts may affect Monocacy River Tributary #10 (Two Mile Run) which was discussed in Section 4.5.1. Adherence to BMPs during the construction phases in accordance with MDE standards will mitigate this impact, as discussed in Section 5.2.5.3 below. Thus, implementation of the Proposed Action may have temporary, minor impacts on Tributary #10 during the construction phases.

Currently, the Installation utilizes 1.12 mgd and Approved Projects will increase daily consumption by 0.37 mgd for a total of 1.49 mgd. During operation of the Proposed Projects, average daily water supply withdrawals are estimated to increase by approximately 0.02 mgd or 1 percent relative to the baseline which includes both FY 2009 Installation consumption and the Approved Projects. Future consumption will be approximately 1.51 mgd which will utilize 75 percent of the 2.0 mgd permitted withdrawal limit.

Implementation of the NEPA Approved Potomac Pipeline Interconnect will supplement Fort Detrick's source water from the Monocacy River with water from the Potomac River. This additional water resource is scheduled to come online around FY 2014. Following implementation of the Proposed Action, the average daily water withdrawal required to support Fort Detrick's operations will be processed in the County's New Design WTP located on the Potomac River (USAG, 2009b). Subsequently, average daily water supply withdrawal from Fort Detrick's WTP on the Monocacy River will decrease. Withdrawal from either source will be limited to a combined maximum daily limit of 2.66 mgd; the maximum daily withdrawal from the Monocacy River will remain 2.5 mgd. This will not increase the average daily withdrawal (2.0 mgd) currently permitted under the MDE Water Allocation Permit FR43S001 (02) expiring in 2012, but will increase the current permitted maximum daily withdrawal of 2.5 mgd to 2.66 mgd from a combination of the Monocacy and Potomac Rivers.

Prior to implementation of the Potomac Pipeline Interconnect (current to FY 2014), the impact of the operation of the Proposed Projects on the flow of the Monocacy River will be minor and limited in extent. This is due to several factors: the expected minimal increase for water withdrawal from the Proposed Projects and water withdrawal at 75 percent of permitted daily capacity. Additionally, minor impacts to the Monocacy River flow will be sustained due to most of the increased water withdrawals returning to the Monocacy River as treated wastewater effluent through the Fort Detrick WWTP at a point approximately ¼ mile downstream from the WTP. Water losses within the Fort Detrick water distribution and treatment systems will be minor.

Following implementation of the Potomac Pipeline Interconnect (FY 2014 and beyond), the impact of the operation of the Proposed Projects on the flow of the Monocacy River and the Potomac River will be minor and limited in extent. The majority of the water resources utilized on Fort Detrick will be shifted from the Monocacy River, a river with high potential for low flow and drought during the summer, to the Potomac River, a water source with adequate flow and low occurrence of drought. The additional maximum withdrawal from the Potomac River will have minor impacts to the river's flow rate which averages 9,510 cfs (approximately 6,134 mgd). Subsequently, the shift in source water will restore some water flow to the Monocacy River which has an average flow of 953 cfs (approximately 615 mgd)(USAG, 2010a).

All wastewater, regardless of the location where the finished water was produced (i.e., Monocacy River or Potomac River), will be processed at Fort Detrick's WWTP and discharged into the Monocacy River. The reallocation of water resources from the Potomac River to the Monocacy River may minimally impact the Potomac River by reducing the flow rate downstream of the County's WWTP and may minimally impact the Monocacy River by increasing flow rate downstream of Fort Detrick's WWTP.

The impact of the operation of the Proposed Action on water quality in the Monocacy River also will be minor. Designation of the Monocacy River as Use IV-P determines the amount of pollutants this water body can receive (see Section 4.5.1), which provides the basis for pollutant discharge limits in the NPDES Permit for the Fort Detrick WWTP. Additionally, wastewater is regulated by ENR standards which limit the amount of phosphorus and nitrogen discharge allowed by Fort Detrick's WWTP. The existing Fort Detrick WWTP meets or exceeds all relevant NPDES restrictions, as discussed in Section 4.15.1.2. However, effluent currently discharged by Fort Detrick's WWTP is not in compliance with the future ENR standards. The WWTP is currently being repaired and upgraded to reduce nitrogen and phosphorus discharge in preparation to meet the ENR standards starting 1 July 2011.

Furthermore, qualitative aspects of the treated wastewater from the Proposed Action, including toxicological properties, are not likely to differ from the current wastewater processed at the WWTP. Sufficient treatment capacity is available to accommodate the sanitary wastewater discharges from the Proposed Action (see Section 5.2.15). The projected total Installation sanitary wastewater flow during operation of the Proposed Projects will average 0.86 mgd; which is well within the WWTP capacity of 2.0 mgd. Accordingly, the potential impacts to aquatic life in the Monocacy River are likely to be negligible. Implementation of the Proposed Action will have a minor impact on surface waters during the operational phase, mitigated by adherence to the WWTP permit restrictions.

Implementation of the Proposed Action will have a minor impact on surface waters during the operational phase, mitigated by adherence to the WWTP permit restrictions. The minor impacts to surface waters associated with implementation of the Proposed Action would not occur with implementation of Alternative II (No Action).

5.2.5.2 *Groundwater*

Implementation of the Proposed Action will have minor impacts on groundwater resources, mitigated by compliance with groundwater protection requirements mandated under RCRA (40 CFR 261-270), CERCLA (40 CFR Parts 300-399), and SDWA (42 USC § 300(f) et seq. and 40 CFR Part 144). The SDWA requires state agencies to identify and protect critical aquifer areas.

During the construction phases of the Proposed Action, it is unlikely that a water supply aquifer would be penetrated during excavation for building foundations or for utility connections of the Proposed Projects. Potential impacts to aquifers will be mitigated by good construction practices determined by construction contract terms and contract management. During the operational phase, no negative impacts to groundwater are anticipated.

Implementation of Alternative I (Proposed Action) or Alternative II (No Action) would not negatively impact groundwater.

5.2.5.3 *Stormwater*

The potential stormwater impacts of implementation of the Proposed Action will be minor and mitigable. As noted in Section 2.6.3, a net increase approximately 33.29 acres of impervious surfaces will occur at Fort Detrick after accounting for construction of the Proposed Projects minus the demolition of 54 existing structures. This will result in increased rates and volumes of stormwater runoff from the Proposed Projects. Stormwater management practices and control measures will be implemented to mitigate potential adverse impacts resulting from the increased stormwater runoff during both the construction and operation phases of the Proposed Projects. Additionally, all new construction projects will adhere to the USEPA's *Final 2010 Effluent Guidelines*. All aspects of the stormwater management systems, including the drainage channels, culverts, and stormwater retention ponds, will be designed and consistent with the *2000 Maryland Stormwater Design Manual Volumes I and II* and constructed in accordance with an MDE-approved project plan incorporating BMPs. To the maximum practical extent, features of LID sustainability for stormwater management will be incorporated into the design of the Proposed Projects (see Section 2.6.3).

Under the No Action Alternative, the Proposed Projects would not be constructed, and potential hydrologic impacts would not occur.

5.2.5.4 *Drinking Water Supplies*

Implementation of the Proposed Action will have a minor negative impact to the Monocacy River prior to the Potomac Pipeline Interconnect. The minor impact will be due to increased demand for drinking water from the Monocacy River during operation of the Proposed Projects. Following implementation of the Potomac Pipeline Interconnect, drinking water from the Monocacy River will be supplemented with water from the Potomac River via the New Design WTP. Following implementation of the Potomac Pipeline Interconnect and the Proposed

Projects, there will be a minor negative impact to the Potomac River due to increased water withdrawal. As a result, there will be a positive impact on the Monocacy water supply at Fort Detrick due to a lessened demand for water from this source.

It is projected that average daily water consumption at the Installation will increase from 1.12 mgd (FY 2009) to 1.51 mgd following implementation of Approved Projects and increase by 0.02 mgd due to Proposed Projects (FY 2018). Future average daily consumption will utilize approximately 75 percent of the current 2.0 mgd limit. The average daily water consumption estimates for the Installation are considered conservative (overestimated) because they do not include implementation of Federally mandated water conservation measures (i.e., EO 13514, EO 13423, EISA) (see Section 2.4).

Implementation of Alternative I (Proposed Action) will cause potential minor impacts of the drinking water supplies to the Installation. Implementation of Alternative II (No Action) would eliminate the minor impacts to drinking water associated with the Proposed Action.

5.2.6 WETLANDS AND FLOODPLAINS

Federal activities within floodplains and wetlands are restricted under EO 11988, 33 CFR 1977, EO 11990, and AR 415-15. The INRMP for Fort Detrick serves as a guide for the management and protection of wetlands at Fort Detrick to be in accordance with Federal laws and regulations (USAG, 2007c).

The closest Approved and Proposed Projects range in distance from approximately 80-425 ft. from the nearest wetland site. The construction and operational phases of the Proposed Action will result in minor impacts to wetlands mitigated by adherence to BMPs and compliance with sediment control requirements. Fort Detrick's ongoing efforts to increase the size and quality of wetlands on the Installation, the Wetlands Expansion (Approved Project), is described in Section 2.5.8 and Section 4.6 and outlined in the INRMP. According to the INRMP, riparian buffer zones between wetland areas, streams, ponds, and adjacent land uses will be provided and maintained for wildlife habitat and erosion control. To delay sediment loading, land use in the vicinity of these wetland habitats will remain compatible with their protection. The objectives are maintaining no net loss of existing wetlands and enhancing wetlands size, function and health.

Implementation of Alternative II (No Action) would eliminate the minor adverse impacts to wetlands associated with the Proposed Action. However, the positive impacts to wetlands resulting from the Wetlands Expansion project associated with implementation of the Proposed Action would not occur.

5.2.7 PLANT AND ANIMAL ECOLOGY

Local plant and animal ecology at the proposed sites could be negatively impacted during construction of the Proposed Action through the destruction of habitat from fugitive dust, erosion, and noise. Utilization of BMPs relevant to fugitive dust, erosion control, and noise will mitigate negative impacts to the local plant and animal ecology during the construction phase of the Proposed Action.

Implementation of the Proposed Action will likely disturb the plant and animal ecology in the immediate area of the Proposed Projects. Although the Installation is not frequented by special status species, the construction and utilization of some of the Proposed Projects will discourage some species, particularly birds and deer, from the area through habitat destruction. Many of the Proposed Projects will be constructed on grassland areas of the Installation. In accordance with the State Forest Conservation Program (COMAR 08.18.04), forestation will be required for the Proposed Action (see Section 2.6.4). The total amount of land disturbed for the proposed activities is approximately 3,164,654 sf (72.65 acres). The total amount of land that requires afforestation is approximately 14.81 acres. The afforestation of previously determined locations on Fort Detrick will be funded at the project proponents' expense.

Despite the loss in grassland areas, the future addition of forest will eventually increase the diversity of wildlife that inhabits Fort Detrick. The forest blocks that will be expanded and/or established on Areas A will also be connected to each other through buffer zones approximately 35 feet in width which will allow protected passage between forest blocks for certain species of wildlife. This action will decrease forest fragmentation, which can lower diversity within a forest system, and will result in the creation of high quality habitat for wildlife. The Forestation Initiative, an Approved Project, is described in Section 2.5.8 and Section 4.7 and outlined in the INRMP.

Implementation of Alternative II (No Action) would eliminate the minor impacts to grassland ecosystems associated with the Proposed Action. However, the significant ecological benefits resulting from increased forestation associated with implementation of the Proposed Action would not occur.

5.2.8 AIR QUALITY

During the construction phase of the Proposed Action, local air quality of Frederick could be impacted by fugitive dust emissions, by construction vehicle emissions, and by vehicular emissions from commuting activities of the workforce and suppliers. These impacts will be temporary and minor. Adherence to BMPs will mitigate potential fugitive dust emissions during construction. The vehicular emissions during the construction and operation phases of the Proposed Action will likely be an insignificant portion of the total transportation related emissions in the Frederick area. Impacts to local air quality during operation of the Proposed Projects will be negligible. The Proposed Action does not involve large fuel-burning equipment or other pollutant emission activities that will require a NSR/PSD review in accordance with the CAA (see Section 2.6.6 and Appendix H). However, potential negligible additional amounts of GHG emissions from fossil fuels, which affect air quality and the atmosphere, may be produced due to implementation of the Proposed Action. Additional GHG emissions will be offset by adherence to requirements in EO 13423 and EISA (see Section 2.8.1). These mandates require Federal agencies to use less energy generated by fossil fuels in new building construction and reduce GHG emissions through the reduction of energy intensity, thus improving air quality.

Implementation of Alternative II (No Action) would eliminate the negligible impacts to air quality associated with the Proposed Action.

5.2.9 HISTORICAL AND CULTURAL RESOURCES

Construction and subsequent use of the facilities could impact significant historic, cultural, or archeological resources if the Proposed Action were conducted near significant sites and in a manner which altered, lessened, or disturbed these resources. Potential adverse impacts due to construction activities at all sites will be minor.

The proposed Nallin Farm Gate, Nallin Visitor Center, Golf Driving Range, Consolidated Logistics facility and NIBC Hazardous Material Handling Facility are within surrounding area of the Nallin Farm Complex. Consultation with SHPO has begun due to the proximity to the Nallin Farm Historic Area. Construction activities related to these projects may cause an increase in noise and fugitive dust which can cause damage to significant historical structures. BMPs such as fugitive dust control must be in effect during the construction phase of the Proposed Action to mitigate any adverse affects, such as pollution damage, to this historical resource area. The Proposed Projects mentioned above and the proposed Consolidated Logistics Facility and NIBC Hazardous Material Handling Facility will have minor visual and noise impacts during construction and operation. Mitigations such as below grade roads and tree buffers will lessen affects from construction and operation of the Proposed Projects. Consultation with SHPO has also begun for the Emergency Services Center which is in the general vicinity of the One-Million Liter Test Sphere. There may be slight visual impacts to the One-Million Liter Test Sphere from the Emergency Services Center. No other Proposed Projects are in the vicinity of significant historical resources.

Implementation of Alternative II (No Action) would eliminate the potential minor impacts to the historical and cultural resources.

5.2.10 SOCIOECONOMIC ENVIRONMENT

Positive impacts to the local economy will occur during the construction phase of the Proposed Action. Local vendors and construction contractors will benefit from the work. Minority and/or low-income communities could be economically impacted if they are excluded from the economic benefits arising from construction activities. All vendors and contractors participating in the construction phase of the Proposed Action will be required to adhere to Equal Employment Opportunity and Affirmative Action considerations as identified in 29 CFR 1608.1.

The overall potential impact on the socioeconomic environment during operation of the Proposed Action will be beneficial. A total of 60 new personnel will be employed at Fort Detrick due to all Proposed Projects. The increase in population may affect quality of life issues on the Installation, but these impacts will be outweighed by the beneficial impacts of the Proposed Action. All Proposed Projects that will be sited in the Community land use category area will have beneficial socioeconomic impacts to residents and workforce on Fort Detrick (see Section 2.5.2). Potential adverse impacts due to construction activities at these sites will be minor, transitory, and mitigable by adherence to BMPs. None of the Proposed Projects will encroach upon existing or planned military housing areas or upon the nearest residences outside the Installation.

Implementation of Alternative II (No Action) would eliminate the positive impacts to the local economy associated with the Proposed Action.

5.2.11 NOISE AND LIGHTING

Noise impacts from the implementation of the Proposed Action will be minor and mitigable. Noise from construction activities and subsequent operation of the Proposed Projects may disturb the local plant and animal ecology, as noted in Section 5.2.7. Excessive noise levels could impact the health of the workforce and/or the residents of housing facilities on Fort Detrick or in neighboring communities. The State of Maryland (COMAR 26.02.03.02 and 26.02.03.03) and the City of Frederick (Ordinance G-02-9) have established environmental noise standards that set maximum allowable noise levels for receivers located in industrial, commercial, and residential districts.

During the construction phase of the Proposed Action, operation of power machinery and other construction activities will result in a temporary increase in the noise level in the immediate vicinity of the sites. Noise impacts on the health of construction workers will be mitigated by adherence to OSHA standards for occupational noise exposure associated with construction (29 CFR 1926.52). Noise impacts on nearby residents will be mitigated by adherence to the regulatory limit for construction activities of 90 dBA at the boundaries of the site [COMAR 26.02.03.03 A(2)(a); Ordinance G-02-9].

Noise impacts from normal operations at the Proposed Projects will be temporary, localized, and negligible, and will be similar to existing activities at Fort Detrick. As noted in Section 4.11, sound levels generated by existing Fort Detrick operations were determined to be compatible with nearby residential use. The regulatory limits for noise levels for receivers in residential areas are 65 dBA during daytime hours and 55 dBA at night.

Lighting for the Proposed Projects will be for parking and security purposes; it is not expected to create any nuisance to neighbors either within or outside the Installation, and will result in minor impacts.

Implementation of Alternative II (No Action) would eliminate the minor noise and light impacts associated with the implementation of the Proposed Action.

5.2.12 ODORS

Odors, such as those generated by construction vehicles, may occur during the construction phase of the Proposed Action. The impacts of such odors on the workforce or residents will be transitory, localized, and negligible to minor. The Proposed Projects are similar to existing facilities elsewhere at Fort Detrick and do not involve significant odor sources. Thus, odor impacts during the operational phase of the Proposed Action will be negligible, since the odors will not be significantly different from those currently experienced on the Installation.

Implementation of Alternative II (No Action) would eliminate the negligible to minor impacts to odors associated with the Proposed Action.

5.2.13 TRANSPORTATION

The potential impacts to transportation resulting from implementation of the Proposed Action will be minor and mitigable. Construction of the proposed projects will result in increased traffic on Fort Detrick and in areas adjacent to the Installation. During the construction phase, contractor

personnel, inspectors, and supply deliveries will temporarily increase vehicular traffic. Approximately 2,500 construction workers are expected on Fort Detrick Area A through 2017. These temporary impacts may be mitigated by project-specific vehicle access restrictions (e.g., limiting gates and hours). In addition, workers may park in Area B and be bused to and from the construction sites to mitigate potential impacts to gate traffic, parking, and traffic on and around Area A.

Increases in gate traffic resulting from operation of the Proposed Action will add to the existing gate traffic volumes, but will cause only negligible impacts to Veterans Gate, Old Farm Gate and the future Nallin Farm Gate. As noted in Table 4-8 and Table 5-1, Fort Detrick’s employment population growth due to all NEPA Approved Projects and Proposed Projects will result in approximately 1,066 additional employees by 2018. However, only 60 new employees will result from the Proposed Projects.

Table 5-1. Projected Fort Detrick Employment Growth Total 2018.

Population Component	Number of People
NEPA Approved Projects	1,006
Proposed Projects	60
Projected Employment Growth	1,066

As noted in Section 4.13.2, recent improvements to Veterans Gate and Old Farm Gate have increased capacity and reduced queuing onto local roadways. Veterans Gate has an AM capacity of 2,400 vph, while Old Farm Gate has an AM capacity of 1,200 vph. The future Nallin Farm Gate that will replace the current Opossumtown Gate will also have an AM capacity of 1,200 vph. Approximately 17 percent of the total vehicles entering Fort Detrick Area A in a 24-hour period enter during the AM peak hour, the time period with the highest potential for congestion and queuing onto surrounding primary access roads due to heavy inbound traffic. Currently, Veterans Gate, Old Farm Gate, and Opossumtown Gate each receive 38.7 percent, 32.6 percent, and 28.7 percent, respectively, of the total vehicles entering Fort Detrick during the AM peak hour. Assuming that all new employees entering Fort Detrick’s Area A arrive during the AM peak hour⁴ and that each gate will continue to receive approximately the same percentage of vehicles that it currently receives, then by FY 2018 the NEPA Approved Projects and the Proposed Projects will result in 413, 347, 306 additional vph entering Veterans Gate, Old Farm Gate, and the new Nallin Farm Gate, respectively, during the AM peak hour (see Table 5-2). However, the new Proposed Projects alone will result in only 23, 19, and 17 additional vph entering Veterans Gate, Old Farm Gate, and the new Nallin Farm Gate, respectively, during the AM peak hour. Therefore, the Proposed Action will result in only a three percent increase in vph entering Fort Detrick Area A during the AM peak hour for each gate.

⁴ For the purposes of this evaluation it was assumed that all new employees due to all planned and proposed projects will enter Fort Detrick Area A during the AM peak hour. This allowed for the most conservative future estimate. However, it is unlikely that all new employees will arrive on post during the AM peak hour, therefore decreasing the total vph entering each gate during that hour.

Table 5-2. Projected Fort Detrick Area A Gate Traffic Volume.

Hours	Veterans Gate	Old Farm Gate	Opossumtown/Nallin Farm Gate*	Total
AM Peak Hour (2009) ⁺	829 vph	697 vph	614 vph	2,140 vph
AM Peak Hour increase [^]	413 vph	347 vph	306 vph	1,066 vph
AM Peak Hour (2018)	1,242 vph	1,044 vph	920 vph	3,206 vph

*Assumes the future Nallin Farm Gate will receive approximately the same percentage of vph that the Opossumtown Gate currently receives.

+ Current AM Peak Hour totals based on the peak number of vehicles entering Fort Detrick A as counted in the September 2009 gate count described in Section 4.13.2.

[^] Increase based on the current percentage of vehicles entering each gate multiplied by expected increase of 1,066 additional vehicles entering Fort Detrick Area A due to all NEPA Approved Projects and Proposed Projects.

The increased vehicles per gate will not result in Veterans Gate, Old Farm Gate, or the new Nallin Farm Gate operating above their designed capacities. Veterans Gate, Old Farm Gate, and Nallin Farm Gate will each operate at 51.8 percent, 87.0 percent, and 76.7 percent of their designed AM gate capacities, respectively. However, if needed in the future, increased gate capacity may be achieved by implementing designated gate access during AM and PM rush hours. Allocating gate assignments to functional area groups may also reduce overloading of gate facilities. Currently, the gates have no room available to expand their number of lanes and limited acreage prohibits the addition of any more gates.

Increased traffic from operation of the Proposed Action will result in minor impacts to existing traffic loading on the surrounding access roads of Opossumtown Pike, Rosemont Avenue and Military Drive, as well as the primary access roads on Area A, Porter Street and Ditto Avenue. Currently Fort Detrick truck traffic only enters the Installation via Old Farm Gate on Rosemont Avenue. The new Nallin Farm Gate will allow trucks to access the Installation via Opossumtown Pike. This will cause minor impacts to Opossumtown Pike which will be partially offset by lessening impacts to Rosemont Avenue. The additional traffic will likely be concentrated at the morning and afternoon commuting times when traffic is heaviest. Recent improvements to the Veterans Gate and Old Farm Gate, the new Nallin Farm Gate construction, as well as ongoing improvements to Installation roadways, are expected to mitigate traffic congestion on the Installation and in areas adjacent to Fort Detrick. Representatives of USAG, the City of Frederick, and Frederick County are evaluating current and future traffic conditions in and around Fort Detrick as well as other shared infrastructural concerns.

The minor impacts to transportation associated with implementation of the Proposed Action would not occur with implementation of the No Action Alternative.

5.2.14 ENERGY RESOURCES

Construction of the Proposed Projects will have negligible impacts on energy resources relative to energy consumption in the Frederick area. During the construction phase, the impact of diesel fuel demands for power equipment and movement of materials, and gasoline for workforce commuting, will be temporary and negligible relative to the consumption of these fuels in the Frederick area.

As stated in Section 2.7, an accurate quantitative determination of the impact on requirements for electricity, water supply, natural gas, and steam is not feasible at the current state of design and planning for these projects. However, a reasonable qualitative estimate is possible. The

operational activities in many of these facilities are not energy intensive, and many existing facilities will be demolished as part of other actions planned on the Installation. On that basis, energy consumption in the new facilities should only increase moderately over current levels.

Minor impacts will result to energy resources during operation of the Proposed Projects. As discussed in Section 2.7, the estimated steam requirements for operation of the Proposed Projects will increase the total Fort Detrick usage to approximately 17 percent of steam generating capacity at the Installation. The total consumption of the electrical power is estimated to increase relative to the current total by approximately 33 percent, well within the utility capacity. As discussed in Section 2.8, the Proposed Projects will be constructed per LEED guidelines.

Energy management practices of the Proposed Projects will follow the energy efficiency mandates in EO 13514, EO 13423, and EISA, which require energy reduction goals of 30 percent by 2015 relative to the 2003 baseline. As a direct result of energy consumption, GHG emissions will be decreased. Federal targets for reduction of direct (Scope 1) GHG and indirect (Scope 2 and Scope 3) GHG emissions have been established at a 28 percent by 2020. In addition, Federal agencies must report a comprehensive GHG inventory annually starting FY 2010.

Implementation of Alternative II (No Action) would eliminate the minor impacts to energy consumption in the construction and operation of the Proposed Projects, but would also eliminate the benefits resulting from operation of energy efficient facilities.

5.2.15 POLLUTION PREVENTION AND WASTE STREAM MANAGEMENT

Construction of the Proposed Projects will have a negligible impact on Fort Detrick waste management systems. The construction contractor will have responsibility for adhering to regulatory requirements for the disposal of wastewater, solid waste, hazardous waste, and construction debris outside Fort Detrick and in accordance with Federal, state, and local regulatory requirements, as noted in Section 2.6.2. The contractors will not be allowed to use Fort Detrick facilities for waste disposal. On that basis, the potential environmental impacts of waste streams during construction will be negligible. In accordance with Army policy for *Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities* (DA, 2006a), the contracts will include a performance requirement for 50 percent minimum diversion of construction and demolition waste by weight from landfill disposal. The contract specifications will include submission of a contractor's construction Waste Management Plan. Construction waste will be managed in accordance with LEED guidelines. During the construction phase of the Proposed Projects, pollution prevention will be practiced through source reduction and conservation in accordance with EO 13514, EO 13423, and EISA.

As stated in Section 2.9, an accurate quantitative determination of the impact of the Proposed Projects on waste generation is not feasible at the current state of design and planning for these projects. However, a reasonable qualitative estimate is possible. The operational activities in these facilities are not expected to generate greater than average waste streams, and many existing facilities will be demolished as part of other actions planned on the Installation.

Operation of the Proposed Projects will likely have minor impacts on the Installation's wastewater system. The future wastewater baseline including Approved Projects and the

associated buildings to be demolished is approximately 0.85 mgd. The total amount of wastewater produced from Proposed Projects is estimated to be a minor increment of 0.01 mgd. The future WWTP capacity is estimated to be at 43 percent with Approved and Proposed Projects and their associated buildings to be demolished. As noted in Section 2.8, the Proposed Projects will incorporate features that will lessen the demand for water, which will minimize production of wastewater as per LEED guidelines, EO 13514, EO 13423, and EISA requirements.

Operation of the Proposed Projects will have negligible impacts on the Installation's MSW and medical waste management systems. The amount of MSW generated by operation of the Proposed Action is estimated to increase the municipal waste incinerators capacity by six percent. As a result Approved and Proposed Projects and the associated buildings to be demolished, will increase the municipal waste incinerators to 15 percent of the capacity. The Proposed Action is not projected to produce medical waste. The future medical waste incinerator capacity is estimated to be at 15 percent with Approved and Proposed Projects and their associated buildings to be demolished. Future waste generation is anticipated to occur at the same unit rate as in the past. Energy/waste savings resulting from EO 13514, EO 13423, and EISA were not factored into the projections.

Under the No Action Alternative, the negligible to minor adverse impacts to waste management systems at Fort Detrick would not occur.

5.2.16 HAZARDOUS MATERIAL MANAGEMENT

The impact of hazardous material management associated with implementation of the Proposed Action will be minor. During the operational phase of the Proposed Projects, USAG oversight of hazardous material handling will ensure compliance with applicable OSHA safety regulations and RCRA regulations for hazardous waste treatment, storage, and disposal. Operation of the Proposed Projects will involve limited use of toxic or hazardous materials (i.e., materials normally associated with administrative and recreational activities). Hazardous materials management in the Proposed Projects will include an active pollution prevention program in accordance with USAG policies. Pollution prevention will be practiced through source reduction and conservation or by elimination of toxic materials during the operational phase of the Proposed Action, following the objectives of the Fort Detrick EMS (see Section 4.17.3).

During the construction phase, adherence to contract provisions will ensure proper management of hazardous materials. Under the No Action Alternative, the minor impacts to hazardous material management systems at Fort Detrick would not occur.

5.2.17 HUMAN HEALTH AND SAFETY

The risk to the workforce, residents of Fort Detrick, and public health from the proposed activities is negligible. Human health and safety impacts may potentially occur both during construction and operation of the Proposed Action. Potential impacts to the health and safety of construction workers will be minimized by adherence to accepted work standards and OSHA regulations (29 CFR Part 1926, *Safety and Health Regulations for Construction*). Operation of the facilities will be governed by the *Army Safety Program* (Army Regulation 385-10), implementing, by reference, all applicable Federal, state, local, DoD, and DA requirements.

Under the No Action Alternative, negligible impacts to human health and safety associated with the Proposed Action would not occur.

5.2.18 ENVIRONMENTAL JUSTICE

The potential impacts to Environmental Justice from the implementation of the Proposed Action will be negligible and mitigable. During the construction phase of the Proposed Action, minority and/or low-income communities could be economically impacted if they are excluded from the economic benefits arising from construction activities. Such adverse Environmental Justice impacts are mitigated by the requirement that all vendors and contractors participating in the construction and operational phases of the Proposed Action must adhere to Equal Employment Opportunity and Affirmative Action considerations as identified in 29 CFR 1608.

EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low Income Populations*, requires Federal agencies to consider whether their projects will result in disproportionate adverse impacts on minority or low-income populations. The US Census considers a poverty area as one where at least 20 percent of the population lives below the poverty level, which it defines as the income level (based on family size, age of householder, and the number of children under 18 years of age) that is considered too low to meet essential living requirements, without regard to the local cost of living. As discussed in Section 4.10.1, the Frederick area is not considered a poverty area.

It is unlikely that implementation of the Proposed Action will have proportionately greater impact on disadvantaged (e.g., minority, low income) populations than the No Action Alternative.

5.2.19 CUMULATIVE IMPACTS

The CEQ regulations implementing NEPA define cumulative impacts to the environment as those effects resulting from the impact of implementation of either Alternative I or Alternative II when combined with past, present, and future actions (40 CFR 1508.7). Thus, cumulative impacts are the sum of all direct and indirect impacts, both adverse and positive, that result from the incremental impacts of implementation of either Alternative I or Alternative II when added to other past, present, and reasonably foreseeable future actions regardless of source. Cumulative impacts may be accrued over time and/or in conjunction with impacts from other activities in the area (40 CFR 1508.25).

The discussion below summarizes the cumulative impacts of all future development at Fort Detrick and integrates the collective environmental impacts of these projects. The collective increases in employment, building construction activities, and associated environmental impacts with the overall development of Fort Detrick are detailed throughout Section 5.0 by environmental attribute area. Activities qualitatively and quantitatively similar to the Proposed Action (i.e., infrastructural construction/improvement and utilization) have occurred on the Installation for over 60 years without evidence of adverse cumulative impacts to the environment. It is unlikely that significant cumulative impacts will result from implementation of the Proposed Action. Environmental impacts associated with future development on Fort Detrick Areas A, B and C and Forest Glenn Annex will be reassessed in a NEPA context, including cumulative impacts.

The potential cumulative impacts resulting from implementation of the Proposed Action will be minor and mitigable.

5.2.19.1 Land Use

The cumulative impacts of implementation of the Proposed Action on land use will be minor. As discussed in Section 2.4, all future development at Fort Detrick (including Approved, Proposed, and Conceptual Projects) will be in accordance with AR 210-20 and the RPMP. Although conversion of previously undeveloped open land to urbanized, impervious surfaces will occur. Positive impacts, in the form of forestation amounting to 14.81 acres, will be undertaken within Fort Detrick.

5.2.19.2 Climate

Negligible cumulative impacts to climate are anticipated from the implementation the Proposed Action.

5.2.19.3 Geology and Soils

The cumulative impacts of implementation of the Proposed Action on geology and soils will be minor, including impacts from Fort Detrick future development. The geologic and soil conditions at Fort Detrick are considered adequate for development of the Proposed Projects, as discussed in Section 5.2.3 and Section 5.2.4. Adherence to good structural design practices and BMPs during the continued development of Fort Detrick have mitigated impacts to topography and stormwater runoff patterns.

5.2.19.4 Water Resources

The cumulative impacts of implementation of the Proposed Action on water resources will be minor, including impacts from Fort Detrick future development. Operation of the Proposed Projects will add to existing and planned demands for water supply on the Installation. Following implementation of the Potomac Pipeline, this increase in demand for water will be supplied by both the Monocacy River and the Potomac River. Minor cumulative impacts to the Potomac River may occur because withdrawal demands will increase. These potential impacts will be minor and mitigable by the use of BMPs and by offsetting the demands on the Monocacy River. Implementation of federally mandated water conservation measures will also provide mitigation of the cumulative impacts on water resources.

Construction and operation of the Proposed Projects will result in increased rates and volumes of stormwater runoff, as indicated in Section 5.2.5.3. Since this will be in addition to increases resulting from other projects currently under design or construction, minor cumulative impacts to stormwater management will result from implementation of the Proposed Action.

5.2.19.5 Wetlands and Floodplains

No cumulative impacts to wetlands and floodplains are anticipated from implementation of the Proposed Action (see Section 5.2.6).

5.2.19.6 Plant and Animal Ecology

The cumulative impacts of implementation of the Proposed Action on plant and animal ecology will be negligible, including impacts from Fort Detrick future development. Some species will be discouraged from the area through destruction of habitat, dust, erosion, and/or noise. However, there are no special status species on Fort Detrick, as discussed in Section 4.7.3. Positive cumulative impacts to the local plant and animal ecology will result from the afforestation and reforestation requirements (habitat creation) and Wetland Expansion project.

5.2.19.7 Air Quality

The cumulative impacts of implementation of the Proposed Action on air quality will be minor, including impacts from Fort Detrick future development. As discussed in Section 2.9.2 and Section 2.9.3, the disposal of general solid waste and special medical wastes generated from the Proposed Projects will increase the loading of the Fort Detrick municipal waste incinerators and medical waste incinerators. The loadings to the incinerators and associated air emissions are within the permit limits set forth by MDE (see Section 4.8 for details). Cumulative impacts to air quality from increased vehicle emissions will be a negligible component of the total vehicular emissions in the Frederick area.

5.2.19.8 Historical and Cultural Resources

Minor cumulative impacts to historical resources are expected with implementation of the Proposed Action. As discussed in Section 5.2.9, five Proposed Projects will take place within the vicinity of the Nallin Farm Complex but mitigation measures will be in place to protect this resource.

5.2.19.9 Socioeconomic Environment

Positive cumulative impacts to the socioeconomic environment will be associated with implementation the Proposed Action, including impacts from Fort Detrick future development. The construction and operation of the Proposed Action will have minor beneficial economic impacts for the economies of the City of Frederick and Frederick County. The salaries and wages from the workforce of the Proposed Projects will contribute directly to the local economy. These increments will comprise only a minor component of the projected population and employment growth for Frederick County.

Construction and operation of the Proposed Projects are not anticipated to have a significant adverse effect on residential property values near Fort Detrick. No significant impacts are anticipated for the attributes that would be perceived as detrimental for property values (i.e., human health and safety, noise, nuisance lighting, and odors).

5.2.19.10 Noise and Lighting

Minor cumulative impacts to the baseline noise levels on and adjacent to Fort Detrick are anticipated, including impacts from Fort Detrick future development. As discussed in Section 4.11, noise from traffic on arterial streets adjoining Area A will likely increase with time. Noise associated with operation of the Proposed Action will result in minor noise impacts for residents of military housing on Area A or adjoining private homes.

Negligible cumulative increases to nuisance lighting from the Proposed Action are anticipated. Lighting for the facilities will be for parking and security purposes.

5.2.19.11 Odors

The cumulative impacts of odors resulting from implementation of the Proposed Action will be minor, including impacts from Fort Detrick future development. During the construction phase fueling of power equipment will result in petroleum odors, but the effects will be localized, transient, and minor. Odors generated during the operational phase of the Proposed Projects will be similar to those currently generated in existing similar facilities on the Installation. The potential odors generated by the incinerators, as discussed in Section 4.12, will increase as a result of the increased loading of these facilities due to the Proposed Projects.

5.2.19.12 Transportation

Minor cumulative impacts to transportation will result from implementation of the Proposed Action. The increased traffic and parking demand anticipated for operation of the Proposed Projects noted in Section 5.2.13 will be in addition to similar increases associated with other Approved Projects for Area A of Fort Detrick. However, recent and planned improvements to the transportation infrastructure serving Fort Detrick personnel will mitigate cumulative impacts (see Section 5.2.13).

5.2.19.13 Energy Resources

Minor cumulative impacts to energy resources will result from implementation of the Proposed Action. Due to their energy efficient design, operation of the Proposed Projects will decrease energy intensity as compared to similar facilities elsewhere, as noted in Section 5.2.14. In addition, the Proposed Projects will follow the energy efficiency mandates in EO 13514, EO 13423, and EISA, which require energy reduction goals of 30 percent by 2015 relative to the 2003 baseline.

5.2.19.14 Pollution Prevention and Waste Management/Hazardous Materials Management

Implementation of the Proposed Action will have minor cumulative impacts on pollution prevention and waste management at Fort Detrick, including impacts from Fort Detrick future development. As discussed in Section 2.9, the disposal of wastes generated from the Proposed Projects and Approved Projects will be approximately 15 percent of capacity of both the Fort Detrick MSW and medical waste incinerators. The WWTP will continue to function within permitted capacity. Future waste generation is anticipated to occur at the same unit rate as in the past. Energy/waste savings resulting from EO 13514, EO 13423, and EISA were not factored into the projections.

As noted in Section 2.8, the Proposed Projects will incorporate features that will lessen the demand for water, which will minimize production of wastewater in accordance with LEED guidelines and EO 13423, EO 13514, and EISA requirements. Pollution prevention will be practiced through source reduction and conservation or by elimination of toxic materials during the operational phase by integration with the EMS objectives of the Installation as a whole (see Section 4.17.3).

5.2.19.15 Human Health and Safety

The cumulative impacts to human health and safety resulting from implementation of the Proposed Action will be negligible.

5.2.19.16 Environmental Justice

The cumulative impacts of implementation of the Proposed Action to environmental justice will be negligible, including impacts from Fort Detrick future development. The requirement that all vendors and contractors participating in the construction and operational phases must adhere to Equal Employment Opportunity and Affirmative Action considerations as identified in 29 CFR 1608 will ensure adverse cumulative impacts will not occur.

5.2.20 PUBLIC OPINION

Public opinion towards a Proposed Action must be considered to the maximum extent practicable in accordance with NEPA and 32 CFR 651. Evaluation of public opinion includes an assessment of national and/or local perception of issues. As part of the NEPA process, public comments are being solicited and encouraged.

5.3 ENVIRONMENTAL IMPACTS OF ALTERNATIVE I

As summarized in Table 5-3 and Table 5-4, no significant environmental impacts are anticipated with implementation of the Proposed Action.

Possible negligible to minor adverse impacts associated with construction include:

- negligible impacts to climate;
- potential negligible to minor impacts to geology;
- potential minor impacts to soils;
- minor impacts to water resources;
- minor impacts to wetlands and floodplains;
- minor impacts to plants and animals;
- minor impacts to air quality;
- minor impacts to historical and cultural resources;
- positive impacts to the local socioeconomic environment (the City of Frederick);
- minor impacts from noise and lighting;
- negligible to minor impacts from odors;
- minor impacts to traffic;
- negligible impacts to energy resources;
- negligible impacts to waste streams;
- minor impacts to hazardous material management; and
- negligible impacts to human health and safety.

Possible negligible to minor adverse impacts, and positive impacts associated with operation include:

- negligible impacts to climate;

- minor and site specific adverse impacts (loss of agricultural land) and positive impacts (gain of forested land, consolidation of similar activities on the Installation, increased wetlands), which will result in a net minor positive impact to land use;
- potential negligible to minor impacts to geology;
- negligible impacts to soils;
- minor impacts to wetlands and floodplains;
- positive impacts to plant and animal ecology (creation of high quality habitat through increased afforestation);
- negligible impacts to air quality;
- minor impacts to historical and cultural resources;
- positive impacts to the Fort Detrick socioeconomic environment (residents of Fort Detrick);
- negligible impacts from noise;
- negligible impacts from odors;
- minor impacts from lighting;
- minor impacts to transportation;
- positive impacts to security;
- minor impacts to energy resources;
- negligible impacts to waste streams;
- minor impacts to hazardous material management; and
- negligible impacts to human health and safety.

Table 5-5 discusses mitigation measures which will be employed during the implementation of the Proposed Action. Application of BMPs during construction and operation of the Proposed Action will mitigate adverse impacts to Fort Detrick and areas adjacent to the Installation.

5.4 ENVIRONMENTAL IMPACTS OF ALTERNATIVE II

Alternative II, the No Action alternative, is Do Not Implement the RPMP, including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland. This alternative would not replace existing antiquated, poorly situated, energy inefficient, and maintenance intensive buildings which would continue in service. Administrative, communications, and community services activities would have to continue operations in functionally inefficient, separate facilities. Much-needed infrastructural improvements would be postponed or abandoned. The recreational and educational opportunities and ecological restoration initiatives would not enhance quality of life on the Installation. Under Alternative II, USAG and its Mission Partners would not be as effective at meeting their respective mission requirements. Implementation of the No Action Alternative would eliminate the negligible to minor adverse impacts detailed above, but would also eliminate the positive impacts resulting from the Proposed Action.

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Table 5-3. Summary of Potential Environmental Impacts Related to Construction of the Proposed Action.

Environmental Attribute	Potential Environmental Impacts Related to Construction
Land Use	Temporary, site-specific and minor land use impacts due to erosion and stormwater runoff. Mitigated by adherence to BMPs, compliance with erosion and sediment control and stormwater management requirements, and COMAR forestation requirements.
Climate	Negligible impacts to climate.
Geology	Negligible to minor impacts to geology due to potential sinkhole formation, mitigated by good structural design practices.
Soils	Minor impacts to soil resources due to erosion resulting from disturbance during excavation and installation of utility lines, mitigated by use of BMPs.
Water Resources	Minor impacts to surface water due to sedimentation, mitigated by adherence to BMPs and compliance with sediment control requirements. Minor impacts to groundwater, mitigated by compliance with groundwater protection requirements. Increased stormwater runoff will result in minor impacts to surface water, mitigated by additional stormwater management facilities.
Wetlands and Floodplains	Temporary minor impacts due to erosion and sedimentation, mitigated by adherence to BMPs and compliance with sediment control requirements. Negligible impacts to floodplains.
Plant and Animal Ecology	Temporary minor impacts to plant and animal resources including displacement of species through disruption of habitat, mitigated by BMPs. Positive impacts due to COMAR forestation requirements.
Air Quality	Temporary and minor impacts due fugitive dust and vehicular emissions. Fugitive dust mitigated by adherence to BMPs.
Historic and Cultural Resources	Minor impacts due to fugitive dust, visual obstruction, and noise mitigated by adherence to BMPs and SHPO recommendations, tree buffers and below grade roads.
Socioeconomic Environment	Positive economic impact to the economy of Frederick.
Housing	Temporary minor impacts to current residents due to fugitive dust and noise. Mitigated by adherence to BMPs.
Noise and Lighting	Transitory minor increased noise at the construction and demolition sites and adjacent off-post areas. Mitigated by adherence to OSHA construction noise standards
Odors	Negligible to minor odor impacts due to transitory and localized odors generated by construction vehicles.
Transportation	Minor impacts on traffic congestion localized at the work sites.
Energy Resources	Temporary negligible impacts to depletable energy resources.
Waste Streams	Negligible impacts from waste streams.
Hazardous Material Management	Minor impacts expected. USAG oversight of hazardous material handling will insure compliance with OSHA and RCRA regulations.
Human Health and Safety	Negligible impact to construction workers and negligible impacts to public health and safety.
Environmental Justice	No disproportionate adverse impacts to minority or low-income populations are anticipated.
Cumulative Impacts	Significant adverse cumulative impacts are not anticipated.

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Table 5-4. Summary of Potential Environmental Impacts Related to Operation of the Proposed Action.

Environmental Attribute	Potential Environmental Impacts Related to Operation
Land Use	Minor and site specific adverse to positive impacts to land use (loss of agricultural land; gain of forested land and wetlands).
Climate	Negligible impacts to climate.
Geology	Negligible to minor impacts to geology, mitigated by engineering controls, proper facility design, and adherence to SOPs.
Soils	Negligible adverse impacts to soils.
Water Resources	Minor impact on Monocacy River water supply source. Groundwater contamination mitigated by adherence to construction standards and operational practices for containment of potential wastewater leakage (e.g., secondary containment). Minor impacts to local groundwater recharge resulting from increased impervious surface area. Minor impacts from increased stormwater runoff due to impervious surfaces, mitigated by upgrading of stormwater management facilities. Minor impacts to water quality, mitigated by WWTP repairs.
Wetlands and Floodplains	Positive impacts to wetlands due to wetlands project. Negligible impacts to floodplains.
Plant and Animal Ecology	Positive impact to plant and animal resources by the forestation and wetlands projects. Displacement of certain species, especially deer and birds, anticipated.
Air Quality	Negligible air quality impacts.
Historic and Cultural Resources	Minor adverse impacts for historic and cultural resources.
Socioeconomic Environment	Beneficial impacts for residents of military housing from community service and recreational projects, as well as beneficial impacts to local economies.
Housing	Positive impacts resulting from upgrading of infrastructural security, recreational facilities, and cultural facilities.
Noise	Negligible noise impacts. Noise levels are not likely to increase over current levels.
Odors	Negligible odor impacts. No significant new odor sources.
Lighting	Minor impacts to lighting.
Transportation	Minor impacts to traffic.
Security	Beneficial impacts from security upgrade projects.
Energy Resources	Minor impacts to energy resources due to increased consumption of natural gas, steam, and electricity.
Waste Streams	Negligible impacts from waste streams, due to increased usage of Installation incinerators.
Hazardous Material Management	Minor impacts expected. USAG oversight of hazardous material handling will ensure compliance with OSHA and RCRA regulations.
Human Health and Safety	Negligible impacts to human health and safety.
Environmental Justice	No disproportionate adverse impacts to minority or low-income populations are anticipated.
Cumulative Impacts	Significant adverse cumulative impacts are not anticipated.

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Table 5-5. Summary of Mitigation Measures and Mechanisms.

Environmental Attribute	Impact	Mitigation Measure
Land Use	Land disturbance	COMAR, afforestation requirement, BMPs, erosion and stormwater management requirements
Geology	Potential for sinkhole formation	Good structural design practices and use of BMPs during construction/demolition/renovation
	Potential pathways for groundwater contamination	Engineering controls and adherence to SOPs
	Potential adverse impacts to topography and stormwater runoff patterns	Use of BMPs during construction
Soils	Soil erosion during construction	Use of BMPs during construction
		Adherence to MDE stormwater management requirements
Water Resources	Sedimentation to surface waters	Use of BMPs during construction
		Adherence to MDE stormwater management requirements
	Increased stormwater runoff due to impervious surfaces	Adherence to MDE stormwater management requirements
	Damage to aquifer during construction	Good construction practices
	Potential groundwater contamination during operation	Secondary containment for potential wastewater leakage and for any ASTs/USTs
	Increased water consumption	Adherence to requirements of EO 13423, EO 13514, and EISA
	Decreased water quality	WWTP Repairs
Plant and Animal Ecology	Minor impacts to plant and animal species	Use of BMPs during construction
	Potential development of forested land	Forestation requirements
Air Quality	Fugitive dust	Use of BMPs during construction
	Pollutant emissions due to increased use of boilers and incinerators and emergency generators	Adherence to air permit requirements
Historical Resources	Potential visual, noise, dust impacts to historical resources	Use of BMPs and adherence to SHPO recommendations (below grade roads, tree buffers, etc.)
Noise	Noise effects on construction worker hearing	OSHA compliance
	Impacts on public health during construction	Adherence to noise control regulations
Transportation	Potential increased traffic	Potential and ongoing infrastructural improvements, vehicle restrictions
	Construction worker parking	Contract requirements
Pollution Prevention and Waste Management	Construction wastes	Contract requirements for disposal of all wastes outside Fort Detrick and in accordance with regulatory requirements
	Wastes generated by operation of Proposed Projects	Pollution prevention through source reduction and conservation
Human Health and Safety	Potential construction-related injury	Compliance with OSHA regulations
	Proposed Projects worker health and safety	Adherence to OSHA safety standards

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6.0 CONCLUSIONS

The Proposed Action (Alternative I) and subject of this EA is the Implementation of the RPMP, including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland. This is comprised of a number of projects for the construction and operation of new facilities and infrastructural improvements, enhancement of recreational and educational opportunities, and ecological restoration within the Installation (the Proposed Projects), which will allow USAG and its Mission Partners to meet their respective mission requirements. During the preparation of this EA, one alternative to the Proposed Action was identified. This alternative is Do Not Implementation of the RPMP, including Proposed Projects and associated buildings to be demolished and the resulting changes in the land use, for Army-controlled land at Areas A and C of Fort Detrick in Frederick County, Maryland (Alternative II, No Action).

This EA considered impacts expected from current and proposed Installation activities, cumulative impacts that might occur after several years, and impacts resulting from association with other activities in the area. Detailed analyses of the individual activities and impacts of the Proposed Action, as well as the actual cumulative impacts of other entities in the immediate vicinity of Fort Detrick, did not reveal any significant adverse environmental impacts.

During the construction phase, the following impacts are anticipated: negligible impacts to the local climate, potential negligible to minor impacts to geology, potential minor impacts to soils, minor impacts to water resources, minor impacts to wetlands and floodplains, minor impacts to plants and animals, minor impacts to air quality, minor impacts to historical and cultural resources, positive impacts to the local socioeconomic environment, minor impacts from noise and lighting, negligible to minor impacts from odors, minor impacts to traffic, negligible impacts to energy resources, negligible impacts to waste streams, minor impacts to hazardous materials management, negligible impacts to human health and safety, and minor cumulative impacts.

During the operational phase, the following impacts are anticipated: minor positive impacts to land use, negligible impacts to the local climate, potential minor impacts to geology, negligible impacts to soils, minor impacts to water resources, minor impacts to wetlands and floodplains, positive impacts to plants and animals, negligible impacts to air quality, minor impacts to historical and cultural resources, positive impacts to the local socioeconomic environment, negligible impacts from noise, minor impacts from lighting, negligible impacts from odors, minor impacts to traffic, positive impacts to security, minor impacts to energy resources, negligible impacts to waste streams, minor impacts to hazardous materials management, negligible impacts to human health and safety, and minor cumulative impacts.

The principal conclusions of this EA are: (1) implementing Alternative I (the preferred alternative) would not result in significant adverse environmental impacts, provided that best management practices (BMPs) to mitigate these potential environmental impacts are adhered to during construction and operation of the Proposed Projects; (2) implementing the Proposed Action will provide Fort Detrick with much-needed infrastructural improvements which will increase efficiency and allow USAG and its Mission Partners to achieve their respective mission requirements; (3) implementing the RPMP for Army-controlled Land of Areas A and C of Fort Detrick (the Proposed Action) will increase recreational opportunities and security for the workforce and residents of Fort Detrick; (4) implementing Alternative I will increase employment by a total of 60 due to all Proposed Projects at Fort Detrick; (5) implementing Alternative I will expand and enhance the natural resources areas of the Installation; (6) implementing

Alternative I is consistent with the land use planning objectives for Fort Detrick; (7) implementing Alternative II (No Action) would not provide Fort Detrick with much-needed infrastructure and facilities and would hamper the ability of USAG and its Mission Partners to meet their respective mission requirements; (8) implementing Alternative II (No Action) is not consistent with land use planning objectives for Fort Detrick; and (9) implementing the No Action alternative would eliminate the negligible to minor environmental impacts associated with the implementation of Alternative I, but would also eliminate the beneficial impacts of the Proposed Action.

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8.0 PERSONS AND AGENCIES CONTACTED

Individual	Affiliation	Telephone
Jennifer Adkins	USAG, EMO, Analytical Services	(301) 619-3169
John Bennett	USAG, DIS, Master Planner	(301) 619-2443
Jenni Benson	USAG, EMO	(301) 619-6800
Laura Cole	USAG, DIS, RCI Project Manager	(301) 619-3224
Anthony Cortea	USAG, DIS, GIS Department, STV	(301) 619-2712
Robert Craig, P.E.	USAG, EMO, Chief,	(301) 619-8345
Mark Dressler	USAG, DIS,	(301) 619-2323
Dawn Federline	USAG, DIS, Real Property Specialist	(301) 619-2442
Chuck Gordon	USAG, Public Affairs Officer	(301) 619-2060
Joseph Gortva	USAG, EMO, Environmental Restoration Program Manager and Storage Tank Manager	(301) 619-3196
David Grams	USAG, DIS, Water/Wastewater Supervisor	(301) 619-2444
A. Lynn Hoch	USAG, EMO, Natural Resource Coordinator	(301) 619-2033
Steve Hockensmith	USAG, DIS, Division Chief	(301) 619-2305
Tiffany Holloway	USAG, Public Affairs Officer	(301) 619-2736
Craig Lambert	City of Frederick, Superintendent of Water Treatment	(301) 694-1186
Frank LeClair	USAG, Resource Management Office, Chief	(301) 619-2639
Mark Lewis	USAG, EMO, Stormwater Management	(301) 619-3136
Doug Mayles	USAG, PAIO,	(301) 619-0023
Eileen Mitchell	USAG, Deputy Garrison Commander	(301) 619-3357
Larry Potter, P.E.	USAG, DIS, Director	(301) 619-2441
Kibby Powell, P.E.	USAG, DIS, Program Manager	(301) 619-9671
Raymond Rehrer	USAG, DIS, Post Architect	(301) 619-3450
Karrie Reckley	USAG, EMO, Analytical Services	(301) 619-1266
Rod Sheffer, P.E.	USAG, EMO, Environmental Engineer	(301) 619-3152
Thomas Starkoski	USAG, PAIO, Chief and NIBC Program Manager	(301) 619-1938
Rhonda Wolf	USAG, EMO, Environmental Engineer	(301) 619-3906
Eric Williams	USAG, DIS, GIS Department Manager, STV	(301) 619-2712
Robert Williams	USACE-IPO, Project Manager	(301) 619-1955

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9.0 PREPARERS

The following preparers, under contract to the US Army Medical Research Acquisition Activity, provided instrumental technical assistance in preparation of this EA. They have no financial or other interest in the outcome of the proposed project.

John R. Beaver
Ph.D., Environmental Engineering Sciences

BSA Environmental Services, Inc.
Beachwood, Ohio

Rachel M. Hollis
B.S., Conservation Science

BSA Environmental Services, Inc.
Beachwood, Ohio

Emmalisa M. Kennedy
M.S., Biology

BSA Environmental Services, Inc.
Beachwood, Ohio

Sheri K. Evans
M.A.P.P., Environmental and Resource Policy

BSA Environmental Services, Inc.
Beachwood, Ohio

Jeremy Gerger
M.S., Environmental Science and Management

BSA Environmental Services, Inc.
Beachwood, Ohio

Ted C. Rosati
M.S., Biology

BSA Environmental Services, Inc.
Beachwood, Ohio

Kristen M. Buccier
B.S., Biology

BSA Environmental Services, Inc.
Beachwood, Ohio

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10.0 ACRONYMS AND ABBREVIATIONS

6MLMC	6th Medical Logistics Management Center
AA/EA	Alternatives Analysis/Environmental Assessment
AAFES	Army and Air Force Exchange Service
ABSL	Animal Biosafety Level
ACHP	Advisory Council on Historic Preservation
ACP	Access Control Point
AF	animal facility
AFMESA	Air Force Medical Evaluation Support Activity
AFMLO	US Air Force Medical Logistics Office
AFMOA	Air Force Medical Operations Agency
AFMS	Air Force Medical Service
AML	Army Medical Laboratory
AR	Army Regulation
ARMA	Air and Radiation Management Administration
AT/FP	Anti-Terrorism/Force Protection
bgs	below ground surface
BMBL	<i>Biosafety in Microbiological and Biomedical Laboratories</i>
BMPs	best management practices
BRAC	Base Realignment and Closure
BSL	biosafety level
CAA	Clean Air Act
CAC	Community Activities Center
CAP	Corrective Action Plan
CBMS	Chemical Biological Medical Systems
CBOC	Community Based Outpatient Clinic
CBRN	Chemical, biological, radiological, nuclear
ccf	hundred cubic feet
CDC	Centers for Disease Control and Prevention
CDMRP	Congressionally Directed Medical Research Programs
CEMS	Continuous Emissions Monitoring System
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CHP	Chemical Hygiene Plan
CLA	Critical Lane Analysis
CO	carbon monoxide
COMAR	Code of Maryland Regulations
COPC	chemicals of potential concern
CPAC	Civilian Personnel Advisory Center
CSP	Community Support Programs
cu. yd.	cubic yards
CUP	Central Utility Plant
CY	calendar year
DA	Department of the Army

dBA	decibels type A
DCMA	Defense Contract Management Agency
DD	Decision Document
DES	Directorate of Emergency Services
DHHS	Department of Health and Human Services
DHS	Department of Homeland Security
DIS	Directorate of Installation Services
DLA	Defense Logistics Agency
DMLSS	Defense Medical Logistics Standard Support
DMSB	Defense Medical Standardization Board
DoD	Department of Defense
DOIM	Directorate of Information Management
DOT	Department of Transportation
DPTMS	Directorate of Plans, Training, Mobilization and Security
DRM	Directorate of Resource Management
DRMS	Defense Reutilization and Marketing Service
DSCS	Defense Satellite Communications System
DSE	Directorate of Safety and Environment
EA	Environmental Assessment
EAS	Essential Air Service
EDS	Effluent Decontamination System
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EMO	Environmental Management Office
EMS	Environmental Management System
EMST	Environmental Management System Team
ENR	Enhanced Nutrient Removal
EO	Executive Order
EPAct	Energy Policy Act
EPAS	Environmental Performance Assessment System
EPG	Environmental Planning Guide
EQCC	Environmental Quality Control Committee
ESPCs	Energy Savings Performance Contracts
F&ESD	Fire and Emergency Services Division
FCC	Frederick Community College
FD	Fort Detrick
FD REG	Fort Detrick Regulation
FDA	Food and Drug Administration
FDPAO	Fort Detrick Public Affairs Office
FDWSRU	Foreign Disease Weed Science Research Unit
FMWR	Family and Morale, Welfare, and Recreation
ft.	feet
FY	fiscal year
GBCI	Green Building Certification Institute
GBI	Green Building Initiative®
GHG	Greenhouse Gas
gpm	gallons per minute

gsf	gross square feet
HAPs	Hazardous Air Pollutants
HAZCOM	Hazard Communication
HAZMAT	Hazardous Materials
HHRA	Human Health Risk Assessment
HI	hazard index
HMMO	Hazardous Material Management Office
HOV	High-Occupancy Vehicle
hr	hour
IATC	Information Assurance Training Center
ICRMP	Integrated Cultural Resources Management Plan
IMP	Installation Master Plan
INRMP	Integrated Natural Resource Management Plan
IPM	integrated pest management
IPMP	Installation Pest Management Plan
IRF	Integrated Research Facility
ISEC	Information Systems Engineering Command
ISO	International Organization for Standardization
JMLFDC	Joint Medical Logistics Functional Development Center
JPMO	Joint Project Management Office
JVAP	Joint Vaccine Acquisition Program
kV	kilovolt
kWh	kilowatt hours
Labs21	Laboratories for the 21 st Century
lbs	pounds
LEED	Leadership in Energy and Environmental Design
LEED-NC	Leadership in Energy and Environmental Design-New Construction
LID	Low Impact Development
LOS	Level of Service
LSS	laboratory sewer system
MARC	Maryland Rail Commuter
MC4	Medical Communications for Combat Casualty Care
MCA	Military Construction Army
MCLs	Maximum Contaminant Levels
MDE	Maryland Department of the Environment
MDNR	Maryland Department of Natural Resources
MEDCOM	US Army Medical Command
mg/kg	milligram per kilogram
mg/L	milligrams per Liter
mgd	million gallons per day
mgY	Million gallons per year
MITS	Medical Identification and Treatment Systems
MMBtu	Million British Thermal Unit
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPTM	Master Planning Technical Manual
MSDSs	Material Safety Data Sheets

MSW	Municipal Solid Waste
MTA	Maryland Transit Administration
MWC	Municipal Waste Combustors
NAAQS	National Ambient Air Quality Standards
NAF	Non Appropriated Funds
NBACC	National Biodefense Analysis and Countermeasures Center
NCDC	National Climatic Data Center
NCI	National Cancer Institute
NCI-Frederick	National Cancer Institute at Frederick
NCMI	National Center for Medical Intelligence
NEC	Network Enterprise Center
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIAID	National Institutes of Allergy and Infectious Diseases
NIBC	National Interagency Biodefense Campus
NICBR	National Interagency Confederation for Biological Research
NIH	National Institutes of Health
NMBDRL	Naval Medical Bio-Defense Research Laboratory
NMLC	Naval Medical Logistics Command
NOV	Notice of Violation
NO _x	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NSR	New Source Review
°F	degrees Fahrenheit
OSHA	Occupational Safety and Health Act
PCBs	polychlorinated biphenyls
Pb	lead
PM ₁₀	particulate matter between 2.5 and 10 microns in aerodynamic diameter
PM _{2.5}	particulate matter less than 2.5 microns in aerodynamic diameter
PPE	Personal Protective Equipment
ppm	parts per million
PSD	Prevention of Significant Deterioration
PT	physical training
PX	Post Exchange
RAB	Restoration Advisory Board
RBCs	Risk Based Concentration
RCI	Residential Communities Initiative
RCRA	Resource Conservation and Recovery Act
RDA	Research Development Activity
RDT&E	Research, Development, Testing, and Evaluation
REC	Record of Environmental Consideration
ReSOC	Research Support Operations Center
RI	Remedial Investigation
RPMP	Real Property Master Plan
RPPB	Real Property Planning Board
SAIA	Sikes Act Improvement Act

SAP	satellite accumulation points
SARA	Superfund Amendments and Reauthorization Act
SAS	School Age Services
SATCON	Satellite Control
SDD	Sustainable Design and Development
SDWA	Safe Drinking Water Act
SETS	Satellite Earth Terminal Station
sf	square feet
SGML	Surgeon General Medical Logistics
SHA	State Highway Administration
SHPO	State Historic Preservation Office
SJA	Staff Judge Advocate
SO ₂	sulfur dioxide
SOPs	Standard Operating Procedures
SPiRiT	Sustainable Project Rating Tool
SSP	Steam Sterilization Plant
SVOCs	semi-volatile organic compounds
SWM	stormwater management
SWPPP	Stormwater Pollution Prevention Plan
TAO	Technology Applications Office
TAPs	toxic air pollutants
TATRC	Telemedicine and Advanced Technology Research Center
TBL+	Triple Bottom Line Plus
TCE	Trichloroethylene
tpy	tons per year
TSDf	Treatment Storage Disposal Facility
TSP	Total Suspended Particulate
UEPH	Unaccompanied Enlisted Personnel Housing
USACEHR	US Army Center for Environmental Health Research
USACHPPM	US Army Center for Health Promotion and Preventive Medicine
USACE	US Army Corps of Engineers
USAEC	US Army Environmental Center
USAF	US Air Force
USAG	US Army Garrison
USAISEC-FDED	US Army Information Systems Engineering Command-Fort Detrick Engineering Directorate
USAMMA	US Army Medical Materiel Agency
USAMMDA	US Army Medical Materiel Development Activity
USAMRAA	US Army Medical Research Acquisition Activity
USAMRIID	US Army Medical Research Institute of Infectious Diseases
USAMRMC	US Army Medical Research and Materiel Command
USC	US Code
USDA	US Department of Agriculture
USEPA	US Environmental Protection Agency
USGBC	US Green Building Council
USGS	US Geological Survey
USTs	underground storage tanks
VA	Veterans Affairs
VOCs	volatile organic compounds

vpd	vehicles per day
vph	vehicles per hour
WMA	Waste Management Administration
WSOC	Wideband Satellite Operations Center
WTP	water treatment plant
WWTP	wastewater treatment plant