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1526.20071003.001

October 3, 2007

Capt Josh Biggers, PE
AFCEE PMO - Andrews
Room 239 - 1602 California Ave
Andrews AFB, Maryland 20762

**SUBJECT: Contract F41689F41624-03-D-8614 Task Order 0191**
**Transmittal of the Final Environmental Assessment (EA) for the FY07-11 BRAC Construction EA at Andrews AFB, Maryland**

Dear Capt. Biggers:

By copy of this letter, and per CDRL A001, I am sending one electronic copy (CD-ROM) of the Final EA for the FY07-11 BRAC Construction at Andrews AFB. In addition, per the referenced CDRL, I am sending twenty-seven hard copies and ten electronic copies (CD-ROM) of the EA to Michelle Quinn of the 316th. Two of the 27 hard copies are for the Air National Guard. Also, per the cc line listed below, I am sending Mr. Mark Fetzer of the Air Mobility Command, one hard copy and one electronic copy (CD-ROM) of same.

Through delivery of this signed FONSI and Final EA, we have met all the requirements of the subject Task Order and consider this contract complete. It has been our pleasure to have worked with all of the Air Force staff at Andrews, including the helpful staff of the 316th, AFCEE, AFDW, ANG, AMC, the 113th and other organizations that were involved with the EBS. We look forward to future opportunities with the Air Force at Andrews. Should you have any questions or require additional information, please do not hesitate to call me at (314) 770-3024.

Sincerely,
SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Tom V. Daues, CHMM
Project Manager

Enclosures

cc: Ms. Michelle Quinn, 316 CES/CEV – 27 hard copies, 10 CD-ROMs
Mr. Mark Fetzer, HQ AMC/A7PC – One hard copy and one CD-ROM
Mr. John Franz, 316 CES/CEV – e-mail only
Mr. Ken Medearis, AFCEE PMO Andrews – e-mail only
Mr. William Harper, AFCEE PMO Andrews – e-mail only
Col. Robert Bowie, 113th DCANG – e-mail only
Mr. Kevin Marek, ANG – e-mail only
Mr. John Gironda, AFDW – e-mail only
Col. Pete Tunison, ANG – e-mail only

# Report Documentation Page

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# FINDING OF NO SIGNIFICANT IMPACT (FONSI)

## ENVIRONMENTAL ASSESSMENT (EA) FOR FY07-11 BRAC CONSTRUCTION REQUIREMENTS AT ANDREWS AIR FORCE BASE, MARYLAND

### PURPOSE

As a result of the 2005 Base Realignment and Closure (BRAC) recommendations, the Department of the Air Force will realign installations such as Andrews Air Force Base (AFB) to produce a more efficient and cost effective base structure for achieving national military objectives. The U.S. Air Force, Air Force District Washington (AFDW), and Andrews AFB have prepared this environmental assessment (EA) for the BRAC construction requirements at Andrews AFB, Maryland in accordance with the National Environmental Policy Act (NEPA); the Council of Environmental Quality regulations implementing the NEPA; and Title 32, Code of Federal Regulations, Part 989, as amended, *The Environmental Impact Analysis Process*.

### PROPOSED ACTION

The Proposed Action would provide additional facilities and the necessary infrastructure at Andrews AFB to support the BRAC recommendations. The purpose for providing these facilities is to continue to accomplish the mission of Andrews AFB for contingency response to the National Capitol Region (NCR), to transport our nation's civilian and military leaders to locations around the globe... in peace, crisis and conflict... and to employ a wide range of current and emerging command, control and communications capabilities to keep them aware of current events and to allow them to make timely decisions that further United States interests. The Proposed Action consists of a compilation of proposed projects to include construction, demolition, and infrastructure upgrades for buildings, roads, utilities, parking lots, an aircraft parking apron and upgrades to the privately owned vehicle (POV) lane into the Pearl Harbor gate. The Proposed Action consists of a compilation of proposed projects to include the following:

- Repair Apron and Construct Parking Spaces for Nine F-16s
- Construct Personally Owned Vehicle Parking (POV) for the 113th Wing
- Disestablish the inpatient mission at the 79th Medical Group and convert the hospital to a clinic with an ambulatory surgery center.
- Construct Addition to Building 1900 for the 135th Aerial Port Squadron
- Construct Administrative Facility and Associated Parking Lot
- Construct Air National Guard Readiness Center Addition and Associated Parking Lot
- Construct POV Lane, Pearl Harbor Gate

### SUMMARY OF ANTICIPATED ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE PROPOSED ACTION

Short-term direct minor adverse effects resulting from construction and demolition activities would occur on the noise environment, air quality, safety, geological resources, water resources, biological resources, and hazardous materials and wastes. Adverse effects associated with

construction activities would be localized to the immediate area of construction and would subside following the end of construction in each area is affected. Short-term indirect minor beneficial effects on socioeconomics would also occur on the local community from construction costs; however, expenditures associated with construction are short-term and would have no long-lasting community benefits.

Long-term direct minor beneficial effects on safety and infrastructure would be expected from the construction of new facilities and demolition of existing facilities on the installation.

Short-term minor adverse and long-term minor beneficial effects would be expected as a result of the removal of asbestos-containing material and lead-based paint in older buildings. All removal and abatement procedures would be in accordance with federal, state, and local regulations. Short-term adverse effects on safety as a result of exposure to contaminated groundwater and/or soil could occur during construction activities in Environmental Restoration Program (ERP) sites. Construction within and disposal of contamination within ERP sites would be accomplished in accordance with federal, state, and local regulations. The Proposed Action would avoid construction in wetlands and areas where threatened and endangered species are known to occur. No direct or indirect effects on archaeological resources or traditional cultural properties would be expected because these areas would be avoided during all construction activities.

## PUBLIC REVIEW AND INTERAGENCY AND INTERGOVERNMENTAL COORDINATION PLANNING

The Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) process for the DOPAA was conducted from 26 March to 27 April 2007. The public and agency review of the Draft EA was conducted between 22 June 2007 and 31 July 2007. Copies of these documents were available for review at the Upper Marlboro Branch Library of the Prince George's County Memorial Library System at 14730 Main St. Upper Marlboro, MD 20772 and at the Andrews AFB Library at 1642 Brookly Avenue and D Street, Andrews AFB, MD 20762. the Andrews AFB point of contact for this project was Mr. Gary Felder, 316 CES/CEV, 3466 North Carolina Avenue.

## FINDING OF NO SIGNIFICANT IMPACT

I conclude that the environmental effects of the proposed installation development at Andrews AFB are not significant, that preparation of an Environmental Impact Statement is unnecessary, and that a FONSI is appropriate. The preparation of the EA is in accordance with NEPA, Council on Environmental Quality regulations, and 32 Code of Federal Regulations Part 989, as amended and is herein incorporated by reference.

ERIC A. SNADECKI, Colonel, USAF
Vice Commander, 316th Wing

18 SEP 2007
Date

# Final
# Environmental Assessment for FY07-11 BRAC Construction Requirements at Andrews Air Force Base, Maryland

Project No.: AMC133715

Prepared for:
US Air Force Center for
Engineering and the Environment

September 2007

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## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| 89 AW | 89th Airlift Wing |
| 113 WG | 113th Wing |
| 135 APS | 135th Aerial Port Squadron |
| 316 WG | 316th Wing |
| AFB | Air Force Base |
| AFCEE | Air Force Center for Environmental Excellence |
| AFDW | Air Force District Washington |
| AFFSA | Air Force Flight Standards Agency |
| AFI | Air Force Instruction |
| AFOSI | Air Force Office of Special Investigations |
| AGS | Air Guard Station |
| AICUZ | Air Installation Compatible Use Zone |
| ANG | Air National Guard |
| ANGRC | Air National Guard Readiness Center |
| AOC | Areas of Concern |
| APS | Aerial Port Squadron |
| APZ | accident potential zone |
| AQCR | Air Quality Control Region |
| AST | above ground storage tank |
| AT/FP | Anti-Terrorism/Force Protection |
| bgs | below ground surface |
| BMP | best management practice |
| BRAC | Base Realignment and Closure |
| BTEX | benzene, toluene, ethylbenzene, and xylene |
| CAA | Clean Air Act |
| CDP | Census Designated Place |
| CEQ | Council on Environmental Quality |
| CERCLA | Comprehensive Environmental Response Compensation Liability Act |
| CFR | Code of Federal Regulations |
| CO | carbon monoxide |
| COMAR | Code of Maryland Regulation |
| CWA | Clean Water Act |
| dB | decibel |
| dBA | A-weighted decibel |
| DBCRC | Defense Base Closure and Realignment Commission |
| DCANG | District of Columbia Air National Guard |
| DoD | Department of Defense |
| DOPAA | Description of Proposed Action and Alternatives |
| EA | environmental assessment |
| EBS | Environmental Baseline Survey |
| EIFS | Economic Impact Forecast System |
| EIS | environmental impact statement |
| EO | Executive Order |
| EPCRA | Emergency Planning and Community Right-to-Know Act |
| ERP | Environmental Restoration Program |
| ESA | Endangered Species Act |
| ESQD | explosive safety-quantity distance |
| FAA | Federal Aviation Administration |

## ACRONYMS AND ABBREVIATIONS (Continued)

| | |
|---|---|
| $ft^2$ | square feet |
| FY | fiscal year |
| HQ | Headquarters |
| HVAC | heating, ventilating and air conditioning |
| Hz | Hertz |
| ICRMP | Integrated Cultural Resources Management Plan |
| IICEP | Interagency and Intergovernmental Coordination for Environmental Planning |
| $L_{dn}$ | Day-Night Average Sound Level |
| $L_{eq}$ | Equivalent Noise Level |
| LQG | large quantity generator |
| $L_{max}$ | maximum sound level |
| MCF | modified commercial forestland |
| MCL | maximum contaminant level |
| MDANG | Maryland Air National Guard |
| MDE | Maryland Department of the Environment |
| MDNR | Maryland Department of Natural Resources |
| MDP | Maryland Department of Planning |
| MMRP | Military Munitions Response Program |
| MSL | mean sea level |
| NAAQS | National Ambient Air Quality Standards |
| NAF | Naval Air Facility |
| NCF | non-commercial forestland |
| NCPC | National Capital Planning Commission |
| NCR | National Capital Region |
| NEI | National Emissions Inventory |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| $NO_2$ | nitrogen dioxide |
| $NO_x$ | nitrogen oxides |
| NPDES | National Pollutant Discharge Elimination System |
| NPL | National Priorities List |
| NRHP | National Register of Historic Places |
| $O_3$ | ozone |
| PA/SI | Preliminary Assessment / Site Investigation |
| Pb | lead |
| PCI | Pavement Condition Index |
| $PM_{2.5}$ | fine particulate matter (>2.5 micrometers in diameter) |
| $PM_{10}$ | particulate matter less (>10 micrometers in diameter) |
| POL | petroleum, oil and lubricants |
| POV | privately owned vehicle |
| ppm | parts per million |
| PPE | Personal Protective Equipment |
| PSD | prevention of significant deterioration |
| RCF | restricted commercial forestland |
| RCRA | Resource Conservation and Recovery Act |
| ROI | region of influence |
| SARA | Superfund Amendments and Reauthorization Act |
| SATAF | Site Activation Task Force |

## ACRONYMS AND ABBREVIATIONS (Continued)

| | |
|---|---|
| SEL | Sound Exposure Level |
| SHPO | State Historic Preservation Office |
| SIP | State Implementation Plan |
| $SO_2$ | sulfur dioxide |
| SOx | sulfur oxides |
| SWPPP | Storm Water Pollution Prevention Plan |
| TCE | trichloroethene |
| TPH-DRO | total petroleum hydrocarbons-diesel range organics |
| TPY | tons per year |
| UFC | United Facilities Code |
| USACE | United States Army Corps of Engineers |
| USAF | United States Air Force |
| USC | United States Code |
| USDA | United States Department of Agriculture |
| USEPA | United States Environmental Protection Agency |
| USFWS | United States Fish and Wildlife Service |
| UST | underground storage tank |
| VOC | volatile organic compound |
| VSI | visual site inspection |
| WMA | Water Management Administration |
| WGL | Washington Gas Light |
| WSSC | Washington Suburban Sanitary Commission |
| $\mu g/m^3$ | microgram per cubic meter |

# 1.0 Purpose, Need and Scope

## 1.1 Purpose and Need

As a result of the 2005 Base Realignment and Closure (BRAC) recommendations, the Department of the Air Force will realign installations such as Andrews to produce a more efficient and cost effective base structure for achieving national military objectives. In September, 2005, the Defense Base Closure and Realignment Commission (DBCRC) submitted findings to the President for approval by Congress. The findings became law within 45 days of submittal to Congress.

The following BRAC recommendations involving Andrews Air Force Base (AFB) were included in the 2005 DBCRC Report:

1. Relocate the Air Force Flight Standards Agency (AFFSA) and their two C-21 aircraft to Will Rogers World Airport Air Guard Station (AGS), Oklahoma.
2. Distribute nine F-16 aircraft to the 113th Wing (113 WG) of the District of Columbia, Air National Guard (DCANG) at Andrews AFB.
3. Realign the 135th Aerial Port Squadron (135 APS) of the Maryland Air National Guard (MDANG) from Martin State AGS Baltimore, Maryland to Andrews AFB.
4. Disestablish the inpatient mission at the 79th Medical Group and convert the hospital to a clinic with an ambulatory surgery center.
5. Relocate the Air Force Office of Special Investigations (AFOSI) to Marine Corps Base Quantico, Virginia.
6. Co-locate miscellaneous Air Force and National Guard leased locations from the National Capital Region (NCR) to Andrews AFB.
7. Relocate the installation management functions from the Naval Air Facility Washington, Maryland to Andrews AFB establishing the Joint Base Andrews-Naval Air Facility Washington, Maryland.

The Proposed Action would provide additional facilities and the necessary infrastructure at Andrews AFB to support the BRAC recommendations. The purpose for providing these facilities is to continue to accomplish the mission of Andrews AFB for contingency response to National Capital Region (NCR) to transport our nation's civilian and military leaders to locations around the globe... in peace, crisis and conflict... and to employ a wide range of current and emerging command, control and communications capabilities to keep them aware of current events and to allow them to make timely decisions that further United States' interests. The Proposed Action consists of a compilation of proposed projects to include construction, demolition, and infrastructure upgrades for buildings, roads, utilities, parking lots, an aircraft parking apron and upgrades to the privately owned vehicle (POV) lane into the Pearl Harbor gate. The following paragraphs describe the purpose and need for each of the proposed projects.

*Repair Apron and Construct Parking Spaces for Nine F-16s*

The 113 WG would require a fully serviceable, aircraft parking area to accommodate the beddown of nine F-16 aircraft. This project provides for the repair of a portion of the existing Navy ramp in the vicinity of the current 113 WG operational area of Andrews AFB. The ramp currently has several damaged concrete slabs and deteriorated patches and seals. Damaged and

deteriorated pavements are a source of potential foreign object damage to aircraft engines and tires. Pavement Condition Index (PCI) ratings in the ramp pavements adjacent to this area have a PCI of less than 70. Some smaller areas have a PCI of less than 50. A PCI of less than 70 is considered "degraded" and a PCI of less than 55 is considered "unsatisfactory". Failure to repair the pavement would result in a continued degradation of the pavement and present an increased risk to aircraft and pilots.

*Construct POV Parking for the 113 WG*

The 113 WG is expected to gain an additional 330 personnel (103 full time and 227 drill). Currently, the 113 WG does not have adequate POV parking for these additional personnel. Based on Air National Guard Handbook 32-1084 standard of 75 percent (of 330 persons), the parking requirement would increase by an additional 248 parking spaces. Failure to provide additional parking would result in 113 WG personnel having to park more than one mile from their designated work centers.

*Construct Addition to Building 1900 for the 135 APS*

Existing space is not available for the relocation of the 135 APS from Martin State AGS, Maryland to Andrews AFB. In order to minimize construction costs, it was determined that the 135 APS should be housed in Building 1900. An addition to the existing 316$^{th}$ Wing facility would be required to accommodate the administrative needs and mobility storage requirements of the additional five full-time and 62 authorized drill positions. The placement of the unit at Andrews AFB provides for benefits due to co-location of function. Failure to adequately house the 135 APS would result in a degradation of equipment due to weather exposure and degraded readiness and mission effectiveness due to overcrowded conditions.

*Construct Administrative Facility*

Approximately 1,973 "NCR" personnel would be relocated from leased space in the Washington, D.C. area to Andrews AFB. Andrews AFB does not currently have adequate office space for the incoming NRC personnel. Constructing a new facility would consolidate "NCR" agencies into a central facility resulting in increased efficiency and a secure working environment. As part of this project, Building 1535 would be demolished and a new facility and associated parking facility would be constructed for the "NCR" personnel and the 396 personnel displaced by the demolition of Building 1535. The combined number of personnel required for this new facility is approximately 2,370. The new facility would be located in the area north of existing Building 1535. The construction of the new facility and demolition of Building 1535 could occur in a phased manner to meet mission requirements. One limitation of this phased approach exists due to a State of Maryland requirement that a construction project permitted for stormwater management be completed within a 3-year timeframe.

*Construct Air National Guard Readiness Center (ANGRC) Addition*

Approximately 650 Air National Guard (ANG) Headquarters (HQ) personnel would be relocated from leased space in the "NCR" to Andrews AFB. This project would provide additional space and amenities such as readily available food services, lockers, changing rooms for physical fitness activities and additional parking for Air Directorate personnel and visitors. The current lease for the off-base property is due for re-negotiation in 2008 and is anticipated to increase in cost. Consolidation of the ANG HQ staff at Andrews AFB would result in increased efficiency through co-location of functional groups. Failure to construct the new addition would result in overcrowded and inefficient working conditions. Inadequate and unsafe working conditions would persist along with organizational separations and lack of coordinated ANG training programs.

*Construct POV Lane, Pearl Harbor Gate*

Approximately 753 full-time personnel (650 HQ ANG and 103 113 WG) would be added to the eastern half of the Base. The personnel increase would require an additional POV lane at the Pearl Harbor Gate to accommodate the projected increase in traffic. The lane would be extended to the Pearl Harbor/Perimeter Road intersection. The current gate on the east side of the Base was designed to handle commercial traffic only and does not have the capacity to handle both POV and commercial traffic. The construction of a POV lane at the gate would allow the Base to separate POV and commercial traffic and expedite entry into the Base. Failure to construct the new POV lane would force drivers to utilize already overcrowded gates on the east or north sides of the Base.

## 1.2 Scope

This Environmental Assessment (EA) evaluates the potential impacts of all construction, demolition, and infrastructure improvements necessary to provide the facilities required to carry out the recommendations of the 2005 DBCRC for Andrews AFB. This EA describes and evaluates direct, indirect, and cumulative environmental impacts resulting from implementation of the Proposed Action. Relevant resources evaluated in this EA include noise, safety and occupational health, air quality, earth resources, water resources, biological resources, land use, socioeconomic resources and environmental justice, cultural resources, hazardous materials and wastes, and infrastructure. Consistent with the local interest of this EA, Andrews AFB is providing a 30-day public review and comment period before preparing the Final EA on the Proposed Action.

## 1.3 Background

The Proposed Action would be implemented at Andrews AFB, Maryland (Figure 1-1). Andrews AFB was established in 1947 and is located approximately five miles southeast of Washington, D.C. The main Base comprises 4,346 acres of land in southern Prince George's County. The 316$^{th}$ Wing is the host wing to more than 60 separate organizations including, among others, units from the ANG, Army, Navy, Marines, and Air Force Reserve Command. The total population living and working on Andrews AFB, including partner units, is approximately 13,000 persons.

The communities of Camp Springs and Morningside are adjacent to the Base. The Washington Beltway (Interstate 495) is immediately northwest of the Base. The surrounding land use is predominantly industrial and commercial. The Patuxent River is approximately seven miles east of the Base. The 316$^{th}$ Wing operates Andrews AFB in support of Partner Units such as the 89th Airlift Wing (89 AW) that provide worldwide airlift support.

## 1.4 Summary of Key Environmental Requirements

This EA has been prepared in compliance with the National Environmental Policy Act (NEPA); other federal statutes, such as Endangered Species Act (ESA), Clean Water Act (CWA), Clean Air Act (CAA), and National Historic Preservation Act (NHPA); Executive Orders (EOs); and other applicable state statutes and regulations.

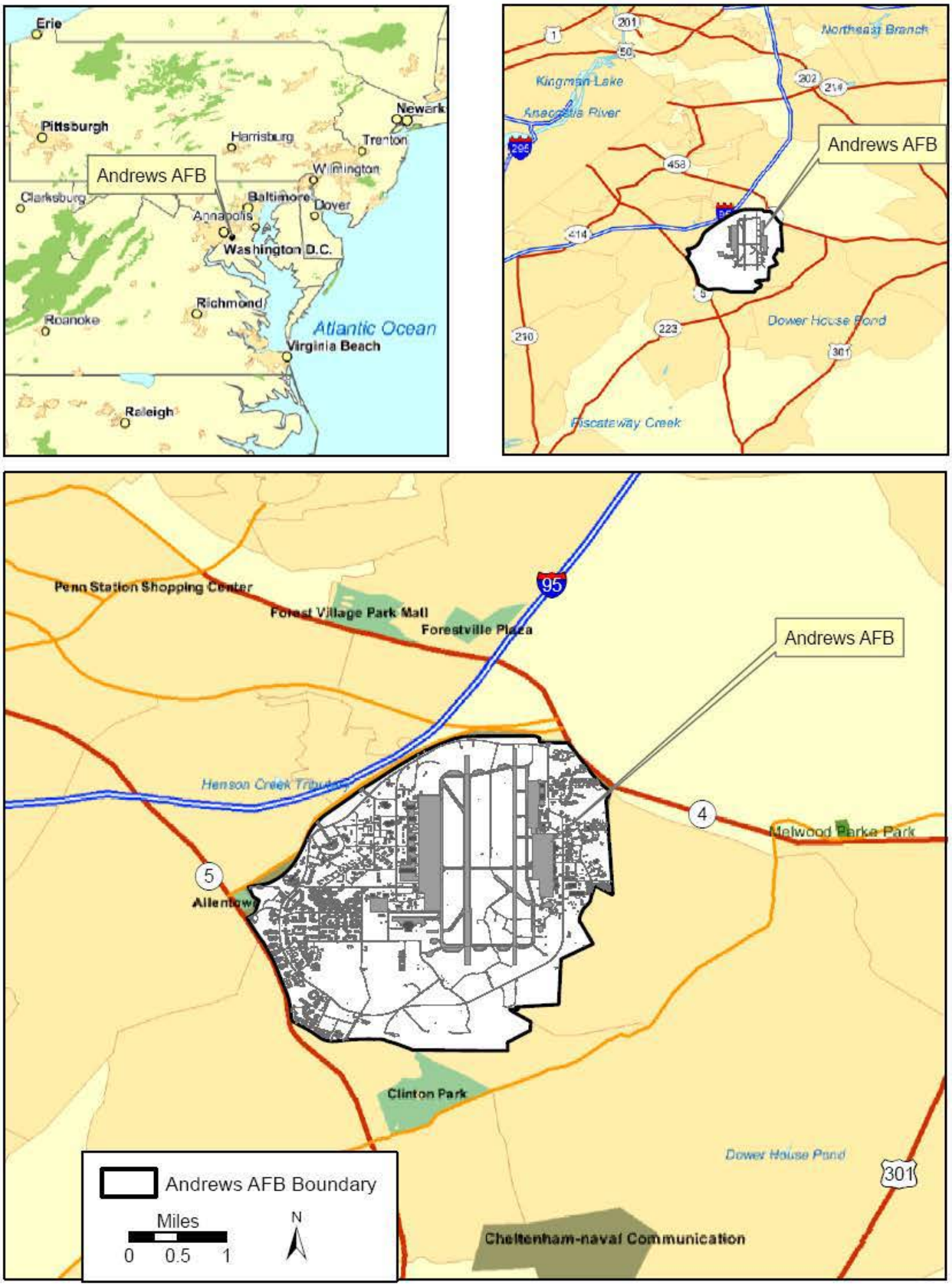


**Figure 1-1 Regional Map of Andrews AFB**

### 1.4.1 National Environmental Policy Act

The NEPA of 1969 requires federal agencies to take into consideration the potential environmental consequences of proposed actions in their decision making process. The intent of NEPA is to protect, restore, and enhance the environment through well-informed federal decisions. The Council on Environmental Quality (CEQ) was established under NEPA to implement and oversee federal policy in this process. The CEQ subsequently issued the Regulations for Implementing the Procedural Provisions of the NEPA (40 Code of Federal Regulations [CFR] §§ 1500–1508). These requirements specify that an EA be prepared to:

- Briefly provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact.
- Aid in an agency's compliance with NEPA when an EIS is not necessary.
- Facilitate preparation of an EIS when one is determined to be necessary.

The proposed BRAC actions for Andrews AFB addressed within this EA constitute a federal action and therefore must be assessed in accordance with NEPA. To comply with NEPA, as well as other pertinent environmental requirements, the decision-making process for the Proposed Action includes the development of this EA to address the environmental issues related to implementation of the proposed projects. The Air Force implementing procedures for NEPA are contained in 32 CFR 989 et seq.

### 1.4.2 Comprehensive Environmental Response Compensation Liability Act (CERCLA)

The Comprehensive Environmental Response, Compensation and Liability Act of 1980 regulates the prevention, control, and compensation of environmental pollution. CERCLA provides a federal "Superfund" to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through the Act, United States Environmental Protection Agency (USEPA) was given power to seek out those parties responsible for any release and assure their cooperation in the cleanup. Various sites at Andrews AFB are regulated under CERCLA.

### 1.4.3 Clean Air Act

The CAA (42 United States Code (USC) §§ 7401–7671, as amended) provided the authority for the USEPA to establish nationwide air quality standards to protect public health and welfare. federal standards, known as the National Ambient Air Quality Standards (NAAQS), were developed for six pollutants: ozone ($O_3$), nitrogen dioxide ($NO_2$), carbon monoxide (CO), sulfur dioxide ($SO_2$), particulate matter, and lead (Pb). The Act also requires that each state prepare a State Implementation Plan (SIP) for maintaining and improving air quality and eliminating violations of the NAAQS. Under the CAA Amendments of 1990, federal agencies are required to determine whether their undertakings are in conformance with the applicable SIP and demonstrate that their actions will not cause or contribute to a new violation of the NAAQS; increase the frequency or severity of any existing violation; or delay timely attainment of any standard, emission reduction, or milestone contained in the SIP.

### 1.4.4 Water Resources Regulatory Requirements

The CWA of 1977 (33 USC § 1251 *et seq*.) regulates pollutant discharges that could affect aquatic life forms or human health and safety. Section 404 of the CWA and EO 11990,

*Protection of Wetlands*, regulate development activities in or near streams or wetlands. Section 404 regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers (USACE) for dredging and filling in jurisdictional wetlands.

The CWA also regulates stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) permitting programs. Projects described in this EA would be constructed in compliance with *Stormwater Management Regulations* of the state of Maryland, found in the Annotated Code of Maryland, Environment Article, Title 4, Subtitle 2; and the *Stormwater Management Regulations*, Code of Maryland Regulation (COMAR), 26.17.02.01-12. These guidelines provide information necessary for submittal of stormwater management plans by state and federal agencies to the Maryland Department of the Environment (MDE), Water Management Administration (WMA) for review and approval.

The Coastal Zone Management Act (CZMA) of 1972 (16 USC § 1451 *et seq*) encourages coastal states, through federal grants, to develop and implement coastal zone management programs. Federal programs that affect land uses, water resources, or coastal resources of a state's coastal zone must be consistent to the maximum extent practicable with enforceable policies of the state's federally approved coastal zone management plan.

Maryland's Coastal Program was established in 1978 and was designed to protect coastal and marine resources of the state. The Coastal Program addresses a variety of coastal issues including provisions of public access, nonpoint source pollution reduction, coastal hazards mitigation, habitat and living resources protection and growth management. The Maryland Department of Natural Resources is the responsible agency for this program. Prince George's County falls within Maryland's coastal zone management area.

### 1.4.5 Cultural Resources Regulatory Requirements

The NHPA of 1966 (16 USC § 470) established the National Register of Historic Places (NRHP) and the Advisory Council on Historic Preservation, outlining procedures for the management of cultural resources on federal property. Cultural resources can include archaeological remains, architectural structures, and traditional cultural properties such as ancestral settlements, historic trails, and places where significant historic events occurred. The Act requires federal agencies to consider potential impacts to cultural resources that are listed, nominated to, or eligible for listing on the NRHP; designated a National Historic Landmark; or valued by modern Native Americans for maintaining their traditional culture. Section 106 of the Act requires federal agencies to consult with State Historic Preservation Office (SHPO) if their undertakings might affect such resources. *Protection of Historic and Cultural Properties* (36 CFR 800 [1986]) provided an explicit set of procedures for federal agencies to meet their obligations under the NHPA, including inventorying of resources and consultation with SHPO.

### 1.4.6 Other Regulatory Requirements

Additional regulatory requirements that potentially apply to the development of this EA include guidelines promulgated by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to ensure that citizens in either of these categories are not disproportionately affected. Additionally, potential health and safety impacts that could disproportionately affect children will be considered under the guidelines established by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. EO 11988, *Floodplain Management*, requires federal agencies to take action to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains. Federal agencies are

directed to consider the proximity of their actions to or within floodplains. EO 13423 *Strengthening Federal Environmental, Energy, and Transportation Management,* is a directive that requires federal agencies to implement sustainable practices for a variety of water, energy, and transportation related activities.

In addition to the other regulatory requirements listed above, Andrews AFB continues to work closely with the National Capital Planning Commission (NCPC) on planning and development issues at Andrews AFB. The NCPC, through its planning policies, seeks to protect and enhance the extraordinary historical, cultural, and natural resources of the nation's capital area. The NCPC has submission guidelines for submission of project plans prior to construction.

### 1.4.7 Environmental Coordination

EO 12372, *Intergovernmental Review of Federal Programs*, requires intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the process of interagency and intergovernmental coordination for environmental planning (IICEP), the proponent must notify concerned federal, state, and local agencies and allow them sufficient time to evaluate potential environmental impacts of a Proposed Action. Comments from these agencies are subsequently incorporated into the analysis. Air Force Instruction (AFI) 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning*, is the Air Force's policy directive IICEP for regulatory agency notifications. The Description of Proposed Action and Alternatives (DOPAA) was provided to local, state, and federal agencies in March 2007 for the 30-day IICEP review. Per the AFI, this Draft EA was distributed for the 30-day public review.

## 1.5 Organization of this Document

This EA is organized into seven sections. Sections 1 and 2 contain the Purpose and Need and the DOPAA. Section 3 contains general descriptions of biophysical resources and baseline conditions that potentially could be affected by implementation of the Proposed Action, alternatives to the Proposed Action, or the No Action Alternative. Section 4 presents an analysis of the environmental consequences for the activities mandated by the Final 2005 DBCRC Report. Section 5 includes an analysis of potential cumulative, irreversible, and irretrievable impacts associated with implementation of the Proposed Action. Section 6 contains the list of preparers and Section 7 lists the sources of information used in the preparation of the document. Appendix A includes a copy of the IICEP letter mailed to the agencies for this action, the IICEP distribution list, and responses to the IICEP letter. Appendix B contains the public notice for the Draft EA and the comments received on this document. Appendix C contains the Final General Conformity Applicability Analysis.

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# 2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

## 2.1 Introduction

This section presents information on the Proposed Action and alternatives related to the implementation of the actions mandated under the 2005 Defense Base Closure and Realignment Act. The recommendations of the 2005 DBCRC included a variety of both people and equipment moves into and out of Andrews AFB, along with the demolition, renovation, or construction of support facilities as needed to accommodate these moves.

Specifically for Andrews AFB, the DBCRC directed the Air Force to take the following actions:

1. Relocate the AFFSA and their two C-21 aircraft to Will Rogers World Airport AGS Oklahoma.
2. Distribute nine F-16 aircraft to the 113 WG of the DCANG at Andrews AFB.
3. Realign the 135 APS of the MDANG from Martin State AGS Baltimore, Maryland to Andrews AFB.
4. Disestablish the inpatient mission at the 79$^{th}$ Medical Group and convert the hospital to a clinic with an ambulatory surgery center.
5. Relocate the AFOSI to Marine Corps Base Quantico, Virginia.
6. Co-locate miscellaneous Air Force and National Guard leased locations from the NCR to Andrews AFB.
7. Relocate the installation management functions from the Naval Air Facility Washington, Maryland to Andrews AFB establishing the Joint Base Andrews-Naval Air Facility Washington, Maryland.

## 2.2 Selection Criteria

During the planning phase of the actions and alternatives, Selection Criteria were developed and evaluated to assist with identifying actions and alternatives to be carried forward for environmental analysis in this EA. A Site Activation Task Force (SATAF) was conducted in July 2006. During the SATAF, different alternatives for each of the actions were discussed and evaluated. The Selection Criteria used for these projects are listed in Table 2-1. The Selection Criteria are based on an evaluation of the six projects (Table 2-2) supporting BRAC and their ability to meet the BRAC law, support wing mission requirements and minimize costs. Based on evaluation of the Selection Criteria, the only alternative that meets all of the Selection Criteria is the combination of re-utilization or renovation of existing facilities/infrastructure with new construction. This alternative applies to all of the projects that comprise the Proposed Action (Table 2-2). For example, the F-16 apron repair project, the additions to Buildings 1900 and 3500, and the POV lane construction projects combine the re-use of existing facilities along with new construction. Building 1535 and POV parking lot projects are solely new construction. Although the No Action alternative would meet the requirements of the BRAC law, it would not meet the mission requirements or minimize costs. With the implementation of the No Action alternative, per BRAC law, both people and equipment (additional planes and support equipment) would arrive at Andrews with inadequate support facilities/infrastructure. Although this alternative does not meet all of the Selection Criteria, it will be carried forward through the EA to serve as a baseline by which to evaluate the other action alternatives against.

**Table 2-1. Selection Criteria**

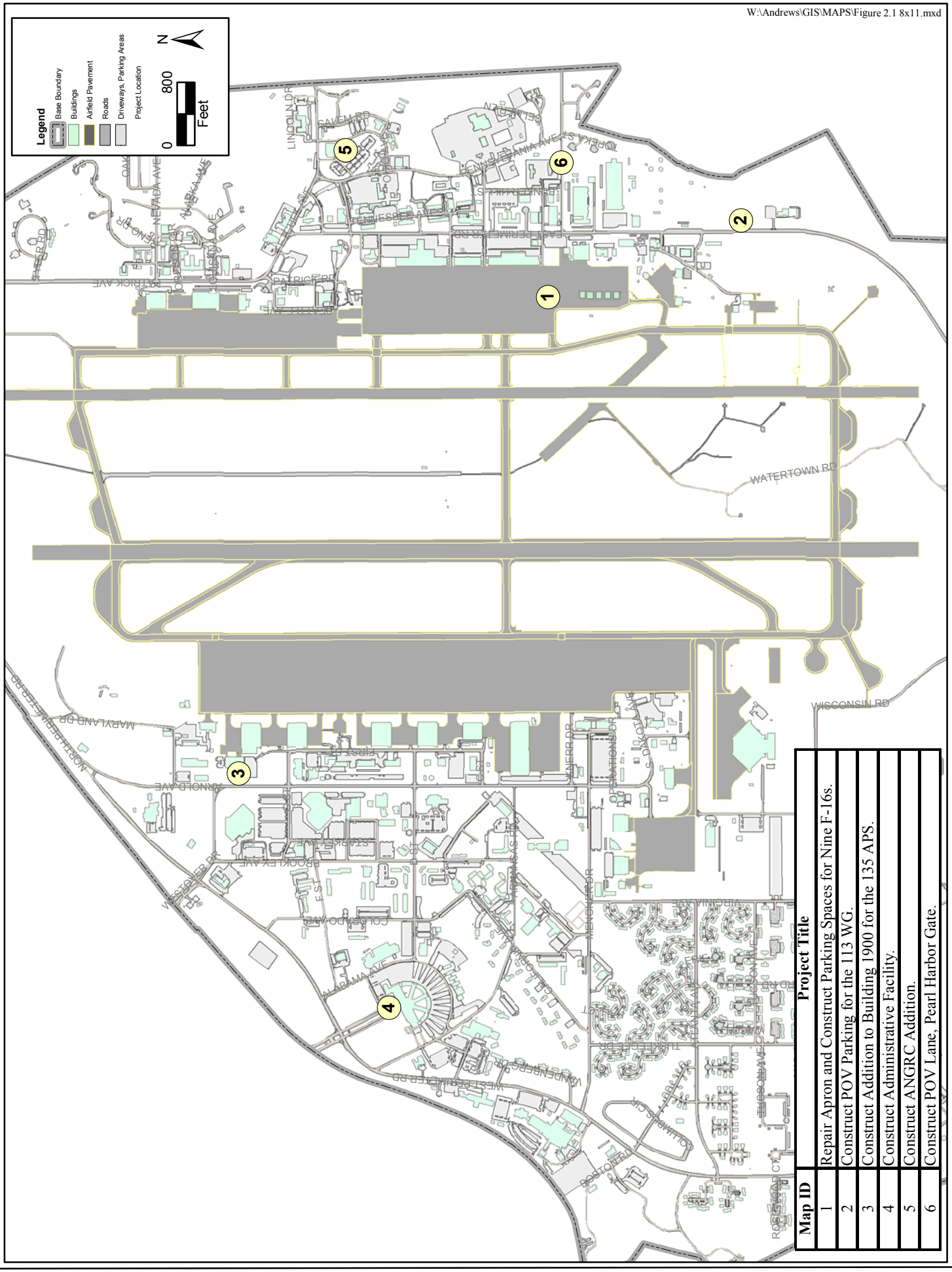
| Selection Criteria | No Action | Re-Use Existing Facilities and Infrastructure | New Infrastructure Facility Construction | Combination of Re-Use and New Construction |
|---|---|---|---|---|
| Meets the requirements of the BRAC law | Yes | Yes | Yes | Yes |
| Effectively meets the minimum mission execution requirements | No | No | Yes | Yes |
| Minimizes costs associated with project implementation and long term maintenance | No | No | No | Yes |

## 2.3 Alternative 1 Proposed Action

Implementation of the Proposed Action would include the projects described in Table 2-2 and depicted on Figure 2-1. This EA will also evaluate the effects of the previously listed DBCRC directed actions (i.e., effects of the net increase in aircraft and net increase in personnel at Andrews AFB). The proposed projects have not been sited in wetlands, floodplains, or in areas of threatened and endangered species habitat. The proposed projects have been sited in appropriate land use types consistent with future land use plans. Implementation of the Proposed Action would meet the space, personnel, equipment, and parking requirements necessary to accommodate the BRAC requirements. In addition, the locations of the various projects included as the Proposed Action would not only sustain the mission but also meet the functional use requirements and enhance the overall safety of Andrews AFB.

**Table 2-2. Projects Included in the Proposed Action**

| Map ID | Project Title | Project Description | Facility and/or Addition Size [total square feet ($ft^2$)] |
|---|---|---|---|
| 1 | Repair Apron and Construct Parking Spaces for Nine F-16s. | Repair spalls and unsatisfactory slabs; reseal joints and cracks; re-stripe ramp; complete full depth repairs; and replace slabs as necessary. | 185,130 $ft^2$ |
| 2 | Construct POV Parking for the 113 WG. | Construct 248-space POV parking lot. | 87,003 $ft^2$ |
| 3 | Construct Addition to Building 1900 for the 135 APS. | Construct addition to Building 1900 that includes renovating 500 $ft^2$ of the building and the removal and replication of vehicle parking. | Addition - 7,100 $ft^2$<br>Parking – 7,201 $ft^2$ (Exist. Pavement) |
| 4 | Construct Administrative Facility. | Construct a new administrative facility and parking lot to support the "NCR" personnel relocating from leased space in Washington, D.C. to Andrews AFB and personnel displaced from the demolition of Building 1535. | 3-4 - Story Building Complex - 402,262 $ft^2$<br><br>Parking Lot 699,000 $ft^2$ |
| 5 | Construct ANGRC Addition. | Construct an addition to Building 3500 and an associated parking lot to accommodate ANG HQ personnel that are being relocated from "NCR" to Andrews AFB. Relocate the existing parking facility outside of the construction footprint. | Addition - 170,318 $ft^2$<br><br>Parking Lot 431,000 $ft^2$ |
| 6 | Construct POV Lane, Pearl Harbor Gate. | Construct a single POV traffic lane at the Pearl Harbor Gate and extend to the intersection of Pearl Harbor and Perimeter Rd to accommodate additional personnel to the east side of the Base. | 8,611 $ft^2$ |




| Map ID | Project Title |
|---|---|
| 1 | Repair Apron and Construct Parking Spaces for Nine F-16s. |
| 2 | Construct POV Parking for the 113 WG. |
| 3 | Construct Addition to Building 1900 for the 135 APS. |
| 4 | Construct Administrative Facility. |
| 5 | Construct ANGRC Addition. |
| 6 | Construct POV Lane, Pearl Harbor Gate. |

Figure 2-1 Proposed Projects

### 2.3.1 Repair Apron and Construct Parking Spaces for Nine F-16s

To accommodate the nine F-16 aircraft proposed to beddown at Andrews AFB, the 113 WG requires additional ramp space. This project involves the repair of a fully serviceable, aircraft parking ramp near the 113 WG area (Figure 2-2). This project would provide an approximate 185,130 $ft^2$ aircraft parking area to be located immediately north of the DCANG Building 3119 and south of Building 3148. The Proposed Action for this project includes the replacement of all joint seals, overlay cracking asphalt, and replacement of damaged concrete slabs prior to aircraft delivery in fiscal year (FY) 07. This subcomponent of the Proposed Action meets all three of the Selection Criteria as described in Section 2.2.

### 2.3.2 Construct POV Parking for the 113 WG

As part of the BRAC moves, the 113 WG is expected to gain 330 personnel (103 full time, 227 drill). To accommodate this move, the POV parking near the 113 WG facilities would need to increase by approximately 248 spaces. Two locations were identified for this parking lot. One location is located immediately east of Bunker Hill Street, south of Bainbridge Street, and north of Annapolis Street. This location would require the demolition of Building 3218. As this location would be impacted by the proposed improvements to Pennsylvania Avenue (25-year Strategic Plan), this location was eliminated from further consideration. The preferred location (87,003 $ft^2$) is located east of Perimeter Road and north of Building 2495 (Figure 2-2). This site is an early successional, densely wooded upland area with trees that appear to be younger than 20 years. This subcomponent of the Proposed Action effectively meets the requirements of the BRAC law and 113 WG mission requirements and minimizes cost associated with implementation and long term maintenance.

### 2.3.3 Construct Addition to Building 1900 for the 135 APS

Approximately five full-time and 62 drill personnel will relocate from Martin State AGS to Andrews AFB. To accommodate this number of personnel, approximately 7,100 $ft^2$ of office space is required near the existing 316$^{th}$ Wing facility, Building 1900. This space is necessary to accommodate the administrative needs and mobility storage requirements of the 135 APS (Figure 2-2). A small portion of the existing facility would be renovated (500 $ft^2$) to accommodate this addition. The building addition would require the removal and replication of the existing vehicle parking (7,201 $ft^2$). Construction of this addition meets all of the Selection Criteria as defined in Table 2-1.

### 2.3.4 Construct Administrative Facility and Associated Parking Lot

An administrative facility that can accommodate approximately 2,370 people is required. This facility is needed to accommodate the 1,973 people being relocated from the "NCR" as well as the 396 people displaced from Building 1535. There is currently no facility at Andrews AFB that can provide space for this number of people. To accommodate this number of people, the facility would need to be approximately 402,262 $ft^2$ and would potentially be constructed as a three or four story complex to minimize impacts associated with the creation of impervious surface and stormwater management (Figure 2-3).

As part of the Proposed Action, Building 1535 would be demolished and a new parking lot and associated stormwater controls would be constructed in the area of the existing building and associated parking lots (Figure 2-3). Although Figure 2-3 provides a reasonable representation of the actions associated with this component of the Proposed Action, this figure may not be representative of the actual engineering design that would be completed prior to construction. However, the environmental and socioeconomic analysis contained in this EA sufficiently covers

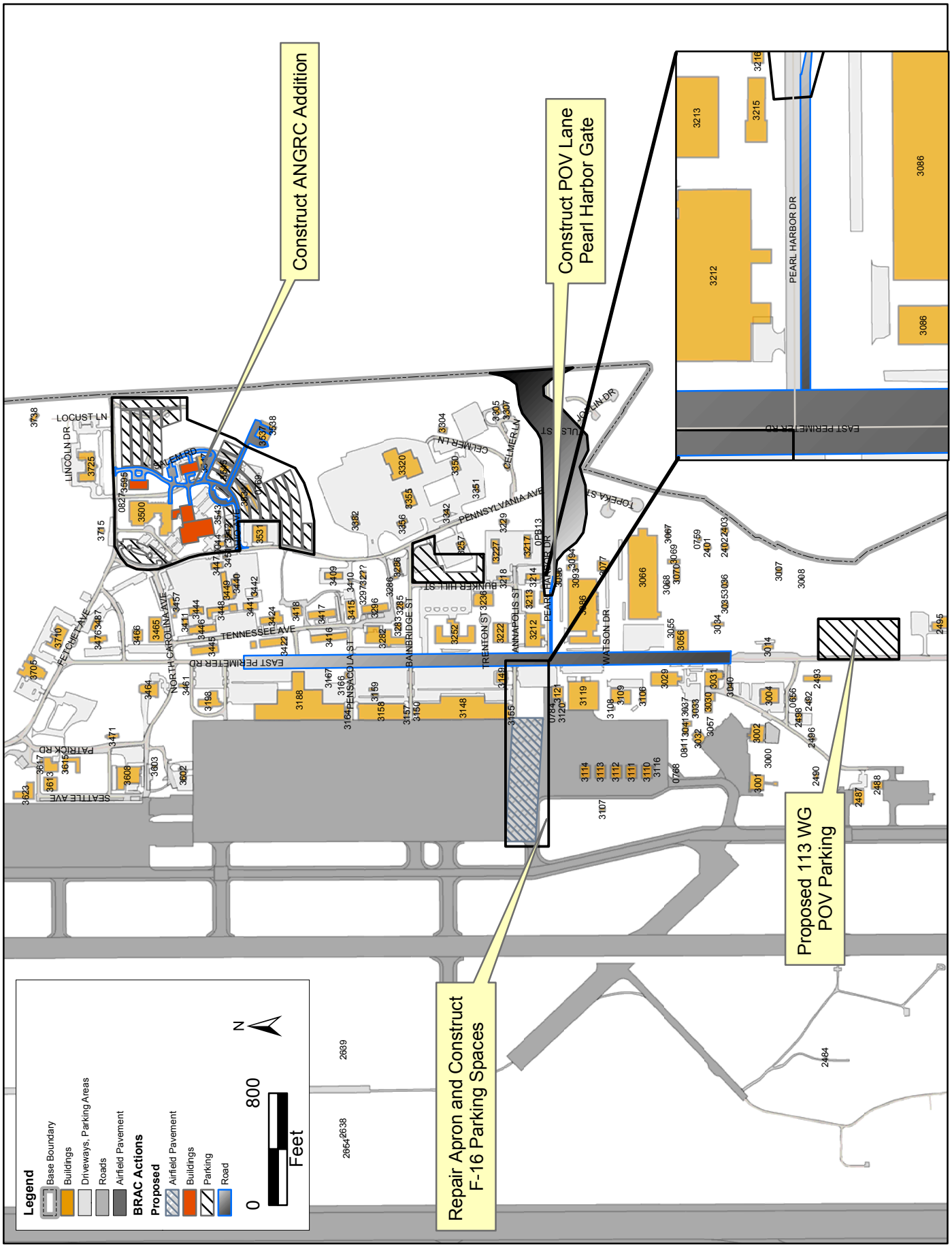



Figure 2-2 Proposed Projects Andrews AFB East

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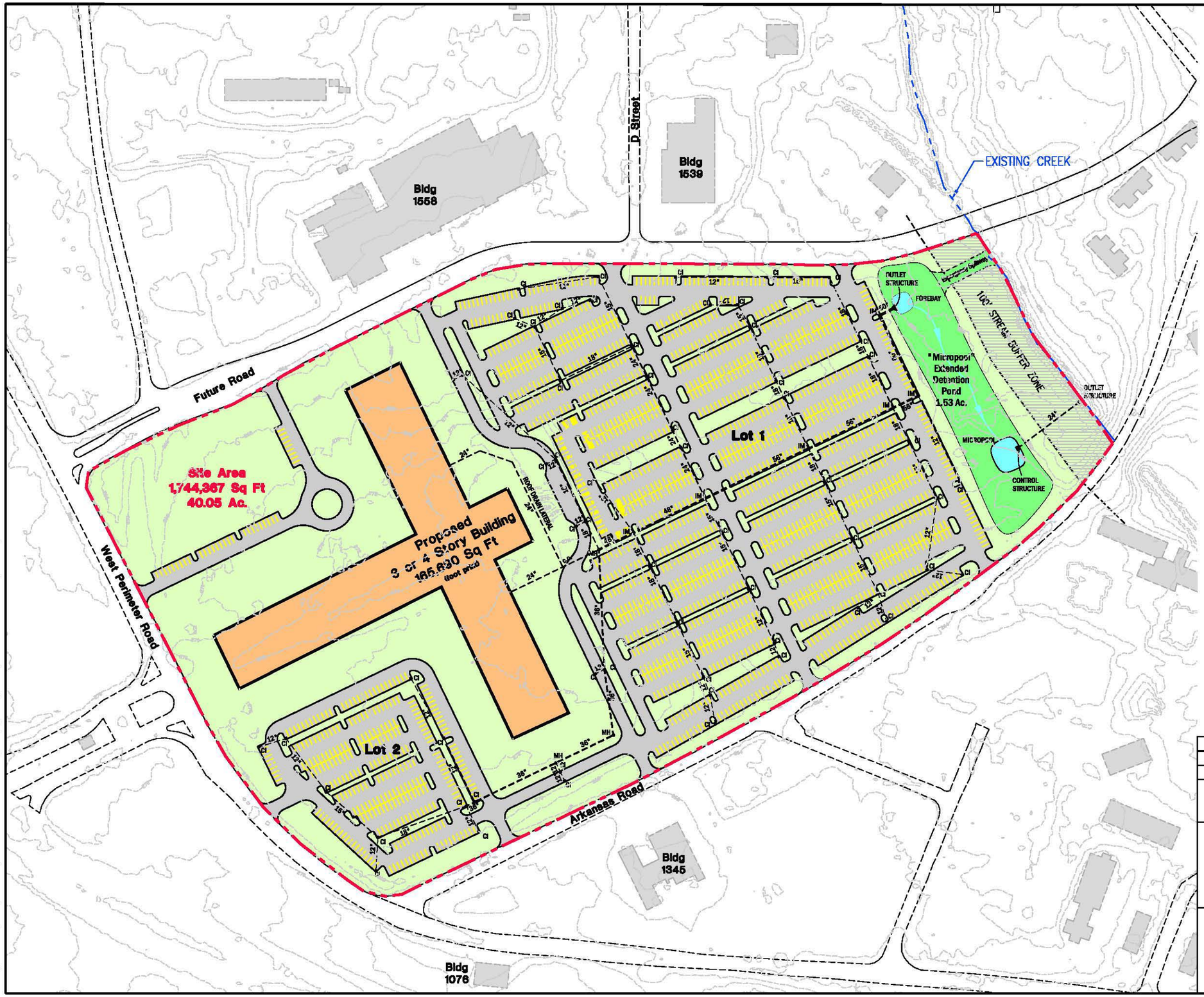


0 100 200 400

SCALE: 1" = 200'

| Parking Data | | | | |
|---|---|---|---|---|
| Lot | Standard Spaces | A.D.A. Car Accessiblity | A.D.A. Van Accessiblity | Total Spaces per Lot |
| 1 | 1670 | 22 | 8 | 1700 |
| 2 | 310 | 0 | 0 | 310 |
| | | | Grand Total | 2010 |

| Pavement Quantities | | |
|---|---|---|
| Lot | Parking Lot Area (s.f.) | 6" Curb & Gutter (L.F.) |
| 1 | 585467 | 21521 |
| 2 | 113705 | 5176 |
| Totals | 699172 | 26697 |

| Area | Acres |
|---|---|
| Total Area | 40.05 |
| Buildings | 3.80 |
| Pervious | 18.67 |
| Basins | 1.53 |
| Impervious | 16.05 |

| Storm Sewer Data | | | |
|---|---|---|---|
| Pipe Size | Pipe Length (L.F.) | Structure Type | Quantity |
| 12" | 2256 | Manhole (MH) | 3 |
| 15" | 1316 | Inlet Manhole (IM) | 6 |
| 18" | 1497 | Curb Inlet (CI) | 60 |
| 24" | 1083 | | |
| 36" | 718 | | |
| 48" | 242 | | |
| 56" | 486 | | |
| 60" | 219 | | |

SITE BOUNDARY

THIS FIGURE SHOWS A REASONABLE REPRESENTATION OF THE CONSTRUCTION FOOTPRINT AND MAY NOT BE REPRESENTATIVE OF THE ACTUAL ENGINEERING DESIGN THAT WILL BE COMPLETED PRIOR CONSTRUCTION.

| REV | DATE | DESCRIPTION | DRAWN | APPR'D |
|---|---|---|---|---|
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AIR MOBILITY COMMAND
ANDREWS FORCE BASE

REDEVELOP B1535 SITE FOR NCR COMPLEX
F414624-03-D-8614 TASK ORDER 0241

Concept 1:1535
Parking Lot with "Micropool" Extended Detention Pond

Figure 2-3
Building 1535 Parking Lot Conceptual Plan

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the site boundary as depicted in Figure 2-3. Therefore any construction within the footprint of the site boundary would be consistent with the evaluation of impacts contained in this EA. The parking lot was selected as the Preferred Alternative for this subcomponent of the Proposed Action predicated on the analysis in Section 4.0 demonstrating no significant impacts. The parking lot would encompass approximately 16 acres. Although construction of the parking lot would create additional impervious surface, the stormwater controls associated with the parking lot would be designed such that stormwater runoff would be treated to meet the stormwater quality and quantity requirements of the Maryland Department of the Environment (MDE). Construction of this building and the associated parking lot meets all three of the Selection Criteria described in Table 2-1 including cost effectiveness. Construction of this new facility and demolition of Building 1535 could occur in a phased manner over several years and subject to funding to meet mission requirements. One limitation on this phased-approach exists due to a Maryland requirement that a construction project permitted for stormwater management be completed within a 3-year timeframe.

### 2.3.5 Construct ANGRC Addition and Associated Parking Lot

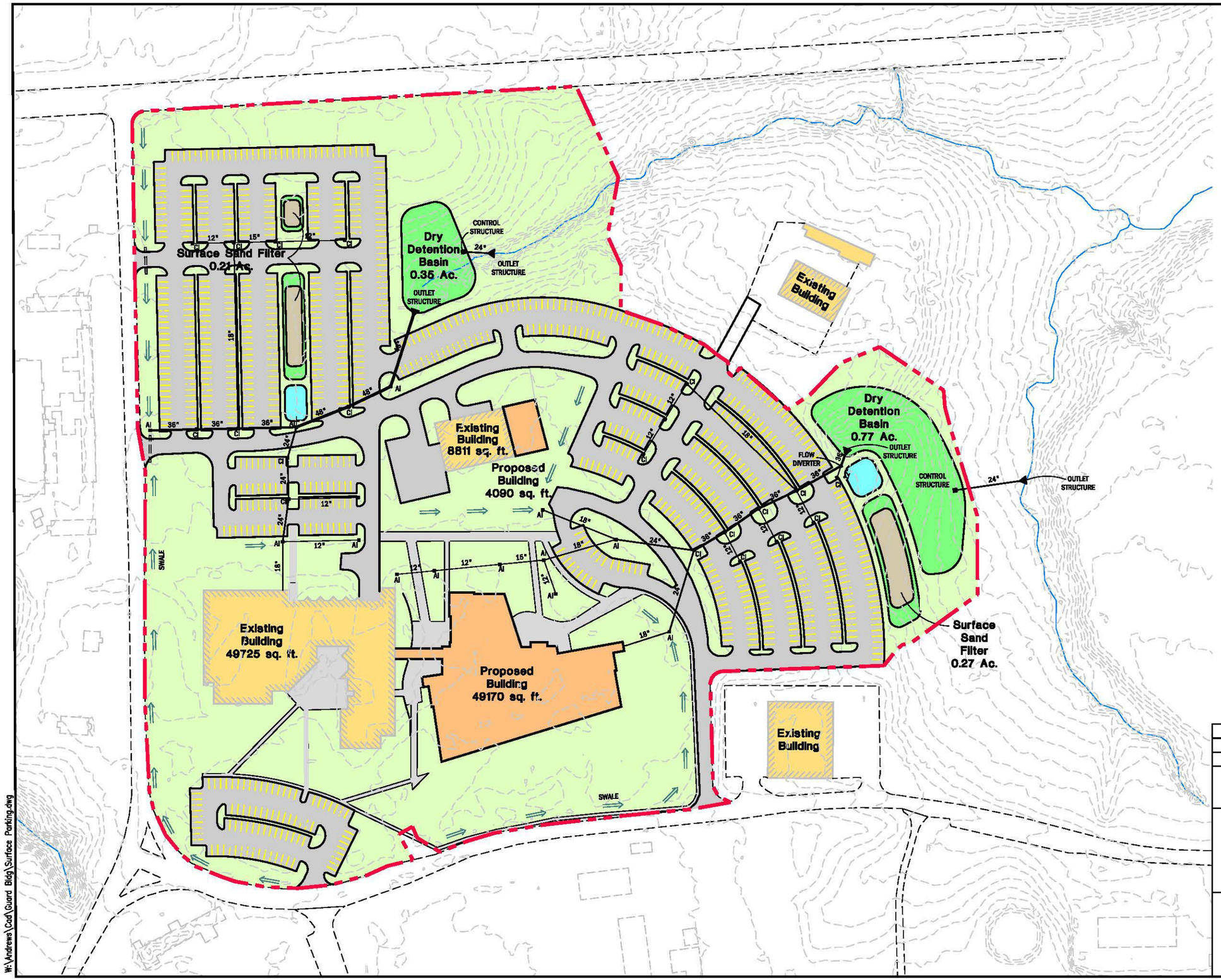
As part of the BRAC moves, approximately 650 ANG HQ employees will be moving their official domicile to Andrews AFB. This relocation would align the entire National Guard Bureau Air Directorate into one complex (Figure 2-2). This additional space would provide for classrooms, conference rooms, administrative workspaces for visiting senior personnel, contractor-provided food service and locker/changing rooms for shift workers, and physical fitness training. In order to accommodate this number of people, the size of the facility would need to be approximately 171,000 $ft^2$. In addition, this facility would need to be near the existing ANG headquarters building.

The proposed addition would require the demolition of Building 3534. This demolition was previously discussed in the *Environmental Assessment of Construction Projects at 113th Air Wing, Andrews AFB, Maryland* (USAF 2002). The existing parking area is in the footprint of the proposed construction and would require relocation. Additional land east of the site would be required to accommodate an additional parking lot and stormwater control structures (Figure 2-5). The current layout for a parking lot would encompass approximately 10 acres. The parking lot was selected as the Preferred Alternative for this subcomponent of the Proposed Action predicated on the analysis in Section 4.0 demonstrating no significant impacts. Although construction of the parking lot would create additional impervious surface, the stormwater controls associated with the parking lot would be designed such that stormwater runoff would be treated to meet the stormwater quality and quantity requirements of the MDE. The AT/FP standoff requirement for parking would also apply to this facility. This subcomponent of the Proposed Action meets all of the Selection Criteria described in Table 2-1.

### 2.3.6 Construct POV Lane at Pearl Harbor Gate

The Pearl Harbor Gate was designed to accommodate commercial traffic only. The Base does not have the capability to separate POV traffic from commercial traffic at this gate (Figure 2-2). With the addition of more than 750 full-time personnel (650 HQ ANG and 103 full time from the 113 WG) to the eastern half of the Base, the construction of a single entrance lane for POV traffic at the existing Pearl Harbor Gate is needed, not only to improve traffic flow, but also to decrease the potential for impacts to the mission associated with gate delays. The proposed 8,611 $ft^2$ lane would be extended to the intersection of Pearl Harbor and Perimeter Road and the turning radius would be increased to adequately accommodate vehicle turning movements. Construction of this POV Lane meets all three of the selection criteria identified in Table 2-1.


Figure 2-4 Proposed Projects Andrews AFB West




| Storm Sewer Data | | | |
|---|---|---|---|
| Pipe Size | Pipe Length (L.F.) | Structure Type | Quantity |
| 12" | 936 | Curb Inlet (CI) | 20 |
| 15" | 134 | Area Inlet (AI) | 12 |
| 18" | 925 | Outlet Structure | 4 |
| 24" | 600 | Control Structure | 2 |
| 36" | 525 | | |
| 48" | 287 | | |

| Area | Acres |
|---|---|
| Total Area | 26.82 |
| Buildings | 2.51 |
| Pervious | 12.45 |
| Basins | 1.60 |
| Impervious | 10.26 |

SITE BOUNDARY

THIS FIGURE SHOWS A REASONABLE REPRESENTATION OF THE CONSTRUCTION FOOTPRINT AND MAY NOT BE REPRESENTATIVE OF THE ACTUAL ENGINEERING DESIGN THAT WILL BE COMPLETED PRIOR CONSTRUCTION.

| REV | DATE | DESCRIPTION | DRAWN | APPR'D |
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AIR MOBILITY COMMAND
ANDREWS FORCE BASE

BUILDING 3500 PARKING LOT CONCEPTUAL PLAN
F414624-03-D-8614 TASK ORDER 0241

Concept B:ANG
Surface Parking Conceptual Site Plan

Figure 2-5
Building 3500 Parking Lot Conceptual Plan

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## 2.4 Alternative 2

This alternative consists of the actions described in Sections 2.3.1 through 2.3.6 with the exception of the parking lots being substituted with parking garages for the Administrative Facility (2.3.4) and the ANGRC Addition (2.3.5). To potentially further reduce stormwater impacts, parking garages and associated stormwater controls were evaluated. For the Administrative Facility, the parking garage would encompass approximately 3.5 acres of land (Figure 2-6). For the ANGRC Addition, the parking garage would encompass approximately 3.6 acres of land (Figure 2-7). The stormwater controls associated with each of these structures would also be smaller than those required for the parking lots. However, the end result, compliance with MDE WMA stormwater regulations, would be the same. Alternative 2 was developed to further reduce the amount of impervious surface and stormwater runoff associated with the construction at Andrews AFB. Although the parking garages would encompass a smaller footprint than the parking lots due to the vertical construction, the additional costs (>3 times that of parking lots) of these structures along with the required maintenance detract from the feasibility of their implementation. Not only is the capital cost of parking garages more than three times that of parking lots, the operation and maintenance costs are also approximately three times the amount required for operation and maintenance of parking lots due to the annual requirements for the structures. In addition, the parking garages for both of the buildings would not meet the third Selection Criteria of minimizing costs associated with project implementation and long term maintenance as described in Table 2-1.

## 2.5 Action Alternatives

The purpose of the Proposed Action is to provide additional facilities and infrastructure necessary to carry out the recommendations of the 2005 DBCRC and directives of the Secretary of Defense for Andrews AFB. Both Selection Criteria and various alternative options (i.e., location and building designs) were evaluated where feasible and prudent (Sections 2.2 and 2.3).

In 2004 and 2005, in preparation for the 2005 BRAC, the Air Force conducted a comprehensive alternatives analysis that included the use of various analytical tools to not only determine base realignment and closures but also aircraft moves within the Air Force. Because the aircraft moves into and out of Andrews AFB were carefully studied and screened by the Base Closure Executive Group and further evaluated by the DBCRC, this EA will not evaluate alternatives for the aircraft moves into or out of Andrews AFB. However, this EA will evaluate the potential impacts of these aircraft moves to Andrews AFB.

## 2.6 No Action Alternative

Under the No Action Alternative, there would be no change to the infrastructure at Andrews AFB to accommodate the BRAC actions. Implementation of the No Action Alternative would mean that although people and equipment would still be moved into and out of Andrews AFB, no new construction, rehabilitation, renovation, demolition, or other infrastructure upgrades would occur. The existing facilities and structures would be inadequate to accommodate the additional BRAC moves. The continued use of existing facilities with the addition of the BRAC personnel and equipment could ultimately impact the success of the collective missions of Andrews AFB and the HQ Air Force. As public law mandates the BRAC actions, the No Action Alternative does not meet the selection criteria but will be carried forward as a baseline against which the impacts of the Proposed Action and alternatives can be evaluated.

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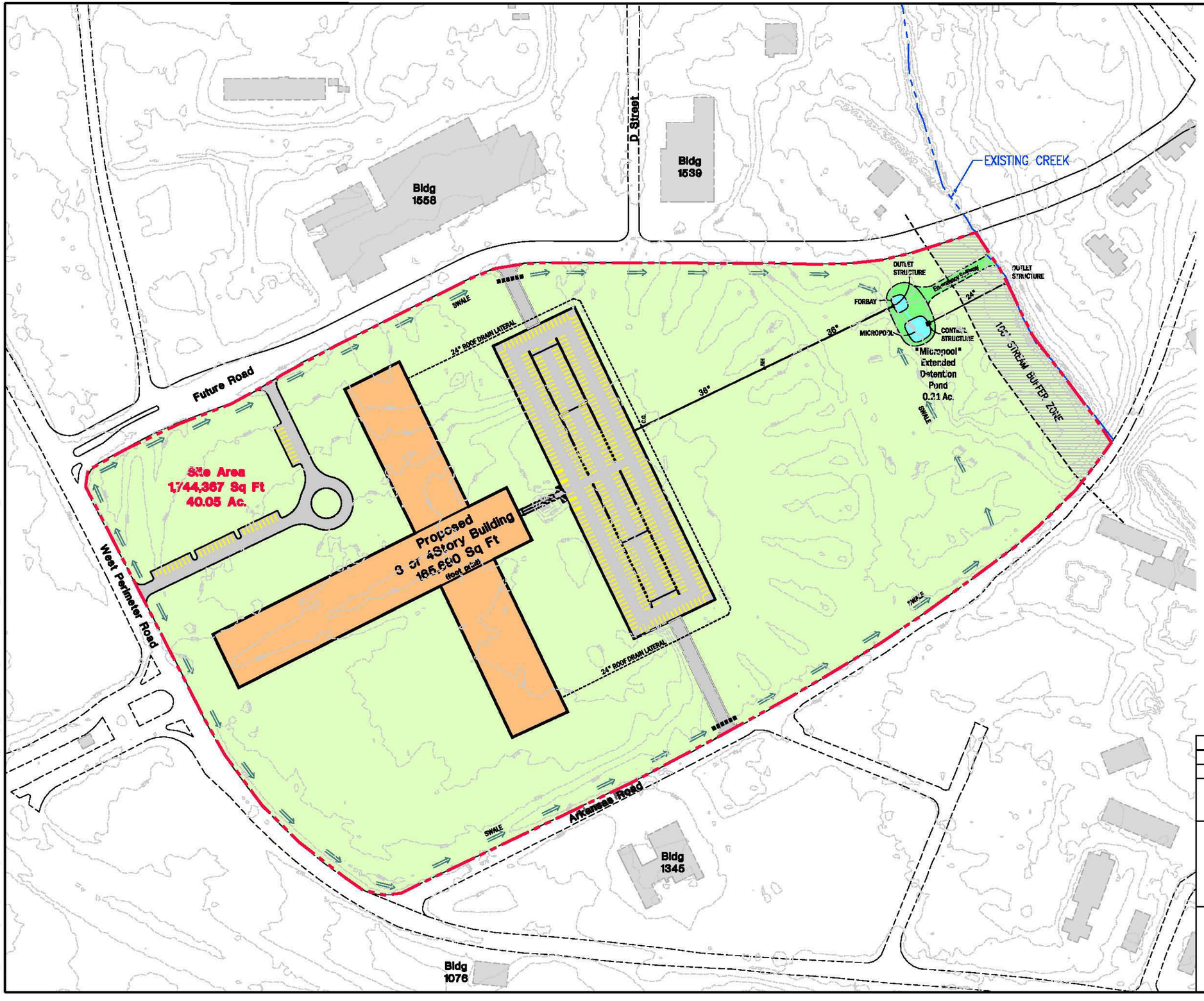


0 100 200 400

SCALE: 1" = 200'

| Parking Data | | | |
|---|---|---|---|
| Standard Spaces | A.D.A. Car Accessiblity | A.D.A. Van Accessiblity | Total Spaces |
| 1985 | 22 | 8 | 2015 |

| Pavement Quantities (Drives Only) | |
|---|---|
| Pavement Area (s.f.) | 6" Curb & Gutter (L.F.) |
| 585467 | 805 |

| Storm Sewer Data | | | |
|---|---|---|---|
| Pipe Size | Pipe Length (L.F.) | Structure Type | Quantity |
| 24" | 1708 | Manhole (MH) | 1 |
| 36" | 593 | Outlet Structure | 2 |
| | | Control Structure | 1 |

| Area | Acres |
|---|---|
| Total Area | 40.05 |
| Buildings | 3.80 |
| Pervious | 32.14 |
| Basins | 0.21 |
| Impervious | 3.90 |

SITE BOUNDARY

THIS FIGURE SHOWS A REASONABLE REPRESENTATION OF THE CONSTRUCTION FOOTPRINT AND MAY NOT BE REPRESENTATIVE OF THE ACTUAL ENGINEERING DESIGN THAT WILL BE COMPLETED PRIOR CONSTRUCTION.

| REV | DATE | DESCRIPTION | DRAWN | APP'D |
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AIR MOBILITY COMMAND
ANDREWS FORCE BASE

REDEVELOP B1535 SITE FOR NCR COMPLEX
F414624-03-D-8614 TASK ORDER 0241

Concept 5:1535
Parking Garage with "Micropool"
Extended Detention Pond

Figure 2-6
Building 1535 Parking Garage Conceptual Plan

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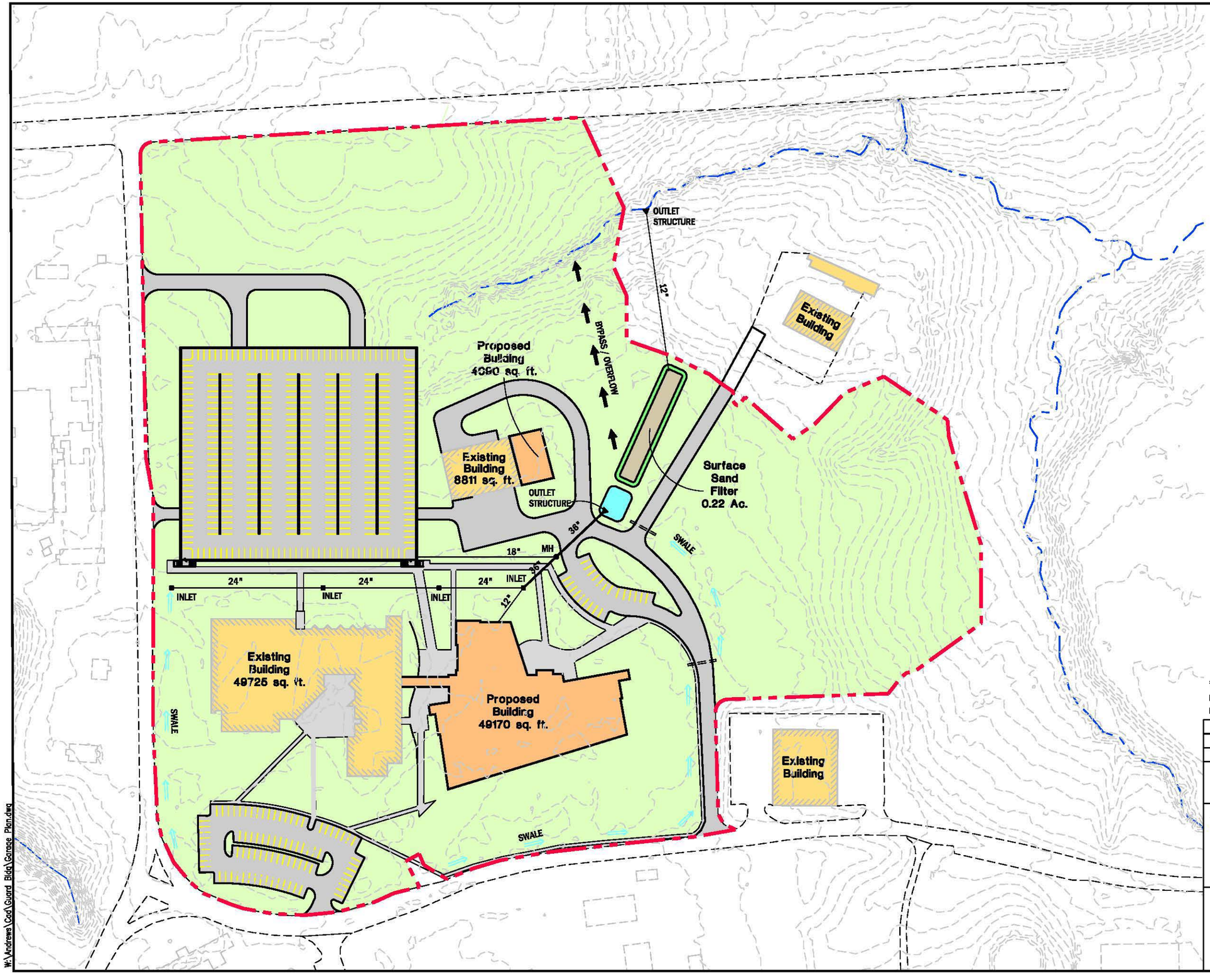


0 50 100 150 300

SCALE: 1" = 150'

| Parking Garage Data | | | |
|---|---|---|---|
| Standard Spaces | A.D.A. Car Accessiblity | A.D.A. Van Accessiblity | Total Spaces* |
| 1134 | 22 | 8 | 1164 |

| Storm Sewer Data | | | |
|---|---|---|---|
| Pipe Size | Pipe Length (L.F.) | Structure Type | Quantity |
| 12" | 335 | Manhole (MH) | 1 |
| 24" | 554 | Inlet | 4 |
| 18" | 219 | Outlet Structure | 1 |
| 36" | 179 | | |

| Area | Acres |
|---|---|
| Total Area | 26.82 |
| Buildings | 2.51 |
| Pervious | 18.03 |
| Basins | 0.22 |
| Impervious | 6.06 |

SITE BOUNDARY

THIS FIGURE SHOWS A REASONABLE REPRESENTATION OF THE CONSTRUCTION FOOTPRINT AND MAY NOT BE REPRESENTATIVE OF THE ACTUAL ENGINEERING DESIGN THAT WILL BE COMPLETED PRIOR CONSTRUCTION.

* This number of spaces is larger then the 1,115 required number due to the configuration of the garage allowing for more spaces

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AIR MOBILITY COMMAND
ANDREWS FORCE BASE

BUILDING 3500 PARKING GARAGE CONCEPTUAL PLAN
F414624-03-D-8614 TASK ORDER 0241

Concept 9:ANG
Garage Parking Conceptual Site Plan

Figure 2-7
Building 3500 Parking Garage Conceptual Plan

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## 2.7 Decision to be Made and Identification of the Preferred Alternative

Upon completion of the EA, Andrews AFB would determine whether implementation of the Proposed Action would result in any significant impacts. If, upon completion of this EA, it is determined that implementation of the Proposed Action would result in significant impacts, Andrews AFB would develop various mitigation measures to reduce impacts to below the level of significance, initiate the preparation of an EIS, or abandon the Proposed Action. This EA will also be used to guide Andrews AFB in implementing the Proposed Action in a manner consistent with the United States Air Force (USAF) standards for environmental stewardship. The Preferred Alternative for the Proposed Action is set forth in Section 2.3.

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# 3.0 EXISTING CONDITIONS

## 3.1 Earth Resources

### 3.1.1 Definition of the Resource

Earth resources include topography, geology, and soils. Geologic resources of an area typically consist of surface and subsurface materials and their inherent properties. The term "soils" refers to unconsolidated materials formed from the underlying bedrock or other parent material. Soils play a critical role in both the natural and human environment. Soil drainage, texture, strength, shrink/swell potential, consistency, and erodibility all determine the suitability of the ground to support man-made structures and facilities. These resources could have scientific, historical, economic, and recreational value.

The region of influence (ROI) for earth resources in this EA includes Andrews AFB. The geologic and topographic descriptions for the project site are general to the entire Base and surrounding region, while the soils discussion is site specific.

### 3.1.2 Existing Conditions

#### 3.1.2.1 GEOLOGY

The Coastal Plain of southern Maryland, on which Andrews AFB is located, is comprised of unconsolidated sedimentary geologic units that range from the Quaternary (1.5 million years ago to the present day) to Cretaceous (144 to 65 million years ago) Periods in age. These geologic units are made of unconsolidated sand, gravel, silt, clay, marl, glauconite, and organic materials that overlay crystallized Precambrian and early Paleozoic age bedrock. Although these units are similar, differences include variations in mineralogy, color, fossil content, and the micro- and macro-structure (United States Department of Agriculture [USDA] 1968; USAF 2001).

The surficial geology of Andrews AFB primarily comprised of upland deposits of the late Tertiary Period Pliocene (approximately 7 million years old). These upland deposits range in thickness from 10 to 20 feet and include irregularly bedded cobbles, gravel, and fine sand that are mixed with silt and clay. In areas where streams have cut deeply into the upland deposits, the underlying Calvert formation can be seen. The Calvert Formation developed during the Miocene Epoch (about 19 million years ago) and comprises a mixture of sands, silts, clays, and shell beds. Surface formations at Andrews AFB have largely been previously disturbed by grading activities in support of facility construction (USDA 1968; USAF 2001).

#### 3.1.2.2 SOILS

Due to the considerable amount of development over the years at Andrews AFB, most of the naturally occurring soils at the Base are no longer present or identifiable. Approximately 50 percent of the Base soils are categorized as Udorthents, which is land that is altered by disturbance to the extent that the original soil series cannot be identified. Much of the originally occurring soil, particularly in and around the runways and taxiways, has been disturbed by cut and fill, with some areas having 20 or more feet of fill material. Only about 10 percent of the Base, primarily along the perimeter and areas of the golf course, is considered to be undisturbed. The two dominant, naturally occurring soil associations on Base are the Sassafras-Croom and the Beltsville-Leonardtown-Chillum associations (USDA 1968; USAF 2001).

The Sassafras-Croom association is located adjacent to drainages associated with Tinkers and Piscataway creeks. This association is comprised of gently sloping to steep, well-drained, and primarily gravelly soils with a compact substratum. Its composition is approximately 30 percent Sassafras soils, 25 percent Croom soils, and 45 percent minor soils. These soils support general farming and residential development in other areas of Prince George's County (USDA 1968; USAF 2001).

The Beltsville-Leonardtown-Chillum association occupies most of the northern portion of the Base. This association is comprised mostly of gently to moderately sloping soils, but can also include nearly level or fairly steep areas. These soils are predominantly moderately deep, well to poorly drained soils with a compacted substratum. Its composition is approximately 45 percent Beltsville soils, 13 percent Leonardtown soils, and 42 percent Chillum and other minor soils. These soils support general farming and residential and industrial development in other areas of Prince George's County (USDA 1968; USAF 2001). Soils associated with the Proposed Action are of the Beltsville-Leonardtown-Chillum soil association.

Potential building constraints associated with naturally occurring soils on Base include several soil types that are somewhat to very limited with regard to depth to saturation zone, flooding, shrink/swell potential, and steep slopes (USDA 1968).

#### 3.1.2.3 TOPOGRAPHY

Andrews AFB is located on the western side of the middle Atlantic Coastal Plain Physiographic Province, which is comprised primarily of unconsolidated substrata. The fall line between the Atlantic Coastal Plain and the Piedmont is located about 12 miles west of the Base. The region is generally level to gently sloping, with local relief of less than 100 feet except in association with moderately steep to steep stream banks. Located on a plateau between the Anacostia River and the Patuxent River, surface elevations at the Base range from about 215 feet above mean sea level (MSL) to 281 feet above MSL (USAF 2001).

## 3.2 Water Resources

### 3.2.1 Definition of the Resource

Water resources analyzed in this EA include surface water and groundwater quantity and quality. Surface water resources include lakes, rivers, and streams and are important for a variety of reasons, including economic, ecological, recreational, and human health. Groundwater includes the subsurface hydrologic resources of the physical environment and is an essential resource in some regions. Groundwater properties are often described in terms of depth to aquifer or water table, water quality, and surrounding geologic composition.

Other issues relevant to water resources include the downstream water and watershed areas affected by existing and potential runoff, and hazards associated with 100-year floodplains. Floodplains are defined by EO 11988, *Floodplain Management,* as "the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, the area subject to a one percent or greater chance of flooding in any given year" (that area inundated by a 100-year flood). Floodplain values include natural attenuation of floods, water quality maintenance, groundwater recharge, as well as habitat for many plant and animal species. The ROI for water resources in this EA includes Andrews AFB.

## 3.2.2 EXISTING CONDITIONS

### 3.2.2.1 SURFACE WATER

Andrews AFB is located within portions of the Potomac River and the Patuxent River watersheds. The uplands that characterize the topography of Andrews AFB create a watershed divide, with the western portion of the Base generally draining to the Potomac River and the northeastern portion generally draining to the Patuxent River which is located approximately seven miles east of the Base. Most of the Base is located within the Potomac River watershed, which drains to the Potomac River located about four miles west of the Base. Several streams that are fed by a shallow, unconfined surface aquifer originate on or near Andrews AFB. Piscataway Creek, a tributary of the tidal Potomac River, originates within the southeastern corner of the Base. Tinkers Creek, an intermediate order tributary of Piscataway Creek, also originates in the southeastern portion of the Base. Additionally, Meetinghouse Branch and Paynes Branch originate in the southwestern quadrant of the Base and flow toward the west and eventually into the Potomac River. Cabin Creek and the Charles Branch originate in the northeastern quadrant of the Base, and drain toward the east to Western Branch, which eventually flows into the Patuxent River (USAF 2001; Andrews AFB 2003). Surface water features at Andrews AFB also include the 16.9-acre Base Lake and five smaller ponds (Andrews AFB 2003).

Stormwater at the Base is conveyed through oil/water separators and storm lines within industrial areas of Andrews AFB, and through swales and ditches in other areas of the Base. All surface runoff is ultimately conveyed to a network of primarily underground culverts, and is discharged from eight major storm drain outfalls. Stormwater is eventually discharged into Henson Creek, Meetinghouse and Payne Branch to the west, Cabin Creek, and Charles Branch to the east, and Piscataway Creek to the southeast. Each of these streams ultimately flows into either the Potomac or Patuxent Rivers (USAF 2001).

To manage on-installation stormwater runoff and protect the quality of surface water on and in the vicinity of the installation, the Base has been issued a NPDES general stormwater permit. In order to comply with the requirements of this permit, Andrews AFB has prepared and implemented a Stormwater Pollution Prevention Plan (SWPPP) that includes water quality monitoring requirements and Best Management Practices (BMPs) to minimize the potential for contaminants to reach nearby surface waters (USAF 2003a).

### 3.2.2.2 GROUND WATER

Andrews AFB is located within a portion of the Maryland Coastal Plain that includes several important regional water supply aquifers. These aquifers are located several hundred feet below ground surface (bgs), and include, in order of descending stratigraphic sequence: the Aquia, Magothy, Patapsco, and Patuxent formations. The Aquia formation, located at a depth of 150 feet bgs, is a primary source of groundwater for Prince George's, Anne Arundel, Charles, and St. Mary's Counties, and is primarily recharged by infiltration in an area northwest of Andrews AFB. The Patapsco and Patuxent formations are important regional aquifers that provide groundwater for Prince George's, Anne Arundel, and Charles Counties. There are two non-potable water supply wells at Andrews AFB. One of the wells is completed in the Magothy Formation at a depth of about 385 feet bgs, while the second well was completed in the Patapsco Formation at a depth of about 650 feet bgs (ANG 2005).

Groundwater underlying the Base occurs at or near the ground surface, with shallow groundwater occurring at depths of less than 20 feet bgs, likely under unconfined conditions.

Groundwater recharge occurs primarily through precipitation. Groundwater flow is believed to be down-gradient toward local streams or downward toward deeper underlying aquifers (USAF 2001).

#### 3.2.2.3 FLOODPLAINS

The Federal Emergency Management Agency has not developed Flood Insurance Rate Maps for Andrews AFB. Consequently, there are no designated 100-year or 50-year floodplains at the Base. In 2005, Andrews AFB completed a floodplain study to determine the locations of floodplains on the Base (89 AW 2005). This analysis indicated that there are seven floodplains located within the boundaries of Andrews AFB. The floodplains are generally limited to small streams and the area immediately adjacent to these streams (Figure 3-1).

## 3.3 Biological Resources

### 3.3.1 DEFINITION OF THE RESOURCE

Biological resources include native or naturalized plants and animals, and the habitats such as wetlands, forests, and grasslands, in which they exist. Sensitive and protected biological resources include plant and animal species that are federally (United States Fish and Wildlife Service [USFWS]) or state (Maryland Department of Natural Resources [MDNR]) listed for protection. Determining which species occur in an area affected by implementation of an action can be accomplished through literature reviews and coordination with appropriate federal and state regulatory agency representatives, resource managers, and other knowledgeable experts.

Under the ESA (16 USC 1536), 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 USFWS also maintains a list of species considered to be candidates for possible listing under the ESA. Although candidate species receive no statutory protection under the ESA, the USFWS has attempted to advise government agencies, industries, and the public that these species are at risk and could warrant future protection under the ESA.

The MDNR oversees the protection and management of state-protected species under the Nongame and Endangered Species Conservation Act (Annotated Code of Maryland 10-2A-01). This Act is supported by regulations (Code of Maryland Regulations 08.03.08) which contain the official State Threatened and Endangered Species list.

Biological resources also include wetlands. Wetlands are an important natural system with diverse biological and hydrological functions. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient recycling, unique plant and wildlife habitat provision, stormwater attenuation and storage, sediment detention, and erosion protection. Wetlands are protected as a subset of the waters of the U.S. under Section 404 of the CWA and incorporate deep-water aquatic habitats and special aquatic habitats (including wetlands). The USACE defines wetlands as "those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR Part 338). The ROI for water resources in this EA includes Andrew AFB.

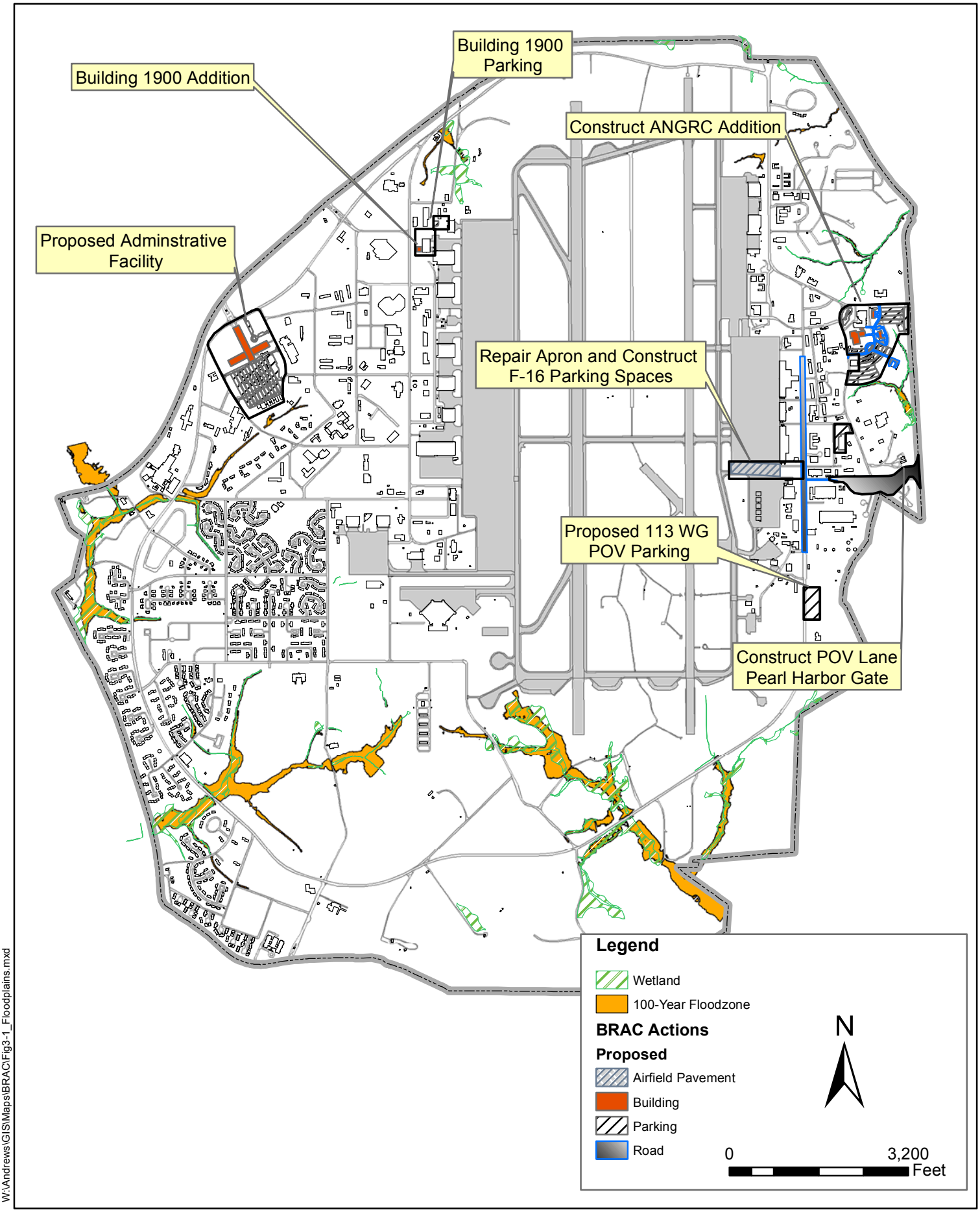



Figure 3-1. Andrews AFB Floodplains and Wetlands

## 3.3.2 EXISTING CONDITIONS

*Vegetation*

Andrews AFB is located in the Atlantic Slope Section of the Oak-Pine Forest Region. The original forest consisted primarily of deciduous trees, predominantly oaks and hickories, with some pines dominant in areas where soils were too poor to support deciduous species. A substantial portion of Prince George's County has been deforested for urban and suburban development, and only small patches of the original forest remain (USAF 2001).

Originally, about 90 percent of the state of Maryland was forested. Forest cover has declined to only 41 percent (MDNR 2003); much of this loss in forest cover occurred prior to 1950 as a result of farmland expansion. Since 1950, the percent forest cover has decreased by only about five percent; clearing for urban development to a large extent being offset by conversion of farmland back to forest (MDNR 2003). Most of the remaining forest cover is in the northwestern part of the state, east to Hagerstown, and in the south, south of Upper Marlboro and on the eastern side of Chesapeake Bay. These two areas contain most of the remaining large blocks of forest in the state (MDNR 2003). Due to increased urbanization, further decline in forest cover is expected to occur in the state of Maryland, and one of the main concerns is fragmentation of the remaining larger blocks of forest. Cover in Prince George's County in particular is 37 percent, near the average for the state (MDNR 2003). Andrews AFB, located along the eastern edge of the larger Washington, D.C. urban area, lies to the west and just north of the southern, more heavily forested part of the state. No part of Andrews AFB is identified as holding forest of high ecological value (MDNR 2003).

### 3.3.2.1 CURRENT VEGETATIVE COVER

Nearly 80 percent of Andrews AFB is developed or intensely managed (USAF 2001). The vegetation occurs largely in association with extensively managed areas (i.e., improved areas): lawns, gardens, golf course fairways, ponds, bare ground, and recreational fields. Semi-improved areas include runway borders, the runway infield, and approach clear zones. The remaining patches of original vegetation (i.e., unimproved areas) consist of or are associated with mixed hardwood forest, mixed hardwood/pine forest, oak forest, oak/hickory forest, oak/pine forest, pine forest, red maple swamp, and shallow emergent marsh. Typical understory plants found in wooded areas include mountain laurel (*Kalmia latifolia*), highbush blueberry (*Vaccinium corymbosum*), and Christmas fern (*Polystichium acrostichoides*) (USAF 2001).

Approximately 720 acres of forestland occur on the main Base. These forested areas are scattered around the perimeter and southern portion of the main Base. The forest classifications include modified commercial forestland (MCF), non-commercial forestland (NCF), and restricted commercial forestland (RCF). However, the limited area of forest and urban environment precludes forest management activities for commercial timber production. Approximately 222 acres of MCF occur in scattered stands on the east side of the main Base. Approximately 34 acres of NCF occur in the housing areas and areas of the golf course. Approximately 152 acres of RCF occur in riparian zones.

Most turf and landscape areas occur in the improved and semi-improved portions of the main Base. These areas include the airfield, golf course, surrounding structures in the cantonment area and base housing, and along major roadways. Dominant turf species are fescue (*Festuca elatior*) and perennial ryegrass (*Lolium perenne*) (USAF 2001).

#### 3.3.2.2 WILDLIFE

Existing information on wildlife at Andrews AFB exists primarily for birds and mammals. During wildlife surveys in 1994, a total of 84 bird species were recorded. Birds associated with open water communities included the Canada goose (*Branta Canadensis*), green heron (*Butorides virescens*), and great blue heron (*Ardea herodias*). Eastern wood pewees (*Contopus virens*), Eastern towhees (*Pipilo erythrophthalmus*), and red-eyed vireos (*Vireo olivaceous*) occurred in stands of mixed hardwood forest, while the prothonotary warbler (*Protonotaria citrea*) and black and white warbler (*Mniotilta varia*) were detected in association with red maple swamp. American crows (*Corvus brachyrhynchos*), house finches (*Carpodacus mexicanus*), Eastern meadowlarks (*Sturnella magna*), Eastern bluebirds (*Sialia sialis*), Carolina chickadees (*Poecile carolinensis*), Carolina wrens (*Thryothorus ludovicianus*), and grasshopper sparrows (*Ammodramus savannarum*) represented some of the species associated with fields and grasslands. Various species of raptors were observed including the great horned owl (*Bubo virginianus*), Eastern screech owl (*Otus asio),* American kestrel (*Falco sparverius*), the red-shouldered hawk (*Buteo lineatus*), and red-tailed hawk (*B. jamaicensis*) (USAF 2001).

Mammals known to occur at Andrews AFB include the following: white-tailed deer (*Odocoileus virginianus*), beaver (C*astor canadensis*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis marsupialis*), Eastern gray squirrel (*Sciurus carolinensis*) and Eastern cottontail (*Sylvilagus floridanus*) (USAF, 2001). Several bat species are also known to be present at Andrews AFB (USAF 2001). Reptiles present at Andrews AFB include the Eastern garter snake (*Thamnophis sirtalis*), black rat snake (*Elaphe obsolete*), fence lizard (*Sceloporus undulatus*) and Eastern box turtle (*Terrapene carolina*). Fish species in the Base Lake include largemouth bass (*Micropterus salmoides floridanus*), smallmouth bass (*M. dolomieui*), carp (*Cyprinus carpio*), and bluegill (*Lepomis macrochirus*) (USAF 2001).

#### 3.3.2.3 THREATENED AND ENDANGERED SPECIES

A total of 21 rare, threatened, or endangered plant species have been detected at Andrews AFB (USAF, 2007; Ecology and Environment, 2005). Of those, however, only six were located on the main Base (Table 3-1). The main Base's six sensitive species consist of the sandplain gerardia (*Agalinis acuta*), blunt-leaved gerardia (*Agalinis obtusifolia*), Curtiss' three-awn (*Aristida curtissii*), spiral pondweed (*Potamogeton spirillus*), swollen bladderwort (*Utricularia inflate*), and tall nutrush (*Scleria triglomerata*). The only known population of the federally endangered sandplain gerardia on the main Base is located on the south-southeast section of Andrews AFB. The area has been fenced off and is monitored on a regular basis to protect the site in accordance with Section 7 of the ESA. The Curtiss' three-awn has been recorded at the edge of the airfield near South Perimeter Road, while the tall nutrush has been found near the southeastern portion of the Base near South Perimeter Road. Threatened and endangered species surveys occur regularly at Andrews AFB and have been conducted in 1993, 1996-1997, 2004 and 2006 (Table 3-1). There are no threatened or endangered faunal species known to occur on Andrews AFB (USAF 2001; K. Harris, personal communication, January 2007).

*Wetlands and Other Aquatic Habitat*

Section 404 of the CWA established a program to regulate the discharge of dredge and fill material into waters of the U.S., including wetlands. Activities in waters of the U.S. that are regulated under this program include fills for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and conversion of wetlands to uplands for farming and forestry. EO 11990, *Protection of Wetlands*, requires federal agencies, including the USAF, to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.

**Table 3-1. Threatened and Endangered Species Known to Occur at Andrews AFB**

| Common Name | Scientific Name | Status | Observed in 1993 | Observed in 1996-1997 | Observed in 2004 | Observed in 2006 |
|---|---|---|---|---|---|---|
| **PLANTS** | | | | | | |
| Sandplain gerardia | *Agalinis acuta* | FE | Yes | No | No | No |
| Carolina foxtail | *Alopecurus carolinianus* | S1 | Yes | Yes | No | No |
| Curtiss' three-awn | *Aristida curtissii* | SU | Yes | Yes | No | No |
| Spiral pondweed | *Potamogeton spirillus* | S1 | Yes | No | No | No |
| Blunt-leafed gerardia | *Agalinis obtusifolia* | SE | Yes | No | Yes | No |
| Swollen bladderwort | *Utricularia inflate* | S3 | Yes | Yes | No | No |

FE = Federal Endangered, SE = State Endangered, SU = State Uncertain (possibly rare in Maryland), S1 = Highly State Rare, S2 = State Rare. Sources: USAF 2007; Maryland Wildlife and Heritage Division 2001a

In May 2004, in coordination with the Baltimore District USACE, the 89th Airlift Wing Civil Engineering Squadron Environmental Management Flight, now the 316th Wing Civil Engineering Squadron Environmental Management Flight completed a formal wetland delineation of all areas on Andrews AFB. Approximately 87.2 acres of jurisdictional wetland were delineated at Andrews AFB (Figure 3-1). The majority of these wetlands were palustrine forested wetlands (PFO), located primarily along streams and drainageways. The other significant wetland type identified at Andrews AFB was the palustrine emergent wetlands (PEM). This wetland type was also located primarily along streams and drainageways. Other wetland types observed on Base include palustrine scrub/shrub wetlands (PSS), and palustrine unconsolidated bottom wetlands (PUB) (89 AW 2004).

## 3.4 Air Quality

This section discusses air quality considerations and conditions in the area around Andrews AFB in Prince George's County, Maryland. It also addresses air quality standards and describes current air quality conditions in the region.

### 3.4.1 Definition of the Resource

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. The levels of pollutants are generally expressed by concentration units of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$) determined over various periods of time (averaging periods).

*Federal Air Quality Standards*

The significance of a pollutant concentration in a region or geographical area is determined by comparing it to federal and/or state ambient air quality standards. Under the authority of the CAA, the USEPA has established nationwide air quality standards to protect public health and welfare, with an adequate margin of safety. These federal standards, known as the NAAQS, represent the maximum allowable atmospheric concentrations and were developed for seven criteria pollutants: $O_3$, $NO_2$, CO, particulate matter less than 10 micrometers in diameter ($PM_{10}$), particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$), sulfur dioxide ($SO_2$), and lead

(Pb). Short-term standards (1-hour, 8-hour, or 24-hour periods) were established for pollutants with acute health effects. The USEPA does not permit these standards to be exceeded more than once per year. Long-term standards (annual periods) were established for pollutants with chronic health effects and these standards may not be exceeded if a region is to maintain an attainment status.

Based on measured ambient criteria pollutant data, the USEPA designates areas of the U.S. as having air quality equal or better than the NAAQS (attainment) or worse than the NAAQS (non-attainment). Upon achieving attainment, areas are considered to be in maintenance status for a period of 10 or more years. Areas are designated as unclassifiable for a pollutant when there is insufficient ambient air quality data for the USEPA to form a basis of attainment status. For the purpose of applying air quality regulations, unclassifiable areas are treated similar to areas that are in attainment of the NAAQS.

*State Air Quality Standards*

Under the CAA, state and local agencies may establish ambient air quality standards and regulations of their own, provided that these are at least as stringent as the federal requirements. For all criteria pollutants, Maryland has adopted the NAAQS. A summary of the NAAQS that apply to the proposed project area at Andrews AFB is presented in Table 3-2.

**Table 3-2. National Ambient Air Quality Standards**

| Air Pollutant | Averaging Time | NAAQS | |
|---|---|---|---|
| | | Primary | Secondary |
| Carbon Monoxide (CO) | 8-hour | 9 ppm | --- |
| | 1-hour | 35 ppm | --- |
| Nitrogen Dioxide ($NO_2$) | AAM | 0.053 ppm | 0.053 ppm |
| | 24-hour | --- | --- |
| Sulfur Dioxide ($SO_2$) | AAM | 0.030 ppm | --- |
| | 24-hour | 0.14 ppm | --- |
| | 3-hour | --- | 0.50 ppm |
| Particulate Matter ($PM_{10}$) | AAM | Revoked [(a)] | Revoked [(a)] |
| | 24-hr | 150 $\mu g/m^3$ | 150 $\mu g/m^3$ |
| Particulate Matter ($PM_{2.5}$) | AAM | 15 $\mu g/m^3$ | 15 $\mu g/m^3$ |
| | 24-hour | 35 $\mu g/m^3$ | 35 $\mu g/m^3$ |
| Ozone ($O_3$) | 8-hour | 0.08 ppm | 0.08 ppm |
| Lead (Pb) and Lead Compounds | Calendar Quarter | 1.5 $\mu g/m^3$ | 1.5 $\mu g/m^3$ |

Notes: AAM = Annual Arithmetic Mean
ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
(a) Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the USEPA revoked the annual $PM_{10}$ standard in 2006 (effective December 17, 2006).
Source: USEPA 2007b

*State Implementation Plan*

For non-attainment regions, the states are required to develop a SIP designed to eliminate or reduce the severity and number of NAAQS violations, with an underlying goal to bring state air quality conditions into (and maintain) compliance with the NAAQS by specific deadlines. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS in each state. Under the CAA Amendments of 1990, federal agencies are required to determine whether their undertakings are in conformance with the applicable SIP and demonstrate that their actions would not cause or contribute to a new violation of the NAAQS; increase the frequency or severity of any existing violation; or delay timely attainment of any standard, emission reduction, or milestone contained in the SIP.

*Prevention of Significant Deterioration (PSD)*

Section 162 of the CAA further established the goal of PSD of air quality in all international parks; national parks that exceeded 6,000 acres; and national wilderness areas and memorial parks that exceeded 5,000 acres if these areas were in existence on August 7, 1977. These areas were defined as mandatory Class I areas, while all other attainment or unclassifiable areas were defined as Class II areas. Under CAA Section 164, states or tribal nations, in addition to the federal government, have the authority to redesignate certain areas as (non-mandatory) PSD Class I areas, e.g., a national park or national wilderness area established after August 7, 1977, which exceeds 10,000 acres. PSD Class I areas are areas where any appreciable deterioration of air quality is considered significant. Class II areas are those where moderate, well-controlled growth could be permitted. Class III areas are those designated by the governor of a state as requiring less protection than Class II areas. No Class III areas have yet been designated. The PSD requirements affect construction of new major stationary sources in the PSD Class I, II, and III areas. According to CAA Section 165, a permit that has been subject to review, and includes emission limitations must be issued prior to construction.

*Visibility*

CAA Section 169(a) established the additional goal of prevention of further visibility impairment in PSD Class I areas. Visibility impairment is defined as a reduction in the visual range and atmospheric discoloration. Determination of the significance of an activity on visibility in a PSD Class I area is typically associated with evaluation of stationary source contributions. The USEPA is implementing a Regional Haze rule for PSD Class I areas that will address contributions from mobile sources and pollution transported from other states or regions. Emission levels are used to qualitatively assess potential impairment to visibility in PSD Class I areas. Decreased visibility could potentially result from elevated concentrations of $PM_{10}$ and $SO_2$ in the lower atmosphere.

*General Conformity*

CAA Section 176(c), General Conformity, established certain statutory requirements for federal agencies with proposed federal activities to demonstrate conformity of the proposed activities with each state's SIP for attainment of the NAAQS. Federal activities must not:

(a) cause or contribute to any new violation;

(b) increase the frequency or severity of any existing violation; or

(c) delay timely attainment of any standard, interim emission reductions, or milestones in conformity to a SIP's purpose of eliminating or reducing the severity and number of NAAQS violations or achieving attainment of NAAQS.

(d) General conformity applies only to nonattainment and maintenance areas. If the emissions from a federal action proposed in a nonattainment area exceed annual thresholds identified in the rule, a conformity determination is required of that action. A conformity determination would require an extensive analysis to demonstrate how an action would conform to the applicable SIP. The thresholds become more restrictive as the severity of the nonattainment status of the region increases.

*Stationary Source Operating Permits*

The Air and Radiation Management Administration regulates air management permits for stationary air pollution sources in the State of Maryland (COMAR 26.11). Air quality permits must be obtained for new or modified sources. Title V of the CAA Amendments of 1990

requires states to issue Federal Operating Permits for major stationary sources. A major stationary source in an attainment or maintenance area is a facility (i.e., plant, base, or activity) that emits more than 25 tons per year (TPY) of volatile organic compounds (VOCs) or nitrogen oxides ($NO_x$) (both of which are atmospheric precursors to the formation of $O_3$), 100 TPY of any other criteria air pollutant, 10 TPY of a hazardous air pollutant, or 25 TPY of any combination of hazardous air pollutants. The purpose of the permitting rule is to establish regulatory control over large, industrial activities and to monitor their impact upon air quality.

### 3.4.2 EXISTING CONDITIONS

*Regional Air Quality*

Federal regulations in 40 CFR 81 (*Designation of Areas for Air Quality Planning Purposes*) delineate certain air quality control regions (AQCRs), which were originally designated based on population and topographic criteria closely approximating each air basin. The potential influence of emissions on regional air quality would typically be confined to the air basin in which the emissions occur. Therefore, the ROI for the Proposed Action is the National Capital AQCR (AQCR 47), which includes Prince George's and Montgomery Counties in Maryland, and Arlington, Fairfax, Loudoun, and Prince William Counties in Virginia (USEPA 2007a).

*Attainment Status*

A review of federally published attainment status for Prince George's County in 40 CFR 81.321 indicated that this region is designated as moderate nonattainment for the 8-hour $O_3$ standard, and attainment (i.e., meeting national standards) for all other criteria pollutants, including CO, $NO_2$, $SO_2$, $PM_{10}$, and Pb (USAF 2006a). The Washington, D.C. metropolitan area is in nonattainment of the $PM_{2.5}$ NAAQS. The metropolitan area was designated as attainment for CO as of March 16, 1996, and is currently covered by a 10-year maintenance plan for CO (61 Federal Regulation 2931, January 30, 1996). Although the County is designated as in attainment for CO, conformity requirements apply for CO due to its maintenance status.

*PSD Class I Areas*

No mandatory PSD Class I areas are designated for the State of Maryland. The nearest PSD Class I areas are the Shenandoah National Park, approximately 88 miles southwest of Andrews AFB; the Dolly Sods Wilderness in West Virginia, approximately 133 miles southwest of the Base; and the Brigantine Wilderness in New Jersey, approximately 140 miles to the north of the Base.

*Climate*

The humid subtropical climate at Andrews AFB is influenced by an easterly airflow that produces frequent successions of high and low pressure systems. Summers are warm and humid, with frequent thunderstorms; winters are cool with surges of cold, dry continental air from the north that can produce moderate to heavy snowfall. Average annual temperature is 56 degrees Fahrenheit (°F). Monthly mean temperatures range from 34°F in January to 77°F in July. Mean annual precipitation is about 42 inches. Rainfall is well distributed throughout the year, with summer being the wettest season and winter the driest. An average of 38 thunderstorms occurs annually. The average winter snowfall is 22 inches per year, with the majority of the snow occurring in January. Average relative humidity is 56 percent, with highest humidity occurring in early mornings. Mean cloud cover is 53 percent during summer and 61 percent during winter. On average, some fog is encountered 164 days per year at Andrews AFB. Wind speed at the Base averages 6 knots, generally coming from the northwest during fall and from the southwest

during spring and summer. The region is occasionally affected by strong coastal low-pressure systems, including nor'easters and hurricanes (USAF 2001).

*Current Emissions*

Air emissions at Andrews AFB from stationary sources include those from boilers/heaters, gasoline storage and dispensing operations, paint spray booths, emergency generators, abrasive blasting, and off-aircraft jet engine testing. In the following table, particulate matter is equivalent to total suspended particulates and includes $PM_{10}$ as a component of the total; $NO_x$ includes $NO_2$ and other nitrogen compounds; and sulfur oxides ($SO_x$) includes $SO_2$ and other sulfur compounds. Because VOCs and $NO_x$ are precursors to the formation of $O_3$ in the atmosphere, control of these pollutants is the primary method of reducing $O_3$ concentrations in the atmosphere. Table 3-3 provides summaries of a stationary emissions inventory conducted in 2005 and a mobile emissions inventory conducted in 2002 (USAF 2005a, USAF 2005b.).

**Table 3-3. Baseline Emissions at Andrews AFB, Calendar Years 2002 and 2005**

| | Annual Emissions (tons per year) | | | | |
|---|---|---|---|---|---|
| | ***CO*** | ***VOC*** | ***$NO_x$*** | ***$SO_x$*** | ***$PM_{10}$*** |
| Stationary Sources[1] | 15.4 | 4.1 | 15.8 | 5.0 | 1.3 |
| Mobile Sources[2] | 2,128 | 527 | 650 | 41 | 107 |

1) Source: USAF 2005a, Table 1-2
2) Source: USAF 2005b, Table S-1

*Regional Air Emissions*

The previous section lists on-Base emissions for Andrews AFB. The NEPA process, however, must also consider impacts from mobile sources and indirect emissions related to the project, some of which (for example, commuting of new employees to and from the facility) occur outside of the installation. Table 3-4 lists county-wide emissions for Prince George's County as compiled by the USEPA in its National Emissions Inventory (NEI), which was last updated in 2002 (USEPA 2006). The 2002 NEI contains estimates of annual emissions for stationary and mobile sources of air pollutants in each county.

**Table 3-4. Air Emissions Inventory Prince George's County, Maryland, Calendar Year 2002**

| Prince George's County, Maryland | Pollutants (Tons per Year) | | | | | |
|---|---|---|---|---|---|---|
| | **CO** | **VOC** | **$NO_x$** | **$SO_2$** | **$PM_{2.5}$** | **$PM_{10}$** |
| Stationary Sources | 16,606 | 13,490 | 17,497 | 55,146 | 6,827 | 12,602 |
| Mobile Sources | 200,338 | 13,902 | 21,527 | 943 | 622 | 891 |

Source: USEPA 2006

# 3.5 Noise

## 3.5.1 Definition of Resource

Noise is considered to be unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. It may be intermittent or continuous, steady or impulsive. It may be stationary or transient. Stationary sources are normally related to specific land uses, e.g., housing tracts or industrial plants. Transient noise sources move through the environment, either along relatively established paths (e.g., highways, railroads, and aircraft flight tracks around airports), or randomly. There is wide diversity in responses to noise that not only vary according to the type of noise and the characteristics of the sound source, but also according to the sensitivity and expectations of the receptor, the time of day, and the distance between the noise source (e.g., an aircraft) and the receptor (e.g., a person or animal).

The physical characteristics of noise, or sound, include its intensity, frequency, and duration. Sound is created by acoustic energy, which produces minute pressure waves that travel through a medium, like air, and are sensed by the ear drum. This is similar to ripples in water that are produced when a stone is dropped into it. As the acoustic energy increases, the intensity or amplitude of these pressure waves increase, and the ear senses louder noise. The unit used to measure the intensity of sound is the decibel (dB). Sound intensity varies widely (from a soft whisper to a jet engine) and is measured on a logarithmic scale to accommodate this wide range. The logarithm, and its use, is nothing more than a mathematical tool that simplifies dealing with very large and very small numbers. For example, the logarithm of the number 1,000,000 is 6, and the logarithm of the number 0.000001 is -6 (minus 6). Obviously, as more zeros are added before or after the decimal point, converting these numbers to their logarithms greatly simplifies calculations that use these numbers.

The frequency of sound is measured in cycles per second, or hertz (Hz). This measurement reflects the number of times per second the air vibrates from the acoustic energy. Low frequency sounds are heard as rumbles or roars, and high frequency sounds are heard as screeches. Sound measurement is further refined through the use of "A-weighting." The normal human ear can detect sounds that range in frequency from about 20 Hz to 15,000 Hz. However, all sounds throughout this range are not heard equally well. Therefore, through internal electronic circuitry, some sound meters are calibrated to emphasize frequencies in the 1,000 to 4,000 Hz range. The human ear is most sensitive to frequencies in this range, and sounds measured with these instruments are termed "A-weighted", and are shown in terms of A-weighted decibels (dBA).

The duration of a noise event and the number of times noise events occur are also important considerations in assessing noise impacts. As a basis for comparison when noise levels are considered, it is useful to note that at distances of about three feet, noise from normal human speech ranges from 63 to 65 dB, operating kitchen appliances range from about 83 to 88 dB, and rock bands approach 110 dB.

The word "metric" is used to describe a standard of measurement. As used in environmental noise analysis, there are many different types of noise metrics. Each metric has a different physical meaning or interpretation and each metric was developed by researchers attempting to represent the effects of environmental noise.

The metrics supporting the assessment of noise from aircraft operations around Andrews AFB and construction activities associated with the proposals assessed in this document are the maximum sound level ($L_{max}$), the Sound Exposure Level (SEL), and Time-Averaged Sound Levels. Each metric represents a "tier" for quantifying the noise environment, and is briefly discussed below.

#### 3.5.1.1 MAXIMUM SOUND LEVEL

The $L_{max}$ metric defines peak noise levels. $L_{max}$ is the highest sound level measured during a single noise event (e.g., an aircraft overflight), and is the sound actually heard by a person on the ground. For an observer, the noise level starts at the ambient noise level, rises up to the maximum level as the aircraft flies closest to the observer, and returns to the ambient level as the aircraft recedes into the distance. $L_{max}$ is important in judging a noise event's interference with conversation, sleep, or other common activities.

This section of the EA considers noise from aircraft operating around airfields. Around airfields, the primary operational modes of aircraft are departures (take-offs) and arrivals (landings). Table 3-5 shows $L_{max}$ values at various distances associated with typical aircraft operating at Andrews AFB.

**Table 3-5. Representative Maximum Sound Levels**

| Aircraft and Power Type | $L_{max}$ Values (in dBA) At Varying Distances (In Feet) | | | | |
|---|---|---|---|---|---|
| | 500 | 1,000 | 2,000 | 5,000 | 10,000 |
| C-12 Departure [1] | 79.4 | 73.2 | 66.7 | 57.4 | 49.5 |
| C-12 Arrival [1] | 76.5 | 69.8 | 62.6 | 51.9 | 42.9 |
| C-21 Departure [1] | 91.8 | 84.6 | 76.8 | 64.8 | 54.1 |
| C-21 Arrival [1] | 78.0 | 70.7 | 62.7 | 51.0 | 41.1 |
| F-16 A/B Departure [1] | 118.3 | 110.8 | 102.8 | 90.9 | 80.8 |
| F-16 Mil Departure [1] | 109.0 | 101.6 | 93.6 | 81.5 | 71.0 |
| F-16 Arrival [1] | 95.7 | 88.5 | 81.3 | 70.1 | 60.2 |
| Gulfstream IV Departure [2] | 86.8 | 80.0 | 72.7 | 62.1 | 53.6 |
| Gulfstream IV Arrival [2] | 80.3 | 73.5 | 66.2 | 58.6 | 47.0 |

Sources: [1] (OMEGA108)
[2] (FAA 2006)

#### 3.5.1.2 SOUND EXPOSURE LEVEL

$L_{max}$ alone may not represent how intrusive an aircraft noise event is because it does not consider the length of time that the noise persists. The SEL metric combines intensity and duration into a single measure. It is important to note, however, that SEL does not directly represent the sound level heard at any given time, but rather provides a measure of the total exposure of the entire event. Its value represents all of the acoustic energy associated with the event, as though it was present for one second. Therefore, for sound events that last longer than one second, the SEL value will be higher than the $L_{max}$ value. The SEL value is important because it is the value used to calculate other time-averaged noise metrics. Table 3-6 shows SEL values corresponding to the aircraft and power settings reflected in Table 3-5.

**Table 3-6. Representative Sound Exposure Levels**

| Aircraft and Power Type | SEL Values (in dBA) At Varying Distances (In Feet) | | | | |
|---|---|---|---|---|---|
| | 500 | 1,000 | 2,000 | 5,000 | 10,000 |
| C-12 Departure [1] | 83.7 | 79.3 | 74.6 | 67.7 | 61.6 |
| C-12 Arrival [1] | 79.5 | 74.6 | 69.2 | 60.9 | 53.7 |
| C-21 Departure [1] | 96.5 | 91.1 | 85.1 | 75.4 | 66.6 |
| C-21 Arrival [1] | 84.6 | 79.1 | 73.0 | 63.6 | 55.5 |
| F-16 A/B Departure [1] | 119.6 | 113.9 | 107.7 | 98.2 | 89.9 |
| F-16 Mil Departure [1] | 113.2 | 107.6 | 101.4 | 91.7 | 82.9 |
| F-16 Arrival [1] | 101.3 | 96.2 | 90.5 | 81.7 | 73.6 |
| Gulfstream IV Departure [2] | 91.4 | 86.5 | 80.8 | 71.9 | 64.3 |
| Gulfstream IV Arrival [2] | 86.2 | 81.3 | 75.5 | 66.6 | 59.1 |

Sources: [1] (OMEGA108)
[2] (FAA 2006)

#### 3.5.1.3 TIME-AVERAGED CUMULATIVE NOISE METRICS

The number of times that noise events occur during given periods is also an important consideration in assessing noise impacts. The "cumulative" noise metrics supporting the analysis of multiple time-varying noise events are the Day-Night Average Sound Level ($L_{dn}$), and the Equivalent Noise Level ($L_{eq}$).

*Day-Night Average Sound Level*

This metric sums the individual noise events and averages the resulting level over a specified length of time. Thus, it is a composite metric which considers the maximum noise levels, the duration of the events, the number of events that occur, and the time of day during which they occur. This metric adds 10 dB to those events that occur between 10:00 P.M. and 7:00 A.M to account for the increased intrusiveness of noise events that occur at night when ambient noise

levels are normally lower than during the day time. This cumulative metric does not represent the variations in the sound level heard. Nevertheless, it does provide an excellent measure for comparing environmental noise exposures when there are multiple noise events to be considered.

*Equivalent Noise Level*

This metric, too, sums all of the individual noise events and averages them over a specified time period. Common averaging times are 8- and 24-hour periods [$L_{eq(8)}$ and $L_{eq(24)}$]. This metric assigns no penalty for the time of the noise event. However, if no noise events occur at night, calculations of $L_{dn}$ and $L_{eq(24)}$ would be identical.

Finally, it should be noted that ambient background noise is not considered in the noise calculations that are presented below. There are two reasons for this. First, ambient background noise, even in wilderness areas, varies widely, depending on location and other conditions. For example, studies conducted in an open pine forest in the Sierra National Forest in California have measured up to a 10 dBA variance in sound levels simply due to an increase in wind velocity (Harrison 1973). Therefore, assigning a value to background noise would be arbitrary. Secondly, and probably most important, is that it is reasonable to assume that ambient background noise in the project's ROI would have little or no effect on the calculated $L_{dn}$. In calculating noise levels, louder sounds dominate the calculations, and overall, aircraft and other transportation-related noise would be expected to be the dominant noise sources characterizing the acoustic conditions in the region.

Using measured sound levels as a basis, the Air Force developed several computer programs to calculate noise levels resulting from aircraft operations. Sound levels calculated by these programs have been extensively validated against measured data, and have been proven to be highly accurate.

In this section of the EA, the sound levels calculated for aircraft operations in an airfield environment are all $L_{dn}$. $L_{dn}$ metrics are the preferred noise metrics of the Department of Housing and Urban Development, the Department of Transportation, the Federal Aviation Administration (FAA), the USEPA, and the Veteran's Administration.

Ignoring the night-time penalty for the moment, $L_{dn}$ may be thought of as the continuous or cumulative A-weighted sound level which would be present if all of the variations in sound level which occur over the given period were smoothed out so as to contain the same total sound energy. While $L_{dn}$ does provide a single measure of overall noise impact, it is fully recognized that it does not provide specific information on the number of noise events or the specific individual sound levels which occur. For example, a $L_{dn}$ of 65 dB could result from a very few noisy events, or a large number of quieter events. Although it does not represent the sound level heard at any one particular time, it does represent the total sound exposure. Scientific studies and social surveys have found the $L_{dn}$ to be the best measure to assess levels of community annoyance associated with all types of environmental noise. Therefore, its use is endorsed by the scientific community and governmental agencies (ANSI 1980, 1988; EPA 1974; FICUN 1980; FICON 1992).

The ROI for the noise assessments is the area around Andrews AFB that is exposed to elevated noise levels caused by aviation-related noise and other human activities in the region.

### 3.5.2 EXISTING CONDITIONS

Public annoyance is the most common concern associated with exposure to elevated noise levels. When subjected to $L_{dn}$ levels of 65 dBA, approximately 12 percent of the persons so exposed

will be "highly annoyed" by the noise. At levels below 55 dBA, the percentage of annoyance is significantly lower (less than three percent), and at levels above 70 dBA, it is significantly higher (greater than 25 percent) (Finegold et al, 1994). Table 3-7 shows the percentage of the population expected to be highly annoyed at a range of noise levels.

**Table 3-7. Percentage of Population Highly Annoyed By Elevated Noise Levels**

| Noise Exposure ($L_{dn}$ in dBA) | Percent Highly Annoyed |
|---|---|
| < 65 | < 12 |
| 65 – 70 | 12 – 21 |
| 70 – 75 | 22 – 36 |
| 75 – 80 | 37 – 53 |
| 80 – 85 | 54 – 70 |
| > 85 | > 71 |

Source: Finegold et al. 1994

### 3.5.2.1 AIRCRAFT ACTIVITY

The following terms are defined to provide a better understanding of how data are developed for input to the various noise models used to calculate noise.

Around an airfield, *aircraft operations* are categorized as takeoffs, landings, or closed patterns (which could include activities referred to as touch-and-goes or low approaches). Each takeoff or landing constitutes one operation. A *closed pattern* occurs when the pilot of the aircraft approaches the runway as though planning to land, but then applies power to the aircraft and continues to fly as though taking off again. The pilot then flies a circular or rectangular track around the airfield, and again approaches for landing. In some cases the pilot may actually land on the runway before applying power, or in other cases the pilot simply approaches very close to the ground. In either event, since a closed pattern operation essentially consists of a landing and a takeoff, it is considered two operations.

Andrews AFB is located approximately five miles southeast of Washington, D.C. Andrews AFB supports multiple missions, and units are equipped with a wide range of fighter, aerial refueling tanker, and transport aircraft, as well as helicopters. Andrews AFB also provides aviation support to varied military and civilian transient aircraft. Under current conditions, Andrews AFB supports approximately 320 daily aviation operations (AFCEE 2006). Considering all types of flight activities, a scenario representing an "average day's" operations was developed. The operations considered include arrivals (landings), departures (takeoffs), and closed patterns. Noise calculations consider the frequency of flight operations, runway utilization, and the flight tracks and flight profiles flown by each aircraft. The numbers and types of representative operations considered are shown in Table 3-8.

**Table 3-8. Average Daily Operations at Andrews AFB**

| | Arrivals | | Departures | | Closed Patterns | | Total[1] |
|---|---|---|---|---|---|---|---|
| **Aircraft** | **Day** | **Night** | **Day** | **Night** | **Day** | **Night** | |
| Based Military / Civil | 57.5 | 6.18 | 57.6 | 6.1 | 122.0 | 0.02 | **249.3** |
| Transient Military | 26.8 | 0.9 | 26.1 | 1.6 | 0.0 | 0.0 | **55.4** |
| Civilian | 6.9 | 0.4 | 6.9 | 0.4 | 0.0 | 0.0 | **14.7** |
| **Total** | **91.2** | **7.5** | **90.6** | **8.1** | **122.0** | **0.02** | **319.5** |

Notes [1] Daily operations are based on averages of annual operations; therefore, numbers do not round.
Source: AFCEE 2006

These levels and types of activity are then combined with information on climatology, maintenance activities, and aircraft flight parameters, and processed through the Air Force's BASEOPS/NOISEMAP (Moulton 1990) computer models to calculate $L_{dn}$. Once noise levels are calculated, they are plotted on a background map in 5-dB incremental contours from 65 dBA

to 85 dBA, as applicable. This information is compiled into the Air Installation Compatible Use Zone (AICUZ) report. The AICUZ for Andrews AFB was compiled in 1998 and the latest revision occurred in 2006. Noise modeling for this EA was based on information that is currently being used for a new AICUZ that will be completed in 2007. Noise contours associated with current activities at Andrews AFB are shown in Figure 3-2. The land area (in acres) encompassed by each contour on and off the installation is shown in Table 3-9.

**Table 3-9. Land Area Exposed To Indicated Sound Levels (Current Condition)**

| Sound Level (In $L_{dn}$) | Acres Of Land | | |
|---|---|---|---|
| | **On Base** | **Off Base** | **Total** |
| 65 – 70 | 451.0 | 3,002.7 | **3,453.7** |
| 70 – 75 | 558.3 | 2,276.4 | **2,834.7** |
| 75 – 80 | 591.3 | 784.7 | **1,376.0** |
| 80 – 85 | 656.0 | 227.3 | **883.3** |
| > 85 | 563.6 | 0 | **563.6** |
| **Total** | | | **9,111.3** |

Source: Wasmer and Maunsell 2004.

In order to further assess noise exposure from aviation activity, several "specific noise receptor" locations were selected for specific analysis. These locations included a sampling of points (referred to as "SP" points on Figure 3-2) in the Andrews AFB / Camp Springs, Maryland area around the runways normally used by the Air Force and FAA for noise impact assessment. These points represented residential neighborhoods and other land use areas which could be sensitive to elevated noise levels. Noise exposure at these points is shown in Table 3-10, and the location of the points is depicted in Figure 3-2.

**Table 3-10. Specific Point Noise Exposure**

| Point ID | Description | Exposure (in $L_{dn}$) |
|---|---|---|
| SP1 | 5502 Morris Avenue | 53.8 |
| SP2 | 5851 Robin Lane | 49.8 |
| SP3 | 5376 Bennett Court | 59.9 |
| SP4 | 7033 Tarquin Avenue | 51.8 |
| SP5 | Open Area South of Armstrong Lane and Ryon Road | 71.4 |
| SP6 | Columbire Lane | 72.3 |
| SP7 | 9511 Nottingham Drive | 68.9 |
| SP8 | 9822 Green Apple Turn | 58.5 |
| SP9 | Tanglewood School and Park | 72.3 |
| SP10 | Clinton Baptist Church | 59.7 |

Source: Moulton 1990

#### 3.5.2.2 OTHER GROUND-BASED ACTIVITY

Some additional noise results from day-to-day activities associated with operations, maintenance, and the industrial functions associated with the operation of Andrews AFB, and other commercial activities around the installation. These noise sources include the operation of ground-support equipment, and other transportation noise from vehicular traffic. However, this noise is generally localized in industrial areas on or near the airfield, or on established lines of communication supporting traffic to-and-from the airfield. Noise resulting from aircraft operations remains the dominant noise source in the airfield region.

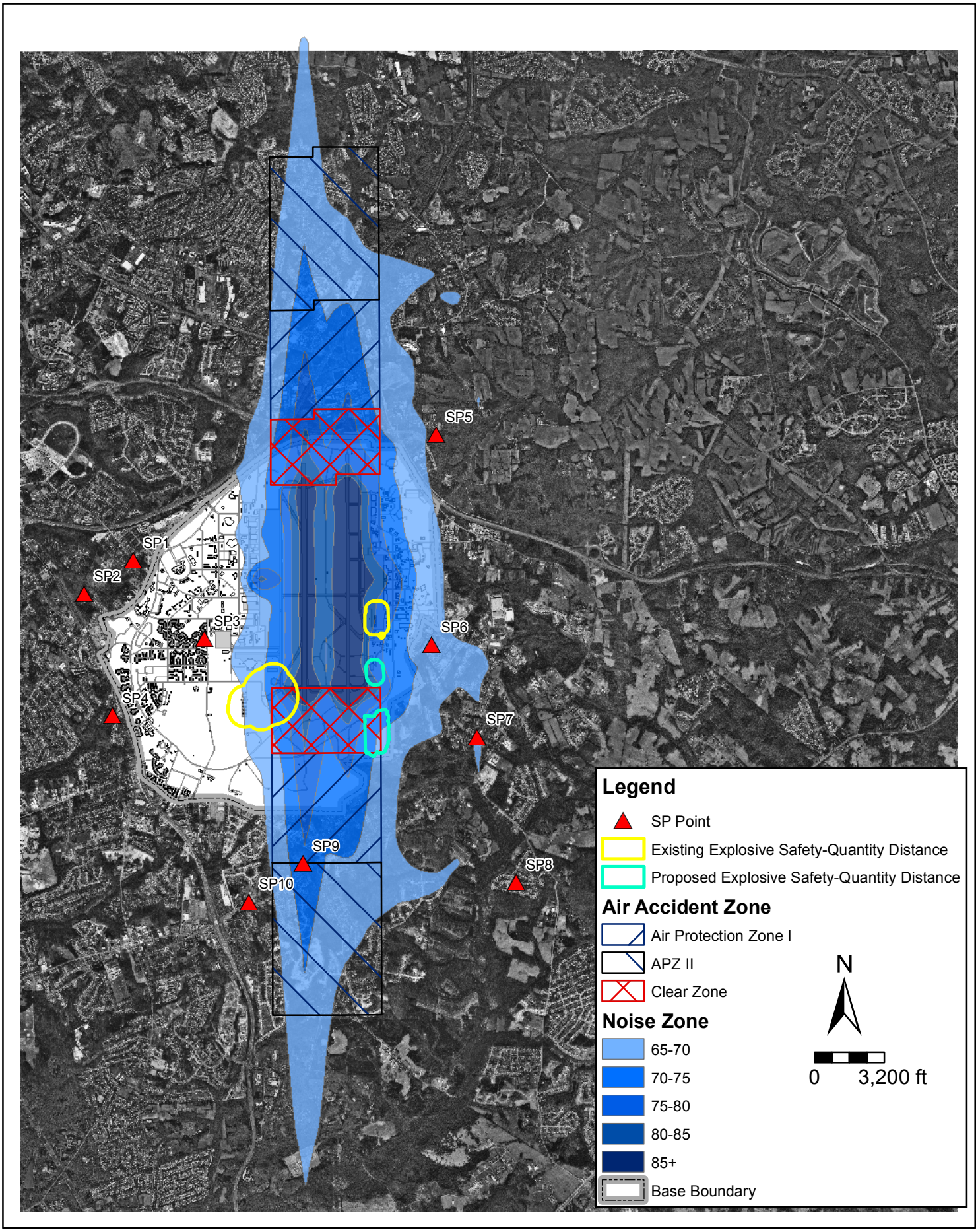



Figure 3-2. Andrews AFB Existing Noise Contours and Safety Zones

# 3.6 Land Use and Visual Resources

## 3.6.1 Definition of the Resource

Land use classifications reflect either natural or human activities occurring at a given location. Land use resulting from human activities includes residential, commercial, industrial, airfield, recreational, agriculture, and other developed areas. Natural uses include resource production such as forestry, mining, or agriculture, and resource protection such as conservation areas, wildlands, and parks. Management plans, policies, and regulations regulate the type and extent of land use allowable in specific areas and protection specially designated for environmentally sensitive areas. The ROI for land use for the Proposed Action includes the lands of Andrews AFB and adjacent properties in Prince George's County.

## 3.6.2 Existing Conditions

### 3.6.2.1 Land Use

Andrews AFB is located approximately five miles southeast of the Washington, D.C. boundary in Prince George's County, Maryland. As such, the Base is part of an inner suburb of a large city. The communities of Camp Springs, Morningside, Woodyard, and Clinton are nearby. The airfield at Andrews AFB is used as the aerial port of arrival/departure for the President of the U.S., members of Congress, and foreign heads of state (Andrews AFB 2003). Various tenants such as the U.S. Navy occupy different parts of Andrews AFB under various joint basing agreements. The U.S. Naval Air Facility (NAF) at Andrews AFB occupies 11 different areas that encompass approximately 115 acres and 35 facilities that include flight-line operations. The Navy owns the buildings within the NAF and leases the surrounding property from the Air Force. However, under a new land use permit agreement scheduled for October 2007, ownership of the buildings will be transferred from the U.S. Navy to the Air Force. To facilitate this new land use permit agreement, the Air Force completed an Environmental Baseline Survey (Andrews AFB 2007).

Existing and proposed land use development at Andrews AFB is presented in the Andrews AFB Strategic Plan. The Strategic Plan establishes goals, policies, and criteria that influence decisions concerning locations and timing of identified development needs. The Strategic Plan identifies 11 general current land use classifications (Figure 3-3) within the 4,346 acres of the Base (USAF 2005c). This plan also identifies eight future land use classifications (Figure 3-4).

Andrews AFB is divided into western and eastern sections, separated by the airfield that runs north to south. The western section of the main Base contains the majority of the land area, including a large outdoor recreation/golf course facility, all of the community facilities, and the Malcolm Grow Medical Center. The majority of the industrial uses are located on the eastern portion of the Base. Both sections house mission and administrative facilities.

Land use activities most sensitive to high levels of ambient noise exposure are residential, public services, commercial, cultural, and recreational uses. In airport noise analyses, noise contours are typically used to determine compatibility of aircraft operations with local land uses, including on-Base land uses. The predicted noise exposure level is shown in the Strategic Plan and is one of the constraints recognized in siting new construction projects. Based on guidelines adopted jointly by the FAA, the Department of Defense (DoD), and the USEPA, any land use lying in an area of less than 65 dB $L_{dn}$ noise exposure is compatible. Between 65 dB $L_{dn}$ and 85 dB $L_{dn}$, the mix of compatible uses changes to the point that very few uses are compatible at the higher end of the range. Refer to Figure 3-2 for a depiction of noise contours on Andrews AFB.

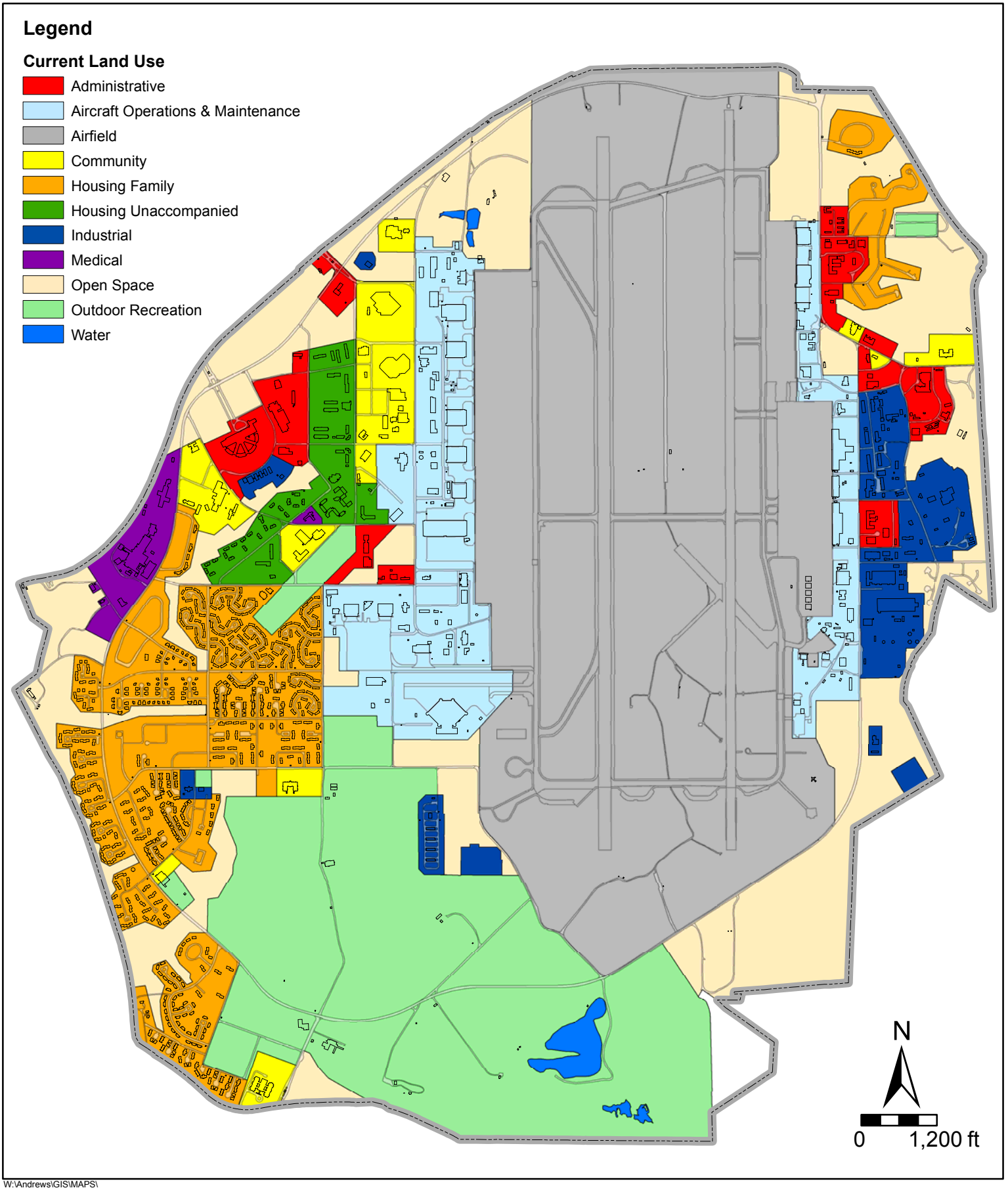
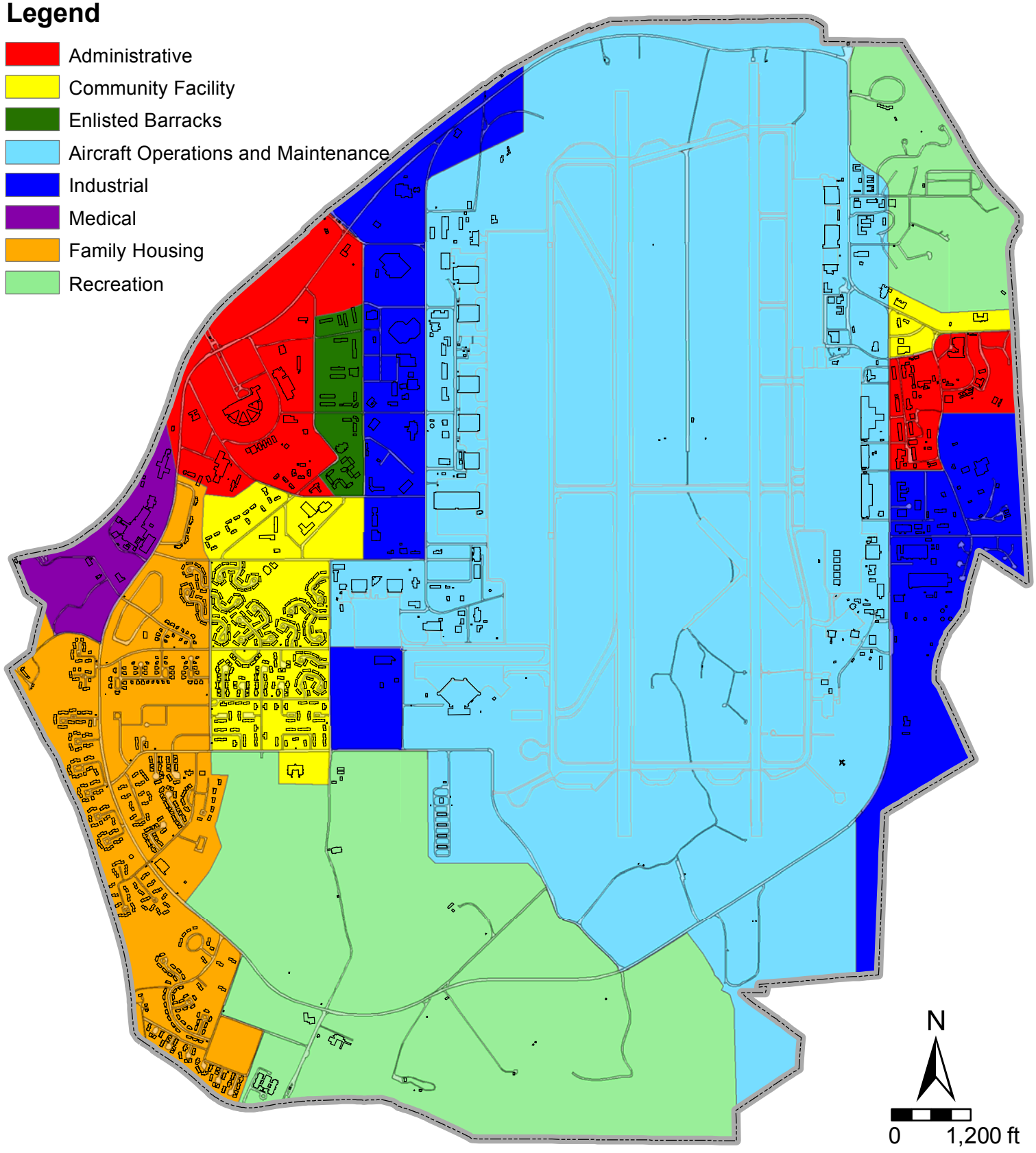



Figure 3-3. Current Land Use at Andrews AFB




**Source: Andrews AFB 2005 Strategic Plan (Existing Land Use)**

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Figure 3-4. Future Land Use at Andrews AFB

#### 3.6.2.2 VISUAL RESOURCES

The built environment of Andrews AFB consists of two parallel runways and associated taxiways and parking aprons; wing and unit headquarters; industrial facilities; community centers; unaccompanied and family housing; medical center; recreational facilities; and open space. Andrews AFB has approximately 100 miles of paved roads; two active runways (01L/19R and 01R/19L) that are 9,300 and 9,755 feet long, respectively; two mass aircraft parking aprons (west and east) and a network of parallel and connecting taxiways (Andrews AFB 2003). Although the predominant visual characteristics of the installation are industrial and administrative in nature, an attempt has been made to maintain wooded areas wherever practicable (USAF 2004a). There are no wild and scenic rivers or highways, unique geologic landforms, or other highly valued aesthetic features on or near the installation (USAF 2004a).

## 3.7 Socioeconomics and Environmental Justice

### 3.7.1 DEFINITION OF THE RESOURCE

Socioeconomic resources are defined as the basic attributes associated with the human environment, particularly population and economic activity. Population is described by the change in magnitude, characteristics, and distribution of people. Economic activity typically encompasses employment, personal income, and business growth. In addition to these characteristics, populations of special concern, as addressed by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* and EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* are also identified.

The essential purpose of EO 12898 is to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, tribal, and local programs and policies. Also included with environmental justice are concerns pursuant to EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. This EO directs federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children under the age of 18. These risks are defined as "risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest."

The socioeconomic and environmental justice analysis that follows is a component of NEPA compliance. Socioeconomic data are presented for the county, state, and nation to characterize baseline socioeconomic conditions in the context of regional, state, and national trends. For socioeconomics, the ROI is defined as Prince George's County. Existing conditions for environmental justice were analyzed through demographic characterization, particularly ethnicity and poverty status for the ROI.

## 3.7.2 EXISTING CONDITIONS

*Social and Economic Conditions*

Andrews AFB is located five miles southeast of Washington, D.C., in southern Prince George's County. Table 3-11 compares the differences in population in the Prince George's County between the 1990 Census, the 2000 Census, and the most recent population estimates from 2005. Prince George's County was growing at a slower rate (9.9 percent) than the state (10.8 percent) and the nation (13.5 percent) from 1990 to 2000. From 2000 to 2005, Prince George's County grew at a slightly slower rate (5.6 percent) than the state (5.7 percent) and a slighter higher rate than the nation (5.3 percent).

The closest communities to Andrews AFB include the Town of Morningside to the northwest, Camp Springs Census Designated Place (CDP) to the west, Clinton CDP to the south, and Rosaryville CDP to the east. The Clinton CDP had the highest 2000 population of 26,064, followed by Camp Springs CDP (17,968), Rosaryville CDP (12,322) and the Town of Morningside (1,295) (US Census Bureau 2000).

**Table 3-11. Population Changes in the Region**

| Location | 1990 | 2000 | 2005 | % change 1990-2000 | % change 2000-2005 |
|---|---|---|---|---|---|
| Prince George's County | 729,268 | 801,515 | 846,123 | 9.9 | 5.6 |
| Maryland | 4,781,468 | 5,296,486 | 5,600,388 | 10.8 | 5.7 |
| United States | 248,709,873 | 281,421,906 | 296,410,404 | 13.5 | 5.3 |

Source: U.S. Census Bureau 1990, 2000, and 2005 Population Estimates.

Additionally, a new town development is proposed to be located immediately northeast of Andrews AFB. Westphalia is a 6,000 acre planned community with public facilities proposed to include nearly 15,000 residential units. Although housing development has already started, the entire community is not anticipated to be completed until 2026 (MNCPPC 2006).

According to the 2000 U.S. Census Bureau, there were 286,610 households in Prince George's County (Table 3-12). The average household size for Prince George's County (2.74) was slightly higher than the state (2.61) and the nation (2.59) for 2000. The 2000 population density for Prince George's County (1,651) was considerably higher than the state of Maryland (542) and the nation (80).

**Table 3-12. 2000 Household Characteristics and Population Density**

| Geographic area | Households (#) | Average Household Size (#) | Population Density per Square Mile |
|---|---|---|---|
| Prince George's County | 286,610 | 2.74 | 1,651 |
| Maryland | 1,980,859 | 2.61 | 542 |
| United States | 105,480,101 | 2.59 | 80 |

Source: US Census Bureau, 2000

Prince George's County, which is the smallest geographic area for which labor statistics were analyzed, had approximately 458,244 persons (16 years and older) in the labor force in 2004 (Table 3-13). Prince George's County also had a higher percent population in the labor force (73.5 percent) than the state (69.7 percent) and the nation (65.9 percent). In 2004, the unemployment rate for Prince George's County was 5.1 percent, which is higher than the state (4.2 percent) and the nation (4.7 percent). The 2004 per capita personal income for Prince George's County ($33,461) is lower than the state ($39,631) and is slightly higher than the nation ($33,050).

**Table 3-13. 2004 Labor Force Characteristics and Per Capita Personal Income**

| Geographic area | Labor Force (#) | Population in Labor Force (%) | Civilian Unemployed (%) | Per Capita Personal Income ($) |
|---|---|---|---|---|
| Prince George's County | 458,244 | 73.5 | 5.1 | 33,461 |
| Maryland | 2,918,749 | 69.7 | 4.2 | 39,631 |
| United States | 145,437,824 | 65.9 | 4.7 | 33,050 |

Source: US Census Bureau 2004 American Community Survey; Bureau of Economic Analysis 2004

There are about 13,106 persons employed at Andrews AFB which includes USAF Active Duty, Guard, Reserves, and civilians. Approximately 60 percent of these jobs are military and 40 percent are civilian. The FY2006 budget included $163.4 million for operations and maintenance, $385.9 million for military payroll, and $25.1 million for military family housing. The total annual economic impact generated by Andrews AFB activities is estimated at $961 million (Andrews AFB 2006a).

*Environmental Justice*

Table 3-14 displays the comparative statistics for race and Hispanic identification for the ROI. The 2000 Black or African American population for Prince George's County (62.7 percent) is substantially higher than the state (27.9 percent) and the nation (12.3 percent). No other minority population is well represented at the local level.

**Table 3-14. Profile of Demographic Characteristics, Year 2000**

| Geographic area | RACE | | | | | | | Hispanic or Latino (of any race) |
|---|---|---|---|---|---|---|---|---|
| | ONE RACE | | | | | | Two or more races | |
| | White | Black or African American | American Indian and Alaska Native | Asian | Native Hawaiian and other Pacific Islander | Some other race | | |
| Prince George's Co. | 216,729 | 502,550 | 2,795 | 31,032 | 447 | 27,078 | 20,884 | 57,057 |
| % | 27.0 | 62.7 | 0.3 | 3.9 | 0.1 | 3.4 | 2.6 | 7.1 |
| Maryland | 3,391,308 | 1,477,411 | 15,423 | 210,929 | 2,303 | 95,525 | 103,587 | 227,916 |
| % | 64.0 | 27.9 | 0.3 | 4.0 | <0.1 | 1.8 | 2.0 | 4.3 |
| United States | 211,460,626 | 34,658,190 | 2,475,956 | 10,242,998 | 398,835 | 15,359,073 | 6,826,228 | 35,305,818 |
| % | 75.1 | 12.3 | 0.9 | 3.6 | 0.1 | 5.5 | 2.4 | 12.5 |

Note: Only the percentages under the 'Race' heading will total 100 percent. Hispanic or Latino can be part of any race, and therefore the percent of Hispanic or Latino is percent of total population.
Source: US Census Bureau 2000

Table 3-15 depicts the percent of persons under the age of legal consent (age 18). The percent of the population under age 18 for Prince George's County (26.8 percent) is slightly higher than the state (25.6 percent) and the nation (25.6 percent).

**Table 3-15. Persons Under Age 18 in the ROI in the Year 2000**

| Geographic Area | Percent Under Age 18 |
|---|---|
| Prince George's County | 26.8 |
| Maryland | 25.6 |
| United States | 25.6 |

Source: US Census Bureau, 2000

Table 3-16 compares poverty at all geographic levels for both individuals and persons under age 18. Poverty in the year 2000 was defined as an income of $8,794 in a household of one individual, or $17,603 for a family of four. Prince George's County has a lower percentage of

individuals living below the poverty level (7.7 percent) than the state (8.5 percent) and the nation (12.4 percent). Prince George's County also has a lower percentage of persons under age 18 below poverty level (9.2 percent) than the state (10.3 percent) and the nation (16.1 percent).

**Table 3-16. Individuals in Poverty, Reported in the Year 2000**

| Geographic Area | Percent Individuals Below Poverty Level | Percent Persons Under Age 18 Below Poverty Level |
|---|---|---|
| Prince George's County | 7.7 | 9.2 |
| Maryland | 8.5 | 10.3 |
| United States | 12.4 | 16.1 |

Source: US Census Bureau, 2000

# 3.8 Cultural Resources

## 3.8.1 Definition of the Resource

Cultural resources are historic districts, sites, buildings, structures, or objects considered important to a culture, subculture, or community for scientific, traditional, religious or other purposes. They include archaeological resources, historic architectural/engineering resources, and traditional resources. Cultural resources that are eligible for listing in the NRHP are called historic properties. Historic properties are evaluated for potential adverse impacts from an action. In addition, some cultural resources such as American Indian sacred sites or traditional resources may not be classified as historic properties but are also evaluated under NEPA for potential adverse effects from an action. These resources are identified through consultation with appropriate American Indian or other interested groups. In 1999, the DoD promulgated its American Indian and Alaska Native Policy emphasizing the importance of respecting and consulting with tribal governments on a government-to-government basis. The Policy requires an assessment, through consultation, of the effects of proposed DoD actions that may have the potential to significantly affect protected tribal resources, tribal rights, and Indian lands before decisions are made by the DoD.

The ROI for cultural resources is the area within which the Proposed Action has the potential to affect existing or potential archaeological, architectural, or traditional cultural resources. For the Proposed and Alternative actions, the ROI is defined as each project's footprint, including any areas that could be used temporarily for staging or other project-related activities.

## 3.8.2 Existing Conditions

### 3.8.2.1 Historical Setting

*Prehistoric Period*

The occupation of the Mid-Atlantic region, including eastern Maryland where Andrews AFB is located, is conventionally divided into three major periods that reflect technological and social adaptation and development. These periods are the Paleo-Indian, Archaic, and Woodland. The Archaic and Woodland periods are further divided into Early, Middle, and Late sub-periods.

Paleo-Indian period (10,000 – 7500 years B.C.) sites are uncommon in the Mid-Atlantic region, likely due in part to poor preservation conditions, the subsequent rise in sea levels, and the nomadic nature of the Paleo-Indian people. Sites from this period are characterized by the presence of finely crafted, fluted stone projectile points usually made of high quality cryptocrystalline stone such as chert or jasper. The Archaic period (7500 – 2000 B.C.) is marked

by technological and cultural adaptations. The Early Archaic sub-period (7500 – 6000 B.C.) served as a transitional phase from the Paleo-Indian period, as new, smaller, projectile point styles were introduced (Andrews AFB 2003b). During the Middle Archaic sub-period (6000 – 4000 B.C.), food technologies changed, including the introduction of ground stone tools for food preparation and an increased reliance on fishing and shellfish gathering. The Late Archaic sub-period (4000 – 2000 B.C.), also known as the Terminal Archaic or Transitional period, involved a large increase in population and social complexity. Settlement sizes increased, large base camps were established and trading networks appeared at this time (Andrews AFB 2003b).

The Woodland period (2000 B.C. – A.D. 1600) is defined by the introduction of pottery across the Mid-Atlantic region. Throughout the Early and Middle Woodland sub-periods (500 B.C. – A.D. 900), base camps similar to those found during the Late Archaic shifted from small creek floodplains to large river floodplains (Andrews AFB 2003b). By the Late Woodland sub-period (A.D. 900 – 1600), horticulture became a substantial part of the overall subsistence system. At the time Europeans arrived in what is today Maryland, the land was occupied by groups of Algonquian-speaking Native Americans. During the Colonial period, Anacostian groups are reported to have lived along the Potomac in the area of Washington, D.C. while the Piscataway lived in the area of what is now Andrews AFB (ANG 2005).

Prehistoric artifacts dating from the Archaic through Woodland periods have been recovered from sites located on Andrews AFB, although these sites do not retain sufficient integrity to be eligible for inclusion in the NRHP.

*Historic Period*

Euro-American history in Maryland is divided into four major periods of development: Contact and Settlement; Rural Agrarian Intensification; Agricultural and Industrial Urban Dominance; and Modern Period (Andrews AFB 2003b). The Contact and Settlement period (1680 – 1750) marks the arrival of the first Europeans in Maryland. The earliest European settlers lived along the banks of the larger rivers that flowed to the Chesapeake Bay. The first land grant for Prince George's County was made in the late 17$^{th}$ century, and the County was established in 1696. The area that is now Andrews AFB was originally a land grant called "The Chance," which had been conveyed to the Calvert family in 1712. The Calvert family residence appears for the first time on the tax records of 1798. The growth of Prince George's County during the period of Rural Agrarian Intensification (1750 – 1815) was similar to that of the rest of the region.

At the beginning of the period of Agricultural and Industrial Urban Dominance (1815 – 1930), few farm villages populated the area. The Chance, now named "Belle Chance," was a modest but thriving family plantation. The original 1798 family residence was probably replaced sometime in the 19$^{th}$ century, but records confirming this are unclear. In 1910, the family home at Belle Chance burned, to be replaced in 1912 with the present concrete mansion (Andrews AFB 2003b). The Modern period (1930 – present) saw the ascendance of the city of Baltimore to one of the pre-eminent municipalities on the eastern seaboard.

In 1942, President Franklin Roosevelt ordered, through the War Department, that the Belle Chance property be condemned for airport construction, and Camp Springs Army Airfield was constructed. The Base became operational in 1943 and was renamed Andrews Field in 1945 in honor of Lieutenant General Frank M. Andrews, commander of European operations for all Army Air Forces. In 1947, the Air Force was created as a separate service. As a result, Andrews experienced another name change, this time from Andrews Field to Andrews AFB (Global Security 2006).

In the early 1960s, Andrews AFB became the primary port of entry for foreign military and government officials and other visitors requiring heightened security coming to the Washington, D.C. area. Because of this, Andrews has a long association with significant events such as the arrival of returning Viet Nam Prisoners of War and the return of the U.S. hostages held by Iran. Andrews has also seen visits from dignitaries and heads of state such as Pope John Paul II, Deng Xiao Ping, Margaret Thatcher, Menachem Begin, and Anwar Sadat. In 1961, the home of the official presidential aircraft was moved from Washington National Airport to Andrews AFB, and remains there today (Global Security 2006).

Today, Andrews AFB is home to more than 60 separate units and special missions including the 316th Wing, Air Force One, the headquarters for the ANG and the 113 WG of the DCANG. The Base occupies 4,346 acres and hosts approximately 13,000 military and civilian personnel.

#### 3.8.2.2 IDENTIFIED CULTURAL RESOURCES

Andrews AFB is centrally located between the Potomac River to the west and the Patuxent River to the east, within four miles and seven miles of the Base, respectively. This physiographic area would have been attractive to prehistoric inhabitants of the region, and Archaic through Woodland period groups are known to have intensively exploited these riverine environments. There is a high probability that prehistoric groups utilized the immediate environs of the Base for habitation and/or resource procurement. However, construction of Andrews AFB and development of the surrounding land has disturbed much of the area's soils, with the result that the integrity of many archaeological sites within the installation and surrounding area has been affected (Andrews AFB 2003b).

Since 1947, several archaeological investigations have been conducted on Andrews AFB and support facilities (Andrews AFB 2003b). The initial surveys identified six archaeological sites on Andrews AFB (sites 18PR443 through 18PR448). Further evaluation of these sites determined that only a portion of the Belle Chance site (18PR447) is eligible for inclusion on the NRHP. Andrews AFB has prepared an Integrated Cultural Resources Management Plan (ICRMP) to help fulfill the Air Force's responsibilities under Sections 106 and 110 of the NHPA, as amended (Andrews AFB 2003b). The ICRMP indicates that Andrews AFB has completed its inventory and identification of archaeological resources and that no new inventory efforts are needed.

*Archaeological Resources*

The existence of indigenous populations on Andrews AFB is evidenced by two sites on the main Base area. As the integrity of the combined prehistoric/historic sites on the main Base property has been compromised by past development, they are not considered eligible to the NRHP. A portion of Site 18PR447, from the historic period and associated with the remaining Belle Chance structures, is eligible for the NRHP (Andrews AFB 2003b).

*Historic Architectural Resources*

A historic architectural survey was conducted on all 104 standing structures built before 1947 (Andrews AFB 2003b). The investigation concluded that only Belle Chance and Chapel II were potentially eligible for nomination to the NRHP. Because of a substantial loss of integrity, Chapel II was later determined to be ineligible (Andrews AFB 2003b). The Belle Chance site consists of three NRHP-eligible buildings associated with the archaeological deposits of 18PR447.

A Base-wide inventory of Cold War-era buildings and structures conducted in 1995 (Andrews AFB 2003b) evaluated 27 properties for NRHP eligibility; of these, only the ANG Alert Hangar

(Building 3032) located within the 113 WG primary cantonment area, was recommended as potentially eligible for inclusion in the NRHP. Maryland SHPO has subsequently determined that Building 3032 is ineligible for inclusion in the NRHP (Andrews AFB 2003b).

*Traditional Resources*

Although there are no federally recognized tribes in Maryland, Andrews AFB will consider Native American concerns in Base planning, complying with the American Indian Religious Freedom Act and the Native American Graves Protection and Repatriation Act.

# 3.9 Safety

## 3.9.1 Definition of the Resource

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Potential safety issues at Andrews AFB include ground and AT/FP, explosive, flight, and construction jobsite safety associated with activities conducted by Andrews AFB. Ground safety considers issues associated with human activities, and operations and maintenance activities that support unit operations. A specific aspect of ground safety addresses AT/FP considerations. Explosive safety addresses the management and use of ordnance or munitions associated with installation operations and training activities. Flight safety considers aircraft flight risks such as aircraft accidents. Construction jobsite safety considerations include the prevention of mishaps related to construction and demolition projects. The ROI for safety is Andrews AFB and the area immediately adjacent to the installation.

## 3.9.2 Existing Conditions

Day-to-day operations and maintenance activities conducted at Andrews AFB are performed in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by USAF Occupational Safety and Health requirements.

Additionally, the DoD and the USAF have developed force protection guidelines for military installations as a result of terrorist activities. The *DoD Minimum Antiterrorism Standards for Buildings* (Unified Facilities Criteria [UFC] 4-010-01) addresses access to facilities on the installation, facility siting, exterior design, interior infrastructure design, and landscaping. The *USAF Installation Force Protection Guide* (USAF, No Date) provides general guidance on force protection issues. The purpose of these documents is to improve security, minimize fatalities, and limit damage to facilities in the event of a terrorist attack.

Andrews AFB has several restricted use areas for the storage and handling of explosive materials. Air Force Manual 91-201, *Explosives Safety Standards*, defines distances to be maintained between explosive storage areas and other types of facilities. These distances are known as explosive safety-quantity distance (ESQD) arcs and the size of the ESQD arc is dependent on the type and quantity of explosive materials that are being stored. Andrews AFB has three primary ESQD arcs (Figure 3-2). The hot cargo pad is located on the southwest corner of the airfield and the ESQD arc surrounding the hot cargo pad has a radius of 1,250 feet. The munitions storage bunkers are located west of the hot cargo pad and have an ESQD arc radius of 1,250 feet. The 113 WG's F-16 alert aircraft are parked on the southern portion of the east apron and have an ESQD arc radius of 792 feet from the outer wing tip of each parked aircraft. Development or construction is prohibited within ESQD arcs to maintain personnel safety and

minimize damage potential to other facilities. Two additional ESQD arcs have been approved but the munitions facilities are not yet operational (Figure 3-2).

In addition to the ESQD arcs, there is a range surface danger zone associated with the Combat Arms Training facility located in the southeast portion of the Base. The surface danger zone extends 900 feet to the south of the range's target line.

Andrews AFB has several operational constraints associated with the airfield regarding safety for the Base and adjacent communities. Clearance criteria related to the design and layout of airfields is provided in the *Airfield and Helipad Planning and Design* (UFC 3-260-01) and Air Force Handbook 32-7084 AICUZ Program Managers Guide. The AOCs would be the clear zone, accident potential zone (APZ) I, and APZ II. The clear zone extends 3,000 feet from the end of the runway, and 1,500 feet on either side of the runway centerline. The APZ I extends 5,000 feet from the end of the clear zone. The APZ II extends this area an additional 7,000 feet (Figure 3-2). Permissible uses, structure heights, and the construction material in these areas are specifically prescribed in order to protect both the safety of the aircrews and the safety of persons and property on the surface. Prince George's County has zoning-based initiatives in place that control building heights and development density under the flight paths of Andrews AFB. The county's zoning ordinance allows industrial development on property that is adjacent to the base and under the flight paths but limits both building height and nighttime occupancy on lands throughout the county (Andrews AFB 2003a).

Bird-aircraft strikes constitute a safety concern because of the potential for damage to aircraft or injury to aircrews or local populations if an aircraft crash should occur in a populated area. Migratory waterfowl (e.g., ducks, geese, and swans) are particularly dangerous to flight safety as waterfowl fly in large flocks and at relatively higher altitudes than other birds. The birds of greatest concern are Canada geese, snow geese, European starlings, and various duck, raptor and gull species. The potential for bird-aircraft strikes is greatest in areas used for migration corridors (flyways) or where birds congregate for foraging or resting (e.g., open water bodies, rivers, and wetlands). Andrews AFB is an area of high bird-aircraft strike hazard (BASH) potential as the Base is located in the Atlantic flyway near several wildlife refuges. The deer population on and adjacent to Andrews AFB is also a hazard to flight safety. Deer behavior on Base strongly suggests that the deer have become accustomed to aircraft, support equipment, and human activity around the airfield. The *Bird/Wildlife Aircraft Strike Hazard Plan* provides guidance to minimize wildlife-aircraft strikes (Andrews AFB 2006b).

Construction jobsite safety and the prevention of accidents is an ongoing activity for any USAF jobsite. All contractors performing construction activities are responsible for complying with USAF safety and Occupational Safety and Health Administration regulations, and are required to conduct construction activities in a manner that does not pose any undue risk to workers or personnel. Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and use and availability of Material Safety Data Sheets. Industrial hygiene is the responsibility of contractors, as applicable. Contractor responsibilities are to review potentially hazardous workplaces; to monitor exposure to workplace chemical (e.g., asbestos, lead, hazardous material), physical (e.g., noise propagation), and biological (e.g., infectious waste) agents; to recommend and evaluate controls (e.g., ventilation, respirators); to ensure personnel are properly protected or unexposed; and to ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures or engaged in hazardous waste work.

# 3.10 Solid and Hazardous Materials and Waste

## 3.10.1 DEFINITION OF THE RESOURCE

This section describes the affected environment associated with hazardous materials and petroleum products, hazardous and petroleum wastes, Environmental Restoration Program (ERP) sites, and solid waste at any of the sites planned for development as part of the Proposed Action.

The terms "hazardous materials" and "hazardous waste" refer to substances defined as hazardous by CERCLA and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA). In general, hazardous materials include substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health or the environment when released into the environment. Hazardous wastes that are regulated under RCRA are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that either exhibit one or more of the hazardous characteristics of ignitability, corrosivity, toxicity, or reactivity, or are listed as a hazardous waste under 40 CFR Part 261. Petroleum products include petroleum-based fuels, oils, and their wastes. The ERP is a USAF program to identify, characterize, and remediate environmental contamination from past activities at USAF installations.

Issues associated with hazardous materials and wastes typically center on waste streams, underground storage tanks (USTs), above ground storage tanks (ASTs), and the storage, transport, use, and disposal of pesticides, fuels, lubricants, and other industrial substances. When such materials are improperly used in any way, they can threaten the health and well being of wildlife species, habitats, and soil and water systems, as well as humans. This section also considers solid waste.

The management of hazardous materials and hazardous wastes is governed by specific environmental statutes. The key regulatory requirements include:

*Comprehensive Environmental Response, Compensation and Liability Act of 1980 (42 USC 9601–9675)* as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. CERCLA/SARA regulates the prevention, control, and compensation of environmental pollution.

*Community Environmental Response Facilitation Act of 1992 (42 USC 9620).* This act amended CERCLA to require that, prior to termination of federal activities on any real property owned by the federal government, agencies must identify real property where hazardous substances were stored, released, or disposed.

*Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 (42 USC 11001–11050).* EPCRA requires emergency planning for areas where hazardous materials are manufactured, handled, or stored and provides citizens and local governments with information regarding potential hazards to their community.

*Resource Conservation and Recovery Act of 1976 (42 USC 6901–6992).* RCRA established standards and procedures for handling, storage, treatment, and disposal of hazardous waste.

*Federal Facility Compliance Act of 1992 (Public Law [P.L.] 102-426).* This act provides for a waiver of sovereign immunity on the part of federal agencies with respect to federal, state, and local requirements relating to RCRA solid and hazardous waste laws and regulations.

*Federal Insecticide, Fungicide, and Rodenticide Act of 1996 (7 USC 136 et seq.).* FIFRA provides federal control of pesticide distribution, sale, and use. It also provides certification criteria for pesticide applicators, including contractors.

*Pollution Prevention Act of 1990 (42 USC 13101–13109).* This act encourages minimization of pollutants and waste through changes in production processes.

*USEPA Regulation on Identification and Listing of Hazardous Waste (40 CFR Part 261).* This regulation identifies solid wastes subject to regulation as hazardous and to notification requirements under RCRA.

*USEPA Regulation on Standards for the Management of Used Oil (40 CFR Part 279).* This regulation delineates requirements for storage, processing, transport, and disposal of oil that has been contaminated by physical or chemical impurities during use.

*USEPA Regulation on Designation, Reportable Quantities, and Notification (40 CFR Part 302).* This regulation identifies reportable quantities of substances listed in CERCLA and sets forth notification requirements for releases of those substances. It also identifies reportable quantities for hazardous substances designated in the CWA.

Additionally, the Maryland Solid Waste Management regulations provide for coordinated state solid waste management and a resource recovery plan (COMAR 26.04), and the Maryland Hazardous Waste Regulations (COMAR 26.13) set forth the requirements for generators, transporters, owners, or operators of treatment, storage, or disposal facilities.

The ROI for hazardous materials, hazardous waste, and petroleum products encompasses areas that could be exposed to an accidental release of hazardous substances from the construction, renovation, or demolition activities. Therefore, the ROI for this section is defined as the boundary of Andrews AFB.

### 3.10.2 EXISTING CONDITIONS

This section describes the existing management of hazardous materials and petroleum products, hazardous and petroleum wastes, ERP sites, and solid wastes within the ROI.

*Hazardous Materials and Petroleum Products*

Operations conducted at Andrews AFB require the use and storage of hazardous materials. These materials, primarily associated with aircraft operations, include flammable and combustible liquids, acids, aerosols, batteries, corrosives, solvents, paints, and hydraulic fluids. A summary of the hazardous materials and petroleum products within the buildings in the demolition and construction areas is provided in the Environmental Baseline Survey (USAF 2007).

Most spills of hazardous materials and petroleum products within Andrews AFB result from leaking vehicles, aircraft, and storage tanks. The Spill Prevention Control and Countermeasures Plan for Andrews AFB (USAF 2006b) provides procedures for spill reporting, containment, cleanup, and disposal of hazardous materials and petroleum products. The Andrews AFB Fire Department has responsibility for acting as the first responding unit for all spill incidents. Based on data from the June 2006 visual site inspection (VSI), no releases of hazardous materials or petroleum products were observed within the demolition or construction areas (USAF 2007).

ASTs and underground storage tanks USTs are used to store hazardous materials and petroleum products within Andrews AFB. The specific ASTs storing diesel fuel and heating fuel within the

demolition and construction areas are listed in the Environmental Baseline Survey (USAF 2007). No USTs were found within the demolition and construction areas during the June 2006 VSI.

*Hazardous and Petroleum Wastes*

The 316th Wing and its tenants produce more than 2,205 pounds (1,000 kilograms) of hazardous waste per month and are therefore regulated as a large quantity generator (LQG) of hazardous wastes under USEPA identification number MD0570024000. Primary types of hazardous wastes generated include batteries, used fuel and oil, solvents, fluorescent bulbs, rags, fuel filters, and solvent-contaminated solids. The majority of hazardous waste is generated because of aircraft operations (USAF 2003b).

Hazardous wastes generated at Andrews AFB are initially collected at one of 102 initial accumulation points. These wastes are generally stored at the initial accumulation points until the volume of the hazardous material reaches 55 gallons. When this occurs, hazardous wastes are transferred to the central accumulation point for transport off the installation by the Hazardous Waste Contractor (USAF 2003b).

The June 2006 VSI noted that hazardous and petroleum wastes were generated in two buildings within the demolition and construction areas (i.e., Building 1522 – Base Engineering Maintenance Shop and Building 1900 – Air Freight Terminal). Operations within these two buildings generate used oil and no spills were noted during the June 2006 VSI (USAF 2007).

*Air Force Clean Up Program*

Andrews AFB is responsible for 28 ERP Sites, 24 of which are located on the main base and 5 Areas of Concern (AOCs), 4 of which are located on the main Base (Figure 3-4). Seventeen of these sites have a remedy in place. In addition to the ERP sites, one Military Munitions Response Program (MMRP) site and six potential MMRP sites are under investigation (Figure 3-4). The one MMRP site is the Old Skeet and Trap Club TS345. This site is considered a small arms range site. The five potential MMRP sites include four small arms ranges (Old Skeet Range, Small Arms Range, Rifle Range I and Rifle Range II) and one bore site range (Firing In-Butt) (Figure 3-4). None of the BRAC actions are located in MMRP sites. Andrews AFB is also responsible for the clean up of contamination resulting from removal of tanks (USTs/ASTs), spills, and solid waste management units as a part of the Air Force Clean Up Program. Numerous cleanup actions have taken place at Andrews AFB, including the removal of hundreds of USTs, installation of groundwater treatment systems at key locations, and removal of residual waste from areas to decrease the risk to human health and the environment.

Sites with contamination levels above action levels include SS-22 (Hangar 13), ST-10 (PD-680 Spill Site), SS-26 (Hangar 15), ST-14 (East Side Service Station), ST-08 (Motor Gas UST Leak), FT-04 (Fire Training Area 4), and LF-05 (D1 Landfill—Leroy's Lane). As depicted on Figure 3-4, the groundwater plumes from Sites SS-26 and ST-14 intersect two of the projects included as part of the Proposed Action. These projects are the F-16 Apron Repair Project (within Site SS-26) and the ANGRC Addition (within Site ST-14). These two sites are described as follows:

- **SS-26 Hangar 15 (AOC-30)**—Hangar 15 was built in 1947 on East Perimeter Road, adjacent to the east operational apron. Hangar 15 originally was used for aircraft and equipment maintenance. In the 1980s, the hangar use changed from maintaining and storing aircraft to maintenance of small aircraft, vehicles, and ground equipment. The hangar was used by Civil Engineering to house snow plows at the time of its demolition in 1998. Oil and solvent spills were evident by stains on the hangar floor and apron. Formerly known as AOC 30, SS-26 is currently in the Preliminary Assessment/Site Investigation (PA/SI) phase of the CERCLA process. Previous studies have shown that

trichloroethene (TCE) is present at concentrations exceeding 400 micrograms per liter in groundwater, which exceeds regulatory standards. Benzene, TCE, cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride exceed maximum contaminant levels (MCLs) in groundwater. In addition, analytical results indicate that subsurface soil contains 680 milligrams per kilogram (mg/kg) of total petroleum hydrocarbons-diesel range organics (TPH-DRO) (Andrews AFB 2007).

- **ST-14 East Side Service Station**—Site ST-14 is located in the northeast portion of Andrews AFB along Fetchet Avenue. It was listed as an ERP site due to leakage from underground tanks and the ancillary piping system associated with Building 3487, the east side service station. In 1983, the tanks were removed and 20,000 gallons of gasoline were recovered from an excavation trench at the site. Subsequent studies delineated a commingled solvent plume extending from the flight line toward the northeast. A former hangar and wash rack were among several suspected sources for these plumes. TCE and carbon tetrachloride also were detected. These contaminants appeared to originate from other sources to the west. ST-14 was grouped with SS-22 into one operable unit for groundwater cleanup. A performance-based contract for both sites was awarded in 2005 and a Record of Decision along with a Remedy in Place is anticipated by the end of 2007. Groundwater at the site contains TCE, carbon tetratchloride, and benzene, toluene, ethylbenzene, and xylene (BTEX) constituents above MCLs (Andrews AFB 2007).

In addition, several ERP sites are adjacent to the proposed demolition and construction areas including the *TU-25 Auto Hobby Shop* and *SS-13 POL Yard Fuel Storage Tanks*. Both of these sites have been closed by MDE and require no further action. In addition, based on groundwater flow directions, these sites would not affect the demolition and construction areas (USAF 2007).

Andrews AFB was officially listed on the National Priorities List (NPL) by the USEPA in June 1999. CERCLA sites are managed under the Partnering Program set up as a result of USEPA placing Andrews AFB on the NPL. Some AOC's would likely be regulated under the CERCLA Program. Additionally, petroleum sites exempted from regulation under CERCLA are delegated by USEPA to the State of Maryland for management under the RCRA Program.

*Solid Waste*

Municipal solid waste management and compliance at USAF installations is established in AFI 32-7042, *Solid and Hazardous Waste Compliance*. In general, AFI 32-7042 establishes the requirements for installations to have a solid waste management program to incorporate the following: a solid waste management plan; procedures for handling, storage, collection, and disposal of solid waste; record-keeping and reporting; and pollution prevention. Source reduction, resource recovery, and recycling of solid waste are addressed in AFI 32-7080, *Pollution Prevention Program*.

Solid waste management at Andrews AFB includes the collection and disposal of non-hazardous solid wastes; recycling; and disposal of overseas waste, infectious waste, and pathological waste. There are no active landfills on Base, and solid wastes from Andrews AFB are transported to off-Base landfills in accordance with applicable local, state, and Federal laws, regulations, and requirements (Andrews AFB 2003).

Although asbestos surveys were completed for the buildings within Andrews AFB, all potential asbestos may not have been identified. Therefore, it is assumed that buildings constructed before 1980 contain asbestos. Based on their year of construction, the buildings within the demolition and construction areas that are assumed to contain asbestos include Buildings 1524, 1527, 1535, 1536, 3534, 3542, 3543, 3545, and 3595.

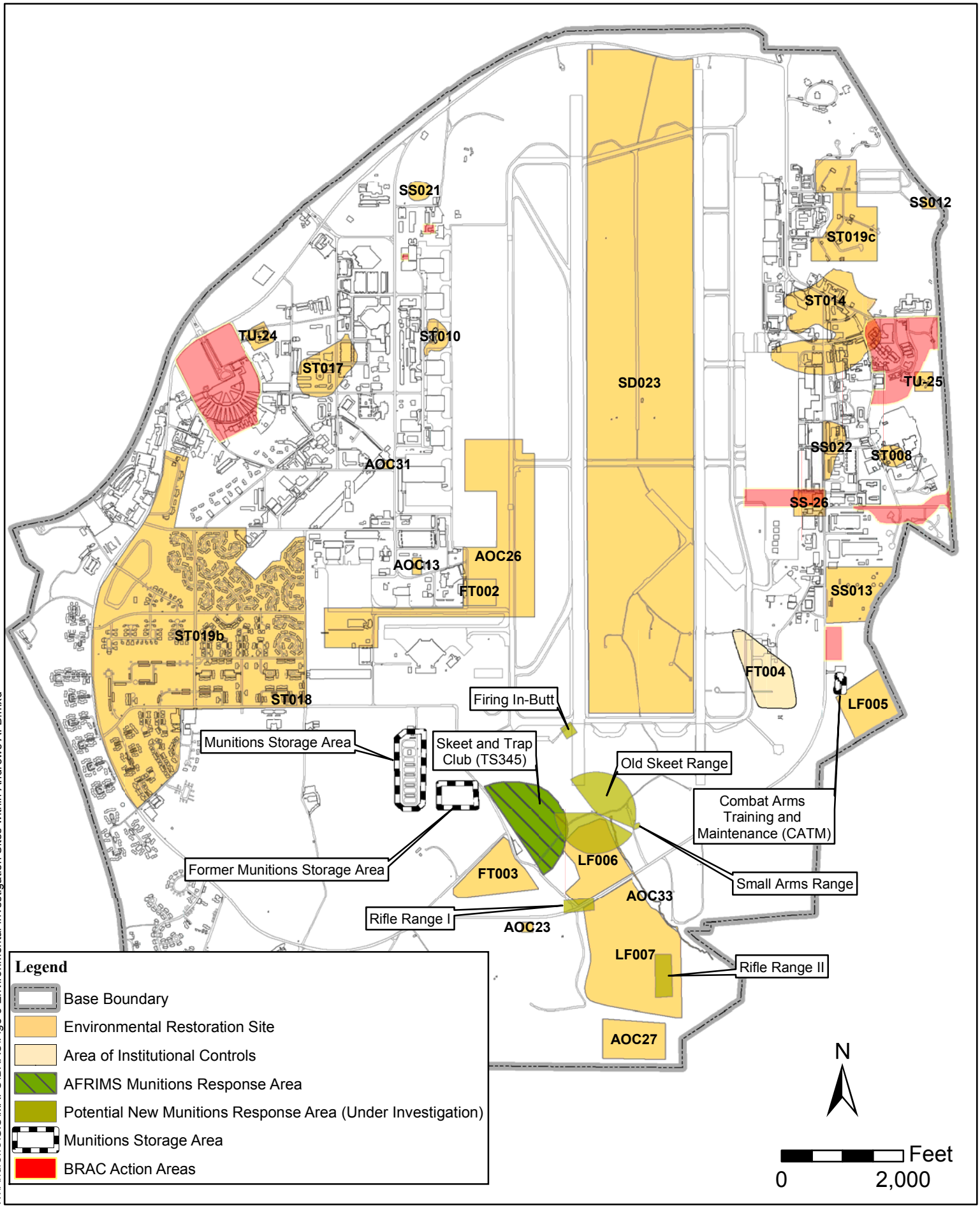


Figure 3-4. Environmental Investigation Sites within Andrews AFB

With regard to lead-based paint (LBP), buildings built prior to 1978 are considered to contain LBP. Within the demolition and construction areas this includes Buildings 1524, 1527, 1535, 1536, 3534, 3542, 3543, 3545, and 3595. (Peeling paint was noted on the windowsills at Building 3595.) If the buildings have not been rehabilitated (i.e., paint has been removed), it is assumed that LBP is present. In addition, a water tank near Building 3500 was covered with LBP and may have been repainted in the 1980s (USAF 2007).

# 3.11 Infrastructure

## 3.11.1 Definition of the Resource

Infrastructure refers to the system of public works, such as transportation and utilities, that provide the underlying framework for a community. Transportation refers to roadway systems, mass transit, the movement or circulation of vehicles, and airfield pavement systems. Utilities include such amenities as water, power supply, and stormwater management. The infrastructure components to be discussed in this section include transportation, airfield pavement, sanitary sewer, potable water, stormwater drainage, natural gas, electricity, heating/cooling, and liquid fuels. The infrastructure information was obtained from the *Andrews Air Force Base Strategic Plan* (USAF 2005c). The SATAF for the BRAC actions rated the Base infrastructure as yellow based on the identified need for infrastructure upgrades such as communication lines. The ROI for this resource consists of Andrews AFB and the interface between the Base and the surrounding area.

## 3.11.2 Existing Conditions

*Transportation*

Andrews AFB is located immediately southeast of the Capital Beltway (I-95/I-495) which carries traffic around Washington, D.C. State Routes 4 and 5 connect Andrews AFB with Washington, D.C. (Figure 1-1). The closest stop for the area's rapid transit (Metrorail) is located approximately 1.3 miles from the Base at the Branch Avenue station. Local bus service is available at the Main Gate and Virginia Gate.

Six gates provide varying degrees of access to and from the Andrews AFB. These include the Main, Pear Harbor, Virginia, North, Maryland, and West Gates. The primary access for the Base is provided through the Main Gate. This gate is open 24 hours and is available for use by government employees, residents, and visitors. The Pearl Harbor Gate provides access for construction vehicles and contractors. The Virginia and North Gates provide access for government employees and base residents during restricted hours. The Maryland Gate is restricted for use to visiting dignitaries or other distinguished visitors. The West Gate is not currently open to traffic but may be utilized as a pedestrian gate in the future. Andrews AFB has approximately 101 miles of paved roads. The overall pavement condition for roads and parking lots on Base is adequate and the majority of the paved surfaces are in good condition. Perimeter Road is the only primary roadway connecting the two sides of the Base. This two-lane undivided road makes an 8.4-mile loop around the Base. The roadway network has two signalized intersections. The first traffic signal is located at the corner of Patrick Avenue and North Perimeter Road. Vehicles entering the North Gate pass through this flashing traffic signal. The second traffic signal is located at Virginia Avenue and South Perimeter Road. Traffic during peak flow hours is heaviest at this intersection due to the limited number of egress points on Base. Despite queuing issues around the gates and signalized intersections, the Base has a very

low accident rate due to adequate sight distance and road signage (Andrews AFB 2003a). The transportation system was rated adequate. A *Comprehensive Transportation Study* (Andrews AFB 2006c) that focused primarily on intersections and roadway corridors, proposed short-term and long-term transportation improvements to improve traffic flow and roadway safety, and to assist in future planning at Andrews AFB. The 2006 study was updated in 2007 to include a total increase of 2,700 BRAC personnel. The purpose of this study was to assess existing conditions at key off-base intersections and to evaluate intersections both on and off-base to identify short-term and long-term transportation needs that would safely provide for future transportation demands.

*Airfield Pavement*

The airfield pavement system consists of runways, taxiways, ramps, and shoulders. Andrews AFB has two complete runway systems located in a north/south orientation. On the west side, Runway 01L/19R is 9,300 feet long with 1,000-foot overruns on each end. There are five taxiways connecting the runway to the parallel taxiway. The west apron provides parking for the 1st Helicopter Squadron, transient aircraft, partner units, and the 89 AW. On the east side, Runway 01R/19L is 9,755 feet long with 1,000-foot overruns on each end. Seven taxiways connect the runway to the parallel taxiway and a warm-up pad on the north end. The east apron provides parking for the Air Force Reserve, Navy, Marine Air Group, and the ANG. Although the airfield pavement system was rated as degraded in 2003, repairs have restored the east runway pavement to an excellent condition. However, the west runway is over 40 years old which has exceeded a design life of 25 years. Four projects have been planned to improve the condition of the west runway pavement (Andrews AFB 2003a).

*Sanitary Sewer*

The sanitary sewer system consists of sewer lines and lift stations that pump wastewater off-base to a wastewater treatment plant that is owned and operated by the Washington Suburban Sanitary Commission (WSSC). Recently privatized and now operated by Terrapin Utility Services, Inc., the sanitary sewer system on Base is approximately 60 years old and contains more than 33 miles of sewer line. The sanitary sewer pipes are constructed of asbestos cement, concrete, clay tile, and PVC. The overall condition of the sanitary sewer system is unsatisfactory as old and deteriorated pipes and manholes allow stormwater and groundwater to infiltrate the sanitary sewer system and the majority of sanitary sewer lift stations are in poor condition. There are several projects identified in the Andrews AFB Strategic Plan such as repairs to lift stations and replacing sewage lines, to help alleviate problems with infiltration and potential sanitary sewer overflow.

Oil-water separators improve the quality of wastewater discharges from industrial areas. Andrews AFB has approximately 60 active oil/water separators.

*Potable Water*

The WSSC supplies treated water through three connections to Andrews AFB through Terrapin Utility Services, Inc. The distribution system has over 100 miles of water line approximately 60 years old. Brown water caused by the development of rust on the interior wall of iron pipes, also known as tuberculation, has been detected throughout the Base.

There are three elevated water storage tanks located around the perimeter of the Base. These towers are not being used with the current Base water supply system. A 500,000-gallon storage tank and a 250,000-gallon storage tank have been inactive since 1993. The third elevated storage tank is a 3,000,000-gallon tank owned by WSSC that is not connected to the water supply on

Base. With an average daily demand of 1.65 million gallons per day, the required storage capacity at Andrews AFB is 825,000 gallons. However, the current storage capacity is 750,000 gallons. As the old and deteriorated water pipes cause water main failures and tuberculation, and because the required water storage capacity has not been met, the water system was rated unsatisfactory in 2002. Funded water line replacement projects would improve water quality throughout the system; however, other phases of the water line replacement project have not been funded. Until these projects are completed, unimproved water mains would be flushed periodically to remove corrosive sediment. Planned renovations to the existing water storage tanks would increase the current storage capacity from 750,000 gallons to 850,000 gallons (Andrews AFB 2003a).

*Stormwater Drainage*

Andrews AFB's stormwater drainage system consists of catch basins, culverts, underground storm sewer pipes, and ditches that discharge rain water into the Piscataway Creek and tributaries to Tinkers Creek, Henson Creek, Cabin Branch, and Charles Branch. These creeks eventually flow into either the Potomac or the Patuxent River. The majority of stormwater leaving the Base ultimately flows into the Potomac River (Andrews AFB 2004).

Although the capacity of the stormwater drainage system is adequate for the collection and disposal of stormwater into the existing infrastructure and natural drainages, the flat terrain and shallow storm sewer lines cause isolated ponding during low-intensity rainfalls. Therefore, the stormwater drainage system was rated as degraded. An infrastructure assessment in 2004 (Andrews AFB 2004) identified seven areas dispersed throughout the Base with a high level of concern for failing drainage structures (Andrews AFB 2004). An evaluation of the system in Watershed Number 3 in 2006 indicated that the stormwater system in this watershed was in good to mediocre condition (USAF 2007).

*Natural Gas*

The Washington Gas Light (WGL) Company supplies natural gas to Andrews AFB through a total of seven connection points. The natural gas distribution system is approximately 21 years old and ten miles in length. Pipe material consists of polyethylene. The natural gas distribution system was rated as adequate. The WGL Company is responsible for the installation and maintenance of the natural gas distribution system at Andrews AFB (Andrews AFB 2003a).

*Electricity*

The Potomac Electric Power Company provides electrical power to Andrews AFB. Two electrical feeders from off-Base tie directly into the main substation on Andrews AFB. From this substation, which is owned and operated by the USAF, a total of 20 primary feeder circuits distribute electricity to the rest of the Base. The distribution system is a combination of both overhead and underground power lines.

The electrical distribution system was rated as unsatisfactory as most of the primary feeder circuits and feeder lines are old and many transformers are pole-mounted instead of pad-mounted. In addition, one of the conduits was noted as being prone to collapse, and the family housing neighborhoods have old overhead distribution lines and transformers that need to be replaced. Planned improvements include replacing transformers and relocating overhead electrical lines underground.

*Heating and Cooling*

Andrews AFB has two central heating plants and approximately ten miles of steam lines that supply steam to 73 facilities on the east and west sides of the Base. The boiler inventory includes over 140 oil-fired and natural gas boilers. Approximately 9,400 tons of air conditioners are used to cool more than five million $ft^2$ in nearly 500 buildings. A separate chilled water plant serves Building 1535. Cooling towers serve ten facilities on Base. The heating and cooling system was rated as unsatisfactory as many heating, ventilation and air conditioning (HVAC) units are old and deteriorating, and the heating distribution system is over 30 years old and requires daily maintenance. Planned improvements include replacing or repairing aging HVAC units and steam lines basewide.

*Liquid Fuels*

Liquid fuel flows into Andrews AFB through a commercial pipeline to a commercial storage farm consisting of three contractor-owned fuel tanks on the west side of the airfield. Fuel is then transported to the Base's bulk storage farm located immediately west of the commercial storage farm. The government-owned bulk storage farm consists of four ASTs and two USTs. The fuel distribution system includes approximately 10,000 feet of piping and a pump station.

Andrews AFB has two fuel service stations for government-owned vehicles, 41 ASTs for diesel fuel, and two independent de-icing fluid tanks. Although some parts of the liquid fuels system are degraded (e.g., deteriorated pipelines), the overall liquid fuels system was rated as adequate.

# 4.0 ENVIRONMENTAL CONSEQUENCES

This section describes the potential impacts to various constraints on Andrews AFB that would result from implementation of the Proposed Action (Figure 4-1).

## 4.1 Earth Resources

### 4.1.1 METHODOLOGY

Protection of unique geologic features, minimization of soil erosion, and the siting of facilities relative to potential geologic hazards and soil limitations are considered when evaluating impacts to earth resources. If the Proposed Action were to substantially affect any of these features, impacts would be considered significant. Generally, impacts associated with earth resources can be avoided or minimized to a level of insignificance if proper construction techniques, erosion control measures, and structural engineering designs are incorporated into project development.

Analysis of potential impacts to geologic resources typically includes identification and description of resources that could potentially be affected, examination of the potential effects that an action may have on the resource, assessment of the significance of potential impacts, and provision of mitigation measures in the event that potentially significant impacts are identified. Analysis of impacts to soil resources resulting from proposed activities examines the suitability of locations for proposed operations and activities. Impacts to soil resources can result from earth disturbance that would expose soil to wind or water erosion.

### 4.1.2 POTENTIAL IMPACTS

#### 4.1.2.1 ALTERNATIVE #1 (PROPOSED ACTION)

The Proposed Action would result in a net increase of approximately 10.4 acres of disturbed land that would become additional impervious surface at Andrews AFB (Table 4-1), primarily as a result of facility construction, as described in Section 2.3. The grading of existing soils and placement of structural fill for new facilities would not substantially alter existing soil conditions at Andrews AFB because much of the property has been previously disturbed by prior development and most naturally occurring surface soils are no longer present, as described in Section 3.1.2. Additionally, the footprint of much of the proposed construction is located on existing impervious surface, or previously disturbed soils. Although no borings or other intrusive studies were conducted, based on existing information, there are no special qualities associated with the soils or geologic resources at the sites proposed for construction activities.

The ERP site ST-14 is located west of the proposed ANGRC Addition. ST-14, which was located on the opposite side of Fetchet Avenue from the ANGRC addition site, was the location of the East Side Service Station. Because the ANGRC addition is located on the opposite side of Fetchet Avenue from this site, no soil contamination is anticipated to be encountered. Although no soil contamination is anticipated, the proposed building addition could potentially intercept the outer boundaries of the groundwater plume. Due to the depth to groundwater and the regulatory status of this site, no worker exposure issues are anticipated from this site. In addition, recent geotechnical borings at this site did not indicate the presence of any contamination.

The eastern portion of the F-16 Apron Repair Project overlaps the ERP site SS-26. Any soil disturbance in this area would require coordination with the Base civil engineering squadron and testing to determine contamination levels and associated worker protection. Because substantial excavation work is not anticipated, worker exposure issues are anticipated to be minimal.

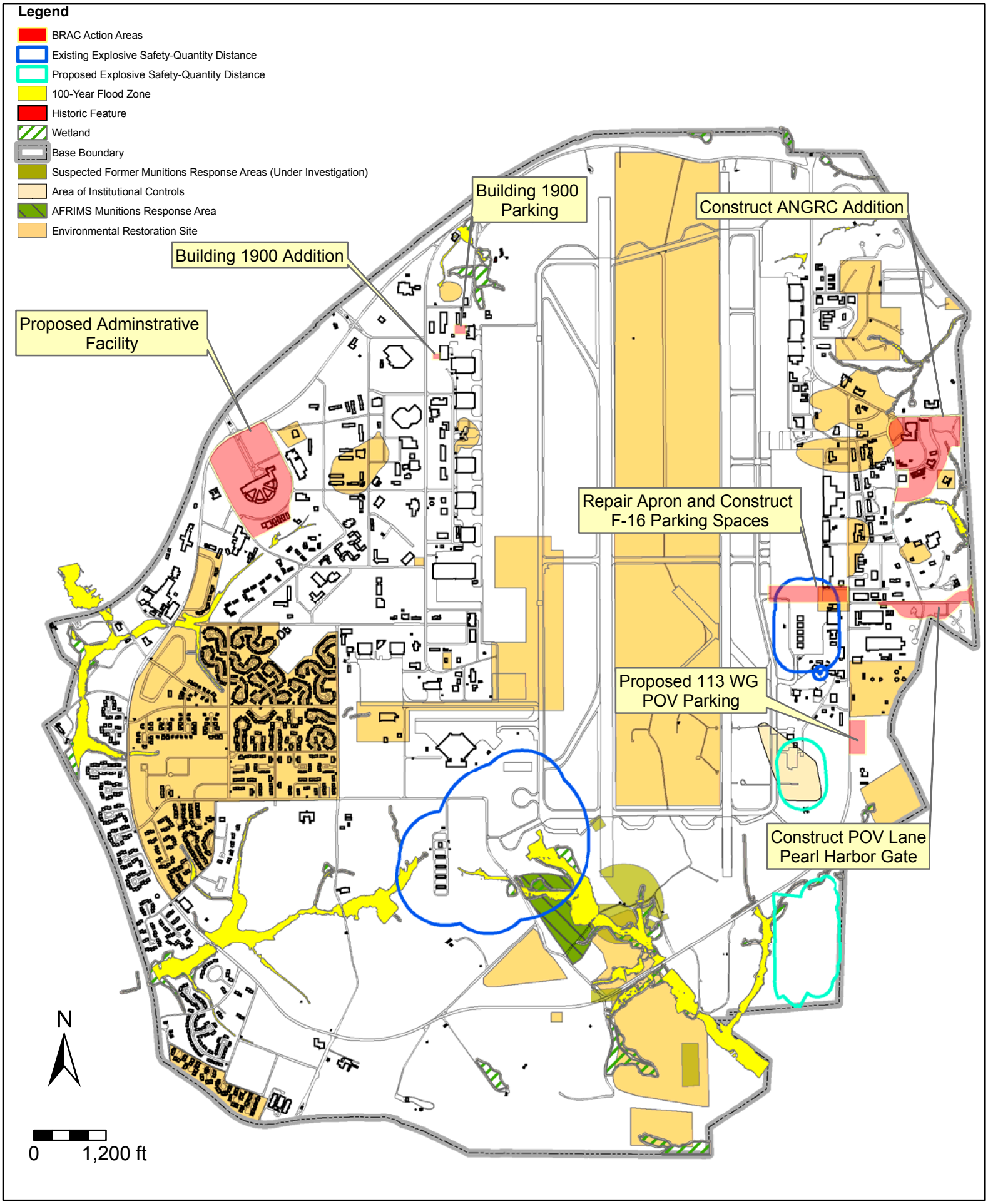


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Figure 4-1 Andrews AFB Constraints Relative to BRAC Projects

Facility design for both the F-16 Apron Repair Project and the ANGRC Addition would ensure that proper site drainage is achieved. Implementation of BMPs during construction activities would minimize impacts associated with erosion. BMPs could include silt fencing, sediment traps, application of water sprays, and revegetation of disturbed areas, as appropriate and necessary. Impacts to earth resources are anticipated to be minimal under the Proposed Action.

#### 4.1.2.2 ALTERNATIVE #2 PARKING GARAGE ALTERNATIVES

Implementation of Alternative 2 would substitute the parking lots for the Administrative Facility and the ANGRC Addition with parking garages. Implementation of this alternative would result in a net decrease of disturbed land at Andrews AFB (Table 4-2). Although impacts to earth resources are anticipated to be similar with both alternatives, construction of the parking garages is cost prohibitive and would require extensive subsurface investigation to determine if these areas contain soils suitable for this type of construction. These investigations were not conducted due to the cost differences associated with the parking garage alternatives. All other impacts to earth resources would be similar to those described in Section 4.1.2.1.

#### 4.1.2.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, no construction would occur and no new impacts to earth resources would occur at Andrews AFB. Conditions would remain as described in Section 3.1.2.

## 4.2 Water Resources

### 4.2.1 METHODOLOGY

Criteria for evaluating impacts related to water resources associated with implementation of the Proposed Action and its alternatives are water availability, water quality, and adherence to applicable regulations. Impacts are measured by the potential to reduce water availability to existing users; endanger public health or safety by creating or worsening health hazards or safety conditions; or violate laws or regulations adopted to protect or manage water resources.

The MDE WMA and the USACE are the regulatory agencies that govern water resources in the State of Maryland and at Andrews AFB. These agencies have adopted the USEPA's applicable environmental rules and regulations. The CWA of 1977 regulates pollutant discharges and development activities that could affect aquatic life forms or human health and safety.

### 4.2.2 POTENTIAL IMPACTS

#### 4.2.2.1 ALTERNATIVE #1 (PROPOSED ACTION)

With regard to water resources, the primary concerns associated with implementation of the Proposed Action include effects on water quality during construction and with operation of proposed facilities, impacts on surface waters, changes to surface water drainage and groundwater recharge, impacts to wetlands, and effects on the availability of local water supplies.

The Proposed Action would result in a net increase of approximately 10.4 acres of impervious surfaces (concrete or asphalt pavement, buildings, etc.) at Andrews AFB (Table 4-1). Prior to construction at sites one acre or larger, Andrews AFB would coordinate with the MDE WMA to obtain authorization to discharge stormwater under a NPDES construction stormwater permit. All construction projects that disturb an area greater than 5,000 $ft^2$ would require a sediment and erosion control plan approved by the MDE. Adherence to the requirements of the construction stormwater permit include filing of a Notice of Intent for the construction activity, and

preparation of an erosion and sediment control plan and BMPs to minimize the potential for exposed soils or other contaminants from construction activities on the Base to reach surface waters. Such BMPs would include the use of silt fences, covering of soil stockpiles, use of secondary containment for the temporary storage of hazardous liquids, establishment of buffer areas near wetlands and intermittent streams, and revegetation of disturbed areas in a timely manner. Adherence to the requirements of the NPDES construction permit would minimize impacts to water resources during construction.

Implementation of the Proposed Action would result in some new construction occurring in existing developed areas. Some of the new construction would result in a decrease in impervious areas. Decreasing impervious areas can improve the quality and reduce the quantity of stormwater runoff. In addition, some of the projects would provide additional water quality treatment above the minimum required by MDE. To account for this, Andrews AFB and MDE developed a Memorandum of Agreement (MOA) to implement a Water Quality Management Bank. The MOA allows credit for impervious area removed to be at 65 percent. The other 35 percent is credited using 20 percent for redevelopment requirement and 15 percent for a banking fee. The MOA provides credit for excess water quality treatment at 85 percent (15 percent banking fee). The stormwater mitigation bank would be updated as necessary throughout the construction and demolition process.

The Proposed Action would increase the amount of impervious surfaces on the installation, resulting in an increase in the amount of surface runoff and a decrease in groundwater recharge. The Proposed Action would require modifications to the installation storm drainage system and updating the installation SWPPP in order to properly manage stormwater. For example, replacement of the storm sewer system around Building 1535 has been recommended (USAF 2006b). To accommodate the stormwater requirements associated with the reconstruction of Building 1535 and the ANGRC Addition, various conceptual stormwater quantity and quality BMP's have been evaluated. For Building 1535, extended detention ponds, wet ponds, underground detention and sand filters and dry basins were all evaluated. For the ANGRC Addition, sand filters and dry ponds are currently being planned for stormwater treatment and detention. Andrews AFB would coordinate with MDE WMA to obtain appropriate permits to control any increased stormwater runoff related to new development. Requirements for management of stormwater runoff are provided in *Maryland Stormwater Management Guidelines for State and Federal Projects* (MDE 2001), and specific stormwater management methods are provided in the *2000 Maryland Stormwater Design Manual* (MDE 2000). A stormwater management plan would be developed and submitted to MDE WMA and approved prior to implementation of construction activities. Adherence to these requirements would minimize degradation of local water quality and would minimize potential impacts. Project design and construction would meet all appropriate federal and state stormwater regulations.

**Table 4-1. Impacts to Impervious Surfaces at Andrews AFB, Alternative 1**

| Map ID | Project Title | Existing Impervious | New Impervious | Change in Impervious |
|---|---|---|---|---|
| 1 | Repair Apron and Construct Parking Spaces for Nine F-16s. | 185,130 | 185,130 | 0 |
| 2 | Construct POV Parking for the 113 WG. | 0 | 87,003 | 87,003 |
| 3 | Construct Addition to Building 1900 for the 135 APS. | 7,201 | 14,301 | 7,100 |
| 4 | Construct Administrative Facility and Parking Lot. | 664,194 | 865,062[1] | 200,868 |
| 5 | Construct ANGRC Addition and Parking Lot. | 386,377 | 537,530 | 151,153 |
| 6 | Construct POV Lane, Pearl Harbor Gate. | 0 | 8,611 | 8,611 |
| | **Total ft²** | 1,242,902 | 1,697,637 | 454,735 |
| | **Total Acres** | **28.53** | **38.97** | **10.4** |

[1]This square footage will not match the square footage in Table 2-2 because the building is multi-story.

As mentioned, the ERP site ST-14 is located across Fetchet Avenue from the proposed ANGRC Addition. The proposed building addition would potentially intercept the outer boundaries of the groundwater plume associated with the ST-14 site. There is a potential for groundwater contamination at the ANGRC Addition site; however groundwater cleanup at the ERP site across Fetchet Avenue has been initiated with the goal of preventing an expansion of contaminants and construction of the proposed building addition should not impact remediation efforts.

The eastern portion of the F-16 Apron Repair Project would potentially intercept the ERP site SS-26. The extent of contamination is currently being evaluated. The repair of the apron would primarily involve surface repairs and minor subsurface excavation. Construction activities are not anticipated to impact groundwater at the site. However, should results of the PA/SI at SS-26 reveal contamination under the parking apron, remediation of the site might be necessary.

#### 4.2.2.2 ALTERNATIVE #2 PARKING GARAGE ALTERNATIVES

Implementation of Alternative 2 would reduce the amount of impervious surfaces present at Andrews AFB by approximately 5.5 acres (Table 4-2). The decrease in impervious surfaces would minimize the amount of stormwater flow controls needed to meet regulatory requirements at the ANGRC Addition and the Administrative Building sites. The implementation of this alternative would have an overall positive impact upon stormwater runoff at Andrews AFB.

**Table 4-2. Impacts to Impervious Surfaces at Andrews AFB, Alternative 2**

| Map ID | Project Title | Existing Impervious | New Impervious | Change in Impervious |
|---|---|---|---|---|
| 1 | Repair Apron and Construct Parking Spaces for Nine F-16s. | 185,130 | 185,130 | 0 |
| 2 | Construct POV Parking for the 113 WG. | 0 | 87,003 | 87,003 |
| 3 | Construct Addition to Building 1900 for the 135 APS. | 7,201 | 14,301 | 7,100 |
| 4 | Construct Administrative Facility. | 664,194 | 335,774 | -328,420 |
| 5 | Construct ANGRC Addition. | 386,377 | 373,309 | -13,068 |
| 6 | Construct POV Lane, Pearl Harbor Gate. | 0 | 8,611 | 8,611 |
| | **Total $ft^2$** | 1,242,902 | 1,004,128 | -238,774 |
| | **Total Acres** | **28.53** | **23.05** | **-5.5** |

#### 4.2.2.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, no construction would occur and no impacts to water resources would occur. Conditions would remain as described in Section 3.2.2.

## 4.3 Biological Resources

### 4.3.1 METHODOLOGY

Evaluation of potential impacts to biological resources is based upon 1) the importance (legal, commercial, recreational, ecological, or scientific) of the resource, 2) the rarity of a species or habitat regionally, 3) the sensitivity of the resource to proposed activities, and 4) the duration of the impact. Impacts to biological resources are considered to be greater if priority species or habitats are adversely affected over relatively large areas and/or disturbances cause reductions in population size or distribution of a priority species.

## 4.3.2 POTENTIAL IMPACTS

### 4.3.2.1 ALTERNATIVE #1 (PROPOSED ACTION)

Under this alternative, there would be minor impacts to biological communities of semi-improved grassland, cultivated grassland, mixed hardwood forest and oak forest.

*Vegetation*

Proposed construction for BRAC projects would primarily be located on cultivated and semi-improved grasslands, as well as previously hardened surfaces. The grassland vegetation that would be affected is managed and widespread on Andrews AFB. Minor clearing of trees would be necessary for the construction of the Administrative Facility and the Addition to Building 1900. Construction of the ANGRC Addition would result in the long-term loss of less than one acre of oak forest. Construction of the 113 WG parking lot would result in the long-term loss of less than 2.0 acres of mixed hardwood forest. The size of the forested area to be cleared represents a negligible (<0.0001) percentage of the remaining forest cover within the State of Maryland (MDNR 2003) and a negligible (<0.003) percentage of forest cover at Andrews AFB. Following project implementation, Andrews AFB would replace 60 percent of the lost forest canopy for the construction of the parking lot per Andrews AFB Environmental Protection Standards for Contracts. Replacement trees must be native species, with a 2-5 inch caliper, and would be arranged in stands similar to those removed (Andrews AFB 2007d).

*Wildlife*

With the exception of the 113 WG parking lot, the proposed demolition and construction activities occur within previously disturbed portions of Andrews AFB. There would be no impacts outside the proposed project areas and construction BMPs implemented during construction and demolition activities would minimize impacts to wildlife at and near the construction sites. New trees, shrubs, and other landscaping would provide additional urban habitat for birds and other wildlife. The construction activities associated with the Proposed Action would not impact wildlife reproduction, movement, or habitat.

Although the construction of the proposed 113 WG parking lot would represent loss of habitat for forest-dwelling wildlife, that loss would be minimal in terms of acreage. It would also occur outside of any of the forest patches identified as larger blocks of remaining forest in the state and per the standards mentioned above, 60 percent of the total impacted area would be replaced with new trees. The grassland vegetation that would be affected is managed or landscaped, and wildlife using proposed construction areas likely consists of species already adapted to a human-dominated environment or even thriving in it.

*Threatened and Endangered Species*

No sensitive wildlife species would be affected by the Proposed Action, as they do not occur on the main Base at Andrews AFB. Similarly, no sensitive plant species would be affected under the Proposed Action as they are not known to occur at the proposed constructions sites.

### 4.3.2.2 ALTERNATIVE #2 PARKING GARAGE ALTERNATIVES

Implementation of Alternative 2 would impact approximately five fewer acres of cultivated and semi-improved grasslands in the vicinity of the ANGRC Addition and Administrative Facility when compared to Alternative 1. All other impacts associated with Alternative 2 would be comparable to those described in Section 4.3.2.1.

#### 4.3.2.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, no construction would occur and no impacts to biological resources would occur. Conditions would remain as described in Section 3.3.2.

## 4.4 Air Quality

This section discusses methodology used to determine whether or not General Conformity Regulations apply, the Conformity Analysis results, and the potential impacts of all alternatives. A more detailed description of the aforementioned topics can be found in Appendix C *Final Air Conformity Applicability Analysis for FY07-11 BRAC Construction Requirements at Andrews Air Force Base, Maryland*. It must be noted that all source documents used in the air conformity analysis were the most current documents available at the time. New studies may have been completed, but are not incorporated into the analysis in order to establish an emissions baseline for the installation. Emission estimates used are moving targets and may have changed slightly in later source documents.

### 4.4.1 METHODOLOGY

Air emissions resulting from the Proposed Action and its alternatives were evaluated in accordance with federal, state, and local air pollution standards and regulations (USAF 2006a). Air quality impacts from a proposed activity or action would be significant if they:

- increase ambient air pollution concentrations above any NAAQS;
- contribute to an existing violation of any NAAQS;
- interfere with or delay timely attainment of NAAQS; or
- impair visibility within any federally mandated federal Class I area.

The approach to the air quality analysis was to estimate the increase in emission levels due to Proposed Action. According to USEPA's General Conformity Rule in 40 CFR Part 51, Subpart W, any proposed federal action that has the potential to cause violations in a NAAQS nonattainment or maintenance area must undergo a conformity analysis. A conformity analysis is not required if the Proposed Action occurs within an attainment area. Since Prince George's County is designated as nonattainment for the 8-hour $O_3$ standard, and the annual $PM_{2.5}$ NAAQS, and is in maintenance status (i.e., recently achieved attainment) for CO, a conformity determination must be performed if projected emissions exceed the *de minimis* thresholds.

In calculating the conformity determination, indirect emissions from off-base sources were evaluated. These off-base sources represent vehicular traffic for new employees coming to Andrews AFB from other areas within the Washington, DC metropolitan region. Vehicular emissions for the amount of personnel described in the Proposed Action already exist in regional emission estimated. Implementation of the Proposed Action would not create a massive influx of personnel or vehicles that are not currently generating emissions into the regional area. What is, in fact, evaluated in the conformity analysis is the average increase of vehicular miles as provided by the Metropolitan Washington Council of Governments analysis, *Impacts of the U.S. Department of Defense (DoD) Base Realignment and Closure (BRAC) Recommendations for the Metropolitan Washington Region* (COG 2005) which accounted for the percentage of employees that may be currently commuting by mass transit and assumes that they will be commuting by car once re-assigned.

As described in Section 3.4.1, Section 169(a) of the CAA established the PSD regulations to protect the air quality in regions that already meet the NAAQS. Certain national parks,

monuments, and wilderness areas have been designated as PSD Class I areas, where appreciable deterioration in air quality is considered significant. The nearest PSD Class I area is more than 80 miles from the region potentially affected by the Proposed Action. Therefore, implementation of the Proposed Action would be unlikely to have a significant impact on any PSD Class I areas.

## 4.4.2 POTENTIAL IMPACTS

### 4.4.2.1 ALTERNATIVE #1 (PROPOSED ACTION)

In addition to gaining approximately 2,700 new employees and nine F-16 aircraft, the Proposed Action would involve construction, demolition, and paving activities on Andrews AFB. Construction personnel and equipment transporting materials to and from the site would also contribute to potential air quality impacts during the construction period. All of the activities associated with implementation of the Proposed Action would produce demolition, construction, operational and indirect emissions.

*Proposed Action Emissions Estimate*

The anticipated emissions from the proposed actions, assumed to take place over a five year period, were quantified to determine the potential impacts on regional air quality. As a result of the attainment statuses for the Washington, D.C. metropolitan area and Prince George's County, the following emissions were considered from all sources for the General Air Conformity Applicability Analysis:

- CO, because the area is in maintenance;
- VOC's, an $O_3$ and $PM_{2.5}$ precursor;
- NOx, an $O_3$ and $PM_{2.5}$ precursor;
- Sulfur Oxides (SOx), a $PM_{2.5}$ precursor; and
- Fine Particulate Matter ($PM_{2.5}$)

The emission factors for building construction and demolition include contributions from engine exhaust emissions (i.e., construction equipment, material handling, and workers' travel) and fugitive dust emissions (e.g., from grading activities). Paving emissions include combustive emissions from bulldozers, rollers, and paving equipment, in addition to emissions from a dump truck hauling pavement materials to the site.

At Andrews AFB, mobile sources of emissions are categorized as one of the following types: mobile Aircraft Ground Equipment (AGE), mobile generators (non-AGE), Government Owned on-road vehicles, Government Owned non-road vehicles (gasoline and diesel) and aircraft operations. For the purpose of this document, mobile sources have been re-categorized according to their source (*i.e.,* construction emissions, operational emissions, and indirect emissions).

Construction Emissions (and the three sub-categories) contain sources such as non-road vehicles (diesel) like dump trucks and other on-site construction equipment. Operational Emissions contain sources such as mobile AGE equipment, mobile generators (non-AGE), and on-base government vehicles. It also includes emissions from aircraft operations. The category Indirect Emissions contains mobile emissions from personal vehicles (including on- and off-base mileage). Engine idling from construction equipment and other diesel fed vehicles would be controlled as per Andrews AFB regulations and therefore, emissions from idling are not expected to significantly contribute to project emissions from the Proposed Action.

For more information regarding individualized emission estimates and categorization see the *Final General Air Conformity Applicability Analysis for FY07-11 BRAC Construction Requirements at Andrews Air Force Base, Maryland*, in Appendix C.

Table 4-3 provides the identified *de minimis* levels for conformity, and shows that the projected annual emissions are below the *de minimis* thresholds for conformity with the Maryland SIP. Therefore, based on the fact that projected Proposed Action emissions are below the *de minimis* thresholds, a formal General Conformity Determination is not required.

**Table 4-3. Emissions Estimate for BRAC Activities at Andrews Air Force Base**

| | | Emissions Increase (tons) | | | | |
|---|---|---|---|---|---|---|
| | | **CO** | **VOC** | **$NO_x$** | **$SO_x$** | **$PM_{2.5}$** |
| Construction Emissions | Construction | 10.3 | 3.2 | 47.2 | 0.0 | 3.3 |
| | Demolition | 0.8 | 0.1 | 0.7 | 0.0 | 0.3 |
| | Pavement | 0.9 | 0.2 | 2.4 | 0.2 | 0.2 |
| | **Total[1]** | **12.0** | **3.5** | **50.4** | **0.2** | **3.8** |
| Operational Emissions | Non-Aircraft Mobile Sources[2] | 7.8 | 0.8 | 3.8 | 0.1 | 0.1 |
| | Stationary Sources | 1.2 | 0.3 | 1.2 | 0.4 | 0.1 |
| | C-21A | -3.7 | -0.5 | -3.2 | -0.1 | 0.0 |
| | F-16 | 7.9 | 3.7 | 12.5 | 0.3 | 0.0 |
| | **Total[1]** | **13.2** | **4.3** | **14.3** | **0.7** | **0.2** |
| Indirect Emissions[3] | Off-Base Commuting[4] | 20.1 | 1.5 | 2.4 | 0.0 | 0.052 |
| | On-Base Commuting[5] | 38.4 | 3.3 | 4.7 | 0.0 | 0.094 |
| | **Total[1]** | **58.5** | **4.8** | **7.2** | **0.0** | **0.1** |
| **Cumulative Emissions[1]** | | **83.7** | **12.6** | **71.8** | **1.0** | **4.2** |
| | | **de minimis Levels (tons/year)** | | | | |
| | | **CO** | **VOC** | **NOx** | **SOx** | **$PM_{2.5}$** |
| | | **100** | **50** | **100** | **100** | **100** |

1) The total of the sums might not equal the total shown due to rounding
2) Includes such sources as: non-aerospace ground equipment (AGE) mobile generators, mobile AGE, and on-base government vehicles
3) Off-base mileage is assumed to be 2.76 miles. It is the result of dividing the estimated increase of vehicle miles traveled per day by the average increase of vehicle trips per day, the result is the average increase of mileage per trip (COG 2005); on-base commuting is assumed to be 5 miles, and represents the average distance traveled everyday by an employee on-base (USAF 2005b)
4) Calculated for 40 miles per hour (mph) as referenced in the *National Capital Region Transportation Planning Board (TPB) Call for Projects for the 2006 Constrained Long-Range Transportation Plan (CLRP) and Fiscal Year 2007-2012 Transportation Improvement Program (TIP)* (TPB 2005)
5) Calculated for 20 mph as referenced in the *Mobile Source Emissions Inventory for Andrews Air Force Base CY 2002* (USAF 2005b)

*Regional Emissions*

Another step of the general conformity process is to determine if the action is regionally significant. An action is regionally significant if the total direct and indirect emissions of an individual pollutant amount to ten percent or more of a nonattainment or maintenance area's emissions of that pollutant. Table 4-4 shows that the estimated emissions of these BRAC activities are less than ten percent of the regional emissions, as given in the Maryland SIP, and are therefore not regionally significant. For more information see Appendix C *Final General Conformity Applicability Analysis for FY07-11 BRAC Construction Requirements at Andrews Air Force Base, Maryland*.

**Table 4-4. Estimated Annual Emissions for the Washington, D.C.-MD-VA Metropolitan Nonattainment Area**

| | Estimated Emissions (tons per year) | | | | |
|---|---|---|---|---|---|
| **Year** | **CO** | **VOC** | **$NO_x$** | **$SO_x$** | **$PM_{2.5}$** |
| 2002[1] | 1,145,861.96 | 160,769.88 | 204,482.88 | Not Available | Not Available |
| 2010 | Not Available | Not Available | Not Available | 288.81[3] | 932.82[2] |
| 10% | 114,586.2 | 16,077.0 | 20,448.3 | 28.9 | 93.3 |
| BRAC Emissions | 83.7 | 12.6 | 71.8 | 1.0 | 4.2 |

1) Baseline 2002 emissions estimate submitted to EPA but not approved (COG 2006)
2) On-road direct $PM_{2.5}$ emissions only (Clifford 2005)
3) Estimated based on emission factors from MOBIL 6.2.03 contained in EDMS 4.4 for a 40 mph average speed and "general" vehicle mix

*Conclusions*

As stated previously, the personnel relocating to Andrews AFB are already an existing workforce in the region; although a person's work site may change, there are no changes in the projected number of households in the region (COG 2005). However, since Andrews AFB is not serviced by mass transit options, there would be a net increase in the vehicle miles traveled per commuter and by extension and increase of emissions from those vehicle miles (see Table 4-3 for off-base commuting emissions estimates). Despite an average increase of 2.76 miles per trip, total emissions from the Proposed Action would be below *de minimus* levels. The two largest sources of emissions are $NO_x$ from construction emissions (66 percent of the Proposed Action's increase) and CO from on-base commuting (46 percent of the Proposed Action's increase).

Emissions produced by activities under this BRAC action are below the *de minimis* threshold levels for all air pollutants and are therefore not subject to a conformity determination. In addition, the emissions are not regionally significant. Therefore this action meets the requirements of the General Conformity Regulations and a formal General Conformity Determination is not required. However, appropriate measures will be taken during construction to minimize air quality impacts and Andrews AFB would coordinate with the MDE on any air permitting issues.

Additional information regarding the General Conformity analysis is contained in Appendix C.

#### 4.4.2.2 ALTERNATIVE #2 PARKING GARAGE ALTERNATIVE

Impacts associated with the implementation of Alternative 2 would be comparable to those described in Section 4.4.2.1.

#### 4.4.2.3 NO ACTION ALTERNATIVE

Although no construction or demolition emissions would occur with the No Action Alternative, per BRAC law, the 2,700 personnel are still required to report to Andrews AFB which would result in additional mobile emissions from commuter vehicles. In addition, because the Pearl Harbor gate would not be expanded with this alternative, additional emissions from idling vehicles resulting from gate delays would be anticipated The additional commuter emissions were evaluated by the Metropolitan Washington Council of Governments (COG) Transportation Planning Board's BRAC analysis (COG 2005).

## 4.5 Noise

### 4.5.1 METHODOLOGY

Noise associated with aircraft operations at Andrews AFB, other transportation-related noise, and construction activities associated with the Proposed Action will be considered and compared

with current conditions to assess impacts. Data developed during this process will also support analyses in other resource areas.

Based on numerous sociological surveys and recommendations of federal interagency councils, the most common benchmark referred to is an $L_{dn}$ of 65 dBA. This threshold is often used to determine residential land use compatibility around airports, highways, or other transportation corridors. Two other average noise levels are also useful:

- An $L_{dn}$ of 55 dBA was identified by the USEPA as a level ". . . requisite to protect the public health and welfare with an adequate margin of safety" (USEPA 1974). Noise may be heard, but there is no risk to public health or welfare.
- An $L_{dn}$ of 75 dBA is a threshold above which effects other than annoyance may occur. It is 10 to 15 dBA below levels at which hearing damage is a known risk (OSHA 1983). However, it is also a level above which some adverse health effects cannot be categorically discounted.

Public annoyance is the most common impact associated with exposure to elevated noise levels. When subjected to $L_{dn}$ of 65 dBA, approximately 12 percent of persons so exposed will be "highly annoyed" by the noise. At levels below 55 dBA, the percentage of annoyance is correspondingly lower (less than three percent). The percentage of people annoyed by noise never drops to zero (some people are always annoyed), but at levels below 55 dBA it is reduced enough to be essentially negligible.

## 4.5.2 POTENTIAL IMPACTS

### 4.5.2.1 ALTERNATIVE #1 (PROPOSED ACTION)

*Aircraft Noise*

In 2006, the Air Force Center for Environmental Excellence (AFCEE) updated the Andrews AFB Air Installation Compatible Use Zone (AICUZ) Report (Andrews AFB 1998, Revision 2005) to incorporate all current aviation activity, and actions associated with recommendations of the 2005 BRAC Commission, which have now become Public Law.

Since the previous AICUZ update at Andrews AFB in 2005, the AFCEE team noted that C-21, F/A-18, and C-9 aircraft have been reassigned, and that the BRAC decisions included two C-21 aircraft leaving Andrews AFB. The BRAC decisions also included the assignment of additional F-16 aircraft to the Washington, DCANG at Andrews AFB. However, during the data collection phase, it was determined that no additional F-16 operations would result from the assignment of additional aircraft. As stated by Major Marc Sasserville (113 WG Operations Group), "The BRAC action added airplanes, but no extra pilots or maintainers" (AFCEE 2006).

As a result, noise from aviation activities remains as discussed in Section 3.5 and will therefore not be further evaluated.

*Construction Noise*

Per the Proposed Action, Andrews AFB would build new facilities, demolish older facilities, and upgrade other aspects of the installation's supporting infrastructure. There are several aspects of this proposal that have the potential to create noise impacts in the ROI.

Construction would most likely occur over a five year time-frame, and at any one time, only a small number of projects would be expected to be ongoing simultaneously. Therefore, noise associated with active construction sites would be expected to be intermittent and of relatively

limited duration. A hypothetical scenario was developed to assess potential noise associated with construction activities on a construction site. Primary noise sources during such activity would be expected to be heavy vehicles and earth moving equipment. Table 4-5 shows sound levels associated with typical heavy construction equipment under varying modes of operation.

**Table 4-5. Typical Equipment Sound Levels**

| Equipment | Sound Level (in dBA) Under Indicated Operational Mode[1] | | |
|---|---|---|---|
| | Idle Power | Full Power | Moving Under Load |
| Forklift | 63 | 69 | 91 |
| Backhoe | 62 | 71 | 77 |
| Dozer | 63 | 74 | 81 |
| Front-End Loader | 60 | 62 | 68 |
| Dump Truck | 70 | 71 | 74 |

Note: [1]Measured at 125 Feet
Source: USAF 1998.

For the assessment of construction noise, a hypothetical "construction area" was designated that approximated the estimated area that would be involved in supporting a major project under the proposal.

The first step in the analysis was to estimate equipment usage and calculate the total acoustic energy that would be expected to be generated on the site. These data also provided information on individual equipment item's relative contribution to the total amount of acoustic energy generated on the site. Next, individual equipment was spatially distributed throughout the construction zone considering "most likely" areas of operation. This yielded an equipment-weighted contribution to total site acoustic energy at different points throughout the site. With this spatial distribution, it was then possible to calculate a mean and standard deviation for the distribution along an axis running through the site.

These data were then used to normally distribute the total site noise energy throughout the site. Finally, the normally distributed sound energy from multiple source points throughout the site was aggregated at a range of points at varying distances from the site edge. This allowed a determination at those points of the total acoustic energy that had emanated off-site.

Calculations based on this conservative scenario indicate an $L_{eq}$ over an eight-hour period ($L_{eq(8)}$) of 67 dBA at a distance of 500 feet from the edge of the site. This is then normalized to an $L_{eq}$ over a 24-hour period ($L_{eq(24)}$) of 62 dBA. Since no construction activity would be expected to occur at night, this would be equivalent to $L_{dn}$ 62 dBA. At a distance of 1,000 feet from the site, noise levels are $L_{eq(8)}$ 62 dBA and $L_{eq(24)}$ 58 dBA. Due to the conservative nature of the scenario, and the fact that sound attenuation only due to spherical spreading was considered, actual levels emanating off-site would be expected to be lower.

It should be noted that the areas involving construction are situated within areas already exposed to elevated noise from airfield operations. All projects are located in, or immediately proximate to air-side locations directly supporting aircraft operations (runways, taxi-ways, parking ramps, etc.). These areas are well within the $L_{dn}$ 65 dBA contour created by aircraft noise. Construction noise emanating off-site would probably be noticeable in the immediate site vicinity, but would not be expected to create adverse impacts, or alter noise contours associated with aircraft operations. Furthermore, construction-related noise is intermittent and transitory, ceasing at the completion of construction. The long-term acoustic environment on Andrews AFB would be expected to remain relatively unchanged.

#### 4.5.2.2 ALTERNATIVE #2 PARKING GARAGE ALTERNATIVE

The implementation of Alternative 2 has the potential to cause severe increases in temporary noise during construction. This increase in noise would be due to the use of sheet pile or stabilization pile techniques in constructing a parking garage. This increase in noise impacts would be located around the Administrative Facility and the ANGRC Addition construction sites and would be temporary in nature.

#### 4.5.2.3 NO ACTION ALTERNATIVE

Under the No-Action Alternative, the BRAC recommended-actions would not be implemented. However, because the BRAC recommendations are law, the people and planes associated with the recommendations would arrive at Andrews. Aircraft operations would remain as discussed in Section 3.5.2, and although no increases to the existing noise environment would be created by construction activities, minor increases to the noise environment would occur from commuter vehicles associated with the BRAC recommendations.

## 4.6 Land Use and Visual Resources

### 4.6.1 METHODOLOGY

The methodology to assess impacts on individual land uses requires identifying those uses, as well as affected land use planning and control policies and regulations and determining the degree to which they would be affected by the proposal. Similarly, visual impacts are assessed by determining how, and to what extent, the Proposed Actions would alter the overall visual character of the area.

### 4.6.2 POTENTIAL IMPACTS

#### 4.6.2.1 ALTERNATIVE #1 (PROPOSED ACTION)

The Proposed Action would require construction of new facilities and modification of existing facilities. Potential construction and renovations would generally be limited to pre-developed areas with the exception of the parking lot for the 113 WG which would require the conversion of less than 2 acres of forested land to a parking lot. In addition, the proposed construction and renovation projects would be compatible with the future land uses at the installation (Figure 4-2).

Adverse land use impacts are not anticipated, since there would be no major changes in general land use patterns, land ownership, and land management plans. The proposed facility construction, alteration, and demolition for Andrews AFB would not create any foreseeable impacts to existing land uses of these sites. Although, implementation of the Proposed Action would require the conversion of some land currently designated as open space to industrial land use, it would not introduce any new land uses at the installation, and therefore would not be incompatible with any existing or future proposed installation land uses. The proposed BRAC actions are compatible with the Andrews AFB Strategic Plan (USAF 2005c). The proposed facilities would be constructed to provide the facilities and infrastructure necessary to accommodate BRAC actions at Andrews AFB. These projects would address current deficiencies and improve the function and efficiency of land use on the installation. The proposed structures and configuration would be more functional and conducive to missions at Andrews AFB than the existing conditions.

All proposed facilities would be designed and constructed architecturally compatible with existing facilities. While the proposed construction does include large structures, the size and type of proposed buildings would be similar to other buildings on the installation. Although the

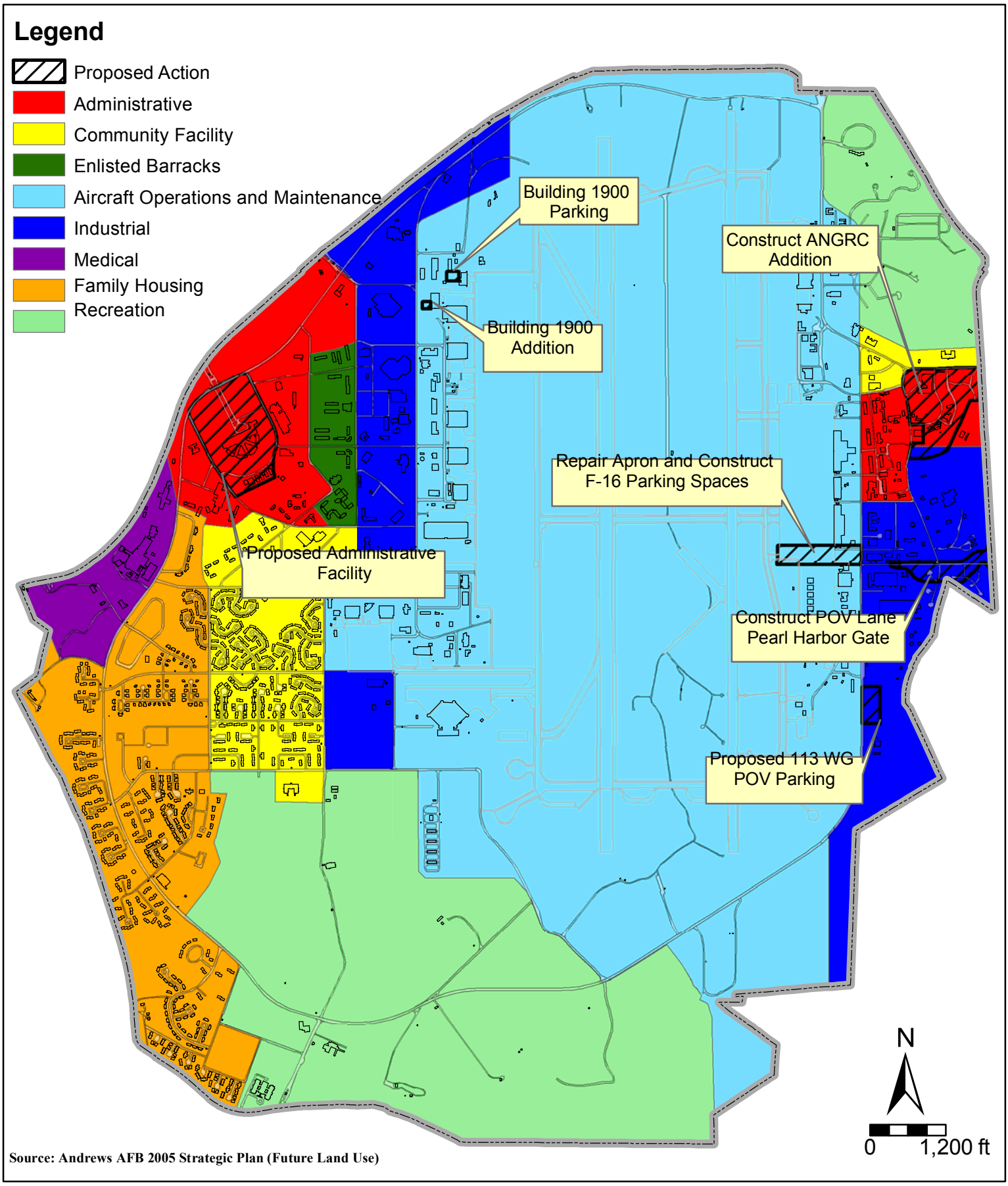


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Figure 4-2. Proposed Projects Relative to Future Land Use

parking lots would have a large footprint, they would not impede the viewshed of either area. In addition, it is anticipated that the parking lots would be landscaped with trees and shrubs to blend into the exiting viewshed. Since the proposed structures would not be incongruent with the surrounding buildings or land uses, an impact to visual resources would not be expected.

#### 4.6.2.2 ALTERNATIVE #2 PARKING GARAGE ALTERNATIVE

Depending upon the perspective of the viewshed, the implementation of Alternative 2 could have either positive or negative impacts to visual resources. The parking garage for Building 1535 would be a five story structure that would extend above any other buildings or trees in this area.

The parking garage for the ANGRC Addition would be a three story structure and would also extend above existing buildings and surrounding trees. The construction of the parking garages would have minor long term impacts to the viewshed of both areas.

#### 4.6.2.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, no facility development would occur. Land use and visual resources would remain as described in Section 3.6.2.

## 4.7 Socioeconomics and Environmental Justice

### 4.7.1 METHODOLOGY

Existing demographic and economic characteristics in Prince George's County were analyzed to assess the potential socioeconomic impacts associated with implementation of the Proposed Action. For this EA, potential socioeconomic impacts are evaluated for personnel changes at the installation and facility construction and modifications. Substantial shifts in populations or adverse effects on housing, utilities, or public services caused by the Proposed Action would be considered significant social impacts.

The Economic Impact Forecast System (EIFS) model was used to estimate the economic effects that might result from the anticipated personnel changes and implementing the Proposed Action. This model was developed by the DoD in the 1970's to efficiently identify and address the regional economic effects of proposed military actions. The EIFS is a computer-based model that calculates multipliers to estimate the direct and indirect effects of a given action. Based on the input data and calculated multipliers, the model estimates changes in sales volume, income, employment and population in the ROI, accounting for the direct and indirect effects of the action. An economic change would be considered significant if the estimated changes would fall outside of the historical range of the ROI economic variation.

This section includes an analysis for the adverse disproportionate impacts on low-income and minority populations by implementing the Proposed Action. Included in this discussion is an analysis for potential health and safety risks that might disproportionately affect children.

### 4.7.2 POTENTIAL IMPACTS

#### 4.7.2.1 ALTERNATIVE #1 (PROPOSED ACTION)

Under the Proposed Action, Andrews AFB would receive an additional 2,700 personnel which is a 20.6 percent increase in the 2006 Base workforce. This includes the employee shift resulting from the de-establishment of the inpatient mission of the hospital. If it is assumed that 80 percent of the 2,700 personnel (approximately 2,160) and their families (averaged two dependents) would relocate to the ROI, then the 2005 population for the ROI would increase by

6,480 or a 0.8 percent increase. The increase in personnel would have a long-term effect on the local workforce resulting in increased demands for housing and public services. However, this increase is not anticipated to result in adverse demands on housing, utilities, or public services within the ROI. Housing should be available within Westphalia and other residential developments within the ROI.

The EIFS model did not indicate any significant changes to the economy within the ROI as a result of an increase in 2,700 personnel and implementing the Proposed Action. However, many direct and indirect, long-term and short-term, beneficial effects on the local economy would be expected. The Proposed Action would generate a total net gain of approximately 4,532 jobs in the ROI, including 3,581 direct and 951 induced (indirect) jobs. The Proposed Action would also generate positive changes in the other economic indicators estimated by the EIFS model, including a 1.1 percent increase in sales volume and a 0.9 percent increase in regional personal income (EIFS 2006).

Total construction costs for the Proposed Action are approximated at $253 million with the majority of these projects proposed to be completed between 2007 and 2009. Although short-term, these construction expenditures would be spread out over the five year construction period and would have a direct, beneficial impact on the local economy. Employment associated with construction activities would benefit the local workforce but would also be temporary.

Since the BRAC recommendations were passed into law, the Maryland Department of Planning (MDP) has developed a report to evaluate the potential impacts associated with implementation of the BRAC recommendations. Part of this report covered Prince George's County and Andrews AFB. The MDP evaluation concluded that the BRAC recommendations for Andrews AFB would have the least amount of potential impact of all the BRAC actions in Maryland when compared to the recommended actions at Fort Meade and the Aberdeen Proving Grounds. Specifically, for Prince George's County, the increase of approximately 2,000 households per the numbers contained in the report is less than five percent of the estimated housing supply available to all migrants over the 2009-2015 period. The MDP report concluded that no major demand versus anticipated supply issues were identifiable (MDP 2006).

*Environmental Justice*

As discussed in Section 3.7, the USAF has issued guidance on environmental analysis for EAs. To comply with EO 12989, ethnicity and poverty status in the ROI have been examined and compared to state and national statistics to determine if minority or low-income groups could be disproportionately affected by the implementation of the Proposed Action. The review indicates that the residents living in the ROI (Prince George's County) have a substantially higher Black or African American population (62.7 percent) than the state (27.9 percent) and the nation (12.3 percent). The per capita personal income for the residents in the ROI ($33,461) is comparable with the nation ($33,050) and lower than the state ($39,631).

The environment around Andrews AFB is influenced by USAF operations, land management practices, vehicular traffic, and emissions sources. However, implementation of the Proposed Action is not anticipated to create adverse environmental or health impacts. Consequently, the Proposed Action is not anticipated to cause disproportionate adverse impacts on minority or low-income populations.

In addition, there are no known environmental health or safety risks associated with implementation of the Proposed Action that could disproportionately affect children. The construction areas would be restricted, to effectively bar any person, including children, from unauthorized access and the addition of the F-16 aircraft is an existing use at Andrews AFB.

Therefore, implementation of the Proposed Action would not have disproportionate adverse impacts on children.

#### 4.7.2.2 ALTERNATIVE #2 PARKING GARAGE ALTERNATIVE

Based on the BRAC Parking Cost Benefit Analysis and Stormwater Study at Andrews AFB, implementation of Alternative 2 would cost approximately three times the amount of Alternative 1 (Andrews AFB 2007c). This would result in a slight increase in the economic benefits to the construction industry; however, these benefits would be short- term during the construction period.

*Environmental Justice*

Environmental Justice associated with implementation of Alternative 2 are essentially the same as those discussed in Section 4.7.2.1.

#### 4.7.2.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, no facilities would be constructed, repaired or renovated to accommodate the 2005 BRAC actions. There would not be enough apron space to accommodate nine incoming F-16s, or office and parking space to accommodate 2,700 additional personnel. Traffic at the Pearl Harbor Gate would be congested due to the addition of more than 750 full-time personnel to the eastern half of the Base and all base support facilities would not be adequate to support the new personnel.

## 4.8 Cultural Resources

### 4.8.1 METHODOLOGY

Under federal law, impacts to cultural resources could be considered adverse if the resources are eligible for listing, or are listed on, the NRHP, or are important to American Indian groups. An NRHP-listed or eligible resource is a historic property. An action results in impacts to a historic property when it alters the resource's characteristics, including relevant features of its environment or use, in such a way that it no longer qualifies for listing on the NRHP. Impacts to traditional resources are identified in consultation with affected American Indian or other traditional groups.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts can occur by physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or alter its setting; or neglecting the resource to the extent that it deteriorates or is destroyed. Direct impacts can be assessed by identifying the types and locations of proposed activities and determining the exact location of cultural resources that could be affected. Indirect impacts generally result from the effects of project-induced population increases and the need to develop new housing areas, utility services, and other support functions to accommodate population growth. These activities and the subsequent use of the facilities can impact cultural resources.

### 4.8.2 POTENTIAL IMPACTS

#### 4.8.2.1 ALTERNATIVE #1 (PROPOSED ACTION)

No impacts to significant or NRHP listed or eligible cultural resources are expected as a result of the Proposed Action. NRHP-eligible archaeological and architectural resources located on

Andrews AFB, consisting of the Belle Chance buildings and associated archaeological site (18PR447), are completely outside the area of proposed construction under the Proposed Action. No NRHP-eligible archaeological or architectural resources have been identified at the location of, or in the vicinity of, any actions associated with this alternative. As part of the Proposed Action, six buildings would be demolished and one building would be altered. Three of the buildings scheduled for demolition are greater than 50 years old. Buildings 1515 and 1535 were constructed in 1946 and Building 3534 was constructed in 1944. The Maryland SHPO has concurred that none of these buildings are eligible for the NRHP (Andrews AFB 2003b; MHT 2000). Maryland SHPO has also concurred that the remaining three buildings to be demolished (1522, 1524, 1527), and the building scheduled for alterations (1900) do not meet the NRHP eligible requirements (Andrews AFB 2003b). The new construction and ground disturbances associated with the Proposed Action would occur in areas where the USAF has determined there are no intact archaeological remains (Andrews AFB 2003b). The NRHP eligible archaeological and architectural resources on Andrews AFB are outside of the Proposed Action construction and demolition areas.

Impacts to American Indian traditional resources are not expected with implementation of the Proposed Action. There are no known federally-recognized American Indian lands or resources at Andrews AFB. The Proposed Action does not have "the potential to significantly affect Indian lands, treaty rights, or other tribal interests" as identified in DoD *American Indian and Alaska Native Policy* (1999).

In the event unanticipated cultural resources are encountered, Andrews AFB would consult with the Maryland SHPO or follow the stipulations outlined in the ICRMP. Should unanticipated Native American human remains, funerary objects, sacred objects or objects of cultural patrimony be found during implementation of the Proposed Action, Andrews AFB would contact the Maryland SHPO, the Maryland Commission on Indian Affairs, and the National Park Service before taking any further action.

#### 4.8.2.2 ALTERNATIVE #2 PARKING GARAGE ALTERNATIVE

Impacts associated with the implementation of Alternative 2 would be comparable to those described in Section 4.8.2.1 with the exception of five fewer acres being disturbed. However, because no cultural resources are known from any of the sites proposed for construction, the impacts would remain comparable.

#### 4.8.2.3 NO ACTION ALTERNATIVE

No impacts to cultural resources are associated with the No Action Alternative. Construction would not occur and buildings would not be demolished. Cultural resources, if any were identified in the future, would be managed in compliance with Federal law, USAF regulation, and the Andrews AFB ICRMP.

## 4.9 Safety

### 4.9.1 METHODOLOGY

Impacts are assessed according to the potential to increase or decrease safety risks to personnel, the public, and property. Impacts were assessed based on direct and indirect effects from implementing the Proposed Action. Unacceptable or unnecessary health and safety risks would be considered significant.

## 4.9.2 POTENTIAL IMPACTS

### 4.9.2.1 ALTERNATIVE #1 (PROPOSED ACTION)

In general, implementation of the Proposed Action would result in positive benefits to the safety environment of Andrews AFB. Providing new properly sited facilities that support operation requirements with adequate space (i.e., Building 1900 Addition, Administrative Facility, ANGRC Addition), and improved infrastructure (i.e., Apron for F-16s, 113 WG POV Parking, POV Lane at Pearl Harbor Gate) would generally enhance safety.

Implementation of the Proposed Action would slightly increase the short-term risk associated with construction contractors performing work at Andrews AFB because the level of such activity would increase. Contractors would be required to establish and maintain safety programs. Activities involved in the proposed facility construction, modification, and demolitions are not unique and are not anticipated to pose an unacceptable or unnecessary safety risk to Base personnel or the public.

Buildings proposed to be demolished that are known to contain asbestos and lead-based paint which would also pose a safety risk to workers. To minimize exposure, all demolition activities would be conducted in accordance with applicable federal, state, and local regulations, as well as existing USAF procedures. Licensed contractors would conduct the removal of all hazardous wastes and other wastes in accordance with all appropriate federal and state regulations.

Although the total number of aircraft would increase, the number and type of sorties would remain the same with the exception of the loss of the two C-21 aircraft which would result in a decrease in sorties. Therefore flight safety risks would remain the same as the existing conditions and would not pose an unacceptable or unnecessary safety risk to Base personnel or the public.

### 4.9.2.2 ALTERNATIVE #2 PARKING GARAGE ALTERNATIVE

Implementation of Alternative 2 would have similar impacts to safety as those discussed in Section 4.9.2.1 with the exception that implementation of Alternative 2 would have a minor positive impact to aircraft safety through a potential reduction in bird-aircraft strike potential. Implementation of Alternative 2 would require approximately 2.5 acres less of stormwater controls than Alternative 1 (Andrews AFB 2007c) at Andrews AFB. Less stormwater controls such as smaller detention basins would reduce the potential to attract waterfowl and thereby reduce the BASH potential on Base. The impact is only considered minor as any stormwater basins constructed at Andrews AFB would be constructed to minimize the BASH potential as much as feasible. The parking garages would however force vehicles into a smaller area and potentially increase vehicle accidents and short term safety impacts for the construction of multi-story garages.

### 4.9.2.3 NO ACTION ALTERNATIVE

Failure to implement the Proposed Action would leave conditions at Andrews AFB as is. Such conditions have the potential for minor adverse impacts to safety. The F-16 Apron Repair Project is required in order to provide adequate parking for the nine new aircraft assigned to Andrews AFB. If no action is taken for upgrades to the existing apron, the aircraft would be required to park on substandard portions of the apron. The failing concrete on these aprons would pose an increased risk of foreign object damage to aircraft due to the rough pavements. As indicated in the 2007 Transportation Study, failure to construct an improved POV lane at the Pearl Harbor Gate would result in increased traffic to the remaining gates. The increased traffic

at other gates would create an increased potential for accidents and other safety violations at these gates. In addition, the additional people that would arrive at Andrews would not have the new support facilities included as part of the Proposed Action creating the potential for unsafe working environments.

# 4.10 Solid and Hazardous Materials and Waste

This section addresses the potential impacts caused by hazardous materials and waste management practices and the impacts of existing contaminated sites on reuse options. Hazardous materials and petroleum products, hazardous and petroleum wastes, ERP sites, and solid wastes are discussed in this section.

## 4.10.1 METHODOLOGY

The qualitative and quantitative assessment of impacts from hazardous materials and solid waste management focuses on how and to what degree the alternatives affect hazardous materials usage and management, hazardous waste generation and management, and waste disposal. A substantial increase in the quantity or toxicity of hazardous substances used or generated would be considered potentially significant. Significant impacts could result if a substantial increase in human health risk or environmental exposure was generated at a level that could not be mitigated to acceptable standards.

Regulatory standards and guidelines have been applied in evaluating the potential impacts that could be caused by hazardous materials and wastes. The following criteria were used to identify potential impacts:

- A spill or release of a reportable quantity of a hazardous substance as defined by the USEPA in 40 CFR Part 302.
- Manufacturing, use, or storage of a compound that requires notifying the pertinent regulatory agency according to EPCRA.
- Exposure of the environment or public to any hazardous material and/or waste through release or disposal practices.

## 4.10.2 POTENTIAL IMPACTS

### 4.10.2.1ALTERNATIVE #1 (PROPOSED ACTION)

*Hazardous Materials and Petroleum Products*

With regard to short-term impacts, construction and demolition activities would cause short-term increases in the quantities of hazardous materials (e.g., paint) and petroleum products (e.g., vehicle fuel) used and stored within the installation. Andrews AFB is responsible for managing these materials in accordance with federal, state, and local regulations to protect their employees from occupational exposure to hazardous materials and to protect the public health of the surrounding community. The operating location would be responsible for the safe storage and handling of hazardous materials used in conjunction with all construction and demolition operations. These materials would be delivered to the installation in compliance with the Hazardous Materials Transportation Act under 49 CFR.

With regard to long-term impacts, the overall number of sorties flown with the F-16 aircraft is not expected to change from those flown with the C-21, F/A-18, and C-9 aircraft. Therefore, the

amount of aircraft maintenance fluids, aircraft lubricants, and jet fuel would remain the same after the construction activities.

With regard to exposure to contaminated soils, spills of hazardous materials and petroleum products have not been recorded at the areas scheduled for demolition and construction. Therefore, it is unlikely that the demolition and construction activities would encounter contaminated soils from spills of these materials. However, as discussed below, two ERP sites are within the Proposed Action areas.

*Hazardous and Petroleum Wastes*

With regard to short-term impacts, the proposed construction and demolition activities would cause short-term increases in the volume of hazardous and petroleum wastes generated. Wastes generated by the construction and demolition contractors are managed and removed offsite by these contractors. Therefore, short-term impacts are not anticipated. In addition, Andrews AFB already operates as a LQG of hazardous waste.

With regard to long-term impacts, the amount of hazardous and petroleum wastes generated would remain the same after the Proposed Action because the number of sorties would not change.

With regard to exposure to contaminated soils, spills of hazardous or petroleum wastes were not observed at the areas scheduled for demolition or construction. Therefore, it is unlikely that demolition or construction activities would encounter contaminated soils from spills of these wastes.

*Air Force Clean Up Program*

With regard to exposure to contaminated soils, two ERP sites (Site SS-26 – Hangar 15 and Site ST-14 – East Side Service Station) are located within the Proposed Action areas. Specifically, the F-16 Apron Repair Project (Site SS-26) and the ANG Readiness Center addition (Site ST-14) are within these two ERP sites. Remedial actions are ongoing at these two sites and are expected to continue through at least 2012. Therefore, contaminated soils and groundwater could be encountered during the construction and demolition activities. As a mitigation action during construction and demolition activities in these areas, workers would be educated on the effects of exposure to chlorinated solvents and volatile petroleum hydrocarbons (e.g., headaches, dizziness, blurred vision, etc.). If contaminated soils or groundwater are encountered, they would be managed in accordance with applicable laws and regulations. However, with specific regard to the F-16 Apron repair project, no subsurface soils would be disturbed and the likelihood that contaminated soils or groundwater would be encountered is minimal.

*Solid Waste*

With regard to short-term impacts, the Proposed Action would create solid waste from debris generated during demolition and construction. The contractor would have the responsibility of arranging transportation and disposal of waste generated during the demolition and construction activities. The demolition of the buildings (including the 347,470 $ft^2$ of Building 1535) and aircraft parking apron resurfacing (including the 185,130 $ft^2$ of the F-16 parking apron) would generate approximately 25,000 tons of debris over a short period of time. In addition, the construction of the new buildings (579,680 $ft^2$ total) and asphalt parking lots (1,432,660 $ft^2$ total) would generate approximately 4,000 tons of debris. The 29,000 tons of debris generated is a small percentage of the local landfill capacity and would not unduly impact landfill life expectancy. In addition, asphalt debris and other demolition materials would be reused to the extent possible to create the new asphalt parking lots (and avoid disposal in the landfill).

Any asbestos encountered during facility demolition would be the responsibility of Andrews AFB and is regulated under National Emission Standards for Hazardous Air Pollutants to prevent the release of asbestos fibers due to damage and disturbance of asbestos-containing materials. Exposed friable asbestos would be removed by a Maryland-licensed abatement contractor in accordance with USAF policy and applicable health laws, regulations, and standards. A Demolition Notification Form will be completed and submitted to the Maryland Department of the Environment for each building containing asbestos at least 10 days prior to demolition. In addition, all construction debris with the potential to contain lead-based paint will be tested to determine if it qualifies as a RCRA-hazardous waste. Depending on the test results, this material will be disposed of in accordance with applicable federal, state, and local regulations.

#### 4.10.2.2 ALTERNATIVE #2 PARKING GARAGE ALTERNATIVE

Impacts associated with the implementation of Alternative 2 would be comparable to those described in Section 4.10.2.1. However, additional maintenance would be required for the parking garages to prevent structural corrosion and keep the facilities cleaned and maintained.

#### 4.10.2.3NO ACTION ALTERNATIVE

Under this alternative, although there would be no change to the current operations of Andrews AFB, there would be changes to the number of people utilizing the installation. Although in general, the conditions within the ROI would remain as described in Section 3.10.2, the increase in people without adequate support facilities would cause minor increases in solid waste at Andrews AFB.

## 4.11 Infrastructure

Impacts on infrastructure are evaluated based on the potential for disruption or improvement of existing levels of service, transportation patterns, circulation, airfield conditions, sanitary sewer, potable water, stormwater drainage, natural gas, electricity, heating and cooling, and liquid fuels systems. Impacts might arise from physical changes to circulation, construction activities, construction-related traffic on local roads, changes in daily or peak-hour traffic volumes, energy needs created by either direct or indirect workforce and work force population changes on Base. An effect might be considered adverse if an action exceeds the capacity for the roadway, airfield, or utility.

### 4.11.1 POTENTIAL IMPACTS

#### 4.11.1.1ALTERNATIVE #1 (PROPOSED ACTION)

*Transportation*

Implementation of the Proposed Action would result in an increase of approximately 2,700 personnel at Andrews AFB which would have a permanent increase in traffic volume. The increase in traffic volume would affect traffic circulation and the level of service. Based on the potential for decreases in traffic levels of service, Andrews AFB recently completed a traffic study that evaluated the additional vehicles on the installation and also evaluated roadways and intersections off base (Andrews AFB 2007b). Based on the results of the traffic models, this study recommended upgrades to various intersections on the installation.

Approximately 2,000 new personnel are anticipated to have offices on the western side of the Base and approximately 700 new personnel are anticipated to have offices on the eastern side of the Base. It is anticipated that the western and eastern sides of the Base would experience

different traffic circulation and level of service effects from implementing the Proposed Action. However, based on the results of the traffic study and this analysis, the addition of approximately 2,700 personnel is not anticipated to exceed the roadway capacity at Andrews AFB.

Parking lots would be constructed on the west and east sides of the Base to accommodate the additional personnel at these facilities. The results of the recent traffic study indicate that upgrades to intersections and roadways throughout Andrews AFB would be necessary to maintain acceptable levels of service at the Base. Without these upgrades, potential adverse impacts to travel times and vehicular safety are anticipated (Andrews AFB 2007b).

As part of the Proposed Action, constructing a POV lane at the Pearl Harbor Gate would assist with traffic flow into the eastern side of the Base. Approximately 650 new personnel are anticipated for HQ ANG and approximately 103 personnel are anticipated for the 113 WG. The ANGRC Addition would provide parking spaces for the 650 new personnel proposed for the HQ ANG. Constructing a POV parking area for the 113 WG would provide parking spaces for the new 113 WG personnel.

Implementation of the Proposed Action would require the delivery of materials and the removal of debris from construction and demolition sites resulting in a temporary increase in traffic volume. Construction traffic would comprise a small percentage of the total existing traffic. Many of the vehicles would be driven to and kept on-site for the duration of the project, resulting in relatively fewer additional trips. All road and lane closures would be temporary in nature and would be coordinated with the Transportation Squadron and Airfield Management.

As a result of the 2005 BRAC, Andrews AFB would experience a net gain of seven aircraft as nine F-16 aircraft would be distributed to the 113 WG at Andrews AFB and two C-21 aircraft would be relocated to Will Rogers World Airport from Andrews AFB. As part of the Proposed Action, a fully serviceable aircraft parking area would be prepared to accommodate the beddown of the nine F-16 aircraft. The net gain of seven aircraft is not anticipated to exceed the aircraft pavement capacity.

*Sanitary Sewer*

As part of the Proposed Action, new buildings and additions to buildings would connect to the existing, aging sanitary sewer system. The addition of approximately 2,700 personnel to Andrews AFB would increase the amount of wastewater collected by the sanitary sewer system resulting in a minor adverse impact on the Base's sanitary sewer system. However, the additional amount of wastewater is not anticipated to exceed the sanitary sewer system capacity.

*Potable Water*

The addition of approximately 2,700 personnel to Andrews AFB would result in an increase in water consumption. The proposed construction projects would tie into the existing water infrastructure that is sufficient to meet the proposed increased demands. The additional amount of potable water required is not anticipated to exceed the potable water system capacity.

*Stormwater Drainage*

Implementation of the Proposed Action would result in increase demands on the stormwater drainage system. As discussed in Section 4.2, BMPs and other stormwater controls would be utilized on a project by project basis. These BMPs would serve to limit the amount of stormwater entering the system during a storm event. In addition, large scale projects such as the Administrative Facility and the ANGRC Addition and associated parking lots would entail construction of entirely new stormwater infrastructure and would be coordinated with local and

state permitting authorities. The stormwater infrastructure, depending on what is constructed, could require periodic maintenance. For example, if sand filters are constructed, they will require cleaning and maintenance on a one to five year schedule.

*Natural Gas*

The WGL Company provides natural gas to Andrews AFB. The demand placed on the utility company by the addition of approximately 2,700 personnel is not anticipated to exceed the capacity of the existing natural gas system.

*Electricity*

The Potomac Electric Power Company provides electrical power to Andrews AFB. Once inside the boundaries of the Base, the USAF is responsible for building and maintaining the electrical distribution system. It is anticipated that the existing system would be capable of meeting the demand of an additional 2,700 Base personnel.

*Heating and Cooling*

Many of the existing heating and cooling systems at Andrews AFB are in the process of undergoing improvements and upgrades. Implementation of the Proposed Action is not anticipated to impact these systems as the new facilities would have independent HVAC systems that would be capable of handling the anticipated increase in Base personnel.

*Liquid Fuels*

Liquid fuels are brought onto Andrews AFB through a commercial pipeline. Because the 113 WG would not gain additional pilots and flights would remain essentially the same, the Proposed Action is not anticipated to increase fuel consumption or increase liquid fuel related risks at Andrews AFB.

#### 4.11.1.2 Alternative #2 Parking Garage Alternative

Implementation of Alternative 2 would have similar impacts to the infrastructure of Andrews AFB as Alternative 1 with minor differences. For example, the construction of parking garages would require more long term infrastructure maintenance than that of a parking lot. De-icing materials such as salt would cause corrosion to both concrete and steel and periodic maintenance would be required to prevent and treat corrosion.

With regard to stormwater infrastructure, the requirements for the parking garages would be less than those of the parking lot due to the size of the footprint. However, some type of stormwater quantity and quality control would still be required and would also likewise require one to five year periodic maintenance.

Both Alternatives 1 and 2 would serve the infrastructure requirements for parking at Andrews AFB. A parking garage would provide sheltered parking and would minimize the distance between parking and office spaces.

#### 4.11.1.3 No Action Alternative

Under this alternative, although no additional infrastructure would be constructed, additional strain on existing infrastructure would occur. The addition of 2,700 people with no construction of new supporting infrastructure would potentially strain the existing infrastructure creating the potential for impact.

# 5.0 CUMULATIVE IMPACTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

## 5.1 Cumulative Impacts

Cumulative impacts to environmental resources result from the incremental effects of an action when combined with other past, present, and reasonably foreseeable future projects in the ROI. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (federal, state, and local) or individuals. In accordance with NEPA, a discussion of cumulative impacts resulting from projects that are proposed (or anticipated over the foreseeable future) is required.

To identify cumulative effects, the analysis needs to address two fundamental questions:

1. Does a relationship exist such that affected resource areas of the Proposed Action or alternatives might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
2. If such a relationship exists, then does an EA reveal any potentially significant impacts not identified when the Proposed Action is considered alone?

The scope of the cumulative effects analysis involves both the geographic extent of the effects and the time frame in which the effects could be expected to occur, as well as a description of what resources could potentially be cumulatively affected.

When addressing cumulative impacts on wetlands and waters of the U.S., the geographic extent for the cumulative effects analysis is the watershed in which the Proposed Action and alternatives have the potential to impact, primarily concentrating on past, present, and reasonably foreseeable actions on and within Andrews AFB and the surrounding ecosystem.

When addressing cumulative impacts on noise quality, the geographic extent for the cumulative effects analysis is the ROI in which the Proposed Action and alternatives have the potential to impact, primarily concentrating on past, present, and reasonably foreseeable actions on Andrews AFB and in the surrounding community. The time frame for cumulative effects analysis centers on the timing of the Proposed Action and would continue into the foreseeable future.

The 316$^{th}$ Wing updates facilities at Andrews AFB on a continual basis. Planning efforts in the ROI include the actions described within this EA, as well as those additional projects that are ongoing, or planned in the vicinity of Andrews AFB. Additional projects within the ROI are discussed below.

Known actions proposed over the next five years at Andrews AFB are shown in Table 5-1. As an active military installation, Andrews AFB and its tenant organizations undergo changes in mission and training requirements in response to defense policies, current threats, and tactical and technological advances, and as such, require new construction, facility improvements, infrastructure upgrades, and ongoing maintenance and repairs on a continual basis. Although such known construction and upgrades are a part of the analysis contained in this section, some future requirements cannot be predicted. As those requirements surface, future NEPA analysis would be conducted, as necessary.

**Table 5-1. Proposed Projects at Andrews AFB**

| Project Name/Description | Anticipated Fiscal Year |
|---|---|
| Demolish Flying Training Classroom Building 1418 | 2009 |
| Demolish Warehouse Bldg 3545 | 2007 |
| Demolish Elevated Water Storage Tank | 2007 |
| Demolish Building 1602 | 2011 |
| Demolish Golf Course Club House Building 4442 | 2008 |
| Demolish SP Operations Building 3538 | 2007 |
| Demolish Dental Clinics Buildings 1601, 1603 | 2009 |
| Demolish Fire Tech Services Building 3812 | 2009 |
| Demolish Administrative Building 3802 | 2008 |
| Demolish East Side Heat Plant Building 3409 | 2008 |
| Demolish Education Center/Administration Building 3615 | 2008 |
| Demolish Existing Entry Control Facility-Building 1840 | 2009 |
| Demolish Waste Treatment Building 1790 | 2008 |
| Demolish Temporary Alert Trailers R60/R61 | 2009 |
| Remove Trenton Court Trailers R62 | 2011 |
| Demolish 113 CES Complex Building 3213, 3214, 3215, 3216 | 2012 |
| Construct 201st AS ASE/Equip Storage Facility Shelter No. 2 | 2011 |
| Construct new BCE Complex – 316th Complex | 2012 |
| Construct new AFDW/316th Wing HQ Bldg | 2009 |
| Construct Consolidated Security Forces Facilities | 2012 |
| Construct Consolidated Library/Education Center #6 | 2010 |
| Construct Addition to 459 AW CES Mobility Warehouse Building 3756 | 2007 |
| Construct Addition to Building 3807 | 2007 |
| Construct Addition for Bioenvironmental Office Move to Building 3423 | 2007 |
| Construct Base Composting Facility | 2010 |
| Construct Collocated Club | 2009 |
| Construct EOD Addition | 2009 |
| Construct Golf Course Clubhouse | 2010 |
| Construct Joint Petroleum Operations Building | 2010 |
| Construct Refueling Vehicle Facility Near 5013, and 5023 | 2007 |
| Construct Fuel Cell Dock Hangar | 2011 |
| Construct Mobility Processing Center/Warehouse Addition to Building 1900 | 2012 |
| Construct Munitions Storage Area | 2009 |
| Construct Refueling Vehicle Maintenance Facility | 2012 |
| Construct New Consolidated Command Post Building 1625 | 2008 |
| Construct New PAX Terminal | 2012 |
| Construct NASAM Berm | 2007 |
| Create Parking Area Near Terminal Building 1245 | 2007 |
| Enlarge Current Parking Area near 5016/5023 | 2007 |
| Replace Bulk Storage and Pumphouse | 2008 |
| Establish PL-1 Clear Zone Relocate RV Storage Lot | 2007 |
| Install Hot Cargo/Row 1 Fuel Pits | 2010 |
| Install Lateral Hydrants Pit Rows 10 and 11 | 2010 |
| Relocate 201AS Parking Lot (AT/FP) | 2008 |
| Replace FAMCAMP | 2010 |
| Widen Access Road Between Building 3639 and Patrick Avenue | 2007 |

Source: SAIC, 2007

*Noise*

Construction noise emanating off-site as a result of the Proposed Action and the activities listed in Table 5-1 would probably be noticeable in the immediate construction site vicinity, but would not be expected to create long term adverse impacts. The acoustic environment on and near the

airfield property is expected to remain relatively unchanged from existing conditions under proposed activities. Cumulative impacts from noise would be expected to be minimal.

*Land Use*

The proposed construction and demolition projects described under the Proposed Action and the activities listed in Table 5-1 are expected to enhance overall installation planning and compatibility of functions at Andrews AFB. The Westphalia planned development is a 6,000 acre community development located adjacent to the northeast corner of the Base. This development would convert existing agriculture and developed land into a new pedestrian friendly community. This development over shadows the six projects to be implemented as the Proposed Action. Some existing incompatibilities would be corrected. Cumulative impacts to land use are expected to be minimal.

*Air Quality*

In general, combustive and fugitive dust emissions from proposed construction and demolition activities under the Proposed Action and the activities listed in Table 5-1 would produce localized, elevated air pollutant concentrations that would occur for a short duration and would not result in any long-term impacts on the air quality of AQCR 47. Cumulative impacts to air quality in the County and the AQCR are expected to be minimal.

*Safety*

Implementation of the Proposed Action and the activities listed in Table 5-1, do involve ground activities that could expose workers performing the required site preparation, grading, and building construction to some risk. Strict adherence to all applicable occupational safety requirements would minimize the relatively low risk associated with these construction activities. All projects have been sited outside any quantity-distance arcs, as appropriate. Additionally, the proposed projects would include measures to enhance and correct AT/FP shortfalls as part of the facility designs. Cumulative impacts to safety are expected to be minimal.

*Geologic Resources*

The grading of existing soil and placement of structural fill for new facilities would not substantially alter existing soil conditions at the installation because, to a large extent, the construction described above is planned for areas where surface disturbance has previously occurred. BMPs would be used to limit soil movement, stabilize runoff, and control sedimentation. Relative cumulative impacts due to the Proposed Action to geologic resources are expected to be minimal.

*Water Resources*

The Proposed Action as well as the proposed future projects at Andrews AFB are anticipated to increase the amount of impervious surfaces at Andrews AFB. To a large extent, the construction described above is planned for areas that already contain a large amount of impervious surface, and therefore much of the proposed construction would occur on existing impervious surfaces. Prior to construction, the proponent would coordinate with the MDE WMA to obtain a General Permit for Construction Activities under the NPDES program. Adherence to the requirements of the permit would include implementation of BMPs to minimize the potential for exposed soils or other contaminants from construction activities to reach nearby surface waters. The proposed facilities would increase the amount of impervious surfaces on the installation, resulting in an increase in the amount of surface runoff and a decrease in groundwater recharge at the installation. These activities would require modifications to the installation storm drainage system and updating the installation SWPPP in order to properly manage stormwater.

Additionally, the proponent would coordinate with MDE WMA to control increased stormwater runoff due to development. Adherence to these requirements would minimize degradation of local water quality and would minimize potential impacts. It is expected that cumulative impacts to water resources would be minimal.

*Biological Resources*

In general, the Proposed Action and the projects listed in Table 5-1 are at sites that are highly altered by man. No cumulative impacts to federal or state listed species are anticipated. The Base Environmental Management Flight would coordinate, as necessary, with the USFWS prior to implementation of construction activities to ensure that impacts to sensitive species do not occur. Cumulative impacts to biological resources are expected to be minimal.

*Cultural Resources*

Activities associated with the Proposed Action and the projects listed in Table 5-1 are not expected to impact archaeological, architectural or traditional resources. Cumulative impacts to cultural resources are expected to be minimal.

*Socioeconomics*

Activities associated with the Proposed Action and the projects listed in Table 5-1 are not expected to have any major adverse impacts on the economy in the ROI. Additionally these projects are not expected to create adverse environmental or health effects and therefore no disproportionately high or adverse impacts to minority, low-income, or youth populations are expected. Cumulative impacts to socioeconomics and environmental justice are expected to be minimal.

*Infrastructure*

The proposed construction and demolition projects associated with the Proposed Action and those actions listed in Table 5-1 would result in some temporary interruption of utility services and minor hindrance of transportation and circulation during construction activities. These impacts would be temporary, occurring only for the duration of the construction period. In general, infrastructure at Andrews AFB would improve under these actions. Cumulative impacts to infrastructure are expected to be minimal.

*Hazardous Materials and Waste*

The proposed construction and demolition projects associated with the Proposed Action and those actions listed in Table 5-1 would generate construction and demolition waste that would be recycled and/or taken to a local demolition landfill, as appropriate. There are no capacity issues associated with the existing landfills. Hazardous materials and wastes would be handled, stored, and disposed of in accordance with applicable regulations. Some asbestos, lead based paint and contaminated soils associated with ERP sites would be removed and disposed of per applicable regulations. On other sites, engineered caps or other land use controls could be used. Cumulative impacts as a result of hazardous materials and waste management are expected to be minimal.

## 5.2 Irreversible and Irretrievable Impacts

NEPA CEQ regulations require environmental analyses to identify "...any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action should it be implemented" (40 CFR Section 1502.16). Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a

specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Building construction material such as gravel and gasoline usage for construction equipment would constitute the consumption of non-renewable resources.

The primary irretrievable impacts of the Proposed Action would involve the use of energy, labor, materials and funds, and the conversion of some lands from an undeveloped condition through the construction of buildings and facilities. However, all of the land proposed to be utilized has been developed in the past. Irretrievable impacts would occur as a result of construction, facility operation, and maintenance activities. The irretrievable loss of energy, labor, materials and funds associated with implementation of the Proposed Action would be inconsequential to the amount of these resources currently available and being used in other areas around Andrews AFB. Direct losses of biological productivity and the use of natural resources from these impacts would be inconsequential.

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# Appendix A

# Interagency and Intergovernmental Coordination for Environmental Planning Correspondence and Distribution List for the DOPAA

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**DEPARTMENT OF THE AIR FORCE**
**HEADQUARTERS 316TH WING (AFDW)**

MAR 2 3 2007

MEMORANDUM FOR SEE DISTRIBUTION

FROM: 316 CES/CD
3465 North Carolina Avenue
Andrews AFB MD 20762-4803

SUBJECT: Description of Proposed Action and Alternatives (DOPAA) for FY 07-11 BRAC Construction Requirements Environmental Assessment

1. The 316th Civil Engineering Squadron Environmental Flight (CES/CEV) is preparing an Environmental Assessment (EA) of 2007-2011 BRAC actions at Andrews AFB. In support of the 2005 Base Realignment and Closure (BRAC) recommendations, Andrews Air Force Base (AFB) proposes various actions such as new facility construction, demolition of aging facilities, movement of aircraft and personnel, and infrastructure upgrades to ensure that the installation can meet its required operational mission for the future national security of the United States. An Environmental Assessment (EA) will be prepared to evaluate the Proposed Action and reasonable alternatives, including the No Action Alternative. The actions contained in this EA are planned to occur over the next five years. The DOPAA is included with this correspondence for your review.

2. The environmental impact analysis process for the Proposed Action and the No Action Alternative is being conducted by the 316 CES/CEV in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Air Force Instruction 32-7060, "Interagency and Intergovernmental Coordination for Environmental Planning" and the Executive Order 12372, Intergovernmental Review of Federal Programs, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental consequences. Also enclosed is the distribution list of those federal, state, and local agencies that have been contacted. If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and attached materials.

3. Please provide any comments or information directly to the 316 CES/CEV, 3466 North Carolina Avenue, Andrews AFB, MD 20762-4803 within 30 calendar days upon receipt of this notification.

4. If members of your staff have any questions, our point of contact is Mr. Keith Harris at (301)981-1653 or e-mail to keith.harris@andrews.af.mil.

LARRY A. CARSON, DAF
Deputy Base Civil Engineer

Attachment:
DOPAA

**Andrews BRAC EAEA DOPAA IICEP List**

Mrs. Linda C. Janey, J.D.
Manager, Maryland State Clearinghouse
Maryland Office of Planning, Room 1104
301 West Preston Street
Baltimore, MD 21201-2365

Mr. John Wolflin
Field Supervisor
U.S. Fish and Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

Mr. Bill Arguto
Environmental Review Coordinator
U.S. Environmental Protection Agency
Region 3
1650 Arch Street
Philadelphia, PA 19106

Dr. Fern Piret
Director of Planning
Prince George's County Department of Planning
14741 Governor Oden Bowie Drive, Room 4150
Upper Marlboro, MD 20772

Mr. Ray Dintaman
Environmental Review Unit
Maryland Department of Natural Resources
Tawes State Office, Bldg B-3
Annapolis, MD 21401

Mr. J. Rodney Little
Maryland State Historic Preservation Office
Maryland Historic Trust
100 Community Place, Third Floor
Crownsville, MD 21032-2023

Director
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, MD 21230

Maryland Department of Planning

Martin O'Malley
Governor
Anthony G. Brown
Lt. Governor

Richard Eberhart Hall
Secretary
Matthew J. Power
Deputy Secretary

May 2, 2007

Post-it® Fax Note 7671 | Date 5-3-07 | # of pages 3
To Mr. Keith Harris | From Bob Rosenbush
Co./Dept. AAFB | Co. MDP
Phone # Environmental Unit | Phone # 410-767-4487
Fax # 301-981-7125 | Fax # as requested
Note: Page 3 was left out earlier at 4:49 p.m. and additional wording on page 2 has been included. Please disregard fax transmittal of 4:49 p.m. today. Thank you

Mr. Keith Harris
Environmental Manager
Andrews Air Force Base
316 CES/CEV
3466 North Carolina Avenue
Andrews AFB, MD 20762-4 03

**STATE CLEARINGHOUS RECOMMENDATION**

**State Application Identifie :** MD20070328-0237
**Applicant:** Andrews Air orce Base
**Project Description:** Envir nmental Assessment: Description of Proposed Action and Alternatives for FY07-11 BRAC Construction Requirements at Andrews Air Force Base (AFB): six (6) projects: new construction; repairs; additions; a d a proposed demolition
**Project Location:** Prince eorge's County
**Approving Authority:** U S. Department of Defense
**Recommendation:** Cons tent with Qualifying Comments, and Contingent Upon Certain Actions

Dear Mr. Harris:

In accordance with Presidenti Executive Order 12372 and Code of Maryland Regulation 14.24.04, the State Clearinghouse has coordinate the intergovernmental review of the referenced project. This letter constitutes the State process review and reco mendation based upon comments received to date. This recommendation is valid for a period of three years fro the date of this letter.

Review comments were requ ted from the Maryland Departments of State Police, Labor, Licensing and Regulation, the Environment, Transportation, Natural Resources, Housing and Community Development, Budget and Management, Business a d Economic Development, the Maryland Higher Education Commission, the Maryland Military Departmer , Prince George's County, and the Maryland Department of Planning, including the Maryland Historical Trust. A of this date, the Maryland Departments of State Police, and Budget and Management have not submit d comments. **This recommendation is contingent upon the applicant considering and addressing ny problems or conditions that may be identified by their review. Any comments received will be f rwarded.** The Maryland Department of Housing and Community Development, and the Maryland Higher Educati n Commission had no comments.

01 West Preston Street • Suite 1101 • Baltimore, Maryland 21201-2305
Telephone: 410.7 4500 • Fax: 410.767.4480 • Toll Free: 1.877.767.6272 • TTY Users: Maryland Relay
Internet: www.MDP.state.md.us

The Maryland Department of he Environment stated that their findings of consistency are contingent upon the Applicant taking these action:

1. Any above ground or underground petroleum storage tanks that may be utilized must be installed and maintained in accordance wit applicable State and federal laws and regulations. Contact the Oil Control Program at (410) 537-3442 for additio al information.

2. Any solid waste incl ing construction, demolition and land clearing debris, generated from the subject project, must be properly dis sed of at a permitted solid waste acceptance facility, or recycled if possible. Contact the Solid Waste Program at ( 0) 537-3318 for additional information.

3. The Hazardous Wast Program should be contacted at (410) 537-3343 prior to construction activities to ensure that the treatment, sto ge or disposal of hazardous wastes and low-level radioactive wastes at the facility will be conducted in compli e with applicable State and federal laws and regulations.

4. Any contract specify g "lead paint abatement" must comply with Code of Maryland Regulations (COMAR) 26.16.01 * Accre ation and Training for Lead Paint Abatement Services. If a property was built before 1950 and will be used s rental housing, then compliance with COMAR 26.16.02 * Reduction of Lead Risk in Housing; and Environment Article Title 6, Subtitle 8, is required. Additional guidance regarding projects where lead paint may be encountere can be obtained by contacting the Environmental Lead Division at (410) 537-3825.

5. Development in area of known or suspected contamination must be coordinated with the Hazardous Waste Program, which can be conta ed at (410) 537-3343.

The Maryland Department of he Environment affirmed the Federal general conformity rule, concerning air quality, applies to Federal projects loc ted in non-attainment areas. Andrews Air Force Base is located in Prince George's County. Prince George's Cou ty is located in the Washington, D.C. Region Non-attainment area for both the Federal 8-hour Ozone Standa l and the PN2.5 (fine particles) Standard. See the attached letter.

The Maryland Department of Transportation, and the Maryland Historical Trust found this project to be generally consistent with their plans, pr grams, and objectives, but included certain qualifying comments summarized below.

The Maryland Department of Transportation stated that "as far as can be determined at this time, the subject has no unacceptable impacts on plan or programs."

The Maryland Historical Tru (the Trust) noted that according to the review document, Andrews AFB intends to develop an Environmental As essment (EA) to evaluate the proposed action and alternatives for related impacts to various resources. One of the esources to be addressed in the EA is cultural resources, and the impacts of the proposed alternatives on thos resources. The Trust awaits receipt of more detailed information from Andrews AFB as planning proceeds in rder to make an informed assessment of the undertaking's effects, if any, on historic properties: including archeol ical sites and historic structures. The Trust encourages Andrews AFB to implement its related Section 106 consul tion for these actions with the Trust, and other relevant parties early in the planning processes. Such consultation will allow sufficient time to effectively conclude coordination well in advance of construction.

The Trust looks forward to fu her consultation with the Andrews AFB, and other relevant parties, to successfully complete the Section 106 revi w of this important initiative as project planning proceeds. If the Applicant has questions or requires further a sistance, it may contact Jonathan Sager (for historic built environment) at 410-514-7636 or
jsager@mdp.state.md.us
or Beth Cole (for archeology) at 410-514-7631
or bcole@mdp.state.md.us

The Maryland Departments o Business and Economic Development, Labor, Licensing and Regulation, and Natural Resources; the Maryland Mil ary Department; Prince George's County; and the Maryland Department of Planning found this project to be consi ent with their plans, programs, and objectives.

Prince George's County direc d its comments to the proposed parking facilities which will be provided for the new Administrative Facility, and t e addition to the Air National Guard Reserve Center (ANGRC) building. The review document provides two (2) al rnatives for the new parking associated with these two (2) facilities. The first is a surface parking lot, and the se ond is a structured, parking garage. To minimize impacts associated with the creation of impervious surfac and reduce storm water impacts, constructing the parking garages is the County's preferred action. Because the Base drains into critical, protected habitat areas of the County and based on the "Countywide Green Infrastru ure Plan", every effort should be made to make the run-off as clean as possible. The Administration Building is in he Tinkers Creek Watershed. Currently, this watershed has a Poor rating for Benthic Index of Biological Integrity ( IBI) and a Very Poor rating for Habitat. The ANGRC building is in the Charles Branch Watershed, and curre ly has a Poor rating for both IBI, and Habitat. In order to raise these water quality ratings, the option of construc ing parking garages, in lieu of surface parking, should be the preferred action. See the attached response form.

**Any statement of considera on given to the comments should be submitted to the approving authority, with a copy to the State Clearing ouse.** The State Application Identifier Number must be placed on any correspondence pertaining to his project. The State Clearinghouse must be kept informed if the approving authority cannot accommoda the recommendation.

Please remember, you must c mply with all applicable state and local laws and regulations. If you need assistanc or have questions, contact the State Clearinghouse staff person noted above at 410-767-4490 or through e-mail at brosenbush@mdp.state.md.us **Also please complete the attached form and return it to the State Clearinghouse as soon as th status of the project is known.** ***Any substitutions of this form must include the State Application Identifier N umber.*** **This will ensure that our files are complete.**

Thank you for your cooperati n with the MIRC process.

Sincerely,

Linda C. Janey, J.D., Assistant Secretary
for Clearinghouse and Communications

LCJ:BR

cc: Beth Cole - MHT
William Ebare - MDSP
Pat Tarpley - DLLR
Joane Mueller - MDE
Cindy Johnson - MDOT
Ray Dintaman - DNR
Luisa Fernandez - DHCD
Chadfield Clapsaddle - DBM
Tammy Edwards - DBED
Helen Szablya - MHEC
Bill Riley - MILT
Beverly Warfield - PGEO

*07-0237_CRR.CLS.doc*

## Please Complete Your Review & Recommendation Before April 25, 2007

Return Completed Form To: Linda C. Janey, J.D., Director, Maryland State Clearinghouse for Intergovernmental Assistance, Maryland Department of Planning, 301 West Preston Street, Room1104, Baltimore, MD 21201-2305
Phone: 410-767-4490 Fax: 410-767-4480

| | |
|---|---|
| **State Application Identifier:** MD20070328-0237 | **Clearinghouse Contact:** Bob Rosenbush, 410-767-4490 brosenbush@mdp.state.md.us |
| **Location:** PGEO | |
| **Applicant:** Andrews Air Force Base | |
| **Description:** Environmental Assessment: Description of Proposed Action and Alternatives for FY07-11 BRAC Construction Requirements at Andrew Air Force Base: six (6) projects: new construction; repairs; additions, and a proposed demolition | |

**Based on a Review of the Information Provided, We Have Checked (✒) the Appropriate Determination Below**

| | | |
|---|---|---|
| | | **CONSISTENT RESPONSES - (For Use By STATE AGENCIES Only)** |
| | C1 | It is **Consistent** with our plans, programs, and objectives |
| | C2 | It is **Consistent** with the policies contained in **Executive Order 01.01.1992.27** (Maryland Economic Growth, Resource Protection, and Planning Act of 1992), **Executive Order 01.01.1998.04** (Smart Growth and Neighborhood Conservation Policy), **and** our plans, programs, and objectives. |
| | C3 | **(MHT ONLY)** It has been determined that the project will have "no effect" on historic properties and that the federal and/or State historic preservation requirements have been met. |
| | C4 | **(DNR ONLY)** It has been determined that this project is in the Coastal Zone and is not inconsistent with the Maryland Coastal Zone Management Program. |
| | C7 | **(MDP ONLY)** It is consistent with the requirements of State Finance and Procurement Article 5-7B-02; 03; 04 and 05 Smart Growth and Neighborhood Conservation (Priority Funding Areas). |
| | | **CONSISTENT RESPONSES - (For Use By *COUNTY & LOCAL AGENCIES* Only)** |
| X | C5 | It is **Consistent** with our plans, programs, and objectives. |
| | C6 | It is **Consistent** with the Economic Growth, Resource Protection, and Planning Visions (Planning Act of 1992), State Finance and Procurement Article 5-7B – Smart Growth and Neighborhood Conservation (Priority Funding Areas), **and** our plans, programs, and objectives. |
| | | **OTHER RESPONSES - (For Use By ALL)** |
| | R1 | **GENERALLY CONSISTENT WITH QUALIFYING COMMENTS:** It is generally **Consistent** with our plans, programs and objectives, but the attached qualifying comment is submitted for consideration. |
| | R2 | **CONTINGENT UPON CERTAIN ACTIONS:** It is generally **Consistent** with our plans, programs and objectives contingent upon certain actions being taken as noted in the attached comment(s). |
| | R3 | **NOT CONSISTENT:** It raises problems concerning compatibility with our plans, programs, objectives, or Planning Act visions/policies; or it may duplicate existing program activities, as indicated in the attached comment(s). If a meeting with the applicant is requested, please check here: ☐ |
| | R4 | **ADDITIONAL INFORMATION REQUESTED:** Additional information is required to complete the review. The information needed is identified below. If an extension of the review period is requested, please check here: ☐ |
| | R5 | **FURTHER INTEREST:** Due to further interest/questions concerning this project, we request that the Clearinghouse set up a conference with the applicant. |
| | R6 | **SUPPORTS:** Supports "Smart Growth" and Federal Executive Order 12072 (Federal Space Management), which directs federal agencies to locate facilities in urban areas. |

Attach additional comments if necessary OR use theses spaces: _____

Name: Cheryl D. Farmer, PGEO
Organization: Prince George's County Government
Address: 9400 Peppercorn Place, Suite 610
Largo, MD 20774

Signature: Cheryl D. Farmer
Phone: (301) 883-5808
Date Completed: 5/1/07

☐ Check here if comments are attached.

RECEIVED
MAY 01 REC'D

MDPCH-1A

ENTERED

MDE
MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard • Baltimore MD 21230
410-537-3000 • 1-800-633-6101

Martin O'Malley
Governor

Anthony G. Brown
Lieutenant Governor

Shari T. Wilson
Secretary

Robert M. Summers, Ph.D.
Deputy Secretary

APR 17 2007

Keith Harris
316 CES/CEV
1419 Menoher Drive
Andrews AFB, MD 20762-4803

Re: *Comments on Environmental Assessment (EA), Description of Proposed Action and Alternatives (DOPAA) for FY07-11 BRAC Construction Requirements at Andrews Air Force Base, Maryland.*

Dear Mr. Harris:

Thank you for the opportunity to review the preliminary information provided in the Environmental Assessment (EA), *Description of Proposed Action and Alternatives (DOPAA) for FY07-11 BRAC Construction Requirements at Andrews Air Force Base, Maryland*. The Maryland Department of the Environment (MDE) looks forward to reviewing the air quality analysis and the general conformity analysis once completed.

Prince George's County is located in the Washington DC Region Nonattainment Area for both the Federal 8-Hour Ozone Standard and the PM2.5 (fine particles) Standard. The MDE is currently developing substantial air quality plans for both of these pollutants. It is important to note that the Federal general conformity rule applies to federal projects located in nonattainment areas. For more information on general conformity please refer to the following Federal Register notices: 40 CFR Parts 6, 51, and 93, November 30, 1993; 40 CFR Part 52, April 19, 1995; and 40 CFR Parts 51 and 93, July 17, 2006.

Under the general conformity rule, projected emissions from a project need to be reviewed against specific *de minimus* emissions thresholds. The thresholds are based on a region's nonattainment status and classification. The Washington DC Region, which includes Prince George's County, is currently designated as nonattainment under the PM2.5 Standard and classified as a moderate nonattainment area under the 8-Hour Ozone Standard. The entire state of Maryland is also located in the Ozone Transport Region (OTR). Therefore the *de minimus* thresholds for projects in Prince George's County are 50 tons per year of VOC, 100 tons per year of NOx, 100 tons per year of SO2, and 100 tons per year of direct PM2.5.

If projected emissions from the proposed action exceed the *de minimus* thresholds for ozone and or PM2.5 established by the general conformity rule, mitigation would be required. The MDE's preference for emissions mitigation would be on-site emission reduction programs that can be used to offset increases in emissions.

Again, thank you for the opportunity to review this draft document. If you have any questions or need further information, please do not hesitate to contact me or a member of my staff at (410) 537- 3240.

Sincerely,

Brian J. Hug
Deputy Program Manager
Air Quality Planning Program

cc: Diane Franks, Program Manager, Air Quality Planning Program, Maryland Department of the Environment

Maryland Department of Planning
Maryland Historical Trust

Martin O'Malley
Governor

Anthony G. Brown
Lt. Governor

Richard Eberhart Hall
Secretary

Matthew J. Power
Deputy Secretary

May 1, 2007

Mr. Keith Harris
Department of the Air Force
Headquarters 316th Wing (AFDW)
316 CES/CEV
1419 Menoher Drive.
Andrews AFB, MD 20762-4803

Re: Description of Proposed Action and Alternatives (DOPAA) for
FY07-11 BRAC Construction Requirements at Andrews Air Force Base (AFB)
State Clearinghouse No. MD20070328-0237

Dear Mr. Harris:

Thank you for providing the Maryland Historical Trust (Trust) with a copy of the above-referenced document, for review and comment. We also received a copy of the draft document through the Maryland State Clearinghouse for Intergovernmental Assistance. The Trust, as Maryland's State Historic Preservation Office, is reviewing the proposed BRAC actions for their effects on historic properties, pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations 36 CFR Part 800. We offer the following comments as part of our ongoing Section 106 coordination efforts with the Andrews AFB.

The DOPAA states that Andrews AFB intends to develop an Environmental Assessment (EA) to evaluate the proposed action and alternatives for related impacts to various resources. One of the resources to be addressed in the EA is cultural resources and the impacts of the proposed alternatives on those resources. We await receipt of more detailed information from Andrews AFB as planning proceeds in order to make an informed assessment of the undertaking's effects, if any, on historic properties – including archeological sites and historic structures. We encourage Andrews AFB to implement its related Section 106 consultation with the Trust and relevant parties early in the planning processes for these actions, to allow sufficient time to effectively conclude coordination well in advance of construction.

We look forward to further consultation with the Andrews AFB, and other relevant parties, to successfully complete the Section 106 review of this important initiative as project planning proceeds. If you have questions or require further assistance, please contact Jonathan Sager (for historic built environment) at 410-514-7636 / jsager@mdp.state.md.us or me (for archeology) at 410-514-7631 or bcole@mdp.state.md.us. Thank you for providing this opportunity for comment.

Sincerely,

Elizabeth J. Cole
Administrator, Project Review and Compliance

EJC/200701011
cc: John Franz (Andrews AFB)
Joseph Brown (Andrews AFB)
Mike Paone (MDP)
Bob Rosenbush (MDP)

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSIO

Prince George's County Planning Department
Office of the Planning Director

14741 Governor Oden Bowie Driv
Upper Marlboro, Maryland 20772
TTY: (301) 952-3796
301-952-3595
www.mncppc.org
**D7-032702**

May 10, 2007

Mr. Larry A. Carson, DAF
Deputy Base Civil Engineer
Department of the Air Force
Headquarters 316th Wing (AFDW)
316 CES/CEV
3466 North Carolina Avenue
Andrews AFB, MD 20762-4803

**Re: Description of Proposed Action and Alternatives (DOPAA) for FY07-11 BRAC Construction Requirements Environmental Assessment at Andrews Air Force Base (AFB), Maryland**

Dear Mr. Carson:

Thank you for the opportunity to review and comment on the *Description of Proposed Action and Alternatives (DOPAA) for FY07-11 BRAC Construction Requirements Environmental Assessment at Andrews Air Force Base (AAFB), Maryland.* As you know, AAFB is located in the Morningside community. The Town of Morningside and the unincorporated community of Camp Springs are contiguous to the installation.

AAFB falls in or is adjacent to several areas covered by master plans and sectional map amendments. As part of Planning Area 77, Melwood, AAFB is located within the 1994 *Melwood-Westphalia Approved Master Plan and Sectional Map Amendment* (SMA). The 1994 *Melwood-Westphalia Approved Master Plan and SMA* recommended a public land use designation and zoned the base property I-1 (Light Industrial). AAFB is located within the Developing Tier and identified as a government installation land use as defined by the 2002 *Prince George's County Approved General Plan*. Additionally, AAFB is contiguous to other master plan areas including the 2006 *Approved Henson Creek-South Potomac Master Plan and SMA*, 1993 *Approved Subregion V Master Plan and SMA*, and the 2007 *Approved Westphalia Sector Plan and SMA*. The proposal is not inconsistent with the goals, objectives, policies and strategies of the 1994 *Approved Melwood-Westphalia Master Plan and SMA* as well as the 2002 *Prince George's County Approved General Plan*.

The Prince George's County Planning Department has no comments regarding the proposed improvements except in regards to the parking facilities which will be provided for the new Administrative Facility and the addition to the ANGRC building. The DOPAA provides two alternatives for the new parking associated with these two facilities. The first is a surface parking lot and the second is a structured parking garage. To minimize impacts associated with the creation of impervious surface and reduce stormwater impacts constructing the parking garages is the county's preferred action. Because AAFB drains into critical, protected habitat areas of the county and based on the 2005 *Countywide Green Infrastructure Plan*, every effort should be made to make the run-off as clean as possible. The

for Benthic Index of Biological Integrity (IBI) and a Very Poor rating for Habitat. The ANGRC building is in the Charles Branch Watershed and currently has a Poor rating for both IBI and Habitat. In order to raise these water quality ratings the option of constructing parking garages in lieu of surface parking should be the preferred action.

We would like to request continued cooperation and involvement with regard to planning the proposed improvements as well as the environmental aspects of the proposal. We look forward to working with you in the future. If you have any questions, please contact me or Betty Carlson-Jameson at 301-952-3179 or via email at Betty.Carlsonjameson@ppd.mncppc.org.

Sincerely,

Fern Piret

Fern Piret
Planning Director

c: Ivy A. Lewis, Chief, Community Planning South Division
Betty Carlson-Jameson, Planner Coordinator, Community Planning South Division

# Appendix B
# Draft EA Notice of Availability and Draft EA Comments

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# The Gazette Newspapers

9030 Comprint Court, Gaithersburg, Maryland 20877, 301-670-2620

## CERTIFICATION OF PUBLICATION

THIS IS TO CERTIFY THAT THE ANNEXED LEGAL ADVERTISEMENT HAS BEEN PUBLISHED IN THE GAZETTE NEWSPAPERS FOR THE NUMBER OF INSERTIONS INDICATED BELOW.

**NOTICE OF AVAILABILITY EA FOR FY07-11 BR**

Gazette Legal Advertising Department

Ashby Elizabeth Tanner
Notary Public, State of Maryland
Montgomery County
My Commission Expires April 6, 2010

**Copy of Ad attached**
Ad Order Number: 0010640924
Dates: St.: 6/21/07 End: 6/21/07 Ins.: 1

**Notice of Availability for the Draft Environmental Assessment (EA) for FY07-11 BRAC Construction Requirements at Andrews AFB, Maryland**

The U.S. Air Force, Air Force District Washington (AFDW) and Andrews AFB propose to issue a Finding of No Significant Impact (FONSI) based on an EA for FY07-11 BRAC Construction Requirements at Andrews AFB. In support of the 2005 BRAC recommendations, Andrews AFB proposes actions such as new facility construction, demolition, infrastructure upgrades and the gain of nine F-16 aircraft with no increase inflight operations. This EA has been prepared to evaluate the Proposed Action and alternatives, including the No Action Alternative. Resources addressed in the EA include noise, land use, air quality, safety, geological resources, water resources, biological resources, cultural resources, socioeconomics and environmental justice, hazardous materials and waste management, and infrastructure. The results, as found in the EA, show that the future proposed BRAC construction requirements would not have a significant impact on the environment - indicating that a FONSI would be appropriate. An Environmental Impact Statement would not be necessary to implement the Proposed Action.

Copies of the Draft FONSI and the Draft EA are available for review until July 21, 2007 at the Upper Marlboro Branch Library of the Prince George's County Memorial Library System at 14730 Main St. Upper Marlboro, MD 20772. Address written comments to Mr. Joe Brown, 316 CES/CEV, 3466 North Carolina Avenue, Andrews AFB, MD 20762-4803, Joseph.Brown3@Andrews.af.mil.

10640924 (6-21-07)

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Maryland Department of Planning

*Martin O'Malley*
*Governor*
*Anthony G. Brown*
*Lt. Governor*

*Richard Eberhart Hall*
*Secretary*
*Matthew J. Power*
*Deputy Secretary*

August 2, 2007

Mr. John Franz
Project Manager
Andrews Air Force Base
316 CES/CEV
3466 North Carolina Avenue
Andrews AFB, MD 20762-4 03

**STATE CLEARINGHOUS RECOMMENDATION**

**State Application Identifie :** MD20070621-0658
**Applicant:** Andrews Air orce Base
**Project Description:** Draft Environmental Assessment and FONSI: BRAC Construction Requirements: planned construction, buildi g addition, infrastructure repair, and demolition (see MD20070328-0237)
**Project Address:** 3466 N rth Carolina Avenue, Andrews Air Force Base, MD 20762-4803
**Project Location:** Prince eorge's County
**Approving Authority:** U. S. Department of Defense
**Recommendation:** **Cons tent with Qualifying Comments and Contingent Upon Certain Actions**

Dear Mr. Franz:

In accordance with Presidenti l Executive Order 12372 and Code of Maryland Regulation 14.24.04, the State Clearinghouse has coordinate the intergovernmental review of the referenced project. This letter, with attachments, constitutes the St te process review and recommendation based upon comments received to date. This recommendation is valid for a eriod of three years from the date of this letter.

Review comments were reque ed from the Maryland Departments of the Environment, Transportation, Natural Resources, the Maryland Mili ry Department, Prince George's County, the Maryland-National Capital Park and Planning Commission in Princ George's County, and the Maryland Department of Planning, including the Maryland Historical Trust. A of this date, the Maryland Department of the Environment has not submitted comments. **This recommend tion is contingent upon the applicant considering and addressing any problems or conditions that may be id ntified by their review. Any comments received will be forwarded.**

The Maryland Departments of Natural Resources, and Transportation; Prince George's County; and the Maryland-National Capital Park and Pla ning Commission in Prince George's County found this project to be generally consistent with their plans, pr grams, and objectives, but included certain qualifying comments summarized below.

The Maryland Department of atural Resources submitted comments that addressed these issues: the need for storm-water management miti ation measures; the need for a Forest Conservation Plan, and Forest Stand Delineation; the reforestation nd protection of streamside buffers; and the State's Green Infrastrucutre Network. See the attached letter.

*01 West Preston Street • Suite 1101 • Baltimore, Maryland 21201-2305*
*Telephone: 410.76 4500 • Fax: 410.767.4480 • Toll Free: 1.877.767.6272 • TTY Users: Maryland Relay*
*Internet: www.MDP.state.md.us*

The Maryland Department of Transportation recommended that the Applicant "work with the State Highway Administration and Prince George's County to determine traffic impacts resulting from the proposed new staff relocation to the Base." See the attached memorandum.

Prince George's County stated that they "have no objection to the proposed improvements as they are fully contained within the Base and have no impact on the County Transportation infrastructure in the area." See the attached memorandum.

The Maryland-National Capital Park and Planning Commission in Prince George's County repeated the comments that were expressed in the State Clearinghouse's letter dated May 2, 2007 which was addressed to Mr. Keith Harris of Andrews Air Force Base. These comments relate to the proposed "parking facilities which will be provided for the new Administrative Facility, and the addition to the Air National Guard Reserve Center (ANGRC) building. The Description of Proposed Action and Alternatives for FY07-11 BRAC Construction Requirements at Andrews Air Force Base provided two (2) alternatives for the new parking associated with these two (2) facilities. The first is a surface parking lot, and the second is a structured, parking garage. To minimize impacts associated with the creation of impervious surface and reduce storm water impacts, constructing the parking garages is the County's preferred action. Because the Base drains into critical, protected habitat areas of the County and based on the "Countywide Green Infrastructure Plan", every effort should be made to make the run-off as clean as possible. The Administration Building is in the Tinkers Creek Watershed. Currently, this watershed has a Poor rating for Benthic Index of Biological Integrity (IBI) and a Very Poor rating for Habitat. The ANGRC building is in the Charles Branch Watershed, and currently has a Poor rating for both IBI, and Habitat. In order to raise these water quality ratings, the option of constructing parking garages, in lieu of surface parking, should be the preferred action."

The Maryland Military Department, and the Maryland Department of Planning found this project to be consistent with their plans, programs, and objectives.

The Maryland Historical Trust has determined that the project will have "no effect" on historic properties.

**Any statement of consideration given to the comments should be submitted to the approving authority, with a copy to the State Clearinghouse.** The State Application Identifier Number must be placed on any correspondence pertaining to this project. The State Clearinghouse must be kept informed if the approving authority cannot accommodate the recommendation.

Please remember, you must c mply with all applicable state and local laws and regulations. If you need assistance or have questions, contact the State Clearinghouse staff person noted above at 410-767-4490 or through e-mail at brosenbush@mdp.state.md.us **Also please complete the attached form and return it to the State Clearinghouse as soon as th status of the project is known.** ***Any substitutions of this form must include the State Application Identifier N umber.*** **This will ensure that our files are complete.**

Thank you for your cooperati n with the MIRC process.

Sincerely,

Linda C. Janey

Linda C. Janey, J.D., Assistant Secretary
for Clearinghouse and Communications

LCJ:BR
Enclosures
cc: Beth Cole - MHT
Joane Mueller - MDE
Cindy Johnson - MDOT
Ray Dintaman - DNR
Bill Riley - MILT
Beverly Warfield - PGEO
Betty Carlson-Jameson - MNCPPCP

*07-0658_CRR.CLS.doc*

Martin O'Ma ty, *Governor*
Anthony G. Brown *Lt. Governor*

SHA
State Highway Administration
Maryland Department of Transportation

John D. Porcari, *Secretary*
Neil J. Pedersen, *Administrator*

MD 20070621-0658

**MEMORANDUM**

**TO:** Mr. Ian Beam
Office o Planning, MDOT

**FROM:** Raja Ve ramanchaneni, Director
Office o Planning and
Prelimi ry Engineering

**DATE:** April 1 , 2007

**SUBJECT:** Descrip ion of Proposed Action and Alternatives
for FY 0 -11 BRAC Construction Requirements at Andrews Air Force Base
Environ ental Assessment
**Review nd Comment**

Thank you for t opportunity to review the Environmental Assessment (EA) for the Description of Proposed Action and lternatives for FY 07-11 BRAC Construction Requirements at Andrews Air Force Base in Prince Ge rge's County. The State Highway Administration (SHA) completed the review, and submits the followi g comments for your consideration:

- The EA report note hat about 2,800 new personnel (Army National Guard Headquarters 650; National Capital Re ion 1,973; Martin State Air Guard Station 135; and 113 Wing 330) are expected to relocate to Andre s Air Force Base by 2011. These additional personnel are likely to have significant impact o local and state highways. The report indicates that the Infrastructure Section has not been develo ed. We suggest that Andrews Air Force Base include the transportation network (local and state) im ects in the Infrastructure Section, when the Section is developed.

- We recommend tha Andrews Air Force Base work with the SHA and Prince George's County to determine traffic im acts resulting from the proposed new staff relocation of the Base. A road improvement plan m ay need to be developed and implemented to accommodate transportation needs of the relocated per nnel to the Base.

If you have any uestions regarding these comments, please contact Mr. Shiva K. Shrestha, our Regional Planner for Pr ce George's County at 410-545-5667 or via email at sshrestha@sha.state.md.us. He will be pleased to as st you.

cc: Mr. Steve Foste Chief of Engineering Access Permits, SHA
Ms. Cindy John on, MDOT
Mr. Subrat Mal patra, Travel Forecaster, SHA
Mr. Darrell Mo ey, District Engineer, SHA
Ms. Claudine M yers, Area Engineer, SHA
Mr. Shiva K. S restha, Regional Planner, SHA

## Please Com lete Your Review & Recommendation Before July 19, 2007

**Return Completed Form To:** Linc : C. Janey, J.D., Assistant Secretary for Clearinghouse and Communications, Maryland Dep tment of Planning, 301 West Preston Street, Room1104, Baltimore, MD 21201-2305
Pho e: 410-767-4490 Fax: 410-767-4480

| | |
|---|---|
| **State Application Identifier:** MD20 :70621-0658 | **Clearinghouse Contact:** Bob Rosenbush, 410-767-4490 brosenbush@mdp.state.md.us |
| **Location:** PGEO | |
| **Applicant:** Andrews Air Force Base | |
| **Description:** Draft Environmental Ass ssment and FONSI: BRAC Construction Requirements: planned construction, building addition, infrastructure repair, and demolition (see MD20070328-0237) | |

**Based on a Review of the Inf rmation Provided, We Have Checked (●) the Appropriate Determination Below**

**CONSIS ENT RESPONSES - (For Use By STATE AGENCIES Only)**

| | | |
|---|---|---|
| ✓ | **C1** | It is **Consistent** with our plan , programs, and objectives |
| | **C2** | It is **Consistent** with the poli es contained in **Executive Order 01.01.1992.27** (Maryland Economic Growth, Resource Protection, and Planning Act of 1992), E ecutive Order 01.01.1998.04 (Smart Growth and Neighborhood Conservation Policy), **and** our plans, programs, and objecti s. |
| | **C3** | **(MHT ONLY)** It has been de rmined that the project will have "no effect" on historic properties and that the federal and/or State historic preservation requirer nts have been met. |
| | **C4** | **(DNR ONLY)** It has been de rmined that this project is in the Coastal Zone and is not inconsistent with the Maryland Coastal Zone Management Program. |
| | **C7** | **(MDP ONLY)** It is consistent with the requirements of State Finance and Procurement Article 5-7B-02; 03; 04 and 05 Smart Growth and Neighborhood C nservation (Priority Funding Areas). |

**CONSISTENT ESPONSES - (For Use By *COUNTY & LOCAL AGENCIES* Only)**

| | | |
|---|---|---|
| | **C5** | It is **Consistent** with our plan programs, and objectives. |
| | **C6** | It is **Consistent** with the Eco omic Growth, Resource Protection, and Planning Visions (Planning Act of 1992), State Finance and Procurement Article 5-7B – S art Growth and Neighborhood Conservation (Priority Funding Areas), **and** our plans, programs, and objectives. |

**OTHER RESPONSES - (For Use By ALL)**

| | | |
|---|---|---|
| | **R1** | **GENERALLY CONSISTENT WITH QUALIFYING COMMENTS:** It is generally **Consistent** with our plans, programs and objectives, but the attached q alifyIng comment is submitted for consideration. |
| | **R2** | **CONTINGENT UPON CERT. IN ACTIONS:** It is generally **Consistent** with our plans, programs and objectives contingent upon certain actions being taken a noted in the attached comment(s). |
| | **R3** | **NOT CONSISTENT:** It raise problems concerning compatibility with our plans, programs, objectives, or Planning Act visions/policies; or it may dup cate existing program activities, as indicated in the attached comment(s). If a meeting with the applicant is requested, please check here: ☐ |
| | **R4** | **ADDITIONAL INFORMATIO REQUESTED:** Additional information is required to complete the review. The information needed is identified below. If an exte sion of the review period is requested, please check here: ☐ |
| | **R5** | **FURTHER INTEREST:** Due further interest/questions concerning this project, we request that the Clearinghouse set up a conference with the applicant |
| | **R6** | **SUPPORTS:** Supports "Sma t Growth" and Federal Executive Order 12072 (Federal Space Management), which directs federal agencies to locate facilities in rban areas. |

**Attach additional comments if necessa y OR use theses spaces:** _____

**Name:** WILLIAM R RILEY
**Organization:** MARYLAND MILITARY DEPT.
**Address:** FIFTH REGIMENT ARMORY
BALTIMORE MD 21201

**Signature:** William R. Riley
**Phone:** (410) 576-6068
**Date Completed:** 7/17/07

_ **Check here if comments are attached.**

RECEIVED
JUL 20 REC'D

MDPCH-1A

**Please Com lete Your Review & Recommendation Before July 19, 2007**

**Return Completed Form To:** Lind C. Janey, J.D., Assistant Secretary for Clearinghouse and Communications, Maryland Dep tment of Planning, 301 West Preston Street, Room1104, Baltimore, MD 21201-2305
Pho e: 410-767-4490 Fax: 410-767-4480

| | | |
|---|---|---|
| **State Application Identifier: MD20** | **70621-0658** | **Clearinghouse Contact:** Bob Rosenbush, 410-767-4490 brosenbush@mdp.state.md.us |
| **Location:** | PGEO | |
| **Applicant:** | Andrews Air Force Base | |
| **Description:** | Draft Environmental Ass sment and FONSI: BRAC Construction Requirements: planned construction, building addition, infrastructure repair, and demolition (see MD20070328-0237) | |

**Based on a Review of the Int rmation Provided, We Have Checked (✓) the Appropriate Determination Below**

**CONSIS ENT RESPONSES - (For Use By STATE AGENCIES Only)**

| | | |
|---|---|---|
| ✓ | **C1** | It is **Consistent** with our plan , programs, and objectives |
| | **C2** | It is **Consistent** with the poli es contained in **Executive Order 01.01.1992.27** (Maryland Economic Growth, Resource Protection, and Planning Act of 1992), E ecutive Order 01.01.1998.04 (Smart Growth and Neighborhood Conservation Policy), and our plans, programs, and objecti s. |
| | **C3** | **(MHT ONLY)** It has been de rmined that the project will have "no effect" on historic properties and that the federal and/or State historic preservation requiren nts have been met. |
| | **C4** | **(DNR ONLY)** It has been de rmined that this project is in the Coastal Zone and is not inconsistent with the Maryland Coastal Zone Management Program. |
| | **C7** | **(MDP ONLY)** It is consisten with the requirements of State Finance and Procurement Article 5-7B-02; 03; 04 and 05 Smart Growth and Neighborhood C nservation (Priority Funding Areas). |

**CONSISTENT ESPONSES - (For Use By *COUNTY & LOCAL AGENCIES* Only)**

| | | |
|---|---|---|
| | **C5** | It is **Consistent** with our plan , programs, and objectives. |
| | **C6** | It is **Consistent** with the Eco omic Growth, Resource Protection, and Planning Visions (Planning Act of 1992), State Finance and Procurement Article 5-7B – S nart Growth and Neighborhood Conservation (Priority Funding Areas), and our plans, programs, and objectives. |

**OTHER RESPONSES - (For Use By ALL)**

| | | |
|---|---|---|
| | **R1** | **GENERALLY CONSISTENT WITH QUALIFYING COMMENTS:** It is generally **Consistent** with our plans, programs and objectives, but the attached c alifying comment is submitted for consideration. |
| | **R2** | **CONTINGENT UPON CERT IN ACTIONS:** It is generally **Consistent** with our plans, programs and objectives contingent upon certain actions being taken a noted in the attached comment(s). |
| | **R3** | **NOT CONSISTENT:** It raise problems concerning compatibility with our plans, programs, objectives, or Planning Act visions/policies; or it may dup cate existing program activities, as indicated in the attached comment(s). If a meeting with the applicant is requested, pleas check here: ☐ |
| | **R4** | **ADDITIONAL INFORMATIO REQUESTED:** Additional information is required to complete the review. The information needed is identified below. If an exte sion of the review period is requested, please check here: ☐ |
| | **R5** | **FURTHER INTEREST:** Due further interest/questions concerning this project, we request that the Clearinghouse set up a conference with the applican |
| | **R6** | **SUPPORTS:** Supports "Sm t Growth" and Federal Executive Order 12072 (Federal Space Management), which directs federal agencies to locate facilities in urban areas. |

**Attach additional comments if necess y OR use theses spaces:** _____

**Name:** Steve Aj v
**Organization:** MDP
**Address:** MARYLAND Department of Planning

**Signature:**
**Phone:** 410 767 4572
**Date Completed:** July 23/07

_ **Check here if comments are attached.**

RECEIVED
JUL 23 REC'D

MDPCH-1A

800/900

08/01/2007 13:09 FAX

Prince George's County, Maryland

June 28, 2007

TO: Betty Ca lson-Jameson, Planner Coordinator
Maryland National Capital Park and Planning Commission

FROM: Beverly . Warfield, PGEO Clearinghouse Coordinator
Departme t of Environmental Resources

RE: Clearing House Referral Number: MD20070621-0658

This inter overnmental review item is being forwarded to you for your inform tion and comment. Please review the attached item and return this sheet to this office by July 19, 2007 with the appropriate rev ewer response.

**PROJECT DESCRIP ION**: Draft Environmental Assessment and FONSI: BRAC Constructi n Requirements: planned construction, building addition, infra tructure repair, and demolition

[illegible]



The Prince George's Cou ty Planning Department has no comments regarding the proposed improvements except in regards to the p king facilities which will be provided for the new Administrative Facility and the addition to the ANGR C building. The DOPAA provides two alternatives for the new parking associated with these two facilities. The first is a surface parking lot and the second is a structured parking garage. To minimize im acts associated with the creation of impervious surface and reduce stormwater impacts constructing the arking garages is the county's preferred action. Because AAFB drains into critical, protected habitat reas of the county and based on the 2005 *Countywide Green Infrastructure Plan*, every effort should e made to make the run-off as clean as possible. The Administration Building is in the Tinkers Creek Wa rshed. Currently this watershed has a Poor rating for Benthic Index of Biological Integrity (IBI) and a Very Poor rating for Habitat. The ANGRC building is in the Charles Branch Watershed and c rrently has a Poor rating for both IBI and Habitat. In order to raise these water quality ratings the option of constructing parking garages in lieu of surface parking should be the preferred action.

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# Appendix C
# Final General Air Conformity Applicability Analysis For FY07-11 BRAC Construction Requirements at Andrews AFB, Maryland

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***Andrews Air Force Base, Maryland***

# Final General Air Conformity Applicability Analysis for FY07-11 BRAC Construction Requirements at Andrews Air Force Base, Maryland

Project No.: AMC133715
Contract No.: F41624-03-D-8614
Task Order 0191

Prepared for:
US Air Force Center
for Environmental Excellence
November 2006

***Department of the Air Force***

TABLE OF CONTENTS



LIST OF TABLES



APPENDICES

## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| 113 WG | 113 Wing |
| 135 APS | 135th Aerial Port Squadron |
| 316 WG | 316th Wing |
| AFB | Air Force Base |
| AFFSA | Air Force Flight Standards Agency |
| AFI | Air Force Instruction |
| AGE | Aerospace Ground Equipment |
| AGS | Air Guard Station |
| ANG | Air National Guard |
| ANGH | Air National Guard Handbook |
| ANGRC | Air National Guard Reserve Center |
| AT/FP | Anti-Terrorism/Force Protection |
| AW | Airlift Wing |
| BCEG | Base Closure Executive Group |
| BRAC | Base Realignment and Closure |
| CAA | Clean Air Act |
| CEQ | Council on Environmental Quality |
| CES | Civil Engineering Squadron |
| CEV | Environmental Management Flight |
| CFR | Code of Federal Regulations |
| CLIP | Constrained Long-Range Transportation Plan |
| CO | Carbon Monoxide |
| COG | Council of Governments |
| CWA | Clean Water Act |
| DCANG | District of Columbia Air National Guard |
| DoD | Department of Defense |
| DOPAA | Description of Proposed Action and Alternatives |
| DOT | Department of Transportation |
| EA | Environmental Assessment |
| EIS | Environmental Impact Statement |
| EO | Executive Order |
| $Ft^2$ | Square Feet |
| $Ft^3$ | Cubic feet |
| FHWA | Federal Highway Administration |
| FONSI | Finding of No Significant Impact |
| GCR | General Conformity Rule |
| GOV | Government Owned Vehicle |
| HQ | Headquarters |
| IICEP | Interagency and Intergovernmental Coordination for Environmental Planning |
| LA | Low Altitude Flyovers |
| LTO | Landings and Takeoffs |
| MPO | Metropolitan Planning Organization |
| NAAQS | National Ambient Air Quality Standards |
| NCR | National Capital Region |
| NEPA | National Environmental Policy Act |
| NFPA | National Fire Protection Association |
| NGB | National Guard Bureau |
| $NO_2$ | Nitrogen Dioxide |

## ACRONYMS AND ABBREVIATIONS (CONT'D)

| | |
|---|---|
| $O_3$ | Ozone |
| PAA | Primary Authorized Aircraft |
| $PM_{2.5}$ | Fine Particulate Matter |
| POV | Privately Owned Vehicle |
| SCAQMD | South Coast Air Quality Management District |
| SIP | State Implementation Plan |
| $SO_x$ | Sulfur Oxides |
| TIP | Transportation Improvement Program |
| TPB | Transportation Planning Board |
| TPC | Power Trim Checks |
| T&G | Touch and Goes |
| USAF | United States Air Force |
| U.S. EPA | United States Environmental Protection Agency |

# 1.0 Definition of General Conformity

The United States Environmental Protection Agency (U.S. EPA), in conjunction with the U.S. Department of Transportation (DOT), established the General Conformity Rule (GCR) under Section 176(c)(1) of the 1990 Clean Air Act Amendments (CAA). The GCR applies to all Federal actions except programs and projects requiring funding or approval from the DOT, the Federal Highway Administration (FHWA), the Federal Transit Administration, or the local Metropolitan Planning Organization (MPO). This legislation prohibits the Federal government from conducting, supporting, approving, funding, licensing, or permitting any actions that do not conform to a U.S. EPA approved State Implementation Plan (SIP) or Federal Implementation Plan (FIP). A SIP is a State's self-authored plan for achieving and maintaining compliance with the goals of the CAA, while a FIP is a similar plan authored by the Federal government (DOT, 2006).

State and local planning agencies use a SIP to define the methods and procedures that will be used to bring the region into attainment with the National Ambient Air Quality Standards (NAAQS). Each nonattainment area (i.e., a local air quality planning region in which measured air quality is worse than the NAAQS) must prepare a SIP, which delineates the method by which the region plans to reach attainment of the standard. The conformity rule ensures that Federal actions do not undermine regional air quality attainment and maintenance efforts by exceeding the growth projections in the SIP, or impeding progress toward emission reduction targets identified in the SIP.

The conformity requirement was present in the CAA prior to the 1990 Amendments, though it had not been enforced through any formal rulemaking or program at either the State or Federal level. The 1990 amendments revised section 176(c)(1) to expand and clarify Congress' expectations of the GCR and added a mandate for the U.S. EPA to establish a Federal conformity program. The U.S. EPA fulfilled this mandate by promulgating the general conformity rule on November 30, 1993. This rule and all subsequent amendments may be found in the Code of Federal Regulations (CFR) at Title 40, CFR Part 51, Subpart W and in 40 CFR Part 93, Subpart B.

The State of Maryland general conformity is addressed under Title 26 (Department of the Environment) Subtitle 11 (Air Quality) Chapter 26 (Conformity Authority) of the Annotated Code of Maryland. The Maryland rule is simply a direct reference to the Federal GCR cited above.

## 1.1 General Conformity and the National Environmental Policy Act (NEPA)

The General Conformity process is similar to the air quality portion of the National Environmental Policy Act (NEPA) process in that air pollutant emissions from a planned action are evaluated to determine the impact of the action on a region's air quality. The potential impacts of a Proposed Action must be evaluated well in advance of the implementation of the action. In fact, EPA expects the conformity analysis to be coupled with the NEPA analysis and, thus, not result in undue delays. However, the conformity process may be conducted outside of the NEPA process, if desired. All Federal actions are covered by General Conformity requirements unless they are otherwise exempt. In contrast to the NEPA process, however, General Conformity focuses on how a Federal action that an agency intends to take conforms to the applicable SIP for criteria air pollutants, rather than requiring the evaluation of all analyzed alternatives.

This General Conformity Applicability Analysis has been prepared to assess if specific actions by the United States Air Force (USAF) at Andrews Air Force Base (AFB) under the FY 07-11 BRAC Activities comply with the requirements of the Federal Clean Air Act (CAA) General Conformity Rule.

# 2.0 General Conformity Process

The general conformity process is divided into two distinct phases, conformity review and conformity determination.

In the first phase, a ***conformity review*** is performed to evaluate whether the conformity regulations would apply to an action. The conformity review should be a relatively simple analysis that determines whether a conformity determination is needed. This involves estimating the direct and indirect emissions of criteria pollutants and their precursors, determining whether or not the action is exempt from General Conformity requirements, and comparing the emissions to the regional emissions inventory. Most of the emissions and attainment status information are also needed for a NEPA impact assessment, so it may be prudent to perform the conformity review on all analyzed alternatives, in order to facilitate a comparative evaluation of alternatives with respect to air quality issues.

The second phase of the General Conformity process is the ***conformity determination***, which applies only to larger projects that are not found by the conformity review to be exempt. The conformity determination demonstrates how an action would conform to the applicable SIP. The conformity determination, which is typically performed only for the Proposed Action and only if the conformity review results in a conclusion that the conformity determination is necessary, may involve extensive analyses, such as local and area-wide air quality modeling, mitigation measures, or emission offsets. The conformity determination documents a finding that the action a Federal agency intends to implement would conform to the applicable SIP or maintenance plan. The methods that can be used to demonstrate conformance include:

- Identifying the emissions from the Proposed Action in the SIP's demonstration of attainment or maintenance of national air quality standards,
- Air quality modeling,
- Emission offsets,
- Other potential options.

## 2.1 Details of the General Conformity Process

The detailed steps taken during the general conformity process are presented below:

1. Determine if the Proposed Action occurs in an air quality nonattainment or maintenance area.
2. Determine if the Proposed Action would result in the emission of an air pollutant that is regulated due to the nonattainment or maintenance status of the region
    - Sources that may contribute to direct emissions include demolition or construction activities associated with the Proposed Action; equipment used to facilitate the action (e.g., construction vehicles, temporary power generation) and new equipment that is a permanent component of the completed action (e.g., boilers, generators)
    - Sources of indirect emissions include commuter activity to/from the site of the action (e.g., employee vehicle emissions); and support services to the action (e.g., increased heating, cooling, potable water or wastewater treatment needs where those services are provided by the Federal agency sponsoring the action).

- Both stationary and mobile sources must be included when calculating the total of direct and indirect emissions

3. Determine if the Proposed Action qualifies as an exempt action under the conformity rule (The U.S. Air Force has not defined any exempt categories. Therefore, there are no Air Force exempt provisions).
4. Determine if the anticipated air pollutant emissions resulting from the Proposed Action are below threshold levels.
   - An annual emission rate (in tons/year) reflecting actual emissions[1] must be calculated for the Proposed Action;
   - The annual emission rate must include both direct and indirect emissions;
   - The annual emission rate must include emissions from both mobile and stationary sources associated with the Proposed Action;
   - For multi-year actions, the annual emission rate must reflect the year for which air emissions are expected to be highest[2]; and,
   - If emission rates are estimated, calculations must be performed using EPA-preferred emission factors such as AP-42[3] for stationary and area sources, and the EPA motor vehicle emission model used for the preparation of SIPs.[4]
   - Emissions would not increase, or an increase in emissions is clearly de minimis (must still perform regional significance if clearly de minimis)
   - Emissions are not reasonably foreseeable
5. Determine if the action is regionally significant.
   - An action is regionally significant if the total direct and indirect emissions of an individual pollutant (as calculated for the threshold determination in Step 4) amounts to 10% or more of a nonattainment or maintenance area's emissions of that pollutant[5]

If it is not regionally significant, then the action is exempt from further analysis under the conformity rule. The screening for regional significance must be documented along with the information described in previous steps if not exempt or clearly de minimis.

[1] Actual emissions are those emissions produced as a direct result of the Proposed Action. They do not include any theoretical maximums, permit limits or the potential-to-emit associated with the activity.
[2] 40 CFR 93.159(d)(2)
[3] Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, 5th edition, U.S. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, January 1995 (with Supplements)
[4] 40 CFR 93.159(b)(1) & (2)
[5] 40 CFR 93.153(i)

# 3.0 Calculation of Emission Increases from BRAC Activities

The Andrews Air Force Base Description of Proposed Action and Alternatives (DOPAA) describes all necessary projects that would be taking place between Fiscal Year 2007 through 2011 in preparation for the first portion of the Base Realignment and Closure (BRAC) effort (DOPAA, 2006).

## 3.1 Basis for Air Emission Calculations

The BRAC projects include several activities:

- construction of new office buildings;
- refurbishment and additions to existing buildings;
- construction of roads and parking lots for non-aerospace ground vehicles;
- construction of parking facilities for the additional nine new F-16's;
- removal of two C-21A aircraft to Roger's Airport, Oklahoma.

These changes would also involve an influx of approximately 2,700 new employees to Andrews. To support these new employees, approximately 579,680 square feet ($ft^2$) of new building area would be constructed. In addition, approximately 936,834 $ft^2$ of pavement area would be added. This includes the construction and repair of ground facilities for the arriving F-16's.

These changes would affect the amount of emissions that Andrews produces in different ways. All the construction, demolition, and paving activities would add to the emissions load during the five-year period leading to 2011. The addition of nine F-16 aircraft and associated ground support equipment would also increase emission loads, though three of those aircraft would serve as backup aircraft and remain unused and would not contribute to the base's heightened emissions. Lastly, the removal of two C-21A's and associated ground support equipment would decrease the emissions estimate for the base.

In addition to the direct emissions resulting from the addition of new office space, new parking space and new aircraft, there are also indirect emissions that can reasonably be considered under the control of the U.S. Air Force. These include the use of privately owned vehicles (POV) used to commute to the base and used on base. Since the National Capital Region Transportation Planning Board transportation conformity does not yet include BRAC employment, changes in their transportation conformity analysis, daily commuting to the installation is included here under General Conformity.

## 3.2 Discussion of General Emission Types

The Washington Metropolitan Area is in Maintenance for the 1-hour carbon monoxide (CO) National Ambient Air Quality Standard (NAAQS); nonattainment for the 8-hour ozone ($O_3$) NAAQS, and nonattainment of the annual fine particulate matter ($PM_{2.5}$) NAAQS. This analysis therefore considers the following emissions from all sources:

- Carbon Monoxide (CO), because the area is in maintenance;
- Volatile Organic Compounds (VOCs), an $O_3$ and $PM_{2.5}$ precursor;
- Nitrogen Oxides (NOx), an $O_3$ and $PM_{2.5}$ precursor;
- Sulfur Oxides (SOx), a $PM_{2.5}$ precursor;
- Fine Particulate Matter ($PM_{2.5}$).

All of these emissions are produced by the activities described in the DOPAA, and can be divided among one of three categories:

1. **Demolition and Construction Emissions**: This category includes demolition of existing structures, building new facilities (construction, demolition, and laying new pavement) according to the DOPAA;
2. **Operational Emissions**: These emissions are from sources that are responsible for the daily operation and activities of the base, including aircraft, and stationary sources including building heating equipment, aircraft support equipment and government vehicles, mobile generators, emergency generators, fuel storage and dispensing, paint spray booths and abrasive blasting booths;
3. **Indirect Emissions**: The use of privately operated vehicles to commute to the facility and to travel between buildings on the facility. Both of these uses would increase emission loads based on the estimated new personnel.

## 3.3 Construction Emissions

Emissions were calculated for sub-categories, each of which is a part of construction. The groups that comprise the demolition and construction emissions category were divided and then calculated separately.

Demolition

Demolition emissions were calculated using a two-step process. First, the 206,448 $ft^2$ to be demolished (DOPAA 2006) was converted to cubic feet ($ft^3$) by multiplying by an estimated building height of 20 feet. The resulting volume was multiplied by an emissions factor for $PM_{10}$. This provided an estimated amount of $PM_{10}$ emissions for demolition. It is assumed that all $PM_{10}$ emissions are emitted as $PM_{2.5}$ to be conservative.

The second step involved calculating the emissions from dump trucks that would be used to haul debris from the job site. To complete this, the total demolition volume was converted to cubic yards ($yd^3$). This was multiplied by an estimated average dump truck volume to obtain the number of truckloads required to remove the construction debris from Andrews AFB. An estimated 20 miles per round trip was used to determine the total amount of mileage to remove the construction debris. The amount of mileage was multiplied by a dump truck emission factor (Jagielski and O'Brien, 1994) for each air pollutant. It was assumed that demolition activities would take place over a five-year period.

The emissions for the fugitive emissions from the demolition and hauling of debris were then added together. This resulted in an amount of emissions, in grams, which was then converted to tons.

Construction

To determine the emissions from the construction group, the new proposed building area construction (DOPAA 2006) was totaled and multiplied by a construction emissions factor for each of the five air pollutants. The emissions factor was taken from a table containing several construction emission factors for different types of buildings being constructed (SCAQMD 1993). The South Coast Air Quality Management District (SCAQMD) emission factors include emissions for bringing construction equipment and workers to the site. Emission factors for the construction of Government Office Buildings were used in this analysis (SCAQMD 1993). The result is the estimated increase of construction emissions. These estimates were then divided by five to represent the yearly emission output until the target year.

Paving

The final component of demolition and construction emissions is for paving. Total area to be paved from the Description of Proposed Action and Alternatives (DOPAA) was divided by the assumed daily paving area of 2,000 $ft^2$ to estimate the number of days that equipment would need to be used on the site. To determine the emissions from dump trucks importing paving materials, the volume of paving materials was calculated by multiplying each DOPAA action by varying estimated paving depths. It was assumed that the depth of the paving for parking lots is six inches and the depth of the paving for aircraft apron and the new heliport is assumed to be 12 inches. The volume of materials being hauled to the site is then divided by an estimated 15 cubic yards to estimate the number of total trips required to haul material to the site. The total trips were multiplied by an estimated 20 miles per round trip to obtain the amount of total miles required to haul all the paving materials. The emissions per year for hauling paving materials to the site are then calculated using grams per mile emission factors from Jagielski and O'Brien, 1994 and then by multiplying by the total miles traveled and then converting grams into tons.

Next, emissions needed to be calculated for paving. To determine the amount of hours required to pave the total area, the duration of paving activity is multiplied by the amount of machinery utilized and estimated hours per day. The resulting hours per construction period is then multiplied by an emission factor for each of the five air pollutants (SCAQMD 1993), and results in the pounds of emissions per construction period. The emissions are then converted into tons.

The emissions from importing material and paving equipment are totaled. The result is the total emissions to complete the paving work described in the DOPAA. This number is divided by five to represent the annual emissions for the paving sub-category through the five year construction period.

## 3.4 Operational Emissions

Operational emissions are divided into four categories. They are: non-aircraft mobile sources, stationary sources, and F-16 and C-21A aircraft emissions.

Mobile Sources

The mobile source category contains items such as non-aerospace ground equipment (AGE) mobile generators, mobile AGE, and on-base Government Owned Vehicles (GOVs). Each subcategory is expected to increase or scale up according to different factors due to the Proposed Action.

*Non-AGE mobile generators:* The non-AGE mobile generators category is expected to scale up based on the increase in total square footage of living and workspace.

*Mobile AGE:* Scaling the mobile AGE is based on the relative increase in total number of aircraft. Since AGE is used to support aircraft while they are on the ground, it is anticipated that the utilization of AGE would increase in proportion to the number of aircraft at Andrews.

*On-Base Government Owned Vehicles (GOV):* The estimated total base population of 20,000 (from traffic.pdf, 2006) was used to scale the emissions from GOV vehicles. It is believed that the number of government vehicles would increase in proportion to the increase of additional personnel on base.

Emissions were calculated based on the 2002 Mobile Emissions Inventory for Andrews Air Force Base. Contained in that document were emissions for each air pollutant. To determine the total increase of emissions in pounds per year, the scaling factor for each category was multiplied by the emission per category. These were then totaled and converted into tons per year.

Non-road vehicles, included in the 2002 Mobile Emissions Inventory, were investigated to determine if any of the equipment in this category would be expected to increase as a result of the BRAC activities. This category includes machines like lawnmowers, backhoes, forklifts, and other miscellaneous facility maintenance equipment. It is believed that this category would not scale up, mainly because they are used to support infrastructure (landscaping/golf course) that is not going to change as a result of BRAC.

Stationary Sources

Stationary sources include heating equipment, emergency generators, fuel storage and dispensing, paint spray booths and blasting operations. These sources are expected to increase according to the increase of base square footage.

C-21A's

To establish the emission factors for the departing C-21A's, several pieces of data needed to be complied. First, the 2002 Mobile Emissions Inventory was used to determine fuel flow rates and emission factors. The emission factors were then converted to pounds of pollutant per hour per engine. The emission factors were then multiplied by two, to account for the fact that the C-21 has two engines. The Mobile Emissions Inventory was used to determine the aircraft's time in each operation: landings and takeoffs (LTOs), touch and goes (T&G), low altitude flyovers (LA), and trim and power checks (TPC). The breakdown of time for how long a plane is in each power setting per operation multiplied by the fuel flow rates and the emission factors (in pounds of pollutant per thousand pounds of fuel) to estimate the emissions for the operation. The emissions were then multiplied by the number of operations per year, which resulted in the total tons of air pollutant per year.

It should be noted that the C-21A's based at Andrews included two engine types, the TFE731-2/2A and TFE731-2/2B. Each engine has the same emission factors, but conducts different amounts of operations per year Therefore the number of C-21A operations per year is the sum of the individual operations conducted per engine. The total C-21A operations per year are multiplied by the emissions per operation, and the result is the total emission for each pollutant.

No PM emission factors exist for the TFE731 engine. In order to estimate the PM emissions, it is assumed that the emission factor for the TFE731 will be the same as that for the JT15D-5B. The JT15D-5B was used because it is a similar size engine for which data is available. It was assumed that all particulates are less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$).

F-16's

The calculation of emissions for the F-16's follows the same procedure as the C-21A's. The emission factors and fuel rates were obtained from the 2002 Mobile Emissions Inventory, as well as the time in operation numbers. The only difference is that the F-16 is a single engine aircraft, while the C-21A is a two engine aircraft.

The Primary Authorized Aircraft (PAA) and Total Sorties document, as well as the DOPAA report stated there would be an increase of nine F-16's. Three of the nine F-16's would remain inactive and serve as backup and not be flown. Therefore, only six F-16's were used for emission calculations. There are several engine types that the F-16 can accommodate; the one used in the emission calculations is the GE F110 (2002 Mobile Emissions Inventory). It is assumed that the new F-16s would also be equipped with F110 engines.

## 3.5 Indirect Emissions

Indirect emissions are broken down into two distinct categories, off-base commuting and on-base commuting. It is believed that there are no other indirect emissions that need to be considered,

and it is assumed that there would be no increase in non-employee round-trips to the base as a result of the 2,700 new direct employees. It is not expected that there would be a significant increase of electricity demand at the base, so emissions from power plants are not included in this analysis.

The emission factor for both off-base and on-base commuting was calculated for the 2009 project year using the version of MOBILE6.2 contained in EDMS 4.4 using the default model year and vehicle type distribution. The average commuting speed for off-base commuting was assumed to be 40 miles per hour taken from the *Call for Projects for the 2006 Constrained Long-Range Transportation Plan (CLRP) and Fiscal Year 2007-2012 Transportation Improvement Program (TIP) DRAFT*, from December 12, 2005. The assumed average speed for on-base commuting was 20 miles per hour as was used in the 2002 Mobile Source Inventory. This appears to be consistent with the base speed limit of 25 miles per hour. It is assumed that 10 percent of the new commuters would use public transit or carpool. This is the same assumption that was used in the 2002 Mobile Source Emissions Inventory.

Off-Base Commuting

Off-Base Commuting includes the miles traveled and emissions produced for commuting to the base round trip. The most recent transportation conformity analysis did not include BRAC actions so these emissions need to be considered here under General Conformity. The estimated average commuting distance is calculated by dividing the estimated increase in the entire Washington Metropolitan Area as a result of BRAC by the estimated increase in trips resulting from BRAC. Before the various BRAC actions were finalized the Metropolitan Washington Council of Governments (COG), Department of Transportation Planning Board (TPB), performed a rough analysis of the decrease in mass transit trips and increase in vehicle miles traveled and personal vehicle commuting trips (COG/TPB 2005). The numbers from this report were used to estimate the average mileage traveling to the base.

On-Base Commuting

On-Base commuting details the emissions produced from the miles traveled on base. A similar method is used in calculating the emission for on-base commuting. The 2002 Mobile Emissions Inventory provided the average on-base round distance trip of five miles. This was used in place of commuting distance in the on-base calculations. The rest of the calculations follow exactly the same as the off-base commuting.

## 3.6 Summary of Emissions Increases

Table 3-1 shows the estimated emission increases for all air pollutants due to the BRAC activities.

## Table 3-1. Emissions Estimate for BRAC Activities at Andrews Air Force Base

| | | Emissions Increase (tons) | | | | |
|---|---|---|---|---|---|---|
| | | **CO** | **VOC** | **$NO_x$** | **$SO_x$** | **$PM_{2.5}$** |
| Construction Emissions | Construction | 10.3 | 3.2 | 47.2 | 0.0 | 3.3 |
| | Demolition | 0.8 | 0.1 | 0.7 | 0.0 | 0.3 |
| | Pavement | 0.9 | 0.2 | 2.4 | 0.2 | 0.2 |
| | **Total**[3] | **12.0** | **3.5** | **50.4** | **0.2** | **3.8** |
| Operational Emissions | Non-Aircraft Mobile Sources | 7.8 | 0.8 | 3.8 | 0.1 | 0.1 |
| | Stationary Sources | 1.2 | 0.3 | 1.2 | 0.4 | 0.1 |
| | C-21A | -3.7 | -0.5 | -3.2 | -0.1 | 0.0 |
| | F-16 | 7.9 | 3.7 | 12.5 | 0.3 | 0.0 |
| | **Total**[3] | **13.2** | **4.3** | **14.3** | **0.7** | **0.2** |
| Indirect Emissions | Off-Base Commuting[1] | 20.1 | 1.5 | 2.4 | 0.0 | 0.052 |
| | On-Base Commuting[2] | 38.4 | 3.3 | 4.7 | 0.0 | 0.094 |
| | **Total**[3] | **58.5** | **4.8** | **7.2** | **0.0** | **0.1** |
| **Cumulative Emissions**[3] | | **83.7** | **12.6** | **71.8** | **1.0** | **4.2** |
| | | **De Minimis Levels (tons/year)** | | | | |
| | | **CO** | **VOC** | **NOx** | **SOx** | **PM2.5** |
| | | **100** | **50** | **100** | **100** | **100** |

[1] Calculated for 40 mph
[2] Calculated for 20 mph
[3] The total of the sums might not equal the total shown due to rounding

# 4.0 Conformity Applicability Analysis

Table 3-1 also provides the identified de minimis levels for conformity, and shows that the projected annual emissions are below the de minimis thresholds for conformity with the Maryland SIP. Therefore, the Proposed Action is exempt from a conformity determination.

## 4.1 Regional Significance of the Emissions

Table 4-1 shows that the estimated emissions of these BRAC activities are less than ten percent of the regional emissions, as given in the Maryland SIP, and are therefore not regionally significant.

## 4.2 Conclusions

Emissions produced by activities under this BRAC action are below the de minimis threshold levels for all air pollutants and are therefore not subject to a conformity determination. In addition, the emissions are not regionally significant. Therefore this action meets the requirements of the General Conformity Regulations and no further action is required or recommended.

**Table 4-1. Estimated Annual Emissions for the Washington DC-MD-VA Metropolitan Nonattainment Area**

| | **Estimated Emissions (tons per year)** | | | | |
|---|---|---|---|---|---|
| Year | CO | VOC | $NO_x$ | $SO_x$ | $PM_{2.5}$ |
| 2002[3] | 1,145,861.96 | 160,769.88 | 204,482.88 | Not Available | Not Available |
| 2010 | Not Available | Not Available | Not Available | 288.81[5] | 932.82[4] |
| **10%** | **114,586.2** | **16,077.0** | **20,448.3** | **28.9** | **93.3** |
| **BRAC Emissions** | **83.7** | **12.6** | **71.8** | **1.0** | **4.2** |
| [3] Baseline 2002 emissions estimate submitted to EPA but not approved. Source: COG, 2006 | | | | | |
| [4]On road direct $PM_{2.5}$ emissions only. Source: Clifford, 2005 | | | | | |
| [5] Estimated based on emission factors from MOBILE6.2.03 contained in EDMS 4.4 for a 40 mph average speed and "general" vehicle mix. | | | | | |

# 5.0 References

2002 Mobile Emissions Inventory – Andrews Air Force Base 89 CES/CEVQ, Mobile Source Emissions Inventory, September 2005 (Revised).

Clifford 2005 – Clifford, Mike, Memorandum "PM2.5 Air Quality Conformity Report: Errata", 2 December 2005.

COG/TPB 2005 – Department of Human Services, Planning and Public Safety, Department of Transportation Planning, Metropolitan Washington Council of Governments , *COG/TPB Regional Analysis: Impacts on the U.S. Department of Defense (DoD), Base Realignment and Closure (BRAC) Recommendations For the Metropolitan Washington Region*, Draft 6 July 2005.

COG 2006 – District of Columbia Department of Health, Maryland Department of the Environment, Virginia Department of Environmental Quality and Metropolitan Washington Council of Governments, *2002 Base Year Emissions Inventory of Ozone Precursor Emissions for the Washington DC-MD-VA Ozone Nonattainment Area*, 15 June 2006.

Description of Proposed Action and Alternatives (DOPAA), 2006 for FY07-11 BRAC Construction Requirements at Andrews Air Force Base, Maryland.

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Jagielski, K. and O'Brien, J. 1994 – Calculations Methods for Criteria Air Pollution Emission Inventories, USAF, Armstrong Laboratory, AL/OE-TR-1994-0049. Brooks AFB.

National Capital Region Transportation Planning Board (TPB), Call for Projects for the 2006 Constrained Long-Range Transportation Plan (CLRP) and Fiscal Year 2007-2012 Transportation Improvement Program (TIP) Draft, 12 December 2005.

South Coast Air Quality Management District (SCAQMD), 1993, California Environmental Quality Act Air Quality Handbook. 21865 E. Copley Drive, Diamond Bar, CA 91765.

# APPENDIX A CONFORMITY ANALYSIS SPREADSHEETS

**2006 Air Conformity Analysis for Andrews AFB**
**Total Emissions Summary**

| De Minimis Levels (tons/year) | | | | | |
|---|---|---|---|---|---|
| **CO** | **VOC** | **NOx** | **SOx** | **PM10** | **PM2.5** |
| **100** | **50** | **100** | **100** | | **100** |

| | | Emissions Increase (tons) | | | | | |
|---|---|---|---|---|---|---|---|
| | | **CO** | **VOC** | **NOx** | **SOx** | **PM10** | **PM2.5** |
| **Construction Emissions** | Construction | 10.3 | 3.2 | 47.2 | 0.0 | 3.4 | 3.353 |
| | Demolition | 0.8 | 0.1 | 0.7 | 0.0 | 0.3 | 0.285 |
| | Pavement | 0.9 | 0.2 | 2.4 | 0.2 | 0.2 | 0.158 |
| | **Total[3]** | **12.0** | **3.5** | **50.4** | **0.2** | **3.8** | **3.8** |
| **Operational Emissions** | Mobile Sources (not aircraft) | 7.8 | 0.8 | 3.8 | 0.1 | 0.2 | 0.1 |
| | Stationary Source | 1.2 | 0.3 | 1.2 | 0.4 | 0.1 | 0.1 |
| | C-21A | -3.7 | -0.5 | -3.2 | -0.1 | -1.0 | 0.0 |
| | F-16 | 7.9 | 3.7 | 12.5 | 0.3 | 1.5 | 0.0 |
| | **Total[3]** | **13.2** | **4.3** | **14.3** | **0.7** | **0.8** | **0.2** |
| **Indirect Emissions** | Off-Base Commuting[1] | 20.1 | 1.5 | 2.42 | 0.0 | 0.1 | 0.052 |
| | On-Base Commuting[2] | 38.4 | 3.3 | 4.74 | 0.0 | 0.1 | 0.094 |
| | **Total[3]** | **58.5** | **4.8** | **7.2** | **0.0** | **0.2** | **0.1** |
| Cumulative Emissions | | **83.7** | **12.6** | **71.8** | **1.0** | **4.8** | **4.2** |

[1] Calculated for 40 mph

[2] Calculated for 20 mph

[3] Totals might not equal the sums due to rounding.

**2006 Air Conformity Analysis for Andrews AFB**
**Building Construction Emissions**

| Building Construction[1] | | |
|---|---|---|
| **Construction Project No.** | **Project Title** | **Area ($ft^2$)** |
| AJXF059128 | Add to and alter Aerial Port. | 7,100 |
| AJXF103002, AJXF103003B, AJXF103004B | Construct Administrative Facility. Demo Bldg 1535 and associated parking. Construct parking facility. | 402,262 |
| AJXF059145, AJXF069112 | HQ Air National Guard and Readiness Addi | 170,318 |
| | **Total** | 579,680 |

| Emission Factors (lbs/const period/1000 $ft^2$ GFA) | | | | | |
|---|---|---|---|---|---|
| Land Use[2] | CO | VOC | NOx | SO2 | PM10 |
| Government Office Complex | 177.2 | 55.4 | 814.7 | 0.0 | 57.9 |
| **Total Emissions (tons/year)[3]** | **10.3** | **3.2** | **47.2** | **0.0** | **3.4** |

[1] From Description of Proposed Action and Alternatives (DOPAA) for FY-07-11 BRAC Construction Requirements at Andrews Air Force Base, Maryland, August 2006, Page 2-3.

[2] SCAQMD, 1993, Table 9-1, page 9/19

[3] Total emissions divided over a 5 year period

GFA = Gross Floor Area

**2006 Air Conformity Analysis for Andrews AFB**
**Demolition Emissions**

| Demolition | | | | |
|---|---|---|---|---|
| **Demolition Project** | | **Area (sq ft)** | **Height (ft)** | **Cubic Feet** |
| AJXF103004 | Buildings | 206,448 | 20 | 4,128,960 |
| | Pavement | 0 | 0.5 | 0 |
| | | | **Total Demolition** | 4,128,960 |

Demolition Emission Factor[1] 0.00042 lb PM10/cubic foot

| | PM10 |
|---|---|
| Emissions (lb) | 1734 |
| Emissions (tons) | 0.9 |

| | |
|---|---|
| Total volume to be removed ($ft^3$) | 4,128,960 |
| Total volume to be removed ($yd^3$) | 152,924 |
| Volume per truckload ($yd^3$/truckload) | 10 |
| Number of truckloads (truckloads) | 15,292 |
| Round trip mileage (miles/load) | 20 |
| Miles traveled (miles) | 305,849 |

| | CO (g/mi) | VOC (g/mi) | Nox (g/mi) | Sox (g/mi) | PM (g/mi) |
|---|---|---|---|---|---|
| Dump truck emission factors[2] | 11.22 | 2.16 | 10.81 | 0.09 | 1.65 |
| Emissions (grams) | 3,431,625 | 660,634 | 3,306,226 | 27,001 | 505,262 |
| Emissions (tons) | 3.78 | 0.73 | 3.64 | 0.03 | 0.56 |

| Total emissions for demolition and hauling (tons/year)[3] | | | | |
|---|---|---|---|---|
| CO | VOC | NOx | SOx | PM |
| 0.8 | 0.1 | 0.7 | 0.0 | 0.3 |

[1] SCAQMD, 1993, Table 9-2, page 9-20.

[2] HDDV emission factors from Jagielski, K. and O'Brien, J. 1994. *Calculations Methods for Criteria Air Pollution Emission Inventories*, USAF, Armstrong Laboratory, AL/OE-TR-1994-0049. Brooks AFB.

[3] Emissions divided by factor of 5 to represent output per year

**2006 Air Conformity Analysis for Andrews AFB**
**New Pavement Emissions**

| Pavement Project | Project Title | Pavement Area ($ft^2$) |
|---|---|---|
| AJXP071503 | Repair Navy ramp for 113 WG F-16 aircraft | **92,565** |
| AJXP071504 | Construct 113 WG POV parking | **101,718** |
| AJXF059128 | Add to and alter Aerial Port. | **7,201** |
| No ACES Project Number | Install heliport near the main medical facility for emergency patient transport. | **10,000** |
| AJXF103002, AJXF103003B, AJXF103004B | Construct Administrative Facility. Demo Bldg 1535 and associated parking. Construct parking facility. | **552,052** |
| AJXF059145, AJXF069112 | HQ Air National Guard and Readiness Addition | **164,687** |
| AJXF071502 | Construct POV Lane at Pearl Harbor Gate | **8,611** |
| | **Total** | **936,834** |

| | |
|---|---|
| Paving Rate ($ft^2$/day) | 2,000 |
| Duration of paving activity (days) | 468.42 |

**Dump Truck to Import Paving Materials**

| | | |
|---|---|---|
| Pavement volume ($ft^3$) | 519,699.5 | |
| Pavement volume ($yd^3$) | 57,744.4 | |
| Miles per round trip | 20.0 | Estimated |
| Size of truckload ($yd^3$) | 15.0 | Typical size of dump truck |
| Total trips | 3,849.6 | (concrete volume) / (volume/t |
| Total miles | 76,992.5 | (trips) x (miles/trip) |

| Emissions Factor (g/mi) | | | | | |
|---|---|---|---|---|---|
| **Vehicle Type[2]** | **CO** | **VOC** | **NOx** | **SOx** | **PM** |
| HDDV | 11.22 | 2.16 | 10.81 | 0.09 | 1.65 |

| Emissions (tons/year) | | | | | |
|---|---|---|---|---|---|
| **Vehicle Type[2]** | **CO** | **VOC** | **NOx** | **SOx** | **PM** |
| HDDV | 1.0 | 0.2 | 0.9 | 0.0 | 0.1 |

**2006 Air Conformity Analysis for Andrews AFB**
**New Pavement Emissions**

**Paving Equipment Emissions**

| Emission Factor (lb/hour) | | | | | |
|---|---|---|---|---|---|
| **Emission Factor Reference[3]** | **CO** | **VOC** | **NOx** | **SOx** | **PM10** |
| SCAQMD-Misc Diesel | 0.675 | 0.15 | 1.7 | 0.143 | 0.14 |
| Roller | 0.300 | 0.065 | 0.870 | 0.067 | 0.050 |
| Concrete Paver -Diesel | 0.806 | 0.161 | 1.773 | 0.161 | 0.081 |
| Asphalt Paver - Diesel | 0.376 | 0.054 | 1.235 | 0.107 | 0.054 |

| Equipment | Number of Equipment | Hours per Day | Hours per Construction |
|---|---|---|---|
| Bulldozers | 1 | 8 | 3747.3 |
| Roller | 2 | 8 | 7494.7 |
| Asphalt Paver - Diesel | 2 | 8 | 7494.7 |

| Emissions (lb/construction period) | | | | | |
|---|---|---|---|---|---|
| **Emission Factor Reference[3]** | **CO** | **VOC** | **NOx** | **SOx** | **PM10** |
| SCAQMD-Misc Diesel | 2529 | 562 | 6370 | 536 | 525 |
| Roller | 2248 | 487 | 6520 | 502 | 375 |
| Asphalt Paver - Diesel | 2817 | 402 | 9255 | 805 | 402 |
| **Total** | **7595** | **1452** | **22146** | **1843** | **1302** |
| **Total (tons)** | **3.8** | **0.7** | **11.1** | **0.9** | **0.7** |

| | Emissions (tons/year)[4] | | | | |
|---|---|---|---|---|---|
| | **CO** | **VOC** | **NOx** | **SOx** | **PM** |
| **Total Emissions** | 0.9 | 0.2 | 2.4 | 0.2 | 0.2 |

[1] Obtained from the DOPAA Info Sheet (August, 2006)

[2] HDDV emission factors from Jagielski, K. and O'Brien, J. 1994. *Calculations Methods for Criteria Air Pollution Emission Inventories*, USAF, Armstrong Laboratory, AL/OE-TR-1994-0049. Brooks AFB.

[3] SCAQMD 1993. South Coast Air Quality Management District. CEQA Air Quality Handbook

[4] Emissions divided by factor of 5 to represent output per year

**2006 Air Conformity Analysis for Andrews AFB**
**Mobile Source Emissions**

| Description | | Scaling Factor | | | Emissions (lb/yr)[1] | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Current number | BRAC increase | % Increase | CO | VOC | NOx | SO2 | PM10 | PM2.5 |
| Mobile Generators (non-AGE)[2] | Building area | 7,494,139 | 579,680 | 8% | 2,596 | 977 | 12,048 | 797 | 855 | 855 |
| Mobile AGE | Total number of aircraft[3] | 112 | 4 | 4% | 6,235 | 2,755 | 16,863 | 1,353 | 807 | 807 |
| On Base GOV Vehicles[4] | Employment increase | 20,000 | 2,700 | 14% | 111,966 | 9,980 | 44,896 | 1,105 | 1,703 | 1,458 |
| | | | | **Non-Aircraft Total (lb/yr)** | **15,539** | **1,521** | **7,595** | **259** | **325** | **292** |
| | | | | **Non-Aircraft Total (tons/yr)** | **7.77** | **0.76** | **3.80** | **0.13** | **0.16** | **0.15** |

[1] Emission totals obtained from pg.7 of the 2002 Mobile Emissions Inventory for Andrews AFB.pdf

[2] Non-AGE scaling factor based on the increase of square footage

[3] Nine F-16s are coming to the base. Three F-16s will remain inactive. Two C-21A's are leaving the base. The result is a net increase of four aircraft.

[4] On-base GOV vehicles scaling factor is based on the increase of base personnel. 20,000 estimated population from the Andrews AFB Comprehensive Traffic Study (4/06).

**2006 Air Conformity Analysis for Andrews AFB**
**Stationary Emission Sources**

| Source Type | Emissions (lb/yr) | | | | |
|---|---|---|---|---|---|
| | CO | VOC | NOx | SOx | PM10 |
| External Combustion | 28,816 | 1,890 | 23,044 | 9,338 | 2,506 |
| Gasoline Storage and Dispensing | 0 | 5,846 | 0 | 0 | 0 |
| Paint Spray Booths | 0 | 179 | 0 | 0 | 0 |
| Emergency Generators | 1,938 | 250 | 8,483 | 572 | 166 |
| **Total (lb/yr)** | **30,754** | **8,165** | **31,527** | **9,910** | **2,672** |
| **Total (tons/yr)** | **15.4** | **4.1** | **15.8** | **5.0** | **1.3** |

| | Current | Proposed |
|---|---|---|
| **Base Square Footage[1]** | 7,494,139 | 8,073,819 |

| | | | | | |
|---|---|---|---|---|---|
| **Emissions Increase (lb/yr)** | **1.2** | **0.3** | **1.2** | **0.4** | **0.1** |

[1] Base square footage provided by email from Donna Jackson, 9 August 2006. Increase of square footage calculated from DOPAA Sheet (11 April 2006)
Reference: CY2005 Emissions Statement.pdf

**2006 Air Conformity Analysis for Andrews AFB**
**Aircraft Emission Factors for F-16s**

| | |
|---|---|
| Aircraft | F-16 |
| Engine | GE110 |
| Engine Ref | 2002 Mobile Source Emissions Inventory, pg.148 Table 5-2 |
| # of eng | 1 |
| # Ref | http://www.af.mil/factsheets/factsheet.asp?fsID=103 |
| Fuel Rate Ref | 2002 Mobile Source Emissions Inventory, pg.148 Table 5-2 |
| CO | |
| VOC | |
| NOx | |
| SOx | |
| PM | |
| State | MD |
| Wt% S | 0.023 |
| Aircraft type | Combat USAF |
| Type Ref | http://www.af.mil/factsheets/factsheet.asp?fsID=103 |
| Time in mode | 2002 Mobile Emissions Inventory, Tables 5-2 through 5-5 |

| | Fuel | Emission Factors (lb/1000lbfuel/eng) | | | | |
|---|---|---|---|---|---|---|
| | (lb/hr/eng) | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
| Idle | 1044 | 24.08 | 1.02 | 5.19 | 0.46 | 3.64 |
| Approach | 4128 | 4 | 0.36 | 10.87 | 0.46 | 3.64 |
| Intermediate | 6598 | 2.2 | 0.19 | 18.25 | 0.46 | 1.46 |
| Military | 9974 | 2.05 | 0.62 | 30.4 | 0.46 | 1.22 |
| After Burner | 16374 | 97.5 | 69.33 | 15.6 | 0.46 | 1.22 |

| | Fuel | Emission Factors (lb/hr/eng) | | | | |
|---|---|---|---|---|---|---|
| | (lb/hr/eng) | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
| Idle | 1044 | 25.14 | 1.06 | 5.42 | 0.48 | 3.80 |
| Approach | 4128 | 16.51 | 1.49 | 44.87 | 1.90 | 15.03 |
| Intermediate | 6598 | 14.52 | 1.25 | 120.41 | 3.04 | 9.63 |
| Military | 9974 | 20.45 | 6.18 | 303.21 | 4.59 | 12.17 |
| After Burner | 16374 | 1596.47 | 1135.21 | 255.43 | 7.53 | 19.98 |

| | Fuel | Emission Factors (lb/hr) | | | | |
|---|---|---|---|---|---|---|
| | (lb/hr) | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
| Idle | 1044 | 25.14 | 1.06 | 5.42 | 0.48 | 3.80 |
| Approach | 4128 | 16.51 | 1.49 | 44.87 | 1.90 | 15.03 |
| Intermediate | 6598 | 14.52 | 1.25 | 120.41 | 3.04 | 9.63 |
| Military | 9974 | 20.45 | 6.18 | 303.21 | 4.59 | 12.17 |
| After Burner | 16374 | 1596.47 | 1135.21 | 255.43 | 7.53 | 19.98 |

**LTO (Landing & Take-Off Operations)**

| Mode | Time (hrs) | Power setting | Fuel (lb/hr) | Emission Factors (lb/hr) CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|---|---|
| Taxi/Idle-out | 0.15 | Idle | 1044 | 25.14 | 1.06 | 5.42 | 0.48 | 3.80 |
| Takeoff | 0.007 | After Burner | 16374 | 1596.47 | 1135.21 | 255.43 | 7.53 | 19.98 |
| Climbout | 0.112 | Intermediate | 6598 | 14.52 | 1.25 | 120.41 | 3.04 | 9.63 |
| Approach | 0.085 | Approach | 4128 | 16.51 | 1.49 | 44.87 | 1.90 | 15.03 |
| Military | 0.02 | Military | 9974 | 20.45 | 6.18 | 303.21 | 4.59 | 12.17 |

| | Fuel lb/LTO | Emission Factors (lb/LTO) | | | | |
|---|---|---|---|---|---|---|
| | | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
| LTO | 1561 | 18.38 | 8.50 | 25.97 | 0.72 | 3.31 |

**2006 Air Conformity Analysis for Andrews AFB**
**Aircraft Emission Factors for F-16s**

**T&G (Touch & Go Operations)**

| Mode | Time (hrs) | Power setting | Fuel (lb/hr) | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|---|---|
| | | | Emission Factors (lb/hr) | | | | | |
| Takeoff | 0.007 | After Burner | 16374 | 1596.47 | 1135.21 | 255.43 | 7.53 | 19.98 |
| Climbout | 0.02 | Military | 9974 | 20.45 | 6.18 | 303.21 | 4.59 | 12.17 |
| Approach | 0.112 | Intermediate | 6598 | 14.52 | 1.25 | 120.41 | 3.04 | 9.63 |

| | Fuel lb/TGO | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| | | Emission Factors (lb/TGO) | | | | |
| TGO | 1053 | 13.21 | 8.21 | 21.34 | 0.48 | 1.46 |

**LA (Low Approach Operations)**

| Mode | Time (hrs) | Power setting | Fuel (lb/hr) | CO | VOC | NOx | SOx | $PM_{2.5}$ |
|---|---|---|---|---|---|---|---|---|
| | | | | Emission Factors (lb/hr) | | | | |
| Climbout | 0.02 | Military | 9974 | 20.45 | 6.18 | 303.21 | 4.59 | 12.17 |
| Approach | 0.112 | Intermediate | 6598 | 14.52 | 1.25 | 120.41 | 3.04 | 9.63 |

| | Fuel lb/LA | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| | | Emission Factors (lb/LA) | | | | |
| Low Approach | 938 | 2.03 | 0.26 | 19.55 | 0.43 | 1.32 |

**TPC (Trim & Power Checks)**

| Mode | Time (hrs) | Power setting | Fuel (lb/hr) | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|---|---|
| | | | | Emission Factors (lb/hr) | | | | |
| | 0.15 | Idle | 1044 | 25.14 | 1.06 | 5.42 | 0.48 | 3.80 |
| | 0.085 | Approach | 4128 | 16.51 | 1.49 | 44.87 | 1.90 | 15.03 |

| | Fuel lb/TPC | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| | | Emission Factors (lb/TPC) | | | | |
| Trim & Power Check | 507 | 5.17 | 0.29 | 4.63 | 0.23 | 1.85 |

**Emission Calculations**

| # of aircraft | |
|---|---|
| Current | Proposed |
| 18 | 24 |

| | Operations/Year | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| | | Emissions (tons/year) | | | | |
| LTO | 2158 | 19.8 | 9.2 | 28.0 | 0.8 | 3.6 |
| TGO | 432 | 2.9 | 1.8 | 4.6 | 0.1 | 0.3 |
| LA | 432 | 0.4 | 0.1 | 4.2 | 0.1 | 0.3 |
| TP | 228 | 0.6 | 0.0 | 0.5 | 0.0 | 0.2 |
| TOTAL (tons/yr) | | 23.7 | 11.0 | 37.4 | 1.0 | 4.4 |
| Increase | | 7.9 | 3.7 | 12.5 | 0.3 | 1.5 |

**2006 Air Conformity Analysis for Andrews AFB**
**Aircraft Emission Factors for**
**C-21 Aircraft**

| | |
|---|---|
| Aircraft | C-21 |
| Engine | TFE731-2/2A |
| Engine Ref | 2002 Mobile Source Emissions Inventory, pg.148 Table 5-2 |
| # of eng | 2 |
| # Ref | http://www.af.mil/factsheets/factsheet.asp?id=88 |
| Fuel Rate Ref | 2002 Mobile Source Emissions Inventory, pg.148 Table 5-2 |
| CO | |
| VOC | |
| NOx | |
| SOx | |
| PM | PM for similar engine: JT15D-5B (per CF Webb, 7/16/2006). Assumed all PM2.5 |
| State | MD |
| Wt% S | 0.023 |
| Aircraft type | Transport-turbine, USAF general |
| Type Ref | http://www.af.mil/factsheets/factsheet.asp?id=88 |
| Time in mode | Mobile Emissions Inventory 2002.pdf |

| | Fuel (lb/hr/eng) | Emission Factors (lb/1000lbfuel/eng) | | | | |
|---|---|---|---|---|---|---|
| | | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
| Idle | 250 | 47.80 | 8.54 | 3.50 | 0.46 | 4.98 |
| Approach | 600 | 15.56 | 1.41 | 6.9 | 0.46 | 3.55 |
| Climb-Out | 1200 | 1.62 | 0.07 | 16.1 | 0.46 | 3.15 |
| Take-Off | 1750 | 1.13 | 0.06 | 19.2 | 0.46 | 2.52 |

| | Fuel (lb/hr/eng) | Emission Factors (lb/hr/eng) | | | | |
|---|---|---|---|---|---|---|
| | | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
| Idle | 250 | 11.95 | 2.14 | 0.88 | 0.12 | 1.25 |
| Approach | 600 | 9.34 | 0.85 | 4.14 | 0.28 | 2.13 |
| Climb-Out | 1200 | 1.94 | 0.08 | 19.32 | 0.55 | 3.78 |
| Take-Off | 1750 | 1.98 | 0.11 | 33.60 | 0.81 | 4.41 |

| | Fuel (lb/hr) | Emission Factors (lb/hr) | | | | |
|---|---|---|---|---|---|---|
| | | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
| Idle | 500 | 23.90 | 4.27 | 1.75 | 0.23 | 2.49 |
| Approach | 1200 | 18.67 | 1.69 | 8.28 | 0.55 | 4.26 |
| Climb-Out | 2400 | 3.89 | 0.17 | 38.64 | 1.10 | 7.56 |
| Take-Off | 3500 | 3.96 | 0.21 | 67.20 | 1.61 | 8.82 |

**LTO (Landing & Take-Off Operations)**

| Mode | Time (hrs) | Power setting | Fuel (lb/hr) | Emission Factors (lb/hr) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
| Taxi/Idle-out | 0.083 | Idle | 500 | 23.90 | 4.27 | 1.75 | 0.23 | 2.49 |
| Takeoff | 0.033 | Take-Off | 3500 | 3.96 | 0.21 | 67.20 | 1.61 | 8.82 |
| Climbout | 0.05 | Climb-out | 2400 | 3.89 | 0.17 | 38.64 | 1.10 | 7.56 |
| Approach | 0.167 | Approach | 1200 | 18.67 | 1.69 | 8.28 | 0.55 | 4.26 |
| Taxi/Idle-in | 0.083 | Idle | 500 | 23.90 | 4.27 | 1.75 | 0.23 | 2.49 |

| | Fuel lb/LTO | Emission Factors (lb/LTO) | | | | |
|---|---|---|---|---|---|---|
| | | CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
| LTO | 519 | 7.41 | 1.01 | 5.82 | 0.24 | 1.79 |

**2006 Air Conformity Analysis for Andrews AFB**
**Aircraft Emission Factors for**
**C-21 Aircraft**

**T&G (Touch & Go Operations)**

| Mode | Time (hrs) | Power setting | Fuel (lb/hr) | Emission Factors (lb/hr) CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|---|---|
| Takeoff | 0.033 | Take-Off | 3500 | 3.96 | 0.21 | 67.20 | 1.61 | 8.82 |
| Climbout | 0.05 | Climb-out | 2400 | 3.89 | 0.17 | 38.64 | 1.10 | 7.56 |
| Approach | 0.167 | Approach | 1200 | 18.67 | 1.69 | 8.28 | 0.55 | 4.26 |

| | Fuel lb/TGO | Emission Factors (lb/TGO) CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| TGO | 436 | 3.44 | 0.30 | 5.53 | 0.20 | 1.38 |

**LA (Low Approach Operations)**

| Mode | Time (hrs) | Power setting | Fuel (lb/hr) | Emission Factors (lb/hr) CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|---|---|
| Climbout | 0.05 | Climb-out | 2400 | 3.89 | 0.17 | 38.64 | 1.10 | 7.56 |
| Approach | 0.167 | Approach | 1200 | 18.67 | 1.69 | 8.28 | 0.55 | 4.26 |

| | Fuel lb/LA | Emission Factors (lb/LA) CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| Low Approach | 320 | 3.31 | 0.29 | 3.31 | 0.15 | 1.09 |

**TPC (Trim & Power Checks)**

| Mode | Time (hrs) | Power setting | Fuel (lb/hr) | Emission Factors (lb/hr) CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|---|---|
| | 0.167 | Approach | 1200 | 18.67 | 1.69 | 8.28 | 0.55 | 4.26 |
| | 0.083 | Idle | 500 | 23.90 | 4.27 | 1.75 | 0.23 | 2.49 |

| | Fuel lb/TPC | Emission Factors (lb/TPC) CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| Trim & Power Check | 242 | 5.10 | 0.64 | 1.53 | 0.11 | 0.92 |

**Emission Calculations**

| # of aircraft | |
|---|---|
| Current | Proposed |
| 11 | 9 |

| | Operations/Year | Emissions (tons/year) CO | VOC | NOx | $SO_2$ | $PM_{2.5}$ |
|---|---|---|---|---|---|---|
| LTO | 4623 | 17.1 | 2.3 | 13.5 | 0.6 | 4.1 |
| TGO | 1151 | 2.0 | 0.2 | 3.2 | 0.1 | 0.8 |
| LA | 491 | 0.8 | 0.1 | 0.8 | 0.0 | 0.3 |
| TP | 60 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| **TOTAL (tons/yr)** | | **20.1** | **2.6** | **17.5** | **0.7** | **5.2** |
| **Increase** | | **-3.7** | **-0.5** | **-3.2** | **-0.1** | **-1.0** |

**2006 Air Conformity Analysis for Andrews AFB**
**Commuting Emission Factors**

| POV Emission Factors[1] | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project Year | Miles per Hour (mph) | CO (g/mi) | VOC (g/mi) | Nox (g/mi) | Sox (g/mi) | PM10 (g/mi) | PM2.5 (g/mi) |
| 2009 | 40 | 10.91 | 0.80 | 1.31 | 0.01 | 0.04 | 0.03 |
| 2009 | 20 | 11.46 | 1.00 | 1.42 | 0.01 | 0.04 | 0.03 |

**AVR=Average vehicle ridership**
#RT/day = #empl/day*(%commuters/100)/AVR
#miles/yr = #miles/RT * RT/wk * wk/yı

| POV Commuting Data (off-base) | Proposed Action |
|---|---|
| BRAC VMT increase per day[2] | 73829 |
| BRAC Vehicle Trips increase per day[2] | 26790 |
| Commuting Distance (miles/RT) | 2.76 |
| Weekly Schedule (days/week) | 5 |
| Annual Schedule (weeks) | 50 |
| Percentage of commuters driving alone[4] | 90% |
| % employees living on-base | - |

| Off-Base Emission Calculation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Manpower | Daily Trips | Annual Miles | CO (tons) | VOC (tons) | NOx (tons) | SOx (tons) | PM10 (tons) | PM2.5 (tons) |
| Proposed Action | 2,700 | 2,430 | 1,674,174 | 20.1 | 1.5 | 2.4 | 0.0 | 0.1 | 0.1 |
| Increase | 2,700 | 2,430 | 1,674,174 | 20.1 | 1.5 | 2.4 | 0.0 | 0.1 | 0.1 |

| POV Commuting Data (on-base) | Proposed Action |
|---|---|
| Commuting Distance (mi/vehicle/day)[3] | 5 |
| Weekly schedule (days/week) | 5 |
| Annual schedule (weeks) | 50 |
| Percentage of commuters driving alone[4] | 90% |
| % employees living on-base | - |

| On-Base Emission Calculation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Manpower | Daily Trips | Annual Miles | CO (tons) | VOC (tons) | NOx (tons) | SOx (tons) | PM10 (tons) | PM2.5 (tons) |
| Proposed Action | 2,700 | 2,430 | 3,037,500 | 38.4 | 3.3 | 4.7 | 0.0 | 0.1 | 0.1 |
| Increase | 2,700 | 2,430 | 3,037,500 | 38.4 | 3.3 | 4.7 | 0.0 | 0.1 | 0.1 |

[1] Emission factors from EDMS 4.4 containing MOBILE6.2.03, based on "general mix" category

[2] From Department of Transportation Planning, Metropolitan Washington Council of Covernments (COG) COG/TPB Regional Analysis: Impacts of U.S. Department of Defences BRAC Recommendations for the Metropolitan Washington Region, Draft, July 6, 2005, 2010 estimates, p.25

[3] Table 3.2 Mobile Emissions Inventory 2002.pdf. Represents the average on-base round trip distance

[4] Carpooling and public transportation are not tracked at Andrews, but the percentage of people driving to base is assumed to be 90% (2002 Mobile Emissions Inventory p.48)

## 2006 Air Conformity Analysis for Andrews AFB
## Aug. 2006 DOPAA Actions

| | | | | New Construction | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Buildings | Pavement | | | | Surface | |
| | | | Year | Building Area | Pavement Area | Pavement Depth | Pavement Volume | Trenching | Total Area | Notes |
| Project # | Project Title | Project Description | | $FT^2$ | $FT^2$ | Feet | Cubic Feet | $FT^2$ | $FT^2$ | |
| AJXP071503 | Repair Navy ramp for 113 WG F-16 aircraft parking | Repair spalls and unsatisfactory slabs; reseal joints and cracks; re-stripe ramp; complete full depth repairs; and replace slabs as necessary. | | | 92,565 | 1.0 | 92,565 | | 92,565 | Assume "repair" of ramp will be about half of the total area. |
| AJXP071504 | Construct 113 WG POV parking | Construct POV parking lot for 248 spaces. | | | 101,718 | 0.5 | 50,859 | | 101,718 | |
| AJXF059128 | Add to and alter Aerial Port. | Construct addition to Bldg 1900 for Aerial Port. Includes renovating 500 SF of Bldg 1900 and the removal and replication of vehicle parking. | | 7,100 | 7,201 | 0.5 | 3,601 | | 14,301 | |
| No Aces Project Number | Install heliport near the main medical facility for emergency patient transport. | Construct a regulation size, limited use helicopter landing pad to expedite the evacuation of critical care patients from the medical center. | | | 10,000 | 1.0 | 10,000 | | 10,000 | |
| AJXF103002, AJXF103003B, AJXF103004B | Construct Administrative Facility. Demo Bldg 1535 and associated parking. Construct parking facility. | Construct a new headquarters administrative facility to house NCR personnel moving from leased space in Washington DC. | | 402,262 | 552,052 | 0.5 | 276,026 | | 954,314 | |
| AJXF059145, AJXF069112 | HQ Air National Guard and Readiness Addition | Construct addition to Bldg 3500 to accommodate ANG HQ that is being relocated from Arlington VA (JP1) to Andrews AFB. Relocate existing parking lot in the footprint of construction. Realign access road to base child care center and historic chapel. | | 170,318 | 164,687 | 0.5 | 82,344 | | 335,005 | |
| AJXF071502 | Construct POV Lane at Pearl Harbor Gate | Construct a single traffic lane (paving and widening with curbs and gutters) for POV traffic at the existing Pearl Harbor commercial gate to accommodate additional personnel to the east side of the Base. | | | 8,611 | 0.5 | 4,306 | | 8,611 | |
| No Aces Project Number | East Road Repair | | | | | | 0 | | 0 | |
| | **Totals** | | **Total** | **579,680** | **936,834** | | **519,700** | **0** | **1,516,514** | |
| | | | | | | | | | **34.8** | **acres** |

| | | | | Demolition | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Buildings | Parking | | | | | Notes |
| | Project Details | | | $FT^2$ | $FT^2$ | | | | | |
| AJXF103004 | HQ ANG Bldg. 3500 Addition | | | 206,448 | | | | | | |
| | | | | | | | | | | |
| | **Totals** | | | **206,448** | **0** | | | | | |

**2006 Air Conformity Analysis for Andrews AFB**
**Vehicle Emission Factors**

## Fleet Emission Factors

Jagielski, K. and O'Brien, J. 1994. *Calculations Methods for Criteria Air Pollution Emission Inventories* , USAF, Armstrong Laboratory, AL/OE-TR-1994-0049. Brooks AFB.
See below for sulfur calculations, which are based on %S in fuel, etc.

1990 Average model year.
High Altitude >4,000 ft.

| Vehicle Type | CO (g/mi) | VOC (g/mi) | NOx (g/mi) | SOx (g/mi) | PM (g/mi) | Reference (from Jagelski & O'Brien, 1994) |
|---|---|---|---|---|---|---|
| POV | 33.85 | 4.08 | 2.16 | 0.005 | 0.082 | (from Jagelski & O'Brien, privately-owned vehicles |
| LDGV | 27.27 | 1.9 | 1.5 | 0.005 | 0.022 | (from Jagelski & O'Brien, light-duty gasoline-fueled vehicles designed to transport 12 people or fewer |
| LDGT | 39.34 | 2.76 | 1.84 | 0.007 | 0.022 | (from Jagelski & O'Brien, light-duty gasoline-fueled trucks with GVW <= 8,500 lbs |
| HDGV | 93.95 | 4.03 | 4.01 | 0.011 | 0.102 | (from Jagelski & O'Brien, heavy-duty gasoline-fueled vehicles with GVW >8,500 lbs |
| LDDV | 2.07 | 0.78 | 1.45 | 0.038 | 0.2 | (from Jagelski & O'Brien, light-duty diesel-powered vehicles designed to transport 12 people or fewer |
| LDDT | 3.25 | 1.03 | 1.53 | 0.053 | 0.26 | (from Jagelski & O'Brien, light-duty diesel-powered trucks with GVW <= 8,500 lbs |
| HDDV | 20.26 | 5.6 | 18.53 | 0.088 | 1.652 | (from Jagelski & O'Brien, heavy-duty diesel-powered vehicles with GVW > 8,500 lbs |

1995 Average model year.
High Altitude >4,000 ft.

| Vehicle Type | CO (g/mi) | VOC (g/mi) | NOx (g/mi) | SOx (g/mi) | PM (g/mi) | Reference (from Jagelski & O'Brien, 1994) |
|---|---|---|---|---|---|---|
| POV | 20.6 | 2.82 | 1.67 | 0.005 | 0.078 | (from Jagelski & O'Brien, privately-owned vehicles |
| LDGV | 15.58 | 1.17 | 1.29 | 0.005 | 0.022 | (from Jagelski & O'Brien, light-duty gasoline-fueled vehicles designed to transport 12 people or fewer |
| LDGT | 23.87 | 1.8 | 1.58 | 0.007 | 0.022 | (from Jagelski & O'Brien, light-duty gasoline-fueled trucks with GVW <= 8,500 lbs |
| HDGV | 60.63 | 2.94 | 3.86 | 0.011 | 0.102 | (from Jagelski & O'Brien, heavy-duty gasoline-fueled vehicles with GVW >8,500 lbs |
| LDDV | 1.52 | 0.5 | 1.12 | 0.038 | 0.2 | (from Jagelski & O'Brien, light-duty diesel-powered vehicles designed to transport 12 people or fewer |
| LDDT | 2.61 | 0.73 | 1.21 | 0.053 | 0.26 | (from Jagelski & O'Brien, light-duty diesel-powered trucks with GVW <= 8,500 lbs |
| HDDV | 18.69 | 4.91 | 10.81 | 0.088 | 1.652 | (from Jagelski & O'Brien, heavy-duty diesel-powered vehicles with GVW > 8,500 lbs |

1990 Average model year.
Low Altitude <=4,000 ft.

| Vehicle Type | CO (g/mi) | VOC (g/mi) | NOx (g/mi) | SOx (g/mi) | PM (g/mi) | Reference (from Jagelski & O'Brien, 1994) |
|---|---|---|---|---|---|---|
| POV | 24.52 | 3.41 | 2.3 | 0.005 | 0.082 | (from Jagelski & O'Brien, privately-owned vehicles |
| LDGV | 20.36 | 1.71 | 1.61 | 0.005 | 0.022 | (from Jagelski & O'Brien, light-duty gasoline-fueled vehicles designed to transport 12 people or fewer |
| LDGT | 27.42 | 2.39 | 2.05 | 0.007 | 0.022 | (from Jagelski & O'Brien, light-duty gasoline-fueled trucks with GVW <= 8,500 lbs |
| HDGV | 59.83 | 3.27 | 5.81 | 0.011 | 0.102 | (from Jagelski & O'Brien, heavy-duty gasoline-fueled vehicles with GVW >8,500 lbs |
| LDDV | 1.56 | 0.6 | 1.45 | 0.038 | 0.2 | (from Jagelski & O'Brien, light-duty diesel-powered vehicles designed to transport 12 people or fewer |
| LDDT | 1.67 | 0.72 | 1.55 | 0.053 | 0.26 | (from Jagelski & O'Brien, light-duty diesel-powered trucks with GVW <= 8,500 lbs |
| HDDV | 12.29 | 2.51 | 18.53 | 0.088 | 1.652 | (from Jagelski & O'Brien, heavy-duty diesel-powered vehicles with GVW > 8,500 lbs |

1995 Average model year.
Low Altitude <=4,000 ft.

| Vehicle Type | CO (g/mi) | VOC (g/mi) | NOx (g/mi) | SOx (g/mi) | PM (g/mi) | Reference (from Jagelski & O'Brien, 1994) |
|---|---|---|---|---|---|---|
| POV | 16.58 | 2.47 | 1.64 | 0.005 | 0.078 | (from Jagelski & O'Brien, privately-owned vehicles |
| LDGV | 13.2 | 1.12 | 1.22 | 0.005 | 0.022 | (from Jagelski & O'Brien, light-duty gasoline-fueled vehicles designed to transport 12 people or fewer |
| LDGT | 18.49 | 1.63 | 1.63 | 0.007 | 0.022 | (from Jagelski & O'Brien, light-duty gasoline-fueled trucks with GVW <= 8,500 lbs |
| HDGV | 36.39 | 2.42 | 4.93 | 0.011 | 0.102 | (from Jagelski & O'Brien, heavy-duty gasoline-fueled vehicles with GVW >8,500 lbs |
| LDDV | 1.4 | 0.47 | 1.12 | 0.038 | 0.2 | (from Jagelski & O'Brien, light-duty diesel-powered vehicles designed to transport 12 people or fewer |
| LDDT | 1.52 | 0.6 | 1.21 | 0.053 | 0.26 | (from Jagelski & O'Brien, light-duty diesel-powered trucks with GVW <= 8,500 lbs |
| HDDV | 11.22 | 2.16 | 10.81 | 0.088 | 1.652 | (from Jagelski & O'Brien, heavy-duty diesel-powered vehicles with GVW > 8,500 lbs |

**SOx Emission Factors**

| S = sulfur content of fuel (S) | ppm | % | Fuel | Ref |
|---|---|---|---|---|
| | 80 | 0.008 | Gasoline | http://www.chevron.com/prodserv/fuels/bulletin/phase2rfg/char.shtml |
| | 500 | 0.05 | Diesel | http://www.chevron.com/prodserv/fuels/bulletin/diesel/L2_3_9_rf.htm |

| Typical Fuel Economy (X) | MPG | Diesel | | Gasol. | | http://www1.faa.gov/arp/app600/ileav/Technical_Report.doc |
|---|---|---|---|---|---|---|
| Heavy Duty Trucks | 6-8 | 6 | HDDV | 7.5 | HDGV | |
| Medium Duty Trucks | 10-14 | 10 | LDDT | 12.5 | LDGT | |
| Light Duty Trucks/Cars | 16-24 | 14 | LDDV | 17.5 | LDGV | |

**Density of fuel (D)**

| | | |
|---|---|---|
| Diesel | 7 | lb/gal |
| Gasoline | 7 | lb/gal |

**Emission Factor for SO2**
EF (g/mi) = (1 gal fuel/X miles) * (D lb fuel/1 gal fuel) * (453.6 g/lb) * (S g sulfur/1,000,000 g fuel) * (64.06 g SO2/32.06 g S)

| | SOx (g/mi) | |
|---|---|---|
| POV | 0.0048 | privately-owned vehicles |
| LDGV | 0.0048 | light-duty gasoline-fueled vehicles designed to transport 12 people or fewer |
| LDGT | 0.0068 | light-duty gasoline-fueled trucks with GVW <= 8,500 lbs |
| HDGV | 0.0113 | heavy-duty gasoline-fueled vehicles with GVW >8,500 lbs |
| LDDV | 0.0378 | light-duty diesel-powered vehicles designed to transport 12 people or fewer |
| LDDT | 0.053 | light-duty diesel-powered trucks with GVW <= 8,500 lbs |
| HDDV | 0.0883 | heavy-duty diesel-powered vehicles with GVW > 8,500 lbs |

**2006 Air Conformity Analysis for Andrews AFB**
**Table 9-1 Construction Emission Factors**

SCAQMD CEQA Air Quality Handbook, April 1993, Table 9-1, page 9/19
Includes on-site construction equipment and workers' travel

| Land Use | Unit of Measure | Emission Factors (lb/construction period) | | | | |
|---|---|---|---|---|---|---|
| | | VOC | CO | NOx | SO2 | PM10 |
| **RESIDENTIAL** | | | | | | |
| Single Family Housing | 1000 $ft^2$ GFA | 23.66 | 75.62 | 347.74 | No EF | 24.69 |
| Apartments | 1000 $ft^2$ GFA | 21.97 | 70.22 | 322.9 | No EF | 22.93 |
| Condominiums | 1000 $ft^2$ GFA | 21.3 | 68.06 | 312.97 | No EF | 22.22 |
| Mobile Homes | 1000 $ft^2$ GFA | 21.3 | 68.06 | 312.97 | No EF | 22.22 |
| **EDUCATIONAL** | | | | | | |
| Schools | 1000 $ft^2$ GFA | 46.99 | 150.16 | 690.52 | No EF | 49.03 |
| **COMMERCIAL** | | | | | | |
| Business Park | 1000 $ft^2$ GFA | 55.44 | 177.17 | 814.72 | No EF | 57.85 |
| Day Care Center | 1000 $ft^2$ GFA | 31.87 | 101.55 | 466.97 | No EF | 33.16 |
| Discount Store | 1000 $ft^2$ GFA | 31.78 | 101.55 | 466.97 | No EF | 33.16 |
| Fast Food | 1000 $ft^2$ GFA | 31.78 | 101.55 | 466.97 | No EF | 33.16 |
| vernment Office Complex | 1000 $ft^2$ GFA | 55.44 | 177.17 | 814.72 | No EF | 57.85 |
| Hardware Store | 1000 $ft^2$ GFA | 31.78 | 101.55 | 466.97 | No EF | 33.16 |
| Hotel | 1000 $ft^2$ GFA | 41.58 | 132.87 | 611.04 | No EF | 43.39 |
| Medical Office | 1000 $ft^2$ GFA | 55.44 | 177.17 | 814.72 | No EF | 57.85 |
| Motel | 1000 $ft^2$ GFA | 41.58 | 132.87 | 611.04 | No EF | 43.39 |
| Movie Theater | 1000 $ft^2$ GFA | 31.78 | 101.55 | 466.97 | No EF | 33.16 |
| Office | 1000 $ft^2$ GFA | 55.44 | 177.17 | 814.72 | No EF | 57.85 |
| Resort Hotel | 1000 $ft^2$ GFA | 41.58 | 132.87 | 611.04 | No EF | 43.39 |
| Restaurant | 1000 $ft^2$ GFA | 31.78 | 101.55 | 466.97 | No EF | 33.16 |
| Shopping Center | 1000 $ft^2$ GFA | 31.78 | 101.55 | 466.97 | No EF | 33.16 |
| Supermarket | 1000 $ft^2$ GFA | 31.78 | 101.55 | 466.97 | No EF | 33.16 |
| **INDUSTRIAL** | | | | | | |
| General Industrial | 1000 $ft^2$ GFA | 32.79 | 104.79 | 481.88 | No EF | 34.22 |

Notes:
E = Daily construction emissions = (GFA/1000 x EF) / days to construct
GFA = Gross Floor Area
No EF = No Emission Factor

## 2006 Air Conformity Analysis for Andrews AFB
## Table 9-2 Fugitive Dust Emission Factors

SCAQMD CEQA Air Quality Handbook, April 1993, Table 9-2, page 9-20

| Land Use | Unit of Measure | Emission Factors (lb/day) |
|---|---|---|
| | | Lbs of PM10 |
| **UNPAVED ROADS** | | |
| **Passenger Vehicles** | VMT | 5.56 |
| **Trucks** | VMT | 23 |
| **PAVED ROADS** | | |
| **Passenger Vehicles** | VMT | 0.33 |
| **Trucks** | VMT | 2 |
| **DEMOLITION** | Cubic Foot | 0.00042 |
| **GRADING** | Acres/Day | 55 |
| **ASBESTOS** | Cubic Foot | 0.00006 |

Notes:

The grading emission factor is lb/day per acre/day.
So one must must multiply the EF times acres/day to get emissions in lb/day.

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