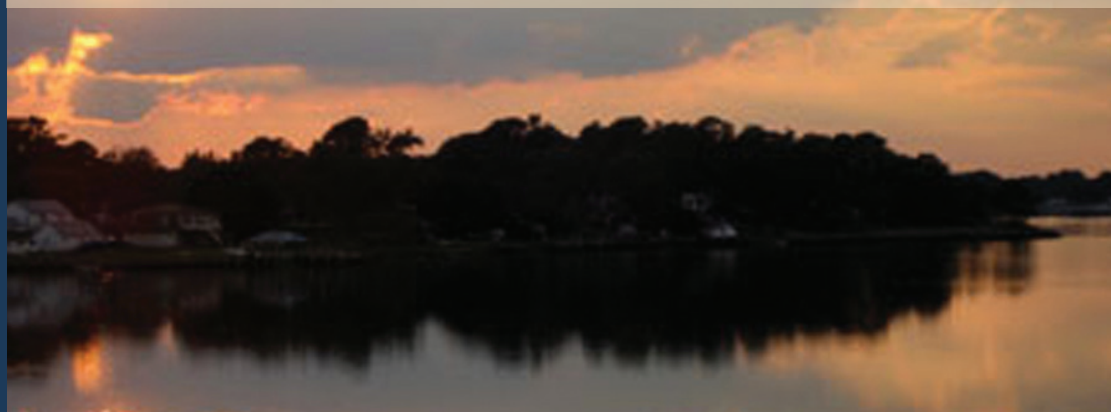
Hampton-Langley

Joint Land Use Study

August 2010



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HAMPTON-LANGLEY

JOINT LAND USE STUDY

City of Hampton
22 Lincoln Street
Hampton, Virginia 23669

prepared by:

Matrix Design Group, Inc.
Integrated Design Solutions

FINAL

August 2010

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POLICY COMMITTEE:

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- **Mary Bunting**
  City Manager, City of Hampton
- **Keith Cannady**
  Planning Services Manager, City of Hampton
- **Col Ken D'Alfonso**
  Commander, 633d, Mission Support Group, Langley AFB
- **Col Gene Kirkland**
  Commander, 633d Air Base Wing, Langley AFB
- **James McReynolds**
  County Administrator, York County
- **Col Matthew Molloy**
  Commander, 1st Fighter Wing, Langley AFB
- **Neil Morgan**
  City Manager, Newport News
- **Pete Peterson**
  Assistant City Manager, City of Hampton
- **Bruce Sturk**
  JLUS Program Coordinator
  Director of Federal Facilities Support, City of Hampton
- **LtCol Marc Vandeveer**
  Commander, 633d, Civil Engineering Squadron, Langley AFB
- **Randy Wheeler**
  City Manager, Poquoson

WORKING GROUP:

The Working Group played an active and important role in the development of the Hampton-Langley JLUS. The City of Hampton would like to thank the following individuals for their support and professional advice:

- **Cheryl Allen**
  NASA Langley Research Center
- **Earl Anderson, AICP**
  Planner, York County
- **Troy Anderson**
  Chief, Asset Optimization, Langley AFB
- **Ryan Baie**
  Community Planner, Langley AFB
- **Keith Cannady**
  Planning Services Manager, City of Hampton
- **John Carlock**
  Deputy Executive Director, Hampton Roads Planning District Commission
- **Joseph Carter**
  Principal Planner, City of Poquoson
- **Timothy Cross, AICP**
  Principal Planner, York County
- **Adanna Davis**
  Community Planner, Langley AFB
- **Christine Garrett**
  Chief, Asset Management Flight, Langley AFB
- **Greg Goetz**
  Land Development Services Manager, City of Hampton
- **Kathy James-Webb, AICP**
  Manager of Environmental Planning, City of Newport News
- **Mark Kramer**
  Director of Facilities, Thomas Nelson Community College
- **Frank Roberts**
  Hampton Roads Military and Federal Facilities Alliance

WORKING GROUP: (Continued)

- **Stan Scott**
  Virginia National Defense Industrial Authority
- **Steve Shapiro**
  Director Codes & Compliance, City of Hampton
- **Ken Spirito**
  Executive Director, Newport News-Williamsburg Airport, Peninsula Airport Commission
- **David Stromberg**
  City Planner, City of Hampton
- **Bruce Sturk**
  JLUS Program Coordinator
  Director of Federal Facilities Support, City of Hampton
- **Jay Sweat**
  JLUS Program Manager, Office of Economic Adjustment
- **Patrick Tremblay**
  Virginia National Defense Industrial Authority
- **Mike Yazkowsky**
  Business Development Manager, City of Hampton

JLUS CONSULTANTS:

Matrix Design Group, Inc.
Integrated Design Solutions

- **Michael Hrapla**
- **Celeste Werner, AICP**
- **Richard Rust, AICP**
- **Todd Tamburino**
- **Brenden Cox**
- **Cathy Lloyd**

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Acronyms

A

ABW ..... Air Base Wing
AC ..... Advisory Circular (FAA)
ACC ..... Air Combat Command
AFB ..... Air Force Base
AF DCGS..... Air Force Distributed Common Ground System
AFI ..... Air Force Instruction
AGL ..... Above Ground Level
AICUZ..... Air Installation Compatible Use Zone
AMC ..... Air Mobility Command
APHIS..... Animal Plant and Health Inspection Service
APOE..... aerial port of embarkation
APZ..... Accident Potential Zone
APZ I ..... Accident Potential Zone I
APZ II ..... Accident Potential Zone II
ASM ..... Airport Safety Management (overlay)
ATC..... Air Traffic Control

B

BASH ..... Bird / Wildlife Aircraft Strike Hazard
BRAC ..... Base Realignment and Closure

C

CEQ..... Council on Environmental Quality
CFR ..... Code of Federal Regulations
CIP ..... Capital Improvements Plan / Program
CZ ..... Clear Zone

D

dB ..... decibel
dBA .....A-Weighted Decibel
DGS..... Deployable Ground Station
DNL ..... Day-Night Average Sound Level
DOD..... Department of Defense
DOT ..... Department of Transportation

E

EA ..... environmental assessment
EIAP..... Environmental Impact Analysis Process (Air Force)
EIS ..... environmental impact statement
EOD ..... explosives ordnance disposal
EPA .....Environmental Protection Agency
ESA ..... Endangered Species Act
ESRI ..... Environmental Systems Research Institute

F

FAA..... Federal Aviation Administration
FADA ..... Federal Area Development Authority
FICUN ..... Federal Interagency Committee on Urban Noise
FONSI..... Finding of No Significant Impact
FS..... Fighter Squadron
FW..... Fighter Wing
FY ..... Fiscal Year

G

GCIC..... Global Cyberspace Integration Center
GIS..... Geographic Information System

H

HCP ..... Habitat Conservation Plan
HFADA ..... Hampton Federal Area Development Authority
HRBT ..... Hampton Roads Bridge-Tunnel
HRC ..... Hampton Roads Center
HRCNC ..... Hampton Roads Center North Campus
HRMFFA..... Hampton Roads Military and Federal Facilities Alliance
HRPCD..... Hampton Roads Planning District Commission
HRTA ..... Hampton Roads Transportation Authority
HRTPO ..... Hampton Roads Transportation Planning Organization

I

IBC ..... International Building Code
ICRMP ..... Integrated Cultural Resource Management Plan
IDA ..... International Dark-SkyAssociation
IFR.....Instrument Flight Rules
INM.....Integrated Noise Model
INRMP..... Integrated Natural Resource Management Plan
IOHMP ..... Integrated Osprey Hazard Management Program

J

JLUS ..... Joint Land Use Study

L

LaRC ..... Langley Research Center
LRTP ..... Long-Range Transportation Plan

M

MIA..... Military Influence Area
MIOD..... Military Influence Overlay District
MMMBT..... Monitor-Merrimac Memorial Bridge-Tunnel
MOA ..... Memorandum of Agreement
MOA ..... Military Operations Area
MOU ..... Memorandum of Understanding
MSL..... Mean Sea Level

N

NACA..... National Advisory Committee for Aeronautics
NACO..... National Association of Counties
NAF ..... Non-appropriated Fund
NAS ..... National Airspace System
NASA ..... National Aeronautics and Space Administration
NAS ..... Naval Air Station
NCCP..... Natural Community Conservation Plan
NEPA..... National Environmental Policy Act of 1969
NGOs..... Non-Governmental Organizations
NNWIA..... Newport News / Williamsburg International Airport
NOAA ..... National Oceanic and Atmospheric Administration
NS..... Norfolk Southern
NVD..... night vision device
NZs ..... Noise Zones

O

OEA ..... Office of Economic Adjustment
OMB..... US Office of Management and Budget

P

PC..... Policy Committee

R

RCS ..... Recovery Credit System
REPI ..... Readiness and Environmental Protection Initiative
ROD ..... Record of Decision
ROM ..... Rough Order of Magnitude

S

SAC..... Strategic Air Command
SIC..... Standard Industrial Classification
SLUCM..... Standard Land Use Coding Manual
SPI ..... Special Public Interest
SPI-HRC ..... Special Public Interest – Hampton Roads Center

T

TAC..... Tactical Air Command
TDR..... Transfer of Development Rights
TERPs ..... Terminal Instrument Procedures
TNCC..... Thomas Nelson Community College
TRACON..... Terminal Radar Approach Control

U

UFC..... Unified Facilities Criteria
US..... United States
USAF ..... US Air Force
USBC..... Uniform Statewide Building Code (Virginia)
USDA..... US Department of Agriculture
USFWS..... US Fish and Wildlife Service
USURA ..... US Urban Renewal Administration
UXO ..... unexploded ordinance

V

VDOT ..... Virginia Department of Transportation
VFR ..... Visual Flight Rules
VMAC ..... Virginia Military Advisory Council
VNDIA ..... Virginia National Defense Industrial Authority
VPDES ..... Virginia Pollutant Discharge Elimination System

W

WG..... Working Group
WS..... Wildlife Services Program

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Chapter One

Introduction

Military installations are critical to local economies, typically generating thousands of jobs and billions of dollars in economic activity and tax revenue annually. In past instances, incompatible development near military installations has been a factor in the curtailment of their training operations and reorganizing mission critical components to other installations. To protect military missions and the health of the economies and industries that rely on them, encroachment must be addressed through collaboration and joint planning between installations and local communities. This Joint Land Use Study (JLUS) attempts to mitigate future issues and improve coordination among the City of Hampton, City of Poquoson, York County, City of Newport News, and Langley Air Force Base (AFB).

The region surrounding Langley AFB, including the City of Hampton, is expected to experience economic and population growth in the future. As new and in-fill development moves closer to the Base, a coordinated effort is needed to ensure that the growth that occurs in the JLUS study area allows the installation to maintain its strategic role in the nation's defense while concurrently remaining a vital member of the local community and a major contributor to the regional economy.

The Hampton-Langley JLUS was undertaken as a proactive and preventative effort to ensure mutually beneficial growth and development occurs at Langley AFB, the City of Hampton, and other local jurisdictions in proximity to the installation. This study seeks to avoid conflicts previously experienced between the United States (US) military and local communities in Hampton Roads by engaging the military and local decision-makers early rather than later when problems have already taken root and have become a reality.

1.1. LANGLEY AFB — INSTALLATION IMPORTANCE

Strategic Importance

Langley AFB is the oldest continuously active air base in the United States. Its strategic importance is linked to the installation's 93-year history as an airfield and proving ground for the Army, Navy, and the National Advisory Committee for Aeronautics (NACA) aircraft. After the creation of the US Air Force (USAF), Langley was home to the headquarters of important Air Force commands, which, until 1992, included the Tactical Air Command (TAC). The strategic mission of the Base under the TAC involved organizing, training, equipping, and maintaining combat-ready forces capable of rapid deployment to meet the challenges of peacetime air sovereignty and wartime air defense. Langley AFB is now home to Headquarters, Air Combat Command (ACC) whose primary mission is to provide air combat forces in the war-fighting commands. It is responsible for fighters, bombers, reconnaissance, and battle-management aircraft, intercontinental ballistic missiles, and command control, communications, and intelligence systems. Additionally, Langley AFB is one of only four installations to support the F-22 Raptor. The 1st Fighter Wing (1 FW) is a key tenant and operates the F-22 and the F-15 Eagle. Figure 1-1 illustrates the regional setting of the JLUS.

Legend

Langley AFB
Jurisdictional Boundary
Town/City
Water Body

Major Roads
Interstate
Highway

0 2.5 5 10 Miles

Figure 1-1
Regional Location

Local Importance

Langley AFB is integral to the overall mission of the US Air Force and is also extremely important to the economy, security, and social fabric of the Hampton Roads region, as well as the State of Virginia. According to the Base, Langley AFB has indirectly created approximately 6,600 jobs, and in Fiscal Year (FY) 2008 had a total economic impact to the local community of over $1.2 billion. Of that figure, over 50 percent was attributed to the Gross Payroll of Personnel Employed ($652,750,689), over 30 percent was generated by the Total Annual Expenditures ($427,615,913), and the remaining impact was the product of the Estimated Annual Value of Jobs Created ($202,815,340).

1.2. LANGLEY AND LOCAL COMMUNITIES – WORKING TOGETHER

Overview

It is very important for military installations to be good stewards and to work closely and interact with their local communities. In FY08, almost 83 percent of the military personnel stationed at Langley AFB and their families resided off-Base in nearby communities such as the cities of Hampton, Poquoson, Newport News, and York County. The personnel and families are integral components of their host communities. Local jurisdictions and agencies provide a range of services for military personnel, from schools, libraries, and utilities to police and fire protection. Langley AFB hosts and encourages a variety of volunteer and interactive activities throughout the year as a way of reaching out to local communities. Military personnel also respond when critical services are needed in adjacent communities.

Cooperation in Land Use Planning

The City of Hampton and Langley AFB have a long and effective history of collaboration to address land use issues that may impact the important missions being carried out at the Base. Over the past 40+ years, the sophistication of land use tools, as well as the criteria for evaluating compatibility, have evolved through plan and regulation updating and the change in mission, equipment, and activities at the installation. The City of Hampton has continuously made good faith efforts to enact and amend land use policies and tools to respond to the needs of Langley AFB while still balancing the realities the city's development status. This JLUS will result in the augmentation of the local "land use planning toolbox" with "best practices" to be considered for implementation. The goal is to achieve the most practical land use regulation in specific areas affecting the mission of Langley AFB.

The long and productive working relationship between the City of Hampton and Langley AFB has enabled the City to develop land use policies and regulations that respond to the mutual interests of the both the Base and the surrounding community. The ongoing nature of changes and enhancements to Langley's mission and the regulatory tools that the City has available to protect it means that today's best approaches may need to be updated and improved to support the future.

A brief historical timeline of past efforts by the City of Hampton to regulate land use in and around Langley AFB are described below:

1960

Adopted of the Aircraft Approach Zone in the City's Master Zoning Ordinance. This zoning district represented the first such land use provision in the State of Virginia and one of the earliest local land use efforts in the country to regulate private land use around the flight zones of a Department of Defense (DOD) facility.

1963

With input from LAFB, amended height restrictions of "structures" in the Aircraft Approach Zone.

1975
Amended height restrictions of radio and / or television towers in the Aircraft Approach Zone (and other zones).

1978
Revised Aircraft Approach Zone to impose additional restrictions on use of land beneath Langley AFB flight paths.

Created Langley Impact District, a restricted industrial and commercial district wherein additional site plan review is required for construction; Base Civil Engineer stated "LAFB wholeheartedly approves of the proposed zoning districts…[and]…appreciates what the [C]ity is doing in this area to protect the interests of [Langley AFB] and neighboring property values."

Revised Aircraft Approach Zone pertaining to "allowable residential densities."

1979
Repealed Aircraft Approach Zone and created Special Public Interest (SPI)-Aircraft Approach Zone. This new district represented updated land use regulations that more accurately reflect Langley AFB operations and standards.

1981
Revised purpose, limits, and height standards of the SPI-Aircraft Approach Zone.

1986
Entered into a memorandum of agreement (MOA) with Langley AFB to share the cost of relocating the Magruder Boulevard Landfill.

1992
Adopted more comprehensive land use regulations through the M-4 and M-5 zoning districts. Provisions of these new districts were crafted in cooperation with Langley AFB staff.

1992
Created the Noise Contour District of the Zoning Ordinance to reflect noise contours based upon the current Langley flying mission. Noise contours were provided by Langley AFB.

1993-2000
Served as a facilitator with Langley AFB and Thomas Nelson Community College to achieve General Assembly approval of a Williamsburg / James City County satellite campus to relieve enrollment pressure, reducing the need for further expansion at the Hampton Campus.

1995
Included Langley AFB staff on the committee developing the North King Street Corridor Study. The Base endorsed the final study.

1999
Collaborated with the Base to minimize potential bird hazard arising from the proposed storm water management basin to be located on the Peninsula Workforce Development Center site.

2007
Invited Langley AFB to staff serve on the planning committee for the update to the North King Street Master Plan.

1.3. A GROWING REGION

The Hampton-Langley JLUS study area has experienced steady population growth, primarily due to consistent development of its diverse industrial and commercial economic base, as well as military growth. The population of the JLUS participating jurisdictions has increased 28 percent between 1980 and 2008, resulting in extensive residential, commercial, and industrial growth. Population growth of these jurisdictions is projected to continue with the expectation that the area's robust and diverse economy will attract over 74,000 additional residents between 2008 and 2034, creating a total population of approximately 473,000 residents. This figure is about 23 percent of the Hampton Roads 2034 regional projected population of 2,080,600 residents.

1.4. WHY PREPARE A JOINT LAND USE STUDY?

In general, the activities or actions of one entity have the potential to negatively impact another, which can result in conflicts. As communities develop and expand in response to growth and market demands, land use decisions can push urban development closer to military installations and operational areas. The result is likely to create land use and other compatibility issues, often referred to as encroachment. This condition can have negative impacts on community safety, economic development, and sustainability of military activities and readiness.

> *What Is a Compatibility Issue?*
>
> ***Chapter 3 lists 24 factors commonly used to categorize compatibility issues. As shown in Chapter 3, compatibility issues can cover a wide range of concerns. Some issues discussed in this JLUS include:***
>
> - ***The impacts of military aircraft noise on nearby communities.***
> - ***The need to ensure land uses in Langley's safety zones are safe and compatible with military aircraft operations.***

This threat to military readiness activities is currently one of the military's greatest concerns.

Collaboration and joint planning between the military and local communities should occur to protect the military mission and the health of the economies and industries in surrounding communities before land use compatibility becomes an issue. Recognizing the symbiotic relationship between installations and their host communities, the DOD, Office of Economic Adjustment (OEA) implemented the Joint Land Use Study program in an effort to mitigate land and air conflicts and to build better relationships among all parties. This program endeavors to preserve the sustainability of local communities while protecting current and future operational missions at Langley AFB. The balancing of community and military needs and desires provides opportunities for growth, fostering a mutually beneficial relationship for all entities.

1.5. WHAT IS A JOINT LAND USE STUDY?

A JLUS is a collaborative planning effort involving local communities, federal officials, residents, business owners, and the military to identify compatible land uses and growth management guidelines near active military installations, such as Langley AFB. The program establishes a mechanism for Langley AFB and local jurisdictions to act as a team to prevent incompatible land uses. An implemented JLUS serves to protect the residents' quality of life, the property owners' rights, and the current and future mission of the installation. Although primarily funded by the DOD-OEA, a JLUS is produced by and for local communities. The primary objectives of the OEA JLUS program are as follows:

Community

- Protect the health, safety, and welfare of residents and maintain quality of life;
- Manage development in the vicinity of military installations that would interfere with the continued operations of these facilities;
- Provide for sustainable growth in an economically, environmentally, and socially sustainable manner; and
- Maintain the economic vitality of the community.

Military

- Promote the health, safety, and welfare of the military and civilian personnel living and working at or near the military installation;
- Ensure the ability of the installation to achieve its mission, maintain military readiness, and support national defense objectives; and

- Preserve the ability of the installation to expand or adapt its mission to changing conditions.

1.6. HAMPTON-LANGLEY JLUS STUDY AREA

The Hampton-Langley JLUS study area is designed to address all lands near Langley AFB that have resources, activities, or land uses (existing or future) that may impact current or future military operations. In order to meet the stated criteria the Hampton-Langley JLUS study area encompasses the largest extent of land to be affected by the operations of Langley AFB and areas that exhibit significant potential for future development. The primary characteristics evaluated in determining the study area were compatibility issues associated with noise, safety zones (including Bird / Wildlife Aircraft Strike Hazard (BASH)), land use, vibration, and competition for scarce resources. Figure 1-2 illustrates the Hampton-Langley JLUS study area, which encompasses land in York County and the cities of Hampton, Poquoson and Newport News, on the southern end of the Virginia Peninsula.

1.7. JLUS GOAL

The goal of the Hampton-Langley JLUS is to protect the viability of current and future missions at Langley AFB while at the same time accommodating local community growth, sustaining the economic health of the region, and protecting public health and safety. To help meet this goal, three primary guiding principles were identified:

- **Understanding.** Convene community and Langley AFB representatives to study the issues in an open forum, taking into consideration both community and military viewpoints and needs. This includes public outreach and input.

- **Collaboration.** Encourage cooperative land use and resource planning between Langley AFB and surrounding communities so that future community growth and development is compatible with the training and operational missions on the installation while at the same time seeking ways to reduce operational impacts on adjacent lands.

- **Actions.** Provide a set of tools, activities, and procedures from which local jurisdictions, agencies, and the installation can select and then use to implement the recommendations developed during the JLUS process. The actions proposed include both operational measures to mitigate installation impacts as well as local government and agency approaches to reduce impacts on Langley AFB operations.

Legend

Jurisdictional Boundary	James City County	Langley AFB	River / Stream
City of Hampton	NASA	Other Military Installation	Major Road
City of Newport News	City of Norfolk	Runway	
City of Poquoson	York County	Water Body	
Isle of Wight County	Airport		

0 1.25 2.5 5 Miles

Figure 1-2
Study Area

1.8. PUBLIC OUTREACH

As highlighted above, the JLUS process was designed to create a community-based plan that builds consensus and obtains support from varied interests, including residents, property owners, local elected officials, business interests, the military, and state and federal agency representatives. To achieve the JLUS goal, the Hampton-Langley JLUS process incorporated a public outreach program that included a variety of opportunities for interested parties to contribute to the development of this study.

Stakeholders

Identifying stakeholders is a key component to any planning process. Informing or involving them early in the project is instrumental in the identification of stakeholder concerns and the development of plans to address them. Stakeholders include individuals, groups, organizations, and political entities interested in, affected by, or affecting the outcome of a decision or project. For the Hampton-Langley JLUS, identified stakeholders included, but were not limited to:

- County and city elected officials, representatives, and staff;
- Local, regional, and state planning regulatory and land management agencies;
- DOD officials (including OEA representatives) and military installation personnel;
- Educational and research institutions;
- Members of the public, property owners, and residents of the study area; and
- Other special interest groups.

Policy Committee and Working Group

The development of the Hampton-Langley JLUS was guided by two groups, the Joint Land Use Study Policy Committee (PC) and the Joint Land Use Study Working Group (WG). The PC was established at the beginning of the project to provide guidance and input on policy issues, provide overall direction to the process, and review study findings. The PC consisted of representatives designated by the cities of Hampton, Newport News, Poquoson, and representatives from York County, Langley AFB, and other stakeholder groups.

The WG was established to provide technical expertise to the PC and the project team (Matrix Design Group, Inc.). The WG consisted of county and city planners and military planners and technical specialists. This group identified issues to be addressed, provided feedback on report development, and evaluated implementation options for the PC.

Policy Committee

Meeting #1: June 10, 2009

Meeting #2: August 20, 2009

Meeting #3: September 13, 2010

Working Group

Meeting #1: June 10, 2009

Meeting #2: September 22, 2009

The PC and WG served as liaisons to their respective stakeholder groups. PC and WG members were charged with communicating committee activities and information to their organizations or constituencies and, subsequently, relaying their organization's comments and suggestions back to both committees for consideration. Tables 1-1, 1-2, and 1-3 identify the participants and responsibilities of the JLUS sponsors, PC, and WG, respectively. Meetings were held throughout the process to ensure the JLUS identified and appropriately addressed local issues. Objectives accomplished at each meeting are highlighted on the following pages.

Table 1-1. JLUS Sponsor Responsibilities and Participants

Participants	Responsibilities
▪ City of Hampton ▪ Department of Defense, Office of Economic Adjustment	▪ Coordination ▪ Accountability ▪ Grant Management ▪ Financial Contribution

Table 1-2. Policy Committee Responsibilities and Participants

Participants	Responsibilities
▪ City of Hampton ▪ City of Poquoson ▪ City of Newport News ▪ York County ▪ Langley AFB	▪ Policy Direction ▪ Study Oversight ▪ Monitoring ▪ Report Adoption

Table 1-3. Working Group Responsibilities and Participants

Participants	Responsibilities
▪ City of Hampton ▪ City of Poquoson ▪ City of Newport News ▪ York County ▪ Department of Defense, Office of Economic Adjustment ▪ Virginia National Defense Industrial Authority ▪ Langley AFB ▪ Thomas Nelson Community College ▪ Newport News-Williamsburg Airport ▪ Hampton Roads Military and Federal Facilities Alliance ▪ Hampton Roads Planning District Commission ▪ NASA Langley Research Center	▪ Identify Issues ▪ Provides Expertise to Address Technical Issues ▪ Evaluate and Recommend Implementation Options to the PC ▪ Provide Draft and Final Report Recommendations to the PC

PC Meetings

Meeting #1: June 10, 2009 – Discussed the purpose and scope of the JLUS and land use compatibility issues. Conducted jointly with the WG, this meeting educated committee members on the JLUS process and identified initial compatibility concerns.

Meeting #2: August 20, 2009 – Provided an overview of the Hampton-Langley JLUS process and committee roles, reviewed the public input survey and the public outreach program, and discussed the project schedule. It involved identification of the compatibility issues to be addressed in the JLUS.

Meeting #3: September 13, 2010 – Reviewed inputs from the public comment period, which included from the July 2010 public meetings at Hampton, Poquoson / York County, and Newport News. The final JLUS draft approval process and final JLUS schedule were also discussed. Lastly, the topic of taking steps towards forming the JLUS Implementation Committee was addressed by the collective group.

WG Meetings

Meeting #1: June 10, 2009 – Discussed purpose and scope of the JLUS and land use compatibility issues. Conducted jointly with the PC, this meeting educated committee members on the JLUS process and identified initial compatibility concerns.

Meeting #2: September 22, 2009 – Discussed the compatibility issue categories identified for this JLUS.

Public Forums

In addition to the PC and WG meetings, a series of public forums were held throughout the development of the study. These forums provided an opportunity for the exchange of information with the surrounding community, assisted in identifying the issues to be addressed in the JLUS, and provided input on the strategies proposed. Each forum included a traditional presentation and oral comment session preceded by an informal, open house. These meetings included facilitated exercises providing a "hands on," interactive opportunity for stakeholders to participate in the development of the study.

- **Public Forum #1: September 22, 2009**
  This forum provided an overview of the Hampton-Langley JLUS process and engaged the community in the identification of issues to be addressed in the JLUS. It also provided an overview of the Langley AFB mission, defined the JLUS program and process, provided an opportunity for questions and answers concerning the program, and then gave an overview of compatibility issue types. This last item was used by attendees to describe the compatibility issues that should be addressed.

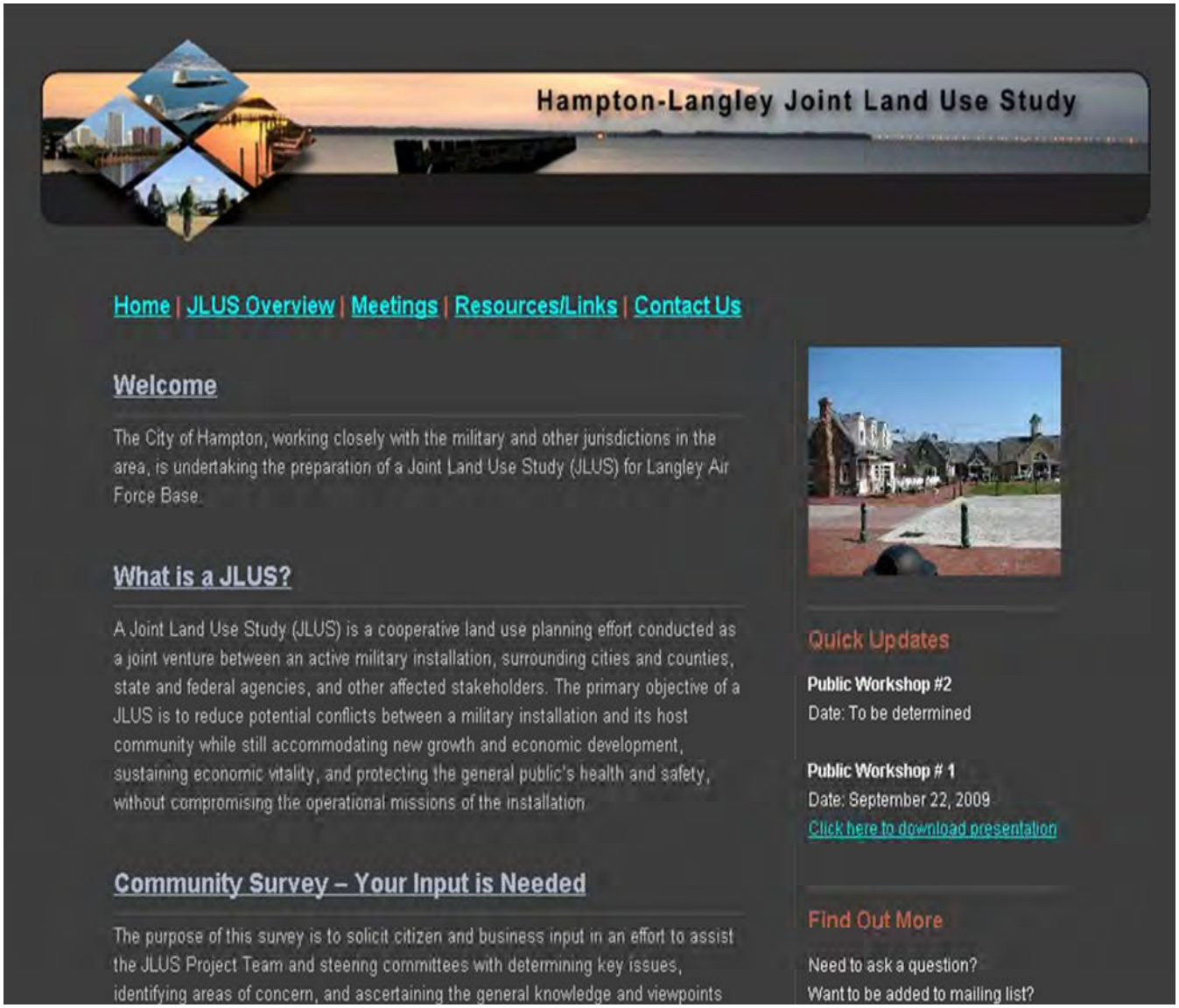
- **Public Forums #2, 3, and 4:**
  July 21-22, 2010

  These forums were held at the City of Hampton (#2), as well as at the cities of Newport News and Poquoson and York County (#3 and #4). They provided an overview of the proposed draft Hampton-Langley JLUS, including a discussion of the proposed compatibility strategies. Input from this forum, as well as other public comments during the review period for the draft, will be discussed by the JLUS PC and WG at future meetings.

Public Outreach Materials

Early in the JLUS process, a Fact Sheet was developed describing the JLUS program, objectives, methods for the public to provide input into the process, the Hampton-Langley JLUS proposed study area, results of a noise study, study area profile and trends analysis, and an initial assessment of the existing plans and programs applicable to this JLUS. This Fact Sheet was made available at all meetings for interested members of the public and may be found in the appendices along with the JLUS Compatibility Factors brochure and the JLUS Standard Compatibility Tools brochure.

In addition to the Fact Sheet, a project website was developed and maintained, providing stakeholders, the public, and media representatives with access to project information. This website (*www.hamptonlangleyjlus.com*) was maintained for the entire project to ensure information was easily accessible. Information contained on the website included: program points of contact, schedules, documents, maps, public meeting information, downloadable comment forms, and other links and contacts to facilitate public feedback.



1.9. JLUS IMPLEMENTATION

Once completed, the JLUS serves as a guide to future actions by local jurisdictions, Langley AFB, state and federal agencies, and other identified stakeholders in the study area. Some of the strategies contained in the JLUS will require additional efforts and public review to implement. For instance, a JLUS strategy to update a jurisdiction's zoning ordinance will require preparation of the new ordinance components, public review and comment, and a hearing by the local jurisdiction before it can be adopted and fully implemented. Langley AFB will use the JLUS to guide their interaction with local jurisdictions on future projects and to manage internal planning processes with a compatibility-based approach. It is through the future actions of the involved stakeholders that the JLUS strategies will become a reality.

The key to making the strategies presented in this JLUS a reality is the establishment of the JLUS Coordinating Committee that oversees the implementation of the JLUS after it is complete. Through this committee, local jurisdictions, Langley AFB, and other interested parties will continue their work together to establish procedures, recommend or refine specific actions for member agencies, and make adjustments to strategies over time to ensure the JLUS remains relevant to the planning issues of the study area.

1.10. JLUS ORGANIZATION

The following is a brief overview of the organization of the Hampton-Langley JLUS, including the contents of each chapter and materials included in the appendices.

Chapter 1, Introduction. Chapter 1 provides an introduction and context for the Hampton-Langley JLUS. This chapter describes the goals and objectives used to guide development of the JLUS, the entities involved in developing the JLUS, public outreach methods, and the organization of the document.

Chapter 2, Study Area Profile. In developing a JLUS, a comprehensive understanding of the installation and local jurisdictions within the study area is necessary. For the Hampton-Langley JLUS, this chapter provides an overview of the installation's history, a description of the primary activity areas on the Base, a look at the current mission and military units located at the Base, installation family housing assets, the economic impact of the Base on the region, and a discussion of future missions. This is followed by an overview of the region's growth potential and a profile of the county and cities within the study area.

Chapter 3, Compatibility Factors. Compatibility, in relationship to military readiness, can be defined as the balance or compromise between long-term community needs and interests and military needs and interests. The goal of compatibility planning is to promote an environment where both entities can coexist successfully.

To develop potential solutions, it is critical to understand the nature of existing and potential compatibility factors in the study area. In this chapter, the JLUS presents the compatibility factors identified for the Hampton-Langley JLUS. These factors were identified based on input from the PC and WG, members of the public, existing plans and technical reports, and evaluation by the project team.

Chapter 4, Existing Plans and Programs. This chapter provides an overview of currently available and relevant plans, programs, and studies used to address compatibility issues in the study area. This includes technical studies, such as the current Langley AFB Air Installation Compatible Use Zone (AICUZ) Study, as well as local comprehensive plans and zoning ordinances.

Chapter 5, Recommendations. The final chapter of the JLUS organizes a specific course of action that has been developed cooperatively with representatives from local jurisdictions,

Langley AFB, state and federal agencies, local organizations, and interested individuals and landowners. The result of a collaborative planning process, the recommendations in this chapter represent a true consensus plan: a realistic, coordinated approach to compatibility planning developed with the support of the stakeholders involved.

Appendices. The main JLUS document is supported by the following key reference documents, which are available electronically from the City of Hampton (on the JLUS website).

The appendices for this document are available electronically at: www.hamptonlangleyjlus.com

A. Hampton-Langley JLUS Fact Sheet

B. Langley Compatibility Factors Brochure

C. Langley Compatibility Tools Brochure

D. Langley Air Installation Compatible Use Zone (AICUZ) Study (2007), Volume I

E. Langley AFB Bird / Aircraft Strike Hazard (BASH) Plan Fact Sheet

F. Federal Aviation Administration (FAA) Regulations, Part 77 Objects Affecting Navigable Airspace

G. Virginia Real Estate Disclosure (Code of Virginia, Section 55 519.1 and August 2008 Disclosure Form)

H. Pima County Noise Level Reduction Measures Example

I. US Navy Study *Guidelines for Sound Insulation of Residences Exposed to Aircraft Operations* (2006)

J. City of Hampton – *Hampton Community Plan*

K. City of Newport News – *Framework for the Future 2030*

L. City of Poquoson – *Comprehensive Plan 2008-2028*

M. York County – *Charting the Course 2025*

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Chapter Two

Study Area Profile

This chapter provides important information about the military and civilian entities within the Hampton-Langley Joint Land Use Study (JLUS) study area. The following presents an overview of the history and current operations at Langley Air Force Base (AFB). Profiles and analyses of development trends and growth potential in the jurisdictions within the Hampton-Langley JLUS study area are also provided.

Identifying and describing the activities performed on the military installation provides valuable insight into the importance of Langley AFB as a national strategic asset. This information will enable stakeholders to make informed decisions about the future development and economic growth of their communities adjacent and proximate to the base, which ultimately impacts its continued existence and future role. It also provides the military with a baseline understanding of the types of activities occurring outside the installation when considering future missions and operations.

2.1. LANGLEY AFB

History

Langley Air Force Base, Virginia, is among the oldest continuously active air bases in the United States (US). The history of Langley AFB parallels the history of military aviation in the United States, first as an element of the Army and then as a separate military department. In December 1916, the land that became Langley Field was the first property ever purchased by the US for aviation purposes. The War Department bought the site for the Army's young air "arm" to build an Aeronautical Experimental Station and Proving Ground, an airfield for aeronautical research, experiments, and test flights. An air base for national defense purposes was not conceived in the early years of aviation. In 1916, the National Advisory Committee for Aeronautics (NACA), predecessor to the National Aeronautics and Space Administration (NASA), established the need for a joint airfield and proving ground for Army, Navy, and NACA aircraft. NACA determined that the site must be near water for over-water flying, exhibit minimal slope and contain minimal vegetation for expansion and to accommodate landing and take-off operations of aircraft, and be located near an Army post. The NACA began construction of its first aeronautical laboratory at Langley Field in 1917. It was the federal government's first and only civilian aeronautical laboratory in the 1920s and 1930s. The advent of World War I altered the Army's plans for Langley Field, and it became an air station with coastal defense responsibilities. The years between the two world wars are considered the "Golden Age" of aviation, characterized by rapid advances in technology. The Base was also the first site of a school for the training of airmen in the doctrine of aerial combat; ultimately, this school was moved to Maxwell AFB in 1931.

A V-173 'Flying Pancake' in Langley NACA Wind Tunnel circa 1941

Langley AFB has historically functioned as a headquarters, first for the Army and later for the Air Force major command, responsible for fighter aircraft. In 1935, the General Headquarters, Air Force was established at Langley AFB, in recognition that an "air force" was a combat force in its own right, rather than just a supporting organization to Army units. Just prior to the creation of the Department of Defense (DOD) in 1947 and the establishment of the Air Force, Langley AFB became home to Tactical Air Command (TAC). The arrival of TAC and jet aircraft marked the beginning of a new era in the history of the field, and in January 1948, Langley Field officially became Langley Air Force Base. During this period, the Air Force realigned its roles with fighter and pursuit aircraft organized within TAC and long-range strategic bombers as components of Strategic Air Command (SAC). In 1992, the Air Force again realigned and merged TAC and SAC into Air Combat Command (ACC).

Over its history, units stationed at Langley AFB have been tapped to assist in virtually all of the nation's military engagements. The aircraft types assigned to the Base have paralleled the history of military aviation and have included a wide variety of lighter-than-air aircraft (airships), as well as the more traditional heavier-than-air aircraft.

Units

Langley AFB is home to Headquarters, Air Combat Command and the newly established 633d Air Base Wing (ABW), which serves as the Installation's host organization. One of ACC's most distinguished flying units, the 1st Fighter Wing, also calls Langley AFB home. Figure 2-1 illustrates Langley's organizational structure.

Langley AFB Welcome Sign

The Base is host to a number of associate units that provide direct command, control, communications, and intelligence support to ACC. These include the Global Cyberspace Integration Center (GCIC) and the Deployable Ground Station 1 (DGS-1). Langley AFB is also an aerial port of embarkation (APOE) for the rapid deployment of fighter aircraft, supporting forces, and units from neighboring military installations to meet worldwide mission requirements.

Headquarters, Air Combat Command

Air Combat Command is the primary force provider of combat airpower to America's warfighting commands. To support global implementation of national security strategy, ACC operates fighter, bomber, reconnaissance, battle-management, and electronic-combat aircraft. It also provides command, control, communications and intelligence systems, and conducts global information operations.

As a force provider, ACC organizes, trains, equips, and maintains combat-ready forces for rapid deployment and employment while ensuring strategic air defense forces are ready to meet the challenges of peacetime air sovereignty and wartime air defense. ACC numbered air forces provide the air component to US Central and Southern Commands with Headquarters ACC serving as the air component to US Northern and Joint Forces Commands. ACC also augments forces to US European, Pacific, and Strategic Commands.

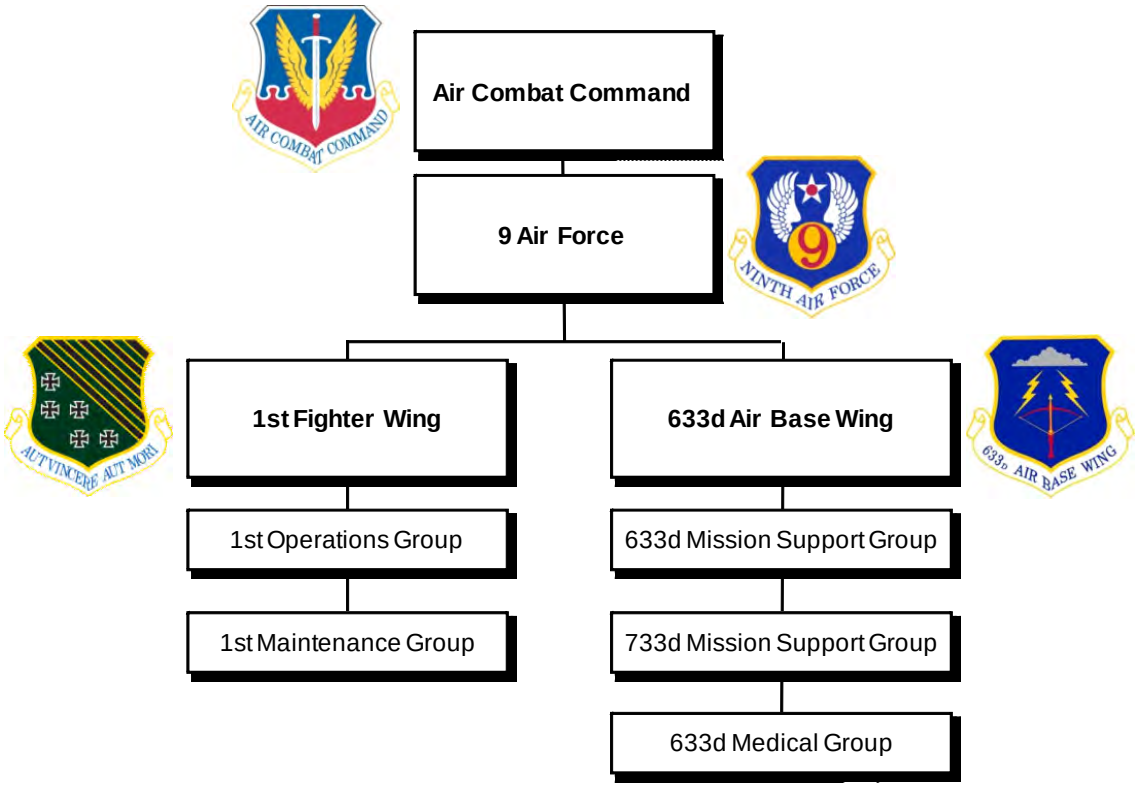


Figure 2-1. Langley AFB Organization Chart

A pair of F-22s approaching the Langley AFB runway

633d Air Base Wing

The 633d Air Base Wing (ABW) became Langley's host unit on January 7, 2010, as part of the Joint Basing effort. Joint Basing is a Base Realignment and Closure (BRAC)-directed, DOD-wide initiative where a lead service is directed to take over the management and provision of installation support for two or more bases. Under this effort, the 633 ABW will assume these roles for Fort Eustis and for Langley AFB.

1st Fighter Wing

The 1st Fighter Wing's mission is to "train, organize, and equip expeditionary Airmen; deploy, fight, and win; provide world class support to Team Langley." To accomplish their mission, the men and women of the 1 FW are organized into two groups: the Operations Group and the Maintenance Group.

192d Fighter Wing

The 192d Fighter Wing is an Air National Guard component of the Virginia National Guard, located in Sandston, Virginia, and at Langley AFB. As one of Virginia's National Guard components, the Wing augments the active-duty Air Force components in the performance of their missions and other joint forces operations. The 192 FW provides tactical air support using the F-22 Raptor as an associate unit of the 1 FW. The Wing has 124 officers and 734 enlisted members.

480th Intelligence, Surveillance, and Reconnaissance Wing (480 ISR WG)

The 480th Intelligence, Surveillance and Reconnaissance Wing is the Air Force leader in globally-networked ISR operations. The wing operates and maintains the Air Force Distributed Common Ground System (AF DCGS) also known as the "Sentinel" weapon system, conducting imagery, cryptologic, and measurement and signatures intelligence activities. Regionally-focused, globally-linked, AF DCGS is the cornerstone of successful Air Force, Joint, and Coalition ISR operations. More than 4,100 Airmen, civilians and contractors make up the 480th ISR Wing's work force. In addition, more than 700 Air Reserve Component members have volunteered to augment the wing's team as it engages in the Global War on Terrorism. Of the five geographically separated groups under the Wing's command, the 497th ISR Group is located at Langley AFB. The other groups are located in California, Hawaii, Germany, and South Korea.

National Aeronautics and Space Administration Langley Research Center (LaRC)

NASA's Langley Research Center was the initial home of the first astronauts, the Mercury 7. Now, the Center is working to design and test a new launch abort system for the next generation space capsules. Langley scientists study the atmosphere to improve life on Earth and to better understand the conditions planes and spacecraft fly through. LaRC engineers work on technologies to make civilian and military planes safer, quieter, and more efficient, while designing tomorrow's supersonic and hypersonic aircraft. Langley researchers analyze materials

X-48C being tested during the final use of NASA LaRC's Full Scale Wind Tunnel

and structures to help spacecraft withstand unforgiving extraterrestrial environments.

2.2. CURRENT MISSION — OPERATIONS

The primary mission performed at Langley AFB is that of the 1 FW. The 1 FW has three fighter squadrons (FS) assigned to Langley AFB, the 27 FS and 94 FS have F-22 Raptor fighters assigned to them, and the 71 FS operates the F-15C Eagle. Langley AFB is one of only four F-22 bases. The other installations are Holloman AFB, New Mexico; Elmendorf AFB, Alaska; and Hickam AFB, Hawaii. The 192 FW, an Air National Guard unit, augments the 1 FW by integrating its flight crews with the 27 FS and 94 FS. Active components and Air National Guard units fly side-by-side in 1 FW aircraft.

Air Operations

The F-22 Raptor is the Air Force's new fighter aircraft. Its combination of stealth, supercruise, maneuverability, and integrated avionics, coupled with improved supportability, represents an exponential leap in war-fighting capabilities. The Raptor performs both air-to-air and air-to-ground missions. The F-22 is designed to project air dominance rapidly and at great distances. The combination of sleek aerodynamic design and increased thrust allows the F-22 to cruise at supersonic airspeeds (greater than Mach 1.0) without using afterburner – a characteristic known as supercruise. This feature greatly expands the F-22's operating envelope in both speed and range over current fighters, which must use the fuel-consuming afterburner to operate at supersonic speeds. The sophisticated F-22 design, advanced flight controls, thrust vectoring, and high thrust-to-weight ratio provide the F-22 with the capability to outmaneuver all current and projected aircraft.

F-22 Raptor

Length: *62.08 ft*
Wingspan: *44.5 ft*
Speed: *Mach 2 class*
Ceiling: *Above 50,000 ft*
Role: *Air-to-air*
Air-to-ground
Range:
More than 1,859 miles w/ 2 x external fuel tanks

Height: *16.67 ft*
Crew: *1*
Armament:
1 x 20mm multibarrel internally mounted gun w/480 rounds of ammunition
Air-to-air Loadout
2 x AIM-9 Sidewinders
6 x AIM-120 AMRAAM
Air-to-ground Loadout
2 x 1,000 lb GBU-32 JDAM
2 x AIM-120 AMRAAM

The F-15C Eagle is an all-weather and extremely maneuverable tactical fighter designed to permit the Air Force to gain and maintain air supremacy over the battlefield. First developed in the 1970s, it has been modified extensively over the years to improve its target acquisition and navigational capabilities.

F-15C Eagle

Length: *63.8 ft*
Wingspan: *42.8 ft*
Speed: *1,875 mph (Mach 2+)*
Ceiling: *60,000 ft*
Role: *Air-to-air*
Range:
3,450 miles w/ 3 x external fuel tanks & conformal fuel tanks

Height: *18.5 ft*
Crew: *1*
Armament:
1 x 20mm multibarrel internally mounted gun w/940 rounds of ammunition
Air-to-air Loadout
AIM-7L/M Sparrows
AIM-9F/M Sidewinders
AIM-120 AMRAAM

In addition to the 1 FW, the Air National Guard has a detachment stationed at the Base performing air defense and surveillance of the airspace between Virginia and Texas. Aircraft are kept in an alert hangar at the west end of the Base, north of the runway and are prepared to scramble on very short notice should the need arise.

NASA has a small fleet of aircraft at its NASA LaRC hangar, also located on the west end of the Base. NASA operates these aircraft for aeronautical research.

The 633d Force Support Squadron (633 FSS) operates a morale, welfare, and recreation non-appropriated fund activity for flight instruction and aircraft rental. Commonly known as an Aero Club, its aircraft and facilities are available to its members. The Aero Club fleet consists of reciprocating, single- and twin-engine propeller driven aircraft. Membership is limited to patrons having an employment related link to the DOD, either as service members, retirees, or civilian employees.

2.3. FUTURE MISSION — OPERATIONS

Langley AFB has the capacity to support future flying and non-flying missions. Force structure changes at individual bases are decided at the Air Force level.

2.4 INSTALLATION SETTING

Langley AFB is located in the City of Hampton which is part of the region of southeastern Virginia known as Hampton Roads. The Base is located at an elevation of 11 feet above mean sea level (MSL) between two branches of the Back River with the City of Poquoson to the north, across the Back River (Northwest Branch). There are approximately 9.5 miles of shoreline adjacent to Langley's northern, eastern, and southern boundaries. According to Code of Federal Regulations, Title 33, Part 334, there is a restricted area along Langley's shoreline measuring 35 yards off of the mean high water mark (see Figure 2-2). This area is shown on National Oceanic and Atmospheric Administration (NOAA) navigation charts.

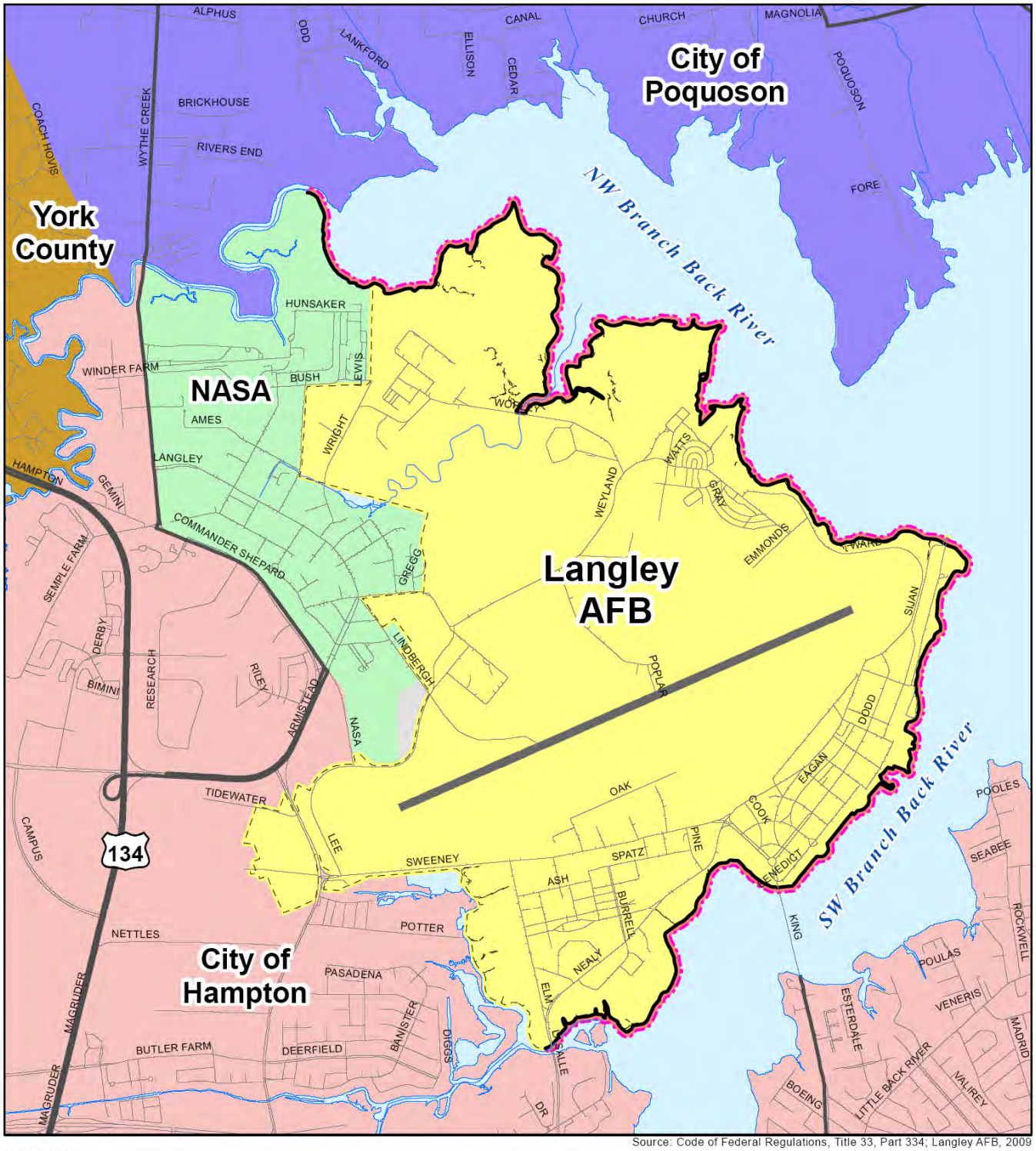
To the northwest of Hampton and the Base is York County; the City of Newport News abuts the western boundary of the City of Hampton. Across the Southwest Branch of the Back River lies the balance of the City of Hampton and further to the east is Chesapeake Bay.

Langley AFB has three major tracts of real estate: the main base in the City of Hampton, Bethel Manor housing area in York County (now known as The Landings at Langley), and Big Bethel Reservoir. The reservoir forms a boundary between York County and the cities of Hampton and Newport News. The Langley AFB main base is located between two tidal tributaries of Chesapeake Bay (the York River and the James River). The topography of the area is characterized as a coastal plain with minimal variation in terrain.

Aircraft Operations Areas

Langley AFB

The Langley AFB Main Base occupies approximately 2,883 acres, with a runway complex consisting of a single runway (08/26). Runway 08/26 is 10,000 feet long by 150 feet wide oriented along an east-west axis, with intersecting taxiways and ramp space to the south for taxiing and parking of 1 FW aircraft. Current noise contours from Langley's aircraft extend predominantly to the northeast and to the southwest off of the Installation's runway; however, the contours also extend to the north and south from the centerline of the runway, albeit not as far as from the runway ends. The day-night average A-weighted sound level (DNL) 65 decibel (dB) contour extends west from the center of the runway approximately 5.5 miles. To the east, the contour extends 7.5 miles from the center of the runway, which reflects the usage pattern favoring Runway 08. To the sides of the runway, the 65 dB contour extends southward approximately 1.5 miles; to the north, the 65 dB contour extends further north, approximately



Source: Code of Federal Regulations, Title 33, Part 334; Langley AFB, 2009

Legend

- Restricted Area (35 yards from shoreline)
- **Jurisdictional Boundary**
  - City of Hampton
  - City of Poquoson
  - NASA
  - York County
- Langley AFB
- Runway
- Water Body
- River / Stream
- State Highway
- Local

0 0.25 0.5 1 Miles

Figure 2-2
Langley AFB Restricted Waters

1.9 miles. The DNL metric is the average noise level over a 24-hour period with a 10-dB penalty added to aircraft flights that occur between 10:00 PM and 7:00 AM to account for their increased annoyance. A key noise metric is the 65 dB as it relates to land uses in the vicinity of airports. Usually no restrictions are recommended below this noise threshold. According to Air Force land use recommendations, residential land use should be located below DNL 65 dB whenever possible.

Another important aspect of air operations at Langley AFB is aircraft safety. The Air Force has identified accident potential zones (APZ) associated with the installation's aircraft operations. These safety zones are the Clear Zone (CZ), Accident Potential Zone I (APZ I), and Accident Potential Zone II (APZ II). The CZ for Langley's runway is 3,000 feet wide by 3,000 feet long. APZ I for this runway is 3,000 feet wide by 5,000 feet long, and APZ II is 3,000 feet wide by 7,000 feet long. The APZs extending north of the northeast end of the runway are primarily located over the Back River, while the APZs extending south of the southwest end of the runway include portions the City of Hampton. Additional details pertaining to Langley's aircraft noise and safety may be found in Chapter 3 of this JLUS report.

NASA LaRC's OV-10A

Additional ramp space for aircraft parking north of the runway, at the west and east ends, is used by the NASA LaRC and an Aero Club, respectively. NASA LaRC operates several varieties of aircraft: BE-200 King Air; Cessna 206; Cirrus SR-22; Lancair Columbia 300; OV-10A Bronco; and a UH-1H helicopter. North of the runway and east of the NASA LaRC hangar is an Alert Hangar for the Air National Guard.

The north portion of a former crosswind runway is now used as a taxiway and, occasionally, for aircraft parking. Since this runway is no longer active, there are no associated safety zones (i.e., CZ or APZs).

The airfield at Langley AFB lies within controlled airspace. The term controlled airspace refers to airspace within which aircraft separation (i.e., air traffic control [ATC]) is provided by the Federal Aviation Administration (FAA) or Air Force air traffic controllers. Separation of aircraft is achieved through a combination of a terminal radar approach control (TRACON) facility in Norfolk operated by the FAA and a control tower at Langley AFB operated by Air Force air traffic controllers. Closest to Langley AFB is a Class D airspace area, which extends outward from the airfield for approximately five miles and upward to an elevation of 2,500 feet MSL. Figure 2-3 shows the different classes of airspace in the National Airspace System.

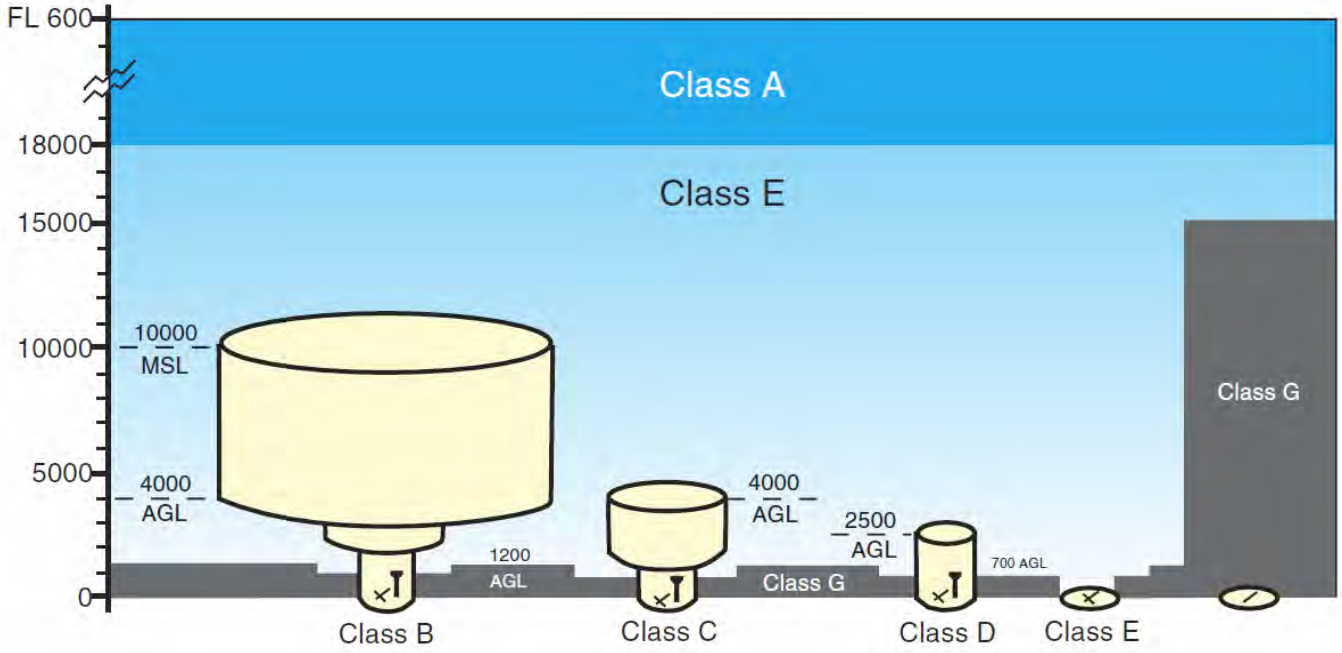


Figure 2-3. National Airspace System (NAS) Airspace Classes

2.5 INSTALLATION DEMOGRAPHICS

For Fiscal Year (FY) 2008, Langley AFB supported nearly 26,000 personnel. This number includes almost 11,000 Active Duty military, Air Force Reserve, and Air National Guard personnel and nearly 13,000 Active Duty military dependents. There were 2,331 civilians employed at Langley AFB, of which 619 people were Non-appropriated Fund (NAF), contractors, and private business. Table 2-1 provides a detailed listing of the Installation's FY08 demographics.

2.6 INSTALLATION ECONOMIC IMPACT

Langley AFB generates a significant economic impact on the economies of the surrounding jurisdictions. The Installation's Economic Impact Analysis for FY08 indicates that the Langley AFB had a financial impact of nearly $1.3 billion. Just over half of that figure was attributed to annual payroll to military and civilian personnel, while over one-third was in local expenditures (construction, services, materials, supplies, and equipment). Langley AFB estimated that 6,577 indirect jobs were created by the Installation and its activities, which equated to a value of nearly $203 million.

Figure 2-4 provides a comparison breakdown of Langley's economic impact.

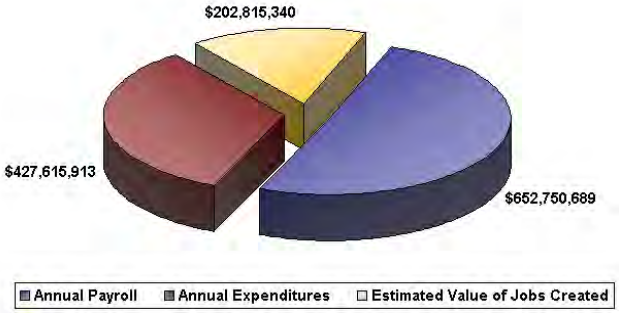


Figure 2-4. Economic Impact, Langley AFB (FY08)

Table 2-1. Population Distribution, Langley AFB (FY08)

Category	Population	Percentage
Appropriated Fund Military	**10,758**	**41%**
Active Duty	*9,867*	
Air National Guard/Air Force Reserve	*891*	
Active Duty Military Dependants	**12,846**	**50%**
Appropriated Fund Civilians	**1,712**	**7%**
General Schedule	*1,502*	
Federal Wage Board	*124*	
Other (Senior Executive, Senior Level, General Manager)	*86*	
Non-appropriated Fund, Contract Civilians, Private Business	**619**	**2%**
Civilian NAF	*350*	
Civilian Base Exchange	*185*	
Contract Civilians (not elsewhere included)	*52*	
Private Businesses On-Base	*32*	
Total Population	*25,935*	*100%*

Source: Langley AFB FY08 Economic Impact Analysis, September 30, 2009

2.7 MILITARY HOUSING

Langley AFB provides on-base housing for military families and unaccompanied personnel, as well as temporary lodging for visitors. There are 1,216 housing units for families. The Installation has 9 buildings with 889 beds for unaccompanied personnel. Of that number, 883 beds are for permanently assigned personnel, and 6 beds in one of the 9 buildings are for temporary / visiting personnel assigned to Langley AFB. According to the Langley Economic Impact Analysis for FY08, nearly 83 percent of Langley's military personnel and their dependents (19,538 people) lived off-base, while 4,066 people resided on-base.

In addition to housing for families and unaccompanied personnel, the Langley Inn offers 367 rooms with 561 beds for visitors and authorized guests. Table 2-2 summarizes these assets and the Installation's capacity to house families, military personnel, and visitors.

Housing and lodging in the local area will be sought to fill demand exceeding Langley's capacity. Family housing at Langley AFB was privatized in September 2007. The sole Langley AFB family housing area is The Landings at Langley (formerly known as Bethel Manor), located less than three miles northwest of the Installation's West Gate (see Figure 2-5). In addition to The Landings at Langley, there are 244 housing units on Langley AFB, which are historic buildings. The Installation is scheduled to maintain a family housing inventory of 1,431 units at end state in September 2014.

Additional dormitories and lodging facilities are planned for Langley AFB. A new 72-room dormitory will be completed in July 2010, and in February 2011, a new 210-room, 210-bed Visitors Quarters building will be added to the lodging inventory. One or more of the older lodging facilities will eventually be vacated, but the final details have not been finalized.

Table 2-2. Housing and Lodging at Langley AFB

	Units / Rooms / Buildings	Bed Spaces
Family Housing	1,216 units	N/A
Dormitories	9 buildings	889
Permanent Party	*8 buildings*	*883*
Temporary Duty	*1 building*	*6*
Lodging	367 rooms	561
Visiting Officers Quarters	*101 rooms*	*115*
Visiting Airman Quarters	*116 rooms*	*116*
Temporary Living Facilities	*150 rooms*	*330*
Total	18 buildings	2,900

Source: Ryan Baie, Planner, Langley AFB, September 9, 2009

2.8 COMMITTEES AND AGENCIES

Three committees or agencies have established working relationships with Langley AFB and jurisdictions within the Hampton-Langley JLUS study area. These entities can be important planning assets in developing and implementing joint land use recommendations.

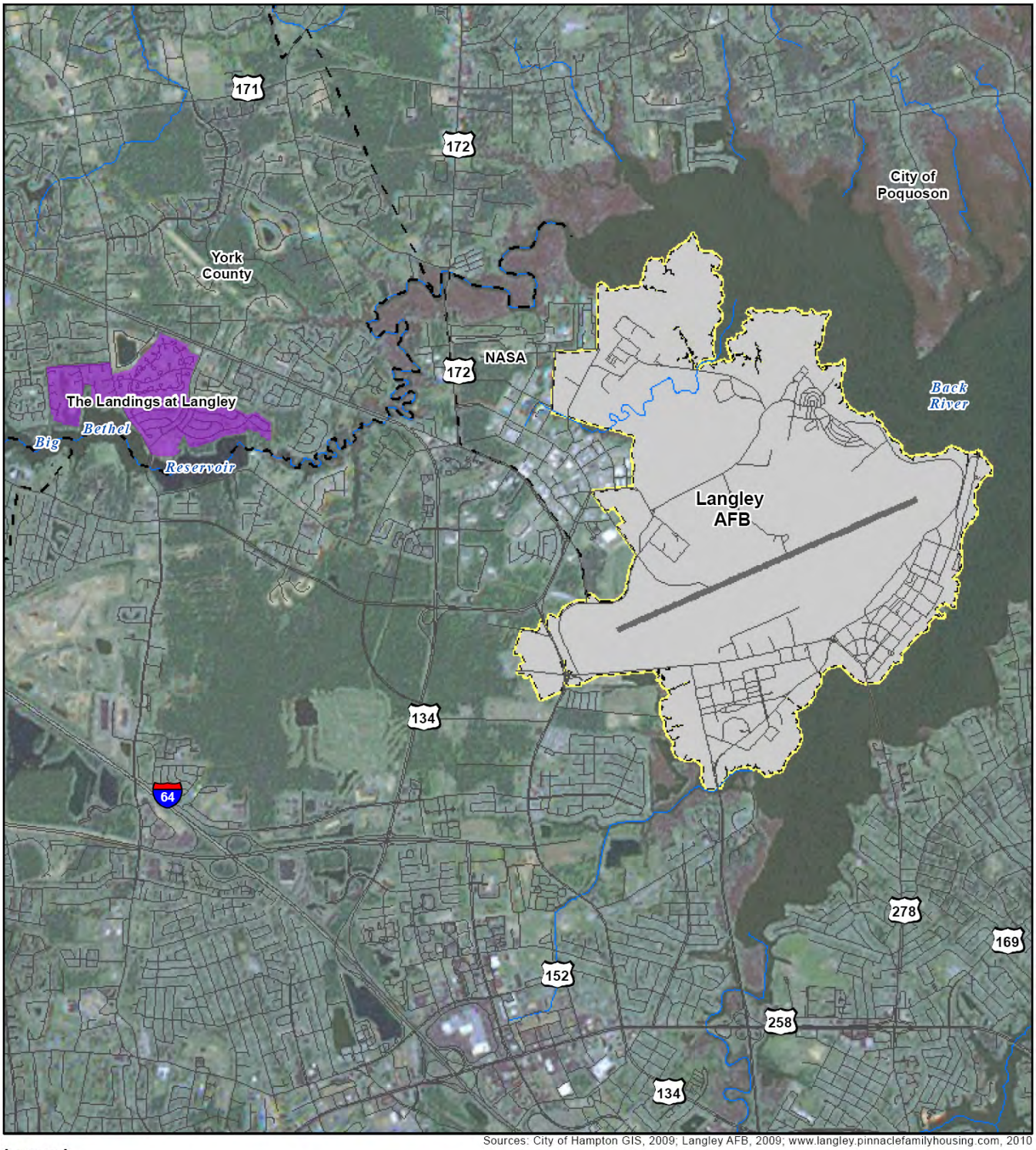
Hampton Roads Planning District Commission

The Hampton Roads Planning District Commission (HRPDC) is one of 21 Planning District Commissions in the Commonwealth of Virginia. It is a regional organization representing 1.6 million people and the area's 16 local governments, including the cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg, and the counties of Gloucester, Isle of Wight, James City, Southampton, Surry, and York. Planning District Commissions are voluntary associations and were created in 1969 pursuant to the *Virginia Area Development Act* and a regionally executed Charter Agreement. The HRPDC was formed in 1990 by the merger of the Southeastern Virginia Planning District Commission and the Peninsula Planning District Commission.

The HRPDC serves as a resource of technical expertise to its member local governments. It provides assistance on local and regional issues pertaining to Economics, Physical and Environmental Planning, Emergency Management, and Transportation. The HRPDC staff also serves as the support staff for the Hampton Roads Transportation Planning Organization, which is responsible for conducting a continuing, cooperative, comprehensive transportation planning process for the region. As a Virginia Planning District, the HRPDC is also the Affiliate Data Center for the region, providing economic, environmental, transportation, census, and other relevant information to businesses, organizations and citizens.

Hampton Federal Area Development Authority

The Hampton Federal Area Development Authority (HFADA) is a seven-member board comprised of City of Hampton residents who are appointed by the Hampton City Council. The HFADA's purpose is to enable more efficient cooperation with the federal government and to increase the value of federal installations in the City. This is accomplished by promoting the development of federal employee housing, including military family housing, office buildings, and other infrastructure through increased coordination among military, private industry, and academic and research institutions located in the City of Hampton and in the Hampton Roads area.



Sources: City of Hampton GIS, 2009; Langley AFB, 2009; www.langley.pinnaclefamilyhousing.com, 2010

Legend

- The Landings at Langley
- Jurisdictional Boundary
- Military Installation
- Runway
- Water Body
- River / Stream

Roads

- Interstate
- Highway
- Local

0 2,000 4,000 8,000 Feet

Hampton_Fig2_05_Landings_Langley_20100122_JKC.pdf

Figure 2-5
Military Housing - The Landings at Langley

Hampton Roads Military and Federal Facilities Alliance

The Hampton Roads Military and Federal Facilities Alliance (HRMFFA) is an initiative of the Hampton Roads Mayors and Chairs Caucus. The Alliance was established to collectively focus area efforts on preserving and growing Federal capabilities within the Hampton Roads region. HRMFFA was incorporated within the Commonwealth of Virginia in March 2006 under the provisions of the Internal Revenue Code of 1986 as a tax exempt, not-for-profit 501c (4) organization. The mission of the HRMFFA is to protect, sustain and grow military and federal capabilities in Hampton Roads for the common good and welfare of the residents of Hampton Roads. Through regional advocacy and influence the Alliance acts to retain and attract organizations, capabilities, and investments owned, operated or funded by the Federal government.

Bird / Wildlife Aircraft Strike Hazard

In an effort to provide the safest flying conditions possible, the Langley AFB continually implements and improves aviation safety programs. One of these programs is the Bird / Wildlife Aircraft Strike Hazard (BASH) prevention program. The purpose of the BASH program is to minimize aircraft and pilot exposure to potentially dangerous wildlife strikes in the local flying area. The program is supported by the Langley AFB BASH Plan 91-20.

The Langley AFB BASH Plan has adopted an integrated-multidiscipline management approach that involves four primary components: monitoring and research; aircraft avoidance; wildlife hazard response; and habitat management and prevention. Each component requires the cooperative and proactive efforts of Flight Safety, Airfield Management, Aircraft Maintenance, Air Traffic Control, Civil Engineering and Natural Resources. In 1999, Langley AFB requested assistance from the United States Department of Agriculture (USDA), Animal Plant and Health Inspection Service (APHIS), Wildlife Services (WS) program and entered into an interagency agreement for two personnel to be located in the Langley AFB Safety Office. The mission of these personnel is to enhance the installation's Flight Safety program by providing the technical and operational expertise necessary for successful BASH mitigation.

The Langley AFB BASH Plan may be found on the Hampton-Langley JLUS website on the resources page.
See: *www.hamptonlangleyjlus.com*

2.9 COUNTY AND CITY PROFILES

Hampton Roads Region

Hampton Roads, Virginia, is a prime mid-Atlantic region located in Southeastern Virginia. Unlike many of the metropolitan areas across the country, Hampton Roads' population nucleus is not confined to one central city, but is spread among several growing cities of significant size (see Figure 2-6). The total estimated population for the 2,907 square mile region was 1,644,903 residents. Hampton Roads is a term that not only refers to its contiguous communities, but also to the entire metropolitan area.

Since 1983, the US Office of Management and Budget (OMB) recognized Hampton Roads as a group of communities exhibiting economic and social integration. Hampton Roads is the fourth largest metropolitan area in the southeastern United States, and the largest between Washington, D.C., and Atlanta, Georgia.

Figure 2-6. Hampton Roads Region

The region boasts the following significant features and facts:

- First permanent English settlement and representative government in America;
- One of the world's biggest and deepest natural harbors;
- Home to the world's largest Naval base at Norfolk;
- Home to the world's largest shipyard in Newport News and one of the busiest and fastest growing ports on the eastern seaboard, the Port of Virginia;
- Access to the Chesapeake Bay, the nation's largest estuary connects to all or part of six states and Washington, DC;
- Home to nearly one-fourth of the United States active-duty military personnel;
- Home to two federal research labs: NASA Langley Research Center and the Thomas Jefferson Lab National Accelerator Facility.

The military has long been a mainstay of the Hampton Roads economy, and today the region is home to the largest concentration of military personnel in the nation, with forces stationed at numerous facilities including Naval Station Norfolk, Naval Weapons Station Yorktown (and Cheatham Annex), Camp Peary, Coast Guard Training Center Yorktown, Langley AFB, Oceana NAS, Little Creek Amphibious Base, Fort Eustis, Fort Monroe (scheduled to be closed by 2011), and Fort Story. Although national defense plays an important role in the regional economy, Hampton Roads is shifting its economic base to a more diverse mix of industries including shipping, defense related industry, technology, manufacturing, agriculture, and tourism. The area also boasts 29 miles of Atlantic Ocean beaches.

City of Hampton

Encompassing slightly less than 52 square miles, the City of Hampton is located at an elevation of ten feet above MSL at the mouth of the James River. The City is bounded on the east by Chesapeake Bay, on the north by the City of Poquoson and York County, and on the west by the City of Newport News. Langley AFB occupies the far northeastern portion of the City. Hampton has an estimated 2008 population of 145,494. Hampton was established in 1610 and is the oldest continuously settled English-speaking community in the US.

Hampton is an independent city. Virginia's independent cities are not politically part of a county, even though geographically they may be completely surrounded by one. Several Virginia municipalities, even though they may be more populous than some existing independent cities, are incorporated towns. These towns always form part of a county. Incorporated towns have limited powers, which vary by their charter. They typically share many aspects such as courts and public school divisions with the county they are located within. All the cities in the Hampton-Langley JLUS study area are independent cities.

City of Newport News

The City of Newport News is an independent city established as a town in 1880 and incorporated as a city in 1896. In the 1960s, the City merged with Warwick County to create today's incorporated area. It encompasses approximately 70 square miles (12.6 square miles for Fort Eustis and 58 square miles for Newport News) in the Hampton Roads region. This city is approximate 70 square miles is size (land area). The City borders James City County on the northwest, York County on the north and northeast, and the City of Hampton on the east. Newport News shares water borders with Portsmouth on the southeast, Suffolk on the south across Hampton Roads, the Isle of Wight County

on the southwest and west, and Surry County on the northwest across the James River. Newport News, along with Norfolk and Portsmouth, constitutes the Port of Hampton Roads, which is part of the State Port Authority. With a 2008 estimated population of 179,614 residents, the City ranks as the 6th largest in Virginia in terms of population.

City of Poquoson

The City of Poquoson is an independent city bounded by York County to the north and west, the City of Hampton to the south, and Chesapeake Bay to the east. The City encompasses 16 square miles of land and another 63 square miles of water, which equates to approximately 82 percent of Poquoson's area being comprised of water. Poquoson was formerly part of York County, but it became an incorporated town in 1952 and an independent city in 1975. The 2008 estimated population for Poquoson was 11,829 residents.

York County

York County is a 106-square mile county located on the north side of the Hampton Roads region. The County is comprised of many small communities and is situated on the York River and many tributaries. The county seat is the unincorporated village of Yorktown. The County shares land borders with the independent cities of Poquoson, Newport News, and Williamsburg, and James City County. It also shares a border along the York River with Gloucester County. York County was formed in 1634 as Charles River Shire, one of the original eight shires (counties) of the Virginia Colony making it one of the oldest counties in the US. The 2008 population estimate for York County was 61,027 residents.

2.10 CURRENT DEVELOPMENT OVERVIEW WITHIN STUDY AREA

Existing and Future Land Use

The pattern of existing land use illustrates the current physical use of the land surrounding Langley AFB. It identifies where existing land use compatibility and incompatibility exists adjacent to, and within proximity of, the installation. For the vast majority of Air Force installations, land use compatibility is gauged in terms of compatibility with aircraft operations, which relates primarily to aircraft noise and safety zones.

The most compatible designations for Langley AFB are those that would not be impacted or would be minimally impacted by the noise and vibration resulting from the Base's aircraft operations. The July 2007 Langley AFB Air Installation Compatible Use Zone (AICUZ) Update identifies the noise contours generated by the installation's aircraft, and delineates areas where varying degrees of impact may be experienced in relation to the Base. The existing and future land uses established by the study area jurisdictions are illustrated on Figures 2-7 and 2-8 and have been quantified by type in Tables 2-3 and 2-4, based on a one, three, and five mile radius from the Langley AFB boundary, respectively. Additional discussion regarding compatibility and existing and future land uses within the study area may be found in Chapter 3 of this report. The tables reflect available data and, in some cases, the totals for the various distances from Langley do not match.

Each of the jurisdictions in the study area has their own classifications for land use, such as densities for residential lands. For the purposes of this JLUS and to reduce the number of existing land use categories shown on the maps, similar land uses in the different jurisdictions have been grouped together. For example, the lowest density residential areas have been identified as "rural residential" and have the largest tracts of

land for houses. Many of the listed categories may be slightly different for each jurisdiction.

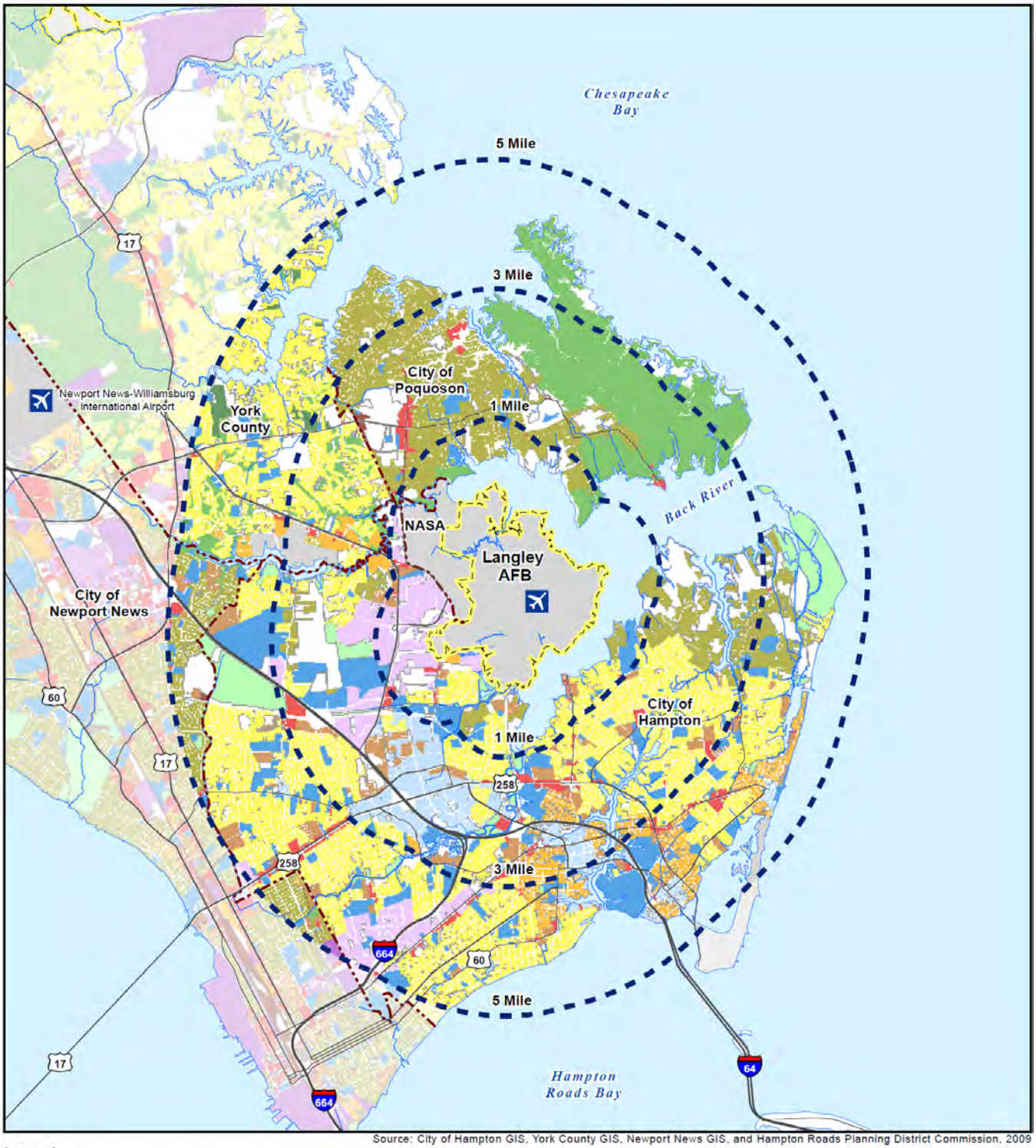
Zoning

The pattern of zoning is an important component to understand the existing and permissible regulations associated with land development throughout the Hampton-Langley JLUS study area. The type of land use that is permissible on a parcel of land is determined by the designated zoning district associated with the parcel. Zoning helps to organize the development of lands with similar uses so that incompatible uses are not located near each other. The zoning districts established by the JLUS jurisdictions have been quantified in Table 2-5 based on a one, three, and five mile radius, from the Langley AFB boundary. These are illustrated on Figure 2-9. Additional discussion regarding compatibility and zoning within the study area may be found in Chapter 3 of this report.

Table 2-3. Existing Land Use in Proximity to Langley AFB

Land Use Classification	Distance in Relation to Langley AFB					
	Within 1 Mile		Within 3 Miles		Within 5 Miles	
	Acreage	Percentage of Total	Acreage	Percentage of Total	Acreage	Percentage of Total
Rural Residential (</=2 du/acre)	840	11%	4,046	15%	6,000	13%
Low Density Residential (>4-8 du/acre)	658	9%	4,660	18%	11,447	25%
Medium Density Residential (>8-15 du/acre)	18	<1%	641	2%	1,367	3%
High Density Residential (>15 du/acre)	131	2%	737	3%	1,342	3%
Commercial / Office	53	<1%	535	2%	866	2%
Light Industrial	671	9%	1,140	4%	1,729	4%
Industrial / Office Park	0	0%	0	0%	7	<1%
Heavy Industrial	0	0%	0	0%	36	<1%
Mixed Use	10	<1%	1,200	5%	1,449	3%
Public / Semi-Public	347	5%	1,705	7%	3,713	8%
Military	3,661	49%	3,909	14%	4,208	9%
Agriculture	0	0%	18	<1%	176	<1%
Conservation	242	3%	3,501	13%	5,384	12%
Open Space	162	2%	586	2%	1,900	4%
Right-of-Way / Utilities	0	0%	1	0%	15	<1%
Unassigned	0	0%	51	<1%	66	<1%
Vacant	674	9%	3,423	13%	5,460	12%
Total	**7,467**		**26,153**		**45,165**	

Source: 1-Mile: City of Hampton; Hampton Roads Planning District Commission (for Poquoson); Matrix Design Group, 2009
3-Miles: Cities of Hampton, Hampton Roads Planning District Commission (for Poquoson), and York County; Matrix Design Group, 2009
5-Miles: Cities of Hampton and Newport News, Hampton Roads Planning District Commission (for Poquoson), and York County; and Matrix Design Group, 2009



Source: City of Hampton GIS, York County GIS, Newport News GIS, and Hampton Roads Planning District Commission, 2009

Legend

Existing Land Use

- Rural Residential (<=2 DU/acre)
- Very Low Density Residential (>2-4 DU/acre)
- Low Density Residential (>4-8 DU/acre)
- Medium Density Residential (>8-15 DU/acre)
- High Density Residential (>15 DU/acre)
- Commercial/Office
- Light Industrial
- Industrial/Office Park
- Heavy Industrial
- Mixed Use
- Public/Semi-Public
- Military
- Agriculture
- Conservation
- Open Space
- Right-of-Way/Utilities
- Unassigned/Undesignated
- Vacant
- Airport
- Langley AFB Buffer (1,3, and 5 mile)
- Jurisdictional Boundary
- Military Installation
- Water Body
- River / Stream

Major Roads

- Interstate
- Highway

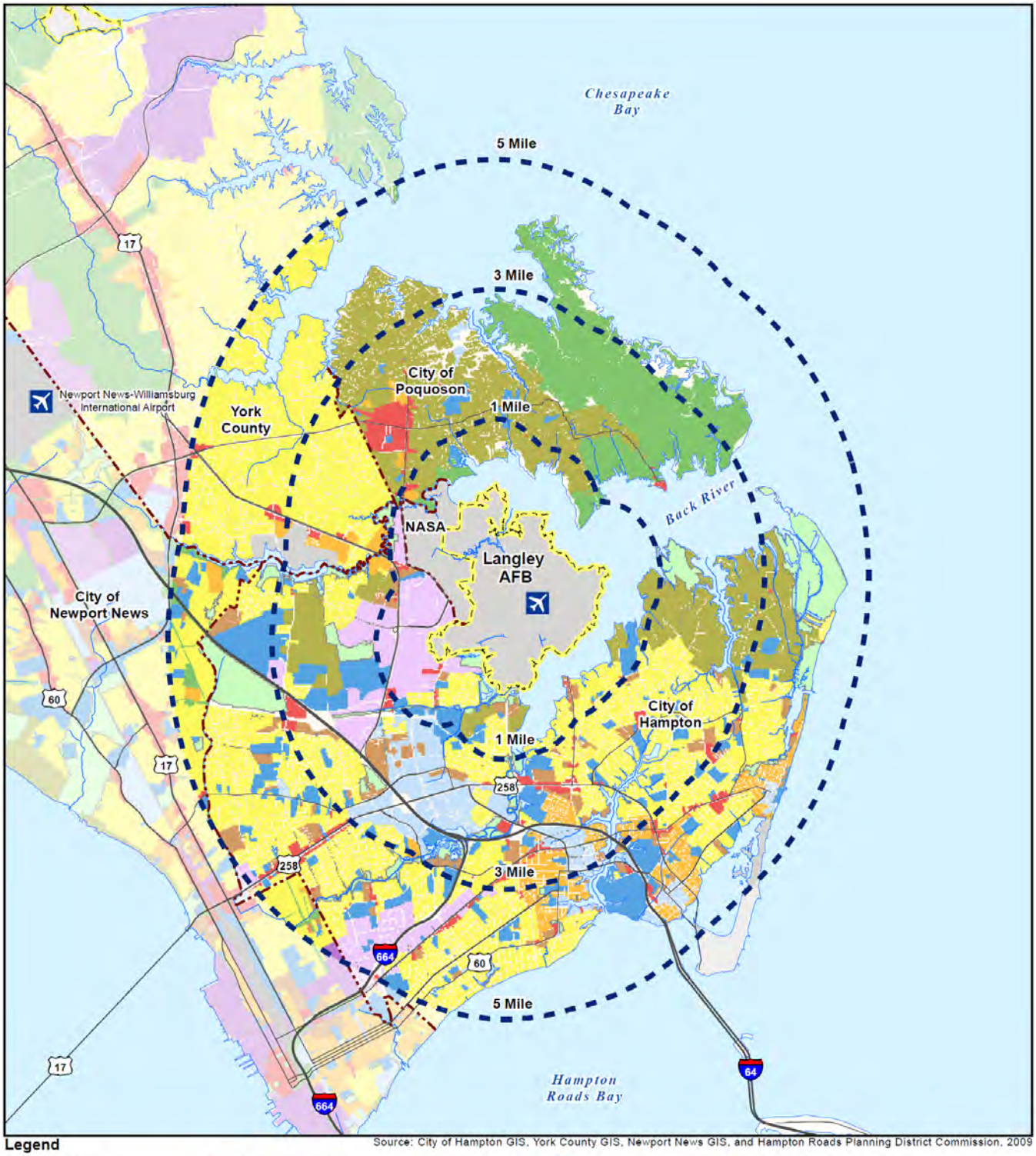
0 0.5 1 2 Miles

Figure 2-7
Existing Land Use

Table 2-4. Future Land Use in Proximity to Langley AFB

Land Use Classification	Distance in Relation to Langley AFB					
	Within 1 Mile		Within 3 Miles		Within 5 Miles	
	Acreage	Percentage of Total	Acreage	Percentage of Total	Acreage	Percentage of Total
Rural Residential (</=2 du/acre)	376	5%	2,291	9%	2,945	6%
Low Density Residential (>4-8 du/acre)	1,389	19%	8,970	34%	19,375	42%
Medium Density Residential (>8-15 du/acre)	19	<1%	717	3%	1,551	3%
High Density Residential (>15 du/acre)	139	2%	798	33%	1,377	3%
Commercial/Office	72	<1%	770	3%	1,162	3%
Light Industrial	1001	13%	1,488	6%	2,118	5%
Heavy Industrial	0	0%	0	0%	34	<1%
Mixed Use	25	<1%	1,431	5%	1,714	4%
Public/Semi-Public	347	5%	1,698	6%	3,598	8%
Military	3661	49%	3,911	15%	4,257	9%
Conservation	241	3%	3,221	12%	4,910	11%
Open Space	202	3%	1,041	4%	2,689	6%
Total	**7,472**		**26,336**		**45,730**	

Source: 1-Mile: City of Hampton; Hampton Roads Planning District Commission (for Poquoson); Matrix Design Group, 2009
3-Miles: Cities of Hampton, Hampton Roads Planning District Commission (for Poquoson), and York County; Matrix Design Group, 2009
5-Miles: Cities of Hampton and Newport News, Hampton Roads Planning District Commission (for Poquoson), and York County; and Matrix Design Group 2009



Source: City of Hampton GIS, York County GIS, Newport News GIS, and Hampton Roads Planning District Commission, 2009

Legend

Future Land Use

- Rural Residential (</=2 DU/acre)
- Low Density Residential (>4-8 DU/acre)
- Medium Density Residential (>8-15 DU/acre)
- High Density Residential (>15 DU/acre)
- Commercial/Office
- Light Industrial
- Industrial/Office Park
- Heavy Industrial
- Mixed Use
- Public/Semi-Public
- Military
- Conservation
- Open Space
- Right-of-Way/Utilities
- Airport
- Langley AFB Buffer (1, 3, and 5 miles)
- Jurisdictional Boundary
- Military Installation
- Water Body
- River / Stream

Major Roads

- Interstate
- Highway

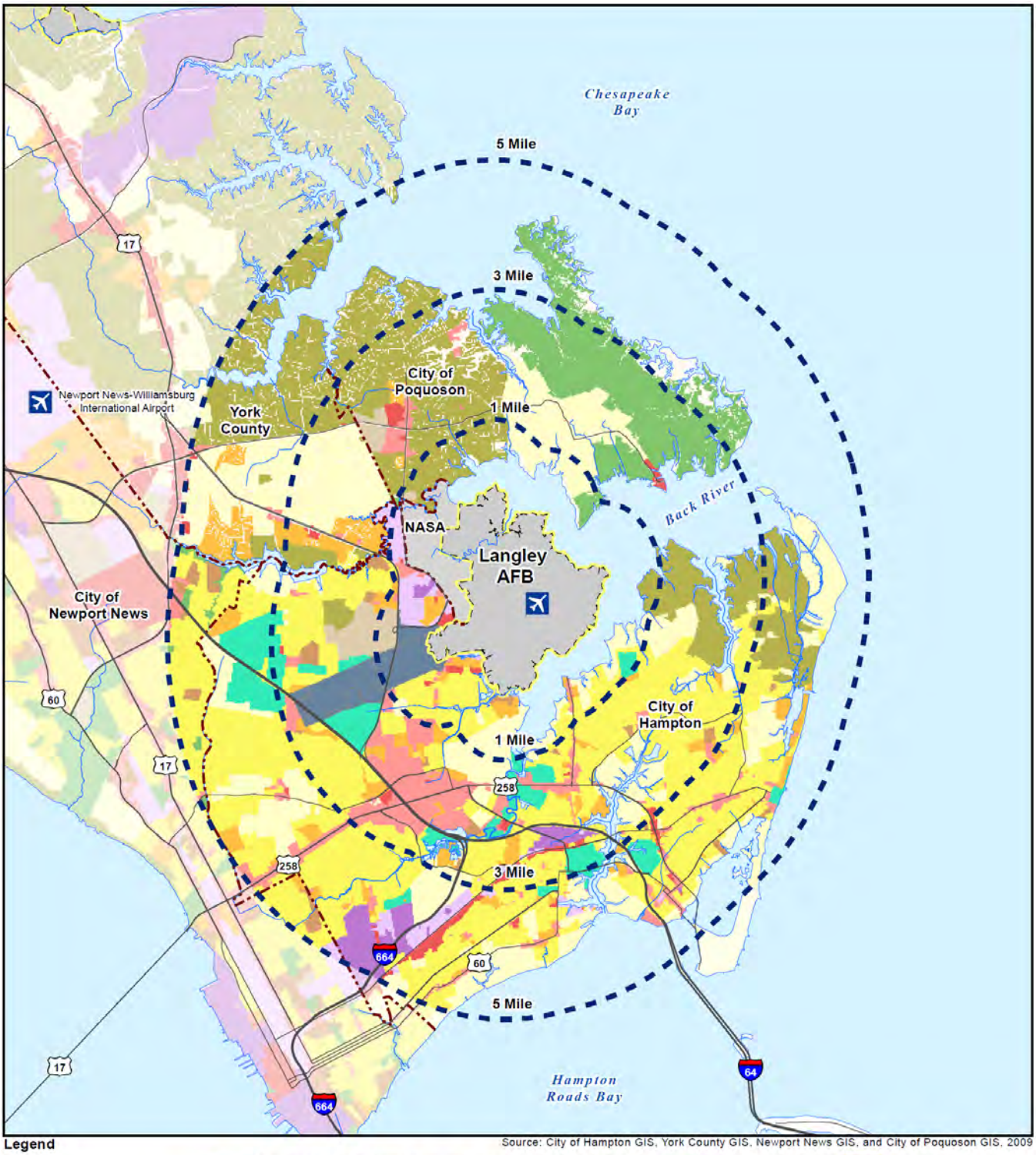
0 1 2 4 Miles

Figure 2-8
Future Land Use

Table 2-5. Zoning in Proximity to Langley AFB

Zoning Category	Distance in Relation to Langley AFB					
	Within 1 Mile		Within 3 Miles		Within 5 Miles	
	Acreage	Percentage of Total	Acreage	Percentage of Total	Acreage	Percentage of Total
Rural Residential (</=2 du/acre)	667	9%	4171	15%	7,995	16%
Very Low Density Residential (>2-4 du/acre)	4565	59%	8135	29%	12,676	26%
Low Density Residential (>4-8 du/acre)	925	12%	6,296	22%	13,769	28%
Medium Density Residential (>8-15 du/acre)	239	3%	1,262	4%	2,294	5%
High Density Residential (>15 du/acre)	22	<1%	221	<1%	455	<1%
Commercial	137	2%	1,860	7%	2,590	5%
High Intensity Commercial	72	<1%	337	1%	572	1%
Office Park	145	2%	605	2%	605	1%
Light Industrial	353	5%	444	2%	768	2%
Heavy Industrial	33	<1%	175	<1%	705	1%
Langley Flight Approach District	464	6%	995	4%	995	2%
Overlay Zoning Districts	63	<1%	1,031	4%	1,866	4%
Parks/Conservation	110	1%	2,765	10%	4,024	8%
Unassigned	0	0%	0	0%	7	<1%
Total	**7,795**		**28,297**		**49,321**	

Source: 1-Mile: Cities of Hampton and Poquoson; Matrix Design Group, 2009
3-Miles: Cities of Hampton and Poquoson, and York County; Matrix Design Group, 2009
5-Miles: Cities of Hampton, Newport News, and Poquoson, and York County; and Matrix Design Group, 2009



Source: City of Hampton GIS, York County GIS, Newport News GIS, and City of Poquoson GIS, 2009

Legend

Zoning

- Rural Residential (<=2 DU/acre)
- Very Low Density Residential (>2-4 DU/acre)
- Low Density Residential (>4-8 DU/acre)
- Medium Density Residential (>8-15 DU/acre)
- High Density Residential (>15 DU/acre)
- Commercial
- High Intensity Commercial
- Office Park
- Light Industrial
- Heavy Industrial
- Langley Flight Approach District
- Special Public Interest
- Parks/Conservation
- Unassigned
- Federal / Military
- Airport
- Langley AFB Buffer (1, 3, & 5 mile)
- Jurisdictional Boundary
- Military Installation
- Water Body
- River / Stream

Major Roads

- Interstate
- Highway

0 1 2 4 Miles

Figure 2-9
Zoning

2.11 REGIONAL ASSESSMENT

Transportation

Roadways

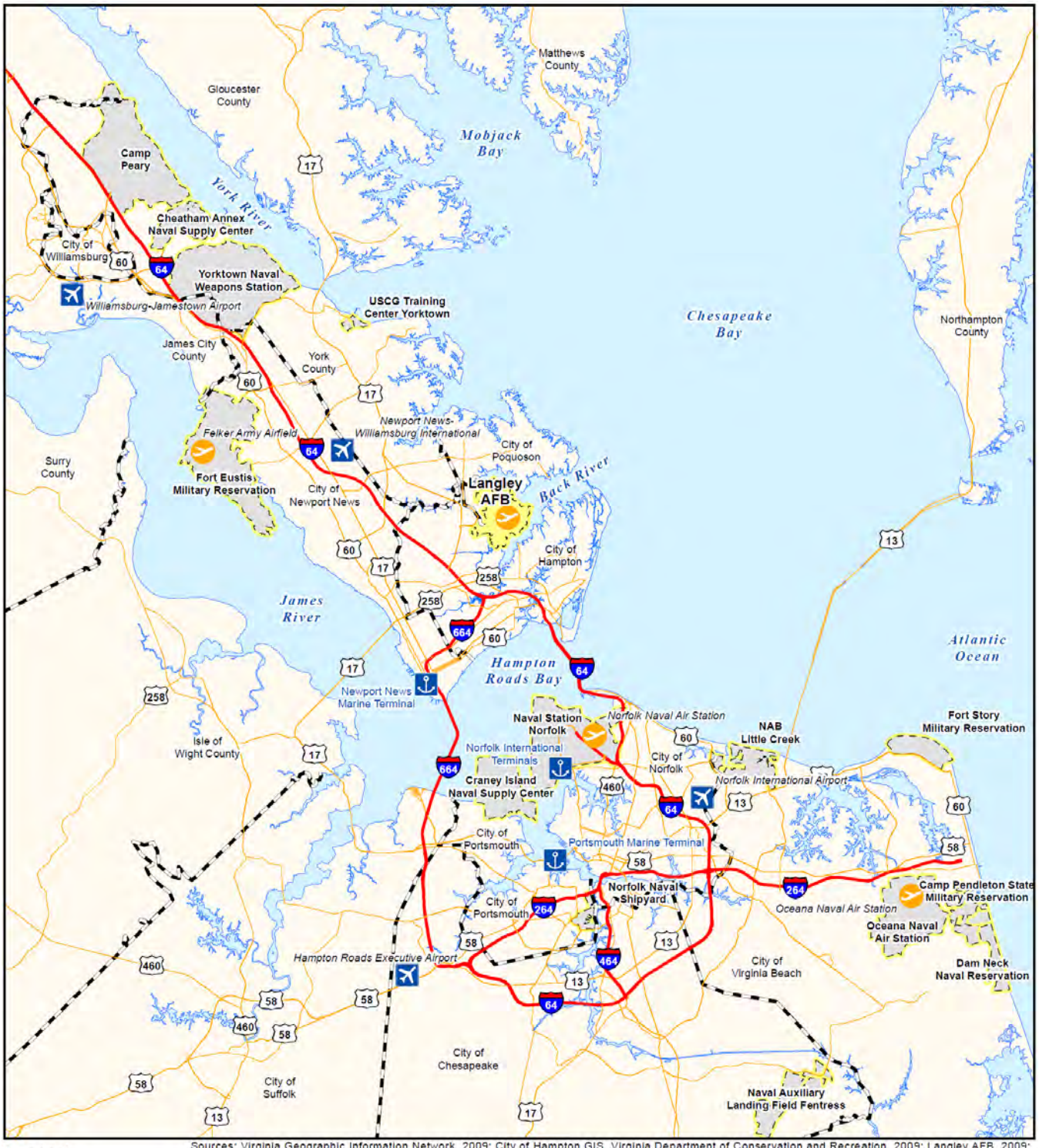
The Hampton Roads region is a major hub for transportation on the East Coast. As a result, it is served by numerous freeways and highways. The Hampton Roads Beltway consists of Interstates 64 and 664 and is considered to be the nucleus of the regional road network. The network services the core regional cities of Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, Suffolk, and Virginia Beach and also provides key connections to the remaining jurisdictions. The Beltway begins and ends at the Interstate 64/Interstate 664 split in the City of Hampton and is connected from the west by Interstate 64 on the James River. This provides key linkages to the cities of Newport News, Poquoson, and Williamsburg, and James City and York counties. The Beltway is connected to US Highways 17, 58, and 460 on the Southside (Chesapeake, Norfolk, Portsmouth, Suffolk, and Virginia Beach), providing links to Isle of Wight and Southampton counties. US Highways 58 and 460 and Interstate 64 provide alternative linkages between the Hampton Roads region and Interstate 95, which is the primary north-south connector for the eastern seaboard (see Figure 2-10).

The northern jurisdictions are connected to the southern jurisdictions in Hampton Roads by two bridge-tunnels. The first is the Hampton Roads Bridge-Tunnel (HRBT), which extends 3.5 miles along Interstate 64. The HRBT and Interstate 64 connect the southern Hampton Roads cities of Norfolk and Virginia Beach with the cities of Hampton and Newport News. The facility is toll-free and is operated and maintained by the Virginia Department of Transportation (VDOT). The second bridge-tunnel is the Monitor-Merrimac Memorial Bridge-tunnel (MMMBT). This 4.6-mile-long crossing includes Interstate 664. It is a four-lane bridge-tunnel composed of bridges, trestles, man-made islands, and tunnels under a portion of the Hampton Roads Bay at the confluence of the James, Nansemond, and Elizabeth Rivers. The James River Bridge provides an additional option for accessing the southern Hampton Roads jurisdictions from the JLUS study area. This is a four-lane divided highway lift bridge across the James River. It is owned and operated by VDOT and is the eastern most such crossing without a tunnel component.

The bridge carries US Highway 17, US Highway 258, and State Route 32 across the River near its mouth at Hampton Roads. The bridge connects Newport News with Isle of Wight County in the southern Hampton Roads region.

As noted in the December 2007 *Hampton Roads 2030 Long-Range Transportation Plan (LRTP),* prepared by the Hampton Roads Planning District Commission, there are a number of roadway improvement projects identified for the region. These projects are identified for the JLUS study area jurisdictions, as well as for the remaining Hampton Roads region. The majority of the projects impacting the region involve widening existing roadways for distances of up to four miles with several projects encompassing distances of up to 21 miles. A small number of projects are to provide new alignments. There are six multi-jurisdictional projects identified in the LRTP, which are expected to significantly improve current traffic congestion and vehicular movement through the Hampton Roads region. These six projects require additional state funding and tolls (see Figure 2-11). The two projects are Interstate 64 Widening and the Hampton Roads Third Crossing. These projects are detailed in the following discussion.

The project to widen Interstate 64 from Newport News northward to upper York County will address current congestion, specifically where the existing six lane highway narrows to four lanes. This location is a key access point to the region utilized by travelers from Washington, D.C., and Richmond. The project calls for widening a



Sources: Virginia Geographic Information Network, 2009; City of Hampton GIS, Virginia Department of Conservation and Recreation, 2009; Langley AFB, 2009; Port of Virginia, 2009; Virginia Economic Development Partnership, 2002.

Legend

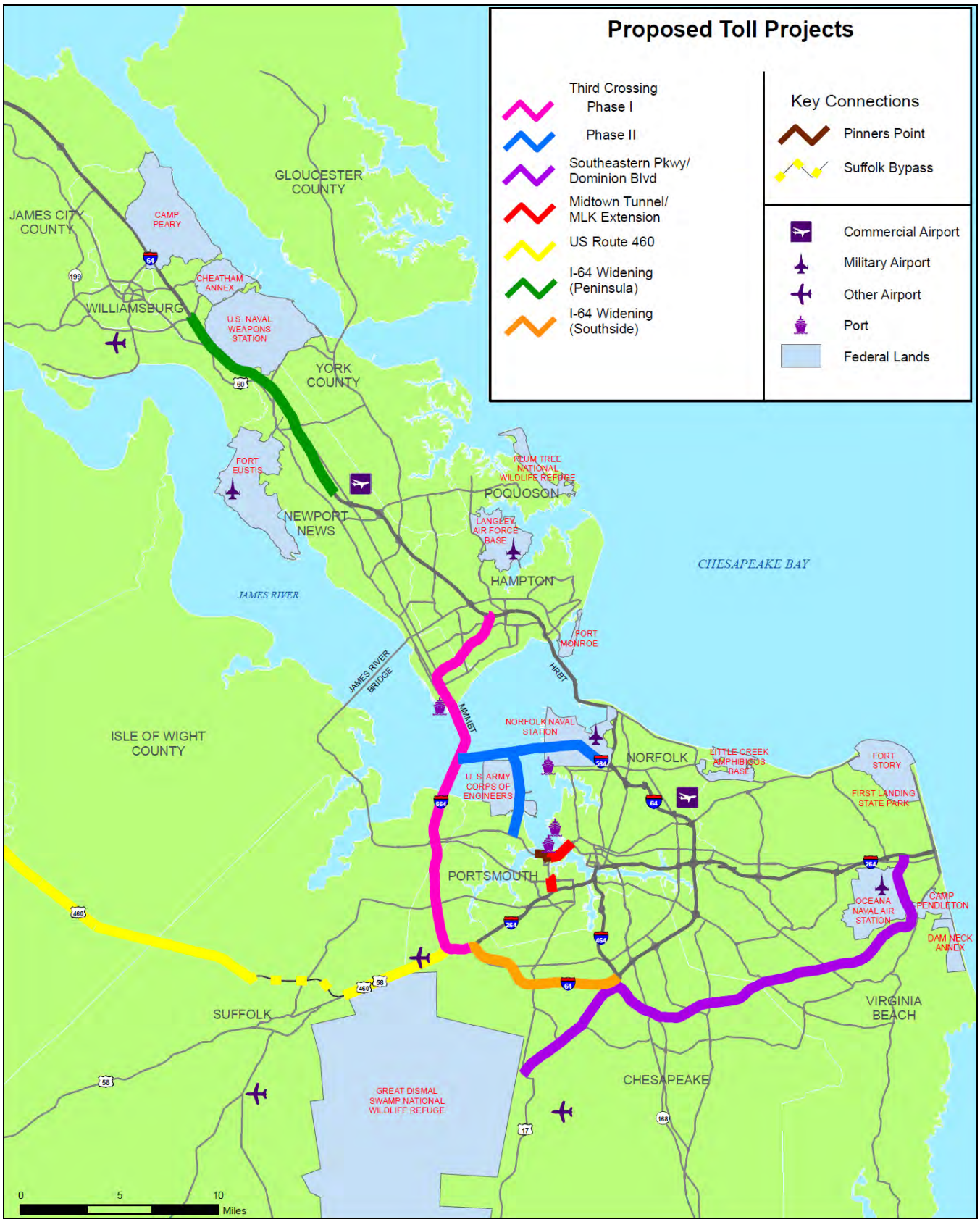
- Port
- Airport / Airfield - Military
- Airport - Civilian
- Langley AFB
- Military Installation
- Jurisdictional Boundary
- Water Body

Major Roads

- Interstate
- Highway

0 1.5 3 6 Miles

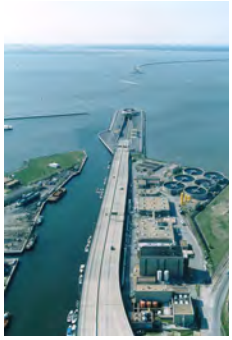
Figure 2-10
Regional Transportation



Source: Hampton Roads Transportation Authority (www.hrpdc.org/HRTA/Projects.htm)

Figure 2-11. Hampton Roads Key Roadway Improvements

21-mile section of the Interstate, from Exit 255 to Exit 242, and incorporating tolls. Preliminary plans will increase the roadway from four lanes to either six or eight lanes.



Monitor-Merrimac Memorial Bridge-Tunnel in Newport News

One of the largest projects in the 2030 LRTP is the Hampton Roads Third Crossing, which would be a new bridge-tunnel crossing Hampton Roads Bay. The Hampton Roads Third Crossing study was initiated in late 1993 to investigate methods of improving mobility across Hampton Roads and relieving congestion at the Interstate 64 Hampton Roads Bridge-Tunnel. Several alternatives were considered in selecting a crossing design. The Commonwealth Transportation Board reviewed these Corridors in 1997 and selected Corridor 9, which would support Single Occupancy Vehicles, High Occupancy Vehicles, trucks, buses, and passenger rail. It involves:

- Widening Interstate 664 in Newport News to eight lanes; constructing two new tubes parallel to the MMMBT, which adds four more lanes for travel;
- Constructing an additional new multimodal tube to add transit/rail lines from the MMMBT to a point near the Norfolk Naval Station;
- Adding a new four-lane highway connector from the new bridge-tunnel to the Western Freeway in Portsmouth; and
- Widening Interstate 664 to six lanes from the MMMBT to the Bowers Hill interchange.

A Final Environmental Impact Statement was prepared in 2001 evaluating the impact of building a new crossing of Hampton Roads. In 2002, the General Assembly offered a ballot referendum involving a one percent increase in sales tax throughout the region to fund six new projects, including the Third Crossing; however, the referendum failed. In 2007, the General Assembly created the Hampton Roads Transportation Authority (HRTA) to levy a series of taxes to help finance the six regional priority projects of the Hampton Roads Transportation Planning Organization (HRTPO), which is included under the HRPDC. However, in 2008, the Virginia Supreme Court ruled that it is unconstitutional for a nonelected body to tax. VDOT is still looking for ways to fund this project and several others in the Hampton Roads region. According to VDOT, there is no funding available in the foreseeable future.

Air Transportation

Aircraft operations are conducted at several military installations and civilian airports dispersed throughout the Hampton-Langley JLUS study area and in the nearby Hampton Roads region (see Figure 2-9). In addition to Langley AFB, there are two airports within the study area – Felker Army Airfield at Fort Eustis and Newport News-Williamsburg International Airport. The Newport News-Williamsburg International Airport is located only eight miles northwest of Langley AFB. It has two runways (8,003 feet long and 6,526 feet long) and is served by commercial passenger airlines such as Air Tran Airways, Delta Connection, and US Airways Express Airlines. The airport also has general aviation facilities. For a 12-month period ending March 31, 2007, the airport experienced an average of 313 aircraft operations per day, of which 32 percent were local general aviation, 25 percent were transient general aviation, 22 percent were military, and 21 percent were commercial.

Another six airports are situated in the surrounding region (Norfolk International Airport, Williamsburg-Jamestown Airport, Hampton Roads Executive Airport, Norfolk Naval Air Station (NAS) / Chambers Field, the

landing strip at Camp Peary, and Oceana NAS / Apollo Soucek Field). The Norfolk International Airport is about 16 miles southeast of Langley AFB. It has two runways, one measuring 9,001 feet long and the other measuring 4,875 feet in length. Passenger carriers such as American Airlines, Continental Airlines, Delta, Northwest Airlines, Southwest Airlines, United Express, and US Airways operate at the airport. For a 12-month period ending December 31, 2006, the airport experienced an average of 352 aircraft operations per day, of which 44 percent were commercial, 23 percent were local general aviation, 16 were air taxi, 9 percent were transient general aviation, and 8 percent were military.

The Williamsburg-Jamestown Airport is a small general aviation airport approximately 22 miles northwest of Langley AFB. The airport maintains one 3,204-foot long asphalt runway. As of February 29, 2008, an average of 70 aircraft operations per day occurred, of which 52 percent were local general aviation, 38 percent were transient general aviation, 9 percent were air taxi, and less than 1 percent were military.

The Hampton Roads Executive Airport is located approximately 21 miles southwest of Langley AFB in Chesapeake, Virginia. The airport is a general aviation facility and serves business and recreation users. The sole runway at the Hampton Roads Executive Airport is asphalt and measures 4,056 feet in length; however, there is a project underway to replace this runway and extend it by 1,350 feet. For a 12-month period ending June 30, 2007, the airport experienced an average of 352 aircraft operations per day, of which 72 percent were transient general aviation, 25 percent were local general aviation, 2 percent were air taxi, and less than 1 percent were military.

According to the 2007 *State of Transportation in Hampton Roads* report by the Hampton Roads Planning District Commission, air travel in Hampton Roads has increased substantially over the years leading up to 2005. Over 2.4 million passengers boarded flights at both Hampton Roads passenger airports, Norfolk International and Newport News-Williamsburg International, in 2005.

The number of passengers boarding flights at Hampton Roads' airports increased 41 percent between 2000 and 2005, while during that time national air travel only grew 4 percent. Norfolk International Airport passenger traffic followed this general trend until 2005; however, with the national economic decline and high fuel prices, passenger volumes showed a decrease beginning in 2006. Maintaining this trend, for the months of January through May 2009, Norfolk International Airport passenger traffic was 4.6 percent below 2008 passenger traffic counts.

Unlike Norfolk International, the Newport News-Williamsburg International Airport experienced increases in passenger volumes between 2006 and 2008, with the largest increase (37 percent) occurring between 2007 and 2008. Estimates for 2009 passenger traffic indicate that the airport will experience a 32 percent decrease in passenger volume compared with 2008.

Water Transportation

Ports

Most facets of the Hampton Roads economy, including the military, ports, and shipbuilding and repair, rely on the Hampton Roads Harbor and its tributaries. The Port of Virginia handled over 33 million tons of total cargo in 2004. While the Port remains the largest exporter of coal in the world, the amount of coal exported through the Port of Virginia has diminished greatly since the mid-1990s. All of the growth that has occurred at the Port in recent years is due to increases in general cargo, which includes containerized and break-bulk cargo.

There are several facilities that comprise the Port of Virginia – Newport News Marine Terminal, Norfolk International Terminals, Portsmouth Marine Terminal, and the Virginia Inland Port. The Newport News Marine Terminal is a 141-acre complex and is the Port of Virginia's main break-

bulk terminal. Located just over eight miles southwest of Langley AFB, the facility has 42,720 feet of direct rail access/rail track provided by CSX. It maintains 3,480 feet of total pier space serviced by four cranes. It offers direct cargo loading on and off ships to and from the CSX break-bulk rail service, covered storage, container storage, and accessibility from three major Virginia roadways.

The 648-acre Norfolk International Terminals is located 12 miles southeast of Langley AFB and is the Port of Virginia's largest terminal. This facility is serviced by 14 of the largest, most efficient cranes in the world. They can reach 245 feet and can offload container ships loaded with cargo. Norfolk International Terminals has 5 berths, 14 container cranes, 3 finger piers, a roll on/roll off berth, covered and container storage, and 89,300 feet of direct rail access, which will soon connect directly to the Commonwealth Railway Project. The main channel leading to the terminal is 50 feet deep and is being deepened to 55 feet.

Located about four miles south of the Norfolk International Terminals, the Portsmouth Marine Terminal includes 219 acres and is the Port of Virginia's second largest terminal. The terminal has 3,540 feet of wharf, 3 berths, and 6 cranes and is able to handle container, break-bulk, and roll on/roll off cargo. The Portsmouth Marine Terminal also has direct access to both CSX and Norfolk Southern (NS) railways and will soon connect to the Commonwealth Railway.

The Virginia Inland Port is located west of Washington, D.C., in Warren County, Virginia. Cargo from the other three state-owned terminals travels here five days a week, bringing the Port of Virginia 220 miles closer to the US Market and 75 international shipping lines. The facility also contains 17,820 linear feet of on-site rail serviced by Norfolk Southern railroad. The Virginia Inland Port is within one mile of Interstate 66 and within five miles of Interstate 81. The facility is also a US Customs-designated port of entry.

Ferry

Marine public transportation services are also available in Hampton Roads. Hampton Roads Transit provides ferry service between Waterside in Downtown Norfolk and High Street Landing in Portsmouth. Over 320,000 passengers used this service in 2005. The Virginia Department of Transportation also operates a free passenger and vehicular ferry service between Jamestown and Scotland in Surry County. This service carried 997,000 vehicles across the James River in 2005, up from 895,000 vehicles in 2000. This connects the region with Surry County and other southern Hampton Roads localities. Pedestrian ferry service is provided by the Elizabeth River Ferry, which consists of three 150-passenger paddle-wheel ferry boats.

Cruise Lines

In addition to commercial marine activities, the Hampton Roads area services the cruise industry. In 2005, 105,000 passengers sailed on cruises from Norfolk, which is up from 35,000 passengers in 2002.

Environmental Resources

The Hampton Roads region and the Commonwealth of Virginia provide essential habitat for wildlife and fish populations. The Hampton-Langley JLUS study area is home to several wildlife refuges, nature parks, preserves, and wetlands. Some of the larger of these are detailed in the following discussion.

National Wildlife Refuge

Most refuges were established to protect and enhance wetlands for the conservation of migratory birds; some were established to provide habitat for endangered species. These areas are located mainly along or near the coast in the eastern half of the state. Refuges promote wildlife diversity and protect wildlife habitat and natural systems, like wetland habitats, that serve communities and people by holding flood waters and filtering pollutants.

The Plum Tree Island National Wildlife Refuge is one of four refuges that comprise the Eastern Virginia Rivers National Wildlife Refuge Complex. The refuge is situated on the southwestern corner of Chesapeake Bay in the City of Poquoson, which is a strategic location approximately midpoint on the Atlantic Flyway. The Refuge's 3,501 acres provide terrestrial and aquatic habitats that are ideally suited for migratory birds and fish. Elevations range from mudflats that are submerged at high tide to approximately five feet above mean sea level. The topography is relatively flat, except for a series of forested hummocks that are remnants of ancient dune lines.

Hundreds of species depend on a healthy marsh/estuarine system to feed, rest, and reproduce. This is particularly true in and around the area of the Refuge. To date, approximately one hundred different bird species have been observed including northern harrier, black duck, sedge wren, sharp-tailed sparrow, bald eagle, peregrine falcon, black-necked stilts, and little blue heron. Mammals include white-tailed deer, raccoon, muskrat, and red fox, among others. Endangered and threatened sea turtles (primarily loggerhead turtles) are known to frequent the waters surrounding the refuge. Fish such as striped bass, mullet, spot, and white perch along with shellfish (oysters, clams, and blue crab) also benefit from the protected marsh.

Nature Park

The City of Hampton is home to the Sandy Bottom Nature Park, a 456-acre facility dedicated to wildlife management and environmental education. The park is bordered by Interstate 64 to the north and Hampton Roads Center Parkway to the south and is less than three miles west of the Langley AFB in general alignment with the centerline of the Installation's runway. It includes a 10,000-square foot nature center overlooking Sandy Bottom Lake.

Nature Preserve

The Grandview Nature Preserve, located in the City of Hampton, covers 475 acres of salt marsh and tidal creeks. It also includes 2.5 miles of secluded Chesapeake Bay beachfront. The Preserve is located approximately four miles east of the Langley AFB runway. A portion of the Preserve is inline with the runway while the majority is south of centerline.

Wetlands

Wetlands are lands that are flooded or saturated at or near the ground surface for varying periods of time during the year. Water is produced through rainfall, snowmelt, river overflow, ocean-driven tides, rising lake levels, or ground water coming to the soil surface. There are many wetland definitions; some are technical definitions used by scientists to describe and inventory wetlands, while others are regulatory definitions that define lands administered by government regulations and zoning ordinances.

Langley AFB is located on the Hampton Flat, which is the principal physiographic feature in the lower part of York County and the cities of Newport News and Hampton. The surface of the Hampton Flat slopes gently toward the sea at one foot per mile. The flat typically has poor drainage, and wetlands are abundant except along the banks of the Hampton and Back Rivers where prior dredging and filling activities have eliminated them.

The Hampton-Langley JLUS study area also includes tidal wetlands. These include non-vegetated mudflats exposed at low tide, rocky shores (with or without algae), and salt and brackish marshes (tidally flooded grasslands). These areas are periodically flooded by tides, some daily, others less frequently, and some only by storm surge.

Wetlands are important for a number of reasons. These include: surface water storage (flood control), shoreline stabilization (wave damage protection/shoreline erosion control), stream-flow

maintenance (maintaining aquatic habitat and aesthetic appreciation opportunities), groundwater recharge (some types replenish water supplies), sediment removal and nutrient cycling (water quality protection), supporting aquatic productivity (fishing, shell-fishing, and waterfowl hunting), production of trees (timber harvest), production of palatable herbaceous growth (livestock grazing and haying), production of peaty soils (peat harvest), and provision of plant and wildlife habitat (hunting, trapping, plant/wildlife/nature photography, nature observation, and aesthetics).

Chapter Three

Compatibility

Compatibility, in relation to military readiness, can be defined as the balance or compromise between community and military needs and interests. The goal of compatibility planning is to promote an environment where both entities can coexist successfully, while taking into account each other's continued success.

A number of factors influence whether community and military plans, programs, and activities are compatible or in conflict. For this Joint Land Use Study (JLUS), a list of 24 common compatibility factors was used to help characterize local issues (see the next page). These common compatibility factors fall into three broad categories: man-made, natural resources, and competition for scarce resources.

Based on input from the JLUS committees, the public, and the JLUS consulting team, issues to be addressed in the Hampton-Langley JLUS were identified under 11 of the 24 common compatibility factors evaluated. This chapter provides an overview of the compatibility factors identified within the Hampton-Langley JLUS study area. This assessment of current and future incompatibilities drives the development of the strategies presented in Chapter 5, which are designed to address the current and future issues.

3.1 METHODOLOGY AND EVALUATION

The purpose of this chapter is to detail the genesis of developing the compatibility factors associated with the Hampton-Langley JLUS. The JLUS evaluation approach consisted of a comprehensive and inclusive discovery process identifying the key stakeholder issues which could directly or indirectly affect the compatibility strategies proposed in Chapter 5. Consequently, the strategies presented in Chapter 5 were designed to address the significant compatibility issues identified in this chapter. During the preparation of the Hampton-Langley JLUS, the public, the Policy Committee (PC), and the Working Group (WG) assisted in working through all 24 factors to identify, describe, and prioritize the extent of existing and potential future compatibility factors that could impact lands within or near the study area.

At the initial committee workshops and public meetings, these groups were asked to identify the location and type of compatibility factors they thought existed today or could occur in the future.

Other issues were also added by the consulting team based on their evaluation of available information and relevant experience on similar projects.

When reviewing this information, it is important to note the following:

Man-Made

1. Land Use
2. Safety Zones
3. Vertical Obstruction
4. Local Housing Availability
5. Infrastructure Extensions
6. Anti-terrorism / Force Protection
7. Noise
8. Vibration
9. Dust / Smoke / Steam
10. Light and Glare
11. Alternative Energy
12. Air Quality
13. Frequency Spectrum Impedance & Interference
14. Public Trespassing
15. Cultural Sites
16. Legislative Initiatives
17. Interagency Coordination

Natural Resources

18. Water Quality / Quantity
19. T & E Species
20. Marine Environments

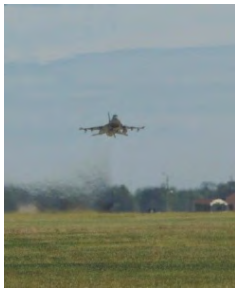
Competition for Scarce Resources

21. Scarce Natural Resources
22. Land, Air, and Sea Spaces
23. Frequency Spectrum Capacity
24. Ground Transportation

Note: Factors colored gray were determined not be factors for this study.

- This chapter provides a general technical background on each of the issues discussed based on available information. The intent is to provide an adequate context for awareness, education, and development of JLUS recommendations. As such, it is not designed or intended to be utilized as an exhaustive technical evaluation of existing or future conditions within the study area.
- Of the 24 standard compatibility factors, 13 were determined not to be existing / current factors for this area. These are shaded gray in the illustration above: Factor 4, Local Housing Availability; Factor 5, Infrastructure Extensions; Factor 8, Vibration; Factor 9, Dust / Smoke / Steam; Factor 11, Alternative Energy; Factor 12, Air Quality; Factor 13, Frequency Spectrum; Factor 14, Public Trespassing; Factor 15, Cultural Sites; Factor 16, Legislative Initiatives; Factor 17, Interagency Coordination; Factor 18, Water Quality / Quantity; Factor 20, Marine Environments; Factor 21, Scarce Natural Resources; and Factor 23, Frequency Spectrum Capacity.

Three criteria were utilized to identify the issues surrounding Langley Air Force Base (AFB), caused by both the military and the surrounding communities. By evaluating the issues based on these three criteria, an analysis can be conducted to determine how severely the current or potential issue would impact the compatibility between military operations and the nearby communities. The three criteria are: current impact, issue location, and potential impact. The criteria utilized for this assessment included the following:



A visiting F-16C takes off from Langley's airfield

- **Current Impact.** Each issue was considered based on its current impact to the compatibility of either the installation or a local jurisdiction. Issues posing the most extensive operational constraints or community concerns constitute the highest priority for mitigation measures. These include items such as incompatible land development within aircraft safety zones. Some issues pose a current impact, but are not as severe to the military mission sustainment such as the existence of threatened and endangered species within the study area.

- **Location.** This criterion measures the proximity of each issue in relation to activities occurring on the installation. Issues occurring near the installation are often more critical than those occurring remotely or in areas more distant from operational activities. Issues that were located inside the JLUS study area and were presently occurring were considered significant and in need of the most mitigation efforts. Issues located inside the JLUS study area with the potential to occur, or located outside the JLUS study area and presently occurring, were still important, but not as severe. Issues located outside the JLUS study area with minimal or no potential to occur were considered very low priority.

- **Potential Impact.** Although an issue may not present a current threat to the installation or the community, it may possess the ability to become an issue in the future. Should conditions change, adjacent or proximate development increase, or other issues become apparent, new conflicts with existing or future missions and operational activities at Langley AFB could arise. Issues were considered based on their future potential using the same criteria as established for current impact.

Each of the 24 compatibility factors discussed in this chapter will include a summary of the issues that were identified during the JLUS process that relate to that factor.

3.2 MAN-MADE COMPATIBILITY FACTORS

This section details the man-made compatibility factors and identified issues associated with operations at Langley AFB.

For the Hampton-Langley JLUS, most of the issues recorded fell under the man-made compatibility factors category. Man-made factors are those that are generated by community development that conflict with military activities. These conditions may also be generated by the military and encroach upon nearby communities. In either case, these issues may not only impact military readiness, but also a community's quality of life. For Langley AFB, 8 of the 17 man-made compatibility factors were identified as producing issues that need to be addressed by the installation and surrounding community stakeholders.

Figure 3-1 illustrates the location of the man-made compatibility issues identified by the JLUS committees, the public, and the consulting team during preparation of this JLUS. The locations shown on Figure 3-1 (and other similar figures in this chapter) indicate known or existing issue locations and are shown to indicate the general distribution of these issues today. However, it is important that the JLUS consider not only where current issues were identified, but evaluate the potential for issues to occur in other locations sometime in the future. The strategies presented in Chapter 5 were designed to address the significant compatibility factors and issues identified in this section.

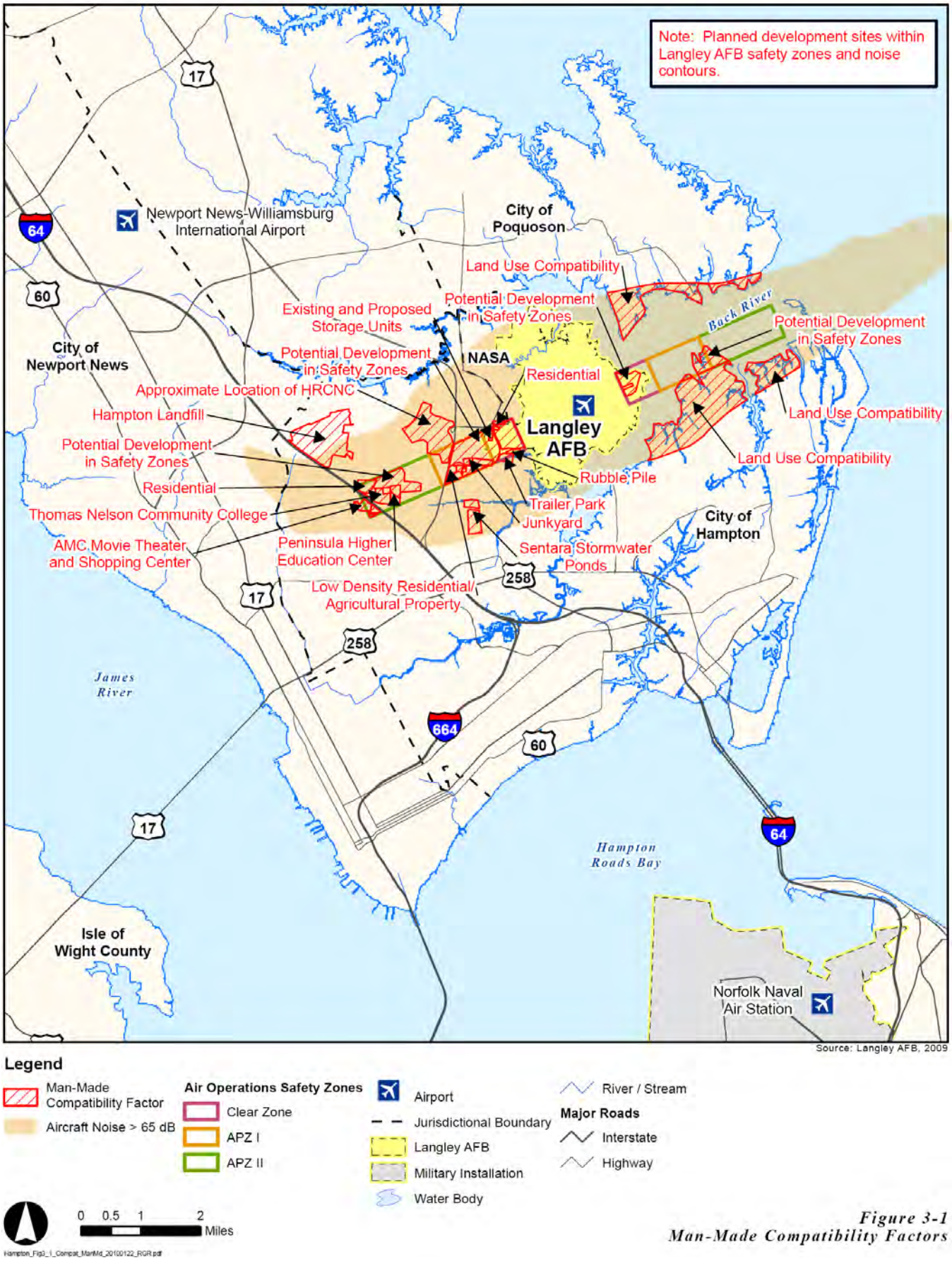


Figure 3-1
Man-Made Compatibility Factors

1 Land Use Issues

Definition:

With respect to the JLUS and compatibility, land use refers primarily to land use planning. The basis of land use planning and regulation relates to the government's role in protecting the public's health, safety, and welfare. Local jurisdictions' general plans and zoning ordinances can be the most effective tools for avoiding or resolving land use compatibility issues. These tools ensure the separation of land uses that differ significantly in character and, consequently, are incompatible with one another. Land use separation also applies to properties where the use of one property may adversely impact the use of another. For instance, industrial uses are often separated from residential uses to avoid impacts related to noise, odors, lighting, and so forth.

Land use planning in the vicinity of military installations is similar to the process used to evaluate other types of land uses. For instance, local jurisdictions already consider compatibility factors such as noise when locating residential developments near commercial or industrial areas. As the land in local municipalities is sold or developed, many facets of the communities and the military are affected. Virginia Code requires sellers to notify potential buyers if the real property for sale lies within noise contours 65 dBA (A-weighted decibel) or higher or an accident potential zone. Renters are also protected under Virginia State law, which requires landlords to disclose that the rental property lies within a noise contour 65 dBA or higher or an accident potential zone. Even with this disclosure requirement, new residents, tenants, or building owners are typically not fully aware of the implications of locating in close proximity to an active military installation and / or training area.

The issues identified for the land use compatibility factor in this JLUS primarily involve existing incompatible land development within Langley AFB aircraft and runway safety zones and are further described in the following discussion, as well as under other factors such as Compatibility Factor 2, Safety Zones and Compatibility Factor 7, Noise.

The issues identified for land use are:

- AMC movie theater and a portion of the adjacent shopping center;
- storage warehouses;
- southern portion of the Hampton Roads Center North Campus (HRCNC);
- residential development;
- existing incompatible land uses within noise contours and aircraft safety zones, including residential and educational facilities; and
- planned development sites within safety zones and noise contours throughout the study area.

Many of the issues related to land use compatibility raised by the public, PC, and WG were associated with existing developments located near the installation. Land uses may be considered incompatible with military installations and their operations based on a number of factors. Among the most common factors causing incompatibility between military airfields and their operation areas and surrounding communities are the high levels of noise created by aircraft, limits on the heights of structures near the installation, safety issues for pilots (and people on the ground) caused by certain types of land uses, and off-installation light pollution that negatively impacts the use of night vision devices (NVD) for military air and ground training (or conversely military lighting that impacts nearby residents). The development of land uses incompatible with an installation's military mission may threaten that installation's continued existence. A number of land uses around Langley AFB generated safety concerns

for aircraft pilots and residents on the ground. Some other common concerns around

Langley AFB is bounded closely by water and local communities

Langley AFB were residential areas located in noise contours that could be impacted by undesirable noise generated by military aircraft. This issue could lead to noise complaints and possible restrictions on the types of operations that take place at the base.

The land use planning process is further complicated by the number of entities responsible for managing the land around Langley AFB. The Back River is adjacent to Langley AFB on the north, east, and south. The land composition to the east, south, and west is a part of the City of Hampton. The City of Poquoson lies across the Back River to the north and composes the land area north of the base. The National Aeronautics and Space Administration (NASA) owns land immediately west of Langley AFB. York County begins less than one mile west of NASA's border. The City of Newport News includes land in the JLUS study area to the southwest and west. The fact that each of these jurisdictions has its own system of land management and control creates challenges to cohesively plan for areas that are at risk for having incompatible land uses.

Most of the land surrounding Langley AFB is already developed, but there are some areas to the east and west of the base that are currently vacant with room for infill development. Without proper planning and coordination, this could pose future issues depending on the types of development proposed. The desirability and potential future development of these vacant areas could create a threat to compatibility if not carefully planned and coordinated. The majority of the land use issues that cause encroachment or incompatible use between Langley AFB and the surrounding communities overlap with other encroachment factors such as safety or noise, and so are discussed in more detail under those factors later in this section.

Parcels that are currently vacant have the potential to develop at incompatible densities or with incompatible land uses that could cause safety issues if there were an aircraft accident, as further discussed in Compatibility Factor 2, Safety Zones. Some incompatible uses have already been developed within the designated aircraft safety zones. These include residential development, an AMC movie theater, the Hamptons Golf Course clubhouse, Thomas Nelson Community College (TNCC), and Peninsula Higher Education Center. All of these uses exceed the Air Force recommended densities for number of people using them. The Air Force did not initiate its Air Installation Compatible Land Use Zone (AICUZ) program, in which incompatible land uses are listed, until 1972, which was five years after TNCC was opened.

The AMC movie theater complex is located at the far west end of the western Accident Potential Zone (APZ) II, on the west side of Interstate 64, inline with the Langley AFB runway centerline. Only a small portion of the theater lies outside of the APZ, as does the balance of the adjacent shopping area. Based on Air Force safety recommendations, this use is not compatible with Langley's aircraft operations. Another incompatible existing use is the storage warehouses located within the western Clear Zone (CZ), just north of the runway overrun.

These issues will be discussed further under Compatibility Factor 2, Safety Zones.

Langley AFB Runway Safety Zones:

Clear Zone -

- *Area of highest potential for aircraft mishap*
- *3,000 feet wide by 3,000 feet long*

Accident Potential Zone I –

- *Area of significant, though reduced, accident potential*
- *3,000 feet wide by 5,000 feet long*

Accident Potential Zone II –

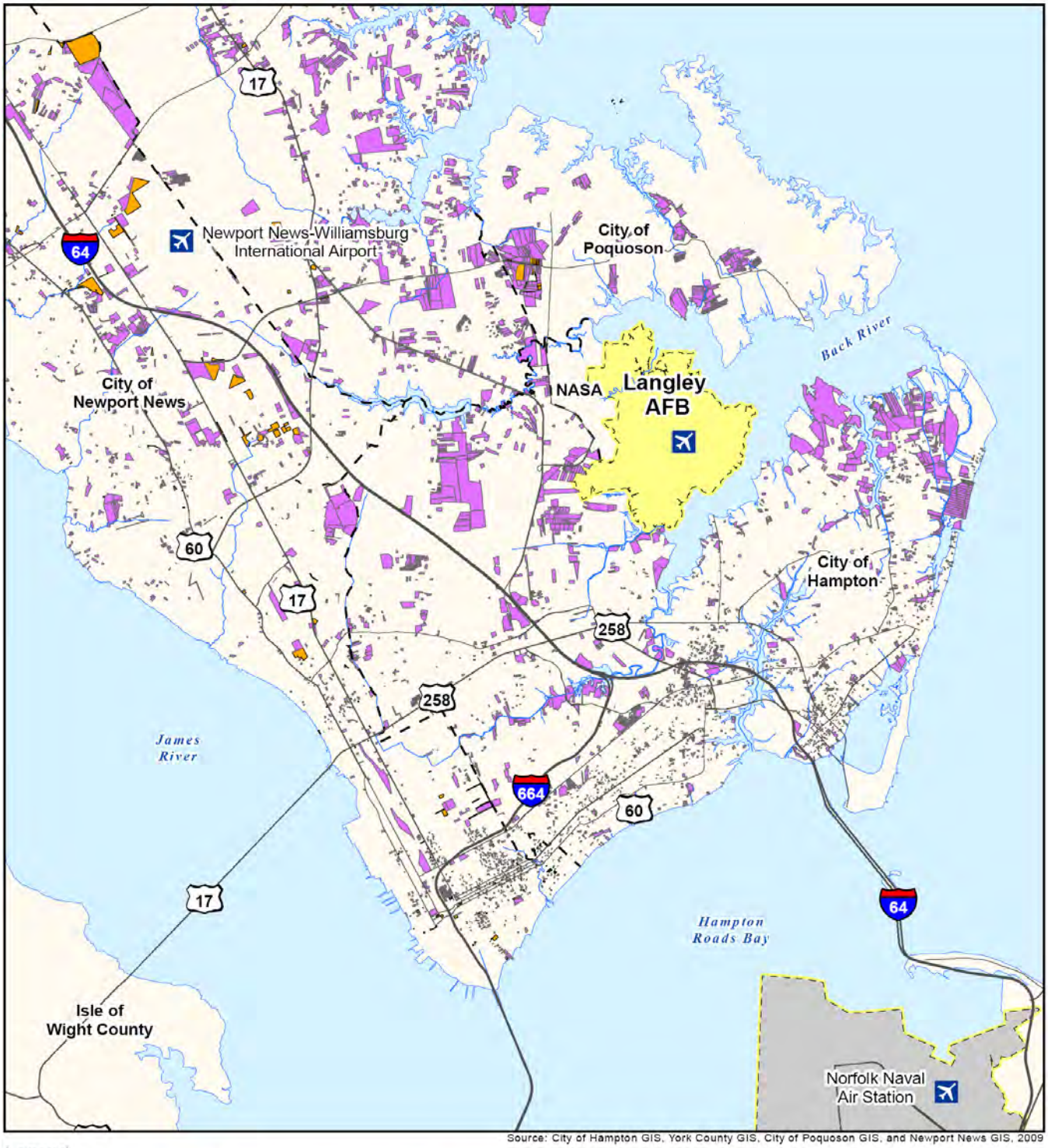
- *Area having lesser, but still significant, potential for accidents*
- *3,000 feet wide by 7,000 feet long*

The noise contours generated by Langley aircraft operations overlay land uses that could result in noise complaints. It is important for local jurisdictions to manage the type of development on the impacted parcels. Much of the land is already developed, some with incompatible uses. Vacant parcels within Langley AFB safety zones and noise contours are of concern for future incompatible land use. The main jurisdictions impacted by this are the cities of Hampton and Poquoson.

The City of Hampton is primarily urbanized; therefore, developable vacant land is scarce. According to Hampton's 2006 Community Plan, the city is over 90 percent built out. The majority of the city's remaining developable vacant land is located west of Langley AFB between the base and Interstate 64. According to the City of Hampton GIS data, less than 10 percent of the city's vacant land is located within the Langley AFB air operations safety zones and noise contours. The Land Use Plan portion of Hamptons Community Plan identified most of this area as a mix of rural and low density residential and business / industrial. Residential development without sound attenuation measures included during construction is not recommended for uses located within noise contours above 65 dB. Some of the residential development could be redirected to an area such as an identified redevelopment zone where the use is more appropriate. This development could then be incorporated into redevelopment areas within the city that would be less impacted by military operations. The business / industrial growth designated for the land west of Langley AFB will most likely not have anywhere else to be redirected as there is only one other large region in the city for this type of development. Figure 3-2 shows the areas within the study area where vacant land exists, identified as being privately or publically held. Figure 3-3 illustrates the future land use designations of vacant land.

Each of the jurisdictions in the study area has their own classifications for land use, such as densities for residential zones. For the purposes of this JLUS and to reduce the number of existing land use categories shown on the maps, similar land uses from the different jurisdictions have been grouped together. For example, the lowest density residential areas have been identified as "rural residential" and have the largest tracts of land for houses. Many of the listed categories may include slightly different uses from each jurisdiction.

The Hampton Community Plan states that in-fill development, redevelopment, and revitalization of existing developed areas will be the main focus of growth within the city. Hampton has prepared several master plans for districts within the city, including Downtown, Buckroe, and Coliseum Central, which describes the various growth and redevelopment goals and patterns for these areas. Primary areas identified for redevelopment are five-acre or larger parcels that are individually owned and were developed more than 30 years ago. There are a variety of factors that play a role in the type and amount of redevelopment for an area, including market conditions, adjacent properties, surrounding land use, and zoning and other regulations. Redevelopment areas are often



Source: City of Hampton GIS, York County GIS, City of Poquoson GIS, and Newport News GIS, 2009

Legend

Vacant Land Ownership
- Private
- Public

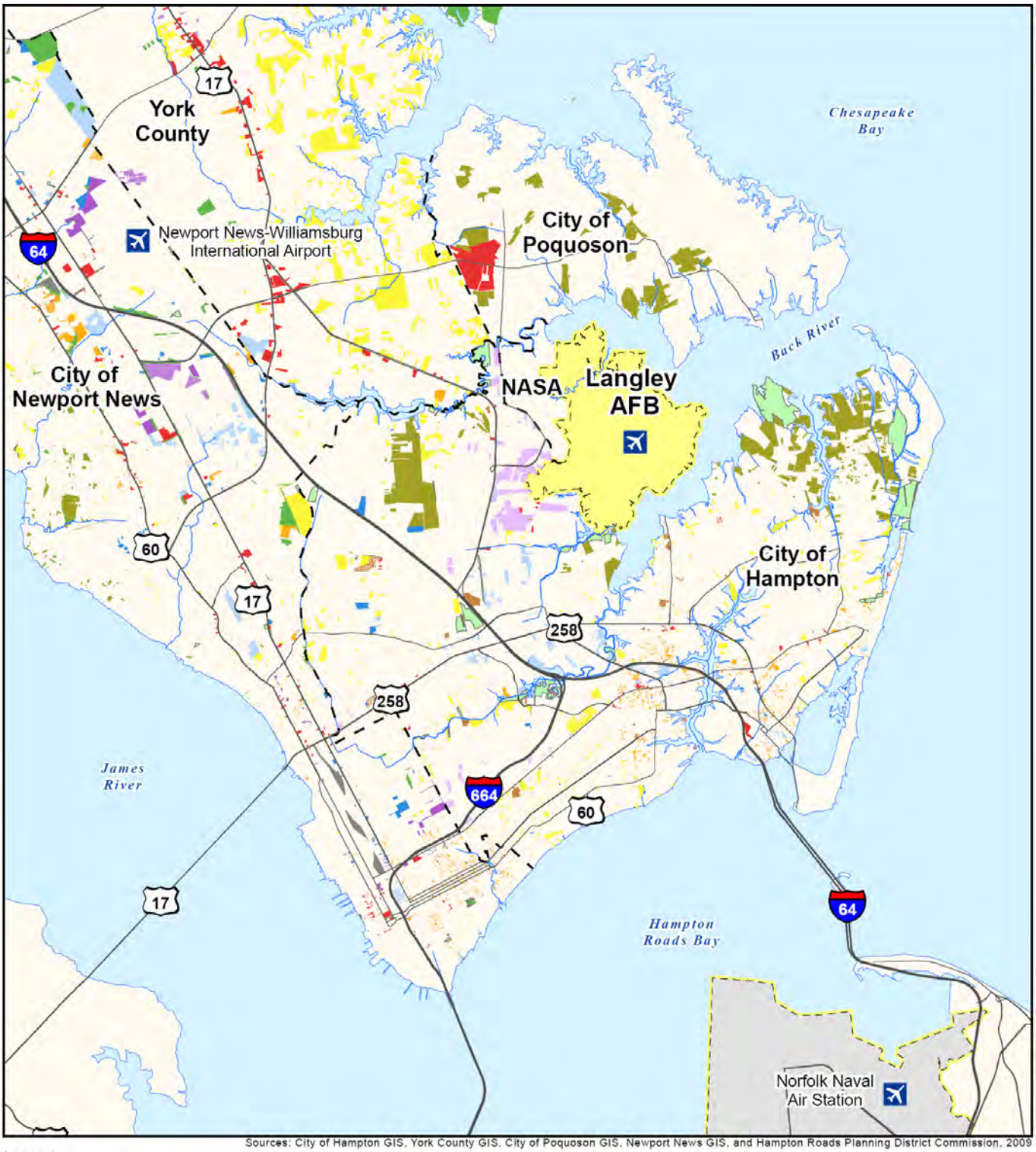
- Airport
- Jurisdictional Boundary
- Langley AFB
- Military Installation
- Water Body
- River / Stream

Major Roads
- Interstate
- Highway

0 0.5 1 2 Miles

Hampton_Fig3_2_VacLandOwner_20100122_RGR.pdf

Figure 3-2
Vacant Land Ownership



Sources: City of Hampton GIS, York County GIS, City of Poquoson GIS, Newport News GIS, and Hampton Roads Planning District Commission, 2009

Legend

Vacant/Future Land Use

- Rural Residential (</=2 DU/acre)
- Low Density Residential (>4-8 DU/acre)
- Medium Density Residential (>8-15 DU/acre)
- High Density Residential (>15 DU/acre)
- Commercial/Office
- Light Industrial
- Industrial/Office Park
- Heavy Industrial
- Mixed Use
- Public/Semi-Public
- Military
- Conservation
- Open Space
- Right-of-Way/Utilities
- Airport
- Jurisdictional Boundary
- Langley AFB
- Military Installation
- Water Body
- River / Stream

Major Roads

- Interstate
- Highway

0 0.5 1 2 Miles

Hampton_Fig3_3_FLU_VacLand_20100923_JKC.pdf

Figure 3-3
Vacant Land - Future Land Use Compatibility Issues

high value, high density, and / or mixed use projects.

Another concern for potential incompatible land use within this area is the Hampton Roads Center North Campus. The HRCNC is a 470-acre business park located along Magruder Boulevard less than two miles west of Langley AFB. The area is a State designated Enterprise Zone. The Enterprise Zone contains a large portion of Hampton's business and industrial parks, providing incentives to encourage qualified business and technology companies to expand, relocate, or start up within the designated zone. The HRCNC allows businesses with similar interests and requirements to be located in close proximity to one another so that they can interact with each other. Approximately 31 acres of the southern portion of the campus lay within APZ I.

About 140 acres of the HRCNC is located within the Langley AFB 65-70 dB noise contour. Just under 131 acres are within the 70-75 dB noise contour, and nearly 12 acres are within the 75-80 dB noise contour. The HRCNC is not fully developed and includes some areas of vacant land. There is limited space for new development to occur on the campus, and all new development would be within the noise zones. Depending on the use ultimately developed on the available parcels, there is a potential for these uses to be incompatible with military activities.

The City of Hampton must balance the current and desired land uses located within Langley's safety and noise zones with its desire to maintain and expand a healthy and sustainable tax and employment base. A challenge for Hampton is to promote regional economic development goals and support a regional economic asset such as Langley AFB while also focusing on enhancing the City's economy.

2 Safety Zones

Definition:
Safety zones are areas in which development should be more restrictive in terms of use and concentrations of people due to the higher risks to public safety. Issues to consider include aircraft accident potential zones, weapons firing range safety zones, and explosives safety zones.

Military installations often have activities or facilities that require special consideration by local jurisdictions when evaluating compatibility due to public safety concerns. The issues related to uses incompatible with safety zones are:

- Development, including residential units, in aircraft and runway safety zones that exceeds recommended densities or types of land uses;
- Public gathering places, such as shopping centers and educational institutions within the safety zones; and
- Areas that attract birds that could pose hazards to aircraft operations, such as golf courses, landfills, and wetlands.

Aircraft Safety Zones

The following discussion details the safety zones associated with military runways and air operations with emphasis on the unique aspects of aircraft operations safety within the Hampton-Langley JLUS study area.

Air Installation Compatible Use Zone

The Department of Defense (DOD) AICUZ program was designed to analyze airfield operations at military bases to promote an environment that protected the health, safety, and welfare of the public in terms of noise and safety issues derived from aircraft operations. DOD analysis determined that the areas immediately beyond the ends of runways and along the extended centerlines (approach and

departure flight paths) have the highest potential for aircraft accidents. Downed aircraft are tracked as part of the Air Force AICUZ program; however, any objects falling from aircraft is tracked locally. It should be noted that there has not been a report of dropped objects since 2001 at Langley AFB. Based on this analysis, the DOD developed three zones that have a relative potential for accidents. These zones are square and rectangular in shape and are designated as the CZ, APZ I, and APZ II. According to data gathered by the United States Air Force (USAF) on aircraft accidents between 1968 and 1995, the majority of aircraft accidents occurred either on the runway (24.9 percent) or within the CZ (27.4 percent). The data also indicated that 10.1 percent of accidents occurred in APZ I and 5.6 percent in APZ II. About 32 percent of the remaining accidents occurred within 10 miles of the airfield. It was concluded that the CZ warranted special attention due to the high incidence of accident potential, which consequently severely limits acceptable land uses. The percentages of accidents within the two APZs are such that land use restrictions are essential to ensure public safety. The USAF recommendation for APZs is to limit the concentrations of people exposed to flight safety hazards through appropriate land use planning.

Each installation's AICUZ Study contains general land use guidelines related to safety and noise associated with aircraft operations. The land use guidelines provided in the 2007 Langley AICUZ Study are located in the JLUS Appendix. These reflect the USAF-recommended land use compatibility guidelines in relation to noise zones and APZs. The information presented in the AICUZ table is essentially the same as the information contained in the June 1980 publication by the Federal Interagency Committee on Urban Noise (FICUN) entitled *Guidelines for Considering Noise in Land Use Planning Control* and in the *Standard Land Use Coding Manual* published in 1965 by the United States Urban Renewal Administration (USURA).

The 2007 Langley AFB AICUZ study may be found on the Hampton-Langley JLUS website on the resources page.
See*: www.hamptonlangleyjlus.com*

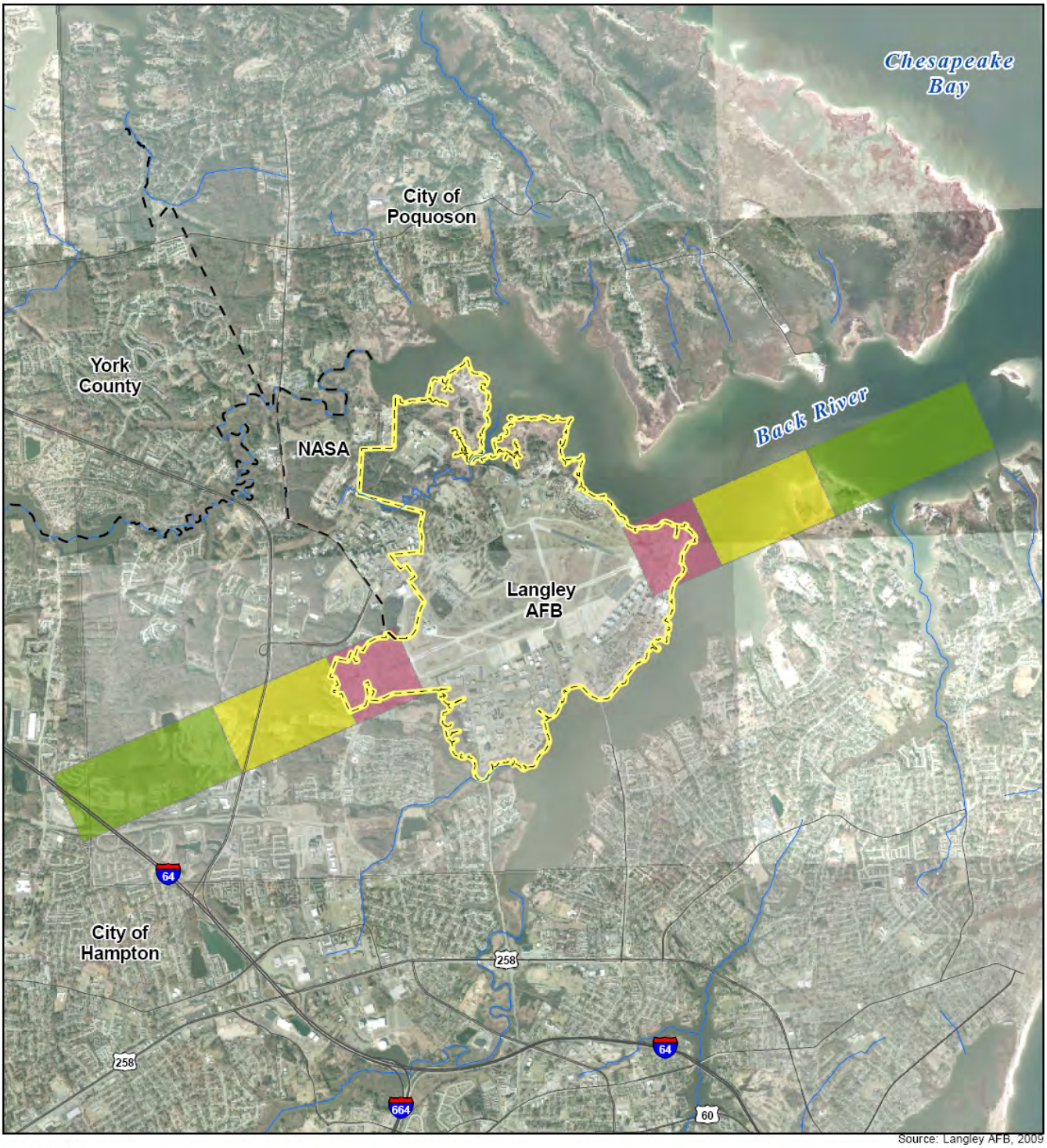
Safety zones are designed to help avoid / limit damage and loss of life from an aircraft crash like the December 2008 Marine F-18 crash in San Diego, CA

Langley AFB Safety Zones

Langley AFB has a single runway that measures 10,000 feet long by 150 feet wide and is oriented in a northeast-southwest direction. The CZ for Langley's runway measures 3,000 feet long by 3,000 feet wide, extending directly beyond the ends of the runway and outward along an imaginary extension of the runway's centerline. Aboveground structures are generally not permitted in these areas, and land is optimally undeveloped. For this reason, acquiring sufficient real property interest in land within the CZ is critical to ensuring incompatible development does not occur in that area. The Air Force has adopted a stance of acquiring land or easements over land that falls within the CZ, and the majority of the land within Langley AFB's western CZ falls under this and is protected from incompatible development. There is some land within the western CZ, however, that has been developed with incompatible uses. Based on 2000 census data and aerial imagery, the July 2007 Langley AFB AICUZ Study estimated that 182 people live within the western CZ, just outside of the base boundary.

APZ I is the same width as the CZ (3,000 feet), and it begins at the end of the CZ extending along the runway's imaginary centerline 5,000 feet (see Figure 3-4). The Langley AICUZ Study estimated that 30 people live within APZ I. The outermost APZ, APZ II, is also 3,000 feet wide and extends from the end of APZ I along the runway centerline for another 7,000 feet. The AICUZ estimated that 366 people live within APZ II.

While the aircraft accident potential in APZs I and II does not warrant land acquisition by the Air Force, land use planning and controls are strongly encouraged for the protection of public safety. Within APZ I and APZ II, a variety of land uses are compatible to varying degrees; however, the primary factor to be considered is the intended densities of people and structures. Occupant-intensive land uses such as high density residential, commercial, and industrial should be avoided due to the greater potential for safety incidents in these areas. Table 3-1 displays various land uses that are both compatible and incompatible within the aircraft safety zones.



Source: Langley AFB, 2009

Legend

Safety Zones
- Clear Zone
- APZ I
- APZ II
- Jurisdictional Boundary
- Langley AFB
- River / Stream

Major Roads
- Interstate
- Highway

0 0.25 0.5 1 Miles

Hampton_Fig3_04_SafetyZones_20100120_RGR.pdf

Figure 3-4
Air Operations Safety Zones

Table 3-1. AICUZ Safety Zones Generalized Land Use Criteria

	Safety Zones		
Generalized Land Use	Clear Zone (CZ)	Accident Potential Zone I (APZ I)	Accident Potential Zone II (APZ II)
Residential	No	No	Yes(1)
Manufacturing	No	Yes(2)	Yes(2)
Transportation, Communications, and Utilities	No	Yes(2)	Yes(2)
Trade, Business, and Offices	No	Yes(2)	Yes(2)
Shopping Districts	No	No	Yes(2)
Public and Quasi-Public Service	No	No	Yes(2)
Recreation	No	Yes(2)	Yes(2)
Public Assembly	No	No	No
Agriculture and Mining	No(3)	Yes(2)	Yes(2)

Notes:
**This chart is for general information. Refer to Langley AFB 2007 AICUZ Study, Volume I, Table 3-4 for specific land use guidelines.*
1. Suggested maximum density 1 dwelling unit per acre.
2. Only limited low-density, low-intensity uses recommended.
3. Except limited agricultural uses are permitted.
Source: Langley AFB 2007 AICUZ Citizen's Brochure

Compatibility

Issues

There are several existing developments within the Langley AFB safety zones that are incompatible with the recommended land uses. As described earlier, safety zones are located at each end of the runway (west and east), each having unique compatibility issues. Figure 3-5 shows the existing land uses as provided by Hampton's Planning Department within each safety zone and their compatibility with USAF air operations.

In 1992, the City of Hampton developed specific zoning guidelines based on operations at Langley AFB. These were in the form of two zoning districts – M-4, Langley Flight Approach and M-5, Langley Flight Approach. The M-4 District has two sub-districts:

- M-4A, Langley Flight Approach – Manufacturing, Distribution, and Warehousing allows light manufacturing, distribution, and sales in conjunction with AICUZ recommendations; and
- M-4B, Langley Flight Approach – Mixed Business and Manufacturing allows similar uses based on AICUZ recommendations.

The M-5 District has four sub-districts:

- M-5A, Langley Flight Approach – Hampton Roads Center (HRC) has recommended density restrictions and incorporated appropriate regulations from the Special Public Interest - Hampton Roads Center (SPI-HRC) District;
- M-5B, Langley Flight Approach – Limited Business I includes recommended density restrictions and does not include SPI-HRC requirements;
- M-5C, Langley Flight Approach – Limited Residential allows for the continuance of existing residential development, but no expansion of that residential use; and
- M-5D, Langley Flight Approach – Limited Business II is similar to the Limited Business I sub-district but with special limitations.

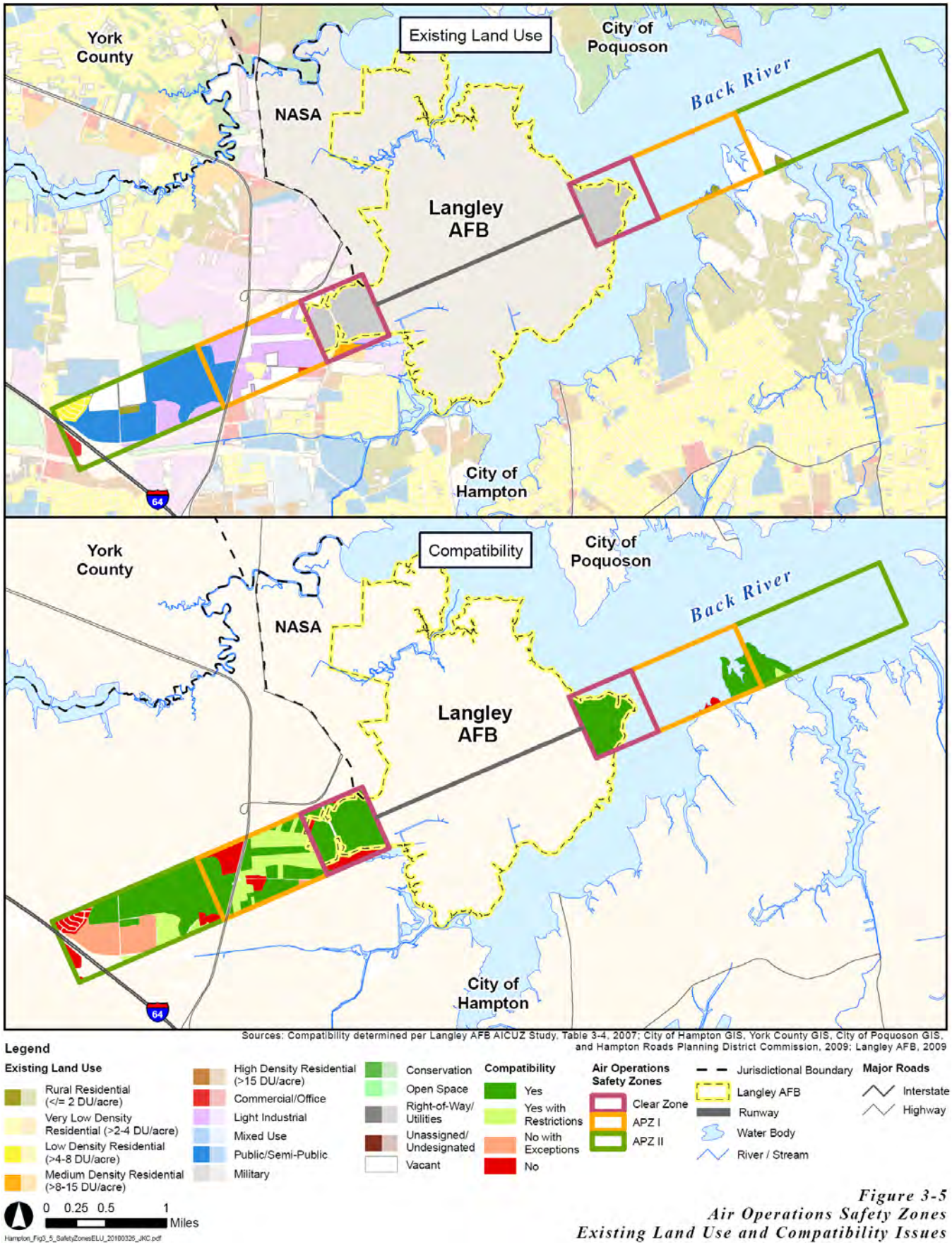


Figure 3-5
Air Operations Safety Zones
Existing Land Use and Compatibility Issues

These two districts and combined six sub-districts permit uses that are generally based on AICUZ guidelines for CZs and APZs. Hampton has adopted a Special Public Interest – Aircraft Approach Overlay Zoning District to further regulate land within the CZ and APZs. This overlay focuses on reducing hazards from light emission, dust, or the potential to create a Bird / Wildlife Aircraft Strike Hazard (BASH).

The 1992 zoning district and ordinance adoption was endorsed by Langley AFB as being consistent with the AICUZ in effect at that time, which was the pre-2007 AICUZ. However, the mission changes that created the need for the 2007 Langley AICUZ also resulted in some incompatibilities with land uses that existed before these regulations were put in place. These uses are located in Langley AFB safety areas. Data Analysis Methodology

The analysis of existing land use and zoning for land within the Langley AFB air operations safety zones included GIS data provided by the City of Hampton GIS Department. For this data, land use and zoning categories for all of the study area jurisdictions were evaluated for similarities and then grouped according to standardized naming conventions. The GIS data from the jurisdictions was merged, taking into account overlapping areas / parcels. This data was then intersected with safety zones to obtain impacted parcels according to categories.

For the City's dataset within the air operations safety zone, an "Undesignated" category was added to ensure the totals for each of the safety zones summed up to the total available for each zone (CZ [3,000 ft x 3,000 ft] = 207 acres, APZ I [3,000 ft x 5,000 ft] = 344 acres, APZ II [3,000 ft x 7,000 ft] = 482 acres). This category includes lands such as water, right-of-way, or another unassigned category.

Western Safety Zones

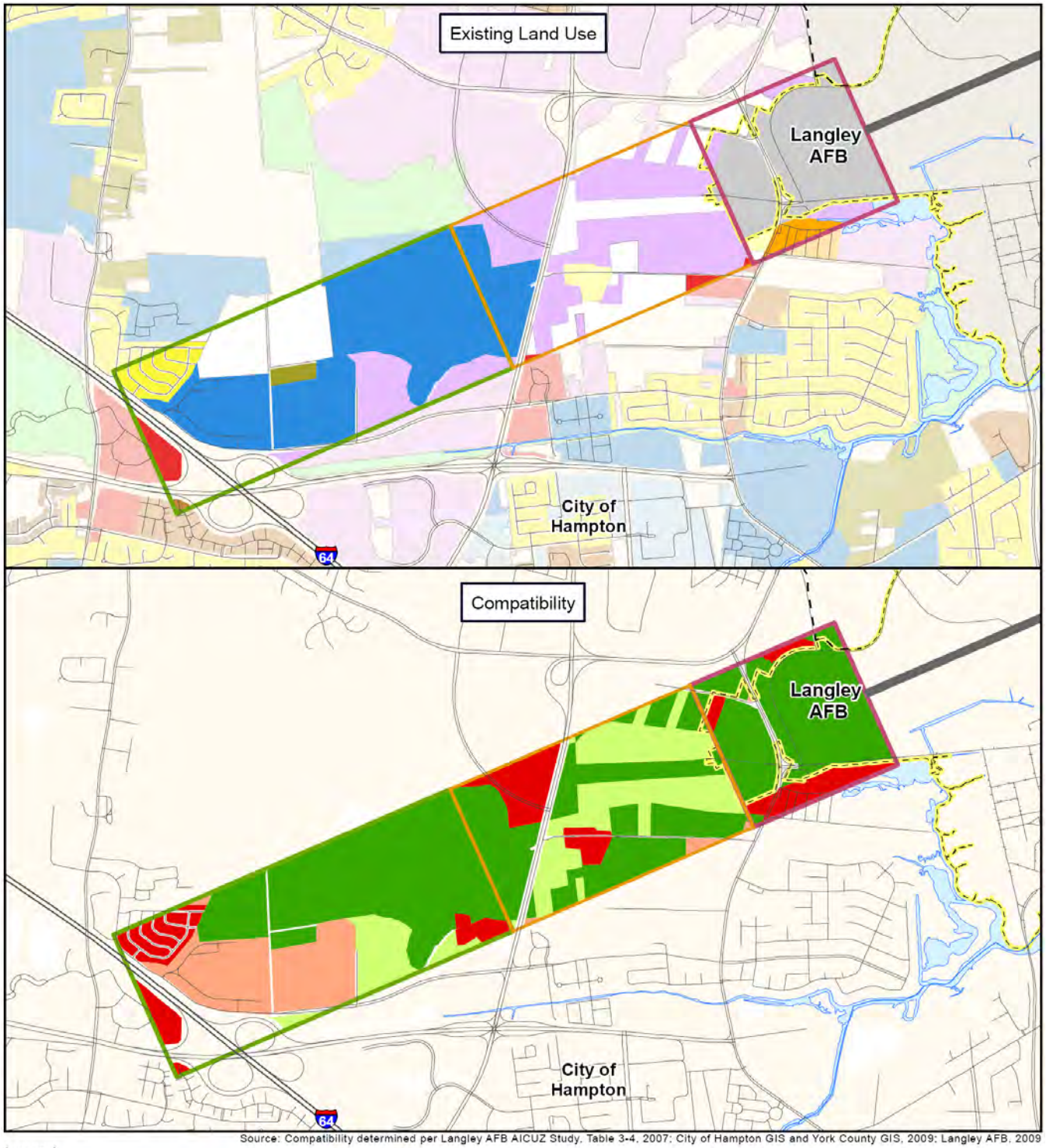
Existing Land Use

A number of land uses and developments were identified as posing safety issues in Langley AFB western air operations safety zones (see Figure 3-1). Figure 3-6 shows existing land uses and land use compatibility within the western safety zones. Just outside of the base boundary, storage unit facilities have been constructed within the northern portion of the western CZ. Additional storage units are under construction just west of the existing containers. Although the containers are not inhabited, Air Force recommendations call for no buildings or structures within the CZ.

The Hampton Town Center, complete with a 24-screen AMC movie theater and shopping venues, was built at the westernmost end of the western APZ II, on the south side of Interstate 64. Shopping malls and shopping centers are considered incompatible in any APZ II. Additionally, uses where high densities of people gather, such as auditoriums, sports arenas, theaters, and public assembly facilities are also not compatible within either APZ. Should an aircraft accident occur, land uses with large numbers of people could sustain a significant loss of life or a large number of injuries.

The AMC-24 movie theater is partially located in Langley's western APZ II

Also located in the western APZ II are the Peninsula Higher Education Center and Thomas Nelson Community College. Although TNCC was established in 1967, before the Air Force AICUZ program was established, educational land uses, including schools, are not compatible within any of the safety zones.



Source: Compatibility determined per Langley AFB AICUZ Study, Table 3-4, 2007; City of Hampton GIS and York County GIS, 2009; Langley AFB, 2009

Legend

Existing Land Use
- Rural Residential (</= 2 DU/acre)
- Very Low Density Residential (>2-4 DU/acre)
- Low Density Residential (>4-8 DU/acre)
- Medium Density Residential (>8-15 DU/acre)
- High Density Residential (>15 DU/acre)
- Commercial/Office
- Light Industrial
- Mixed Use
- Public/Semi-Public
- Military
- Open Space
- Vacant

Compatibility
- Yes
- Yes with Restrictions
- No with Exceptions
- No

Air Operations Safety Zones
- Clear Zone
- APZ I
- APZ II

- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream

Roads
- Interstate
- Local

0 625 1,250 2,500 Feet

Hampton_Fig3_6_SafetyZones&LU_West_20100326_JKC.pdf

Figure 3-6
Air Operations Safety Zones (West)
Existing Land Use and Compatibility Issues

In general, the Hamptons Golf Course location within APZ I and APZ II is compatible with Langley's air operations; however, the course's clubhouse use is incompatible in an APZ II, as it may be occupied by large numbers of people.

There are several residential developments throughout all three western safety zones. These developments are generally at a greater density than the one to two dwelling units per acre recommended by the USAF. Residential use with densities above this are considered incompatible. A portion of a mobile home park is located in the southern side of the western CZ. As previously stated, no type of residential use is recommended for this zone. The mobile home park and several single family homes in the CZ are the source of the estimated 182 residents identified as living within the CZ by the Langley AFB 2007 AICUZ Study. Within the western APZ I, a realty office building and low density residential are located nearly in line with the Langley AFB centerline. Future administrative development is also proposed within APZ I in close proximity to the realty office. There is also residential use in the northwest corner of APZ II adjacent to the north side of Interstate 64 that is at a density higher than recommended by the Air Force for APZ II.

Analysis of the existing land uses within the three western safety zones demonstrates the amount of incompatible land uses that are currently located within these zones. According to land use data provided by the City of Hampton's GIS Department, the majority of the 207 acres in the CZ (70 percent) is owned by the DOD and is part of Langley AFB. Of the CZ land, 16 acres (7.7 percent) are currently vacant and another 11 acres is undesignated. The light industrial, very low density residential, and medium density residential uses are not compatible with the CZ.

The data set was evaluated to identify additional incompatible and potentially incompatible land uses in both of the APZs.

As noted in the discussion of Compatibility Factor 1, Land Use, vacant parcels throughout the JLUS study area that are within Langley's western safety zones and that could support development are a concern for potentially incompatible uses. West of Langley AFB, vacant parcels impacted by Langley's safety zones are located in the City of Hampton. The main concentration of these parcels is in APZ I, generally along the runway's centerline. Table 3-2 details the number of acres for each type of existing land use within the three western safety zones. Red shading indicates land uses incompatible with the safety zone while yellow shading indicates potentially incompatible uses.

Future Land Use

Table 3-3 identifies the future land uses within the three western safety zones as indicated by the Hampton GIS Department. Each safety zone has incompatible and / or potentially incompatible land uses. Red shading in the table indicates land uses incompatible with the safety zone while yellow shading indicates potentially incompatible uses. Figure 3-7 shows future land uses as provided by the city's GIS department, as well as future land use compatibility within the western safety zones.

Table 3-2. Existing Land Use within Langley AFB's Western Safety Zones

Land Use	Hampton Planning Data	
	Acres	Percent of Total
Clear Zone		
Rural Residential (</= 2 du/acre)		
Very Low Density Residential (>2-4 du/acre)	3	1.4%
Low Density Residential (>4-8 du/acre)		
Medium Density Residential (>8-15 du/acre)	13	6.3%
High Density Residential (>15 du/acre)		
Commercial/Office		
Light Industrial	19	9.2%
Military	145	70.0%
Public/Semi-public		
Vacant	16	7.7%
Unassigned/Undesignated	11	5.3%
Total	**207**	
Accident Potential Zone I		
Rural Residential (</= 2 du/acre)		
Very Low Density Residential (>2-4 du/acre)	10	2.9%
Low Density Residential (>4-8 du/acre)		
Medium Density Residential (>8-15 du/acre)		
High Density Residential (>15 du/acre)		
Commercial/Office	4	1.2%
Light Industrial	180	52.3%
Military	3	<1.0%
Public/Semi-public	42	12.2%
Vacant	89	25.9%
Unassigned/Undesignated	89	25.9%
Total	**344**	

Land Use	Hampton Planning Data	
	Acres	Percent of Total
Accident Potential Zone II		
Rural Residential (</= 2 du/acre)	6	1.2%
Very Low Density Residential (>2-4 du/acre)		
Low Density Residential (>4-8 du/acre)	20	4.1%
Medium Density Residential (>8-15 du/acre)	13	6.3%
High Density Residential (>15 du/acre)		
Commercial/Office	11	2.3%
Light Industrial	50	10.4%
Military		
Public/Semi-public	260	53.9%
Vacant	69	14.3%
Unassigned/Undesignated	69	14.3%
Total	**482**	

Note: Compatibility derived from Langley AFB AICUZ Update, July 2007, Table 3-74 "Land Use Compatibility, Noise Exposure, and Accident Potential"

Source: Hampton Planning Data provided by the City of Hampton GIS Department, September 29, 2009

Table 3-3. Future Land Use within Langley AFB's Western Safety Zones

Land Use	Hampton Planning Data	
	Acres	Percent of Total
Clear Zone		
Rural Residential (</= 2 du/acre)		
Low Density Residential (>4-8 du/acre)		
High Density Residential (>15 du/acre)		
Commercial/Office	1	< 1.0%
Light Industrial	37	17.9%
Military	145	70.0%
Public/Semi-Public		
Open Space	11	5.3%
Unassigned/Undesignated	13	6.3%
Total	**207**	

Land Use	Hampton Planning Data	
	Acres	Percent of Total
Accident Potential Zone I		
Rural Residential (</= 2 du/acre)		
Low Density Residential (>4-8 du/acre)		
High Density Residential (>15 du/acre)		
Commercial/Office	6	1.7%
Light Industrial	277	80.5%
Military	3	< 1.0%
Public/Semi-Public	42	12.2%
Open Space		
Unassigned/Undesignated	16	4.7%
Total	**344**	
Accident Potential Zone II		
Rural Residential (</= 2 du/acre)	61	12.7%
Low Density Residential (>4-8 du/acre)	21	4.4%
High Density Residential (>15 du/acre)	1	< 1.0%
Commercial/Office	11	2.3%
Light Industrial	51	10.6%
Military		
Public/Semi-Public	274	56.8%
Open Space		
Unassigned/Undesignated	63	13.1%
Total	**482**	

Note: Compatibility derived from Langley AFB AICUZ Update, July 2007, Table 3-74 "Land Use Compatibility, Noise Exposure, and Accident Potential"

Source: Hampton Planning Data provided by the City of Hampton GIS Department, September 29, 2009

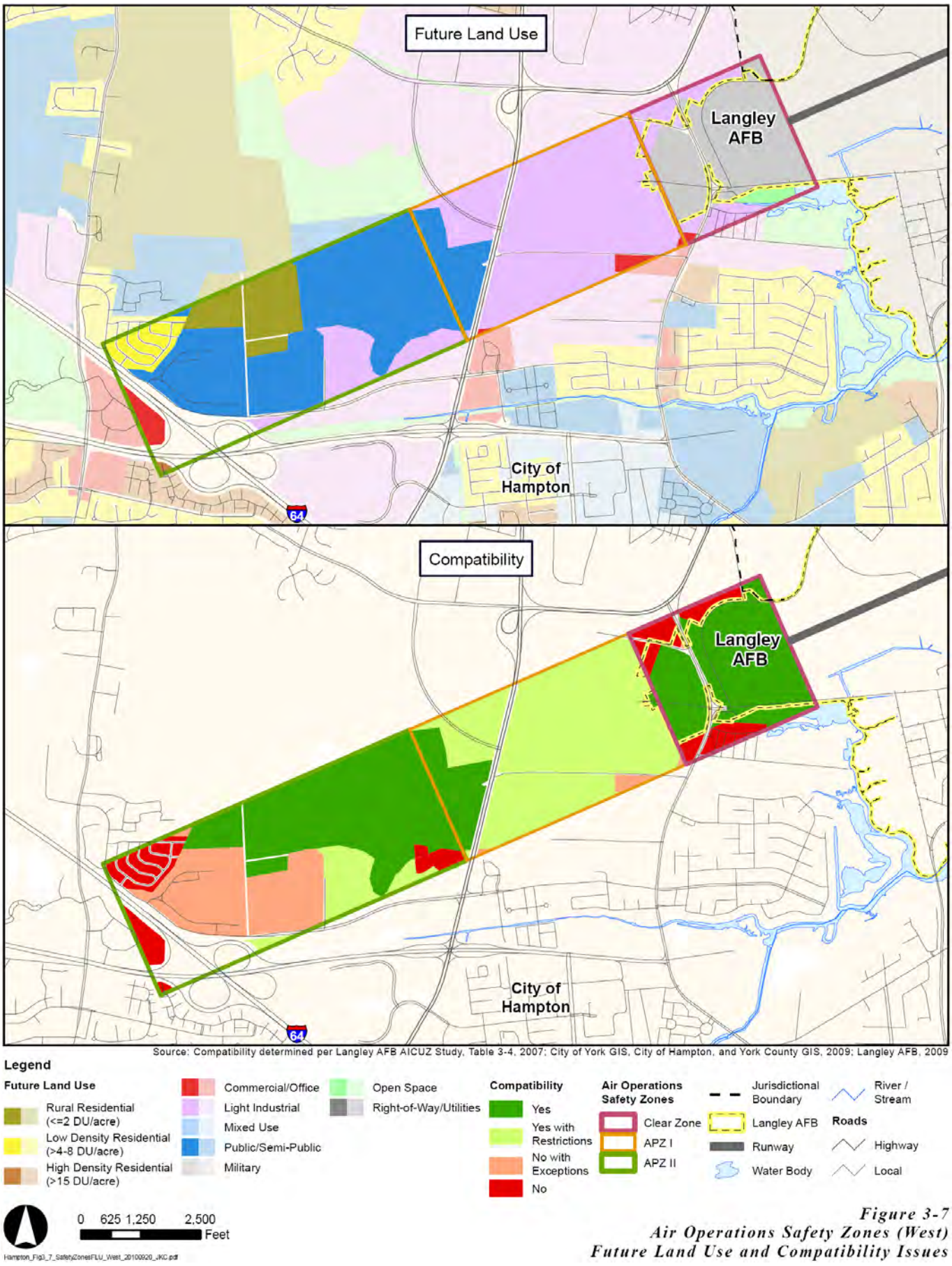


Figure 3-7
Air Operations Safety Zones (West)
Future Land Use and Compatibility Issues

Zoning

Analysis of zoning within the safety zones provides additional information as to the types of development that exists or could exist in the zones. All of the land located within the three safety zones is within the City of Hampton, which includes Langley AFB parcels in the Clear Zones. Figure 3-8 shows zoning as provided by the city's GIS department, as well as the compatibility of zoning within the safety zones with Langley AFB air operations. Figure 3-9 illustrates the same data as in Figure 3-8 but specifically for the western safety zones.

Of the 207 acres possible in the western CZ, Langley AFB owns 150 acres (73 percent). Although part of the installation, the parcels are zoned by Hampton as R-13 single family residential and Langley Flight Approach District – Manufacturing, Distribution, and Warehousing. According to the city's planning staff, the City does not have a Military zoning category; therefore, Langley lands within the western CZ were assigned zoning categories of residential and Flight Approach District as a means to guide future development on those parcels should Langley AFB ever be closed. For the purposes of this JLUS, land within Langley AFB and NASA were categorized at Federal / Military. These uses on the Langley lands within the western CZ are in accordance with Air Force requirements for air operations safety zones. Although no residential or manufacturing, distribution, and warehousing uses currently occur in the western CZ, it must be noted that their zoning classifications present compatibility issues with Langley's western safety zones (see Figure 3-9). The primary zoning concerns in the western CZ are the parcels (57 acres) outside of Langley AFB boundaries that are zoned for commercial, industrial, and residential uses as indicated by the City of Hampton GIS Department. These uses are not compatible with Langley's western CZ. There are incompatible and potentially incompatible uses also located in the APZs; however, the acreage is much less than in the CZ. Table 3-4 shows the breakdown of the number of acres for each zoning category within the three western safety zones. Red shading in the table indicates land uses incompatible with the safety zone while yellow shading indicates potentially incompatible uses.

Table 3-4. Zoning within Langley AFB's Western Safety Zones

Zoning Categories	Hampton Planning Data	
	Acres	Percent of Total
Clear Zone		
Very Low Density Residential (>2-4 du/acre)		
Low Density Residential (>4-8 du/acre)		
Medium Density Residential (>8-15 du/acre)	9	4.3%
Low Intensity Commercial	8	3.9%
High Intensity Commercial	6	2.9%
Light Industrial	10	4.8%
Langley Flight Approach District	24	11.6%
Federal / Military	150	72.5%
Total	**207**	

Zoning Categories	Hampton Planning Data	
	Acres	Percent of Total
Accident Potential Zone I		
Very Low Density Residential (>2-4 du/acre)		
Low Density Residential (>4-8 du/acre)		
Medium Density Residential (>8-15 du/acre)	1	< 1.0%
Low Intensity Commercial		
High Intensity Commercial		
Light Industrial		
Langley Flight Approach District	340	98.8%
Federal / Military	3	1.4%
Total	**344**	
Accident Potential Zone II		
Very Low Density Residential (>2-4 du/acre)		
Low Density Residential (>4-8 du/acre)		
Medium Density Residential (>8-15 du/acre)	5	1.0%
Low Intensity Commercial		
High Intensity Commercial		
Light Industrial		
Langley Flight Approach District	477	99.0%
Federal / Military		
Total	**482**	

Note: Compatibility derived from Langley AFB AICUZ Update, July 2007, Table 3-74 "Land Use Compatibility, Noise Exposure, and Accident Potential"

Source: Hampton Planning Data provided by the City of Hampton GIS Department, September 29, 2009

Analysis of the zoning of vacant land within the safety zones is important in that it can provide an idea of what type of land use is allowed on a certain parcel. There are 16 acres of vacant land in the Langley AFB western CZ. The USAF recommends only agricultural uses that do not involve buildings or livestock, as well as limited recreation uses within the CZ. Table 3-5 shows the breakdown of vacant acres by zoning category for the three western safety zones. Red shading in the table indicates uses incompatible with the safety.

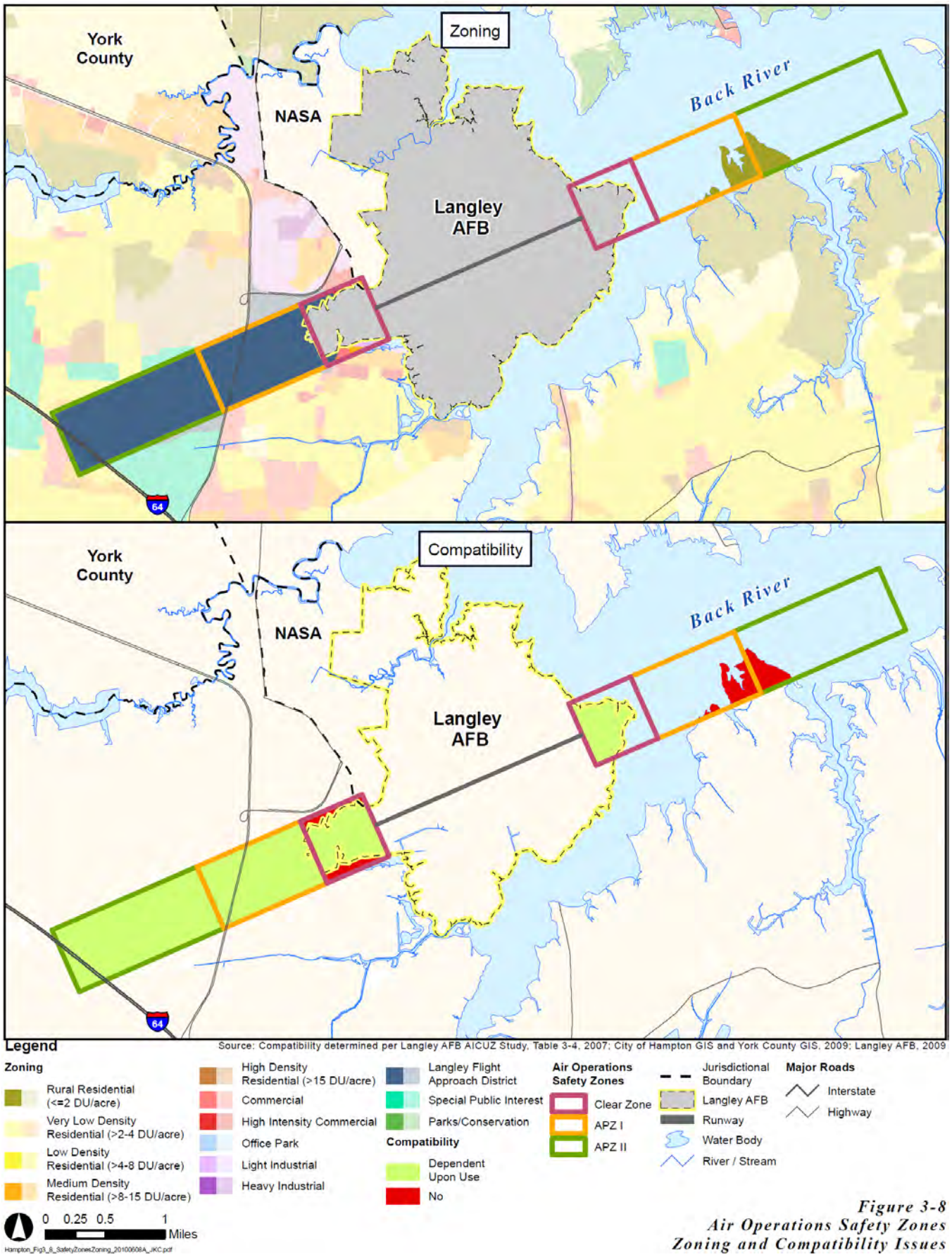


Figure 3-8
Air Operations Safety Zones
Zoning and Compatibility Issues

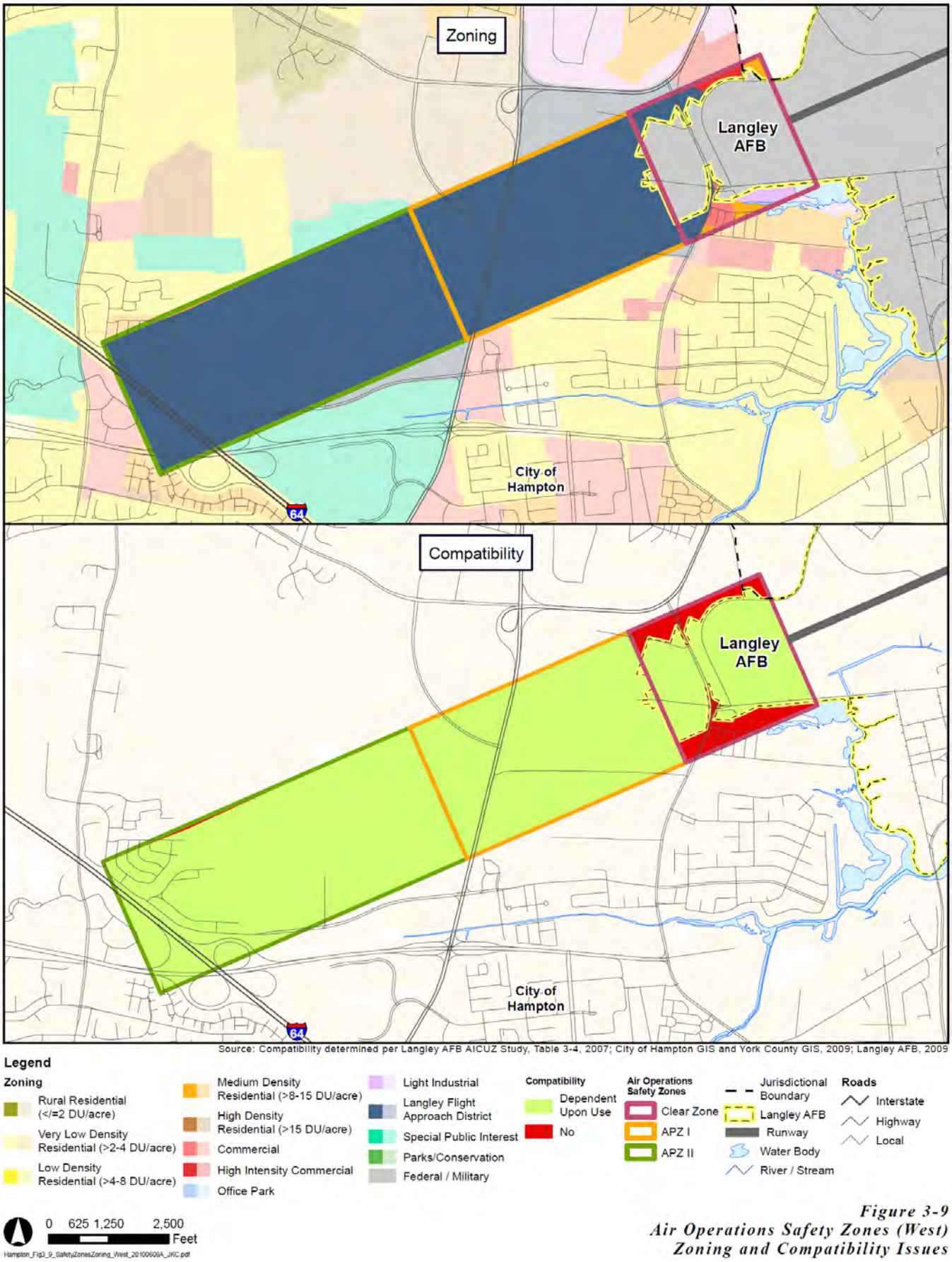


Figure 3-9
Air Operations Safety Zones (West)
Zoning and Compatibility Issues

Table 3-5. Zoning on Vacant Land within Langley AFB's Western Safety Zones

Zoning Categories	Hampton Planning Data	
	Acres	Percent of Total
Clear Zone		
Langley Flight Approach District	15	93.8%
Medium Density Residential (>8-15 du/acre)		
High Intensity Commercial	1	6.2%
Total	**16**	
Accident Potential Zone I		
Langley Flight Approach District	92	100%
Medium Density Residential (>8-15 du/acre)		
High Intensity Commercial		
Total	**92**	
Accident Potential Zone II		
Langley Flight Approach District	68	95.8%
Medium Density Residential (>8-15 du/acre)	3	4.2%
High Intensity Commercial		
Total	**71**	

Note: Compatibility derived from Langley AFB AICUZ Update, July 2007, Table 3-74 "Land Use Compatibility, Noise Exposure, and Accident Potential"

Source: Hampton Planning Data provided by the City of Hampton GIS Department, September 29, 2009

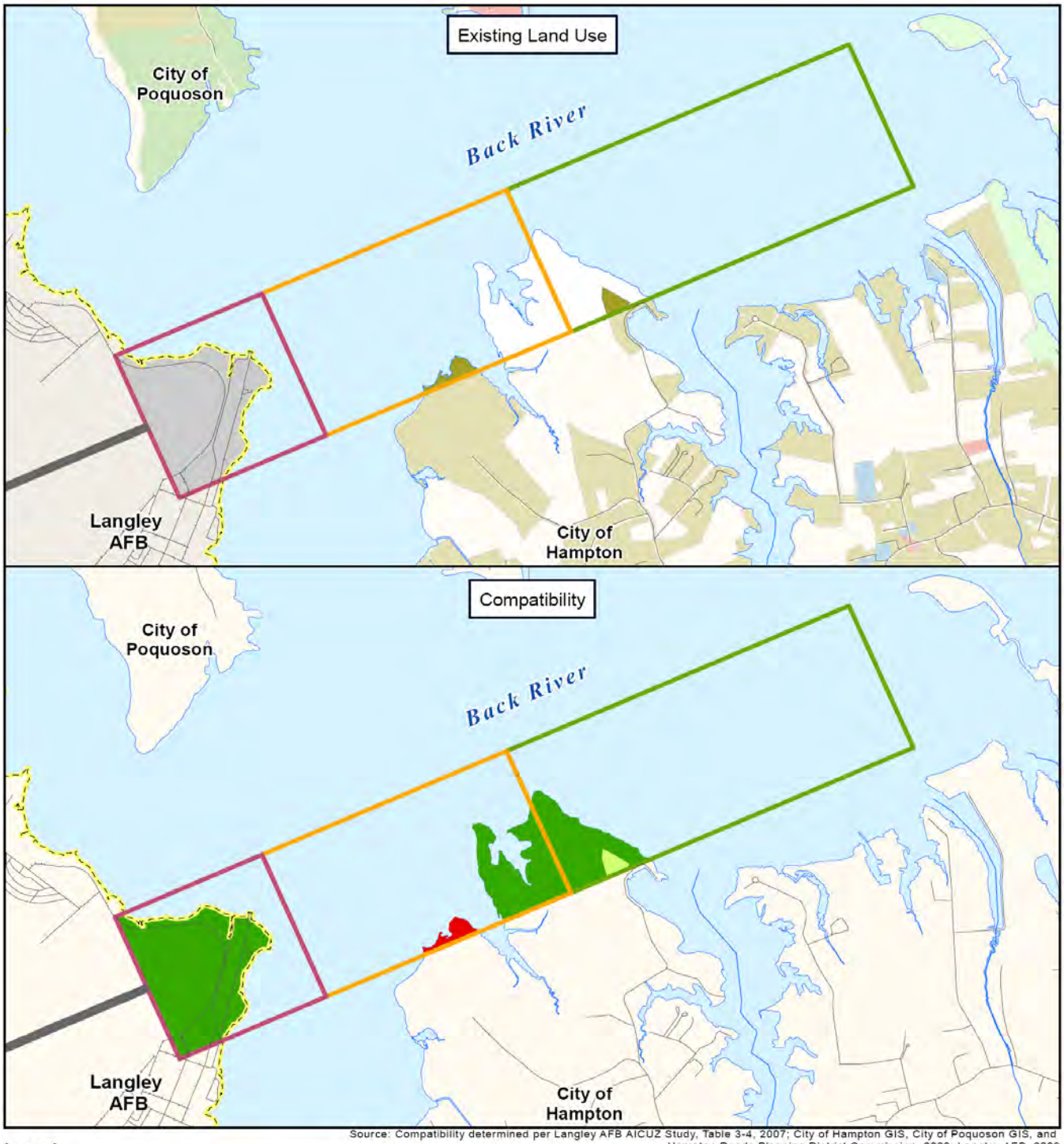
Eastern Safety Zones

Existing Land Use

The majority of the eastern air operations safety zones are located over the Back River, where development is not a concern. Figure 3-10 shows existing land uses based on the city's GIS department information, and also compatibility within the eastern safety zones.

The only land that lies under the CZ is 114 acres that belongs to and controlled by Langley AFB. Thus, it can be regulated appropriately without concern of incompatible land uses. The City of Hampton owns 92 acres of land within eastern APZ I and APZ II. This area has the only vacant parcels east of the Installation.

The only current development in APZ II is a marina, which is a land use compatible with Langley's air operations. The issue for the land located in eastern APZ I and APZ II is that there is a potential for future development that is incompatible with air operations safety zones. For this reason, it is important that the City of Hampton ensure proposed land uses are compatible with the safety zones when reviewing site proposal plans. Table 3-6 provides the breakdown of existing land uses within the three eastern safety zones.



Source: Compatibility determined per Langley AFB AICUZ Study, Table 3-4, 2007; City of Hampton GIS, City of Poquoson GIS, and Hampton Roads Planning District Commission, 2009; Langley AFB, 2009

Legend

Existing Land Use
- Rural Residential (<=2 DU/acre)
- Low Density Residential (>4-8 DU/acre)
- Commercial/Office
- Public/Semi-Public
- Military
- Conservation
- Open Space
- Vacant

Compatibility
- Yes
- Yes with Restrictions
- No

Air Operations Safety Zones
- Clear Zone
- APZ I
- APZ II

- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream

Roads
- Local

0 625 1,250 2,500 Feet

Hampton_Fig3_10_SafetyZonesELU_East_20100323_JKC.pdf

Figure 3-10
Air Operations Safety Zones (East)
Existing Land Use and Compatibility Issues

Table 3-6. Existing Land Use within Langley AFB's Eastern Safety Zones

Land Use	Hampton Planning Data	
	Acres	Percent of Total
Clear Zone		
Rural Residential (</= 2 du/acre)		
Military	116	56.0%
Agriculture		
Open Space		
Vacant		
Unassigned/Undesignated	91	44.0%
Total	**207**	
Accident Potential Zone I		
Rural Residential (</= 2 du/acre)	**6**	**1.7%**
Military		
Agriculture		
Open Space		
Vacant	44	12.9%
Unassigned/Undesignated	294	85.4%
Total	**344**	
Accident Potential Zone II		
Rural Residential (</= 2 du/acre)	4	< 1.0%
Military		
Agriculture		
Open Space		
Vacant	38	7.9%
Unassigned/Undesignated	440	91.3%
Total	**482**	

Note: Compatibility derived from Langley AFB AICUZ Update, July 2007, Table 3-74 "Land Use Compatibility, Noise Exposure, and Accident Potential"

Source: Hampton Planning Data provided by the City of Hampton GIS Department, September 29, 2009

Currently, the majority of the land in APZ I and APZ II is either undesignated or vacant, which, depending on the specific use of each parcel, may or may not be compatible with the safety zone. Red shading in the table indicates land uses incompatible with the safety zone while yellow shading indicates potentially incompatible uses.

Future Land Use

Table 3-7 identifies the future land uses within the three eastern safety zones as indicated by the Hampton GIS Department. Just under half of the land within the eastern CZ is undesignated; however, this area is comprised of water. APZs I and II have over 85 percent and 91 percent of their composition respectively, as undesignated, which are also comprised of water. Figure 3-11 shows future land uses based on the city's GIS department information, and also compatibility within the eastern safety zone.

Table 3-7. Future Land Use within Langley AFB's Eastern Safety Zones

Land Use	Hampton Planning Data	
	Acres	Percent of Total
Clear Zone		
Rural Residential (</= 2 du/acre)		
Military	116	56.0%
Open Space		
Unassigned/Undesignated	91	44.0%
Total	**207**	
Accident Potential Zone I		
Rural Residential (</= 2 du/acre)	**6**	**1.7%**
Military		
Open Space	44	12.8%
Unassigned/Undesignated	294	85.5%
Total	**344**	
Accident Potential Zone II		
Rural Residential (</= 2 du/acre)	10	2.1%
Military		
Open Space	32	6.6%
Unassigned/Undesignated	440	91.3%
Total	**482**	

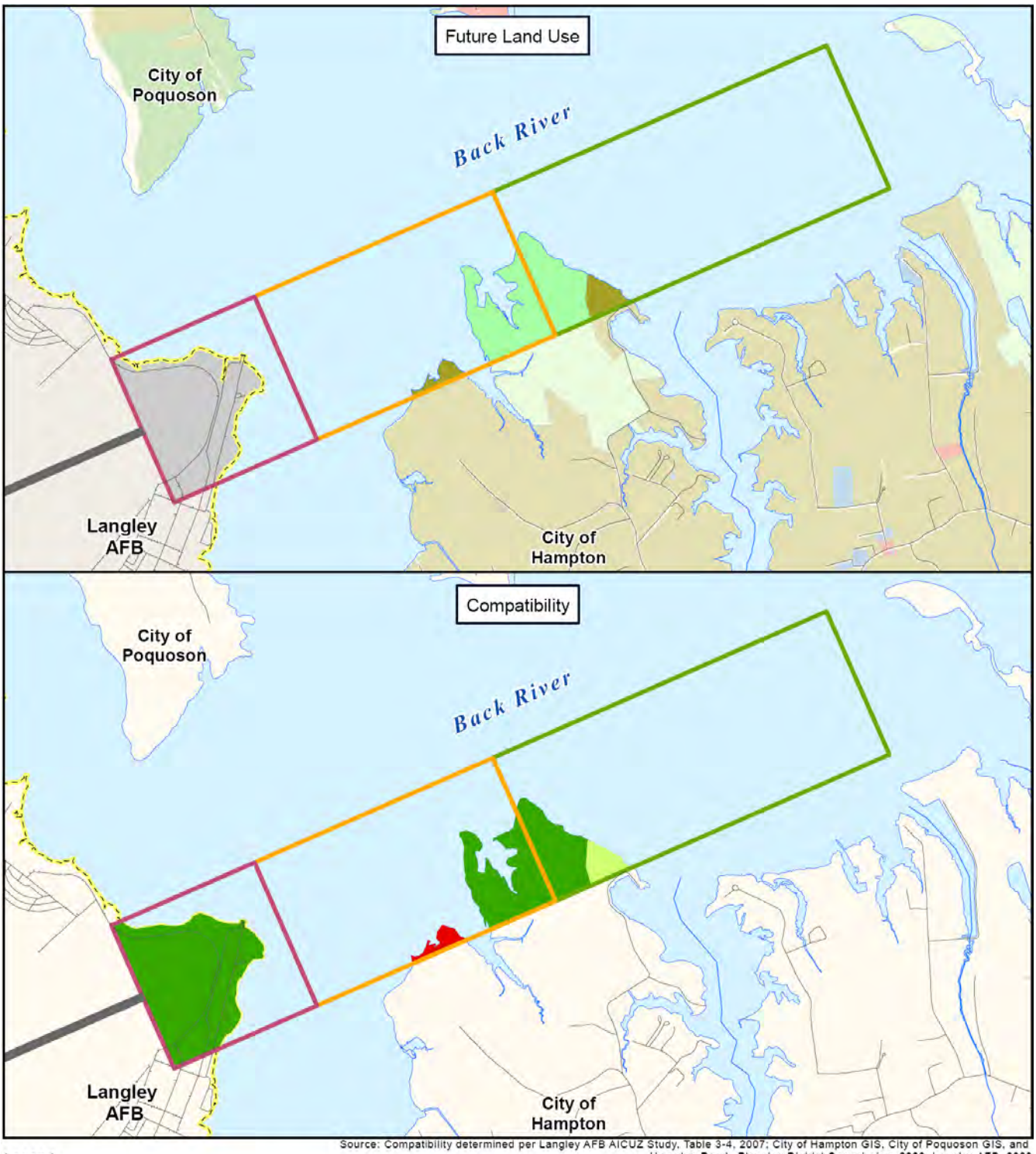
Note: Compatibility derived from Langley AFB AICUZ Update, July 2007, Table 3-74 "Land Use Compatibility, Noise Exposure, and Accident Potential"

Source: Hampton Planning Data provided by the City of Hampton GIS Department, September 29, 2009

Zoning

All of the land within the eastern APZ I and APZ II (excluding water) is zoned as very low density residential by the City of Hampton. Langley AFB owns all of the land (116 acres) in the eastern CZ. The remaining 91 acres is comprised of water in the Back River. As with the zoning assigned to Langley AFB lands in the western CZ, parcels located within Langley's boundaries were assigned the R-13 residential zoning category as a means to guide future development on those parcels should Langley AFB ever be closed. According to the Air Force, residential uses are not compatible with APZ I; consequently, the land within this zone is currently incompatibly zoned.

There are parcels zoned as rural residential in both APZ I and APZ II. Rural residential is defined as less than or equal to 2 dwelling units per acre. Residential uses of any density are not compatible with APZ I. However, Air Force compatibility guidelines for APZ II allow rural residential, but at a density of less than 2 dwelling units per acre. Therefore, the rural residential zoned parcels in APZ II may be compatible, but this allowance has restrictions.



Source: Compatibility determined per Langley AFB AICUZ Study, Table 3-4, 2007; City of Hampton GIS, City of Poquoson GIS, and Hampton Roads Planning District Commission, 2009; Langley AFB, 2009

Legend

Future Land Use
- Rural Residential (<=2 DU/acre)
- Low Density Residential (>4-8 DU/acre)
- Commercial/Office
- Public/Semi-Public
- Military
- Conservation
- Open Space

Compatibility
- Yes
- Yes with Restrictions
- No

Air Operations Safety Zones
- Clear Zone
- APZ I
- APZ II

- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream

Roads
- Local

0 625 1,250 2,500 Feet

Hampton_Fig3_11_SafetyZonesFLU_East_20100920_JKC.pdf

Figure 3-11
Air Operations Safety Zones (East)
Future Land Use and Compatibility Issues

Figure 3-12 shows zoning as provided by the city's GIS department and compatibility of zoning within the eastern safety zones of Langley AFB air operations.

Although some of the land can be rezoned, it is often a timely and costly effort. The majority of the land within the two APZs is vacant and is zoned as single family residential. Table 3-8 shows the current breakdown of all land by zoning category. Red shading in the table indicates uses incompatible with the safety zone while yellow shading indicates potentially incompatible uses.

Table 3-8. Zoning within Langley AFB's Eastern Safety Zones

Land Use	Hampton Planning Data	
	Acres	Percent of Total
Clear Zone		
Rural Residential (</= 2 du/acre)		
Very Low Density Residential (>2-4 du/acre)		
Federal / Military	114	55.1%
Unassigned/Undesignated	93	45.0%
Total	**207**	
Accident Potential Zone I		
Rural Residential (</= 2 du/acre)	**50**	**14.5%**
Very Low Density Residential (>2-4 du/acre)		
Federal / Military		
Unassigned/Undesignated	294	85.5%
Total	**344**	
Accident Potential Zone II		
Rural Residential (</= 2 du/acre)	42	8.7%
Very Low Density Residential (>2-4 du/acre)		
Federal / Military		
Unassigned/Undesignated	440	91.3%
Total	**482**	

Note: Compatibility derived from Langley AFB AICUZ Update, July 2007, Table 3-74 "Land Use Compatibility, Noise Exposure, and Accident Potential"

Source: Hampton Planning Data provided by the City of Hampton GIS Department, September 29, 2009

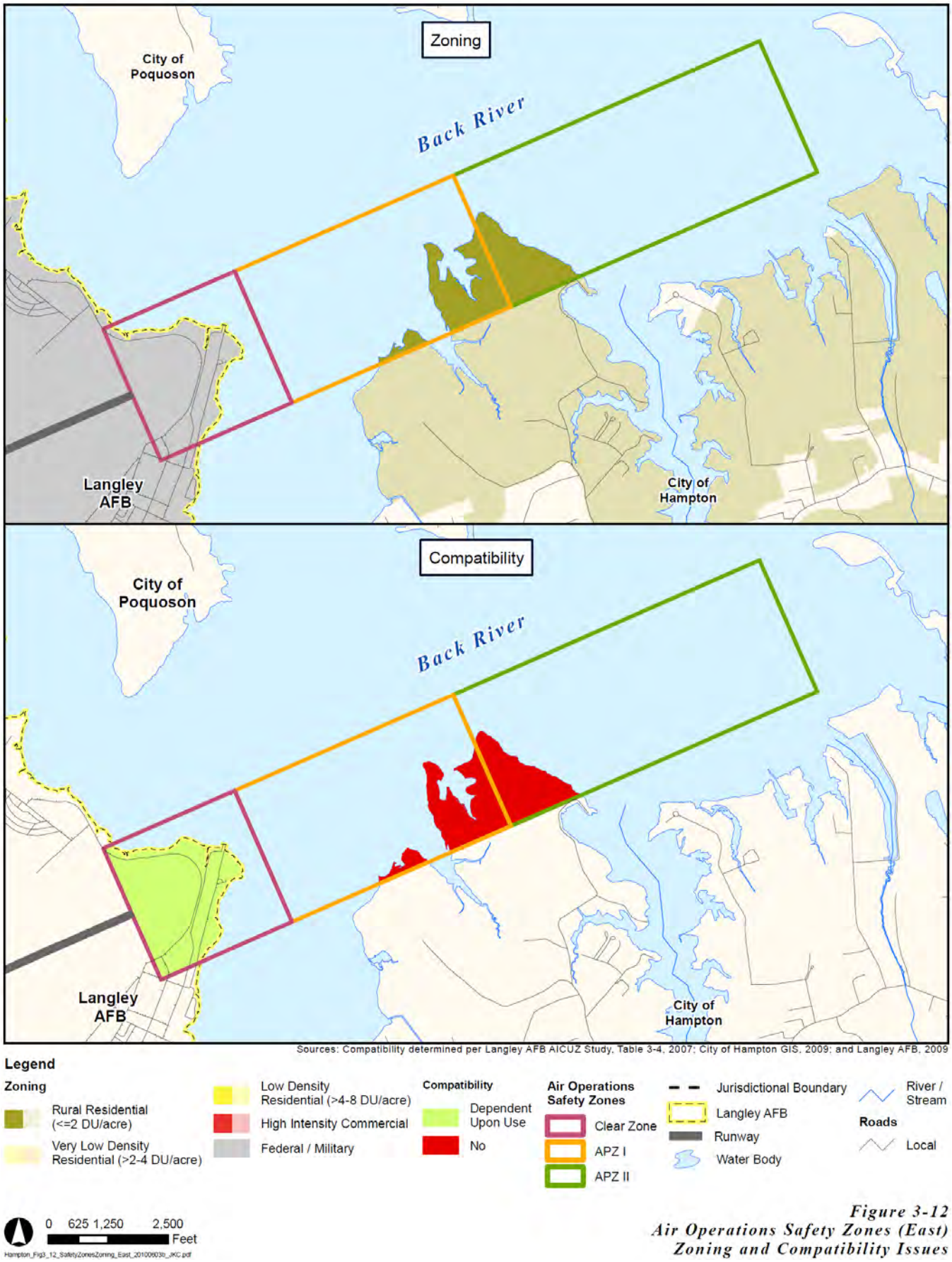


Figure 3-12
Air Operations Safety Zones (East)
Zoning and Compatibility Issues

Bird strikes can cause significant damage to aircraft and endanger pilots and people on the ground

Bird Attraction Hazards

Collisions with birds on the ground or in the air, as well as with wildlife on the ground, are dangerous for pilots, people on the ground, and aircraft operations in general. The primary concern at Langley AFB is bird activity, more so than ground-based wildlife, interfering with air operations. A number of variables factor into determining whether a specific land use will result in Bird Aircraft Strike Hazard (BASH) issues. Therefore, the location in relation to air operations and the unique development aspects of each land use must be assessed on a case-by-case basis. It is important to note that the BASH issue may be directly related to a component of the primary property use (i.e., stormwater retention ponds in a residential development) or to amenities associated with a land use (i.e., water hazards on a golf course).

There are some land uses that have a higher probability than others to attract hazardous birds. These uses include, but are not limited to, agriculture, conservation, open space, public / semi-public, rural residential, and vacant / undeveloped. The following will detail the specific BASH issues noted during the JLUS process, rather than simply assessing the land uses assigned to the issue areas.

As shown on Figure 3-13, there are several BASH areas of concern within the Hampton-Langley JLUS study area. Within approach and departure flight tracks and in close proximity to Langley AFB, bird attractants exist that could impact aircraft operating at the airfield. These attractants include golf courses, wetlands, and agricultural land uses. Golf courses, junk yards, and other uses with large open areas near Langley AFB also have a potential to accumulate standing water during and after periods of rain. The standing water, temporary or permanent, can be a significant hazardous bird attractant.

A Bird / Wildlife Aircraft Strike Hazard Plan for Langley AFB was finalized on June 15, 2009. The plan stated that a significant BASH issue exists at Langley and its surrounding areas from both resident and migratory bird species. Many of these areas are natural communities and ecosystems, such as the Back River and undeveloped shoreline along the Chesapeake Bay. The base itself contains natural areas which include 300 acres of forested land, 450 acres of salt marsh, and 100 acres of other wetlands. Furthermore, Langley AFB is located within the Atlantic Flyway, within which millions of birds travel during spring and fall migration periods.

There are several other natural areas within five miles of the runway that attract birds. The 475-acre Grandview Natural Preserve (conservation land use) is located along the coast of the Chesapeake Bay roughly four miles east of the runway. Part of the City of Hampton, the Preserve is open to the public and consists of salt marshes, tidal creeks, and beachfront that attracts migratory birds. Grundland Creek Park (conservation land use) is just west of Grandview Natural Preserve, is still being developed, and is not yet open to the public. It contains salt marshes, creeks, and shoreline that attract bird species. Plum Tree Island National Wildlife Refuge (conservation land use) is situated approximately four miles northeast of Langley AFB. The area was previously owned by the DOD and was used as a bombing range. Due to safety concerns with unexploded ordnance, the

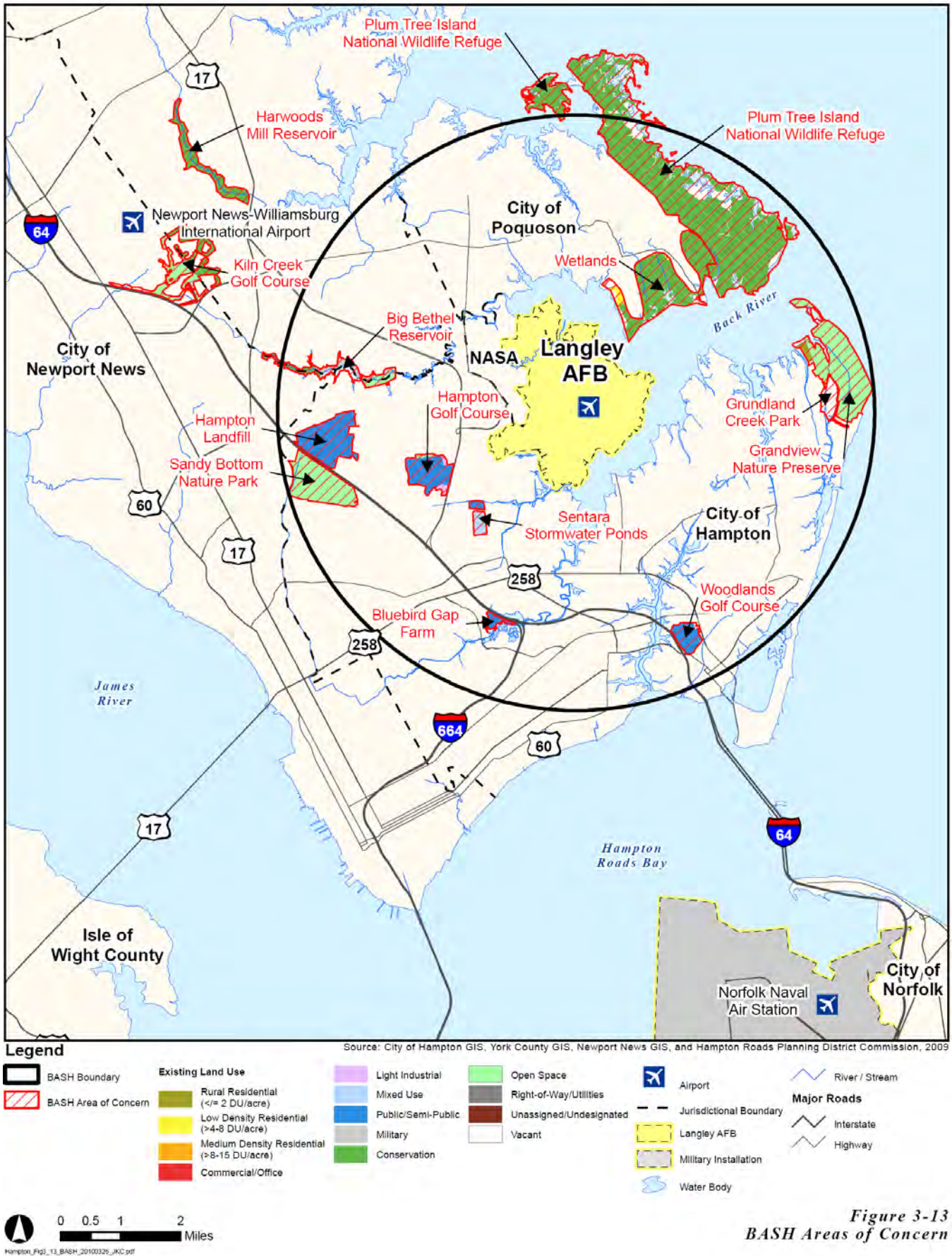


Figure 3-13
BASH Areas of Concern

public is prohibited from the majority of the Refuge. It covers 3,501 acres of salt marsh, shrub-scrub, and wooded habitat in the City of Poquoson. It sits roughly at the midpoint for the Atlantic Bird Flyway and draws a variety of migratory birds, as well as hosts resident bird species. Big Bethel Reservoir (water body adjacent to military / housing, conservation and other land uses) is about three miles west of Langley and poses a risk for BASH issues as it attracts birds. The reservoir extends into portions of the cities of Newport News and Hampton, as well as York County. Finally, undeveloped land east of the Harris River in the City of Hampton is known to attract birds that could pose safety concerns for pilots.

There are several man-made locations within five miles of Langley AFB that also attract birds and pose safety concerns. Active and inert landfills can pose compatibility issues to aircraft operations since these operations have the potential to attract wildlife, specifically birds. Bethel Landfill (within public /semi-public land use) is roughly 3.5 miles west of the Langley runway and attracts large numbers of gulls and other species. Between 2000 and 2005, eight bird strikes were reported to have occurred near the landfill. A community program was initiated to alert Langley personnel when a bird hazard is present.

Golf courses are another major bird attractant. They generally are well landscaped and have water features, ponds, and lakes that are attractive to birds. The Eaglewood Golf Course (within military land use) on Langley AFB north of the runway has seven freshwater ponds that cover a total of ten acres. The course includes 320 acres of fairways and greens that entice migratory and resident Canadian geese. Other golf courses within the JLUS study area include the 232-acre Hamptons Golf Course, with three 9-hole courses located in the western APZ I and APZ II; the 108-acre Woodlands Golf Course, with 18 holes about four miles southeast of the runway, and the 253-acre Kiln Creek Golf Course, with 18 holes approximately eight miles northwest of the runway. The first two courses are on public / semi-public land uses, while the Kiln Creek Course is designated as conservation area in Newport News and as open space within York County.

The Sentara Careplex Hospital (mixed use and public / semi-public uses) was opened in December 2002, about two miles southwest of Langley AFB. The hospital includes 200 patient rooms and covers a large area of land. The building and associated pavement made the land impervious to water drainage and absorption during rain and flooding. To mitigate the issue of water buildup, several storm water ponds were built in conjunction with the hospital. These storm water ponds attract bird species such as Canadian geese, which pose a hazard to pilots. Amplifying this BASH concern is the site's location within Langley AFB flight paths.

There is an automobile salvage yard located in the western CZ and a junkyard located in the western APZ I. These are located within military and light industrial land uses. Both of these uses could attract birds searching for food or water if they are built up. Sandy Bottom Nature Park (conservation land use) is a redevelopment area operated by the City of Hampton at the end of the western APZ II, along Interstate 64. This 456-acre passive park draws a variety of wildlife and bird species. Despite the fact that the area is incompatible with safety in regards to the BASH issue, it is an important feature to the city as it was reclaimed from being a barrow pit. Hampton operates the Bluebird Gap Farm (public / semi-public land use) 3.5 miles south of Langley AFB. This 60-acre farm has over 250 domestic and wild animals, including a wide variety of bird species. One of the main bird attractants at the farm are its ponds and pastures. A total of 161 bird species have been

Sentara Careplex Hospital and retention ponds and water features can attract birds

identified at Bluebird Gap Farm, including waterfowl, shorebirds, vultures, Bald Eagles, hawks, gulls, and crows.

All of the locations listed above, except for Woodlands Golf Course, are situated along or adjacent to flight paths that have been identified and are used by aircraft operating from Langley AFB. According to the 2005 Langley BASH Plan, there are approximately two dozen nesting pairs of osprey within the vicinity of Langley AFB. Each pair of osprey typically raises two to four young annually.

Osprey are a significant BASH concern for Langley AFB

According to the Langley AFB Safety Office, ospreys are one of the biggest BASH concerns due to behavior that predisposes them to aircraft strikes and their location in proximity to the base. A collision between an F-15C and an osprey in 2000 resulted in over $700,000 in damage to the aircraft's engine. This incident resulted in an Integrated Osprey Hazard Management Program (IOHMP) at the base.

The IOHMP monitors osprey nesting patterns and uses varying amounts of control to ensure osprey do not nest on or near the runway, including nestling translocation, habitat modification, non-lethal harassment, and nest removal. As noted in the 2009 Langley AFB BASH Plan, 76 nestling osprey have been relocated to Ohio and Indiana since the program's inception.

3 Vertical Obstruction Issues

Definition:

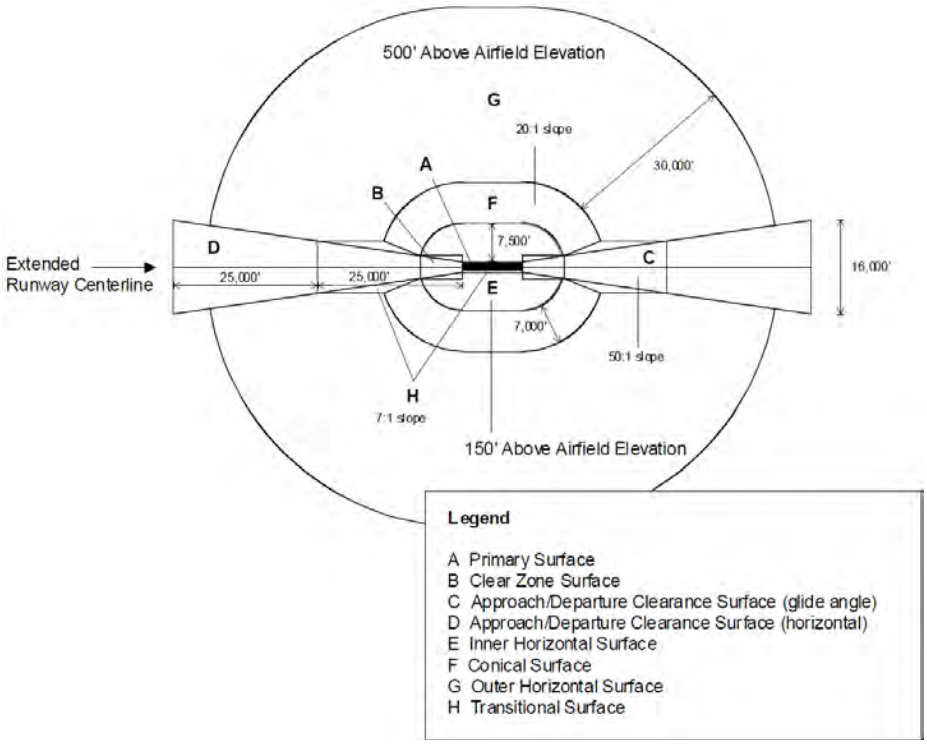
Vertical obstructions are created by buildings, structures or other features that may encroach into the navigable airspace used by military operations (aircraft approach, transitional, inner horizontal, outer horizontal and conical areas, as well as military training routes), presenting a safety hazard to both the public and military personnel and potentially impacting military readiness.

The issues identified for this compatibility factor are:

- a large pile of rubble / construction debris;
- Bethel Landfill; and
- radio transmitter towers in the area

Evaluating Vertical Obstruction

Vertical obstruction in relation to flight operations from an airport (military or civilian) are addressed through compliance with Federal Regulation Title 14 Part 77, which establishes standards and notification requirements for objects affecting navigable airspace. Commonly referred to as FAA Part 77 or Part 77 compliance, this regulation provides details on how to evaluate the potential for a vertical obstruction based on the elevation of the airfield, the height and resulting elevation of the new structure or facility, and the location of the structure or facility in relation to the airfield in question. Figure 3-14 illustrates common terms used in the Part 77 regulation, and Figure 3-15 provides a graphic representation of the imaginary surfaces associated with Langley AFB. These are how structures and facilities are evaluated to determine if they pose a vertical obstruction in relation to the airspace around base. The various imaginary surfaces build upon one another and are designed to eliminate obstructions to air navigation and operations, either natural or man-made.



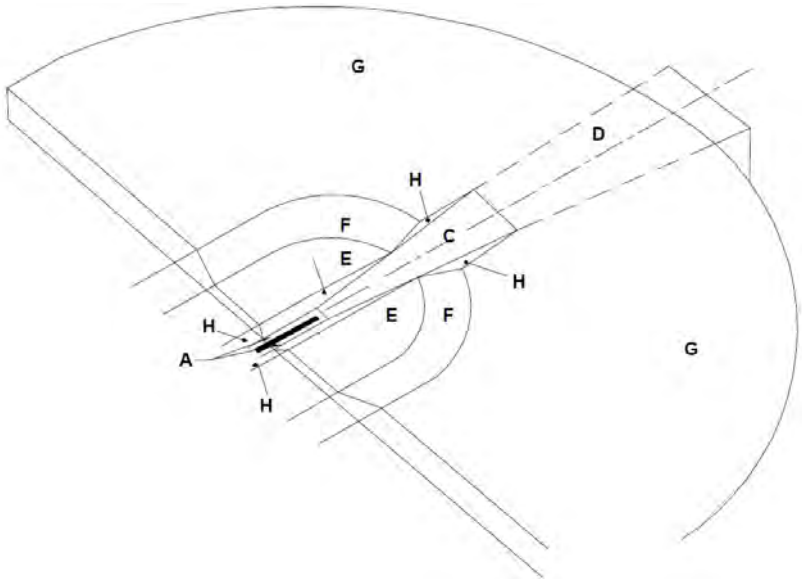
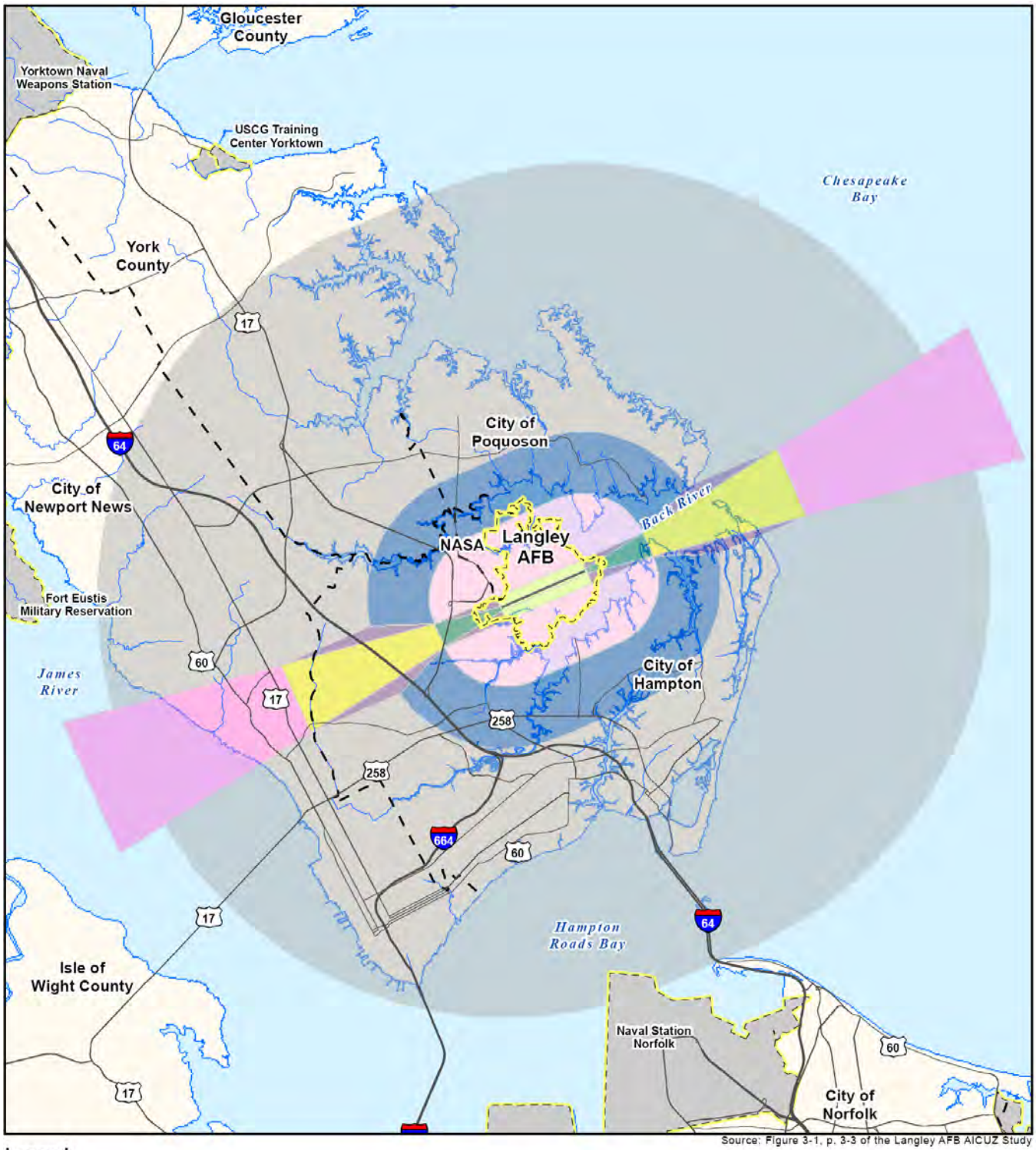


Figure 3-14. Part 77 Terminology, Imaginary Surfaces



Source: Figure 3-1, p. 3-3 of the Langley AFB AICUZ Study

Legend

- Primary Surface
- Clear Zone Surface
- Approach/Departure Clearance Surface (glide angle)
- Approach/Departure Clearance Surface (horizontal)
- Inner Horizontal Surface
- Conical Surface
- Outer Horizontal Surface
- Transitional Surface
- Jurisdictional Boundary
- Langley AFB
- Military Installation
- Water Body
- Runway
- River / Stream

Major Roads

- Interstate
- Highway

0 0.875 1.75 3.5 Miles

Hampton_Fig3_15_ImagSurf_Airspace_20100127_JKC.pdf

Figure 3-15
Imaginary Surfaces - USAF Airspace Control

These terms associated with imaginary surfaces and Part 77 are further described in the discussion that follows.

Primary Surface – This surface defines the limits of the obstruction clearance requirements in the immediate vicinity of the landing area. The primary surface comprises surfaces of the runway, runway shoulders, and lateral safety zones and extends 200 feet beyond the runway ends. The width of the primary surface for a single Class "B" runway, the class for Langley AFB's primary runway, is 2,000 feet, or 1,000 feet on each side of the runway centerline. Ideally, there should be no obstructions, fixed or mobile, within the primary surface area.

Clear Zone – This surface defines the limits of the obstruction clearance requirements in the vicinity contiguous to the end of the primary surface. The CZ surface length and width (for a single runway) is 3,000 feet by 3,000 feet. This area has the highest accident potential of all zones.

Approach-Departure Clearance Surface – This surface is symmetrical about the extended runway centerline, begins as an inclined plane (glide angle) at each end of the primary surface of the centerline elevation of the runway end, and extends for 50,000 feet. The slope of the approach-departure clearance surface is 50:1 along the extended runway (glide angle) centerline until it reaches an elevation of 500 feet above the established airfield elevation. It then continues horizontally at this elevation to a point 50,000 feet from the start of the glide angle. The width of this surface at the runway end is 2,000 feet; it flares uniformly, and the width at 50,000 feet is 16,000 feet.

Inner Horizontal Surface – This surface is a plane, oval in shape at a height of 150 feet above the established airfield elevation. It is constructed by scribing an arc with a radius of 7,500 feet above the centerline at the end of the runway and interconnecting these arcs with tangents.

Conical Surface – This is an inclined surface extending outward and upward from the outer periphery of the inner horizontal surface for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation. The slope of the conical surface is 20:1.

Outer Horizontal Surface – This surface is a plane located 500 feet above the established airfield elevation. It extends for a horizontal distance of 30,000 feet from the outer periphery of the conical surface.

Transitional Surfaces – These surfaces connect the primary surfaces, CZ surfaces, and approach-departure clearance surfaces to the outer horizontal surface, conical surface, other horizontal surface, or other transitional surfaces. The slope of the transitional surface is 7:1 outward and upward at right angles to the runway centerline. To determine the elevation for the beginning of the transitional surface slope at any point along the lateral boundary of the primary surface, including the clear zone, draw a line from this point to the runway centerline. This line will be at right angles to the runway axis. The elevation at the runway centerline is the elevation for the beginning of the 7:1 slope.

The land areas that fall within the surfaces recognized above should be regulated in order to prevent incompatible development or uses that might cause safety hazards to aircraft operations. The Langley AFB AICUZ Study also identifies the following uses that should be restricted and / or prohibited for pilot safety.

- Uses that release into the air any substance that would impair visibility or otherwise interfere with the operation of aircraft (i.e., steam, dust, or smoke).

- Uses that produce light emissions, either direct or indirect (reflective), that would interfere with pilot vision.

- Uses that produce electrical emissions that would interfere with aircraft communications systems or navigational equipment.
- Uses that would attract birds or waterfowl, including but not limited to, operation of sanitary landfills, maintenance of feeding stations, or the growing of certain vegetation.
- Uses that include structures within ten feet of aircraft approach-departure and / or transitional surfaces.

To determine when proposed structures or facilities require the FAA to be notified, Part 77 (§ 77.13) states the following requirements.

§ **77.13** - Any person / organization who intends to sponsor any of the following construction or alterations must notify the Administrator of the FAA (paraphrased):

(1) Any construction or alteration of more than 200 feet in height above the ground level at its site.

(2) Any construction or alteration of greater height than an imaginary surface extending outward and upward at one of the following slopes:

- within 20,000 ft of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with at least one runway more than 3,200 ft.
- within 10,000 ft of a public use or military airport which exceeds a 50:1 surface from any point on the runway of each airport with its longest runway no more than 3,200 ft.
- within 5,000 ft of a public use heliport which exceeds a 25:1 surface.

(3) Any highway, railroad, or other traverse way whose prescribed adjusted height would exceed that above noted standards.

(4) When requested by the FAA.

(5) Any construction or alteration located on a public use airport or heliport regardless of height or location.

Further, Part 77 identifies the height at which an object may be considered an obstruction at a designated distance. An excerpt from Section 77.23 follows.

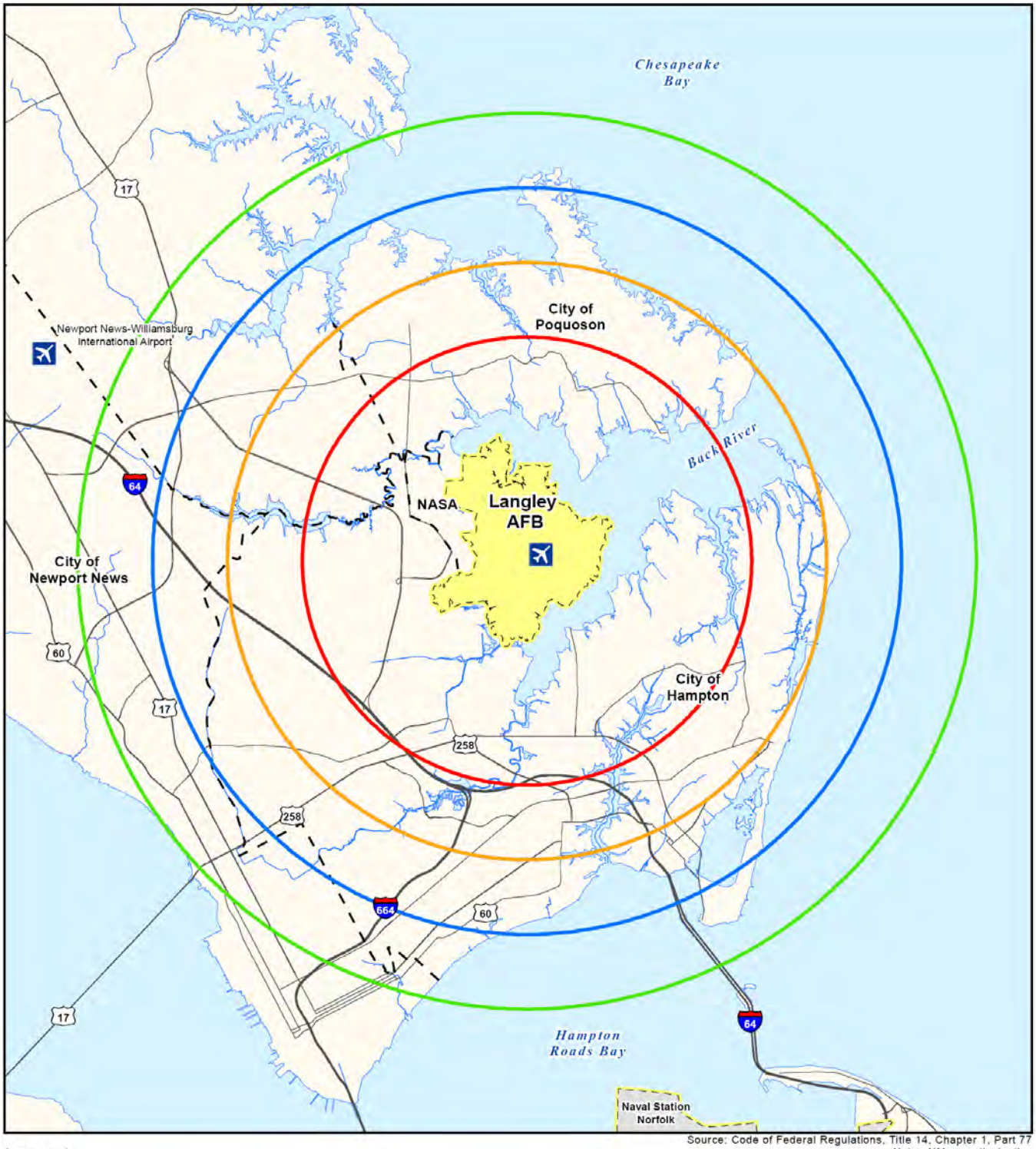
§ **77.23** – Standards for determining obstructions

(a) An existing object, including a mobile object, is, and a future object would be, an obstruction to air navigation if it is of greater height than any of the following heights or surfaces:

(1) A height of 500 feet above ground level (AGL) at the site of the object.

(2) A height that is 200 feet above ground level or above the established airport elevation, whichever is higher, within three nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length, and that height increases in the proportion of 100 feet for each additional nautical mile of distance from the airport up to a maximum of 500 feet.

Figure 3-16 depicts how Part 77 requirements impact allowable vertical structures as they relate to distance from Langley AFB.



Source: Code of Federal Regulations, Title 14, Chapter 1, Part 77
Note: NM = nautical miles

Legend

Structure Height

- >200' AGL @ 3 NM
- >300' AGL @ 4 NM
- >400' AGL @ 5 NM
- >500' AGL @ 6 NM
- Langley AFB
- Military Installation
- Airport
- Jurisdictional Boundary
- Water Body
- River / Stream

Major Roads

- Interstate
- Highway

0 1 2 4 Miles

Hampton_Fig3_16_VertObstr_Comply_20100127_JKC.pdf

Figure 3-16
Vertical Obstruction Compliance - FAA Part 77

The airfield at Langley AFB sits at an elevation of 11 feet MSL. Based on this, the outer horizontal surface has an elevation of 511 feet MSL, which equates to 500 feet AGL. Incompatible developments within this area above a certain height could impact operations and mission capabilities at the base. Not only would they pose safety hazards to pilots, but they could also impede the use of instrument approach corridors. This could in-turn force pilots to approach at too high of an altitude and / or have to divert to alternate airfields during certain conditions such as inclement weather.

There were few existing locations identified during the JLUS process that currently pose vertical obstruction issues. There is a large pile of construction debris located in the southern corner of the western CZ adjacent to Langley AFB's West Gate and approximately one-quarter of a mile from the west end of the base's runway. This use is not compatible with air operations and the Air Force recommended uses in the CZ. The Bethel Landfill to the west of Bethel Road was also identified as a vertical obstruction concern due to its attraction of birds. The landfill's height increases as new waste is added. This results in increased heights at which birds fly above it. As the column of birds soars higher over the landfill, there is a greater risk of a BASH accident with aircraft departing or arriving to or from Langley AFB. A group of radio transmitter towers is located in the vicinity of the Buckroe Beach area of Hampton, approximately 4.5 miles southeast of the Langley AFB runway. These towers extend above the 511-foot MSL (500-foot AGL) elevation of the outer horizontal surface.

Towers may obstruct aircraft operations

It should be noted that vertical structures that may be below the imaginary surfaces may still impact Terminal Instrument Procedures (TERPS). For this reason, in addition to evaluating structures based on imaginary surfaces, the local TERPS office may need to be contacted to ensure proposed structures will not impact aircraft operations at the Installation.

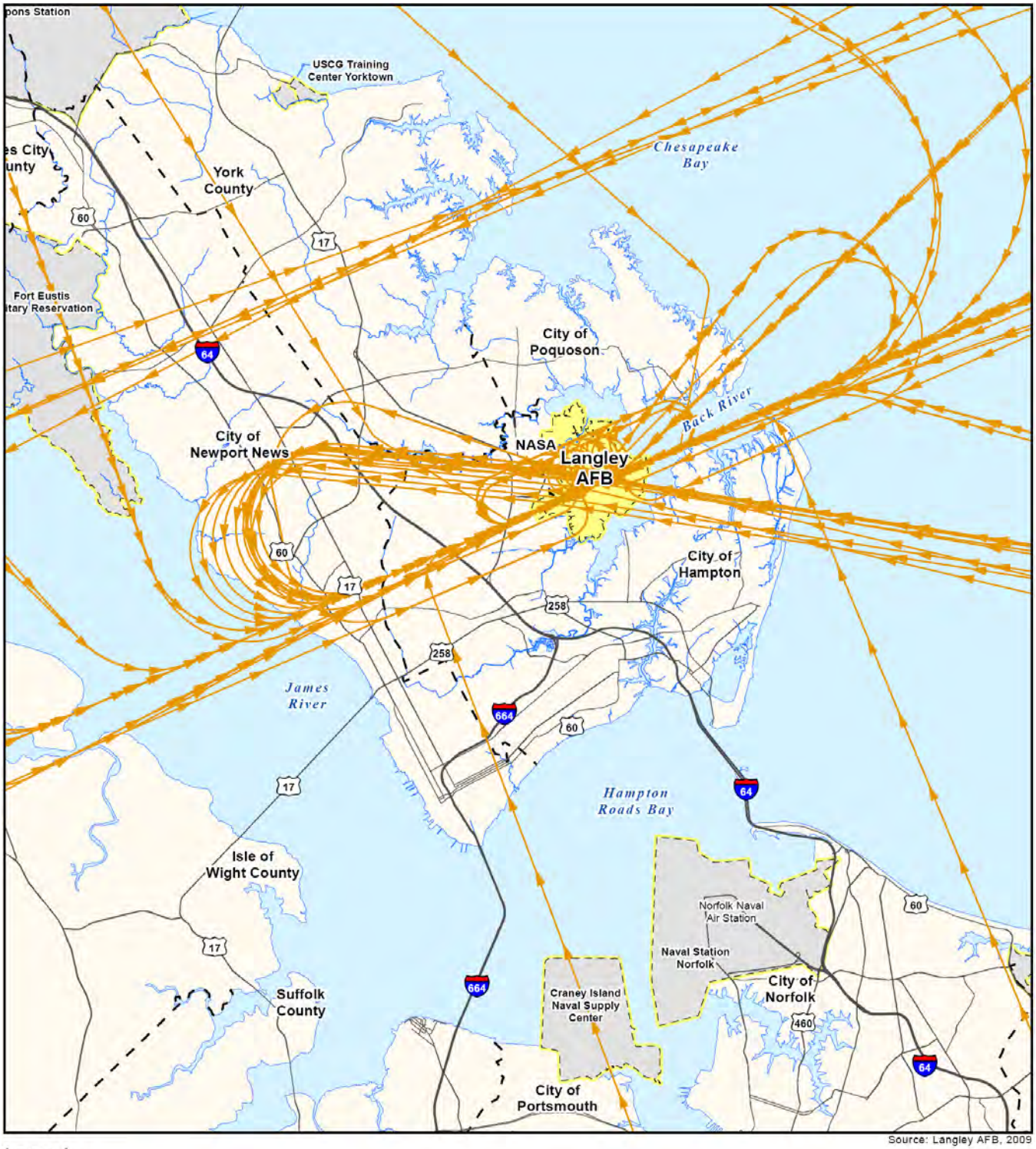
Other than those listed periodically, no other issues were identified for vertical obstructions within the flight paths associated with Langley aircraft operations; however, low-level flight that is often a part of ingress and egress into the base is a general concern. Structures built above FAA-regulated heights and under flight paths could pose hazards to pilots and people on the ground. It is important to note that in addition to the review of obstacles Langley AFB has a large network of flight paths including arrival, departure, and closed pattern. These flight paths are illustrated respectively on Figures 3-17, 3-18, and 3-19.

4 Local Housing Availability Issues

Definition:

Local housing availability addresses the supply and demand for housing in the region, the competition for housing that may result from changes in the number of military personnel and the supply of military family housing provided by the base.

Given personal choice and the availability of installation housing, military personnel assigned to Langley AFB often seek housing in nearby communities. In reviewing local housing availability, no specific areas or concerns were identified. Similar to many installations across the nation, Langley AFB recently underwent privatization of its military housing areas. Congressionally authorized since 1996, the



Legend

- Arrival Paths
- Jurisdictional Boundary
- Langley AFB
- Military Installation
- Water Body
- River / Stream

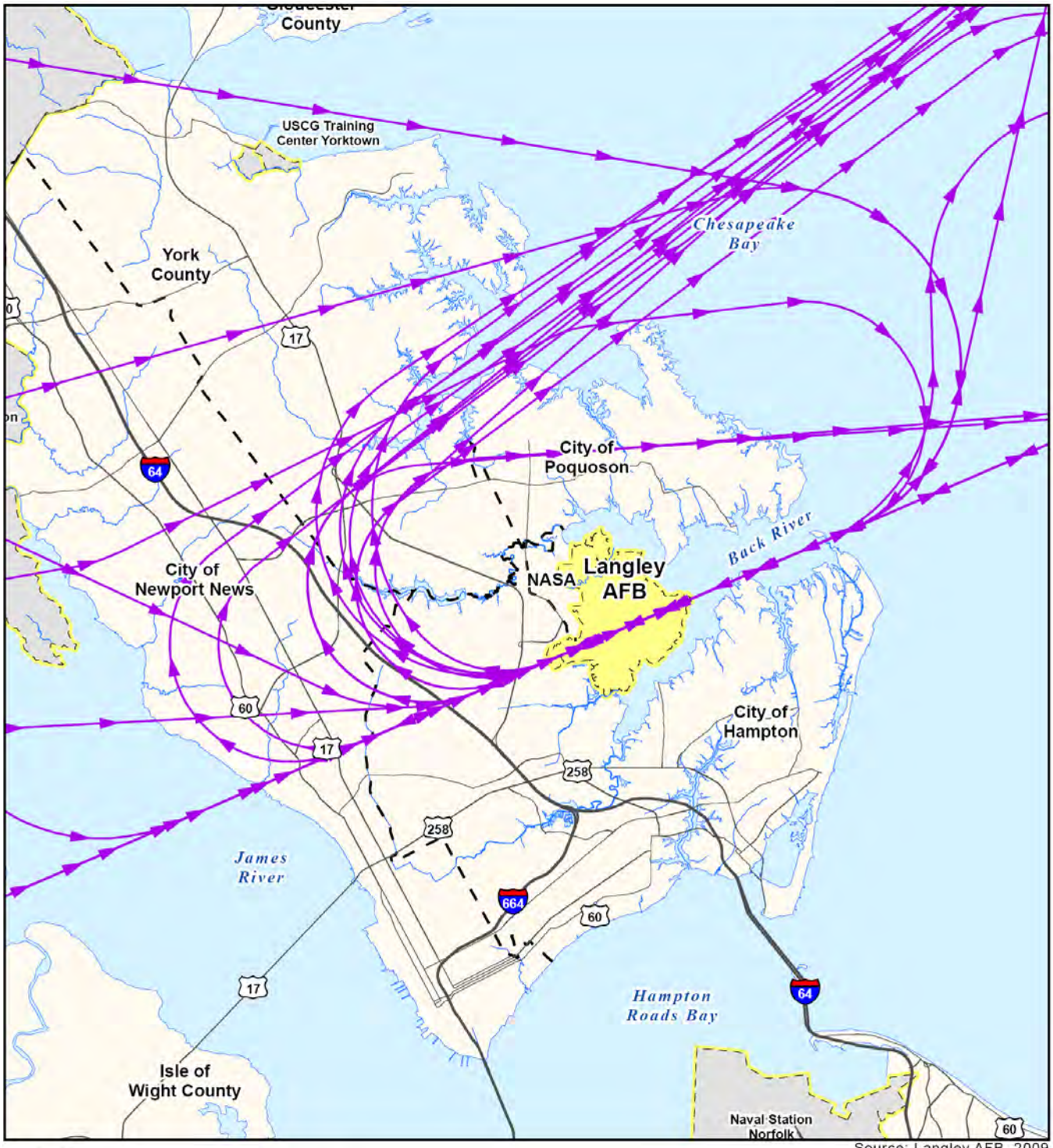
Major Roads

- Interstate
- Highway

0 1.5 3 6 Miles

Hampton_Fig3_17_FlightArr_20100323_JKC.pdf

Figure 3-17
Flight Arrival Paths



Source: Langley AFB, 2009

Legend

- Departure Paths
- Jurisdictional Boundary
- Langley AFB
- Military Installation
- Water Body
- River / Stream

Major Roads

- Interstate
- Highway

0 1.5 3 6 Miles

Hampton_Fig3_18_FlightDep_20100323a_JKC.pdf

Figure 3-18
Flight Departure Paths

Source: Langley AFB, 2009

Legend

- Closed Pattern
- Jurisdictional Boundary
- Langley AFB
- Military Installation
- Water Body
- River / Stream
- Major Roads
- Interstate
- Highway

0 2.5 5 10 Miles

Hampton_Fig3_19_FlightClosed_20100323_JKC.pdf

Figure 3-19
Closed Pattern Flight Paths

Military Housing Privatization Initiative allows the military to work with the private sector to design, construct and / or renovate, operate, manage, and maintain family housing assets located on Installation property, both on and off of the primary Installation (i.e., remote housing locations).

Langley AFB's privatization project is a public-private venture with the firm Pinnacle Hunt and is designed to revitalize the Installation's existing housing stock. Under this partnership agreement, Pinnacle Hunt will demolish a large number of Langley AFB's existing units, renovate many of the remaining units, and construct new houses as it moves towards the end-state of 1,431 units (including 244 historic units) by September 2014.

Military families are not required to live in family housing and can obtain housing anywhere within the local communities. Changes in missions at the Installation could increase or decrease the number of personnel assigned to Langley AFB, which could translate into a requirement for more or less housing to support the Installation's families.

In the case of an increase in personnel, the increased demand beyond the available on-base housing stock would likely be handled by the local communities, at least in a short-term situation. Depending on the magnitude of the increase, this could impact housing supply in the local region.

5 Infrastructure Extensions Issues

Definition:
This factor covers the extension or provision of infrastructure (i.e., roads, sewer, water, etc.).

Infrastructure plays an interesting role in compatibility planning. Historical development has shown that the old adage "if you build it, they will come" is particularly true when it comes to infrastructure extensions. Infrastructure can positively impact and enhance the operations of the installation by providing needed services, such as transportation systems. It can also be a compatibility concern if enhanced infrastructure encourages growth into areas near the installation where it would not be compatible with current or future missions.

Utility extensions or expansion of infrastructure in proximity to military installations, promotes the desirability of the area for growth increasing the potential for incompatible development.

Through careful planning, the extension of infrastructure can serve as a means to help guide development into appropriate areas while providing the community opportunities for new development potential.

As the majority of land in proximity to Langley AFB is developed already, no specific issues for this factor were identified.

6 Anti-terrorism / Force Protection Issues

Definition:
Anti-terrorism / Force Protection (AT/FP) relates to the safety of personnel, facilities, and information on an installation from outside threats.

The factors identified for this compatibility factor are:

- an automobile salvage yard;
- a large pile of rubble / construction debris; and
- a mobile home park located adjacent to the Langley AFB fence line.

Like any military installation, there are security concerns at Langley AFB. Further anti-terrorism and security measures have been initiated since the September 11, 2001 terrorist attacks on the US. Three specific issues were identified that pose

AT/FP concerns due to their location adjacent to Langley's fence line. The automobile salvage yard in the western CZ, poses a threat because it contains large amounts of scrap metal stacked close to the base's southwest boundary and is in line with the runway centerline. A person could potentially climb the stack, which would provide a view into the base. Another concern could be the interference with aircraft operations arriving or departing from the west end of the runway. The large pile of construction debris is located in the southern corner of the western CZ. Like the automobile salvage yard, the debris pile could afford a pedestrian the opportunity to view base personnel and activities, as well as the Langley West Gate from a significant height. The debris pile could also potentially conceal a person's movement on the Installation. The mobile home park is also partially located in the western CZ, and is identified under the Safety compatibility factor. The mobile home park poses similar concerns because it is close to the base boundary. Additionally, people can climb on top of the trailers and view into the base.

7 Noise Issues

Definition:
Defining noise from a technical perspective, sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. More simply stated, sound is what we hear. As sounds reach unwanted levels, this is referred to as noise.

The issues identified for this compatibility factor are in regards to noise-sensitive land uses located within the noise contours established by operations at Langley AFB. These include:

- high density residential;
- low density residential;
- the Peninsula Higher Education Center;
- Thomas Nelson Community College;
- development sites within safety zones and noise contours throughout the study area; and
- the potential for future incompatible development in the noise zones.

Understanding Noise

Due to the technical nature of this resource topic and its importance to the JLUS process, this section provides a discussion of the characteristics of sound and the modeling process used to evaluate noise impacts.

The following key terms are used to describe noise.

- **Ambient Noise.** The total noise associated with an existing environment and usually comprising sounds from many sources, both near and far.
- **Attenuation.** Reduction in the level of sound resulting from absorption by the surrounding topography, the atmosphere, distance from the source, barriers, construction techniques and materials, and other factors.
- **A-weighted decibel (dBA).** A unit of measurement for noise having a logarithmic scale and measured using the A-weighted sensory network on a noise-measuring device. An increase or decrease of 10 decibels corresponds to a tenfold increase or decrease in sound energy. A doubling or halving of sound energy corresponds to a 3-dBA increase or decrease.
- **Day-Night Average Sound Level (DNL).** DNL represents an average sound exposure over a 24-hour period. During the nighttime period (10:00 p.m. to 7:00 a.m.), averages are artificially increased by 10 dB. This weighting reflects the added intrusiveness and the greater disturbance potential of nighttime

noise events attributable to the fact that community background noise typically decreases by 10 dB at night.

- **Noise Contours.** Connecting points of equal noise exposure typically expressed in 5 dBA increments (60, 65, 70, 75, etc.).
- **Sensitive Receptors.** Sensitive receptors are defined as locations and uses typically more sensitive to noise, including residential areas, hospitals, convalescent homes and facilities, schools, and other similar land uses.

Characteristics of Sound

Sound is characterized by oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). The sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The decibel scale is used to quantify sound intensity. Because sound pressure can vary by over one trillion times within the range of human hearing, a logarithmic loudness scale (i.e., dB scale) is used to present sound intensity levels in a convenient format.

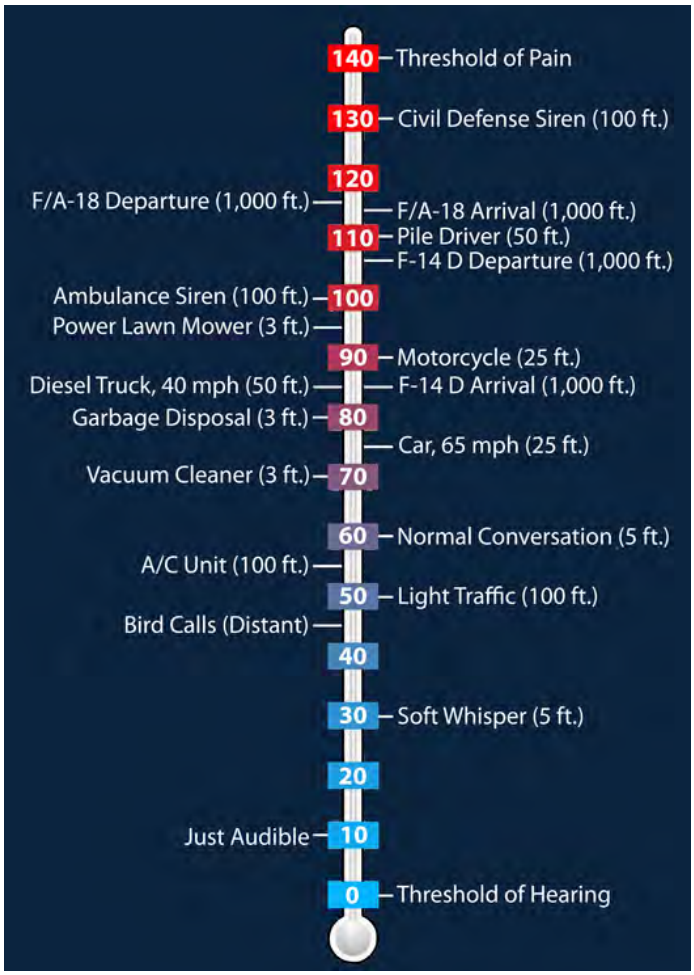


Figure 3-20. Sound Levels Comparison (in dB)

Since the human ear is not equally sensitive to all frequencies within the entire spectrum, noise measurements are weighted more heavily within those frequencies of maximum human sensitivity in a process called "A-weighting" written as dBA. The human ear can detect changes in sound levels of approximately 3 dBA under normal conditions. Changes of 1 to 3 dBA are typically noticeable under controlled conditions, while changes of less than 1 dBA are only discernable under controlled, extremely quiet conditions. A change of 5 dBA is typically noticeable to the general public in an outdoor environment. Typical A-weighted sound levels for a range of indoor and outdoor activities are summarized in Figure 3-20.

Environmental noise fluctuates over time. While some noise fluctuations are minor, others can be substantial. These fluctuations include regular and random patterns, how fast the noise fluctuates, and the amount of variation. When describing noise impacts, it is common to look at the average noise over an average day.

Characteristics of Noise Modeling

The Air Force adopted the NOISEMAP computer model to analyze and describe noise impacts created by aircraft operations. NOISEMAP is one of two Environmental Protection Agency (EPA) approved models. The other is the Integrated Noise Model (INM), which is used by the FAA for civilian airports.

In 1974, EPA designated the noise descriptor Ldn, or DNL, as the standard measurement for noise impacts. The terms DNL and Ldn are used interchangeably with DNL. DNL is an average sound level exposure, measured in decibels, over a 24-hour period (see the definition earlier in this

section for details). On a national level, DNL measurements are projected down to 65 decibels.

Aircraft Noise

For noise sources attributable to Langley AFB, aircraft noise is the primary concern relative to compatibility planning. Over the years, several studies have been developed regarding noise levels associated with aircraft operations at Langley AFB. The analysis of airborne noise varies based on the type of aircraft modeled of this JLUS, flight operations, training activities, flight frequency, and other aircraft using the airspace.

As described in Chapter 4, Langley AFB published an updated AICUZ Study in July 2007, which revised the previous AICUZ Study from 1997. One major difference between the 1997 and 2007 AICUZ Studies is the identified noise zones. The 2007 update and subsequent noise zone changes were the result of:

- Changes in flight operations and the addition, elimination, or alteration of flight tracks for mission and training purposes;
- The integration of the Air National Guard into the Air Force's active duty program has resulted in more frequent operations on weekends;
- Post September 11, 2001, aircraft operations tempo supporting wartime mission and homeland security requirements;
- Technical improvements to NOISEMAP, a computer program for modeling noise levels that determines noise zones (NZ) based on aircraft activity; and
- Changes in aircraft type, such as the addition of the F-22 Raptor located at Langley AFB.

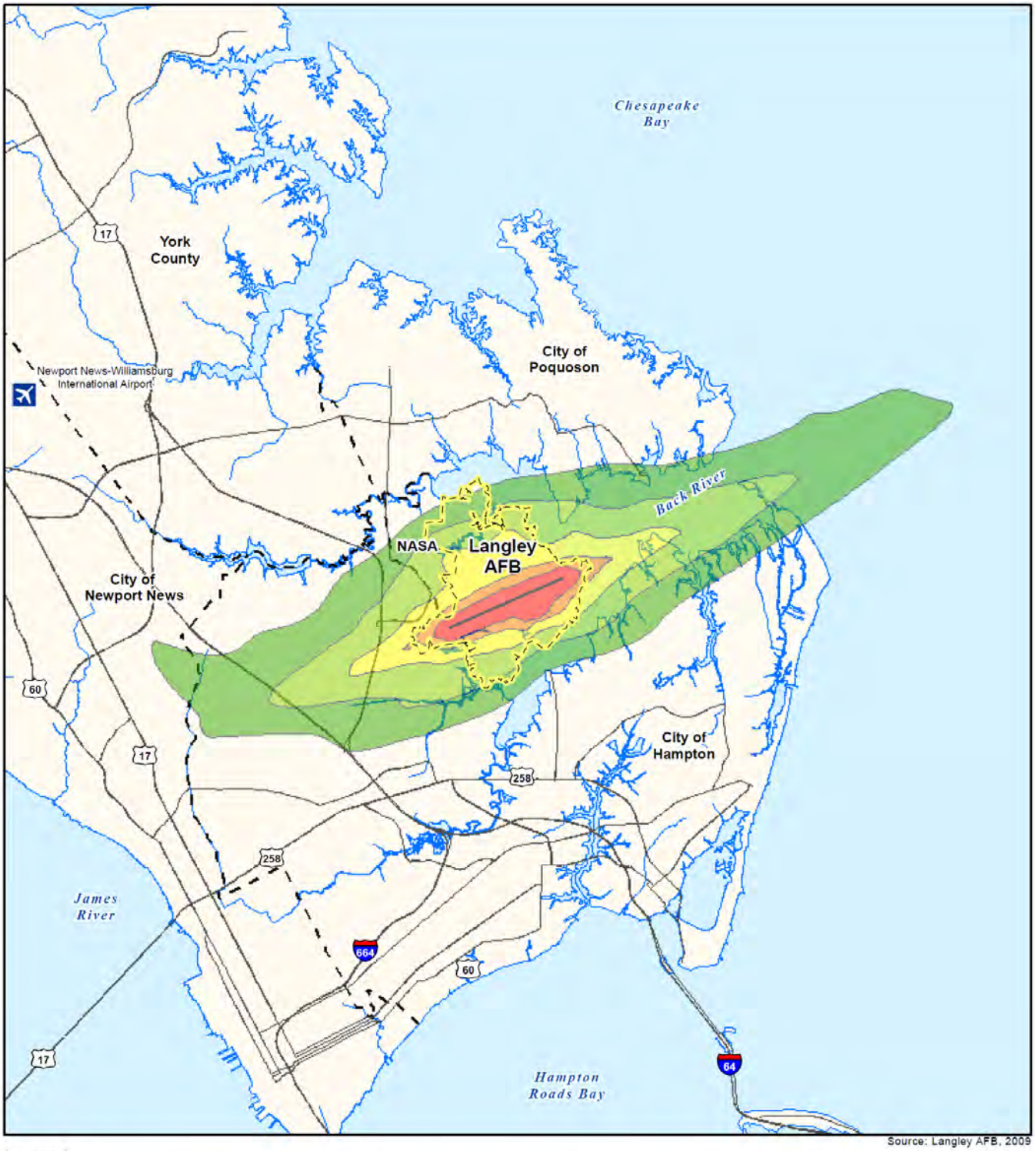
The 2007 Langley AICUZ provided detailed noise modeling of current aircraft operations at the Installation. Aircraft operations at Langley AFB have the most noticable noise effect in the surrounding area to residential and commercial uses.

The Langley AICUZ looks at noise for a typical or average day over a given year. On any given day, noise levels on a specific property will be higher or lower depending on a number of factors, including the number of flights, aircraft mix, the actual flight tracks taken, and flight elevations. Other changes at the base could result in changes to the noise contours. As such, the noise contours should be used as guidance in making future land use decisions, not absolute constraints.

The AICUZ noise contours show areas where noise compatibility factors are likely to occur at varying levels. Outside of these contours are additional areas where overflight will occur and new development will notice noise from flight operations. The overall shape and size of the study area reflects locations that experience periodic low level overflight, and therefore, may be exposed to occasional noise.

Noise contours were established in the Langley AICUZ using NOISEMAP ranging from 65 dB to 80+ dB in five-dB increments. The Langley AFB noise contours are illustrated on Figure 3-21, with an additional 85+ contour shown for reference. The 80+ dB contour extends just beyond the base boundaries and partially covers an automobile salvage yard and the northernmost portion of a mobile home park. Both of these uses are incompatible with Langley's aircraft operations. The 65 dB contour extends to the east along the runway centerline for approximately 7.5 miles and to the west of the runway centerline for about 5.5 miles. The contour also extends north of the runway for about 1.9 miles and to the south roughly 1.5 miles.

Table 3-9 displays land use types and corresponding Air Force recommendations within the four noise contours.



Source: Langley AFB, 2009

Legend

Aircraft Noise Contours
- 65-70 dB
- 70-75 dB
- 75-80 dB
- 80-85 dB
- 85+ dB

- Airport
- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream

Major Roads
- Interstate
- Highway

0 1 2 4 Miles

Figure 3-21
Aircraft Noise Contours

Table 3-9. AICUZ Noise Contours Generalized Land Use Criteria

General Land Use	DNL Noise Contours (dB)			
	65-69	70-74	75-79	80+
Residential	No[1]	No[1]	No	No
Manufacturing	Yes	Yes	Yes	Yes
Transportation, Communications and Utilities	Yes	Yes	Yes	No
Trade, Business, and Offices	Yes	Yes	Yes	No
Shopping Districts	Yes	Yes	Yes	No
Public and Quasi-Public Service	Yes	No[1]	No[1]	No
Recreation	Yes	Yes	No	No
Public Assembly	Yes	No	No	No
Agriculture and Mining	Yes	Yes	Yes	Yes

Notes:
** This chart is for general information. Refer to Langley AFB 2007 AICUZ Study, Volume I, Table 3-4 for specific land use guidelines.*
1. Unless sound attenuation materials are installed.
Source: Langley AFB 2007 AICUZ Citizen's Brochure

Langley F-15 taking off using afterburners

The majority of the compatibility issues in the study area related to aircraft noise stems from existing residential developments. According to the 2007 AICUZ, residential uses are discouraged within areas impacted by 65 dB or higher without some type of noise level reduction techniques (sound attenuation) in the building construction. Several areas were identified during the JLUS process that fall within Langley's noise contours and are incompatible with aircraft operations noise levels. One of the locations is a low density residential / agricultural property located in the western APZ I and under the 70-74 and 75-79 dB noise contours.

Studies have shown that environments with excess amounts of noise (i.e., insufficient / improper sound attenuation) can negatively impact both quality of life and health of people or animals. There is a mobile home park located within the western CZ and in the 75-79 dB noise contour.

Mobile home parks are not recommended in any of the listed noise contours due to the structures' construction and increased susceptibility to noise. The Peninsula Higher Education Center and Thomas Nelson Community College are both located in the western APZ II in line with the Langley AFB runway. These locations are within the 70-74 dB noise contour.

To help reduce the impacts of their aircraft operations on the surrounding communities, Langley AFB conducts major engine testing (also called 'run ups') in hush houses. These facilities are primarily designed for military fighter aircraft use; they provide an enclosed, acoustically treated environment to run various aircraft types with the engines installed or to test un-installed engines.

A specially designed engine test facility (hush house) at Langley AFB.

The acoustic treatment provided by the facility minimizes the environmental impact on the surrounding area by reducing the sound emitted from the facility.

Langley AFB takes additional measures to reduce operational noise impacts through its commitment to 'quiet hours' at night. The installation observes published quiet hours from 11:30PM to 6:00AM, Monday through Friday. On weekends, the quiet hours are 11:30PM to 8:00AM. On occasion, the Wing Commander will authorize mission essential aircraft to arrive-depart during published quiet hours; however, this occurs very rarely. If night flying requirements are known ahead of time, Langley AFB Public Affairs publishes a notice of the upcoming activities in the local papers.

Also, as much as wind speed allows, Langley's aircraft take off to the east over the water. This reduces local noise impacts during the loudest part of the aircraft operation – the take off. Ultimately, wind speed and direction dictate the flight procedures.

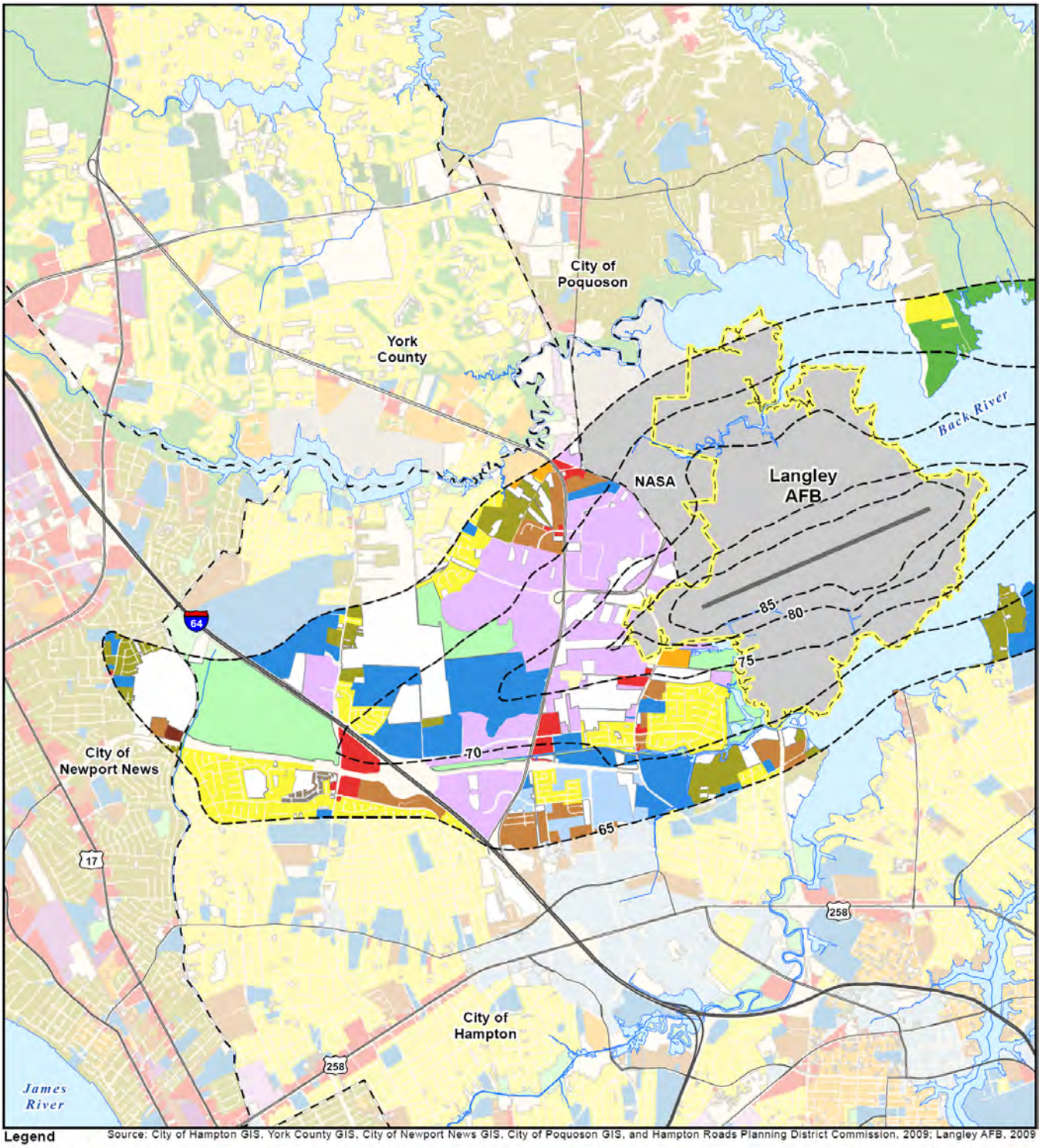
As noted in the discussion of Compatibility Issue 1, Land Use, vacant parcels throughout the JLUS study area that are within Langley's noise contours and that could support development are a concern for potentially incompatible uses. East of Langley AFB, the primary concentrations of vacant parcels within the Installation's noise contours are located in the City of Hampton along the Back River. A small number of vacant parcels are also located adjacent to the Back River, but these are in the City of Poquoson. West of Langley AFB, vacant parcels impacted by Langley's noise contours are located in Hampton. One concentration of parcels is immediately adjacent to the base's western boundary generally along the runway's centerline.

Another concentration of vacant parcels is located approximately 1.5 miles west of the base and north of the runway centerline.

Another location identified during the JLUS process as a compatibility issue is a high density residential development along Interstate 64 west of the runway. This development is within the 65-69 dB contour. Some of the land in the 65-69 and 70-74 dB contours to the east of Langley AFB is currently vacant and could potentially be developed for residential or other noise sensitive uses in the future.

There are other locations throughout the study area that lie under Langley's noise contours and include residential uses, but the issues listed above were identified as posing the biggest concerns at this time. Figures 3-22 through 3-27 illustrate the existing land use, future land use, and zoning designations, respectively, as well as corresponding compatibility for land west of Langley AFB and within the Installation's noise contours. Similarly, Figures 3-28 through 3-33 illustrate these topics for areas east of Langley AFB.

Using 2007 Environmental Systems Research Institute (ESRI) data, the numbers of people living within each of the five noise contours for Langley AFB aircraft operations was estimated. The numbers were estimated by intersecting the noise contours with 2000 census block GIS data, calculating the area of the resulting figure, and multiplying that area by the 2007 estimated population density. Using this process, it was projected that a total of 28,569 people were estimated to reside within Langley's noise contours. Of that number, an estimated 1,546 people live in the 85+ dB contour; 1,211 people are in the 80-84 dB contour; 3,233 people reside in the 75-79 dB contour; 7,488 people live in the 70-74 dB contour; and 15,091 people were estimated to reside in the 65-69 dB contour. It should be noted that this analysis process was based on existing available statistical data. The 85+ and 80-84 dB noise contours are contained almost entirely within Langley's boundaries, and as such, the personnel impacted by these high levels of noise are anticipated to be people working on the base, unaccompanied base personnel living in



Legend

Source: City of Hampton GIS, York County GIS, City of Newport News GIS, City of Poquoson GIS, and Hampton Roads Planning District Commission, 2009; Langley AFB, 2009

Existing Land Use

- Rural Residential (<=2 DU/acre)
- Very Low Density Residential (>2-4 DU/acre)
- Low Density Residential (>4-8 DU/acre)
- Medium Density Residential (>8-15 DU/acre)
- High Density Residential (>15 DU/acre)
- Commercial/Office
- Light Industrial
- Industrial/Office Park
- Heavy Industrial
- Mixed Use
- Public/ Semi-Public
- Military
- Agriculture
- Conservation
- Open Space
- Right-of-Way/Utilities
- Unassigned/ Undesignated
- Vacant
- Aircraft Noise Contours
- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream

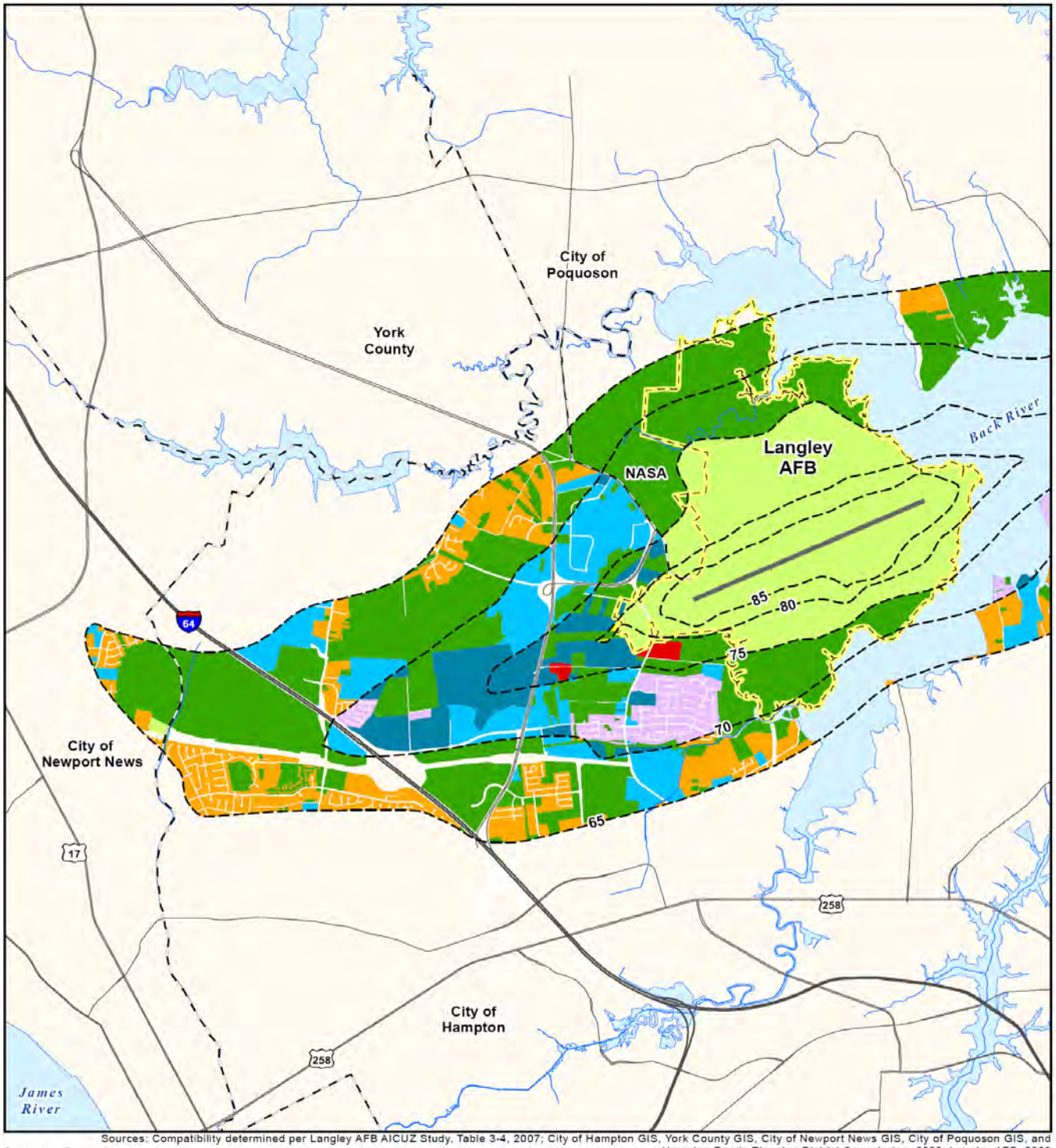
Major Roads

- Interstate
- Highway

0 0.25 0.5 1 Miles

Hampton_Fig3_22_NoiseELU_West_20100323a_JKC.pdf

Figure 3-22
Aircraft Noise Contours (West)
Existing Land Use



Sources: Compatibility determined per Langley AFB AICUZ Study, Table 3-4, 2007; City of Hampton GIS, York County GIS, City of Newport News GIS, City of Poquoson GIS, and Hampton Roads Planning District Commission, 2009; Langley AFB, 2009

Legend

Compatibility

- Yes
- Dependent Upon Land Use, Noise Level Reduction may Apply
- Generally Compatible with Noise Level Reduction of 25 dB
- Generally Compatible with Noise Level Reduction of 30 dB
- Generally Compatible with Noise Level Reduction of 35 dB
- Discouraged; Generally Compatible with Noise Level Reduction of 25 dB
- Strongly Discouraged; Generally Compatible with Noise Level Reduction of 30 dB
- No
- Aircraft Noise Contours
- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream

Major Roads

- Interstate
- Highway

0 0.25 0.5 1 Miles

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Figure 3-23
Aircraft Noise Contours (West)
Existing Land Use Compatibility Issues

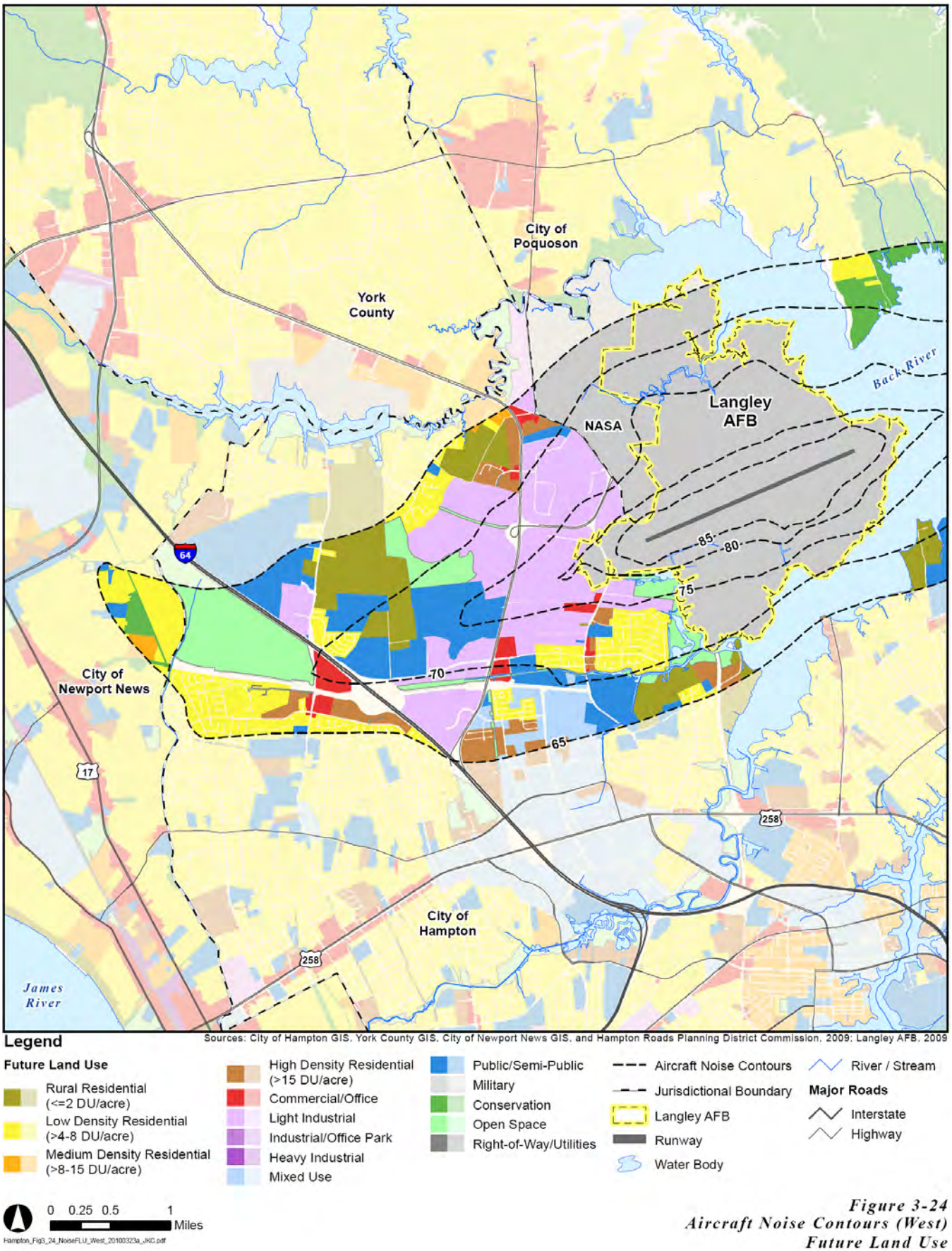
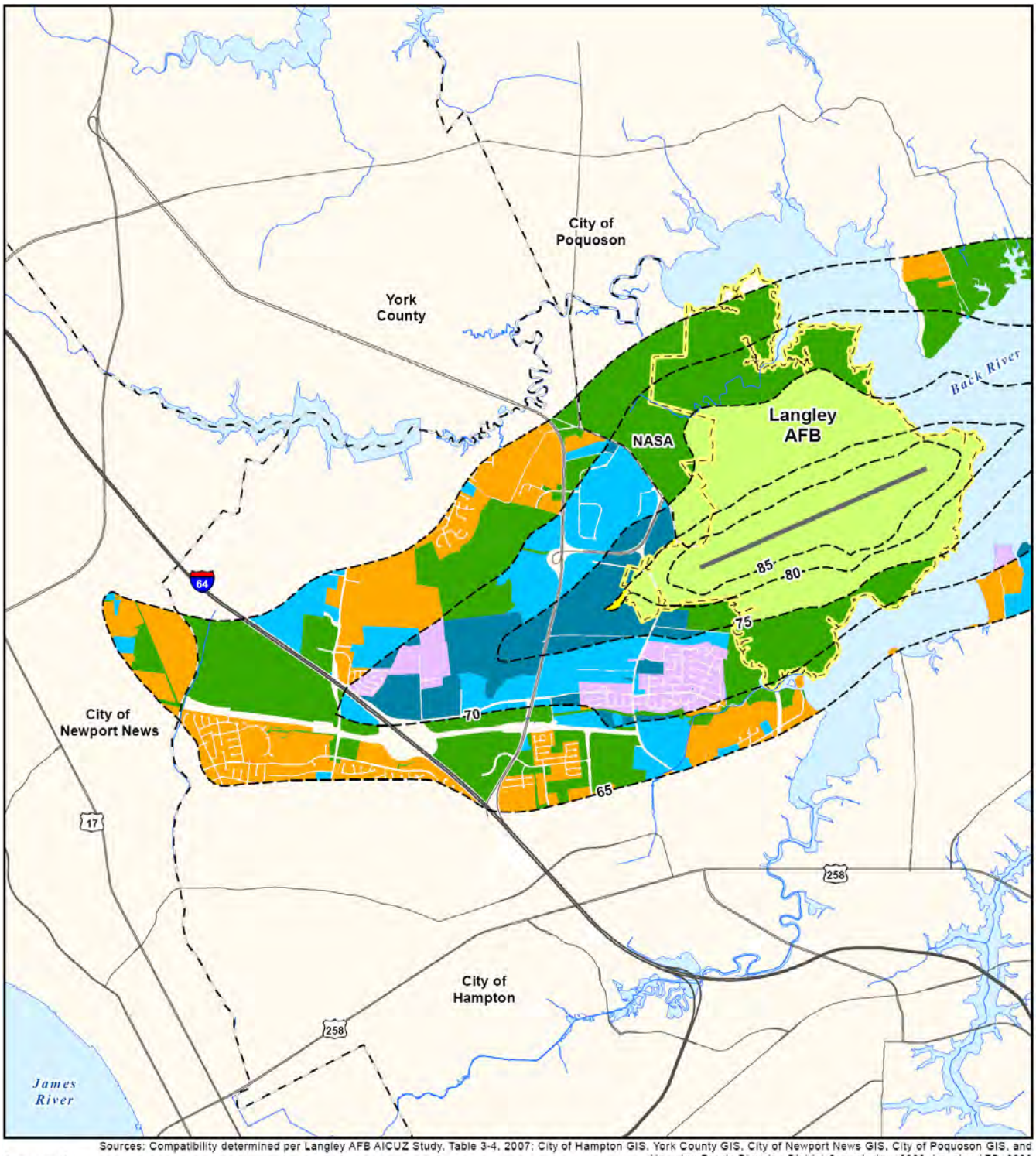


Figure 3-24
Aircraft Noise Contours (West)
Future Land Use



Sources: Compatibility determined per Langley AFB AICUZ Study, Table 3-4, 2007; City of Hampton GIS, York County GIS, City of Newport News GIS, City of Poquoson GIS, and Hampton Roads Planning District Commission, 2009; Langley AFB, 2009

Legend

Compatibility

- Yes
- Dependent Upon Land Use, Noise Level Reduction may Apply
- Generally Compatible with Noise Level Reduction of (25 dB)
- Generally Compatible with Noise Level Reduction of (30 dB)
- Generally Compatible with Noise Level Reduction of (35 dB)
- Discouraged; Generally Compatible with Noise Level Reduction of (25 dB)
- Strongly Discouraged; Generally Compatible with Noise Level Reduction of (30 dB)
- No
- Aircraft Noise Contours
- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream

Major Roads

- Interstate
- Highway

0 0.25 0.5 1 Miles

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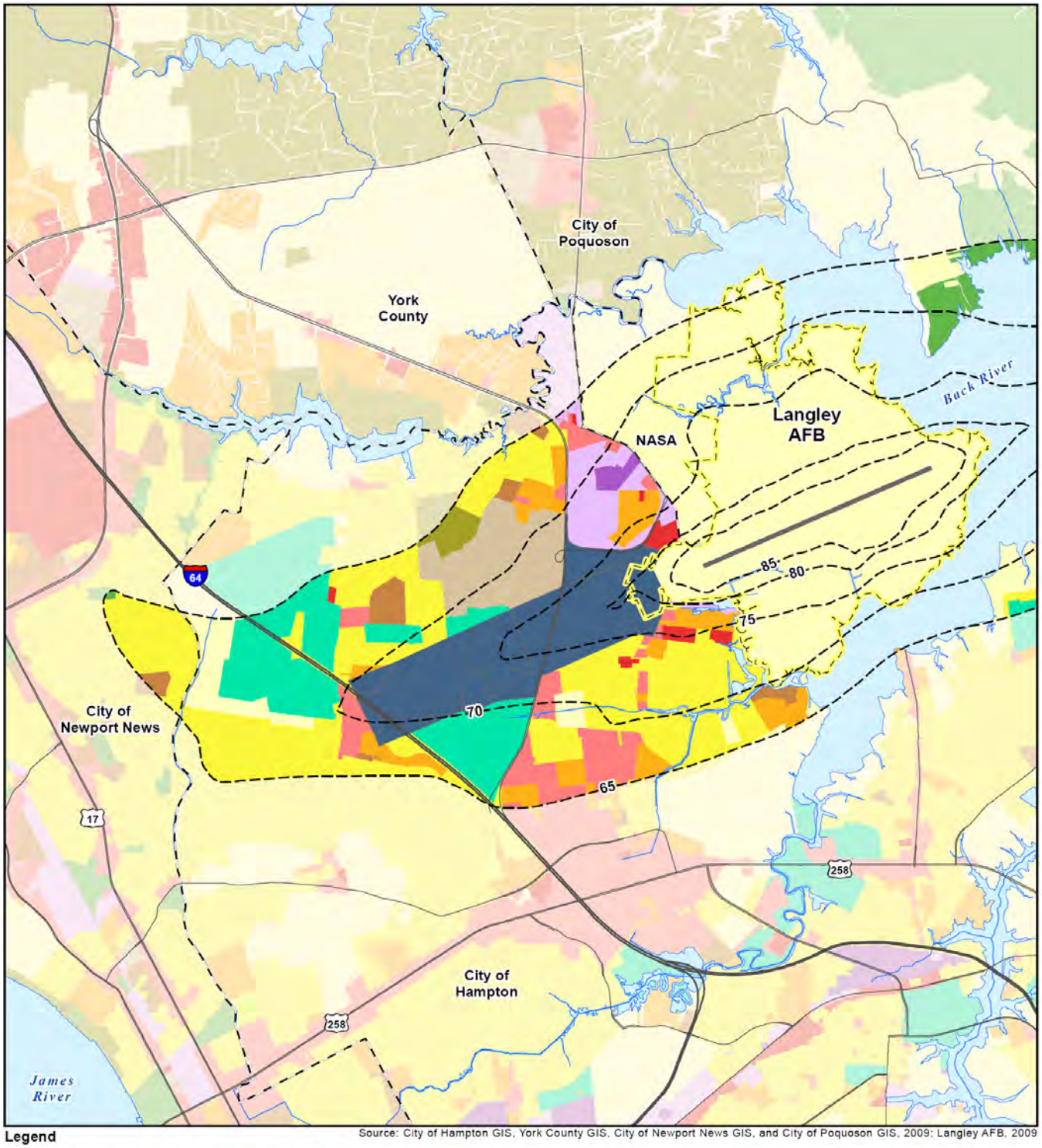
Figure 3-25
Aircraft Noise Contours (West)
Future Land Use Compatibility Issues



Source: City of Hampton GIS, York County GIS, City of Newport News GIS, and City of Poquoson GIS, 2009; Langley AFB, 2009

Legend

Zoning for legend

- Rural Residential (<=2 DU/acre)
- Very Low Density Residential (>2-4 DU/acre)
- Low Density Residential (>4-8 DU/acre)
- Medium Density Residential (>8-15 DU/acre)
- High Density Residential (>15 DU/acre)
- Commercial
- High Intensity Commercial
- Office Park
- Light Industrial
- Heavy Industrial
- Langley Flight Approach District
- Special Public Interest
- Parks/Conservation
- Aircraft Noise Contours
- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream

Major Roads

- Interstate
- Highway

0 0.25 0.5 1 Miles

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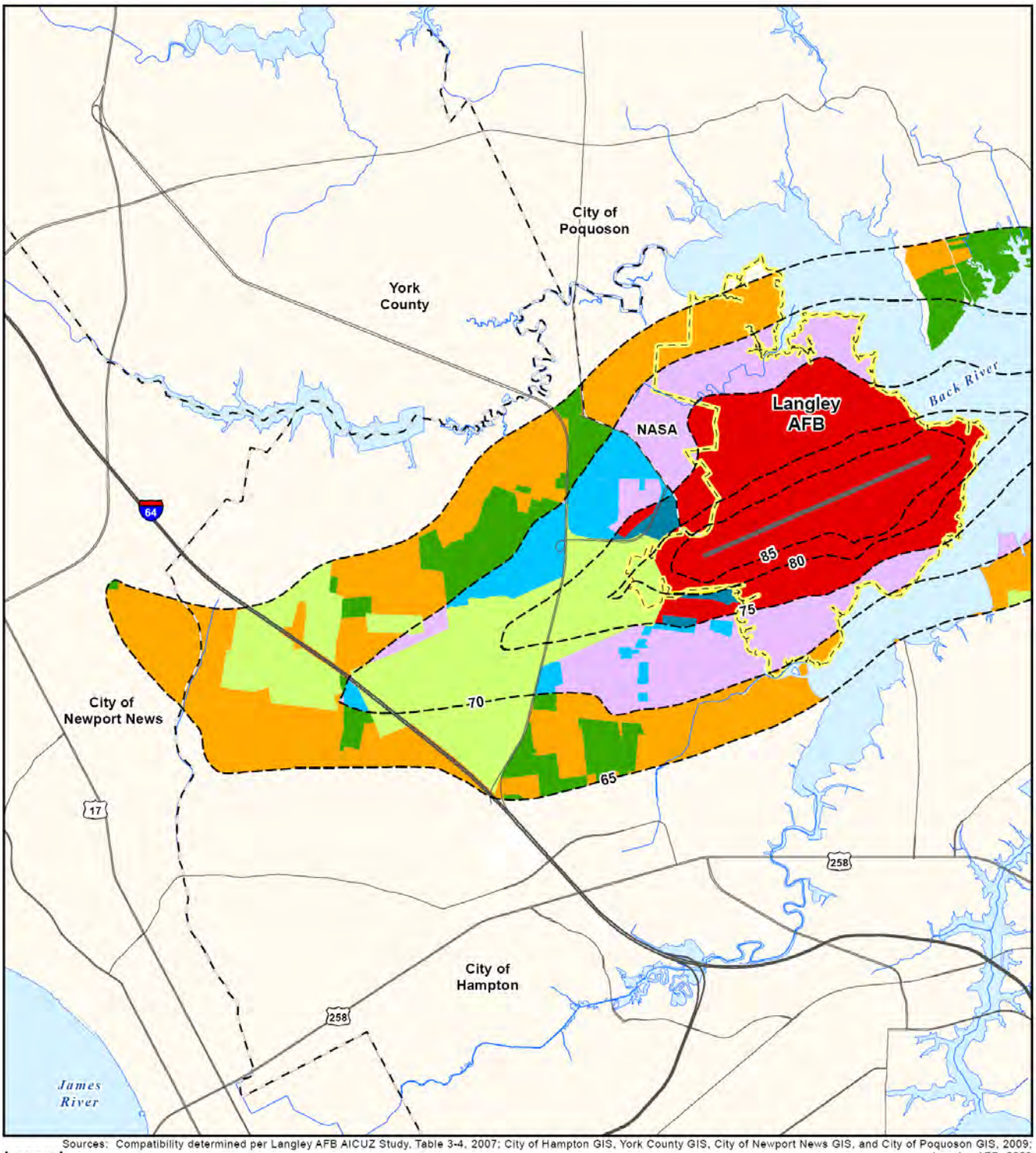
Figure 3-26
Aircraft Noise Contours (West)
Existing Zoning



Sources: Compatibility determined per Langley AFB AICUZ Study, Table 3-4, 2007; City of Hampton GIS, York County GIS, City of Newport News GIS, and City of Poquoson GIS, 2009; Langley AFB, 2009

Legend

Compatibility

- Yes
- Dependent Upon Land Use, Noise Level Reduction may Apply
- Generally Compatible with Noise Level Reduction of 25 dB
- Generally Compatible with Noise Level Reduction of 30 dB
- Generally Compatible with Noise Level Reduction of 35 dB
- Discouraged; Generally Compatible with Noise Level Reduction of 25 dB
- Strongly Discouraged; Generally Compatible with Noise Level Reduction of 30 dB
- No
- Aircraft Noise Contours
- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream

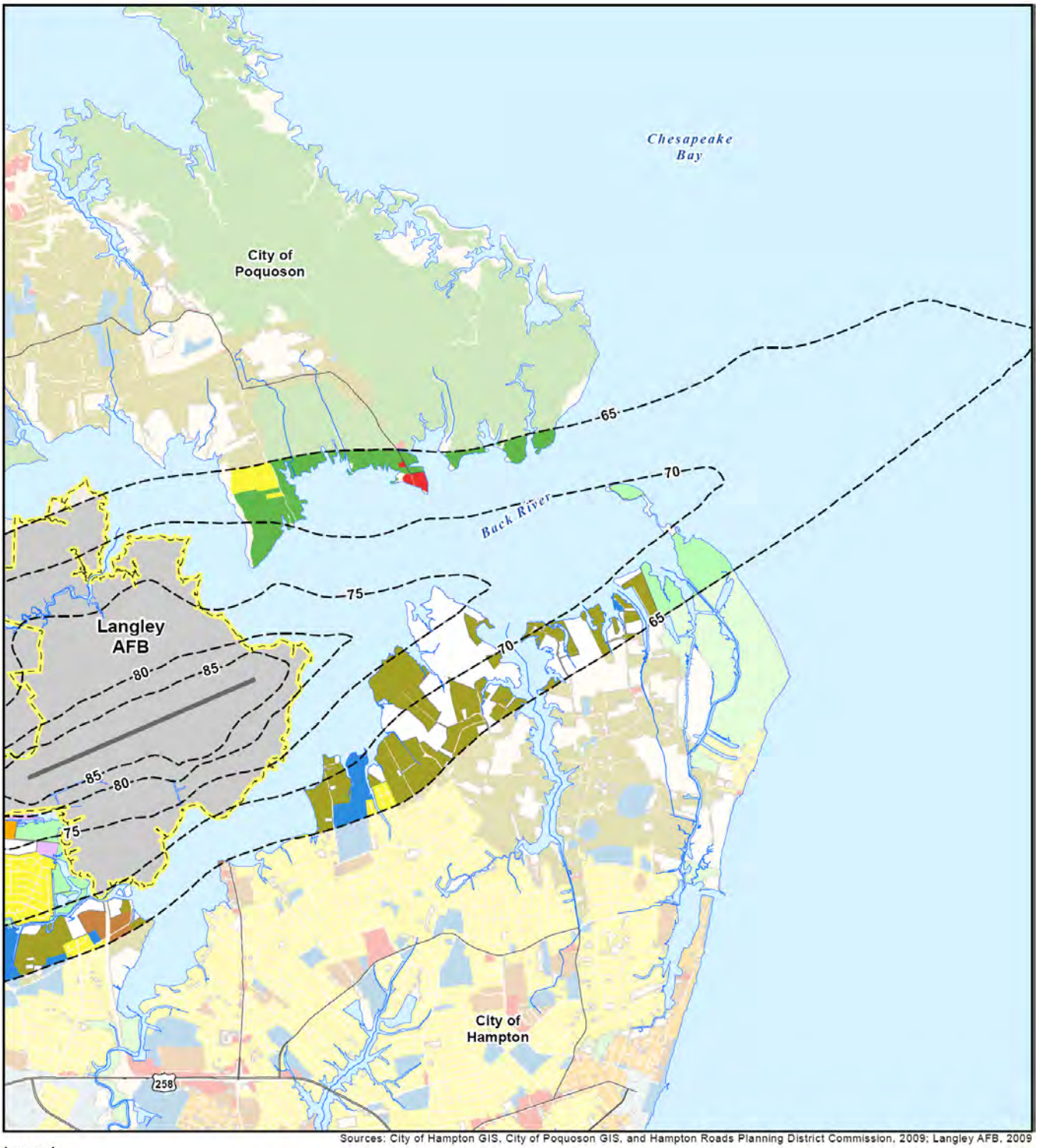
Major Roads

- Interstate
- Highway

0 0.25 0.5 1 Miles

Hampton_Fig3_27_NoiseZoning_West_Compat_20100125_JKC.pdf

Figure 3-27
Aircraft Noise Contours (West)
Existing Zoning Compatibility Issues



Sources: City of Hampton GIS, City of Poquoson GIS, and Hampton Roads Planning District Commission, 2009; Langley AFB, 2009

Legend

Existing Land Use

- Rural Residential (</= 2 DU/acre)
- Low Density Residential (>4-8 DU/acre)
- Medium Density Residential (>8-15 DU/acre)
- High Density Residential (>15 DU/acre)
- Commercial/Office
- Light Industrial
- Mixed Use
- Public/Semi-Public
- Military
- Conservation
- Open Space
- Vacant
- Aircraft Noise Contours
- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream

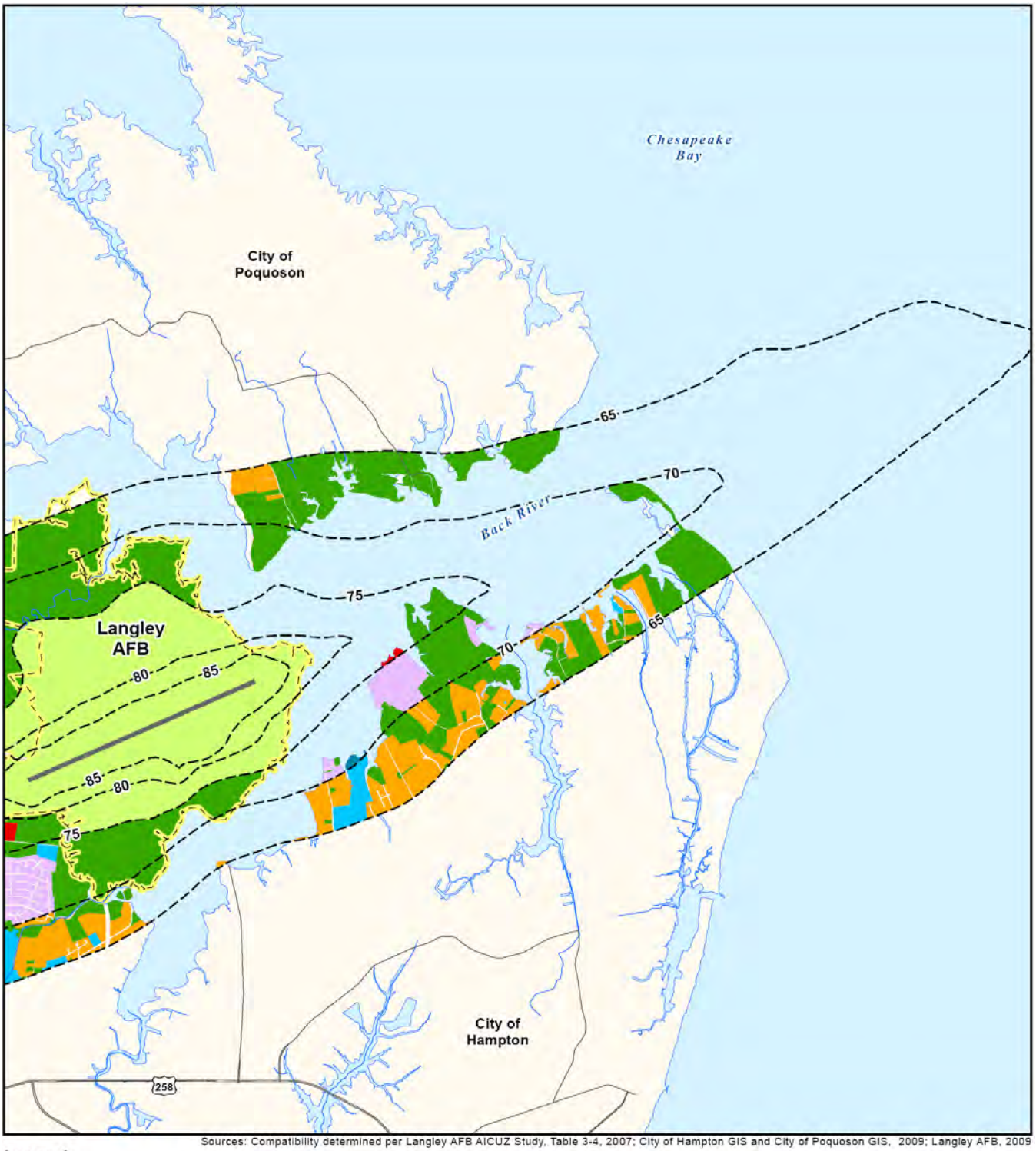
Major Roads

- Highway

0 0.25 0.5 1 Miles

Hampton_Fig3_28_NoiseELU_East_20100326_JKC.pdf

Figure 3-28
Aircraft Noise Contours (East)
Existing Land Use



Sources: Compatibility determined per Langley AFB AICUZ Study, Table 3-4, 2007; City of Hampton GIS and City of Poquoson GIS, 2009; Langley AFB, 2009

Legend

Compatibility

- Yes
- Dependent Upon Land Use, Noise Level Reduction may Apply
- Generally Compatible with Noise Level Reduction of 25 dB
- Generally Compatible with Noise Level Reduction of 30 dB
- Generally Compatible with Noise Level Reduction of 35 dB
- Discouraged; Generally Compatible with Noise Level Reduction of 25 dB
- Strongly Discouraged; Generally Compatible with Noise Level Reduction of 30 dB
- No
- Aircraft Noise Contours
- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream
- Highway

0 0.25 0.5 1 Miles

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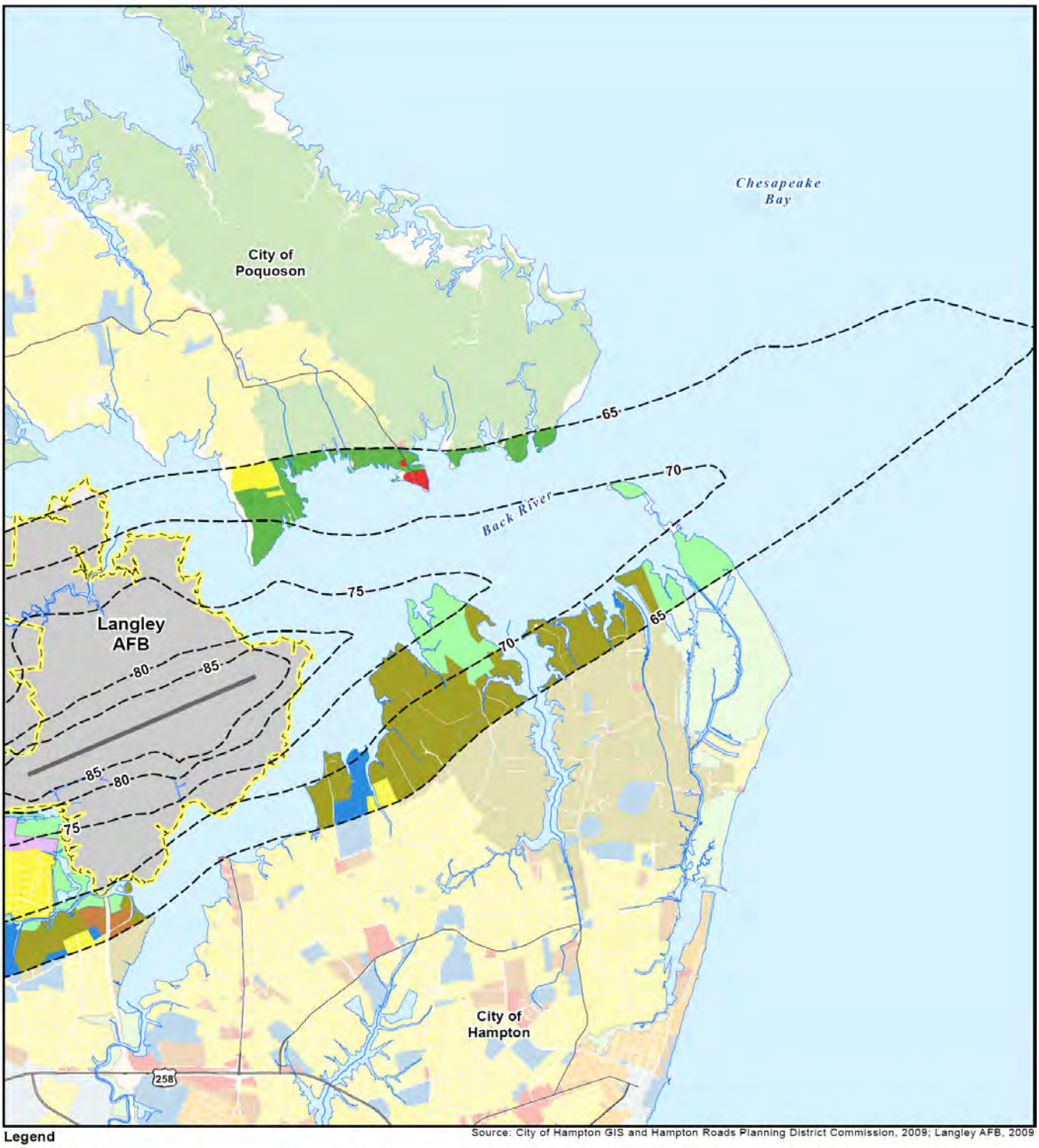
Figure 3-29
Aircraft Noise Contours (East)
Existing Land Use Compatibility Issues



Source: City of Hampton GIS and Hampton Roads Planning District Commission, 2009; Langley AFB, 2009

Legend

Future Land Use

- Rural Residential (<=2 DU/acre)
- Low Density Residential (>4-8 DU/acre)
- High Density Residential (>15 DU/acre)
- Commercial/Office
- Light Industrial
- Public/Semi-Public
- Military
- Conservation
- Open Space
- Aircraft Noise Contours
- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream

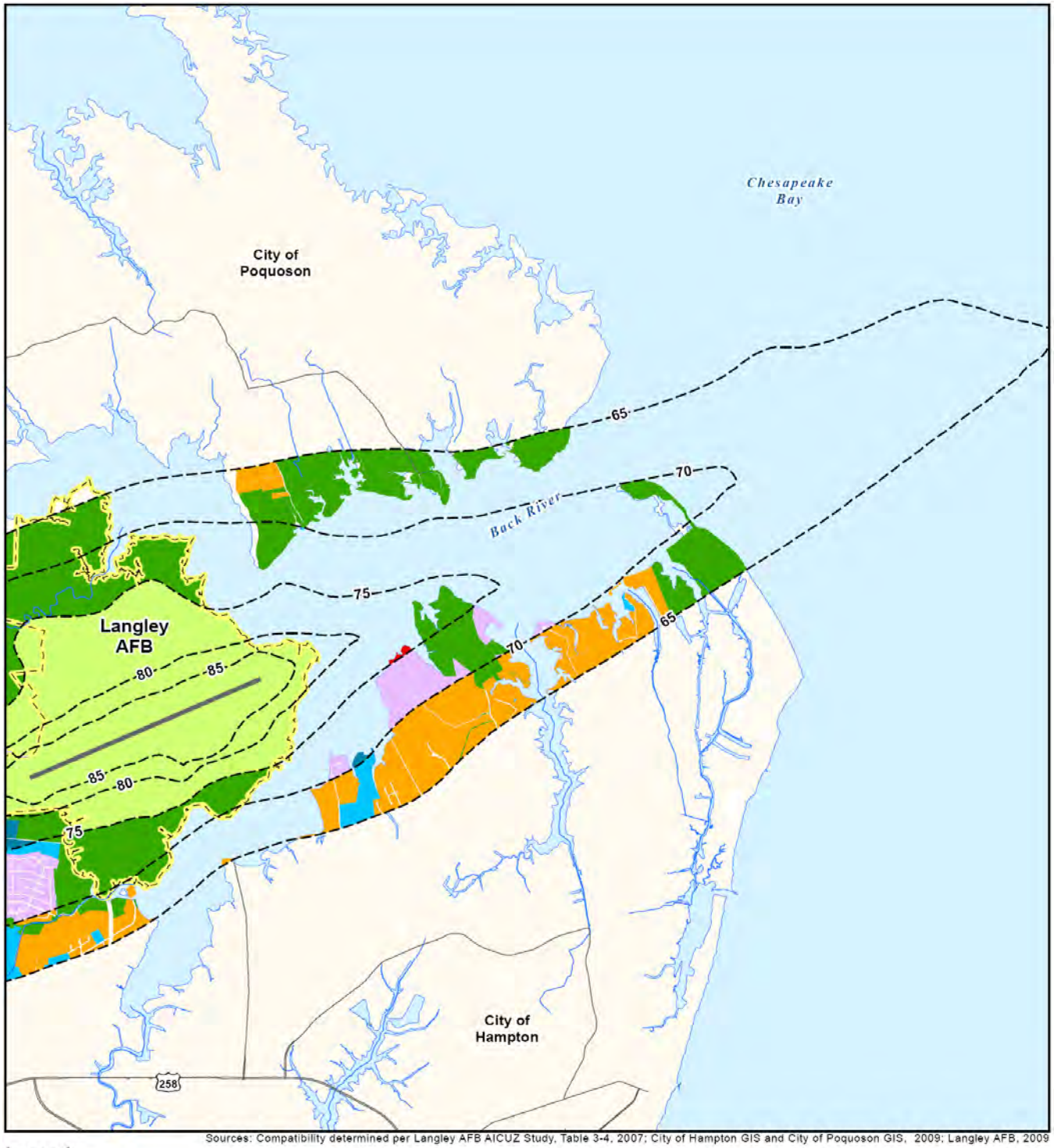
Major Roads

- Highway

0 0.25 0.5 1 Miles

Hampton_Fig3_30_NoiseFLU_East_20100323_JKC.pdf

Figure 3-30
Aircraft Noise Contours (East)
Future Land Use



Sources: Compatibility determined per Langley AFB AICUZ Study, Table 3-4, 2007; City of Hampton GIS and City of Poquoson GIS, 2009; Langley AFB, 2009

Legend

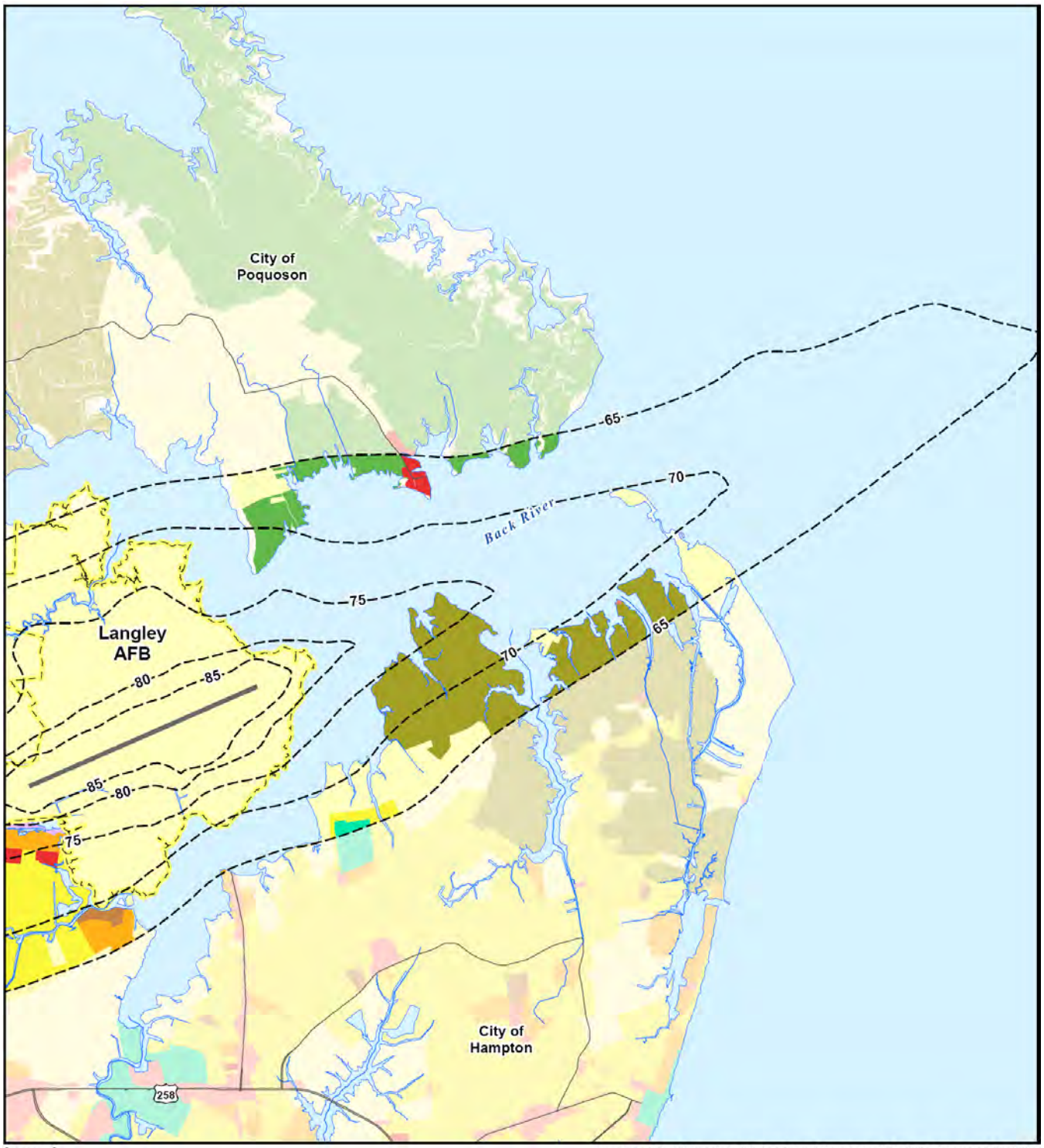
Compatibility

- Yes
- Dependent Upon Land Use, Noise Level Reduction may Apply
- Generally Compatible with Noise Level Reduction of 25 dB
- Generally Compatible with Noise Level Reduction of 30 dB
- Generally Compatible with Noise Level Reduction of 35 dB
- Discouraged; Generally Compatible with Noise Level Reduction of 25 dB
- Strongly Discouraged; Generally Compatible with Noise Level Reduction of 30 dB
- No
- Aircraft Noise Contours
- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream
- Highway

0 0.25 0.5 1 Miles

Hampton_Fig3_31_NoiseFLU_East_Compat_20100128_JKG.pdf

Figure 3-31
Aircraft Noise Contours (East)
Future Land Use Compatibility Issues



Legend

Sources: City of Hampton GIS and City of Poquoson GIS, 2009; Langley AFB, 2009

ZONING

- Rural Residential (<=2 DU/acre)
- Very Low Density Residential (>2-4 DU/acre)
- Low Density Residential (>4-8 DU/acre)
- Medium Density Residential (>8-15 DU/acre)
- High Density Residential (>15 DU/acre)
- Commercial
- High Intensity Commercial
- Light Industrial
- Office Park
- Special Public Interest
- Parks/Conservation
- Aircraft Noise Contours
- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream

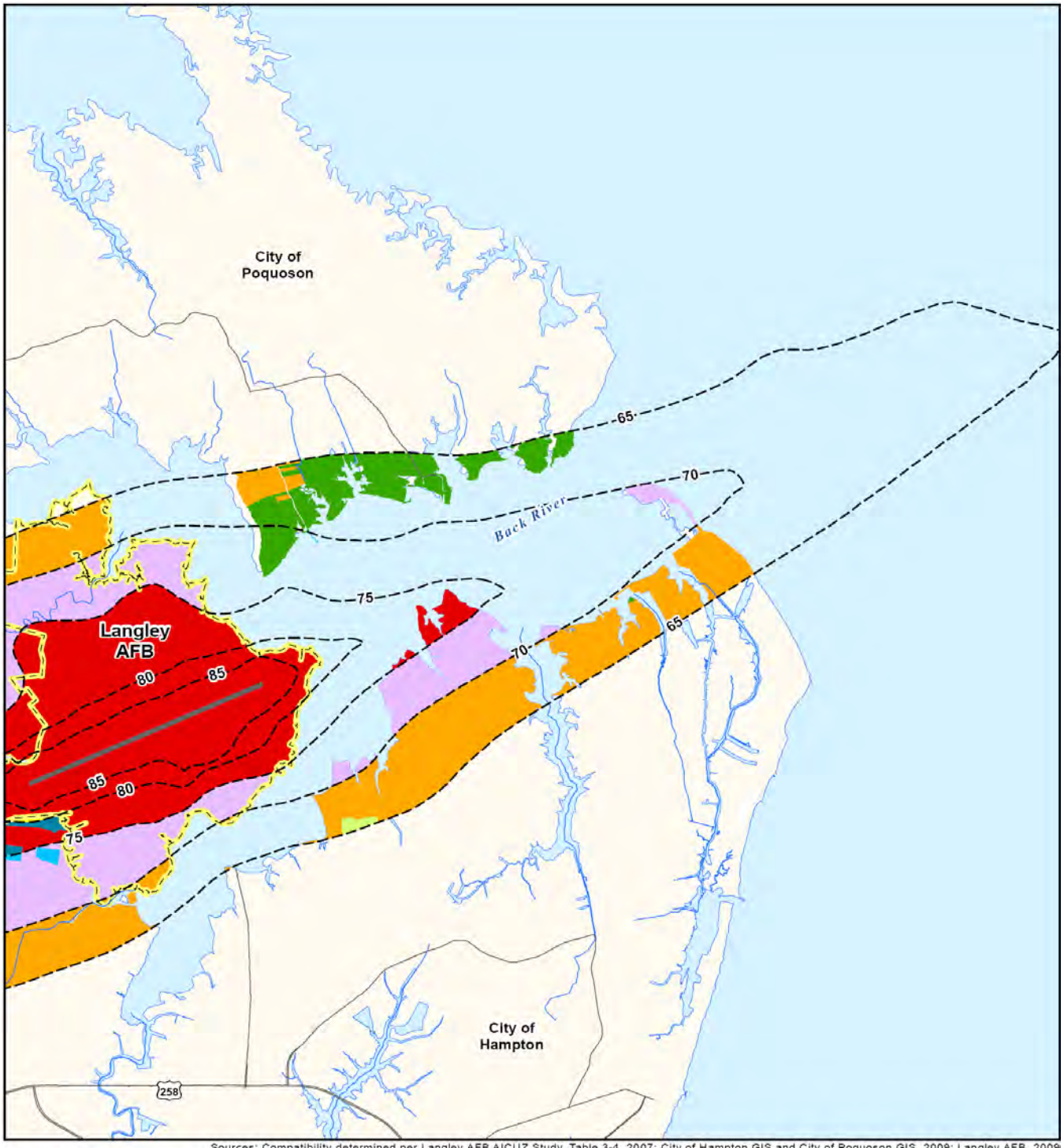
Major Roads

- Highway

0 0.25 0.5 1 Miles

Hampton_Fig3_32_NoiseZoning_East_20100323_JKC.pdf

Figure 3-32
Aircraft Noise Contours (East)
Existing Zoning



Sources: Compatibility determined per Langley AFB AICUZ Study, Table 3-4, 2007; City of Hampton GIS and City of Poquoson GIS, 2009; Langley AFB, 2009

Legend

Compatibility

- Yes
- Dependent Upon Land Use, Noise Level Reduction may Apply
- Generally Compatible with Noise Level Reduction of 25 dB
- Generally Compatible with Noise Level Reduction of 30 dB
- Generally Compatible with Noise Level Reduction of 35 dB
- Discouraged; Generally Compatible with Noise Level Reduction of 25 dB
- Strongly Discouraged; Generally Compatible with Noise Level Reduction of 30 dB
- No
- Langley Flight Approach District
- Aircraft Noise Contours
- Jurisdictional Boundary
- Langley AFB
- Runway
- Water Body
- River / Stream

Major Roads

- Highway

0 0.25 0.5 1 Miles

Hampton_Fig3_33_NoiseZoning_East_Compat_20100126_JKC.pdf

Figure 3-33
Aircraft Noise Contours (East)
Existing Zoning Compatibility Issues

dormitories, and personnel and families residing in temporary lodging facilities. As a whole, though, there should be a general a level of concern for the amount of people already living within the Langley AFB noise contour zones. The Appendix contains an example of noise reduction measures from Pima County, Arizona. This reference, as well as the Navy's 2006 study Guidelines for Sound Insulation of Residences Exposed to Aircraft Operations may also be found the Hampton-Langley JLUS website on the resources page.
See: *www.hamptonlangleyjlus.com*

Potential Future Aircraft Noise

As an active Air Combat Command (ACC) installation with high quality operations and support facilities and long runways, it is possible that Langley AFB could be chosen by the DOD and the Air Force to support an increased mission or a new mission in the future. This change could bring an increase in the existing F-22 fleet, or it may involve a different aircraft. Increased noise could be among the impacts of a mission increase or a new mission.

F-35 Lightning II, formerly the Joint Strike Fighter, during testing

As an example, the DOD's newest aircraft, the F-35 Lightning II, is expected to produce greater levels of noise than any of the aircraft currently in the Air Force inventory, including the F-15 or F-22. The introduction of the F-35 at Langley AFB would be expected to affect more of the communities surrounding the base than are currently impacted. The exact noise contours for the F-35 are not available.

Conversely, should Langley receive an aircraft that is quieter than the F-15 or F-22, less area in the local communities could be affected by the aircraft's noise. The AICUZ noise contours could be reduced from their current configurations. In either case, the Langley AICUZ study would need to be updated so that the actual noise impacts associated with any new aircraft could be determined.

The F-16 Fighting Falcon has a smaller noise signature than the F-15 or F-22

8 Vibration Issues

Definition:
Vibration is an oscillation or motion that alternates in opposite directions and may occur as a result of an impact, explosion, noise, mechanical operation, or other change in the environment.

The issue identified for vibration is: residential development in close proximity to Langley AFB.

There are no substantiated vibration complaints on record with either the City of Hampton or Langley AFB, which resulted in the conclusion that vibration is not an issue currently associated with operations at Langley AFB. It was, however, identified as a potential problem during the JLUS process. The operation of jet engines produces a certain amount of vibration that could affect certain land uses if they were located close to the Installation. Based on Langley's current assigned aircraft, missions, and locations of development around the base, no concerns were noted. However, future development near the base or mission changes could result in vibration becoming an issue.

9 Dust / Smoke / Steam Issues

Definition:
Dust is the common term used to describe the suspension of particulate matter in the air. Dust, smoke, and steam can be created by fire (controlled burns, agricultural burning), ground disturbance (agricultural operations, grading), industrial activities, or other similar processes. Dust, smoke, and steam become a compatibility issue if sufficient in quantity to impact flight operations (such as reduced visibility or equipment damage).

Civilian and military activities can produce dust, smoke, and steam from grading, agriculture, industrial practices, vehicle movement, or weapons training. Suspended particulate matter becomes a compatibility factor if sufficient in quantity to impact flight operations (such as reduced visibility or equipment damage) or substantially impacting the quality of life of local residents. Sources of dust, smoke, and steam in the vicinity of the airfield could obstruct the pilot's vision during takeoff, landing, or other periods of low altitude flight. No specific issues were identified for this factor.

10 Light and Glare Issues

Definition:
This compatibility factor refers to man-made lighting (street lights, airfield lighting, building lights) and glare (direct or reflected light that is harsh and disrupts normal vision). Light sources from commercial, industrial and residential uses at night can cause excessive glare and illumination, which impacts the use of military night vision devices and air operations. Conversely, high intensity light sources generated from a military area (such as ramp lighting) may have a negative impact on the adjacent community.

The factors identified for this compatibility factor are:

- development sites within safety zones and noise contours throughout the study area; and
- the potential for new development along flight paths to include uses that would create glare or light that could affect pilot visibility.

Langley AFB is located in the middle of an urban area, which means that there is always night glow caused by lighting from urban uses such as residential and commercial. Although some night operations may take place at Langley AFB, they are not the focus of the base's mission;

Consequently, light pollution is not a significant problem with Langley's aircraft operations. It is important to note, however, that light pollution could impact future missions at Langley AFB depending on the requirements of that mission.

Two issues were identified during the JLUS process that pose concerns for light and glare. Much of the land along the Back River, east of the base is undeveloped. Development sites along the north and south shorelines in Hampton and Poquoson could have a variety of land uses developed on them. It is important to keep in mind that these areas are in the Installation's flight path, and uses that produce excess glare could negatively impact pilot visibility and overall safety.

11 Alternative Energy Development Issues

Definition:
Alternative energy refers to sources such as solar, wind or biofuels that can be used to replace or supplement traditional fossil-fuel sources, such as coal, oil and natural gas. Alternative energy development could pose compatibility issues related to glare (solar energy) or vertical obstruction (wind generation). Other alternative energy developments, such as biofuels, have no typical compatibility issues and would be judged for compatibility on a case-by-case basis.

There were no issues identified for alternative energy uses within the study area that would cause incompatible use with operations at Langley AFB.

12 Air Quality Issues

Definition:
Air quality is defined by a number of components that are regulated at the federal and state level. For compatibility, the primary concerns are pollutants that limit visibility, such as particulates, ozone and potential non-attainment of air quality standards that may limit future changes in operations at the installation.

There were no issues identified for air quality within the study area that would cause incompatible use with operations at Langley AFB.

13 Frequency Spectrum Impedance and Interference Issues

Definition:
Frequency spectrum impedance and interference refers to the interruption of aircraft related electronic signals by a structure (impedance) or the inability to distribute / receive a particular frequency because of similar frequency competition (interference).

In the performance of typical operations, the military relies on a range of frequencies for communications and support systems. Similarly, public and private uses rely on a range of frequencies to support daily life. The potential for increased background radio frequency interference / electromagnetic interference is developing as a mission impact to the US military's high-tech combat forces. Frequency interference can result from a number of factors, including:

- New transmissions using a frequency that is near an existing frequency used by the military;
- Reducing the distance between two antennae transmitting similar frequencies;
- Increasing the power of a similar transmission signal;
- Using poorly adjusted transmission devices that transmit outside their assigned frequency;
- Production of an electromagnetic signal that interferes with a signal transmission;
- Explosion of consumer electronic sources and uses from portable systems to whole communities utilizing Wi-Fi broadband systems and industrial sources that produce electronic noise by-products.

As the use of the frequency spectrum increases (such as the rapid increase in cellular phone

technology over the last decade) and as development expands near military installations and operations, the potential for frequency spectrum interference and competition increases.

The final item of concern is frequency impedance. Key issues to consider relative to frequency spectrum impedance include the construction of buildings or other facilities that block or impede the transmission of signals from antennae, satellite dishes, or other transmission / reception devices affected by line-of-sight requirements. No specific compatibility issues were identified for this JLUS; however, as development continues in and around Langley AFB and the surrounding communities, care must be taken to avoid impendence by construction outside the Installation.

14 Public Trespassing Issues

Definition:
This factor addresses public trespassing, either purposeful or unintentional, onto Langley AFB. This issue is related to Compatibility Factor 6, AT/FP.

There were no issues identified for public trespassing within the study area that would cause incompatible use with operations at Langley AFB.

15 Cultural Sites Issues

Definition:
Cultural sites may prevent development on the base, apply development constraints or require special access by Native American tribal governments or other authorities.

Special considerations must be made for any development or expansion of military missions considered for areas with cultural significance. There were no issues identified for cultural sites within the study area that would cause incompatible use with operations at Langley AFB.

16 Legislative Initiatives Issues

Definition:
Legislative initiatives are federal, state or local laws and regulations that may have a direct or indirect effect on a military installation to conduct its current or future mission or a community's ability to direct growth.

There were no issues identified for legislative initiatives within the study area that would cause incompatible use with operations at Langley AFB.

17 Interagency Coordination Issues

Definition:
Interagency coordination relates to the level of interaction on compatibility issues between military installations, jurisdictions, land and resource management agencies, and conservation authorities.

The development of proactive partnerships between the Air Force, other governmental agencies, and local jurisdictions is required to ensure continued sustainability of Langley AFB and local economies. Local jurisdictions and agencies are generally considerate of operations at Langley AFB when planning new development and work closely with the military to ensure that they are aware of what is occurring in the surrounding communities. There were no issues identified for this compatibility factor.

3.3 NATURAL RESOURCE COMPATIBILITY FACTORS

In addition to man-made compatibility factors, natural resource compatibility factors are also potential sources of conflict with military readiness activities. Factor 19, Threatened and Endangered Species was the only natural resource compatibility factor identified during the JLUS process to currently present compatibility issues.

Figure 3-34 illustrates the location of the natural resource compatibility issues identified by the JLUS committees, the public, and the consulting team during preparation of this JLUS. The strategies presented in Chapter 5 are designed to address the significant compatibility issues identified in this section.

18 Water Quality / Quantity Issues

Definition:
Water quality / quantity concerns include ensuring adequate water supplies of good quality for use by installations and surrounding communities as the area develops.

The long term availability of water at sufficient quality and quantity within the study area is vital to sustaining local communities and Langley AFB. There were no issues identified for water quality / quantity within the study area that would cause incompatible use with operations at Langley AFB.

19 Threatened & Endangered Species Issues

Definition:
*A **threatened** species is one that may become extinct if measures are not taken to protect it. An **endangered** species is one that has a very small population and is at greater risk of becoming extinct. Many species that become extinct never make it to the endangered species list. The presence of threatened and endangered species may require special development considerations, could halt development and could impact performance of military missions.*

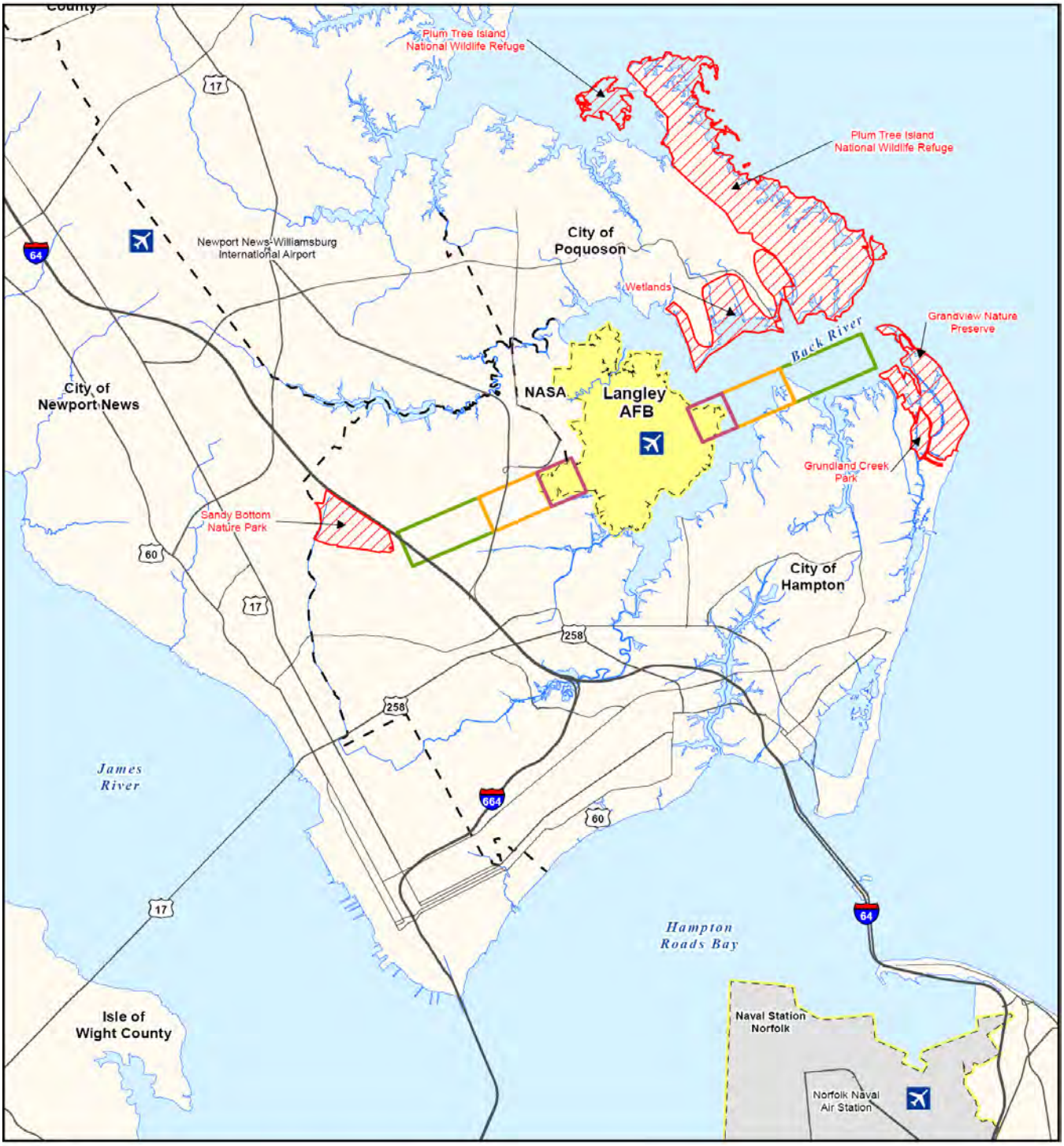
The issues identified for this compatibility factor are:

- Plum Tree Island National Wildlife Refuge;
- Grandview Nature Preserve;
- Sandy Bottom Nature Park; and
- Wetlands throughout the study area.

The maintenance and enhancement of biodiversity is an important component to Langley AFB's land management stewardship responsibilities. Natural resource management on Langley AFB is influenced by federal legislation and Department of Defense policies, including the Federal Endangered Species Act of 1973, Department of Defense Directive 4700.4, Air Force Instruction 32-7064, and the Department of Defense Ecosystem Management Principles. Based on the need to adhere to the aforementioned policies, habitat management for the Installation is guided by its 2006 Integrated Natural Resources Management Plan (INRMP).

Canebrake rattlesnake

Although there have been no threatened or endangered species (federal or state-listed) identified as permanently residing or nesting on land within Langley AFB, there are several federally-listed species with the potential to occur within five miles of the base. There are two threatened turtle species, the green sea turtle and the loggerhead sea turtle, as well as two endangered turtle species, Kemp's Ridley sea turtle and the leatherback sea turtle. Although these are primarily sea-dwelling creatures, they do come on land during breeding season to lay their eggs in the sand. Additional species with the potential to occur within five miles of the Installation include the endangered red-cockaded woodpecker, the threatened piping plover, the federally threatened northeastern beach tiger beetle, and the recently de-listed bald eagle.



Legend

- Natural Resources Compatibility Factor
- **Air Operations Safety Zones**
  - Clear Zone
  - APZ I
  - APZ II
- Airport
- Jurisdictional Boundary
- Langley AFB
- Military Installation
- Water Body
- River / Stream
- **Major Roads**
  - Interstate
  - Highway

0 0.5 1 2 Miles

Hampton_Fig3_34_Compat_Natural_20100326_JKC.pdf

Figure 3-34
Natural Resources Compatibility Factors

- There have been three state-listed endangered species with the potential to occur within five miles of Langley AFB, which include Harpers Fimbristylis (a plant species), the canebrake rattlesnake, and the eastern tiger salamander. The six state-listed threatened species identified are the barking tree frog and Mabee's salamander, as well as the bird species of the peregrine falcon, the upland sandpiper, the gull-billed tern, and the loggerhead shrike.

- None of the species mentioned above currently pose issues for mission operations; however should their habitats be altered / destroyed or some other natural or man-made occurrence cause them to relocate onto portions of Langley AFB, the base would then be subject to federal regulations that could restrict operations. The base includes a large amount of undeveloped area that could provide safe haven for certain species. As a federal institution, the base has a responsibility to protect threatened and endangered species if they occur within the boundaries of the base. Other military installations across the country have faced restrictions and reductions in mission and training capabilities due to the presence of federally protected species.

- The last concern for threatened and endangered species in the study area is the potential for Bird / Wildlife Aircraft Strike Hazard occurrences. The Grandview Nature Preserve, Plum Tree Island National Wildlife Refuge, Sandy Bottom Nature Park, and the various wetlands in the region all provide habitat for a variety of wildlife, which could include threatened or endangered bird species. These areas are located within flight tracks used by aircraft at Langley AFB. Not only does a BASH incident pose safety concerns, but there is further concern if it was to involve a threatened or endangered species.

20 Marine Environment Issues

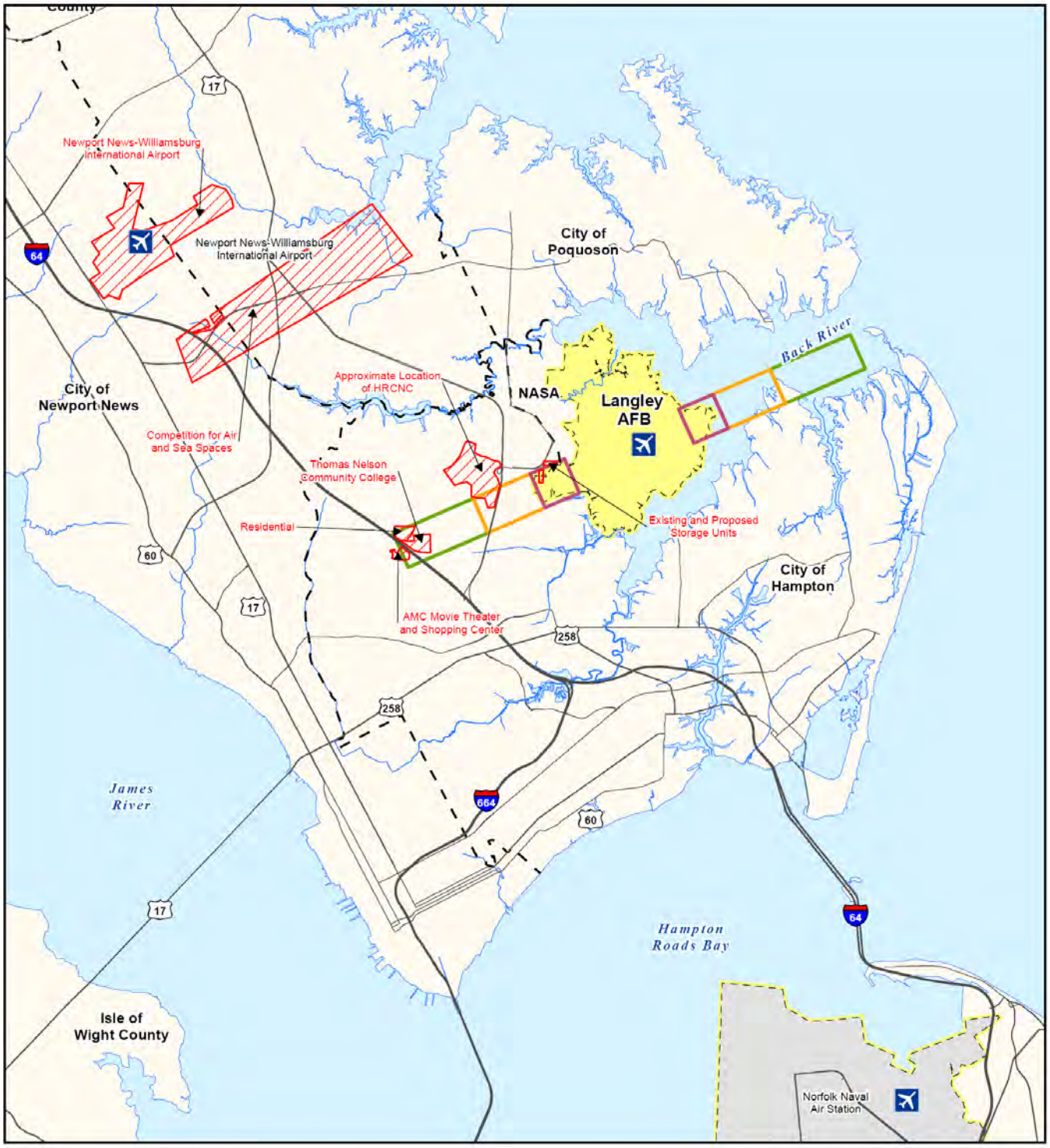
Definition:
Regulatory or permit requirements protecting marine and ocean resources can cumulatively affect the military's ability to conduct operations, training exercises, or testing in the marine environment.

There were no issues identified for marine environments within the study area that would cause incompatible use with operations at Langley AFB.

3.4 COMPETITION FOR SCARCE RESOURCES

Competition for scarce resources can cause compatibility factors due to competition between local and federal government agencies, other agencies, private development concerns, and the military when demand exceeds the supply of the desired attribute. The following is a description of the key resources that could be in high demand.

Figure 3-35 illustrates the location of the compatibility issues related to competition for scarce resources as identified by the JLUS committees, the public, and the consulting team during preparation of this JLUS. In general, these issues were not determined to be a major concern in the JLUS study area. There were only a few issues identified related to Compatibility Factor 22, Land, Air, and Sea Spaces.



Legend

- Competition Compatibility Factor
- **Air Operations Safety Zones**
  - Clear Zone
  - APZ I
  - APZ II
- Airport
- Jurisdictional Boundary
- Langley AFB
- Military Installation
- Water Body
- River / Stream
- **Major Roads**
  - Interstate
  - Highway

0 0.5 1 2 Miles

Hampton_Fig3_35_Compat_Compet_20100423_JKC.pdf

Figure 3-35
Competition Compatibility Factors

21 Scarce Natural Resources Issues

Definition:
Pressure to gain access to valuable natural resources (such as oil, gas, minerals, and water resources) located on military installations, within military training areas, or on public lands historically used for military operations can impact resource utilization and military operations.

There were no issues identified for scarce natural resources within the study area that would cause incompatible use with operations at Langley AFB.

22 Land, Air, and Sea Spaces Issues

Definition:
Land, Air, and Sea Spaces with regard to other airports in the proximity of the military installations can cause competition for limited resources.

The issue identified for this compatibility factor is competition for airspace with the Newport News-Williamsburg International Airport.

To help controllers and pilots deal with varying traffic conditions in the sky, US airspace has been divided into six different classes (A, B, C, D, E, and G; Class G Airspace is uncontrolled). These various classes have different requirements for entry into the airspace, pilot qualifications, radio and transponder equipment, and Visual Flight Rules (VFR) weather minimums. VFR consists of published routes that use visual references such as railroads, highways, waterways, etc. Weather must also exceed certain minimum requirements, including visibility must be at least three miles and the pilot must be able to remain clear of clouds by at least 500 feet.

The other type of route, Instrument Flight Rules (IFR), requires that pilots are trained and certified in navigational methodologies and must adhere to air traffic control clearances containing specific flight route and altitude directions.

The airspace around Langley AFB is classified as Class D airspace. This airspace extends outward from Langley's airfield approximately five miles and upward to 2,500 feet MSL. By requiring two-way communication between pilots and air traffic control, Class D airspace allows air traffic control to provide separation service to participating aircraft that operate under VFR and IFR. This permits operations to occur during periods that have less than favorable weather.

Airspace resources around Langley AFB must be available and of sufficient size, cohesiveness, and quality to accommodate effective training for existing and future missions.

Airspace near Langley AFB is a high-demand resource. Increases in demand for flights from the Newport News-Williamsburg International Airport, which is approximately eight miles northwest of Langley AFB, or the other airports in the nearby region may impact existing and future aircraft operations at Langley AFB (i.e., approach and departure tracks, closed pattern flight tracks, etc.). Other airports in the region include Felker Army Airfield at Fort Eustis, Norfolk International Airport, Williamsburg-Jamestown Airport, Hampton Roads Executive Airport, Norfolk Naval Air Station (NAS) / Chambers Field, the landing strip at Camp Peary, and Oceana NAS / Apollo Soucek Field. If flight demand increases either for Langley AFB, Newport News-Williamsburg International Airport, or other nearby airports, constraints on flight activity will result for the other entities with regards to the amount and type of aircraft operations that can occur.

Newport News-Williamsburg International Airport

Class D airspace also surrounds Newport News-Williamsburg International Airport for a

five-mile radius upward to 2,500 feet MSL and, therefore, has similar communications regulations as Langley AFB. Current facilities at Newport News-Williamsburg International Airport include two runways. According to statistics dated March 31, 2007, there was an average of 313 aircraft operations per day. It is important for the local public and private airports to keep in contact with Langley AFB and for all air traffic controllers to be aware of the types and times of military operations and public operations to avoid hazards.

23 Frequency Spectrum Capacity Issues

Definition:
Frequency spectrum capacity is critical for maintaining existing and future missions at Langley AFB. This also needs to be addressed from the standpoint of consumer electronics.

There were no issues identified for frequency spectrum capacity within the study area that would cause incompatible use with operations at Langley AFB.

24 Ground Transportation Capacity Issues

Definition:
Ground transportation capacity relates to the ability of existing freeways, highways, arterials, and other local roads to provide adequate mobility and access between military installations and their surrounding communities.

Vehicular transportation within the Hampton-Langley JLUS study area is problematic given its location on the Virginia Peninsula. The peninsula is connected to South Hampton Roads by two bridge-tunnels – the Hampton Roads Bridge-Tunnel and the Monitor-Merrimac Memorial Bridge-Tunnel. The third and last major connection between the Virginia Peninsula and land to the south is the James River Bridge. The primary vehicular transportation route north off of the peninsula is Interstate 64, which has numerous capacity issues resulting in traffic congestion and delays. There are several transportation projects identified by the Hampton Roads Transportation Planning Organization aimed at improving vehicular transportation on and off of the peninsula; therefore, no issues were identified related to this aspect of the study area's transportation capacity. There were, however, issues identified for ground transportation in close proximity to Langley AFB. This issue called out the inadequate vehicular transportation capacity of the roadways between the City of Poquoson and NASA LaRC / the west side of Langley AFB. The sole high speed roadway supporting north-south movement is State Highway 172. This highway intersects the State Highway 171 corridor, which provides east-west movement into Poquoson and York County. These roadways have been deemed inadequate to support the study area's current and future demand. Should a mission change or increase result in additional personnel at the base, the limited capacity of these roadways would be stressed even further.

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Chapter Four

Existing Plans & Programs

This chapter provides an overview of plans and programs that are currently used or applied in evaluating and addressing compatibility issues in the Hampton-Langley Joint Land Use Study (JLUS) study area. This JLUS begins its examination of planning documents at the Federal level and narrows to the local level.

This chapter starts with the review of documents created by the Federal government to aid in planning, conservation and public safety and welfare for communities in close proximity to a military installation. The next set of documents reviewed and analyzed are the plans and programs used by Langley Air Force Base (AFB) to direct their planning efforts. The next documents reviewed are utilized by the Commonwealth of Virginia, at both the regional level to state-wide initiatives. The final pertinent information includes plans and programs currently used by local jurisdictions and agencies to address compatibility issues. This review includes an overview of each jurisdiction's general plan and regulatory tools (i.e., tools codified through a formal action such as a zoning ordinance, subdivision ordinance, or building code).

This chapter concludes with an overview of other resources that can be consulted concerning compatibility planning.

4.1. FEDERAL INITIATIVES

The Federal government has enacted several regulatory policies for federally funded projects. These include the Noise Control Act, National Environmental Policy Act and Federal Aviation Act, as well as requirements from the U.S. Fish and Wildlife Services.

The Noise Control Act

The Noise Control Act of 1972 determined that noise not adequately controlled has the potential of endangering the health and welfare of people. It states that all Americans are entitled to an environment free from noise that can jeopardize their general health and quality of life. Along with state and local governments, actions from the Federal government were needed to ensure that the objectives of the Act were met.

Concurrently, military installations were experiencing the impacts related to encroaching urban development located adjacent to the installation and then addressing complaints regarding noise from military flight operations. In 1973, the Department of Defense (DOD) responded by establishing the Air Installation Compatible Use Zone (AICUZ) program.

The AICUZ program seeks to develop a cooperative relationship between communities and military installations and provides land use compatibility guidelines designed to protect public health and safety, as well as maintain military readiness. As designed, the AICUZ study evaluates three components: noise, vertical obstructions, and accident potential zones.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 requires Federal agencies to analyze and consider the potential environmental impact of their actions. For projects receiving federal

funding, an environmental assessment (EA) and sometimes an environmental impact statement (EIS) must be completed. NEPA is applicable to all Federal agencies, including the military.

For local planning officials, an EIS or EA is a valuable planning document in determining the extent of impacts of changing military actions or operations may have on their municipal policies, plans and programs and on the surrounding community. Public hearings are required for all EIS documents released by the military under NEPA. An EA requires publishing the draft EA and a Finding of No Significant Impact (FONSI) also allowing public comment for a period of 30 days. An EA can either end in a FONSI, or a Record of Decision (ROD) that concludes there will be a significant impact. The information obtained by the EIS / EA is valuable in planning coordination and policy formation at the local government level.

NEPA mandates that the military analyze the impact of its actions and operations on the environment, including its surrounding civilian communities. Inherent in this analysis is an exploration of methods to reduce any adverse environmental impact. The EIS is a public process that welcomes participation by the community.

Endangered Species Act

The Endangered Species Act was passed in 1973 to protect and recover imperiled species and their habitats. It is administered by the U.S. Fish and Wildlife Service (USFWS). The Endangered Species Act provides regulations on lands where endangered species are known to live and can restrict the types of development that occur on or around those lands.

The USFWS has designated several species on the threatened species list within the study area. These include a bird called the Piping Plover, an insect called the Northeastern Beach Tiger Beetle and a plant called Small Whorled Pogonia. There are no species listed on the endangered species list inhabiting the study area.

The Plum Tree Island National Wildlife Refuge is located in the City of Poquoson. The Refuge is situated east of the City and is strategically located almost midpoint on the Atlantic Flyway. It consists of 3,501 acres of saltmarsh, shrub-scrub and wooded habitats that provide a haven for waterfowl, marsh-birds, and shorebirds. Previously owned by the US Department of Defense (and now administered by USFWS), the area was used as a bombing range. Much of the area contains unexploded ordnance (UXO). Due to this hazard, Plum Tree Island Refuge is closed to the public for all purposes except permitted waterfowl hunting on the 200 acre Cow Island portion of the Refuge. Cow Island is adjacent to the main tract of the Refuge and was never used as a bombing range.

Recovery Credit System (RCS)

The RCS, created and commissioned by the USFWS, is an optional tool available to Federal agencies to promote and enhance the recovery of listed species on non-Federal lands. Using RCSs, Federal agencies are able to demonstrate how benefits accrued on non-Federal lands offset unavoidable effects of Federal actions that occur on their lands elsewhere. However, in an RCS, the combined effects of both adverse and beneficial actions must achieve a net benefit to the recovery of the species.

A recovery credit is a unit of measurement established by an RCS that quantifies the contribution that an agency's action makes toward the recovery of a listed species. Credits are based on the implementation of specific conservation measures identified in a species' approved recovery plan. If there is no final approved recovery plan, an RCS may employ an equivalent service-approved document that describes specific measures that will contribute to the downlisting or delisting of endangered or threatened species.

The RCS program is a new program, which has thus far only been implemented at Fort Hood in central Texas. At Fort Hood, the RCS is

comprised of leases for a term ranging from 5 to 25 years. Landowners are provided confidentiality and, therefore, no public comment is allowed on the merits of RCS credits for particular tracts. The leases may be organized in terms of repayment schedules and include a penalty clause. In a developed region, such as the area around Langley AFB, temporary leases may not be suitable if the intent is to execute conservation requirements. Traditional conservation easements (which are not revocable and run in perpetuity) may be a more preferable approach.

Department of Defense Conservation Partnering Initiative

In 2003, Congress amended Title 10 U.S.C. §2684a and §2692a (P.L. 107-314) of the National Defense Authorization Act, to add authority to the DOD to partner with other federal agencies, states, local governments, and conservation based Non-Governmental Organizations (NGOs). The intent is to set aside lands near military bases for conservation purposes and to prevent incompatible development from encroaching on, and interfering with, military missions. This law provides an additional tool to support mission sustainability, conservation, and environmental stewardship on and off military installations.

Department of Defense Readiness and Environmental Protection Initiative (REPI)

To implement the authority provided by the Department of Defense Conservation Partnering Initiative, the DOD established the REPI. This initiative enables DOD to work with state and local governments, NGOs, and willing landowners to limit encroachment and incompatible land use.

REPI funds are used to support a variety of DOD partnerships that promote compatible land use. By relieving encroachment pressures, the military is able to operate in a more effective and efficient manner. By preserving land surrounding military installations, habitats for plant and animal species are conserved and protected.

Federal Aviation Act (Part 77)

The Federal Aviation Act requires the Secretary of Transportation to make long-range plans which formulate policy for the orderly development and use of "navigable air space". The intent is to serve the needs of both civilian aeronautics and national defense, but does not include the specific needs of military agencies. Military planning strives to work alongside local, state, and federal aviation law and policies but sometimes must supersede these and other levels of government due to national security interests.

As documented in the appendices, the 500-foot (ft) rule, promulgated by the Federal Aviation Administration (FAA), states that every citizen of the United States has "a public right of freedom of transit in air commerce through the navigable air space of the United States". The rule was formally announced in the 1963 Court of Claims ruling in *Aaron v. United States* and states that flights 500 feet or more above ground level (AGL) do not represent a compensable taking because flights 500 feet AGL enjoy a right of free passage without liability to the owners below. This is important to the City of Hampton and the surrounding communities when considering development rights.

Part 77 of the Federal Aviation Act establishes standards used to determine obstructions within navigable airspace, typically within a certain distance from an airport or airfield. It defines an obstruction to air navigation as an object that is of "greater height than any of the following heights or surfaces" in the following manner:

- A height of 500 feet AGL at the site of the object.
- A height that is 200 feet AGL or above the established airport elevation, whichever is higher, within 3 nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length, and that height increases in the proportion of 100 feet for each additional

nautical mile of distance from the airport up to a maximum of 500 feet.

- A height within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area, which would result in the vertical distance between any point on the object and an established minimum instrument flight altitude within that area or segment to be less than the required clearance.
- A height within an en route obstacle clearance area, including turn and termination areas, of a Federal airway or approved off-airway route, that would increase the minimum obstacle clearance altitude.
- The surface of a takeoff and landing area of an airport or any imaginary surface established under 77.25, 77.28, or 77.29. However, no part of the take-off or landing area itself will be considered an obstruction.

FAA Part 77 may be found on the Hampton-Langley JLUS website on the resources page. See: *www.hamptonlangleyjlus.com*

4.2. LANGLEY AFB PLANS

Langley AFB utilizes several types of plans to both mitigate compatibility issues as well as to create a well performing Base. The plans are intended to provide guidance for land use and safety, both on and off base.

Air Installation Compatible Use Zone

The purpose of the Department of Defense's (DOD) long-standing Air Installation Compatible Use Zone (AICUZ) program is to promote compatible land development in areas subject to increased noise exposure and accident potential due to aircraft operations. In addition, the AICUZ program's goal is to protect military airfields (and the navigable airspace leading to them) from encroachment by incompatible uses and structures.

The updated Langley AFB AICUZ addresses incompatibilities that might compromise the ability to fulfill mission requirements. The AICUZ states that, "Accident potential and aircraft noise in the vicinity of military airfields should be major considerations in any planning process that the local municipal authorities may wish to undertake." Important issues that are addressed include incompatible land uses, noise complaints and ambient light impacts on base operations. The major recommendation from the study is to regulate land uses so that incompatible uses are not built near the Base.

The 2007 Langley AFB AICUZ study served to update and revise the noise and accident potential information from 1997. Differences between the 1997 AICUZ Study and the 2007 AICUZ Study are attributed to the following:

- Changes to the mix of aircraft used at Langley (from the F-15 Eagle to the F-15 Eagle and the F-22 Raptor).
- Increased frequency of aircraft operations to support wartime mission and homeland security requirements, post September 11, 2001.
- Actual data to determine noise zones (NZs) based on aircraft activity from the newly commissioned F-22 Raptor, i.e. new noise contours.
- Integrating the Air National Guard into its active duty program resulting in more frequent operations on weekends.

Mitigating noise and potential accident injury are major components of compatibility planning. These two issues will be addressed in detail within this JLUS, as well as other issues pertaining to compatibility.

The 2007 Langley AFB AICUZ study may be found on the Hampton-Langley JLUS website on the resources page.
See: *www.hamptonlangleyjlus.com*

Noise Zone Profile

Noise is the cornerstone of the AICUZ study. The noise generated by military aircraft operations and the effects of that noise on local communities are presented in a variety of ways in the study (i.e., written text, graphically, etc.). To fully appreciate the findings and recommendations presented in the AICUZ study, it is beneficial to provide an understanding of how military aircraft noise is measured, evaluated, and graphically illustrated. Information describing these characteristics is located in Chapter 3 under Compatibility Factor #7, Noise. The noise zone profile will serve as a technical tool to address noise as a compatibility factor.

Vertical Obstructions

Vertical obstructions are evaluated based on FAA Regulation Part 77, Subpart C. This regulation determines compatibility based on the height of proposed vertical structures or natural features in relation to their distance from the ends of the runway. Using a distance formula from this regulation, local jurisdictions can easily assess the height restrictions near airfields. Additional information on Part 77 is located in Chapter 3 under Compatibility Factor #3, Vertical Obstruction, or on the Federal Aviation Administration Internet site at: *www.faa.gov*

Accident Potential Zones

As part of the AICUZ program, and to aid in land use planning surrounding military bases, the DOD established Accident Potential Zones (APZs). These are defined as Clear Zones (CZs), Accident Potential Zone I (APZ I), and Accident Potential Zone II (APZ II). These zones are determined using a statistical analysis of all DOD aircraft accidents. APZs follow departure, arrival, and pattern flight tracks and are based on historical data. The Clear Zone is a square area that extends directly beyond the end of the runway and outward along the extended runway center line. The CZ for the Langley AFB runway is 3,000 feet wide by 3,000 feet long. Required for all active runways, above ground structures are generally not permitted in these areas. The land within CZs should remain undeveloped. For this reason, acquiring sufficient real property interest in land within the CZ is critical.

At Langley AFB, the boundary of APZ I begins at the end of the CZ and extends out 5,000 feet. APZ II extends from the end of APZ I and continues an additional 7,000 feet. Both APZ I and APZ II maintain the CZ risk width of 3,000 feet. While aircraft accident potential in APZs I and II does not warrant acquisition by the USAF, land use planning and controls are strongly encouraged for the protection of the public. Within APZ I and II a variety of land uses are compatible; however uses sensitive to noise, such as hospitals and schools, and uses that attract large numbers of people such as high density residential, should be restricted due to the higher potential for aviation related incidents in these areas. The current AICUZ safety zones and noise contours for Langley AFB are shown in Chapter 3.

Each AICUZ Study contains general land use guidelines related to safety and noise associated with aircraft operations. The Langley AICUZ Study lists the USAF recommended land use compatibility guidelines in relation to noise zones and APZs. The information presented in the table is essentially the same as the information published in the June 1980 publication by the Federal Interagency Committee on Urban Noise (FICUN) entitled *Guidelines for Considering Noise in Land Use Planning Control* (FICUN 1980) and in the *Standard Land Use Coding Manual* (USURA 1965) published by the U.S. Urban Renewal Administration (USURA).

Bird / Wildlife Aircraft Strike Hazard

In July of 2009, Langley AFB adopted the current Bird / Wildlife Aircraft Strike Hazard (BASH) plan, an update to the March 2003 and original July 2000 BASH plans. The BASH Plan is prepared in accordance with provisions of AFI 91-202 (*US Air Force Mishap Prevention Program*), AFI 91-204 (*Safety Investigations and Reports*), and AFPAM 91-212 (*BASH Management*

Techniques). The BASH plan defines responsibilities and prescribes procedures for minimizing aircraft and pilot exposure to potentially dangerous and catastrophic bird / wildlife strikes. The plan is based on hazards from indigenous and migratory bird and mammal species. Execution of specific portions of this plan is continuous, while other portions are dictated by hazardous wildlife activity, environmental changes, and land use development. Specific operations include:

- The establishment of a BASH working group.
- Procedures for reporting wildlife-aircraft strike incidents and hazardous wildlife activity.
- Provisions to provide information to all assigned aircrews and transient aircrews on hazardous wildlife activity and procedures for avoidance.
- Taking active measures to monitor and control hazardous wildlife within the local airspace and airfield environments.
- Actions to identify, eliminate, and mitigate environmental factors that attract hazardous wildlife to the airfield and within the local airspace.

The 2009 Langley AFB BASH plan may be found on the Hampton-Langley JLUS website on the resources page.
See: *www.hamptonlangleyjlus.com*

Langley AFB General Plan

The Langley AFB General Plan is designed to assist Base personnel understand existing conditions, documents, existing needs and future expectations, and provide programs and projects that can help the Base respond to an ever-changing world. Last updated in 2007, the General Plan provides Air Force decision makers, as well as local governments, with essential information on the plans to ensure Langley AFB can fulfill its existing and future mission. The General Plan supports the vision of Langley AFB and is the culmination of existing component plans and special plans and studies. It draws on existing information to create a cohesive plan for physical development of the installation.

The Langley AFB General Plan was created to assist the Air Combat Command's (ACC) commitment to manage Air Force resources effectively and to protect the environment. The General Plan was written to meet the requirements of Air Force Instruction (AFI) 32-7062, Air Force Comprehensive Planning. The plan discusses the vision, goals and objectives for Langley AFB. The goals include: improving infrastructure to current standards; ensuring the highest and best use of scarce developable land on site; providing a secure and pleasant living environment for Langley AFB personnel and families; exercising responsible stewardship of valuable Federal lands and facilities; and reinforcing Langley AFB's position as the U.S. Air Force's premier fighter base. The plan identifies several areas of concern, as well as including on-base and off-base issues. The plan discusses concerns about off-base development and encroachment, which could interfere with flight operations and impact noise and accident potential zones. The plan recommends that Langley AFB purchase land in the clear zones to help alleviate this concern. Another major concern, both on-base and off, was the need to use sound attenuation in new construction and retrofitting older buildings when needed.

A site analysis of the Base revealed three main concerns: maintaining the clear zone, buildings located within the 65 dBA noise contour and the explosive safety arcs. The clear zones have been maintained, except for one building which minimally encroaches into the clear zone. The entire campus is located within the 70 dBA and 85 dBA noise contours. This will require noise attenuation for all future buildings and retrofitting for existing buildings. The general plan states that there are not any buildings located within the explosive safety arcs, however the buildings that store the explosives, along with

the munitions support facilities, are located within the arcs.

The installation's general plan identifies Base constraints and opportunities, develops recommendations for improvements to infrastructure, and identifies potential land use changes and capital improvements. Although this document focuses on development within the installation boundaries, it is an important reference for all study area jurisdictions when conducting planning activities. Information and plans detailed in the General Plan can have both direct and indirect impacts upon all surrounding study area jurisdictions. The general plan will aid in the creation of policies in this study by providing information on the land use, capital improvements, and future development plans on the Base. These developments will be critical in assessing existing and future compatibility between the installation and the community.

Langley AFB Integrated Natural Resource Management Plan (INRMP)

In February of 2007, Langley AFB adopted an Integrated Natural Resource Management Plan (INRMP), which supports the management of natural resources as described in the plan document. The purpose of the plan is to enable Langley AFB to effectively manage the use and condition of natural resources on the installation to primarily protect the natural setting of the Base for training purposes. The plan supports the continuing need to ensure the safety and efficiency of the Bases' mission while practicing sound resource stewardship and complying with environmental policies and regulations.

The INRMP provides Langley AFB with a description of the installation and its surrounding environments, and presents various management practices designed to mitigate negative impacts and enhance the positive effects of the installation's mission on regional ecosystems. These recommendations are balanced against the requirements of Langley AFB to accomplish their mission at the highest possible level of efficiency.

The primary goal of the Langley AFB INRMP is to provide a sustainable natural resource base to support the Air Force mission. The INRMP identifies the following objectives to accomplish this goal:

- Support the 1st Fighter Wing (1 FW) BASH program.
- Identify and characterize the installation's natural resources.
- Protect and maintain the installation's resources.
- Develop and enhance the installation's resources.
- Create opportunities for beneficial use and enjoyment of installation resources by the public and installation personnel.
- Ensure 1 CES / CEV Natural Resources Personnel are adequately trained in the principles and practices of natural resources management on Air Force installations.

The INRMP was a joint effort between the Air Mobility Command (AMC), the U.S. Fish and Wildlife Service, and the Virginia Department of Game and Inland Fisheries, and was conducted pursuant to the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] Parts 1500–1508) for implementing the procedural provisions of the National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] 4321 et seq.), and the Air Force Environmental Impact Analysis Process (EIAP) (32 CFR Part 989). The INRMP was prepared in accordance with the provisions of the Sikes Act (16 U.S.C. 670a et seq.) and AFI 32-7064 Integrated Natural Resources Management). Compatibility between the installation and the community includes the management of natural resources which are not bound by jurisdictional boundaries. Information obtained and measures taken in the creation of the INRMP may pertain to the community. The information and measures can be adopted by the community to continue the

practice of natural resource stewardship across the installation boundary.

The 2006 Langley AFB INRMP and the installation's partner document for cultural resources (ICRMP) may be found on the Hampton-Langley JLUS website on the resources page. See: *www.hamptonlangleyjlus.com*

4.3. STATE PLANNING TOOLS

The Commonwealth of Virginia has several laws that establish the guidelines for its cities and counties to regulate land uses and plan for their future. The body responsible for creating, drafting and enacting legislation to assist in governing the Commonwealth of Virginia, is the General Assembly. The General Assembly is comprised of two bodies, the Senate and House of Delegates. The Senate consists of 40 members, each serving four year terms. The House of Delegates has 100 members, who serve two year terms. The General Assembly meets for its regular session annually on the second Wednesday in January. Their sessions last for 60 days in even-numbered years and 30 days in odd-numbered years. The governor may also call a special session when deemed necessary or when petitioned by two-thirds of the General Assembly. The General Assembly also holds a reconvened session on the sixth Wednesday after adjournment of each regular or special session, to review and consider the governor's recommendations and vetoed legislation.

The State of Virginia is a "Dillon Rule" state. This means the municipal governments only have the powers that are expressly granted to them by the state legislature; those that are necessarily implied from that grant of power and those that are essential and indispensible to the municipality's existence and functioning.

The Code of Virginia specifically addresses planning and zoning for cities and counties. Title 15.2 – Counties, Cities and Towns contains numerous sections including provisions for comprehensive plans, zoning ordinances, subdivision ordinances and the Virginia Uniform Statewide Building Code (USBC). The Code of Virginia may be found at: *www.leg1.state.va.us/000/src.htm.*

On that page, select the 'Table of Contents' hyperlink to view the various titles of the code. Additional sections from the Code of Virginia that relate to this JLUS are summarized below.

Virginia Uniform Statewide Building Code

The Virginia USBC is a state regulation promulgated by the Virginia Board of Housing and Community Development. It is divided into three stand-alone pieces. The first one, known as the Virginia Construction Code, contains regulations specific to the construction of new buildings and structures, as well as alterations, additions and change of occupancy in existing buildings and structures. The second piece, the Virginia Rehabilitation Code, contains optional regulations specific to the rehabilitation of existing buildings that may be used as an acceptable alternative to the Construction Code. The third piece, the Virginia Maintenance Code, contains the regulations for the maintenance of existing structures, which are enforced at the discretion of the local governments.

The Virginia USBC is controlled by the General Assembly and thus the power for local governments to change it is limited. It was most currently updated in 2006 and includes a series of Virginia-specific trade codes published by the International Code Council. These codes include the Virginia Residential Code, the Virginia Plumbing Code, the Virginia Mechanical Code, and the Virginia Fuel Gas Code. The Virginia USBC has specific provisions for changes to the International Building Code (IBC). For example, Virginia has adopted changes to the IBC that requires sound attenuation standards for residential structures within certain aircraft noise zones. The Virginia USBC allows for properties to have a nonconforming use if it already existed before the passage of the Code. If a permit for an update is requested to the building or structure, it generally must comply with the Code when the update is completed.

The Virginia USBC may be found at: *www.dhcd.virginia.gov/StateBuildingCodesandRegulations/Virginia_Uniform_Statewide_Building_Code.htm*

Airport Related Legislation

Virginia has several existing laws pertaining to airports, including military installations, and land use. The first is Virginia Code Section 15.2-2204 D, which states that any proposed comprehensive plan amendment, change in zoning, or application for a special permit on a parcel of land within 3,000 feet of the boundary of a military base, military installation, military airport, or licensed public-use airport must provide written notice to the military or airport at least 10 days before the public hearing. The military or airport is then allowed the opportunity to submit comments or recommendations. The second is Virginia Code Section 15.2-2294, which states that every jurisdiction shall regulate building height and natural growth, based on Federal Aviation Act Part 77, for the purpose of protecting the safety of air navigation and the public investment in air navigation facilities. The third is Code Section 15.2-2295 which permits localities to require sound attenuation for buildings within noise overlay zones. The jurisdiction must be adjacent to the installation and can only require certain uses to have sound attenuation, including residential, retail, assembly, institutional and office uses. It requires that sound attenuation occur during the building process and identifies that future tenants / landowners be notified when real property lies within the noise overlay zone.

Real Estate Disclosures

Real estate disclosures are used in Virginia to notify potential property owners of conditions affecting the property that should be made available prior to purchase. Section 55-519.1 of the Virginia Code requires sellers to notify potential buyers if the real property for sale lies within 65 dBA or higher noise contours or an accident potential zone. Renters are also protected under Virginia State law (Section 55-248.12:1) which requires landlords to disclose that the rental property lies within a noise contour 65 dBA or higher or an accident potential zone. Code of Virginia, Section 55-519.1 (disclosure requirements pertaining to military air installation) and the August 2008 Real Estate Disclosure form for Virginia properties located in a noise zone and/or accident potential zone are located in the appendices.

Joint Exercise of Powers

Section 15.2-1300.A of the Code of Virginia grants powers to any political subdivision to exercise jointly any power with another political subdivision that has a similar power. This is intended to foster cooperation between cities, towns and counties facing common issues. This power could be used by any of the municipalities or county to impose a zoning overlay relating to Langley AFB, which would assist in addressing the land use and other compatibility issues.

4.4. LEGISLATION AND OTHER REGULATIONS

The Commonwealth of Virginia has created several councils that assist its cities and counties work with the military. These councils are to help facilitate communication between the different jurisdictions and the military.

Virginia Military Advisory Council

The Virginia Military Advisory Council (VMAC), formed by Section 2.2-2666.1 of the Code of Virginia, was created to be an advisory council to maintain a cooperative and constructive relationship between the Commonwealth and the leadership of the Armed Forces stationed in the Commonwealth. It is comprised of 27 members, specifically identified in the Code. The goal of VMAC is to encourage regular communication on continued military facility viability, the exploration of privatization opportunities and issues affecting preparedness, public safety and security. Certain records of the VMAC are exempt from disclosure to the public per Section 2.2-3705.2 (12). It is also allowed to hold closed door meetings for certain reasons, as stated

in Section 2.2-3711 of the Code of Virginia. The VMAC's duties are to:

- Identify, study and provide advice and comments to the Governor on issues of mutual concern to the Commonwealth and the Armed Forces of the United States, including exclusive and concurrent jurisdiction over military installations, educational quality and the future of federal impact aid, preparedness, public safety and security concerns, transportation needs, alcoholic beverage law enforcement, substance abuse, social service needs, possible expansion and growth of military facilities in the Commonwealth and such other issues as the Governor or the Council may determine to be appropriate subjects of joint consideration.

Oceana / Fentress Military Advisory Council

Section 2.2-2666.3 of the Code of Virginia created the Oceana / Fentress Military Advisory Council as a subunit to the Virginia Military Advisory Council. This sub committee provides advice and comments to the VMAC on issues of mutual concern to Virginia and the Navy regarding Naval Air Station Oceana and Naval Auxiliary Landing Field Fentress. This approach may be a useful strategy for Langley AFB and will be addressed in Chapter 5 of this document.

Virginia National Defense Industrial Authority (VNDIA)

The Virginia National Industrial Defense Authority (VNDIA) was created during the 2005 Virginia General Assembly, which had the sense that "a need exists for the provision of technical assistance and coordination between the Commonwealth, its political subdivisions and the United States military." The authority is found in the Code of Virginia, Section 2.2-2328 through 2.2-2335, and, like VMAC, has limited exemptions from public disclosure of records and meetings.

VNDIA's Board of Directors consists of 18 non-legislative members appointed by the Governor, Speaker of the House and the Senate Committee on Rules. By code, membership includes retired general and flag officers, senior business and civic leaders, and representation from select regions of the state, including Hampton Roads.

The authority's work is conducted through three committees that include Strategic Planning; Local Coordination, Support and Communication; and Grant Review and Oversight. VNDIA identifies critical military issues facing Virginia, maintains an installation visit program, provides a comprehensive resource of information for local, state and military leaders, and administers the state's Military Strategic Response Fund, consisting of General Fund grants to communities to help them respond to growth and address issues initiated through the BRAC 2005 decision.

4.5. REGIONAL PLANNING TOOLS

This section will discuss regional organizations and tools that assist jurisdictions with planning. One of these tools is the regional planning district. The Commonwealth of Virginia created planning districts to assist regions of the State with planning activities and to create a cohesive vision for the future. There are 21 planning districts within Virginia.

Hampton Roads Planning District Commission

The Hampton Roads Planning District Commission (HRPDC) is comprised of a collection of 16 cities and counties located near Chesapeake Bay. The HRPDC is a regional organization representing this area's sixteen local governments, including York County and the cities of Hampton, Poquoson and Newport News. Planning District Commissions are voluntary associations and were created in 1969 pursuant to the *Virginia Area Development Act* and a regionally executed Charter Agreement. The HRPDC was formed in 1990 by the merger of the Southeastern Virginia Planning District Commission and the

Peninsula Planning District Commission. The HRPDC is solely an advisory body and serves three main functions:

- Serve as a forum for local and elected officials and chief administrators to deliberate and decide issues of regional importance;
- Provide the local governments and citizens of Hampton Roads with credible and timely planning, research, and analysis on matters of mutual concern; and
- Offer leadership, strategies, and support services to other public and private, local, and regional agencies in their efforts to improve the region's quality of life.

4.6. LOCAL JURISDICTIONAL PLANNING TOOLS

The planning tools used by the study area jurisdictions include comprehensive (or community) plans, zoning ordinances, building codes, subdivision and other pertinent ordinances. It is important to note that unlike other states, the Commonwealth of Virginia includes jurisdictions known as independent cities. These independent cities are not politically part of a county. This means that each entity operates independently of each other, including the court system, police departments, and planning and zoning departments. The cities included in the JLUS study area are all independent cities. Title 15.2 of the Code of Virginia allows its cities, counties and towns the right to plan and zone land, regulate uses and administer the subdivision of land. Table 4-1 shows the various available planning tools for the JLUS jurisdictions provides an analysis of their use.

Table 4-1. Local Government Planning Tools

Jurisdiction	Planning Tools						
	Comprehensive Plan	Zoning Code - Height Restrictions	Zoning Code - Sound Attenuation	Airport Hazard Zoning Regulations	Subdivision Regulations	Building Code	Acquisition
City of Hampton	Y	Y	Y	Y	Y	Y	U
City of Poquoson	Y	Y	N	N	Y	Y	U
City of Newport News	Y	Y	N	N	Y	Y	U
York County	Y	Y	N	Y	Y	Y	U

Legend:
= Does not include military component or formal process
= Potentially useful compatibility tool
Y = Yes, the jurisdiction utilizes this tool
N = No, the jurisdiction does not utilize this tool
U = Unknown whether the jurisdiction uses this tool

City of Hampton

The City of Hampton is located on the southern portion of the Peninsula. As the municipality most affected by Langley AFB, the City of Hampton has taken a proactive approach in working and collaborating with their neighbor. Some areas within the City are impacted by the flight operations of Langley AFB, due to the noise created by the aircraft and the accident potential of operations. The following is a review of the existing planning tools utilized by the City of Hampton, along with a brief analysis identifying their efficiency in addressing land use and military compatibility. Deficiencies within programs and potential improvements which can be made to address encroachment issues are also discussed. The City of Hampton planning tools that have been evaluated are listed below:

- Hampton Community Plan
- Zoning Ordinance
- Building and Development Regulations
- Subdivision Ordinance
- Noise Ordinance

Hampton Community Plan

Section 15.2-2223 of the Code of Virginia (the Code) requires that all jurisdictions create a comprehensive (or community) plan. The plan is expected to meet the projected growth of residential and commercial uses for at least 10 years, but no more than 20 years. Each jurisdiction is expected to review, and if necessary revise, its comprehensive plan every five years to ensure it is still meeting its goals. The Code sets the requirements for advertisement of plans and ordinances (Section 15.2-2204.D). In the aforementioned section, it states that any jurisdiction making changes to the comprehensive plan (located within 3,000 feet of a military installation), must notify the commander of the military installation with a written notice of the change at least 10 days prior to the hearing.

The City of Hampton adopted the Hampton Community Plan on February 8, 2006, which serves as its comprehensive plan. The Community Plan is an update of the 1998 Hampton Strategic Plan and the 2010 Comprehensive Plan (adopted by City Council in 1989). The Community Plan integrated the City's Strategic Plan and Comprehensive Plan and incorporated planning for Hampton City Schools. The City has taken a progressive approach in planning for its future by including provisions for Langley AFB in the Community Plan. It references the adoption of the AICUZ in 2007. The AICUZ is intended to protect the health, safety and welfare of those living near military airfields while preserving the mission of the F-15 Eagle and F-22 Raptor airframes by balancing the need for frequent aircraft operations as well as quality of life in the community. As discussed in Chapter 3, section 2 Hampton has created six master plans for different areas of the City, none of which are located within the DNL 65 dB or higher noise contours. Each of these plans, including the Community Plan, guides appropriate land uses and zoning districts. The Community Plan has two specific strategies that focus on strengthening the City's relationship with both Langley AFB and NASA.

Excerpt from City of Hampton Community Plan, Section IX: Community Plan Strategies:

- Strategy PE-12: Explore opportunities to develop formalized on-going partnerships and cooperation agreements with key institutions within the City such as Hampton University, Thomas Nelson Community College, NASA, Langley AFB and Fort Monroe. Its goals are to promote a healthy business climate, healthy neighborhoods and a healthy region.
- Strategy PE-14: Continue to work closely with Langley Air Force Base to study the impacts of the F-22 Raptors on the City and to maximize the compatibility between aircraft operation and the surrounding community. Its goals are to promote healthy neighborhoods.

The Hampton Community Plan may be found on the Hampton-Langley JLUS website on the resources page.
See: *www.hamptonlangleyjlus.com*

Zoning Ordinance

The Commonwealth of Virginia authorizes cities, towns and counties to adopt and enforce a zoning ordinance in Section 15.2-2280 of the Code. Considered one of the key tools in the implementation of a comprehensive plan, the zoning ordinance is the primary mechanism whereby local governments can regulate the direction, type, use, density, and location of development. The primary purpose of zoning is to protect the public health, safety and welfare as well as guard against physical danger. This includes physical safety for properties in proximity to military ranges or within aviation routes and corridors. Additionally, zoning can address glare, lighting, noise, dust, vibration.

The zoning ordinance enumerates uses permitted by right or by special exception within specified zoning districts. Most ordinances allow for the ability to grant special exceptions, provided certain conditions are met. These exceptions are

often referred to as conditional privileges, use permits, special exemptions or variances. In addition to land uses, the zoning ordinances also set the standard for permitted densities, location of structures, building heights, setbacks, acreage requirements, and other development parameters.

The City of Hampton's Zoning Ordinance is organized into 25 zoning districts. The last district is called the Special Public Interest Districts and has 14 districts including the Aircraft Approach District. Hampton directly addresses Langley AFB with two zoning districts and one overlay district. The first is the M-4 District, Langley Flight Approach – Land Intensive Manufacturing. This district has dual purposes, it provides reasonable land use regulations for uses which require large amounts of land but are lightly populated, while providing significant protection to the flight operations at Langley. The second district is the M-5 District, Langley Flight Approach – Mixed Use District. The M-5 District provides regulations that limit the intensity of development, specifically the concentration of people living and working in the area within the flight approach. The intent of this district is to minimize negative impact on the flight operations at Langley AFB, yet provide for a wide range of commercial and industrial activities. The A-A Aircraft Approach District is an overlay district created to protect life and property in specified areas at the ends of Langley AFB runways. This district also restricts uses that could interfere with flight operations, as well as construction of buildings or structures within which 50 people or more would gather. Land use and building height restrictions have been developed for the overlays to achieve this goal.

The Hampton Zoning Ordinance may be found at:
www.municode.com/library/clientlisting.aspx?stateID=46

Building and Development Regulations (Chapter 9 of the Hampton Code of Ordinances)

The City of Hampton uses the Virginia USBC to regulate building construction, alteration and occupancy to ensure health, safety and welfare. The building code regulates building construction such that it is compatible with military installations, including sound attenuation for residences within applicable noise zones. The USBC requires all residential buildings that are located within noise contour lines exceeding 65 dBA are required to include noise attenuation measures to reduce interior noise levels to 45 dBA.

Chapter 9 of the Hampton Code of Ordinances includes provisions for site plans, which are required prior to the construction of a building or structure within the City limits. Site plans are required for the enlargement of existing buildings, any grade alterations in excess of three feet. The director of public works can require evidence that the appropriate federal and state agencies have been notified of the submission of a preliminary site plan. Single-family dwellings, two-family dwellings, accessory buildings, and subdivisions developed under the guidance of Chapter 35 of the Hampton Code of Ordinances are exempt from the site plan requirements.

Subdivision Ordinance (Chapter 35 of the Hampton Code of Ordinances)

The Code of Virginia, in Section 15.2-2240, allows cities, towns and counties the right to prepare and adopt a subdivision ordinance. The Subdivision Ordinance was adopted in 1956 and has been subsequently updated, and comprises Chapter 35 of the Hampton Code of Ordinances. The Subdivision Ordinance is strictly a design manual, although it extends the City's jurisdiction three miles into any adjacent county. It is not intended, nor is it able, to restrict development other than to prohibit the unauthorized subdivision of lots.

Noise Ordinance (Chapter 22 of the Hampton Code of Ordinances)

The City of Hampton has taken a proactive approach in working with Langley AFB to address noise abatement issues. The Noise Ordinance was adopted in 1956 and has since been updated to identify criteria for residential ("Use Group R" in the International Building Code) building construction for those areas of Hampton that are likely to be impacted by aircraft noise associated with Langley AFB. The Ordinance requires residential properties located within the 65 dBA or higher contours to make the adequate provision for sound reduction in exterior walls, doors, windows, etc. This is to minimize the impact of such noise on occupants, and to ensure that buyers of property within this zone are aware of its associated noise levels. The district regulations not only identify noise attenuation in all buildings and structures classified as "Use Group R" of the International Building Code, as amended, but also provide disclosure to potential buyers of the existence of the associated noise.

A review of the planning tools for the City of Hampton has identified the following issues:

1. No mention of assisting Langley AFB in implementing BASH Plan regarding height of structures and incompatible land uses, such as golf courses or other uses that attract birds.
2. No plan of action for addressing development in the safety zones.
3. No plan of action for addressing development, especially residential, within the clear zone.
4. No plan of action for limiting the height of the Bethel Landfill, the auto salvage yard, or the junk yard within the safety zones.

The Hampton Code of Ordinances may be found at:
www.library.municode.com/index.aspx?clientId=14532&stateId=46&stateName=Virginia

City of Newport News

Newport News is located on the west side of the Peninsula. It is a narrow linear city, with a length of approximately 20 miles and a width that ranges between six miles and one-half mile. Although Newport News is minimally affected by Langley AFB, its connection to the military in the region and its own international airport require Newport News to maintain a regional view. Due to its proximity to Langley AFB (a distance of less than four miles) the City and its residents may be affected by operations at the Base. The City may also have an impact on the installation operations due to the presence of glare and vertical obstructions. The Newport News planning tools evaluated are listed below:

- *Framework for the Future 2030* (Comprehensive Plan)
- Zoning Ordinance
- Building Code
- Subdivision Ordinance
- Noise Ordinance
- Airport Master Plan

Framework for the Future 2030

Newport News recently updated and adopted their comprehensive plan, *Framework for the Future 2030*, on November 6, 2008. The plan addresses noise, discussing the sources of noise problems, those being Newport News / Williamsburg International Airport and transportation noise (e.g. cars and trains). It states that the City's noise abatement policy requires dense landscaping or sound walls. The plan includes discussion of the airport expansion, including a new runway and new gates. It discourages future residential development proximate to the airport.

Newport News' *Framework for the Future 2030* may be found on the Hampton-Langley JLUS website on the resources page.
See: *www.hamptonlangleyjlus.com*

Zoning Ordinance (Chapter 45 of the Newport News Code of Ordinances)

The Newport News Zoning Ordinance divides the City into 20 distinct districts. These include 9 residential districts (ranging from rural residential to mixed use and multifamily residential), one park district and 10 commercial districts (which provides districts for office, commercial and industrial). The City of Newport News has taken a proactive approach with its zoning ordinance in managing Newport News / Williamsburg International Airport. The City created an Airport Overlay District in 1997 to both assist the Airport in maintaining its operations and helping the City to protect the health, safety and welfare of its citizens. The Overlay District regulates the height of structures and trees. It restricts uses within the District such that no use shall cause electrical interference, impair visibility in any way, create bird strike hazards or otherwise interfere with the landing, takeoff or maneuvering of aircraft.

Building Code (Chapter 13 of the Newport News Code of Ordinances)

The City of Newport News uses the Virginia USBC to regulate building construction, alteration and occupancy to ensure health, safety and welfare of its citizens and visitors. The building code regulates construction such that it is compatible with military installations, including sound attenuation for residences within 65 dBA or greater noise contours. The USBC regulates all residential buildings that occur within 65 dBA or higher noise contours are required to include noise attenuation to reduce interior noise to 45 dBA.

Subdivision Ordinance (Appendix B of the Newport News Code of Ordinances)

The City of Newport News subdivision ordinance is intended to control the design of subdivisions within City limits. The ordinance regulates design, requirements, submittal procedures and the approval process. The ordinance includes a section pertaining to noise, but is intended only to regulate the noise associated with construction, not sound attenuation of structures.

Noise Ordinance (Chapter 28-36 of the Newport News Code of Ordinances)

The City of Newport News regulates noises that are considered a nuisance to the general public. Chapter 28-36 states that it is unlawful to operate an audio device in a manner that noise is plainly audible across property boundaries between 10:00 pm and 8:00 am, or at a distance of 50 feet from the device.

The Newport News Code of Ordinances may be found at:
www.municode.com/library/clientlisting.aspx?stateID=46

Newport News/ Williamsburg International Airport Master Plan Update

The Newport News / Williamsburg International Airport (NNWIA) Master Plan Update was last completed in 1997. Since the document has not been updated recently, the data therein may not conform to current standards.

A review of the planning tools for Newport News has identified the following issues:

1. No mention of either the NASA facility or Langley AFB.
2. Outdated Newport News/ Williamsburg International Airport Master Plan.

City of Poquoson

Poquoson is located on the east side of the Peninsula, north of the City of Hampton and Langley AFB. Due to its proximity to Langley AFB and NASA Langley Research Center, the City and its residents may be affected by operations at the Base. The City may have an impact on the installation operations due to the presence of glare and vertical obstructions. The City of Poquoson planning tools evaluated are listed below:

- *City of Poquoson Comprehensive Plan 2008 - 2028*
- Zoning Ordinance
- Building Code
- Subdivision Ordinance
- Noise Ordinance

City of Poquoson Comprehensive Plan 2008 — 2028

The City of Poquoson adopted its comprehensive plan in September 2009. The Comprehensive Plan addresses Langley AFB and NASA Langley Research Center through several policies. It references the adoption of the Air Installation Compatible Use Zone (AICUZ) in 2007. The Plan references and includes information on both Langley AFB as well as NASA Langley Research Center. The Plan mentions that the City reviewed maps of the noise contour lines created by Langley AFB and determined that a minimal amount of real property was impacted, approximately 336 acres. All of the property within the 70 dBA contour, 46 acres, is part of the Plum Tree Island National Wildlife Refuge, which is currently closed to the public. The majority of property within the 65 dBA was part of the conservation area or commercially zoned, with a small part zoned for single-family residential. This area totaled 290 acres. While the plan identifies the need for a Dark Sky Ordinance, it is only to be implemented in the Zoning Ordinance for site planning purposes. The Plan expresses the need to attenuate residences in the Amory's Wharf and Messick Point areas of the City from aircraft noise generated within the region.

Poquoson's Comprehensive Plan may be found on the Hampton-Langley JLUS website on the resources page.
See: *www.hamptonlangleyjlus.com*

Zoning Ordinance (Appendix A of the Poquoson Code of Ordinances)

The City of Poquoson adopted its zoning ordinance on September 14, 1981. The City utilizes 11 zoning districts to regulate land uses within City limits. While the City acknowledges the importance of Langley AFB and its impact on the region, its zoning ordinance does not contain the regulatory capacity to implement the Comprehensive Plan policies. The Ordinance does not include regulations pertaining to lighting, generally or specifically related to Langley AFB. The ordinance, however, addresses wireless communication facilities. It limits the height of any tower to 199 feet, but does not include any regulations regarding locating such towers out of the flight path.

Building Code (Chapter 18 of the Poquoson Code of Ordinances)

The City of Poquoson uses the Virginia USBC to regulate building construction, alteration and occupancy to ensure health, safety and welfare. The building code regulates building construction such that it is compatible with military installations, including sound attenuation for residences within applicable noise zones. The USBC states that all residential construction occurring within the 65 dBA contour is required to include noise attenuation measures to reduce interior noise to 45 dBA.

Subdivision Ordinance (Appendix B of the Poquoson Code of Ordinances)

The City of Poquoson subdivision ordinance was adopted on October 12, 1981 and is intended to control the design of subdivisions within City limits. The ordinance regulates design, requirements, submittal procedures and the approval process. The subsection regarding noise is intended to only regulate construction generated noise.

Noise Ordinance (Chapter 34, Article 2 of the Poquoson Code of Ordinances)

The City of Poquoson regulates noise that is considered a nuisance to the general public. Such noise is: loud music, a loud car or any sound that is excessive, disturbing, unreasonable or unusually loud.

A review of the planning tools for the City of Poquoson identified the following issues:

1. No clear direction for construction standards related to vibration and noise attenuation for the Messick Point redevelopment site or Armory's Wharf.

The Poquoson Code of Ordinances may be found at:
www.municode.com/library/clientCodePage.aspx?clientID=3919

York County

York County is located on the north side of the Peninsula. The majority of development in York County has occurred near the cities of Poquoson, Newport News and Hampton. Three military installations, Camp Peary, the Yorktown Naval Weapons Station, and Cheatham Annex occupy much of the land in the central and northern portions of the County. The planning tools currently utilized in York County are evaluated and listed below:

- *Charting the Course to 2025* (York County Comprehensive Plan)
- Zoning Ordinance
- Building Code
- Subdivision Ordinance
- Noise Ordinance

Charting the Course to 2025

York County adopted its Comprehensive Plan in December 6, 2005. It references the 1997 AICUZ and states that no property in York County lies within the 65 dBA or greater noise contours created by Langley AFB. The Plan did discuss the residential subdivisions located within the 65 dBA and 70 dBA contours of Newport News / Williamsburg International Airport. In addition to addressing the residential subdivision within the noise contours, all vacant land within the contours was changed to an industrial designation and it was expected that those contours would be reduced in the future due to two factors: (1) older, louder jets are expected to be phased out and replaced and (2) a shift in the aircraft mix from the louder military to the quieter commercial jets. Since York County is not within the immediate proximity of the Langley AFB safety hazard zones associated safety zoning regulations are not required.

York County's *Charting the Course to 2025* may be found on the Hampton-Langley JLUS website on the resources page.
See: *www.hamptonlangleyjlus.com*

Zoning Ordinance (Chapter 24.1 of the Code of York County)

The York County Zoning Ordinance was adopted on June 29, 1995. The ordinance is organized into 15 zoning districts. It regulates the airports in, or near, the County limits with overlay zoning districts and appropriate zoning on nearby properties. The County uses the Airport Safety Management Overlay District (ASM) to regulate land uses and building height within the vertical obstruction zones as defined by FAA Regulation Part 77. The District requires that development cannot interfere with civil or military air traffic and specifically identifies Newport News/Williamsburg Airport, Camp Peary and Langley AFB. The County will also maintain the CZ for each of those airports. Although the County does not have a separate Dark Sky Ordinance (an ordinance to regulate outdoor lighting), it requires that all light fixtures, having an excess of 3,000 lumens shall be designed to be full cut-off, so that light does not spill into unwanted areas. (Section 24.1-260).

Building Code (Chapter 7.1 of the Code of York County)

York County uses the Virginia USBC to regulate building construction, alteration and occupancy to ensure health, safety and welfare. The building code regulates building construction practices such that they are compatible with military installations, including sound attenuation for residences within applicable noise zones. The USBC states that all residential construction

occurring within the 65 dBA contour are required to include noise attenuation requirements to reduce interior noise to 45 dBA.

Subdivision Ordinance (Chapter 20.5 of the Code of York County)

The York County subdivision ordinance was adopted on December 1, 1991 and is intended to control the design of subdivisions within County limits. The ordinance regulates design, submittal procedures and describes the development approval process. The subdivision ordinance defers to the zoning ordinance for density, setbacks and other land use issues.

Noise Ordinance (Chapter 16, Section 19 of the Code of York County)

York County only regulates noise that is considered a nuisance to the general public. This includes, but is not limited to: horns, radios, animals, loud cars and yelling by peddlers.

A review of the planning tools for York County identified the following issues:

1. Absence of required mitigation measures or sound attenuation standards for noise generated by the military in residential zones.

2. Lack of a formal policy or process for sharing development proposals and planning documents with Langley AFB.

The Code of York County may be found at: *www.yorkcounty.gov/Default.aspx?alias=www.yorkcounty.gov/code*

4.7. OTHER RESOURCES

In the interest of preventing land use compatibility issues between the military and the local community, the DOD Office of Economic Adjustment (OEA) and other public interest groups, such as the National Association of Counties (NACO), have prepared educational documents and videos to inform the public on encroachment issues and methods that can be used to address existing or reduce/avoid future compatibility concerns. Below are five resources that have been published to inform the public on land use compatibility.

Documents

The Practical Guide to Compatible Civilian Development near Military Installations (July 2007), OEA. This guide offers general information on community development and civilian encroachment issues. The guide can be found at: *www.oea.gov*.

Joint Land Use Study Program Guidance Manual (November 2006). This manual provides guidance on the JLUS program, process, and efforts to support compatible development. This manual can be obtained on the OEA internet site at the following address: *www.oea.gov*.

Encouraging Compatible Land Use between Local Governments and Military Installations: A Best Practices Guide (April 2007), NACO. This guidebook presents case studies of best practices between the military and communities through communication, regulatory approaches, and Joint Land Use Studies. The guide can be accessed on the NACO internet site at the following address: *www.naco.org*

Videos

The Base Next Door: Community Planning and the Joint Land Use Study Program, OEA. This informative video discusses the issue of encroachment on military installations as urban development occurs within its vicinity.

Managing Growth, Communities Respond, OEA. This video highlights the lessons learned from three successful communities (Kitsap Naval Base in Bangor, Washington; Fort Drum in Jefferson County, New York; and Fort Leonard Wood in Pulaski County, Missouri) managing growth near their respective military installation.

Chapter Five

Implementation Plan

This chapter prescribes a specific course of action that has been developed cooperatively with representatives from local county and municipal jurisdictions, Langley Air Force Base (AFB), state and federal agencies, proximate organizations, and other interested entities. As a result of this collaborative planning process, the implementation actions presented in this chapter are recommendations that represent the Joint Land Use Study (JLUS) Implementation Plan; a realistic and coordinated approach to compatibility planning for the area near Langley AFB.

5.1 INTRODUCTION

The JLUS Implementation Plan presents strategies and associated actions that are recommended to guide appropriate development and economic development while maintaining the operational capabilities of Langley AFB. Several factors were taken into consideration when developing the JLUS Implementation Plan. These factors include:

- Review and analysis of existing and potential encroachment and compatibility issues (refer to Chapter 3 for details);
- Review and analysis of existing regulatory and non-regulatory compatible land use strategies (refer to Chapter 4 for details);
- Input from Policy Committee, Working Group and the public; and
- Consultant's professional experience and judgment.

JLUS Implementation Plan Guidelines

The key to a successful study is balancing the different needs of all involved stakeholders. In working toward a balanced approach, several guidelines served as the basis upon which the strategies and actions were developed.

- In concert with the State of Virginia's laws, the JLUS Implementation Plan was developed with the understanding that the recommended strategies must not result in a taking of property value.
- In some cases, the recommended strategies can only be implemented with new State enabling legislation.
- In order to minimize regulation, strategies were recommended only for specific geographic areas to resolve the compatibility / encroachment issues identified.

Organization of this Chapter

The remainder of this chapter is organized in three sections:

- **Section 5.2 – Compatibility Strategy Types.** Provides a list, and the definition of the type of compatibility strategies used in the JLUS Implementation Plan.
- **Section 5.3 – JLUS Geography**. A key aspect of the JLUS is to associate strategies with the areas that require additional attention. This helps to ensure that the strategies and actions proposed apply only to the areas where a specific issue occurs.
- **Section 5.4 – JLUS Implementation Plan.** Identifies specific strategies and the actions recommended for achievement of

the strategy. A column of pertinent information is also included on the right side of each strategy which identifies:

- The timeframe for implementation (priority);
- The location where the strategy will be applied;
- The parties responsible for implementation;
- Any partners identified to assist in implementation; and
- The rough order of magnitude cost for implementation

5.2 COMPATIBILITY STRATEGY TYPES

To help organize the presentation of the JLUS recommendations, the strategies and actions proposed are identified as utilizing one or more of the following 11 strategy types. These types represent the complete range of strategies that may be applied to the compatibility factors identified previously in Chapter 3. The following section provides a brief definition and assessment for each JLUS compatibility strategy type to ensure a common understanding exists among the various implementing entities of how these types of strategies work.

Acquisition Strategies

Property rights are comprised of a bundle of rights and privileges that are attached to each parcel of land, and include the right to possess, use, develop, lease, or sell the land. As a compatibility planning tool, all or some of these property rights can be acquired through purchase, donation or easement. Acquisition through fee simple purchase, lease or management agreement is described below.

Since easements are a common acquisition tool, they are called out as a separate strategy type (see heading labeled "Easement Strategies").

- **Fee Simple Acquisition.** This option involves the purchase of property and is typically the most costly method to protect land use compatibility, open space, as well as sensitive or critical areas. The cost to purchase property and / or the need to have a willing seller may make this acquisition tool difficult to implement.
- **Fee Simple / Leaseback**. An example of a leaseback is when a government agency purchases the full title to a property and then leases it back to the previous owner. The land use compatibility, natural resource and open space values are protected through lease controls that restrict land uses.
- **Lease.** In cases where the landowner does not want to, or cannot make a permanent commitment, the execution of a lease may be a way to control land uses for a specific time periods. Leases can be obtained by government agencies or jurisdictions, non-profit organizations, land trusts, or private entities.
- **Management Agreement.** A management agreement is a specified plan under which the landowner or the land trust (or a combination thereof) will manage the land. Management agreements identify a specific amount of time, making them a short-term approach to protecting land.

The purpose of acquisition tools is to eliminate current and potential land use incompatibilities through market transactions and the local development process. Acquisition tools are particularly effective because they advance the complementary goals of shifting inappropriate uses away from military installations and preserving community assets such as agriculture, open space, rural character, or sensitive natural habitats.

Examples where property acquisition strategies have been used to address compatibility issues include:

- Creating a buffer between active military installations and incompatible land uses;
- Shifting future growth away from critical military lands;
- Protecting public safety by limiting incompatible land uses;
- Protecting the natural environment; and
- Conserving open space.

Easement Strategies

An easement is a non-possessory right to use land owned by another party. The types of uses granted to another party or limitations on the use of the property are made on a voluntary basis through negotiations with the property owner. The examples of use of property acquisition for compatibility planning also apply to easements.

Two types of easements are common relative to compatibility planning: avigation easements and conservation easements.

- **Avigation Easement**. An avigation easement is an easement that grants the holder one or more of the following rights: the right of flight; the right to cause noise, dust, or other impacts related to aircraft flight; the right to restrict or prohibit certain lights, electromagnetic signals, and bird-attracting land uses; the right to unobstructed airspace over the property above a specified height; and, the right of ingress or egress upon the land to exercise those rights.

  Avigation easements transfer certain property rights from the owner of the underlying property to another entity. This entity could be the owner of an airport or, in the case of military airports, to a local government agency or authorized federal agency on behalf of the military. Due to the timing involved, the Department of Defense (DOD) does not typically process avigation easements. Historically, if the military desires such easements, there are several ways they can be obtained. The US Army Corps of Engineers serves as the negotiator and the principal real estate agent for the Air Force.

  Entities acquire avigation easements for the airspace over neighboring properties to: (1) prevent construction of buildings and towers, planting of trees, installation of lighting, or any other development that might interfere with aircraft takeoff and landing, or (2) protect against liability for any nuisance caused by aircraft using the airport (i.e. noise, fumes, and vibration) that might impact the use and enjoyment of properties adjacent to an airfield or under its flight paths.

- **Conservation Easement.** A conservation easement is a way to protect a buffer, natural resource, open space area, or the agricultural value of land by retaining it in its current state. The owner maintains ownership of the property and the right to sell or deed the property to another interested party. The owner retains the right to use the property as long as the use is allowed by the conditions of the easement. Conservation easements can be acquired through several mechanisms, including donation or purchase. If they are donated, the donor could qualify for a federal income tax deduction, making this option more desirable to the property owner. Conservation easements are typically a more cost effective method to protect land or resources compared with outright purchase.

Capital Improvements Plan Strategies

A Capital Improvements Plan (CIP) is a detailed fiscal and planning document used to identify, direct, and prioritize a jurisdiction's or agency's (federal, state or local) investment in capital facilities, including infrastructure. A CIP expresses a multi- year timeframe of facility plans and programs of the jurisdiction or agency and provides details on expenditures that can be incorporated into the jurisdiction's or agency's annual budgeting process.

Jurisdictions can influence when and where growth will take place through capital investment decisions, such as the placement of roadways or other infrastructure systems. In addition to facility planning and design, the timing of the facilities is also a critical component to promote compatibility. It has been proven in communities throughout the United States that in areas where infrastructure is extended, growth will follow. Building on lessons learned, and in order to discourage non-compatible land uses, it is important that infrastructure is not extended within the Langley AFB area without developing a compatible land use plan for the land, and an infrastructure plan that supports the intended intensity of development for that area. The premature extension of infrastructure can encourage growth in an area. Conversely, the lack of funding for regional transportation projects can cause roadway capacity constraints in the short term.

Communication / Coordination Strategies

In any planning effort, plans can only move toward successful implementation if frequent and ongoing communication is maintained among the local jurisdictions, Langley AFB, state and federal agencies, landowners, and the public. Enhanced communication and coordination is an integral component to successful compatibility planning in support of Langley's existing and future missions.

Opportunities to partner with nongovernmental organizations (NGOs) are also included in the communication / coordination strategy type. NGOs are recognized for their role in developing innovative initiatives and programs to address a variety of issues. Local governments and military installations can develop relationships with NGOs to provide additional resources to achieve joint goals. For example, under these partnerships, agreements can be reached to acquire real estate or property rights in the vicinity of military installations to protect military training, testing, operations, and readiness.

Construction Standard Strategies

Construction standards and building codes are ordinances and regulations controlling the design, construction process, materials, alteration, and occupancy of any structure to ensure human safety and welfare. They include both technical and functional standards and generally address the following in terms of compatibility issues.

- **Structural Safety**. Buildings should be designed for environmental factors in the area and man-made issues, such as vibration.
- **Sound Attenuation.** Sound attenuation refers to special construction techniques and materials designed to reduce the amount of noise that penetrates the windows, doors, and walls of a building.

For sound attenuation, the following key issues should be addressed:

- The first choice in sound attenuation is avoidance. Some land uses are more sensitive to noise, including residential development, schools, hospitals, etc. When possible, noise-sensitive uses should not be located within proximity of military installations or noise sources.
- When evaluating noise impacts on sensitive receptors, recommendations should include acceptable levels for outdoor space as well as indoor space.

- Noise is a cumulative condition. Programs such as the Air Force Air Installation Compatible Use Zone (AICUZ) program incorporate noise levels associated with typical flight operations and aircraft, but do not incorporate noise from other sound generators. Therefore, a home slightly outside the 65 dBA contour may exhibit a cumulative noise exposure of over 65 dBA when roadway noise and other local noise sources are added.
- While noise is typically measured and mitigated, based on a daily average noise level, some circumstances may require an evaluation of peak noise levels.
- Retrofitting of existing structures can be expensive and cost-prohibitive in certain instances.

Environmental Strategies

The federal Endangered Species Act (ESA) allows for the development of Natural Community Conservation Plans (NCCPs) and Habitat Conservation Plans (HCPs). An NCCP identifies and provides for the regional or area-wide protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity.

Incidental take permits help landowners legally proceed with activities that might otherwise result in illegal impacts to a listed species. An HCP is a document that supports an incidental take permit application pursuant to Section 10(a)(1)(B) of the ESA.

HCPs are an evolving tool. Initially designed to address individual projects, HCPs are currently more likely to be broad-based plans covering a large area. The geographically broader HCP is used as the basis for an incidental take permit for any project within the boundaries of the HCP. Regardless of size, an HCP should include measures that, when implemented, minimize and mitigate impacts to the designated species to the maximum extent possible, and identify the means by which these efforts will be funded.

The primary objective of the NCCP and HCP programs is to conserve natural communities at the ecosystem level while accommodating compatible land use. The programs seek to anticipate and prevent the controversies and gridlock that can be caused by species' listings. Instead, they focus on the long-term stability of wildlife and plant communities. The programs also include key stakeholders in the development process for the plan.

In relation to compatibility planning, this strategy type can be used to provide mechanisms to ensure species protection while promoting compatible development or buffers in areas around Langley AFB.

Legislative Strategies

State legislation can have a significant impact on compatibility planning by allowing, restricting or limiting the tools available to local jurisdictions to control land use planning activities. Legislative strategies are designed to encourage changes in state law to accomplish a desired end state. Under Virginia law, local jurisdictions are provided with certain powers over which they can regulate land uses and activities. If additional local control is desirable, state enabling legislation would be required to create or amend existing regulatory authority.

On the local level, new or expanded regulation would be accomplished through the creation, consideration, and passage of new ordinances or procedures. These changes would need to be consistent with the provisions of state law.

Memorandum of Understanding (MOU)

A Memorandum of Understanding (MOU) is a contract between two or more government entities. The governing bodies of the participating public agencies must take appropriate legal actions, often adoption of an ordinance or resolution, before such agreements become effective. These agreements are also known as Joint Powers Agreements or Inter-local Agreements.

The purpose of an MOU is to establish a formal framework for coordination and cooperation. These agreements may also assign roles and responsibilities for all of the agreement's signatories. MOUs generally promote:

- Coordination and collaboration by sharing information on specific community development proposals, such as rezonings and subdivision plats.
- Joint communication among participating jurisdictions, agencies and the military ensuring that residents, developers, businesses, and local decision makers have adequate information about military operations, possible impacts on surrounding lands, procedures to submit comments, and any additional local measures to promote land use compatibility around installations.
- Formal agreement on cooperative land use planning activities, such as implementation of the recommendations within this Hampton-Langley JLUS.

Operational Strategies

In some cases, options may exist in how operations are conducted at an installation. This is particularly relevant for the planning of new or modified operations at an installation. If more than one operational choice meets the mission needs, coordination with local jurisdictions can be undertaken to incorporate local compatibility issues.

Plan and Program Strategies

Several of the issues identified in Chapters 3 and 4 can be addressed through modifications to existing plans and programs and the creation of new plans and programs. Local jurisdictions' comprehensive plans, airport master plans, and military plans which have been analyzed are identified as follows:

- A **comprehensive plan** is a long-range plan that outlines goals and policies to guide the physical development of a municipality. Comprehensive plans are designed to serve as the jurisdiction's blueprint for future decisions concerning physical development, including land use, infrastructure, public services, and resource conservation. Typically, comprehensive plans consist of written text discussing the community's goals, objectives, policies, and programs for the distribution of land use as well as one or more diagrams or maps illustrating the general location of existing and future land uses, roadways, public facilities, and parks and open space. Comprehensive plans are adopted by a city council.
- The Newport News **Airport Master Plan** provides the guidelines for future long-term airport development which will satisfy aviation demand in a financially feasible manner in recognition of the aviation, environmental, and socioeconomic issues existing in a community. The airport master plan process is guided by the Federal Aviation Administration (FAA) and ultimately results in projections of future growth and an Airport Layout Plan (ALP). All development at federally obligated airports must be completed in accordance with a FAA-approved ALP.
- Similar to a local jurisdiction, Langley AFB maintains a long-range **general plan**. The Langley AFB General Plan is the primary document that provides the installation commander and other military decision makers with a comprehensive assessment of the ability of an installation to support its mission through its physical assets and delivery systems. The purpose of the Langley AFB General Plan is to provide an assessment of the installation's infrastructure and attributes for the purpose of gauging the installation's development and growth potential.

In addition to its General Plan, Langley AFB also maintains a number of plans that describe the operational parameters for activities on the installation and in the airspace around the base. They also maintain a set of plans that address the protection of natural and cultural resources.

Real Estate Disclosure Strategies

Prior to the transfer of real property to a new owner, real estate disclosure requires sellers and their agents to divulge certain specified facts related to the condition of the property and its environs. These facts could include noise or other proximity impacts associated with property near a military installation or operations area. The purpose of real estate disclosure is to protect the seller, buyer, and sales agent from potential litigation resulting from specified existing and / or anticipated conditions (i.e., hazard areas, existing easements). Disclosures are perhaps the most practical and cost effective land use compatibility tools for the reason that the buyers are informed of the possible effects (noise, light, etc.) for lands proximate to a military installation prior to considering purchase.

Zoning Ordinance / Subdivision Regulation Strategies

The primary purpose of **zoning** is to protect the public health, safety and welfare. Zoning is a regulatory tool that enables the division of a jurisdiction into districts (zones) within which permissible uses are prescribed and allowable building height, bulk, layout, and other requirements.

The zoning ordinance can provide protection against:

- Physical danger, particularly safety considerations for properties in proximity to military ranges or within military flight areas.
- Nuisances associated with military operations, such as noise, vibration, air emissions, etc.
- Psychological nuisances, such as perceived and actual dangers associated with military operations.
- Light and glare, air emissions, and loss of privacy.
- Loss of open space and agricultural land.

Zoning ordinances requiring rigid separation of uses or inflexible provisions can make creative solutions to land use compatibility, such as cluster development, difficult or impossible.

In addition to guidance contained in local comprehensive plans or zoning, **subdivision regulations** are used to govern the design of a subdivision, the size of its lots, and the types of required improvements; such as street construction, sewer lines, water lines and drainage facilities. Applications for subdivisions must be submitted to the local government for consideration. Subdivision regulations set forth the minimum requirements deemed necessary to protect the health, safety, and welfare of the public. More specifically, these regulations are designed to accomplish the following initiatives:

- Assure that effective protection is provided for the natural resources of the community, especially groundwater and surface water.
- Encourage well-planned subdivisions through the establishment of adequate design standards.
- Facilitate adequate provisions for transportation and other public facilities.
- Secure the rights of the public with respect to public lands and waters.
- Improve land records by the establishment of standards for surveys and plats.

- Safeguard the interests of the public, the homeowner, the subdivider, and units of local government.
- Prevent, where possible, excessive governmental operating and maintenance costs.

5.3 JLUS GEOGRAPHY

Within this JLUS, a mixture of Military Influence Areas (MIA) and an overall Military Influence Overlay District (MIOD) are used to associate proposed strategies and actions with the geographic locations that need the additional guidance. The following pages and figures provide a description of each MIA and the MIOD.

Military Influence Areas

An MIA is a formally designated geographic planning area where military operations may impact local communities, and conversely, where local activities may affect the military's ability to carry out its mission. An MIA is designated to accomplish the following purposes:

- Promote an orderly transition between community and military land uses so that they remain compatible on both sides of the "fence".
- Protect public health, safety and welfare.
- Maintain operational capabilities of military installations and areas.
- Establish compatibility requirements within the designated area, such as requirements for sound attenuation, real estate disclosure, and avigation easements.

An MIA delineates a geographical area where compatible land use strategies and actions are recommended to support the JLUS goals and objectives. In some cases, an MIA geographic area may have more than one subarea. These subareas are identified as zones.

Three MIAs are recommended for the Hampton-Langley JLUS Implementation Plan. A description of each MIA (and any zones within the MIA) is presented below.

Noise MIA

Noise is typically a concern of the public surrounding a military installation. To specifically assess noise impacts requires a noise study with data that models the environment related to the operational characteristics of Langley AFB. For this JLUS, noise information presented in the Langley AFB AICUZ was the primary source of noise data.

While flight operations generally adhere to the centerline of the established flight corridors, they have the potential to deviate based on climatic, environmental or man-made factors. The noise generated by flight operations in this corridor can vary, depending on the height of the aircraft, type of aircraft, and location of arriving / departing aircraft. The AICUZ noise contours are based on the established flight corridors, and variation in noise levels will occur based on actual routes flown.

The MIA for noise compatibility is classified by noise impacting the community generated by flight operations (primarily arrivals and departures) as shown on Figure 5-1. The Noise MIA boundary includes the AICUZ 65 dB LDN noise contour for existing operations (current mission). The MIA trends northeast, predominately over the Back River and shoreline areas within Poquoson and Hampton, extending approximately 7.5 miles from the center of the runway. It trends to the southwest, predominately within the City of Hampton, including a small area located within the City of Newport News, approximately 5.5 miles from the center of the runway. It also extends to the south of the runway approximately 1.5 miles and to the north approximately 1.9 miles.

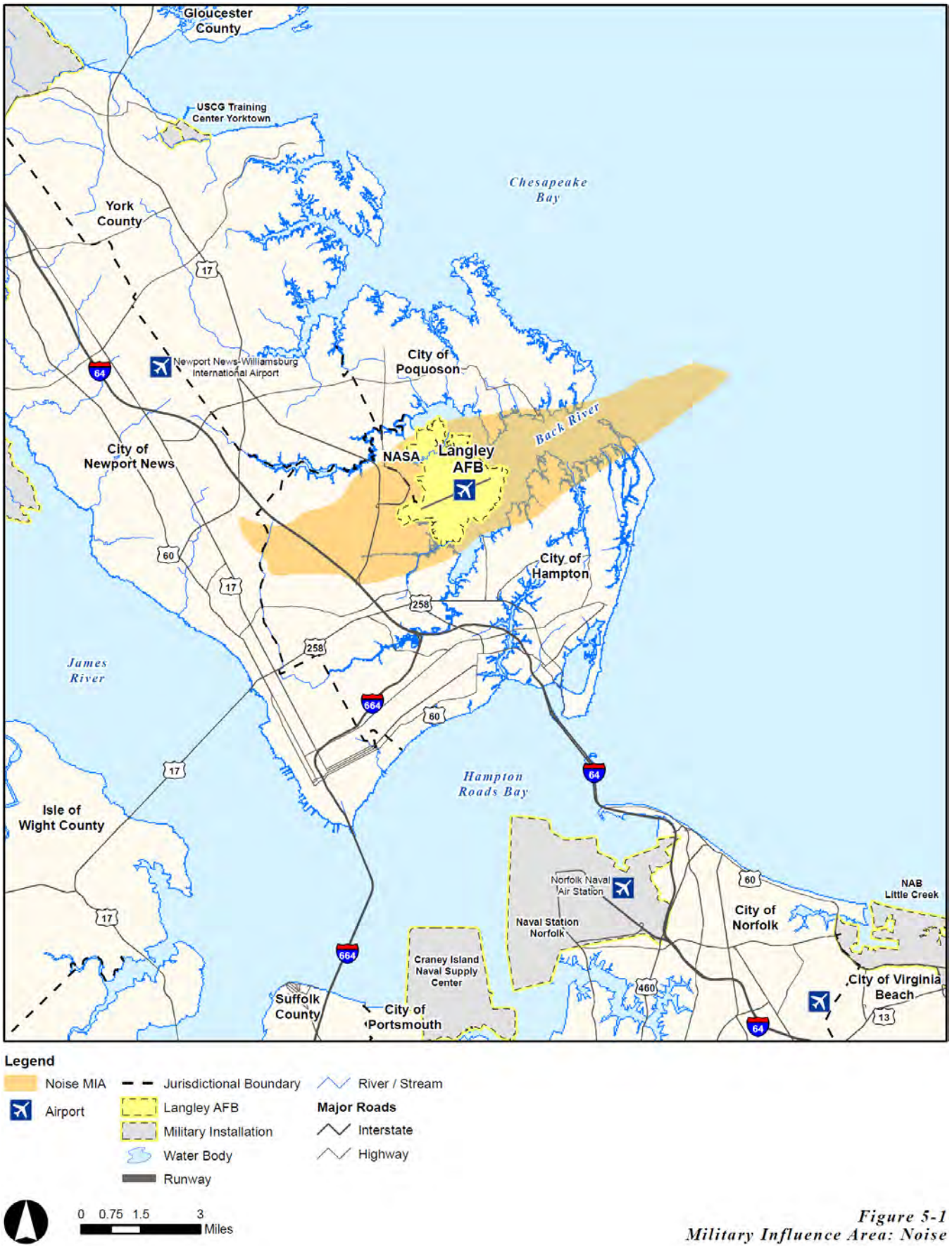


Figure 5-1
Military Influence Area: Noise

Safety / BASH MIA

Safety associated with Langley AFB flight operations is a major concern to the military and the surrounding jurisdictions. There are a total of four zones identified within the Safety MIA as shown on Figure 5-2.

Zone 1

The boundary for Zone 1 includes the Clear Zones (CZ) established at each end of Runway 08-12. The Zone 1 boundary, located at the northeast end of the runway, includes both Back River water areas and base property. The Zone 1 boundary located on the southwest end of the runway includes both military property and private property. Both Zone 1 areas have a width of 3,000 feet and extend out from the ends of the runway to a distance of 3,000 feet.

Zone 2

The Zone 2 boundary includes the areas located within Accident Potential Zone (APZ) I. The Zone 2 boundary for both the northeast and southwest ends of the runway uses the same width and alignment as Zone 1 and extends out 5,000 feet from the ends of Zone 1. The Zone 2 area to the northeast is over the Back River, and also includes a small portion of land within the City of Hampton. To the southwest, Zone 2 extends over private property in the City of Hampton.

Zone 3

The Zone 3 boundary includes the areas located within APZ II. The Zone 3 boundary for both the northeast and southwest ends of the runway utilizes the same width and alignment as Zones 1 and 2 and extends out a distance of 7,000 feet from the ends of Zone 2. The Zone 3 area to the northeast is over the Back River, including a small portion of the City of Hampton. The Zone 3 area to the southwest includes land within the City of Hampton.

Zone 4

The Zone 4 boundary is a Bird and Wildlife Strike Hazard (BASH) area and extends out from Langley AFB a distance of five miles. The area included within Zone 4 encompasses the majority of the City of Hampton, the majority of the land within the City of Poquoson, all of the NASA facility, the southern portion of York County and a small eastern portion of the City of Newport News.

Vertical Obstruction MIA

Vertical obstruction / height issues are a major concern for flight operations and training approaching and departing from the Base. Providing flight safety associated with the height of structures such as cell towers, power lines, and tall buildings is important to both the military and the surrounding community. The approach and departure areas extending out from Runway 08-12 encompass more stringent height restrictions.

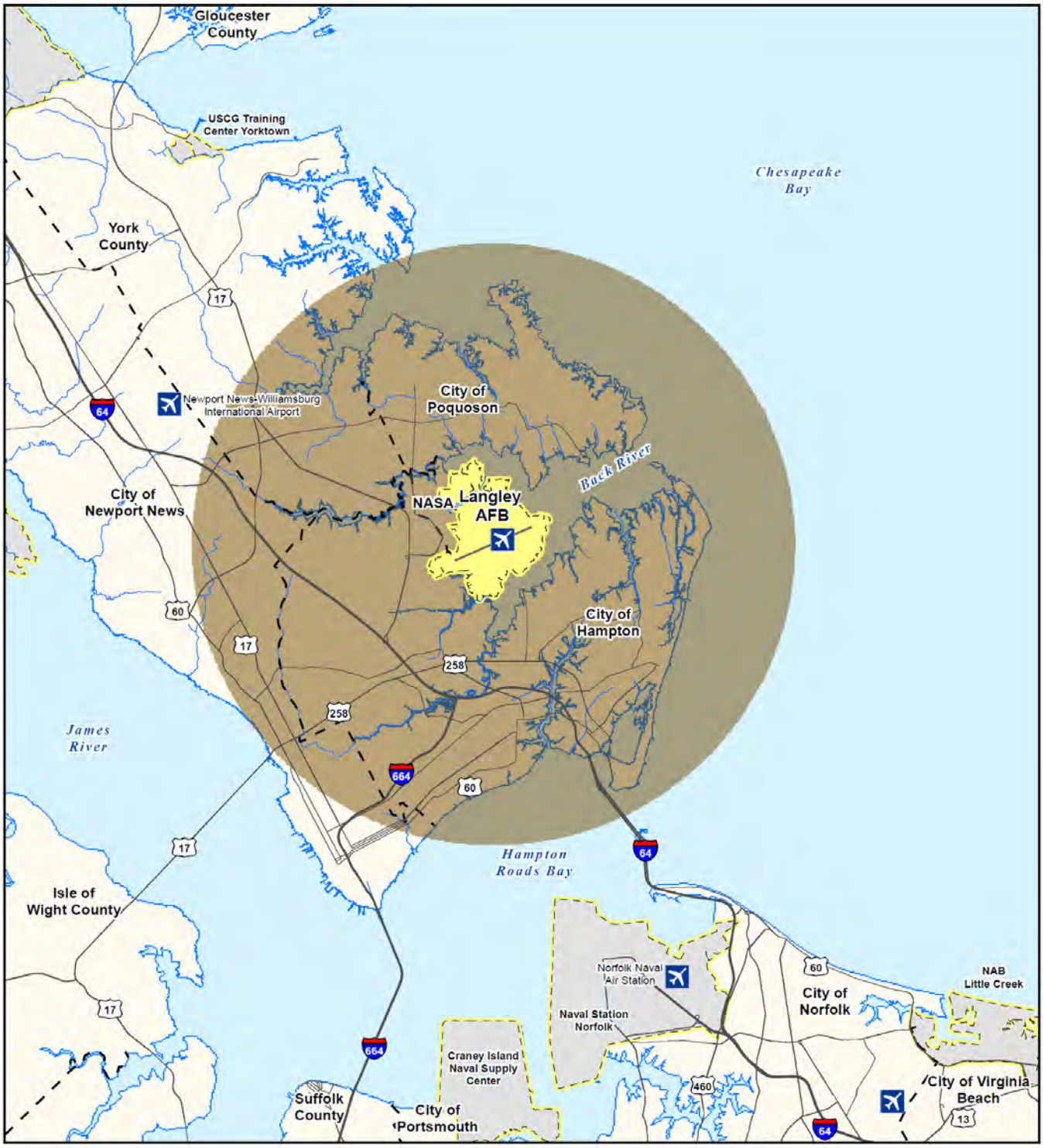
The boundary of the MIA for vertical obstructions is a six statute mile distance from the boundary of Langley AFB as shown on Figure 5-3. The MIA boundary is based on FAA Part 77 height regulations.

Hampton-Langley Military Influence Overlay District

A Military Influence Overlay District encompasses the areas covered by each MIA, and is proposed as the planning and zoning area to define the implementation of the strategies and actions associated with each Hampton-Langley JLUS MIA.

The official MIOD boundary will be developed during the implementation stage of the JLUS. The preliminary MIOD boundary is depicted on Figure 5-4.

Figure 5-2
Military Influence Area: Safety/BASH



Legend

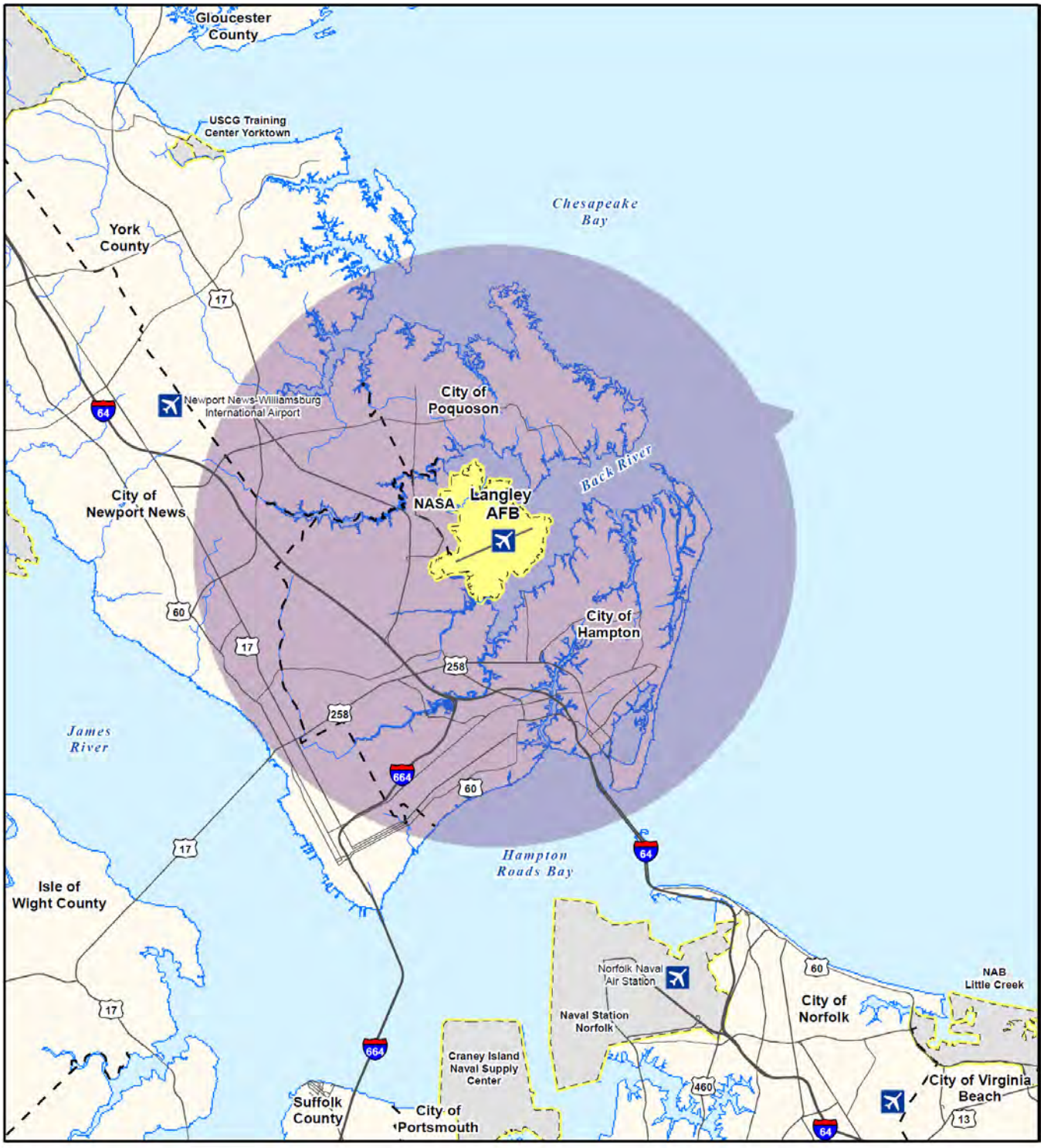
- MIA: Vertical Obstruction
- Airport
- Jurisdictional Boundary
- Langley AFB
- Military Installation
- Runway
- Water Body
- River / Stream

Major Roads

- Interstate
- Highway

0 1.5 3 6 Miles

Figure 5-3
Military Influence Area: Vertical Obstruction



Legend

- MIOD
- Airport
- Jurisdictional Boundary
- Langley AFB
- Military Installation
- Runway
- Water Body
- River / Stream

Major Roads

- Interstate
- Highway

0 1.5 3 6 Miles

Figure 5-4
Military Influence Overlay District

5.4 JLUS IMPLEMENTATION PLAN

As a result of this collaborative planning process, the recommendations for Hampton-Langley JLUS are outlined in the following JLUS Implementation Plan. This plan is the result of a realistic and coordinated approach to compatibility planning for the areas located around Langley AFB.

How to Use the JLUS Implementation Plan

The JLUS Implementation Plan provides a detailed road map of the JLUS recommended strategies and actions. The Hampton-Langley JLUS Implementation Plan recommends strategies that are aimed to help mitigate the compatibility issues identified in Chapters 3 and 4 of this JLUS.

To help organize the presentation of the JLUS Implementation Plan, the 21 recommended strategies are numbered and listed below.

Acquisition Strategies (ACQ)

1. Develop a Land Acquisition Program
2. Acquisition Through Fee Simple Purchase
3. Acquisition of Development Rights Through TDR

Easement Strategies (EASE)

4. Avigation Easements
5. Conservation Easements

Capital Improvements Plan Strategies (CIP)

6. Capital Improvement Planning

Communication / Coordination Strategies (COM)

7. Establish a JLUS Implementation Committee
8. Develop Communications Policies and Procedures
9. Promote and Maintain Langley AFB Missions

Construction Standard Strategies (CST)

10. Sound Attenuation

Environmental Strategies (ENV)

11. BASH / Natural Resources

Legislative Strategies (LEG)

12. Develop a Legislative Strategic Plan
13. Amend Existing Legislation

Operational Strategies (OPS)

14. Future Flight Operations

Plan and Program Strategies (PLAN)

15. Vertical Obstruction
16. Prepare and Adopt Comprehensive Land Use Policies
17. Light and Glare Control

Real Estate Disclosure Strategies (RED)

18. Require Enhanced Real Estate Disclosure

Zoning Ordinance / Subdivision Regulation Strategies (ZONE)

19. Rezoning for Compatibility
20. Setbacks from Langley AFB
21. Review and Monitor Light and Glare Issues

Each strategy is presented in a consistent format comprised of nine components. These strategy components are shown on Figure 5-5 and described below.

1 **Strategy Number / Type / Title**

Each strategy is numbered for quick reference. The title of the strategy is also shown at the top of each page. Above the strategy number is an acronym that identifies the type of compatibility strategy. The acronyms used are as follows:

Identified the type of strategy that addresses the compatibility factor(s) and its abbreviation, as follows:

ACQ	Acquisition Strategy
EASE	Easement Strategies
CIP	Capital Improvement Plan Strategy
COM	Communication / Coordination Strategies
CST	Construction Standards / Code Enforcement Strategies
ENV	Environmental Strategies
LEG	Legislative Strategies
OPS	Operational Strategies
PLAN	Plan and Program Strategies
RED	Real Estate Disclosure
ZONE	Zoning Ordinance

2 **Strategy**

Contains the name and brief description of the strategy.

3 **Compatibility Factors Addressed**

Identified which of the following compatibility factors (identified in Chapter 3) are addressed by the specific strategy:

Compatible Land Use

- Safety
- Vertical Obstruction
- Light and Glare
- Noise
- Coordination

4 **Reference Maps**

The information under this heading provides a reference to the figures (maps) that display information about where that strategy applies. Most strategies are designed to apply only to a specific geographic area, referred to as a Military Influence Area. A few strategies apply to a broad area or have no specific geographic orientation (such as changes to State legislation). These are identified as within the Military Influence Overlay District. These are described further in the next section.

5 **Implementation Actions**

Describes the specific actions necessary to achieve the identified strategy.

6 **Priority**

Identifies when the strategy is proposed to be completed. The strategies are identified to be completed within one or more of the three time periods identified below. They include:

- Short Term (0-2 Years)
- Mid-Term (2-4 Years)
- Long Term / Ongoing (4+ years)

7 **Location**

Identifies the geographic area where the strategy applies (MIOD and / or an MIA). Non-location specific strategies are included in the MIOD row.

Develop a Land Acquisition Program

ACQ 1

Strategy

Develop a land acquisition program to enhance compatibility in designated Clear Zones (CZs) associated with Langley AFB.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** To remove incompatible land uses in the Clear Zone.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for MIA and MIOD locations.
- Figure 5-6 to identify locations for acquisition related strategies.

Implementation Actions

- ☐ **Action 1.1:** Identify critical parcels for acquisition that support preservation of military readiness for existing and potential future missions. For this strategy, acquisition could entail fee simple purchase, lease, transfer of development rights, purchase of development rights, establishing a conservation easement, etc. Locations for these actions (by type) are shown on Figure 5-6.
- ☐ **Action 1.2:** Determine the ownership, zoning, future land use, extent of incompatibility and parcel value data (based on transaction records, appraised value, etc.) of critical parcels identified in Action 1.1.
- ☐ **Action 1.3:** Based on the information developed under Actions 1.1 and 1.2, establish a priority for acquisition.
- ☐ **Action 1.4:** Identify potential funding sources and/or partnerships among public agencies and/or private entities to leverage funds for property acquisition. Refer to Strategy 2 for more details.
- ☐ **Action 1.5:** Leverage DoD Readiness and Environmental Protection Initiative (REPI) funds to acquire those environmentally important lands that, if developed, would not only remove important habitat, but also impact the military mission at Langley AFB.

Sample

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Current Mission Noise MIA	
Future Mission Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
NASA LaRC	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total Cost

Figure 5-5. Strategy Guide

8 **Responsibility**

Lists the jurisdictions, agencies and organizations that are responsible for implementing a strategy, and those that are a partner in implementing the strategy.

9 **Cost Estimate (ROM)**

Provides a very general, Rough Order of Magnitude (ROM) cost by the responsible parties to implement the strategy. These costs are organized into four cost ranges:

- < $250,000
- $250,000 to $500,000
- $500,000 to $1,000,000
- > $1,000,000

Hampton-Langley JLUS Implementation Strategies

The following pages list the 24 recommended strategies and associated actions, consistent with the format previously described. These strategies and actions are intended as recommendations to guide the future work of the JLUS Implementation Committee.

AICUZ Land Use Compatibility

Several of the strategies contained in this chapter refer to using the current Langley AFB AICUZ study and the Land Use Compatibility table that it contains. For ease of reference, a copy of this table is shown on the following pages as Table 5-1.

On Table 5-1, the first column refers to the Standard Land Use Coding Manual (SLUCM) was introduced in 1965 and last updated in 1987. It is the standard land use classification system used by the military. Most local jurisdictions and many private industries utilize the Standard Industrial Classification (SIC) system for determining land use classifications within their respective jurisdictions. The SIC code was introduced in the 1930s and has been periodically revised to reflect the economy's changing industrial composition and organization.

There is not a clear conversion system from the SLUCM system to the SIC system. This results in potential confusion between appropriate land use classifications and definitions in the application of the Air Force's recommendations of compatible land use.

Table 5-1. Land Use Compatibility, Noise Exposure, and Accident Potential

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-69 dB	70-74 dB	75-79 dB	80+ dB
10	Residential							
11	Household units							
11.11	Single units; detached	N	N	Y[1]	A[11]	B[11]	N	N
11.12	Single units; semidetached	N	N	N	A[11]	B[11]	N	N
11.13	Single units; attached row	N	N	N	A[11]	B[11]	N	N
11.21	Two units; side-by-side	N	N	N	A[11]	B[11]	N	N
11.22	Two units; one above the other	N	N	N	A[11]	B[11]	N	N
11.31	Apartments; walk up	N	N	N	A[11]	B[11]	N	N
11.32	Apartments; elevator	N	N	N	A[11]	B[11]	N	N
12	Group quarters	N	N	N	A[11]	B[11]	N	N
13	Residential hotels	N	N	N	A[11]	B[11]		N
14	Mobile home parks or courts	N	N	N	N	N	N	N
15	Transient lodgings	N	N	N	A[11]	B[11]	C[11]	N
16	Other residential	N	N	N[1]	A[11]	B[11]	N	N
20	Manufacturing							
21	Food & kindred products; manufacturing	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
22	Textile mill products; manufacturing	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
23	Apparel and other finished products made from fabrics, leather, and similar materials; manufacturing	N	N	N[2]	Y	Y[12]	Y[13]	Y[14]
24	Lumber and wood products (except furniture); manufacturing	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
25	Furniture and fixtures; manufacturing	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
26	Paper & allied products; manufacturing	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
27	Printing, publishing, and allied industries	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
28	Chemicals and allied products; manufacturing	N	N	N[2]	Y	Y[12]	Y[13]	Y[14]
29	Petroleum refining and related industries	N	N	N	Y	Y[12]	Y[13]	Y[14]
30	Manufacturing							
31	Rubber and misc. plastic products, manufacturing	N	N[2]	N[2]	Y	Y[12]	Y[13]	Y[14]
32	Stone, clay and glass products manufacturing	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
33	Primary metal industries	N	N2	Y	Y	Y12	Y13	Y14

Table 5-1. Land Use Compatibility, Noise Exposure, and Accident Potential (cont'd)

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-69 dB	70-74 dB	75-79 dB	80+ dB
34	Fabricated metal products; manufacturing	N	N[2]	Y	Y	Y[12]	Y[13]	Y[14]
35	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks manufacturing	N	N	N[2]	Y	A	B	N
39	Miscellaneous manufacturing	N	Y[2]	Y[2]	Y	Y[12]	Y[13]	Y[14]
40	Transportation, communications and utilities							
41	Railroad, rapid rail transit and street railroad transportation	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
42	Motor vehicle transportation	N[3]	Y	Y	Y	Y[12]	Y[13]	Y[14]
43	Aircraft transportation	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
44	Marine craft transportation	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
45	Highway & street right-of-way	N[3]	Y	Y	Y	Y[12]	Y[13]	Y[14]
46	Automobile parking	N[3]	Y[4]	Y	Y	Y[12]	Y[13]	Y[14]
47	Communications	N[3]	Y[4]	Y	Y	A[15]	B[15]	N
48	Utilities	N[3]	Y[4]	Y	Y	Y	Y[12]	Y[13]
49	Other transportation communications and utilities	N[3]	Y[4]	Y	Y	A[15]	B[15]	N
50	Trade							
51	Wholesale trade	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
52	Retail trade-building materials, hardware and farm equipment	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
53	Retail trade-general merchandise	N[2]	N[2]	Y[2]	Y	A	B	N
54	Retail trade-food	N[2]	N[2]	Y[2]	Y	A	B	N
55	Retail trade-automotive, marine craft, aircraft and accessories	N[2]	N[2]	Y[2]	Y	A	B	N
56	Retail trade-apparel and accessories	N[2]	N[2]	Y[2]	Y	A	B	N
57	Retail trade-furniture, home furnishings and equipment	N[2]	N[2]	Y[2]	Y	A	B	N
58	Retail trade-eating and drinking establishments	N	N	N2	Y	A	B	N
59	Other retail trade	N	N[2]	Y[2]	Y	A	B	N
60	Services							
61	Finance, insurance and real estate services	N	N	Y[6]	Y	A	B	N
62	Personal services	N	N	Y[6]	Y	A	B	N

Table 5-1. Land Use Compatibility, Noise Exposure, and Accident Potential (cont'd)

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-69 dB	70-74 dB	75-79 dB	80+ dB
62.4	Cemeteries	N	Y[7]	Y[7]	Y	Y[12]	Y[13]	Y[14, 2, 1]
63	Business services	N	Y[8]	Y[8]	Y	A	B	N
64	Repair services	N	Y[2]	Y	Y	Y[12]	Y[13]	Y[14]
65	Professional services	N	N	Y[6]	Y	A	B	N
65.1	Hospitals, nursing homes	N	N	N	A*	B*	N	N
65.1	Other medical facilities	N	N	N	Y	A	B	N
66	Contract construction services	N	Y[6]	Y	Y	A	B	N
67	Governmental services	N[6]	N	Y[6]	Y*	A*	B*	N
68	Educational services	N	N	N	A*	B*	N	N
69	Miscellaneous services	N	N[2]	Y[2]	Y	A	B	N
70	Cultural, entertainment and recreational							
71	Cultural activities (including churches)	N	N	N[2]	A*	B*	N	N
71.2	Nature exhibits	N	Y[2]	Y	Y*	N	N	N
72	Public assembly	N	N	N	Y	N	N	N
72.1	Auditoriums, concert halls	N	N	N	A	B	N	N
72.11	Outdoor music shell, amphitheaters	N	N	N	N	N	N	N
72.2	Outdoor sports arenas, spectator sports	N	N	N	Y[17]	Y[17]	N	N
73	Amusements	N	N	Y[8]	Y	Y	N	N
74	Recreational activities (including golf courses, riding stables, water recreation)	N Y	Y[8, 9, 10]	Y	Y*	A*	B*	N
75	Resorts and group camps	N	N	N	Y*	Y*	N	N
76	Parks	N	Y[8]	Y[8]	Y*	Y*	N	N
79	Other cultural, entertainment and recreation	N[9]	Y[9]	Y[9]	Y*	Y*	N	N
80	Resources production and extraction							
81	Agriculture (except livestock)	Y[16]	Y	Y	Y[18]	Y[19]	Y[20]	Y[20, 21]
81.5 to 81.7	Livestock farming and animal breeding	N	Y	Y	Y[18]	Y[19]	Y[20]	Y[20, 21]
82	Agricultural related activities	N	Y[5]	Y	Y[18]	Y[19]	N	N
83	Forestry activities and related services	N[5]	Y	Y	Y[18]	Y[19]	Y[20]	Y[20, 21]
84	Fishing activities and related services	N[5]	Y[5]	Y	Y	Y	Y	Y

Table 5-1. Land Use Compatibility, Noise Exposure, and Accident Potential (cont'd)

LAND USE		ACCIDENT POTENTIAL ZONES			NOISE ZONES			
SLUCM NO.	NAME	CLEAR ZONE	APZ I	APZ II	65-69 dB	70-74 dB	75-79 dB	80+ dB
85	Mining activities and related services	N	Y[5]	Y	Y	Y	Y	Y
89	Other resources production and extraction	N	Y[5]	Y	Y	Y	Y	Y

LEGEND SLUCM - Standard Land Use Coding Manual, U.S. Department of Transportation.
Y = (Yes); Land use and related structures are compatible without restriction.
N = (No); Land use and related structures are not compatible and should be prohibited.
Y^x = (Yes with restrictions); Land use and related structures are generally compatible; see note indicated by the superscript.
N^x = (No with exceptions); See note indicated by the superscript.
NLR = (Noise Level Reduction; NLR) (outdoor to indoor); To be achieved through incorporation of noise attenuation measures into the design and construction of the structures.
A, B, or C = Land use and related structures generally compatible; measures to achieve NLR of A (25 dB), B (30 dB), or C (35 dB) should be incorporated into the design and construction of structures.
A*, B*, and C* = Land use generally compatible with NLR. However, measures to achieve an overall noise level reduction do not necessarily solve noise difficulties and additional evaluation is warranted. See appropriate footnotes.
* = The designation of these uses as "compatible" in this zone reflects individual federal agency and program consideration of general cost and feasibility factors, as well as past community experiences and program objectives. Localities, when evaluating the application of these guidelines to specific situations, may have different concerns or goals to consider.

NOTES
[1]Suggested maximum density of 1-2 dwelling units per acre possibly increased under a Planned Unit Development (PUD) where maximum lot coverage is less than 20 percent.
[2]Within each land use category, uses exist where further definition may be needed due to the variation of densities in people and structures. Shopping malls and shopping centers are considered incompatible in any APZ.
[3]The placing of structures, buildings, or above ground utility lines in the clear zone is subject to severe restrictions. In a majority of the clear zones, these items are prohibited. See AFI 32-7063 and AFI 32-1026 for specific guidance.
[4]No passenger terminals and no major above ground transmission lines in APZ I.
[5]Factors to be considered: labor intensity, structural coverage, explosive characteristics, and air pollution.
[6]Low-intensity office uses only. Meeting places, auditoriums, etc., are not recommended.
[7]Excludes chapels.
[8]Facilities must be low intensity.
[9]Clubhouse not recommended.
[10]Areas for gatherings of people are not recommended.
[11a]Although local conditions may require residential use, it is discouraged in DNL 65-69 dB and strongly discouraged in DNL 70-74 dB. An evaluation should be conducted prior to approvals, indicating that a demonstrated community need for residential use would not be met if development were prohibited in these zones, and that there are no viable alternative locations.
[11b]Where the community determines the residential uses must be allowed, measures to achieve outdoor to indoor NLR for DNL 65-69 dB and DNL 70-74 dB should be incorporated into building codes and considered in individual approvals.
[11c]NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, and design and use of berms and barriers can help mitigate outdoor exposure, particularly from near ground level sources. Measures that reduce outdoor noise should be used whenever practical in preference to measures which only protect interior spaces.
[12]Measures to achieve the same NLR as required for facilities in the DNL 65-69 dB range 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.
[13]Measures to achieve the same NLR as required for facilities in the DNL 70-74 dB range 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.
[14]Measures to achieve the same NLR as required for facilities in the DNL 75-79 dB range 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.
[15]If noise sensitive, use indicated NLR; if not, the use is compatible.
[16]No buildings.
[17]Land use is compatible provided special sound reinforcement systems are installed.
[18]Residential buildings require the same NLR required for facilities in the DNL 65-69 dB range.
[19]Residential buildings require the same NLR required for facilities in the DNL 70-74 dB range.
[20]Residential buildings are not permitted.
[21]Land use is not recommended. If the community decides the use is necessary, hearing protection devices should be worn by personnel.

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Strategy

Develop a land acquisition program to enhance compatibility in designated Clear Zones (CZs) associated with Langley AFB.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** To remove incompatible land uses in the Clear Zone.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 1.1:** The JLUS Implementation Committee will identify, as appropriate, parcels that may be suitable for acquisition that support preservation of military readiness for existing and potential future missions. For this strategy, acquisition could entail fee simple purchase, lease, transfer of development rights, purchase of development rights, establishing a conservation easement, etc.

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

☐ **Action 1.2:** Determine the ownership, zoning, future land use, extent of incompatibility and parcel value data (based on transaction records, appraised value, etc.) of critical parcels identified in Action 1.1.

RESPONSIBLE AGENCY: City of Hampton
TOTAL ROM COST: <$250,000

☐ **Action 1.3:** Based on the information developed under Actions 1.1 and 1.2, the JLUS Implementation Committee will establish a prioritization list of properties that should be pursued for acquisition. This list will identify the acquisition type that is best suited for each property.

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

☐ **Action 1.4:** Identify potential funding sources and/or partnerships among public agencies, non-governmental organizations (NGO) and/or private entities to leverage funds for these activities.

There are many public agencies, as well as many private, nonprofit conservation organizations that do work to conserve land in the Commonwealth of Virginia. Typically, each agency or organization serves a particular region of the state and / or exists for a particular purpose, such as habitat protection or historical preservation. Organizations focusing mainly on land protection are typically called land trusts or conservancies. A list of the conservation agencies and organizations that could assist with funding and implementation is provided below.

- National Land Conservation Organizations
  - The Nature Conservancy
  - Land Trust Alliance
  - Trust for Public Land
  - American Farmland Trust
  - The Conservation Fund
  - National Park Trust
  - Ducks Unlimited
- Commonwealth of Virginia Conservation Agencies and Programs
  - Office of Land Conservation, Virginia Department of Conservation and Recreation
  - Virginia's United Land Trusts

- Regional Land Trust and Conservancies
  - Civil War Preservation Trust
  - Hampton Land Conservancy
  - Williamsburg Land Conservancy

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

☐ **Action 1.5:** Leverage DoD Readiness and Environmental Protection Initiative (REPI) funds by submitting applications for REPI funding to acquire those environmentally important lands that, if developed, would not only remove important habitat, but also impact the military mission at Langley AFB.

RESPONSIBLE AGENCY: Langley AFB
TOTAL ROM COST: <$250,000

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Strategy

Develop a program to acquire parcels within the Clear Zone at-risk for compatibility issues through Fee Simple Purchase. Priorities for acquisitions are developed and recommended by the JLUS Implementation Committee.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** Acquiring land around Langley AFB that may support incompatible development will reduce compatibility issues between Langley AFB and jurisdictions in the future.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 2.1:** Based on the properties identified by the JLUS Implementation Committee for potential acquisition as part of Action 1.3, develop a list of landowners of identified parcels who are willing to sell all or a portion of a property (lots suitable for a lot split as determined under Action 2.2).

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

☐ **Action 2.2:** Review parcels identified for potential acquisition and determine those that could be suitable for a lot split action that would divide the parcel into two parts: one part constrained by operations at Langley AFB, and one part outside this area that would be unconstrained relative to future development. A lot split would only be appropriate if the resulting parcel outside the constrained area was large enough for viable development and if the current property owner volunteers to implement the strategy.

RESPONSIBLE AGENCY: City of Hampton
TOTAL ROM COST: <$250,000

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

- **Action 2.3:** For parcels suitable for lot splits and which are proposed for acquisition, the jurisdiction will assist in filing and processing the lot split application.

  RESPONSIBLE AGENCY: City of Hampton
  TOTAL ROM COST: <$250,000

- **Action 2.4:** Acquire properties with available funds using the priorities identified under Action 1.3 and the funding sources identified in Strategy 1.

  RESPONSIBLE AGENCY: City of Hampton
  TOTAL ROM COST: >$1,000,000

- **Action 2.5:** Identify private entities willing to purchase lands with development restrictions.

  RESPONSIBLE AGENCY: City of Hampton
  TOTAL ROM COST: <$250,000

- **Action 2.6**: Identify compatible land users and market critical parcels for these uses.

  RESPONSIBLE AGENCY: City of Hampton
  TOTAL ROM COST: <$250,000

Strategy

Evaluate the feasibility of a volunteer program to acquire development rights for parcels at risk for incompatible uses using transfer of development rights (TDR).

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** By transferring the development rights of vacant at-risk parcels, the compatible use of these at-risk parcels can be secured.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.
- Figure 5-6 shows vacant, residentially zones parcels within the 65 dB LDN contour.

Implementation Actions

☐ **Action 3.1:** Confirm parcels that should be considered as appropriate to offer TDR proceedings (refer to results from Action 1.3).

RESPONSIBLE AGENCY: Cities of Hampton and Newport News
TOTAL ROM COST: <$250,000

☐ **Action 3.2**: Consult with landowners of vacant parcels, using the parcels shown on Figure 5-7 and refined from the results of Action 1.3, as an initial list for consideration, to determine if they are willing to engage in TDR proceedings.

RESPONSIBLE AGENCY: Cities of Hampton and Newport News
TOTAL ROM COST: <$250,000

☐ **Action 3.3**: If an appropriate number of landowners are interested in pursuing a TDR proceeding, the JLUS Implementation Committee will identify parcels outside of the MIOD where development rights sold within the MIOD could be transferred.

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

- ☐ **Action 3.4** As needed, develop an MOU with applicable jurisdictions to allow for the transfer of development rights outside of the jurisdiction within which the development application is submitted.

  RESPONSIBLE AGENCY: JLUS Implementation Committee
  TOTAL ROM COST: <$250,000

- ☐ **Action 3.5**: As needed, based on the results of Action 1.3 and the location of properties identified as appropriate for TDR and based on identification of a willing landowner to utilize a TDR process, the City of Hampton should consider establishing the procedures, methods, and standards necessary for the application of a transfer of development rights program.

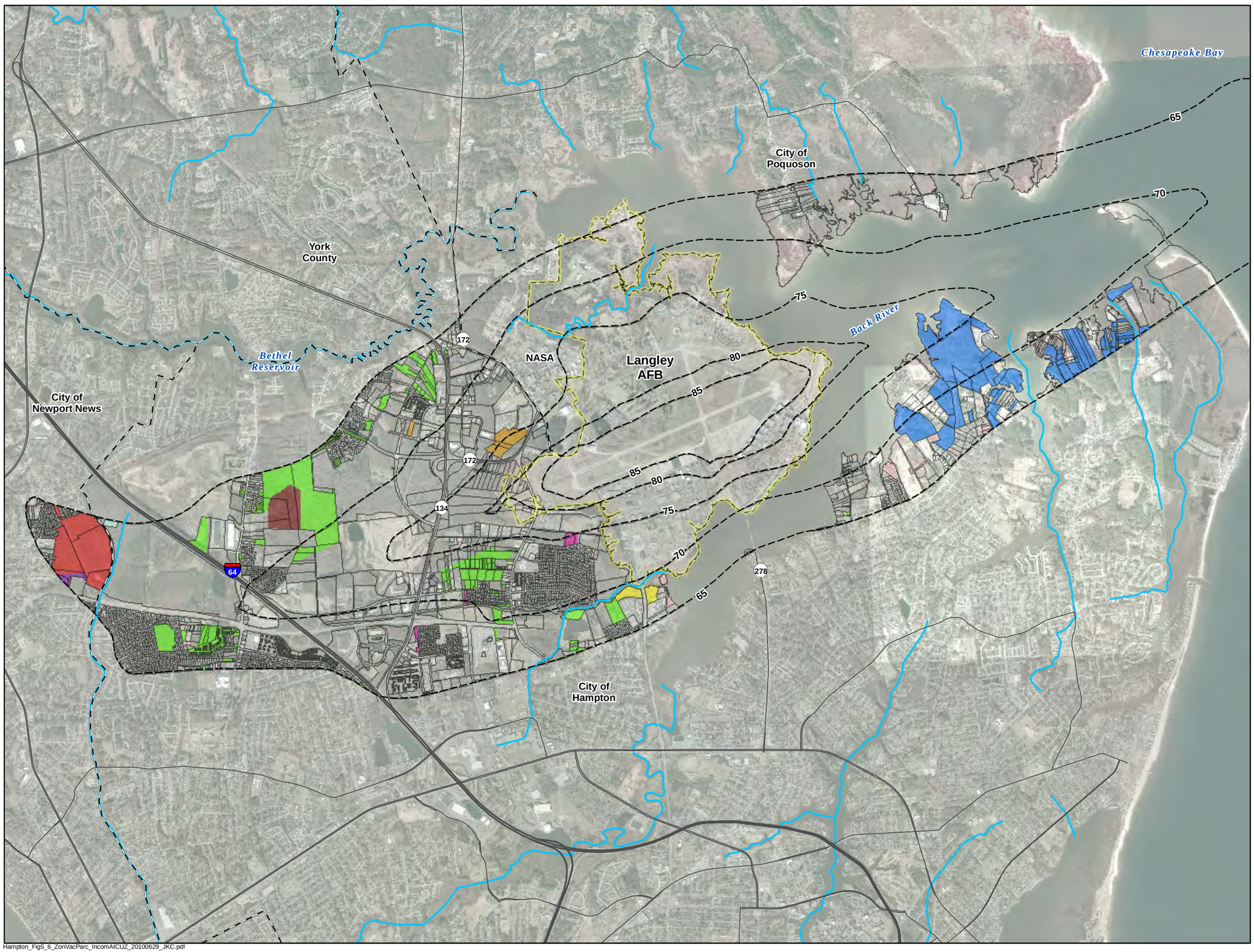
  RESPONSIBLE AGENCY: City of Hampton
  TOTAL ROM COST: <$250,000

- ☐ **Action 3.6**: As needed, based on the results of Action 1.3 and the location of properties identified as appropriate for TDR and based on identification of a willing landowner to utilize a TDR process, the City of Newport News should consider establishing the procedures, methods, and standards necessary for the application of a transfer of development rights program.

  RESPONSIBLE AGENCY: City of Newport News
  TOTAL ROM COST: <$250,000

- ☐ **Action 3.7**: As needed, based on the results of Action 1.3 and the location of properties identified as appropriate for TDR and based on identification of a willing landowner to utilize a TDR process, the City of Poquoson should consider establishing the procedures, methods, and standards necessary for the transfer of development rights program.

  RESPONSIBLE AGENCY: City of Poquoson
  TOTAL ROM COST: <$250,000



Legend

Aircraft Noise Contours (dB)

Roads

- Interstate
- Highway
- Jurisdictional Boundary
- River / Stream
- Langley AFB
- Parcel

Vacant Zoning Category

City of Hampton

- R-R Rural Residential (<1.32 du/ac)
- R-33 One Family Residence (1.32 du/ac)
- R-15 One Family Residence (2.9 du/ac)
- R-13 One Family Residence (3.63 du/ac)
- R-11 One Family Residence (4.84 du/ac)
- R-9 One Family Residence (7.26 du/ac)
- R-M Multiple Residence
- MD-2 Multiple Dwelling (16 du/ac)
- MD-3 Multiple Dwelling (20 du/ac)

for Newport News in Legend

City of Newport News

- R-4 Single Family Dwelling (< 6.6 du/ac)
- R-7 Medium Density Multi-Family Dwelling (<24 du/ac)

0 1,000 2,000 4,000 Feet

Figure 5-6
Zoning for Vacant Parcels Incompatible with AICUZ (within 65+ db Ldn)

Hampton_Fig5_6_ZonVacParc_IncomAICUZ_20100629_JKC.pdf

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Strategy

Langley AFB should work with local jurisdictions to obtain, through a volunteer program, the dedication of avigation easements when development is proposed on property within the Clear Zone, APZ I, APZ II, and the Noise MIA.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** Entities acquire avigation easements to the airspace over neighboring properties to: (1) prevent construction of buildings and towers, planting of trees, installation of lighting, or any other development that might interfere with aircraft takeoff and landing, or (2) protect against liability for any nuisance caused by aircraft using the airport (i.e. noise, fumes, and vibration) that might impact the use and enjoyment of properties adjacent to an airfield or under its flight paths.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 4.1**: Working with the JLUS Implementation Committee, develop a standardized avigation easement form that will be used by all jurisdictions as defined in Action 4.2.

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

☐ **Action 4.2:** Working with the local jurisdictions, identify volunteers who are willing to grant an avigation easement as a condition of their zoning or building permit application. This easement shall hold the city/county, public and Langley AFB harmless from any damages, both real and perceived, caused by noise, vibration, fumes, dust, fuel, fuel particles, or other effects that may be caused by the operation of aircraft taking off, landing, or operating on or near Langley AFB, not including the physical impact of aircraft or parts thereof. Avigation

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

easements could be submitted on easement forms provided by the local jurisdiction.

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

Strategy

Identify potential funding sources and/or partnerships among public agencies and/or private entities to leverage funds for property acquisition within the Clear Zone that provide benefits to conservation efforts as well as land use compatibility. Priorities for acquisition and easement are developed and recommended by the JLUS Implementation Committee.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** Acquiring land around Langley AFB that may support incompatible development will reduce compatibility issues between Langley AFB and jurisdictions in the future.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Acton 5.1:** Develop a conservation easement program that protects Langley AFB while also protecting special status species and the habitats that support them. The following steps should be undertaken.

- Identify land trust organizations dedicated to protecting areas of value to conservation efforts.
- Research opportunities presented by agencies such as Nature Conservancy and programs such as REPI.

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

☐ **Action 5.2**: Create new and enhance existing relationships with non-governmental organizations that assist in acquiring lands for conservation and/or military readiness. Refer to information on non-governmental agencies presented with Strategy 1.

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
NASA LaRC	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

- **Action 5.3:** Acquire development rights with available funds using the priorities identified under Action 1.3.

  RESPONSIBLE AGENCY: JLUS Implementation Committee
  TOTAL ROM COST: >$1,000,000

Strategy

Jurisdictions and agencies shall coordinate Capital Improvement Programs (CIP) among Langley AFB and nearby jurisdictions.

Compatibility Factors Addressed

■	Compatible Land Use	***Purpose:*** Prevent disjointed planning within the vicinity of Langley AFB to decrease the potential for encouraging incompatible land uses based on the placement or sizing of future infrastructure.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
■	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 6.1:** The Jurisdictions' CIP Committees should coordinate their City's annual CIP process with the JLUS Implementation Committee for property within the MIOD that may impact current and future missions at Langley AFB.

NOTE: The types of CIPs that Langley AFB wishes to be involved as part of the review process will be established as part of Action 8.1.

RESPONSIBLE AGENCY: All jurisdictions within MIOD
TOTAL ROM COST: <$250,000

☐ **Action 6.2:** The Jurisdictions' CIP Committees should coordinate their respective City's annual CIP process with the JLUS Implementation Committee for infrastructure improvements designed to serve Langley AFB and the community.

RESPONSIBLE AGENCY: All jurisdictions within MIOD
TOTAL ROM COST: <$250,000

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	■
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	■
MIOD	■
RESPONSIBILITY	
City of Hampton	■
City of Newport News	■
City of Poquoson	■
York County	■
Langley AFB	■
State of Virginia	
JLUS Imp. Committee	■
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	■
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	■
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	■
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- ■ Implementation Priority
- ■ Location Where Strategy Applies
- ■ Responsible Agency
- ■ Partner Agency
- ■ Total ROM Cost

- **Action 6.3:** The Hampton Roads Transportation Planning Organization (HRTPO) and Virginia DOT should coordinate with the JLUS Implementation Committee to consider adequate transportation infrastructure is provided to Langley AFB, providing optimum circulation of traffic in the vicinity around the base.

  RESPONSIBLE AGENCY: JLUS Implementation Committee
  TOTAL ROM COST: <$250,000

Strategy

Establish a JLUS Implementation Committee to maintain efficient and effective coordination among local jurisdictions, Langley AFB, and other interested parties.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** To create an organizational structure that fosters JLUS implementation through on-going collaboration and communication.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 7.1:** Identify Implementation Committee members. Each of the following jurisdictions / agencies will be invited to identify up to two members for this committee:

- City of Hampton
- City of Newport News
- City of Poquoson
- York County
- Langley AFB
- Hampton Federal Area Development Authority (FADA)
- Hampton Roads Military and Federal Facilities Alliance (HRMFFA)
- National Aeronautics and Space Administration, Langley Research Center (NASA LaRC)
- Thomas Nelson College
- Virginia National Defense industrial Authority (VNDIA)

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
NASA LaRC	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

☐ **Action 7.2:** Develop an MOU among all participating jurisdictions / agencies represented on the JLUS Implementation Committee. This MOU should specify the following:

- Composition of the committee and election of a chair and co-chair;
- Frequency and general format of meetings;
- General committee member requirements (i.e., attendance / absences, meeting conduct, etc.);
- Financial responsibilities; and,
- Staff support.

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

☐ **Action 7.3:** Extract the list of strategies to be completed in the first three years following completion of the Hampton-Langley JLUS (2010 – 2012) for review and coordination. Establish responsibilities among the committee members for advancement and completion of these strategies / actions.

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

☐ **Action 7.4:** Establish subcommittees based on the topical or aggregated topics of the JLUS to address specific strategies as needed. These subcommittees may be supplemented with representatives from topical or technical experts, as directed by the JLUS Implementation Committee. Agencies and organizations that may be called on include the following:

- Air Force Association
- Hampton Roads Military and Federal Facilities Alliance (HRMFFA)
- Langley Civic Leaders

- United States Department of Agriculture (USDA)
- United States Fish and Wildlife Service (USFWS)
- Virginia Department of Transportation (Virginia DOT) / Hampton Roads Transportation Planning Organization (HRTPO)

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

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Strategy

Develop communications policies /procedures to guide interface between military and local jurisdictions.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** Enhance communication between the military and local jurisdictions to improve coordination on local land use decisions that could impact Langley AFB and vice versa.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 8.1:** Prepare and adopt a communication MOU between Langley AFB and the jurisdictions represented on the JLUS Implementation Committee outlining a procedure for responding to proposed community / development projects. This MOU should include the following:

- Identification, through discussions with the JLUS Implementation Committee, of application types and locations that should be transmitted to Langley AFB for review and comment. This action will identify applications to transmit based on factors such as (but not limited to):
  - Type of application
  - Location of project / action
  - Type of use or action proposed
- Identification of point of contact list (person and/or department / unit) for all written forms of communication transmitted to/from Langley AFB.
- The mutually agreed upon timeframe (i.e., working days) within which Langley AFB will be able to submit input for consideration within the jurisdictional review of proposed development projects. If no response (or request for extension of time on review) is received

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

within the agreed upon review timeframe, the jurisdiction can move forward under the assumption that Langley AFB does not have any comments.

- If possible, Langley AFB will be invited to participate in pre-application and development review activities held prior to holding public hearing(s) on the application. This early coordination can help develop alternatives or project design modifications early in the design phase of a project.

- As part of the review package provided to Langley AFB, the jurisdiction will include (at a minimum) the following information regarding the proposed development and/or application:
    - Agenda or other notice of date, time, and location for public meetings and/or public hearings on the proposed development or application
    - Staff report (if available)
    - Location of project or action
    - Project / application description, which could include proposed regulatory language, subdivision map, parcel map, site plan, building elevations, and so forth
- The desired format for comments, responses, and recommendations (approval, approval with stipulations/modifications, or denial) of the proposed development or action in an electronic manner (i.e., Word / Excel) to Langley AFB.

RESPONSIBLE AGENCY: JLUS Implementation Committee Jurisdictions
TOTAL ROM COST: <$250,000

☐ **Action 8.2:** Develop a communication MOU between Langley AFB and JLUS member jurisdictions outlining a procedure for responding to proposed military projects, mission expansions, updated studies (such as AICUZ, INRMP, etc.) and environmental compliance documents prepared to meet

the requirements of the National Environmental Policy Act (NEPA). This MOU should include the following:

- Identify, through discussions with the JLUS Implementation Committee, application types and locations that should be transmitted to jurisdictions and regulatory and resource agencies for review and comment.
- Identification of point of contact list (person and/or department) for all written forms of communication transmitted to / from each jurisdiction.
- The mutually agreed upon timeframe (i.e., working days) within which each jurisdiction is responsible to submit timely input for consideration within the jurisdictional review of proposed military projects. If no response (or request for extension of time on review) is received within the agreed upon review timeframe, Langley AFB can move forward under the assumption that the jurisdiction's involved do not have any comments.

- As part of the review package provided to affected jurisdictions, Langley AFB will include (at a minimum) the following information regarding the proposed development and/or action:
    - Location of project or action
    - Uses proposed, including potential compatibility impacts or encroachment issues with uses outside the Langley AFB boundary
    - NEPA documentation
    - For development projects, site plan and/or building elevations
    - For planning documents that effect areas outside the base boundary, a copy of the plan or document
    - Proposed timeframe for approvals, design and development

- Date, time, and location for project and/or public meetings

- Langley AFB will transmit its desired format for comments regarding the proposed military project or action in an electronic manner (i.e., Word / Excel) to each MOU jurisdiction.

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

☐ **Action 8.3:** Officials representing Langley AFB and Newport News Airport will maintain on-going communications relative to changes in the use of airspace, airfield operations, master planning, expansion, or other changes that may impact operations at the other facility.

RESPONSIBLE AGENCY: City of Newport News and Langley AFB
TOTAL ROM COST: <$250,000

☐ **Action 8.4:** Langley AFB shall identify and make available, as appropriate, Langley AFB personnel to provide technical input and assistance testimony at local jurisdiction meetings. As necessary to support Action 8.1, above, Langley AFB personnel could prepare for, and attend city/county planning commission, city council, county Board of Supervisors, or any other public meeting in an effort to contribute the military's perspective to the discussion of development projects presenting potential compatibility issues.

RESPONSIBLE AGENCY: Langley AFB
TOTAL ROM COST: <$250,000

☐ **Action 8.5:** Langley AFB will provide information on standard operating elevation limits, flight tracks, and approach and departure areas, as they are modified, to local jurisdictions. Significant deviations or changes drive the requirement for an Environmental Assessment (EA). Draft EAs will be provided to JLUS Implementing Committee members prior to such changes taking effect, which will ensure local concerns can be expressed and considered.

Such information will be transmitted to the respective jurisdictional points of contact (as established through the MOU developed under Action 8.1) for their use in addressing planning and development issues related to compatibility. The respective jurisdictional points of contact should contact Langley AFB to inquire about the availability of information in geographic information system (GIS) format. If no security concerns exist, Langley AFB will release the GIS data to the requesting point of contact.

RESPONSIBLE AGENCY: Langley AFB
TOTAL ROM COST: <$250,000

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Strategy

Continue existing, and develop new, communications and outreach programs to promote and maintain existing missions and to show community-wide support for the pursuit of new missions at Langley AFB.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** Enhance communication between the military and local jurisdictions to prevent incompatible land uses from impacting Langley AFB.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 9.1:** Ensure existing programs are maintained that have proven effective in successful collaboration and communication between Langley AFB and stakeholders relative to current and future missions at the base.

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

☐ **Action 9.2:** Engage local and regional military associations in lobbying efforts on behalf of Langley AFB, and continue to develop and foster relationships with the surrounding communities using the Hampton Roads Military and Federal Facilities Alliance, Hampton Federal Area Development Authority, Air Force Association, the Langley Civic Leaders Association, and other interested organizations willing to promote Langley AFB at the community, regional, state, and federal levels.

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
NASA LaRC	
Thomas Nelson College	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

- **Action 9.3:** Select key Congressional and General Assembly representatives to work closely with the JLUS implementation committee to advocate a coordinated objective; to not only acquire additional, compatible missions at Langley AFB, but also the beddown / training of next generation combat technology.

  RESPONSIBLE AGENCY: JLUS Implementation Committee
  TOTAL ROM COST: <$250,000

- **Action 9.4** Develop an informational brochure that describes the benefits of the installation to the local economy. This can be updated annually using information provided by Langley AFB.

  RESPONSIBLE AGENCY: Langley AFB
  TOTAL ROM COST: <$250,000

- **Action 9.5:** As appropriate, Langley AFB should develop documentation to increase awareness and understanding of the locations of Langley AFB's operations and routes, purpose of the operations, and its various impacts (i.e., noise / hazards, economic, etc.) on the surrounding communities. Materials should be developed for several different audiences.

  - For local jurisdiction and agency staff members
  - For Realtors relative to disclosure
  - For the development community (i.e., developers, builders, etc.)
  - For landowners

  RESPONSIBLE AGENCY: Langley AFB
  TOTAL ROM COST: <$250,000

- **Action 9.6:** Incorporate military operation safety into Langley AFB publications and on-line information. Information pertaining to military operation safety should be made available to property owners and residents surrounding Langley AFB in a readily accessible format.

  RESPONSIBLE AGENCY: Langley AFB
  TOTAL ROM COST: <$250,000

Strategy

Aggressively regulate noise-related nuisances within the proximity of Langley AFB.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** Prevent disjointed planning within the Langley AFB region to decrease the potential for incompatible uses.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.
- Figure 5-7 to identify locations for voluntary sound attenuation.

Implementation Actions

☐ **Action 10.1:** Develop a voluntary sound attenuation retrofit program for noise sensitive uses (defined as locations and uses typically more sensitive to noise, including residential areas, hospitals, convalescent homes and facilities, schools, and other similar land uses) located within the Noise MIA. The following steps will need to be taken to develop this program.

- Determine applicable structures within such defined noise impacted areas for inclusion in the retrofit program.
- Develop a program goal (number of structures to retrofit within a desired decibel level).
- Develop program policies including timing for fund allocation, eligible uses and/or types of structures, eligible activities, and types of funding provided to property owners (grant, loan, reimbursement, matching grant, etc.).
- Identify potential funding sources.
- Develop application procedures for property owners seeking funding through the retrofit program.

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

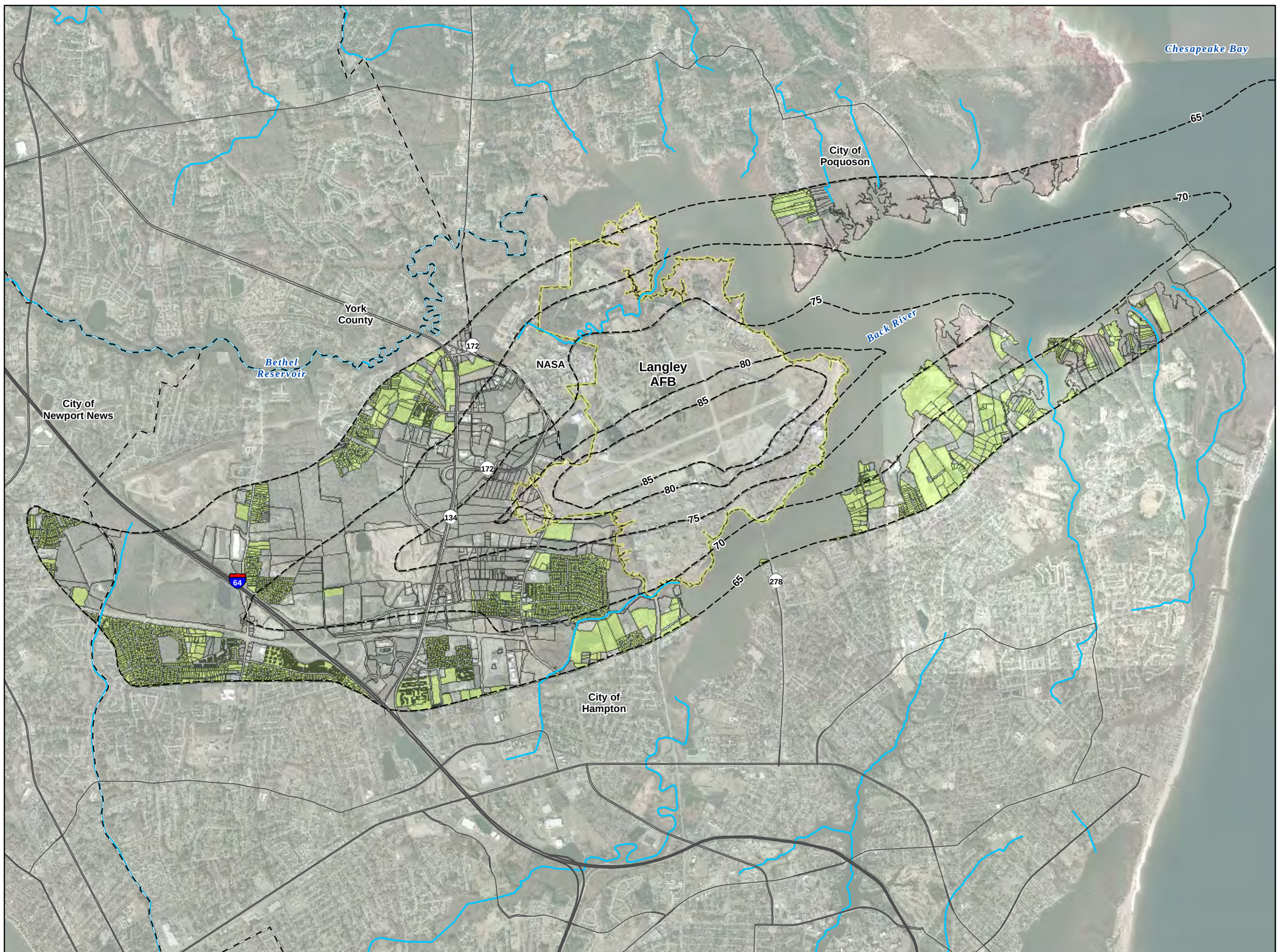
- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

- Establish and prepare marketing and outreach materials to explain the parameters of the retrofit program.
- Identify programs that might provide financial assistance for this effort.

RESPONSIBLE AGENCY: Hampton, Newport News, Poquoson, York County
TOTAL ROM COST: <$250,000

☐ **Action 10.2:** Partner with other Defense Communities in advocating that FAA HUD Grants are eligible for areas around military installations with an active runway.

RESPONSIBLE AGENCY: JLUS Implementation Committee Jurisdictions
TOTAL ROM COST: <$250,000



Legend

- Aircraft Noise Contours (dB)

Roads

- Interstate
- Highway
- Jurisdictional Boundary
- River / Stream
- Langley AFB
- Parcel

Recommended Strategy

- Voluntary Sound Attenuation

0 1,000 2,000 4,000 Feet

Figure 5-7
Residential Parcels Suitable for Voluntary Sound Attenuation

Hampton_Fig5_7_ResParcSuitVolSouAtt_2010629_JKC.pdf

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Strategy

Develop a regional approach among jurisdictions that supports the Bird and Wildlife Aircraft Strike Hazard (BASH) program at Langley AFB.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** Reduce the potential for BASH occurrences within proximity to Langley AFB.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 11.1:** Langley AFB will work directly with the cities of Hampton and Poquoson, other State or Federal agencies, such as the U.S. Department of Agriculture (USDA), and landowners to minimize conflicts between hazardous wildlife and aircraft.

RESPONSIBLE AGENCY: Langley AFB
TOTAL ROM COST: <$250,000

☐ **Action 11.2:** Langley AFB should provide educational information (such as a pamphlet) on reducing the potential for hazardous bird and wildlife attractions that may impede safe air operations to local jurisdictions, agencies, and landowners in the region.

RESPONSIBLE AGENCY: Langley AFB
TOTAL ROM COST: <$250,000

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
NASA LaRC	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

- **Action 11.3:** All land use and development projects sponsored by Langley AFB, local jurisdictions, or regulatory agencies should consider the project's direct and indirect effects in attracting birds (i.e., water, food sources, and habitat) within local airspace. Local jurisdictions or agencies will consult (using the procedures developed under Strategies 7 and 8) with Langley AFB on the review and mitigation (if needed) of significant bird and wildlife attraction issues.

  RESPONSIBLE AGENCY: City of Hampton, City of Newport News, and York County
  TOTAL ROM COST: <$250,000

- **Action 11.4:** Local jurisdictions should work with the USDA and Langley AFB to evaluate, and if necessary modify, their design guidelines and site plan requirements to minimize direct and indirect bird attraction components associated with on and off-site drainage.

  Local jurisdictions should work with project applicants to develop mutually agreeable design solutions that meet the drainage objectives of the municipality, requirements of the jurisdiction's or agency's Virginia Pollutant Discharge Elimination System (VPDES) permits, protect public health and safety, and protect property from flood damage as part of project design or conditions of approval.

  Design features should include:

  - When possible, detention facilities should be designed for a maximum of 48-hour detention of water;
  - When it is not possible for water to drain within 48 hours, include barrier elements in the detention facility, such as bird balls, wire grids, or netting. These uses must be evaluated to ensure they will not adversely affect water rescue;
  - If soil conditions and other requirements allow, the use of underground storm water infiltration systems, such as French drains or buried rock fields, should be utilized;

- In areas where constant flow of water is anticipated through the basin, or a portion may remain wet, the detention facility should include a concrete or paved pad in the bottom to prevent vegetation growth;
- Reducing detention facility perimeter by utilizing circular or linear designs or;
- Constructing barrier walls around detention facilities so that there is no shoreline or land connected to them.

RESPONSIBLE AGENCY: City of Hampton, City of Newport News, and York County
TOTAL ROM COST: <$250,000

☐ **Action 11.5:** New projects that propose the expansion or creation of waste disposal operations, water treatment facilities, wetlands, agricultural practices, or other land uses that are known to potentially attract a large quantity of hazardous birds (i.e., golf courses, green space/areas, etc.) should conform to the siting criteria established in the FAA Advisory Circular (AC) 150/5200-33. Coordinating agencies will make every effort to undertake actions that are mutually beneficial, legally acceptable, and consistent with the siting criteria noted in Section 1-3 of AC 150/5200-33. The projects may be evaluated in consultation with Langley AFB to discuss project alternatives or mitigations that would lessen potential BASH issues to acceptable levels.

RESPONSIBLE AGENCY: City of Hampton, City of Newport News, and York County
TOTAL ROM COST: TOTAL ROM COST: <$250,000

☐ **Action 11.6:** Provide the Virginia Department of Conservation and Recreation with a copy of all suggested modifications for review and comment prior to adoption.

RESPONSIBLE AGENCY: JLUS Implementation Committee Jurisdictions
TOTAL ROM COST: <$250,000

- **Action 11.7:** The JLUS Implementation Committee will work to achieve coordination of the natural resource plans, policies and management programs of Langley AFB and location jurisdictions.

  RESPONSIBLE AGENCY: JLUS Implementation Committee
  TOTAL ROM COST: <$250,000

- **Action 11.8:** The JLUS Implementation Committee will work with appropriate State and Federal regulated agencies to recommend alternative land development and site design standards to minimize conflicts between hazardous wildlife and aircraft. The committee should draft the recommended land development and site design standards that are within siting criteria noted in Sections 1-3 of FAA AC 5200-33 and will be used as a guide for all agencies.

  RESPONSIBLE AGENCY: JLUS Implementation Committee
  TOTAL ROM COST: <$250,000

- **Action 11.9:** Langley AFB will continue to identify and monitor wildlife hazards and attractive habitats within the 5-mile BASH MIA and will initiate efforts to develop cooperative management plans with local jurisdictions, property managers, and landowners. Management plans will avoid adverse impacts to wetlands, threatened or endangered wildlife species, or other sensitive habitats.

  RESPONSIBLE AGENCY: Langley AFB and Local Jurisdictions
  TOTAL ROM COST: <$250,000

Strategy

Develop a legislative strategic plan to promote land use compatibility and long term sustainability of the missions at Langley AFB.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** To modify the existing foundation of legislation supporting land use compatibility.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 12.1:** Identify key stakeholders and potential partner agencies to assist in accomplishing the legislative priorities. The following stakeholders should include:

- JLUS Implementation Committee member organizations
- Langley AFB (633d Air Base Wing Public Affairs)
- Hampton Roads Military and Federal Facilities Alliance (HRMFFA)
- Hampton Federal Area Development Authority (FADA)
- Air Force Association
- Langley Civic Leaders Association

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

☐ **Action 12.2:** Draft language for new legislation.

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

- **Action 12.3:** Identify key legislators to submit changes to Virginia General Assembly.

  RESPONSIBLE AGENCY: JLUS Implementation Committee
  TOTAL ROM COST: <$250,000

- **Action 12.4:** Identify those stakeholders responsible for monitoring legislative priorities as they proceed through the General Assembly.

  RESPONSIBLE AGENCY: JLUS Implementation Committee
  TOTAL ROM COST: <$250,000

- **Action 12.5:** Identify key lobbying activities, participants, and timeframes for each proposed legislative measure.

  RESPONSIBLE AGENCY: JLUS Implementation Committee
  TOTAL ROM COST: <$250,000

- **Action 12.6:** Develop a strategy for the introduction of new bills or amendments to existing legislation during the appropriate General Assembly session.

  RESPONSIBLE AGENCY: JLUS Implementation Committee
  TOTAL ROM COST: <$250,000

- **Action 12.7:** Develop legislation monitoring program to keep key stakeholders involved and educated on the progress of legislative initiatives. Strategic Plan

  RESPONSIBLE AGENCY: JLUS Implementation Committee
  TOTAL ROM COST: <$250,000

Strategy

Support legislation to amend existing codes applied to properties and development in the State of Virginia.

- Code of Virginia, Chapter 22, Section 15.2-2295
  Aircraft noise attenuation features in buildings and structures within airport noise zones
- Virginia Uniform Statewide Building Code, Sections 1207.1 (*Scope*) and 1207.4 (*Airport noise attenuation standards*).
- Code of Virginia, Chapter 22, Section 15.2-2204 D
  Advertisement of plans, ordinances, etc.; joint public hearings; written notice of certain amendments

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** To modify the existing foundation of legislation supporting land use compatibility.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 13.1: Amend Section 15.2-2295**

- The amended language of the section should allow all localities, regardless of adjacency to a military installation, to enforce building regulations relating to sound attenuation if the jurisdiction is located in a 65 dB LDN or higher noise zone as defined in the currently published AICUZ.
- The amended language of the section should allow jurisdictions affected by noise from operations at Langley Air Force Base to enforce sound attenuation standards. Currently, this section pertains only to localities in whose jurisdiction a United States Master

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

Jet Base is located or adjacent, to enforce building regulations pertaining to sound attenuation.

RESPONSIBLE AGENCY: JLUS Implementation Committee and State of Virginia
TOTAL ROM COST: <$250,000

☐ **Action 13.2: Amend the Virginia Statewide Building Code**

- The amended language of the Code should include noise sensitive areas created by Langley AFB. Chapter 12, Section 1207.1 and 1207.4 requires sound attenuation for structures in jurisdictions where a United States Master Jet Base is located or any adjacent locality. The scope of this requirement should be revised to include Langley AFB and should be applicable in any jurisdiction affected by aircraft noise regardless of adjacency to the installation.

RESPONSIBLE AGENCY: JLUS Implementation Committee and State of Virginia
TOTAL ROM COST: <$250,000

☐ **Action 13.3: Amend Section 15.2-2204 D**

- The amended language of the section should account for the adopted JLUS MIOD, not just 'within 3,000 feet' of a boundary of a military base, installation, or airport.

RESPONSIBLE AGENCY: JLUS Implementation Committee and State of Virginia
TOTAL ROM COST: <$250,000

Strategy

Ensure that flight operations associated with future missions or airframes are designed to meet all operational requirements and, to the greatest extent possible, minimize impacts on existing developed areas.

Compatibility Factors Addressed

■	Compatible Land Use	***Purpose:*** Protect public health and safety while meeting operational needs.
■	Safety	
	Vertical Obstruction	
	Light and Glare	
■	Noise	
■	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 14.1:** For future missions or airframes at Langley AFB, design flight operations to meet all operational parameters and protect flight safety, while minimizing the impacts on existing developed areas, when possible.

RESPONSIBLE AGENCY: Langley AFB
TOTAL ROM COST: <$250,000

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	■
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	■
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	■
State of Virginia	
JLUS Imp. Committee	■
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	■
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- ■ Implementation Priority
- ■ Location Where Strategy Applies
- ■ Responsible Agency
- ■ Partner Agency
- ■ Total ROM Cost

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Strategy

Establish and protect areas surrounding Langley AFB from vertical structures that may intrude into airspace that is used for typical and emergency flight operations.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** Vertical obstructions / height issues are a major concern to military flight operations and public safety. Strategy is designed to enhance safety near Langley AFB.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 15.1:** Prepare and adopt consistent vertical obstruction standards (applying to new and substantially rehabilitated public buildings and/or structures, such as antennae) among regional communities. This action should include:

- Working with Langley AFB, identify existing vertical obstruction issues.
- For all structures, ensure compliance with FAA Part 77 requirements when establishing height regulations or restrictions.
- Modification of existing vertical obstruction policies, as needed, to extend regulations to cover the entire MIOD. Regulations should be reviewed against vertical obstruction guidance provided by Air Force regulations, and reflected in current Langley AFB AICUZ study.
- Work to ensure that each jurisdiction's current development standards are clearly defined.

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

- Work to ensure consistency among all jurisdiction.

RESPONSIBLE AGENCY: Cities of Hampton, Newport News, and Poquoson
TOTAL ROM COST: <$250,000 each

☐ **Action 15.2:** Langley AFB shall ensure information on arrival and departure corridors and other special elevation limits are made available to jurisdictions and management agencies for their use in planning and developing guidance.

RESPONSIBLE AGENCY: Langley AFB
TOTAL ROM COST: <$250,000

☐ **Action 15.3:** Evaluate and update as appropriate, the review and approval procedures established within each jurisdiction for public facilities such as communications towers and utility structures.

RESPONSIBLE AGENCY: Cities of Hampton, Newport News, and Poquoson
TOTAL ROM COST: <$250,000 each

☐ **Action 15.4:** Work with public utility companies and utility providers to maximize the use of existing corridors prior to development of new corridors. Require consultation with Langley AFB prior to the establishment of new corridors.

RESPONSIBLE AGENCY: Cities of Hampton, Newport News, and Poquoson
TOTAL ROM COST: <$250,000 each

- **Action 15.5:** As part of the permitting process for state issued permits (for new projects, project expansions or renewals) near Langley AFB and within the Vertical Obstruction MIA, the State of Virginia should evaluate the application relative for its compliance with vertical height guidance in FAA Part 77 guidelines and relative to the Air Force imaginary surface floor elevations. For projects that include an increase in vertical height over existing conditions within the Vertical Obstruction MIA, state regulators responsible for such permits should seek consultation with Langley AFB to discuss project alternatives or mitigations that would lessen potential vertical obstruction issues to acceptable levels.

  RESPONSIBLE AGENCY: State of Virginia
  TOTAL ROM COST: <$250,000

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Strategy

Prepare and adopt comprehensive land use policies to amend the City of Hampton, City of Poquoson, City of Newport News, and York County Comprehensive Plans. Policies should be modified or added to include:

- The establishment of the MIOD;
- Notification of Langley AFB for new developments within the MIOD; and
- The development of regulations to protect the missions at Langley AFB.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** Provide a policy basis for compatibility planning, including enhanced communication and promotion of compatible land uses.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 16.1: City of Newport News**. Newport News should consider adding policies that: 1) support interagency coordination and review, 2) policies identifying the locations and actions associated with the JLUS MIAs and MIOD for preventing encroachment specific to each MIA / MIOD, and 3) support future mission sustainability.

RESPONSIBLE AGENCY: City of Newport News
TOTAL ROM COST: <$250,000

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

- **Action 16.2:** **City of Poquoson**. Poquoson should consider adding policies that: 1) support interagency coordination and review, 2) policies identifying the locations and actions associated with the JLUS MIAs and MIOD for preventing encroachment specific to each MIA / MIOD, and 3) support future mission sustainability.

  RESPONSIBLE AGENCY: City of Poquoson
  TOTAL ROM COST: <$250,000

- **Action 16.3:** **York County**. York County should consider adding policies that: 1) support interagency coordination and review, 2) policies identifying the locations and actions associated with the JLUS MIAs and MIOD for preventing encroachment specific to each MIA / MIOD, and 3) support future mission sustainability.

  Future missions at Langley AFB are anticipated to deploy airframes potentially generating higher noise levels than are currently generated from operations at Langley AFB. A policy should be in place stating that should louder technology be deployed at Langley AFB, extending the 65 dBA LDN noise contour into York County, the county will develop sound attenuation standards for affected areas.

  RESPONSIBLE AGENCY: York County
  TOTAL ROM COST: <$250,000

- **Action 16.4:** Update the Langley AFB General Plan to incorporate the strategies in the final Hampton – Langley JLUS.

  RESPONSIBLE AGENCY: Langley AFB
  TOTAL ROM COST: <$250,000

Strategy

Develop or update light and glare controls to protect the operational environment near Langley AFB and the surrounding communities. These controls should be designed to reduce the amount of light that spills into surrounding areas and impacts regional ambient illumination.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** Excessive light in the area around Langley AFB can impact operational safety associated with flight operations. This strategy is designed to reduce overall impacts.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 17.1:** Work with Langley AFB to identify locations off of the installation with the greatest concerns relative to existing or future light and glare potentials, which impact current operations or could impact future military missions.

RESPONSIBLE AGENCY: JLUS Implementation Committee Jurisdictions
TOTAL ROM COST: <$250,000

☐ **Action 17.2:** Conduct a lighting study in the areas within the MIOD to identify the existing photometric conditions generated within the installation, as well as those within the surrounding communities.

RESPONSIBLE AGENCY: JLUS Implementation Committee Jurisdictions
TOTAL ROM COST: $250,000 - $500,000

☐ **Action 17.3:** High intensity areas (as identified under Action 17.1) and those areas specifically identified by Langley AFB (Action 17.2) may require mitigation measures (i.e., shielding, retrofitting, etc.) to reduce light pollution generated from land uses located within the community, which impact current operations or could impact future

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
Utility Providers	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

military missions.

The following should be considered when conducting this study:

- Tailor existing lighting standards to specifically address the impacts of light pollution on military missions; and
- Develop new lighting standards and fixture requirements to prevent increasing the intensity of light pollution.

RESPONSIBLE AGENCY: JLUS Implementation Committee Jurisdictions
TOTAL ROM COST: Accounted for under Action 17.2

☐ **Action 17.4:** Local jurisdictions, in coordination with Langley AFB, will develop lighting standards for exterior lighting as a component of their subdivision regulations (including street lighting fixtures). These lighting standards should be designed to reduce light impacts on night operations at Langley AFB these standards may include lighting:

- types
- locations
- intensities
- fixture types
- shielding and similar controls

RESPONSIBLE AGENCY: JLUS Implementation Committee Jurisdictions
TOTAL ROM COST: <$250,000

☐ **Action 17.5**: The JLUS Implementation Committee should work with electric utilities to develop a voluntary lighting retrofit program for businesses. This program will include:

- Distribution of materials to businesses informing them of the issue and programs available to assist them

- A self-help guide to assist businesses in the evaluation of their facilities and sites for compliance with dark sky directives
- A funding program to assist with retrofit projects, which may include grants, matching funds, and low interest loans
- Modify local permitting procedures to include a requirement for retrofitting as part of a major renovation project
- Work with local utilities to provide funding resources as part of their energy conservation programs
- Develop an incentive package for businesses to retrofit their lighting fixtures to meet regulations
- Jurisdictions would be responsible for providing the utility providers the dark sky lighting standards for their community

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: $250,000 - $500,000

☐ **Action 17.6:** The JLUS Implementation Committee should work with electric utilities and local jurisdictions to develop a voluntary lighting retrofit program for residential units. This program will include:

- Distribution of educational materials to homeowners and owners of rental property informing them of the issue, the benefits of dark sky (IDA approved) light fixtures, and programs available to assist them in retrofitting their lighting systems to include alternative lighting types for outdoor illumination and the placement and use of these fixtures
- Develop an incentive package for homeowners to retrofit their lighting fixtures to meet regulations
- A self-help guide to assist residents in the evaluation of their homes / units for compliance with dark sky directives

- Work with local retailers, utilities, community groups, jurisdictions to provide incentives and funding as part of their sustainability programs to offset homeowner costs

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: $250,000 - $500,000

Strategy

Evaluate opportunities to expand the use of real estate disclosures to be included in the titles to real property located within the MIOD.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** Communicate impacts associated with purchasing and developing property located within the MIOD.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 18.1:** Work with Department of Professional and Occupational Regulation, Real Estate Board, and local real estate representatives to develop and implement adequate language for inclusion in disclosure notices.

RESPONSIBLE AGENCY: JLUS Implementation Committee
TOTAL ROM COST: <$250,000

☐ **Action 18.2:** Coordinate language to be included in real estate disclosures with all jurisdictions within the MIOD.

RESPONSIBLE AGENCY: JLUS Implementation Committee Jurisdictions
TOTAL ROM COST: <$250,000

☐ **Action 18.3:** Work with Department of Professional and Occupational Regulation, Real Estate Board and local real estate representatives to ensure compliance with notification requirements.

RESPONSIBLE AGENCY: JLUS Implementation Committee Jurisdictions
TOTAL ROM COST: <$250,000

☐ **Action 18.4:** Local jurisdictions and Langley AFB should work cooperatively to make available the information required

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

for real estate disclosure (as defined by this strategy) regarding operational issues at Langley AFB (aircraft overflight, light and glare, etc.).

RESPONSIBLE AGENCY: JLUS Implementation Committee Jurisdictions
TOTAL ROM COST: <$250,000

- ☐ **Action 18.5:** Local jurisdictions will work with Langley AFB, through the JLUS Implementation Committee, to define the types of information that they will need to ensure accurate disclosure information

RESPONSIBLE AGENCY: JLUS Implementation Committee Jurisdictions
TOTAL ROM COST: <$250,000

Strategy

To reduce non-compatible uses as defined by the compatible land use table within the current Langley AFB AICUZ. The JLUS Implementation Committee will provide policy and technical guidance to local jurisdictions regarding zoning code changes to increase land use compatibility with Langley AFB. The overall intent is to identify encroachment issues confronting both the civilian community and the military installation and to recommend strategies to address the issues in the context of local comprehensive/general planning programs.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** This strategy is designed to increase land use compatibility with operations at Langley AFB through the use of zoning techniques. Non-compatibility may be in the form of specific land uses, the intensity of a specific use, or other land use characteristics.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.
- Figures 5-6 and 5-7 for specific parcels within the noise contours.

Implementation Actions

☐ **Action 19.1:** Examine opportunities and make recommendations to the appropriate decision making authorities (planning commissioners, city council, and board of supervisors) to rezone parcels located within the Clear Zone and Accident Potential Zones I and II to districts more compatible with the current Langley AFB AICUZ.

RESPONSIBLE AGENCY: City of Hampton
TOTAL ROM COST: <$250,000

☐ **Action 19.2:** Examine opportunities and make recommendations to the appropriate decision making authorities (planning commissioners, city council and board of supervisors) to rezone residential districts located within the 75 dB noise contour to districts more compatible with the current Langley AFB AICUZ.

RESPONSIBLE AGENCY: All jurisdictions within MIOD
TOTAL ROM COST: <$250,000

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

- **Action 19.3:** Examine opportunities and make recommendations to the appropriate decision making authorities (planning commissioners, city council and board of supervisors) to rezone vacant parcels located within the Noise MIA to a more compatible district based on the currently published Langley AFB AICUZ. Proffered conditions limiting non-compatible uses should be attached to rezonings within the Noise MIA, whenever possible.

  RESPONSIBLE AGENCY: All jurisdictions within MIOD
  TOTAL ROM COST: <$250,000

- **Action 19.4:** Examine opportunities and make recommendations to the appropriate decision making authorities (planning commissioners, city council and board of supervisors) to amend the Langley Flight Approach Districts M-4 (Land Intensive Manufacturing District) and M-5 (Mixed Use District) to meet the recommended land uses and intensities of the 2007 Langley AFB AICUZ.

  RESPONSIBLE AGENCY: City of Hampton
  TOTAL ROM COST: <$250,000

- **Action 19.5:** Each local jurisdiction should amend its Zoning map to include lines illustrating the location of the CZ, APZ I, APZ II and the currently published AICUZ noise contours as they apply to that jurisdiction's area of responsibility.

  RESPONSIBLE AGENCY: All jurisdictions within MIOD
  TOTAL ROM COST: <$250,000

Strategy

Evaluate building setbacks along the Langley AFB perimeter and identify options to increase consistency with Unified Facilities Criteria (UFC) 4-101-01.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** To increase land use and building design compatibility with Langley AFB.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 20.1** Prior to approval of subdivision, zoning, or other development permits, a conservation easement, deed restriction, or other covenant should be established such that there will be unimpeded line of sight within 33 feet of the Langley AFB boundary / fence line, per UFC 4-101-01.

- Structures greater than 6 inches in height should not be permitted within this zone, and vegetation should not exceed 4 inches in height, per Department of Defense Directive 0-2000.12-H and UFC 4-101-01. This will provide Langley personnel with adequate line-of-sight to identify and react to covert activities or threats originating outside of the base boundary.

RESPONSIBLE AGENCY: City of Hampton
TOTAL ROM COST: <$250,000

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
Air Force Association	
Hampton FADA	
HRMFFA	
HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

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Strategy

Review and monitor areas of concern and new projects that contain high intensity lighting.

Compatibility Factors Addressed

	Compatible Land Use	***Purpose:*** To prevent light and glare from interfering with Langley AFB missions.
	Safety	
	Vertical Obstruction	
	Light and Glare	
	Noise	
	Coordination	

Reference Maps

- Figures 5-1 through 5-4 for applicable MIA and/or MIOD locations.

Implementation Actions

☐ **Action 21.1:** Work with Langley AFB to identify areas of concern relative to light and glare issues and monitor changes over time. Langley AFB will provide information to local jurisdictions of locations and lighting types that will be of a concern.

These activities should be incorporated into reviews conducted under Strategy 8.

RESPONSIBLE AGENCY: All jurisdictions within MIOD
TOTAL ROM COST: <250,000

☐ **Action 21.2:** Review plans with Langley AFB of any applications for new intensive lighting uses, such as sports fields or large retail venues to ensure appropriate lighting mitigations (downlighting, shielding, no wall-mounted lighting, etc.) are contained in the plans for the facility.

RESPONSIBLE AGENCY: All jurisdictions within MIOD
TOTAL ROM COST: <250,000

PRIORITY	
Short-term (2010-12)	
Mid-term (2013-15)	
On-going	
LOCATIONS	
Clear Zone MIA	
APZ I MIA	
APZ II MIA	
5-mile BASH MIA	
Noise MIA	
Vertical Obstruction MIA	
MIOD	
RESPONSIBILITY	
City of Hampton	
City of Newport News	
City of Poquoson	
York County	
Langley AFB	
State of Virginia	
JLUS Imp. Committee	
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Hampton FADA	
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HRRPDC	
Langley Civic Leaders	
Thomas Nelson College	
USDA	
USFWS	
Virginia DOT / HRTPO	
VNDIA	
COST ESTIMATE (ROM)	
< $250,000	
$250,000 - $500,000	
$500,000 - $1,000,000	
> $1,000,000	

Legend

- Implementation Priority
- Location Where Strategy Applies
- Responsible Agency
- Partner Agency
- Total ROM Cost

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For more information contact:

City of Hampton
City Manager's Office
22 Lincoln Street
Hampton, VA 23669
(757) 727-6884

or visit the website at
www.hamptonlangleyjlus.com

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