DRAFT PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

Area Development Plan at Fort Detrick

U.S. Army Garrison Fort Detrick

Directorate of Public Works, Environmental Division

May 2022

DISTRIBUTION STATEMENT
APPROVED FOR PUBLIC RELEASE:
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Fort Detrick Area Development Plan

Fort Detrick, Maryland

PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

Reviewed by:

U.S. Army Garrison Fort Detrick

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DANFORD W. BRYANT, II

Colonel, CA

Commanding

Area Development Plan at Fort Detrick

Draft Programmatic Environmental Assessment

U.S. Army Garrison Fort Detrick
Directorate of Public Works, Environmental Division

May 2022

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FINDING OF NO SIGNIFICANT IMPACT

AREA DEVELOPMENT PLAN
AT FORT DETRICK, MARYLAND

Introduction

Fort Detrick includes six non-contiguous land parcels designated as Areas A, B, Area C Water Treatment Plant (WTP), Area C Wastewater Treatment Plant (WWTP), Forest Glen Annex, and Forest Glen Housing Area. Areas A, B, and C are located within Frederick County, Maryland and will be evaluated in this EA. Within Frederick County, Fort Detrick encompasses approximately 1,212 acres. Fort Detrick has command and control of approximately 1,143 of those acres. Of the 1,143 acres of Army-controlled land areas; Area A is 728 acres; B is 399 acres; Area C WTP is 7 acres, and Area C WWTP is 9 acres.

The Fort Detrick ADP for Area A elicits three primary goals: provide sustainable infrastructure to support mission requirements; ensure efficient land usage; and consolidate functions into modern facilities.

The ADP for Fort Detrick Areas B and C elicits four primary goals; promote environmental stewardship; create a secure, functional campus; build adaptable, permanent facilities; and provide redundant utilities and infrastructure systems.

The Proposed Action is the preferred alternative and includes the implementation of all projects in Areas A, and B, of Fort Detrick as defined in the ADPs at Fort Detrick, Maryland. These projects are in-line with the mission and vision goals put in place by Fort Detrick as well as the overarching Real Property Management Plan (RPMP) aimed at creating a sustainable growth at Army installations.

In accordance with both Council on Environmental Quality (CEQ) and National Environmental Policy Act (NEPA) regulations (40 Code of Federal Regulations [CFR] 1508.13 and 32 CFR Part 651.21, respectively), this Finding of No Significant Impact (FNSI) hereby incorporates the entire PEA by reference.

1. Purpose and Need

The **purpose** of the Proposed Action is to implement the ADP for Fort Detrick Areas A, and B, with the intent of creating sustainable and manageable growth at Fort Detrick. The ADPs for Area A and Areas B and C were developed in consultation with the RPMP. The ADPs address the specific developmental needs at Fort Detrick to allow development to continue alongside a comprehensive plan addressing infrastructural updates as well as expansion needs.

The Proposed Action is ***needed*** because the Army must ensure sustainable growth through a comprehensive plan pinpointing areas of distress as Fort Detrick is a growing installation that continues to increase in size (currently hosting 32 tenants) as well as administrative capacities. The ADPs address local issues in Areas A and Areas B and C to achieve vision statement goals of: creating sustainable, adaptable and modernized facilities and infrastructure; a high quality of life; and a safe, interconnected, campus-like environment at Fort Detrick. With ADPs Fort Detrick can improve upon these goals, ensuring operations and missions on the Installation are carried out efficiently and properly.

2. Description of the Proposed Action and Alternatives

Chapter 3 of the PEA presents a discussion of the alternatives evaluated.

The No Action Alternative was also considered.

No Action Alternative - The No Action Alternative is to allow the growth of Fort Detrick to continue without a plan for future growth and management. The growth and development occurring at Fort Detrick would be unmanaged and chaotic. Strategic updates to infrastructure would not occur. Environmental impacts of development would not be considered for projects and tactical strategies to enhance the quality of life and practicality of the infrastructure at Fort Detrick would be foregone.

The No Action Alternative does not adhere to state or federal regulations requiring the Installation to consider environmental consequences of its development. Antiquated infrastructure, including functionality equipment such as electrical systems, would not be updated and therefore fail to meet the goals of the ADPs set forth for Areas A, B, and C. Unsustainable growth could create hectic circumstances, leaving the infrastructure of Fort Detrick obsolete and unable to continue their mission in a functional and stream-lined manner. This alternative is not ideal and does not allow Fort Detrick to continue to operate as a functional Installation. This alternative is evaluated further in this EA.

Proposed Action Alternative - The Proposed Action is the preferred alternative and includes the implementation of all projects in Areas A and B of Fort Detrick from the ADPs. These projects are in-line with the mission and vision goals put in place by Fort Detrick as well as the overarching RPMP aimed at creating a sustainable growth at Army installations.

The implementation of the proposed action will be evaluated for potential environmental and cultural impacts, as well as compliance with state and federal regulatory requirements. This alternative is evaluated further in this EA.

3. Environmental Analysis

Environmental Consequences and Comparison of Alternatives: Chapter 5 of the EA is organized in tabular format by resource area following the same sequence as in the preceding Section 4.0.

The implementation of the Proposed Action is not anticipated to result in adverse significant environmental impacts. It is anticipated that the use of BMPs and adherence to permit and compliance requirements could alleviate the potential for impacts of individual projects when planned, designed, and implemented.

Cumulative Effects: For the purposes of this EA, and in accordance with CEQ Regulation 40 CFR 1508.7, cumulative impacts result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable actions, regardless of who undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

Cumulative effects may result from the presence of multiple projects in the same location (or in close proximity). Table 5-1 of the PEA indicates whether there is a potential for cumulative effects to a resource category based on the co-location of projects. The timing of project implementation has not been taken into account for purposes of this PEA. The potential for impacts to the following resource categories were not evaluated due to the inability to determine impacts to those resources based solely on location of the project(s):

1. Air Quality and Greenhouse Gases
2. Visual Aesthetics
3. Socioeconomics, Environmental Justice, and Protection of Children

Proposed Impact Reduction Measures:

Various permits, plans, and measures have been identified within the EA analysis that would be undertaken by Fort Detrick to minimize adverse effects.

4. Public Review and Comment:

A Notice of Availability (NOA) was published in the Washington Post and Frederick News Post, on the Fort Detrick website, as well as distributed to federal, state and local agencies via letter. The NOA and publication announced the availability of the official public Draft EA and requested comments from the general public and federal, state, and local agencies. The Draft EA was made available to the public for 30 days, along with a Draft FONSI. The Draft EA and FONSI were available by request from Fort Detrick and hardcopies were placed in the following Montgomery and Frederick County Public Library:

- Brigadier General Charles E. McGee Library (900 Wayne Ave, Silver Spring, MD 20910)
- Long Branch Library (8800 Garland Avenue, Silver Spring, MD 20901)
- White Oak Library (11701 New Hampshire Avenue, Silver Spring, MD 20904)
- C. Burr Artz Public Library (110 East Patrick Street, Frederick, MD 21701)

Comments received during the 30-day public review period will be addressed and documented in the final EA. All coordination letters sent and responses received during the preparation of this EA are located in Appendix A.

5. Finding of No Significant Impact:

I have considered the results of the analysis in the EA, the comments received during the public comment period, and associated cumulative effects.

Based on these factors, I have decided to proceed with the Proposed Action, a long-term solution that would meet all applicable federal, state, local, and installation regulations, and would be used to enable Fort Detrick to continue with a plan for future growth and management at Fort Detrick, would meet the mission requirements at Fort Detrick, and along with specified permits, plans and measures would not have a significant impact on the quality of human life or the natural environment.

This analysis fulfills the requirements of NEPA, as implemented by the CEQ regulations (40 CFR Parts 1500-1508), as well as the requirements of the Environmental Analysis of Army Actions (32 CFR Part 651). Therefore, issuance of a FNSI is warranted, and an Environmental Impact Statement is not necessary.

_____ _____

DANFORD W. BRYANT, II Date

Colonel, AC

Commanding

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1 INTRODUCTION

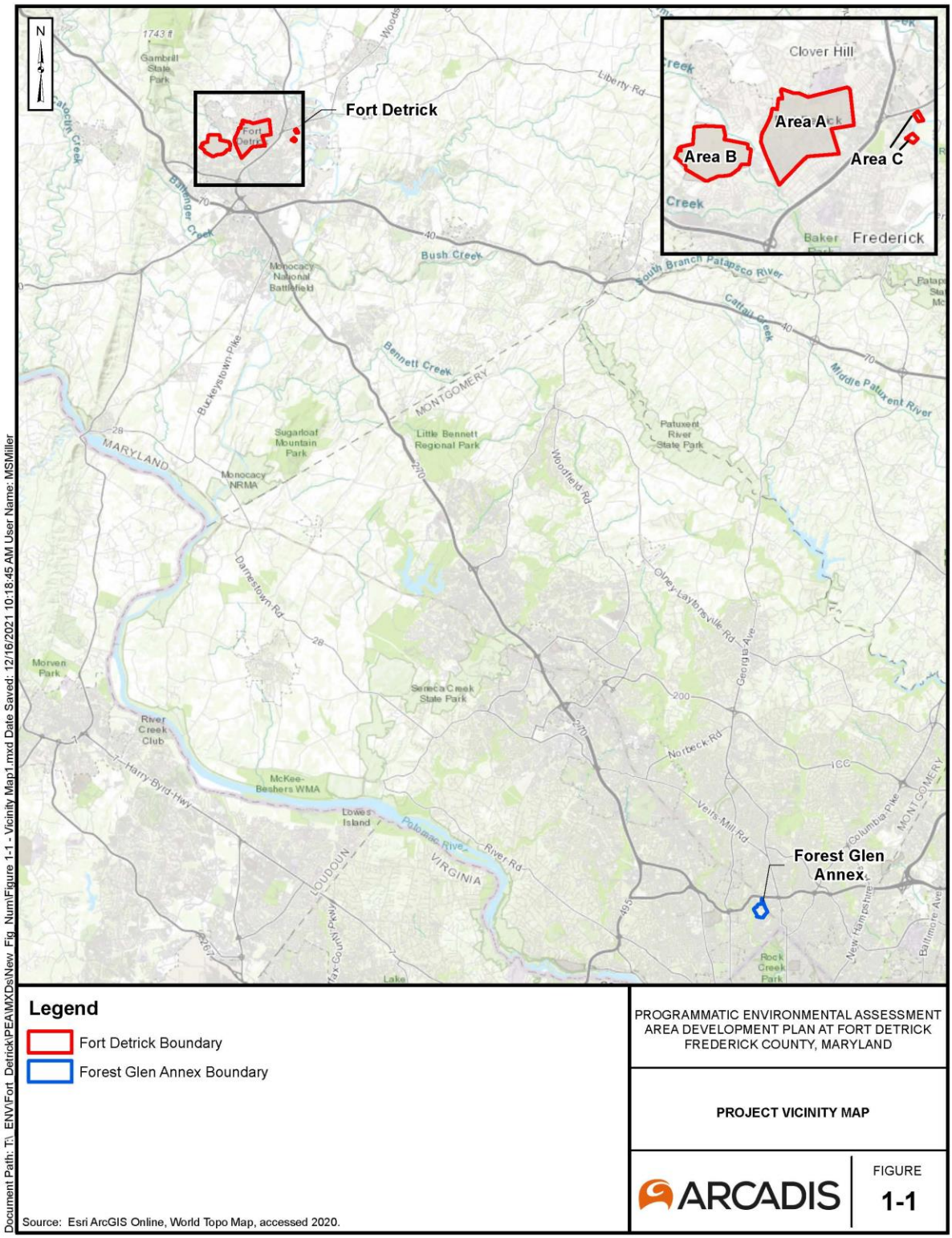
1.1 Project Background

U.S. Army Garrison (USAG) Fort Detrick completed this Environmental Assessment (EA) to evaluate the implementation of Fort Detrick's Area A, B, and C Area Development Plan (ADP). Fort Detrick's Annex property, Forest Glen, developed a separate ADP, which will be evaluated in a separate EA.

The ADPs developed for Areas A, B and C are detailed development plans geared towards the Installation's vision goals that align with larger Fort Detrick mission. The primary missions at Fort Detrick are biomedical research and development, medical logistics and materiel management, and global Department of Defense (DoD) telecommunications. Fort Detrick supports 34 tenant activities.

Fort Detrick includes six non-contiguous land parcels designated as Area A, Area B, Area C Water Treatment Plant (WTP), Area C Wastewater Treatment Plant (WWTP), Forest Glen Annex, and Glen Haven Housing Area. Areas A, B, and C are located within Frederick County, Maryland and will be evaluated in this EA. Within Frederick County, Fort Detrick encompasses approximately 1,212 acres. Fort Detrick has command and control of approximately 1,143 of those acres. Of the 1,143 acres of Army-controlled land areas; Area A is 728 acres; B is 399 acres; Area C WTP is 7 acres, and Area C WWTP is 9 acres, as shown on **Figure 1-1**. Two distinct ADPs have been developed for Fort Detrick: Area A and Areas B and C, and the Forest Glen Annex, which will be described in a separate EA.

Figure 1-1: Project Vicinity Map



1.1.1 Area A ADP

The Fort Detrick ADP for Area A elicits three primary goals: provide sustainable infrastructure to support mission requirements; ensure efficient land usage; and consolidate functions into modern facilities. These goals are further described in more detail in **Table 1-1**.

Table 1-1: ADP Area A Goals and Objectives

Goal 1: Provide sustainable infrastructure to support mission requirements	Implement net zero/Leadership in Energy and Environmental Design (LEED), where appropriate
	Maintain a robust SRM program-maintainable buildings/utilities
	Incorporate reliable technology
	Ensure infrastructure security
Goal 2: Ensure efficient land usage	Identify appropriate land use zones
	Respect environmental assets and constraints
	Promote flexible use, adaptable, multi-story buildings
	Demolish outdated facilities
	Provide a connected transportation network
	Establish a well-connected, walkable pedestrian network
Goal 3: Consolidate functions into modern facilities	Promote energy efficiency
	Consolidate functions into multi-story facilities
	Ensure facility security

The Area A ADP includes multiple projects. The ADP is broken down into short-, mid-, and long-term phases. These projects are planned to begin within the next five years following the end of their individual NEPA evaluations. Mid-term plans are to be executed within 6-15 years and long-term plans are to be executed within 16-20 years.

The anticipated timeframes associated with each of the projects included in this document located in Area A are shown in **Table 1-2** below.

Table 1-2: Area A Projects Timeframes

Project #	Name	Anticipated Timeframe
1	Construct MRDC HQ	Short Range (0-5 years)
2	Construct USDA Laboratory Greenhouse	Short Range (0-5 years)
3	Connect Fitness Path	Short Range (0-5 years)
4	General Admin Bldg LRP for USAMDA	Short Range (0-5 years)
5	General Admin Bldg LRP for USAMRAD	Short Range (0-5 years)
6	Bldg 568 HIV Research Repairs	Short Range (0-5 years)
7	Bldg 1671 TAO remodeling	Short Range (0-5 years)
8	Bldg 10 TAO Warehouse Remodel	Short Range (0-5 years)
9	Bldg 1650 antenna and equipment room replacements	Short Range (0-5 years)
10	Expand Bldg 8400	Mid-Range (6-15 years)
11	Bldg 504 - Demolition	TBD
12	Bldg 505 - Demolition	TBD
13	Bldg 525 - Demolition	TBD
14	Bldg 722 - Demolition	TBD
15	Bldg 844 - Demolition	TBD

1.1.2 Areas B and C ADP

The ADP for Fort Detrick Areas B and C elicits four primary goals; promote environmental stewardship; create a secure, functional campus; build adaptable, permanent facilities; and provide redundant utilities and infrastructure systems. These goals are further described in further detail in Table 1-3.

Table 1-3: ADP Areas B and C Goals and Objectives

Goal 1: Promote environmental stewardship	Incorporate net zero/LEED where appropriate
	Respect environmental assets and constraints
	Manage existing contamination and waste disposal responsibly
Goal 2: Create secure, functional campuses	Maintain physical security to meet requirements
	Provide flexible areas for a variety of missions and training
	Create a comprehensive interior access and circulation strategy between campuses
Goal 3: Build, adaptable permanent facilities	Promote flexible, adaptable, multi-story buildings
	Prioritize construction of permanent facilities instead of temporary contingencies
	Demolish unsafe, outdated and obsolete facilities
Goal 4: Provide redundant utilities and infrastructure systems	Design and build redundancies into all utility systems
	Ensure infrastructure is resilient to natural and man-made contingencies
	Increase utility system capabilities to serve current and projected tenants

The Areas B and C ADP includes multiple planned projects, with the majority located in Area B. The ADP is broken down into short-, mid-, and long-term phases.

Short-term plans are immediate projects which would begin following the end of the NEPA process and would not exceed five years. Mid-term plans are to be executed within 6-15 years. Long-term plans are to be executed within 16-20 years. The anticipated timeframes associated with each of the projects included in this document located in Area B are shown in Table 1-4 below.

Table 1-4: Area B Projects Timeframes

Project #	Name	Anticipated Timeframe
16	Construct Vehicle Covers	Short Range (0-5 years)
17	Construct Battery Building	Long Range (16-20 years)
18	Construct Permanent ECP	Mid-Range (6-15 years)
19	Construct Gear Wash Rack	Mid-Range (6-15 years)
20	Connect MRMC to Area B	Mid-Range (6-15 years)

2 PURPOSE AND NEED FOR THE PROPOSED ACTION

2.1 Purpose and Need

The ***purpose*** of the Proposed Action is to implement the ADP for Fort Detrick Areas A, and B, with the intent of creating sustainable and manageable growth at Fort Detrick. The ADPs for Areas A and Areas B and C were developed in consultation with the Real Property Master Plan (RPMP). The ADPs address the specific developmental needs at Fort Detrick to allow development to continue alongside a comprehensive plan addressing infrastructural updates as well as expansion needs.

The Proposed Action is ***needed*** because the Army must ensure sustainable growth through a comprehensive plan pinpointing areas of distress as Fort Detrick is a growing installation that continues to increase in size (currently hosting 32 tenants) as well as administrative capacities. The ADPs address local issues in Areas A and Areas B and C to achieve vision statement goals of: creating sustainable, adaptable and modernized facilities and infrastructure; a high quality of life; and a safe, interconnected, campus-like environment at Fort Detrick. With ADPs Fort Detrick can improve upon these goals, ensuring operations and missions on the Installation are carried out efficiently and properly.

2.2 Scope of the Environmental Assessment

This EA evaluates the direct and indirect impacts associated with the implementation and correlated development of Fort Detrick, in accordance with the NEPA. This document identifies and evaluates the potential environmental, cultural, and socioeconomic effects associated with the Proposed Action as accomplished by implementing the Proposed Action and the No-Action Alternative.

The EA focuses on impacts likely to occur within the proposed areas of development. The area of development for the Proposed Action is Areas A, and B of Fort Detrick (**Figure 2-1**). All projects are within the boundaries of Fort Detrick and will be analyzed in this comprehensive PEA describing the ADPs for Area A and Areas B and C, both developed at the 2018 Fort Detrick Area Development Plan workshop.

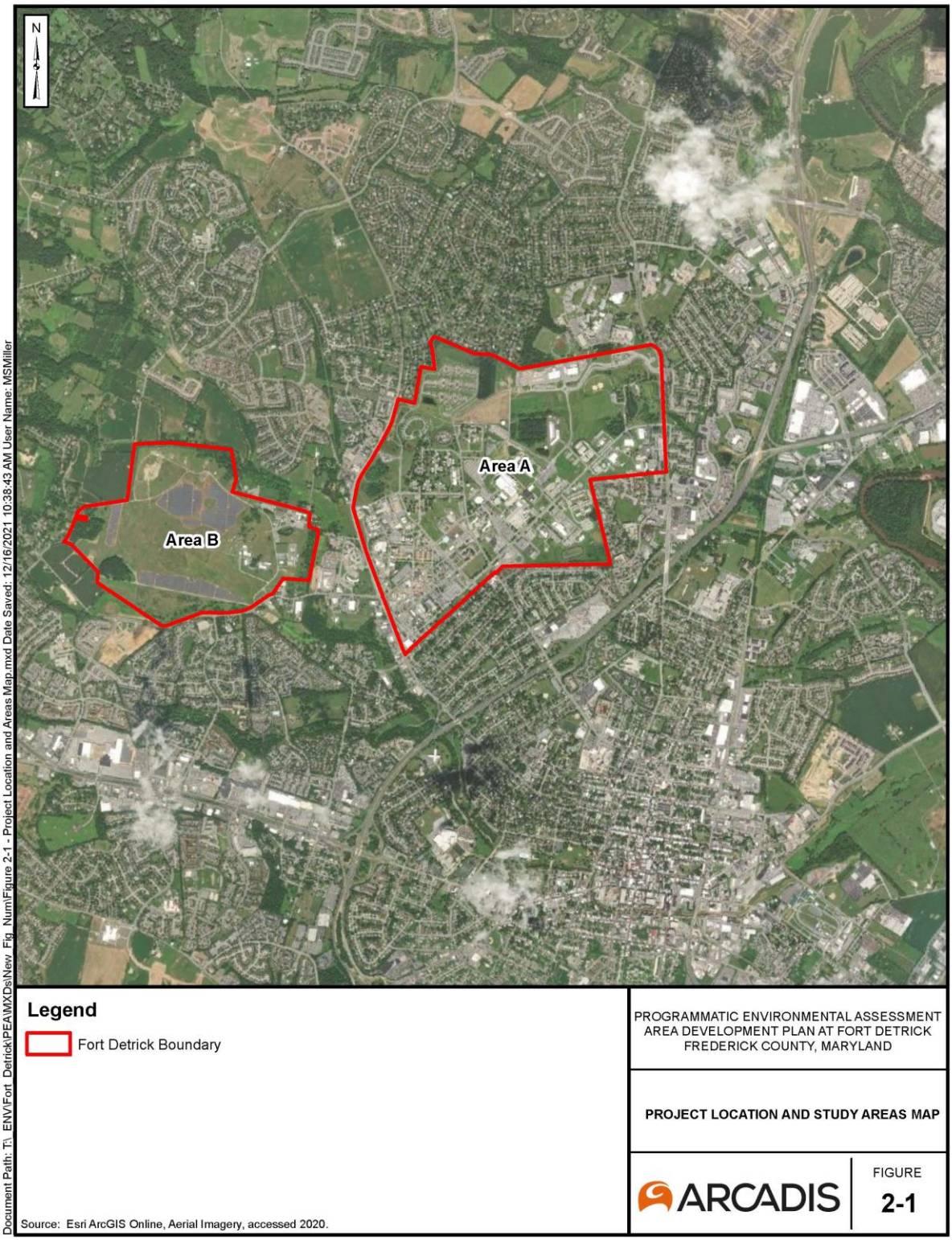
This document analyzes direct effects (those resulting from the alternatives and occurring at the same time and place) and indirect effects (those distant or occurring at a future date) of both the implementation of the Area A and Areas B and C ADPs at Fort Detrick. The potential for cumulative impacts as defined by 40 C.F.R 1508.7 is also addressed. Compliance with applicable state and federal statutes, standards, and directives pertinent to the Proposed Action were considered during the preparation of this EA.

Under the guidance provided in the NEPA and in 32 C.F.R Part 651, *Environmental Analysis of Army Actions*, either an Environmental Impact Statement (EIS) or an EA must be prepared for any

federal action. Actions that are determined to be exempt by law, emergencies, or categorically excluded do not require the preparation of an EA or EIS, but the decision and analyses will be documented in a Record of Environmental Consideration if required. An EA provides sufficient evidence and analysis for determining whether or not to prepare an EIS. If an action may significantly affect the environment, an EIS would be prepared. The contents of an EA include the need for the Proposed Action, alternatives to the Proposed Action, environmental impacts of the Proposed Action and alternatives considered for implementation, and documentation of agency and public coordination.

An evaluation of the environmental consequences of the implementation of the Proposed Action and the No-Action Alternative, which includes direct, indirect, and cumulative effects, as well as qualitative and quantitative (where possible) assessment of the level of significance of these effects. The EA results in either a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an EIS. If Fort Detrick determines that this Proposed Action may have a significant impact on the quality of the human environment, an EIS will be prepared.

Figure 2-1: Project Location and Study Areas Map



2.3 Environmental Laws and Regulations

The 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 C.F.R 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 contained in Army Regulation (AR) 200-1 and 32 C.F.R 650, *Environmental Protection and Enhancement*, and 32 C.F.R 651, *Environmental Analysis of Army Actions* (dated March 29, 2002). This EA was developed pursuant to these laws and regulations.

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 C.F.R 651.20).

Laws and regulations that may apply to the Proposed Action could include, the Clean Air Act of 1970 (CAA) (as amended), Clean Water Act (CWA) (1972, as amended), Toxic Substances Control Act (TSCA) (1976, as amended), Noise Control Act (NCA) (1972), Endangered Species Act (ESA) (1973, as amended), National Historic Preservation Act (NHPA) (1966), Archaeological Resources Protection Act (ARPA) (1979), Resource Conservation and Recovery Act (RCRA) (1976), Executive Order (EO) 11593, *Protection and Enhancement of the Cultural Environment*, dated May 13, 1971; EO 11988, *Floodplain Management*, dated May 24, 1977; EO 11990, *Protection of Wetlands*, dated May 24, 1977; EO 12088, *Federal Compliance with Pollution Control Standards*, dated October 13, 1978; EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, dated February 11, 1994; EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, dated April 21, 1997; EO 13112, *Invasive Species*, dated February 3, 1999; and EO 13508, *Chesapeake Bay Protection and Restoration*, dated May 12, 2009. Note that this list is not all-inclusive and other federal, state, and local regulations may apply.

2.4 Public Involvement

Under NEPA regulation 40 C.F.R §1506.6, Fort Detrick will involve the public and all relevant agencies in the process of this EA. Coordination letters were provided to U.S. Fish and Wildlife Service (USFWS) and Maryland Department of Natural Resources (MDNR). Additionally, the Maryland State Historic Preservation Office (SHPO), Maryland Historical Trust (MHT), and federally recognized Native American Tribes listed in Appendix A were invited to consult under Section 106 of the NHPA. Relevant Native American Tribes were identified based on their geographic association with the area. All correspondence with these parties has been incorporated into this EA and included in Appendix A.

A Notice of Availability (NOA) was published in the Washington Post and Frederick News Post, on the Fort Detrick website, as well as distributed to federal, state and local agencies via letter. The NOA and publication announced the availability of the official public draft EA and requested comments from the general public and federal, state, and local agencies. The Draft EA was made available to the public for 30 days, along with a Draft FONSI. The Draft EA and FONSI were available by request from Fort Detrick and hardcopies were placed in the following Montgomery and Frederick County Public Library:

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Comments received during the 30-day public review period will be addressed and documented in the final EA. All coordination letters sent and responses received during the preparation of this EA are located in Appendix A.

3 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

3.1 Proposed Action

The Proposed Action is the preferred alternative, and includes the implementation of all projects in Areas A and B of Fort Detrick from the ADPs. The locations of these projects are shown on Figures 3-1 and 3-2. These projects are in-line with the mission and vision goals put in place by Fort Detrick as well as the overarching RPMP aimed at creating a sustainable growth at Army installations.

The implementation of the proposed action will be evaluated for potential environmental and cultural impacts, as well as compliance with state and federal regulatory requirements. This alternative is evaluated further in this PEA.

Figure 3-1: Area A Project Locations

Figure 3-2: Area B Project Locations

3.2 No-Action Alternative

The CEQ requires the analysis of the No Action Alternative even if the agency is under legislative command to act. Analysis of the No Action Alternative provides a benchmark for enabling decision-makers to compare the magnitude of environmental effects of the other action alternatives.

The No Action Alternative is to allow the growth of Fort Detrick to continue without a plan for future growth and management. The growth and development occurring at Fort Detrick would be unmanaged and chaotic. Strategic updates to infrastructure would not occur. Environmental impacts of development would not be considered for projects and tactical strategies to enhance the quality of life and practicality of the infrastructure at Fort Detrick would be foregone.

The No Action Alternative does not adhere to state or federal regulations requiring the Installation to consider environmental consequences of its development. Antiquated infrastructure, including functionality equipment such as electrical systems, would not be updated and therefore fail to meet the goals of the ADPs set forth for Areas A, B, and C. Unsustainable growth could create hectic circumstances, leaving the infrastructure of Fort Detrick obsolete and unable to continue their mission in a functional and stream-lined manner. This alternative is not ideal and does not allow Fort Detrick to continue to operate as a functional Installation. This alternative is evaluated further in this EA.

4 AFFECTED ENVIRONMENT

This section of the EA describes the existing conditions of the natural and human resources affected by the Proposed Action. Each environmental, cultural, and social resource category typically considered in an EA was reviewed for its applicability to be affected by the Proposed Action. For the purpose of describing existing conditions and environmental effects, the area of influence encompasses the areas interior to the property boundaries of Areas A and B of Fort Detrick, and as shown in the following figures.

4.1 Land Use

Fort Detrick, which is situated within the limits of the City of Frederick. Frederick County, Maryland maintains its own land use planning, which is designed to conform and complement local community planning to the maximum extent possible (USAG, 2019). Although the Installation is located within the city limits of Frederick, local land use regulations are not binding (USAG, 2010a). Fort Detrick is primarily surrounded by medium to low density residential development as well as Frederick County Community College. Existing land uses within Areas A and B are shown on **Figures 4-1 and 4-2**.

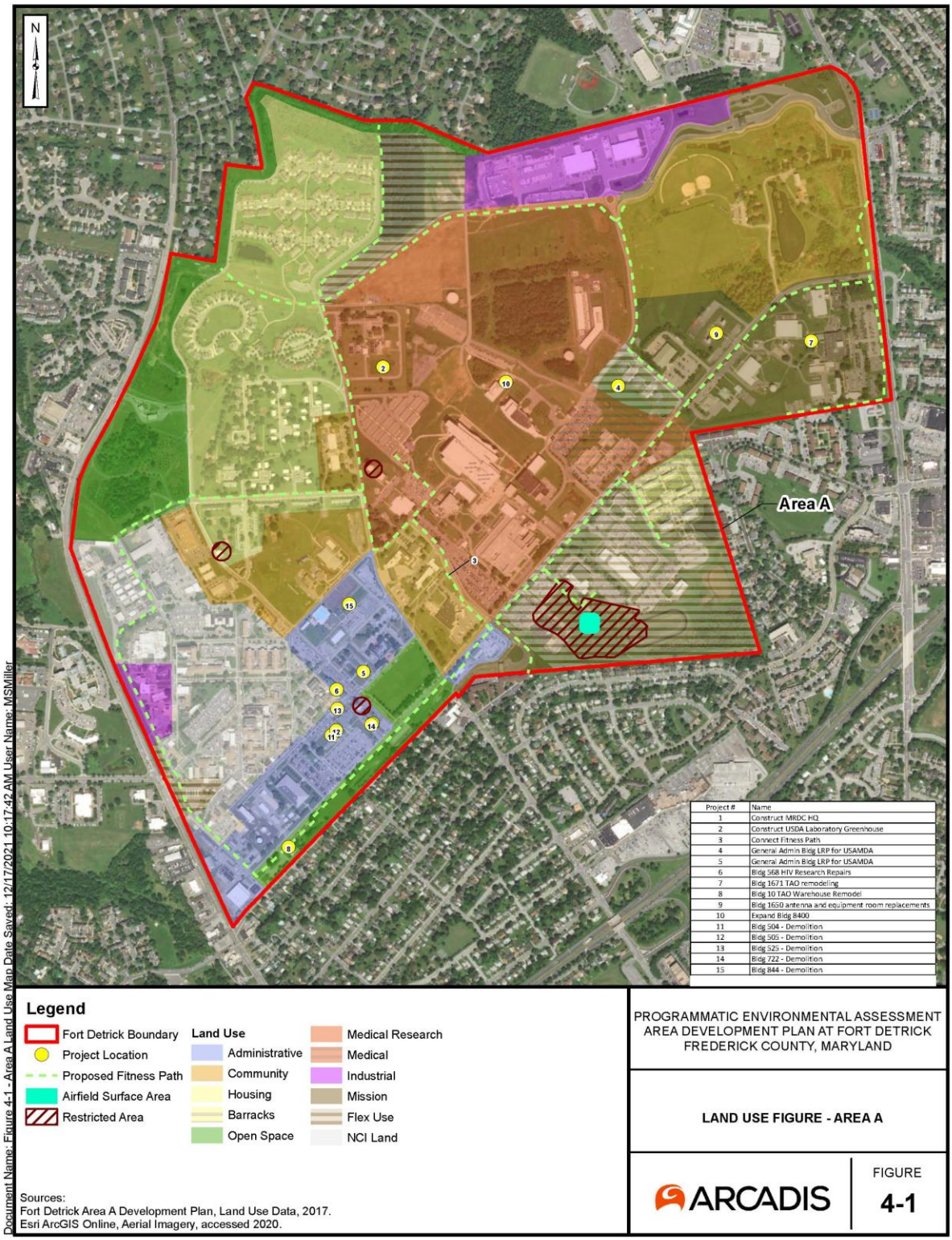
Fort Detrick's Installation Action Plan (IAP) outlines the total multiyear cleanup program for the installation. The plan identifies environmental cleanup requirements at each site or area of concern (AOC), and proposes a comprehensive, installation-wide approach, along with the costs and schedules associated with conducting investigations and taking the necessary remedial actions (RA). The IAP incorporates several Land Use Controls (LUC) and land use restrictions for areas included in the IAP, including media specific restrictions which serve to prohibit, or otherwise manage excavation, and landfill restrictions, prohibiting activities that would impact landfill caps or cover systems and associated drainage systems (USAG, 2019). In addition, Fort Detrick has an active environmental restoration program to investigate and clean-up past activities that have resulted in environmental contamination. The Superfund Amendments and Reauthorization Act of 1986 (10 U.S.C. 2701) requires DOD to carry out its Defense Environmental Restoration Program in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, commonly referred to as Superfund (42 U.S.C. 9620).

4.1.1 Area A

Area A of Fort Detrick is approximately 797 acres and is the largest and most intensively developed area, comprised of administrative buildings, community service facilities, recreation areas, advanced research and development complexes, communications facilities, and military and family housing units (USAG, 2019).

The only operational constraint at Fort Detrick Area A is the Airfield Surface area associated with a helicopter landing zone. This area is located south of Buildings 1507 and 1510 and west of Building 1520, as shown on **Figure 4-1**. This helicopter landing zone has an associated restricted access area, which is enforced when the landing zone is in operation. The additional restricted areas shown are the three water towers and a site with land use controls around the airfield surface area (USACE, 2018).

Figure 4-1: Land Use Figure – Area A

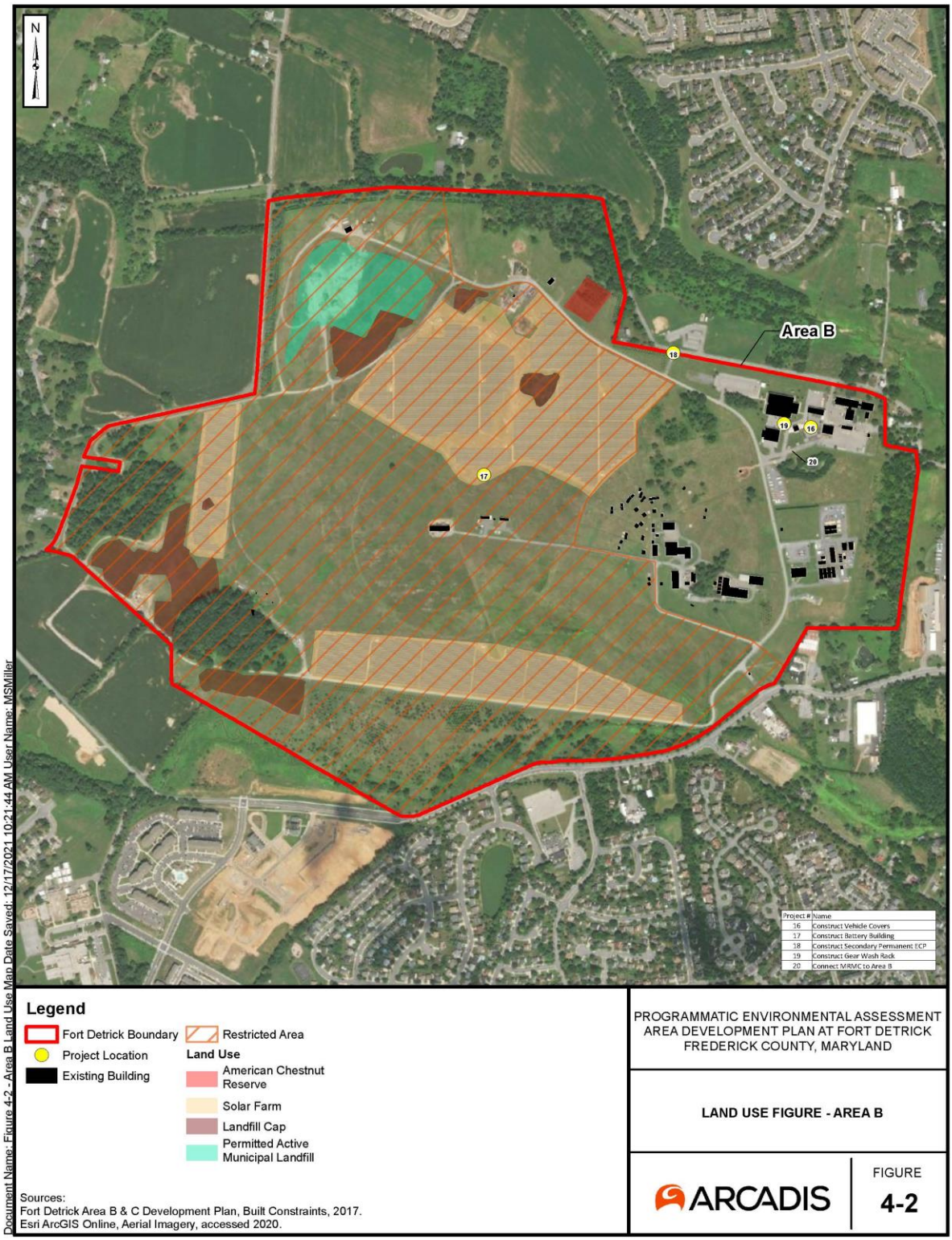


4.1.2 Area B

Area B with 395 acres, was established as the test area for research and provides waste management areas for Area A (USACE, 2019). There is an active municipal landfill at Area B. In addition to this active landfill, there are several other restricted areas at Area B. These restricted areas are former landfills that have land use controls as part of Area B's bio- remediation efforts. Digging, trenching or disturbing soil in these areas is not allowed by the office of environmental management. There are three restricted sites situated to the north of the northern set of solar arrays, which are associated with former landfill operations. Two additional restricted areas are situated next to the western and southern sets of solar arrays and are associated with environmental remediation areas. In total these areas are roughly 26.5 acres of Area B. In addition, as shown on **Figure 4-2**, Area B includes a restricted area and there should not be any permanent development within this area (USACE, 2019).

Despite the constraints throughout Area B, there is still development potential for new facilities. Development related to the active landfill and solar farm is allowed, while any new permanent facility will require vapor barriers. Development related to ground water monitoring and cleanup efforts is also allowed. All development must be approved by DPW and the Real Property Planning Board (USACE, 2019).

Figure 4-2: Land Use Figure – Area B



4.2 Hazardous and Toxic Materials, and Solid Wastes

A hazardous substance is defined as any substance that is:

1) listed in Section 101(14) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA);

2) designated as a biologic agent and other disease causing agent which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such persons or their offspring;

3) listed by the U.S. Department of Transportation (DOT) as hazardous materials under 49 CFR 172.101 and appendices; or

4) defined as a hazardous waste per 40 CFR 261.3 or 49 CFR 171 (USAG, 2019a).

The Occupational Safety and Health Administration's (OSHA's) definition of hazardous substance includes any substance or chemical which is a "health hazard" or "physical hazard," including: chemicals which are carcinogens, toxic agents, irritants, corrosives, sensitizers; agents which act on the hematopoietic system; agents which damage the lungs, skin, eyes, or mucous membranes; chemicals which are combustible, explosive, flammable, oxidizers, pyrophorics, unstable-reactive or water-reactive; and chemicals which in the course of normal handling, use, or storage may produce or release dusts, gases, fumes, vapors, mists or smoke which may have any of the previously mentioned characteristics. (Full definitions can be found at 29 CFR 1910.1200.) (USAG, 2019a)

USEPA incorporates the OSHA definition for hazardous substance and adds any item or chemical which can cause harm to people, plants, or animals when released by spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment (40 CFR 355).

The DOT defines a hazardous material as any item or chemical which, when being transported or moved in commerce, is a risk to public safety or the environment, and is regulated as such under its Pipeline and Hazardous Materials Safety Administration regulations (49 CFR 100-199), which includes the Hazardous Materials Regulations (49 CFR 171-180). In addition, hazardous materials in transport are regulated by the International Maritime Dangerous Goods Code; Dangerous Goods Regulations of the International Air Transport Association; Technical Instructions of the International Civil Aviation Organization; and U.S. Air Force Joint Manual, Preparing Hazardous Materials for Military Air Shipments (USAG, 2019a).

The NRC regulates materials that are considered hazardous because they produce ionizing radiation, which means those materials that produce alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. This includes "special nuclear material," by-product material, and radioactive substances. (See 10 CFR 20).

Fort Detrick follows the U.S. Army's Hazardous Materials Management Policy (HMMP) that fulfills the requirements of the Federal, state, and Army regulations as specified therein. (DA, 2010). The manual includes procedures for maintaining inventory data and for procuring, receiving, and tracking hazardous materials. In addition, Fort Detrick fulfills all requirements of the following federal, state, and Army regulations including:

Federal:

- Comprehensive Environmental Response, Compensation, and Liability Act
- Superfund Amendments and Reauthorization Act (SARA)
- Toxic Substances Control Act
- Occupational Safety and Health Administration Hazard Communication Standard
- 29 CFR 1910.1200, Hazard Communication Standard, 2001
- EO 12580. Superfund Implementation
- Hazardous Waste Regulations (40 CFR Parts 260-279)
- Superfund Amendments and Reauthorization Act (Public Law 99-499)
- Spill Prevention, Control, and Countermeasure Rule (40 CFR Part 112)
- OSHA Hazardous Waste Operations and Emergency Response standard (29 CFR 1910.120 and 1926.65)
- Federal Acquisition Regulation

State:

- COMAR10.06.06, Communicable Disease Prevention – Handling, Treatment, and Disposal of Special Medical Waste
- COMAR 10.10.11, Biological Agents Registry Program
- COMAR 26.13.11, Special Medical Wastes
- COMAR 26.13.12, Standards Applicable to Generators of Special Medical Waste
- COMAR 26.13.13, Standards Applicable to Transporters of Special Medical Waste
- COMAR 26.13.03 Standards Applicable to Generators of Hazardous Waste

Army/DoD:

- DoD Directive 4140.25M, Procedures for the Management of Petroleum Products
- DoD Directive 4150.7, Pest Management Program
- DoD Directive 5030.41, Oil and Hazardous Substances Pollution Prevention and Contingency Program
- Army Regulation 200-1 Environmental Protection and Enhancement
- AR 700-141, Hazardous Materials Information Resource System
- MEDCOM Regulation 40-35

- Fort Detrick Integrated Solid Waste Management Plan

Specific hazardous material guidance is also covered in AR 200-1 which establishes policies and procedures to protect the environment, including environmental responsibilities for the Department of the Army (DA), major commands, and installations. It directs Army staff to follow applicable environmental regulations of final governing standards and Army environmental quality policies pertaining to the Emergency Planning and Community Right-to-Know Act, RCRA, and CERCLA, also known as the Federal Superfund Law. It also defines the Army's goal of continually managing and reducing the generation of hazardous waste, through waste identification and disposal, records management, and training programs (USAG 2019).

4.2.1 Hospital, Medical, and Infectious Waste

All regulated medical waste generated at Fort Detrick is managed in accordance with Biosafety in Microbiological and Biomedical Laboratories (BMBL) guidelines and applicable Federal, DA, USAG, and state regulations for the protection of transporters and the public from potential hazards associated with potential contaminants (USAG, 2019). 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, 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) (USAG, 2019). Although Fort Detrick no longer treats special medical wastes onsite, historical treatment (disinfection) of special medical waste and disposal by incineration at Fort Detrick was accordance with COMAR 10.06.06.04 and 10.06.06.06, respectively (USAG, 2019), and MEDCOM Regulation 40-35.

Fort Detrick operated two hospital, medical and infectious waste incinerators under Refuse Disposal Permit No. 2015-WIN-0341 issued by the MDE WMA effective through 24 March 2021 and CAA Title V Part 70 Operating Permit (No. 24-021-00131) issued by MDE ARMA effective through 31 August 2020. Each medical waste incinerator had a capacity of 1,000 lbs (0.5 tons) per hour. The medical waste incinerators were operated 8 hours a day, 5 days a week, and disposed of an average of approximately 3 tons of regulated medical waste per day. Typically, one medical waste incinerator was in operation while the other was down for routine maintenance, although both of them could be operated at the same time and up to 24 hours per day under the permit conditions (USAG, 2006).

As stated previously, until 2018 Fort Detrick was operating two antiquated HMIWIs when the Garrison Commander ceased operations due to aging equipment. Fort Detrick implemented its contingency plan and began sending the generated RMW, via contractor, to an off-site regulated medical waste disposal facility. This situation is current as of the preparation of this EA document.

4.2.2 Hazardous Waste

Under the provisions of RCRA, Area A of Fort Detrick is registered as a large quantity generator of hazardous wastes (EPA Identification (EPA ID) No. MD8211620267). This EPA ID No. applies only to hazardous waste generated on the Army-owned portion of Area A. Separate EPA ID numbers have been issued by the EPA to the USAG for Area B, and to the National Cancer Institute at Frederick (NCI-Frederick) portion of Area A. Additional tenants (National Institute of Allergy and Infectious Diseases (NIAID) lab and Central Utility Plant (CUP)) of Area A are separately registered with EPA. RCRA is administered in Maryland by the MDE Hazardous Waste Program through regulatory requirements for Controlled Hazardous Substances (COMAR 26.13) (USAG, 2019).

There are two less than 90-day hazardous waste storage sites on the Army-owned portion of Area A. The less than 90-day site at Building 9255 is operated by the Garrison's Hazardous Materials Management Operation (HMMO). Building 9255 was constructed to replace Building 262, the former HMMO-operated less than 90-day site. There is also a less than 90-day site operated by USAMRIID at Building 1425. Within 90 days after the accumulation start date (the date that a hazardous waste leaves the Satellite Accumulation Point (SAP)), the hazardous waste must be removed from the Installation for shipment to a properly permitted offsite Treatment, Storage, and Disposal Facility (TSDF). The Garrison contracts with the Defense Reutilization Marketing Office for the transportation, and disposal of hazardous waste. The hazardous waste must be packaged in accordance with the U.S. DOT regulations (49 CFR 171-179), Operational Services Command (OSC), Federal, state, and TSDF requirements (USAG, 2019).

In most cases, hazardous waste is taken to the Garrison's less than 90-day hazardous waste storage site prior to being transported from Fort Detrick.

The chlorinated solvents trichloroethylene (TCE) and perchloroethylene (PCE) were used for degreasing operations on Area A. Records identified the use of TCE in three Area A buildings for refrigeration and/or freeze-drying purposes for test chambers and other activities dating back to the 1960s. Accidental leaks or spills from a refrigeration operation in Building 568 resulted in TCE contamination of groundwater on Area A (USAG, 2019).

4.2.3 Solid Waste

Fort Detrick constructed a lined sanitary landfill that began operation in October 1990 (Frederick County, 2019). The Fort Detrick landfill (MDE Permit No. 2015-WMF-0327), located in Area B, is licensed to accept non-hazardous solids wastes (Frederick County, 2019). Following the cease in operations of Fort Detrick's former on-site Municipal Waste Combustion systems, Fort Detrick had been using its on-site landfill for the disposal of Municipal Solid Waste (MSW) generated and originating on Fort Detrick (Frederick County, 2018). Fort Detrick then requested permission to use the County-owned waste disposal facilities for municipal waste. According to a memorandum

from the Frederick County Division of Utilities and Solid Waste Management (DUSWM) to the Frederick County Council on August 27, 2018, an Intergovernmental Support Agreement (IGSA) between USAG Fort Detrick and Frederick County was executed to provide installation support and services, specifically for the interim disposal of MSW generated by Fort Detrick to the County's disposal facilities located at Reichs Ford Road Landfill and Recycling Center (Frederick County, 2018). The Frederick County Solid Waste Management Plan (SWMP) recognized Fort Detrick as a separate entity within the County, with its own waste disposal systems that did not rely on the County's waste disposal infrastructure. Therefore, an amendment to the County's SWMP was necessary before Fort Detrick could use the County's MSW disposal facilities on a permanent basis, which is a requirement pursuant to the IGSA (Frederick County, 2018). The proposed changes to the Frederick County SWMP were reviewed with the County's Solid Waste Advisory Committee (SWAC) and approved by SWAC on August 1, 2018 (Frederick County, 2018). The Frederick County Planning Commission, at their regular public meeting on September 19, 2018 reviewed and approved the proposed amendment to the County's SWMP (Frederick County, 2018a). The Frederick County Council, at a Public Hearing held on October 16, 2018, approved Resolution 18-26 regarding proposed amendments to the 2018-2037 Frederick County Solid Waste Management Plan to include Fort Detrick as a source of municipal solid waste disposal at the Frederick County Landfill (Frederick County, 2018b). According to the amendments to the Frederick County SWMP, Fort Detrick may bring certain types of acceptable MSW to Frederick County's waste management facilities for either landfill disposal or transfer and disposal (Frederick County, 2019). Fort Detrick ceased utilizing the Area B for landfilling of municipal wastes on February 13, 2019.

4.2.4 Wastewater

Fort Detrick owns and operates a wastewater treatment plant (WWTP) located in Area C, for the treatment of sanitary wastewater generated and collected throughout the installation. Fort Detrick maintains the sanitary sewer collection system that conveys wastewater to the WWTP. This wastewater is pumped northeastward approximately 2.4 miles to the WWTP, which is located on Area C, via two parallel 12-inch pipelines. Fort Detrick has the ability to divert a portion of the sanitary wastewater generated at the installation to the City of Frederick WWTP through an emergency bypass. 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 million gallons in FY 2019-2020. The daily sanitary wastewater flows are well within the maximum WWTP capacity (2.0 mgd average daily flow) under NPDES Wastewater Discharge Permit No. MD0020877. The Fort Detrick WWTP discharges treated wastewater into the Monocacy River, a tributary of the Potomac River, which eventually empties into the Chesapeake Bay. The Fort Detrick WWTP was upgraded in 2011 with Enhanced Nutrient Removal (ENR) technologies to meet the 2010 goals set in the Chesapeake Bay Agreement. The new agreement sets nutrient loading goals of 4.0 milligrams per liter (mg/L) for nitrogen and 0.3

mg/L for phosphorus for WWTPs with a design capacity at or above 0.5 mgd. Effluent wastewater from the sanitary sewer system flows sequentially through the headworks facility, oxidation ditch, two secondary clarifiers, ultraviolet disinfection, and additional phosphorus filtration prior to discharge to the Monocacy River. The WWTP outfall is downstream from both the City of Frederick WTP and Fort Detrick WTP water intakes.

Wastewater from area B is pumped to Area A where it enters the sanitary sewer system and continues as part of the scenario described above.

4.2.5 Pesticides

Small field research crops formerly existed on Fort Detrick Area A for many years, including row crops, weed species, and a vegetable garden. A broad spectrum of pesticides (mainly herbicides) were applied over the years, but should be thoroughly degraded by exposure to sun, heat and rain (Boggs, 2018).

4.2.6 Existing Contamination

4.2.6.1 Area A

A historical release of TCE occurred at Building 568 in the southwestern portion of Area A of Fort Detrick. TCE was used at this building as a refrigerant, however, the refrigeration system was removed between 1970 and 1971. There were no visible leaks upon removal. The quantity of TCE is unknown, however, leaks of mechanical seals were documented as early as 1964 (Boggs, 2018). A known groundwater plume with TCE exists in the area of Building 568. A groundwater production well (with one backup well) is used to supply water for aquatic biological laboratories housed in Building 568. Groundwater flow in Area A trends southwest from Building 568 toward Carroll Creek, intersecting Carroll Creek slightly downstream of Area B's primary discharge area. Area A's probable discharge area includes a grouping of springs (Spearmint, Upsurgent and Sewerline Springs) located just across Rosemont Avenue from Area A's south corner (USACE, 2019a).

Groundwater investigations at Area A have identified a plume comprised primarily of TCE and chloroform migrating southwest from Building 568 (USACE, 2019a). While concentrations have declined significantly over the monitoring period, low concentrations of VOCs are still detected in two separate plume lobes: a southern lobe trending toward Spearmint, Upsurgent and Sewerline Springs on Carroll Creek, and a northern lobe trending toward the Frederick County property north of Montevue Lane (USACE, 2019a).

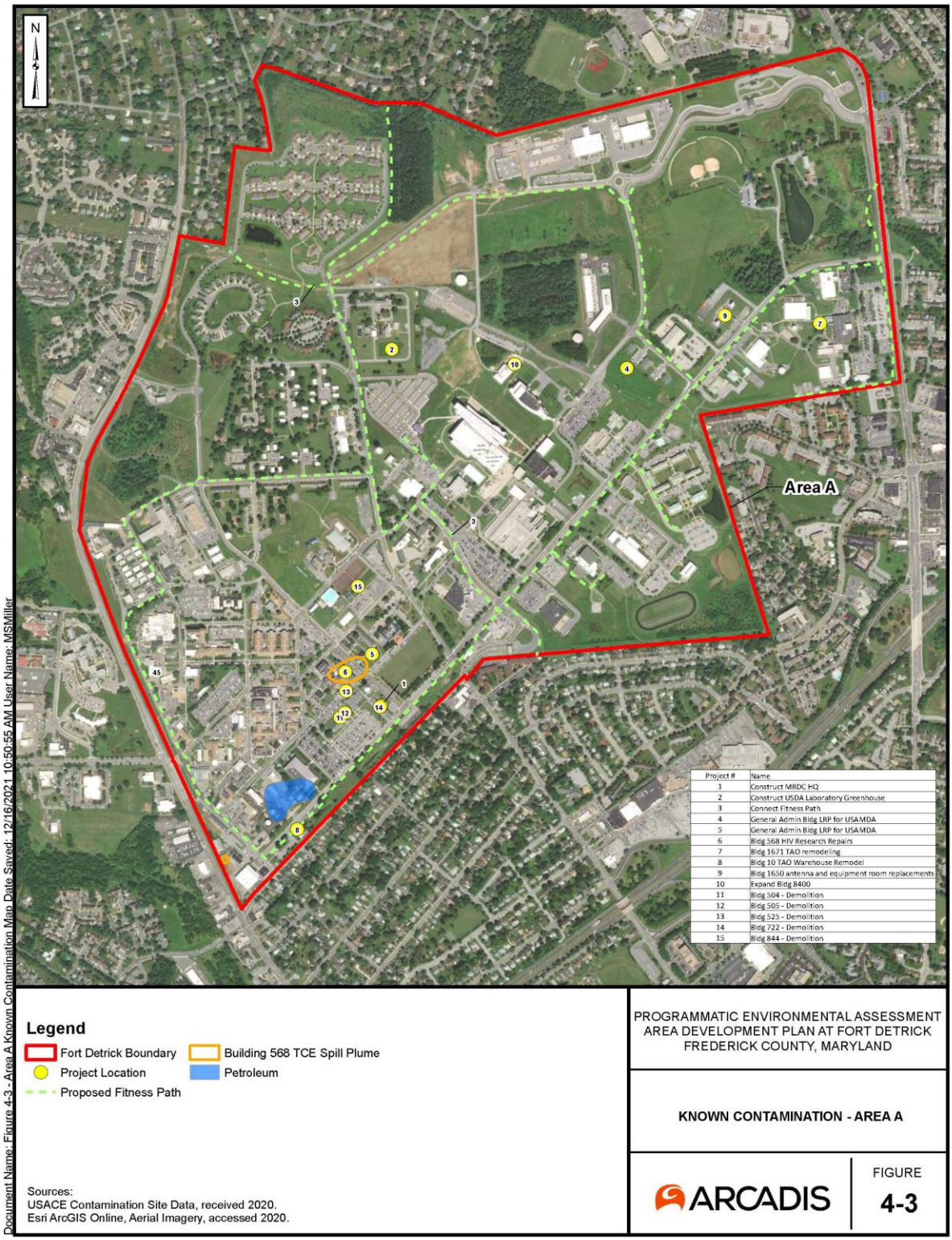
The Five-Year Review Report for Area A, Building 568 TCE Spill Site (FTD-66) was signed on 30 July 2019. The remedy at the Area A, Building 568 TCE Spill Site is protective of human health and the environment. The groundwater extraction system is operating and maintains hydraulic

control, containing the dissolved TCE plume within the Area A boundaries. Containment of all concentrations of TCE associated with the TCE Spill Site is confirmed via ongoing monitoring. The next five-year review will be completed in 2024.

Industrial operations involving petroleum fuel storage, dispensing and use had associated infrastructure such as underground fuel lines, pumping/dispensing areas, and storage tanks [both above ground storage tanks (ASTs) and underground storage tanks (UST)]. As a result of infrastructure failure and accidental releases, Fort Detrick has a number of sites with historical petroleum contamination including gasoline releases from USTs associated with a former motor pool at Building 940 and No. 6 fuel oil from USTs at the Building 190 boiler plant (USAG, 2019).

In addition, nitrogen, phosphorus, and potassium based fertilizers, fast and slow release, were also applied over the years, but little (if any) residue is expected to remain since there has been grass and weed cover in place to remove most of the nutrients from the soil (Boggs, 2018).

Figure 4-3: Known Contamination – Area A



4.2.6.2 Area B

Fort Detrick Area B Groundwater is regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Fort Detrick Area B was proposed to be added to the National Priorities List (NPL) in 2008, as part of the NPL Proposed Rule #49 (73 FR 51393) due to groundwater contamination. In April 2009, the site was listed on the NPL. The terms of the NPL listing are described in a Federal Facilities Agreement between the U.S. Army and the U.S. Environmental Protection Agency (USEPA), signed in December 2010 (USACE, 2019a). The principal environmental concerns at Area B relate to former waste disposal areas used by Fort Detrick when the installation served as a biological warfare research center, between 1943 and 1969. Concerns at Area B have historically been divided into 14 Operable Units (OUs), with 13 OUs encompassing Area B's known and suspected disposal sites, and one OU (FTD 72/OU-14) comprising all groundwater impacts associated with historical sources of contamination on Area B. Investigation and remediation of the disposal areas (i.e., OU-1 through OU-13) was completed prior to the FTD 72/OU-14 NPL listing. Although much of the accessible waste material and impacted soils were removed in actions completed between 2001 and 2004, post-excavation sampling showed that high levels remained in soil that may act as a secondary source of contamination. That work culminated with a targeted source removal in one disposal site, and installation of impermeable landfill caps above each area where wastes were buried. Capping was completed by May 2010 (USACE, 2019a).

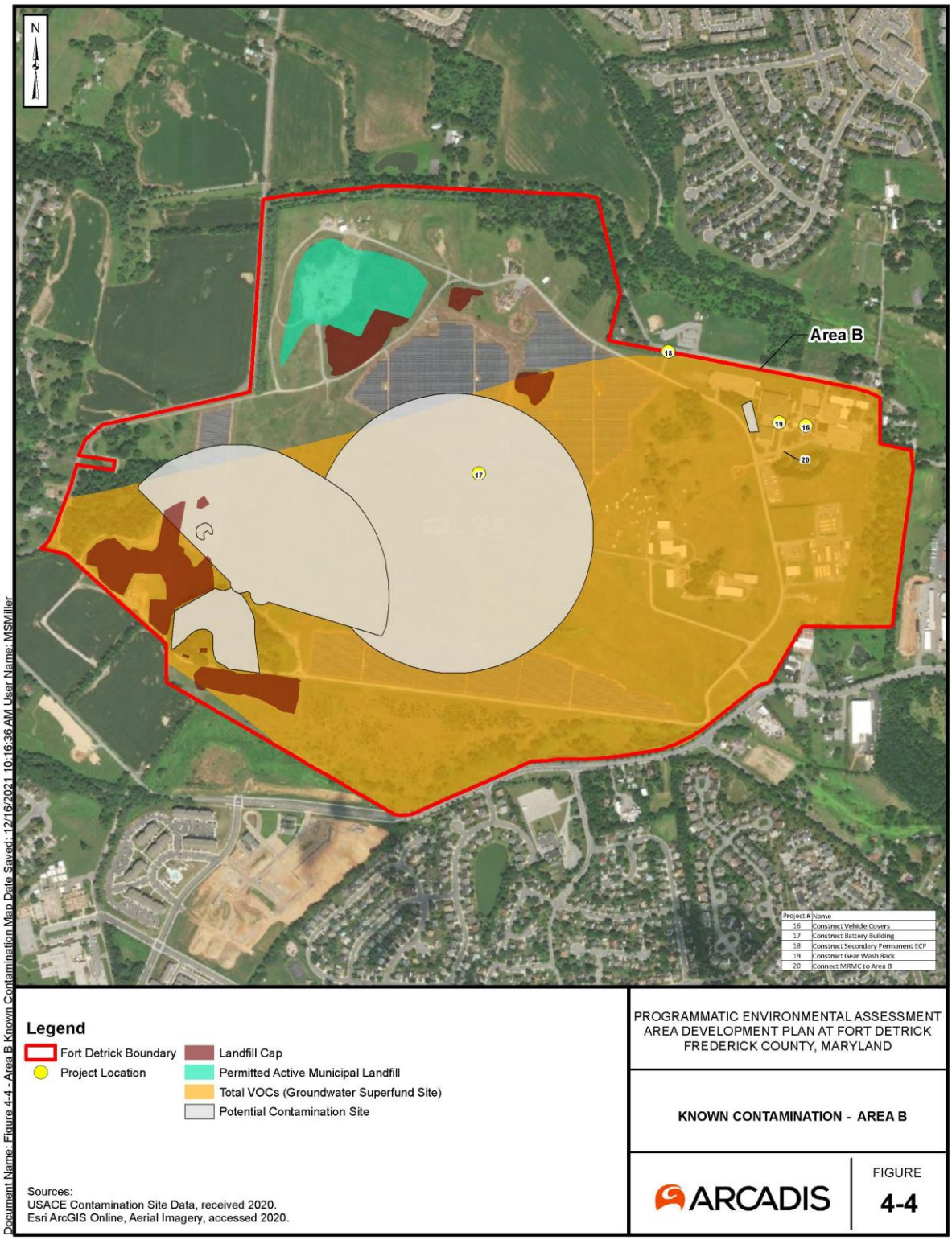
A groundwater remedial investigation (RI) associated with Area B was performed in 2019 under the U.S. Army Installation Restoration Program for Area B Groundwater (FTD 72/OU-14) (USACE, 2019a). The 2019 RI focused on describing field and laboratory work completed between 2011 and 2017, however, since 1977, more than 160 monitoring wells, including 106 bedrock wells, have been installed to investigate the groundwater beneath Area B. Groundwater samples at Area B were analyzed for a broad suite of contaminant classes, encompassing approximately 270 individual organic and inorganic analytes. Area B groundwater Constituents of Concern (COCs) included Volatile Organic Compounds (VOCs), Semi-volatile Organic Compounds (SVOCs), Metals, Pesticides, Dioxins, PCPs, Herbicides, Gross-Alpha, and Gross-Beta. The primary constituent in groundwater at Area B is trichloroethylene (TCE), however additional analytes were detected above criteria (USACE, 2019a). The Western Disposal Area (WDA) of Area B is considered to be the primary source of groundwater contamination at Area B and is the most significant source of the majority of the COCs identified in the RI. However, for several constituents, additional sources exist, including other Area B sources (former disposal areas investigated prior to the 2019 RI) and unrelated offsite sources, including, but not limited to, chlorinated VOCs originated in Fort Detrick's Area A.

The DoD's Installation Restoration Program (IRP) was established to provide guidance and funding for the investigation and remediation of hazardous waste sites caused by historical disposal activities at military installations. Fort Detrick has an active IRP established and funded under the

Defense Environmental Restoration Program (DERP). The IRP is a comprehensive program to identify, investigate and clean up hazardous substances, pollutants, and contaminants resulting from historical operations and practices on the installation. Although all investigations and clean-up activities are investigated under the CERCLA, also known as Superfund, only the Area B Groundwater site is included on the National Priorities List. CERCLA authorizes cleanup responses when there is a release or threat of a release of a hazardous substance into the environment resulting in unacceptable risks to the public or the environment and sets a framework for implementing those responses. Investigations and cleanup actions are coordinated with the USEPA and the MDE.

In addition, Fort Detrick has an active environmental restoration program to investigate and clean-up past activities that have resulted in environmental contamination. The Superfund Amendments and Reauthorization Act of 1986 (10 U.S.C. 2701) requires DOD to carry out its Defense Environmental Restoration Program in accordance with CERCLA, as amended, commonly referred to as Superfund (42 U.S.C. 9620).

Figure 4-4: Known Contamination – Area B



4.3 Noise

Noise is often defined as unwanted sound that interferes with normal activities in a way that reduces the quality of the environment. The human ear experiences sound as a result of pressure variations in the air. The physical intensity or loudness level of noise is expressed quantitatively as the sound pressure level. Sound pressure levels are defined in terms of decibels (dB), which are measured on a logarithmic scale. Sound can be quantified in terms of its amplitude (loudness) and frequency (pitch). Frequency is measured in hertz, which is the number of cycles per second. The typical human ear can hear frequencies ranging from approximately 20 hertz to 20,000 hertz. Typically, the human ear is most sensitive to sounds in the middle frequencies where speech is found and is less sensitive to sounds in the low and high frequencies.

Since the human ear cannot perceive all pitches or frequencies equally, measured noise levels in dB will not reflect the actual human perception of the loudness of the noise. Thus, the sound measures can be adjusted or weighted to correspond to a scale appropriate for human hearing. A-weighting is used most often for high frequency sounds such as vehicle traffic ("hum" sounds). C-weighting is used for low-frequency events such as large arms and explosions ("boom" sounds). Sound levels and their associated dBA levels are listed in **Table 4-1** below.

Table 4-1: Common Sound Levels Relative Loudness of Common Noise Sources

Common Noise Source	Noise Levels, dB(A)	Loudness Relative to a Conversation at a Distance of 1 meter
Threshold of Pain	140	256
Jet taking off (60 meters away)	130	128
Operating heavy equipment	120	64
Night club (with music)	110	32
Construction site	100	16
Boiler room	90	8
Freight train (30 meters away)	80	4
Classroom chatter	70	2
Conversation (1 meter away)	100	1
Urban residence	50	1/2
Soft whisper (1.5 meters away)	40	1/4
North Rim of Grand Canyon	30	1/8
Silent study room	20	1/16
Threshold of human hearing (1,000 Hertz)	0	1/64

Source: U.S. Department of Labor, Occupational Safety and Health Administration 2016

dB(A) = A-weighted decibel

Noise levels decrease (attenuate) with distance from the source. A generally accepted rule is that the sound level from a stationary source would drop approximately 6 dB each time the distance from the sound source is doubled. The sound level from a moving "line" source (e.g., a train or a roadway) would drop 3 dB each time the distance from the source is doubled. Noise levels may be further reduced by natural factors, such as temperature and climate, and are reduced by barriers, both manmade (e.g., sound walls) and natural (e.g., forested areas, hills) (FTA, 2006).

Physical mitigation of noise is generally feasible for higher frequency sounds, such as small arms fire and traffic, whereby the low frequency component of impulsive "boom" noise has wave characteristics that can typically travel through obstacles.

4.3.1 Regulatory Overview

The Noise Control Act of 1972 (P.L. 92-574) directs Federal agencies to comply with applicable Federal, state, interstate, and local noise control regulations to the fullest extent consistent with agency missions. The act requires compliance with state or local noise control regulations in off-post areas only; however, the Army often uses the time restrictions outlined in local ordinances as general guidelines for on-post activities. In 1974, the USEPA provided information suggesting that continuous and long-term noise levels in excess of 65 dBA are normally unacceptable for noise-sensitive land uses such as residences, schools, churches, and hospitals.

The Maryland Environmental Noise Act of 1974 established policy that states the "limitation of noise to that level which will protect the health, general welfare, and property of the people of the State." Effective October 1, 2012, MDE delegated noise enforcement authority to local governments. MDE continues to update noise control standards, but enforcement is handled by local jurisdictions.

Title 26 of the COMAR, MDE, Subtitle 02, Chapter 03 (26.02.03 Control of Noise Pollution) and City of Frederick Noise Ordinance (Sec. 15-21) provides the regulatory structure for noise pollution, hazards, and control. The COMAR and City of Frederick Ordinance set maximum allowable noise levels for industrial, commercial, and residential land uses, as depicted in **Table 4-2**.

Table 4-2: Maximum Allowable Noise Levels (dBA)

Time	Industrial	Commercial	Residential
Day	75	67	65
Night	75	62	55

Source: COMAR 26.02.03.02 Environmental Noise Standards; City of Frederick Noise Ordinance, Section 15-21.2

In addition, COMAR and City of Frederick Ordinance states that noise levels that emanate from construction or demolition site activities cannot exceed 90 dBA during daytime hours. Daytime hours are defined within the regulations as 0700 to 2200. The installation has established that noise levels emanating from construction or demolition activities may not exceed 90 dBA at the designated construction (limit of disturbance) property line between the hours of 0700 through 1630. Maximum noise levels cannot exceed regulatory industrial, commercial and residential noise level criteria between the hours of 1630 and 0700 (non-construction hours) as specified in **Table 4-1**. Construction activities may not permit prominent discrete tones and periodic noises (dump truck tail gates banging, etc.) that exceed a level which is 5 dBA lower than the noise criteria established in this requirement. Blasting operations associated with construction and demolition activities are exempt from COMAR and City of Frederick Ordinance regulatory noise requirements (daytime hours only). OSHA occupational noise exposure limits for construction workers must be met as detailed in 29 CFR 1926.52. Any construction activities conducted outside

the hours specified in this requirement must be pre-approved through the installation command. Weekend construction activities must be pre-approved through the installation command.

4.3.2 Existing Noise Conditions at Fort Detrick

Fort Detrick is generally relatively quiet with no significant noise pollution sources within the study area boundaries (Area A and Area B). Minor noise sources within Area A include emergency generators located in Buildings 1673 and 1677, usual vehicular traffic, and military unit physical training activities conducted between 0630 and 0800 hours. Minor noise sources within Area B include the dump trucks moving in and out of the existing active land fill. In addition, there is a restriction for "no cadence calling" on portions of physical activity routes that adjoin residential areas external to the post. According to sound-level measurements performed at Fort Detrick, the noise generally generated from operations is compatible with residential use (USAG, 2006).

Fort Detrick has a mass warning system (giant voice) which is an emergency alert intercom system designed to alert the population throughout the Fort Detrick community. The system is designed to alert people who are outside of buildings because it cannot be heard indoors. Fort Detrick conducts periodic testing of the system to ensure proper operations in the event of an emergency.

4.4 Geology, Soils and Topography

4.4.1 Geology

Fort Detrick lies in the Western Lowlands Section of the Piedmont Plateau Physiographic Province (the Appalachian Highlands) in a geologic subdivision known as the 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 Frederick Valley extends 26 miles by six miles wide, runs from north to south, and is known as the Fredrick Syncline. The Catoctin Mountains, located directly west of the Frederick Valley, are part of an overturned anticline known as the South Mountain Anticlinorium (USACE, 2000). The entire state of Maryland is classified as a seismic zone 1 area with a low probability of experiencing a damaging earthquake within a 50-year period (USAG, 2003).

Several sinkholes/depressions have been detected on or near Area A and Area B through interpretation of aerial photographs and U.S. Geological Survey (USGS) quadrangle maps. Six areas of sinkholes have been identified within Area A, including NCI-Frederick, Veterans Gate along Ditto Avenue, northeast boundary adjacent to Nallin Farm Pond, west central portion near military housing, and partially within the northwest and southeast boundaries. Five areas of sinkholes have been identified within Area B, including the north central boundary, partially within the eastern boundary, the southeastern boundary, the west central portion, and the east central portion. All of the sinkholes in Area A and Area B are filled with soil, with the exception of one

of the small sinkholes in the western portion of Area B, which captures a small spring that flows during high groundwater conditions (USACE, 2001).

4.4.1.1 Area A

Area A geology is primarily made up of the fractured limestone and dolomite of the Upper Cambrian Frederick Formation, consisting of the Lime Kiln, Rocky Springs Station, and Adamstown members. The concept of formally defined layers or strata is central to the geologic discipline of stratigraphy. Groups of strata are divided into formations, which are divided into members. Area A consists mainly of the Rocky Springs Station Member, which is a thinly-bedded limestone comprised of dolomite and layers of coarse quartz sand. In the western portion of the Area A Study Area, there are three small portions comprised of thicker and more massive breccia beds (USACE, 1993).

4.4.1.2 Area B

Area B geology is also primarily made up of the fractured limestone and dolomite of the Upper Cambrian Frederick Formation, as well as the Triassic shales, mudstones, and limestone conglomerates. Area B is mainly underlain by the New Oxford Formation, comprised of limestone and quartz-pebble conglomerates. The southern portion of Area B is underlain by the Rock Springs Station Member. The Triassic shales and mudstones are made up of residual clay with low permeability that are moderately hard and jointed. The Triassic conglomerate is a combined base of coarse silt, sand, and clay (USACE, 1993).

4.4.2 Soils

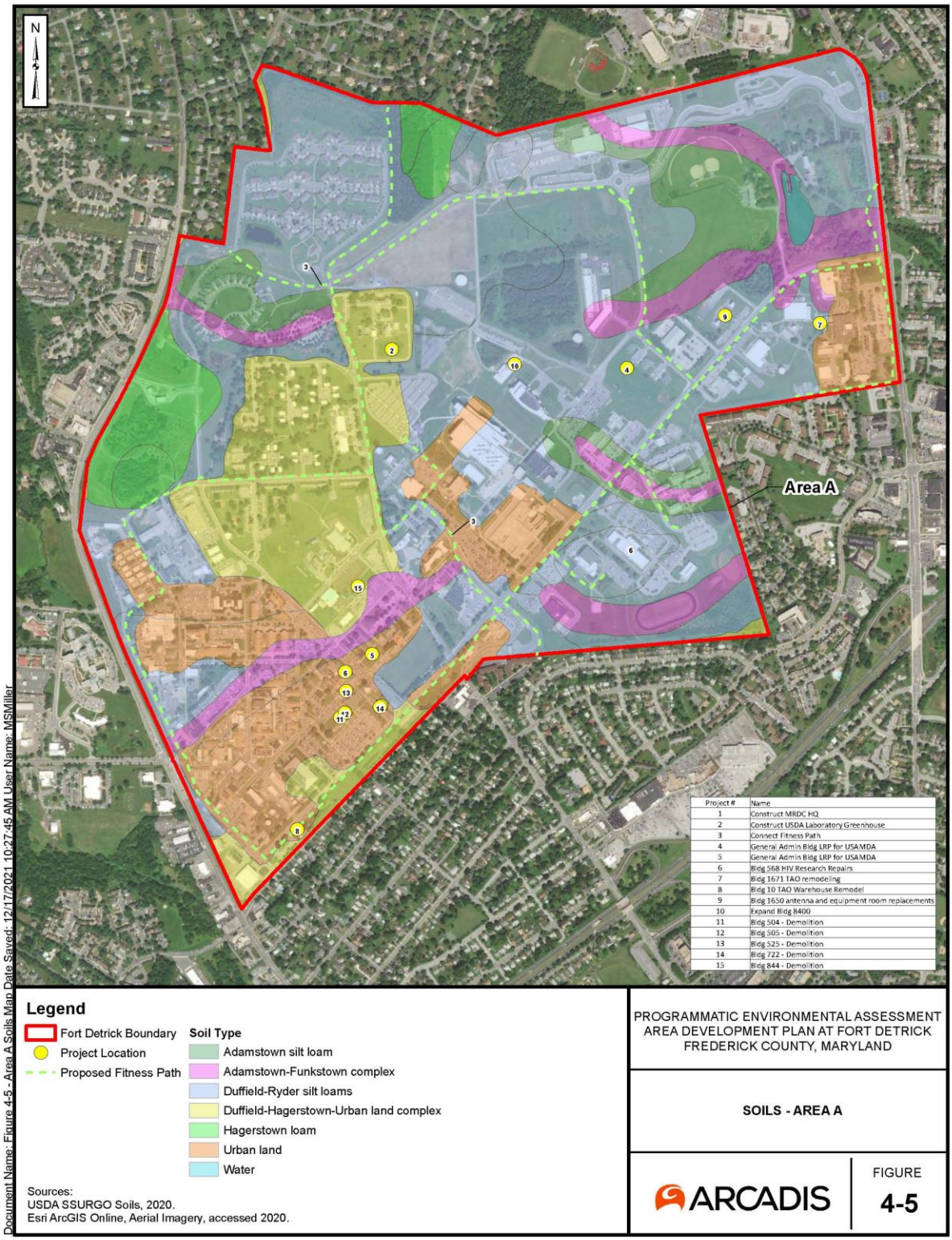
The soils of Frederick County are among the most productive in Maryland and consist of a combination of residual lime soils and wind-transported soils (Telemarc, Inc., 1993). Soils within Areas A, B, and C are discussed below. Detailed descriptions of soil series can be found online in the USDA Natural Resources Conservation Service's (NRCS) Soil Survey Geographic Database for Frederick County. See **Figures 4-5 and 4-6** for mapped soils in Areas A and B.

4.4.2.1 Area A

The soils within Area A are predominately made up of the Adamstown, Duffield, Funkstown, Hagerstown, and Ryder series, which are found throughout Area A. In addition, a significant portion of Area A is comprised of urban lands (USDA, 2014).

The soils mapped within Area A are Adamstown silt loam (0 to 3% slopes), Adamstown-Funkstown complex (0 to 8% slopes), Duffield-Ryder silt loams (0 to 8% slopes), Duffield-Hagerstown-Urban land complex (3 to 8% slopes), Hagerstown loam (0 to 15% slopes), Urban land (0 to 15% slopes), and Water. Soils are moderately well drained to well drained, have moderate permeability, and no soils are listed as hydric soils (USDA, 2014).

Figure 4-5: Soils – Area A

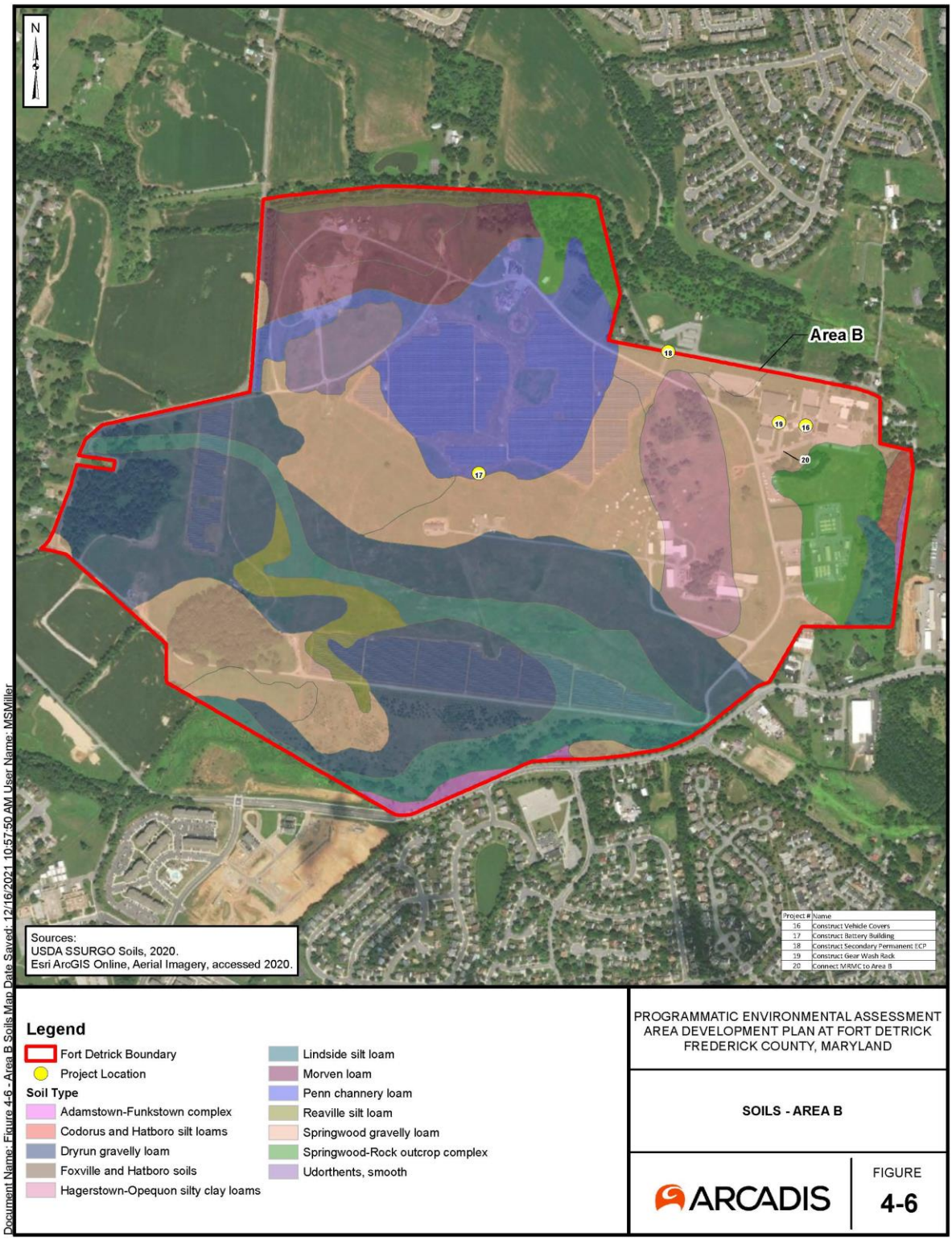


4.4.2.2 Area B

The soils within Area B are predominately made up of the Dryrun, Lindside, Morven, Penn, and Springwood series, which are found throughout Area B. In addition, there are numerous other series found within Area B. The Adamstown, Funkstown, Hagerstown, and Opequon series are found in small patches within the southeastern and eastern portions of Area B. The Foxville and Hatboro, series are found in small patches within the northern and northwestern portions of Area B. The Codorus and Reaville series are found in the northeast and central portions of Area B, respectively. Lastly, a small patch of Udorthents series is found within the northern center of Area B (USDA, 2014).

The soils mapped within Area B are Adamstown-Funkstown complex (0 to 8% slopes), Codorus and Hatboro silt loams (0 to 3% slopes), Dryrun gravelly loam (0 to 3% slopes), Foxville and Hatboro soils (0 to 3% slopes), Hagerstown-Opequon silty clay loams (3 to 8% slopes, rocky), Lindside silt loam (0 to 3% slopes), Morven loam (0 to 8% slopes), Penn channery loam (3 to 8% slopes), Reaville silt loam (0 to 3% slopes), Springwood gravelly loam (0 to 15% slopes), Springwood-Rock outcrop complex (3 to 8% slopes), and Udorthents, smooth (0 to 8% slopes). Soils are predominately moderately well drained to well drained within Area B, with the exception of Codorus, Foxville, Hatboro, and Raeville series soils. Soils have varied permeability, from very low to very high. Hatboro series soils are the only series listed as hydric soils (USDA, 2014).

Figure 4-6: Soils – Area B



4.4.3 Prime and Unique Farmland

High quality farmland is of major importance in meeting the nation's short- and long-range needs for food and fiber. Prime farmland, as defined by the USDA, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. Farmland of Statewide Importance, as defined by the USDA, is land that includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. The NRCS identifies soil map units that may be considered prime farmland or Farmland of Statewide Importance due to the physical and chemical properties of the soil.

Although NRCS identifies soil map units within the Installation that may be considered prime farmland or Farmland of Statewide Importance due to the physical and chemical properties of the soil, as these soils are located within the bounds of an active military installation, they are therefore excluded under the exceptions in the USDA definition. The land in question was converted to military use before enactment of the Farmland Protection Policy Act and therefore is not included in the inventory of prime farmland. Therefore, no prime farmland or Farmland of Statewide Importance is found within Areas A and B (USDA, 2000).

4.4.4 Topography

The Piedmont Plateau is characterized by rolling terrain and deeply incised stream valleys and encompasses approximately 29 percent of Maryland's land area. The Piedmont Plateau elevations ranges from approximately 100 feet to 1,000 feet above sea level (MDNR, 1999). Fort Detrick elevations range from 320 feet to more than 400 feet above sea level (USGS, 1993). Elevations in Area A range from 320 to 380 feet and in Area B from 320 to 500 feet.

Figure 4-7: Topographic Map – Area A

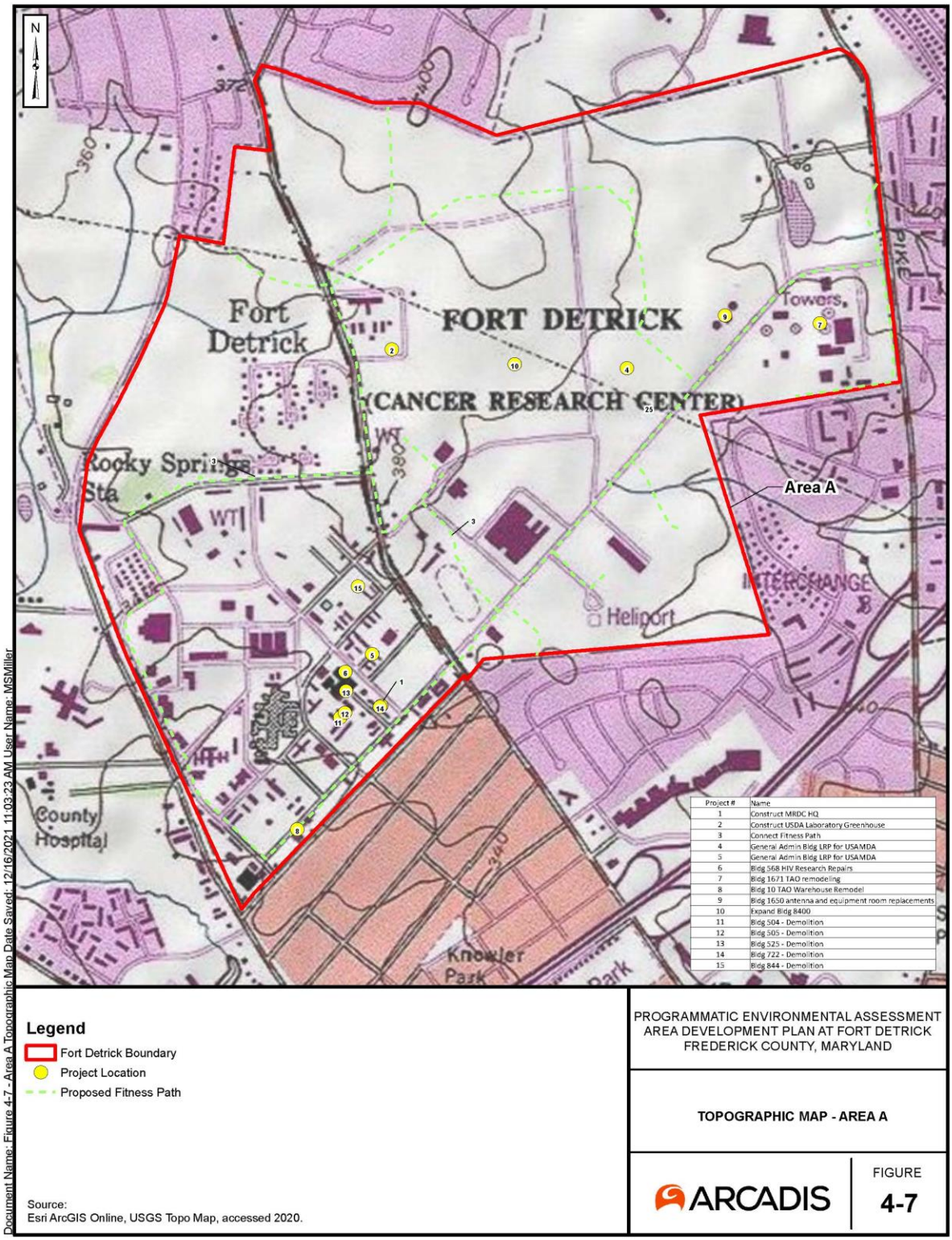
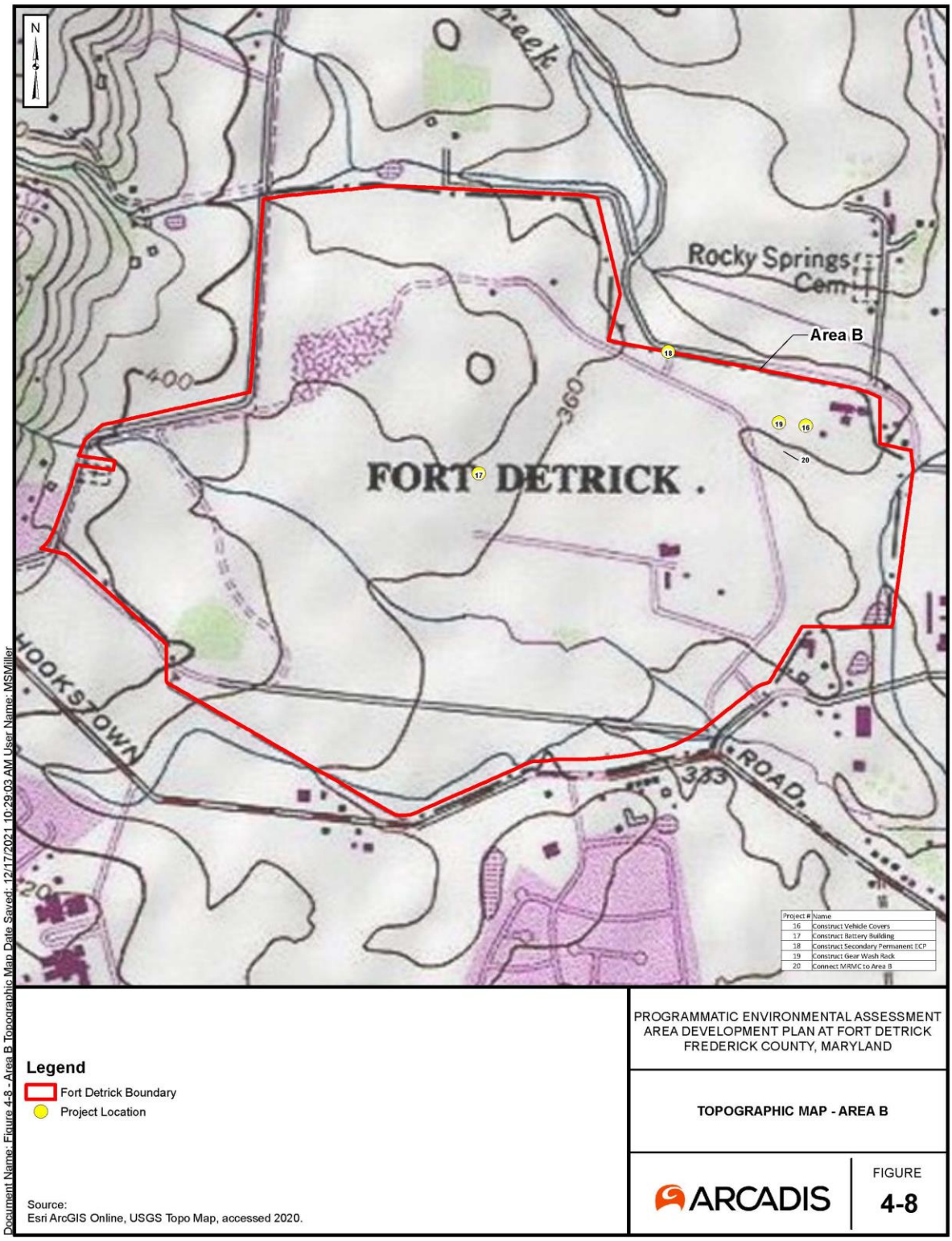


Figure 4-8: Topographic Map – Area B



4.5 Water Resources and Water Quality

4.5.1 Surface Water

Fort Detrick is located within the Monocacy River drainage basin, a sub-basin of the Middle Potomac River Basin in the Chesapeake Bay watershed. The Monocacy River ranges from 40 feet to 375 feet in width and from 0.5 feet to 18 feet in depth. The Monocacy River originates near the Maryland-Pennsylvania border and flows south and to the east of Fort Detrick and Frederick City, continuing 15 miles downstream to the Potomac River. The Monocacy River is located approximately 1.5 miles to the east of Area A.

The Monocacy River is classified by the State of Maryland as Use IVP Recreational Trout Waters and Public Water Supply (COMAR 26.08.02). The Monocacy River is used as a partial water supply system for the City of Frederick and is the sole source water supply system for Fort Detrick under MDE Water Resource Allocation Permit No. FR1943S001(04). The Monocacy River is designated as a State scenic river under the Maryland Scenic and Wild Rivers Act of 1968. A scenic river, as designated in Natural Resources Article 8-402(d)(2), is "a free-flowing river whose shorelines and related lands are predominantly forested, agricultural, grassland, marshland, or swampland with a minimum of development for at least 2 miles of the river length". It is State policy to preserve and protect the natural values of designated scenic and/or wild rivers, enhance their water quality, and fulfill vital conservation purposes by wise use of resources within their surrounding environment.

4.5.1.1 Area A

Primary surface waters within Area A include the Nallin Farm Pond (3.3 acres) 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, 2003). Two Mile Run (Federal Emergency Management Agency (FEMA) Tributary #10) extends south and then east from Nallin Farm Pond for approximately one mile before discharging into the Monocacy River (DA, DIS, 2001). Detrick Branch (FEMA Tributary #9) extends east from the central portion of Area A for approximately one mile, flowing through the northern tip of the Area C WWTP parcel, before discharging into the Monocacy River (DHS and USAG, 2004).

Stormwater from the central and western portions of Area A drains west into Carroll Creek and stormwater from the eastern portion of Area A drains into Tributaries #9 and #10, and eventually the Monocacy River (DHS and USAG, 2004). There are 27 stormwater ponds within Area A and only 9 of these hold stormwater year-round, with the remaining ponds holding water only during rain events. Eight 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 and the other four outfalls (A-3, A-4, A-5, and A-6) drain toward the Monocacy River (General Physics, 2004; USAG, 2005a). The majority of

stormwater in Area A is diverted through a system of surface ditches, culverts, inlets, and storm sewer lines.

4.5.1.2 Area B

Primary surface waters within Area B include Carroll Creek and two tributaries of Carroll Creek. Carroll Creek flows along the eastern boundary of Area B, then flows southeast towards Area A, and then flows east for approximately 3.5 miles to the Monocacy River (USAG, 2010a). Shookstown Creek (FEMA Tributary #96) flows east within the southern portion of Area B before converging with Carroll Creek east of Area B. FEMA Tributary #96A flows southeast through the central portion of Area B and meets up with Shookstown Creek in the southeast edge of the Area B boundary. Additionally, there are a freshwater pond and a freshwater forested/shrub wetland mapped by the USFWS NWI Wetlands Mapper in Area B. The freshwater pond, (approximately 0.48 acre) and the freshwater forested/shrub wetland area (approximately 6.06 acres) are mapped near Carrol Creek within the eastern portion of Area B (USFWS, 2019). The presence and boundaries of these mapped areas would need to be confirmed on site.

Stormwater from Area B drains into Carroll Creek via two outfall culverts (B-1 and B-2). There are two separate stormwater management basins in Area B, including an erosion and sediment control basin associated with an existing active landfill and a stormwater management basin associated with the Reserve Center on the northeastern portion of Area B (USAG, 2010a).

4.5.2 Groundwater

Groundwater in the area of Fort Detrick occurs in hard rock aquifers associated with the Frederick Valley subdivision of the Piedmont Physiographic Province. These are some of Maryland's most productive aquifers, with approximately 20 percent of the formations yielding water at rates of at least 50 gallons per minute (USAG, 2011). Groundwater in and around Fort Detrick is generally of good quality and is drawn from fractures or solution channels located within carbonate rocks (e.g. limestone and dolomite). Water is transported through the carbonate aquifers via bedding planes, fractures, joints, faults, and other partings towards the Monocacy River (USAG, 2003). Groundwater underlying the Fort Detrick area flows generally to the southeast, towards the Monocacy River (USACE, 2000). For the purpose of research, under MDE Permit No. FR1943G101(05), Fort Detrick is permitted to withdraw a daily average of 9,000 gallons of well water on a yearly basis and a daily average of 9,500 gallons for the month of maximum use (USAG, 2003).

4.5.2.1 Area A

In 1987, TCE was detected (300 parts per billion [ppb] to over 2000 ppb) in a production well of Building 568 in Area A. Field RIs were conducted from October 1994 through May 1995 (referred to as "Phase I") and from January through September 1997 (referred to as "Phase II"). According

to the Revised Final Remedial Investigation Area A report, issued in June 2000, which summarized the Phase I and Phase II efforts, a groundwater plume was identified in Area A and is currently controlled by an active groundwater treatment system at Building 568 (USACE, 2000). The Army's CERCLA-based IRP for Area A is at "Remedy in Place" or "Response Complete" (USAG, 2010a).

4.5.2.2 Area B

Area B Groundwater was identified as an area of potential environmental concern through the Fort Detrick IRP (USAG, 2010a). TCE concentrations above the MCLs and elevated levels of trichlorofluoromethane were detected in February 1992 in an Area B monitoring well. A study of the active landfill and Area B was conducted that included installation and sampling of monitoring wells. In April 2009, Area B groundwater was placed on the National Priorities List and a RI was implemented from 2011 through 2017 (USACE, 2019a).

The Final Area B Groundwater RI Report (December 2019) noted that the disposal pits in the western disposal area are the primary source of TCE, perchloroethylene (PCE), chloroform, and other constituents found in Area B groundwater. The western disposal area was subsequently covered with an impervious, composite cap to limit recharge through impacted areas; capping was completed in May 2010. Groundwater passing beneath the western disposal area picks up contaminants and transports them downgradient. All groundwater transport pathways converge upward to surface water, discharging either within Area B or in the primary discharge area, a 0.5-mile region of springs and seeps on Carroll Creek and a stream east of Area B (USACE, 2019a).

There are 33 groundwater COCs, where TCE is the primary groundwater contaminant at Area B. Additional COCs include twenty-one VOCs, four SVOCs, metals (lead, cobalt, and arsenic), pesticides (heptachlor), and dioxins (2,3,7,8-tetrachlorodibenzo-p-diozin) (December 2019). Most of the COCs were found at levels of concern in groundwater only near the western disposal area. The COCs present at the highest concentrations (TCE, PCE, and chloroform) were found in groundwater downgradient of the western disposal area towards the primary discharge area (USACE, 2019a).

The western area of Area B was deemed to have the most significant human health risk. USEPA's risk management thresholds were exceeded in this area for hypothetical future use of groundwater by residents as a source of drinking water, future potential exposures to a construction worker, and future indoor air exposures to hypothetical commercial workers or residents (USACE, 2019a).

4.5.3 Floodplains

According to the FEMA, floodplains are defined as those areas that will be inundated by a flood event having a 1% chance of exceedance in any given year. This is also referred as the 100-year floodplain (Zone AE). Based on FEMA's Flood Insurance Rate Maps, a small portion in the

northeast corner of Area A, near Nalin Pond and Two Mile Run, is within the 100-year floodplain. Several areas within the northern, eastern, and southern portions of Area B, associated with Carroll Creek and its tributaries, are located within the 100-year floodplain. Most of the Area C WTP parcel and a portion around the northwest and northeast boundaries of the Area C WWTP parcel are located within the 100-year floodplain. **Figures 4-9 and 4-10** show the locations of the 100-year floodplain in Area A and Area B.

Figure 4-9: Floodplain Map – Area A

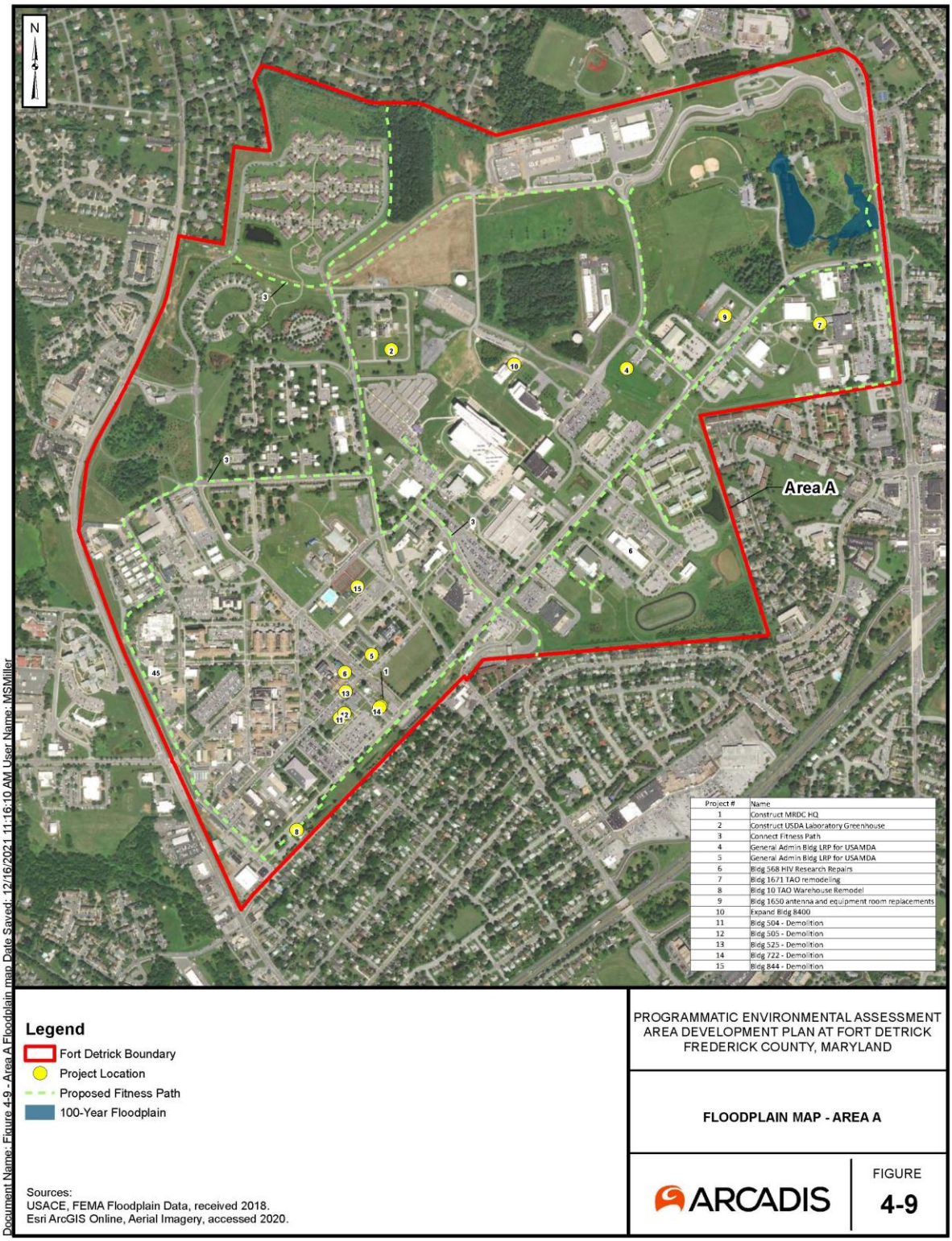
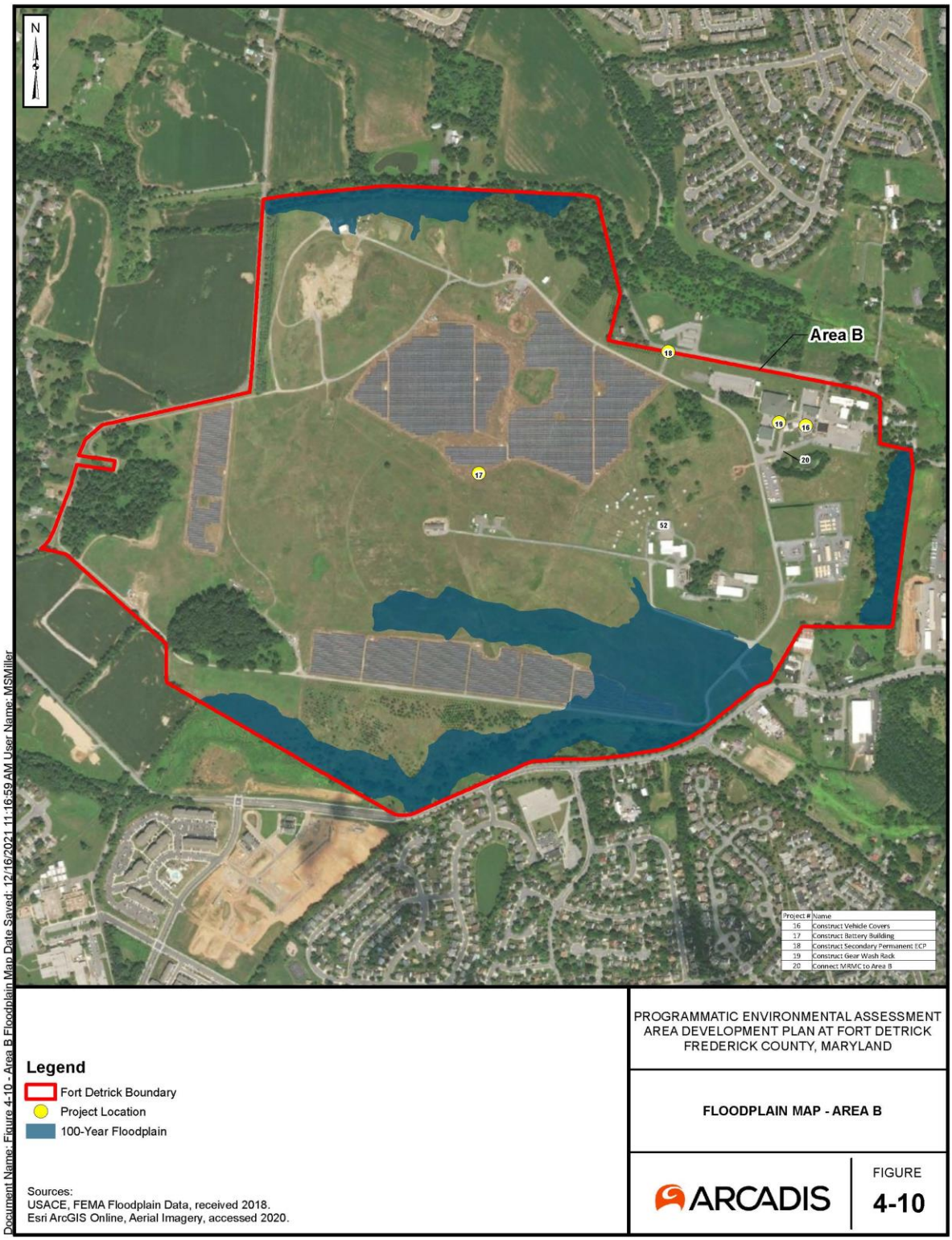


Figure 4-10: Floodplain Map – Area B



4.5.4 Wetlands

Wetlands are jointly defined by the USEPA and the USACE as "those areas that are inundated or saturated by surface water or groundwater 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 "swamp marshes, bogs and similar areas" (40 CFR 230.3(t) and 33 CFR 328.3(b)). USACE regulates the discharge of dredged or fill material in waters of the United States, including jurisdictional wetlands pursuant to Section 404 of the CWA. Section 404 of the CWA requires Federal regulation for most activities that impact wetlands.

EO 11990, *Protection of Wetlands*, requires Federal agencies take action to minimize the destruction, loss or degradation of wetlands. The order further requires Federal agencies to ensure that there are no practicable alternatives to such construction and that the Proposed Action includes all practical measures to minimize harm to wetlands which may result from such use. In making this determination agencies may take into account economic, environmental and other pertinent factors (USACE, 2014).

Important wetland functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, storm water attenuation and storage, sediment detention, and erosion protection. Wetlands on Fort Detrick are beneficial to stormwater management, erosion, and sediment control. Wetlands provide habitat for ducks, geese, herons, shore birds, muskrat, mink, and beaver, and also support numerous species of annual and perennial herbaceous plants.

4.5.4.1 Area A

There is one wetland mapped by the USFWS NWI Wetlands Mapper within Area A. Nallin Farm Pond (3.3 acres), a freshwater pond, is mapped in the northeast portion of Area A and characterized as palustrine, unconsolidated bottom, permanently flooded, and diked/impounded. This mapped wetland area is shown on **Figure 4-11** below. The presence and boundaries of this mapped area would need to be confirmed on site.

A Natural Resources Management Planning Level Survey (PLS) was completed in July and August 2010 and included identification and delineation of wetland sites within Area A and Area B (USAG, 2011). Five wetland sites (total of 3.58 acres) within the northeast corner of Area A, in the vicinity of Nallin Farm Pond were delineated during the 2010 PLS. It is assumed that the locations and boundaries of these delineated areas are still valid but should be confirmed on site as needed. These delineated areas are shown on **Figure 4-11** below.

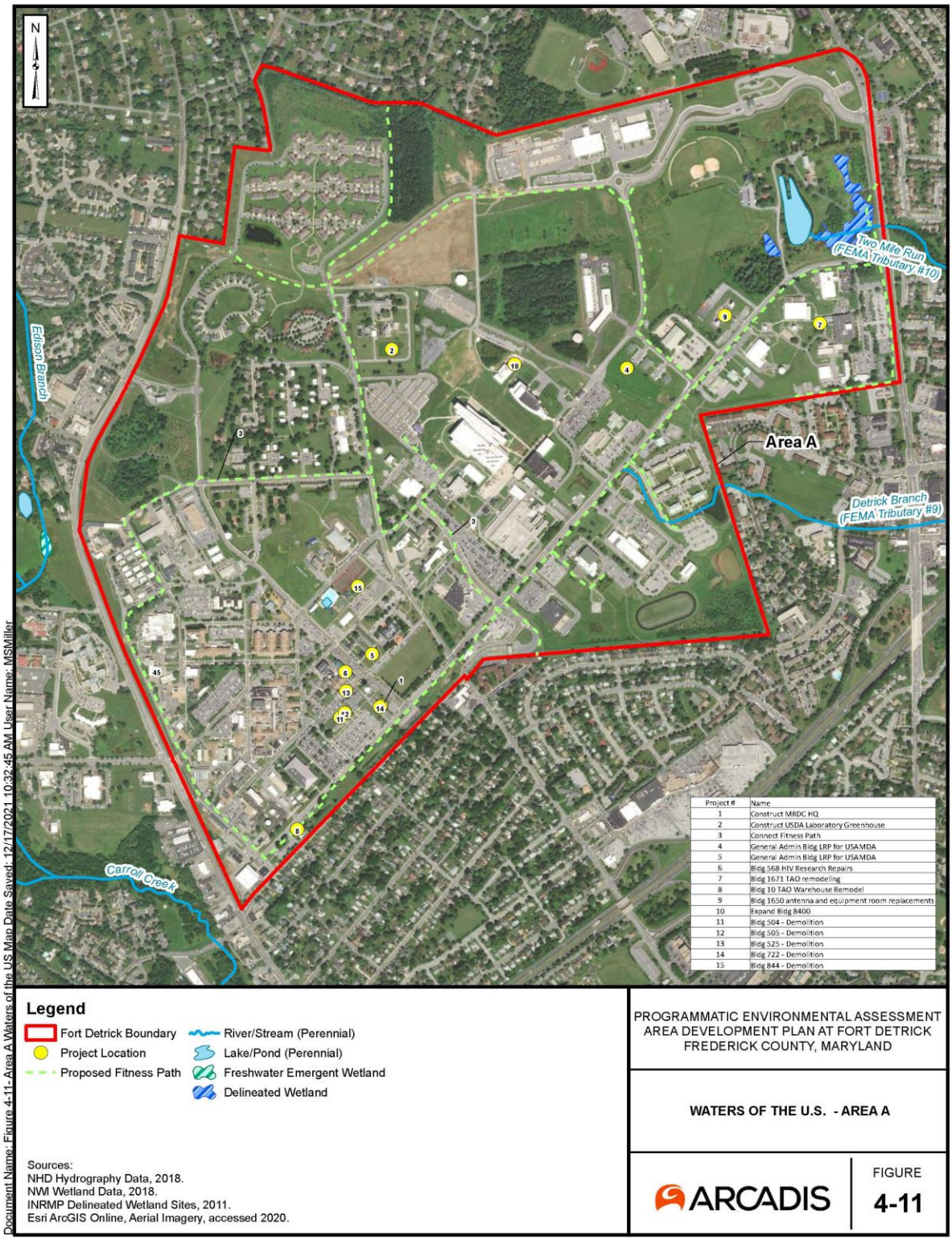
Wetland Sites 1 through 5 were identified and delineated in the 2010 PLS in Area A. Wetland Site 1 and Wetland Site 2 are isolated from other wetland areas, Nallin Farm Pond, and the tributary (Two Mile Run), which flows from Nallin Farm Pond into the Monocacy River. Wetland Site 1 (approximately 0.13 acre) is located southwest of Nallin Farm Pond and is characterized as a wet

meadow with dominant species of creeping bentgrass (*Agrostis stolonifera*), field bindweed (*Convolvulus arvensis*), Canada thistle (*Cirsium arvense*), and strawcolored flatsedge (*Cyperus stigosus*) (USAG, 2011). Wetland Site 2 (approximately 0.27 acre) is located southwest of Nallin Farm Pond and is characterized as a palustrine-forested wetland with pockets of scrub-shrub and emergenct vegetation. Dominant species of Wetland Site 2 include red maple (*Acer rubrum*), river birch (*Betula nigra*), silky dogwood (*Cornis amomum*), rice cutgrass (*Leersia oryzoides*), common reed (*P. australis*), clearweed (*Pilea pumila*), and black willow (*Salix nigra*) (USAG, 2011).

Wetland Site 3, Wetland Site 4, and Wetland Site 5 drain into the tributary and are therefore, regulated by the USACE. Wetland Site 3 (approximately 0.74 acre) is located east of Building 1655 and is characterized as a palustrine emergent wetland with dominant species of creeping bentgrass, Frank's sedge (*Carex frankii*), fox sedge (*C. vulpinoidea*), soft rush (*Juncus effuses*), and green bulrush (*Scirpus atrovirens*). Wetland Site 4 (approximately 1.52 acres) is located below the Nallin Farm Pond outfall and is characterized as a palustrine-forested wetland. Dominant species of Wetland Site 4 include creeping bentgrass, Queen Anne's lace (*Daucus carota*), and tall fescue (*Festuca arundinacea*) (USAG, 2011). Wetland Site 5 (approximately 0.92 acres) is located south of an asphalt-paved pathway (USACE, 2005a) and is characterized as a wetland enhancement area planted with emergent shrub and tree wetland species. Dominant species of Wetland Site 5 include marshmallow (*Althaea officinalis*), river birch, buttonbush (*Cephalanthus occidentalis*), spotted touch-me-not (*Impatiens capensis*), black willow, and broad-leaf cattail (*Typha latifolia*) (USAG, 2011). Wetland Site 4 and Wetland Site 5 are located within the floodplain of the tributary (USACE, 2005b).

Wetland Site 1 and Wetland Site 3 are considered to provide very low-quality wildlife habitat function, while Wetland Site 2, Wetland Site 4, and Wetland Site 5 are thought to provide high quality wildlife habitat function and improved water quality (USAMRMC and USAG, 2006).

Figure 4-11: Waters of the U.S. – Area A



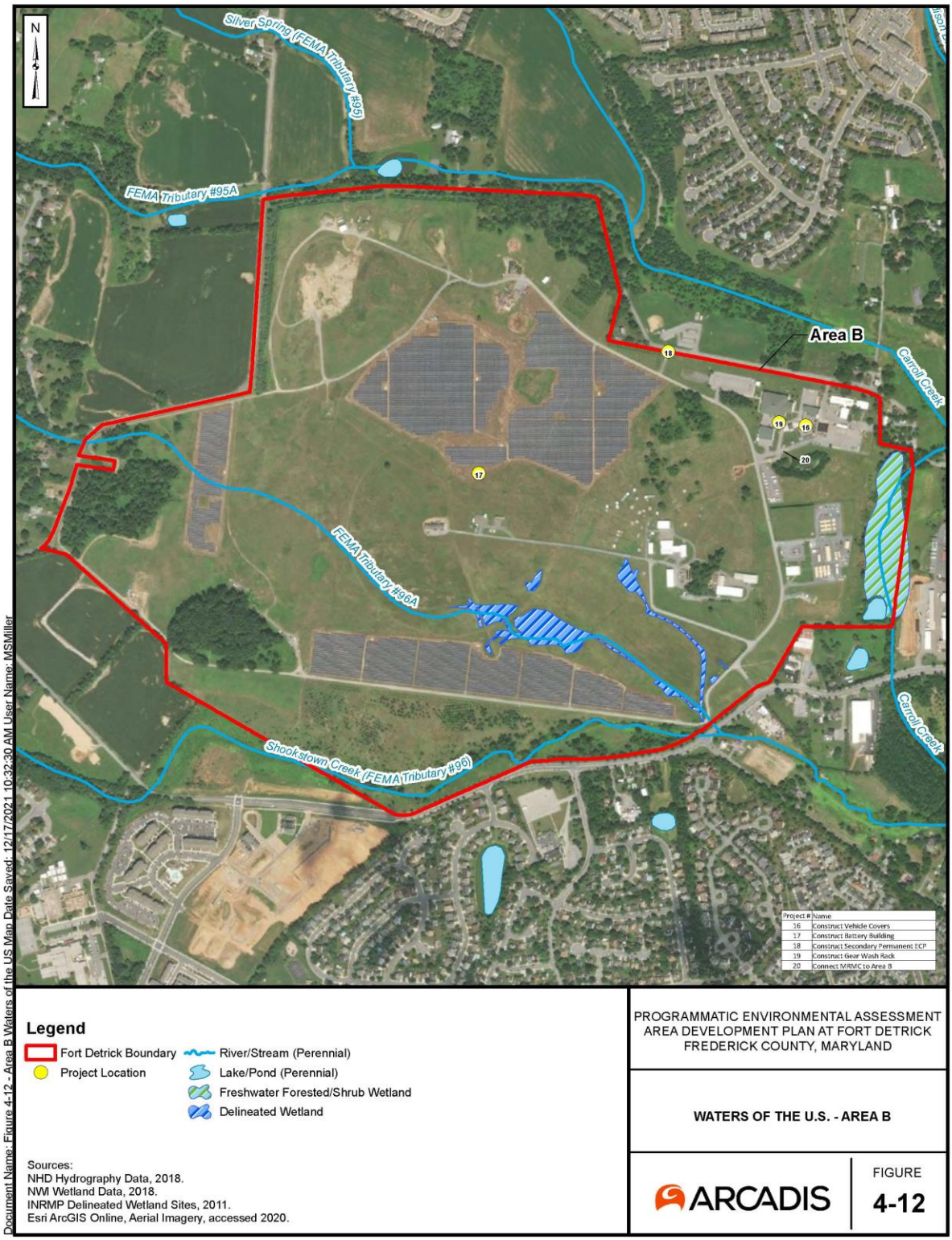
4.5.4.2 Area B

There are two wetlands mapped by the USFWS NWI Wetlands Mapper within Area B. One freshwater pond is characterized as palustrine, unconsolidated bottom, permanently flooded, and manmade via excavation, and mapped along the eastern boundary of Area B (0.48 acre). A freshwater forested/shrub wetland (6.06 acres) is mapped near this freshwater pond, along the eastern boundary of Area B and characterized as palustrine, forested, broad-leaved deciduous, and temporarily flooded (USFWS, 2019). These mapped wetland areas are shown on **Figure 4-12** below. The presence and boundaries of these mapped areas would need to be confirmed on site.

Three wetland sites and one drainage ditch (total of 4.88 acres) were delineated during the 2010 PLS within the southeastern portion of Area B. It is assumed that the locations and boundaries of these delineated areas are still valid but should be confirmed on site as needed. These delineated areas are shown on **Figure 4-12** below.

Wetland Sites 6 through 9 were identified and delineated in the 2010 PLS in Area B. Wetland 6 is the largest wetland on Area B (4.63 acres) and was delineated as two linear segments that connect near the boundary of Area B. Wetland 6 is considered an emergent wetland and is dominated by creeping bentgrass, barnyardgrass (*Echinochloa crus-galli*), soft rush, and Pennsylvania smartweed (*Polygonum pensylvanicum*). Wetland 7 (0.05 acres) is also an emergent wetland and is located near the entrance of Area B. This wetland is dominated by soft rush, path rush (*Juncus tenuis*), Pennsylvania smartweed, and rough cocklebur (*Xanthium strumarium*). Wetland 8 (0.02 acre) was delineated as a disturbed, drainage ditch and lacked hydrophytic vegetation. Wetland 9 (0.18 acre) is located just north of Wetland 6 and is an emergent wetland. This wetland is dominated by bog beggarticks (*Bidens conjuncta*), barnyardgrass, blunt spikerush (*Eleocharis obtuse*), and slender goldentop (*Euthamia caroliniana*) (USAG, 2011).

Figure 4-12: Waters of the U.S. – Area B



4.5.5 Water Quality Certification

CWA water quality certifications provide the opportunity to address aquatic resource impacts of federally issued permits and licenses, in order to help protect water quality within the state. Under Section 401, a Federal agency cannot issue a permit or license for an activity that may result in a discharge to Waters of the U.S. until they state where the discharge would originate or the Federal agency has granted or waived Section 401 certification. The state has the ability to grant, with or without conditions; deny; or waive certification. Granting certification, with or without conditions, allows the Federal permit or license to be issued consistent with any conditions of the certification. Denying certification prohibits the Federal permit or license from being issued. Waiver allows the permit or license to be issued without state comment. States make their decisions to deny, certify, or condition permits or licenses based in part on the proposed project's compliance with USEPA-approved water quality standards.

4.6 Biological Resources

Biological resources include native or naturalized plants and animals, as well as federally protected species and the habitats in which they live. Protected biological resources include plants and animal species listed by the State of Maryland as rare, threatened, or endangered, or by the USFWS as threatened or endangered. Special concern species are not afforded the same level of protection as the protected species, but their presence is taken into consideration by resource agency biologists involved in reviewing projects and permit applications (USACE, 2014).

4.6.1 Vegetation

Fort Detrick was originally covered by an oak-hickory hardwood forest, characterized by species such as northern red oak (*Quercus rubra*), black oak (*Q. velutina*), white oak (*Q. alba*), scarlet oak (*Q. coccinea*), chestnut oak (*Q. montana*), and several species of hickories (*Carya* spp). Species such as sassafras (*Sassafras albidum*), sourwood (*Oxydendrum arboreum*), wild grape (*Vitis* spp), Virginia creeper (*Parthenocissus quinquefolia*), and poison ivy (*Toxicodendron radicans*) comprise the understory of oak-hickory forests. As a result of urbanization at Fort Detrick, most of the native vegetation has been destroyed or highly altered. Approximately 500 acres are maintained as forested areas and grasses (USAG, 2011).

4.6.1.1 Area A

The PLS, completed in July and August 2010, delineated the installation into multiple habitats and vegetation and wildlife species were identified in each habitat. There are seven plant communities generally present within Area A, including: forested upland, mowed, maintained lawns, old field, vegetative basin, emergent wetland, forested wetland, and open water. Forested upland areas are located in the central, northern, and eastern portions of Area A and are characterized by tree species such as box elder (*Acer negundo*), black locust (*Robinia pseudoacacia*), and slippery elm (*Ulmus*

rubra), and ground layer species, such as garlic mustard (*Alliaria petiolate*), nodding thistle (*Carduus mutans*), Queen Anne's lace, bush honeysuckle (*Lonicera japonica*), mile-a-minute (*P. perfoliatum*), lady's thumb (*P. persicaria*), multiflora rose (*Rosa multiflora*), and poison ivy. Maintained mowed areas are located throughout Area A and are characterized by cover types such as chicory (*Chicorium intybus*), thistle species (*Cirsium* spp.), crabgrass (*Digitaria sanguinalis*), grass species (*Festuca* spp.), field peppergrass (*Lepidium campestre*), common plantain (*Plantago major*), common dandelion (*Taraxacum officinale*), and clover species (*Trifolium* spp.). Old field habitat is located in the northern and northeastern portions of Area A and comprised primarily of grasses, including horseweed (*Erigeron Canadensis*), sheep fescue (*Festuca ovina*), wild timothy (*Muhlenbergia glomerate*), redtop panicgrass (*Panicum agrostoides*), switchgrass (*P. virgatum*), and common timothy (*Phleum pretense*), as well as scattered tree and shrub species including tree-of-heaven (*Ailanthus altissima*), autumn olive (*Elaegnus umbellate*), red mulberry (*Morus rubra*), and weeping willow (*S. babylonica*) (USAG, 2011).

Three stormwater ponds, that no longer hold water year round, were delineated as vegetative basins and include common ground layer species such as Queen Anne's lace, grass species, pokeweed (*Phytolacca americana*), plantain species, foxtail grass (*Seteria faberi*), horsenettle (*Solanum carolinense*), and red clover (*T. pretense*). There are five wetlands delineated within the Area A Study Area that total approximately 3.58 acres. Vegetation within these areas are discussed under Section 4.8.4 above. Common species to the stormwater ponds include chicory, field bindweed, thistle species, grass species, plantain species, Pennsylvania smartweed, and clover species (USAG, 2011).

4.6.1.2 Area B

There are five plant communities generally present within Area B, including: forested upland, mowed, maintained lawns, old field, emergent wetland, and open water. Forested upland areas are located in the western, eastern, and northern portions of Area B and are characterized by tree species such as silver maple (*A. saccharinum*) and black cherry (*Prunus serotina*), and ground layer species, such as garlic mustard, common burdock (*Arctium minus*), spicebush (*Lindera benzoin*), pokeweed, Pennsylvania smartweed, multiflora rose, and poison ivy. Maintained mowed areas are located throughout Area B and are characterized by cover types such as common yarrow (*Achillea millefolium*), chicory, thistle species, Deptford pink (*Dianthus armeria*), pokeweed, plantain species, curly dock (*Rumex crispus*), clover species, and common mullein (*Verbascum Thapsus*). Old field habitat is the largest cover type in Area B and is comprised primarily of herbaceous species, including common ragweed (*Ambrosia artemisiifolia*), chicory, Canada thistle, Deptford pink, white snakeroot (*Eupatorium rugosum*), and common mullein (USAG, 2011).

There are three wetlands and one drainage ditch delineated within Area B that total approximately 4.88 acres. Vegetation within these areas are discussed under Section 4.8.4 above. There are two

small ponds located in the southeastern portion of Area B. Common species to these ponds include Indian hemp (*Apocynum cannabinum*), small white aster (*Aster vimineus*), nodding thistle, nut sedge (*Cyperus esculentus*), white snakeroot, common yellow oxalis (*Oxalis stricta*), pokeweed, and goldenrod species (*Solidago* spp.) (USAG, 2011).

4.6.2 Wildlife Resources

Wildlife species observed within Areas A, B, and C during the PLS and by Dr. Lynn Hoch on site are representative and typical for communities in this area. Mammal species observed include white-tailed deer (*Odocoileus virginianus*), white-footed mouse (*Peromyscus leucopus*), racoon (*Procyon lotor*), red tail fox (*Vulpes vulpes*), skunk (*Mephitis mephitis*), muskrats (*Ondatra zibethicus*), groundhogs (*Marmota monax*), eastern grey squirrel (*Sciurus carolinensis*), coyote (*Canis latrans*), small brown bat (*Myotis lucifugus*; only observed in Area A), and black bear (*Ursus americanus*; only sighted in Area B). Bird species observed within the study areas include northern cardinal (*Cardinalis cardinalis*), American goldfinch (*Carduelis tristis*), gray catbird (*Dumetella carolinensis*), American robin (*Turdus migratorius*), eastern tufted titmouse (*Baeolophus bicolor*), red-shouldered hawk (*Buteo lineatus*), mourning dove (*Zenaida macroura*), bluebird (*Sialia sialis*), geese (*Branta canadensis)*, pigeon (*Columba livia domestica*), and starlings (*Sturnus vulgaris)*. Insect species observed include field cricket (*Cryllus pennsylvanicus*), cicada (*Magicicada septendecim*), dragonfly species (Odonata: Anisoptera spp), common buckeye (*Junonia coenia*), Monarch butterfly *(Danaus plexippus)*, and cabbage white butterfly (*Pieris rapae*). Amphibian and reptile species observed include eastern box turtle (*Terrapene carolina carolina*), snapping turtle (*Chelydra serpentine*), red-eared slider (*Trachemys scripta elegans*), leopard frog (*Lithobates sp*), black snake (*Pantherophis obsoletus*), garter snake (*Thamnophis sp*), and common frog (*Rana temporar*) (USAG, 2011; Hoch, 2020). A full list of vegetation and wildlife species observed during the 2010 survey within Areas A, and B are included in the PLS.

The Monocacy River is a warm water fishery, Use IV-P (COMAR 26.08.02), and water quality must be maintained to support viable populations of warm water aquatic invertebrates and fish. The Monocacy River 1976-1983 report conducted by the MDNR identified at least 43 fish species present in the river. Smallmouth bass (*Micropterus dolomieu*), black crappie (*Pomoxis nigromaculatus*), redbreast sunfish (*Lepomis auritus*), bluegill (*L. macrochirus*), catfish (*Ictalurus punctatus*), eels, shorthead redhorse (*Moxostoma macrolepidotum*), white sucker (*Catostomus commersonii*), and various shiners and minnows are the most common species of fish found within the middle segment of the Monocacy River (near Carroll Creek), with small populations of white crappie (*P. annularis*) and brown trout (*Salmo trutta*) (Advanced Sciences, Inc., 1991).

4.6.3 Rare, Threatened, and Endangered Species

Protected biological resources include plant and animal species listed by the State of Maryland as rare, threatened, or endangered or by the USFWS as threatened or endangered. Special concern

species are not afforded the same level of protection, but their presence is taken into consideration by resource agency biologists involved in reviewing projects and permit applications.

Under the Endangered Species Act (ESA), an "endangered species" is defined as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future. The ESA also provides for recovery plans to be developed describing the steps needed to restore a species population. Special status species are listed as threatened or endangered, are proposed for listing, or are candidates for listing by the state and/or federal government.

Critical habitats, as defined by the ESA, are areas with physical or biological features essential to the preservation of a species that may require special management or protection. Federal agencies are required to take precautions to not adversely modify critical habitat. The following considerations are made when determining critical habitat for a species: space for individual and population growth and normal behavior; cover or shelter; food, water, air, light, minerals, or other nutritional or physiological requirements; sites for breeding and rearing offspring; and habitats that are protected from disturbances or are representative of the historic geographical and ecological distributions of a species (USACE, 2014).

Per the Official Species List obtained from the USFWS Information for Planning and Conservation website on 13 November 2020, there is one threatened wildlife species in Frederick County: northern long-eared bat (*Myotis septentrionalis*), which is listed as federally and state threatened, within Areas A, and B. Projects with a federal nexus that have tree clearing equal to or greater than 15 acres require further consideration and consultation with the USFWS under Section 7 of the ESA and evaluation under the Northern Long-Eared Bat Consultation and Section 4(d) Rule Consistency Key. For the purposes of this document, it is assumed that less than 15 acres of trees would be cleared as a result of the Proposed Action and, therefore, northern long-eared bat has not been evaluated under the Section 4(d) Rule for potential impacts from the Proposed Action. MDNR did not provide comments in the official recommendation letter provided by the State of Maryland dated 2 March 2021.

4.7 Energy and Utilities

4.7.1 Energy

Until 2008, steam generation at Fort Detrick was produced exclusively by the Boiler Plant (Building 190) and at Building 393 as heat recovered from the two solid waste combustors and two medical waste incinerators. However, since that time, additional steam generation sources have come online. The NCI-Frederick has constructed two natural gas fired steam generation facilities, which meet their entire steam requirement. A CUP is located on Fort Detrick Area A. The CUP simultaneously produces electrical power, heating, and cooling in a unified facility under

the U.S. Army's Enhanced Use Leasing (EUL) program, which allows for military installations to out lease land and facilities to a private or public entity. (USAG, 2005b). The CUP (aka Energy Production Facility (EPF) is a contractor owned/contractor operated plant that provides secure commodities for electricity, steam, and chilled water for the NIBC. Construction underway to provide utility support to Global Communications and Medical Intelligence units (Signal Campus). Ft. Detrick is connecting missions to support Global Communications and Intelligence. In 2018, a micro boiler decentralization project was completed to install natural gas fired micro boilers throughout the campus which eliminated the need for the vastly energy inefficient and polluting centralized Building 190 boiler plant. The Building 190 plant was permanently closed August 25, 2018 and demolished in 2020.

Solar panels are located on the roofs of the privatized homes located on Fort Detrick Area A, and Fort Detrick Area B also includes several solar arrays located in the western, southern, and north-central portions. On Area B, the U.S. Army Office of Energy Initiatives (OEI), Fort Detrick, and the Defense Logistics Agency (DLA) Energy collaborated with Montevue Lane Solar LLC to develop a 15 megawatt (MW) alternating current (AC) solar energy project on Area B (U.S. Army OEI, 2019). In February 2016, the project became fully operational, bringing on-site generation with a potential future microgrid and supply diversity to the installation (U.S. Army OEI, 2019). All energy supplied by the 59,994 solar panels is consumed by Fort Detrick, and the project generates enough electricity to power the equivalent of about 2,720 homes per year and reduces greenhouse gas emissions by approximately 19,000 metric tons annually (Ameresco, 2016). The solar facility is designed to serve about 12 percent of the installations total annual electric load requirements, improving the installation's resilience by adding distributed generation sources and supply diversification (U.S. Army OEI, 2019). The solar project was financed and is owned, operated, and maintained by Ameresco, and includes a 25-year Power Purchase Agreement (PPA) and a 26-year lease with the Army (U.S. Army OEI, 2019). Potomac Edison supplies the majority of electricity to Fort Detrick.

Natural gas is furnished by the Washington Gas and natural gas usage at Fort Detrick is primarily by distributed boilers and heaters, and the CUP and the NIBC Mission Partner facilities (USAG, 2010a).

4.7.2 Stormwater

Stormwater is defined as rainwater that flows overland; accumulates in gutters, ditches, and culverts; and travels through storm drains to streams.

Provisions of COMAR 26.17.02.01 require that all jurisdictions in Maryland implement a stormwater management program to control the quality and quantity of stormwater runoff resulting from new development (MDE, 2010). The primary goals of the state and local stormwater management programs are to maintain after development, as nearly as possible, the predevelopment runoff characteristics, and to reduce stream channel erosion, pollution, siltation

and sedimentation, and local flooding by implementing environmental site design to the maximum extent practicable and using appropriate structural best management practices only when necessary.

COMAR Title 26.17.02.05 (when stormwater management is required) exempts any developments that do not disturb more than 5,000 square feet of land area or 100 cubic yards of earth. Conversely, developments disturbing more than 5,000 square feet of land or 100 cubic yards of earth require stormwater management. The Stormwater Management Plan requirements are outlined in COMAR 26.17.02.09.

Fort Detrick's Stormwater Institutional Management Plan (SIMP) provides a comprehensive drainage area-wide plan and practices for future development, including a water quality banking system, and innovative site planning and design using low impact development (LID) approaches. As part of the SIMP, any future stormwater retention ponds should be designed to minimize retention time to avoid attracting resident waterfowl (USAG, 2011).

4.7.2.1 Area A

In general, stormwater from the central and western portions of Area A drains west into Carroll Creek, whereas stormwater from the eastern portions of Area A drains into Tributaries #9 and #10 (USAG, 2011). There is a total of eight separate surface water outfalls in Area A. The majority of stormwater in Area A is diverted through a system of surface ditches, culverts, inlets, and storm sewer lines. There are 27 stormwater management ponds on Area A and only 9 of these hold stormwater year-round, with the remaining ponds holding water only during rain events.

4.7.2.2 Area B

There are two outfalls (B-1 and B-2) in Area B that discharge stormwater to Carroll Creek. Fort Detrick has four separate general permits for stormwater discharge (USAG, 2011).

4.7.3 Water Treatment and Wastewater

Fort Detrick is permitted to withdraw water from local resources in accordance with permits regulated by MDE. Drinking water consumed by Fort Detrick customers is a combination of Fort Detrick and Frederick County sources. Source water provided by Fort Detrick comes from the Monocacy River and through the Fort Detrick Water Treatment Plant (WTP) (Public Water System ID MD010-0011) (Fort Detrick, 2019). Most Frederick County residents obtain their water from publicly owned Community Water Systems (CWS). A large Federal CWS serves Fort Detrick (Frederick County, 2014). Fort Detrick has an existing long-term agreement with Frederick County to purchase drinking water for use at the installation, and beginning on September 20, 2012, Fort Detrick began obtaining supplemental drinking water from Frederick County sources (USAG, 2018). Fort Detrick ceased obtaining any drinking water from Frederick County on January 1,

2021 and currently relies on the Fort Detrick WTP for all potable water consumed on the installation.

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 and ultraviolet (UV) treatment for disinfection, activated carbon for taste and odor control, zinc orthophosphate 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. 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 (USAG, 2010a).

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 where the water is chlorinated and zinc orthophosphate is added corrosion control. 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 (USAG, 2010a).

Disinfected water is pumped into the water distribution system. Treated water is used for human consumption, process water, irrigation, and fire protection (USAG, 2010a). 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 (USAG, 2010a).

4.7.4 Other Utilities

There are many easements at Fort Detrick, some directly serving Fort Detrick and others are for private utility providers (USACE, 2019a). Easements also extend off Fort Detrick property between Areas A and B, in proximity to Montevue Lane.

Several existing on-site subsurface utilities are located on Area A, including sanitary sewer, electric, storm sewer, potable water, natural gas, and data fiber.

Subsurface utility coverage is concentrated in the eastern quadrant of Area B to serve the consolidation of existing facilities. The utilities available within Area B include water, wastewater, gas, electric, communication and stormwater lines, and the water and gas lines extend to the center of Area B (USACE, 2019a). The portion of Area B occupied by the current active landfill includes wastewater line mains and a water line main located in proximity (USACE, 2019a). Provisions for redundant utilities and infrastructure systems in Area B is addressed in the Areas B and C ADP.

4.8 Cultural Resources

Cultural resources are "historic properties" as defined by the National Historic Preservation Act of 1966 (NHPA), "cultural items" as defined by the Native American Graves Protection and Repatriation Act of 1979 (NAGPRA), "archaeological resources" as defined by the Archaeological Resource Protection Act of 1979 (ARPA), "sacred sites" as defined by EO 13007, to which access is afforded under the American Indian Religious Freedom Act of 1987 (AIRFA), and collections and associated records as defined in 36 CFR 79 (USAG, 2019).

Archeological resources consist of locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains. Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic significance. Traditional cultural properties include locations of historic occupations and events, historic and contemporary sacred and ceremonial areas, prominent topographical areas that have cultural significance, traditional hunting and gathering areas, and other resources that Native Americans or other groups consider essential for the persistence of their traditional culture (USAG, 2019).

Several federal laws and regulations, including NHPA, ARPA, NAHPRA, and AIRFA, have been established to manage cultural resources. In order for a cultural resource to be considered significant, it must meet one or more of the following criteria for inclusion on the National Register of Historic Places (NRHP):

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and associated and: 1) that are associated with events that have made a significant contribution to the broad patterns of our history; or 2) that are associated with the lives or persons significant in our past: or 3) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or 4) that have yielded, or may be likely to yield, information important to prehistory or history (USAG, 2019).

Cultural resources are finite, non-renewable, and often fragile, and are frequently threatened by development activities. In accordance with AR 200-1, *Cultural Resources Management*, Fort Detrick maintains an Integrated Cultural Resources Management Plan (ICRMP) that serves as a guide for compliance with the NHPA, and other applicable Federal laws and regulations (USAG, 2019). This document identifies several historic properties that are known to exist within the study areas.

Fort Detrick requested information from the Maryland Historical Trust (MHT) in a letter dated January 21, 2021 (see Appendix A), which initiated consultation with the Maryland State Historic

Preservation Office (SHPO) pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966. In a response letter from SHPO dated February 19, 2021 (see Appendix A), the SHPO stated that although Fort Detrick is significant as a biological weapons research facility during World War II and the Cold War, no intact historic district was identified with the completion of the most recent ICRMP, but individual resources were determined eligible for the NRHP.

4.8.1 Archaeological Resources

Fort Detrick is located within the Monocacy River Drainage Basin of the Piedmont Physiographic Province, which is part of Maryland Archaeological Unit 17. According to the Fort Detrick ICRMP dated May 2012, previous archaeological surveys have recorded several prehistoric and historic artifacts and have identified eight sites. One NHRP-eligible archaeological site has been identified in Area A. The Nallin Farm site (18FR684) is associated with the NHRP-listed Nallin Farm in Area A (Goodwin and Associates, 2012).

A Phase II Archeological Evaluation of the Site 18FR74 (Worman East) 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. This location may represent an isolated activity area downstream from the main portion of Site 18FR74 (USAG, 2010).

4.8.2 Architectural Resources

In their response letter, MHT stated that five of the Installation's resources determined eligible for the NRHP in the ICRMP are found in the Maryland Inventory of Historic Places (MIHP): the Boiler Plant (Building 190, F-3-161-2), the Green House (Buildings 1303-04, F-3-229), and the Laboratory, Incinerator, and Administration Buildings (Buildings 1412, 1414, & 1415, F-3-161-1).

Also located within the boundaries of Fort Detrick Area A, according to the MHT response letter, are three additional historic properties:

- Building 470, the Pilot Plant/National Cancer Institute (F-3-199) – not including in the ICRMP and determined eligible for the NRHP by MHT in 2002;
- One-Million-Liter Test Sphere (Buildings 567 and 561) (F-3-46) – listed on the National Register of Historic Places
    - The One-Million-Liter Test Sphere (Building 527) is located in the southwest corner of Fort Detrick Area A and is listed on the NHRP due to its national significance in the scientific development of aerobiology and for its unique

structural engineering. It consists of a 40-foot-diameter, gas-tight, steel sphere that was used for aerobiological studies of pathogenic agents from 1950 to 1970 (USAG, 2019).

- Nalin Farm (F-3-43, Farmhouse and F-3-44, Springhouse and Bank Barn) – listed on the NRHP.
    - The Nalin Farmhouse (Building 1692) and its associated Bank Barn (Building 1655) and Springhouse (Building 1661), are listed on the NRHP for their local significance in 19th Century architecture and agriculture (USAG, 2019). The Nalin Farmhouse was constructed around 1830 during the Agricultural-Industrial Transition Period (1815-1870) and possesses characteristics of both a typical regional farmhouse and Federal-period architecture. The Nalin Spring house and Bank Barn are representative of a construction period that dates to be 1798 (USAG, 2019). According to the MHT website, the Nalin Farm is historically significant for its association with typical agricultural practices in Frederick County from c. 1795-1943, when it was acquired by the federal government. The property illustrates the local pattern of German-influenced, diversified agriculture that typified the prosperous farming community (MHT, 2020). According to the MHT website, the precise age of these structures is not known, but both are typical of such rural outbuildings of the early 1800s and are architecturally in keeping with the Nalin Farmhouse. The bank barn and the springhouse embody the distinctive methods of stone construction and heavy timber framing of the late 18th century (MHT, 2020a).

4.9 Transportation and Traffic

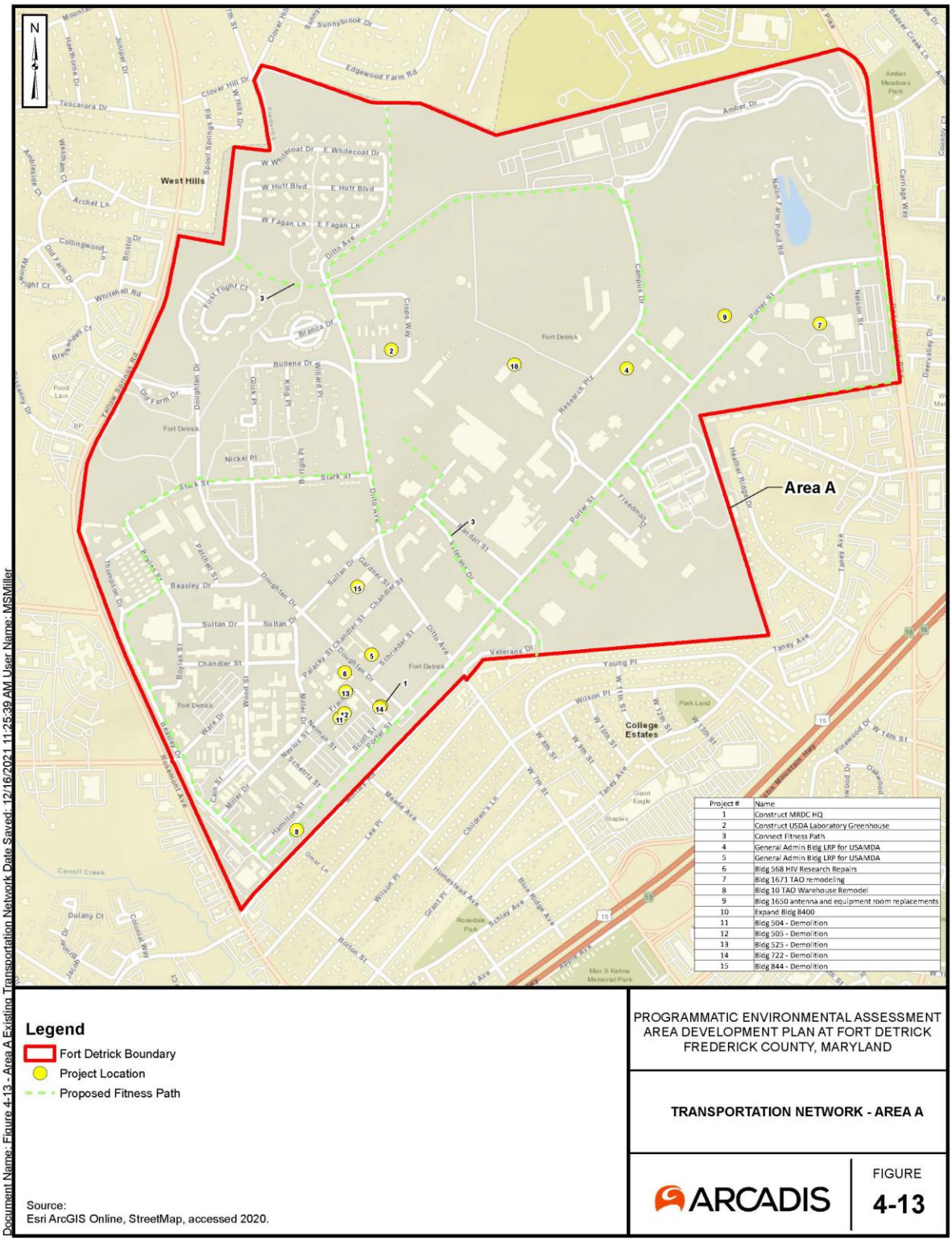
Area A of Fort Detrick is bordered by Opposumtown Pike to the east and Rosemont Avenue/Yellow Springs Road to the west, with residential areas abutting the installation to the north and south as shown in **Figure 4-13** below. There are currently three access control points (ACPs) located on the installation property: the intersection of Yellow Springs Road and Doughten Drive to the west (Old Farm Gate); the intersection of Opposumtown Pike and Amber Drive to the east (Nallin Farm Entrance); and the intersection of Military Road, West 7th Street, and Veterans Drive to the south (7th Street Entrance) (USAG, 2019).

Within Area A of Fort Detrick, there are several main roads that travel throughout the property and connect to smaller side streets. From Opposumtown Pike, Porter Street travels west before curving north into Beasley Drive, providing a connection between the east and west areas of the installation. Ditto Avenue and Doughten Drive provide north-south routes between the southwest quadrant and northwest, residential quadrant (USAG, 2019).

Based on a review of aerial imagery of Area A of Fort Detrick, on and off-street parking is available throughout the installation. The largest amount of parking is concentrated in the southwest

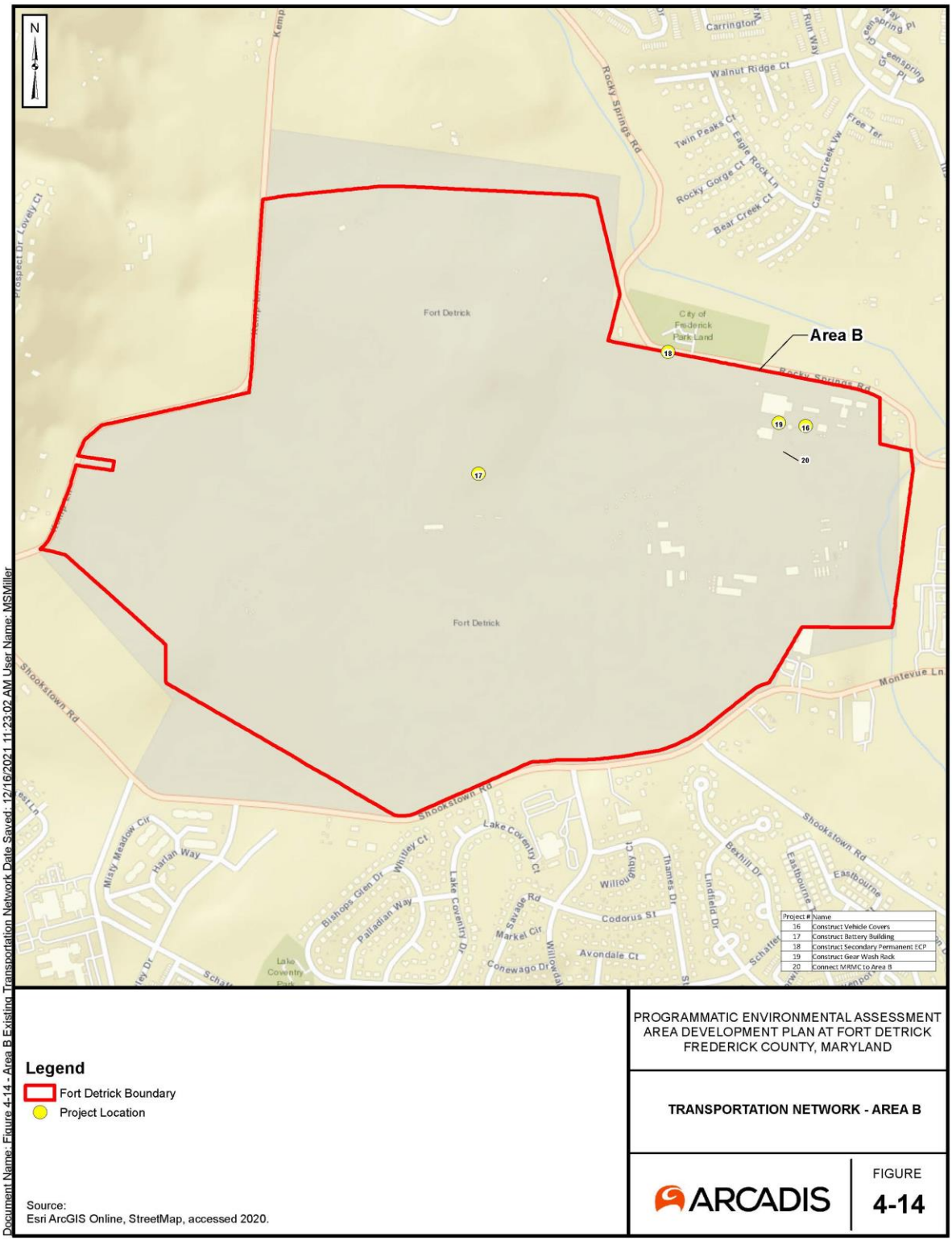
quadrant of the installation, where there are several off-street, surface lots and on-street parking spaces servicing the buildings in this area (USAG, 2019).

Figure 4-13: Transportation Network – Area A



Area B of Fort Detrick is bounded to the west by Kemp Lane, to the south by Shookstown Road, to the east by Carroll Creek, and to the north by a large residential property (**Figure 4-14**). ACPs for Area B are located off Montevue Lane, and Rocky Springs Road. There are few roadways internal to Fort Detrick Area B, and in general roadways and parking areas are congregated in the eastern quadrant of Area B, located in proximity to the existing buildings.

Figure 4-14: Transportation Network – Area B



5 ENVIRONMENTAL CONSEQUENCES, CUMULATIVE EFFECTS, AND ANTICIPATED REQUIRED FUTURE NEPA ANALYSIS

The following section describes the anticipated environmental impacts associated with implementing the Proposed Action and the No Action Alternative. The No Action alternative acts as a baseline condition, assuming the Proposed Action and implementation of all projects in Areas A and B of Fort Detrick from the Area A ADP and Areas B and C ADP would not take place.

This EA evaluates the potential for impacts or effects resulting from the location(s) of the proposed projects and potential for environmental consequences based on the known location(s) of existing resources. BMPs and mitigation measures would be utilized for all projects to reduce the potential for impacts to the environment. However, many details are not available to fully analyze the effects of each project, but the projects are included for real property planning and capacity for future development. Fort Detrick would conduct additional NEPA analyses (either a Record of Environmental Condition [REC], EA, or Environmental Impact Statement [EIS]) when project details become available. These analyses may be tiered from this EA in accordance with 40 CFR Part 1502.20 and 32 CFR Part 651.14(c).

This section is organized in tabular format by resource area following the same sequence as in the preceding Section 4.0.

Cumulative effects may result from the presence of multiple projects in the same location (or in close proximity). Tables 5-1 and 5-3 indicate whether there is a potential for cumulative effects to a resource category based on the co-location of projects. The timing of project implementation has not been taken into account for purposes of this PEA. The potential for impacts to following resource categories were not evaluated due to the inability to determine impacts to those resources based solely on location of the project(s):

1. Air Quality and Greenhouse Gases
2. Visual Aesthetics
3. Socioeconomics, Environmental Justice, and Protection of Children

The potential for future required NEPA analysis for each project is indicated in **Tables 5-2 and 5-4** below. It is expected that certain projects would require a Record of Environmental Consideration prior to implementation based on the findings of this PEA. All other projects requiring earthwork, expansion, relocation, and/or new construction are expected to require the preparation of a site-specific EA or EIS in accordance with NEPA prior to implementation. However, information regarding the size, complexity, and nature of the individual projects would be used in the determination of the required future NEPA analysis for each project. Project descriptions are not provided or analyzed in this PEA document, and therefore, the determination

of likely required future NEPA analysis for each project as indicated in the tables below is based on the project name with a cursory assumption as to what the project name implies for the nature of the project itself. When a cursory assumption regarding the likely nature of the project could not be made based on the project name, the future NEPA analysis is indicated as "Unknown".

5.1 Area A Summary of Environmental Consequences

Table 5-1: Area A Summary of Environmental Consequences

Resource Category	Projects[1] Affecting Resource Category	Projects with Potential for Cumulative Effects to Resource Category Due to Co-Location	Potential Compliance Implications
Land Use	• Proposed Fitness Path	• N/A	1. Office of Environmental Management requirements for work within restricted area 2. City of Frederick Zoning requirements
Hazardous and Toxic Materials and Solid Wastes	• 6	• 6	1. Discovery of previous contamination must be added to IRP and subject to CERCLA process
Noise	All construction and demolition projects	• 1 & 14 • 7 • 6 • 5	1. Adherence to OSHA standards for occupational noise exposure associated with construction 2. Adherence to regulatory limit for construction activities (90 dBA at site

[1] Indicated by number corresponding to ID numbers located on figures throughout Section 4 of this document

Resource Category	Projects[1] Affecting Resource Category	Projects with Potential for Cumulative Effects to Resource Category Due to Co-Location	Potential Compliance Implications
			boundaries); COMAR 26.02.03.03 A(2)(a); City of Frederick Ordinance Section 15-21
Geology, Soils and Topography[2]	• 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 10 • 11 • 12 • 13 • 14 • 15	• 1 & 14 • 7 • 6 • 5	1. If disturbance of soils of 5,000 sq ft or more is required, MDE-approved erosion and sediment control plan must be prepared pursuant to COMAR 26.17.01 2. NPDES permit (General Permit for Construction Activities)
Water Resources (Surface & Groundwater	• 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9	• 1 & 14 • 7 • 6 • 5	1. MDE stormwater management permit (COMAR26.17.02) 2. Section 404 of the CWA

[2] It is assumed projects relocating, consolidating, converting, or with interior-only activities do not include earthwork.

Resource Category	Projects[1] Affecting Resource Category	Projects with Potential for Cumulative Effects to Resource Category Due to Co-Location	Potential Compliance Implications
	• 10 • 11 • 12 • 13 • 14 • 15		
Floodplains	• Proposed Fitness Path	• N/A	1. EO 11988, *Floodplain Management*
Wetlands	• Proposed Fitness Path	• N/A	1. EO 11990, *Protection of Wetlands* 2. Section 404 of the CWA 3. Maryland's Nontidal Wetlands Protection Act and Program
Water Quality Certification	• Proposed Fitness Path	• N/A	1. Section 401 of the CWA
Biological Resources	• N/A	• N/A	1. The Forest Conservation Act requires that areas disturbing 40,000 sf or greater must prepare a Forest Conservation Plan requiring the replacement of trees.

Resource Category	Projects[1] Affecting Resource Category	Projects with Potential for Cumulative Effects to Resource Category Due to Co-Location	Potential Compliance Implications
			2. Fort Detrick policy requires that all trees removed must be replaced at a 2 for 1 ratio.
Energy and Utilities	All construction and demolition projects	• 1 & 14 • 7 • 6 • 5	1. MDE erosion and sediment control permit (COMAR 26.17.01) 2. MDE stormwater management permit (COMAR26.17.02) 3. NPDES permit (General Permit for Construction Activities) 4. Mark-out of all existing utilities
Cultural Resources	• 2 • 6	• N/A	1. Section 106 NHPA
Transportation and Traffic	• N/A	• N/A	1. City of Frederick Code of Ordinances Chapter 13 – Motor Vehicles and Traffic

5.2 Area B Summary of Environmental Consequences

Table 5-3: Area B Summary of Environmental Consequences

Resource Category	Projects[3] Affecting Resource Category	Projects with Potential for Cumulative Effects to Resource Category Due to Co-Location	Potential Compliance Implications
Land Use	• 17	• N/A	1. Office of Environmental Management requirements for work within restricted area 2. Fort Detrick Department of Public Works approval 3. Fort Detrick Real Property Planning Board approval 4. City of Frederick Zoning requirements
Hazardous and Toxic Materials and Solid Wastes	• 16 • 17 • 18 • 19 • 20	• N/A	1. Discovery of previous contamination must be added to IRP and subject to CERCLA process
Noise	All construction and demolition projects	• N/A	1. Adherence to OSHA standards for occupational noise exposure associated with construction 2. Adherence to regulatory limit for construction activities (90 dBA at site boundaries); COMAR 26.02.03.03 A(2)(a);

[3] Indicated by number corresponding to ID numbers located on figures throughout Section 4 of this document

Resource Category	Projects[3] Affecting Resource Category	Projects with Potential for Cumulative Effects to Resource Category Due to Co-Location	Potential Compliance Implications
			City of Frederick Ordinance Section 15-21
Geology, Soils and Topography	All projects	• N/A	1. If disturbance of soils of 5,000 sq ft or more is required, MDE-approved erosion and sediment control plan must be prepared pursuant to COMAR 26.17.01 2. NPDES permit (General Permit for Construction Activities)
Water Resources (Surface & Groundwater	All projects	• N/A	1. MDE stormwater management permit (COMAR26.17.02) 2. Section 404 of the CWA
Floodplains	• 17	• N/A	1. EO 11988, *Floodplain Management*
Wetlands	• N/A	• N/A	1. EO 11990, *Protection of Wetlands* 2. Section 404 of the CWA 3. Maryland's Nontidal Wetlands Protection Act and Program
Water Quality Certification	• N/A	• N/A	1. Section 401 of the CWA
Biological Resources	• N/A	• N/A	1. MDE erosion and sediment control permit (COMAR 26.17.01)

Resource Category	Projects[3] Affecting Resource Category	Projects with Potential for Cumulative Effects to Resource Category Due to Co-Location	Potential Compliance Implications
			2. MDE stormwater management permit (COMAR26.17.02) 3. NPDES permit (General Permit for Construction Activities)
Energy and Utilities	• All construction and demolition projects	• N/A	3. MDE erosion and sediment control permit (COMAR 26.17.01) 4. MDE stormwater management permit (COMAR26.17.02) 5. NPDES permit (General Permit for Construction Activities) 6. Mark-out of all existing utilities
Cultural Resources	• N/A	• N/A	1. Section 106 NHPA
Transportation and Traffic	• N/A	• N/A	1. City of Frederick Code of Ordinances Chapter 13 – Motor Vehicles and Traffic

6 CONCLUSION

This EA evaluates the direct and indirect impacts associated with the implementation and correlated development of the Area A ADP and Areas B and C ADP at Fort Detrick, in accordance with the NEPA. The purpose of the Proposed Action is to implement the ADP for Fort Detrick Areas A and B, with the intent of creating sustainable and manageable growth. The ADPs for Areas A and Areas B and C were developed in consultation with the Real Property Master Plan (RPMP). Both ADPs address the specific developmental needs at Fort Detrick to allow development to continue alongside a comprehensive plan addressing infrastructural updates as well as expansion needs. The Proposed Action projects are in-line with the mission and vision goals put in place by Fort Detrick as well as the overarching RPMP aimed at creating a sustainable growth at Army installations.

The PEA was prepared in accordance with the NEPA and implementing regulations issued by the CEQ and 32 CFR Part 651.

At Area A, the Proposed Action could result in impacts to land use, hazardous and toxic materials and solid wastes, noise, geology, soils and topography, water resources, floodplains, wetlands, Water Quality Certification, energy and utilities, and cultural resources, based on the location of proposed projects in proximity to known resources. However, it is anticipated that the use of BMPs and adherence to permit and compliance requirements could alleviate the potential for impacts of individual projects when planned, designed, and implemented.

At Area B, the Proposed Action could result in impacts to land use, hazardous and toxic materials and solid wastes, noise, geology, soils and topography, water resources, floodplains, and energy and utilities. However, it is anticipated that the use of BMPs and adherence to permit and compliance requirements could alleviate the potential for impacts of individual projects when planned, designed, and implemented.

Under the No Action Alternative, the growth of Fort Detrick to continue without a plan for future growth and management. The No Action Alternative would potentially result in short or long term moderate adverse impacts to all resource categories without the implementation of strategic updates to infrastructure or modifications to compliance requirements. The No Action Alternative does not adhere to state or federal regulations requiring the Installation to consider environmental consequences of its development. Antiquated infrastructure, including functionality equipment such as electrical systems, would not be updated and therefore fail to meet the goals of the ADPs set forth for Areas A and B/C. While the nature of the current existing operational functions at Fort Detrick are not evaluated in this PEA, it is expected that the No Action Alternative would allow for unsustainable growth at Fort Detrick creating hectic circumstances, leaving the infrastructure of Fort Detrick obsolete and unable to continue their mission in a functional and stream-lined manner.

Based on the evaluation of locational impacts to known existing resources as described in Chapter 5 and summarized in Tables 5-1 and 5-3 the Proposed Action would not result in a significant impact to the environment if all compliance and mitigation measures are met. However, many details are not available to fully analyze the effects of each project, but the projects are included for real property planning and capacity for future development. These analyses may be tiered from this EA in accordance with 40 CFR Part 1502.20 and 32 CFR Part 651.14(c). Therefore, an EIS will not be necessary for this Proposed Action. This conclusion is documented in the FNSI found at the beginning of this report.

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9 ACRONYMS AND ABBREVIATIONS

AC	alternating current
ADP	Area Development Plan
AOC	Area of Concern
AR	Army Regulation
ARPA	Archaeological Resources Protection Act
ASTs	above ground storage tanks
BMBL	Biosafety in Microbiological and Biomedical Laboratories
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
COCs	Constituents of Concern
COMAR	Code of Maryland Regulations
CUP	Central Utility Plant
CWA	Clean Water Act
CWS	Community Water Systems
DA	Department of the Army
dB	decibels
DERP	Defense Environmental Restoration Program
DLA	Defense Logistics Agency
DoD	Department of Defense
DOT	Department of Transportation
DUSWM	Division of Utilities and Solid Waste Management
EA	Environmental Assessment
EIS	Environmental Impact Statement
ENR	Enhanced Nutrient Removal

EO	Executive Order
EPA ID	EPA Identification
EPF	Energy Production Facility
ESA	Endangered Species Act
EUL	Enhanced Use Leasing
FEMA	Federal Emergency Management Agency
FNSI	Finding of No Significant Impact
HMIWI	Hospital/Medical/Infectious Waste Incinerators
HMMO	Hazardous Materials Management Operation
HMMP	Hazardous Materials Management Policy
IAP	Installation Action Plan
ICRMP	Integrated Cultural Resources Management Plan
IGSA	Intergovernmental Support Agreement
IRP	Installation Restoration Program
LID	low impact development
LUC	Land Use Controls
MDNR	Maryland Department of Natural Resources
mg/L	milligrams per liter
MEDCOM	U.S. Army Medical Command
MDE	Maryland Department of the Environment
MHT	Maryland Historic Trust
MSW	municipal solid waste
MW	megawatt
NCA	Noise Control Act
NCI	National Cancer Institute
NCI-Frederick	National Cancer Institute at Frederick
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966

NIBC	National Interagency Biodefense Campus
NOI	Notice of Intent
NPL	National Priorities List
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OEI	Office of Energy Initiatives
OSC	Operational Services Command
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PCE	perchloroethylene
PLS	Planning Level Survey
PPA	Power Purchase Agreement
ppb	parts per billion
ppm	parts per million
RA	Remedial Action
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
SARA	Superfund Amendments and Reauthorization Act
SIMP	Stormwater Institutional Management Plan
SVOCs	Semi-volatile Organic Compounds
SWMP	Solid Waste Management Plan
TCE	trichloroethylene
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage, and Disposal Facility
TBD	To Be Determined
USAG	US Army Garrison
USAMRIID	U.S. Army Medical Research Institute of Infectious Diseases
USDA	U.S. Department of Agriculture

USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USTs	underground storage tanks
VOC	volatile organic compound
WDA	Western Disposal Area
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

APPENDIX A

Agency Coordination