DRAFT

ENVIRONMENTAL IMPACT STATEMENT
FOR
PROPOSED AIRCRAFT CONVERSION
OF THE
167th AIRLIFT WING

West Virginia Air National Guard
Eastern West Virginia Regional Airport
Martinsburg, West Virginia

January 2004

AIR NATIONAL GUARD
ENVIRONMENTAL DIVISION

How to Read This EIS

This environmental impact statement, or "EIS," addresses potential effects of a proposed aircraft conversion for the West Virginia Air National Guard. We have taken several steps to make the document easy to read while still providing an accurate analysis of the issues. We've shortened the text portion of the analysis, reduced the use of technical terms and abbreviations, and provided technical appendices and other supporting information.

<u>The guide below serves as a reference tool for you as you read this EIS.</u>

Overall Proposal

Summaries
Cover Sheet: 1-page summary
Executive summary (project overview & impact summaries)

Section 1 Purpose & Need
Why implement the proposed action?
Background information
EIS process

Section 2 Proposed Action & Alternatives
Proposed conversion activities
Alternatives and those eliminated from study

Existing Conditions

Section 3 describes existing conditions for environmental and human resources. The 15 numbered sections (1 for each resource) include details for each alternative location.

Physical & Natural Resources	*Human Resources*	
3.2 Air Quality	3.1 Airspace and Airfield Operations	3.11 Cultural Resources
3.6 Geological Resources	3.3 Noise	3.12 Socioeconomics
3.7 Water Resources	3.4 Land Use	3.13 Environmental Justice and Protection of Children
3.8 Biological Resources	3.5 Utilities and Infrastructure	3.14 Hazardous Materials and Waste
	3.9 Transportation and Circulation	3.15 Safety
	3.10 Visual Resources	3.16 Department of Transportation Section 4(f)

Impacts

Section 4 describes potential impacts of the proposed action and alternatives. Section numbering in Section 4 mirrors numbering in Section 3. For example, existing air quality is in Section 3.2 and impacts to air quality are in Section 4.2. Additional subjects addressed in Section 4 include Cumulative Impacts, Special Procedures and Mitigation Measures, Relationship between Short-term Use of the Environment and Long-term Productivity, Irreversible and Irretrievable Commitment of Resources, and Summary of Adverse Environmental Effects that Cannot be Avoided.

Section 4
Direct/indirect impacts for all resources
Each alternative is analyzed (including No-Action Alternative)

Supporting Sections

Contacts & References
5 - References
6 - Coordination with Other Government Agencies, Non-government Organizations, and the Public

Other Sections
7 - Glossary and Index
8 - Acronyms & Abbreviations
9 - List of Preparers

Appendices
A - Federal Register Notices
B - IICEP Coordination
C - General Coordination List (Public Scoping Meetings including transcripts)
D - Regulatory Setting
E - Alternative Development Plan
F - Discussion of Noise and Its Effects on Environment

<u>Frequently Asked Questions</u>

<u>Where can I find a certain topic?</u> Use the Table of Contents or Index in Section 7 to find it.

<u>What does an acronym (like "EIS") mean?</u> A list of acronyms is on the back of cover sheet.

<u>What does a word or term mean?</u> Definitions can be found in the Glossary in Section 7.

<u>How was my comment addressed?</u> See Appendix C.

<u>Who do I contact for more information?</u> Contact information is on the page iii, Cover Sheet.

PRIVACY ADVISORY

Public comments on this Draft Environmental Impact Statement (DEIS) are requested. Letters or other written or oral comments provided to the Air National Guard Environmental Planning Branch (ANG/CEVP) may be published in the Final EIS. As required by law, comments will be addressed in the Final EIS and made available to the public. Any personal information provided to ANG/CEVP will be used only to identify your intent to make a comment or to fulfill requests for copies of the Final EIS or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EIS. However, only the names of the individuals making comments and their specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EIS.

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ACRONYMS AND ABBREVIATIONS LIST

167 AW	167th Airlift Wing
AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
AFFF	aqueous film forming foam
AFI	Air Force Instruction
AGE	aerospace ground equipment
AGL	above ground level
AGR	Active Guard Reserve
AIP	Airport Improvement Program
ANG	Air National Guard
ANG/CEVP	Air National Guard Environmental Division
ANGH	Air National Guard Handbook
ANGRC	Air National Guard Readiness Center
AST	aboveground storage tank
ATC	air traffic control
AVGAS	aviation gasoline
BASH	Bird-Aircraft Strike Hazard
BCE	base civil engineer
BCPSSD	Berkeley County Public Service Sewer Department
bgs	below ground surface
BMP	Best Management Practice
BOQ	Bachelor Officers Quarters
BRL	building restriction line
CAA	Clean Air Act
CAAA	Clean Air Act Amendment
CAP	Central Accumulation Point
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfh	cubic feet per hour
CFR	Code of Federal Regulations
CO	carbon monoxide
dB	decibel
dBA	A-weighted decibel
DD	Decision Document
DEIS	Draft Environmental Impact Statement
DEP	Department of Environmental Protection
DME	Distance Measuring Equipment
DNL	day-night average sound level
DNR	Division of Natural Resources
DoD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
DZ	drop zone
EA	Environmental Assessment
EBS	Environmental Baseline Survey
EDMS	Emissions & Dispersion Modeling System
EDR	Environmental Data Resources, Inc.
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EWVRA	Eastern West Virginia Regional Airport
EWVRAA	Eastern West Virginia Regional Airport Authority
°F	degree Fahrenheit
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FICUN	Federal Interagency Committee on Urban Noise
FL	Flight Level
FONSI	finding of no significant impact
FY	fiscal year
GCA	ground control approach
GOV	government-owned vehicles
gpd	gallons per day
gpm	gallons per minute
HAP	hazardous air pollutant
HIRL	High Intensity Runway Lights
HUD	U.S. Department of Housing and Urban Development
hz	hertz
IFR	instrument flight rules
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
ILS	Instrument Landing System
INM	Integrated Noise Mode
IPA	Isopropyl alcohol
IR	instrument route
IRP	Installation Restoration Program
LA	low approach
LBP	lead-based paint
lf	linear foot
LOX	liquid oxygen
LQG	large quantity generator
LTO	landing and takeoff
mcf	million cubic feet
MEK	methyl ethyl ketone
MGD	million gallons per day
MIALS	Medium Intensity Approach Lighting System
MIRL	Medium Intensity Runway Lights
MOGAS	motor gasoline
MSDS	Material Safety Data Sheet
MSL	mean sea level
MTR	military training route
mw	megawatt
mwh	megawatt hour
NAAQS	National Ambient Air Quality Standards
NDI	Non-Destructive Inspection
NEPA	National Environmental Policy Act
NGB	National Guard Bureau
NLR	noise level reduction
NM	nautical mile
NOA	Notice of Availability
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
OFZ	object-free zone
OWS	oil/water separator
PA	Preliminary Assessment
PAI	Primary Aircraft Inventory
PAX	passenger terminal
PCB	polychlorinated biphenyl
POL	petroleum, oil, and lubricants
POV	privately owned vehicles
psi	pounds per square inch
PTE	potential-to-emit
QD	Quantity Distance
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
ROI	region of influence
RPZ	runway protection zone
SAP	Satellite Accumulation Point
SEL	sound exposure levels
sf	square feet
SHPO	State Historic Preservation Officer
SI	Site Investigation
SIP	State Implementation Plan
SKE	Station-Keeping Equipment
SO_2	sulfur dioxide
SPCC	Spill Prevention Control and Countermeasures
SQG	small quantity generator
SR	Slow Route
sy	square yard
T&G	touch and go
TCE	Trichloroethylene
TPH	Total Petroleum Hydrocarbon
tpy	tons per year
USACOE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
U.S.C.	U.S. Code
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
UTA	unit training assembly
VA	Veteran's Administration
VASI	Visual Approach Slope Indicator
VFR	visual flight rules
VOC	Volatile Organic Compound
VOR	Very High Frequency Omnidirectional Range
VORTAC	Very High Frequency Omnidirectional Range/Tactical Air Navigation
VR	visual route
WVDCH	West Virginia Department of Culture and History
WVDOT	West Virginia Department of Transportation

COVER SHEET

LEAD AGENCY: U.S. Air Force

COOPERATING AGENCIES: Federal Aviation Administration
Eastern West Virginia Regional Airport Authority
West Virginia Department of Transportation

TITLE OF PROPOSED ACTION: Conversion of the 167th Airlift Wing to the C-5 Aircraft

AFFECTED JURISDICTIONS: West Virginia

POINTS OF CONTACT:

Air National Guard Environmental Division
ANG/CEVP
3500 Fetchet Avenue
Andrews AFB, MD 20762-5157
(301) 836-8065

Environmental Manager
167th Airlift Wing
West Virginia Air National Guard
222 Sabre Jet Boulevard
Martinsburg, WV 25401-7704
(304) 262-5418

DOCUMENTATION DESIGNATION: Draft Environmental Impact Statement

ABSTRACT: This document provides an evaluation of the environmental consequences associated with the proposed action to convert the existing fleet of C-130H transport aircraft used by the 167th Airlift Wing of the West Virginia Air National Guard to the larger C-5 transport aircraft. If implemented, this action would result in construction of new aircraft hangars and related maintenance and training facilities, lengthening of the existing Runway 08/26, and closure of Runway 17/35. Due to differences in training requirements, stationing the C-5 aircraft at Martinsburg would significantly reduce the annual number of aircraft operations conducted by the 167th Airlift Wing. Analyses in this document address a range of issues, including differences in noise impacts between the C-130H and C-5 operations, adjacent land use, and socioeconomic impacts. Alternatives addressed include the Proposed Action, Relocation of Runway 17/35 Alternative, and the No-Action Alternative.

COMMENTS SHOULD BE ADDRESSED TO:

Program Manager, Martinsburg EIS
Environmental Division
ANG/CEVP
3500 Fetchet Avenue
Andrews AFB, MD 20762-5157

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

This Environmental Impact Statement (EIS) evaluates potential environmental impacts associated with a proposed aircraft conversion, mission change, and construction program at Eastern West Virginia Regional Airport (EWVRA) in Martinsburg, West Virginia. This EIS has been prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) Regulations on Implementing NEPA (40 Code of Federal Regulations [CFR] § 1500-1508), and Title 32, CFR Part 989 (32 CFR 989), *Environmental Impact Analysis Process* and with cooperation from the Federal Aviation Administration (FAA), West Virginia Department of Transportation (WVDOT), and Eastern West Virginia Regional Airport Authority (EWVRAA).

The purpose of the proposed aircraft conversion and related actions is to accommodate changes in the strategic military framework established by the Department of Defense (DoD). The Quadrennial Defense Review Report developed by the DoD determined a need for an increase in strategic airlift capability while decreasing tactical airlift assets. This action, proposed to be implemented at the 167th Airlift Wing (167 AW) of the West Virginia Air National Guard (ANG), would result in a conversion from C-130H to C-5 aircraft. An extensive construction program would be required to provide the unique mix of facilities and support capabilities associated with the C-5, the largest cargo aircraft in the DoD inventory. Ultimately, the unit would maintain and operate an inventory of 10 C-5 aircraft. In addition to new facilities and expanded airfield surfaces, the proposed aircraft and mission change would result in increased full- and part-time staffing levels associated with the 167 AW.

The Proposed Action consists of three primary components: 1) conversion from C-130H to C-5 aircraft; 2) acquisition of land via lease; and 3) construction of facilities on existing and acquired parcels. The proposed integration of 10 C-5 aircraft and subsequent decommission of 12 C-130H aircraft from the 167 AW would take place over a 5-year period. All C-130H aircraft would be returned to the Air Force for relocation to other units; these aircraft would replace older C-130 aircraft, resulting in a net decrease in the DoD's C-130 inventory. No dual aircraft operations would occur and there would be an approximate one-year period of limited military aircraft activity at EWVRA. Approximately 133 acres would be acquired from EWVRA to facilitate construction necessary to support the new aircraft and mission of the 167 AW. Among the most substantial proposed construction actions would be a new C-5 maintenance hangar, fuel cell dock, corrosion control dock, and expanded airfield pavements.

After considering a total of four alternative locations based on specific siting criteria, the only location that would fulfill the need and meet the siting criteria of the new C-5 mission was the EWVRA at Martinsburg, WV; therefore, no alternative locations to the 167 AW and EWVRA were evaluated. A total of six conceptual design alternatives were developed to accommodate long-range mission requirements associated with the beddown of a C-5 strategic airlift mission at EWVRA. The Proposed Action is the preferred design alternative that best fulfills the 167 AW design principles and is based on extensive coordination involving 167 AW personnel and interested parties, including local civil aviation pilots. However, in addition to the Proposed Action, the Relocation of Runway 17/35 Alternative, and the No-Action Alternative were considered.

The findings of this EIS indicate that implementation of the proposed aircraft and mission change would result in impacts to the local noise environment, land use patterns, and safety conditions (Table ES-1). It was determined that all other resource areas would either not be impacted or that anticipated impacts would be short-term, temporary, or otherwise negligible. The EIS also includes an analysis of cumulative impacts associated with other development activities recently completed or under consideration in the vicinity of the installation. Adjacent to the installation boundary, several single-family residences have been constructed in the last 5 years; further, several adjacent parcels have been earmarked for additional housing. Primarily due to high projected noise levels associated with C-5 operations, implementation of the proposed action could result in cumulative impacts with regard to land use compatibility in these areas.

Table ES-1. Summary of Environmental Impacts Associated with the Proposed Action and Alternatives

Resource	Proposed Action	Relocation of Runway 17/35 Alternative	No-Action Alternative
Key Facts	Runways Active: 1 167 AW Operations: 564 Residences within >65 dB noise contour: 85 Residences within RPZs: 10	Runways Active: 2 167 AW Operations: 564 Residences within >65 dB noise contour: 85 Residences within RPZs: 17	Runways Active: 3 167 AW Operations: 6,897 Residences within >65 dB noise contour: 23 Residences within RPZs: 34
Airspace and Airfield Operations	Impacts related to closure of crosswind Runway 17/35 would be offset by reduction in 167 AW and transient military operations on Runway 08/26. Also, Runway 08/26 would be lengthened and improved.	Airspace and Airfield Operations would be reduced based on a decrease in 167 AW and transient military operations. The relocation of Runway 17/35 would give general aviation aircraft a runway option for takeoff and landing.	Airspace and Airfield Operations would remain consistent to current activity. Use of Runways 17/35 and 08/26 would remain uninterrupted and no impacts would occur.
Air Quality	Berkeley County is in attainment for all NAAQS criteria pollutants. Impacts associated with dust generation would be short-term and temporary. Emissions from aircraft operations would decrease; however, emissions from facility operations would increase.	Berkeley County is in attainment for all NAAQS criteria pollutants. Impacts associated with dust generation would be short-term and temporary. Emissions from aircraft operations would decrease; however, emissions from facility operations would increase.	Berkeley County is in attainment for all NAAQS criteria pollutants and current 167 AW operations are within their emissions permit. Selection of the No-Actin Alternative would result in no change to air quality conditions associated with 167 AW.
Noise	Despite a decrease in operations, noise exposure in the airport vicinity (including residential areas) would increase. However, removal of an engine test cell would reduce noise levels adjacent to the cell and a reduction in total daily operations would reduce the frequency with which noise impacts are encountered.	Despite a decrease in operations, noise exposure in the airport vicinity (including residential areas) would increase. However, removal of an engine test cell would reduce noise levels adjacent to the cell and a reduction in total daily operations would reduce the frequency with which noise impacts are encountered.	Operations and noise exposure would remain consistent with the current mission of the 167 AW.
Land Use	Increased noise exposure would impact residential land use areas adjacent to EWVRA. There also would be increased incompatible land use specific to safety concerns; specifically, new locations of RPZs overlap existing residences.	Increased noise exposure would impact residential land use areas adjacent to EWVRA. There also would be increased incompatible land use specific to safety concerns; specifically, new locations of RPZs overlap existing residences.	Impacts to land use would remain consistent with the current 167 AW mission.
Utilities and Infrastructure	Utilities and Infrastructure would be upgraded throughout the installation. The increased demand for utilities would be met by new or upgraded systems and providers have sufficient capacity to accommodate forecast demand.	Utilities and Infrastructure would be upgraded throughout the installation. The increased demand for utilities would be met by new or upgraded systems and providers have sufficient capacity to accommodate forecast demand.	Utilities and Infrastructure would not be upgraded but would continue to accommodate current operations.

Table ES-1. Summary of Environmental Impacts Associated with the Proposed Action and Alternatives (continued)

Resource	Proposed Action	Relocation of Runway 17/35 Alternative	No-Action Alternative
Geological Resources	No sensitive or unique soil types occur at EWVRA. Management practices would be implemented to minimize erosion.	No sensitive or unique soil types occur at EWVRA. Management practices would be implemented to minimize erosion.	No sensitive or unique soil types occur at EWVRA; no impacts would occur.
Water Resources	The primary potential impact to local water resources would be the establishment of additional impervious surfaces, resulting in reduced groundwater recharge and increased overland flow. Upgrades to the unit's stormwater collection and drainage system would accommodate increased surface flows and reduced groundwater recharge would be negligible on a regional scale.	The primary potential impact to local water resources would be the establishment of additional impervious surfaces, resulting in reduced groundwater recharge and increased overland flow. Upgrades to the unit's stormwater collection and drainage system would accommodate increased surface flows and reduced groundwater recharge would be negligible on a regional scale.	Local water resources would not change form current conditions. No new impervious surfaces would be created and changes in the stormwater collection and drainage system would not occur.
Biological Resources	The wetland on the acquisition parcel is an artificially constructed pond that is less than 0.1 acre and exempt from regulation, while impacts to installation wetlands from infrastructure (utility) improvements are authorized by the Nationwide Permit No. 12, previously issued by the USACOE for purposes of Section 404 of the Clean Water Act, as published in the January 15, 2002 issue of the Federal Register (USACOE 2003). No Federal or state listed species would be impacted by implementation of the Proposed Action.	The wetland on the acquisition parcel is an artificially constructed pond that is less than 0.1 acre and exempt from regulation, while impacts to installation wetlands from infrastructure (utility) improvements are authorized by the Nationwide Permit No. 12, previously issued by the USACOE for purposes of Section 404 of the Clean Water Act, as published in the January 15, 2002 issue of the Federal Register (USACOE 2003). No Federal or state listed species would be impacted by implementation of the Proposed Action.	No wetlands or Federal or state listed species would be impacted under the No-Action Alternative.
Transportation and Circulation	Transportation systems on the installation would be improved with establishment of a new Main Gate and cross-installation roadway. Peak-hour congestion would increase on U.S. Highway 11 at the Main Gate but impacts would be short-term (i.e., approximately 2 hours per day) and minimized through establishment of turn lanes (traffic signal if necessary) into the Main Gate. Further, traffic that utilized residential area roads to access the installation would be reduced.	Transportation systems on the installation would be improved with establishment of a new Main Gate and cross-installation roadway. Peak-hour congestion would increase on U.S. Highway 11 at the Main Gate but impacts would be short-term (i.e., approximately 2 hours per day) and minimized through establishment of turn lanes (traffic signal if necessary) into the Main Gate. Further, traffic that utilized residential area roads to access the installation would be reduced.	Parking at the installation fails to meet minimum Air Force requirements (a ratio of 0.75 parking spaces to personnel). Therefore, current conditions should be addressed.

Table ES-1. Summary of Environmental Impacts Associated with the Proposed Action and Alternatives (continued)

Resource	Proposed Action	Relocation of Runway 17/35 Alternative	No-Action Alternative
Visual Resources	New facilities and activities at EWVRA would be consistent with military operations that have been taking place there for several decades. Further, although the C-5 aircraft is much larger than the C-130H, operations would be less frequent and would not involve extensive local (e.g., "racetrack") flight patterns typical of C-130H operations.	New facilities and activities at EWVRA would be consistent with military operations that have been taking place there for several decades. Further, although the C-5 aircraft is much larger than the C-130H, operations would be less frequent and would not involve extensive local (e.g., "racetrack") flight patterns typical of C-130H operations.	Facilities and activities would remain consistent with a military facility and airport.
Cultural Resources	Several structures and sites at EWVRA have been investigated in order to determine their sensitivity and/or potential eligibility for Federal protection. Based on these investigations and correspondence with the West Virginia SHPO, the Proposed Action is not expected to impact any sensitive Cultural Resources.	Several structures and sites at EWVRA have been investigated in order to determine their sensitivity and/or potential eligibility for Federal protection. Based on these investigations and correspondence with the West Virginia SHPO, the Proposed Action is not expected to impact any sensitive Cultural Resources.	No sensitive structures or sites at EWVRA are eligible for Federal protection.
Socioeconomics	Property values in the immediate area could be affected; however, beneficial impacts associated with the Proposed Action (e.g., increased staffing at the unit, corresponding secondary spending and construction) would provide an approximate 42 percent increase to regional economics.	Property values in the immediate area could be affected; however, beneficial impacts associated with the Proposed Action (e.g., increased staffing at the unit, corresponding secondary spending and construction) would provide an approximate 42 percent increase to regional economics.	Socioeconomic activities and attributes would not change from their current level.
Environmental Justice and Protection of Children	With regard to Protection of Children, exposure of children to increased noise levels has been determined by HUD to be a significant hearing loss risk factor; however, considering the magnitude of the proposed decrease in operations (from about 23 to 2 per day), the relatively low number of noise events would likely offset any potential adverse impact. With regard to Environmental Justice, no populations (low-income, minority, or otherwise) would be disproportionately adversely impacted.	With regard to Protection of Children, exposure of children to increased noise levels has been determined by HUD to be a significant hearing loss risk factor; however, considering the magnitude of the proposed decrease in operations (from about 23 to 2 per day), the relatively low number of noise events would likely offset any potential adverse impact. With regard to Environmental Justice, no populations (low-income, minority, or otherwise) would be disproportionately adversely impacted.	Current noise contours reflect that areas where children would be exposed to noise are within acceptable ranges. Currently, no low-income or minority populations are disproportionately adversely impacted.

Table ES-1. Summary of Environmental Impacts Associated with the Proposed Action and Alternatives (continued)

Resource	Proposed Action	Relocation of Runway 17/35 Alternative	No-Action Alternative
Hazardous Materials and Waste	No active IRP sites exist at the installation and changes to the unit's storage and use of hazardous materials and wastes would be addressed in their relevant Management Plans.	No active IRP sites exist at the installation and changes to the unit's storage and use of hazardous materials and wastes would be addressed in their relevant Management Plans.	No active IRP sites exist at the installation and hazardous materials and waste currently generated would not change.
Safety	With proposed runway extensions, existing RPZs would be shifted and would affect new areas that are currently developed for residential use. The FAA restricts the existence of private residences within RPZs (FAA 1996).	In addition to the proposed runway extensions establishing new RPZs over residential areas, relocation of Runway 17/35 and associated RPZs would also cover areas currently developed for residential use. The FAA restricts the existence of private residences within RPZs (FAA 1996).	Impacts to safety would remain consistent with the current 167 AW mission.
Department of Transportation Section 4(f)	No Department of Transportation Section 4(f) resources (public parks or recreation areas, wildlife or waterfowl refuges, and historical or archaeological resources) would be impacted through implementation of the Proposed Action.	No Department of Transportation Section 4(f) resources (public parks or recreation areas, wildlife or waterfowl refuges, and historical or archaeological resources) would be impacted through implementation of the Relocation of Runway 17/35 Alternative.	No Department of Transportation Section 4(f) resources exist at the installation or are impacted through the 167 AW's current mission.

TABLE OF CONTENTS

TABLE OF CONTENTS

Section **Page**

COVER SHEET iii

EXECUTIVE SUMMARY v

TABLE OF CONTENTS xi

LIST OF FIGURES xvii

LIST OF TABLES xviii

1 INTRODUCTION 1-1
1.1 COOPERATING AGENCIES 1-1
1.2 PURPOSE 1-1
1.3 NEED 1-2
1.4 LOCATION 1-2
1.5 CURRENT 167 AW OPERATIONS 1-6
1.6 ENVIRONMENTAL IMPACT ANALYSIS PROCESS 1-6
1.6.1 The NEPA Process 1-6
1.6.2 Scoping Process and Issues Identified 1-8
1.6.2.1 Process 1-8
1.6.2.2 Summary of Major Issues Identified 1-9
1.6.3 Interagency and Intergovernmental Coordination for Environmental Planning 1-9
1.7 STRUCTURE OF THIS EIS DOCUMENT 1-10

2 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES 2-1
2.1 INTRODUCTION 2-1
2.1.1 Local Setting 2-1
2.1.2 Siting Criteria 2-3
2.2 PROPOSED ACTION 2-3
2.2.1 Proposed Mission Changes 2-3
2.2.2 Proposed Aircraft Actions 2-5
2.2.3 Proposed Personnel Changes 2-6
2.2.4 Proposed Property Transaction 2-6
2.2.5 Proposed Construction 2-6
2.2.6 Proposed Circulation Improvements and Additions 2-8
2.2.7 Proposed Renovations 2-10
2.2.8 Proposed Facility Demolition 2-10
2.3 ALTERNATIVES TO THE PROPOSED ACTION 2-12
2.3.1 Alternatives Considered But Eliminated from Detailed Study 2-12
2.3.1.1 Selection of Another Location for the C-5 Conversion 2-12
2.3.1.2 Alternative Designs for the Proposed Construction at EWVRA 2-12
2.3.2 Relocation of Runway 17/35 Alternative 2-13
2.3.3 No-Action Alternative 2-13
2.4 SUMMARY OF FINDINGS AND COMPARISON OF ALTERNATIVES 2-15

TABLE OF CONTENTS (CONTINUED)

Section **Page**

3 AFFECTED ENVIRONMENT 3-1
3.1 AIRSPACE AND AIRFIELD OPERATIONS 3-1
3.1.1 Definition of Resource 3-1
3.1.2 Existing Conditions 3-2
3.1.2.1 Mission 3-2
3.1.2.2 Aircraft Inventory and Operations 3-2
3.1.2.3 Airspace Operations 3-2
3.1.2.4 Airfield Operations 3-6
3.2 AIR QUALITY 3-8
3.2.1 Definition of Resource 3-8
3.2.1.1 Criteria Pollutants 3-8
3.2.1.2 Clean Air Act Amendments 3-9
3.2.2 Existing Conditions 3-9
3.2.2.1 Climate 3-9
3.2.2.2 Local Air Quality 3-9
3.2.2.3 Emissions at the 167 AW Installation 3-10
3.3 NOISE 3-14
3.3.1 Definition of Resource 3-14
3.3.1.1 Land Use Guidelines 3-15
3.3.1.2 Ambient Noise 3-15
3.3.2 Existing Conditions 3-17
3.3.2.1 Regional Setting 3-17
3.3.2.2 Aircraft Flight Activity 3-17
3.3.2.3 Ground-Based Activity 3-20
3.4 LAND USE 3-21
3.4.1 Definition of Resource 3-21
3.4.2 Existing Conditions 3-21
3.4.2.1 Local Land Use 3-21
3.4.2.2 Land Use at the 167 AW Installation 3-23
3.5 UTILITIES AND INFRASTRUCTURE 3-27
3.5.1 Definition of Resource 3-27
3.5.2 Existing Conditions 3-27
3.5.2.1 Natural Gas 3-27
3.5.2.2 Electricity 3-27
3.5.2.3 Wastewater Treatment 3-28
3.5.2.4 Potable Water 3-28
3.5.2.5 Communications 3-28
3.5.2.6 Stormwater Collection 3-28
3.6 GEOLOGICAL RESOURCES 3-30
3.6.1 Definition of Resource 3-30
3.6.2 Existing Conditions 3-30
3.6.2.1 Regional Setting 3-30
3.6.2.2 Geological Resources at the 167 AW Installation 3-31
3.7 WATER RESOURCES 3-34
3.7.1 Definition of Resource 3-34
3.7.2 Existing Conditions 3-34
3.7.2.1 Regional Conditions 3-34
3.7.2.2 Water Resources at the 167 AW Installation 3-36

TABLE OF CONTENTS (CONTINUED)

Section **Page**

3.8 BIOLOGICAL RESOURCES 3-39
3.8.1 Definition of Resource 3-39
3.8.2 Existing Conditions 3-39
3.8.2.1 Regional Setting 3-39
3.8.2.2 Biological Resources at the 167 AW Installation 3-40
3.9 TRANSPORTATION AND CIRCULATION 3-45
3.9.1 Definition of Resource 3-45
3.9.2 Existing Conditions 3-45
3.9.2.1 Regional and Local Circulation 3-45
3.9.2.2 Circulation at the 167 AW Installation 3-45
3.9.2.3 Parking at the 167 AW Installation 3-48
3.10 VISUAL RESOURCES 3-49
3.10.1 Definition of Resource 3-49
3.10.2 Existing Conditions 3-49
3.10.2.1 Regional Visual Character 3-49
3.10.2.2 Visual Resources at the 167 AW Installation 3-49
3.11 CULTURAL RESOURCES 3-50
3.11.1 Definition of Resource 3-50
3.11.2 Existing Conditions 3-51
3.11.2.1 Regional History 3-51
3.11.2.2 Cultural Resources at EWVRA 3-51
3.11.2.3 Cultural Resources at the 167 AW Installation 3-51
3.12 SOCIOECONOMICS 3-53
3.12.1 Definition of Resource 3-53
3.12.2 Existing Conditions 3-53
3.12.2.1 Population 3-53
3.12.2.2 Job Growth and Unemployment 3-54
3.12.2.3 West Virginia ANG and the 167 AW 3-56
3.13 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN 3-59
3.13.1 Definition of Resource 3-59
3.13.2 Existing Conditions 3-59
3.13.2.1 Minority and Low-Income Populations 3-59
3.13.2.2 Protection of Children 3-61
3.14 HAZARDOUS MATERIALS AND WASTES 3-62
3.14.1 Definition of Resource 3-62
3.14.2 Existing Conditions 3-62
3.14.2.1 Hazardous Waste Generation and Storage 3-62
3.14.3 Storage Tanks 3-66
3.14.4 Installation Restoration Program 3-66
3.15 SAFETY 3-70
3.15.1 Definition of Resource 3-70
3.15.2 Existing Conditions 3-70
3.15.2.1 Aircraft Mishaps 3-70
3.15.2.2 Runway Protection Zones 3-70
3.15.2.3 Bird-Aircraft Strike Hazard 3-71
3.15.2.4 Explosives Safety 3-71
3.15.2.5 Security 3-74
3.16 DEPARTMENT OF TRANSPORTATION ACT SECTION 4(f) 3-75

TABLE OF CONTENTS (CONTINUED)

Section **Page**

3.16.1 Definition of Resource 3-75
3.16.2 Existing Conditions 3-76
3.16.2.1 Parks or Recreation Areas 3-76
3.16.2.2 Waterfowl or Wildlife Refuges 3-76
3.16.2.3 Historic Sites or Cultural Resources 3-76
3.16.2.4 Other Considerations 3-77

4 ENVIRONMENTAL CONSEQUENCES 4-1
4.1 AIRSPACE AND AIRFIELD OPERATIONS 4-1
4.1.1 Approach to Analysis 4-1
4.1.2 Impacts 4-2
4.1.2.1 Proposed Action 4-2
4.1.2.2 Relocation of Runway 17/35 Alternative 4-3
4.1.2.3 No-Action Alternative 4-3
4.2 AIR QUALITY 4-4
4.2.1 Approach to Analysis 4-4
4.2.2 Impacts 4-4
4.2.2.1 Proposed Action 4-4
4.2.2.2 Relocation of Runway 17/35 Alternative 4-7
4.2.2.3 No-Action Alternative 4-7
4.3 NOISE 4-8
4.3.1 Approach to Analysis 4-8
4.3.2 Impacts 4-8
4.3.2.1 Proposed Action 4-8
4.3.2.2 Relocation of Runway 17/35 Alternative 4-11
4.3.2.3 No-Action Alternative 4-11
4.4 LAND USE 4-15
4.4.1 Approach to Analysis 4-15
4.4.2 Impacts 4-15
4.4.2.1 Proposed Action 4-15
4.4.2.2 Relocation of Runway 17/35 Alternative 4-17
4.4.2.3 No-Action Alternative 4-17
4.5 UTILITIES AND INFRASTRUCTURE 4-18
4.5.1 Approach to Analysis 4-18
4.5.2 Impacts 4-18
4.5.2.1 Proposed Action 4-19
4.5.2.2 Relocation of Runway 17/35 Alternative 4-21
4.5.2.3 No-Action Alternative 4-21
4.6 GEOLOGICAL RESOURCES 4-22
4.6.1 Approach to Analysis 4-22
4.6.2 Impacts 4-22
4.6.2.1 Proposed Action 4-22
4.6.2.2 Relocation of Runway 17/35 Alternative 4-23
4.6.2.3 No-Action Alternative 4-24
4.7 WATER RESOURCES 4-25
4.7.1 Approach to Analysis 4-25
4.7.2 Impacts 4-25
4.7.2.1 Proposed Action 4-25

TABLE OF CONTENTS (CONTINUED)

Section **Page**

4.7.2.2 Relocation of Runway 17/35 Alternative....4-27
4.7.2.3 No-Action Alternative....4-27
4.8 BIOLOGICAL RESOURCES....4-28
4.8.1 Approach to Analysis....4-28
4.8.2 Impacts....4-28
4.8.2.1 Proposed Action....4-28
4.8.2.2 Relocation of Runway 17/35 Alternative....4-31
4.8.2.3 No-Action Alternative....4-31
4.9 TRANSPORTATION AND CIRCULATION....4-32
4.9.1 Approach to Analysis....4-32
4.9.2 Impacts....4-32
4.9.2.1 Proposed Action....4-32
4.9.2.2 Relocation of Runway 17/35 Alternative....4-35
4.9.2.3 No-Action Alternative....4-35
4.10 VISUAL RESOURCES....4-37
4.10.1 Approach to Analysis....4-37
4.10.2 Impacts....4-37
4.10.2.1 Proposed Action....4-37
4.10.2.2 Relocation of Runway 17/35 Alternative....4-37
4.10.2.3 No-Action Alternative....4-38
4.11 CULTURAL RESOURCES....4-39
4.11.1 Approach to Analysis....4-39
4.11.2 Impacts....4-39
4.11.2.1 Proposed Action....4-39
4.11.2.2 Relocation of Runway 17/35 Alternative....4-41
4.11.2.3 No-Action Alternative....4-41
4.12 SOCIOECONOMICS....4-42
4.12.1 Approach to Analysis....4-42
4.12.2 Impacts....4-42
4.12.2.1 Proposed Action....4-42
4.12.2.2 Relocation of Runway 17/35 Alternative....4-43
4.12.2.3 No-Action Alternative....4-43
4.13 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN....4-44
4.13.1 Approach to Analysis....4-44
4.13.2 Impacts....4-44
4.13.2.1 Proposed Action....4-44
4.13.2.2 Relocation of Runway 17/35 Alternative....4-45
4.13.2.3 No-Action Alternative....4-45
4.14 HAZARDOUS MATERIALS AND WASTES....4-46
4.14.1 Approach to Analysis....4-46
4.14.2 Impacts....4-46
4.14.2.1 Proposed Action....4-46
4.14.2.2 Relocation of Runway 17/35 Alternative....4-47
4.14.2.3 No-Action Alternative....4-47
4.15 SAFETY....4-49
4.15.1 Approach to Analysis....4-49
4.15.2 Impacts....4-49
4.15.2.1 Proposed Action....4-49

TABLE OF CONTENTS (CONTINUED)

Section **Page**

4.15.2.2 Relocation of Runway 17/35 Alternative....4-51
4.15.2.3 No-Action Alternative....4-53
4.16 DEPARTMENT OF TRANSPORTATION ACT SECTION 4(f)....4-54
4.16.1 Approach to Analysis....4-54
4.16.2 Impacts....4-54
4.16.2.1 Proposed Action....4-54
4.16.2.2 Relocation of Runway 17/35 Alternative....4-56
4.16.2.3 No-Action Alternative....4-56
4.17 CUMULATIVE IMPACTS....4-57
4.18 SPECIAL PROCEDURES AND MITIGATION MEASURES....4-58
4.19 RELATIONSHIP BETWEEN SHORT-TERM USE OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY....4-64
4.20 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES....4-65
4.21 SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED....4-66

5 REFERENCES....5-1

6 COORDINATION WITH OTHER GOVERNMENT AGENCIES, NON-GOVERNMENT ORGANIZATIONS, AND THE PUBLIC....6-1
6.1 SCOPING....6-1
6.2 PUBLIC COMMENT PERIOD ON THE DRAFT EIS....6-1
6.3 PUBLIC HEARINGS AND RESPONSES TO COMMENTS....6-2

7 GLOSSARY AND INDEX....7-1
7.1 GLOSSARY....7-1
7.2 INDEX....7-3

8 ACRONYMS AND ABBREVIATIONS....8-1

9 LIST OF PREPARERS....9-1
9.1 PREPARERS OF THE DEIS....9-1
9.2 REVIEWERS OF THE DEIS....9-2

APPENDICES

A FEDERAL REGISTER NOTICES....A-1
B IICEP COORDINATION....B-1
C GENERAL COORDINATION LIST....C-1
D REGULATORY SETTING....D-1
E ALTERNATIVE DEVELOPMENT PLAN....E-1
F DISCUSSION OF NOISE AND ITS EFFECTS ON THE ENVIRONMENT....F-1

LIST OF FIGURES

Number **Page**

1-1 Vicinity Map, Eastern West Virginia Regional Airport, Martinsburg, West Virginia 1-3
1-2 Eastern West Virginia Regional Airport (EWVRA) and the West Virginia Air National Guard 1-4
1-3 West Virginia Air National Guard Installation at Eastern West Virginia Regional Airport, Martinsburg, West Virginia 1-5
1-4 The EIS Process 1-7
2-1 Land Use in the Vicinity of Eastern West Virginia Regional Airport and the West Virginia Air National Guard 2-2
2-2 Proposed Acquisition Parcel and Construction Projects at the West Virginia Air National Guard Installation, Eastern West Virginia Regional Airport 2-4
2-3 Proposed Circulation Reconfiguration Projects at the West Virginia Air National Guard Installation, Eastern West Virginia Regional Airport 2-9
2-4 Proposed Demolition Projects at the West Virginia Air National Guard Installation, Eastern West Virginia Regional Airport 2-11
2-5 Alternative 1 Acquisition Parcel and Construction Projects at the West Virginia Air National Guard Installation, Eastern West Virginia Regional Airport 2-14
3-1 FAA Controlled Airspace Classifications 3-4
3-2 National Ambient Air Quality Standards and Measured Emission Levels, Berkeley County, West Virginia 3-11
3-3 Baseline DNL Contours, Eastern West Virginia Regional Airport/Shepherd Field 3-19
3-4 Land Use in the Vicinity of Eastern West Virginia Regional Airport and the West Virginia Air National Guard 3-22
3-5 Existing Land Use, West Virginia Air National Guard Installation, Eastern West Virginia Regional Airport 3-25
3-6 Surface Soils within the Existing Installation and Proposed Property Acquisition Parcel at Eastern West Virginia Regional Airport 3-32
3-7 Surface Water Resources in the Vicinity of Eastern West Virginia Regional Airport and the West Virginia Air National Guard 3-35
3-8 Surface Water within the Existing Installation and Proposed Acquisition Parcel at Eastern West Virginia Regional Airport 3-37
3-9 Wetlands within the Existing Installation and Proposed Acquisition Parcel at Eastern West Virginia Regional Airport 3-44
3-10 Regional Transportation Network in the Vicinity of Eastern West Virginia Regional Airport and the West Virginia Air National Guard 3-46
3-11 Local Transportation Network and Average Daily Traffic Volumes in the Vicinity of Eastern West Virginia Regional Airport 3-47
3-12 Unemployment Rates for Berkeley County, West Virginia, and United States (1990-2000) 3-55
3-13 Jobs by Industrial Sector Berkeley County (1990, 1995, and 2000) 3-57
3-14 Average Annual Earnings per Industrial Sector, Berkeley County (2000) in Thousands of Dollars 3-58
3-15 Environmental Justice Data 3-60
3-16 CAP and SAPs at the Existing Installation and Proposed Property Acquisition Parcel at Eastern West Virginia Regional Airport 3-67
3-17 Runway Protection Zones at Eastern West Virginia Regional Airport 3-72
3-18 Migratory Flyways over the United States 3-73

LIST OF FIGURES (CONTINUED)

Number **Page**

4-1 Proposed Action DNL Contours, Eastern West Virginia Regional Airport/ Shepherd Field 4-10
4-2 Relocation of Runway 17/35 Alternative DNL Contours, Eastern West Virginia Regional Airport/Shepherd Field 4-12
4-3 Comparison of Baseline, Proposed Action, and Relocation of Runway 17/35 DNL Contours, Eastern West Virginia Regional Airport/Shepherd Field....4-13
4-4 Surface Water Drainage Pattern Associated with the Proposed Action....4-26
4-5 Wetlands and Locations of Proposed Construction Projects at the 167 AW, West Virginia Air National Guard 4-29
4-6 Proposed Main Gate Entrance and U.S. Highway 11 Intersection 4-36
4-7 Runway Protection Zones Associated with the Proposed Action at the West Virginia Air National Guard Installation, Eastern West Virginia Regional Airport....4-50
4-8 Runway Protection Zones Associated with Relocation of Runway 17/35 Alternative at the West Virginia Air National Guard Installation, Eastern West Virginia Regional Airport 4-52

LIST OF TABLES

Number **Page**

1-1 Public Involvement Summary 1-9
2-1 Proposed, Relocation of Runway 17/35 Alternative, and No-Action Alternative Aircraft Actions....2-5
2-2 Summary of Proposed Construction at the 167 AW 2-7
2-3 Proposed Demolition 2-10
2-4 Summary of Environmental Impacts Associated with the Proposed Action and Alternatives....2-16
3-1 Summary of Actual and Potential Stationary and Mobile Source Air Emissions at the 167 AW Installation (2000)....3-10
3-2 Emissions from Aircraft Landings and Take Offs at the 167 AW (2000)....3-12
3-3 Emissions from Aircraft Touch and Go's at the 167 AW (2000)....3-13
3-4 Emissions from Aircraft Low Approaches at the 167 AW (2000) 3-13
3-5 Land-Use Compatibility with Yearly Day-Night Average Sound Levels 3-16
3-6 Estimated Land Area, Housing Units and Population within Noise Exposure Contours for the current operations at EWVRA....3-18
3-7 Land Use Summary at the EWVRA 3-23
3-8 West Virginia ANG Land Use Inventory 3-24
3-9 Special Status Plant and Animal Species of Berkeley County....3-41
3-10 Population Overview: 1970-2000 3-53
3-11 Berkeley County Employment by Industry (1980, 1990, and 2000)....3-54
3-12 Economic Indicators, Berkeley County, West Virginia, and United States, 1980, 1990, and 2000 (earnings in 2000 dollars) 3-55
3-13 Payroll Expenditures by Classification at 167 AW 3-58
3-14 Hazardous Waste Generation at the 167 AW 3-63
3-15 Hazardous Waste Storage Locations at the 167 AW 3-65
3-16 Summary of Storage Tanks at the 167 AW 3-68

LIST OF TABLES (CONTINUED)

Number **Page**

3-17 Summary of OWSs at the 167 AW....3-69
4-1 EDMS Estimate Emissions from C-5 and C-130H Aircraft Takeoffs and Landings at the 167 AW....4-6
4-2 Estimated Emissions Associated with Proposed Facilities....4-6
4-3 Comparison of SEL for the C-130H and C-5 Aircraft....4-9
4-4 Estimated Land Area, Housing Units and Population within Noise Exposure Contours for the Proposed Action at EWVRA....4-9
4-5 Estimated Land Area, Housing Units and Population within Noise Exposure Contours for the Relocation of Runway 17/35 Alternative at EWVRA....4-14
4-6 167 AW Annual Baseline and Projected Utility Usage and Capacity....4-18
4-7 Estimated Traffic and Parking Increase from 167 AW Personnel Associated with the Proposed Action....4-33
9-1 Preparers of the EIS....9-3

SECTION 1

INTRODUCTION

SECTION 1
INTRODUCTION

This Draft Environmental Impact Statement (DEIS) was prepared by the U.S. Air Force (USAF), with support from the West Virginia Air National Guard (ANG) and the Air National Guard Readiness Center, Environmental Division, in accordance with the National Environmental Policy Act (NEPA). The DEIS is intended to support the decision-making process relevant to the proposed conversion of military transport aircraft attached to the 167th Airlift Wing (167 AW) from the existing fleet of C-130H aircraft to the larger C-5 aircraft. It also addresses an associated construction/demolition program at the ANG installation at Martinsburg, West Virginia, and the Eastern West Virginia Regional Airport (EWVRA). To accommodate the conversion and construction/demolition program, a new installation entrance would be developed requiring an intersection redesign. This effort shall fulfill the requirements of NEPA, Council on Environmental Quality (CEQ) regulations, and other applicable Federal and State laws and environmental regulations.

1.1 COOPERATING AGENCIES

Cooperating agencies involved in scoping and development of the DEIS included the Federal Aviation Administration (FAA), West Virginia Department of Transportation (WVDOT), and Eastern West Virginia Regional Airport Authority (EWVRAA). Cooperating agencies are established through the request of the lead agency, or any other Federal agency which has jurisdiction by law. In addition, any other Federal agency which has special expertise with respect to any environmental issue that should be addressed in the statement may be a cooperating agency upon request of the lead agency. Further, an agency may request the lead agency to designate it a cooperating agency.

Per CEQ regulations, each cooperating agency shall: 1) participate in the NEPA process at the earliest possible time; 2) participate in the scoping process; 3) assume on request of the lead agency responsibility for developing information and preparing environmental analyses including portions of the EIS concerning issues with which the cooperating agency has special expertise; and, 4) make available staff support at the lead agency's request to enhance the latter's interdisciplinary capability. A cooperating agency may in response to a lead agency's request for assistance in preparing the EIS reply that other program commitments preclude any involvement or the degree of involvement requested in the action that is the subject of the EIS.

1.2 PURPOSE

The Department of Defense (DoD) 2001 Quadrennial Defense Review Report outlined key military defense changes intended to develop a new strategic framework to defend the nation and secure a viable peace while increasing strategic airlift capability of the U.S. military. The purpose of the proposed action is to meet one of the objectives described in the DoD Quadrennial Defense Review Report by increasing strategic airlift

capability and decreasing tactical airlift assets. The U.S. Air Force (USAF) has identified all aircraft assets and locations, including all ANG and USAF Reserve units and has determined that a reduction in C-130H assets and the systematic removal of C-141 aircraft (which have been identified as nearing the end of their usable life span) from the USAF inventory is necessary. These aircraft assets would be replaced with new C-17 or existing C-5 aircraft that would increase the overall strategic airlift capability of the USAF, ANG, and USAF Reserves. Ultimately, the purpose of the proposed conversion is to provide sufficient strategic airlift capability to conduct expeditionary operations in distant lands (DoD 2001).

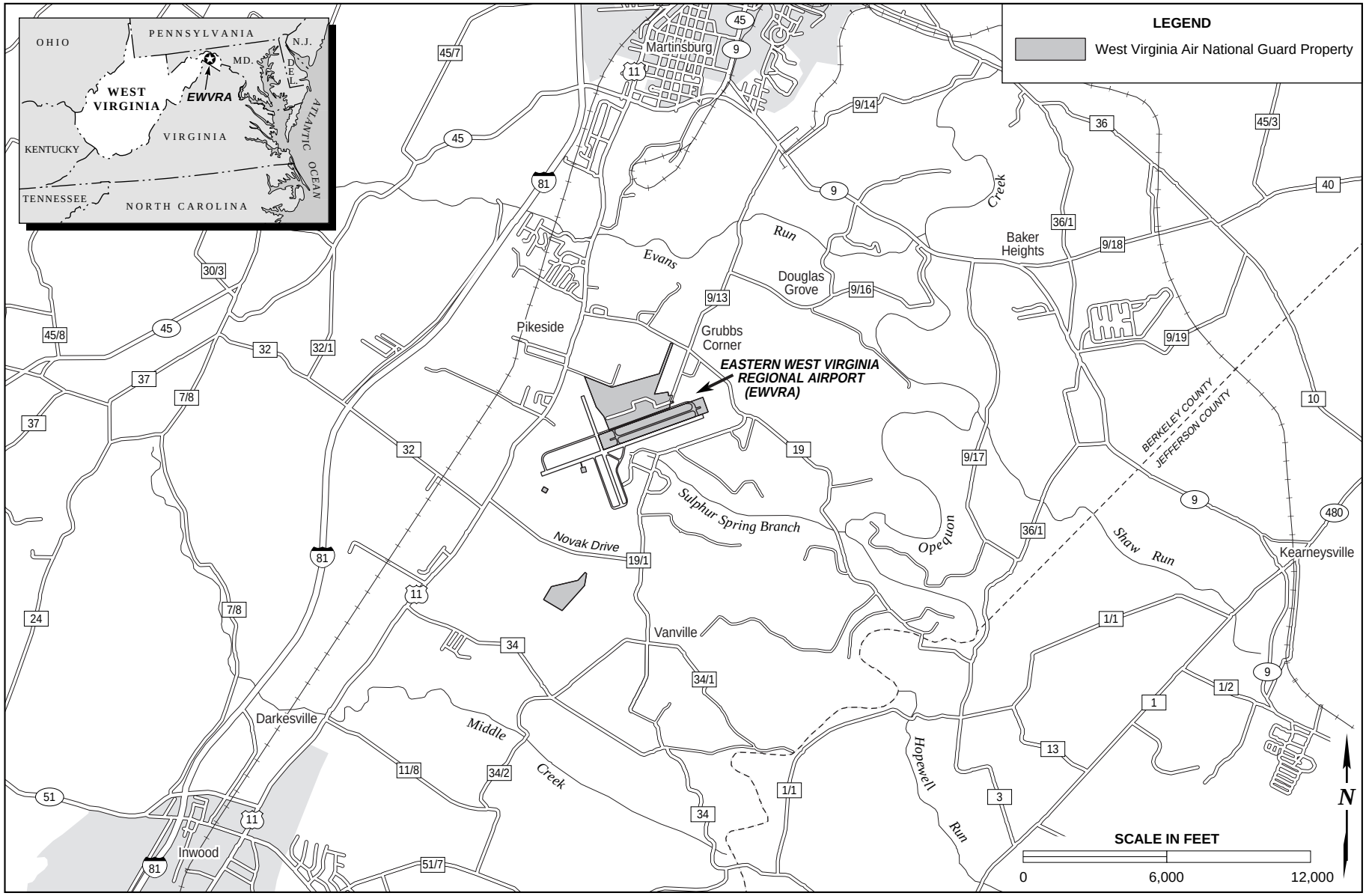
1.3 NEED

The recent and rapid expansion of the ANG's mission has created a need for long-range planning programs to help evaluate existing and future equipment, space, and facility requirements. In support of this long-range planning, the proposed mission change and aircraft conversion would accomplish the following ANG goals: 1) provide a second operational and strategically located C-5 airlift unit for the ANG; 2) provide property control for long-term availability at EWVRA; 3) establish support facilities for the C-5 mission at the 167 AW; and, 4) reduce the number of units in the region performing tactical airlift operations.

Facility needs for the C-5 mission beyond those currently available at the installation were identified for the 167 AW as advised by the first and only operational C-5 unit in the ANG: the 105 AW of the New York ANG at Stewart International Airport. The need for and location of facility construction and improvements to support a C-5 mission was determined based on an evaluation of existing facilities at the installation and adjacent available property to support necessary facility construction.

1.4 LOCATION

The EWVRA is located approximately 4 miles south of the City of Martinsburg, in Berkeley County, West Virginia (Figure 1-1). The 167 AW currently occupies approximately 206 total acres comprising five separate parcels at the airport (Figure 1-2). The main development area comprises 105.33 acres and is the largest of the five parcels (Figure 1-3). The 167 AW also maintains and operates a short-field runway, located on 70.9 acres between Runway 08/26 and taxiway A, a small-arms range occupying 28.5 acres on the south end of the airport property, a ground control approach (GCA) site of 1.11 acres adjacent to Runway 08/26, and a Bachelor's Officers Quarters is located south of Runway 08/26 on 0.9 acres of land. The West Virginia ANG operates and maintains 34 buildings, totaling 347,441 square feet of space, at the EWVRA (Hayes et al. 2001).



EIS

Figure 1-1. Vicinity Map
Eastern West Virginia Regional Airport
Martinsburg, West Virginia

Figure 1-1

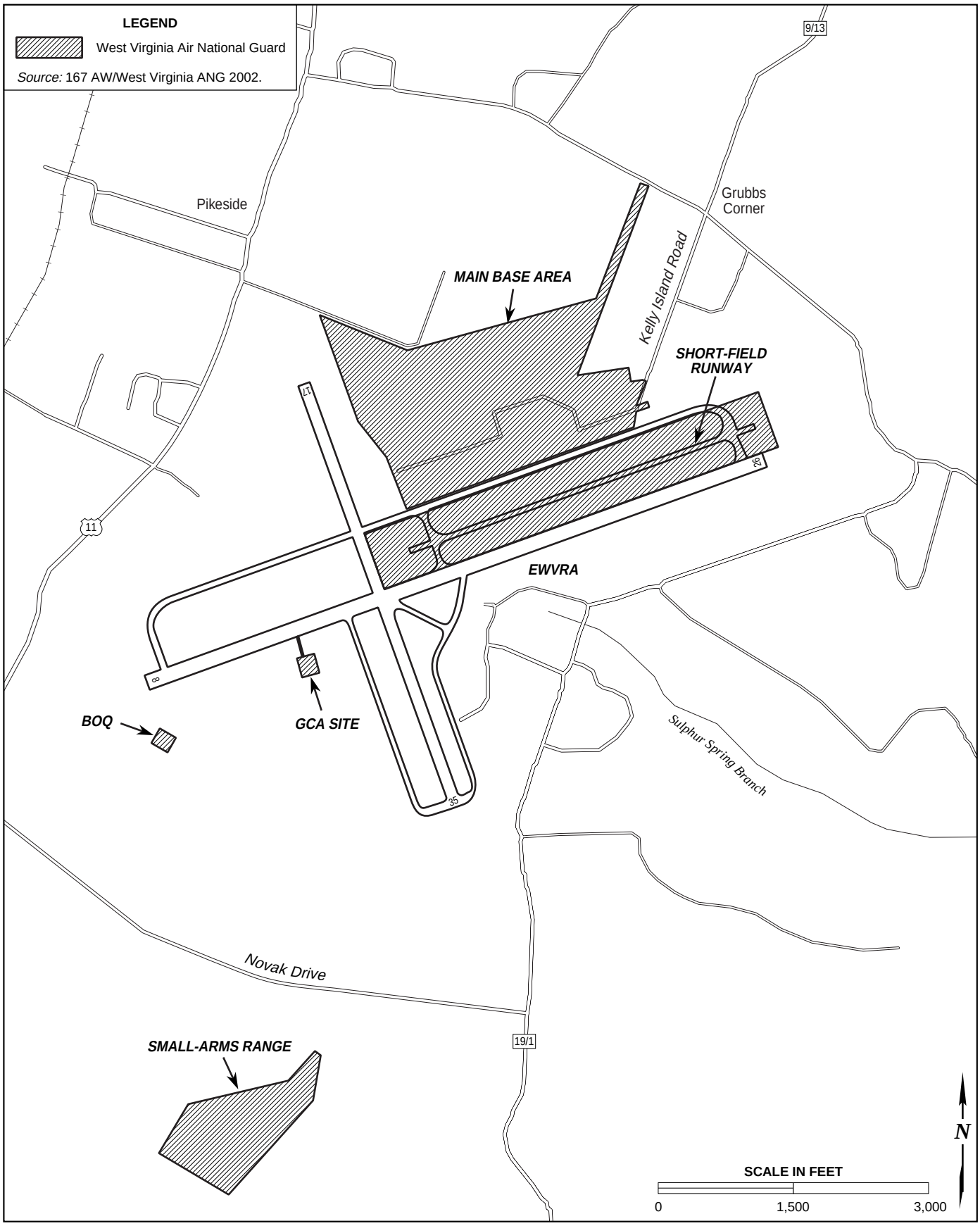


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Figure 1-2. Eastern West Virginia Regional Airport (EWVRA) and the West Virginia Air National Guard

Figure 1-2

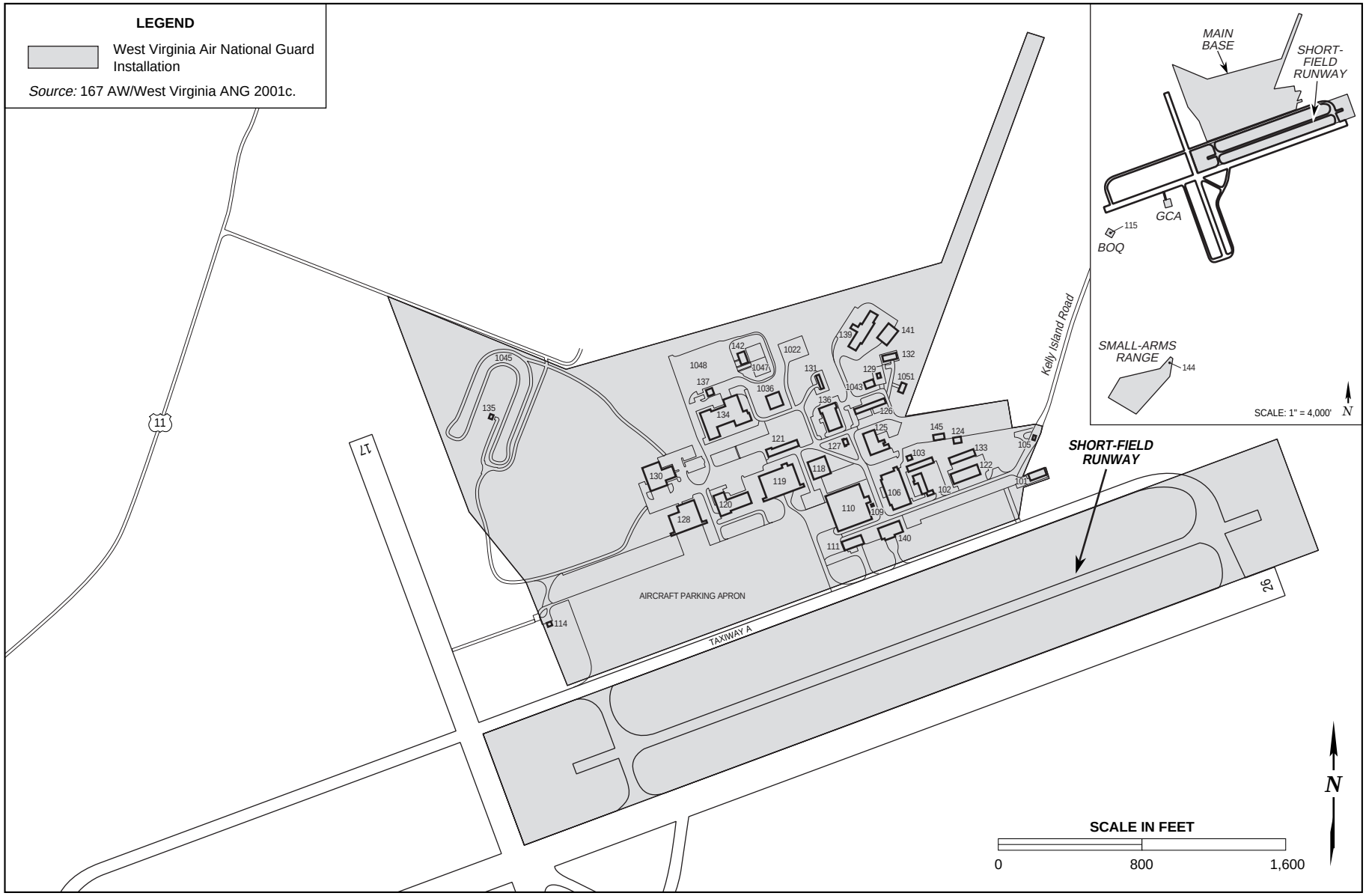

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Figure 1-3. West Virginia Air National Guard Installation at Eastern West Virginia Regional Airport Martinsburg, West Virginia

Figure 1-3

1.5 CURRENT 167 AW OPERATIONS

The 167 AW currently operates a Primary Aircraft Inventory (PAI) of 12 C-130H tactical airlift aircraft. The mission of the 167 AW is "to maintain the highest state of readiness for those we are called to serve." The unit has a peace-time and war-time mission of airlift and aerial delivery of personnel and equipment. This mission includes an aero-medical detail on occasion. During contingency operations, the 167 AW falls under the authority of Air Mobility Command, headquartered at Scott Air Force Base (AFB). The 167 AW is the sole unit of the West Virginia ANG located at the EWVRA. The wing commander has full authority and responsibility of command (Hayes et al. 2001).

To maintain combat readiness in its mission, 167 AW aircrews routinely fly training missions that depart from the EWVRA, fly high altitude navigation training routes and low altitude slow routes (SRs), or make drops at regional drop zones (DZs) and return to the airfield. Approximately 90 percent of the unit's flight operations depart from Runway 26 and the other 10 percent takeoff from Runway 08. The 167 AW flies C-130Hs on six SRs: 802 (208 operations per year), 803 (6 operations per year), 804 (208 operations per year), 806 (6 operations per year), 807 (6 operations per year), and 808 (6 operations per year) with a "baseline" altitude of 500 feet above ground level (AGL). The unit also utilizes two DZs: Shepherd DZ on the airfield at EWVRA, at a rate of 104 drops per year from 500 to 1,300 feet AGL; and McClean DZ at Fort Indiantown Gap, Pennsylvania, at a rate of 104 drops per year from 500 to 1,300 feet AGL. The 167 AW also drops once per year at Pope AFB with a large formation of 10 aircraft.

In addition, the 167 AW uses nine Station-Keeping Equipment (SKE) Routes within 100 nautical miles of Martinsburg: SKE 05 (416 operations per year), 06 (6 operations per year), 07 (6 operations per year), 08 (6 operations per year), 09 (6 operations per year), 10 (6 operations per year), 11 (approximately 6 operations per year), 12 (6 operations per year), and 13 (6 operations per year); all of these operations are conducted above 5,000 feet mean sea level (msl).

1.6 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

The Environmental Impact Analysis Process (EIAP) is the process by which Federal agencies facilitate compliance with environmental regulations. The primary legislation affecting these agencies' decision-making process is NEPA (1969). This act and other facets of the EIAP are described in the following sections.

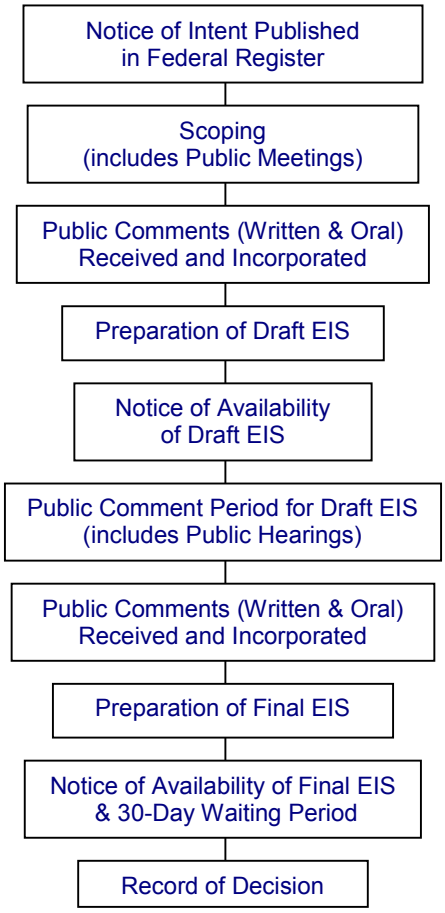
1.6.1 The NEPA Process

NEPA requires Federal agencies to take the environmental consequences of proposed actions into consideration in their decision-making process. The intent of NEPA is to protect, restore, or enhance the environment through well-informed Federal decisions. The CEQ was established under NEPA to implement and oversee Federal policy in this process. To this end, the CEQ issued the *Regulations for Implementing the Procedural*

Provisions of the National Environmental Policy Act (40 Code of Federal Regulations [CFR] § 1500-1508).

Whenever Federal agencies propose major actions, such as the action introduced earlier in this section, NEPA requires the sponsoring agency to undertake the systematic examination of possible and probable environmental consequences of the proposed action and alternatives to the action. The formal NEPA process (Figure 1-4) used by the ANG is described in Title 32, CFR Part 989 (32 CFR 989), *Environmental Impact Analysis Process*. When the potential impacts may be significant or controversial, the sponsoring agency officially begins the NEPA process by announcing in the *Federal Register* a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS). Comments on potential issues to be addressed in the EIS are solicited from Federal and state agencies, and the public, and used in "scoping" the subjects to be addressed in the EIS. The Draft Environmental Impact Statement (DEIS) is then prepared and made available to the public for review and comment through publication of a Notice of Availability (NOA) in the *Federal Register*. The agency then considers and responds to the public's comments on the DEIS in preparing a Final Environmental Impact Statement (FEIS) and announces its completion with a NOA. The agency decision-maker then issues its Record of Decision (ROD) concerning the proposed action, taking into consideration the findings of the EIS.

Figure 1-4
The EIS Process



The USAF and West Virginia ANG initiated preparation of the DEIS with support from the Air National Guard Readiness Center, Environmental Division. Additionally, the FAA, WVDOT, and the EWVRAA acted as cooperating agencies providing valuable information and support during the planning and analysis stages of DEIS development.

In conjunction with the preparation of this DEIS, and to comply with NEPA, correspondence has been sent to Federal, state, and local agencies with jurisdictions that could possibly be affected by the proposals. This coordination fulfills requirements under Executive Order 12372, which requires Federal agencies to cooperate with and consider state and local views when implementing a Federal proposal, and 32 CFR 989, which requires the ANG to implement an Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) process.

This document also considers the relevant sections of the Clean Air Act, Clean Water Act, Wilderness Act, Forest Management Act, Endangered Species Act, National Historic Preservation Act, and the Wild and Scenic Rivers Act, as well as other applicable Federal laws and regulations. A detailed list of regulatory requirements is contained in Appendix D of this EIS.

1.6.2 Scoping Process and Issues Identified

1.6.2.1 Process

Pursuant to CEQ regulations for implementing NEPA, "*There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This process shall be termed scoping*."

Scoping is intended to "*determine the scope and the significant issues to be analyzed in depth in the EIS*." The scoping process facilitates the participation of all affected parties by providing public notice of NEPA-related hearings, public meetings, and the availability of environmental documents so as to inform those persons and agencies who may be interested or affected.

On October 18, 2002, a NOI to prepare this EIS was published in the *Federal Register*. Subsequently, newspaper advertisements, radio announcements, and correspondence targeted to potentially interested parties provided notification of two scoping meetings to be held on November 6 and 7, 2002. Press releases were provided to local and regional radio and print media regarding each scoping meeting and results of the meetings were reported in local newspapers. A stenographer was available at all meetings to record public comments.

Scoping meetings were held as follows:

- The first scoping meeting was held on November 6, 2002, at the National Guard Armory in Martinsburg, West Virginia. The meeting began in an "Open House" format at 5:30 PM, included a presentation by the 167 AW at 7:00 PM, and concluded at 9:30 PM. Forty-one persons attended the scoping meeting. Six individuals provided verbal comments regarding the Proposed Action. In addition, three written comments were received.
- The second scoping meeting was held on November 7, 2002, and was also at the National Guard Armory. The second meeting followed the same format as the November 6 meeting and convened at 5:30 PM and concluded at 9:30 PM. Attendance at the second meeting totaled 80 persons. Eleven individuals provided a verbal comment at the meeting and six written comments were received.

Prior to each meeting, the ANG arranged for a C-5 aircraft from the New York ANG to land and take off for the public to view. During the day on 7 November 2002, an open house at the airport provided the public with an opportunity to tour the aircraft while it was parked on the tarmac.

In addition to the comments received during the scoping meetings, several comment letters from the general public were received by mail, some after the official comment period had expired. All comments were considered by the ANG in scoping the DEIS. Table 1-1 provides an overview of the public involvement efforts conducted to date.

Table 1-1. Public Involvement Summary

Date	Public Involvement Action
18 October 2002	Notice of Intent published in the *Federal Register* (Vol. 67, No. 202)
6 and 7 November 2002	The ANG held scoping meetings at the National Guard Armory in Martinsburg
6 February 2004*	Notice of Availability of Draft EIS published in the *Federal Register* (Vol. *TBD*, No. *TBD*)
17 and 19 February 2004*	The ANG will hold public hearings at National Guard Armory in Martinsburg
April 2004*	End of public comment period
June 2004*	Final EIS

TBD – to be determined
*Dates subject to change.

1.6.2.2 Summary of Major Issues Identified

A variety of issues and concerns were raised during the scoping process. The primary issues concerned noise generated by C-5 aircraft compared to the existing C-130H aircraft; potential loss of use of Runway 17/35 as a result of the new construction; and socioeconomic impacts.

1.6.3 Interagency and Intergovernmental Coordination for Environmental Planning

Both NEPA and CEQ regulations require intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the IICEP process, the ANG notifies relevant Federal, state, and local agencies and allows them sufficient time to make known their environmental concerns specific to a proposed action. Comments and concerns submitted by these agencies during the IICEP process were incorporated into the analysis of potential environmental impacts conducted as part of the EIS.

1.7 STRUCTURE OF THIS EIS DOCUMENT

The primary presentation of the issues of concern and potential impacts associated with the alternatives is presented in the sections listed below:

- Section 1: Introduction
- Section 2: Description of Proposed Action and Alternatives
- Section 3: Affected Environment
- Section 4: Environmental Consequences

Other shorter sections address the EIS references (Section 5), agency coordination (Section 6), index (Section 7), acronyms and abbreviations (Section 8), and the list of preparers (Section 9). Numerous appendices support the technical analyses summarized in the EIS and are presented at the end of this document.

SECTION 2

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

SECTION 2
DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

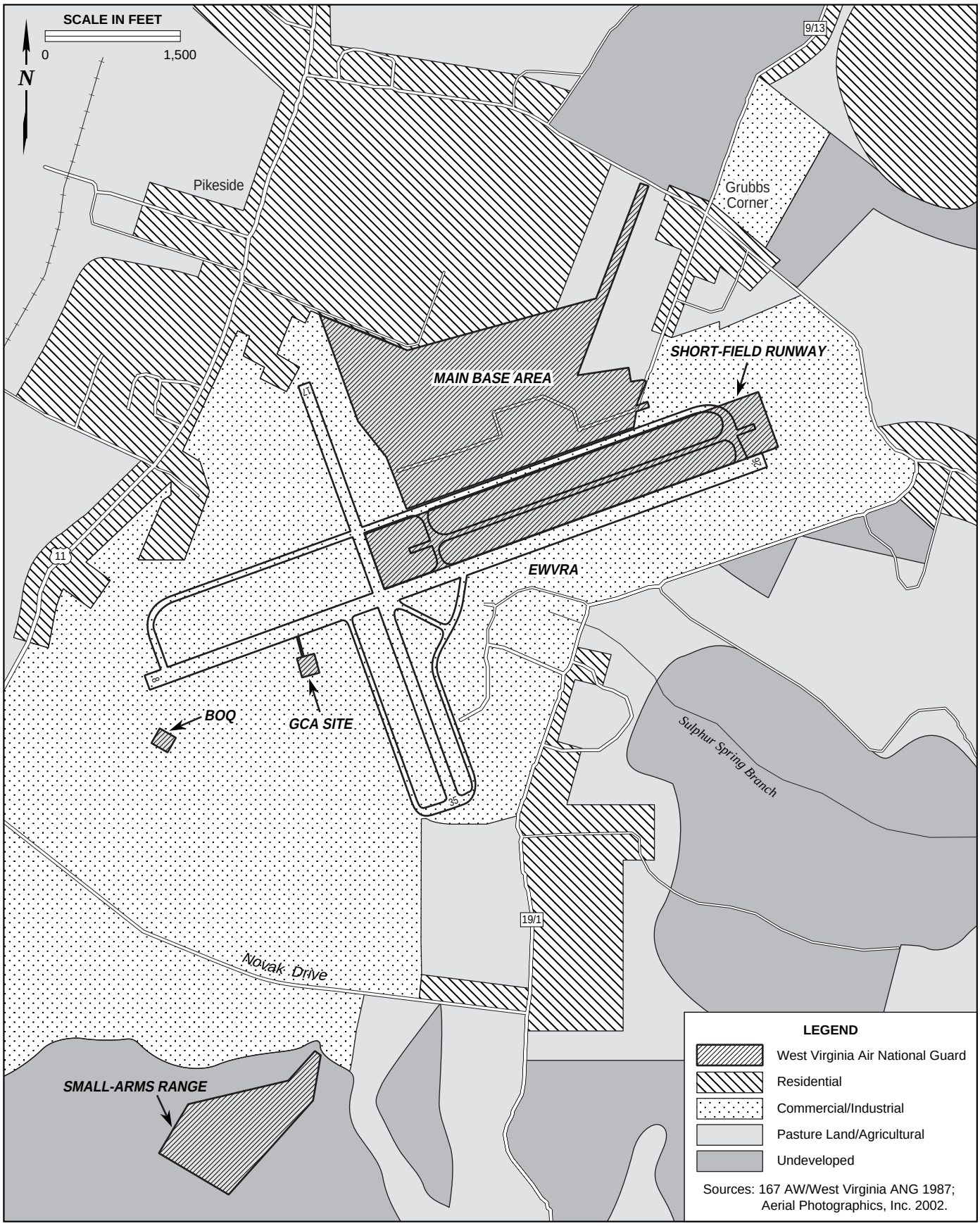
This Environmental Impact Statement (EIS) addresses the aircraft conversion proposed by the U.S. Air Force (USAF) for the 167th Airlift Wing (167 AW) and related property acquisition, demolition, and construction. The Air National Guard (ANG) unit located in Martinsburg, West Virginia, would convert from C-130H to C-5 aircraft. The conversion would require new construction, facility modifications, demolition, and the acquisition of additional land through lease arrangement with the airport to accommodate the unit's new mission. In addition to the Proposed Action, the following alternatives were considered:

- Relocation of Runway 17/35 Alternative
- The No-Action Alternative

Each Eastern West Virginia Regional Airport (EWVRA) alternative included a provision that the main entrance would be moved from the east side of the installation and that the present installation entrance would be maintained and used as a secondary gate. Each potential alternative was based on facility requirements mandated by the ANG Readiness Center, adapted from Air National Guard Handbook (ANGH) 32-1084.

2.1.1 Local Setting

The 167 AW uses airfield facilities owned and maintained by the EWVRA, including runways, taxiways and associated clearance areas, to support its operations. (The design of these existing facilities is in compliance with requirements detailed in Federal Aviation Administration [FAA] Advisory Circular 150/5300-13, which addresses airfield design and height restrictions.) As such, a great deal of adjacent land use and development is occupied by the airport and airport-related activities, thus limiting 167 AW development. The current runway layout at EWVRA helps define the current configuration of the installation. The main runway, Runway 08/26, and accompanying parallel taxiway A, provide a limit to 167 AW development to the south. Runway 17/35 has limited installation development to the west. Land use east of the installation (see Figure 2-1) includes a fixed base operator, an aerial photography operation, and limited residential development. A residential development has also been established immediately north of the installation limiting growth in that direction. Beyond the land immediately adjacent to the installation, areas of low-density residential and commercial uses can be found along thoroughfares. In addition, a quarry operation is located north of the installation and agricultural activities are scattered around the airport's vicinity.



EIS

Figure 2-1. Land Use in the Vicinity of Eastern West Virginia Regional Airport and the West Virginia Air National Guard

Figure 2-1

2.1.2 Siting Criteria

Siting of the facilities was restricted by numerous environmental and mission-related constraints. Environmental constraints include topography, surface water drainage, and wetlands. Topography constraints include several steep slopes that occur along drainage swales and in the extreme northeast portion of the installation. Surface water drainage on the installation is limited to a single creek that bisects the installation and provides drainage of the aircraft parking apron and other impervious surfaces. Further, a creek on the current installation property and a pond within the acquisition parcel have been classified as wetlands; future development in these areas must be sensitive to these constraints.

Mission-related constraints are associated with the operations of the unit, its mission, and associated support activities. Primarily, construction to support the new mission of the 167 AW must comply with airfield and safety constraints. Constraints to installation development include object-free zones (OFZs) surrounding the runways and approaches, runway protection zones (RPZs) at the ends of the runways, and the building restriction line (BRL), a required setback used to identify suitable building sites relative to the runways. Two other safety constraints also factor into development decisions: one is the 100-foot explosives safety zone (i.e., the Quantity Distance [QD] arc) associated with the munitions storage area located in Building 131. The other is the 125-foot building setback that separates aircraft parking and circulation from adjacent flightline facilities.

2.2 PROPOSED ACTION

The USAF is proposing that the West Virginia ANG unit located at EWVRA convert from C-130H aircraft to C-5 aircraft. The construction and demolition program required to support the conversion would provide facilities for a total of ten (10) C-5s that would be assigned to the 167 AW. This section describes the actions proposed to support the aircraft conversion. Figure 2-2 shows the proposed facility changes in support of the new aircraft and mission.

2.2.1 Proposed Mission Changes

The central component of the Proposed Action is a conversion from C-130H to C-5 aircraft. Administrative installation functions associated with the 167 AW at EWVRA would remain primarily in a single development compound on the north side of Runway 08/26. Additional mission functions would be accomplished through the closure of

View of the Acquisition Parcel located in the Northwest Section of the EWVRA looking Northwest

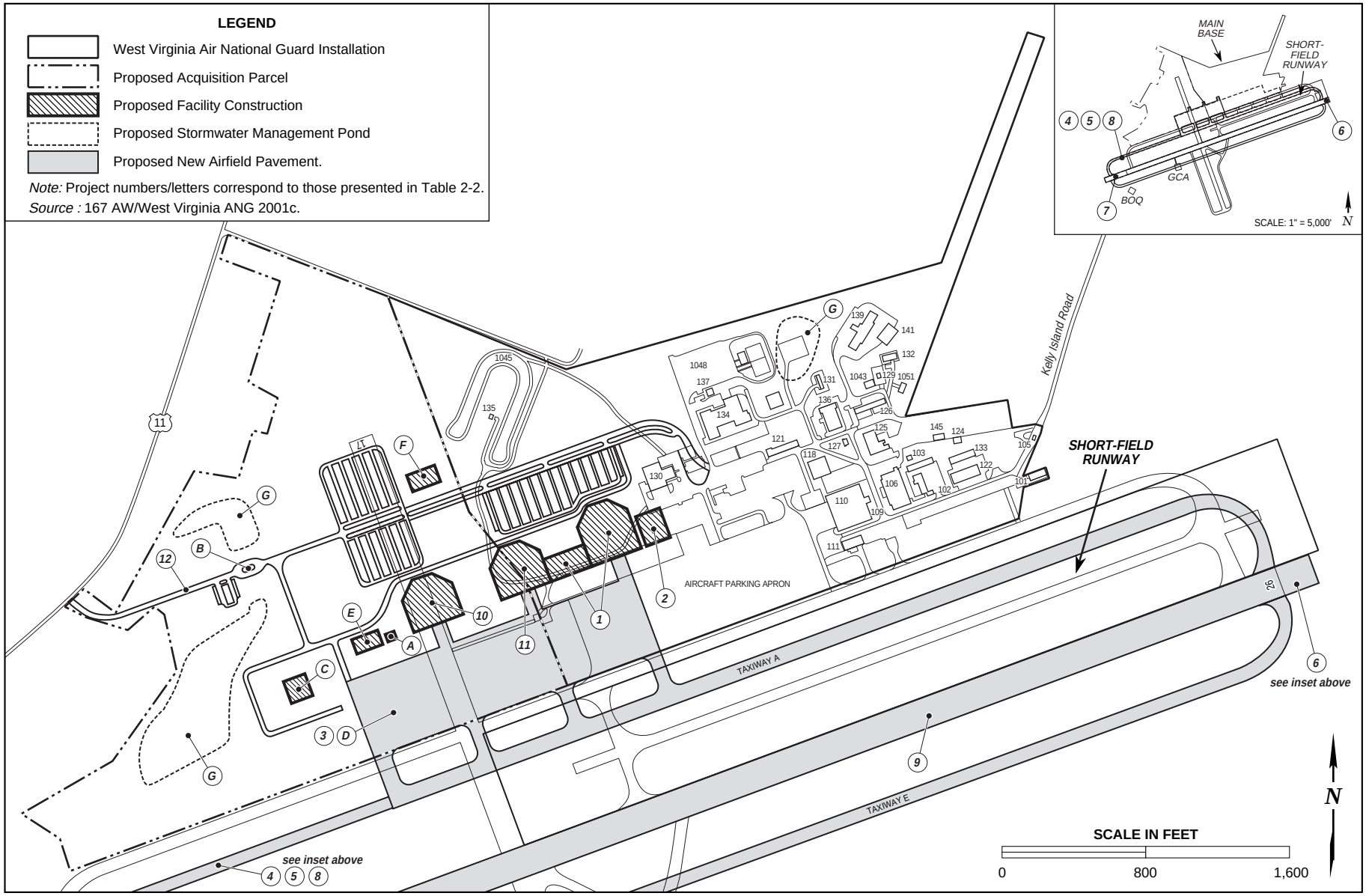


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Figure 2-2. Proposed Acquisition Parcel and Construction Projects at the West Virginia Air National Guard Installation Eastern West Virginia Regional Airport

Figure 2-2

Runway 17/35 and acquisition of EWVRA property to the west. Per siting criteria detailed previously, administrative and mission support functions would be built away from the flightline.

2.2.2 Proposed Aircraft Actions

Once fully operational, the 167 AW's C-5s would perform fewer operations (a single event within a sortie, for example, take-offs, landings, cargo drops, low approaches, and touch and go's) than the current C-130H aircraft. Based on the number of operations flown by the 13 C-5s of the New York ANG's 105 Airlift Wing from Stewart International Airport in 2000 and 2001, approximately 2 operations (1 sortie) per day would be expected to be flown by the 167 AW's 10 aircraft (Table 2-1) (167 AW/West Virginia ANG 2003). While the unit's existing inventory of C-130H aircraft currently performs 23 daily operations and 6,897 operations annually within the airspace of the EWVRA, operations associated with the C-5 at the local airfield would be mainly take-offs and landings (167 AW/West Virginia ANG 1999a; Wyle Laboratories 2003a).

Table 2-1. Proposed, Relocation of Runway 17/35 Alternative, and No-Action Alternative Aircraft Actions

	Sorties		Operations		Arrivals		Departures	
	Daily	Annual	Daily	Annual	Runway 08/26	Runway 17/35	Runway 08/26	Runway 17/35
Proposed Action								
167 AW C-5	0.79	228	1.96	564	228	N/A	228	N/A
Civilian	9.75	3,559	20.28	7,403	3,559	N/A	3,559	N/A
Transient Military	1.55	568	11.02	4,028	568	N/A	568	N/A
TOTAL	**12.09**	**4,355**	**33.26**	**11,995**	**4,355**	**N/A**	**4,355**	**N/A**
Relocation of Runway 17/35 Alternative								
167 AW C-5	0.79	228	1.96	564	228	0	228	0
Civilian	9.75	3,559	20.28	7,403	2,850	709	2,850	709
Transient Military	1.55	568	11.02	4,028	568	0	568	0
TOTAL	**12.09**	**4,355**	**33.26**	**11,995**	**3,646**	**709**	**3,646**	**709**
No-Action Alternative								
167 AW C-130H	2.32	698	22.92	6,897	698	0	691	0
Civilian	9.75	3,559	20.28	7,403	2,850	709	2,850	709
Transient Military	3.36	1,225	25.42	9,284	1,225	0	1,225	0
TOTAL	**15.43**	**5,482**	**68.62**	**23,584**	**4,773**	**709**	**4,766**	**709**

Notes: 167 AW C-130H Annual Sorties and Operations based on 301 operating days.
167 AW C-5 Annual Sorties and Operations based on 288 operating days.
Civilian and Transient Military Sorties and Operations based on 365 operating days.
A Sortie is a takeoff, operation, and landing of a single aircraft.
An Operation is a single event within a sortie (i.e., takeoff, landing, low approach closed pattern).
Assumption that 20 percent of civilian arrivals/departures/operations occur on Runway 17/35.
Source: Wyle Laboratories 2003a.

The proposed integration of 10 C-5 aircraft and subsequent decommission of 12 C-130H aircraft from the 167 AW would take place over a 5-year period. All C-130H aircraft would be returned to the Air Force for relocation to other units; these aircraft would replace older C-130 aircraft resulting in a net decrease in the Department of Defense's (DoD's) C-130 inventory. During the transition, no dual aircraft operations would occur and there would be an approximate one-year period of limited military aircraft activity at EWVRA.

2.2.3 Proposed Personnel Changes

The 167 AW currently employs 77 active guard reserve (AGR) personnel, 209 full-time military technician personnel, 48 full-time state employees, and 1,210 part-time Traditional Guardsmen at the West Virginia ANG installation at Martinsburg.

Implementation of the Proposed Action and beddown of 10 C-5 aircraft would require staffing levels to increase to 157 AGR personnel, 318 full-time military technician personnel, 58 full-time state employees, 1 simulator contractor, and 1,360 part-time Traditional Guardsmen.

2.2.4 Proposed Property Transaction

To facilitate construction of facilities required to support the C-5 mission, an approximately 133-acre parcel would be added to the West Virginia ANG's existing lease agreement with EWVRA. (This component of the Proposed Action also required a separate Environmental Baseline Survey [EBS] that was prepared to satisfy environmental requirements associated with real estate transactions.)

2.2.5 Proposed Construction

Several large-scale construction projects are proposed that would facilitate implementation and accomplishment of the new C-5 mission. One of the larger components of the construction program would be the new C-5 maintenance hangar and complex, consisting of 168,700 square feet (sf) that would house general purpose shops, Non-Destructive Inspection (NDI), organizational maintenance, engine shop, avionics, and weapons systems maintenance management and is proposed to be located west of Building 128. The 167 AW also proposes to construct a new ATC tower (5,665 sf) west of the present site and Runway 17/35 (Table 2-2).

Also proposed is the construction of a two-story squadron operations facility (30,000 sf) that would be situated on the central flightline, on the current site of Building 128 and adjacent to the new C-5 maintenance hangar.

Due to increased spatial requirements associated with the C-5 aircraft, extension of the existing aircraft parking apron serving the present C-130H tactical airlift mission would be required to the west and southeast. This extension would comprise approximately 1.2 million sf or about 28 acres. The new ramp would be sited at the west end of the

Table 2-2. Summary of Proposed Construction at the 167 AW

Locator[1]	Project Component	Size
Large Construction Projects		
1	C-5 Maintenance Hangar and Complex	168,700 sf
2	Squadron Operations Facility	30,000 sf
3	Extension of the existing aircraft parking apron	1,219,950 sf
4	Paved shoulders	209,250 sf
5	Relocate taxiway	252,000 sf
6	Extensions for Runway 08/26 at the east end (runway end 26) 200 feet and relocation of Glide Scope, Medium Intensity Approach Lighting System and Runway Alignment Indicator Lights and Visual Approach Slope Indicator	29,880 sf
7	Extensions for Runway 08/26 at the west end (runway end 08) 800 feet and relocation of EWVRA localizer	119,520 sf
8	Extend taxiway	361,350 sf
9	Existing runway upgrade	1,050,300 sf
10	Fuel Cell Dock and Complex	84,200 sf
11	Corrosion Control Dock and Complex	84,800 sf
12	New entrance and cross-installation roads	3,850 lf
Small-scale Construction Projects		
A	ATC Tower	5,665 sf
B	New Main Gate	200 sf
C	Bulk Fuel Storage Complex	13,000 BL
D	Hydrant fueling system to support the parking apron	8 pits
E	Fire Station	21,000 sf
F	C-5 Simulator	12,000 sf
G	3 Storm Water Management Ponds	TBD
	Utility corridor backbone for the installation	TBD
	Upgrade and repair existing roadway	TBD

Notes: [1]Locator = see Figures 2-2 and 2-5
BL = barrels
lf = linear feet
sf = square feet
TBD = to be determined
Source: 167 AW/West Virginia ANG 2001c.

present ramp and on the site of the existing ATC tower (Building 114). Also, to meet increased airfield surface requirements associated with the C-5, the unit proposes to construct extensions for Runway 08/26: 200 linear feet (lf) (29,880 sf) at the east end and 800 lf (119,520 sf) at the west end; further, the taxiway for Runway 08/26 would be relocated (252,000 sf) to the south and extended (361,350 sf) to the east and west. Both runway extensions would require relocation of FAA associated navigational aids. New paved shoulders (209,250 sf) and upgrading the existing runway (1,050,300 sf) are proposed to meet C-5 airfield surface requirements.

Two large maintenance docks—a fuel cell dock and a corrosion control dock (84,200 sf and 84,800 sf)—are also proposed for construction. The fuel cell dock would be established on the new C-5 ramp east of the new fire station. The corrosion control dock would be located adjacent to the C-5 maintenance hangar on the airfield ramp.

Development of a new entrance road off U.S. Highway 11 and cross-installation roadway (approximately 3,850 lf) is proposed and would link the proposed main gate to the existing gate at Kelly Island Road.

Smaller-scale construction projects include:

- establishment of a new main gate (200 sf) at U.S. Highway 11 on the west side of the installation;
- construction of new bulk fuel storage for a petroleum, oil, and lubricant (POL) area west of proposed aircraft parking apron, total capacity of 13,000 barrels;
- construction of a new hydrant fueling system containing eight fueling pits to support the parking apron;
- construction of a new fire station (21,000 sf) adjacent to the ATC tower on the northwest corner of the new C-5 parking ramp (this facility would also provide crash and fire rescue services to the entire EWVRA complex);
- construction of a C-5 simulator (12,000 sf) immediately south of the running track on the north side of the cross-installation roadway;
- development of three storm water management ponds;
- establishment of a new utility corridor “backbone” for the installation—any new construction would need to remove existing utility infrastructure and replace or relocate it to tie into the new utility corridor; and
- upgrade and repair existing roadway.

Also, the Eastern West Virginia Regional Airport Authority (EWVRAA) proposes to develop a taxiway to the south of Runway 08/26. Taxiway E would be 75 feet wide, extend the length of Runway 08/26, and accommodate aircraft up to Airplane Design Group IV.

2.2.6 Proposed Circulation Improvements and Additions

The 167 AW proposes to improve access within the installation by establishing two new cross-installation roadways totaling approximately 3,850 lf. One would extend from the proposed new gate on U.S. Highway 11 to the current main gate on Kelly Island Road (Figure 2-3). This cross-installation roadway would begin at the southwest corner of Building 134 and continue west to U.S. Highway 11, near the intersection of U.S. Highway 11 and Stewart Lane. East of Building 134, access to Kelly Island Road would retain its present pattern, and the gate would continue to be maintained, although it would be used only as a secondary gate for access during peak traffic times (e.g., during unit training assembly [UTA] weekends). The second proposed roadway would extend from the new entrance road to the POL area and then head east, north of the new

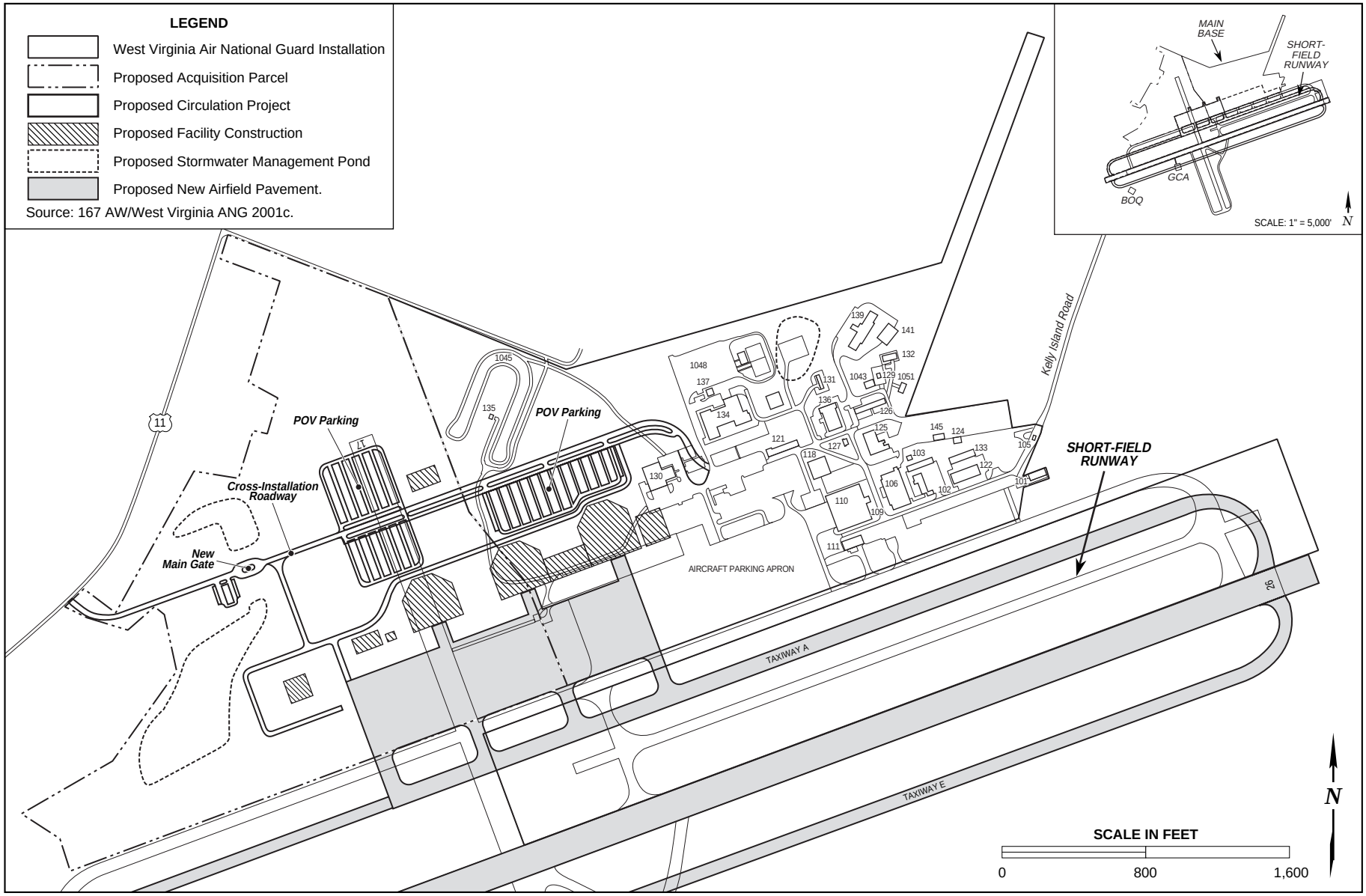

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Figure 2-3. Proposed Circulation Reconfiguration Projects at the West Virginia Air National Guard Installation Eastern West Virginia Regional Airport

Figure 2-3

hangars, until heading north at Building 130 and intersecting the new cross-installation roadway.

Further, the West Virginia Department of Transportation (WVDOT) proposes to develop left-and right-turn lanes on U.S. Highway 11 into the installation's Main Gate access road.

2.2.7 Proposed Renovations

The unit proposes to upgrade, realign, and extend Taxiway A by constructing lateral taxiways extending to the aircraft parking ramps; these upgrades would total 361,350 sf. The alignment of the taxiway would move slightly to the south to accommodate the construction of the new C-5 ramp. Also proposed is the upgrade of an existing 7,000-foot segment of Runway 08/26 totaling 1,050,300 sf; this would be necessary to accommodate the C-5's standard take-off weight of 769,000 pounds.

2.2.8 Proposed Facility Demolition

In order to replace aging, obsolete, or otherwise incompatible facilities and to provide land areas adequate in size to accomplish proposed construction, the following eight buildings would be demolished: 114 (ATC tower), 120 (squadron operations), 128 (fuel cell dock), 140 (fire station), 142 (pumping station), 1022 (engine test stand), 1036 (sewage treatment plant), and 1047 (jet fuel storage) (Table 2-3) (Figure 2-4). Further, the short-field runway would also be demolished.

Table 2-3. Proposed Demolition

Locator[1]	Facility	Size
1	Building 114 (ATC Tower)	1,869 sf
2	Building 120 (Squadron Operations)	32,653 sf
3	Building 128 (Fuel Cell Dock)	20,461 sf
4	Building 140 (Fire Station)	9,373 sf
5	Building 142 (Pumping Station)	2,838 sf
6	Building 1022 (Engine Test Stand)	N/A
7	Building 1036 (Sewage Treatment Plant)	N/A
8	Building 1047 (Jet Fuel Storage)	N/A
9	Short-field Runway	180,000 sf

Notes: [1] Locator = see Figure 2-4
N/A = Not Available
sf = square feet
Source: 167 AW/West Virginia ANG 2001c.

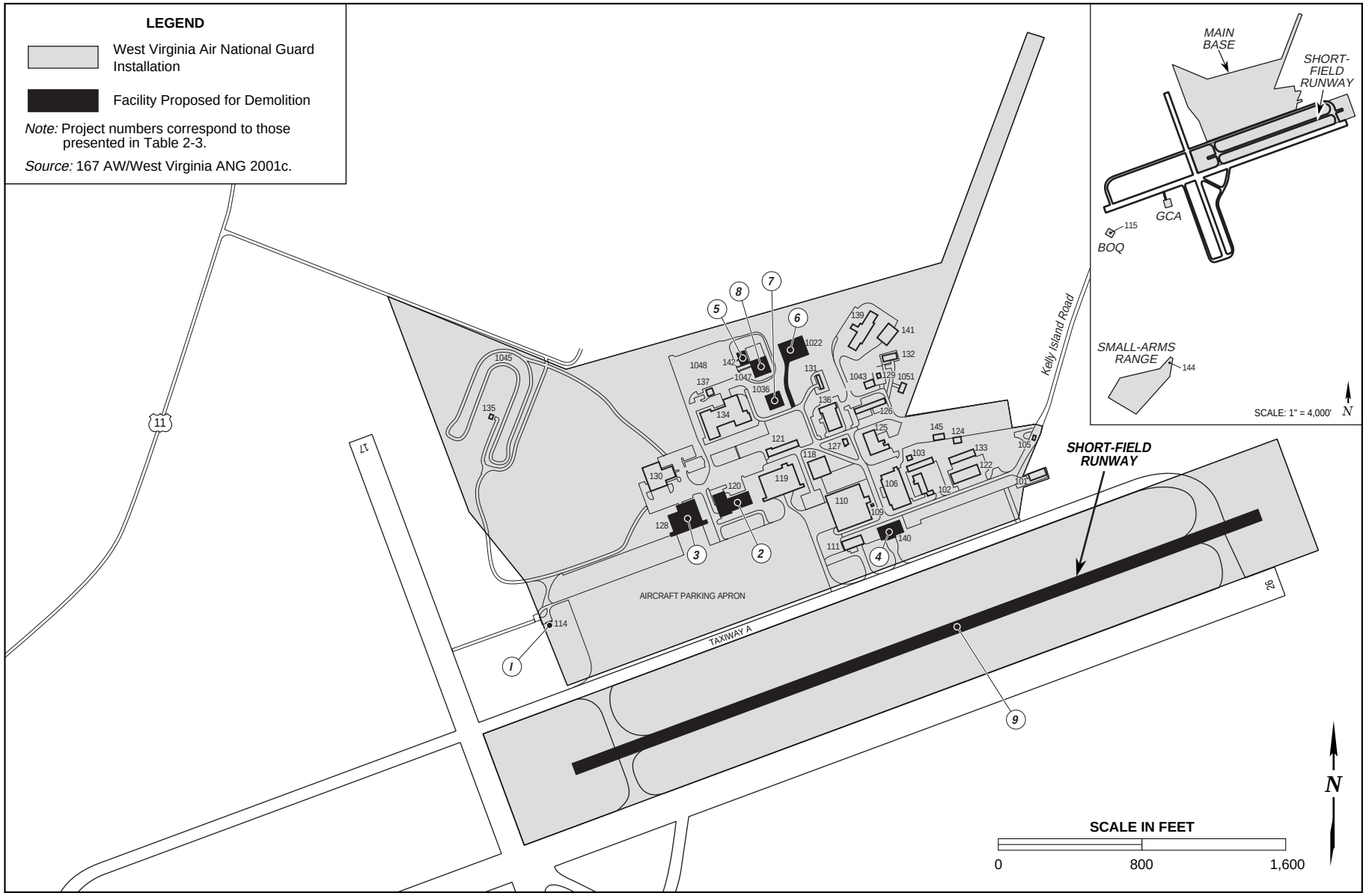

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Figure 2-4. Proposed Demolition Projects at the West Virginia Air National Guard Installation Eastern West Virginia Regional Airport

Figure 2-4

2.3 ALTERNATIVES TO THE PROPOSED ACTION

2.3.1 Alternatives Considered But Eliminated from Detailed Study

This subsection provides information concerning the reasons some alternatives to the Proposed Action were eliminated from further detailed study in this EIS.

2.3.1.1 Selection of Another Location for the C-5 Conversion

Prior to selecting the location of the new C-5 unit at EWVRA, alternative locations were evaluated. The Quadrennial Defense Review Report of 2001, a product of senior civilian and military leadership of the DoD, identified the need to increase strategic airlift capability in the USAF, including ANG and USAF Reserve assets. Further, the review report identified the need to simultaneously decrease tactical airlift (e.g., C-130H) assets (DoD 2001).

An overarching objective identified in the review was the need for provision of more strategic airlift capability in the eastern and northeastern U.S. The USAF and U.S. Readiness Command (USRC) already have units in these regions that could not be replaced or were already scheduled to receive replacement aircraft. The ANG has one strategic airlift unit in this region and six units carrying out tactical airlift missions. In order to meet the need for strategic airlift and the required fleet mix of C-5 and C-17 aircraft, and to meet the USAF policy of integrating and modernizing ANG and Reserve units while reducing the number of tactical airlift units, three alternate locations were examined for potential accommodation of a new C-5 unit. The key factors in the examination were: 1) the distance from the proposed location to Dover Air Force Base (AFB), Delaware, and McGuire AFB, New Jersey, where the need to pick up and transport equipment and personnel is most important (approximately 125 miles); 2) existing infrastructure availability; 3) potential land availability to support construction requirements; and 4) existing unit scheduled for conversion due to aging assets. The only location that meets these specific criteria is EWVRA in Martinsburg, West Virginia. Other locations considered included McGuire AFB, New Jersey, which was instead selected as a location for beddown of C-17 aircraft; Baltimore Washington International Airport which was determined to be too congested for military use; and Wilmington, Delaware, which does not have adequate land availability. Consequently, the alternative to select another location for the C-5 conversion was eliminated from further detailed study (DoD 2001).

2.3.1.2 Alternative Designs for the Proposed Construction at EWVRA

Initially, six conceptual alternatives were designed to provide the 167 AW a plan for accommodating long-range mission requirements associated with the beddown of a C-5 strategic airlift mission. Each design alternative was evaluated on the following criteria: available property of 167 AW and EWVRA to support the beddown of a C-5 strategic airlift mission; continued 167 AW operations during construction; the ability to consolidate similar functions under one roof where practical; improvement of the

installation circulation system and linking the installation to the regional transportation system; replacing aging facilities during the span of the Master Plan time frame; and operation of the installation within the limitation of natural and operational constraints. In all of the alternatives, the short-field runway was closed to accommodate the expanded C-5 aircraft ramp; further, in five of the six alternatives, Runway 17/35 was closed to provide additional ramp space for the C-5 aircraft. Proposed facility development and location was determined by facility requirements established by the Air National Guard Readiness Center and based on Air Force Instruction (AFI) 32-1024.

Only one of the design alternatives fulfilled the criteria necessary to accommodate the long-range mission requirements associated with the proposed beddown; the selected alternative was developed through numerous meetings between representatives of the 167 AW, general aviation and local civilian pilots, and area residents. Input from all parties was evaluated and instrumental in developing the proposed design. This alternative required acquisition of additional property within the EWVRA boundary and further design modifications. The selected alternative would allow the 167 AW to continue operations (non-flying) during construction, retain the most facilities relative to other alternatives, provide access to U.S. Highway 11 while upgrading the cross-installation road, and establish ideal aircraft parking orientation relative to prevailing wind patterns. Other alternatives were eliminated based on the need to acquire non-EWVRA property, to shut down all 167 AW operations during construction, limitations imposed on future development, and the division of a western support campus and an eastern operations campus.

2.3.2 Relocation of Runway 17/35 Alternative

This alternative was developed and brought forth for discussion in response to comments received during the scoping process facilitated by ANG/CEVP and the 167 AW and incorporated with input from the EWVRA general aviation community. Selection of the Relocation of Runway 17/35 Alternative would result in the land acquisition and identical construction, demolition, and renovation activities associated with the proposed action; additionally, a new Runway 17/35 would be developed to accommodate smaller civilian aircraft (Figure 2-5). This runway would have a dimension of 2,700 feet in length and 60 feet in width, would intersect to Runway 08/26, and have a center line approximately 1,300 feet east of the western end of Runway 08/26. Further, turnouts would be developed at either end of Runway 17/35 to provide additional maneuvering space. This alternative would result in the development of necessary facilities to successfully beddown 10 C-5 aircraft while enabling civilian aircraft to continue operating within the airfield and airspace, similar to the options currently available at EWVRA.

2.3.3 No-Action Alternative

If the No-Action Alternative were selected, the 167 AW would not convert to C-5 aircraft and would continue to maintain and operate C-130H aircraft. Because Council on Environmental Quality regulations stipulate that the No-Action Alternative be analyzed to

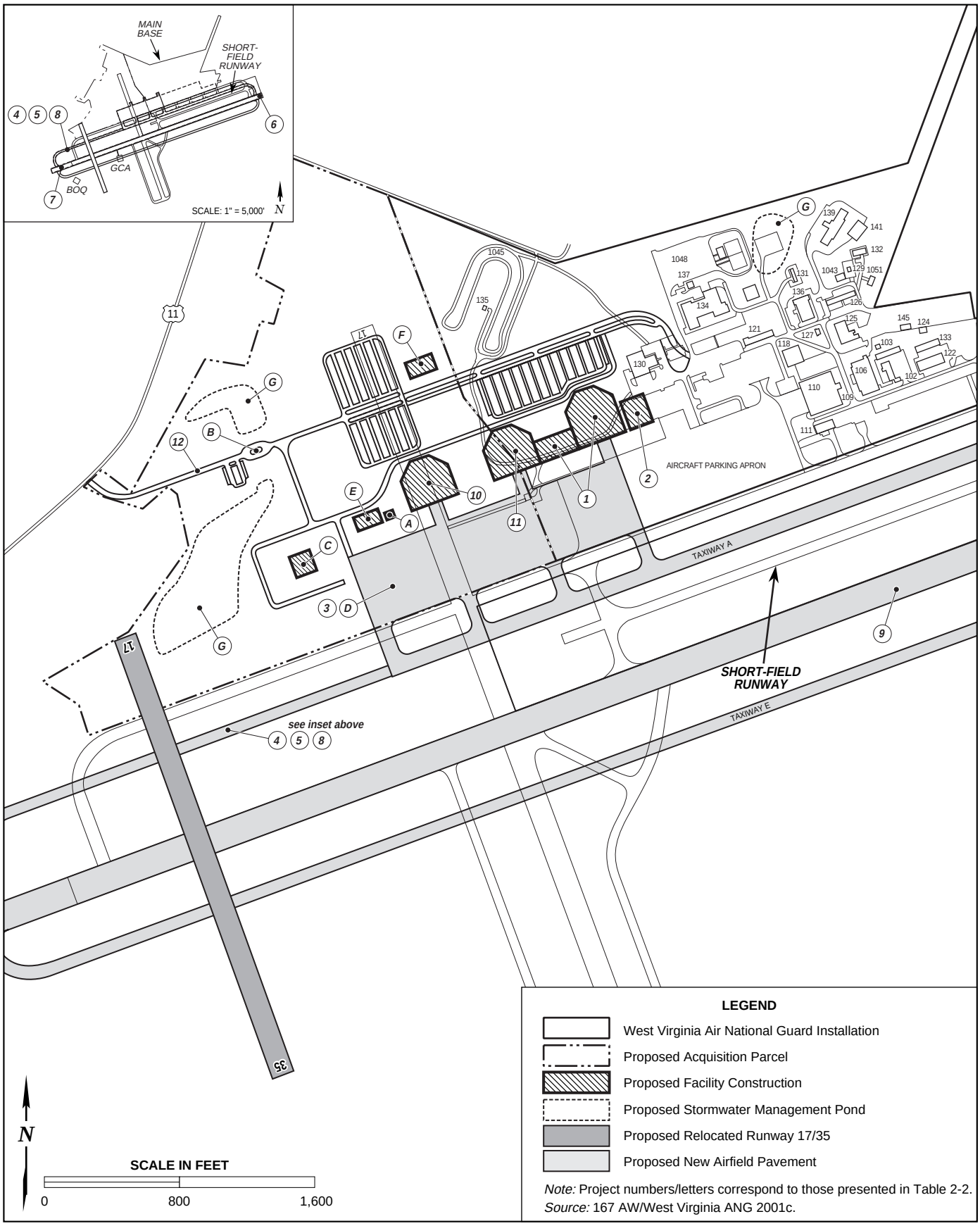

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Figure 2-5. Alternative 1 Acquisition Parcel and Construction Projects at the West Virginia Air National Guard Installation Eastern West Virginia Regional Airport

Figure 2-5

assess any environmental consequences that may occur if the Proposed Action is not implemented, this alternative is carried forward for analysis in the EIS. The No-Action Alternative also provides a baseline against which the Proposed Action can be compared.

2.4 SUMMARY OF FINDINGS AND COMPARISON OF ALTERNATIVES

A summary of environmental impacts anticipated to result from implementation of the USAF-proposed aircraft and mission change at the 167 AW of the West Virginia ANG at EWVRA are evaluated in this section. Table 2-4 provides an overview of key information associated with the Proposed Action, the Relocation of Runway 17/35 Alternative, and No-Action Alternative.

Airspace and Airfield Operations. Under implementation of the Proposed Action, a decrease in the number of aircraft operations associated with the 167 AW would occur at EWVRA; as a result operational demands on the current airspace infrastructure would be reduced around the EWVRA and in the region. Further, the Proposed Action would result in a decrease of flying hours associated with the 167 AW within local airspace. As a result of the Proposed Action, Runway 17/35 and the short-field runway would be closed and only Runway 08/26 would be operational. In addition to the closure of two of three runways, all drop zone activities would cease and transient military operations associated with the short-field runway would be eliminated. This would result in a 75 percent reduction of transient C-130 military operations at EWRVA. Taxiway E would eventually be developed by the EWVRAA to accommodate aircraft up to Airplane Design Group IV. The reduced operations of the 167 AW would alleviate any potential impact with regard to civilian air traffic congestion at EWVRA.

Air Quality. Berkeley County is currently in attainment for all criteria pollutants. Under implementation of the Proposed Action, particulate matter equal to or less than 10 microns in diameter (PM_{10}), would be generated during construction activities including vegetation removal, grading, and demolition. A conservatively high projected total of approximately 20.81 tons of dust per month would be generated during construction. Increased PM_{10} emissions resulting from proposed construction activities would be short-term and would be mitigated through standard dust minimization practices, such as regularly watering exposed soils, soil stockpiling, and soil stabilization. Further, only a small amount of dust would be produced during the winter months (November through March) because of the increased moisture associated with this season. Once operational, long-term emissions associated with proposed facilities would increase from baseline conditions; however, long-term emissions from aircraft operations would decrease based on reduced and remote operations.

Noise. Regarding proposed construction, expansion, and demolition, the Proposed Action would have minor, temporary impacts on the noise environment in the vicinity of the EWVRA. However, noise generation would be typical of construction activities, would last only the duration of construction, and could be reduced through the use of

Table 2-4. Summary of Environmental Impacts Associated with the Proposed Action and Alternatives

Resource	Proposed Action	Relocation of Runway 17/35 Alternative	No-Action Alternative
Key Facts	Runways Active: 1 167 AW Operations: 564 Residences within >65 dB noise contour: 85 Residences within RPZs: 10	Runways Active: 2 167 AW Operations: 564 Residences within >65 dB noise contour: 85 Residences within RPZs: 17	Runways Active: 3 167 AW Operations: 6,897 Residences within >65 dB noise contour: 23 Residences within RPZs: 34
Airspace and Airfield Operations	Impacts related to closure of crosswind Runway 17/35 would be offset by reduction in 167 AW and transient military operations on Runway 08/26. Also, Runway 08/26 would be lengthened and improved.	Airspace and Airfield Operations would be reduced based on a decrease in 167 AW and transient military operations. The relocation of Runway 17/35 would give general aviation aircraft a runway option for takeoff and landing.	Airspace and Airfield Operations would remain consistent to current activity. Use of Runways 17/35 and 08/26 would remain uninterrupted and no impacts would occur.
Air Quality	Berkeley County is in attainment for all NAAQS criteria pollutants. Impacts associated with dust generation would be short-term and temporary. Emissions from aircraft operations would decrease; however, emissions from facility operations would increase.	Berkeley County is in attainment for all NAAQS criteria pollutants. Impacts associated with dust generation would be short-term and temporary. Emissions from aircraft operations would decrease; however, emissions from facility operations would increase.	Berkeley County is in attainment for all NAAQS criteria pollutants and current 167 AW operations are within their emissions permit. Selection of the No-Actin Alternative would result in no change to air quality conditions associated with 167 AW.
Noise	Despite a decrease in operations, noise exposure in the airport vicinity (including residential areas) would increase. However, removal of an engine test cell would reduce noise levels adjacent to the cell and a reduction in total daily operations would reduce the frequency with which noise impacts are encountered.	Despite a decrease in operations, noise exposure in the airport vicinity (including residential areas) would increase. However, removal of an engine test cell would reduce noise levels adjacent to the cell and a reduction in total daily operations would reduce the frequency with which noise impacts are encountered.	Operations and noise exposure would remain consistent with the current mission of the 167 AW.
Land Use	Increased noise exposure would impact residential land use areas adjacent to EWVRA. There also would be increased incompatible land use specific to safety concerns; specifically, new locations of RPZs overlap existing residences.	Increased noise exposure would impact residential land use areas adjacent to EWVRA. There also would be increased incompatible land use specific to safety concerns; specifically, new locations of RPZs overlap existing residences.	Impacts to land use would remain consistent with the current 167 AW mission.
Utilities and Infrastructure	Utilities and Infrastructure would be upgraded throughout the installation. The increased demand for utilities would be met by new or upgraded systems and providers have sufficient capacity to accommodate forecast demand.	Utilities and Infrastructure would be upgraded throughout the installation. The increased demand for utilities would be met by new or upgraded systems and providers have sufficient capacity to accommodate forecast demand.	Utilities and Infrastructure would not be upgraded but would continue to accommodate current operations.

Table 2-4. Summary of Environmental Impacts Associated with the Proposed Action and Alternatives (continued)

Resource	Proposed Action	Relocation of Runway 17/35 Alternative	No-Action Alternative
Geological Resources	No sensitive or unique soil types occur at EWVRA. Management practices would be implemented to minimize erosion.	No sensitive or unique soil types occur at EWVRA. Management practices would be implemented to minimize erosion.	No sensitive or unique soil types occur at EWVRA; no impacts would occur.
Water Resources	The primary potential impact to local water resources would be the establishment of additional impervious surfaces, resulting in reduced groundwater recharge and increased overland flow. Upgrades to the unit's stormwater collection and drainage system would accommodate increased surface flows and reduced groundwater recharge would be negligible on a regional scale.	The primary potential impact to local water resources would be the establishment of additional impervious surfaces, resulting in reduced groundwater recharge and increased overland flow. Upgrades to the unit's stormwater collection and drainage system would accommodate increased surface flows and reduced groundwater recharge would be negligible on a regional scale.	Local water resources would not change form current conditions. No new impervious surfaces would be created and changes in the stormwater collection and drainage system would not occur.
Biological Resources	The wetland on the acquisition parcel is an artificially constructed pond that is less than 0.1 acre and exempt from regulation, while impacts to installation wetlands from infrastructure (utility) improvements are authorized by the Nationwide Permit No. 12, previously issued by the USACOE for purposes of Section 404 of the Clean Water Act, as published in the January 15, 2002 issue of the Federal Register (USACOE 2003). No Federal or state listed species would be impacted by implementation of the Proposed Action.	The wetland on the acquisition parcel is an artificially constructed pond that is less than 0.1 acre and exempt from regulation, while impacts to installation wetlands from infrastructure (utility) improvements are authorized by the Nationwide Permit No. 12, previously issued by the USACOE for purposes of Section 404 of the Clean Water Act, as published in the January 15, 2002 issue of the Federal Register (USACOE 2003). No Federal or state listed species would be impacted by implementation of the Proposed Action.	No wetlands or Federal or state listed species would be impacted under the No-Action Alternative.
Transportation and Circulation	Transportation systems on the installation would be improved with establishment of a new Main Gate and cross-installation roadway. Peak-hour congestion would increase on U.S. Highway 11 at the Main Gate but impacts would be short-term (i.e., approximately 2 hours per day) and minimized through establishment of turn lanes (traffic signal if necessary) into the Main Gate. Further, traffic that utilized residential area roads to access the installation would be reduced.	Transportation systems on the installation would be improved with establishment of a new Main Gate and cross-installation roadway. Peak-hour congestion would increase on U.S. Highway 11 at the Main Gate but impacts would be short-term (i.e., approximately 2 hours per day) and minimized through establishment of turn lanes (traffic signal if necessary) into the Main Gate. Further, traffic that utilized residential area roads to access the installation would be reduced.	Parking at the installation fails to meet minimum Air Force requirements (a ratio of 0.75 parking spaces to personnel). Therefore, current conditions should be addressed.

Table 2-4. Summary of Environmental Impacts Associated with the Proposed Action and Alternatives (continued)

Resource	Proposed Action	Relocation of Runway 17/35 Alternative	No-Action Alternative
Visual Resources	New facilities and activities at EWVRA would be consistent with military operations that have been taking place there for several decades. Further, although the C-5 aircraft is much larger than the C-130H, operations would be less frequent and would not involve extensive local (e.g., "racetrack") flight patterns typical of C-130H operations.	New facilities and activities at EWVRA would be consistent with military operations that have been taking place there for several decades. Further, although the C-5 aircraft is much larger than the C-130H, operations would be less frequent and would not involve extensive local (e.g., "racetrack") flight patterns typical of C-130H operations.	Facilities and activities would remain consistent with a military facility and airport.
Cultural Resources	Several structures and sites at EWVRA have been investigated in order to determine their sensitivity and/or potential eligibility for Federal protection. Based on these investigations and correspondence with the West Virginia SHPO, the Proposed Action is not expected to impact any sensitive Cultural Resources.	Several structures and sites at EWVRA have been investigated in order to determine their sensitivity and/or potential eligibility for Federal protection. Based on these investigations and correspondence with the West Virginia SHPO, the Proposed Action is not expected to impact any sensitive Cultural Resources.	No sensitive structures or sites at EWVRA are eligible for Federal protection.
Socioeconomics	Property values in the immediate area could be affected; however, beneficial impacts associated with the Proposed Action (e.g., increased staffing at the unit, corresponding secondary spending and construction) would provide an approximate 42 percent increase to regional economics.	Property values in the immediate area could be affected; however, beneficial impacts associated with the Proposed Action (e.g., increased staffing at the unit, corresponding secondary spending and construction) would provide an approximate 42 percent increase to regional economics.	Socioeconomic activities and attributes would not change from their current level.
Environmental Justice and Protection of Children	With regard to Protection of Children, exposure of children to increased noise levels has been determined by HUD to be a significant hearing loss risk factor; however, considering the magnitude of the proposed decrease in operations (from about 23 to 2 per day), the relatively low number of noise events would likely offset any potential adverse impact. With regard to Environmental Justice, no populations (low-income, minority, or otherwise) would be disproportionately adversely impacted.	With regard to Protection of Children, exposure of children to increased noise levels has been determined by HUD to be a significant hearing loss risk factor; however, considering the magnitude of the proposed decrease in operations (from about 23 to 2 per day), the relatively low number of noise events would likely offset any potential adverse impact. With regard to Environmental Justice, no populations (low-income, minority, or otherwise) would be disproportionately adversely impacted.	Current noise contours reflect that areas where children would be exposed to noise are within acceptable ranges. Currently, no low-income or minority populations are disproportionately adversely impacted.

Table 2-4. Summary of Environmental Impacts Associated with the Proposed Action and Alternatives (continued)

Resource	Proposed Action	Relocation of Runway 17/35 Alternative	No-Action Alternative
Hazardous Materials and Waste	No active IRP sites exist at the installation and changes to the unit's storage and use of hazardous materials and wastes would be addressed in their relevant Management Plans.	No active IRP sites exist at the installation and changes to the unit's storage and use of hazardous materials and wastes would be addressed in their relevant Management Plans.	No active IRP sites exist at the installation and hazardous materials and waste currently generated would not change.
Safety	With proposed runway extensions, existing RPZs would be shifted and would affect new areas that are currently developed for residential use. The FAA restricts the existence of private residences within RPZs (FAA 1996).	In addition to the proposed runway extensions establishing new RPZs over residential areas, relocation of Runway 17/35 and associated RPZs would also cover areas currently developed for residential use. The FAA restricts the existence of private residences within RPZs (FAA 1996).	Impacts to safety would remain consistent with the current 167 AW mission.
Department of Transportation Section 4(f)	No Department of Transportation Section 4(f) resources (public parks or recreation areas, wildlife or waterfowl refuges, and historical or archaeological resources) would be impacted through implementation of the Proposed Action.	No Department of Transportation Section 4(f) resources (public parks or recreation areas, wildlife or waterfowl refuges, and historical or archaeological resources) would be impacted through implementation of the Relocation of Runway 17/35 Alternative.	No Department of Transportation Section 4(f) resources exist at the installation or are impacted through the 167 AW's current mission.

equipment sound mufflers and restriction of construction activity to normal working hours. The Proposed Action would involve a change in the type of aircraft and aircraft operations associated with the 167 AW; therefore, aircraft-related noise exposure would change upon implementation. Proposed facilities would be sited in areas that have noise-exposure characteristics of 60 to 75 day-night average sound level (DNL); the U.S. Department of Housing and Urban Development (HUD) , DoD, and FAA consider such facilities compatible in this environment. However, off-site residential areas are not compatible: residential areas would exist within the 65 to 75 DNL and 75+ DNL noise contours created by the C-5 aircraft. HUD, DoD, and FAA consider residential areas within these noise contours "normally unacceptable" (65 to 75 DNL) and "clearly unacceptable" (75+ DNL).

Land Use. The proposed projects associated with the aircraft conversion are inherently consistent with West Virginia ANG planning policies and guidelines; further, all project components at the installation have been designed and sited to be compatible with existing airfield safety guidelines. With regard to off-site land use, no new land use activities would be introduced onto the West Virginia ANG installation; therefore, no

newly introduced activity would have the potential to conflict with vicinity land use. The extension of Runway 08/26 would require new RPZs to be established and residential land use currently occurs within the proposed RPZ; the FAA has determined that this land use area is incompatible with an RPZ.

Utilities and Infrastructure. Implementation of the Proposed Action would result in an increase in demand for natural gas, water, sewerage service, telecommunications, and electrical service. Expansion of the existing utility corridor would be required but would take place in previously disturbed areas. Therefore, although the Proposed Action would require an increase in utilities, the demand would not exceed the supply.

Geological Resources. Potential geologic impacts associated with the Proposed Action at the West Virginia ANG installation would be limited to ground-disturbing activities. However, most construction activities associated with the Proposed Action would occur on previously disturbed or developed land, which is capable of supporting such development. Additionally, standard erosion control measures would reduce any potential geological impacts to negligible levels. Finally, areas where construction is proposed are not utilized for agricultural or mineral purposes.

Water Resources. With regard to surface water, construction and demolition would have a localized and temporary effect on hydrology; however, practices would be incorporated during the construction and demolition phases of the Proposed Action to minimize erosion, runoff, and sedimentation. No project activities would occur within floodplains nor would these areas be impacted. Potential impacts to wetlands and stream channels is further discussed in the *Biological Resources* section. Upon completion of construction, no adverse impacts would occur and long-term impacts to surface water resources on and in the vicinity of the West Virginia ANG installation would be negligible. The establishment of additional impermeable surface areas would reduce regional groundwater recharge capabilities, resulting in permanent, but negligible, impacts to groundwater hydrology. (Increased surface water flow volumes resulting from expanded airfield pavements would be accommodated by a new stormwater system consisting of upgraded storm drains installed during airfield expansion and three stormwater management ponds. The new system was designed to accommodate a minimum of 10-year flood event.) Therefore, implementation of the Proposed Action would not result in impacts to groundwater resources.

Biological Resources. Proposed construction of a stormwater management pond within the acquisition parcel would impact the palustrine wetland noted on the 1980 National Wetlands Inventory (NWI) map. Further, the installation's single palustrine wetland is within the area proposed for infrastructure improvements and has linked to an unnamed tributary connecting to Cold Springs River. The wetland in the acquisition parcel is artificially constructed, less than 0.1 acre, and exempt from regulation. The wetland within the current installation boundary would be impacted through infrastructure improvements for airport expansion; however, these improvements are authorized with Nationwide Permit No. 12, issued by the USACOE for purposes of Section 404 of the Clean Water Act, as published in the January 15, 2002 issue of the *Federal Register*

(USACOE 2003). Currently, no state or federally listed threatened or endangered species occupy habitat within the 167 AW installation or the proposed acquisition parcel; however, no listed species surveys have been conducted recently. While Berkeley County is on the edge of the Indiana bat's range, no bats have been identified within the county. Suitable habitat for the endangered Indiana bat could occur on the proposed acquisition parcel; however, should suitable habitat be identified the amount would be less than 9 acres and unlikely to affect the endangered Indiana bat.

Transportation and Circulation. Implementation of the Proposed Action would require delivery of materials to and removal of demolition-related debris from construction sites. However, construction traffic would make up only a small portion of the total existing traffic volume in the region and at the installation, and many of the vehicles would be driven to and kept on site for the duration of construction, resulting in very few actual increased trips. The development of two cross-installation roadways would alleviate installation congestion and establish a new main gate off a major thoroughfare, U.S. Highway 11 (improving the current situation which requires unit personnel and visitors to drive through a residential area to access the existing main gate). These proposed circulation system improvements would address existing circulation deficiencies and provide efficient access to proposed and existing facilities at the installation. Further, parking proposed for development would meet the Air Force's minimum parking-space/personnel requirement by approximately 75 percent. Based on the capacity of U.S. Highway 11 and the increased personnel levels required for the aircraft conversion, peak-hour congestion would increase along this highway at the new Main Gate entrance; however, these impacts would be short-term (i.e., affecting only 2 hours per day) and reduced through development of a left- and right-turn lane (traffic signal if necessary) into the installation from U.S. Highway 11.

Visual Resources. Facility construction projects associated with the Proposed Action would be visually consistent with existing structures at the installation; however, the number of facilities visible from off site residences and public streets would increase. Implementation of the aircraft conversion, from C-130H to C-5 aircraft, would result in a more visible aircraft but would be consistent with what currently exists at the installation and what is characteristic of an airport. When operational, the C-5 would be more visible than the current 167 AW aircraft; however, fewer aircraft operations would take place upon implementation of the Proposed Action.

Cultural Resources. No architectural, archaeological, historic, or Native American cultural resources are known to exist within the boundaries of the West Virginia ANG installation or the acquisition parcel. Two small cemeteries and the ruins of a brick operations building are located in the southeastern section of the EWVRA property opposite the 167 AW installation and proposed acquisition parcel. Another small burial plot is located adjacent to the installation on property owned by the State of West Virginia and occupied by the West Virginia Army National Guard. This cemetery is approximately 0.5 mile east of any proposed development. Therefore, implementation of the Proposed Action would not impact known archaeological or historic cultural

resources. Although most proposed construction projects have been sited in previously developed areas on the 167 AW installation, the potential remains—however slight—for currently buried, unknown archaeological resources to be uncovered during ground-disturbing activities (i.e., construction and expansion of facilities, and demolition). If such resources were uncovered during construction or renovation at the 167 AW installation or development of the proposed acquisition parcel, activities would be suspended until a qualified archaeologist could determine the significance of the resource(s).

Socioeconomics. Economic activity associated with proposed construction, such as hiring of temporary laborers and purchasing of materials, would provide regional economic benefits should these expenditures take place in Berkeley County. Additionally, long-term changes in economic activity associated with the 167 AW could occur upon implementation of the Proposed Action (e.g., there would be an increase in unit staffing levels). Conservative impacts to economic indicators on a regional scale have been projected to increase approximately 42 percent. With regard to property values, quantitative analyses would vary depending on distance from the airfield, topographic relief, and other factors. A quantitative assessment of actual impacts on property values would be too speculative at this time.

Environmental Justice and Protection of Children. Comparatively, Berkeley County residents in communities near the installation are not considered low-income; further, the percentage of minority residents in the County of Berkeley is slightly higher than the State of West Virginia but much less than the nation. Implementation of the Proposed Action or any identified alternative would not disproportionately adversely impact minority or low-income populations. No on-site housing or facilities for children exist in areas associated with the West Virginia ANG installation. Because children would not have access to construction sites, implementation of the Proposed Action would not result in safety risks to children. However, residences are within the 65 to 75 DNL ("usually unacceptable" per HUD, FAA and DoD explore noise level reduction options) and 75 to 80 DNL ("clearly unacceptable" per HUD, not compatible per FAA and DoD) (HUD 1991). Some of these residences would presumably house children; therefore, although the actual number of high noise events would decrease, implementation of the Proposed Action could have an increased environmental health risk to children.

Hazardous Materials and Wastes. Implementation of the Proposed Action would result in a net increase in the quantity of hazardous materials stored and hazardous wastes generated at the 167 AW due to construction and operation of the proposed facilities. Based on activities conducted by units operating similar aircraft (e.g., C-5, C-141), a modification of the installation's Resource Conservation and Recovery Act (RCRA) permit as a Small Quantity Generator (SQG) of hazardous waste is not anticipated. The existing 504-sf hazardous waste Central Accumulation Point (CAP) located at Building 132 (Base Supply Open Storage) would remain. This facility would have adequate capacity to accommodate the increased volume of wastes generated by the aircraft conversion. Hazardous wastes would continue to be disposed of by the Defense Reutilization and Marketing Office (DRMO). An increase in the storage of hazardous waste would also occur throughout the demolition phase of the project; however, such

an impact would be temporary. This hazardous waste (lead-based paint and asbestos-containing materials associated with demolition) would have special handing requirements and be stored at the installation's existing CAP prior to final disposal off-site. Further, all four Installation Restoration Program (IRP) sites at the installation were recommended for no further action and were closed. Finally, an EBS of the proposed acquisition parcel recommended, based on a lack of evidence of on-site or adjacent contamination, that the property transaction proceed.

Safety. With regard to the potential for aircraft mishaps, implementation of the Proposed Action would result in a reduction to the frequency of aircraft operations performed by the 167 AW. The C-5 aircraft has a lower mishap rate than the C-130H aircraft and local, low-level drop zone operations would be eliminated from the 167 AW mission. The new small arms munitions maintenance/storage complex is proposed for construction within the northern section of the installation and no incompatible structures are proposed for development within the safety arc associated with this complex or the new POL storage area. Guarded entrance gates, border and flightline patrols, and perimeter fencing would remain, providing adequate security for 167 AW personnel and aircraft. Although no 167 AW facilities proposed for development would be incompatible with regard to new RPZs associated with the runway extensions at EWVRA, the Proposed Action would result in a shift in location of established RPZs and potential land use conflict with regard to airfield safety as it relates to local residential areas. The FAA restricts the establishment of private residences within RPZs; however, RPZs associated with EWVRA currently overlap seven residences (FAA 1996). Implementation of the Proposed Action would establish new RPZs over existing residential areas impacting an additional three residences (Air Photographics, Inc. 2002).

Department of Transportation Section 4(f). Implementation of the Proposed Action would not impact any properties addressed by Department of Transportation Section 4(f), specifically: publicly owned parks and recreation areas, wildlife and waterfowl refuges, and historic or archaeological sites. No Section 4(f) properties are in close proximity to the EWVRA. Further, development of associated facilities, airfield improvements, and highway intersection realignment would not result in the direct acquisition of any Section 4(f) properties and no audible, visual, or atmospheric conditions associated with construction and C-5 operations would directly or indirectly impact Section 4(f) properties. One privately owned park that consists of two baseball diamonds is present within the proposed acquisition parcel. Once acquired, this parcel and the park would become the responsibility of the 167 AW. The unit currently plans to keep the park in its existing condition.

SECTION 3

AFFECTED ENVIRONMENT

SECTION 3
AFFECTED ENVIRONMENT

Under the National Environmental Policy Act (NEPA), the analysis of environmental baseline conditions is directly related to assessing the expected environmental consequences of implementing the proposed action. NEPA requires that the analysis only address those resource areas and environmental characteristics with the potential to be affected by the Proposed Action; locations and resources with no potential to be affected need not be analyzed. The environment includes all land areas that might be affected, as well as the natural, cultural, and socioeconomic resources they contain or support. Thus, in the environmental analysis process, analysts first identify the resources to be analyzed and then select the level of analysis, both in spatial extent and intensity that the resources will be examined.

This section describes relevant existing environmental conditions for resources potentially affected by the Proposed Action and Alternative. In compliance with NEPA, Council on Environmental Quality (CEQ) regulations, and Title 32, Code of Federal Regulations (CFR) Part 989 (32 CFR 989), *Environmental Impact Analysis Process*, the description of the affected environment in this section focuses on those resource areas within the region of influence (ROI) for each resource area potentially subject to impacts.

In the case of the Proposed Action at the 167th Airlift Wing (167 AW), the affected environment description is limited primarily to the West Virginia Air National Guard (ANG) installation, Eastern West Virginia Regional Airport (EWVRA), the City of Martinsburg, and Berkeley County. Resource descriptions focus on the following areas: air quality, noise, land use, utilities and infrastructure, geological resources, water resources, biological resources, transportation and circulation, visual resources, cultural resources, socioeconomics, environmental justice and protection of children, hazardous materials and wastes, and safety. Airspace and airfield operations would be affected by the Proposed Action; therefore, it is also included in the discussion.

3.1 AIRSPACE AND AIRFIELD OPERATIONS

3.1.1 Definition of Resource

Airspace management is defined by the U.S. Air Force (USAF) as the coordination, integration, and regulation of the use of airspace (Air Force Instruction 13-201). Categories and types of airspace are dictated by several elements: the complexity and density of aircraft movements, the nature of aircraft operations, the required level of safety, and national and public interest in the airspace. Airspace management is an important issue when considering potential environmental and safety effects of a proposed aircraft conversion since it dictates the types of aircraft activities that can occur at different locations and altitudes. The Federal Aviation Administration (FAA) has overall responsibility for managing airspace through a system of flight rules and regulations, airspace management actions, and air traffic control (ATC) procedures.

The FAA accomplishes this through close coordination with state aviation and airport planners, military airspace managers, and other entities to determine how airspace can be used most effectively to serve all interests. All military and civilian aircraft are subject to Federal Aviation Regulations (FARs). Elements of airspace management relevant to safety and environmental resources include aircraft types, speeds, altitudes, and frequency of operations. These elements, in turn, influence the types and severity of effects that can occur on biological resources, cultural resources, air quality, safety, land use, socioeconomics, and visual resources.

3.1.2 Existing Conditions

3.1.2.1 Mission

As a tactical airlift unit, the primary peace- and war-time mission of the 167 AW is to provide tactical airlift service and aerial delivery of personnel and equipment under the authority of the Air Mobility Command, headquartered at Scott Air Force Base (AFB). To maintain combat readiness for its mission, aircrews of the 167 AW routinely fly training missions that depart from the EWVRA, fly high altitude navigation training routes, low altitude slow routes and drops, regional drops, and return to the airfield.

3.1.2.2 Aircraft Inventory and Operations

The 167 AW currently maintains and operates a Primary Aircraft Inventory (PAI) of 12 C-130H tactical airlift aircraft. The C-130H entered operational service in 1974 as an airdrop and cargo airlift aircraft. The unit currently conducts approximately 692 C-130H sorties annually (2 to 3 daily) during 301 flying days per year. Within each sortie various operations are performed. An operation is defined as a single event which includes landing, takeoffs, an individual climb-out, and descent portions of a closed pattern. Approximately 23 C-130H operations are performed daily by the 167 AW (167 AW/West Virginia ANG 1999a; Wyle Laboratories 2003a). All 167 AW cargo drops taking place at EWVRA occur within local controlled airspace when the ATC tower is in operation.

3.1.2.3 Airspace Operations

The FAA has designated four types of airspace above the U.S.: *controlled, uncontrolled, special use,* and *airspace for military special use.* The categories and types of airspace are dictated by the complexity or density of aircraft movements, the nature of the operations conducted within the airspace, the required level of safety, and national and public interest in the airspace.

The airspace ROI for this Environmental Impact Statement (EIS) includes the airspace within a 20 Nautical Mile (NM) radius of EWVRA from the ground surface up to and including 5,000 feet mean sea level (MSL).

Controlled Airspace

Controlled airspace is a generic term that encompasses the different classifications of airspace (Class A, B, C, D, and E) and defines dimensions within which ATC service is provided for instrument flight rules (IFR) and visual flight rules (VFR) conditions (Figure 3-1). VFR air traffic flies below 18,000 feet MSL using visual references such as towns, highways, and railroads as a means of navigation. VFR aircraft may also follow Federal airways at altitudes not used by aircraft on instrument flight. VFR conditions rely heavily on "see-and-avoid" procedures that require pilots to be visually alert for and maintain safe distances from other aircraft, populated areas, obstacles, or clouds. Most other air traffic (including air passenger commercial carriers, business aircraft, and military aircraft) operate under IFR conditions that require pilots to be trained and appropriately certified in instrument navigational procedures. The respective procedures established under VFR and IFR for airspace use and flight operations help segregate aircraft operating under each set of rules. Military pilots are trained for and use both VFR and IFR conditions.

Class A Airspace

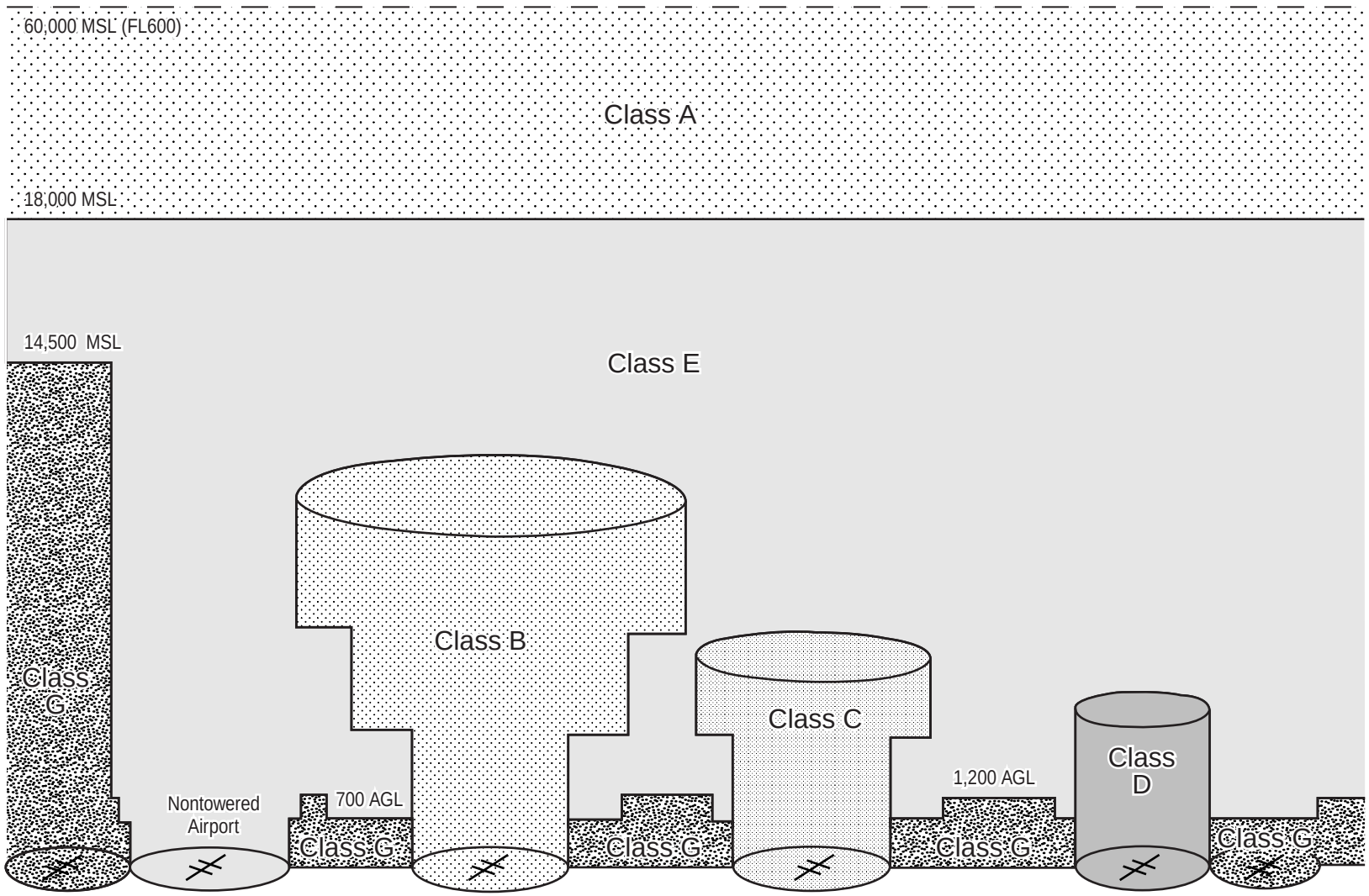
Class A airspace includes all flight levels or operating altitudes, including that airspace overlying waters within 12 NM of the coast of the 48 contiguous states, from 18,000 to 60,000 feet MSL. Class A airspace is dominated by commercial aircraft using jet routes between 18,000 and 45,000 feet MSL.

Class B Airspace

Class B airspace typically comprises that airspace surrounding the nation's busiest airports such as Reagan National Airport, Washington, DC, from the surface to 10,000 feet MSL. The configuration of each Class B airspace area is individually tailored and consists of a surface area with an additional two or more layers; it is designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace.

Class C Airspace

Airspace designated as Class C can generally be described as controlled airspace that extends from the surface up to 4,000 feet above ground level (AGL). Class C airspace is designated and implemented to provide additional control into and out of primary airports that occasionally experience a large number of aircraft operations. All aircraft operating within Class C airspace are required to maintain two-way radio communications with local ATC entities.



AGL – above ground level
MSL – above mean sea level

Note: Altitudes not to scale.

Source: FAA 1993; http://www.asy.faa.gov/safety_products/airspaceclass.htm.

Figure 3-1. FAA Controlled Airspace Classifications

Class D Airspace

Class D airspace is the area within 5 NM from an ATC-controlled airport, extending from the surface to 2,500 feet AGL or higher. All aircraft operating within Class D airspace must be in two-way radio communications with the ATC facility. The airspace in the immediate vicinity of EWVRA is Class D airspace.

Class E Airspace

Class E airspace is controlled airspace that is not designated as Class A, B, C, or D. It includes designated Federal airways (routes) consisting of low-altitude V or "Victor" routes. Federal airways have a width of 4 statute miles on either side of the airway centerline and can occur between altitudes of 700 feet AGL and 18,000 feet MSL. These airways frequently intersect approach and departure paths from military and civilian airfields. The majority of Class E airspace is located where more stringent airspace controls have not been established.

Uncontrolled Airspace

Uncontrolled (i.e., Class G) airspace is not subject to the restrictions that apply to controlled airspace. Limits of uncontrolled airspace typically extend from the surface to 700 feet AGL, but if no other types of controlled airspace have been designated by the FAA, these altitudes can extend to as high as 14,500 feet MSL. ATC does not have the authority to exercise control over aircraft operations within uncontrolled airspace. Primary users of uncontrolled airspace are general aviation aircraft operating in accordance with VFR.

Special Use Airspace

Special use airspace consists of airspace within which specific activities must be confined, or where limitations are imposed on aircraft not participating in those activities. With the exception of Controlled Firing Areas, special use airspace is depicted on sectional aeronautical charts. These charts include hours of operation, altitudes, and the agency controlling the airspace. All special use airspace descriptions are contained in FAA Order 7400.8E and published in the Department of Defense (DoD) Flight Information Publication: *AP/1A – Special Use Airspace North and South America*.

Examples of special use airspace are military operations areas, restricted areas, warning areas, and prohibited areas. No special use airspace exists within the Martinsburg ROI.

Airspace for Military Special Use

Airspace for military special use are areas where military activities occur but few restrictions are put on non-participating aircraft below 18,000 feet MSL. These areas include military training routes (MTRs) and slow routes (SRs). MTR and SR

descriptions are contained in FAA Order 7400.8E and published in the DoD Flight Information Publication: *AP/1B—Military Training Routes, North and South America*.

MTRs are flight corridors of defined width and altitude structures dedicated to low altitude flight operations in excess of 250 knots indicated airspeed. There are two types of MTRs: instrument routes (IRs) and visual routes (VRs). IRs can be flown in both instrument and visual conditions. VRs may only be flown in visual conditions. There is one MTR (VR-708) within the Martinsburg ROI. The 167 AE does not utilize VR-708.

SRs are similar to MTRs in structure but can only be flown at speeds less than 250 knots indicated airspeed and under VFR conditions. There are six designated SRs within the Martinsburg ROI (SRs 802, 803, 804, 806, 807 and 808) flown by the 167 AW's C-130H aircraft. All of the SRs begin just north of the EWVRA and terminate at the Shepherd Drop Zone (DZ) on EWVRA.

EWVRA

During times when the ATC tower is operational, airspace surrounding the EWVRA is designated as primarily Class D. When the tower is non-operational, airspace in the EWVRA area is designated Class E. However, a section of the ROI airspace is within the northwestern boundary of Class B airspace that extends from the Washington, DC, area to a point approximately 16 miles southeast of the EWVRA.

There is one civil/military, one public, and three private use airports located within or adjacent to the controlled airspace associated with the Martinsburg ROI. EWVRA and Washington County Regional Airport are the only airports located in the ROI that operate an ATC tower.

3.1.2.4 Airfield Operations

The EWVRA airfield consists of one primary instrument runway (08/26), one visual runway (17/35), and short-field runway used to practice short field landings and takeoffs. The instrument and visual runways intersect at approximately mid-field. Runway 08/26 is oriented east/west and is 7,000 feet long by 150 feet wide. This runway is equipped with High Intensity Runway Lights (HIRL) that are pilot activated when the tower is closed, a Medium Intensity Approach Lighting System (MIALS), and a Visual Approach Slope Indicator (VASI) lighting system. Runway 17/35 is oriented north/south, used for visual approaches only, equipped with Medium Intensity Runway Lights (MIRL), and is 5,001 feet long and 150 feet wide. This runway is used by general aviation for convenience, based on its proximity to the civilian tie down and hangar area. The short-field runway is located north of and parallel to Runway 08/26, and is 3,000 feet long and 60 feet wide. The EWVRA ATC tower is operational Tuesday through Thursday 7:00 AM to 10:00 PM, Friday and Saturday 7:00 AM to 4:00 PM, and Sunday 1:00 PM to 6:00 PM.

There are three published low-altitude instrument approach procedures at EWVRA. There is one precision Instrument Landing System (ILS) approach and one non-precision Very High Frequency Omnidirectional Range (VOR) approach to the airfield, and one localizer/Distance Measuring Equipment (DME) Back Course to Runway 08/26. These approaches are initiated from points defined off the Martinsburg Very High Frequency Omnidirectional Range Tactical Air Navigation (VORTAC) at altitudes at or above 3,000 feet MSL. Tower-controlled traffic patterns are flown to either side of each runway at altitudes of 1,600 feet MSL for rectangular patterns and 2,100 feet MSL for overhead patterns.

The majority of aircraft operations (i.e., one takeoff, one landing, a low approach, or missed approach) at EWVRA are generated by resident C-130H and general aviation aircraft. Annual operations at EWVRA, based on an average of 301 flying days for the 167 AW C-130H and 365 flying days per year for general aviation, are approximately 6,897 (29.2 percent) 167 AW operations and 7,403 (31.4 percent) civilian operations. Transient military aircraft account for the other 9,284 (39.4 percent) of EWVRA annual operations (167 AW/West Virginia ANG 1999a; 167 AW/West Virginia ANG 2002a).

3.2 AIR QUALITY

3.2.1 Definition of Resource

Air quality in a given location is determined by the concentration of various pollutants in the atmosphere. National Ambient Air Quality Standards (NAAQS) are established by the U.S. Environmental Protection Agency (USEPA) for criteria pollutants, including: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter equal to or less than ten microns in diameter (PM_{10}), and lead (Pb). NAAQS represent maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare.

3.2.1.1 Criteria Pollutants

Air quality is affected by stationary sources (e.g., industrial development) and mobile sources (e.g., motor vehicles). Air quality at a given location is a function of several factors, including the quantity and type of pollutants emitted locally and regionally, and the dispersion rates of pollutants in the region. Primary factors affecting pollutant dispersion are wind speed and direction, atmospheric stability, temperature, the presence or absence of inversions, and topography.

Ozone (O_3). The majority of ground-level (or terrestrial) O_3 is formed as a result of complex photochemical reactions in the atmosphere involving volatile organic compounds (VOC), nitrogen oxides (NO_x), and oxygen. O_3 is a highly reactive gas that damages lung tissue, reduces lung function, and sensitizes the lung to other irritants. Although *stratospheric* O_3 shields the earth from damaging ultraviolet radiation, terrestrial O_3 is a highly damaging air pollutant and is the primary source of smog.

Carbon Monoxide (CO). CO is a colorless, odorless, poisonous gas produced by incomplete burning of carbon in fuel. The health threat from CO is most serious for those who suffer from cardiovascular disease, particularly those with angina and peripheral vascular disease.

Nitrogen Dioxide (NO_2). NO_2 is a highly reactive gas that can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Repeated exposure to high concentrations of NO_2 may cause acute respiratory disease in children. Because NO_2 is an important precursor in the formation of O_3 or smog, control of NO_2 emissions is an important component of overall pollution reduction strategies. The two primary sources of NO_2 in the U.S. are fuel combustion and transportation.

Sulfur Dioxide (SO_2). SO_2 is emitted primarily from stationary source coal and oil combustion, steel mills, refineries, pulp and paper mills, and from non-ferrous smelters. High concentrations of SO_2 may aggravate existing respiratory and cardiovascular disease; asthmatics and those with emphysema or bronchitis are the most sensitive to SO_2 exposure. SO_2 also contributes to acid rain, which can lead to the acidification of lakes and streams and damage trees.

Particulate Matter (PM_{10}). PM_{10} is typically composed of dust, ash, soot, smoke, or liquid droplets emitted into the air by industrial sources. Fires, construction activities, use of unpaved roads, and natural sources (e.g., volcanic eruptions) also contribute to PM_{10} levels. Small particulates are most likely to cause adverse health effects because they can be inhaled into the lower regions of the respiratory tract where they can aggravate existing respiratory disease and decline in lung function.

Airborne Lead (Pb). Airborne lead can be inhaled directly or ingested indirectly by consuming lead-contaminated food, water, or non-food materials such as dust or soil; fetuses, infants, and children are most sensitive to Pb exposure. Pb has been identified as a factor in high blood pressure and heart disease. Exposure to Pb has declined dramatically in the last 10 years as a result of the reduction of Pb in gasoline and paint, and the elimination of Pb from soldered cans.

3.2.1.2 Clean Air Act Amendments

The Clean Air Act Amendments (CAAA) of 1990 place most of the responsibility to achieve compliance with NAAQS on individual states. To this end, USEPA requires each state to prepare a State Implementation Plan (SIP). A SIP is a compilation of goals, strategies, schedules, and enforcement actions that will lead the state into compliance with all NAAQS. Areas not in compliance with a standard can be declared *nonattainment* areas by USEPA or the appropriate state or local agency. In order to reach *attainment*, NAAQS may not be exceeded more than once per year. A *nonattainment* area can reach *attainment* when NAAQS have been met for a period of 10 consecutive years.

3.2.2 Existing Conditions

3.2.2.1 Climate

Berkeley County is located in the Great Appalachian Valley and bordered by the Potomac River. Typical annual weather consists of warm humid summers and cold humid winters. The average temperature in the winter is approximately 32 degrees Fahrenheit (°F) and in the summer is approximately 73° F. The average annual precipitation in the county is 37.54 inches, where 54 percent falls between the months of April and September. The average seasonal snowfall is 25.3 inches (Natural Resource Conservation Service [NRCS] 2000).

3.2.2.2 Local Air Quality

Berkeley County is under the jurisdiction of the West Virginia Department of Environmental Protection (DEP) and is currently designated as an *attainment* area for all criteria pollutants. However, the county has filed for Early Action Compact for ozone and would be in non-attainment for this criteria pollutant without this action.

There is one active air quality monitoring station in the county; it is located at the Martinsburg Ball Field approximately 6.5 miles northeast of the EWVRA (Figure 3-2). This station monitors O_3 and PM_{10}. The USEPA has also designated Berkeley County as being in attainment for all criteria pollutants (USEPA 2002).

3.2.2.3 Emissions at the 167 AW Installation

Primary on-site emission sources at the 167 AW installation include:

- aircraft operations and maintenance (aircraft flying operations, trim and power checks);
- vehicle operations and maintenance (aerospace ground equipment [AGE], privately owned vehicles [POVs], government-owned vehicles [GOVs]);
- combustion sources (21 boilers and water heaters, 9 diesel-fueled emergency back-up generators, one diesel-fueled fire pump, and one engine test stand);
- fuel storage operations (fuel storage tanks, aircraft refueler tank trucks); and
- maintenance sources (paints, thinners, solvents, cleaners, and other materials containing VOCs and hazardous air pollutants [HAPs]).

The most recent air emissions inventory data available for the 167 AW installation evaluated actual and potential stationary source emissions and actual mobile source emissions from the installation for calendar year 2000 (Table 3-1).

Table 3-1. Summary of Actual and Potential Stationary and Mobile Source Air Emissions at the 167 AW Installation (2000)

	Actual Emissions (tpy)			Potential Emissions (tpy)
Pollutant	**Stationary**	**Mobile**	**Total**	**Stationary Only**
Carbon Monoxide	1.0	103.0	104.0	14.0
Nitrogen Oxides	2.0	203.0	205.0	27.0
Particulate Matter	<1.0	55.0	55.0	3.0
Sulfur Dioxide	<1.0	18.0	18.0	2.0
Volatile Organic Compounds	4.0	24.0	28.0	14.0
Hazardous Air Pollutants	2.0	N/A	2.0	9.0

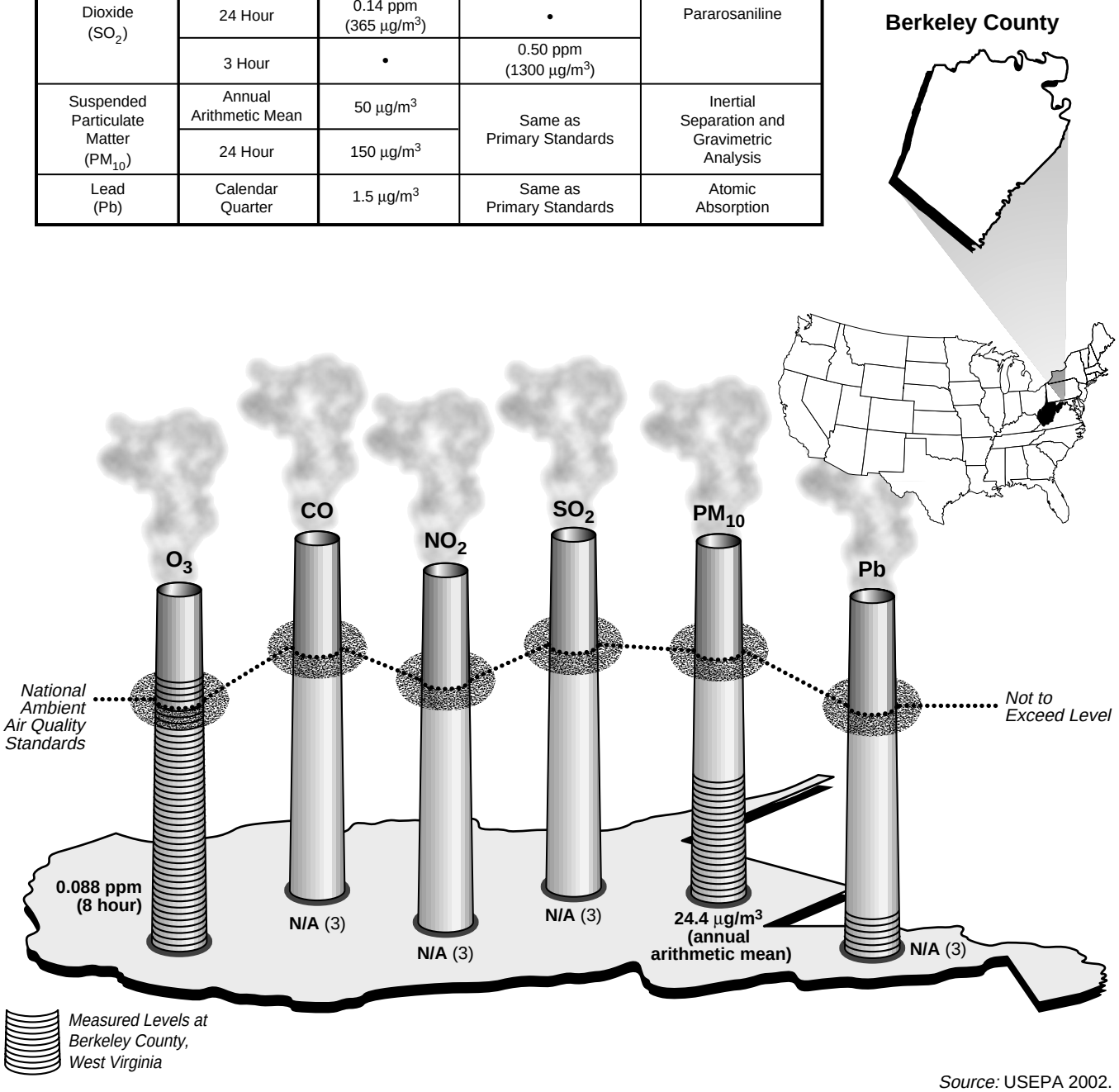
Note: tpy - tons per year
Source: 167 AW/West Virginia ANG 2000a.

Under the CAAA of 1990, the Title V Operating Permit Program imposes requirements for air quality permitting on air emission sources. The 167 AW is located in an area that is an attainment area for all criteria pollutants. The thresholds for CAAA Title V status are 100 tons per year (tpy) of any criteria pollutant, or 10 or 25 tpy of any single HAP or combination of HAPs, respectively. In determining Title V status, these emissions levels are calculated for potential-to-emit (PTE), which, according to the West Virginia DEP interpretation, is full operation for 24 hours per day, 365 days per year. On the basis of the unrestricted PTE of the stationary sources, the 167 AW does not exceed the

POLLUTANT	AVERAGING TIME	NATIONAL STANDARDS (1)		
		Primary	Secondary	Method
Ozone (O_3) (2)	8 Hour	0.08 ppm (157 $\mu g/m^3$)	Same as Primary Standards	Ethylene Chemiluminescence
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	Same as Primary Standards	Nondispersive Infrared Spectroscopy
	1 Hour	35 ppm (40 mg/m^3)		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.053 ppm (100 $\mu g/m^3$)	Same as Primary Standards	Gas Phase Chemiluminescence
Sulfur Dioxide (SO_2)	Annual Average	0.03 ppm (80 $\mu g/m^3$)	•	Pararosaniline
	24 Hour	0.14 ppm (365 $\mu g/m^3$)	•	
	3 Hour	•	0.50 ppm (1300 $\mu g/m^3$)	
Suspended Particulate Matter (PM_{10})	Annual Arithmetic Mean	50 $\mu g/m^3$	Same as Primary Standards	Inertial Separation and Gravimetric Analysis
	24 Hour	150 $\mu g/m^3$		
Lead (Pb)	Calendar Quarter	1.5 $\mu g/m^3$	Same as Primary Standards	Atomic Absorption

ppm – parts per million
$\mu g/m^3$ – micrograms per cubic meter
mg/m^3 – milligrams per cubic meter

(1) Not to be exceeded more than once a year except for annual standards; new ozone standard can be exceeded 3 times per year.
(2) USEPA has recently revised the ozone standard. The new averaging time is 8 hours and the Primary Standard is 0.08 ppm.
(3) Not monitored in Berkeley County.



Source: USEPA 2002.

EA

Figure 3-2. National Ambient Air Quality Standards and Measured Emission Levels Berkeley County, West Virginia

Figure 3-2

threshold limit for any of the criteria pollutants or HAPs, and remains classified as a minor source under the Title V program (167 AW/West Virginia ANG 2000a).

The West Virginia DEP submitted their Title V program and received interim approval from USEPA in November 1995. The 167 AW currently has one air permit with West Virginia DEP (Permit R13-1227B) which was last renewed in October 2003 (167 AW 2003e). This permit is for the two 330,000 gallon JP-8 internal floating roof tanks. The permit limits the maximum annual throughput of JP-8 to 3.13 million gallons per year. In 2000, the JP-8 output at the 167 AW was 2.3 million gallons and within the permit limit. The permit also limits VOC emissions from JP-8 fuel transfer from the storage tanks to fuel trucks to 198 pounds per year. For 2000, the calculated actual VOC emissions from fuel transfer of JP-8 equaled 198 pounds per year (167 AW/West Virginia 2000a).

Although mobile sources are not considered under the CAAA Title V Operating Permit program, they are a significant component of total emissions associated with 167 AW aircraft operations. Therefore, actual emissions from mobile sources are included in this inventory to present a full assessment of basewide air emissions (see Table 3-1). For this inventory, mobile sources include on- and off-road vehicles and equipment, aircraft operations, AGE, and mobility generators.

Emissions from aircraft operations result primarily from landings and takeoffs (LTOs), touch and go's (T&Gs), and low approaches (LAs). An LTO cycle includes taxiing between the hangar and runway, taking off and climbing out of the local pattern, and descending from the local pattern to touch down. T&Gs include only take off, climbout, and approach, where LAs include only approach and climbout (167 AW/West Virginia 2000a). Emission calculations for LTOs, T&Gs, and LAs for C-130H aircrafts at the 167 AW are shown in Tables 3-2 through 3-4.

Table 3-2. Emissions from Aircraft Landings and Take Offs at the 167 AW (2000)

Aircraft Type	Engine Type	Number of Engines	Number of LTOs/year	Procedure	Actual Emissions (tons/year)				
					CO	VOC	NO_x	SO_2	PM_{10}
C-130H	T-56-A-15	4	1,498	Taxi Out	10.74	5.51	20.94	1.29	10.18
		4	1,498	Take Off	0.62	0.10	4.0	0.16	0.43
		4	1,498	Climb Out	1.86	0.29	11.98	0.48	1.28
		4	1,498	Approach	5.63	1.16	16.60	0.92	7.69
		4	1,498	Taxi In	2.68	1.38	5.24	0.32	2.54
Total Emissions					21.53	8.44	58.76	3.17	22.12

Source: 167 AW/West Virginia ANG 2000a.

Table 3-3. Emissions from Aircraft Touch and Go's at the 167 AW (2000)

Aircraft Type	Engine Type	Number of Engines	Number of T&Gs/year	Procedure	Actual Emissions (tons/year)				
					CO	VOC	NO_x	SO_2	PM_{10}
C-130H	T-56-A-15	4	3,244	Take Off	0.44	0.07	2.85	0.12	0.30
		4	3,244	Climb Out	4.02	0.64	25.93	1.04	2.77
		4	3,244	Approach	12.20	2.51	35.94	2.0	16.65
Total Emissions					16.66	3.22	64.72	3.16	19.72

Source: 167 AW/West Virginia ANG 2000a.

Table 3-4. Emissions from Aircraft Low Approaches at the 167 AW (2000)

Aircraft Type	Engine Type	Number of Engines	Number of LAs/year	Procedure	Actual Emissions (lb/year)				
					CO	VOC	NO_x	SO_2	PM_{10}
C-130H	T-56-A-15	4	248	Climb Out	0.31	0.05	1.98	0.08	0.21
		4	248	Approach	1.40	0.29	4.12	0.23	1.91
Total Emissions					1.71	0.34	6.10	0.31	2.12

Source: 167 AW/West Virginia ANG 2000a.

3.3 NOISE

3.3.1 Definition of Resource

Noise is generally defined as unwanted sound and can be any sound that is undesirable because at a minimum it interferes with normal activities. More intense noise interrupts communication and can be annoying and can impact human hearing. Human responses to noise vary depending on such factors as the type and characteristics of the noise, distance between the noise source and receptor, receptor sensitivity, and time of day the noise occurs.

Because the loudest sounds which can be detected comfortably by the human ear have intensities which are 1,000,000,000,000 times larger than those of sounds which can just be detected, any attempt to represent the intensity of sound using a linear scale becomes very unwieldy. Thus, a logarithmic unit known as a decibel (dB) is used to represent the intensity of sound. The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB. A change in the sound level of about 10 dB is usually perceived by the average person as a doubling or halving of the sound's loudness.

Sound frequency is measured in terms of hertz (hz), and the normal human ear can detect sounds ranging from about 20 to 15,000 hz. However, because all sounds in this wide range of frequencies are not heard equally well by the human ear, which is most sensitive to frequencies in the 1000 to 4000 hz range, the very high and very low frequencies are adjusted to approximate the human ear's lower sensitivity to those frequencies. This is called "A-weighting" and is commonly used in measurement of community environmental noise.

The day-night average sound level (DNL) represents the energy-averaged sound level over a 24-hour period, with a 10-dB penalty assigned to noise events occurring between 10:00 PM and 7:00 AM. The 10-dB nighttime penalty represents the added intrusiveness of sounds occurring during normal sleeping hours, based on the increased sensitivity to noise during those hours and that ambient nighttime sound levels are typically about 10 dB lower than daytime levels. DNL is the preferred noise metric for assessing long-term community noise impacts. DNL is endorsed by the U.S. Department of Housing and Urban Development (HUD), U.S. Department of Transportation (USDOT), FAA, USEPA, the Veteran's Administration (VA), and DoD.

Analyses of aircraft noise exposure and compatible land uses around DoD facilities are normally accomplished using a group of computer-based programs, collectively called NOISEMAP (USAF 1992). NOISEMAP, through it's program named BASEOPS, allows entry of runway coordinates, airfield information, flight tracks, flight profiles (engine thrust settings, altitudes, and speeds) along each flight track for each aircraft, numbers of flight operations, run-up coordinates, run-up profiles, and run-up operations. Since EWVRA is a joint use facility, NOISEMAP version 6.5 was used to represent the military and civilian operations. Usually the FAA's Integrated Noise Model (INM) is used to

analyze civil aircraft noise, however NOISEMAP also includes those civil aircraft. NOISEMAP output is a regularly spaced "grid" file containing DNL values. The NMPLOT program uses the "grid" file to plot contours of equal DNL. These DNL contours can than be overlaid onto base maps. The 65 dB through 85 dB DNL contours were generated for the scenarios described herein.

3.3.1.1 Land Use Guidelines

In June 1980, an ad hoc Federal Interagency Committee on Urban Noise (FICUN) published guidelines (FICUN 1980) relating DNL to compatible land uses. This committee was composed of representatives from DoD, USDOT, and HUD; USEPA; and VA. Since the issuance of these guidelines, Federal agencies have adopted the guidelines for their noise analyses.

Following the lead of the committee, DoD and FAA adopted the concept of land-use compatibility as the accepted measure of aircraft noise effect. The FAA included the committee's guidelines in Title 14 Part 150 Appendix A of the Code of Federal Regulations (CFR) Part 150 (14 CFR 50 App. A). These guidelines and explanatory notes are reprinted in Table 3-5. Although these guidelines are not mandatory, they provide the best means for determining noise impact in airport communities. In general, residential land uses are normally not compatible with outdoor DNL above 65 dB, and the land area and population exposed to DNL of 65 dB and higher provides the best measure for assessing noise impacts.

In airport noise analyses, noise contours are used to help determine compatibility of aircraft operations and local land uses. Although noise resulting from aircraft flight operations represents the greatest contribution to the overall noise environment near the airfield, other noise sources (e.g., highway traffic) may also influence total ambient noise levels. Other activities that may generate substantial amounts of noise at an airport include engine preflight run-ups and aircraft maintenance activities, industrial operations, and construction activities.

Although aircraft maintenance actions and industrial operations may generate large amounts of noise, they are typically confined to the airfield and industrial areas. Construction activities, on the other hand, may occur anywhere on the site and result in disturbance to on-site personnel or off-site noise-sensitive receptors (e.g., housing areas and schools). However, construction noise tends to be localized and temporary and may be reduced through use of special equipment or scheduling restrictions.

3.3.1.2 Ambient Noise

Outdoor DNL values in urban residential areas typically vary from 58 to 72 dB, while suburban neighborhoods experience levels of approximately 48 to 57 dB. Rural and non-urban areas are estimated to have outdoor DNL values ranging between 35 and 50 dB (USEPA 1974). Noise levels from flight operations exceeding ambient background noise typically occur beneath approach and departure corridors, under local

Table 3-5. Land-Use Compatibility with Yearly Day-Night Average Sound Levels

Land Use*	Yearly Day-Night Average Sound Level (L_{dn}) in Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes and transient lodging	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Government services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail--building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade--general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Numbers in parenthesis refer to notes.

* The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

KEY

SLUCM=Standard Land Use Coding Manual.

Y (YES)=Land Use and related structures compatible without restrictions.

N (No)=Land Use and related structures are not compatible and should be prohibited.

NLR=Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35=Land use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 dB must be incorporated into design and construction of structure.

NOTES

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(5) Land use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

Reprinted from Title 14 Part 150 Appendix A of the Code of Federal Regulations Part 150.

air traffic patterns around the airfield, and in areas immediately adjacent to parking ramps. As departing aircraft gain altitude, their noise drops to levels indistinguishable from the ambient background, and the converse is true for arriving aircraft.

3.3.2 Existing Conditions

3.3.2.1 Regional Setting

The noise environment of Berkeley County and the City of Martinsburg can best be described as a town setting dominated by vehicular noise along roadways. Much of the area surrounding the airport is sparsely populated with relatively low ambient sound levels of relatively low magnitude.

3.3.2.2 Aircraft Flight Activity

Military and civilian aircraft operations at EWVRA generate the most noise and dominate the noise environment at and near the 167 AW installation. Aircraft operations at EWVRA take place 365 days per year; however, in fiscal year 2000 (FY00) 167 AW flights comprised approximately 29 percent of annual airport operations on 301 days, while transient military aircraft operations comprised an additional 39 percent of the total military, transient and civilian operations (AFCEE 2002). The 167 AW aims to conduct all aircraft operations within the environmental daytime hours (0700 to 2200) to ensure ATC from the EWVRA ATC tower and to avoid noise disturbance in the surrounding community during environmental nighttime hours (2200 to 0700). However, occasionally 167 AW aircraft operations occur during the environmental nighttime hours consisting mainly of landing operations. On average, approximately one environmental nighttime operation occurs per month (12 per year) with the majority of annual nighttime environmental operations occurring during the summer months when daylight savings is observed (167 AW/West Virginia ANG 2003d).

In 2002, no noise complaints regarding non-military aircraft were registered with the airport manager (EWVRA 2002), and the 167 AW superintendent of flying has received 11 noise complaints associated with military operations since 1998 (167 AW/West Virginia ANG 2002b). In 2002, the unit received only one noise complaint and no noise complaints have been registered in 2003 to date.

Based on the 167 AW not routinely scheduling environmental nighttime operations, the infrequency with which nighttime operations occur, and efforts made to avoid environmental nighttime operations, nighttime operations were not included in developing baseline operations noise contours. The few and random nighttime operations that do occur would not significantly affect noise contours or baseline noise analysis. Nighttime operations are assessed an additional 10 dB over daytime operations accounting for reduced background sound levels and greater community sensitivity during nighttime hours. Further, one nighttime operation would have the same result on the noise environment as 10 daytime operations and the total number of operations is considered when evaluating noise impacts (Wyle Laboratories 2003c).

Given that the 167 AW conducts approximately 12 nighttime operations per year, equaling approximately 120 daytime operations per year, the additional 120 daytime operations per year would bring the total 167 AW annual aircraft operations to 7,017. This increase of 1.7 percent is negligible and would not affect noise analyses.

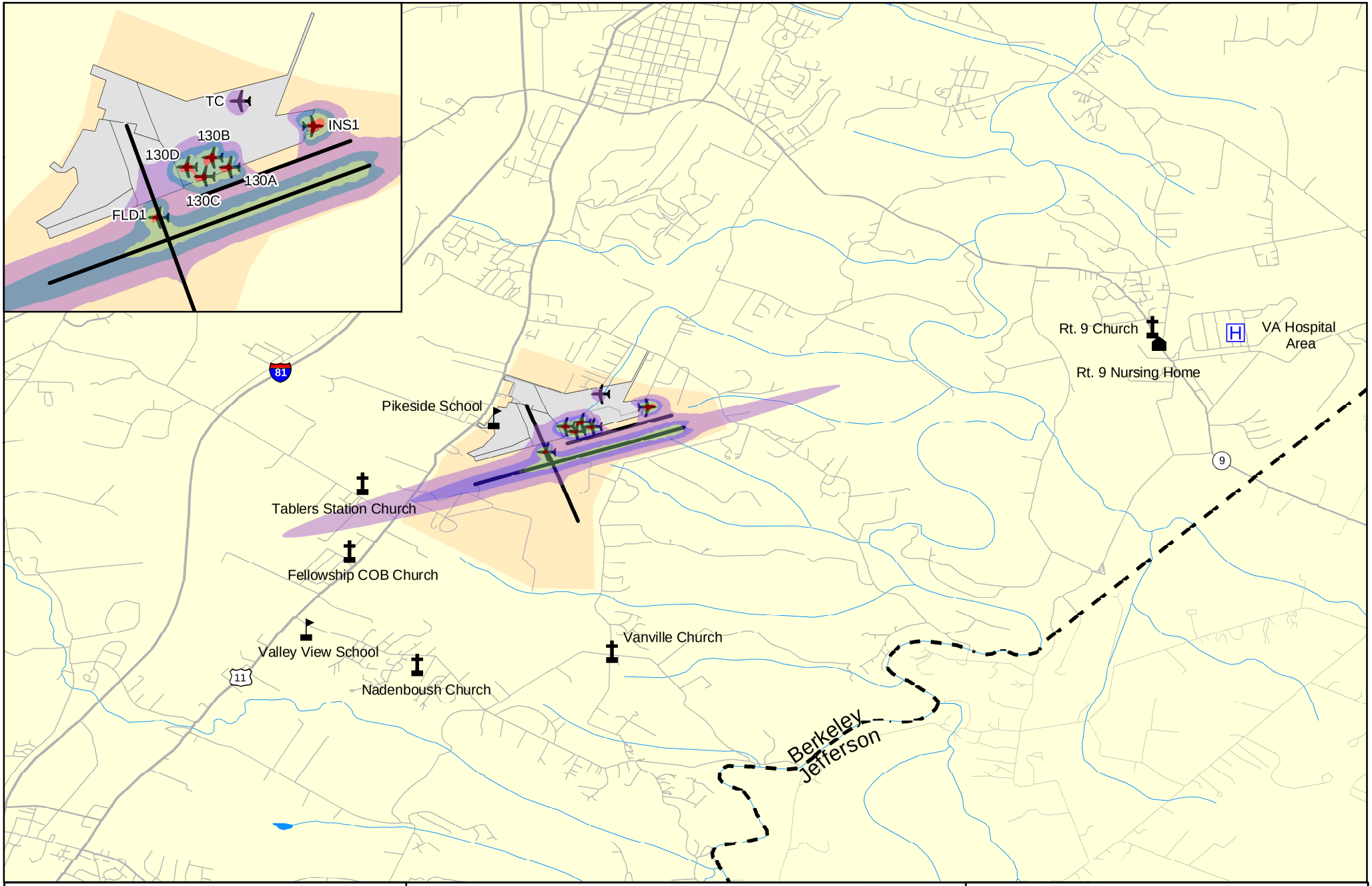
Figure 3-3 presents the 65, 70, 75, and 80 dB DNL contours associated with current military operations (baseline) at the EWVRA in FY00. The DNL 65 dB contour extends beyond the airport, affecting open space, agricultural, industrial, and commercial land use areas. Table 3-6 shows the impacts in terms of estimated acres, housing units and population within the contours at 5 dB increments based on aerial photographs, ground truthing, and U.S. Census Bureau 2000 data.

Table 3-6. Estimated Land Area, Housing Units and Population within Noise Exposure Contours for the current operations at EWVRA

DNL Contour Band	Item	Existing Conditions
65–70 dB	Acres	322
	Housing Units	17
	Population	43
70–75 dB	Acres	124
	Housing Units	5
	Population	13
75–80 dB	Acres	57
	Housing Units	1
	Population	3
80–85 dB	Acres	5
	Housing Units	0
	Population	0
Summary of Exposure		
65–75 dB	Acres	446
	Housing Units	22
	Population	56
75+ dB	Acres	62
	Housing Units	1
	Population	3

Sources: 167 AW/West Virginia ANG 2003d; Wyle Laboratories 2003b.

Acres within the 65 dB DNL were estimated using Arc GIS, a Geographic Information System platform, along with the NOISEMAP 6.5 computed contours. To accurately assess structures and population, the number of housing units within the 65 dB DNL was determined through overlaying the NOISEMAP 6.5 computed contours onto aerial photographs to outline the structures within this contour. Structures within the 65 dB DNL contour were subject to ground truthing to determine which were residences. Residential locations depicted in Figure 3-3 were taken from public roads using a Global Positioning System device. The locations are for reference only and do not show the exact location of each residence. The population data was derived from U.S. Census 2000 data for average household size in Berkeley County, West Virginia. The average number of persons per household is between 2.51 and 2.56 people (U.S. Department of Commerce/U.S. Census Bureau 2000). The populations calculated with the above data



N

0 0.5 1 2
Miles

Sound Level (dB)

65 75
70 80
Airport Boundary
WVANG Boundary

Hospital
Nursing Home
Run-up Location
School
Religious Institution

Runway
Stream/Creek
County Line

Roads

Primary
Secondary
Local

Figure 3-3

Baseline DNL Contours
Eastern WV Regional
Airport/Shepherd Field

are estimates and are most useful in determining relative change in population impact between baseline and proposed conditions.

3.3.2.3 Ground-Based Activity

Other major contributors to an area's noise environment typically include highways with high traffic volumes, heavily used railroads, and major industrial or production facilities. Aircraft pre-flight run-up and maintenance run-up operations also contribute to the noise environment, and are included in the noise analyses and presented in Figure 3-3.

3.4 LAND USE

3.4.1 Definition of Resource

Land use comprises natural conditions or human-modified activities occurring at a particular location. Human-modified land use categories include residential, commercial, industrial, transportation, communications and utilities, agricultural, institutional, recreational, and other developed use areas. Management plans and zoning regulations determine the type and extent of land use allowable in specific areas and are often intended to protect specially designated or environmentally sensitive areas.

Several siting criteria have been established specific to land development and use at commercial and military airfields. For example, Airfield Clearance Criteria which address building restriction lines, primary surface, taxiway clearance lines, and apron setbacks, are enforced at EWVRA to protect aircraft during landing, take-off and while taxiing. FAR Part 77 imposes constraints on land development and use at the EWVRA.

3.4.2 Existing Conditions

3.4.2.1 Local Land Use

The EWVRA is located approximately 4 miles south of the City of Martinsburg in Berkeley County in the northeast panhandle of West Virginia. Located in a rural area, the EWVRA is owned, maintained, and operated by the Eastern West Virginia Regional Airport Authority (EWVRAA). The Berkeley County, West Virginia, Comprehensive Development Plan designates the area surrounding the airport as “Industrial/Business Park Districts.” While this land use designation was approved by the Berkeley County Planning Commission in May of 1990, it was never implemented by voter referendum, as required by State law. Therefore, Berkeley County currently has no land use zoning requirements in place to regulate land use patterns. Consequently, land use surrounding the airport property is composed of predominately commercial/industrial, residential, and agricultural land. Moderately dense residential areas exist directly north and west of the airport property line with fewer residences located to the east. Agricultural areas exist around the EWVRA; however, the majority of continuous agriculture fields are located to the south and east of the airport property. While a limited number of undisturbed areas exist immediately adjacent to the EWVRA, more continuous undisturbed areas can be found to the south and east (Figure 3-4).

The City of Martinsburg Comprehensive Development Plan predicted continued population growth, averaging about 3.4 percent per year since 1970 (Berkeley County Planning Commission 1990). Berkeley County continues to be one of the fastest growing counties in West Virginia, with the City of Martinsburg and environs most affected due to its location in the eastern portion of Berkeley County, approximately 90 miles from Baltimore, Maryland. Arden, the Magisterial District where the EWVRA is located, is noted as being a “major area of urbanization.” Although the area

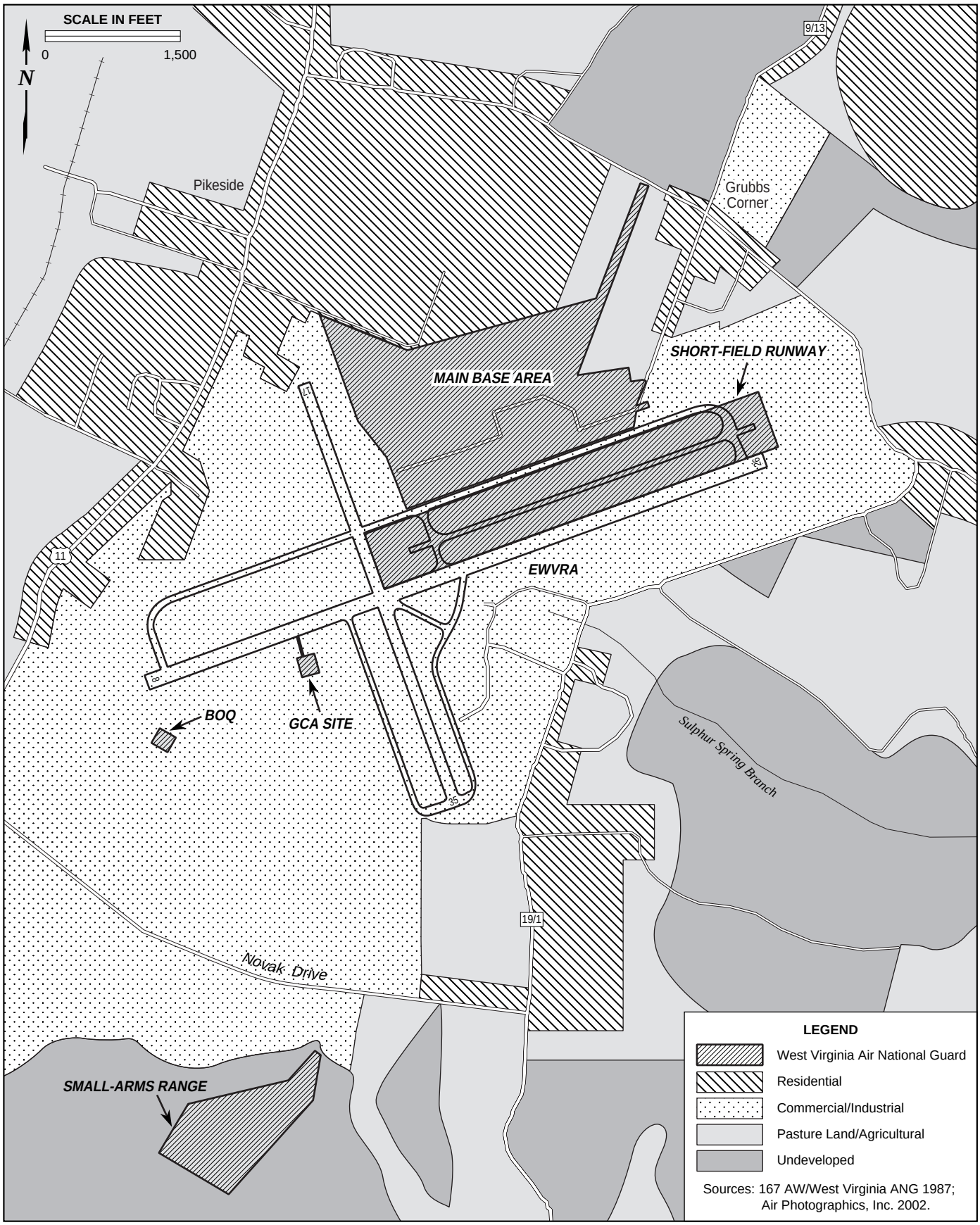


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Figure 3-4. Land Use in the Vicinity of Eastern West Virginia Regional Airport and the West Virginia Air National Guard

Figure 3-4

directly north and west of the EWVRA is designated as an "Industrial/Business Park" District, residential growth since 1990 has continued to occur. Figure 3-4 displays existing land uses in the vicinity of the EWVRA as of 2002. The number of acres exposed to noise levels associated with existing airport operations is quantified in *Section 3.3, Noise.*

Under existing conditions and according to aerial photographs from December 2002, 8 residences are located within existing RPZs associated with Runway 08/26; further, 26 residences and 4 commercial/industrial use buildings are located within existing RPZs associated with Runway 17/35 (Air Photographics, Inc. 2002; EWVRAA 2003; 167 AW/West Virginia ANG 2003d) (refer to *Section 3.15, Safety*, Figure 3-17).

EWVRA occupies approximately 1,300 acres and is owned by the EWVRAA. The West Virginia ANG is the primary tenant, occupying 206 acres at four different locations (Table 3-7). The paved airfield (45 acres), general aviation (9 acres), and the civil aviation terminal (3,450 square feet [sf]) comprise the remaining developed acres. The EWVRA and all of the accompanying property is intended for commercial and industrial land use.

Table 3-7. Land Use Summary at the EWVRA

Land Use	Acres
Airfield and paved areas	45
Open Space	1,040
Air National Guard	206
Terminal	<1
General Aviation Activities	9
Total	**1,300**

Source: EWVRAA 1992.

3.4.2.2 Land Use at the 167 AW Installation

The West Virginia ANG currently leases 206 acres of land from the EWVRAA to accommodate administrative, maintenance, and operational functions associated with the 167 AW. The 167 AW is the sole unit of the West Virginia ANG currently operational at EWVRA.

Constraints to future development of the 167 AW at EWVRA include the following: a creek that bisects the installation; airfield constraints established by the FAA (e.g., RPZs, OFZs, and building restriction lines); safety constraints associated with the storage of munitions; and building setbacks separating aircraft parking and circulation from flightline facilities.

Land Use Plans

The short- and long-range development of the installation is outlined in the *Airfield Development Plan* (2001). The purpose of the plan is to recognize existing needs and future potential; to ensure orderly development; and to sufficiently support the programmed and probable future growth of the installation. The West Virginia ANG development plans must be compatible with those of the EWVRAA, Berkeley County, and the City of Martinsburg which establishes guidelines and procedures for implementing development objectives and provides direction for the city's growth.

Land Use Inventory

Existing ANG facilities at EWVRA include 34 permanent and temporary structures with a cumulative floor space total of about 347,441 sf. Land use within the 167 AW installation is divided into eight land use categories that have been developed by the National Guard Bureau (NGB) to apply to all ANG installations (Table 3-8 and Figure 3-5).

Table 3-8. West Virginia ANG Land Use Inventory

Land Use Category	Acres	Percent of Total Acreage
Open Space	105.4	51.2
Special Categories	29.6	14.4
Airfield Pavement	21.5	10.4
Industrial Facilities	20.9	10.1
Restricted Safety	10.7	5.2
Maintenance Facilities	8.0	3.9
Command & Support Facilities	5.0	2.4
Aircraft Operations	4.9	2.4
Total	**206.0**	**100.0**

Source: 167 AW/West Virginia ANG 2001b.

Open Space is the largest land use category at the installation, accounting for about 105.4 acres, or 51.2 percent of the total land area. This land use category includes undeveloped, landscaped, setback, water, and wooded areas. Such areas include spaces between buildings and facilities, and a portion of this acreage could support facilities development in the future.

Special Categories is the second largest land use component encompassing 29.6 acres, or approximately 14.4 percent of the total installation area. This category includes areas for activities such as small arms ranges, munitions maintenance storage, and fire training facilities. All of these facilities require some identified quantity distance (QD) arc or safety zone. The special category land use classification also includes those land uses that do not conform to the other land use categories found within the NGB's Standard Land Use Classification system. Such land use at the 167 AW includes the visiting airmen's quarters.

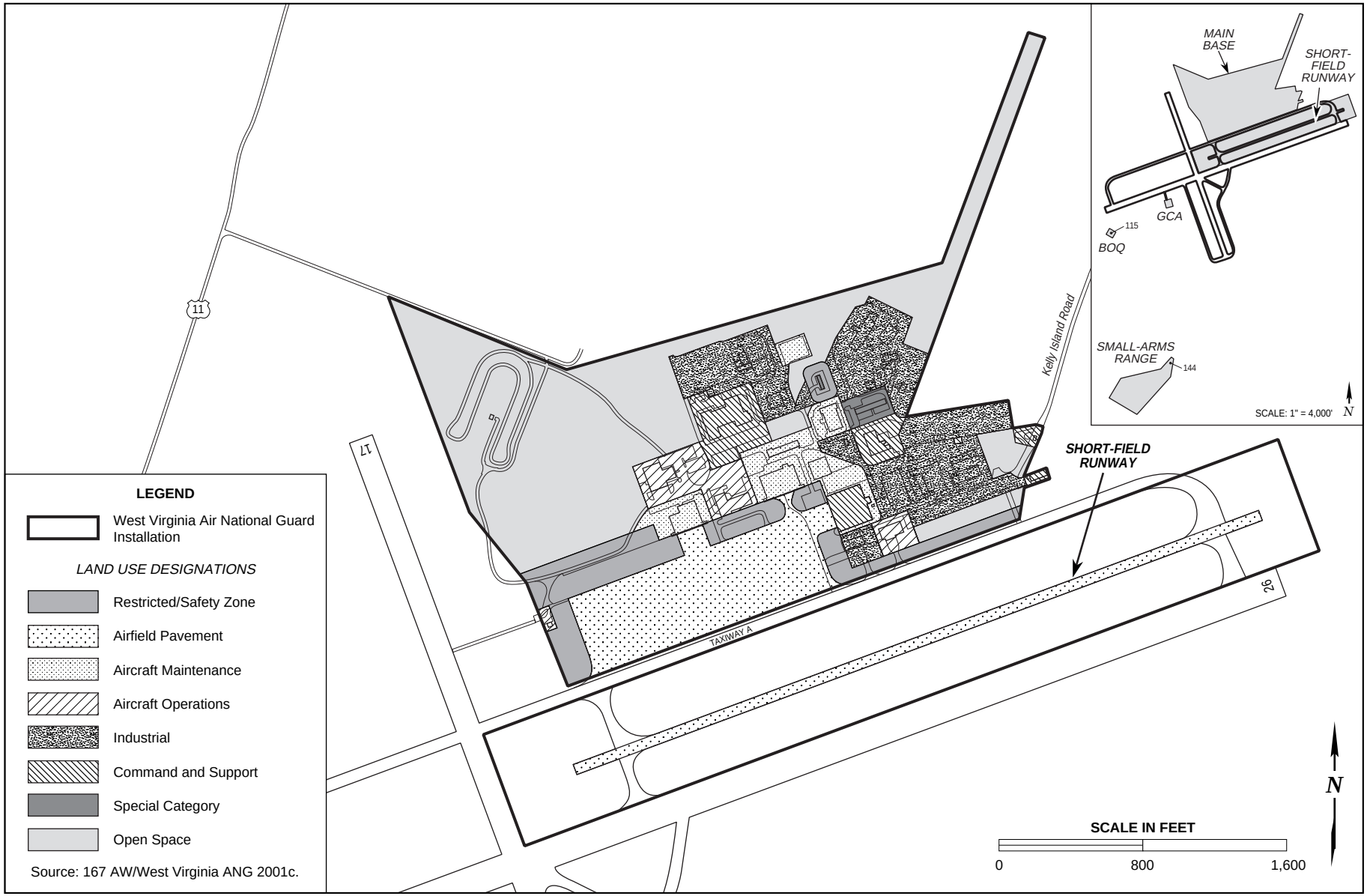

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Figure 3-5. Existing Land Use
West Virginia Air National Guard Installation
Eastern West Virginia Regional Airport

Figure 3-5

Airfield Pavement encompasses 21.5 acres, or approximately 10.4 percent of the total installation area. This category includes: the aircraft parking apron; runways; and taxiways, required to protect aircraft moving under their own power on runways and taxiways. These zones must conform to military and FAA criteria.

Industrial Facilities occupy 20.9 acres, or approximately 10.1 percent of the total land area at the installation. This category includes base civil engineer (BCE) operations and storage, supply, motor pool, vehicle maintenance shop, mobility storage, refueler parking, storage sheds, liquid oxygen (LOX) storage, and petroleum, oil, and lubricants (POL) storage.

Restricted/Safety comprises 10.7 acres, or 5.2 percent of the total land area at the installation. This category includes safety zones, airfield clearance areas, and QD arcs. This land use at the 167 AW comprises the clearance zones associated with the parking ramp and runways in addition to the QD arc associated with Building 131 (munitions storage).

Maintenance Facilities account for 8.0 acres, or about 3.9 percent, of the total land area at the installation. This category includes land adjacent to the aircraft parking apron or taxiway used for servicing aircraft, as well as hangars, fuel cell, engine shop, and AGE facilities.

Command and Support Facilities comprises 5.0 acres, or 2.4 percent of the total land area at the installation. This category includes recreational facilities, security police, base exchange, headquarters, and dining facilities.

Aircraft Operations accounts for 4.9 acres, or 2.4 percent of the total land area at the installation. This category includes squadron operations, survival equipment shop, crash airlift, and aerial port training facility. The functions in this land use group generally occur in locations near and within sight of the aircraft parking apron and close to the aircraft maintenance functions.

3.5 UTILITIES AND INFRASTRUCTURE

3.5.1 Definition of Resource

In any given community, a variety of basic services are provided by public and private entities for the purpose of providing necessary functions and enhancing the quality of life. Existing utilities provided at the 167 AW installation at EWVRA, Martinsburg, WV, include: natural gas, wastewater, potable water, electricity, and telephone services, and are described in this section.

The assessment of existing conditions was based on information contained in the Utilities Master Plan for the 167 AW/West Virginia ANG (167 AW/West Virginia ANG 2003f). With the exception of wastewater treatment, which is currently provided by an on-site wastewater treatment plant owned and operated by the 167 AW/West Virginia ANG, all other services are provided by utilities that serve the Martinsburg region. During the preparation of the Utilities Master Plan for the 167 AW/West Virginia ANG interviews were conducted with service providers to verify the utilities' ability to serve existing and approved development in the region with the additional support facilities proposed by the Airfield Development Plan. Planned improvements to utility infrastructures are also noted in this section.

3.5.2 Existing Conditions

3.5.2.1 Natural Gas

Natural gas is currently provided to the region and the 167 AW by Allegheny Power. The gas service to the installation is non-interruptible and supplied through a 6-inch gas main just inside the main gate. The natural gas pipeline network generally follows installation roads. Existing gas usage at the installation averages 7,612 cubic feet per hour and 21,249 thousand cubic feet (kcf) annually (167 AW/West Virginia ANG 2003f).

There are several gas lines that run contiguous to the base that are scheduled for improvements according to the short-term master plan for Allegheny Power. These improvements include extension of a 12 to 15 pounds per square inch (psi) residential supply line from Kelley Island Road to the base, and provision of service further down Paynes Ford Road and Highway 11 to the base frontage. With these planned improvements, it is Allegheny Power's intent to abandon the existing high-pressure base feed (167 AW/West Virginia ANG 2003f).

3.5.2.2 Electricity

Electrical power is supplied to the installation through four separately metered feeders from Allegheny Power with annual usage totaling approximately 2,256.145 megawatt hours (mwh). The 167 AW has a capacity of 1 megawatt of power for current operations. The firing range and visitors officers quarters are each served by separate metered feeders and the remaining two, Pikeside and Wheatland feeders, service the

installation facilities. The Pikeside and Wheatland feeders are able to handle the installation's power needs individually should the other fail; the majority of this system was installed in 1998 (167 AW/West Virginia ANG 2003f).

3.5.2.3 Wastewater Treatment

Sanitary sewage treatment to the community surrounding the EWVRA is provided by the Opequon Treatment Plant with a rated capacity of 0.9 million gallons per day (MGD). The Opequon Treatment Plant is a publicly owned treatment works operated by the Berkeley County Public Service Sewer Department (BCPSSD). As of January 2003, the Opequon Treatment Plant Wastewater operated at an average capacity of 0.25 MGD. There are three primary sanitary sewer mains near the base: Grubbs Corner Sewer, Airport Area Sewer, and the Summer Hill Subdivision Sewer. According to the Air National Guard Utilities Master Plan, these 3 pump station are not forecasted to operate at or near capacity (167 AW/West Virginia ANG 2003f).

Sanitary sewage at the 167 AW is treated at the installation-owned and operated wastewater treatment plant. The plant is located east of Building 134 and has a rated treatment capacity of 48,000 gallons per day (gpd) and treats 15,000 to 20,000 gpd. The National Pollution Discharge Elimination System (NPDES) permit for the effluent discharge from the plant allows flow levels of 48,000 gpd, which is the approximately 2.4 to 3.0 times the current flow rate (167 AW/West Virginia ANG 2003f).

3.5.2.4 Potable Water

Water is provided to the 167 AW by the BCPSSD through an 8-inch water main along Kelly Island Road. Currently, 167 AW uses approximately 16.23 gallons per minute (gpm) of water during an 8-hour day to supply the operations at the installation with annual usage being approximately 3.8071 million gallons. The water distribution system on the installation was developed and is maintained by ANG personnel. Local water towers near the installation provide sufficient storage and gravitational pressure to supply the base (167 AW/West Virginia ANG 2003f).

3.5.2.5 Communications

The existing underground telecommunications system at the 167 AW is serviced by Verizon Communications and was installed in 1990. It consists of copper voice cables and single and multinode fiber optic cables. The telecommunications hub is located in Operations and Training, Building 128 (167 AW/West Virginia ANG 2003f).

3.5.2.6 Stormwater Collection

Adequate stormwater collection and management facilities presently exist within EWVRA and the installation. Drainage is directed following topography into culverts and ditches that drain into four areas: open space west of Runway 17/35, open space in the northwest corner EWVRA property, south of Runway 08/26, and the lower base compound on the eastern end of the property. In general, under existing conditions,

surface runoff from drainage areas eventually enters tributaries to named streams (see Section 3.7, *Water Resources*). Since 1979, no flooding has occurred at the 167 AW installation.

3.6 GEOLOGICAL RESOURCES

3.6.1 Definition of Resource

Geological resources consist of surface and subsurface materials and their properties. Principal geologic factors affecting the ability to support structural development are seismic properties (i.e., potential for subsurface shifting, faulting, or crustal disturbance), soil stability, and topography.

The term *soil*, in general, refers to unconsolidated materials overlying bedrock or other parent material. Soil structure, elasticity, strength, shrink-swell potential, and erodibility all determine the ability for the ground to support man-made structures. Soils typically are described in terms of their complex type, slope, physical characteristics, and relative compatibility or constraining properties with regard to particular construction activities and types of land use.

Topography is the change in elevation over the surface of a land area. An area's topography is influenced by many factors, including human activity, underlying geologic material, seismic activity, climatic conditions, and erosion. A discussion of topography typically encompasses a description of surface elevations, slope, and distinct physiographic features (e.g., mountains) and their influence on human activities.

3.6.2 Existing Conditions

3.6.2.1 Regional Setting

<u>Geology</u>

Berkeley County lies entirely within the Northern Appalachian Ridges and Valleys physiographic province. The exposed rocks in the county are all sedimentary in origin and belong to the Mississippian, Devonian, Silurian, Ordovician, and Cambrian geologic periods (NRCS 2000). The most common types of rocks in Berkeley County include limestone, shale, sandstone, and siltstone. Rock outcrop and sinkholes are the major geologic deterrents to land development within portions of the county (Berkeley County Planning Commission 1990).

<u>Soils</u>

Berkeley County has 11 major soil associations, which occur in parallel bands following a northeast-southwest landform pattern (Berkeley County Planning Commission 1990). Most soils in Berkley County formed in material weathered from limestone, shale, sandstone, or siltstone. Soils that exist on terraces (e.g., Monongahela soils) are much older than the soils on the floodplains (e.g., Pope soils). Soils in several portions of the county, especially where limestone-based soils exist, provide for prime agricultural areas.

Topography

Berkeley County's major landforms consist of a series of parallel ridges and valleys that have a southwest-northeast orientation. The eastern two-thirds of the county is located within the Shenandoah Valley, which is part of the Great Valley of the Appalachians that extends from Georgia to New York. The average elevation in the Shenandoah Valley is about 650 feet MSL (NRCS 2000). North Mountain, one of the three main ridges in the county, divides the Great Valley to the east from Back Creek Valley to the west. Elevations in the county range from 300 feet to 2,200 feet MSL (Berkeley County Planning Commission 1990).

3.6.2.2 Geological Resources at the 167 AW Installation

Geology

Previous geological studies have shown that areas with shallow depth (less than 10 feet) to bedrock are present at the 167 AW Installation. A fault line runs north-south bisecting the installation east of the control tower. Shale bedrock also underlies portions of the installation, such as in the vicinity of the fire department training area (ANG Support Center 1985; 167 AW/West Virginia ANG 2001c).

Soils

Soils occurring within the EWVRA and the 167 AW installation include *Carbo-Endcav silty clay loams,* 3 to 8 percent slopes; *Clearbrook-Berks channery silt loams,* 3 to 8 percent slopes*; Carbo-Endcav silty clay loams,* 8 to 15 percent slopes; *Carbo-Opequon complex,* 3 to 8 percent slopes; *Weikert-Berks channery silt loams,* 8 to 15 percent slopes and 15 to 25 percent slopes; *Weikert-Berks channery silt loams,* 15 to 25 percent slopes; *Dunning silt loams,* nearly level floodplains*; Huntington silt loam,* nearly level floodplains*;* and *Urban land* (Figure 3-6).

Urban land comprises nearly the entire existing installation and consists of highly developed areas where more than 90 percent of surface area is covered with asphalt, concrete, or buildings. Most of the original soil material in these areas has been disturbed, smoothed, filled-over, or otherwise destroyed prior to construction. The remainder of the soil types are found in the Great Valley on gently or strongly sloping, convex limestone or dissected shale uplands that are sometimes shallowly dissected by intermittent drainageways. Sinkholes occur in some areas. These soils are generally well to somewhat excessively well drained, have slow to moderate permeability, moderate to severe erosion hazards, and low to high shrink-swell potential. *Dunning silt loams* are the exception, found in nearly level floodplains; they are poorly drained with high available water capacity. The potential for urban use of these soils is generally poor due to slow permeability, sinkholes, high shrink-swell potential, low strength, erosion hazards, and depth to bedrock (NRCS 2000).

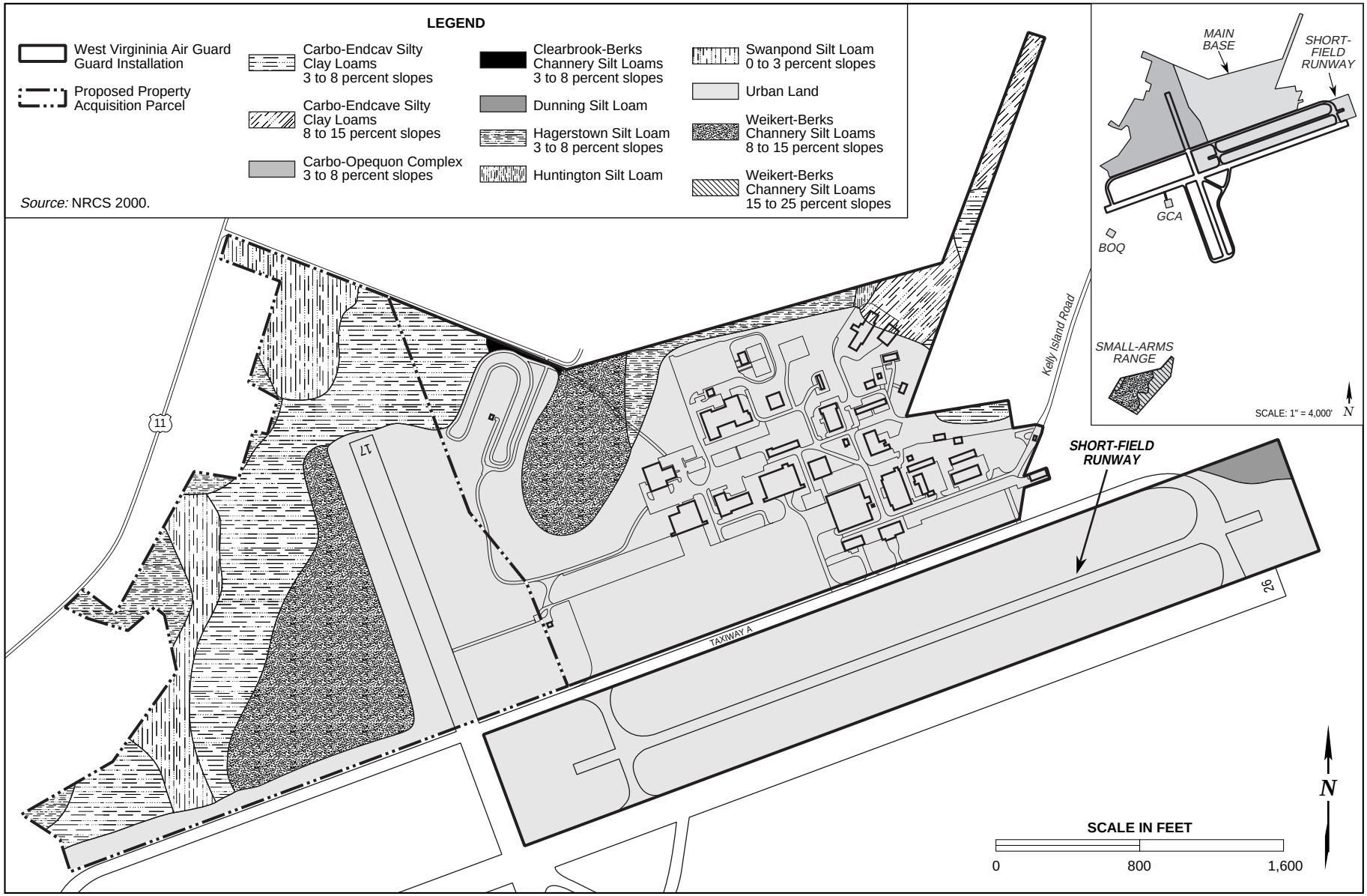

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Figure 3-6. Surface Soils within the Existing Installation and Proposed Property Acquisition Parcel at Eastern West Virginia Regional Airport

Figure 3-6

In addition to the soils mentioned above, soils within the proposed property acquisition parcel include *Hagerstown silt loam,* 3 to 8 percent slopes and *Swanpond silt loam,* 0 to 3 percent slopes. *Hagerstown silt loam* soils are well drained, have moderate permeability, moderate erosion hazard, and moderate shrink-well potential. *Swanpond silt loam* soils are moderately well drained, have slow permeability, moderate erosion hazard, and high shrink-swell potential in the subsoil. The potential for urban use of these soils is rated as limited to poorly suited due to sinkholes, slow permeability, and high shrink-swell potential (NRCS 2000).

Topography

Topography at the 167 AW and the proposed property acquisition parcel is characterized by nearly level to gently rolling terrain; however, the parcels are located on improved land with minor topographic variation. The natural topography has been altered or leveled in areas to accommodate development. Undeveloped areas within the installation consist of low, relatively flat areas, while higher, steeper slopes occur adjacent to the airport runways. The runways and taxiways serve as local high points, with drainage divides along their centerlines (167 AW/West Virginia ANG 2003f). Elevations range from approximately 556 feet MSL in the west to 520 feet MSL in the east. There are several slopes located along drainage swales and at the northeast corner of the existing 167 AW installation (Air National Guard Readiness Center [ANGRC] 1996; Environmental Data Resources 2000).

3.7 WATER RESOURCES

3.7.1 Definition of Resource

Water resources analyzed in this EIS include surface and groundwater resources. The quality and availability of surface and groundwater and potential for flooding are addressed in this section. Surface water resources comprise lakes, rivers, and streams and are important for a variety of reasons including economic, ecological, recreational, and human health. Groundwater comprises the subsurface hydrologic resources of the physical environment and is an essential resource in many areas; groundwater is commonly used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition.

Other issues relevant to water resources include watershed areas affected by existing and potential runoff and hazards associated with 100-year floodplains. Floodplains are belts of low, level ground present on one or both sides of a stream channel and are subject to either periodic or infrequent inundation by flood water. Inundation dangers associated with floodplains have prompted Federal, state, and local legislation that limits development in these areas largely to recreation and preservation activities.

3.7.2 Existing Conditions

3.7.2.1 Regional Conditions

Surface Water

Surface water in Berkeley County is drained by the Potomac River and its tributaries. The Martinsburg area is located within the Shenandoah Valley, which is drained by Opequon Creek and its tributaries: Shaw Run, Evans Run, Hopewell Run, Middle Creek, Sulphur Spring Branch, and Opequon Creek (Figure 3-7). Surface water often drains through sinkholes and channels in limestone bedrock that underlies the region (NRCS 2000).

According to a Water Quality Status Assessment of the Potomac River Direct Drains Watershed, for the period between 1997 and 1999, the principal causes of impairment in the watershed were siltation and fecal coliform, due mainly to agriculture and urban runoff. Nine percent of the streams monitored for toxins had elevated levels. However, no bathing beach or public water supply closures were documented in the watershed, and no fish kills were reported. In addition, no streams in the watershed were on the Clean Water Act Section 303(d) impaired streams list for streams which did not meet water quality standards.

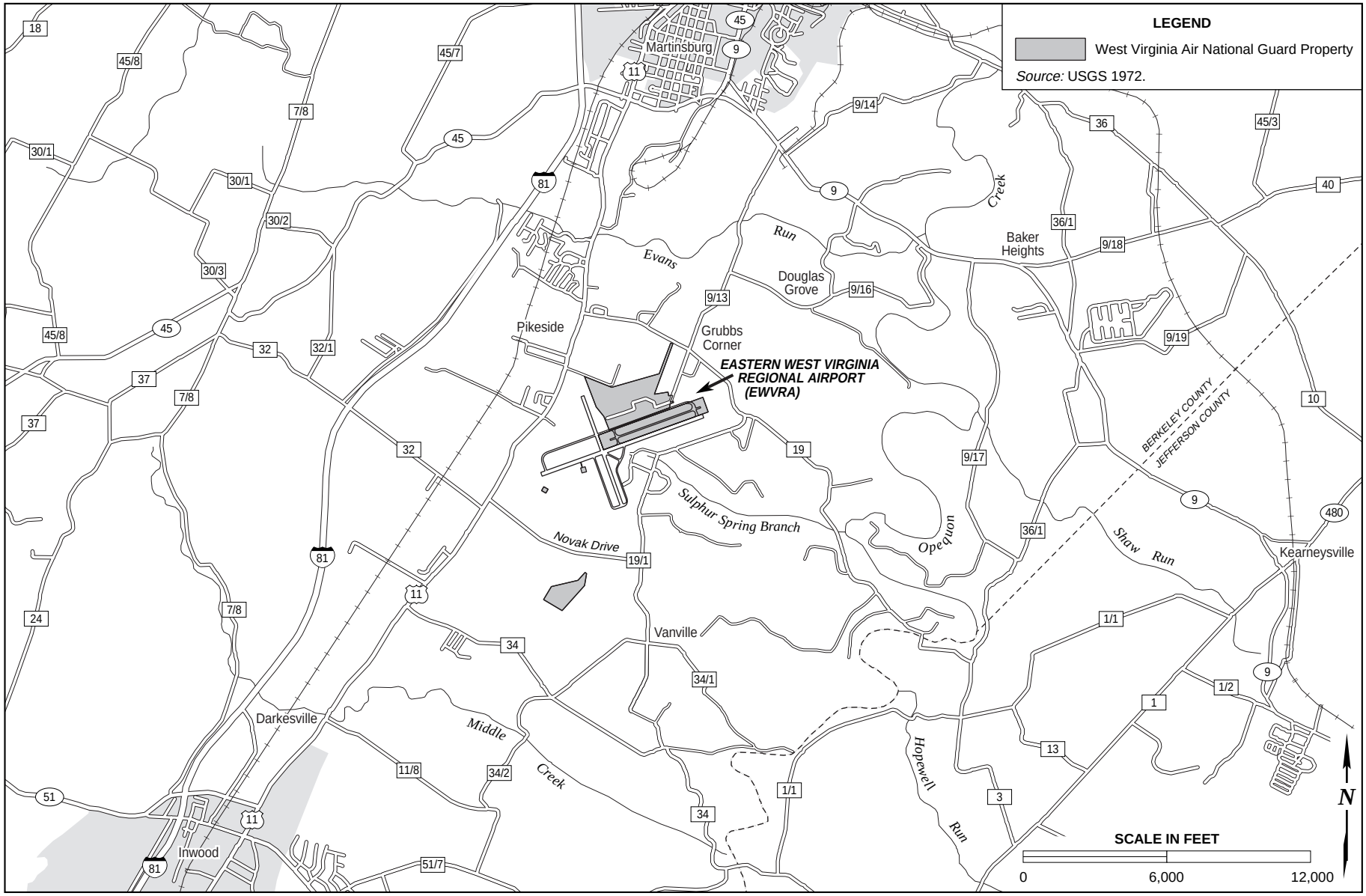

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Figure 3-7. Surface Water Resources in the Vicinity of Eastern West Virginia Regional Airport and the West Virginia Air National Guard

Figure 3-7

Groundwater

Groundwater in Berkeley County occurs in limestone and shale bedrock. Drilled wells commonly supply domestic water systems in rural areas. Groundwater supply obtained from limestone is generally abundant; however, the depth to good water-bearing strata varies and water levels are subject to a rapid and wide range of seasonal fluctuations. The average depth of wells in these areas is about 150 to 200 feet. This groundwater is especially vulnerable to contamination through sinkholes and channels in the bedrock. Groundwater yield from shale is generally less than that of limestone; however, the depth and yield is generally more dependable. Most wells in these areas are 100 to 150 feet deep (NRCS 2000).

The primary water-bearing stratum in the Martinsburg area is the Beekmantown Limestone. Groundwater recharge occurs at the fractures, fault zones, and cavernous areas commonly found in the area. Depth to wells in this formation is generally in the 200-foot range and the sources have an average yield of 69 gpm (ANG Support Center 1985; ANGRC 1996).

3.7.2.2 Water Resources at the 167 AW Installation

Surface Water

The surface water drainage system at the existing 167 AW installation consists of unlined shallow swales, rip-rap-lined ditches, culverts, and piping with catch basins and manholes. The majority of stormwater runoff is conveyed via swales and piping to a drainage ditch that traverses the installation from south of Building 134, past Building 121 and Building 131, to a point of discharge (Outfall 002) at the installation boundary north of Building 139, as shown in Figure 3-8. This ditch provides drainage of the aircraft parking apron and other impervious surfaces and ultimately discharges to a small perennial unnamed tributary located at the installation and airport's northern boundary. While no flooding has occurred on the installation, during rare extreme rain events waters within this unnamed tributary have risen over the tributary banks temporarily flooding the open field just beyond the installation boundary.

Generally, surface water from the northern half of the installation flows northward into Cold Spring Run, and surface water from the southern half flows eastward into Sulfur Spring Branch. These streams flow eastward into Opequon Creek and ultimately northeast into the Potomac River (ANGRC 1996).

Runoff from the proposed acquisition parcel flows in a northwesterly direction, following the topography into a culvert beneath U.S. Highway 11. Drainage from this ditch combines with another ditch draining U.S. Highway 11 and adjacent properties flowing generally northward into a tributary of Cold Spring Run.

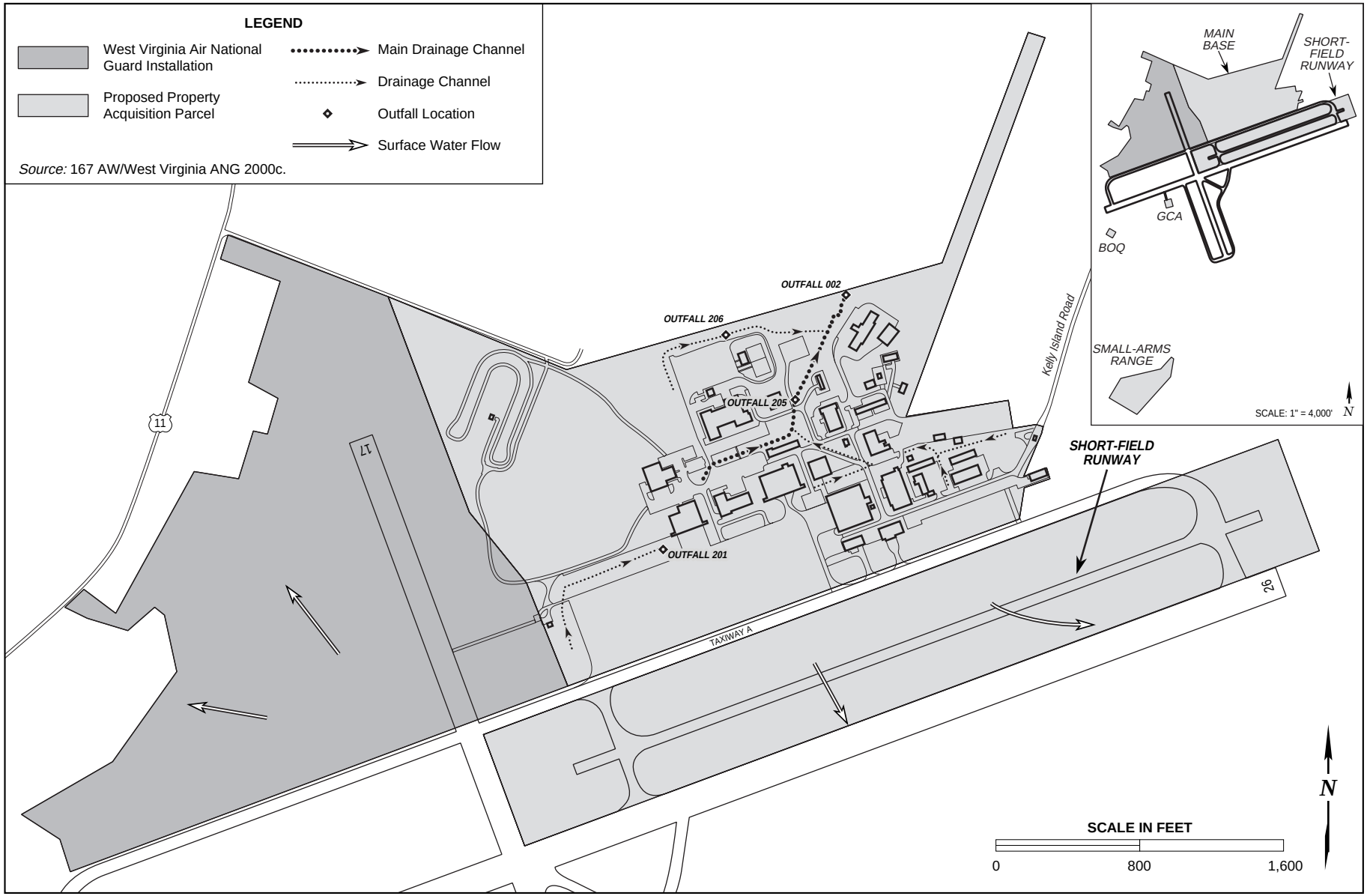

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Figure 3-8. Surface Water within the Existing Installation and Proposed Acquisition Parcel at Eastern West Virginia Regional Airport

Figure 3-8

To the south of Runway 08/26, stormwater runoff flows in a southeastern direction to culverts where it is collected in a stormwater pond before making its way to Sulfur Spring Branch.

The existing 167 AW installation has been issued a National Pollutant Discharge Elimination System (NPDES) Industrial Wastes Permit (#WV0005665) by the West Virginia DEP for May 2003 through April 2008. The permit requires quarterly and bi-annual analytical monitoring to control pollutants from four locations (Outfalls 002, 206, 205, and 201) that could be potentially discharged from the installation. According to the installation's First Quarter Discharge Monitoring Report for 2002, all pollutants analyzed (including total flow, total suspended solids, oil/grease, total organic carbon, biochemical oxygen demand, chemical oxygen demand, ammonia, total silver, fecal coliform, dissolved oxygen, total ammonia nitrogen, and pH) were reported to be below the permitted limits (167 AW/West Virginia ANG 2002e). Installation personnel have reported that during heavy rain events, sanitary sewage influent rates have exceeded the allowable capacity under the NPDES permit, which is 48,000 gpd (167 AW/West Virginia ANG 2003f). This indicates that some infiltration of stormwater runoff into the sanitary sewage system occurs during rainstorms.

Groundwater

Estimated depth to groundwater in the area of the 167 AW and proposed property acquisition parcel ranges from 25 to 40 feet. Groundwater has been encountered during previous geotechnical evaluations within fractured bedrock and clay seams from 40 to 50 feet below ground surface. Groundwater flow is estimated to be toward the northern portion of Runway 08/26. Groundwater flow in the area south of the runway generally flows eastward toward Opequon Creek, approximately 1 mile east of the installation (ANGRC 1996).

Two groundwater wells exist within the 167 AW installation. One well, located at the Consolidated Club (Building 101), is approximately 100 feet deep and is no longer in use. The well was previously investigated as a potential drinking water source and was found to contain water with high levels of bacteria. A second well is located south of the existing 167 AW installation, at the firing range (Building 144). The well is currently used to supply potable water, and is sampled monthly for contaminants. A few instances of high lead content from deteriorating fixtures have occurred in the past, however, the fixtures were replaced (167 AW/West Virginia ANG 2002a) and no further problems have been reported.

Floodplains

The 167 AW installation and proposed property acquisition parcel are not located within a 100-year floodplain (Federal Emergency Management Agency [FEMA] 1988; ANG Support Center 1985).

3.8 BIOLOGICAL RESOURCES

3.8.1 Definition of Resource

Biological resources include native or naturalized plants and animals and the habitats in which they occur. Sensitive biological resources are defined as those plant and animal species listed as threatened or endangered, or proposed as such, by the U.S. Fish and Wildlife Service (USFWS) or West Virginia Department of Natural Resources, Wildlife Diversity Program.

Wetlands are defined by the U.S. Army Corps of Engineers (USACOE) and USEPA as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR 328.3 [b]; 1984). Wetlands provide a variety of functions including groundwater recharge and discharge; floodflow alteration; sediment stabilization; sediment and toxicant retention; nutrient removal and transformation; aquatic and terrestrial diversity and abundance; and uniqueness. Three criteria are necessary to define wetlands: vegetation (hydrophytes), soils (hydric), and hydrology (frequency of flooding or soil saturation). *Hydrophytic vegetation* is classified by the estimated probability of occurrence in wetland versus upland (non-wetland) areas throughout its distribution. *Hydric soils* are those that are saturated, flooded, or ponded for sufficient periods during the growing season and that develop anaerobic conditions in their upper horizons (i.e., layers). *Wetland hydrology* is determined by the frequency and duration of inundation and soil saturation; permanent or periodic water inundation or soil saturation are considered significant forces in wetland establishment and proliferation. Jurisdictional wetlands are those subject to regulatory authority under Section 404 of the Clean Water Act (CWA) and Executive Order 11990, *Protection of Wetlands.*

3.8.2 Existing Conditions

3.8.2.1 Regional Setting

<u>Vegetation</u>

Areas within Berkeley County that are undisturbed are composed predominately of mixed hardwood forest. The forest areas are dominated by a mixture of oaks and hickories that include Northern red oak (*Quercus rubra*) and shagbark hickory (*Carya ovata*). Yellow poplar (*Liriodendrom tulipifera*) and Virginia pine (*Pinus Virginiana*) are also common, in addition to black walnut (*Juglans nigra*). Understory species include black gum (*Nyssa sylvatica*) and Kinnikinnik dogwood (*Cornus amonum*). The shrub layer varies from sparse to dense, and can include numerous species of Hawthorns shrubs (*Crataegus* sp.).

Wetlands

According to a National Wetlands Inventory (NWI) survey, approximately six (6) individual wetland areas exist within the property boundary of the EWVRA. The wetland areas are palustrine systems (isolated wetlands or ponds, less than 6.6 feet in depth, non-saline, vegetated, and less than 20 acres in size) that are predominantly open water and intermittently exposed (NWI 1980).

Wildlife

Avian species in the region include: Mourning Dove (*Zenaida macroura*), Bobwhite Quail (*Colinus virginianus*), Wild Turkey (*Meleagris gallopavo*), Ring- necked Pheasant (*Phasianus colchicus*), and Ruffed Grouse (*Bonasa umbellus*). Mammals that occupy regional forested areas include the white-tailed deer (*Odocoileus virginiana*), gray squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*), and where the forest meets grassy fields, the eastern cotton-tail rabbit (*Sylvigagus floridanus*).

Threatened and Endangered Species

Two plant species in Berkeley County are federally listed as endangered, the harperella (*Ptilimnium nodosum*) and northeastern bulrush (*Scirpus ancistrochaetus)*. Rare plant species occurring in the county include, but are not limited to, whorled coreopsis (*Coreopsis verticillata*), spotted pondweed (*Potamogeton pulcher*), hard-stemmed bulrush (*Scirpus acutus*), and lance-leaved buckthorn (*Rhamnus lanceolata*). Currently, no federally listed animals occur in Berkeley County; however, the Indiana bat (*Myotis sodalis*) does occur within the state and could forage and roost in Berkeley County (West Virginia Division of Natural Resources [DNR] 2002). Summer Indiana bat foraging habitats are generally defined as riparian, bottomland, or upland forest and old fields and pastures with scattered trees. Further, their roosting habitat consists of live or dead hardwood tree species (FAA 2002, West Virginia DNR 2003b). All rare, threatened, and endangered species potentially occurring in Berkeley County are listed in Table 3-9.

3.8.2.2 Biological Resources at the 167 AW Installation

Vegetation

Virtually all natural vegetation on the 167 AW installation was removed during construction and grading for development. Current vegetation on the installation is primarily limited to lawns, and transplanted shrubs and trees.

The property proposed for acquisition has been previously disturbed and agricultural (i.e., soy bean) production currently occupies the majority of this parcel. Additionally, invasive species such as musk thistle (*Cardus nutans*) occupy the areas not groomed for crops. Sparse groupings of the following trees are also present: northern red oak, shagbark hickory, black walnut, and yellow poplar.

Table 3-9. Special Status Plant and Animal Species of Berkeley County

Scientific Name	Common Name	Status	
		State	Federal
Plants			
Arabis hirsuta var. *pycnocarpa*	Hairy Rock-Cress	S2	
Arabis patens	Spreading Rockcress	S2	
Arundinaria gigantea	Giant Cane	S2	
Catocala herodias gerhardi	Pine Barrens Underwing	SU	
Coreopsis verticillata	Whorled Coreopsis	S1	
Drosera rotundifolia	Roundleaf Sundew	S3	
Glyceria acutiflora	Sharp-Scaled Manna-Grass	S2	
Hendersonia occulta	Cherrystone Drop	S1S2	
Hydrocotyle ranunculoides	Floating Pennywort	S2	
Liparis loeselii	Loesel's Twayblade	S2	
Lysimachia hybrida	Lowland Loosestrife	S1	
Margariscus margarita	Pearl Dace	S2S4	
Oenothera argillicola	Shale Barren Evening-Primrose	S3	
Paronychia argyrocoma	Silver Nail-Wort	S3	
Peltandra virginica	Arrow-Arum	S2	
Potamogeton pulcher	Spotted Pondweed	S1	
Ptilimnium nodosum	Harperella	S1	LE
Pycnanthemum muticum	Blunt Mountain-Mint	S1	
Ranunculus sceleratus	Cursed Crowfoot	SH	
Rhamnus lanceolata	Lance-Leaved Buckthorn	S1	
Samolus valerandi ssp. *parviflorus*	Water Pimpernel	SH	
Satyrium caryaevorum	Hickory Hairstreak	S2	
Scirpus acutus	Hard-Stemmed Bulrush	S2	
Scirpus ancistrochaetus	Northeastern Bulrush	S1	LE
Scirpus purshianus	Weakstalk Bulrush	S2	
Senecio antennarifolius	Pussytoes Ragwort	S3	
Solidago arguta var. *harrisii*	Shale Barren Goldenrod	S3	
Sparganium androcladum	Branching Bur-Reed	S1	
Synosma suaveolens	Sweet-Scented Indian-Plantain	S2	
Thuja occidentalis	White Cedar	S2	
Triflolium virginicum	Kates Mountain Clover	S3	
Vernonia glauca	Broad-Leaf Ironweed	SH	
Veronica scutellata	Marsh Speedwell	S1	
Woodsia ilvensis	Rusty Woodsia	S2	
Zannichellia palustris	Horned Pondweed	S1	
Animals			
Invertebrates			
Caecidotea pricei	Price's Cave Isopod	S1	
Euchlaena milnei	A Looper Moth	S2	
Orconectes limosus	Spinycheek Crayfish	S1	
Porhomma cavernicola	Appalachian Cave Spider	S2	
Stygobromus cooperi	Cooper's Cave Amphipod	S1	
Stygobromus gracilipes	Shenandoah Valley Cave Amphipod	S1	

Table 3-9. Special Status Plant and Animal Species of Berkeley County (Continued)

Scientific Name	Common Name	Status	
		State	Federal
Animals (continued)			
Amphibians			
Acris crepitans crepitans	Eastern Cricket Frog	S2	
Ambystoma jeffersonianum	Jefferson Salamander	S3	
Pseudacris triseriata feriarum	Upland Chorus Frog	S2	
Pseudotriton ruber	Northern Red Salamander	S3	
Birds			
Coragyps atratus	Black Vulture	S2B, S3N	
Lanius ludovicianus migrans	Migrant Loggerhead Shrike	S1B, S1N	
Pandion haliaetus	Osprey	S1B, S2N	
Fish			
Cottus cognatus	Slimy Sculpin	S1	
Etheostoma olmstedi	Tessellated Darter	S2	
Notropis amoenus	Comely Shiner	S3S4	
Notropis procne	Shallowtail Shiner	S2	
Mammals			
Cryptotis parva	Least Shrew	S2	
Myotis sodalis	Indiana bat	S1	LE
Neotoma magister	Allegheny Woodrat	S3	
Sorex hoyi winnemana	Southern Pygmy Shrew	S2S3	
Zapus hudsonius	Meadow Jumping Mouse	S3	
Reptiles			
Pseudemys rubriventris	Northern Red-Bellied Cooter	S1	
Clemmys guttata	Spotted Turtle	S1	
Clemmys insculpta	Wood Turtle	S2	

State Status
- S1 Five or fewer documented occurrences, or very few remaining individuals within the state. Extremely rare and critically imperiled.
- S2 Six to 20 documented occurrences, or few remaining individuals within the state. Very rare and imperiled.
- S3 Twenty-one to 100 documented occurrences.
- S4 Common and apparently secure with more than 100 occurrences.
- SH Historical. Species which have not been located within the last 20 years. May be rediscovered.

Characteristics Related to State Ranking
- B Breeding populations.
- N Non-breeding populations.
- U Unrankable.

Federal Status
- LE Listed as endangered.

Source: West Virginia DNR, Wildlife Diversity Program 2002.

Wetlands

Within the current 167 AW boundary, a drainage ditch system is located in the northeastern section of the installation and leads off base to an unnamed tributary and eventually to Cold Spring Run. This excavated system handles runoff from the aircraft parking apron and other impervious surfaces which bisects the installation (167 AW/West Virginia ANG 2001b) (Figure 3-9).

According to the NWI, within the proposed acquisition parcel one excavated, intermittently exposed, open water palustrine system exists. This wetland is located in the western section of the proposed acquisition parcel, north of Runway 08/26 and is less than 0.1 acre in size (Figure 3-9).

The USACOE has determined that no jurisdictional wetlands occur on EWVRA property in the area proposed for Taxiway E development (FAA 2002).

Wildlife

There is virtually no habitat suitable for wildlife on the 167 AW installation; wildlife species found would be limited to those adapted to high levels of human activity and disturbance. A few avian species have been identified on the installation or in flight around the installation and include: the Rock Dove (*Columba livia*); Red-tailed Hawk (*Buteo jamaicensis*); Mourning Dove and European Starling (*Sturnus vulgaris*). Wildlife within the parcel proposed for acquisition is composed of small mammal species normally found in agricultural fields of West Virginia and include species of moles, shrews, mice, and opossums.

Threatened and Endangered Species

No federally listed threatened, endangered, or candidate species are known to occur at the West Virginia ANG installation, and no habitats in the vicinity of the installation have been designated as critical. However, the federally endangered Indiana Bat does occur statewide and has the potential to occur in Berkeley County; further, potential suitable habitat could be present on the proposed acquisition parcel. Additionally, no state listed rare species are known to occur at the installation or on the proposed acquisition parcel. The rare hard-stemmed bulrush does occur at a distance of more than 2 miles from the EWVRA (167 AW/West Virginia ANG 1999a).

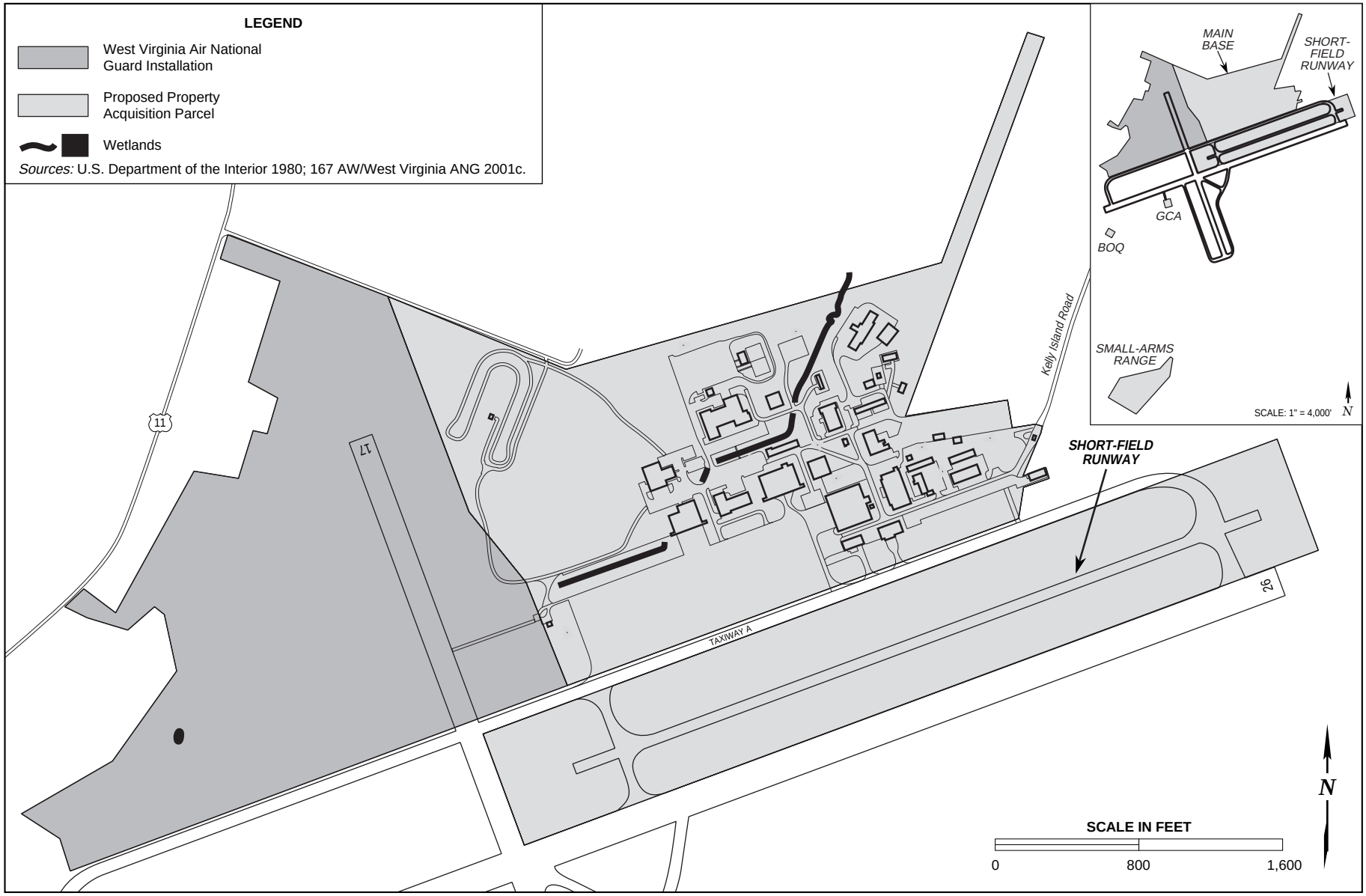

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Figure 3-9. Wetlands within the Existing Installation and Proposed Acquisition Parcel at Eastern West Virginia Regional Airport

Figure 3-9

3.9 TRANSPORTATION AND CIRCULATION

3.9.1 Definition of Resource

Transportation and circulation refer to the movement of vehicles throughout a road and highway network. Primary roads are principal arterials, such as major interstates, designed to move traffic and not necessarily to provide access to all adjacent areas. Secondary roads are arterials such as rural routes and major surface streets which provide access to residential and commercial areas, hospitals, and schools.

3.9.2 Existing Conditions

3.9.2.1 Regional and Local Circulation

Regional north-west access to the West Virginia ANG installation is provided by Interstate 81 (I-81) and I-70 (Figure 3-10). Regional access from east or west of the installation is provided by I-70, which intersects I-81 approximately 20 miles northeast of the installation. West Virginia State Route 9 provides local east/west access, while U.S. Highway 11 offers north/south access.

Kelly Island Road leads to the traffic check house/main gate and serves as the primary access road to the installation. Average daily traffic (ADT) volume along Paynes Ford Road between U.S. Highway 11 and Kelly Island Road was 4,400 vehicles in 2002 (Figure 3-11). ADT volume on U.S. Highway 11 where it intersects Paynes Ford Road was 15,000 vehicles in 2002. To the southeast of the EWVRA, Airport Road between the intersection with Paynes Ford Road and Novak Road had an ADT volume of 1,600 vehicles. Based on the increased development in the area, it is probable that traffic volumes have increased since 2002 along U.S. Highway 11 and Paynes Ford Road (West Virginia Department of Transportation/Division of Highways 2003b).

Mass transit to the region is provided by airline, rail, and motor transportation systems. The airport serving the Martinsburg area is EWVRA which handles general aviation. Regional and national transportation is also provided by Amtrak, along the Conrail Railroad.

3.9.2.2 Circulation at the 167 AW Installation

The West Virginia ANG installation in Martinsburg is currently a nonresidential base, although dormitories do exist on base to provide sleeping quarters for personnel on unit training assembly (UTA) weekends. Approximately 334 full- and part-time employees commute to the installation daily. Approximately 1,210 ANG personnel commute one weekend per month for UTAs.

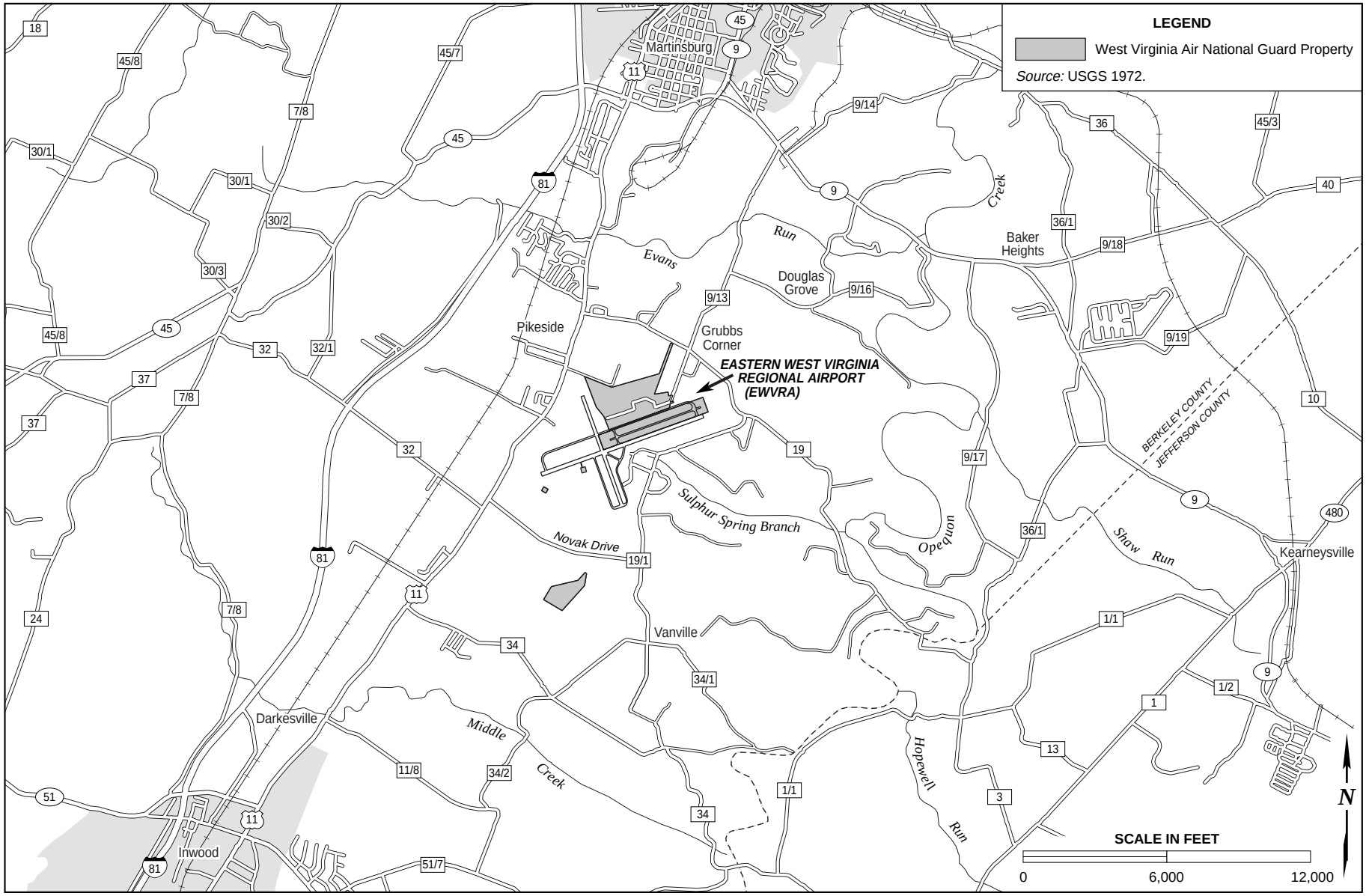

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Figure 3-10. Regional Transportation Network in the Vicinity of Eastern West Virginia Regional Airport and the West Virginia Air National Guard

Figure 3-10

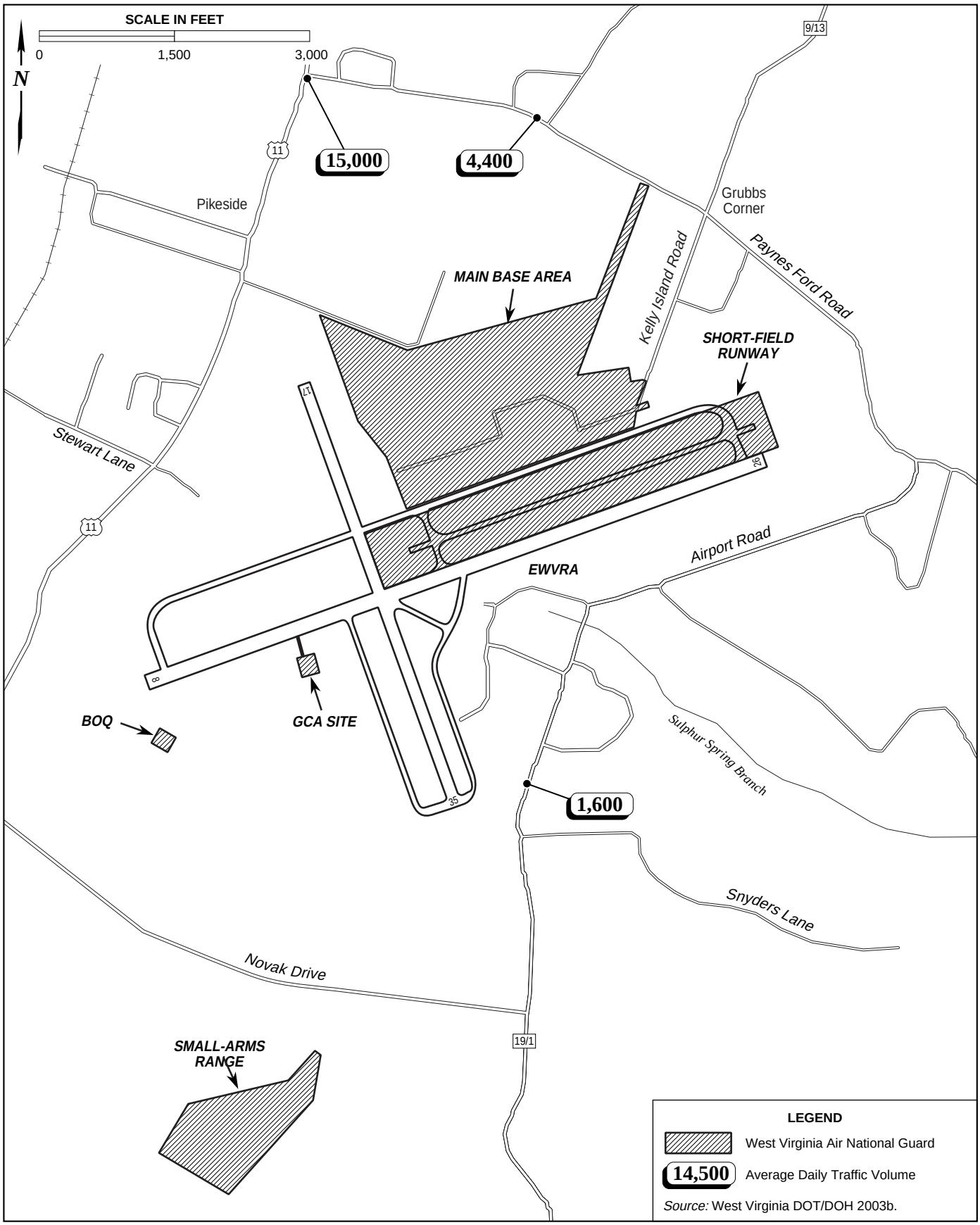

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Figure 3-11. Local Transportation Network and Average Daily Traffic Volumes in the Vicinity of Eastern West Virginia Regional Airport

Figure 3-11

Primary access to and egress from the base occurs at the Main Gate at Kelly Island Road. Once on base, POVs generally travel on nine arterial roads: Sabre Jet Boulevard, Constellation Boulevard, Mustang Boulevard, Hercules Drive, Boxcar Drive, Douglas Drive, Lockhead Drive, Shooting Star Drive, and Goonie Bird Lane. The circulation system includes relatively few traffic control devices. No traffic counts have been performed for roadways within the installation.

3.9.2.3 Parking at the 167 AW Installation

The USAF has established guidelines intended to ensure that adequate parking is available at USAF and ANG facilities; according to these standards, the ratio of available parking spaces to personnel should be no less than 0.75. The installation currently contains 800 POV parking spaces. This supply of parking spaces is more than adequate for regular weekday staffing levels (i.e., 334 personnel); however, based on an authorized UTA weekend population of 1,210 personnel, the ratio of parking spaces to personnel is 0.66 and does not meet USAF requirements.

3.10 VISUAL RESOURCES

3.10.1 Definition of Resource

Visual resources are defined as the natural and manufactured features that comprise the aesthetic qualities of an area. These features form the overall impressions that an observer receives of an area or its landscape character. Landforms, water surfaces, vegetation, and manufactured features are considered characteristic of an area if they are inherent to the structure and function of a landscape.

3.10.2 Existing Conditions

3.10.2.1 Regional Visual Character

EWVRA is located in Berkeley County, West Virginia, situated on the southern edge of the City of Martinsburg. The topography of the area is level to gently sloping at an elevation of 520 to 560 feet MSL and the regional visual character is dominated by suburban and rural development.

3.10.2.2 Visual Resources at the 167 AW Installation

The 167 AW is located on 206 acres of land in the northeastern portion of EWVRA in Berkeley County approximately 4 miles south of the City of Martinsburg. Land use in the vicinity of the installation includes sparsely developed areas of agriculture, residential, and commercial properties. There are no wild and scenic rivers, designated scenic roads or vistas, or other sensitive visual resources in the immediate vicinity of the installation.

The visual environment at the installation is characteristic of a military facility; buildings tend to vary only slightly in style and construction materials. Most structures are one-story, flat-roofed, and constructed of concrete block or brick. With the exception of larger buildings associated with aircraft maintenance operations, facilities blend with surrounding natural features. Landscaping has been implemented in some areas of the ANG facility. Overall, visual resources at the installation do not constitute unique or sensitive viewsheds.

Visual Resources of the EWVRA and the 167 AW
View from the Northwest Section of the EWVRA looking Southeast

3.11 CULTURAL RESOURCES

3.11.1 Definition of Resource

Cultural resources represent and document activities, accomplishments, and traditions of previous civilizations and link current and former inhabitants of an area. Depending on their conditions and historic use, these resources may provide insight to living conditions in previous civilizations and may retain cultural and religious significance to modern groups.

Archaeological resources comprise areas where prehistoric or historic activity measurably altered the earth or deposits of physical remains (e.g., arrowheads, bottles) discovered therein. Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic significance. Architectural resources generally must be more than 50 years old to be considered for inclusion in the National Register of Historic Places (NRHP), an inventory of culturally significant resources identified in the U.S.; however, more recent structures, such as Cold War-era resources, may warrant protection if they have the potential to gain significance in the future. Traditional cultural resources can include archaeological resources, structures, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals that Native Americans or other groups consider essential for the persistence of traditional culture.

Several Federal laws and regulations have been established to manage cultural resources, including the National Historic Preservation Act (1966), the Archaeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resource Protection Act (1979), the Native American Graves Protection and Repatriation Act (1990), and the DoD American Indian and Alaska Native Policy (1999). In order for a cultural resource to be considered significant, it must meet one or more of the following criteria for inclusion on the NRHP:

> "The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design setting, materials, workmanship, feeling, and association and: 1) that are associated with events that have made a significant contribution to the broad patterns of our history; or 2) that are associated with the lives or persons significant in our past; or 3) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or 4) that have yielded, or may be likely to yield, information important in prehistory or history" (CFR, Title 36, Part 60:4).

3.11.2 Existing Conditions

3.11.2.1 Regional History

The prehistory of West Virginia consists of activities attributed to Paleo-Indians, who lived in the area 8,000 – 10,000 years ago. These nomads hunted large game animals including buffalo. Many of the Native American remains found in the region were those of Mound Builders of the Adena and Hopewell cultures; the Mound Builders were in the area from 500 BC to about AD 800 (West Virginia Division of Culture and History 2002).

Europeans arrived and began to settle into the area around 1730. By the French and Indian war (1754-1763) approximately 8,000 settlers were living along the Shenandoah, Potomac, and other streams along the Eastern Panhandle of West Virginia (Encarta 2001).

3.11.2.2 Cultural Resources at EWVRA

Within the EWVRA boundary, two cemeteries and the remains of an old brick operations building are located in the southeastern quadrant of the property, across the airfield from the 167 AW. The Shepherd and Showalter Cemetery, also known as the Shepherd Family Mausoleum, houses the remains of the Shepherd family who owned what is now the airport property from 1844 until 1923. This cemetery is located to the east of the current EWVRA terminal. The other cemetery contains two graves and is located 500 feet south of the end of Runway 17/35. Brick ruins reported to be an old operations building of the airport is approximately 200 feet north of the current EWVRA terminal building. These ruins were determined not to be eligible for the National Register of Historic Places by the West Virginia Department of Culture and History (WVDCH). WVDCH suggested that should these ruins ever be removed for construction, homage should be paid to the structure by incorporating the ruins into the new construction and/or into a commemorative plaque, designed to showcase the antiquated bricks (AMEC 2003a; FAA 2002; EWVRA 2002).

Adjacent to the northeast boundary of the EWVRA, a burial site is located on State of West Virginia property currently occupied by the West Virginia Army National Guard. This cemetery contains the remains of the original property owners (167 AW/West Virginia ANG 2002b).

3.11.2.3 Cultural Resources at the 167 AW Installation

In July 1992, a Phase I Cultural Resource Reconnaissance Survey of 15 acres within the installation boundary was conducted by Thunderbird Archeological Associates, Inc. for the Department of the Navy. The Navy's proposed Naval Reserve Facility was to occupy an open space area east of Runway 17 and north of the control tower. The cultural resource survey included a records check and field survey. A record search revealed that no identified cultural resource site was within the installation boundary, with the closest site being less than 2 miles away. The 15-acre parcel was

subsequently surveyed by a field walkover. Further, 102 shovel test pits were excavated and screened to sterile subsoil. The only evidence of any prehistoric activity within the project area was a single projectile point found during the pre-fieldwork walkover. The projectile point could not be dated, based on the extensive sharpening before being discarded. No additional prehistoric materials were discovered during either the walkover or test pit excavations. The survey concluded that no prehistoric or historic sites were located within the parcel and no further archaeological work was recommended (Department of the Navy 1992).

All architectural structures at the 167 AW installation were built post-1940s and are not considered to be of Cold War-era significance; therefore, no buildings would be eligible for listing by the NRHP.

No Cultural Resources Management Plan (CRMP) or Architectural and Historical Assessment is known to have been prepared at the installation, and no NRHP-eligible cultural or historic resources are known to exist at the airport. In addition, due to lack of surface water features in the project area, it is unlikely that any unknown prehistoric archaeological sites exist at the installation. However, if more substantial context evolves, the facility should be evaluated for historic significance.

Annotated Department of Defense American Indian and Alaska Native Policy

In 1999, the DoD promulgated its American Indian and Alaska Native Policy, which emphasizes the importance of respecting and consulting with tribal governments. The Policy requires an assessment, through consultation, of the affect 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 services. In order to comply with this policy, the 167 AW was contacted to obtain information on any known claims by federally recognized Indian tribes to the lands associated with the 167 AW installation and the project area. No lands on or in the immediate vicinity of the installation are held in trust by the U.S. for tribal governments (167 AW/West Virginia ANG 2002b). An additional consideration is the potential for tribal trust resources, which are associated with lands ceded by the Treaty of 1836 and are primarily associated with fishing rights. However, no surface water resources (i.e., lakes and streams) are located within the proposed project area (refer to *Section 3.7*); as such, it is unlikely that tribal trust resources are located within the proposed project areas.

3.12 SOCIOECONOMICS

3.12.1 Definition of Resource

Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Human population is affected by regional birth and death rates as well as net in- or out-migration. Economic activity typically comprises employment, personal income, and industrial growth. Impacts on these fundamental socioeconomic indicators can also influence other components such as housing availability and public services provision.

Socioeconomic data in this section are presented at the county, state, and national level to analyze baseline socioeconomic conditions in the context of regional, state, and national trends. Data have been collected from previously published documents issued by Federal, state, and local agencies (e.g., Berkeley County Planning and Economic Development) and from state and national databases (e.g., U.S. Bureau of Economic Analysis' *Regional Economic Information System*).

3.12.2 Existing Conditions

Martinsburg is located in Berkeley County, one of the 55 counties in West Virginia. It is designated by the U.S. Census Bureau as part of the Washington Primary Metropolitan Statistical Area (PMSA). PMSAs are population centers surrounded by numerous communities characterized by high degrees of economic and social interaction and interdependence.

3.12.2.1 Population

The 2000 Washington PMSA population was estimated at 4,739,999, which represents a 5 percent increase over the 1995 census population of 4,493,018. Approximately 2 percent of the population of the Washington PMSA is located in Berkeley County, which had a 2000 census population of 75,905, ranking sixth in the state (U.S. Bureau of Economic Analysis 2000). Berkeley County represents approximately 4.2 percent of the 2000 state population, which ranked 37th in the nation at 1,808,344 (Table 3-10).

Table 3-10. Population Overview: 1970-2000

	1970	1980	1990	2000
Berkeley County	36,356	46,775	59,253	75,905
West Virginia	1,746,629	1,950,186	1,793,477	1,808,344
United States	203,211,926	226,545,805	248,709,873	281,421,906

Sources: U.S. Bureau of Economic Analysis 1997; U.S. Census Bureau 2002.

3.12.2.2 Job Growth and Unemployment

Employment

Table 3-11 presents the distribution of jobs by employment sector in Berkeley County for 1980, 1990, and 2000. In 1980, *government/government enterprises* (with 3,984 jobs, or 20 percent of all jobs), *manufacturing* (20 percent), and *retail trade* (13.5 percent) were the largest employment sectors of the county economy, together accounting for 53.5 percent of all jobs in Berkeley County (U.S. Bureau of Economic Analysis 1999). The largest industries in 2000 were still *government* (19 percent) *retail trade* (18 percent), and *manufacturing* (12 percent) (Table 3-11). Combined, these sectors provide jobs for an estimated 51 percent of the non-farm workforce, which totaled 33,756 people in 2000. County employment levels have increased between 1980 and 2000, experiencing a cumulative increase of 14,872 jobs (76 percent overall increase) (Table 3-12). Total job growth in the county was greater than the state's 14.0 percent overall increase and the nationwide overall increase of 47.0 percent during the same period (U.S. Bureau of Economic Analysis 2002).

Table 3-11. Berkeley County Employment by Industry (1980, 1990, and 2000)

Employment Sector	1980	1990	2000
Farm	1,167	953	752
Non-Farm	18,549	24,493	33,756
Ag. Services, Forestry, Fisheries	261	284	490
Mining	23	23	n/a
Construction	1,027	1,791	1,935
Manufacturing	3,997	3,463	4,142
Transportation & Public Utilities	941	781	1,285
Wholesale Trade	1,405	1,234	1,657
Retail Trade	2,664	5,078	6,336
Finance, Insurance, Real Estate	1,012	1,467	1,927
Services	3,145	5,247	n/a
Govt. and Govt. Enterprises	3,984	5,125	6,711
Federal, Civilian	2,221	2,570	2,979
Military	170	324	410
State and Local	1,593	2,231	3,322

Source: U.S. Bureau of Economic Analysis 2002.

Unemployment

Unemployment rates in Berkeley County are higher than nationwide levels but lower than overall unemployment in the State of West Virginia. Trends between 1990 and 2000 are summarized in Figure 3-12.

Table 3-12. Economic Indicators, Berkeley County, West Virginia, and United States, 1980, 1990, and 2000 (earnings in 2000 dollars)

	1980	1990	2000
Berkeley County			
Total Jobs	19,626	25,446	34,498
Military Jobs	170	324	410
Military Jobs/Total Jobs	0.8%	1.3%	1.2%
Average Earnings per Job	$13,602	$20,794	$29,112
Military Earnings per Job	$4,811	$9,459	$17,112
Per Capita Personal Income	$8,391	$15,707	$23,027
State of West Virginia			
Total Jobs	783,753	783,138	894,432
Average Earnings per Job	$15,140	$21,576	$27,380
Per Capita Personal Income	$8,172	$14,579	$21,738
United States			
Total Jobs	114,231,200	139,426,900	167,465,300
Average Earnings per Job	$15,144	$25,163	$36,315
Per Capita Personal Income	$10,183	$19,572	$29,469

Source: U.S. Bureau of Economic Analysis 2002.

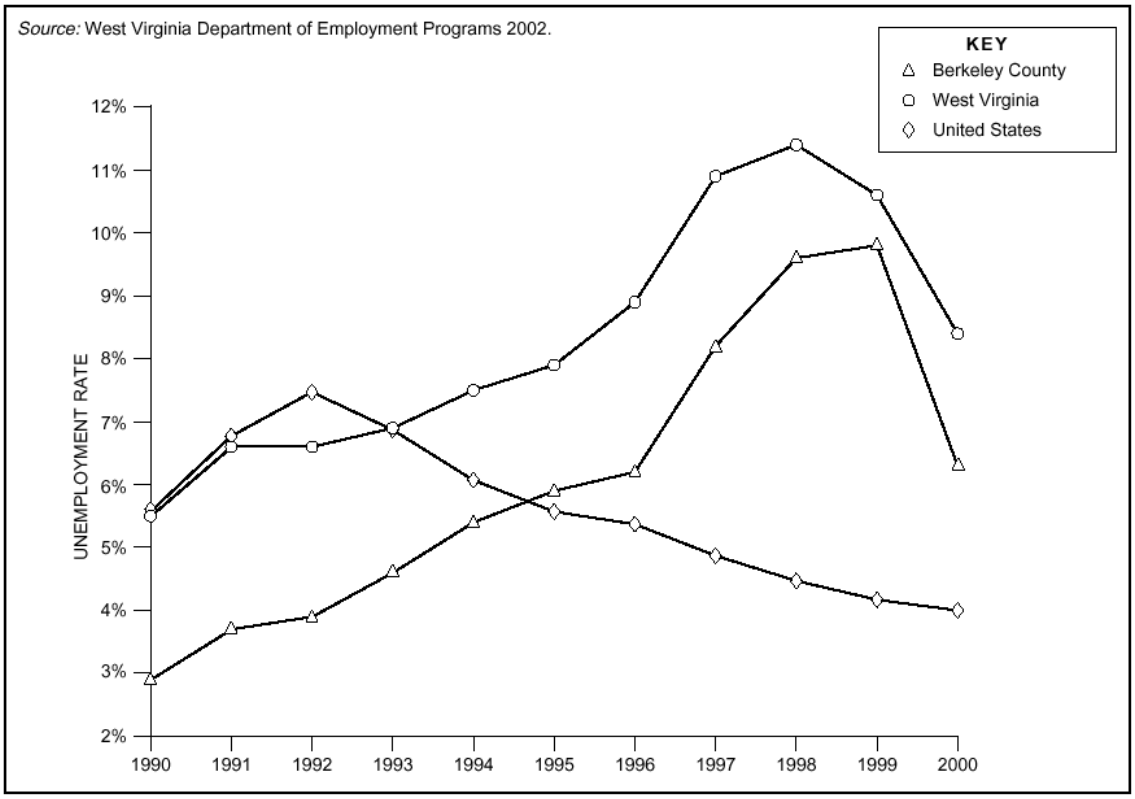

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Figure 3-12. Unemployment Rates for Berkeley County, West Virginia, and United States (1990-2000)

Figure 3-12

Job Composition

Figure 3-13 presents the distribution of jobs by employment sector in Berkeley County for 1990, 1995, and 2000. Employment in the *government* sector comprises *state and local government, Federal military*, and *Federal civilian* jobs. *Government* employment increased by 31 percent (1,582 jobs) between 1990 and 2000. Industrial sectors had net job losses between 1990 and 1995 (*construction*); however, between 1995 and 2000, no net job losses occurred (U.S. Bureau of Economic Analysis 1999).

Earnings

From 1999 to 2000, Berkeley County's net earnings increased by 7.3 percent, from $1.17 billion in 1999 to $1.25 billion; whereas the state's net earnings increased by only 4 percent. The largest specific industries in 2000 were *Federal civilian government* (17.6 percent of earnings) and *manufacturing* (11.2 percent). Of the industries that accounted for at least 5 percent of earnings in 1999, the largest decrease in earnings from 1990 to 2000 was *wholesale trade* (7.4 percent of earnings in 1999), which decreased 6.6 percent; the largest increase was *manufacturing*, which increased 9.9 percent (U.S. Bureau of Economic Analysis 2000). In 2000, Berkeley County had a total personal income (TPI) of $1.76 billion. This TPI ranked sixth in the state and accounted for 4.4 percent of the state total. The 2000 TPI reflected an increase of 6.5 percent from 1999. The 1999-2000 State TPI increase was 4.5 percent and the national increase was 6.6 percent. Earnings per sector are summarized in Figure 3-14.

In addition, Berkeley County had a per capita personal income (PCPI) of $23,040 in 1999. This PCPI ranked ninth in the state, and was 110 percent of the state average ($20,921) and 81 percent of the national average ($28,546). The 1999 PCPI reflected an increase of 5.5 percent from 1998. The 1998-99 state change was 3.5 percent and the national change was 4.5 percent (U.S. Bureau of Economic Analysis 2002).

In 2000, West Virginia had a PCPI of $21,738. This PCPI ranked 50th in the United States but reflected an increase of 5.0 percent from 1999. The 1999–2000 national change was 5.8 percent ($28,546 to $29,469). Berkeley County's 2000 PCPI was $23,027, a decrease of 0.1 percent from 1999 (U.S. Bureau of Economic Analysis 2002).

3.12.2.3 West Virginia ANG and the 167 AW

Currently, approximately 334 full-time personnel are employed at the 167 AW. Of that number, 77 are military, active duty employees; 209 are civilian technicians; and 48 are state-appropriated-fund civilians. On a UTA weekend, 1,210 Traditional Guardsmen are active at the 167 AW. The average salary for military and civilian full-time personnel at the 167 AW installation is $41,585 and $43,878, respectively.

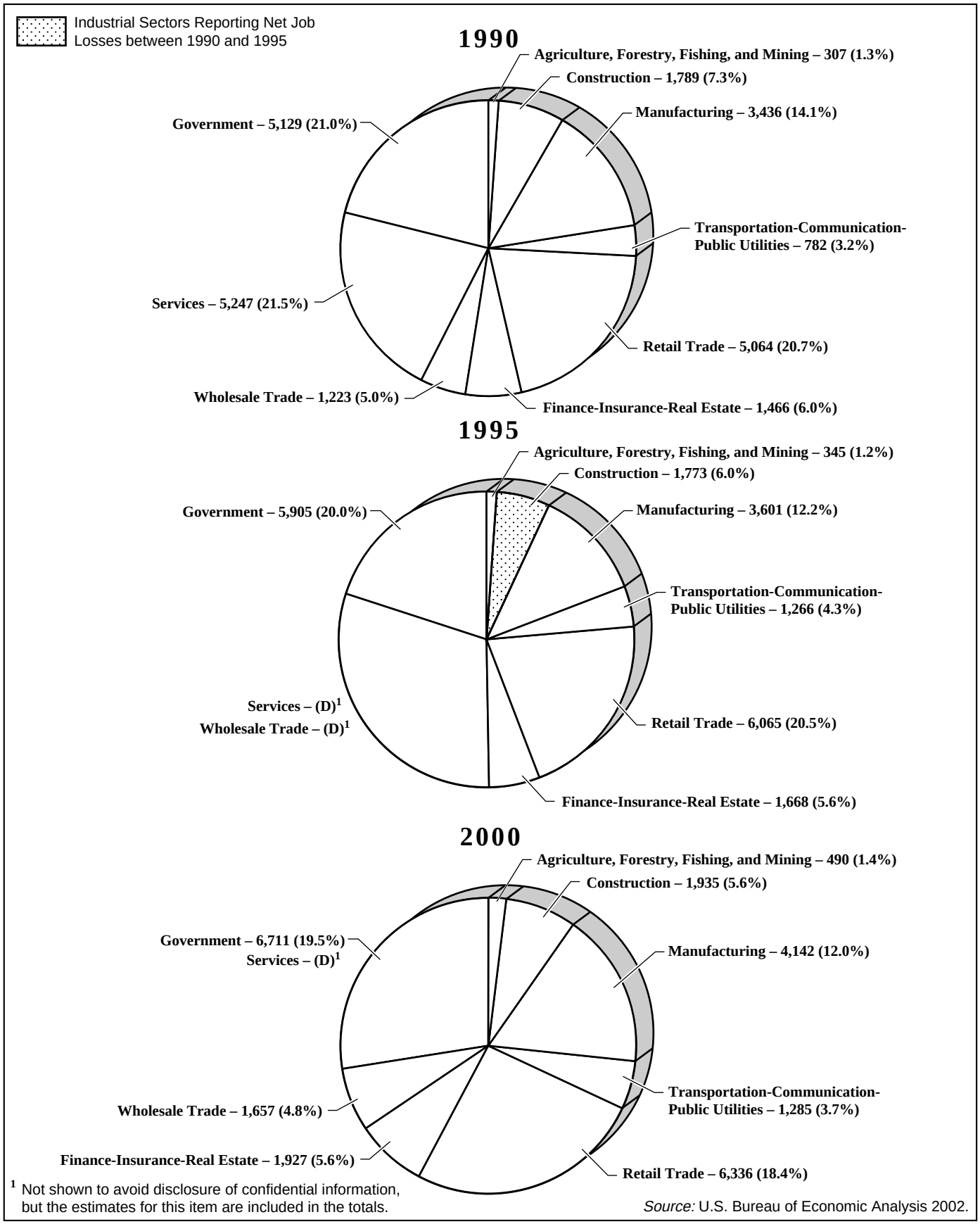

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Figure 3-13. Jobs by Industrial Sector Berkeley County (1990, 1995, and 2000)

Figure 3-13

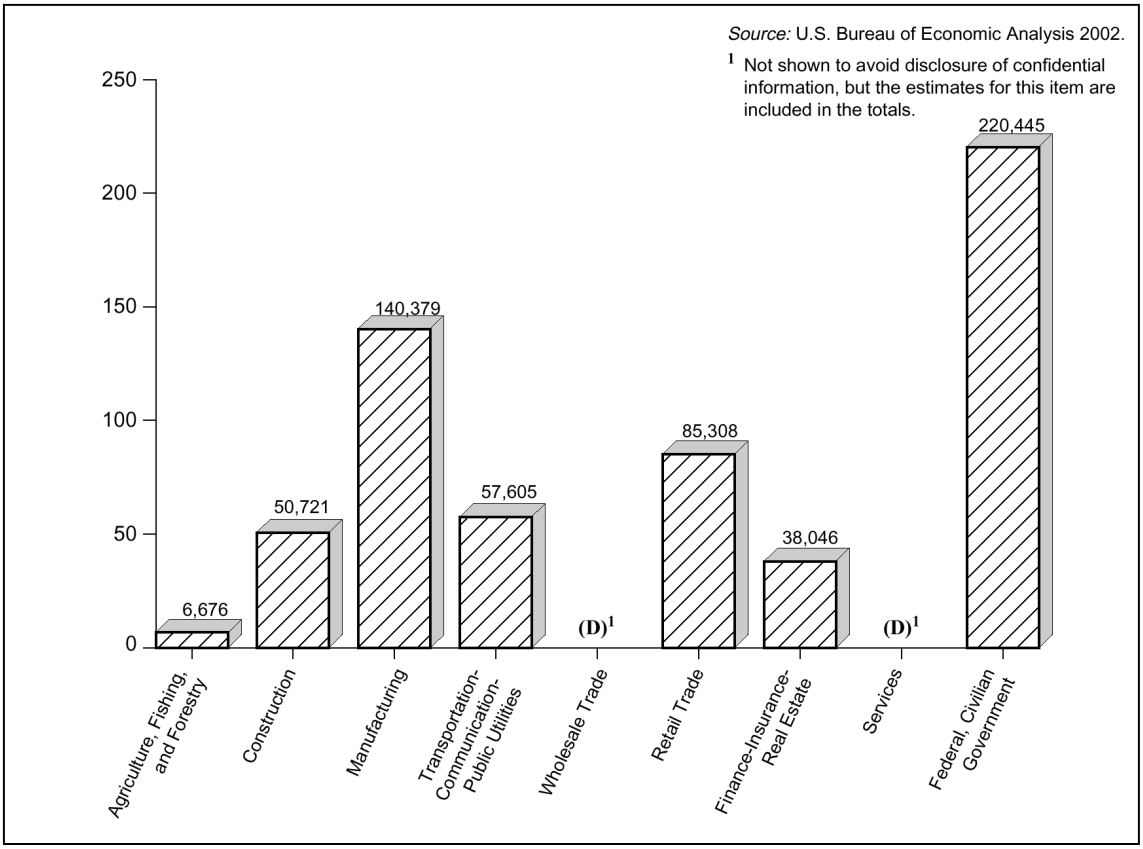

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Figure 3-14. Average Annual Earnings per Industrial Sector Berkeley County (2000) in Thousands of Dollars

Figure 3-14

Table 3-13 represents the distribution of staffing levels and payroll at the 167 AW for Fiscal Year (FY) 2000. Total expenditures by the unit are estimated at $31 million, including approximately $24 million in military and civilian payroll; $6 million in goods and services; and approximately $400,000 in real property maintenance.

Table 3-13. Payroll Expenditures by Classification at 167 AW

Payroll Category	Personnel	Payroll	Berkeley County Per Capita Salary	Average Salary
Active Duty	77	$3,202,030	$23,027	$41,858
Traditional Guardsmen/Reservists	1,210	$9,478,544	$23,027	$7,834
Civilians (technicians and state-appropriated)	257	$11,320,424	$23,027	$44,048
Total	**1,544**	**$24,000,998**		

Source: 167 AW/West Virginia ANG 2000e.

3.13 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

3.13.1 Definition of Resource

In 1994, Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, was issued to focus attention of Federal agencies on human health and environmental conditions in minority and low-income communities and to ensure that disproportionately high and adverse human health or environmental effects on these communities are identified and addressed.

Because children may suffer disproportionately from environmental health risks and safety risks, Executive Order 13045, *Protection of Children From Environmental Health and Safety Risks*, was introduced in 1997 to prioritize the identification and assessment of environmental health risks and safety risks that may affect children and to ensure that Federal agencies' policies, programs, activities, and standards address environmental health risks and safety risks to children.

Data used for the environmental justice and protection of children analysis were collected from the 2000 *Census of Population and Housing* (U.S. Bureau of the Census 2002) and represent the most complete, detailed, and accurate statistics available addressing population distribution and income. There are no indications that regional trends that have occurred since 2000 have significantly altered general population characteristics.

3.13.2 Existing Conditions

3.13.2.1 Minority and Low-Income Populations

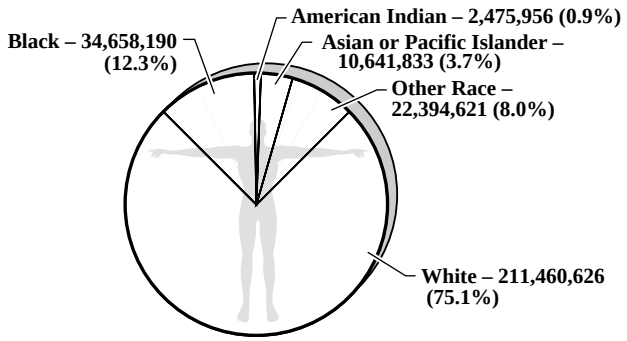
In order to comply with Executive Order 12898 (*Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*), ethnicity and poverty status in the vicinity of the West Virginia ANG at EWVRA were examined and compared to regional, state, and national data to determine if any minority or low-income communities could potentially be disproportionately affected by implementation of the Proposed Action.

Based on data contained in the 2000 Census of Population and Housing, the percentage of population in Berkeley County living below the poverty level is 11.2 percent; the lowest percent of the three geographic areas examined in this analysis (Figure 3-15). The next highest poverty level is the nation (13.3 percent), followed by the State of West Virginia (16.8 percent) (U.S. Bureau of the Census 2002).

Minority residents comprise 10.9 percent of the total population of the City of Martinsburg. By comparison, minority residents comprise smaller percentages in Berkeley County (7.3 percent) and the State of West Virginia (5.0 percent); however, minority residents in the nation comprise 24.9 percent of the total population (U.S. Bureau of the Census 2002).

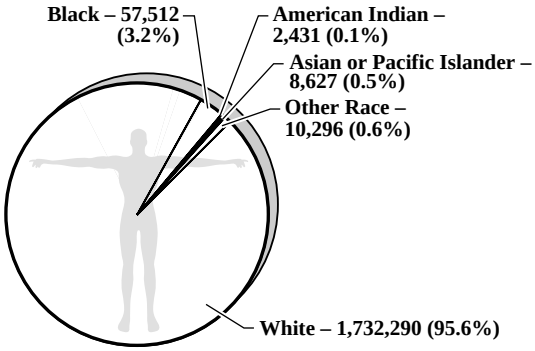
Source: U.S. Bureau of the Census 2002.

United States



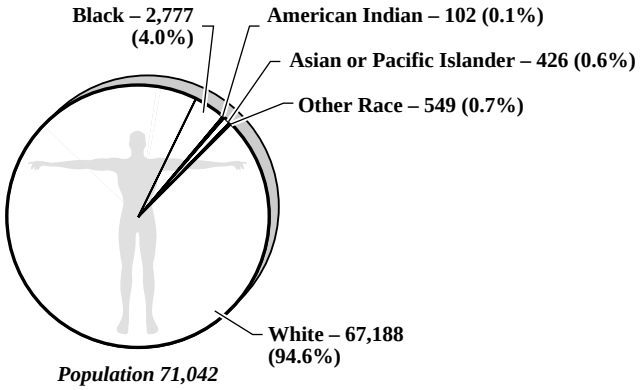
Population 281,421,906

State of West Virginia



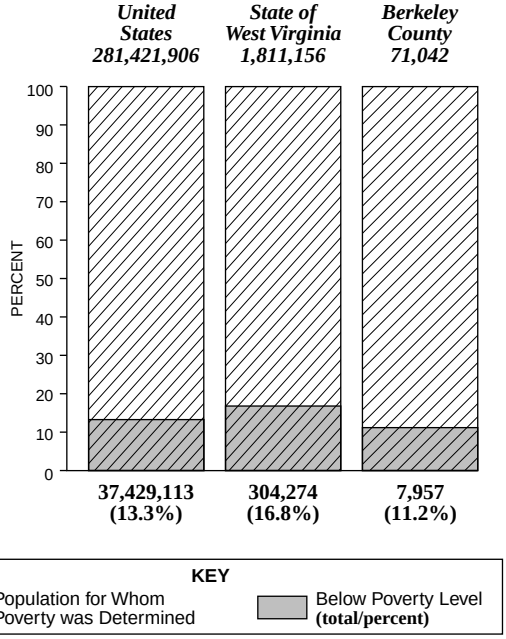
Population 1,811,156

Berkeley County



Population 71,042

Poverty Status



Age Distribution

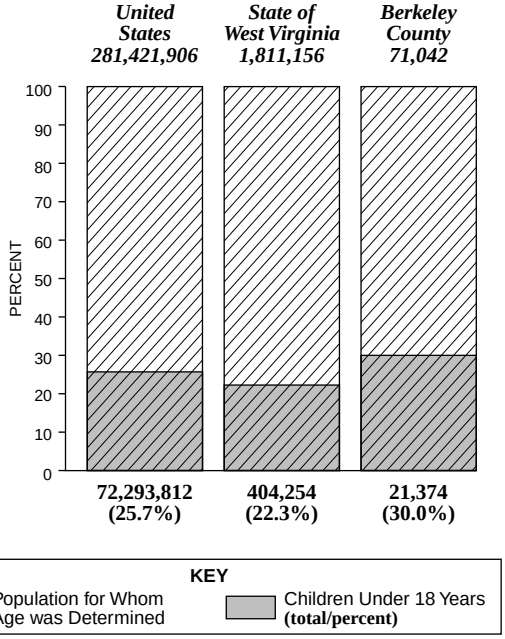


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Figure 3-15. Environmental Justice Data

Figure 3-15

3.13.2.2 Protection of Children

In order to comply with Executive Order 13045 (*Protection of Children From Environmental Health Risks and Safety Risks*), the number of children under age 18 in the vicinity of the 167 AW installation was examined and compared to county, state, and national levels. Additionally, base locations where populations of children may be concentrated (e.g., child care centers, schools, and parks) were determined to address potentially disproportionate health and safety risks to children that may result from implementation of the Proposed Action.

Berkeley County has a higher percentage of total population of children under age 18 than both the State of West Virginia and the nation. In 2000, there were 21,374 children under age 18 in Berkeley County, comprising 30.0 percent of the overall population, as compared to 22.3 percent for West Virginia and 25.7 percent for the nation (U.S. Bureau of the Census 2002).

<u>Schools</u>

The Berkeley County School District—serving the City of Martinsburg—has a total enrollment of about 13,000 students in elementary, secondary and senior high schools. Schools located in the vicinity of the 167 AW include 17 elementary schools with a combined enrollment of approximately 6,238 students; four secondary schools with a combined enrollment of 3,040 students; and 3 senior high schools with a combined enrollment of 3,731 students (Berkeley County Development Authority 2000). No schools are located within the 167 AW installation.

<u>Housing</u>

Although areas adjacent to the installation have been developed to support residential use, no family housing currently exists at the 167 AW and, accordingly, no children live on base. Further, no facilities on base offer services specific to children (e.g., a day care center).

3.14 HAZARDOUS MATERIALS AND WASTES

3.14.1 Definition of Resource

Hazardous materials are defined as substances with strong physical properties of ignitability, corrosivity, reactivity, or toxicity which may cause an increase in mortality, a serious irreversible illness, incapacitating reversible illness, or pose a substantial threat to human health or the environment. Hazardous wastes are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes which pose a substantial present or potential hazard to human health or the environment.

Issues associated with hazardous materials and wastes typically center around underground storage tanks (USTs); aboveground storage tanks (ASTs); and the storage, transport, and use of pesticides, bulk fuel, and POL. When such resources are improperly used they can threaten the health and well-being of wildlife species, botanical habitats, soil systems, water resources, and people.

To protect habitats and people from inadvertent and potentially harmful releases of hazardous substances, DoD has dictated that all facilities develop and implement *Hazardous Waste Management Plans* or *Spill Prevention, Control, and Countermeasure Plans*. Also, DoD has developed the Installation Restoration Program (IRP), intended to facilitate thorough investigation and cleanup of contaminated sites located at military installations. These plans and programs, in addition to established legislation (e.g., the Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA] and Resource Conservation and Recovery Act [RCRA]) effectively form the “safety net” intended to protect the ecosystems on which most living organisms depend.

3.14.2 Existing Conditions

3.14.2.1 Hazardous Waste Generation and Storage

Hazardous waste at the 167 AW installation is primarily generated by activities associated with aircraft maintenance/refueling, AGE maintenance, ground vehicle maintenance/refueling, and facilities maintenance. Typical hazardous wastes generated by these operations include used oil and oil filters, used batteries, waste paint, used antifreeze, light bulbs, adhesives, sealants, solvents, metals, batteries, and fuels. Hazardous wastes are ultimately disposed of by the Defense Reutilization and Marketing Office (DRMO). The installation is regulated by the USEPA as a Small Quantity Generator (SQG) of hazardous waste (USEPA ID #WV1572890001) (167 AW/West Virginia ANG 2000b). Materials used by the 167 AW which result in hazardous waste generation are summarized in Table 3-14.

Prior to disposal by DRMO, hazardous waste generated by the 167 AW is temporarily stored at Satellite Accumulation Points (SAPs) or at the 180-day Central Accumulation Point (CAP) located at Building 132. These are the only locations at the installation that can store any type of hazardous waste. SAPs are located at or near the point of generation where hazardous waste is initially accumulated prior to consolidation at a

Table 3-14. Hazardous Waste Generation at the 167 AW

Building	Description	Hazardous Substance	Containment
102	CE Shop	Batteries, oil, paint, starter fluid	1- & 5-gallon containers
103	CE Covered Storage	AFFF	5-gallon cans & 55-gallon drums
		Pesticide, herbicide	1-gallon containers
		Paint, starter fluid	1-quart containers
		Oil, solvent	30-gallon container
106	Base Supply	POL, paint, solvent, cleaner, AFFF, IPA, thinner, degreaser	1-quart & 5-gallon containers
109	Generator Station	Diesel	285-gallon AST
110	Main Hangar	Sealant, oil, thinner, paint, solvent, MEK, IPA, cleaner, degreaser, batteries, brake fluid	1- & 5-gallon containers
		Acid	1-quart containers
		Alodine	30-gallon tank
		Heat treating oil	30- & 55-gallon drums
		De-icing fluid	500-gallon trucks
114	Control Tower	Diesel	1,000-gallon AST
115	BOQ	Fuel Oil	500-gallon AST
118	Engine Shop	Adhesive, paint, oil, grease, cleaner, MEK, solvent	1- & 5-gallon containers
119	Aircraft Maintenance	Paint, lubricant, grease, oil, brake fluid, adhesive, solder flux, sealant, cleaner	1-, 5-, & 10-gallon containers
		AFFF	25- and 500-gallon ASTs
		Diesel	97-gallon AST
120	Composite Squadron Operations	Paint, solvent, IPA, batteries	5-gallon containers
		Diesel	190-gallon AST
121	AGE	Engine oil, flux, antifreeze, sealant, oil, grease, chlorine	5-gallon cans
122	CE	Antifreeze, oil, paint, gasoline, mixed gas, fuel	5-gallon containers
		Acid, corrosives	1-quart containers
		Lubricant, adhesive, stain, cleaner	1-gallon containers
125	Medical Clinic	Developer, fixer, replenisher	1-gallon containers
126	Visiting Airmen's Quarters/Base Exchange	Fuel oil	2,000-gallon AST
128	Fuel Cells Dock	Cleaner, paint, MEK, sealant, degreaser, solvent, thinner, AFFF	1- & 5-gallon containers
		Reclaimed JP-8	400-gallon bowser
		AFFF	500-gallon AST
130	Aerial Port	Paint, cleaner, oil	1-gallon containers
131	Magazine Storage	Munitions	Self-contained storage building
132	Base Supply Open (Drum) Storage	Propylene glycol, lube oil, carbon remover, aircraft washing soap	55-gallon drums
134	Operations/Training	Oil, paint, insect spray, corrosive compound, batteries	1-quart containers

Table 3-14. Hazardous Waste Generation at the 167 AW (continued)

Building	Description	Hazardous Substance	Containment
135	Remote Antenna Site	Diesel	500-gallon AST
136	Avionics	Oil, adhesive, cleaner, solvent, paint, solder flux, TCE	1-gallon containers
		Penetrant, emulsifier, developer	55-gallon containers
		Fixer, acid	1-liter containers
137	POL Operations	Paint, oil, petroleum, solvent	5-gallon containers
		Diesel	97-gallon AST
139	Vehicle Maintenance Shop	Degreaser, cleaner, grease, oil, antifreeze, paint, solvent, freon, sealant	5- , 10-, 30-, and 55-gallon containers & drums
		Diesel	20-gallon AST
		JP-8	500-gallon AST
		MOGAS/Diesel	5,000-gallon AST
140	Fire Station	Antifreeze, oil, brake fluid, cleaner	5-gallon containers
144	Range	Cleaner, oil	1-quart containers
145	HazMat Pharmacy	Paint, lacquer, adhesive, solvent, cleaner, oil, antifreeze, deicing fluid	5-gallon containers
1022	Engine Test Stand	Oil	1-quart containers
		JP-8	2,500-gallon mobile tanker
1036	Sewage Treatment Plant	Calcium hypochlorite, sodium sulfite	Tablets
		Diesel	2,000-gallon AST
1043	LOX Storage	Deicing Fluid (propylene glycol)	5,000-gallon AST
		LOX	50-, 400-, and 2,000-gallon ASTs
1047	Jet Fuel Storage	JP-8	305,000-gallon ASTs
1048	Refueler Parking Pad	JP-8	6,000-gallon mobile refuelers
		Reclaimed JP-8	1,800-gallon UST

Notes: AFFF - aqueous film forming foam
AGE – Aerospace ground equipment
AST – Aboveground storage tank
CE - Civil Engineering
IPA – Isopropyl alcohol
BOQ – Bachelor Officers Quarters
MEK – Methyl ethyl ketone
POL - petroleum, oil, and lubricants
MOGAS - motor gasoline
TCE - Trichloroethylene
LOX – Liquid oxygen
JP-8 - jet fuel

Source: 167 AW/West Virginia ANG 2000b.

180-day CAP. Of 66 SAPs located within 20 buildings at the 167 AW installation, 25 are designated for hazardous waste, 10 are designated for used oil, 6 are designated for non-hazardous waste, and 25 are designated for universal waste (167 AW/West Virginia ANG 2002a). Buildings containing SAPs and the CAP are listed in Table 3-15 and shown in Figure 3-16.

Table 3-15. Hazardous Waste Storage Locations at the 167 AW

Bldg.	Description	SAP#	Hazardous Waste
102	CE Maintenance Shop	HW1	Waste paint
		HW2	Paint and paint related material
		HW20	Thermostats, PCB ballasts
		HW23	Liquid paint waste
		UO3	Used oil
		NH6	Antifreeze clean-up material
		UN25	Mercury thermostats
106	Base Supply	HW19	Paint can/propane recovery
110	Main Hangar	HW3	Chemical mask filters
		HW4	Sealant
		UN5	Alkaline batteries
		UN6	Alkaline batteries
		UN7	Alkaline batteries
118	Engine Shop	HW21	Absorbent pads
		HW25	Absorbent pads
		UO1	Used hydraulic oil
		UO2	Used engine oil
		NH1	Asbestos gaskets
		UN1	Alkaline batteries
119	Aircraft Maintenance	HW13	Absorbent pads
		HW14	Bead blast media waste
		HW15	Sealant, bead blast media
		HW22	Lead solder
		HW24	Bead blast media waste
		UO6	Used hydraulic oil
		UO7	Used hydraulic oil
		UN15	Alkaline, Ni-Cad batteries
		UN18	Alkaline batteries
		UN19	Alkaline batteries
		UN20	Alkaline batteries
120	Squadron Operations	HW5	Chemical filters
		UN8	Mercury and lithium batteries
		UN24	Alkaline batteries
121	AGE	UO8	Used oil
		UN21	Alkaline batteries
122	CE Maintenance Shop	HW6	Incandescent light bulbs
		NH2	Ballasts
		UN2	Fluorescent lights, alkaline batteries
124	Reserve Forces Training	UN4	Alkaline batteries
125	Medical Clinic	HW18	X-rays, medical waste
		UN23	Alkaline batteries
128	Fuel Cell Dock	HW7	JP-8 absorbent pads
		HW8	Waste paint
		HW9	Waste paint related material
		UN9	Alkaline batteries
130	Aerial Port Training	HW10	Light sticks
		HW17	Chemical warfare related waste
		UN10	Alkaline batteries

Table 3-15. Hazardous Waste Storage Locations at the 167 AW (continued)

Bldg.	Description	SAP#	Hazardous Waste
132	Base Supply Open (Drum) Storage	CAP	Central Accumulation Point
134	Operations/Training	UN12	Alkaline batteries
		UN13	Alkaline batteries
		UN14	Alkaline batteries
136	Avionics	HW12	Sealant
		UN16	Alkaline batteries
137	POL Operations	UN11	Alkaline batteries
139	Vehicle Maintenance Shop	UO4	Used oil, used antifreeze
		UO5	Used oil, fuel filters
		UO9	Use oil filters
		UO10	Used JP-8
		NH4	Absorbent pads
		UN17	Alkaline batteries
140	Fire Station	UN3	Alkaline batteries
142	POL Pumping Station	HW11	JP-8 absorbent pads and filters
		NH5	Sump drain liquid
145	HazMat Pharmacy	HW16	HazMat Pharmacy waste
		NH3	HazMat Pharmacy material
		UN22	HazMat Pharmacy material

Notes: AGE - aerospace ground equipment
CE - Civil Engineering
HW – Hazardous waste
JP-8 – Jet fuel
NH – Non–hazardous
PCB – Polychlorinated biphenyl
POL - petroleum, oil, and lubricants
SAP – Satellite Accumulation Point
UO – Used oil
UN – Universal

Source: 167 AW/West Virginia ANG 2002d.

3.14.3 Storage Tanks

Bulk hazardous materials and fuel storage at the 167 AW installation includes jet fuel (JP-8), diesel fuel, motor gasoline (MOGAS), aqueous film forming foam (AFFF), deicing fluid (propylene glycol), and fuel oil. ASTs and USTs located within the installation are presented in Table 3-16 (167 AW/West Virginia ANG 2000b).

Oil/water separators (OWSs) are used to separate oils, fuels, sand, and grease from wastewater and to prevent contaminants from entering the sanitary sewer and stormwater drainage systems. Six OWSs are located at the 167 AW installation as listed in Table 3-17 (167 AW/West Virginia ANG 2000b).

3.14.4 Installation Restoration Program

The IRP was developed by the DoD to identify and address environmental contamination from past military operations. Future development of sites identified through the IRP program may be constrained depending on the severity of the contamination or the extent of the remedial action required. The overall objective of the IRP is to identify potential environmental problems and provide timely remedies, so as to protect public health and the environment.

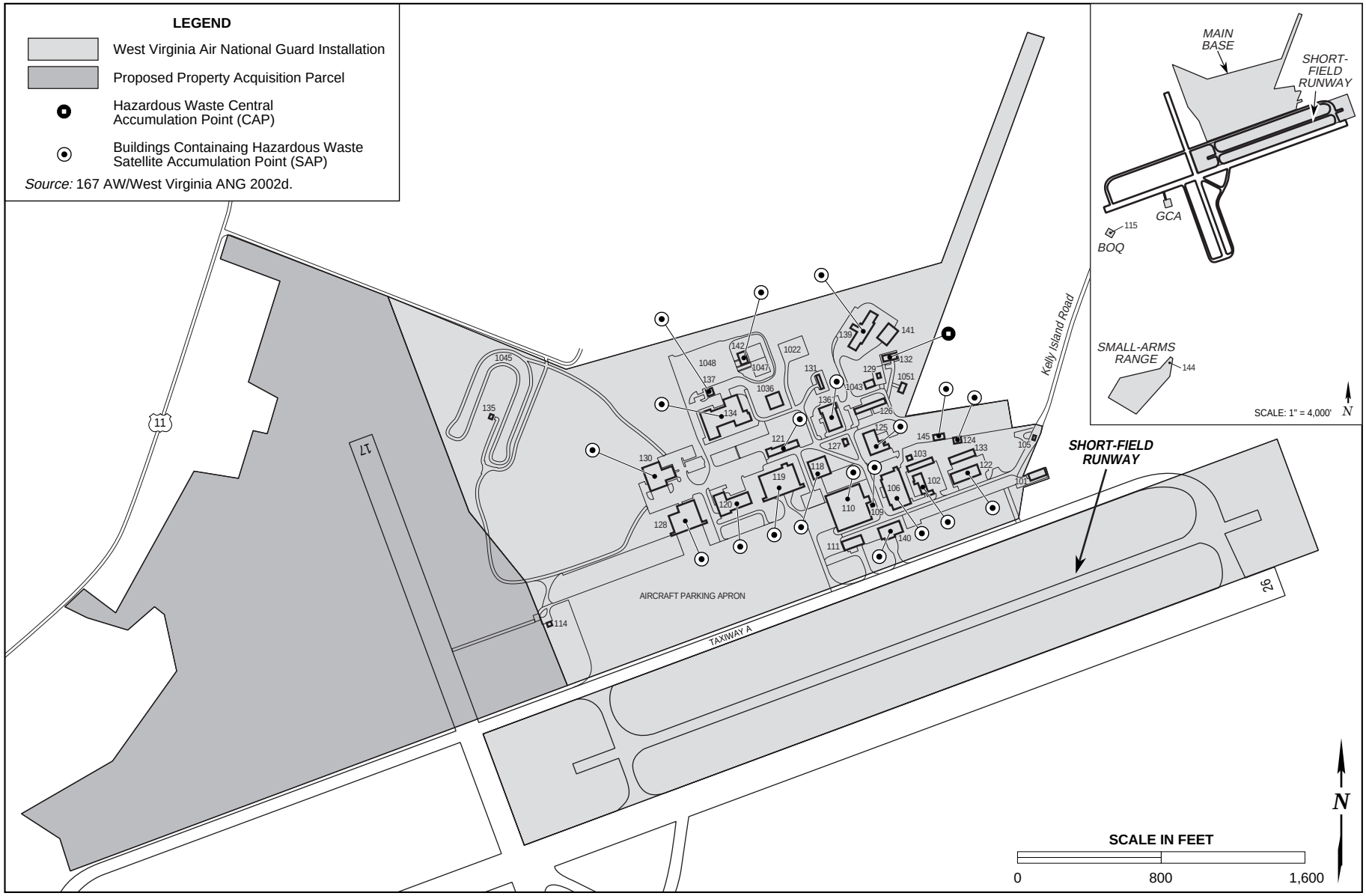

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Figure 3-16. CAP and SAPs at the Existing Installation and Proposed Property Acquisition Parcel at Eastern West Virginia Regional Airport

Figure 3-16

Table 3-16. Summary of Storage Tanks at the 167 AW

Building	Description	Type	Volume (gallons)	Material	Contents
ABOVEGROUND STORAGE TANKS					
109	Generator Station	AST	285	Steel Generator	Diesel
110	Main Hangar	De-icing truck	2 @ 500	Steel	De-icing fluid
114	Control Tower	AST	1,000	Steel Generator	Diesel
115	BOQ	AST	500	Steel	Fuel oil
119	Aircraft Maintenance	AST	3 @ 25		AFFF
		AST	2 @ 500		AFFF
		AST	97	Steel Generator	Diesel
120	Composite Squadron Operations	AST	190	Steel Generator	Diesel
126	Visiting Airmen's Quarters/Base Exchange	AST	2,000	Steel	Fuel oil
128	Fuel Cells Dock	Mobile Bowser	400	Steel	Reclaimed JP-8
		AST	500	Steel	AFFF
135	Remote Antenna Site	AST	500	Steel Generator	Diesel
137	POL Operations	AST	97	Steel Generator	Diesel
139	Vehicle Maintenance Shop	AST	2 @ 5,000	Steel	MOGAS/Diesel
		AST	500	Steel	JP-8
		AST	20	Steel Generator	Diesel
1022	Engine Test Stand	Mobile tanker	2,500		JP-8
1036	Sewage Treatment Plant	AST	2,000	Steel Generator	Diesel
1043	LOX Storage	AST	2,000	Steel	LOX
		AST	400	Steel	LOX
		Mobile Tanker	3 @ 50	Steel	LOX
		AST	5,000	Steel	Deicing Fluid (propylene glycol)
1047	Jet Fuel Storage	AST	2 @ 305,000	Steel	JP-8
1048	Refueler Parking Pad	Mobile Refueler	3 @ 6,000	Steel	JP-8
UNDERGROUND STORAGE TANK					
1048	POL	UST	1,800	Steel	Reclaimed JP-8

Notes: AST – Aboveground storage tank
AFFF - aqueous film forming foam
BOQ – Bachelor Officers Quarters
JP-8 - jet fuel
LOX – Liquid oxygen
MOGAS - motor gasoline
POL - petroleum, oil, and lubricants
UST – Underground Storage Tank

Source: 167 AW/West Virginia ANG 2000b.

Table 3-17. Summary of OWSs at the 167 AW

Building	Volume (gallons)	Collects from	Discharges to
102	500	Indoor trench drain	Sanitary sewer
118	1,200	Indoor trench drain	Sanitary sewer
128	12,000	Indoor trench drain	Sanitary sewer
137	7,500	JP-8 secondary containment area	Storm drainage ditch
139	400	Indoor trench drain	Sanitary sewer
140	220	Indoor drains	Sanitary sewer

Notes: OWS - oil/water separator
JP-8 - jet fuel
Source: 167 AW/West Virginia ANG 2000b.

A Preliminary Assessment (PA) completed in March 1986 identified four IRP sites within the 167 AW installation. As of 1999, all IRP sites have been closed and no further remedial action is planned.

3.15 SAFETY

3.15.1 Definition of Resource

The primary safety concern with regard to military training flights is the potential for aircraft mishaps (i.e., crashes), which may be caused by mid-air collisions with other aircraft or objects, weather difficulties, or bird-aircraft strikes.

Siting requirements for explosive materials storage (e.g., munitions) and handling facilities are based on safety and security criteria. Air Force Manual (AFM) 91-201, *Explosives Safety Standards*, requires that defined distances be maintained between these and a variety of other types of facilities. These distances, called QD arcs, are determined by the type and quantity of explosive materials to be stored and each explosive material storage or handling facility has QD arcs extending outward from its sides and corners for a prescribed distance. Within these QD arcs, development is either restricted or altogether prohibited in order to maintain safety of personnel and minimize the potential for damage to other facilities in the event of an accident. QD arcs for multiple facilities at a single site may overlap, leaving a series of arcs as edges of the safety zone. Explosive materials storage and build-up facilities must be located in areas where security can be assured.

3.15.2 Existing Conditions

3.15.2.1 Aircraft Mishaps

Four mishap classifications have been defined by the USAF. Class A mishaps result in a fatality or permanent total disability; total cost in excess of $1 million for injury, occupational illness, and property damage; or destruction or damage beyond repair to military aircraft. Class B mishaps result in a permanent partial disability; total cost in excess of $200,000 but less than $1 million for injury, occupational illness, and property damage; or hospitalization of five or more personnel. Class C mishaps result in total damages between $10,000 and $200,000, and Class D mishaps result in total damages between $1,000 and $10,000. *High accident potential* events are significant aircraft, missile, space, explosives, miscellaneous air operations, or ground occurrences with a high potential for causing injury, occupational illness, or damage if they occur. These events do not have reportable mishap costs. The 167 AW experienced one Class A aircraft mishap in 1992 but has avoided any aircraft mishap since that time.

3.15.2.2 Runway Protection Zones

Runway Protection Zones (RPZs)—trapezoidal zones extending outward from the ends of active runways at commercial airports—delineate those areas recognized as having the greatest risk of aircraft mishaps, most of which occur during takeoff or landing. Development restrictions within RPZs are intended to preclude incompatible land use activities from being established in these areas.

At EWVRA, the areas directly beyond either end of runways 08/26 and 17/35 are designated RPZs (Figure 3-17). According to aerial photographs from December 2002, sparsely developed residential areas occur in the vicinity of EWVRA and 7 homes are located within the existing RPZs associated with Runway 08/26. Further, approximately 26 residences and 4 commercial/industrial use buildings are located within RPZs for Runway 17/35 (Air Photographics, Inc. 2002; EWVRAA 2003; 167 AW/West Virginia ANG 2003d).

3.15.2.3 Bird-Aircraft Strike Hazard

Bird-Aircraft Strike Hazard (BASH) is defined as the threat of aircraft collision with birds during flight operations and is a safety concern at all airfields due to the frequency of aircraft operations and the possibility of encountering birds at virtually all altitudes. Most birds fly close to ground level; correspondingly, more than 95 percent of all reported bird-strikes occur below 3,000 feet AGL. At most military installations, about half of reported bird strikes occur in the immediate vicinity of the airfield and another 25 percent occur during low-altitude local training exercises.

Bird-aircraft strikes present a potential threat to 167 AW aircraft and aircrew safety due to the installation's proximity to the Atlantic Flyway (Figure 3-18). The installation has developed a *BASH Plan* in order to minimize the threat and occurrence of wildlife hazards at the airport. The *BASH Plan* identifies hazardous avian species and airport features that contribute to potential problems. The *BASH Plan* describes the responsibilities, policies, and procedures to reduce avian hazards at the airport. It includes habitat and avian management techniques, and considerations for updating future BASH Plans. Key elements of the *BASH Plan* include:

- habitat prevention to reduce environmental factors which may attract birds to the airfield (e.g., grass height management);
- dispersal methods to discourage birds from congregating at the airfield; and
- depredation to eliminate persistent bird populations.

According to BASH data from 2000, four bird-strikes occurred to 167 AW C-130H aircraft; however, all were non-damaging incidents (i.e., not class A, B, or C mishaps) (167 AW/West Virginia ANG 2002c).

3.15.2.4 Explosives Safety

A QD arc associated with small arms munitions storage and conventional munitions has been established at the 167 AW installation. Within this 100 foot arc surrounding Building 131, development is either restricted or altogether prohibited in order to maintain safety of personnel and minimize the potential for damage to other facilities in the event of an accident.

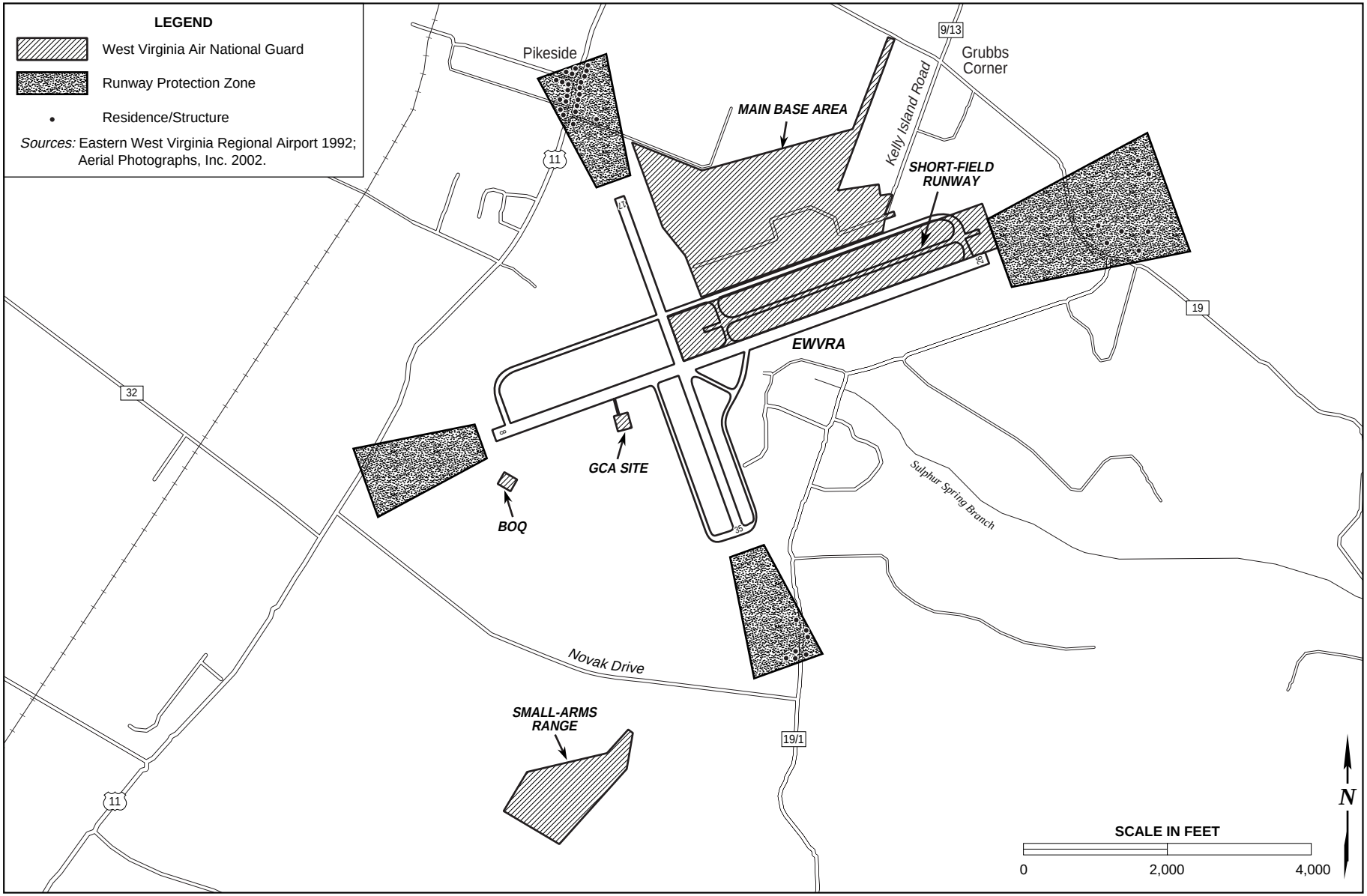

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Figure 3-17. Runway Protection Zones at Eastern West Virginia Regional Airport

Figure 3-17

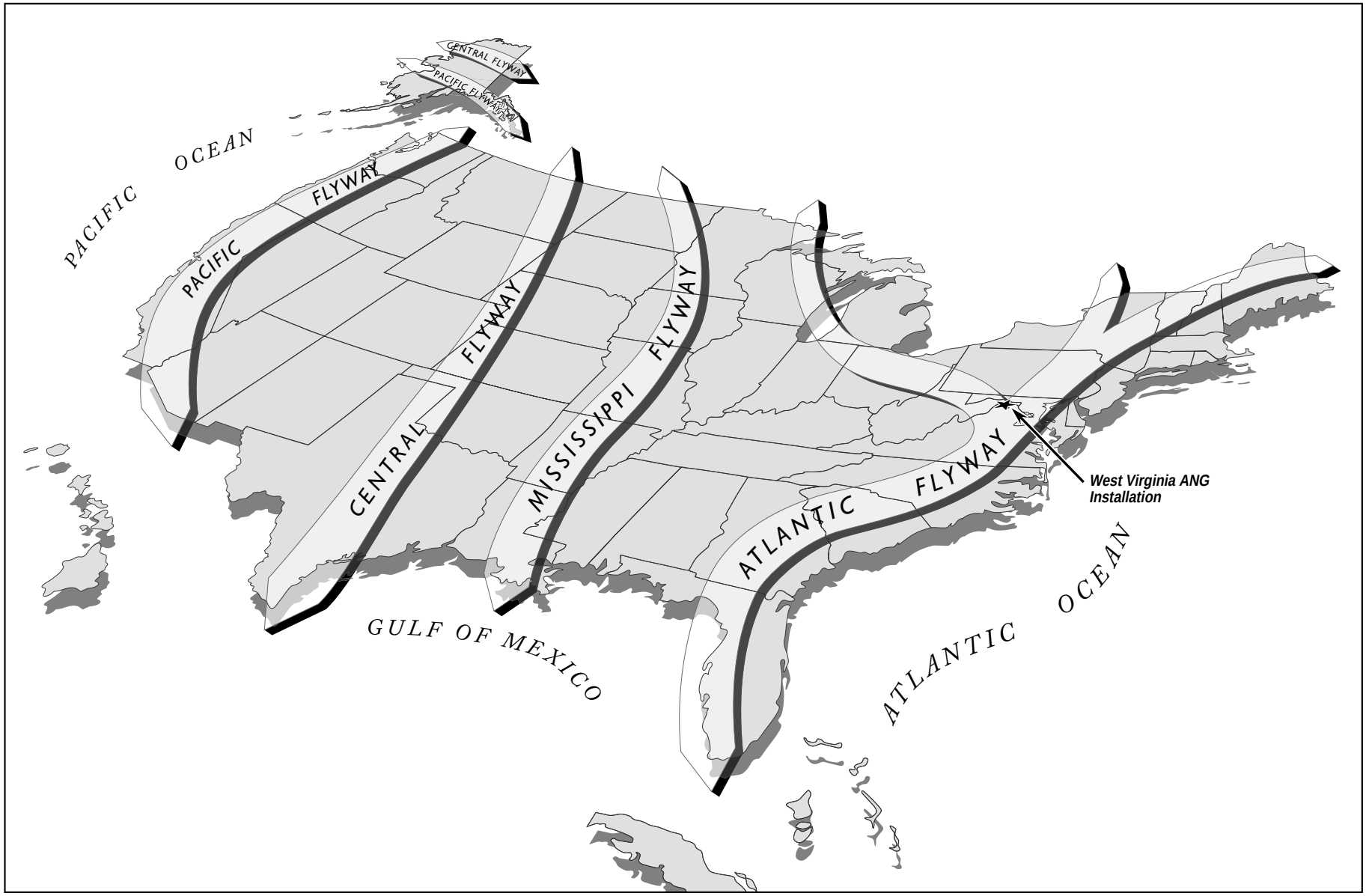

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Figure 3-18. Migratory Flyways over the United States

3-18

3.15.2.5 Security

Security at the 167 AW is composed of perimeter fencing, a 24-hour guarded gate, and numerous flightline and installation patrols. Eight-foot-high barbed wire fencing surrounds and separates the installation from adjacent properties to the north, east, and west. Runway 8/26 makes the southern border of the installation. The main entrance into to the installation is protected by armed guards throughout the day and evening hours. Patrols around the perimeter and the flightline are conducted routinely by military police.

3.16 DEPARTMENT OF TRANSPORTATION ACT SECTION 4(f)

3.16.1 Definition of Resource

Section 4(f) of the Department of Transportation Act of 1966 provides a mandate to make special efforts to "preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." Identified special efforts include providing a detailed description of the affected resources; discussion of direct (property acquisition) and indirect impacts on these resources from project alternatives; identification and evaluation of alternatives to avoid such impacts; and mitigation measures intended to minimize unavoidable adverse effects. Section 4(f) prohibits the taking of publicly owned lands that are managed as public parks and recreation areas, wildlife or waterfowl refuges, and precludes any activities that would adversely impact significant historic sites, regardless of ownership. There are two possible exceptions to these policies: 1) if there is no feasible and prudent alternative to the use of the land and 2) if the project includes all possible planning to minimize harm to the property.

In order to qualify as a park or recreation area under Section 4(f), the resource must be publicly owned, open to the public, significant as a park or recreation area, and its primary purpose must be for park and recreation activities. Public ownership refers to ownership by a local, state, or Federal government agency. Section 4(f) does not apply if a park or recreation area is owned by a private institution or an individual, even if it is open to the public. A resource that is open to the public is one where access is not limited to specific members of the public; rather, it is available to the entire public during normal hours of operation. If a resource is restricted to a select group of people, it is not considered open to the public and is therefore not considered a Section 4(f) resource. A recreational resource is considered significant if its availability and function, when compared to the overall recreation objectives of the surrounding community, are thought to fulfill those objectives. The primary purpose of a resource would be determined by officials with jurisdiction over the land. Lands used primarily for non-recreational purposes but that host recreational activities which are incidental, secondary, occasional, or dispersed do not have recreation as a primary purpose.

Waterfowl and wildlife refuges have similar standards to that of parks and recreation areas to qualify for protection under Section 4(f). Refuges must be publicly owned, be significant as a refuge, and its primary purpose must be that of a refuge.

Historic sites or cultural resources qualify for protection under Section 4(f) if they are of national, state, or local significance and are on or eligible for inclusion on the NRHP. If not on or eligible for the NRHP, a property can still be protected under Section 4(f) if its protection is considered appropriate by the Department of Transportation. Cultural resources do not require public ownership to qualify for protection under Section 4(f). Archaeological resources may be protected under Section 4(f) if they are on or eligible for NRHP. Section 4(f) does not apply to archaeological sites that have minimal value

for preservation in place, and whose primary importance stems from what they reveal through data excavation.

Other resources that are not as easily classified or fit into multiple categories that are considered Section 4(f) properties include: wildlife management areas, school playgrounds, fairgrounds, public multi-use land holdings, wild and scenic rivers, bodies of water, planned facilities, bikeways, trails, and scenic byways. These resources must be publicly owned, considered significant as a resource, and their primary purpose must be resource specific.

3.16.2 Existing Conditions

3.16.2.1 Parks or Recreation Areas

According to Federal, state, and local agencies no public parks or recreation areas exist in the immediate vicinity of EWVRA. The West Virginia DNR, Parks and Recreation Division, has stated that their agency does not have any parks or lands in the vicinity of EWVRA. The West Virginia Division of Forestry has stated that there are no state forests in Berkeley County. Further, the Berkeley County Planning Commission has stated that to the best of the commission's knowledge, no county-owned parks or facilities are located in the vicinity of the EWVRA. The National Park Service has no park areas located in Berkeley County (FAA 2002).

Pikeside Park is located within the EWVRA boundary and comprises two baseball diamonds. This park resides on EWVRA property and is owned by the EWVRAA.

3.16.2.2 Waterfowl or Wildlife Refuges

No Federal, state, or local waterfowl or wildlife refuges are located in Berkeley County (FAA 2002; West Virginia DNR 2003).

3.16.2.3 Historic Sites or Cultural Resources

Within the EWVRA boundary, two cemeteries and the remains of an old brick operations building are located in the southeastern quadrant of the property, across the airfield from the 167 AW. The Shepherd and Showalter Cemetery, also known as the Shepherd Family Mausoleum, houses the remains of the Shepherd family, which owned what is now the airport property from 1844 until 1923. This cemetery is located to the east of the current EWVRA terminal. The other cemetery contains two graves and is located 500 feet south of the end of Runway 17/35. Brick ruins reported to be from an old operations building of the airport are located approximately 200 feet north of the current EWVRA terminal building. These ruins were determined not to be eligible for the NRHP by the WVDCH; rather, that agency suggested that should these ruins ever be removed for construction, homage should be paid to the structure by incorporating the ruins into the new construction and/or into a commemorative plaque, designed to showcase the antiquated bricks (AMEC 2003a; FAA 2002; EWVRA 2002).

Adjacent to the northeast boundary of the EWVRA, a burial site is located on State of West Virginia property currently occupied by the West Virginia Army National Guard. This cemetery contains the remains of the original property owners (167 AW/West Virginia ANG 2002b).

In July 1992, a Phase I Cultural Resource Reconnaissance Survey of 15 acres within the installation boundary was conducted by Thunderbird Archeological Associates, Inc. for the Department of the Navy. The Navy's proposed Naval Reserve Facility was to occupy an open space area east of Runway 17 and north of the control tower. The cultural resource survey included a records check and field survey. A record search revealed that no identified cultural resource site was within the installation boundary, with the closest site being less than 2 miles away. The 15-acre parcel was subsequently surveyed by a field walkover. Further, 102 shovel test pits were excavated and screened to sterile subsoil. The only evidence of any prehistoric activity within the project area was a single projectile point found during the pre-fieldwork walkover. The projectile point could not be dated, based on the extensive sharpening before being discarded. No additional prehistoric materials were discovered during either the walkover or test pit excavations. The survey concluded that no prehistoric or historic sites were located within the parcel and no further archaeological work was recommended (Department of the Navy 1992).

All architectural structures at the 167 AW installation were built post-1940s and are not considered to be of Cold War-era significance; therefore, no buildings would be eligible for listing by the NRHP.

3.16.2.4 Other Considerations

The state owned Sleepy Creek wildlife management area is located 11 miles west of Martinsburg. No other state or Federal wildlife management areas are located in Berkeley County (West Virginia DNR 2003).

SECTION 4

ENVIRONMENTAL CONSEQUENCES

SECTION 4
ENVIRONMENTAL CONSEQUENCES

This section of the Environmental Impact Statement (EIS) assesses the potential environmental consequences associated with the Proposed Action and alternatives. Pursuant to the requirements of the National Environmental Policy Act (NEPA), and Title 32, Code of Federal Regulations (CFR) Part 989 (32 CFR 989), *Environmental Impact Analysis Process*, the following sections assess direct, indirect, unavoidable, and cumulative effects. Potential environmental impacts are evaluated in the context of the scope of the Proposed Action, as defined in *Section 2*, and in consideration of the potentially affected environment characterized in terms of the Region of Influence (ROI) described in *Section 3*, *Affected Environment*.

4.1 AIRSPACE AND AIRFIELD OPERATIONS

4.1.1 Approach to Analysis

Analysis of airspace management is based on the potential impacts to the existing structure, management, and use of the airspace that could result given implementation of an action. Airspace management is an important issue when considering potential environmental and safety effects since it dictates the types of aircraft activities that can occur at different locations and altitudes. The evaluation focuses on whether a Proposed Action would require the alteration of airspace management procedures and assesses the capacity of the airspace to accommodate proposed use.

Impacts associated with the Proposed Action are assessed by comparing projected military flight operations and proposed airspace use with existing conditions, including consideration of civil aviation activities in the ROI. Impacts would be significant if implementation of the Proposed Action affects the movement of other air traffic in the area, air traffic control (ATC) systems or facilities, or potential for mid-air collisions between military and non-participating civilian operations. Potential impacts are evaluated to determine the extent that the proposed aircraft conversion would affect existing relationships between Federal airways, transition areas, and airport-related air traffic operations.

The airspace ROI for this EIS includes the airspace within a 20 nautical mile (NM) radius of Eastern West Virginia Regional Airport (EWVRA) from the ground surface up to and including 5,000 feet mean sea level (MSL). There are one civil/military, one public, and three private use airports located within or adjacent to the controlled airspace associated with the Martinsburg ROI. EWVRA and Washington County Regional Airport are the only airports in the ROI with an ATC tower.

4.1.2 Impacts

4.1.2.1 Proposed Action

Airspace Operations

Under the Proposed Action, the number of daily C-5 operations (projected to be approximately 2) would be less than current baseline operations associated with the C-130H aircraft (23 daily). The less frequent number of operations and elimination of current 167th Airlift Wing (167 AW) local drop zone activity would lower the demand for airspace infrastructure around the EWVRA and within the ROI. Aircraft activity within the airspace would continue to comprise both military and civilian aircraft. While the number of civilian operations would remain as described for baseline conditions, transient military (C-130) operations would be reduced by 75 percent with the removal of the short-field runway.

Current departure protocol and ATC associated with ROI airports would remain consistent with current protocols, requiring no adjustments to airspace usage or ATC procedures.

Airfield Operations

Under the Proposed Action, the C-5 aircraft would use Runway 08/26 for take-off and landing during environmental day-time hours (7:00 AM to 10:00 PM), with an occasional night-time operation (approximately 3 operations monthly). The short-field runway would be eliminated due to the new mission of the 167 AW, which would not require short-field landing and take-off. Implementation of the Proposed Action would also require the closure of Runway 17/35. However, based on the reduced number of operations associated with the 167 AW mission and accompanying C-5 aircraft, civilian and transient military operations would have more ready access to Runway 08/26. Ultimately, all civilian and transient military take-off and landing would take place along Runway 08/26. While the number of civilian operations would remain as described for baseline conditions, transient C-130 military operations would be reduced by 75 percent with the removal of the short-field runway. The total number of aircraft operations conducted at the EWVRA would decrease. Civilian aircraft would lose use of Runway 17/35; however, these aircraft would have access to upgraded and expanded airfield pavements and would be operating in an airfield environment with reduced overall traffic. Further, the Eastern West Virginia Regional Airport Authority (EWVRAA) would develop Taxiway E to the south of Runway 08/26 which would enable non-167 AW aircraft to access Runway 08/26 from the south and further enhance the EWVRA airfield.

Based on the extension and upgrade to Runway 08/26, the potential for commercial aircraft to utilize EWVRA exists; however, an estimate of the number of commercial operations resulting from implementation of the proposed action was deemed too speculative at this time.

4.1.2.2 Relocation of Runway 17/35 Alternative

If the Relocation of Runway 17/35 Alternative were selected, all construction, demolition, and renovation activities associated with the Proposed Action would be implemented; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. Therefore, impacts to airfield and airspace operations as a result of the implementation of the Relocation of Runway 17/35 Alternative would be in addition to those previously described for the Proposed Action.

If the relocation and development of Runway 17/35 were implemented, the airport would have two operating runways that are essentially perpendicular to one another, similar to existing conditions. Further, conversion to C-5 aircraft by the 167 AW would reduce the number of military operations within the EWVRA airspace and removal of the short-field runway would reduce transient C-130 military operations by 75 percent, thus reducing the overall airspace traffic.

4.1.2.3 No-Action Alternative

If the No-Action Alternative were selected, the 167 AW would continue to operate the C-130H aircraft and the management of current airspace and airfield operations would remain unchanged from the current status. Therefore, if the No-Action Alternative were implemented there would be no change to airspace and airfield operations.

4.2 AIR QUALITY

4.2.1 Approach to Analysis

The 1990 Amendments to the Clean Air Act (CAA) require that Federal agency activities conform to the State Implementation Plan (SIP) with respect to achieving and maintaining attainment of National Ambient Air Quality Standards (NAAQS) and addressing air quality impacts. The U.S. Environmental Protection Agency (USEPA) General Conformity Rule requires that a conformity analysis be performed which demonstrates that a Proposed Action does not: 1) cause or contribute to any new violation of any NAAQS in the area; 2) interfere with provisions in the SIP for maintenance or attainment of any NAAQS; 3) increase the frequency or severity of any existing violation of any NAAQS; or 4) delay timely attainment of any NAAQS, any interim emission reduction, goals, or other milestones included in the SIP for air quality. Provisions in the General Conformity Rule allow for exemptions from performing a conformity determination only if total emissions of individual nonattainment area pollutants resulting from the Proposed Action fall below the significant (*de minimis*) threshold values.

4.2.2 Impacts

4.2.2.1 Proposed Action

Pollutant emissions associated with construction activities proposed at the 167 AW would include fugitive dust emissions during ground disturbance and related site preparation activities, combustion emissions from vehicles and heavy-duty equipment used during construction of new facilities, facility upgrades, and demolition, and emissions associated with proposed aircraft operations. However, construction emissions would be temporary and would not occur beyond completion of construction activities. Further, Berkeley County is currently designated as an attainment area in compliance with all NAAQS.

<u>Dust Emissions</u>

Under implementation of the Proposed Action, dust (i.e., particulate matter less than 10 micrometers in diameter [PM_{10}], a criteria pollutant) would be generated from construction activities including vegetation removal, grading, and demolition. Dust emissions can vary substantially daily depending on levels of activity, specific operations, and prevailing meteorological conditions. Using conservatively high estimates (based on moderate activity levels, moderate silt content in affected soils, and a semi-arid climate), the standard dust emission factor for construction activity is 1.2 tons of dust generated per acre per month of activity. Based on this dust-generation factor and the maximum estimated acreage that would be disturbed at any one time (17.34 acres), a projected total of approximately 20.81 tons of dust per month would be generated during the construction process. Proposed demolition projects would disturb approximately 0.48 acres; therefore, the greatest amount of dust generated from

demolition alone would be 0.56 tons of dust per month (167 AW/West Virginia Air National Guard [ANG] 2002c) (refer to Tables 2-2 and 2-3). Increased PM_{10} emissions resulting from proposed construction activities would be mitigated through standard dust minimization practices, such as regularly watering exposed soils, soil stockpiling, and soil stabilization.

Development of Taxiway E and reconfiguration of U.S. Highway 11 at the Main Gate access road intersection would provide additional dust emissions. However, dust emissions associated with these two projects would be negligible.

Combustion Emissions

Combustion emissions associated with construction-related vehicles and equipment would be minimal because most vehicles would be driven to and kept at affected sites for the duration of construction activities. Further, as is the case with PM_{10} emissions associated with site preparation activities, emissions generated by construction equipment would be temporary and short-term.

Operational Emissions

Implementation of the Proposed Action would result in changes in aircraft operations and personnel levels at the 167 AW installation. Estimated emissions for proposed C-5 aircraft activity were calculated using the Emissions & Dispersion Modeling System (EDMS) 4.0 and are compared to current 167 AW C-130H operations in Table 4-1. Emissions were based on an estimate of a maximum of 228 sorties per year for C-5 aircrafts at the 167 AW. It was also assumed that only landings and takeoffs (LTOs) would occur at the installation and only minimal touch and go's (T&Gs) and low approaches (LAs) would occur off-site. EDMS defaults were selected for taxi times (29.8 minutes) and engine type (TF39-GE-1). C-5 aircraft emissions estimates for all pollutants were significantly lower than C-130H aircraft emissions at the 167 AW in 2000. Therefore, emissions associated with the unit's proposed aircraft activity would be less than current emission levels.

The 167 AW currently has one air permit with the West Virginia Department of Environmental Protection (DEP) which was renewed in October 2003. This permit for two 330,000 gallon JP-8 internal floating roof tanks limits the maximum annual throughput of JP-8 to 3.13 million gallons per year. In 2000, the JP-8 output at the 167 AW was 2.3 million gallons and within the permit limit. If implementation of the proposed action would require different holding tanks or annual throughput limits then the 167 AW would obtain the necessary permits from the West Virginia DEP.

The West Virginia DEP does not currently have any regulations regarding mobile emission sources (167 AW/West Virginia ANG 1997a). The increase of personnel and, more specifically, the increased transportation emissions associated with their commute to the installation would affect local air quality. Personnel levels would approximately double, requiring twice as many personal vehicle trips.

Table 4-1. EDMS Estimate Emissions from C-5 and C-130H Aircraft Takeoffs and Landings at the 167 AW

Aircraft Type	Engine Type	Number of Engines	Number of LTOs/year	Procedure	Actual Emissions (tons/year)				
					CO	VOC	NO_x	SO_2	PM_{10}
C-5	TF39-GE-1	4	228	Taxi	17.44	5.99	0.78	0.14	0.0
		4	228	Take Off	0.04	0.01	1.65	0.03	0.0
		4	228	Climb Out	0.03	0.01	1.20	0.02	0.0
		4	228	Approach	0.11	0.03	4.26	0.08	0.0
Total Estimated Emissions					**17.62**	**6.04**	**7.89**	**0.27**	0.0
C-130H	T-56-A-15	4	1,498	Taxi Out	10.74	5.51	20.94	1.29	10.18
		4	1,498	Take Off	0.62	0.10	4.0	0.16	0.43
		4	1,498	Climb Out	1.86	0.29	11.98	0.48	1.28
		4	1,498	Approach	5.63	1.16	16.60	0.92	7.69
		4	1,498	Taxi In	2.68	1.38	5.24	0.32	2.54
Total Emissions					**21.53**	**8.44**	**58.76**	**3.17**	**22.12**

Notes: CO - carbon monoxide
NO_x - nitrogen oxides
PM_{10} - particulate matter less than 10 micrometers in diameter
SO_2 - sulfur dioxide
VOC - volatile organic compounds
Sources: FAA 2001; 167 AW/West Virginia ANG 2000a.

The majority of the long-term operational emissions associated with the Proposed Action would comprise the combustion of natural gas for the generation of industrial and utility electric power, and the heating of commercial space. Operational emissions associated with the proposed facilities are estimated to fall substantially below the significant (*de minimis*) threshold values (Table 4-2).

Table 4-2. Estimated Emissions Associated with Proposed Facilities

Source	Estimated Emissions (tpy)	
	NO_x	VOCs
C-5 Maintenance Hangar and Complex	0.34	0.02
Squadron Operations Facility	0.06	0.004
Fuel Cell Dock and Complex	0.17	0.01
Corrosion Control Dock and Complex	0.17	0.01
ATC Tower	0.01	0.006
Jet Fuel Storage Complex	TBD	TBD
Hydrant fueling system to support the parking apron	TBD	TBD
Fire Station	0.04	0.002
C-5 Simulator	0.02	0.001
Total	**0.81**	**0.053**
de minimis threshold	**100**	**100**

Notes: tpy - tons per year
TBD – to be determined
Sources: FAA 2001; AMEC 2003b.

4.2.2.2 Relocation of Runway 17/35 Alternative

Selection of the Relocation of Runway 17/35 Alternative would result in construction, demolition, and renovation activities similar to those described for the Proposed Action; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. Therefore, impacts to air quality as a result of the implementation of the Relocation of Runway 17/35 Alternative would be in addition to those previously described for the Proposed Action.

Implementation of the Relocation of Runway 17/35 Alternative would increase the amount of dust emissions by approximately 0.8 percent per month (0.9 tons), which would be mitigated through standard dust minimization practices, such as regularly watering exposed soils, soil stockpiling, and soil stabilization. Increased air emissions associated with this alternative would have a minor, short-term impact on local and regional air quality.

4.2.2.3 No-Action Alternative

Selection of the No-Action Alternative would result in the 167 AW's continued operation of the C-130H aircraft; therefore, air quality would remain as described in *Section 3.2, Air Quality*. If this alternative were selected, there would be no impacts with regard to air quality.

4.3 NOISE

4.3.1 Approach to Analysis

Noise impact analyses typically evaluate potential changes to existing noise environments that would result from implementation of a Proposed Action. Potential changes in the noise environment can be beneficial if they reduce the area and number of persons exposed to high noise levels, negligible if the total area exposed to high noise levels is essentially unchanged, or adverse if they result in increased exposure to high noise levels.

Projected noise contours associated with the Proposed Action of the West Virginia ANG at EWVRA were calculated using NOISEMAP Version 6.5, and operational data (fiscal year 2005 [FY05]) provided by the 167 AW and 105 AW of the New York ANG at Stewart International Airport.

4.3.2 Impacts

4.3.2.1 Proposed Action

Operations-Related Impacts

The Proposed Action would involve changes in the type and number of aircraft and aircraft operations associated with the 167 AW; therefore, aircraft-related noise exposure would change upon implementation. Under the Proposed Action, the 167 AW at EWVRA would beddown and operate 10 C-5 aircraft once facility development is complete and aircraft are available. Aircraft noise generated by C-5 operations would affect a greater number of persons and exposure area than current C-130H aircraft operations. While the proposed C-5 aircraft operations are louder than the existing C-130H, the actual number of events are 12 times less. The C-130 H flew 6,897 events in FY00 and the 167 AW is proposing 564 C-5 events.

A direct comparison of the relative intrusiveness among single noise events of the C-5 and C-130H is provided by means of Sound Exposure Level (SEL) analyses. SEL is a logarithmic measure of the total acoustic energy transmitted to the listener during an individual noise event. Mathematically, it represents the level of a constant sound that would, in one second, generate the same acoustic energy as the actual time-varying noise event. SEL does not directly represent the sound level heard at any given time but provides a measure of the net sound energy of the entire acoustic event. SEL is a composite noise metric that represents both the intensity and duration of one noise event. SELs are provided to outline the differences in noise generated by C-130H and C-5 departure and arrival operations (Table 4-3). For both departure and arrival events, the C-5 aircraft produces a greater SEL than the C-130H aircraft (Wyle Laboratories 2003b).

Table 4-3. Comparison of SEL for the C-130H and C-5 Aircraft

Aircraft Type	Flight Configuration	Power Setting	Speed (Knots Indicated Air Speed)	Altitude in Feet Above Ground Level					
				500	1,000	2,000	3,000	5,000	10,000
C-130H	Takeoff	970°C TIT	170	97	91	86	82	77	70
C-5	Takeoff	93%N1	185	120	114	106	101	94	83
C-130H	Landing	580°C TIT	140	95	89	83	79	74	65
C-5	Landing	68%N1	150	115	109	102	97	89	73

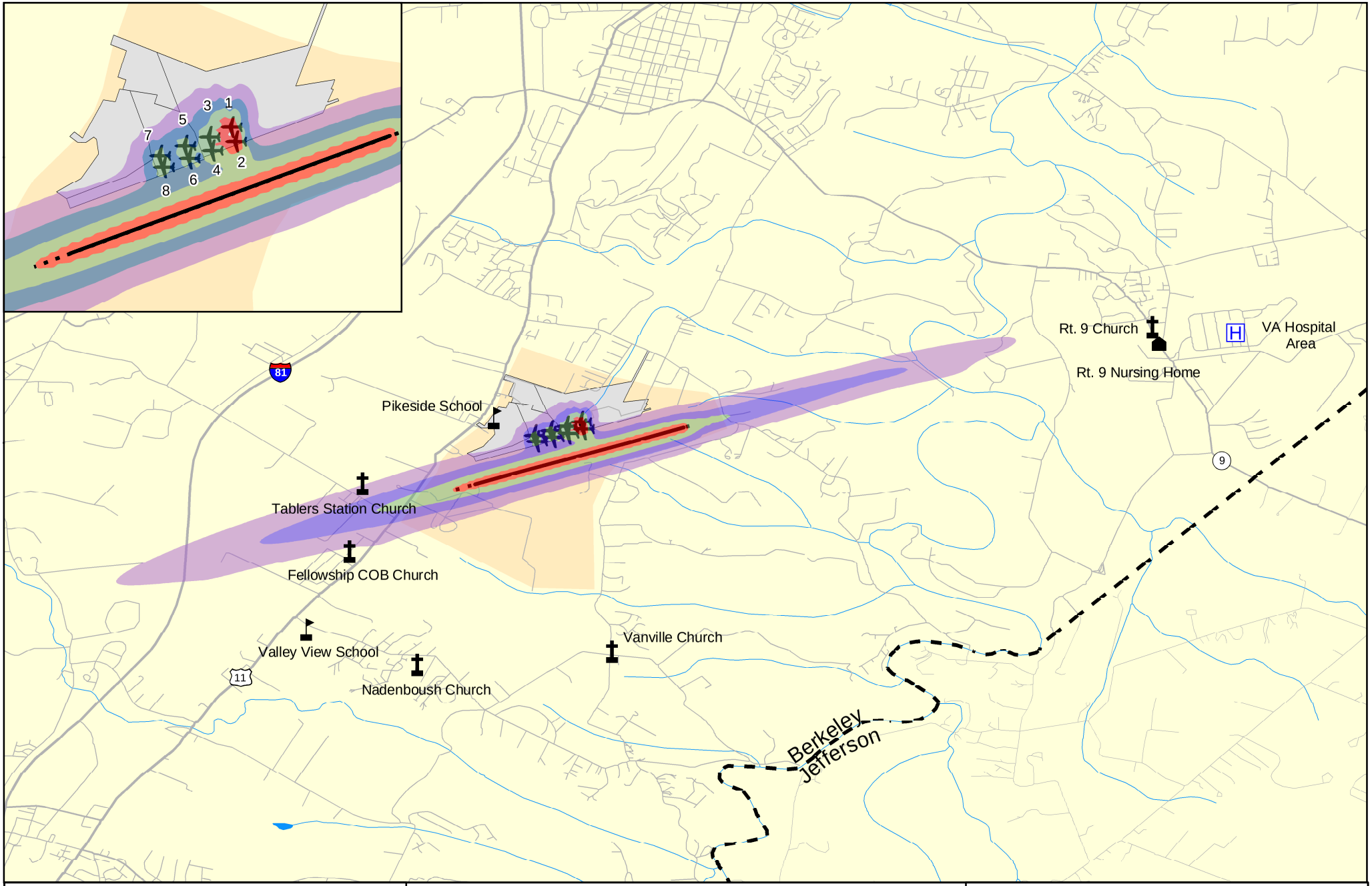
Source: Wyle Laboratories 2003b.

The day-night average sound level (DNL) noise contours for the Proposed Action, as illustrated in Figure 4-1, show an increase in the amount of acreage, number of people and residential units exposed to the resulting aircraft noise (Table 4-4). To accurately determine the number of structures and population within specific noise contours, the same methodology used to assess baseline conditions (see *Section 3.3*, *Noise*) was used for the Proposed Action. Further, some residential areas located near the airport that are currently exposed to DNL values of 65 to 70 decibels (dB) during C-130H operations would ultimately be within the DNL 70 to 75 dB contour once the 167 AW's C-5 mission is fully operational. According to industry standard land use guidelines, such exposure levels to residential areas and other sensitive receptors is not compatible.

Table 4-4. Estimated Land Area, Housing Units and Population within Noise Exposure Contours for the Proposed Action at EWVRA

DNL Contour Band	Item	Baseline	Proposed Action	Change
65–70 dB	Acres	322	694	+372
	Housing Units	17	65	+48
	Population	43	166	+123
70–75 dB	Acres	124	330	+206
	Housing Units	5	15	+10
	Population	13	38	+25
75–80 dB	Acres	57	144	+87
	Housing Units	1	4	+3
	Population	3	10	+7
80+ dB	Acres	5	76	+71
	Housing Units	0	1	+1
	Population	0	3	+3
Summary of Exposure				
65–75 dB	Acres	446	1,024	+578
	Housing Units	22	80	+58
	Population	56	204	+148
75+ dB	Acres	62	220	+158
	Housing Units	1	5	+4
	Population	3	13	+10

Sources: 167 AW/West Virginia ANG 2003d; Wyle Laboratories 2003b.



N

0 0.5 1 2
Miles

Sound Level (dB)

65 | 75
70 | 80
Airport Boundary
WVANG Boundary

Hospital
Nursing Home
Run-up Location
School
Religious Institution

Proposed Runway
Runway
Stream/Creek
County Line

Roads
Primary
Secondary
Local

Figure 4-1

Proposed Action DNL Contours
Eastern WV Regional
Airport/Shepherd Field

Implementation of the Proposed Action would increase noise levels in the areas surrounding EWVRA and resultant noise levels would exceed those recommended as compatible with residential areas. Analysis of the impacts noise could have on lands surrounding the 167 AW and EWVRA is described in *Section 4.4, Land Use*.

Construction-Related Impacts

Implementation of the Proposed Action would have minor, temporary impacts on the noise environment in the vicinity of proposed construction and demolition sites. Use of heavy equipment for site preparation and development (e.g., vegetation removal, grading, and back fill) would generate noise exposure above typical ambient levels at these portions of the installation. However, noise generation would be typical of construction activities, would last only the duration of construction activities, and could be reduced through the use of equipment sound mufflers and restriction of construction activity to normal working hours (i.e., between 7:00 AM and 5:00 PM). Further, construction would be short-term in duration and occur during normal working hours.

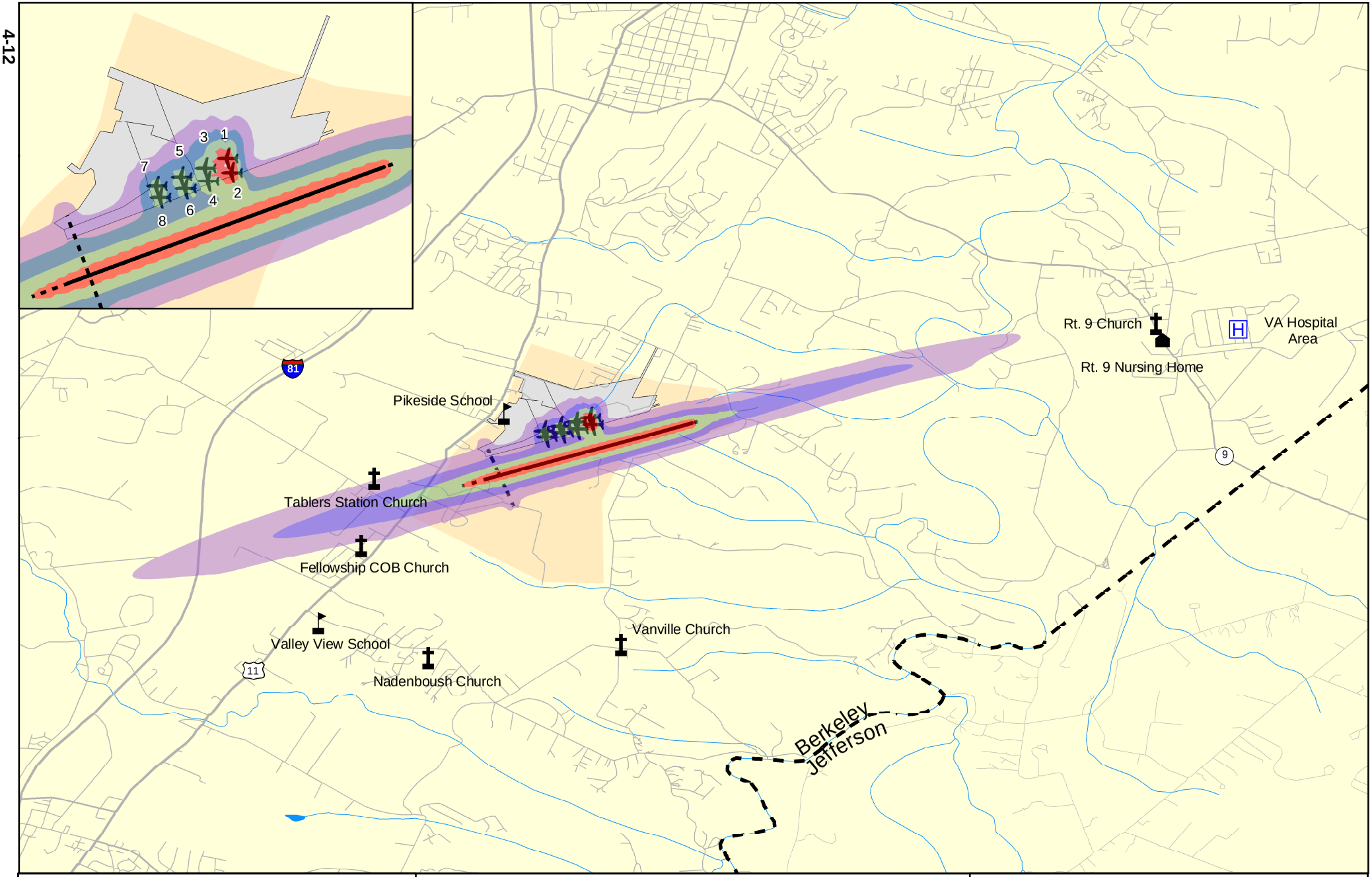
4.3.2.2 Relocation of Runway 17/35 Alternative

If the Relocation of Runway 17/35 Alternative were selected, all construction, demolition, and renovation activities associated with the Proposed Action would be implemented, as would the transition from C-130H aircraft to the C-5 aircraft. Additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. Therefore, noise impacts as a result of the implementation of the Relocation of Runway 17/35 Alternative would negligibly increase in the vicinity of the south end of the new Runway 17/35 as compared to those previously described for the Proposed Action. This slight increase is shown in the noise contours of Figure 4-2 and in the number of acres, people and dwellings affected in Table 4-5. A comparison of baseline, Proposed Action, and Relocation of Runway 17/35 Alternative 65 dB DNL contours is depicted in Figure 4-3. The number of acres within the 65 to 75 dB contour is slightly larger than under the Proposed Action; however, the number of residences and population impacted is identical to those for the Proposed Action.

Based on the dimensions of the proposed relocated Runway 17/35, only smaller civilian aviation aircraft would be allowed use this runway. Noise levels associated with these aircraft at this new location would be compatible with land use guidelines (as defined in Table 3-5).

4.3.2.3 No-Action Alternative

If the No-Action Alternative was selected, the 167 AW would continue to use the C-130H aircraft where noise levels and occurrence would remain as described for the current 167 AW mission. Selection of the No-Action Alternative would result in no significant impacts to the noise environment.



N

0 0.5 1 2
Miles

Sound Level (dB)

65 75

70 80

Airport Boundary

WVANG Boundary

Hospital

Nursing Home

Run-up Location

School

Religious Institution

Proposed Runway

Runway

Stream/Creek

County Line

Roads

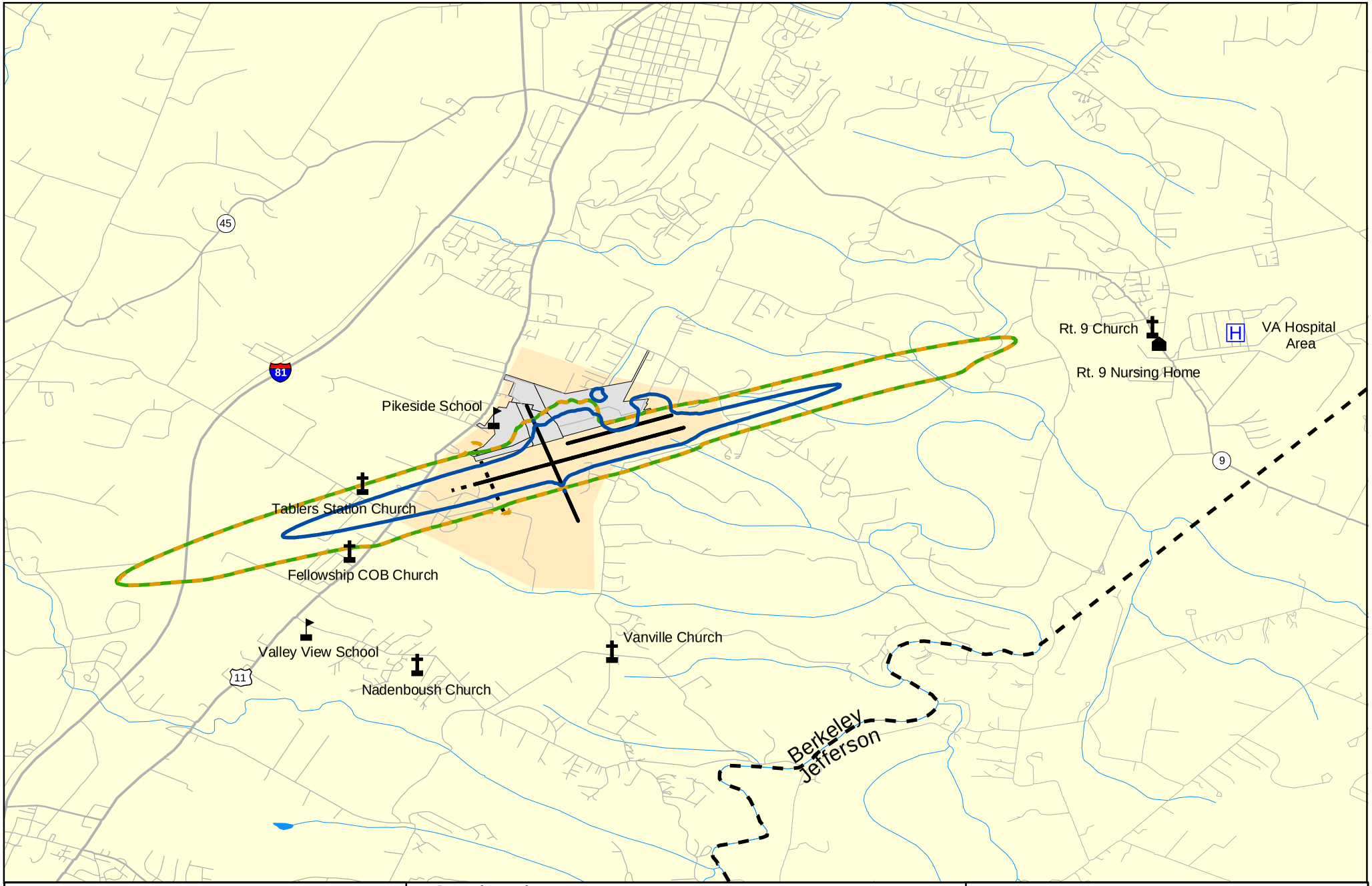
Primary

Secondary

Local

Figure 4-2

Relocation of Runway 17/35
Alternative DNL Contours
Eastern WV Regional
Airport/Shepherd Field



N

0 0.5 1 2
Miles

Sound Level (65 dB)
- FY00
- FY05
- FY05 Alt1
- Airport Boundary

- Hospital
- Nursing Home
- Run-up Location
- School
- Religious Institution

- Proposed Runway
- Runway
- Stream/Creek
- County Line
- WVANG Boundary

Roads
- Primary
- Secondary
- Local

Figure 4-3
Comparison of Baseline, Proposed Action, and Relocation of Runway 17/35 DNL Contours
Eastern WV Regional Airport/Shepherd Field

Table 4-5. Estimated Land Area, Housing Units and Population within Noise Exposure Contours for the Relocation of Runway 17/35 Alternative at EWVRA

DNL Contour Band	Item	Baseline	Relocation of Runway 17/35 Alternative	Change
65–70 dB	Acres	322	698	+376
	Housing Units	17	65	+48
	Population	43	166	+123
70–75 dB	Acres	124	329	+205
	Housing Units	5	15	+10
	Population	13	38	+25
75–80 dB	Acres	57	145	+88
	Housing Units	1	4	+3
	Population	3	10	+7
80+ dB	Acres	5	75	+70
	Housing Units	0	1	+1
	Population	0	3	+3
Summary of Exposure				
65–75 dB	Acres	446	1,027	+581
	Housing Units	22	80	+58
	Population	56	204	+148
75+ dB	Acres	62	220	+158
	Housing Units	1	5	+4
	Population	3	13	+10

Sources: 167 AW/West Virginia ANG 2003d; Wyle Laboratories 2003b.

4.4 LAND USE

4.4.1 Approach to Analysis

The analysis of potential impacts to land use includes: 1) identification and description of land use areas that may be affected by implementation of a Proposed Action; 2) examination of the Proposed Action and its potential effects on land use; 3) assessment of the compatibility of a Proposed Action with existing land use; 4) assessment of the significance of potential impacts to land use based on the criteria described above; and 5) provision of mitigation measures to minimize potential adverse impacts.

Significance of potential land use impacts is based on the level of land use sensitivity in areas affected by a Proposed Action. In general, land use impacts would be significant if they would: 1) be inconsistent or in noncompliance with applicable land use plans or policies; 2) preclude the viability of existing land use; 3) preclude continued use or occupation of an area; 4) be incompatible with adjacent or vicinity land use to the extent that public health or safety is threatened; or 5) conflict with airfield planning criteria established to ensure the safety and protection of human life and property.

The most stringent Federal Aviation Administration (FAA) land use regulations relate to the protection of people and property on the ground within runway protection zones (RPZs) (FAA 1996). RPZs comprise a trapezoidal area off the end of the runway intended to enhance the protection of people and property on the ground in the event an aircraft lands or crashes beyond the runway end. It is FAA policy to object to incompatible land uses that are proposed for property within the RPZ, whether or not the airport owns the land. Land uses restricted within RPZs are residences and places of public assembly (e.g., churches, schools, hospitals, office buildings, shopping centers, and other uses with similar concentrations of persons). Compatible land use within the RPZ is generally restricted to activities that do not attach wildlife are outside the Runway Object Free Area, and do not interfere with navigational aids. The FAA recommends that airports work to prevent incompatible land uses that could cause sufficient conflict to endanger the airport and cause it to be closed, or require substantial remedial investment.

4.4.2 Impacts

4.4.2.1 Proposed Action

<u>Berkeley County</u>

The FAA addressed the issue of controlling or limiting establishment of noise sensitive land use around airports in a series of orders and advisory circulars, including Federal Aviation Regulation (FAR) Part 150, Airport Noise Compatibility Planning. In 2002, the EWVRA and 167 AW received very few noise complaints: the EWVRA received no noise complaints and the 167 AW received one (EWVRAA 2002c; 167 AW/West Virginia ANG 2002b). Since 1998, the 167 AW has received a total of 11 noise complaints. According to FAA regulations, preparation of a Noise Compatibility Study is

voluntary and since relatively few noise complaints have been received at EWVRA and the 167 AW in the past, no Noise Compatibility Study has been prepared for the EWVRA. In airport noise analyses, 65 A-weighted decibel scale (dBA) noise contours are often used to help determine compatibility of aircraft operations with local land use.

With regard to off-site land use, the conversion from C-130H to C-5 aircraft and the proposed acquisition of an approximately 133-acre parcel would result in an expansion of the geographic footprint affected by 167 AW operations. This westward expansion of facilities and operations would bring 167 AW activities closer to adjacent residences. Impacts associated with an increase in overall aircraft-generated noise would affect residential neighborhoods surrounding the installation in the north, east and west. Residential areas are considered to be sensitive noise receptors. Based on industry standards of recommended land use for DNL-based noise values, noise levels of 65 dBs or greater are normally unacceptable within residential areas. Under the Proposed Action, the amount of residential land use exposed to noise levels of 65 dB (DNL) or greater would increase. According to industry standards, residential land use within the 65+ DNL noise contours is "normally unacceptable". (Potential noise impacts associated with the Proposed Action are discussed in greater detail in *Section 4.3* of this EIS.)

Implementation of the Proposed Action would also result in extensions of 800 and 200 feet at the west and east ends of Runway 08/26, respectively. At both ends of the runway, trapezoidal RPZs have been established to "enhance the protection of people and property on the ground."

Upon implementation of the Proposed Action, repositioned RPZs associated with Runway 08/26 would affect an additional 4.6 acres off of the east end of the current RPZ and an additional 9.2 acres off the RPZ to the west (refer to *Section 4.15, Safety*, Figure 4-7). Within the projected new footprint of the RPZs, 10 single-family residences, two car dealerships, agricultural land, and undeveloped areas exist (Air Photographics, Inc. 2002; 167 AW/West Virginia ANG 2003d).

No restrictions are currently in place that would preclude establishment of additional incompatible development. Without limitations that would restrict the type of development that could occur in the vicinity of the EWVRA, it is possible that incompatible growth under areas used for flight operations will continue in the foreseeable future.

<u>167 AW</u>

Each element of the proposed construction program has been designed to accommodate the unit's new mission, consolidate like land uses, improve access within the installation, and improve operational efficiency. The proposed construction projects are inherently consistent with West Virginia ANG planning policies and guidelines; further, all project components have been designed and sited to be compatible with existing installation land use and airfield safety guidelines. In summary, construction components of the Proposed Action have been sited in accordance with established

land use development guidelines addressing safety, functionality, and environmental constraints.

Similar to the situation off-base, implementation of the proposed aircraft conversion at EWVRA would increase noise levels on-base during single-event takeoffs. Base personnel and visitors would be exposed to increased levels of aircraft-generated noise. (Potential noise impacts associated with the Proposed Action are discussed in greater detail in *Section 4.3*, *Noise*, of this EIS.)

4.4.2.2 Relocation of Runway 17/35 Alternative

Selection of the Relocation of Runway 17/35 Alternative would result in identical construction, demolition, and renovation activities to those described for the Proposed Action; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. Therefore, impacts to land use as a result of the implementation of the Relocation of Runway 17/35 Alternative would be in addition to those previously described for the Proposed Action.

The relocation and development of Runway 17/35 and associated RPZs would affect approximately 10 residences to the north of the proposed runway and one commercial business to the south (refer to *Section 4.15*, *Safety*, Figure 4-8). While this is a reduction in the overall number of residences currently within the RPZs associated with Runway 17/35, new residences would be exposed to the potential of aircraft accidents and this alternative would not comply with FAA regulations regarding land use.

Based on the dimensions of the proposed relocated Runway 17/35, only smaller civilian aviation aircraft would be allowed use this runway. Noise levels associated with these aircraft at this new location would be compatible with industry standard land use guidelines (residential land use would be exposed to noise levels less than 65 dB DNL).

4.4.2.3 No-Action Alternative

If the No-Action Alternative were selected, the 167 AW would not implement an aircraft conversion, mission change, property transactions, facilities construction, or facilities demolition projects, and would not make improvements to the installation circulation system. Because there would be no aircraft conversion, there would be no noise- or additional RPZ-related impacts to local land use. If the No-Action Alternative were implemented, there would be no change to current land use patterns.

4.5 UTILITIES AND INFRASTRUCTURE

4.5.1 Approach to Analysis

Interruption or disruption of utility services at the installation could occur as a result of physical displacement and subsequent relocation of public utility infrastructure during project implementation. An impact to utilities would occur if an increase in demand for utility service is beyond the capacity of regional utilities providers. In general, impacts to utilities would be significant if the Proposed Action had the potential to disrupt or exceed existing or forecasted local provider capacities of natural gas, wastewater, water, electricity, or telephone services.

4.5.2 Impacts

Utility service associated with the Proposed Action would stem from providers outside the installation and access the 167 AW through a utility corridor. The utilities would be placed along current roadways where practical and configured in a defined corridor for ease of location and uniformity of maintenance and access.

The proposed expansion of the 167 AW would not exceed the rated capacity of existing natural gas, electricity, wastewater treatment, and stormwater collection systems. However, to guarantee adequate supply and modernize utility distributions systems the 167 AW Air National Guard Utilities Master Plan proposes to expand natural gas and electricity systems, establish a new wastewater treatment connection, and construct additional stormwater collection ponds. 167 AW baseline and projected utility usage and capacity is depicted in Table 4-6. The following assessment of C-5 conversion impacts was based on information contained in the Utilities Master Plan for the 167 AW.

Table 4-6. 167 AW Annual Baseline and Projected Utility Usage and Capacity

Utility	Baseline Usage	Baseline Capacity	Projected Usage	Projected Capacity
Gas (cfh)	2,426	12,466	4,793	30.676
Electrical (mwh)	2,256	1 mw	4,458	13 mw
Wastewater (gpd)	15,000-20,000	50,000	30,000	900,000
Water (gpm)	7.24	1,197	14.31	1,330
Communications	N/A	N/A	N/A	N/A
Stormwater (mcf)	N/A	0.7-1.0	N/A	1.5-2.0

cfh = cubic feet per hour
gpd = gallons per day
gpm = gallons per minute
mcf = million cubic feet
mw = megawatt
mwh = megawatt hour
N/A = not available
Sources: 167 AW/West Virginia ANG 2003f, 2003a.

4.5.2.1 Proposed Action

Natural Gas

Allegheny Power has planned improvements that include the extension of two new gas lines and closure of the existing point of service, according to the short-term master plan for Allegheny Power. However, since the conversion of the 167 AW installation to a C-5 facility may proceed prior to the planned improvements by Allegheny Power, a new PVC pressure pipe is proposed that would carry natural gas from the existing natural gas line along Kelly Island Road. This new pipeline would include the installation of a stub-out for a future connection to a planned pipeline along Highway 11. Because this improvement may be constructed prior to planned infrastructure improvements, the Utility Master Plan states that the proposed system shall be constructed according to Allegheny Power specifications to assure potential future privatization of the corridor (167 AW/West Virginia ANG 2003f).

Implementation of the Proposed Action would result in a substantial increase in demand for natural gas. Natural gas usage would increase from 2,426 cubic feet per hour (cfh) to 4,793 cfh while capacity would increase from the current rate of 12,466 cfh to approximately 30,676 cfh. Allegheny Power would continue to provide natural gas to the installation and the gas main would be looped with the water main, allowing for maintenance without interruption of service as well as equalization of pressure in the pipe loop. Existing facilities would maintain their current service (167 AW/West Virginia ANG 2003f).

Electricity

The current electrical distribution system would not be able to handle the proposed conversion and electrical usage would increase from 2,256 megawatt hours (mwh) to 4,458 mwh through implementation of the Proposed Action. Increases in electrical power usage would require a change from a capacity of 1 megawatt to a capacity of approximately 13 megawatts (167 AW/West Virginia ANG 2003f). The State of West Virginia's Energy Roadmap strongly encourages private and public projects to conserve energy where feasible and incorporate energy saving devices into building design (State of West Virginia 2002). However, this increase in electricity would not impact electrical service to the surrounding community or the service provider.

Wastewater Treatment

Implementation of the Proposed Action would require sewerage service to be provided by the Berkeley County Public Sewage Service District (BCPSSD). The BCPSSD prefers to retire the installation's existing Facility Owned Treatment Works and connect installation sewer lines to public sewer lines, available along U.S. Route 11 and the adjacent Summerhill subdivision. Sewage from the installation would be discharged into the County collection system (167 AW/West Virginia ANG 2003f). Sanitary sewage flow rates associated with the 167 AW are estimated to increase by approximately

47 percent above current flow rates (167 AW/West Virginia ANG 2003f). The Opequon Sewage Treatment Plant has an estimated design capacity of 900,000 gallons per day (gpd) and a current use of 250,000 gpd. The proposed increase of up to 10,000 gpd attributable to the installation expansion would not cause the design capacity of the Opequon Sewage Treatment Plant to be exceeded. Therefore, while the need for wastewater treatment would increase, the BCPSSD would be able to accommodate increased flow rates projected to result from the 167 AW conversion.

Potable Water

The water distribution system currently serving the 167 AW is operated and maintained by the Berkeley County Public Service District. Implementation of the Proposed Action would result in an increased demand for domestic water and would require an upgrade to the installation's water distribution system. Once fully operational, the 167 AW would use approximately 14.31 gallons per minute (gpm) of water. Proposed development would not have an impact on the working pressure or capacity of the County system (167 AW/West Virginia ANG 2003f).

Communications

The existing underground telecommunications system supplied by Verizon Communications would be extended similar to the development described for electrical service. All telecommunications and fiber optic cables would be serviced from the existing central hub in the Operations and Training Facility and would not impact service to the surrounding community (167 AW/West Virginia ANG 2003f).

Stormwater Collection

As stated in the Utility Master Plan, stormwater runoff would sheet flow to ditches, inlets, headwalls, and culverts that comprise the proposed stormwater collection system. Drainage would then be directed to three separately located stormwater detention ponds for treatment and temporary storage reducing any flood potential off-base. Approximately 3,027,932 square feet of impervious surface area would be added under the Proposed Action (AMEC 2003c; 167 AW/West Virginia 2003f). Three stormwater detention facilities with an approximate combined volume of 1.5 to 2.0 million cubic feet are proposed to control storm runoff quantity and protect water quality (AMEC 2003c, 2003d; 167 AW/West Virginia 2003b). The basins would be sized to store the appropriate volume of stormwater to control the release rates to pre-developed levels in accordance with State of West Virginia DEP requirements and to prevent any off-base flooding. The 167 AW is currently evaluating the use of a non-propylene glycol-based solution for aircraft deicing and anti-icing as described in *Section 4.14*, *Hazardous Materials and Waste*. A stormwater pond in the southeastern section of the EWVRA boundary would collect the marginal increase in stormwater runoff from Taxiway E.

4.5.2.2 Relocation of Runway 17/35 Alternative

If the Relocation of Runway 17/35 Alternative were selected, all construction, demolition, and renovation activities associated with the Proposed Action would be implemented; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. Therefore, impacts to utilities and infrastructure as a result of the implementation of the Relocation of Runway 17/35 Alternative would be in addition to those previously described for the Proposed Action.

The development and relocation of Runway 17/35 would create an additional 4.5 acres of impermeable surface further increasing stormwater runoff; however, a stormwater management plan including three new stormwater detention ponds associated with the Proposed Action would accommodate and control additional runoff such that outflows and tributaries of Cold Springs Run would not be affected. (The stormwater pond proposed to be located just north of Runway 08/26 and east of the relocated Runway 17/35 may have to be reduced in size or repositioned to allow for development of the alternative runway and to comply with associated FAA setback requirements.)

4.5.2.3 No-Action Alternative

If the No-Action Alternative were selected, the 167 AW would not implement the Proposed Action. Therefore, conditions would remain as described in *Section 3.5, Utilities and Infrastructure*.

4.6 GEOLOGICAL RESOURCES

4.6.1 Approach to Analysis

Generally, impacts with regard to geological resources can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering designs are incorporated into project development. Analysis of potential impacts to geological resources typically includes: 1) identification and description of resources that could potentially be affected; 2) examination of the Proposed Action and the potential effects this action may have on the resource; 3) assessment of the significance of potential impacts; and 4) provision of mitigation measures in the event that potentially significant impacts are identified.

4.6.2 Impacts

4.6.2.1 Proposed Action

Geology

Potential geologic impacts associated with implementation of the Proposed Action at the 167 AW installation would be limited to ground-disturbing activities (i.e., construction) and expansions to the existing aircraft parking apron and runway. However, most construction activities associated with the Proposed Action, Taxiway E development, and U.S. Highway 11 reconfiguration would occur on previously disturbed or developed land, which is capable of supporting such development. If shallow bedrock were encountered at previously undeveloped project sites, standard construction techniques and site preparation activities (e.g., small-scale blasting) would enable facilities development. Implementation of such construction practices is a common procedure and would be localized.

Soils

The majority of naturally occurring soils at the existing 167 AW installation have been physically altered (e.g., cut, graded, or covered) or removed and replaced by imported fill to support establishment and development of the installation. The majority of the aircraft apron expansion, and almost all facilities development within the existing installation is proposed on *Urban Land*. A proposed new entrance road would be located in an area in the northern portion of the installation that is currently undeveloped and comprised of *Weikert-Berks channery silt loams,* which are rated as somewhat compatible with roads and paved areas.

The proposed acquisition parcel is utilized primarily for agricultural purposes; soy beans being the primary crop. Most of the proposed construction on the parcel would occur in areas with *Welkert-Berks channery silt loams* (8 to 15 percent slopes) and *Carbo-Endcav silty clay loams*. *Welkert-Berks channery silt loams* have no flooding potential and are excessively drained; however, due to severe erosion hazards, these soils are

poorly suited for construction site development. *Carbo-Endcav silty clay loams* are well drained and have no flooding potential; however, these soils are rated poor in terms of suitability for construction development due to the depth to bedrock, slow permeability, sinkholes and high shrink-swell potential in the subsoil. Construction proposed upon these soils would be limited to the new fire station and ATC tower. The expansion of the C-5 aircraft parking apron would also extend minimally into areas where *Weikert-Berks channery silt loams* exist. Fill material would likely be brought on site to render surface materials suitable for development; otherwise, modern engineering and construction practices would incorporate corrective measures to compensate for these soil types and enable facilities development.

The extension of Runway 08/26 in the eastern portion of the installation would be constructed partially upon *Weikert-Berks channery silt loams* soils with slopes of 15-25 percent, which are rated as severely limited for roadway construction due to slopes. However, land within EWVRA has been graded and leveled and erosion control measures such as silt fencing, sediment traps, application of water sprays, and revegetation of disturbed areas, would reduce potential impacts related to proposed construction activities.

Development of Taxiway E would occur on *Weikert-Berks channery silt loams*, *Urban land*, *Clearbrook-Berks channery silt loams*, and *Carbo-Opequon complex*. With the exception of *Urban land*, which is suited for development, all other soils that exist in the areas proposed for Taxiway E are poorly suited for development (NCRS 2000). Therefore, fill material would likely be brought on site to render surface materials suitable for development; otherwise, modern engineering and construction practices would incorporate corrective measures to compensate for these soil types and enable facilities development. U.S. Highway 11 expansion would take place on *Hagerstown silt loam* which has limited suitability for development; however, a suitable road base would be developed to prevent any impacts.

<u>Topography</u>

Construction activities proposed within the existing 167 AW installation would occur primarily on previously disturbed or developed land, which is capable of supporting such development. Steeper slopes within the proposed acquisition parcel (ranging from 520 to 556 feet MSL) exhibit slight erosion hazards; however, standard erosion control measures (e.g., silt fencing, sediment traps, application of water sprays, and revegetation of disturbed areas) would reduce potential impacts related to proposed construction activities.

4.6.2.2 Relocation of Runway 17/35 Alternative

Selection of the Relocation of Runway 17/35 Alternative would result in identical construction, demolition, and renovation activities to those described for the Proposed Action; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. Therefore, impacts to

geological resources as a result of the implementation of the Relocation of Runway 17/35 Alternative would be in addition to those previously described for the Proposed Action. Development of Runway 17/35 would occur on *Carbo-Endcav silty clay loams* and *Swampond silt loam*. The potential for urban use on these soils is rated as poor due to sinkholes, slow permeability, and high shrink-sell potential.

Implementation of the Relocation of Runway 17/35 Alternative would require additional ground disturbing activities and fill material to be brought on site to render surface material suitable for development; otherwise, modern engineering and construction practices would incorporate corrective measures to compensate for these soil types and enable runway development.

4.6.2.3 No-Action Alternative

If the No-Action Alternative were selected, the 167 AW would not undergo a mission change and aircraft conversion; acquire property; construct or demolish facilities; or improve the installation circulation system. Therefore, no change from current conditions and no impacts to geological resources (as described in *Section 3.6*) would occur under implementation of the No-Action Alternative.

4.7 WATER RESOURCES

4.7.1 Approach to Analysis

Significance of potential impacts to water resources is based on water availability, quality, and use; existence of floodplains and wetlands; and associated regulations. An impact to water resources would be significant if it would: 1) reduce water availability to or interfere with the supply of existing users; 2) create or contribute to overdraft of groundwater basins or exceed safe annual yield of water supply sources; 3) adversely affect water quality or endanger public health by creating or worsening adverse health hazard conditions; 4) threaten or damage unique hydrologic characteristics; or 5) violate laws or regulations that have been established to protect or manage water resources of an area. Impacts of flood hazards on Proposed Actions would be significant if such actions are proposed to be established in areas with high probabilities of flooding.

4.7.2 Impacts

4.7.2.1 Proposed Action

Regional water supply is abundant and has sufficient capacity to meet current and anticipated demands at the 167 AW. None of the proposed facilities comprises a significant water user or wastewater generator. Further, no structures are proposed for development within a 100-year floodplain and, therefore, proposed facilities would neither affect nor be affected by flood hazards at the installation.

With regard to surface water, implementation of the Proposed Action would decrease permeable surfaces by approximately 70 acres and could therefore have a localized effect on hydrology. There would also be a potential for ponding to occur in areas surrounding the proposed parking apron and runway due to a large increase in runoff. To prevent potential flooding at the installation and tributaries off the installation boundary, runoff would be incorporated into the installation's new storm drainage system, which would be capable of accommodating increased flows (167 AW/West Virginia ANG 2003f). The new system would include three stormwater management detention ponds to capture, store, and treat runoff (Figure 4-4). The 167 AW would notify the Berkeley County Flood Control Department and the West Virginia DEP of the increase in the amount of impervious surface created as a result of the project, and modifications would be made to the installation's existing National Pollution Discharge Elimination System (NPDES) permit. Potential impacts to stormwater collection are further evaluated in *Section 4.5*, *Utilities and Infrastructure*. The establishment of additional impermeable surface areas would also reduce regional groundwater recharge capabilities. Finally, erosion minimization practices (e.g., sediment and silt fences) would be used during construction to reduce or eliminate water quality and sedimentation impacts.

Increased runoff associated with Taxiway E would be accommodated through the EWVRA stormwater pond located in the southeastern section of the airport property.

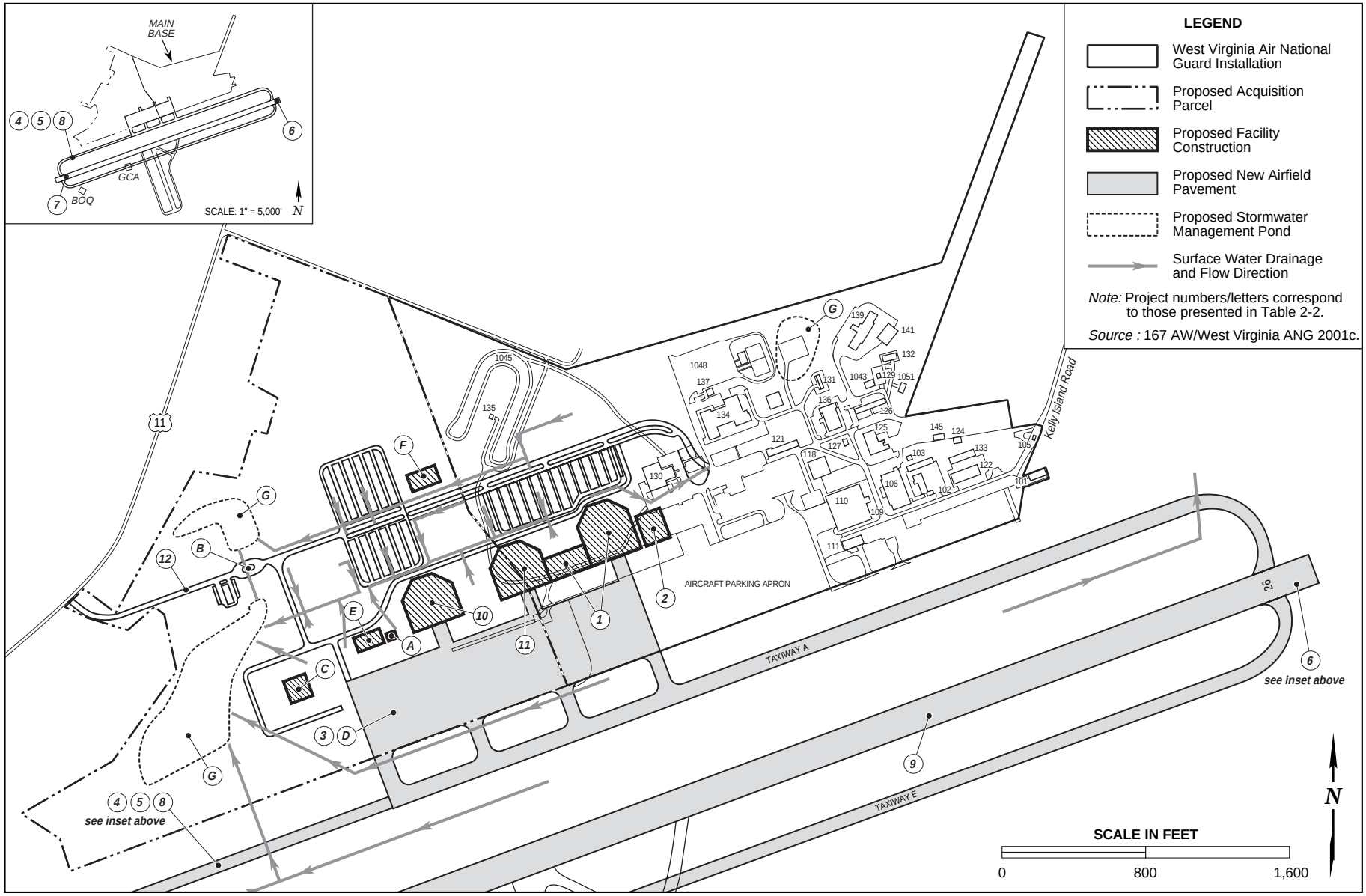


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Figure 4-4. Surface Water Drainage Pattern Associated with the Proposed Action

Figure 4-4

The EWVRA is covered under a general permit for airports in the state of West Virginia as it relates to monitoring stormwater runoff. Once the taxiway is complete, the West Virginia DEP, Division of Water Resources would determine if a modification to the current permit would be required.

Several water wells are located within the vicinity of the subject site. Required practices to minimize potential impacts to groundwater aquifers during construction activities such as blasting or rock coring are outlined in *Section 4.17*, *Special Procedures and Mitigation Measures*. The airport is located within a wellhead protection area; however, no permit is required by the Department of Health and Human Resources for construction in a wellhead protection area. If blasting or rock coring are necessary for development of Taxiway E, care must be taken to ensure no damage to the aquifer occurs (FAA 2002).

The existing storm drainage system consists of a single drainage ditch that bisects the installation and leads off the installation to an unnamed tributary and eventually to Cold Spring Run. Potential impacts to wetlands and waters of the U.S. as defined by the U.S. Army Corps of Engineers (USACOE) are evaluated in *Section 4.8, Biological Resources*.

4.7.2.2 Relocation of Runway 17/35 Alternative

If the Relocation of Runway 17/35 Alternative were selected, all construction, demolition, and renovation activities associated with the Proposed Action would be implemented; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. Therefore, impacts to water resources as a result of the implementation of the Relocation of Runway 17/35 Alternative would be in addition to those previously described for the Proposed Action.

The development and relocation of Runway 17/35 would create an additional 4.5 acres of impermeable surface, further increasing stormwater runoff; however, a new stormwater management plan introducing three new stormwater detention ponds for the Proposed Action would be able to accommodate and control additional runoff from impacting outflows and tributaries of Cold Springs Run.

4.7.2.3 No-Action Alternative

If the No-Action Alternative were selected, the 167 AW would not implement any portion of the Proposed Action. Water resource conditions would remain unchanged from their current status, as described in *Section 3.7*. Selection of the No-Action Alternative would not impact regional or local water resources.

4.8 BIOLOGICAL RESOURCES

4.8.1 Approach to Analysis

Determination of the significance of potential impacts to biological resources is based on 1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource; 2) the proportion of the resource that would be affected relative to its occurrence in the region; 3) the sensitivity of the resource to proposed activities; and 4) the duration of ecological ramifications. Impacts to biological resources are significant if species or habitats of concern are adversely affected over relatively large areas or disturbances cause reductions in population size or distribution.

Potential physical impacts such as habitat loss, noise, and impacts to surface water were evaluated to assess potential impacts to biological resources resulting from implementation of the proposed mission change and associated construction program.

4.8.2 Impacts

4.8.2.1 Proposed Action

<u>Construction</u>

Construction associated with the Proposed Action would require vegetation removal in previously disturbed areas; however, no sensitive or native plants species are known to occur on the current installation or the proposed acquisition parcel. Development of the acquisition parcel would require removing soybean agricultural fields and a few species of trees including northern red oak, black walnut and shagbark hickory.

Wildlife species within the current installation boundary and within the proposed acquisition parcel have adapted to disturbance associated with airport operations. Small mammal habitat, such as the soybean field and sparse tree groupings, would be removed.

According to a 1980 National Wetlands Inventory (NWI) map, a palustrine, open water, intermittent/permanent, excavated jurisdictional wetland occurs within the western section of the proposed acquisition parcel. Under the Proposed Action, this wetland would be impacted through the development of stormwater management detention pond #1 (Figure 4-5). However, this pond has been artificially constructed and is less than the 0.1 acre in size and is therefore exempt from regulation. Development of the stormwater management pond requires no authorization from the USACOE (USACOE 2003).

Additionally, within the northeast section of the installation a drainage ditch has been formed by runoff from the parking apron and surrounding impervious surfaces. Proposed construction of a third stormwater management detention pond and infrastructure (utility) improvements would alter this wetland. However, utility

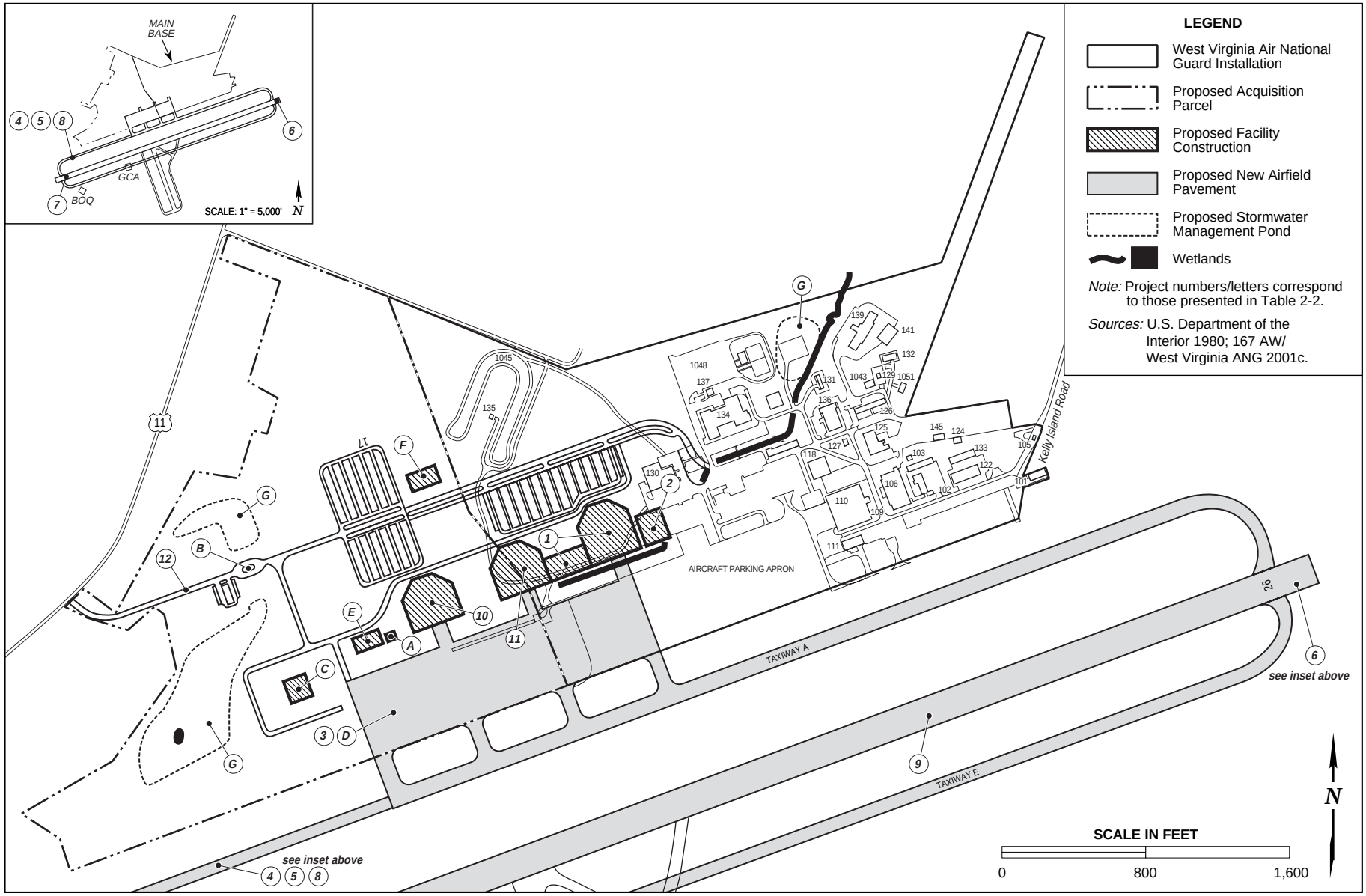

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Figure 4-5. Wetlands and Locations of Proposed Construction Projects at the 167 AW, West Virginia Air National Guard

Figure 4-5

improvements constructed across drainage ditches as part of airport expansion are authorized by Nationwide Permit Number 12, previously issued by the USACOE for purposed of Section 404 of the Clean Water Act, as published in the January 15, 2003, issue of the *Federal Register* (USACOE 2003).

According to the USACOE, Pittsburgh District, no jurisdictional wetlands would be impacted through development of Taxiway E. The USACOE further stated that they have no objection to the proposed activity and a Department of Army permit is not required (FAA 2002).

Due to the developed nature of the West Virginia ANG installation and EWVRA, sensitive species are not common in the project area. No federally listed threatened or endangered species have been recorded in the vicinity of the project area. The State of West Virginia is on the edge of the federally endangered Indiana bat's range; however, the Indiana bat has not been identified in any caves within Berkeley County (West Virginia Division of Natural Resources [DNR] 2003b). Further, suitable habitat does not exist at the current 167 AW installation. The proposed acquisition parcel does contain old fields and pastures with approximately 9 acres or scattered trees that could be suitable habitat. The USFWS has determined that projects affecting 17 acres or less of suitable foraging and roosting habitat would have a very small chance of resulting in direct or indirect takes. If less than 17 acres of suitable habitat would be disturbed, the USFWS considers that action discountable and unlikely to adversely affect the Indiana bat during any season of the year (FAA 2002). The area of potential suitable habitat for the Indiana bat within the acquisition parcel totals less than 17 acres. Rare species such as the rare hard-stemmed bulrush (*Scirpus acutus*) occur at a distance of more than 2 miles to the northeast and would not be impacted by implementation of the Proposed Action. The airport is surrounded by fencing to deter wildlife hazards from entering the property and scare tactics are used to prevent birds from gathering on the airfield; therefore, wildlife species are discouraged from remaining in the area.

The West Virginia DNR has not yet been contacted regarding potential biological impacts resulting from implementation of the Proposed Action. Interagency coordination would take place prior to implementation of the Proposed Action. However, in response to the EWVRA proposed Taxiway E development, the West Virginia DNR has no known records of any rare, threatened or endangered species, critical habitats or wilderness areas and preserves within the project area (FAA 2002).

Operations

Over the past 20 years, numerous studies have been performed to evaluate the impact of aircraft noise and sudden visual appearance of aircraft on wildlife. These studies have revealed a wide range of behavioral response between species that varies as a function of previous exposure to noise, individual temperament, and, in some instances, the life cycle of the species (National Park Service 1994). Many wildlife species have been reported to exhibit an immediate fright response, while other species show no

visible reaction, and some species appear to be influenced more by the sight than by the sound of low-flying jet aircraft.

Long-term, population-based impact studies of low-altitude jet overflights have also been performed. These studies have focused on evaluating whether or not wildlife habituate to aircraft noise. Research efforts led by Gladwin, Bowles, and the Air Force conclude that habituation to aircraft noise occurs with most species (Gladwin et al. 1988; Bowles et al. 1991; USAF 1994). However, other researchers have concluded that being startled is a reflex behavior that cannot be eliminated through habituation (Harrington and Veitch 1991; USAF 1994). Given the existing data, no definitive answer to the question of long-term impacts and habituation of species to low-altitude overflights can be reached.

While single-event SEL noise from C-5 aircraft flying at low altitude would be considerably higher than currently associated with C-130H flight operations, such events would be rare as average daily 167 AW flight operations would decrease from 23 to about 2.

4.8.2.2 Relocation of Runway 17/35 Alternative

Selection of the Relocation of Runway 17/35 Alternative would result in identical construction, demolition, and renovation activities to those described for the Proposed Action; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. This would result in additional impacts to vegetation and habitat through grading and eventual development.

4.8.2.3 No-Action Alternative

If the No-Action Alternative were selected, the 167 AW would continue to use the C-130H aircraft to support its current mission. Biological resources would remain as described in *Section 3.8, Biological Resources*.

4.9 TRANSPORTATION AND CIRCULATION

4.9.1 Approach to Analysis

Potential impacts to transportation and circulation are assessed with respect to anticipated disruption or improvement of current transportation patterns and systems; deterioration or improvement of existing levels of service; and changes in existing levels of transportation safety. Impacts (beneficial or adverse) may arise from physical changes to circulation (e.g., closing, rerouting, or creating roads), construction activity, introduction of construction-related traffic on local roads, or changes in daily or peak-hour traffic volumes created by installation workforce and population changes. Adverse impacts on roadway capacities would be significant if roads with no history of exceeding capacity were forced to operate at or above their full design capacity.

4.9.2 Impacts

4.9.2.1 Proposed Action

Estimated traffic increases associated with the Proposed Action are shown in Table 4-7. These estimates were calculated using the following assumptions:

A) None of the new full- and part-time employees would be housed at the installation.
B) Weekday operations at the installation require an average of 1.5 round trips per day for each full-time employee (one round trip accessing the installation and an average of one round trip every other day to remote destinations). This estimate applies to the 334 full-time military and civilian employees currently associated with the 167 AW. Thus, each additional full-time employee would add approximately 3 daily one-way trips to existing average daily traffic (ADT) volumes but only one trip to morning and evening peak traffic periods.
C) It is assumed that under current operations 80 percent of full-time employees access and depart the installation during peak-hour conditions. Under the Proposed Action, 75 percent of 167 AW full-time personnel would access and depart the installation during peak-hour conditions. The remaining 25 percent of full-time employees are described as maintenance personnel and would access and depart the installation at various times throughout a 24-hour period (167 AW/West Virginia ANG 2003d).
D) In addition to weekday personnel activity, approximately 50 additional round trips to the installation are made by service contractors (e.g., equipment suppliers, maintenance, and fuel trucks). It is assumed that these trips would occur during non-peak hours.
E) Using assumptions B and C, and based on 334 full-time employees, multiplied by 1.5 round trips per day, plus 50 additional trips (assumption D), current ADT volumes associated with 167 AW during weekdays is 551. As a result of project implementation, there would be an additional 200 full-time personnel on base,

Table 4-7. Estimated Traffic and Parking Increase from 167 AW Personnel Associated with the Proposed Action

Transportation Component	Baseline	Projected	Change
ADT Volume on U.S. Highway 11			
Weekday	551	851	+300
Weekday Peak-Hour	401	601	+200
UTA Weekend	1,008	1,133	+125
UTA Weekend with 30 Percent Accessing Installation Through Rear Gate	1,008	793	-215
WVANG Installation			
Parking	800	1,020	+220
Proposed USAF Parking-to-Personnel Ratio	0.66	0.75	+0.09

and weekday ADT traffic volumes would increase by 54 percent to 851. During weekday peak-hour conditions, when 75 percent of full-time employees access or depart the installation (80 percent under current operations), ADT volumes would increase from an existing volume of 401 round trips to 601 round trips per vehicle.

F) Proportional distribution of employee trips accessing the installation are not currently known. ADT volumes along U.S. Highway 11 are currently only available at close proximity, west of the installation.

G) Unit training assembly (UTA) weekend activities (once per month) would require one round trip per training day (Saturday and Sunday) for each vehicle. Current ADT volumes during UTA weekends are based on a total of 1,210 personnel. Using average ridership estimates of 1.2 persons per vehicle, a total of 1,008 vehicle round trips would occur per day. Under the Proposed Action, ADT volumes on a UTA weekend would be based on 1,360 personnel. Using average ridership estimates of 1.2 people per vehicle, a total of 1,133 vehicle round trips would occur per day. On a UTA weekend, approximately 340 vehicles (30 percent) would access the installation through the gate located off Kelly Island Road (167 AW/West Virginia ANG 2003c).

H) It is assumed that parking demands would be based on an increase of 200 personnel on weekdays and an additional 150 personnel during UTA weekends. Based on an USAF-established criterion of 0.75 spaces per employee, this results in an increased parking demand of 220 spaces to accommodate UTA weekends (during maximum attendance). Existing parking capacity would be sufficient for full-time personnel, but not for personnel levels during UTA weekends.

Construction-Related Impacts

Implementation of the Proposed Action would require delivery of materials to and removal of demolition-related debris from construction sites. However, construction traffic would make up only a small portion of the total existing traffic volume in the region and at the installation, and many of the vehicles would be driven to and kept on site for the duration of construction, resulting in very few actual increased trips. Further, increases in traffic volumes associated with construction activity would be temporary.

Operation-Related Impacts

Implementation of the Proposed Action would result in establishment of a new main gate at U.S. Highway 11 on the west side of the installation and development of a cross-installation roadway linking the existing main gate at Kelly Island Road to the proposed main gate. Access to Kelly Island Road would retain its present pattern and the gate would continue to be maintained; however, it would be utilized as a secondary gate for access during peak traffic times (e.g., during UTA weekends). These proposed circulation system improvements would address existing circulation and safety deficiencies while providing efficient access to proposed and existing facilities at the installation. Further, the proposed circulation improvements would accommodate the increase in personnel necessary to support the new C-5 mission.

In terms of regional circulation, the Proposed Action would impact ADT volumes and traffic flow on U.S. Highway 11, since it is a two-lane highway, and the increase in installation personnel would increase ADT volumes near installation entrances. Currently, a total of 1,210 personnel are at the installation during UTA weekends. Under the Proposed Action this number would increase to 1,360 total personnel during UTA weekends. Assuming the ridership value of 1.2 persons per vehicle on a UTA weekend, the number of vehicle round trips would increase from approximately 1,008 to approximately 1,133. The estimated ADT volume increase of 125 vehicles during UTA weekends along U.S. Highway 11 represents approximately 0.8 percent of current ADT volumes and would cause an increase in traffic congestion on U.S. Highway 11 for a minimal period of time. Further, according to installation personnel, approximately 30 percent of 167 AW personnel would utilize the rear gate located on Kelly Island Road resulting in a reduction in vehicle trips along U.S. Highway 11 (1,008 vehicle trips to 793 vehicle trips). Approximately 60 percent of the remaining UTA weekend personnel travelling along U.S. Highway 11 would access the Main Gate from the south (making a right-turn) while 40 percent would access the Main Gate from the north making a left-turn (167 AW/West Virginia 2003g). Further, these UTAs occur on weekends during periods of lower localized ADT volume and traffic volume through residential areas would be reduced by 78.7 percent.

An estimated ADT volume increase of 300 vehicles along U.S. Highway 11 during weekdays represents nearly a 2.0 percent increase relative to current ADT volumes. If all vehicles continued to access the base via Paynes Ford Road to Kelly Island Road, this estimated ADT increase would be approximately 6.8 percent along Paynes Ford Road. However, the proposed new gate at the west end of the installation would connect to the highway and would be the principal entrance, thereby reducing the amount of vehicles entering the installation from Paynes Ford and Kelly Island roads. This would reduce the amount of traffic on residential roads accessing the 167 AW installation via the Kelly Island Road gate. Due to the two-lane status of the highway, the increase in ADT levels based on the increased number of personnel could cause congestion on U.S. Highway 11 at the new gate entrance on the west end of installation. However, West Virginia Department of Transportation (WVDOT)/Division of Highways has proposed installing left- and right-turn lanes (traffic signal if necessary) into the

installation at the U.S. Highway 11 intersection to alleviate congestion and enhance safety (Figure 4-6) (WVDOT/Division of Highways 2003a). The majority of development for the turn lanes would take place within the U.S. Highway 11 right-of-way with only minimal vacant property required by a few residences. Development of the Main Gate access road off U.S. Highway 11 would occur within the EWVRA right-of-way. Currently, a gravel road within the right-of-way provides access to the EWVRA eastern property and one residence. Under the proposed action, the gravel road would be widened and paved within the right-of-way, providing one entrance lane and two exit lanes (one right-turn, one left-turn) to and from U.S. Highway 11. Off the proposed Main Gate road, an access point would be developed for the residence. Development of this access road would result in daily use of the current right-of-way; however, a designated private entrance would be established to allow access to the residence.

Parking

Virtually all construction vehicles would be parked at each construction site throughout the construction phase. Once the new mission is operational, personnel levels would increase by 200 full-time employees on weekdays and 150 part-time Traditional Guardsmen on UTA weekends. This personnel increase would result in parking requirements of 1,020 stalls. Currently, capacity for privately-owned vehicle (POV) parking is about 9 percent less than the USAF-established criterion of 0.75 spaces per employee (i.e., there are 800 parking spaces available for 1,210 personnel). The personnel increase associated with the Proposed Action would be compensated for by the development of 220 new parking spaces. The resulting ratio for the number of POV parking spaces available would be increased to 0.75.

4.9.2.2 Relocation of Runway 17/35 Alternative

If the Relocation of Runway 17/35 Alternative were selected, all construction, demolition, and renovation activities associated with the Proposed Action would be implemented; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. Therefore, impacts to transportation and circulation as a result of the implementation of the Relocation of Runway 17/35 Alternative would be identical to those described for the Proposed Action.

4.9.2.3 No-Action Alternative

If the No-Action Alternative were selected, the 167 AW would not implement an aircraft conversion and mission change; property transactions; facilities construction, or demolition projects; or improvements to the installation circulation system. Existing transportation and circulation at the installation would remain unchanged; therefore, selection of the No-Action Alternative would not impact installation or regional transportation systems. However, the number of parking spaces currently available at the installation does not meet Air Force requirements and this deficiency would not be corrected.

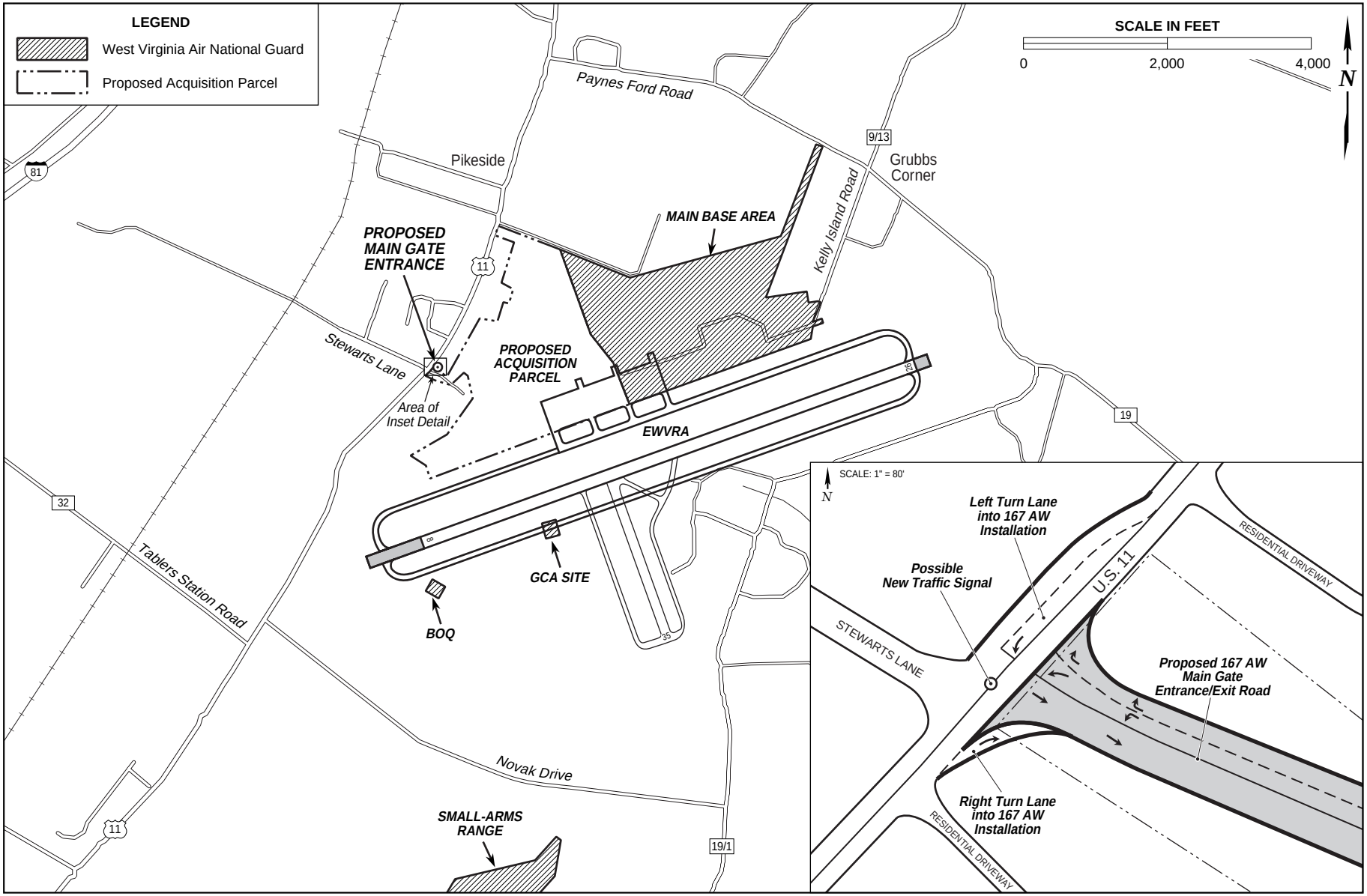

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Figure 4-6. Proposed Main Gate Entrance and U.S. Highway 11 Intersection

Figure 4-6

4.10 VISUAL RESOURCES

4.10.1 Approach to Analysis

Determination of the significance of impacts to visual resources is based on the level of visual sensitivity in the area. Visual sensitivity is defined as the degree of public interest in a visual resource and concern over adverse changes in the quality of that resource. In general, an impact to a visual resource is significant if implementation of the Proposed Action would result in substantial alteration to an existing sensitive visual setting.

4.10.2 Impacts

4.10.2.1 Proposed Action

Facility construction projects associated with the Proposed Action would be visually consistent with existing structures at the installation; however, the number of facilities visible from off site residences and public streets would increase substantially. Further, a number of facilities would be constructed in areas currently characterized by open space and agricultural land. While the number of facilities at the installation would increase in number and size, the facilities would be visually consistent with characteristics associated with the EWVRA and the 167 AW installation.

Implementation of the Proposed Action would result in the conversion from C-130H to C-5 aircraft. The C-5 aircraft, with an overall length of 248 feet, wingspan of 222 feet, and height of 65 feet, is approximately twice the size of the C-130H (98 x 133 x 38 feet) and would be more visible when parked at the installation; however, the views would be consistent with what currently exists at the installation and what is characteristic of an airport. When operational, the C-5 would be more visible than the current 167 AW aircraft; however, fewer aircraft operations would take place upon implementation of the Proposed Action.

4.10.2.2 Relocation of Runway 17/35 Alternative

Selection of the Relocation of Runway 17/35 Alternative would result in identical construction, demolition, and renovation activities to those described for the Proposed Action; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. Therefore, impacts to visual resources associated with this alternative would not be identical to those previously described for the Proposed Action. New approach and departure routes for civilian aircraft would be established and while these routes would cover new areas, the routes would be in the same direction and only slightly west of current civilian operation on Runway 17/35.

4.10.2.3 No-Action Alternative

Under the No-Action Alternative, the 167 AW would continue with its current mission and assigned aircraft. Visual resources would remain as described in *Section 3.10, Visual Resources*. Selection of the No-Action Alternative would result in no impacts to visual resources.

4.11 CULTURAL RESOURCES

4.11.1 Approach to Analysis

Cultural resources are subject to review under both Federal and state laws and regulations. Section 106 of the National Historic Preservation Act of 1966 empowers the Advisory Council on Historic Preservation to comment on federally initiated, licensed, or permitted projects affecting cultural sites listed or eligible for inclusion on the National Register of Historic Places (NRHP).

Once cultural resources have been identified, significance evaluation is the process by which resources are assessed relative to significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Only cultural resources determined to be significant (i.e., eligible for the NRHP) are protected under the National Historic Preservation Act.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may occur by 1) physically altering, damaging, or destroying all or part of a resource; 2) altering the characteristics of the surrounding environment that contribute to resource significance; 3) introducing visual, audible, or atmospheric elements that are out of character with the property or alter its setting; or 4) neglecting the resource to the extent that it is deteriorated or destroyed.

Direct impacts can be assessed by identifying the types and locations of Proposed Actions and determining the exact locations of cultural resources that could be affected. Indirect impacts primarily result from the effects of project-induced population increases and the resultant need to develop new housing areas, utilities services, and other support functions necessary to accommodate population growth. These activities and facilities' subsequent use can disturb or destroy cultural resources.

4.11.2 Impacts

4.11.2.1 Proposed Action

No archaeological, historic, or Native American cultural resources are known to exist at the West Virginia ANG installation or within the proposed acquisition parcel. Further, since no land areas held in trust by the U.S. for tribal governments are located in the immediate vicinity of the airport, and no surface water features are located within the proposed project areas (167 AW/West Virginia ANG 2002b), tribal trust resources would not have the potential to be impacted by implementation of the Proposed Action and formal tribal consultation was not conducted. Finally, due to a lack of integrity, uniqueness, or significance, none of the affected buildings meets the criteria necessary to be eligible for the NRHP.

All proposed construction projects have been sited in previously developed or disturbed areas on or adjacent to the installation. Although these sites have been disturbed

during establishment and subsequent development and use of the installation, the potential remains—however slight—for currently buried, unknown archaeological resources to be uncovered during ground-disturbing activities. If such resources were uncovered during development at any of the proposed project locations, activities would be suspended until a qualified archaeologist could determine the importance of the resource(s).

The parcel proposed for acquisition and construction is disturbed agricultural land and no archaeological, historic, or Native American cultural resources are known to exist in this area. However, the potential remains for currently buried, unknown archaeological resources to be uncovered during ground-disturbing activities. If such resources were uncovered during development at any of the proposed project locations, activities would be suspended until a qualified archaeologist could determine the importance of the resource(s).

Two cemeteries and the ruins of an old brick building exist on the southeastern section of the EWVRA property, across the airfield from the 167 AW installation. Implementation of the Proposed Action would take place in the northern half of the airport property; therefore, the Proposed Action would not be affected. Development of Taxiway E would impact the ruins of the original EWVRA operations building; however, these ruins are not eligible for listing in NRHP and the WVDCH has determined that removal of the ruins would have *no effect* on cultural resources (AMEC 2003a). The Shepherd family mausoleum would be protected during development by an 100-foot buffer zone; therefore, no impacts to this resource would result (EWVRA 2002b). Further, the two-grave cemetery on EWVRA property and the cemetery on the State of West Virginia property are not located within any proposed development areas and would not be affected (AMEC 2003a).

The State of West Virginia, Division of Culture and History (WVDCH) has not yet been contacted to allow its review and comment on the proposed aircraft conversion and construction program; however, interagency coordination would take place prior to implementation of the Proposed Action.

Reconfiguration of U.S. Highway 11 at the Main Gate access road intersection would occur within the WVDOT right-of-way and minimal vacant residential property. No cultural resources are known to exist in this area. All proposed construction projects have been sited in previously developed or disturbed areas on or adjacent to the installation. Although these areas have been disturbed, the potential remains—however slight—for currently buried, unknown archaeological resources to be uncovered during ground-disturbing activities. If such resources were uncovered during development at any of the proposed project locations, activities would be suspended until a qualified archaeologist could determine the importance of the resource(s).

4.11.2.2 Relocation of Runway 17/35 Alternative

If the Relocation of Runway 17/35 Alternative were selected, all construction, demolition, and renovation activities associated with the Proposed Action would be implemented; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. Impacts to cultural resources as a result of the implementation of the Relocation of Runway 17/35 Alternative would be virtually identical to those previously described for the Proposed Action.

4.11.2.3 No-Action Alternative

If the No-Action Alternative were selected, the current 167 AW mission and associated C-130H aircraft would remain as described in *Section 3.11, Cultural Resources*. Under this alternative, no new ground disturbing activities would take place and cultural resources would not be affected.

4.12 SOCIOECONOMICS

4.12.1 Approach to Analysis

Significance of population and expenditure impacts are assessed in terms of their direct effects on the local economy and related effects on other socioeconomic resources (e.g., housing). The magnitude of potential impacts varies depending on the location of a Proposed Action; for example, an action that creates 20 employment positions may be unnoticed in an urban area but may have significant impacts in a more rural region. If potential socioeconomic impacts would result in substantial shifts in population trends, or adversely affect regional spending and earning patterns, they would be significant.

4.12.2 Impacts

4.12.2.1 Proposed Action

Economic activity associated with proposed construction activities, such as hiring of laborers, contractors, and the purchasing of materials over a potential 5-year construction period, would provide regional economic benefits should these expenditures take place within Berkeley County. Conservative economic impacts to the regional economy have been projected to increase approximately 42 percent over baseline regional economic activity associated with current 167 AW operations.

The Proposed Action would increase the number of personnel required to staff the 167 AW's new mission. Approximately 200 new full-time positions would be created to support the C-5 mission, a 60 percent increase over current full-time ANG staff levels. This would represent an approximately 30 percent increase in military jobs and 1.5 percent of total jobs in Berkeley County.

The Proposed Action would result in an increase in aircraft-related noise and could potentially affect property values in nearby residential areas. Several studies have been conducted to determine the effects of airport noise on surrounding housing values, but no two studies resulted in identical findings. An estimate of potential impact to housing values resulting form beddown and operation of C-5 aircraft at EWVRA was deemed too speculative at this time.

Based on the reduced number of 167 AW and transient military operations, and improvements to Runway 08/26, no impacts to economic activity at EWVRA associated with general aviation operations are anticipated. While the closure of Runway 17/35 eliminates a landing and take-off option, the reduced number of operations would reduce airfield and airspace activity, providing an inviting scenario for general aviation.

4.12.2.2 Relocation of Runway 17/35 Alternative

Selection of the Relocation of Runway 17/35 Alternative would result in identical construction, demolition, and renovation activities to those described for the Proposed Action; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. Therefore, impacts to socioeconomics as a result of the implementation of the Relocation of Runway 17/35 Alternative would be identical to those previously described for the Proposed Action, including the creation of new employment opportunities.

4.12.2.3 No-Action Alternative

If the No-Action Alternative were selected, the 167 AW would continue to use the C-130H aircraft. Existing socioeconomic conditions would remain as described in *Section 3.12, Socioeconomics*. Therefore, selection of the No-Action Alternative would not have a significant impact on socioeconomics.

4.13 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

4.13.1 Approach to Analysis

In order to comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, ethnicity and poverty status in the vicinity of the West Virginia ANG installation have been examined and compared to city, regional, state, and national data to determine if any minority or low-income communities could potentially be disproportionately affected by implementation of the Proposed Action.

Similarly, to comply with Executive Order 13045, *Protection of Children From Environmental Health Risks and Safety Risks*, the distribution of children and locations where numbers of children may be proportionally high on and in the vicinity of the West Virginia ANG installation was determined to ensure that environmental and safety risks to children are addressed.

4.13.2 Impacts

4.13.2.1 Proposed Action

Relative to state and national indicators, residents in communities near the installation are not considered low-income. The percentage of minority residents in Berkeley County (7.3 percent) is greater than the percentage for the State of West Virginia (5.0 percent), but much less than the nation (24.9 percent). Measurable impacts are anticipated to occur with regard to noise, land use, and safety resources upon implementation of the Proposed Action. However, no minority or low-income populations are located near the installation or make up a disproportionate amount of the total population of Berkeley County.

Berkeley County has the largest percentage (30 percent) of its total population represented by children under age 18 when compared to the State of West Virginia and the nation. No facilities for children currently exist on or in the immediate vicinity of the West Virginia ANG installation; however, private residences are adjacent to the installation and would likely house children. Although children would not have access to construction sites, operations associated with the C-5 aircraft would increase noise exposure to children residing within the 65 dB DNL noise contour projected to result from C-5 operations; however, despite these higher noise levels, the actual number of high noise events (i.e., aircraft operations) would decrease from 23 to 2 per day. Schools, single-family, duplex, and mobile homes are normally unacceptable within the 65 dB DNL noise contour. Analysis of the impacts noise would have on residences and other structures likely to house children is presented in *Section 4.4, Land Use*.

4.13.2.2 Relocation of Runway 17/35 Alternative

If the Relocation of Runway 17/35 Alternative were selected, all construction, demolition, and renovation activities associated with the Proposed Action would be implemented; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. Therefore, impacts to environmental justice and the protection of children as a result of the implementation of the Relocation of Runway 17/35 Alternative would be essentially identical to those previously described for the Proposed Action.

4.13.2.3 No-Action Alternative

If the No-Action Alternative were selected, the 167 AW would continue with their current mission and aircraft. Conditions would remain as described in *Section 3.13*; therefore, selection of the No-Action Alternative would not impact environmental justice or the protection of children.

4.14 HAZARDOUS MATERIALS AND WASTES

4.14.1 Approach to Analysis

Numerous local, state, and Federal laws regulate the storage, handling, disposal, and transportation of hazardous materials and wastes; the primary purpose of these laws is to protect public health and the environment. The significance of potential impacts associated with hazardous substances is based on their toxicity, ignitability, and corrosivity. Impacts associated with hazardous materials and wastes would be significant if the storage, use, transportation, or disposal of hazardous substances substantially increases the human health risk or environmental exposure.

4.14.2 Impacts

4.14.2.1 Proposed Action

Hazardous Materials and Wastes

Implementation of the Proposed Action would result in a net increase in the quantity of hazardous materials stored and hazardous wastes generated at the 167 AW due primarily to construction and operation of proposed new facilities (e.g., C-5 maintenance hangar). Consequently, a modification of the installation's Resource Conservation and Recovery Act (RCRA) permit as a Small Quantity Generator (SQG) of hazardous waste to a Large Quantity Generator (LQG) of hazardous waste may be required.

The existing 504-square foot (sf) hazardous waste Central Accumulation Point (CAP) located at Building 132 (Base Supply Open Storage) would remain. The facility has adequate capacity to accommodate the increased volume of wastes generated by the unit's conversion to and operation of the C-5 aircraft and mission. Hazardous wastes would continue to be disposed of by the Defense Reutilization and Marketing Office (DRMO).

Any increase in hazardous materials and wastes generated upon implementation of the Proposed Action would be handled in accordance with updates to the installation's *Integrated Contingency Plan* and other hazardous materials management plans, policies, and procedures. In addition, consolidation of operations would reduce the frequency of waste handling and transfer, thereby reducing the likelihood of inadvertent spills.

A short-term, temporary increase in the storage of hazardous materials and wastes would also occur throughout the construction and demolition phases of the project. Hazardous wastes would be stored at the installation's existing CAP prior to final disposal off-site.

Aircraft Deicing Fluid

Deicing and anti-icing fluids (mixtures of hot water and non-glycol ice control agents, processed starches, and sugars) would be used on C-5 aircraft at the 167 AW installation to prevent or remove ice and snow from aircraft wings and fuselages during overnight storage in cold temperatures or severe weather. Non-glycol aircraft deicing fluid (ADF-2) is being considered to replace the glycol-based fluid which could eliminate the requirement for capturing or treating the fluid prior to its release into the environment. ADF-2 is organic and is soluble in water and non-corrosive to ferrous metals and non-ferrous alloys. It is estimated that approximately 75 to 80 percent of the fluid that is sprayed onto an aircraft is deposited on the ground surface as a result of excess application or drippage. In addition, some sloughing and drippage takes place during taxiing and take-off. These fluids may potentially drain into the stormwater system; however, ADF-2 reportedly biodegrades readily and completely to carbon dioxide and water (Orison Marketing, L.L.C. 2003; USAF Research Laboratory 2001).

To reduce impacts from hazardous materials usage, measures outlined in the *167 AW Utilities Master Plan* (January 2003) would include using non-toxic and non-hazardous deicing and anti-icing fluid ADF-2 and storing aircraft overnight in heated hangars in advance of anticipated use whenever possible. In addition, inlets to the proposed new installation stormwater collection system would be equipped with manual valves, allowing an alternate connection to the sanitary sewer system for use during deicing activities directly on the parking apron.

Installation Restoration Program

All four Installation Restoration Program (IRP) sites previously identified at the installation have been determined not to pose a significant risk or threat to public health or the environment. The sites were recommended for no further action and have been closed.

4.14.2.2 Relocation of Runway 17/35 Alternative

Selection of the Relocation of Runway 17/35 Alternative would result in identical construction, demolition, and renovation activities to those described for the Proposed Action; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. Therefore, impacts to hazardous materials and wastes as a result of the implementation of the Relocation of Runway 17/35 Alternative would be identical to those previously described for the Proposed Action.

4.14.2.3 No-Action Alternative

Implementation of the No-Action Alternative would neither increase nor decrease the amount of hazardous materials and wastes currently stored and generated by the 167 AW in Martinsburg. No impacts would occur from implementation of the No-Action

Alternative with regard to hazardous materials and wastes, and conditions would remain as described in *Section 3.14*.

4.15 SAFETY

4.15.1 Approach to Analysis

If implementation of the Proposed Action would substantially increase risks associated with aircraft mishap potential or flight safety relevant to the public or the environment, it would represent a significant impact. For example, if an action involved an increase in aircraft operations such that mishap potential would increase significantly, air safety would be compromised.

Further, if implementation of the Proposed Action would result in incompatible land use with regard to safety criteria such as RPZs or quantity-distance (QD) arcs, impacts would be significant.

4.15.2 Impacts

4.15.2.1 Proposed Action

Mishap Potential and Bird-Aircraft Strike Hazard

Implementation of the Proposed Action would result in changes to the frequency and type of aircraft operations performed by the 167 AW. Under the proposed aircraft conversion, the 167 AW would perform fewer aircraft operations to support the new mission. Since the C-5 has been in operation, the Class A mishap rate is 0.85 per 100,000 flying hours (USAF 2002a). The C-130H has a Class A mishap rate of 0.93 since its first operating date in 1955 (USAF 2002b). Bird-Aircraft Strike Hazard (BASH) data relevant to the unit and its operations at the West Virginia ANG installation indicate that an aircraft conversion would not present a substantial safety issue. The 167 AW would continue to adhere to the unit's *BASH Plan* to minimize the threat and occurrence of wildlife hazards at EWVRA.

Runway Protection Zones

Proposed facility construction within the 167 AW installation boundary would be compatible with land use at the installation and with regard to newly established RPZs associated with the runway extensions at EWVRA (Figure 4-7). However, implementation of the Proposed Action—specifically extending the runway by 1,000 linear feet—would result in a shift in location of established RPZs.

The runway extensions and associated changes to the location of RPZs would result in a total of 10 residences (3 additional residences not currently within RPZs combined with the 7 residences that currently exist within RPZs), and two car dealerships overlapping portions of these safety zones (167 AW/West Virginia ANG 2003d). Per FAA guidance, the RPZs associated with the proposed aircraft conversion would be incompatible with residences at the both ends of Runway 08/26 and two car dealerships at the western end of Runway 08/26. The FAA recommends restricting the following

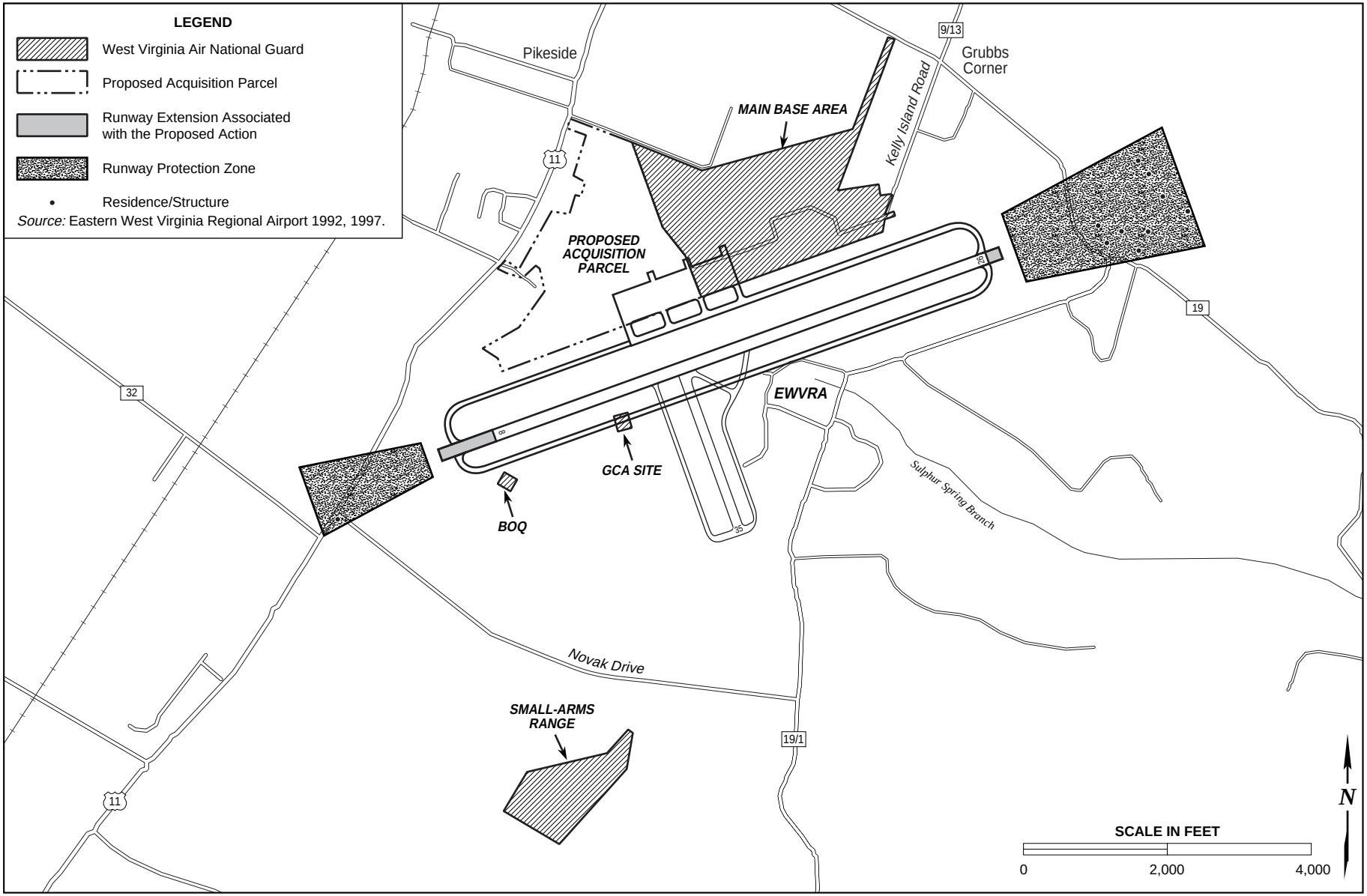

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Figure 4-7. Runway Protection Zones Associated with the Proposed Action at the West Virginia Air National Guard Installation Eastern West Virginia Regional Airport

Figure 4-7

land use within an RPZ: residences and places of public assembly (i.e., churches, schools, hospitals, office buildings, shopping centers, and other uses with similar concentrations of persons that typify places of public assembly). Closure of Runway 17/35 and elimination of associated RPZs would reduce the total number of residences within the RPZs at EWVRA. Analysis of the impacts RPZs would have on the surrounding land use is further described in *Section 4.4, Land Use*.

General Aviation

The closure of Runway 17/35 would eliminate a landing and take-off option for general aviation aircraft. This runway would be a safer option for light general aviation aircraft in cross-wind situation; however, a *Wind Rose Study* of prevailing wind patterns at EWVRA was inconclusive and did not make a compelling case for retention of Runway 17/35 for safety reasons. Further, the extension and resurfacing along with the width of Runway 08/26 would provide a sufficient and safe landing and takeoff runway for light general aviation aircraft. Given the reduced number of 167 AW and transient military operations at EWVRA and the adequate length and width of Runway 08/26, no impacts to safety associated with general aviation aircraft is anticipated.

Explosives Safety

A new small arms munitions maintenance/storage complex is proposed for construction within the current 167 AW installation immediately northeast of the northern end of Runway 17/35. No incompatible structures exist or are proposed for development within the 100-foot QD arc that would be established around the facility.

4.15.2.2 Relocation of Runway 17/35 Alternative

If the Relocation of Runway 17/35 Alternative were selected, all construction, demolition, and renovation activities associated with the Proposed Action would be implemented; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft (Figure 4-8). Therefore, impacts to safety as a result of the implementation of the Relocation of Runway 17/35 Alternative would be in addition to those previously described for the Proposed Action.

The relocation and development of Runway 17/35 and associated RPZs would affect approximately 7 residences to the north of the proposed runway and one commercial business to the south. While this is a reduction in the overall number of residences and structures currently within the RPZs associated with Runway 17/35, new residences would be exposed to the potential of aircraft accidents and this alternative would still not comply with FAA regulations regarding land use and safety. Further, the proposed stormwater management pond located just north of Runway 08/26 and east of proposed alternative Runway 17/35 may have to be reconfigured or reduced in size to comply with FAA regulations regarding detention ponds and the distance to runways.

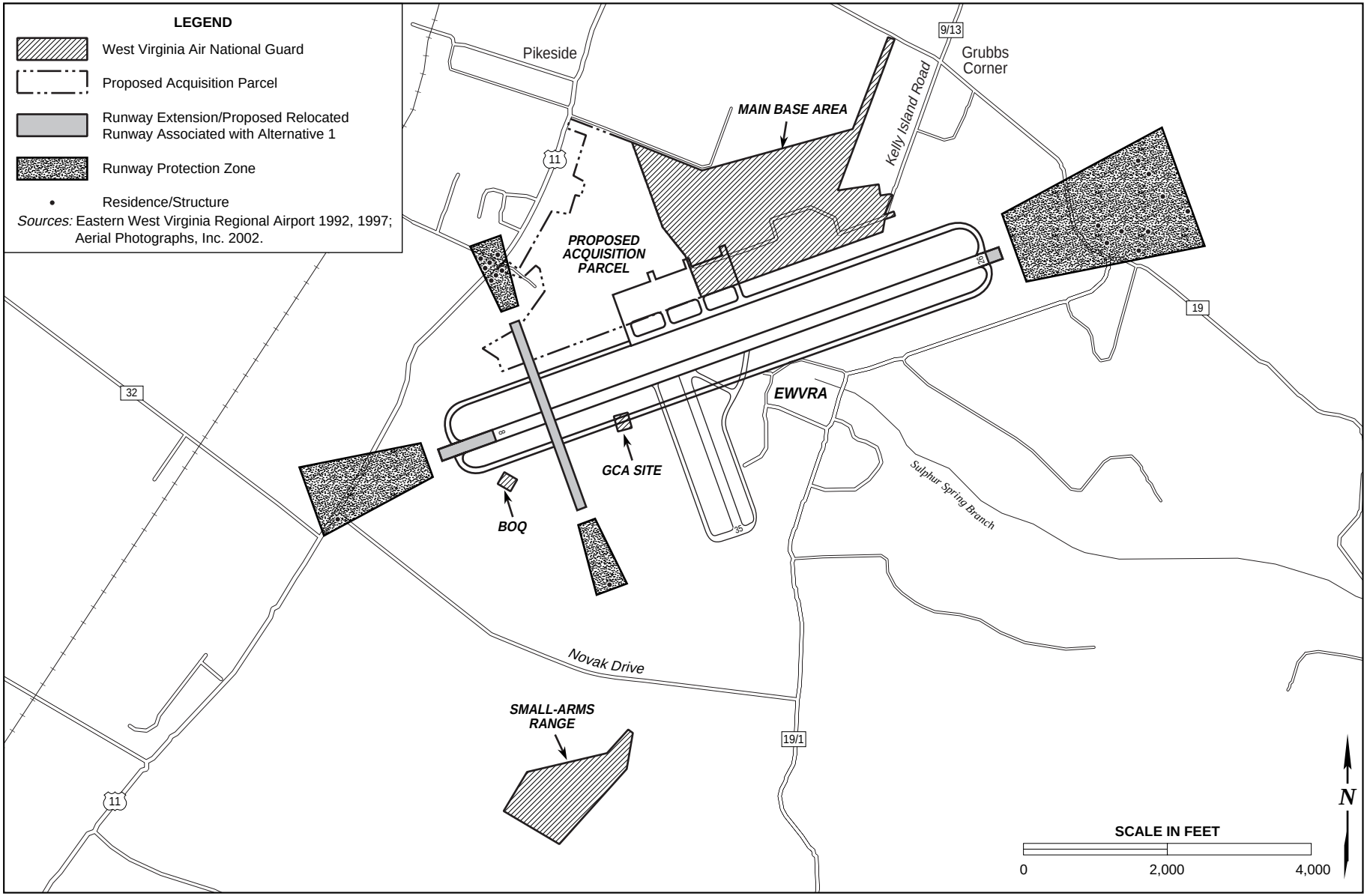

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Figure 4-8. Runway Protection Zones Associated with Alternative 1 at the West Virginia Air National Guard Installation Eastern West Virginia Regional Airport

Figure 4-8

4.15.2.3 No-Action Alternative

If the No-Action Alternative were selected, the 167 AW would continue to use the C-130H aircraft in support of its current mission. Safety conditions would remain as described in *Section 3.15, Safety*, including the current RPZs associated with runways 08/26 and 17/35 that overlap existing residential areas.

4.16 DEPARTMENT OF TRANSPORTATION ACT SECTION 4(f)

4.16.1 Approach to Analysis

Section 4(f) properties are subject to review under the Department of Transportation Act of 1966 as 49 U.S. Code (U.S.C.) 1653(f) prohibiting the approval of a project that would use land from a publicly owned park, recreation area, wildlife or waterfowl refuge, or historic site. Exceptions to these restrictions can be granted if there is no feasible or prudent alternative to use of the land and if the project includes all possible planning to minimize harm to the property.

Analysis of potential impacts to Section 4(f) properties considers both direct and indirect impacts. Direct impacts may occur through property acquisition or physically altering, damaging, or destroying all or part of a resource. Indirect impacts occur when the proposed project does not actually use land from a Section 4(f) property, but the property's proximity to the project area results in impacts related to visual, audible, or atmospheric elements that are out of character with the property.

4.16.2 Impacts

4.16.2.1 Proposed Action

<u>Parks or Recreation Areas</u>

According to Federal, state, and local agencies, no public parks or recreation areas exist in the vicinity of EWVRA. The West Virginia Division of Natural Resources, Parks and Recreation Division, West Virginia Division of Forestry, and National Park Service have no park areas, recreation areas, state or National forests located in Berkeley County (FAA 2002). Further, the Berkeley County Planning Commission has stated that to the best of the commission's knowledge, no county owned parks or facilities are in the area of the EWVRA. Therefore, no impacts associated with the Proposed Action would affect parks or recreation areas.

Pikeside Park is located within the EWVRA boundary, owned by the EWVRAA, and is composed of two baseball diamonds. This park is within the proposed acquisition parcel; however, the park is privately owned and not subject to Section 4(f). It is the intent of the 167 AW to keep the two baseball diamonds in their current state and allow for use during construction and following implementation of the new mission.

<u>Waterfowl or Wildlife Refuges</u>

No Federal, state, or local waterfowl or wildlife refuges are located in Berkeley County; therefore, impacts to refuges would not occur (FAA 2002; West Virginia DNR 2003).

Historic Sites or Cultural Resources

No archaeological, historic, or Native American cultural resources are known to exist at the West Virginia ANG installation or within the proposed acquisition parcel. Further, since no land areas held in trust by the U.S. for tribal governments are located in the immediate vicinity of the airport, and no surface water features are located within the proposed project areas (167 AW/West Virginia ANG 2002b), tribal trust resources would not have the potential to be impacted by implementation of the Proposed Action. Finally, due to a lack of integrity, uniqueness, or significance, none of the affected buildings meets the criteria necessary to be eligible for the NRHP.

All proposed construction projects have been sited in previously developed or disturbed areas on or adjacent to the installation (including the proposed acquisition parcel). Although these sites have been disturbed during establishment and subsequent development and use of the installation, the potential remains—however slight—for currently buried, unknown archaeological resources to be uncovered during ground-disturbing activities. If such resources were uncovered during development at any of the proposed project locations, activities would be suspended until a qualified archaeologist could determine the importance of the resource(s).

Within the southeastern quadrant of the EWVRA, across the airfield from the 167 AW, two cemeteries and the remains of an old brick operations building are present. The Shepherd and Showalter Cemetery, also known as the Shepherd Family Mausoleum, is located to the east of the current EWVRA terminal. The mausoleum would require establishment of a 100-foot buffer zone during development of Taxiway E (FAA 2002). The other cemetery contains two graves, is located 500 feet south of the end of Runway 17/35, and is not within close proximity to proposed development. Brick ruins reported to be from an old operations building are approximately 200 feet north of the current EWVRA terminal building. Development of Taxiway E would require the removal of these ruins, which were determined not to be eligible for the NRHP by WVDCH. WVDCH suggested that homage should be paid to the old structure by incorporating the bricks into the new construction and/or into a commemorative plaque, designed to showcase the antiquated bricks (AMEC 2003a; FAA 2002; EWVRA 2002).

Adjacent to the northeast boundary of the EWVRA, a burial site is located on State of West Virginia property currently occupied by the West Virginia Army National Guard. This cemetery is not on EWVRAA property and would not be impacted through proposed development.

The WVDCH has not yet been contacted to allow its review and comment on the proposed aircraft conversion and construction program; however, interagency coordination will take place prior to implementation of the Proposed Action.

Other Considerations

The state owned Sleepy Creek wildlife management area is located 11 miles west of Martinsburg. Based on its remote location relative to the EWVRA, implementation of the Proposed Action would not impact the Sleepy Creek wildlife management area. No other state or Federal wildlife management areas are located in Berkeley County (West Virginia DNR 2003).

The expansion of U.S. Highway 11 and development of an intersection with the Main Gate access road would require use of property within an established WVDOT right-of-way and minimal vacant areas on residential property. Residential property is not publicly owned and not subject to Section 4(f); therefore, no impacts would occur.

4.16.2.2 Relocation of Runway 17/35 Alternative

If the Relocation of Runway 17/35 Alternative were selected, all construction, demolition, and renovation activities associated with the Proposed Action would be implemented; additionally, a new, reduced-size Runway 17/35 would be developed at the west end of Runway 08/26 to accommodate smaller civilian aircraft. Impacts to Section 4(f) as a result of the implementation of the Relocation of Runway 17/35 Alternative would be virtually identical to those previously described for the Proposed Action.

4.16.2.3 No-Action Alternative

If the No-Action Alternative were selected, the current 167 AW mission and associated C-130H aircraft would remain as described in *Section 3.16, Department of Transportation Act Section 4(f)*. Under this alternative, no Section 4(f) properties would be affected.

4.17 CUMULATIVE IMPACTS

Cumulative impacts on environmental resources result from incremental impacts of Proposed Actions when combined with other past, present, and reasonably foreseeable future projects in an affected area. Cumulative impacts can result from minor, but collectively substantial, actions undertaken over a period of time by various agencies (Federal, state, or local) or persons. In accordance with NEPA, a discussion of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the near future is required.

Construction and expansion is planned at EWVRA to enhance private airport operations, including development of Taxiway E (167 AW/West Virginia ANG 2001c). However, no proposed activities would take place within the current West Virginia ANG boundary or within the proposed acquisition parcel. Ultimately, these planned projects would contribute to a further modernized airport facility, bringing the airport up to current safety and environmental standards. Further, these types of developments would be consistent with surrounding land use and would not result in environmental impacts. At present, no other substantial facility improvement or construction projects are known to be proposed at the 167 AW installation or at EWVRA.

Regionally, development of a residential area is currently underway and plots planned for further residential development have been identified immediately north of the 167 AW installation. Residential development in this area would be affected by implementation of the Proposed Action with regard to noise and associated land use incompatibilities. Further, there are no restrictions currently in place that would preclude establishment of incompatible development; therefore, the possibility of future residential development within the vicinity of EWVRA and associated areas used for flight operations exists.

4.18 SPECIAL PROCEDURES AND MITIGATION MEASURES

Impact evaluations conducted in the development of this EIS have determined that measurable environmental impacts would result through implementation of the Proposed Action. This determination is based on thorough review and analysis of existing resource information, the application of accepted modeling methodologies, and coordination with knowledgeable, responsible personnel from the 167 AW and relevant local, state, and Federal agencies.

Since implementation of the Proposed Action at the West Virginia ANG installation at EWVRA would require modifications to established RPZs and would result in measurable changes with regard to noise, land use, and safety, recommendations for special procedures are necessary to reduce the significance of impacts. The special procedures and mitigation measures culminate a cooperative effort between airport users, airport area businesses, the EWVRAA Board, Berkeley County Development Authority, WVDOT, and FAA.

Air Quality

Special Procedures

Construction-related vehicles and equipment would be driven to and stored at affected site during construction activities to reduce combustible engine emissions.

Standard dust minimization practices, such as regularly watering exposed soils, soil stockpiling, and soil stabilization would be implemented to reduce PM_{10} emissions.

If new NAAQS for ozone and $PM_{2.5}$ are formally adopted, it is expected that Berkeley County would be in non-attainment for these criteria pollutants. At that time, 167 AW would comply with rules set forth by amendments to the CAA. The 167 AW will continue to comply with rules set forth by the West Virginia SIP and 1990 Amendments to the CAA.

Noise

Mitigation Measures

The EWVRAA, in a cooperative effort with the community, as well as local, state and Federal agencies involved with the airport intends to develop a Noise Compatibility Land Use Plan pending funding. The Noise Compatibility Land Use Plan would establish a system for determining the exposure of people to noise, as well as a standardized noise compatibility planning program. Further, this plan would develop maps and documentation illustrating the effects of existing and future noise exposure levels on the areas surrounding the airport and to develop noise compatibility programs comprised of techniques to reduce potential noise impacts.

Inherent in the plan development process is participation by those most affected by aircraft noise: people who live and work in the impacted areas. The goals of the community-based program process can only be realized when communities work together to develop a noise compatibility plan. Participation by the local, state, and Federal agencies involved with airport and community planning is also desirable to the process. Because noise compatibility planning is a continuing process, this would require periodic updating to reflect changes in the community environment.

In anticipation of the arrival of C-5 aircraft, the EWVRAA intends to begin immediate coordination with local, state and Federal planning agencies to put mechanisms in place to ensure that land compatibility is a priority for city and county planners. Once the 167 AW has been fully operational with C-5 aircraft for a period of one-year, the EWVRAA would collect noise data to determine the number of residences impacted and to initiate appropriate mitigation pending available funding.

If Federal funds are not available through the FAA or Air Force, the State of West Virginia would seek to obtain such funding through the West Virginia legislature. The EWVRAA intends to initiate, regardless of funding mechanisms, a program to ensure mitigation for private property owners and confirmation of the airport's right to continue aircraft operations, pending available funding. Appropriate mitigation often includes acoustical treatment in exchange for avigation easements and is applied to existing incompatible structures in areas with high noise exposure. Such a program benefits both the property owner and the airport because the interior noise problem is alleviated, and at the same time, the airport has confirmed its right to continue aircraft operations over the area. Standard mitigation practices require compliance with interior noise levels recommended by HUD, Department of Defense (DoD) and FAA. Mitigation efforts would be based on those described in Table 1, Appendix A, of Federal Aviation Regulation Part 150 (see Table 3-5). Acoustical treatments would need to achieve a noise level reduction (NLR) of at least 25 dB and 30 dB. Normal residential construction can be expected to provide a NLR of 20 dB; thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. Residences within the 65 to 75 dB DNL would be eligible for acoustical treatment, while residences located within the 75+ dB would probably need to be relocated.

EWVRA intends to coordinate with local county resources and state and Federal agencies to develop a noise map showing areas projected to be exposed to 60-65 dB DNL and 65+ dB DNL. The map is intended to be provided to the Board of Realtors for distribution and posted to any available and existing website.

Special Procedures

Noise generation by construction activities would last only the duration of construction activities and would be reduced through the use of equipment sound mufflers. Also, construction activity would be restricted to normal working hours (i.e., Monday through Friday between 7:00 AM and 5:00 PM).

Land Use

Mitigation Measures

The current airport ordinance does not address incompatible land use issues regarding residential areas, specifically those relating to noise and RPZs. However, it is the intention of the County Commission of Berkeley County to amend the local code to include provisions to prevent future incompatible land uses surrounding EWVRA. The Berkeley County Development Authority's current land acquisition program would continue to attempt to purchase land adjacent to EWVRA and earmark this land for industrial purposes only.

The RPZs function is to enhance the protection of people and property on the ground. This is achieved through airport owner control on the ground. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ. While it is desirable to clear all objects from the RPZ, some uses are permitted; activities that do not attract wildlife, are outside the Runway Object Free Area, and do not interfere with navigational aids. Land use prohibited from the RPZ are residences and places of public assembly. Fuel storage facilities also should not be located in the RPZ. Relocation of the residences that are located within the current and proposed RPZs are the responsibility of the EWVRAA. Residences located within RPZs would be located through two separate actions. EWVRAA intends to request, through the FAA's Airport Improvement Plan (AIP) funding, to relocate those residences in the current RPZs. The additional three residences that are in the RPZs as a result of the Proposed Action would be relocated through alternative funding that would be identified through the cooperating effort of local, state and Federal agencies that work with the EWVRAA on noise mitigation issues pending available funding.

Geological Resources

Special Procedures

Soils rated poor in terms of suitability for construction development due to the depth to bedrock, slow permeability, sinkholes and high shrink-swell potential in the subsoil would be covered with fill material brought on site to render surface materials suitable for development; otherwise, modern engineering and construction practices would incorporate corrective measures to compensate for these soil types and enable facilities development.

Water Resources

Mitigation Measures

Mitigation measures required to minimize potential impacts to groundwater aquifers should blasting activities or rock coring be necessary would include blasting controls, pre-blast and/or post-blast inspections, effects monitoring and a blasting effects evaluation study by an expert.

Special Procedures

Some counties and urban areas may have local ordinances that require Best Management Practices (BMPs) during construction. BMPs are techniques used during construction to control stormwater runoff, sediment control, soil stabilization, as well as management decisions to prevent or reduce non-point source pollution. The selection of an appropriate BMP would depend greatly on local site conditions, such as land use, topography, slope, water table elevation, and geology. Usually a combination of BMPs are used to prevent as much soil erosion and sedimentation as possible during storm events. Construction site owners and developers are responsible to keep storm drains and other discharge points clear throughout the entire construction site, including perimeter areas where surface runoff exists the site.

Erosion minimization practices (e.g., sediment and silt fences) would be used during construction to reduce or eliminate water quality and sedimentation impacts.

Construction activities within close proximity to stream systems should use straw bales and/or filter fabric where appropriate to control sediment input to the stream system. The typical locations for this material is below construction activities where an adequate natural buffer does not exist that would help to prevent sediment input during normal spring runoff. These filters should normally be placed higher than the 50-year floodplain, to prevent them from washing out during high runoff events.

State water quality regulations require a stormwater permit on construction sites that would disturb more than 1 acre.

Transportation and Circulation

Special Procedures

The West Virginia Department of Transportation/Division of Highways has proposed installing left- and right-turn lanes (traffic signal if necessary) into the installation at the U.S. Highway 11 intersection to alleviate congestion and enhance safety.

Cultural Resources

Special Procedures

The Shepherd Family Mausoleum would require implementation of a 100-foot buffer zone during development of Taxiway E (FAA 2002).

During implementation of the Proposed Action, the potential remains—however slight—for currently buried, unknown archaeological resources to be uncovered during ground-disturbing activities. If such resources were uncovered during development at any of the proposed project locations, activities would be suspended until a qualified archaeologist could determine the significance of the resource(s).

Hazardous Materials and Waste

Special Procedures

The Contractor would notify the Contracting Officer, or designated representative, of any hazardous materials (as defined in 29 CFR 1910.120) to be used on the job and would have Material Safety Data Sheets (MSDS) for those materials available on the job. All such materials shall be labeled in accordance with Federal and state regulations.

If the total oil or oil products storage exceeds 1,320 gallons or if any single container exceeds a capacity of 660 gallons, the Operator/Contractor would prepare and submit a Spill Prevention Control and Countermeasures (SPCC) Plan. Such a plan would meet applicable USEPA requirements (40 CFR 112) including certification by a registered professional engineer. This plan would include notification of appropriate state and Federal officials, the Contracting Officer, and other appropriate agencies.

All petroleum products or other hazardous substances (as defined in 20 CFR 1910.120) would not be released on or into land, rivers, streams, and impoundments, or natural or manmade channels leading thereto. If equipment is required to work in or around water, protective devices as required by state and Federal Regulations would be on site. Servicing of all equipment would be done in areas approved by the Contracting Officer or their designated representative. The Operator/Contractor would dispose of waste oil, vehicle filters (drained of free flowing oil), and oily rags in accordance with applicable state and Federal regulations and such material would be transported off Government property in accordance with state and Federal regulations.

The Operator/Contractor shall immediately take action to notify the appropriate agencies (including the Contracting Officer, or designated representative), and to contain, and clean up, without expense to the Government, all petroleum products or other hazardous substances releases which are in the vicinity of the project and which are caused by the Contractor's employees, directly or indirectly, as a result of the construction operations. In the event the Government determines that additional resources beyond those of the Contractor's are required, the Contractor may be held

liable for all damages and costs of the additional labor, subsistence, equipment, supplies, and transportation deemed necessary by the Government for the containment and clean up of petroleum products or other hazardous substances releases caused by Contractor's employees or resulting from construction operations.

Safety

Mitigation Measures

The RPZs function is to enhance the protection of people and property on the ground. This is achieved through airport owner control on the ground. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ. While it is desirable to clear all objects from the RPZ, some uses are permitted; activities that do not attract wildlife, are outside the Runway Object Free Area, and do not interfere with navigational aids. Land use prohibited from the RPZ are residences and places of public assembly. Fuel storage facilities also should not be located in the RPZ. Relocation of the residences that are located within the current and proposed RPZs are the responsibility of the EWVRAA. Residences located within RPZs would be located through two separate actions. EWVRAA intends to request, through the FAA's Airport Improvement Plan (AIP) funding, to relocate those residences in the current RPZs. The additional three residences that are in the RPZs as a result of the Proposed Action would be relocated through alternative funding that would be identified through the cooperating effort of local, state and Federal agencies that work with the EWVRAA on noise mitigation issues pending available funding.

4.19 RELATIONSHIP BETWEEN SHORT-TERM USE OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

Short-term uses of the environment are considered those that occur over a period of less than 5 years. Conversely, long-term uses of the environment include those that occur over a period of more than 5 years. Long-term impacts are directly related to the short-term usage of the land. However, impacts associated with the proposed construction and subsequent conversion from C-130H aircraft to C-5 aircraft are short-term in nature and would not be expected to effect long-term productivity of the environment.

Use by the 167 AW of new land at the airport would be accomplished by a land acquisition through a lease agreement that would change current civilian-controlled airport land areas to federally controlled lands. The relative changes in the total land areas involved would have a negligible impact on both short-term use and long-term productivity of the environment.

4.20 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible and irretrievable resource commitments are related to the use of non-renewable resources and the effects that the use of these resources have on future generations. An irreversible resource commitment results from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. The use of a resource that cannot be replaced is termed an irretrievable resource commitment.

The primary commitment of resources would be associated with development of proposed facilities necessary to support the C-5 aircraft to be maintained and operated by the 167 AW, including materials used to build the aircraft hangar and the runway extensions. Varying quantities of gravel, concrete, and other construction materials would be consumed, as well as fuels and electricity to power construction equipment. Although these materials are considered irretrievable, the relative amounts of the resources used would be negligible.

Additionally, fuel resources associated with the proposed conversion and subsequent operations and mission change would be irretrievable. The C-5 aircraft consumes more fuel than the C-130H aircraft; however, with implementation of the proposed conversion, the 167 AW would operate the C-5 aircraft at a rate equivalent to 8.2 percent of the current rate of C-130H operations (i.e., a reduction in average daily operations from 23 to 2). Further, 167 AW C-130H aircraft operations currently originate at EWVRA and require the aircraft to be adequately fueled to complete an entire operation. C-5 aircraft would be fueled to accommodate an empty load at the EWVRA and then fly to a loading destination. Once loaded, the C-5 aircraft would be fueled to capacity prior to completing the mission. The reduced number of operations and reduced local fueling requirements would result in a small increase in fuel resources necessary to support the conversion.

4.21 SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED

Detailed information on environmental effects anticipated to result from implementation of the Proposed Action has been presented previously in this section for each resource area, as applicable. However, the primary issue associated with this proposal is noise from aircraft operations, and noise impacts cannot be avoided under the Proposed Action. The runway extension, and to some degree the construction of new buildings and hangars would also result in some unavoidable loss of vegetation and habitat. Ground disturbance during construction may involve potential short-term impacts to surface water resources; however, such impacts can be mitigated through standard best management procedures.

SECTION 5

REFERENCES

SECTION 5
REFERENCES

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SECTION 6

COORDINATION WITH OTHER GOVERNMENT AGENCIES, NON-GOVERNMENTAL ORGANIZATIONS, AND THE PUBLIC

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6.1 SCOPING

In scoping the Draft Environmental Impact Statement (DEIS), the National Guard Bureau (NGB) has actively solicited comments from a wide group of interested parties. The U.S. Department of the Air Force published a Notice of Intent (NOI) in the *Federal Register* (see 67 F.R. No. 202, p. 64354, October 18, 2002) announcing its intent to prepare a DEIS, as required under the National Environmental Policy Act (see Appendix A). In addition, subsequent newspaper advertisements, radio announcements, and written correspondence to identified interested parties announced two public scoping meetings that were held in 6 and 7 November, 2002, in Martinsburg, West Virginia.

To further facilitate the coordination and scoping process from intergovernmental points-of-contact, the Air National Guard (ANG) developed an Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) list and subsequently contacted those parties. This list is presented in Appendix C. Concurrently, coordination with Federal and state agencies was also initiated.

All comments received during the scoping process associated with this EIS were considered in the preparation of the document. Such comments, as they relate to the proposal, have helped to improve the EIS process and have become a part of the administrative record for the proposal.

As a result of the scoping process and agency consultation activities, the NGB developed its final coordination/mailing list of potentially interested parties to be contacted concerning distribution of the DEIS. The list shown in Appendix B represents the initial coordination list for the DEIS.

In addition to those receiving the DEIS through the initial direct mailing, anyone else desiring a copy of the DEIS, or wishing to comment on the document, should direct their correspondence to the address provided on the cover sheet (page iii) of this document. All information received during the comment period will be considered during the preparation of the Final EIS (FEIS).

6.2 PUBLIC COMMENT PERIOD ON THE DRAFT EIS

The Council on Environmental Quality provides guidelines for the preparation of EISs, and the review of EISs by the public and governmental agencies. These guidelines direct agencies to “allow not less than 45 days for comments on draft statements” (see Section 1506.10). The comment period for this draft officially opened with the Notice of Availability published in the *Federal Register*. The initial mailing of the Draft EIS to

persons identified as potentially interested parties (see Appendix C) is intended to be accomplished prior to the publication of the Notice of Availability.

6.3 PUBLIC HEARINGS AND RESPONSES TO COMMENTS

A series of public hearings on the DEIS will be held during the comment period at the Army National Guard Armory in Martinsburg, West Virginia. The hearing location was selected to ensure the inclusion of potentially interested parties within the affected areas.

An additional appendix for the FEIS will display all public comments on the DEIS received at the public hearings or by mail and will provide the ANG responses.

Every comment on the DEIS received or postmarked before the close of the comment period will be incorporated into the FEIS. All comments that are received on the DEIS will be considered in the preparation of the FEIS. The public comment process provides the ANG with an opportunity to receive input from Federal and state regulatory agencies and the public concerning the DEIS. Public comments enable the ANG to improve the FEIS by clarifying existing text, adding new information or maps, and refining or expanding analyses in the document.

SECTION 7

GLOSSARY AND INDEX

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7.1 GLOSSARY

The following table presents definitions of technical terms used in this EIS.

Term	Definition
Above ground level	Altitude of an aircraft as measured above the ground over which it is being flown.
Above mean sea level	Altitude of an aircraft as measured above mean sea level.
Acquifers	Permeable layers of underground rock or sand that hold or transmit groundwater below the water table.
Airspace	The space above a nation and under its jurisdiction. Under Title 49, U.S. Code and Public Law 103-272, the U.S. government has exclusive jurisdiction over the nation's airspace. This jurisdiction extends from the surface to above 60,000 feet above mean sea level.
Ambient air quality	Atmospheric concentration of a specific compound (amount of pollutants in a specified volume of air) actually experienced at a particular location (this may be some distance from the source of the pollutant emissions).
Class A aircraft mishap	Mishap of an aircraft that results in loss of life or permanent total disability, a total cost in excess of $1 million, destruction of an aircraft, or damage to an aircraft beyond economical repair.
Class B aircraft mishap	Mishap of an aircraft that does not result in fatalities but results in total costs from $200,000 to $1 million or in permanent or partial disability.
Class C aircraft mishap	Mishap that involves costs of $10,000 to $200,000 or the loss of worker productivity for more than 8 hours.
Cooperating agency	Any federal agency other than a lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major federal action significantly affecting the quality of the human environment…A state or local agency of similar qualifications…may by agreement with the lead agency become a cooperating agency.
Criteria pollutants	Pollutants for which state and federal standards have been established.
de minimis	Emission thresholds that trigger requirements for a conformity analysis.
Environmental Impact Statement (EIS)	Evaluates the significance of potential environmental and human resource impacts associated with implementation of proposed actions and alternatives.
Federal Aviation Agency (FAA)	Responsible for the planning, management, and control of the structure and use of all airspace over the U.S.

Term	Definition
Federal Register	A legal newspaper published every business day by the National Archives and Records Administration. It contains federal agency regulations; proposed rules and notices; and Executive orders, proclamations and other Presidential documents. The Federal Register informs citizens of their rights and obligations for funding. National Archives and Records Administration Office of the Federal Register prepares the Federal Register for publication in partnership with the Government Printing Office (GPO), which distributes it in paper, on microfiche and on the World Wide Web.
Federal standards	National Ambient Air Quality Standards established by the Clean Air Act.
Ground truthing	Acquiring data about a study area from on-site gathering of data and analysis of aerial photography. Ground truthing data are considered to be the most accurate (truth) data available about an area of study.
Hazardous materials	Materials that are capable of posing an unreasonable risk to health, safety, and property.
Hazardous wastes	Substances with strong physical properties of ignitability, corrosivity, reactivity, or toxicity which may cause an increase in mortality, a serious irreversible illness, an incapacitating reversible illness, or pose a substantial threat to human health or the environment.
Instrument Flight Rules (IFR)	One of two flight rules established by the Federal Aviation Administration (FAA) that, along with specific regulations, airspace management actions, and air traffic control procedures, assists in managing airspace. Aircraft pilots are required to be trained and appropriately certified in instrument navigational procedures (also see Visual Flight Rules).
Military operations area (MOA)	Special use airspace designed to separate certain military activities from other IFR aircraft traffic.
Military training route (MTR)	Low-altitude corridor for navigation and instrument training at airspeeds in excess of 250 knots indicated airspeed. MTRs can also be flow for training at airspeeds less than 250 knots but their use in not mandatory at these airspeeds.
National Environmental Policy Act (NEPA)	Public Law 91-190, passed by Congress in 1969, established a national policy designed to encourage consideration of the influence of human activities on the natural environment. NEPA also established the Council on Environmental Quality. NEPA procedures require that environmental information be made available to the public before decisions are made.
Nonattainment areas	Areas that violate federal air quality standards.
Non-participating aircraft	Aircraft no involved in training events.
Notice of Availability	A publication that states the availability of an Environmental Impact Statement or Record of Decision and published in the Federal Register.
Notice of Intent	A publication that states intention s to prepare an Environmental Impact Statement and published in the Federal Register.
Pollutant emissions	Amounts (usually stated as a weight) of one or more specific compounds introduced into the atmosphere by a source or group of sources.

Term	Definition
Primary pollutants	Pollutants emitted directly into the atmosphere such as carbon monoxide (CO), sulfur dioxide (SO_2), lead particulates, and hydrogen sulfide.
Record of Decision (ROD)	The document prepared by the federal government that documents the reasoning behind the decisions.
Scoping	Inviting public and agency input to determine and define the significant issues to be addressed in the Environmental Impact Statement.
Sortie	Single military aircraft flight from takeoff through landing.
Sortie-operation	Use of one airspace unit by one aircraft (one sortie can have multiple sortie-operations); each time a single aircraft conducting a sortie flies in a different airspace unit (for example from an MTR to a MOA), one sortie-operation is counted for that unit.
Sound exposure level	Used to describe a single noise event, such as the noise heard from an overflying aircraft. Sound exposure level takes into account both the intensity and the duration of a noise event. In calculating sound exposure level, all of the acoustic energy that occurs during the event, which may have a duration of 20 to 30 seconds, is normalized into one second. Therefore, sound exposure levels normally reflect a sound level that is 0 to 15 decibels higher than the maximum sound level for that event.
Traditional Guardsman	A part-time Air National Guard personnel.
Unclassified areas	Areas that lack air quality monitoring data to demonstrate attainment or nonattainment status.
Visual Flight Rules (VFR)	One of two flight rules established by the Federal Aviation Administration (FAA) that, along with specific regulations, airspace management actions, and air traffic control procedures, assists in managing airspace. Aircraft flying Visual Flight Rules fly below 18,000 feet above mean sea level using visual references such as towns, highways, and railroads as means of navigation (also see Instrument Flight Rules).
Visual Route (VR)	One of two Military Training Routes, where visual flight rules apply and must be followed (also see Instrument Route).
Wetland	An area that is regularly wet or flooded and has a water table that stands at or above the land surface for at least part of the year, such as a bog, pond, fen, estuary, or marsh.

7.2 INDEX

Abbreviations, 1-10, 8-1
Acronyms, 1-10, 8-1
Air Quality, vii, 2-16, 3-1, 3-2, 3-10, 4-4, 4-5, 4-7, 4-58, 7-1, 7-2, 7-3

Aircraft, v, vi, vii, ix, 1-1, 1-2, 1-6, 1-9, 2-1, 2-3, 2-5, 2-6, 2-7, 2-8, 2-10, 2-12, 2-13, 2-15, 2-16, 2-18, 2-19, 2-21, 2-22, 2-23, 3-1, 3-2, 3-3, 3-5, 3-6, 3-7, 3-10, 3-12, 3-14, 3-15, 3-17, 3-18, 3-21, 3-23, 3-26, 3-36, 3-43, 3-49, 3-62, 3-63, 3-70, 3-71, 4-1, 4-2, 4-3, 4-4, 4-5, 4-7, 4-8, 4-9, 4-11, 4-15, 4-16, 4-17, 4-20, 4-21, 4-22, 4-23, 4-24, 4-27, 4-30, 4-31, 4-35, 4-37, 4-38, 4-40, 4-41, 4-42, 4-43, 4-44, 4-45, 4-46, 4-47, 4-49, 4-51, 4-53, 4-54, 4-56, 4-58, 4-59, 4-60, 4-62, 4-63, 4-64, 4-65, 7-1, 7-2, 7-3
Aircraft mishaps, 2-23, 3-70
Airfield, v, 1-6, 2-1, 2-3, 2-5, 2-7, 2-8, 2-13, 2-19, 2-20, 2-22, 2-23, 3-1, 3-2, 3-6, 3-7, 3-14, 3-15, 3-17, 3-23, 3-26, 3-51, 3-71, 3-76, 4-2, 4-3, 4-15, 4-16, 4-30, 4-40, 4-42, 4-55
Airport, vii, ix, 1-2, 1-9, 2-1, 2-16, 2-18, 2-20, 2-21, 3-1, 3-5, 3-15, 3-17, 3-18, 3-21, 3-23, 3-33, 3-36, 3-45, 3-51, 3-52, 3-71, 3-76, 4-3, 4-9, 4-15, 4-16, 4-25, 4-27, 4-28, 4-30, 4-37, 4-39, 4-40, 4-42, 4-55, 4-57, 4-58, 4-59, 4-63
Airspace, 2-5, 2-13, 2-15, 3-1, 3-2, 3-3, 3-5, 3-6, 4-1, 4-2, 4-3, 4-42, 7-1, 7-2, 7-3
Alternatives, v, 1-7, 1-10, 2-1, 2-12, 2-13, 3-75, 4-1, 7-1
Archaeological Resources, 2-21, 3-50, 4-40, 4-55, 4-61
Biological Resources, 3-1, 3-2, 3-39, 4-28
Bird-Aircraft Strike Hazards (BASH), 3-71, 4-49, 8-1
Contributors to the EIS, 3-20
Cultural Resources, 2-21, 3-1, 3-2, 3-50, 3-75, 4-39, 4-40, 4-41, 4-55
Cumulative Impacts, vi, 4-57
day-night average sound level (DNL), 2-19, 2-22, 3-14, 3-15, 3-18, 3-19, 4-9, 4-10, 4-11, 4-12, 4-13, 4-14, 4-16, 4-17, 4-44, 4-59, 8-2
Decibel (dB), 3-14, 4-16, 8-2
Eastern West Virginia Regional Airport (EWVRA), v, vii, viii, ix, 1-1, 1-2, 1-4, 1-6, 2-1, 2-3, 2-5, 2-6, 2-7, 2-8, 2-12, 2-13, 2-15, 2-16, 2-17, 2-18, 2-21, 2-23, 3-1, 3-2, 3-5, 3-6, 3-7, 3-10, 3-14, 3-17, 3-18, 3-21, 3-23, 3-24, 3-27, 3-28, 3-31, 3-40, 3-43, 3-45, 3-49, 3-51, 3-59, 3-71, 3-76, 3-77, 4-1, 4-2, 4-3, 4-8, 4-9, 4-11, 4-14, 4-15, 4-16, 4-17, 4-20, 4-23, 4-25, 4-27, 4-30, 4-35, 4-37, 4-40, 4-42, 4-49, 4-51, 4-54, 4-55, 4-56, 4-57, 4-58, 4-59, 4-60, 4-64, 5-1, 5-2, 5-3, 5-5, 8-2
Economic Benefit, 2-22, 4-42
Economy, 3-54, 4-42
Employment, 3-53, 3-54, 3-56, 4-42, 4-43
Endangered Species, 2-20, 3-40, 4-30
Environmental Baseline Survey (EBS), 2-6, 2-22, 8-2
Environmental Impact Statement (EIS), v, vi, 1-1, 1-7, 1-8, 1-9, 1-10, 2-1, 2-12, 2-15, 3-2, 3-34, 4-1, 4-16, 4-17, 4-58, 6-1, 7-1, 8-2, 9-1, 9-3
Environmental Impacts, v, 1-9, 2-15, 4-1, 4-57, 4-58
Environmental Justice, vi, 3-1, 3-59, 4-45
Federal Aviation Administration (FAA), 5-5
Federal Register, viii, 1-7, 1-8, 1-9, 2-17, 2-20, 4-30, 6-1, 7-2
Fuel, v, 2-8, 2-10, 3-8, 3-10, 3-12, 3-26, 3-62, 3-63, 3-64, 3-66, 3-68, 3-69, 4-32, 4-64
Geology, 4-60
Habitat, 2-20, 3-40, 3-43, 3-71, 4-28, 4-30, 4-31, 4-65
Housing, vi, 2-22, 3-15, 3-18, 3-53, 3-61, 4-39, 4-42
IICEP, 1-7, 1-9, 6-1, 8-3
Impacts on Environmental Resources, 4-57
Installation Restoration Program (IRP), x, 2-19, 2-22, 3-62, 3-66, 3-69, 4-47, 8-3

Instrument Flight Rules, 3-3, 8-3
Instrument Routes, 3-6
Jobs, 3-54, 3-56, 4-42
Knots, 3-6, 7-2
Landscape, 3-49
Local Economy, 4-42
Military Operations Area, 3-5
Military Training Route, 3-5, 8-3
Mishaps, 3-70, 3-71
Mitigation, 4-27, 4-58, 4-59, 4-60, 4-62, 5-9
National Ambient Air Quality Standards (NAAQS), vii, 2-16, 3-8, 3-9, 4-4, 8-3
National Environmental Policy Act (NEPA), v, 1-1, 1-6, 1-7, 1-8, 1-9, 3-1, 4-1, 4-57, 7-2, 8-3
National Register of Historic Places (NRHP), 3-50, 3-52, 3-75, 3-76, 3-77, 4-39, 4-40, 4-55
Noise, vi, vii, ix, 1-9, 2-15, 2-16, 2-18, 2-19, 2-22, 3-1, 3-14, 3-15, 3-17, 3-20, 3-23, 4-8, 4-9, 4-11, 4-15, 4-16, 4-17, 4-28, 4-30, 4-31, 4-42, 4-44, 4-54, 4-57, 4-58, 4-59, 4-65, 5-5, 7-3, 8-3
Population, 3-15, 3-18, 3-20, 3-21, 3-48, 3-53, 3-59, 3-61, 4-9, 4-11, 4-28, 4-32, 4-39, 4-42, 4-44
Preparers, 1-10
Proposed Action, vi, 1-1, 1-6, 1-7, 1-8, 1-9, 2-13, 3-1, 4-2, 4-5, 4-35, 7-1
Public Comment Period, 1-9
Public Hearings, 1-9, 6-2
Quality of Life, 3-27
References, 1-10, 3-3, 7-3
Regional Air Quality, 4-7
Runway protection zone (RPZ), 2-3, 2-19, 4-15, 4-16, 4-51, 8-4
Safety, vi, vii, x, 2-3, 2-16, 2-19, 2-22, 2-23, 3-1, 3-2, 3-8, 3-23, 3-24, 3-26, 3-59, 3-61, 3-62, 3-70, 3-71, 4-1, 4-15, 4-16, 4-32, 4-34, 4-35, 4-44, 4-49, 4-51, 4-57, 4-58, 4-61, 5-7, 7-2
Scoping, 1-1, 1-7, 1-8, 1-9, 2-13, 6-1
Socioeconomic Resources, 3-1, 4-42
Soil, viii, 2-15, 2-17, 3-9, 3-30, 3-31, 3-39, 3-62, 4-5, 4-7, 4-23, 4-24, 4-58, 4-60
Sorties, 3-2, 4-5
sound exposure levels (SEL), 4-8, 4-9, 4-31, 7-3, 8-4
State Historic Preservation Officer (SHPO), ix, 2-18, 8-4
Transportation, 2-13, 3-1, 3-8, 3-21, 3-45, 4-5, 4-32, 4-35, 4-46, 4-62
U.S. Air Force (USAF), 1-1, 1-2, 1-7, 2-1, 2-3, 2-12, 3-1, 3-14, 3-48, 3-70, 4-31, 4-33, 4-47, 4-49, 5-7, 8-5, 9-2
U.S. Environmental Protection Agency (USEPA), 3-8, 3-9, 3-10, 3-12, 3-14, 3-15, 3-39, 3-62, 4-4, 4-61, 5-8, 5-9, 8-5
Vegetation, 2-15, 3-39, 3-40, 3-49, 4-4, 4-11, 4-28, 4-31, 4-65
Visual Flight Rules, 3-3, 7-3, 8-5
Visual Routes, 3-6
Water Resources, viii, 2-17, 2-20, 3-1, 3-34, 3-52, 3-62, 4-25, 4-27, 4-65
West Virginia Air National Guard (West Virginia ANG), 1-2, 1-6, 1-7, 2-3, 2-5, 2-6, 2-7, 2-10, 2-15, 2-19, 2-20, 2-21, 2-22, 3-2, 3-7, 3-10, 3-12, 3-13, 3-17, 3-18, 3-23, 3-24, 3-27, 3-28, 3-31, 3-33, 3-38, 3-43, 3-45, 3-51, 3-52, 3-56, 3-58, 3-59, 3-62, 3-64, 3-66, 3-68, 3-69, 3-71, 3-77, 4-5, 4-6, 4-8, 4-9, 4-14, 4-15, 4-16, 4-18, 4-19, 4-20, 4-25, 4-30, 4-32, 4-33, 4-39, 4-44, 4-49, 4-55, 4-57, 4-58, 5-1, 5-2, 5-3, 5-4, 9-2
Wetland(s), viii, 2-3, 2-17, 2-20, 3-39, 3-40, 3-43, 4-25, 4-27, 4-28, 4-30
Wildlife, 3-43, 3-62, 3-71, 3-75, 3-76, 3-77, 4-15, 4-30, 4-31, 4-49, 4-54, 4-55, 4-56, 4-60, 4-62

SECTION 8

ACRONYMS AND ABBREVIATIONS

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ACRONYMS AND ABBREVIATIONS

167 AW	167th Airlift Wing
AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
AFFF	aqueous film forming foam
AFI	Air Force Instruction
AGE	aerospace ground equipment
AGL	above ground level
AGR	Active Guard Reserve
AIP	Airport Improvement Program
ANG	Air National Guard
ANG/CEVP	Air National Guard Environmental Division
ANGH	Air National Guard Handbook
ANGRC	Air National Guard Readiness Center
AST	aboveground storage tank
ATC	air traffic control
AVGAS	aviation gasoline
BASH	Bird-Aircraft Strike Hazard
BCE	base civil engineer
BCPSSD	Berkeley County Public Service Sewer Department
bgs	below ground surface
BMP	Best Management Practice
BOQ	Bachelor Officers Quarters
BRL	building restriction line
CAA	Clean Air Act
CAAA	Clean Air Act Amendment
CAP	Central Accumulation Point
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfh	cubic feet per hour
CFR	Code of Federal Regulations

CO	carbon monoxide
dB	decibel
dBA	A-weighted decibel
DD	Decision Document
DEIS	Draft Environmental Impact Statement
DEP	Department of Environmental Protection
DME	Distance Measuring Equipment
DNL	day-night average sound level
DNR	Division of Natural Resources
DoD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
DZ	drop zone
EA	Environmental Assessment
EBS	Environmental Baseline Survey
EDMS	Emissions & Dispersion Modeling System
EDR	Environmental Data Resources, Inc.
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EWVRA	Eastern West Virginia Regional Airport
EWVRAA	Eastern West Virginia Regional Airport Authority
°F	degree Fahrenheit
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FICUN	Federal Interagency Committee on Urban Noise
FL	Flight Level
FONSI	finding of no significant impact
FY	fiscal year
GCA	ground control approach
GOV	government-owned vehicles
gpd	gallons per day
gpm	gallons per minute

HAP	hazardous air pollutant
HIRL	High Intensity Runway Lights
HUD	U.S. Department of Housing and Urban Development
HZ	hertz
IFR	instrument flight rules
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
ILS	Instrument Landing System
INM	Integrated Noise Mode
IPA	Isopropyl alcohol
IR	instrument route
IRP	Installation Restoration Program
LA	low approach
LBP	lead-based paint
lf	linear foot
LOX	liquid oxygen
LQG	large quantity generator
LTO	landing and takeoff
mcf	million cubic feet
MEK	methyl ethyl ketone
MGD	million gallons per day
MIALS	Medium Intensity Approach Lighting System
MIRL	Medium Intensity Runway Lights
MOGAS	motor gasoline
MSDS	Material Safety Data Sheet
MSL	mean sea level
MTR	military training route
mw	megawatt
mwh	megawatt hour
NAAQS	National Ambient Air Quality Standards
NDI	Non-Destructive Inspection
NEPA	National Environmental Policy Act
NGB	National Guard Bureau

NLR	noise level reduction
NM	nautical mile
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
OFZ	object-free zone
OWS	oil/water separator
PA	Preliminary Assessment
PAI	Primary Aircraft Inventory
PAX	passenger terminal
PCB	polychlorinated biphenyl
POL	petroleum, oil, and lubricants
POV	privately owned vehicles
psi	pounds per square inch
PTE	potential-to-emit
QD	Quantity Distance
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
ROI	region of influence
RPZ	runway protection zone
SAP	Satellite Accumulation Point
SEL	sound exposure level
sf	square feet
SHPO	State Historic Preservation Officer
SI	Site Investigation
SIP	State Implementation Plan
SKE	Station-Keeping Equipment
SO_2	sulfur dioxide
SPCC	Spill Prevention Control and Countermeasures
SQG	small quantity generator
SR	Slow Route

sy	square yard
T&G	touch and go
TCE	Trichloroethylene
TPH	Total Petroleum Hydrocarbon
tpy	tons per year
USACOE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
U.S.C.	U.S. Code
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
UTA	unit training assembly
VA	Veteran's Administration
VASI	Visual Approach Slope Indicator
VFR	visual flight rules
VOC	Volatile Organic Compound
VOR	Very High Frequency Omnidirectional Range
VORTAC	Very High Frequency Omnidirectional Range/Tactical Air Navigation
VR	visual route
WVDCH	West Virginia Department of Culture and History
WVDOT	West Virginia Department of Transportation

SECTION 9

LIST OF PREPARERS

SECTION 9
LIST OF PREPARERS

This Draft Environmental Impact Statement (DEIS) was prepared under the supervision of the West Virginia Air National Guard (ANG) and the ANG Readiness Center. The organizations and individuals that contributed to the preparation of this document are listed below. Table 9-1 summarizes, for each contributor, the sections of the DEIS for which inputs were prepared:

9.1 PREPARERS OF THE DEIS

AMEC Earth and Environmental, Inc. (AMEC), Santa Barbara, California; Bethesda, Maryland; and Louisville, Kentucky

Jeffrey Weiler Senior Project Manager	M.S., Resource Economics/ Environmental Management B.A., Political Science Years of Experience: 30	EIS Program Manager, Overall Project Planning and Integration
Doug McFarling Senior Project Manager	B.A., Environmental Studies Years of Experience: 11	EIS Project Manager, Subcontractor Coordination, QA Review
Aaron Goldschmidt Program Manager	M.A., Geography B.A., Geography Years of Experience: 14	QA Review
Kent Adams Airspace Management Specialist	B.A., Geography Years of Experience: 20	Airspace and Airfield Operations and QA Review
Marianne Aydil, Ph.D. Air Quality Engineer	Ph.D. Chemical Engineering B.S. Chemical Engineering Years of Experience: 12	Air Quality
Anne Bader, M.A.,RPA Senior Archaeologist	Doctoral Studies, Anthropology M.A., Anthropology B.A., Anthropology Years of Experience: 20	Cultural Resources
Lisa Burns, AICP Senior Planner	B.A., Urban Studies Years of Experience: 20	Land Use and Noise Analyses
Brian Cook Senior Analyst	B.A., Biology Years of Experience: 4	Airspace and Airfield Operations, Biological Resources, Utilities and Infrastructure, Visual Resources, Environmental Justice and Safety
Janice Depew Production Manager	M.B.A., Business Administration B.A., Art Years of Experience: 29	Document Production and Technical Editing
Jan Jenneman Architectural/Landscape Historian	B.S., Landscape Architecture Years of Experience: 6	Cultural Resources

Joanne Lortie, AICP Project Manager	M.A., Economics B.A., Economics and Spanish Years of Experience: 15	Socioeconomics and QA Review
Hank McKelway, Ph.D., RPA Senior Archaeologist	Ph.D., Anthrogology M.A., Anthropology Years of Experience: 21	Cultural Resources
Mathia Scherer Historian	M.A., History B.A., History Years of Experience: 6	Cultural Resources
Deirdre Stites Graphic Artist	Years of Experience: 20	Graphic Arts
Chelsey Swanson Technical Analyst	B.A., Environmental Studies Years of Experience: 2	Air Quality, Transportation and Circulation, and Socioeconomics
Linn Zukor Senior Analyst	B.A., Environmental Studies and Geography Years of Experience: 6	Hazardous Materials and Wastes, Geological Resources, Water Resources, and QA Review

Wyle Laboratories, Arlington, Virginia

Geral Long Aviation Acoustics Specialist	M.S., Ecology B.S., Biology Years of Experience: 31	Wyle Project Manager, Noise Analysis
Xaviera Jessurun Aviation Acoustics Specialist	B.S., Aviation Management Years of Experience: 3	Acoustics Assessments, Aircraft Operations

9.2 REVIEWERS OF THE DEIS

This DEIS has been reviewed by the West Virginia ANG and the Environmental Protection Committee of the National Guard Bureau. Additionally, the following cooperating agencies reviewed the DEIS: Federal Aviation Administration, West Virginia Department of Transportation and the Eastern West Virginia Regional Airport Authority. The Environmental Protection Committee is responsible for monitoring, attaining, and maintaining environmental compliance for the Environmental Division of the ANG at Andrews Air Force Base, Maryland. Representatives to the Environmental Protection Committee include Engineering and Services, the Surgeon, Logistics, Operations, Plans, Judge Advocate, Public Affairs, Comptroller, Personnel, and Safety. The Environmental Protection Committee is organized under the authority of Air Force Instruction (AFI) 32-7061. The DEIS has also been reviewed by the USAF Security and Policy Office, the USAF Environmental Safety and Occupational Health Office, and by all cooperating agencies participating in this DEIS.

Table 9-1. Preparers of the EIS

Preparers, By Organization	Sections										Appendices			
	ES	1	2	3	4	5	6	7	8	9	A	B	C	D
AMEC														
Jeffrey Weiler	•	•	•			•	•			•				
Doug McFarling	•	•	•	•	•	•	•	•		•	•	•	•	•
Aaron Goldschmidt	•	•	•											
Kent Adams	•	•	•	•	•									
Marianne Aydil, Ph.D.				•	•									
Anne Bader, RPA				•	•									•
Lisa Burns, AICP				•	•									
Brian Cook	•	•	•	•	•	•	•	•		•	•	•		•
Janice Depew	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Jan Jennemann				•	•									•
Joanne Lortie, AICP	•	•	•	•	•									
Hank McKelway, Ph.D., RPA				•	•									•
Mathia Scherer				•	•									•
Deirdre Stites		•	•	•	•									
Chelsey Swanson				•	•									
Linn Zukor				•	•									
Wyle Laboratories														
Geral Long				•	•									
Xaviera Jessurun				•	•									