Replacement of QF-4 Full-Scale Aerial Targets (FSATs) with QF-16 FSATs at Tyndall AFB, FL

Draft
Environmental Assessment

May 2013

DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)

REPLACEMENT OF QF-4 FULL-SCALE AERIAL TARGETS (FSATS) WITH QF-16 FSATS AT TYNDALL AFB, FLORIDA

Pursuant to provisions of the National Environmental Policy Act (NEPA), 42 United States Code (USC) 4321 to 4270d, implementing Council on Environmental Quality (CEQ) Regulations, 40 Code of Federal Regulations (CFR) 1500-1508, and 32 CFR Part 989, Environmental Impact Analysis Process, the U.S. Air Force (Air Force) assessed the potential environmental consequences associated with this proposal to replace 82nd Aerial Target Squadron QF-4 Full Scale Aerial Targets with QF-16 FSATs at Tyndall Air Force Base (AFB) in Florida (FL).

The Air Force has developed, tested, and employed manned and unmanned aircraft as target systems for fighter pilot and aircrew training since 1959. Currently, the F-4 serves as the only full-scale aerial target (FSAT) in the Air Force; they are designated QF-4s. The 82nd Aerial Target Squadron (82 ATRS) operates the only FSAT program. The 82 ATRS is located at Tyndall AFB (TAFB) and Detachment 1 (Det 1) of the 82 ATRS at Holloman AFB (HAFB). The Air Force has developed, tested, and employed manned and unmanned aircraft as target systems for fighter pilot and aircrew training since 1959. Currently, the F-4 serves as the only full-scale aerial target (FSAT) in the Air Force; they are designated QF-4s. The 82nd Aerial Target Squadron (82 ATRS) operates the only FSAT program. The 82 ATRS is located at Tyndall AFB (TAFB) and Detachment 1 (Det 1) of the 82 ATRS at Holloman AFB (HAFB). The only two bases currently basing QF-4 FSATs are TAFB and HAFB. Basing the QF-16s at any location other than these two bases would be both costly and an inefficient use of existing Air Force assets because other locations would not have the necessary infrastructure and/or personnel to support this change. The QF-4s currently located at TAFB are almost at the end of their useful service life and need to be replaced first.

The purpose of this Proposed Action is to replace the QF-4 FSATs at TAFB with QF-16 FSATs to meet Air Force requirements for full-scale aerial target training at that location. The need for the Proposed Action is to replace the nearly depleted and outmoded QF-4 FSATs at TAFB commencing in 2014. By meeting this need, the Air Force's mission of providing manned and unmanned target systems for pilot and aircrew training would continue to be met without interruption. Any decision on when to replace the QF-4 FSATs at HAFB with QF-16 FSATs will be made at a later date when the Air Force has more certainty about when the QF-4s at HAFB will no longer be serviceable. When/if such an action is considered, then that replacement analysis will be the subject of separate NEPA review.

The EA considers all potential impacts of the Proposed Action (Preferred Alternative) and the No Action Alternative. The EA also considers cumulative environmental impacts with other projects at TAFB.

PROPOSED ACTION (PREFERRED ALTERNATIVE)

The Proposed Action would replace 82 ATRS QF-4 FSATs with QF-16 FSATs at TAFB. Up to 60 QF-16 FSATs would replace the 40 QF-4s currently at TAFB. Aircraft replacement would occur over 4 years, starting in December 2013 (or Fiscal Year 2014 [FY14]). The QF-16 aircraft would use existing runways and operate in airspace in the same way the QF-4 aircraft do today. The contracted annual operational numbers would remain unchanged from current conditions whereby the exact number and type (test support, training, and operational requirements) of sorties are forecast annually in response to

Department of Defense (DoD) customer and unit requirements. Customer training flights are not forecast far in advance and vary year-to-year. However, to ensure that enough FSATs are available to meet customer demand, logistics and maintenance activities are contracted for an annual fixed number of sorties (and consequently, operations). Therefore, QF-16s would be operated (i.e., flight procedures, safety precautions, and maintenance) in the same manner as QF-4s.

The QF-16 would use the same regional airspace that QF-4s operate in now, at the same number of operations. No modifications or enhancements to airspace are proposed. The same procedures and processes in place for coordinating and scheduling airspace for QF-4 operations would be maintained for the QF-16s. As is currently the case, the majority of QF-16 manned, and all unmanned operations, would occur in W-151 over the Gulf of Mexico. Manned QF-16 aircraft could operate in any of the other local airspace units associated with TAFB.

There would be no changes to personnel numbers to accommodate the QF-4 replacement; however, six renovation and upgrade projects would be needed to successfully implement the replacement program at TAFB.

NO ACTION ALTERNATIVE

Under this alternative QF-4 FSATs would not be replaced with QF-16 FSAT; QF-4s would continue operating as described under baseline conditions. However, these third-generation fighter aircraft are reaching the end of their operational life, production has ceased, and they cannot be replaced. If this alternative were adopted, the inventory of QF-4 FSATs would eventually be depleted and the 82 ATRS no longer able to meet their mission as the only entity to provide full-scale aerial targets for DoD and Allied Forces for research, development, and test projects.

SUMMARY OF FINDINGS

Potential environmental consequences associated with the Proposed Action/Preferred Alternative and No Action Alternative are summarized below. A total of 10 resource categories were evaluated for their potential to be impacted by the Proposed Action/Preferred Alternative, and the following were identified for more detailed analysis: 1) noise, 2) air quality (to include greenhouse gases), 3) aircraft and public safety, 4) land use (including recreation and visual resources), 5) cultural and traditional resources, 6) earth resources (soils), 7) water resources (storm water), 8) hazardous and toxic materials and wastes, 9) wetlands, and 10) coastal zone.

Under the Proposed Action/Preferred Alternative, there would be imperceptible, minor changes in noise levels. There would be a decrease in the number of acres and people exposed to noise levels within the 65 decibel (dB), day-night average sound level (DNL) and greater noise contour bands. Air emissions of criteria pollutants would also experience a minor decrease, with the exception of nitrogen oxides (NO_x); however, the region surrounding TAFB is in attainment and the increase of NO_x would not change that status. The QF-16s would continue to follow all Federal Aviation Administration-regulated airspace management procedures and no perceptible changes in flight operations to conflict with existing civilian, commercial, and military use of the regional airspace. For land use, recreation, and visual resources, only negligible impacts would occur when compared to existing conditions. The number of sites storing, using, and handling hazardous materials may change slightly with the replacement of QF-4s with QF-16s at the installation; however, the Air Force system currently in place for hazardous materials

management and hazardous waste disposal ensures that hazardous materials are strictly controlled and only present in quantities required for mission accomplishment.

Cultural Resources. There would be no adverse impacts to eligible or potentially eligible archeological and architectural resources under the National Register of Historic Properties within the Area of Potential Effect (APE) under cultural and traditional resources. The Florida State Historic Preservation Office concurred with the Air Force conclusion of no adverse effects in the APE.

Earth Resources (Soils). Because the Proposed Action/Preferred Alternative would involve demolition and modifications to existing facilities and infrastructure, there would be minor impacts to soils. Erosion and sedimentation control techniques would be used to stabilize soils. These techniques include (but are not limited to) vegetative covers (e.g., permanent seeding, groundcover), silt fencing, and sediment traps. In the long term, proper stormwater design and management (e.g., breaking runoff flow and landscaping) would be implemented to decrease surface runoff and the associated risk of exposed soil erosion.

Water Resources. All required stormwater protection measures and minimization efforts would be employed by the construction contractor(s) to eliminate adverse pollutant runoff, minimize soil erosion, and protect against undue sedimentation of adjacent wetlands or surface water bodies to avoid short-term direct and indirect impacts to storm water. In accordance with Florida Department of Environmental Protection and Northwest Florida Water Management District guidelines, a minimum buffer of 15 feet and an average buffer of 25 feet would be maintained between upland activities and adjacent wetlands. TAFB is also required to evaluate its proposal in terms of consistency with the Coastal Zone Management Act. The Air Force has determined that the proposal is consistent with Florida's coastal management program and a positive consistency determination sent to the Florida DEP.

FINDING OF NO SIGNIFICANT IMPACT

Based on my review of the facts and analyses contained in the attached Final EA, conducted under the provisions of NEPA, CEQ Regulations, and 32 CFR Part 989, I conclude that the Preferred Alternative, cumulatively with other projects at Tyndall AFB, will not impose significant impacts on the quality of the human or natural environment. Accordingly, an Environmental Impact Statement is not required. The signing of this Finding of No Significant Impact completes the environmental impact analysis process.

CONCURRENCE

In conjunction with the Final Environmental Assessment proposal to replace 82nd Aerial Target Squadron QF-4 Full Scale Aerial Targets with QF-16 FSATs at Tyndall Air Force Base, Florida.

DAVID E. GRAFF, Colonel, USAF
Commander

Date

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ACRONYMS AND ABBREVIATIONS

49 WG	49th Wing
53 WG	53rd Wing
325 FW	325th Fighter Wing
82 ATRS	82nd Aerial Target Squadron
A/B	After burner
ABA	Architectural Barriers Act
ACC	Air Combat Command
ACM	Asbestos-Containing Materials
ADA	Americans with Disabilities Act
AFB	Air Force Base
AFI	Air Force Instruction
AFMC	Air Force Materiel Command
AFOSH	Air Force Occupational Safety and Health
AFPD	Air Force Policy Directive
AFSC	Air Force Safety Center
AGL	Above Ground Level
AHAS	Avian Hazard Advisory System
AICUZ	Air Installation Compatible Use Zone
Air Force/USAF	United States Air Force
AOC	Areas of Concern
APE	Area of Potential Effect
APZ	Accident Potential Zone
AQCR	Air Quality Control Region
ATCAA	Air Traffic Control Assigned Airspace
ATRS	Aerial Target Squadron
BAM	Bird Avoidance Model
BASH	Bird/Wildlife Aircraft Strike Hazard
BLM	Bureau of Land Management
BWWSA	Boles Well Water System Annex
CATEX	Categorical Exclusion
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	CO_2 Equivalent
CZ	Clear Zone
CZMA	Coastal Zone Management Act
dB	Decibels
dBA	A-weighted decibels
dBC	C-weighted decibels
DEP	Department of Environmental Protection
DMM	Discarded Military Munitions
DNL	Day-Night Average Sound Level
DoD	Department of Defense
DOT	Department of Transportation
DPE	Drone Peculiar Equipment
DT/OT	Developmental Test/Operational Test
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
EPU	Emergency Power Unit
ERP	Environmental Restoration Program
ETR	Engine Thrust Request
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Administration
FL	Florida
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FSAT	Full-Scale Aerial Targets
ft	Foot/feet
FW	Fighter Wing
FY	Fiscal Year
GHG	Greenhouse Gases
GIS	Geographic Information System
GWP	Global Warming Potential
H-70	Hydrazine 70 Percent
HWMP	Hazardous Waste Management Plan
IAP	Initial Accumulation Point
ICRMP	Integrated Cultural Resources Management Plan
IFR	Instrument Flight Rules
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
lb	Pound
LBP	Lead-Based Paint
L_{dnmr}	Onset-Rate Adjusted Day-Night Average Sound Level
L_{max}	Maximum Sound Level
MMRP	Military Munitions Response Program
MOA	Military Operations Areas
mph	Miles Per Hour
MSL	Mean Sea Level
N_2O	Nitrous Oxide
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NC	Engine Core
NEPA	National Environmental Policy Act
NEXRAD	Next Generation Radar
NHPA	National Historic Preservation Act
nm	Nautical Miles
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System

NRHP	National Register of Historic Places
NULLO	Not Under Live Local Operations
NWFWMD	Northwest Florida Water Management District
O_3	Ozone
O&M	Operations and Maintenance
OSHA	Occupational and Safety Health Administration
Pb	Lead
PL	Public Law
$PM_{2.5}$	Particulate Matter at 2.5 micrometers
PM_{10}	Particulate Matter at 10 micrometers
R-	Restricted Area
RCRA	Resource Conservation and Recovery Act
RPM	Revolutions per Minute
SEL	Sound Exposure Level
sf	Square Foot
SHPO	State Historic Preservation Office
SPCCP	Spill Prevention, Control, and Countermeasures Plan
SO_2	Sulfur Dioxide
SWPPP	Storm Water Pollution Prevention Plan
SWQB	Surface Water Quality Bureau
TAFB	Tyndall Air Force Base
TSCA	Toxic Substances Control Act
Tribes	American Indian Tribes
USACE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UXO	Unexploded Ordnance
VFR	Visual Flight Rules
VOC	Volatile Organic Compounds
W-	Warning Area
WEG	Weapons Evaluation Group
WG	Wing
WIC	Weapons Instructor School
WMA	Wildlife Management Area
WSEP	Weapons System Evaluation Program

1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

CHAPTER 1 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The United States Air Force (Air Force or USAF) has developed, tested, and employed manned and unmanned aircraft as target systems for fighter pilot and aircrew training since 1959 (as prescribed in Title 10 of the United States Code [USC] section 2366). Currently, the F-4 serves as the only full-scale aerial target (FSAT) in the Air Force; they are designated QF-4s. The 82nd Aerial Target Squadron (82 ATRS) operates the Department of Defense's (DoD) only FSAT program, maintaining modified QF-4 aircraft for aerial targeting purposes at Tyndall Air Force Base (AFB) (Eglin AFB 2002). The 82 ATRS is located at Tyndall Air Force Base (TAFB) in Florida (FL) and Detachment 1 (Det 1) of the 82 ATRS at Holloman AFB (HAFB) in New Mexico (NM) (Figure 1-1). Both provide target support for the Air Force's Weapon System Evaluation Program (WSEP) and Weapons Instructor Course (WIC). At TAFB, this includes supporting DoD users in the Gulf of Mexico ranges and airspace. At HAFB, Det 1 supports the Air Force WSEP and White Sands Missile Range (WSMR) research, development, and test projects in its ranges and airspace. The 82 ATRS and Det 1 fall under the command of the 53rd Weapons Evaluation Group (WEG) at TAFB, which is in turn, a subordinate element of the 53rd Wing (53 WG) at Eglin AFB, FL.

In use since the late 1990s, the QF-4 production run has drawn to a close and the FSAT inventory will soon be depleted. Replacement FSAT aircraft are needed. In addition, pilots and aircrews are facing new combat threats with the transition to more technologically advanced aircraft (such as the F-22 and F-35) and more advanced target systems are also needed. The best way to meet these needs is to replace the aging and depleting QF-4s with aircraft from the Air Force inventory. Effective and efficient use of available resources is of primary importance; therefore, the Air Force seeks to maximize the use of its current assets and capitalize on existing support capabilities. This would be done by replacing QF-4 FSATs with F-16 aircraft, modified for remote, unmanned target control (designated "QF-16" for use as FSATs).

For this EA, the QF-4 replacement is being evaluated for the TAFB location only. The QF-4 replacement for the HAFB location will be evaluated in a separate EA. This is due to the delay of the scheduled replacement of the QF-4s at HAFB and the urgency to complete the analysis for TAFB due to replacement scheduled in calendar year 2014.

1.2 PURPOSE OF AND NEED FOR THE ACTION

The Air Force has developed, tested, and employed manned and unmanned aircraft as target systems for fighter pilot and aircrew training since 1959. Currently, the F-4 serves as the only full-scale aerial target (FSAT) in the Air Force; they are designated QF-4s. The 82nd Aerial Target Squadron (82 ATRS) operates the only FSAT program. The 82 ATRS is located at Tyndall AFB (TAFB) and Detachment 1 (Det 1) of the 82 ATRS at Holloman AFB (HAFB). The only two bases currently basing QF-4 FSATs are TAFB and HAFB. Basing the QF-16s at any location other than these two bases would be both costly and an inefficient use of existing Air Force assets because other locations would not have the necessary infrastructure and/or personnel to support this change. The QF-4s currently located at TAFB are almost at the end of their useful service life and need to be replaced first.

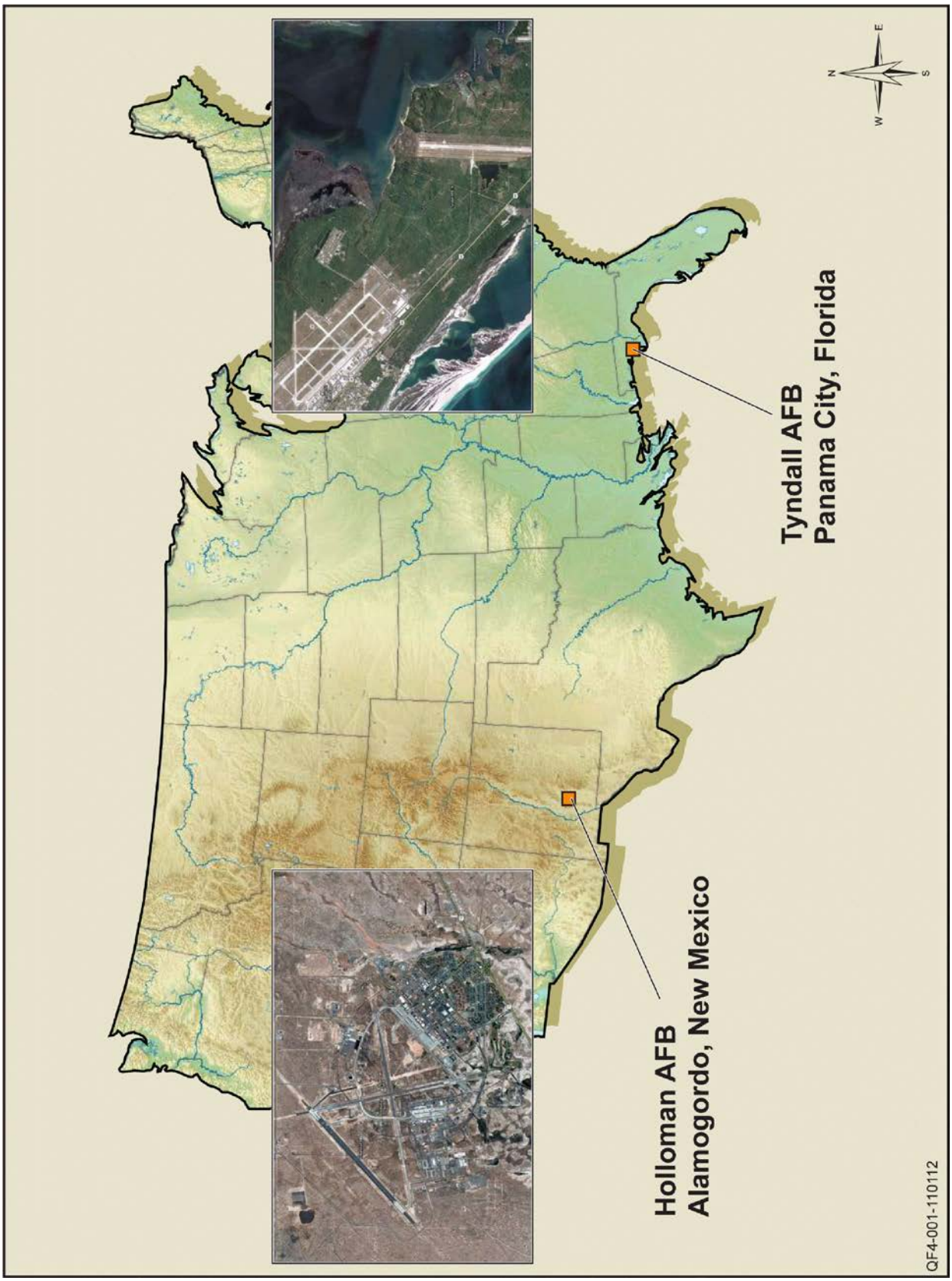


Figure 1-1 Tyndall AFB and Holloman AFB Location Map

The ***purpose*** of this Proposed Action is to replace the QF-4 FSATs at TAFB with QF-16 FSATs to meet Air Force requirements for full-scale aerial target training at that location. The ***need*** for the Proposed Action is to replace the nearly depleted and outmoded QF-4 FSATs at TAFB commencing in 2014. By meeting this need, the Air Force's mission of providing manned and unmanned target systems for pilot and aircrew training would continue to be met without interruption. Any decision on when to replace the QF-4 FSATs at HAFB with QF-16 FSATs will be made at a later date when the Air Force has more certainty about when the QF-4s at HAFB will no longer be serviceable. When/if such an action is considered, then that replacement analysis will be the subject of separate NEPA review.

As mentioned above, the QF-4 airframe was developed and fielded in the late 1990s. It is a manned or unmanned (remotely controlled drone), full-scale, supersonic, afterburning aerial target, capable of all-attitude, high "g" maneuvering flight. Production of the QF-4 has drawn to a close and the number of available FSATs will soon be depleted. While careful management of QF-4 target losses (or “kills”) could support continued live fire/lethality testing for a few years, eventually the QF-4 inventory will be exhausted. As the Air Force contemplated the future of the FSAT program, the QF-4’s technological and programmatic gaps were primary considerations when identifying their replacement.

Technological gains over the last 15 to 20 years have made it more difficult for the QF-4 to meet the training and testing requirements of more advanced munitions and aircraft. Existing QF-4 capabilities and technology do not replicate the advancements found in fourth (e.g., F-16) or fifth (e.g., F-22) generation fighter aircraft performance. It would neither be cost effective nor practicable to “upgrade” QF-4s with technological advances given their production run has halted; therefore, the Air Force chose to replace QF-4 FSATS with QF-16s. These fourth generation aircraft can support the full-scale target capabilities required to meet WSEP, Weapons Instructor Course, and WSMR research, development, and test missions. The Air Force has identified the QF-16 as being able to meet the advanced munitions and aircraft training and testing requirements and of replicating current and future threats.

1.3 THE ENVIRONMENTAL REVIEW PROCESS

1.3.1 The National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires consideration of environmental issues in federal agency planning and decision making. Under NEPA, federal agencies must prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS) for any major federal action, except those actions that are determined to be “categorically excluded” from further analysis. An EA is a concise public document that provides sufficient analysis for determining whether the potential environmental impacts of a Proposed Action are significant, resulting in the preparation of an EIS; or if not significant, resulting in the preparation of a Finding of No Significant Impact (FONSI), and where applicable, a Finding of No Practicable Alternative (FONPA).

1.3.2 Documents Incorporated by Reference

In accordance with Council on Environmental Quality (CEQ) regulations for implementing NEPA and with the intent of reducing the size of this document, the following material (ordered by date) relevant to the Proposed Action is being incorporated by reference. Actions related to training operations by aircraft at the two bases have been included in the environmental analysis of this EA.

- Record of Decision and Final EIS. F-35A Training Basing Environmental Impact Statement (EIS). June 2012 (Air Force 2012).
- FONSI/FONPA and Final EA. F-22 Operational Squadron and T-38 Detachment Beddown at Tyndall AFB, FL. August 2011 (Tyndall AFB 2011).
- Categorical Exclusion was approved to conduct the initial testing of the QF-16 Development Test/Operational Test Beddown at Tyndall AFB/Eglin Test and Training Range, FL. June 2008 (Tyndall AFB 2008a).
- Final EA. Eglin Gulf Test and Training Range Programmatic Assessment. November 2002 (Eglin AFB 2002).
- FONSI (March 1995) and Final EA (November 1994). Final Life Cycle Environmental Assessment for the QF-4 FSAT (Eglin AFB 1994, 1995).

1.3.3 Interagency and Intergovernmental Coordination for Environmental Planning and Scoping

Scoping is an early and open process for developing the breadth of issues to be addressed in the EA and for identifying significant concerns related to a Proposed Action. Through the Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) process (Air Force Instruction [AFI] 32-7060), the Air Force notified relevant federal, state, and local agencies of the Proposed Action in September 2012. In addition, the Air Force notified federally-recognized American Indian Tribes (Tribes) that might have an interest in the Proposed Action. Of the 8 agency and 4 Tribal IICEP letters sent in September 2012, the Air Force received two responses (Appendix A provides a copy of the IICEP letter and the responses received). The Florida Department of Environmental Protection indicated that prior to implementing the project TAFB will need to obtain storm water, drinking water, and domestic wastewater permits as well as ensure that the action is consistent with the Florida Coastal Management Program. The Florida State Historic Preservation Office (SHPO) indicated that historic properties could be adversely affected (see Section 1.4.1 for consultation results with SHPO).

1.4 REGULATORY AND GOVERNMENT-TO-GOVERNMENT COMPLIANCE

In accordance with Section 7 of the Endangered Species Act, the U.S. Fish and Wildlife Service (USFWS) was consulted, as well as the Florida SHPO (per Section 106 of the NHPA). Pursuant to Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, the Air Force initiated government-to-government, project-specific consultation with federally-recognized American Indian Tribes. Appendix A provides copies of the agency consultation and government-to-government coordination letters and responses.

1.4.1 Regulatory Consultation

In November 2012 consultation letters were sent to the Florida Region 4 USFWS Office and Florida SHPO. The USFWS, Region 4 responded that they determined that the proposed action was not likely to adversely affect any species under the Endangered Species Act. The Florida SHPO requested further information in response to IICEP and TAFB coordinated with the SHPO to address their concerns. In April 2013, the Florida SHPO concurred with the Air Force conclusion of no adverse effects.

1.4.2 Government-to-Government

Project specific consultation letters were sent in November 2012 to the Muscogee (Creek) Nation, Miccosukee Tribe of Indians in Florida, Poarch Band of Creek Indians, and the Seminole Tribe of Florida

notifying them of the Air Force determination that no cultural resources would be affected and requesting if they would wish to undertake further consultation. Of the four American Indian Tribes, one response was received from the Muscogee (Creek) Nation as of publication of the Draft EA. They indicated that they did not identify any significant historical or cultural sites at this exact location and recommended a finding of "No Effect." They did state, however, that due to the historic presence of their people in the project area, inadvertent discoveries of human remains and related Native American Graves Protection and Repatriation Act items may occur. If such items were discovered, they request that all work cease and the Muscogee (Creek) nation and other appropriate agencies be immediately notified.

1.5 LEAD AND COOPERATING AGENCIES

The Air Force is the proponent for the replacement of QF-4 with QF-16 FSATs and is the lead agency for the preparation of the EA.

1.6 DECISION TO BE MADE

Based on the analysis in this EA, the Air Force will make one of three decisions regarding the Proposed Action:

1) Choose the alternative that best meets the purpose and need and sign a FONSI or FONSI/FONPA, allowing implementation of the selected alternative;
2) Initiate preparation of an EIS if it is determined that significant impacts would occur with implementation of the Proposed Action; or
3) Select the No Action Alternative, whereby the Proposed Action would not be implemented.

1.7 ORGANIZATION OF THE ENVIRONMENTAL ASSESSMENT

Chapter 1 (here) presents the purpose and need for the QF-4 Replacement. It explains the background of and need for the action. It also discusses the public involvement and scoping process.

Chapter 2 describes the Proposed Action and alternatives, including a detailed discussion of the alternative identification process. It also addresses alternatives considered but not carried forward and provides a comparative summary of the effects of the Proposed Action and alternatives for the various environmental resources.

Chapter 3 presents definitions, analysis methodology, and affected environment identification for each of the resources evaluated. The chapter then details baseline conditions for each of the resources and describes the potential environmental consequences from the Proposed Action and alternatives.

Chapter 4 presents cumulative effects, **Chapter 5** describes other NEPA considerations, and **Chapter 6** provides references cited in the EA (persons or agencies contacted during the course of preparing this EA are cited as personal communications and also listed in this section). **Chapter 7** lists the preparers and contributors.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

CHAPTER 2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

Air Force regulations (32 Code of Federal Regulations [CFR] Part 989) implementing NEPA (40 CFR Section 1502.14) require rigorous exploration and objective evaluation of all reasonable alternatives for a federal action. Each of the alternatives must be feasible, reasonable, and meet the stated purpose and need of the Proposed Action.

The following section details the elements of the Proposed Action; identifies alternatives that meet the purpose and need; and in accordance with CEQ regulations (40 CFR Section 1502.14[d]), includes a No Action Alternative that serves as a baseline against which environmental impacts of the Proposed Action and alternatives are measured.

2.1 INTRODUCTION

Located near Panama City, FL, TAFB is home to the 325th Fighter Wing (325 FW). The 325 FW supports operations conducted by F-22, T-38, MU-2, and E-9A aircraft, and several tenant units including the 53 WEG. As mentioned in Chapter 1, the 82 ATRS is under the command of the 53 WEG and operates DoD's only FSAT program. The squadron maintains a baseline inventory of 50 modified QF-4 aircraft at TAFB for U.S. Air Force, Navy, Army, and Allied Forces customers. To support its operational mission, the 82 ATRS maintains three, 120-foot (ft) drone recovery vessels and two smaller patrol boats to recover targets, support range safety, and conduct salvage operations in the Gulf of Mexico. The Air Force's only two E-9As provide overwater and overland aerial surveillance and relay missile and target telemetry for over-the-horizon coverage of WSEP operations. Primary airspace used by QF-4 aircraft includes overland Military Operations Areas (MOAs) and overwater Warning Areas (W-) (Figure 2-1). The QF-4 also operates (to a lesser degree) in Eglin Test and Training Range restricted airspace, Air Traffic Control Assigned Airspace, and on Military Training Routes.

The 82 ATRS aircraft are maintained and operated under contract (Air Combat Command 2012a). The contract is based on a fixed number of annual QF-4 operations; therefore, regardless of the inventory, or how many QF-4s are parked at an airfield, the number of operations remains consistent. The Air Force could modify the contract but would only do so if there were a need (expressed by its customers) to support an increase in FSAT test operations. Currently, no such need is anticipated, so the number of FSAT operations would remain the same whether they are QF-4s or QF-16s.

2.2 SELECTION STANDARDS

Effective and efficient use of available resources is of primary importance; therefore, the Air Force seeks to maximize the use of its assets and capitalize on existing full scale target missions and support capabilities. Currently, QF-4 FSATs in support of the Air Force WSEP, WIC, as well as research, development, and test projects are located at two bases—TAFB and HAFB. These two bases already have the assets such as infrastructure, airspace, and ranges required to operate manned and unmanned QF-4 target aircraft, and have the potential for upgrading to accommodate the QF-16 FSATs.

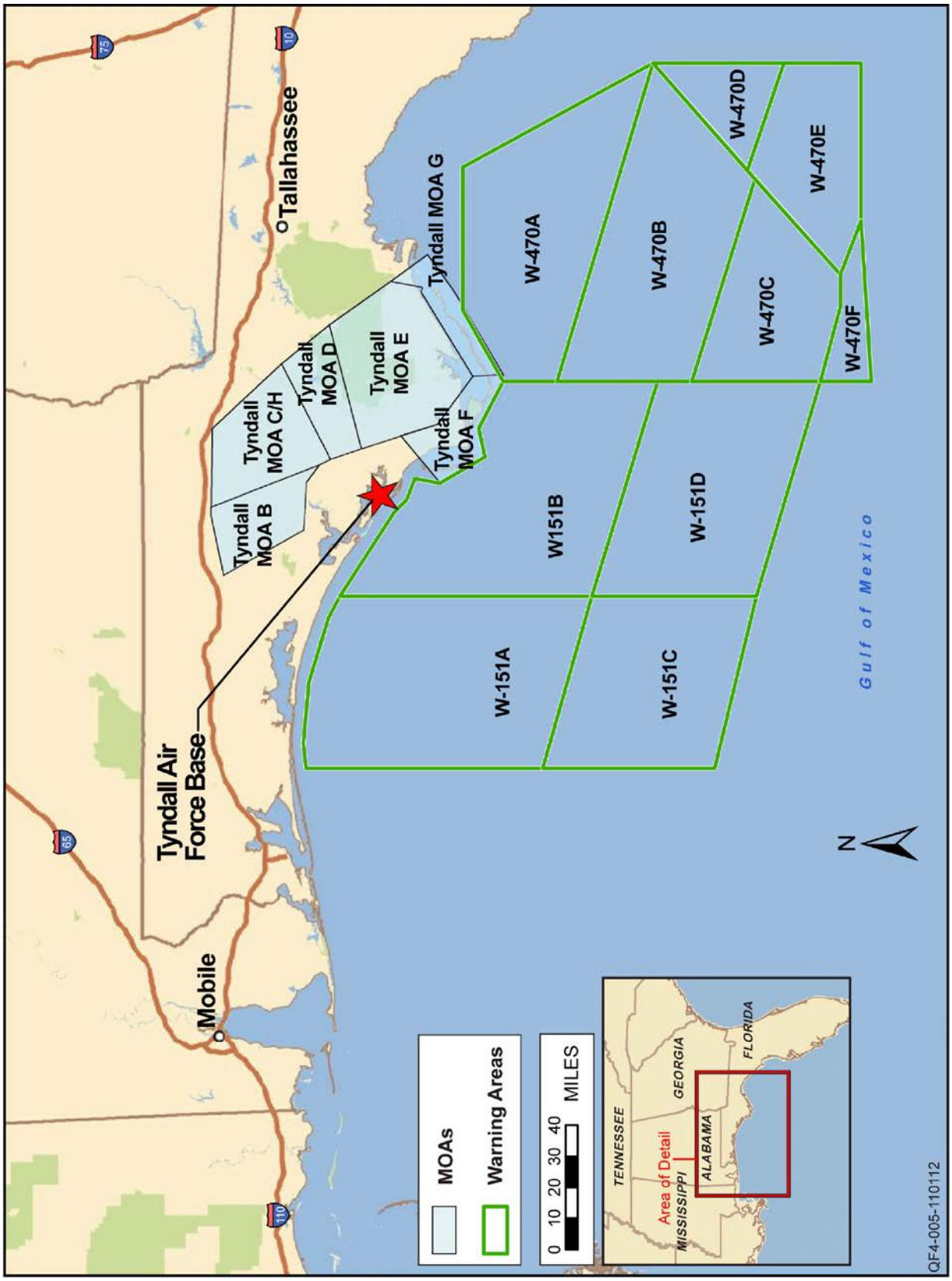


Figure 2-1 Tyndall AFB QF-4 Primary Airspace

The Air Force selected F-16s to replace QF-4 because:

- F-16s, as fourth generation fighter aircraft, approximate the performance of current and future generations of threat aircraft.
- There are adequate numbers of F-16s in the Air Force inventory to support the FSAT program into the future.
- There is an existing cadre of pilots who have the skills and knowledge to operate the aircraft and available support personnel and equipment to maintain them.

The following base assets are required to accomodate the QF-16s and are used as the reasonable selection standards to evaluate the proposed action (Section 2.4.1) and the alternatives considered but not carried forward (Section 2.4.3).

- A runway that supports unmanned (drone) operations during launch and recovery so that drone operations do not conflict with other based aircraft operations.
- Sufficient existing ancillary facilities (and/or facilities that can be expanded or upgraded in 2013 to accommodate the QF-16 FSATs with target arrival dates commencing in 2014).
- Communications and command/control infrastructure to safely and productively operate FSATs. Direct access for drone aircraft into restricted airspace.
- An airfield that is situated so as not to have unmanned, drone aircraft flying over populated areas.
- Ability to support the 82 ATRS mission to provide FSAT and sub-scale aerial targets
- Runway Clear Zones of sufficient size to accommodate recovery when targets are damaged during training.
- Airspace of sufficient size and isolation to accommodate drone target, research, development, and battle training requirements.

Tyndall AFB meets all of the above reasonable selection standards. Therefore, TAFB was adopted as the best location to base replacement QF-16 FSATs. Holloman AFB meets 10 of the 11 selection standards. However, HAFB will not have the necessary facilities to accommodate the QF-4 replacement by 2014.

2.3 PROPOSED ACTION

The Proposed Action would replace 82 ATRS QF-4 FSATs with QF-16 FSATs at TAFB. Up to 60 QF-16 FSATs would replace the 40 QF-4s currently based at TAFB. Aircraft replacement would occur over 4 years, starting in Fiscal Year 2014 (FY14). Table 2-1 outlines the transition phases for TAFB. Please note that the table shows conservative, maximum number of aircraft in any given year.

Facility and infrastructure upgrades would occur and a hydrazine storage facility would be established in an existing building at TAFB prior to QF-16 arrival.

Table 2-1 QF-4 to QF-16 TAFB Transition Schedule

Primary Aircraft Inventory	*Proposed Action*					*Total End State*	*No Action Alternative*
	Baseline	FY14	FY15	FY16	FY17		
QF-16	*0*	*5*	*20*	*40*	*60*	*60*	*0*
QF-4	*50*	*35*	*0*	*0*	*0*	*0*	*0*
F-22 (training)	28	28	28	28	28	28	28
F-22 (operational)	21	21	21	21	21	21	21
T-38	20	20	20	20	20	20	20
MU-2	8	8	8	8	8	8	8
E-9A	2	2	2	2	2	2	2
Total Aircraft	**129**	**119**	**99**	**119**	**139**	**139**	**79**
Change from Baseline	-	*-10*	*-30*	*-10*	*+10*	*+10*	*-50*

The QF-16, like the QF-4, is a manned and unmanned (remotely-controlled drone), full scale, supersonic, after-burning aerial target, capable of all-attitude, high "g" maneuvering flight. Table 2-2 provides a brief comparison of QF-4 and QF-16 characteristics. The QF-16 is a modified F-16 that can be flown by a pilot or remotely controlled by Drone Peculiar Equipment (DPE). When airborne, the remotely-controlled drone is flown using a fixed ground control station through a command telemetry link. The QF-16 provides representative threat presentations for developmental, operational, and live-fire tests of U.S. and foreign weapon systems. It can simulate fourth generation fighter threats, aircraft agility, and performance, as well as infrared and radio frequency signatures. It will carry Electronic Attack and Electronic Counter Countermeasures expendable payloads; be capable of formation flight with other unmanned aircraft; be equipped with a Flight Termination System, scoring system, Identification Friend or Foe; and be able to provide target position, performance, and health information via data link.

Table 2-2 Comparison of FSAT Aircraft Characteristics

Aircraft	*Engines*	*Speed*	*Flight Ceiling*	*Defensive Counter Measures*
QF-16	1 at 27,000 pounds thrust	Mach 2	Above 50,000 ft mean sea level (MSL)	Chaff and Flares*
QF- 4	2 at 17,845 pounds thrust	Mach 2.23	60,000 ft MSL	Chaff and Flares*

Note: Chaff and flares would only be deployed in airspace approved for such use and within the approved amount and type.

2.3.1 Flight Operations

This EA uses two terms to describe different components of aircraft flying activities: *sortie and operation.* Each has a distinct meaning and commonly applies to a specific set of activities in a particular airspace environment. These terms also provide a means to quantify activities for the purposes of analysis. A *sortie* consists of a single military aircraft from a take-off through a landing and includes a flying mission. For this EA, the term *sortie* is commonly used when summarizing an amount of flight activity from a base. However, the term receives rare use since it provides limited analytic and descriptive value. A sortie can include more than one *operation.* The term *operation* can apply to both airfield and airspace activities, and represents the primary analytical and descriptive quantifier of aircraft flight activities presented in this EA. At an airfield, an operation comprises one action such as a landing, take-off, or closed-pattern (a closed-pattern is considered two operations because it includes both a departure from and arrival to the runway). For airspace and ranges, an operation comprises the

use of one airspace unit (e.g., MOA, restricted area, or Warning Area) by one aircraft. Each time a single aircraft flies in a different airspace unit, one operation is counted for the unit.

The QF-16 aircraft would use existing runways and operate in airspace similar to the way the QF-4 aircraft do today.

Airfield. Table 2-3 presents baseline and proposed annual airfield operations by aircraft based at TAFB. Baseline operations are provided as a benchmark against which proposed activities can be assessed. In this EA, baseline airfield operations are those conditions that will be found when QF-16s start arriving and operating at the bases in FY14. Operations presented in the table were derived using the best available information from previous NEPA documents where the actions have already been approved and would be implemented (refer to Section 1.3.2, *Documents Incorporated by Reference*). At TAFB, baseline airfield operations are those that would be found after the beddown (or basing) of F-22 and T-38 aircraft (see the Final EA and signed FONSI for F-22 Operational Squadron and T-38 Detachment Beddown at Tyndall AFB [August 2011]). Transient (i.e., visiting) aircraft operations also are included as part of baseline conditions. All QF-4 operations occur during environmental daytime hours, between 7 a.m. and 10 p.m.; none occur between the hours of 10 p.m. and 7 a.m. (or environmental night).

Table 2-3 Baseline QF-4 and Proposed QF-16 Annual Airfield Operations

Location	*Baseline*	*Proposed Action*	*No-Action Alternative*
Based QF-4	3,045	0	3,045
Proposed QF-16	0	3,045	0
Other Based and Transient Aircraft	76,153	76,153	76,153
Total Airfield Operations	79,197	79,197	79,197
Percent Change	0	0	0

Source: Tyndall AFB 2011.

As presented in Table 2-3, there are 79,197 annual baseline airfield operations at TAFB (Tyndall AFB 2011). Other based and transient aircraft operations were assumed to remain unchanged under the Proposed Action/Preferred Alternative (Air Combat Command 2012b). As is currently the case, QF-16s would conduct no airfield operations during environmental nighttime hours between 10 p.m. and 7 a.m. All unmanned (or what is termed Not Under Live Local Operations [NULLO]) takeoffs and landings would occur at the drone runways. Manned operations would use any of the available runways.

Airspace. Currently, QF-4s do not have a planned flying hour program. Exact number and type (test support, training, and operational requirements) of sorties are forecast annually in response to DoD customer and unit training requirements. The training flights are not forecast far in advance and vary year-to-year. However, to ensure that enough FSATs are available to meet customer demand, logistics and maintenance activities are contracted for an annual fixed number of sorties (and consequently, operations). The QF-16s would be operated in the same manner as QF-4s and the contracted annual operational numbers would remain unchanged (Air Combat Command 2012b).

The QF-16 would use the same regional airspace that QF-4s operate in now, at the same number of operations. No modifications or enhancements to airspace are proposed. The same procedures and processes in place for coordinating and scheduling airspace for QF-4 operations would be maintained for the QF-16s. As is currently the case, the majority of QF-16 manned, and all unmanned operations, would

occur in W-151. Manned QF-16 aircraft could operate in any of the other local airspace units (refer to Figure 1-1), however, operations would not exceed the number or duration conducted by QF-4s under baseline conditions.

2.3.2 Facilities

Six operations and maintenance (O&M) projects were identified to adequately support conversion from QF-4s to QF-16s (Table 2-4). Figure 2-2 illustrates where these infrastructure upgrades are planned. It is anticipated that construction would occur within a 6-month timeframe starting around October 2013.

Table 2-4 Tyndall AFB Proposed O&M Projects for QF-16

Description	*Project Size*	*Project Detail*
Addition/Repair Drone Maintenance Facility	NA	Install One Roll-Up Door, perform interior renovations, paint hangar doors, and add fire suppression in Building 9310
Addition/Repair Egress, Hangar 5	2,466 square feet (sf)	Addition to Life Support Section
Hydrazine Storage Facility	NA	Renovate Building 45 in vicinity of Taxiway F
Water/Wastewater Lines	4,900 linear ft	Extend lines to Building 9310
Drone Runway/Ramp	900,000 sf	Maintenance and Repair
Interior Facility/Infrastructure for Integrated Maintenance Data Systems	NA	Repair

2.3.3 Personnel Changes

Personnel changes associated with QF-16 replacement would be negligible. The majority of current QF-4 staff would remain and be retrained on the new QF-16 system. No change to government personnel authorizations or civilian personnel is anticipated. Personnel assignment actions (i.e., rotation cycles) are also anticipated to be minimal.

2.3.4 Logistics and Maintenance

For QF-16s, logistics and maintenance activities would be done under a fixed price contract, similar to what is provided for QF-4s. Manned QF-16 aircraft would fly with fully functional hydrazine systems which use an aqueous mixture of 70 percent hydrazine (Chemical Abstract Service No.302-01-2), known as H-70. The hydrazine is used for emergency backup power generation in the event primary power is lost due to engine failure. This backup power is provided by an Emergency Power Unit that contains 6.7 gallons of H-70. Due to its volatility, a specialized facility is required for hydrazine storage.

Hydrazine tanks would be removed from unmanned QF-16 aircraft. In the event of engine failure during flight, the drones are equipped with the ability to be safely destructed by remote control.

2.3.5 Communications and Command/Control Infrastructure

Converting from QF-4 to QF-16 FSATs would be seamless. The QF-16 FSAT would use the same systems now being used for QF-4 FSAT operations. The base has the fixed ground control stations integrated via a command telemetry link to safely operate manned and unmanned FSATs. In addition, support equipment such as the Automated System Test Set and Portable Flight-line Tester are already in place and would be used for QF-16 operations.

Figure 2-2 Proposed Areas for Infrastructure Upgrades at TAFB

2.4 DESCRIPTION OF ALTERNATIVES

The only location considered for basing QF-16 FSATs was TAFB. Basing the QF-16s at any location other than TAFB, would not meet the selection standards presented in Section 2.2.

2.4.1 Proposed Action/Preferred Alternative: Basing QF-16 FSATs at TAFB

At TAFB there is the capability to store/park up to 60 QF-16. Again, due to the maintenance and logistics contract, there would be no changes in operational numbers if 60 QF-16 FSATs were based at TAFB. See the detailed description of the Proposed Action in Section 2.3 above.

2.4.2 No Action Alternative

Under the No Action Alternative, QF-4 FSATs would not be replaced with QF-16 FSAT; QF-4s would continue operating as described under baseline conditions. However, these third-generation fighter aircraft are reaching the end of their operational life, production has ceased, and they cannot be replaced. If this alternative were adopted, the inventory of QF-4 FSATs would eventually be depleted and the 82 ATRS no longer able to meet their mission of providing full-scale aerial targets for DoD and Allied Forces for research, development, and test projects.

2.4.3 Alternatives Considered but Not Carried Forward

Holloman AFB was considered as an alternative but was eliminated (determined not to be a viable alternative) based on a review of the reasonable selection standards (Section 2.2), which included ability to accommodate the required infrastructure and other upgrades to on-base facilities by the time the QF-16s arrive in FY14. Any decision on when to replace the QF-4 FSATs at HAFB with QF-16 FSATs will be made at a later date when the Air Force has more certainty about when the QF-4s at HAFB will no longer be serviceable. When/if such a proposed action is considered, then that replacement analysis will be the subject of separate NEPA review.

2.5 COMPARISON OF IMPACTS

The analysis in this EA established that the proposed replacement of QF-4 with QF-16 FSAT aircraft would result in minimal effects (positive and negative) on resources; however, none of these impacts would be of sufficient magnitude to require mitigation. Table 2-5 summarizes potential environmental impacts according to the Proposed Action/Preferred Alternative and the No Action Alternative.

Table 2-5 Summary and Comparison of Impacts

Resources	***Impacts According to Affected Area***	
	No Action Alternative	**Proposed Action/Preferred Alternative**
Noise	No change when compared to baseline conditions	Minor, but imperceptible decrease in areas and population affected by noise levels 65 dB DNL and greater.

Table 2-5 Summary and Comparison of Impacts

Resources	*Impacts According to Affected Area*	
	No Action Alternative	**Proposed Action/Preferred Alternative**
Air Quality	No change when compared to baseline conditions	Region is in attainment. There would be a 30-ton per year increase in NO_x emissions; all other criteria pollutant emissions decrease. A less than 1 percent regional contribution of CO, VOCs, SO_2, PM_{10}, $PM_{2.5}$, and NO_x emissions. Does not change attainment status or represent a major contributor to regional emissions. Overall reduction of more than 6,100 metric tons per year of GHG emissions.
Aircraft and Public Safety	No change when compared to baseline conditions	Mishap rate for F-16s is less than those for F-4s. No change to emergency responses or BASH conditions anticipated.
Land Use, Recreation, and Visual Resources	No change when compared to baseline conditions	No change to how lands are used; no recreational opportunities would be affected; and the visual landscape would not change.
Cultural and Traditional Resources	No change when compared to baseline conditions	No adverse effects to APE for cultural or traditional resources would occur.
Earth Resources		
Soils	No change when compared to baseline conditions	Construction ground disturbance causing minor erosion and siltation issue; however, existing management actions (e.g., siltation fencing, watering soils) preclude any adverse effects.
Water Resources		
Storm Water	No change when compared to baseline conditions	No new impervious surface introduced. Only minor impacts anticipated with installation of waste and potable water lines and pavement upgrades, however, existing adherence to SWPPP requirements would preclude adverse effects. Existing outfalls capable of handling this minor, long-term increase in runoff.
Wetlands	No change when compared to baseline conditions	No jurisdictional wetlands would be removed or affected.
Coastal Zone	No change when compared to baseline conditions	Construction and upgrade/improvement activities would be consistent with State Coastal Zone Management Program.

Table 2-5 Summary and Comparison of Impacts

Resources	*Impacts According to Affected Area*	
	No Action Alternative	**Proposed Action/Preferred Alternative**
Hazardous Materials and Waste	No change when compared to baseline conditions	No change in Large Quantity Generator Status. Hydrazine storage would be required; TAFB would obtain necessary permits and update SPCCP to reflect new material storage. Hazardous material handling and storage would not be affected. Existing waste streams and disposal requirements would be unaffected.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 ANALYTICAL APPROACH

NEPA requires focused analysis of the areas and resources potentially affected by an action or alternative, and an EA should consider, but is not required to analyze in detail, those areas or resources not potentially affected by the proposal. Therefore, an EA should not be encyclopedic; rather, it should be succinct and to the point. Both description and analysis in an EA should provide sufficient detail and depth to ensure that the agency (i.e., the Air Force) took a hard look at the proposal and the potential impacts it might have on the human and natural environment. NEPA also requires a comparative analysis that allows decision makers and the public to differentiate among the alternatives.

Environmental impact analysis provides a framework for understanding the direct, indirect, and cumulative effects of the Proposed Action/Preferred Alternative and No Action Alternative. Categories of potential environmental impact were developed based on the professional judgment of resource analysts and the magnitude of impacts categorized as follows:

- *None*. There are no impacts to the resource.
- *Negligible Impact.* The environmental impact is barely perceptible or measurable, remains confined to a single location, and does not result in a sustained recovery time for the resource impacted (days to months).
- *Minor Impact.* The environmental impact is perceptible and measurable but remains localized; the resource, however, should recover in a relatively short period of time without any lasting effects.
- *Major Impact.* The environmental impact is readily perceptible and measurable, and does not remain localized. Under a major impact, recovery of the resource may not occur or require a longer period of time than a minor impact.

3.1.1 Resource Identification

The Proposed Action/Preferred Alternative includes several elements that directly affect TAFB: construction, infrastructure upgrades/improvements, and aircraft operations/maintenance. Table 3-1 presents the elements, lists resource categories associated with the human and natural environment, identifies the magnitude of impact (none, negligible, minor, major), and whether the resource category is analyzed in the EA. If a resource was determined to have negligible or no impacts it was not considered further for analysis; justification for not carrying a resource forward is discussed in the following section.

A total of 13 resource categories were evaluated for their potential to be impacted by the Proposed Action/Preferred Alternative, and the following were identified for more detailed analysis: 1) noise, 2) air quality (to include greenhouse gases), 3) aircraft and public safety, 4) land use (including recreation and visual resources), 5) cultural and traditional resources, 6) earth resources (soils), 7) water resources (storm water), 8) hazardous and toxic materials and wastes, 9) wetlands, and 10) coastal zone.

Table 3-1 Resources Analyzed to Determine Impacts and Need for Further Evaluation

Resources	*Elements of Proposed Action/Preferred Alternative and Anticipated Impact*	
	Construction	**Operations/ Maintenance**
1. Airspace Management and Use	None	Negligible
2. Noise	None	Minor
3. Air Quality (including Greenhouse Gases)	Negligible	Minor
4. Aircraft and Public Safety	Negligible	Minor
5. Land Use, Recreation, and Visual Resources	None	Minor
6. Cultural and Traditional Resources	None	Minor
7. Earth Resources		
Topography	None	None
Soils	Minor	None
Geology	None	None
8. Water Resources		
Wetlands	Minor	None
Floodplains	Negligible	None
Coastal Zone	Minor	None
Storm Water	Minor	None
Quality/Quantity	None	None
9. Hazardous Materials and Waste	Minor	Minor
10. Biological Resources		
Vegetation	Negligible	None
Wildlife	None	Negligible
Special Status Species	None	None
11. Socioeconomics		
Economics (demographics, housing, employment)	None	None
Environmental Justice	None	None
Provision for the Handicapped	None	None
Protection of Children	None	None
12. Traffic/Transportation	None	None
13. Public Services		
Power	None	None
Communications	None	None
Waste Water	None	None
Solid Waste	None	None

3.1.2 Resources Eliminated from Further Detailed Analysis

Air Force procedures for implementing NEPA, NEPA, and CEQ specify that an EA should focus only on those resources potentially subject to impacts. In addition, the level of analysis applied to any given resource should be commensurate with the level of impact anticipated for that resource. Applying these guidelines, the following resource areas were not analyzed in this EA: airspace management and use, earth resources (including topography and geology), water resources (floodplains and quality/quantity), biological resources, socioeconomics (including economics, environmental justice, provision for the handicapped, and protection of children), traffic/transportation, and public services. It is anticipated that impacts would be negligible or nonexistent to these resources. Justification for this conclusion follows.

Airspace Management and Use: Airspace management is defined as the direction, control, and handling of flight operations in the "navigable airspace" that overlies the geopolitical boundaries of the U.S. and its territories. The FAA is responsible for developing plans and policies for using navigable airspace, for designating use of the airspace necessary to ensure aircraft safety, and ensuring its efficient use through regulations or orders (49 USC Section 40103(b); FAA Order JO 7400.2J [with changes 1]). Special Use Airspace identified for military and other governmental activities is charted and published by the National Aeronautical Charting Office in accordance with FAA Order JO 7400.2J and other applicable regulations and orders. Special Use Airspace has defined dimensions where military activities can operate and has boundaries to limit access by non-participating aircraft. Types of this airspace include: Restricted Areas, MOAs, and Warning Areas. Other airspace includes Military Training Routes, National Security Areas, and Air Traffic Control Assigned Airspace (ATCAA). When not required for other needs, an ATCAA can extend the vertical boundary of training airspace (e.g., a MOA) as authorized for military use by the controlling Air Route Traffic Control Center.

Under the Proposed Action/Preferred Alternative, no alterations to airspace structure or management would be needed. The QF-16s would to continue to use overwater Warning Areas and overland MOAs in the same manner and number as the QF-4s. There would be either no or only negligible changes to departure and arrival routes at the base to accommodate QF-16 flight requirements versus the QF-4, and civil and commercial aviation airspace would be unaffected. Flight safety procedures used for QF-4 FSAT operations would continue with conversion to QF-16 FSATs. Because there would be neither changes in airspace management and structure nor the type and number (i.e., use) of airspace operations, this resource category is not carried forward for further analysis.

Earth Resources (topography and geology): Earth resources are defined as the topography, geology, and soils of a given area. Topography refers to terrain, dominant landforms, and other visible features. The geology of an area includes bedrock materials, mineral deposits, and fossil remains. Neither the topography nor geology at the base would be affected by the Proposed Action/Preferred Alternative. Topography and geology could be affected by demolition, construction, and/or upgrade activities. However, the majority of ground disturbance would occur in already developed areas and would not entail ground removal that would change the topography or geology of the sites. It is for these reasons that topography and geology are not carried forward for more detailed analysis; however, effects to soils is evaluated and can be found in Section 3.7.

Water Resources (floodplain and water quality/quantity): A floodplain is the flat or nearly flat land adjacent to a stream or river that stretches from the banks of the channel to the base of the enclosing topography and experiences flooding during periods of high discharge. Floodplains typically are described as areas likely to be inundated by a particular flood. For example, a flood that has a 1-percent chance of occurring in any 1 year is considered a 100-year floodplain.

The Clean Water Act of 1972 (Public Law [PL] 95-217), the Safe Drinking Water Act of 1972 (PL 93-523) and Amendments of 1986 (PL 99-339), and the Water Quality Act of 1987 (PL 100-4) are the primary federal laws protecting the nation's waters. In addition, several applicable regulations and permits are in place to protect the quality and quantity of water resources in the U.S. These include: National Pollutant Discharge Elimination System (NPDES) Construction Activity General Permit (40 CFR Sections 122-124); NPDES Industrial Permit and NPDES Municipal Separate Storm Sewer System Permit; U.S. Environmental

Protection Agency (USEPA), Subchapter D-Water Programs (40 CFR Sections 100-145); and USEPA, Subchapter N-Effluent Guidelines and Standards (40 CFR Sections 401-471).

Under the Proposed Action/Preferred Alternative, construction, demolition, and upgrade activities would be the most likely elements affecting floodplains and water quality/quantity. However, none of the sites proposed for construction and upgrades/improvements at TAFB fall within the 100-year floodplain (Federal Emergency Management Administration [FEMA] 2012). The Air Force will follow and complete all applicable federal and state permits prior to any ground-disturbing activities to protect water quality; water quantity would not be impacted during the construction and upgrade phases of the Proposed Action/Preferred Alternative. Once based at TAFB, QF-16 operational and maintenance activities would not affect water quality and quantity. Hydrazine would be stored in a facility designed to contain spills, precluding water contamination. Water use would only be negligibly impacted because there would be neither changes in personnel numbers nor how aircraft are maintained to affect quantity. Therefore, floodplains and water quality/quantity were not carried forward for more detailed analysis. Storm water, wetlands, and coastal zones are addressed in Section 3.8.

Biological Resources: Biological resources include living, native, or naturalized plant and animal species, wildlife, and the habitats in which they occur. Habitat can be defined as the resources and conditions present in an area that produces occupancy of a plant or animal. In addition, species and habitats of special societal importance or are protected under federal or state law or statute are considered. Under the Proposed Action/Preferred Alternative, no wildlife, special status species, or associated habitat would be affected. All areas proposed for demolition, construction, and/or upgrades are found on previously disturbed or developed sites which do not support special status species or sensitive habitat. Minimal wildlife populations are found in these developed areas and it would be unlikely that they would be impacted in any major manner. Operational and maintenance activities of the QF-16 FSATs would continue in the same manner as found under QF-4 baseline conditions. Bird/wildlife aircraft strike hazards (BASH) avoidance measures would continue to minimize impacts to wildlife and bird species. Further information about the BASH program is presented in Sections 3.4.

Socioeconomics (Economics, Environmental Justice, Provision for the Handicapped, and Protection of Children): Socioeconomics describes the basic attributes and resources associated with the human environment, particularly population, housing, and economic activity. There are no governing regulations with regard to socioeconomics.

Economic activity generally encompasses employment, personal income, and industrial growth. Implementation of the Proposed Action/Preferred Alternative would result in minor, temporary income generated from infrastructure upgrades and construction; however, this amount would not generate any negligible changes to the regional economy.

Environmental Justice: Executive Order (EO) 12898 requires analysis of the potential for a federal action to cause disproportionate health and environmental impacts on minority and low-income populations. Under this proposal, noise generated by aircraft operations would not perceptibly change around the airfield or under the airspace when compared to baseline conditions to disproportionally affect low-income or minority populations.

Provisions for the Handicapped: According to Deputy Secretary of Defense Memorandum dated October 2008, it is the goal of DoD to make its facilities accessible to persons with disabilities (DoD 2008). To

achieve that goal DoD requires that the more stringent of either the *Uniform Federal Accessibility Standards* (49 Federal Register 31528 [August 7, 1984]) or the 1991 version of the *Americans with Disabilities Act (ADA) Accessibility Guidelines* be applied to all DoD facilities designed, constructed (including additions), altered, leased, or funded by DoD. Specifically, DoD has adopted the standards from the Architectural Barriers Act of 1968 (ABA), as amended (42 USC Section 4151, *et seq*.); Section 504 of the Rehabilitation Act of 1973, as amended (29 USC Section 794); and the 2004 *ADA and ABA Accessibility Guidelines* (ADA-ABA 2004). However, exception is made for facilities or portions of facilities that are designed and constructed for use (e.g., hangars, maintenance, and hydrazine facilities) exclusively for able-bodied military personnel (DoD 2008). Because that is the case in all instances of construction and/or upgrade improvements under this proposal, no impacts are anticipated to this resource category.

Protection of Children: Under the Proposed Action/Preferred Alternative, no adverse health risks would be introduced by converting QF-4s to QF-16s. On-base noise impacts would continue as found under baseline conditions (see Section 3.2 for specific noise discussion).

In summary, because negligible impacts to the regional economy, low-income, minority, and handicapped populations, or children would occur, this resource and associated categories are not carried forward for further analysis.

Traffic/Transportation: Traffic and transportation refer to roadway and street systems, the movement of vehicles on roadway networks, and mass transit. Roadway operating conditions and the adequacy of existing roadway systems to accommodate vehicle use are often described in terms of average daily traffic volumes and level of service ratings.

Under the Proposed Action/Preferred Alternative, there would be no changes in personnel numbers to affect long-term daily traffic volumes or level of service ratings at the base. On a temporary basis, construction crews would use existing road networks for site access; however, this would not cause major impacts to traffic flow. No other improvements would be introduced that could affect transportation or traffic flow; therefore, this resource was not carried forward for further analysis.

Public Services: This refers to the system of public works and utilities that provide the underlying framework for a community or installation. There would be impacts to public services if an action degraded the existing infrastructure such that it would not be able to provide the requisite services, or if capacity issues developed for services provided by any locality to the community or installation.

Under the Proposed Action/Preferred Alternative, no additional personnel would be added at TAFB, and therefore, would not degrade existing public services infrastructure or preclude any locality from providing these services. Aircraft operations and maintenance would remain consistent with current levels so would not require any additional services. While a waste- and potable-water line would be extended, no extra capacity would be needed when compared to baseline conditions. There would be a temporary increase in solid waste material generated during demolition and construction activities; however, materials would be recycled to the maximum extent practicable or disposed of in properly permitted solid waste facilities. In summary, public services would experience either no or negligible impacts; no further analysis of this resource is undertaken.

3.1.3 Baseline and Affected Environment Identification

Baseline conditions provide a benchmark against which the Air Force measures potential impacts. Differences in the conditions between baseline and what would occur under the Proposed Action/Preferred Alternative reflect the magnitude and intensity of impacts relative to the resources analyzed. Under this proposal, baseline conditions are those that will be found once the QF-16s start arriving at the base in FY14. This approach is taken to account for actions already evaluated, decisions made, and/or completed by FY14 at TAFB.

Identifying and defining the affected environment (or region of influence) for the Proposed Action/Preferred Alternative provides the foundation for evaluating potential impacts and identifying mitigation strategies when they are needed. The affected environment is identified based on the anticipated magnitude and intensity of potential impacts and can vary from resource to resource. As presented in Section 2.3, the Proposed Action/Preferred Alternative would replace the 82 ATRS QF-4 FSATs with QF-16 FSATs at TAFB; up to 60 QF-16 FSATs would replace the current 40 QF-4s at TAFB. The transition would occur over a 4-year time period (refer to Table 2-1) starting in December 2013. In addition, the Proposed Action/Preferred Alternative would include O&M improvement/renovation projects as described in Table 2-4 and at the locations identified in Figure 2-2.

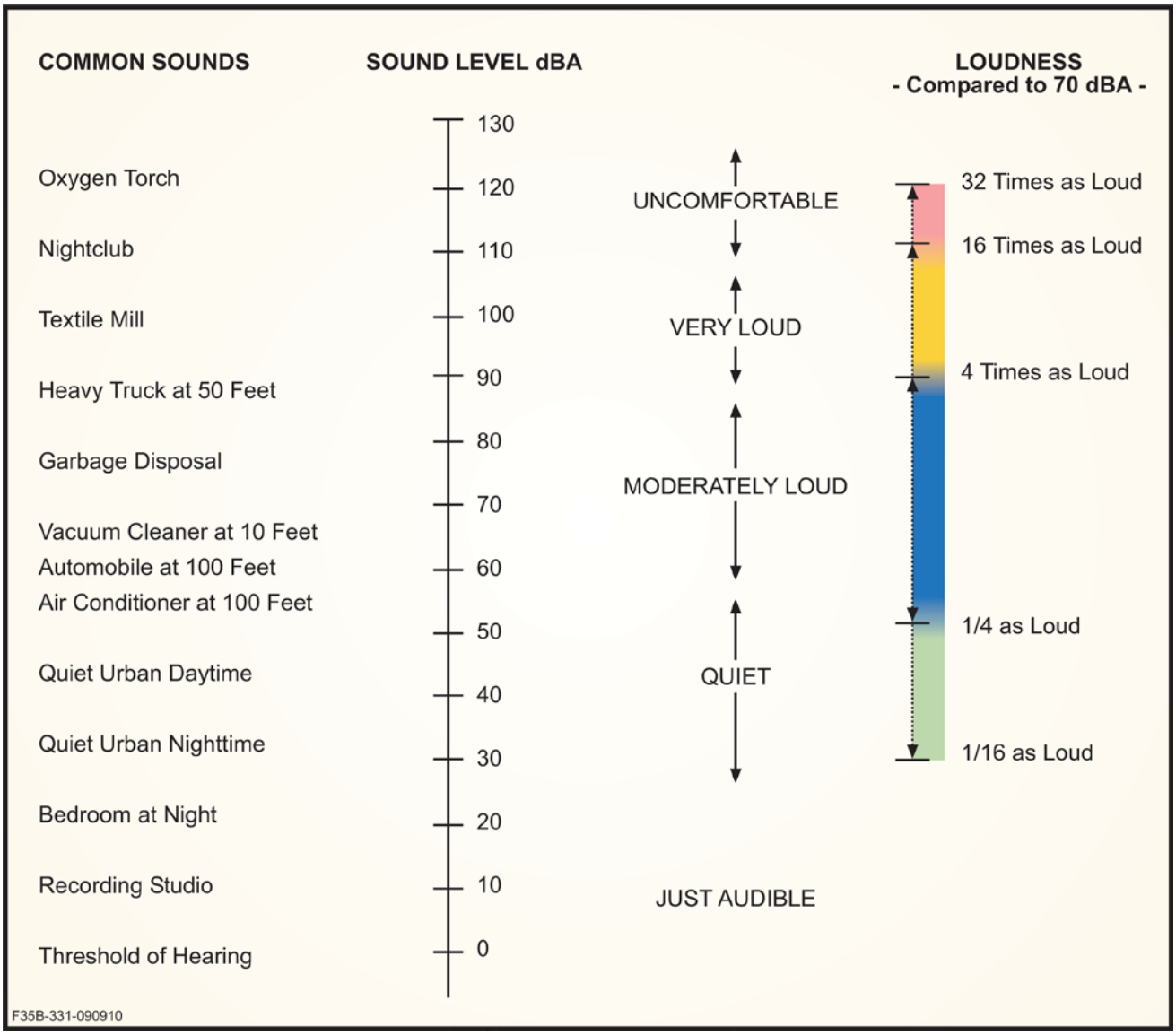
Under the Proposed Action/Preferred Alternative the number of sorties (a sortie includes one aircraft departing the airfield, conducting operations in the airspace, and arriving back at the airfield) would remain the same as baseline conditions. As presented in Chapter 2, this is because the total number is dictated by a fixed price FSAT maintenance contract. Currently, the Air Force does not anticipate any changes in this contracted number and therefore, sorties would remain unchanged at 1,136 annually. For the No Action Alternative, QF-4 FSATs would not be replaced by QF-16s and operations would continue as presented under baseline.

3.2 NOISE

Several components generate noise and warrant analysis in this EA. The predominant noise sources consist of aircraft operations, both at and around the airfields, as well as in the airspace. Other components such as construction, aircraft ground support equipment for maintenance purposes, and vehicle traffic would produce noise, but such noise generally represents a transitory and negligible contribution to the average noise environment. The federal government supports conditions free from noise that threaten human health and welfare and the environment. Response to noise varies depending on the type and characteristics of the noise, distance between the noise source and whoever hears it (the receptor), receptor sensitivity, and time of day.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and are sensed by the human ear. Sound is all around us and noise is defined as unwanted or annoying sound that interferes with or disrupts normal human activities. Although exposure to very high noise levels can cause hearing loss, the principal human response to noise is annoyance. The response of different individuals to similar noise events is diverse and is influenced by the type of noise, perceived importance of the noise, its appropriateness in the setting, time of day, type of activity during which the noise occurs, and sensitivity of the individual. While aircraft are not the only sources of noise in an urban or suburban environment, they are, nevertheless readily identified by their noise output and are given special attention in this EA.

Noise and sound are expressed in decibels (dB), which are logarithmic units. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions (Figure 3-1). Normal speech has a sound level of approximately 60 dB; sound levels above 120 dB begin to be felt inside the human ear as discomfort. Sound levels between 130 to 140 dB are felt as pain (Berglund and Lindvall 1995). The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB. On average, a person perceives a doubling (or halving) of the sound's loudness when there is a 10 dB change in sound level.



Sources: Harris 1979, FICAN 1997.

Figure 3-1 Typical A-Weighted Sound Levels of Common Sounds

All sounds have a spectral content, meaning their magnitude or level changes with frequency, where frequency is measured in cycles per second or hertz. To mimic the human ear's non-linear sensitivity and perception of different frequencies of sound, the spectral content is weighted. For example, environmental noise measurements are usually on an "A-weighted" (dBA) scale that filters out very low

and very high frequencies to replicate human sensitivity. It is common to add the "A" to the measurement unit to identify that the measurement was made with this filtering process. For low frequency noise, "C-weighting" (dBC) is typically applied for impulsive sounds such as sonic booms and ordnance detonation.

In accordance with DoD guidelines and standard practice for environmental impact analysis documents, the noise analysis herein utilizes the following, A-weighted noise descriptors or metrics: Maximum Sound Level, Sound Exposure Level, Day-Night Average Sound Level, and Onset-Rate Adjusted Day-Night Average Sound Level.

Maximum Sound Level (L_{max}). The highest A-weighted, integrated sound level measured during a single event in which the sound level changes value with time (e.g., an aircraft overflight) is called the maximum A-weighted sound level or L_{max}. During an aircraft overflight, the event starts at the ambient or background noise level, rises to the maximum level as the aircraft flies closest to the receptor, and returns to the background level as the aircraft recedes into the distance. The L_{max} indicates the maximum sound level occurring for a fraction of a second. For aircraft noise, the "fraction of a second" over which the maximum level is defined is generally one-eighth of a second, and is denoted as "fast" response (ANSI 1988). Slowly varying or steady sounds are generally measured over a period of one second, denoted "slow" response. The L_{max} is important in judging the interference caused by a noise event with conversation, television or radio listening, sleep, or other common activities. Although it provides some measure of the intrusiveness of the event, it does not completely describe the total event, because it does not include the entire period of time that the sound is heard. Therefore, other metrics are applied and described below.

Sound Exposure Level (SEL). The SEL metric is a composite that represents both the intensity of a sound and its duration. Noise events such as aircraft overflights have two main characteristics: a sound level that changes throughout the event and a period of time during which the event is heard. The SEL metric provides a measure of the net impact of the entire acoustic event, but it does not directly represent the sound level heard at any given time. During an aircraft flyover, SEL includes both the L_{max} and the lower noise levels produced during onset and recess periods (i.e., the coming and going) of the overflight.

Day-Night Average Sound Level (DNL). The composite metric DNL accounts for all noise events in a 24-hour period, and takes into consideration the increased human sensitivity to noise at night by applying a 10-dB penalty to nighttime events occurring between 10:00 p.m. and 7:00 a.m. (or environmental nighttime). Like SEL, DNL does not represent the sound level heard at any particular time, but quantifies the total sound energy received. While it is normalized as an average, it represents all of the sound energy, and is a cumulative measure. Also, the logarithmic nature of the decibel unit causes the noise levels of the loudest events to control the 24-hour average. Noise averaging over a 24-hour period does not ignore the louder single events and tends to emphasize both the sound levels and number of those events over the entirety of exposure.

Onset-Rate Adjusted Day-Night Average Sound Level (L_{dnmr}). This metric is a derivation of DNL, but it accounts for the nature of operations in airspace. Whereas aircraft operations at airfields tend to be continuous or patterned, operations in airspace are sporadic and dispersed. L_{dnmr} also accounts for the specific effects of low-altitude and high-speed operations that can occur in airspace such as MOAs or Restricted Areas. Because military jet aircraft can exhibit a rate of increase in sound level (onset rate) of

up to 150 dB per second, the L_{dnmr} metric is adjusted to account for the startle effect with addition of up to 11 dB to the normal SEL. Unlike the use of DNL around airfields, the Federal Interagency Committee on Urban Noise (FICUN) compatibility standards do not readily apply to land use under military airspace. Rather, the analysis considers both the L_{dnmr} generated by the proposed operations and the degree of change in L_{dnmr} from baseline to proposed noise conditions. The implications of higher L_{dnmr} depend upon the underlying land uses and the degree of change in noise levels. For example, a 3 dB change in L_{dnmr} begins to be perceptible to the human ear and a 10 dB change is perceived as a doubling or halving of the sound.

3.2.1 Affected Environment

The affected environment for noise includes the base's runways and area immediately surrounding the runways where aircraft takeoff, land, and conduct pattern work and along flight tracks within the vicinity of the runways. The noise environment at TAFB was modeled using the software program NOISEMAP. The Air Force uses NOISEMAP to model noise exposure at and around military air bases for operations generated by military aircraft and engine run-up activities. Noise contours generated by NOISEMAP are used in support of the AICUZ program and NEPA documentation. NOISEMAP 7 is the latest software version and includes the input component (BASEOPS), the calculation component (NMAP), and the output component (NMPlot).

Table 3-2 (on the following page) illustrates representative sound levels in SEL and L_{max} at varying altitudes. As presented earlier, L_{max} is the highest A-weighted, integrated sound level measured during a single event in which the sound level changes value with time; SEL is a composite metric that represents both the intensity of a sound and its duration. Various types of aircraft operate out of TAFB and the noise levels, in SEL and L_{max}, during landing and takeoff, as well as at cruising speed are presented; airspeeds have been standardized for comparison purposes. Please note that there are several F-15 and F-16 engine types and their representative noise levels are presented as well. As the data indicate, the QF-16 (regardless of engine type) would generate lower noise levels than the QF-4s it is replacing.

Under baseline conditions, an annual average of 79,197 airfield operations (3,045 operations are generated by the QF-4s) are flown by all aircraft at TAFB (refer to Table 2-3). As is currently the case, QF-4s conduct no airfield operations after 10 p.m. or before 7 a.m. Under the Proposed Action/Preferred Alternative, the number of QF-16 operations would remain the same at 3,045 and operations would be conducted between the hours of 7 a.m. and 10 p.m.

Table 3-2 SEL and L_{max} Comparison (in dBA)

Aircraft Engine Type)	*Power Setting*	*Power Unit*	*SEL (altitude in ft)*					*L_{max} (altitude in ft)*				
			500	1,000	2,000	5,000	10,000	500	1,000	2,000	5,000	10,000
			TAKEOFF (AIRSPEED=250 knots)					**TAKEOFF (AIRSPEED=250 knots)**				
F-16 (GE-100)	104	%NC	117.1	111.3	105	95.1	86.3	111.9	104.3	96.1	83.9	73.3
F-16 (PW-220)	91	%NC	118.1	112.85	106.9	97.7	89.02	111.4	104.3	96.6	85	74.7
F-16 (PW-200)	90	%NC	113.4	108.2	102.2	92.5	82.8	108.1	101	93.3	81.1	69.7
F-4C	100	%RPM	122.3	116.5	109.8	99.5	89.7	117.3	109.7	101.2	88.5	76.9
F-22	100	%ETR	125	119.5	113.5	104.3	96	119.7	112.4	104.6	93	82.9
T-38C	98	%RPM	108.2	102.2	95	83.8	73.7	103.2	95.4	86.4	72.8	60.9
F-15E (PW 220)	90	%NC	118.1	112.8	106.9	97.7	89.2	111.4	104.3	96.6	85	74.7
F-15A (PW-100)	90%	%NC	118.1	112.8	106.9	97.7	89.2	111.4	104.3	96.6	85	74.7
			LANDING (AIRSPEED=180 knots)					**LANDING (AIRSPEED=180 knots)**				
F-16 (GE-100)	87	%NC	93.9	88.5	82.5	73	64.3	89.1	81.9	74	62.1	51.7
F-16 (PW-220)	82.5	%NC	100.8	95.7	90	81.2	73.1	95.7	88.8	81.3	70.1	60.2
F-16 (PW-200)	82	%NC	97.7	92.1	86.5	77.8	70	91.1	84.3	76.9	65.8	56.2
F-4C	87	%RPM	110.8	105.4	99.4	89.7	81	106.3	99.1	91.3	79.3	68.7
F-22	43	%ETR	114.4	108.8	102.6	92.9	84	111.3	103.9	95.9	83.9	73.1
T-38C	95	%RPM	98.7	93	86.66	76.7	67.6	92	84.5	76.3	64	53.1
F-15E (PW 220)	75	%NC	93.7	88.7	83.1	74.4	66.4	88.5	81.6	74.3	63.2	53.4
F-15A (PW-100)	75	%NC	93.7	88.7	83.1	74.4	66.4	88.5	81.6	74.3	63.2	53.4
			CRUISE (AIRSPEED=400 knots)					**CRUISE (AIRSPEED=400 knots)**				
F-16 (GE-100)	85	%NC	86.5	80.8	74.2	63.8	54.7	84.4	76.9	68.5	55.7	44.8
F-16 (PW-220)	77	%NC	86	80.6	74.5	64.7	55.7	83.5	76.3	68.3	56.1	45.4
F-16 (PW-200)	78	%NC	89.9	83.9	76.8	65.3	55	89.1	81.2	72.3	58.4	46.4
F-4C	86.5	%RPM	108.9	103.7	97.8	88.3	79.2	106.5	99.6	91.9	80	69
F-22	30	%ETR	104	98.6	92.4	82.5	73.3	98.4	91.2	83.2	70.9	59.9
T-38C	91	%RPM	92.3	86.5	80.1	70	60.5	88.7	81.2	72.9	60.4	49.2
F-15E (PW 220)	73.5	%NC	92.2	87.2	81.6	72.8	65	88.6	81.7	74.3	63.2	53.6
F-15A (PW-100)	73.5	%NC	92.2	87.2	81.6	72.8	65	88.6	81.7	74.3	63.2	53.6

Source: SELCALC, November 20, 2012.
Weather: 59° Fahrenheit, 70% Relative Humidity. NC=Engine Core; RPM=revolutions per minute; ETR = Engine thrust request. All numbers rounded.

Base. Figure 3-2 presents baseline contours at TAFB and Table 3-3 provides acres exposed to noise levels 65 dB DNL and greater. Under baseline conditions, outside of base boundaries and excluding water, 801 acres are exposed to noise levels no greater than 70 dB DNL and 54 acres are exposed to noise levels no greater than 75 dB DNL. No off-base acreage is exposed to noise levels exceeding 75 dB DNL. Section 3.6 discusses in further detail potential noise impacts to land uses and representative noise receptors.

Table 3-3 Baseline Noise Exposure at TAFB

Location	*Geographic Area (in acres) Exposed to Noise Levels (dB DNL)*					
	65-70	**70-75**	**75-80**	**80-85**	**>85**	**Total**
Tyndall AFB	6,650	8,151	4,364	2,049	1,628	***22,842***
Open Water	35,450	10,236	2,267	260	0	***48,212***
Off Base	801	54	0	0	0	855
Total Acres	***42,901***	***18,441***	***6,630***	***2,309***	***1,628***	***71,909***

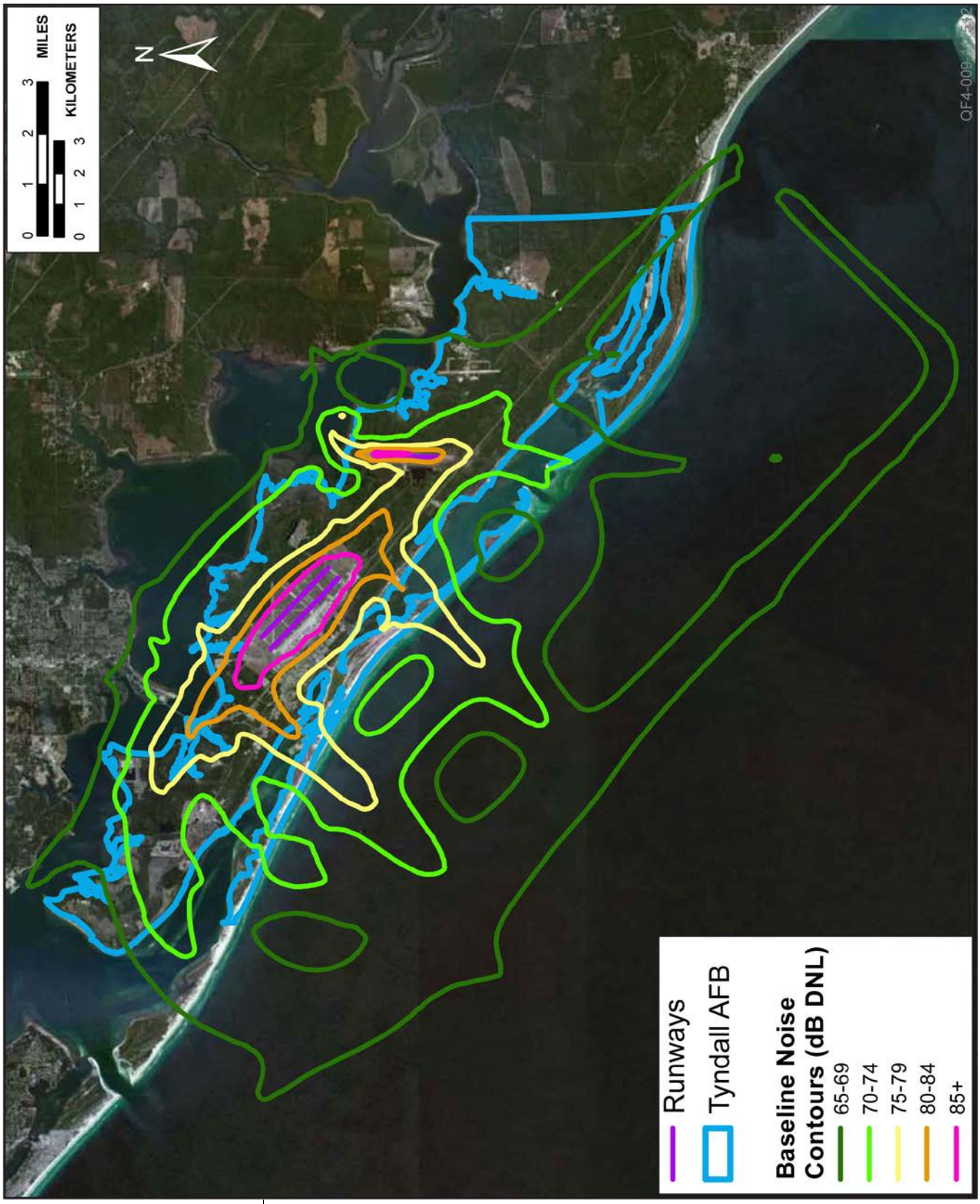


Figure 3-2 Baseline Noise Contour Bands at TAFB

In terms of population exposed, the following steps were undertaken to calculate the number of people exposed to noise contours 65 dB DNL and greater:

1. Population counts were computed using a geometric proportion method. This method assumes a uniform population distribution across each census Block.
2. The total population inside a noise contour was assigned based on the portion of the census Block that partially or wholly fell within the contour boundary.
3. If a contour contained a portion of a Block, then only the geographically based proportion of that Block's population within that contour is summed.
4. If a census Block was contained completely by the noise contour, then 100 percent of the Block's population was included in the estimates.

Table 3-4 presents baseline population numbers exposed to noise levels 65 dB DNL and greater. Under baseline conditions the majority of the population is found within noise contour bands 65 to 75 dB DNL.

Table 3-4 Baseline Population Exposed to TAFB Off-Base Noise Levels

dB DNL	*Baseline*
65-70	591
70-75	161
75-80	0
80-85	0
>85	0

Airspace. Military overflights are dispersed and distributed throughout the training airspace unit within MOAs, warning areas, and overlying ATCAAs (refer to Figure 2-1). Table 3-5 presents baseline aircraft noise levels in the MOAs and overlying ATCAAs and are the same as those represented in the 2011 F-22 Operational Squadron and T-38 Detachment Beddown at TAFB, FL EA (or Relocation EA) (Tyndall AFB 2011) and are incorporated by reference. Subsonic noise levels in all airspace units are 62 L_{dnmr} or less except Tyndall G MOA, where the noise level is 67 L_{dnmr}. Tyndall G MOA is located almost entirely over water, and noise generated in this area affects a limited number of persons. Sonic noise levels and booms are presented in the Relocation EA (Tyndall AFB 2011). These data are incorporated herein because they would not change from what is presented under that Proposed Action/Preferred Alternative in the EA.

Table 3-5 Baseline Noise Levels Beneath Primary Airspace

Airspace Unit	*dB L_{dnmr}*
Tyndall B MOA	62
Tyndall C/H MOA	58
Tyndall D MOA	58
Tyndall E MOA	58
Tyndall F MOA	44
Tyndall G MOA	67

Source: Tyndall AFB 2011.
Note: ATCAA supersonic approved above 30,000 ft MSL; sonic booms would not be expected to propagate to the ground.

3.2.2 Environmental Consequences

Proposed Action/Preferred Alternative

Base. Proposed noise contour are presented in Figure 3-3. Under the Proposed Action/Preferred Alternative there would be a 5 percent reduction in off-base land areas exposed to noise levels 65 dB DNL and greater (Table 3-6). Population numbers exposed to noise levels 65 dB DNL and greater would decrease by about 11 percent (Table 3-7). In total, acres exposed to noise levels 65 dB DNL and greater would decrease by 3,277 and total population numbers would be reduced by 64.

Table 3-6 Proposed Noise Exposure at TAFB

Location	***Geographic Area (in acres) Exposed to Noise Levels (dB DNL)***						***Change from Baseline***
	65-70	**70-75**	**75-80**	**80-85**	**>85**	***Total***	
Tyndall AFB	6,358	8,126	4,215	1,897	1,559	***22,154***	*-688*
Open Water	33,773	9,493	2,176	246	0	***45,688***	*-2,524*
Off Base	737	53	0	0	0	***790***	*-66*
Subtotal by Contour Band	***40,868***	***17,672***	***6,391***	***2,143***	***1,559***	***68,632***	*-3,277*
Change Compared to Baseline	*-2,033*	*-770*	*-240*	*-166*	*-69*	*-3,277*	

Table 3-7 Baseline and Proposed Population Exposed to TAFB Off-Base Noise Levels

dB DNL	***Baseline***	***Proposed***	***Change from Baseline***
65-70	591	531	***-60***
70-75	161	157	***-4***
75-80	0	0	***0***
80-85	0	0	***0***
>85	0	0	***0***

Airspace. There would be negligible and imperceptible changes in MOA airspace noise levels. Proposed operational numbers and altitudes at which the QF-16s would operate would not alter from those flown by QF-4s. As the SEL and L_{max} cruising speed data (generally what would be flown by the aircraft in airspace) indicate (refer to Table 3-2), QF-16 noise levels would remain consistent or imperceptibly reduce when compared to QF-4 baseline conditions.

If the Proposed Action/Preferred Alternative were implemented, while it would not be perceptible, noise levels would diminish slightly around the base and under the airspace.

No Action Alternative

Under this alternative, QF-4s would continue operating at TAFB until the inventory is depleted. Noise levels would remain consistent with those presented under baseline conditions.

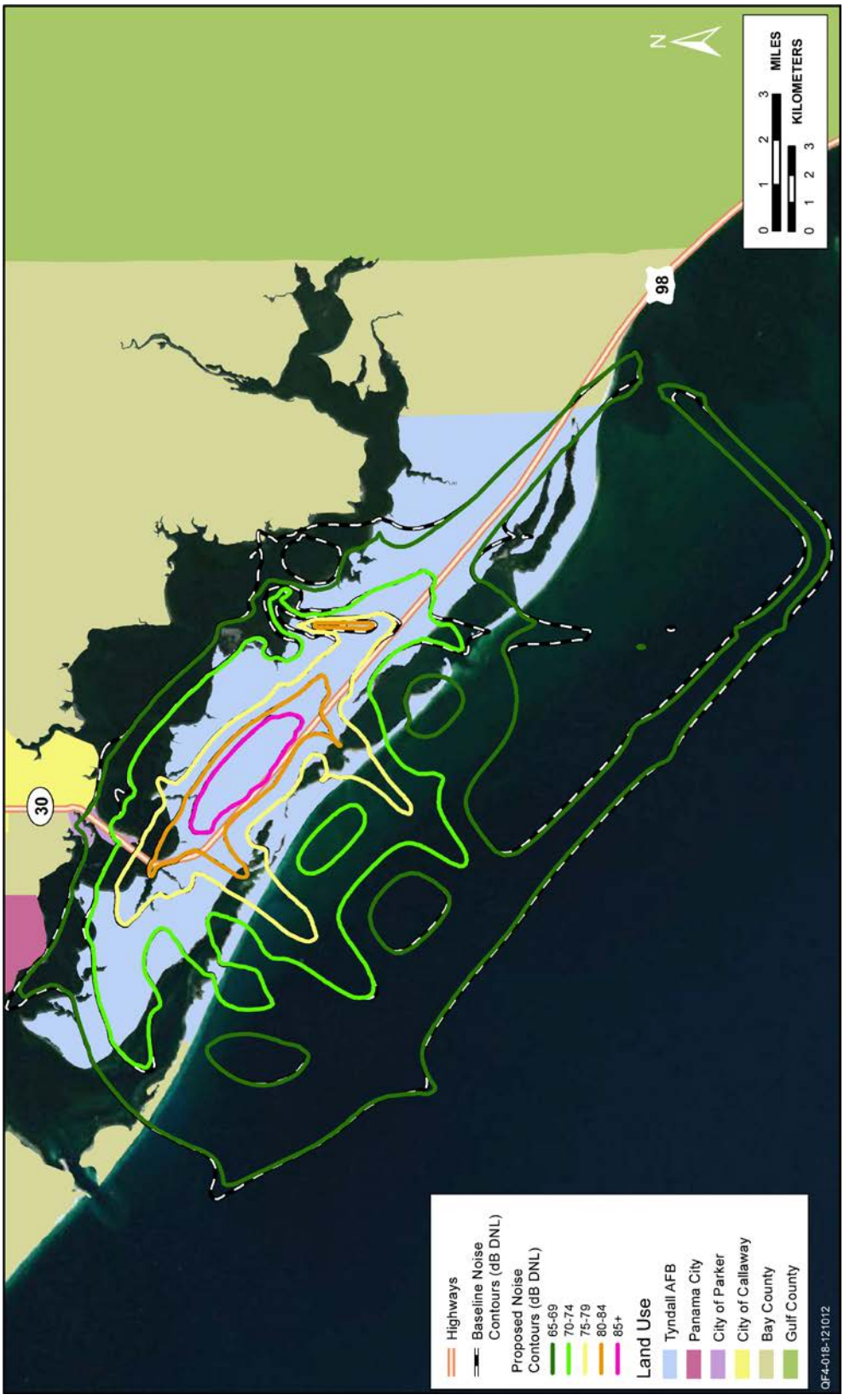


Figure 3-3 Proposed Noise Contour Bands at TAFB

3.3 AIR QUALITY

National Ambient Air Quality Standards. The Clean Air Act requires the U.S. Environmental Protection Agency (USEPA) to establish National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. There are primary and secondary standards under the NAAQS. Primary standards set limits to protect public health, including "sensitive" populations. Secondary standards set limits to protect public welfare, including protection from decreased visibility, damage to animals, crops, vegetation, and buildings. Areas that are in violation of the NAAQS are designated non-attainment or in maintenance for attainment of criteria pollutants. TAFB is not located in areas of non-attainment or in maintenance for attainment of any criteria pollutants; therefore, a general conformity determination is not required.

There are six criteria pollutants found under the NAAQS: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM) at 10 and 2.5 micrometers (PM_{10} and $PM_{2.5}$), and Lead (Pb); ozone precursors include volatile organic compounds (VOCs) and nitrogen oxides (NO_x). This EA evaluates five of the six criteria pollutants (Table 3-8 on the following page). Lead, as well as hazardous and toxic air pollutants, is not included in this analysis because they are primarily generated by stationary industrial activities, not by mobile sources such as aircraft.

Ambient air quality refers to the atmospheric concentration of a specific compound (amount of pollutants in a specified volume of air) that occurs at a particular geographic location. The ambient air quality levels measured at a particular location are determined by the interactions of emissions, meteorology, and chemistry. Emission considerations include the types, amounts, and locations of pollutants emitted into the atmosphere. Meteorological considerations include wind and precipitation patterns affecting the distribution, dilution, and removal of pollutant emissions. Chemical reactions can transform pollutant emissions into other chemical substances. Ambient air quality data are generally reported as a mass per unit volume (e.g., $\mu g/m^3$ or mg/m^3) or as a volume fraction (e.g., ppm or ppb by volume).

Pollutant emissions typically refer to the amount of pollutants or pollutant precursors introduced into the atmosphere by a source or group of sources. Pollutant emissions contribute to the ambient air concentrations of criteria pollutants, either by directly affecting the pollutant concentrations measured in the ambient air or by interacting in the atmosphere to form criteria pollutants. Primary pollutants, such as CO, SO_2, and some particulates, are emitted directly into the atmosphere from emission sources.

Secondary pollutants, such as O_3, NO_2, and some particulates, are formed through atmospheric chemical reactions that are influenced by meteorology, ultraviolet light, and other atmospheric processes. Particulate Matter is generated as primary pollutants by various mechanical processes (e.g., abrasion, erosion, mixing, or atomization) or combustion processes. However, PM_{10} and $PM_{2.5}$ can also be formed as secondary pollutants through chemical reactions or by gaseous pollutants condensing into fine aerosols. In general, emissions that are considered "precursors" to secondary pollutants in the atmosphere (such as reactive organic gases, VOCs, and NO_x), are the pollutants for which emissions are evaluated to control the level of O_3 in the ambient air. Sources of emissions evaluated in this EA include those generated during demolition/construction and from aircraft operations/maintenance activities.

Table 3-8 National Ambient Air Quality Standards

Pollutant		*Averaging Time*	*National Standards[1, 2]*	
			Primary[3]	*Secondary[4]*
O_3		8-hour	0.075 ppm (147 µg/m^3)	Same as primary
CO		8-hour	9 ppm (10 mg/m^3)	—
		1-hour	35 ppm (40 mg/m^3)	—
NO_2		Annual	53 ppb (100 µg/m^3)	Same as primary
		1-hour	100 ppb (188 µg/m^3)	—
SO_2		1-hour	75 ppb (105 µg/m^3)	—
		3-hour	—	0.5 ppm (1,300 µg/m^3)
PM	PM_{10}	24-hour	150 µg/m^3	Same as primary
	$PM_{2.5}$	Annual	12 µg/m^3	Same as primary
		24-hour	35 µg/m^3	Same as primary

Source: USEPA 2012.

Notes:

[1]Standards other than the 24-hour PM_{10}, 24-hour $PM_{2.5}$, and those based on annual averages are not to be exceeded more than once a year.

[2]Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis. Parts per million (ppm), parts per billion (ppb), micrograms per cubic meter of air [µg/m^3], or milligrams per cubic meter of air [mg/m^3].

[3]Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the USEPA.

[4]Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

The quality of air between ground level and 3,000 ft above ground level (AGL) is of most concern to human health. Below 3,000 ft AGL there is less mixing of the atmosphere, so airflow stagnates and emissions are not as easily dispersed into the upper atmosphere. Pollutants emitted above this mixing height become diluted in the large volume of air before they are slowly transported to ground level. These emissions have little or no effect on ambient air quality and are excluded from analysis. Per USEPA guidance (USEPA 420-R-92-009, 1992), unless otherwise stipulated within a state's implementation plan, a mixing height of 3,000 ft AGL was assumed.

The methodology for estimating aircraft emissions involves evaluating the type of activity, the number of hours of operation, the type of engine, and the mode of operation for each type of aircraft. Emissions occurring above the mixing height were considered to be above the atmospheric inversion layer and would not impact the local air quality. Mobile source emissions include aircraft operations (take-offs and landings), ground support equipment, and maintenance aircraft operations performed with the engines still mounted on the aircraft (engine run-ups and trim checks). Emissions from aircraft take-offs and

landings, as well as other flight operations at the base, considered all based and transient aircraft. Aircraft emissions were calculated based on the following inputs:

- Flight profiles and operations totals for each installation were generated by operations personnel as part of this EA.
- Operation data (power, fuel usage, emission factors) from Air Force IERA Air Emissions Inventory Guidance Document for Mobile Sources at Air Force installations (December 2003).
- SO_2 emissions for aircraft calculated based on maximum weight percent sulfur content of JP-8, as identified in MIL-DTL-83133G (April 2010).
- CO_2, NO_2, and CH_4, emissions for aircraft are based on emission factor data from the USEPA Mandatory Greenhouse Gas Reporting Rule.
- Construction vehicle emissions factors were obtained from the USEPA's MOBILE6 model.

Greenhouse Gases (GHGs) trap heat in the atmosphere. GHG emissions occur from natural processes as well as human activities. Accumulation of GHGs in the atmosphere helps regulate the earth's temperature. Scientific evidence suggests a trend of increasing global temperature over the past century may be related to an increase in GHG emissions from human activities. The climate change connected to global warming and its associated ecological changes may produce negative economic and social consequences across the globe.

The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride. Each GHG is assigned a global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to CO_2, which has a value of one. For example, CH_4 has a GWP of 21, which means that it has a global warming effect 21 times greater than CO_2 on an equal-mass basis. Total GHG emissions from a source are often reported as a CO_2 equivalent (CO_2e). The CO_2e is calculated by multiplying the emission of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs.

On a national scale, federal agencies are addressing GHG emissions by reductions mandated in federal laws and Executive Orders (EO). This includes EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* signed in October 2009. In an effort to reduce energy consumption, reduce dependence on petroleum, and increase the use of renewable energy resources in accordance with the goals set by EO 13514 and the Energy Policy Act of 2005, the Air Force has implemented a number of renewable energy projects. The types of projects currently in operation include thermal and photovoltaic solar systems, geothermal power plants, and wind generators. The Air Force continues to promote and install new renewable energy projects.

The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are not individually significant enough to have an appreciable or measurable effect on climate change. At this time, a threshold of significance has not been established for the emissions of GHGs, but the CEQ has released the *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*, which suggests that proposed actions that would reasonably emit 25,000 metric tons or more of carbon dioxide equivalent gases should be evaluated by quantitative and qualitative assessments. This is not a threshold of significance but rather a minimum level that would require consideration in NEPA documentation. Nonetheless, the GHG

emissions from the Proposed Action were quantified to the extent feasible for information and comparison purposes.

3.3.1 Affected Environment

The affected environment for TAFB-generated emissions includes the base, the area surrounding the base where aircraft operate below 3,000 ft AGL (i.e., the airfield itself), the airspace overlying these areas, and where aircraft train. The base is located in a relatively rural area within Bay County, and falls within the Mobile (Alabama)-Pensacola-Panama City (Florida)-Southern Mississippi Interstate Air Quality Control Region (AQCR) (40 CFR Part 81.91). This AQCR includes 10 counties in Florida, 3 counties in Alabama, and 37 counties in Mississippi. Air quality in the AQCR has been designated as either in "attainment", "unclassifiable/attainment," or "better than national standards" with the NAAQS for all pollutants (40 CFR 81.310 and 81.311); therefore, no conformity applicability analysis is required.

Table 3-9 summarizes the regional emissions (stationary and mobile) of criteria pollutants and precursor emissions in Bay County, one of 50 counties in the AQCR. The data indicate that emissions generated by QF-4s do not represent a major regional contribution of emissions. In all instances, QF-4 emissions contribute less than 1 percent to regional air quality. The table below also presents GHG contribution at the base in the form of CO_2e; however, there are no data available for these types of emissions at the county level.

Table 3-9 Baseline Emissions Generated by QF-4 Compared to Bay County

Location	*Criteria Pollutants in tons per year*						
	VOCs	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2e[1]**
Bay County[2]	9,266	44,118	11,593	17,824	4,962	1,698	-
QF-4 Baseline	37.71	129.76	37.70	8.27	3.82	3.44	15,510
Percent Regional Contribution	*0.41*	*0.29*	*0.33*	*0.05*	*0.08*	*0.20*	-

[1] CO_2e = (CO_2 * 1) + (CH_4 * 21) + (N_2O * 310), (40 CFR Part 98, Subpart A, Table A-1) in metric tons per year.
[2] County emissions derived from USEPA website; 2008 data are the most recently recorded by USEPA.

3.3.2 Environmental Consequences

In addition to emissions from air operations, emissions from ground operations and site modifications (such as construction) must also be considered as appropriate. Impacts would be considered significant if emissions would affect the AQCR attainment status or in an area of nonattainment or maintenance, preclude the region from meeting its attainment goals. As was mentioned above, Bay County is in attainment for all criteria pollutants.

Proposed Action/Preferred Alternative

Under the Proposed Action/Preferred Alternative, air quality impacts would be the same because there are no differences in the number or type of FSAT operations that would occur under either scenario. Table 3-10 presents emissions that would be generated by construction and aircraft and ground support maintenance equipment (Appendix C contains the emissions calculations and factors applied). Please note that a conservative approach to calculating emissions was adopted; all construction was assumed to occur within FY14. Projected aircraft emissions were based on 3,045 operations and aircraft operational and maintenance emissions were combined and referred together as operational emissions. As the data indicate, there would be a temporary but minor increase in emissions generated by construction, contributing less than 0.01 percent of regional emissions. Once all QF-4s have been

replaced, there would be emissions reductions in four out of the five criteria pollutants and GHG. There would be an approximate 30-ton increase in NO_x annually; however, this increase only represents 0.59 percent of regional contributions. Emissions generated by the Proposed Action/Preferred Alternative, therefore, would not change the AQCR attainment status nor would they contribute more than 10 percent to the regional air emissions.

Table 3-10 Projected FY14 Construction and Operational Emissions at/around TAFB

Location	*Criteria Pollutants in tons per year*						
	VOCs	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2e[1]**
Construction Emissions FY14							
Construction Emissions	0.32	2.20	4.23	0.06	18.07	2.05	874
Bay County	9,266	44,118	11,593	17,824	4,962	1,698	-
Percent County Contribution	*0.00003*	*0.00005*	*0.0004*	*0.000003*	*0.004*	*0.001*	-
Operational Emissions							
QF-4 Baseline	37.71	129.76	37.70	8.27	3.82	3.44	15,510
Projected QF-16 Emissions	**13.09**	**25.42**	**68.16**	**4.97**	**3.18**	**2.86**	**9,320**
Emissions Net Change	*-24.62*	*-104.34*	*30.46*	*-3.3*	*-0.64*	*-0.58*	*-6,190*
Percent County Contribution	*0.14*	*0.06*	*0.59*	*0.03*	*0.06*	*0.17*	-

[1] CO_2 in metric tons per year. N_2O and CH_4 not calculated.

No Action Alternative

Under the No Action Alternative, QF-4 FSAT operations would continue and emissions generated would remain at levels consistent with those presented for baseline in Table 3-10. Continued operation of the QF-4s would not change the AQCR attainment status or represent a major contribution to the regional air quality.

3.4 AIRCRAFT AND PUBLIC SAFETY

The Air Force practices Operational Risk Management as outlined in Air Force Instruction (AFI) 90-901 *Operational Risk Management*. This AFI provides for a process to maintain readiness in peacetime and achieve success in combat while safeguarding people and resources. The safety analysis addresses issues related to the health and well-being of both military personnel and civilians living on or in the vicinity of TAFB, and under airspace used by the FSATs. Specifically, this section provides information on hazards associated with aviation safety (aircraft mishaps, emergency and mishap response, Bird/Wildlife Aircraft Strike Hazard, Accident Potential Zones), and construction safety.

Aircraft Mishaps are classified as A, B, or C (Table 3-11). Class A mishaps are the most severe with total property damage of $2 million or more, or a fatality, and/or permanent total disability; the rates are typically calculated per 100,000 flying hours.

Table 3-11 Aircraft Mishap Definitions

Classification	*Total Property Damage*	*Fatality/Injury*
A	$2,000,000 or more and/or aircraft destroyed	Fatality or permanent total disability
B	$500,000 or more but less than $2,000,000	Permanent partial disability or three or more persons hospitalized as inpatients
C	$50,000 or more but less than $500,000	Nonfatal injury resulting in loss of time from work beyond day/shift when injury occurred

Source: DoD 2011.

Emergency and Mishap Response involves the procedures and equipment needed to react to mishaps on or off the base. Elements of this response include rescue, fire suppression, security, and investigation.

Bird/Wildlife Aircraft Strike Hazards (BASH). BASH and the dangers it presents form another safety concern for aircraft operations. BASH constitutes a safety concern because of the potential for damage to aircraft or injury to aircrews or local populations if an aircraft crash should occur in a populated area. Aircraft can encounter birds at nearly all altitudes up to 30,000 ft MSL. According to the Air Force Safety Center (AFSC) BASH statistics, more than 60 percent of bird/wildlife strikes occur below 500 ft, and 90 percent occur at less than 2,000 ft AGL (AFSC 2011a). Waterfowl present the greatest BASH potential due to their congregational flight patterns and because, when migrating, they can be encountered at altitudes up to 20,000 ft AGL. Raptors also present a substantial hazard due to their size and soaring flight patterns. In general, the threat of bird/wildlife-aircraft strikes increases during March and April and from August through November due to migratory activities. The Air Force BASH program was established to minimize the risk for collisions of birds/wildlife and aircraft and the subsequent loss of life and property. In accordance with AFI 91-202, *U.S. Air Force Mishap Prevention Program,* each flying unit in the Air Force is required to develop a BASH plan to reduce hazardous bird/wildlife activity relative to airport flight operations. The intent of each plan is to reduce BASH issues at airfields by creating an integrated hazard abatement program through awareness, avoidance, monitoring, and actively controlling bird and animal population movements. Some of the procedures outlined in the plan include monitoring the airfield for bird and other wildlife activity, issuing bird hazard warnings, initiating bird/wildlife avoidance procedures when potentially hazardous bird/wildlife activities are reported, and submitting BASH reports for all incidents.

Accident Potential Zones (APZs) were first established by the Air Force's Air Installation Compatible Use Zone (AICUZ) program, a DoD discretionary program designed to promote compatible land use around military airfields. The military services maintain an AICUZ program in an effort to protect the operational integrity of their flying mission in accordance with DoD Instruction 4165.57.

APZs define the areas in the vicinity of an airfield that would have the highest potential to be affected if an aircraft mishap were to occur. AICUZ guidelines identify three types of APZs for airfields based on aircraft mishap patterns: the Clear Zone (CZ), APZ I, and APZ II. The standard CZ is a trapezoidal area that extends 3,000 ft from the end of a runway and has the highest probability of being impacted by a mishap. APZ I, which typically extends 5,000 ft from the end of the CZ, has a lower mishap probability; and APZ II, which typically extends 7,000 ft from the end of APZ I, has the lowest mishap probability of the three zones.

Construction Safety. Human health and safety issues associated with construction are generally found with traffic and the potential for accidents involving pedestrians and vehicles, as well as safety of personnel involving land uses within or adjacent to the construction zones. All construction and demolition activities are required to be performed in accordance with all federal regulations, including applicable U.S Occupational and Safety Health Administration (OSHA) requirements; therefore, this facet of safety is not carried forward for more detailed analysis.

3.4.1 Affected Environment

The affected environment comprises the airfields, areas encompassed by the APZs, as well as lands under airspace where aircraft operations are conducted, including arrival, departure, and pattern activities around the airfields, and airspace in which flight operations occur.

Aircraft Mishaps. The QF-4 and QF-16 FSATs are flown both manned and as unmanned targets and comparison of accident rates would still be applicable for the unmanned flights as aircraft mechanical failures comprise some of the mishap statistics. However, as an aerial target the QF-4s are sometimes meant to be destroyed as part of testing and evaluation missions and as such are not considered mishaps. Table 3-12 presents the number of mishaps by year, and flight hours and mishap rate of the aircraft since their introduction into the fleet. The lifetime Class A mishap rate for the F-4 is 4.64, and for the F-16 it is 3.58 (AFSC 2011b).

Table 3-12 Historic Class A Flight Mishaps for F-4 and F-16 Aircraft

Year	*F-16 (all types)*			*F-4*		
	Class A Mishaps	**Flight Hours**	**Mishap Rate**	**Class A Mishaps**	**Flight Hours**	**Mishap Rate**
FY 71	-	-	-	23	436,269	5.27
FY 72	-	-	-	30	568,706	5.28
FY 73	-	-	-	25	519,446	4.81
FY 74	-	-	-	21	419,577	5.01
FY 75	1	161	621.12	19	425,582	4.46
FY 76	1	226	442.48	24	407,606	5.89
FY 77	0	856	0.00	23	420,527	5.47
FY 78	0	1,402	0.00	11	396,350	2.78
FY 79	2	6,527	30.64	24	393,891	6.09
FY 80	5	26,803	18.65	14	360,491	3.88
FY 81	5	56,423	8.86	25	353,214	7.08
FY 82	17	107,389	15.83	12	343,186	3.50
FY 83	11	150,728	7.30	14	349,925	4.00
FY 84	10	199,761	5.01	11	349,657	3.15
FY 85	10	219,647	4.55	11	350,597	3.14
FY 86	11	254,491	4.32	14	324,011	4.32
FY 87	8	233,560	3.43	13	298,062	4.36
FY 88	23	338,039	6.80	12	253,486	4.73
FY 89	14	385,179	3.63	6	220,354	2.72
FY 90	13	408,078	3.19	13	152,886	8.50
FY 91	21	461,451	4.55	4	108,172	3.70
FY 92	18	445,201	4.04	0	47,356	0.00
FY 93	19	433,949	4.15	1	32,182	3.11
FY 94	16	400,474	4.00	1	24,394	4.10
FY 95	10	386,429	2.59	1	22,953	4.36
FY 96	9	374,517	2.14	1	8,956	11.17
FY 97	11	367,038	3.00	0	3,840	0.00
FY 98	14	360,245	3.89	0	4,561	0.00
FY 99	18	352,275	5.11	0	4,306	0.00
FY 00	9	343,085	2.62	0	4,214	0.00
FY 01	13	337,315	3.85	-	-	-
FY 02	7	368,707	1.90	-	-	-

Table 3-12 Historic Class A Flight Mishaps for F-4 and F-16 Aircraft

Year	*F-16 (all types)*			*F-4*		
	Class A Mishaps	**Flight Hours**	**Mishap Rate**	**Class A Mishaps**	**Flight Hours**	**Mishap Rate**
FY 03	11	355,557	3.09	-	-	-
FY 04	2	343,198	0.58	-	-	-
FY 05	5	324,238	1.54	-	-	-
FY 06	9	327,979	2.74	-	-	-
FY 07	10	304,030	3.29	-	-	-
FY 08	3	285,503	1.05	-	-	-
FY 09	3	257,209	1.17	-	-	-
FY 10	3	245,029	1.22	-	-	-
FY 11	5	225,079	2.22	-	-	-
Total	**347**	**9,687,778**	**3.58**	**353**	**7,604,757**	**4.64**

Emergency and Mishap Response. Detailed mishap response plans and procedures are maintained by the 325 FW to respond to a wide range of potential incidents. These plans assign agency responsibilities and prescribe functional activities necessary to react to major mishaps, whether on or off base. Response would normally occur in two phases. The first phase is the initial response that considers such factors as rescue, evacuation, fire suppression, safety, and ensuring security of the area, and other actions immediately necessary to prevent loss of life or further property damage. The first response element consists of those personnel and agencies primarily responsible for beginning the initial phase. This element includes crash rescue, medical, security police, and crash recovery personnel. The second response element, the investigative phase, comprises a response team composed of an array of organizations, whose participation is governed by the circumstances associated with the mishap, and actions required to be performed.

After all required investigations and related actions on the site are complete, the aircraft is removed. The base civil engineer is responsible for site cleanup and either accomplishes this in-house or contracts to an outside entity. Overall, the purpose of response planning is to:

- save lives, property, and material by timely and correct response to mishaps;
- quickly and accurately report mishaps to higher headquarters; and
- investigate the mishap to preclude the reoccurrence of the same or a similar mishap.

Bird/Wildlife Aircraft Strike Hazards. The Air Force BASH Team maintains a database that documents all reported bird/wildlife-aircraft strikes. Historic information for the past 39 years indicates that 39 Air Force aircraft were destroyed and 33 fatalities have occurred from bird/wildlife-aircraft strikes (AFSC 2011c).

At TAFB there is a high probability of BASH due to its coastal location and the abundant wildlife, and resident avian and migratory bird species. Daily and seasonal bird movements create various hazardous conditions. To address aircraft bird strike issues, the Air Force has developed the Avian Hazard Advisory System (AHAS) which monitors bird activity and forecasts bird strike risks. The AHAS is an online, near real-time, Geographic Information System (GIS) used for flight planning from bird strike risk across the Continental United States and Alaska. Using Next Generation Radar, weather radars, and models developed to predict bird movement the Air Force is able to minimize BASH incidents. Additionally, the Air Force has developed a Bird Avoidance Model (BAM) using GIS technology as a key tool for analysis

and correlation of bird habitat, migration, and breeding characteristics and is combined with key environmental and man-made geospatial data as part of an overall strategy to reduce BASH risks.

Using BAM, Air Force pilots and flight schedulers/planners have a tool for making informed decisions when selecting flight routes. The model was created to protect human lives, wildlife, and equipment during air operations. This information is integrated into required pilot briefings that take place prior to any sortie. Tyndall AFB is located in a bird migratory corridor (flyway) so the BASH Plan establishes procedures to minimize this hazard including the removal or control of bird attractants (Tyndall AFB 2008b). For the period FY08 to FY10, TAFB personnel recorded 65 bird strikes with 35 percent of them being Mourning Doves. No strikes resulted in a Class A accident. Other issues for the TAFB BASH Program include deer, coyote, and fox management (Tyndall AFB 2006).

Clear and Accident Potential Zones. The Air Force identifies three areas of accident potential to assist in land use planning: CZ, APZ I, and APZ II. These zones are not meant to serve as predictors of accidents, rather if an aircraft mishap were to occur, there is expected to be a higher probability of its occurrence within a CZ or APZ. Zones are delineated based on historical data associated with departure, arrival, and flight tracks on and near airfield runways. Figure 3-4 illustrates these three zones for active and drone runways at TAFB.

In order to assist installations and local governments in land use compatibility near airfields, the AICUZ program recommends no development in the CZ and includes general suggestions for development restrictions on density/intensity of development in APZs I and II (Tyndall AFB 2008c). In general, the recommended land use restrictions are:

- Residential: no residential use in APZ I, and maximum of two single detached dwellings units per acre in APZ II;
- Commercial, services, or industrial: buildings or structure occupants limited to a density of 25 per acre in APZ I and 50 per acre in APZ II;
- Outside events: limited to assemblies of not more than 25 people per acre in APZ I and maximum assemblies of 50 people per acre in APZ II.

The AICUZ program also notes that it is not realistic to state that one numerical density is safe while another is not; rather, the objective is to maximize the degree of safety that can reasonably be attained within local land use considerations.

3.4.2 Environmental Consequences

Impacts to aircraft and public safety would be considered significant if the ability to provide for safe operation of aircraft is diminished or safety hazards are introduced to risk military personnel, the public, or property.

Proposed Action/Preferred Alternative

The Proposed Action/Preferred Alternative would replace QF-4s with the newer QF-16 FSATs. Under either scenario, impacts would be the same (i.e., the number of operations in the TAFB terminal airspace would remain consistent with baseline conditions). For F-16 aircraft, the historic mishap rate is 3.58 versus the F-4 rate of 4.64; therefore, a minor decrease in the probability of mishaps could be

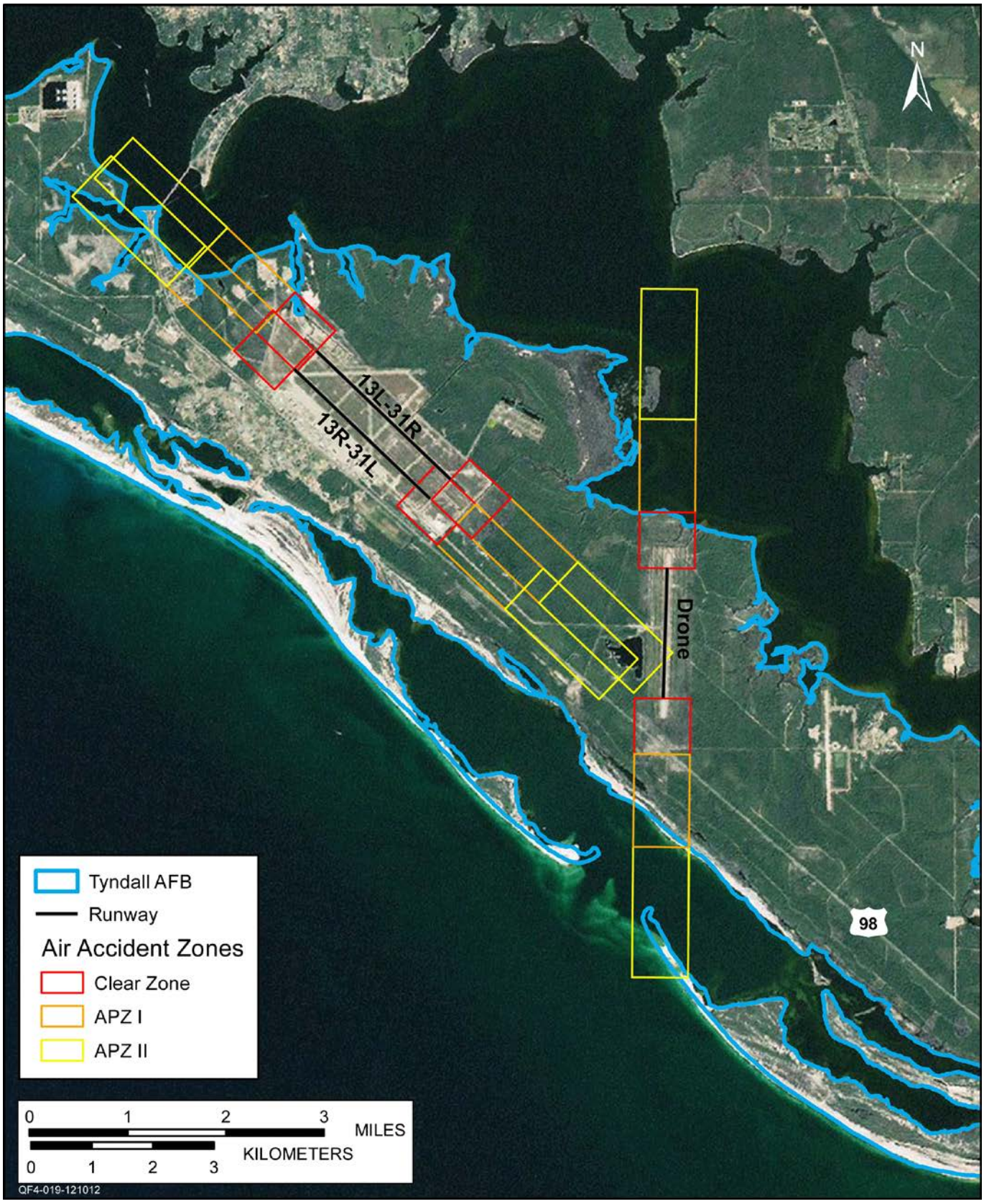


Figure 3-4 Clear Zones and Accident Potential Zones at TAFB

anticipated with replacement of QF-4s with QF-16s. Additionally, all safety regulations and procedures currently in force would continue to be applied to minimize risks to aircrews and the general population. No changes in emergency and accident response would occur if the Proposed Action/Preferred Alternative was implemented.

Current BASH procedures would continue to apply to operations within TAFB terminal airspace. Although the possibility of strikes exists, they are not expected to increase because there would be no changes in the overall number of aircraft operations. There would be no significant impacts to bird populations resulting from aircraft strikes. Under the Proposed Action/Preferred Alternative, no increases in the number of BASH incidents are anticipated, and no unacceptable hazards to military personnel, the public, and property would occur.

Proposed construction and infrastructure improvement projects related to the Proposed Action/Preferred Alternative would be consistent with established CZs and APZs. Therefore, construction activity and subsequent operations within new or renovated structures would not result in any greater safety risk.

No Action Alternative

Under the No Action Alternative, QF-4 FSAT operations would continue at TAFB. The potential for aircraft mishaps and BASH incidents would remain unchanged from baseline conditions.

3.5 LAND USE, RECREATION, AND VISUAL RESOURCES

Land Use impact analysis focuses on those areas affected by aircraft noise. Land uses that are most sensitive to noise typically include residential and commercial areas, public services, and areas associated with cultural sensitivities and recreational activities.

Under the AICUZ Program, three Noise Zones are identified for community compatibility purposes. Noise Zone I includes areas exposed to noise levels less than 65 dB using averaged sound levels that occur during the day and night (or DNL). Zone I is generally considered compatible with all types of land uses such as residential areas, schools, and churches. Zone II comprises those areas exposed to noise levels of 65 to 75 dB DNL. Exposure to noise within this area is normally compatible with activities such as commercial/retail/services, manufacturing, agriculture and highways; however, residential areas, schools, and churches are generally considered incompatible and communities discouraged from introducing such land uses in this zone. Noise Zone III encompasses noise levels greater than 75 dB DNL. Land uses such as residential areas, hospitals, schools, and churches are incompatible and highly discouraged for development in this zone.

Recreation encompasses those indoor and outdoor recreational activities that take place away from the residence of the participant. Factors that influence recreational experiences include opportunities (i.e., type and number of facilities) and settings (i.e., municipal park versus wilderness area).

Visual resources are defined as the natural and manufactured features that constitute an area's aesthetic qualities. These features form the overall impression that an observer receives of an area, including its landscape character. Landforms, water surfaces, vegetation, and manufactured features are considered distinctive elements of an area's visual character if they are inherent to the function and structure of the landscape. Sensitivity levels are a measure of the concern for the scenic values of a landscape that the public (users) have. Public lands are given a high, medium, or low sensitivity level by

considering the type of user, amount of use, public uses, adjacent land uses, and special management or research objectives.

3.5.1 Affected Environment

Land Use. Land use affected environment includes the base and areas exposed to aircraft-generated noise. The majority of land (23,390 acres) found on TAFB is classified as unimproved (the majority is forested or coastal). Almost 1,864 of TAFB's 30,000 acres are classified as undeveloped military and there are 4,699 acres classified as developed military activity (Tyndall 2006).

Recreation. Several opportunities for outdoor recreation are available on TAFB. There are five fishing lakes and four hiking trails as well as hunting opportunities. Approximately 12,500 acres have been categorized as a Wildlife Management Area (WMA) by the Florida Fish and Wildlife Conservation Commission. In WMAs, public recreation and hunting is operated by the landowner in cooperation with the Commission. Outside of base boundaries, St. Andrews State Park also provides outdoor recreation opportunities including boating, hiking, camping, fishing, swimming, scuba diving, and snorkeling. The park is located adjacent to and north of TAFB on 700 acres.

Visual. Generally, the visual landscape can be characterized from quite rural within base boundaries with abundant forested and coastal acreage on the base to quite well developed and urbanized outside base boundaries.

Base. Tyndall AFB is located in Bay County which has a population of approximately 152,000 people. Under baseline conditions, 98 percent of noise levels 65 dB DNL and greater fall over open water and TAFB, a little over 1 percent of off-base lands are exposed to noise levels between 65 and 75 dB DNL (Table 3-13). A total of 110 acres, zoned as residential, would be exposed to noise levels 75 dB DNL and less. No other land uses outside of base boundaries are exposed to noise levels exceeding 75 dB DNL.

Table 3-13 Baseline Noise Exposure and Land Uses at TAFB

Location	***Geographic Area (in acres) Exposed to Noise Levels (DNL)***					
	65-70	**70-75**	**75-80**	**80-85**	**>85**	**Total**
Tyndall AFB	6,650	8,151	4,364	2,049	1,628	***22,842***
Open Water	35,450	10,236	2,267	260	0	***48,212***
Commercial	22	9	0	0	0	***31***
Industrial	0	0	0	0	0	***0***
Open/Forest	634	24	0	0	0	***657***
Public	48	9	0	0	0	***57***
Residential	97	14	0	0	0	***110***
Total by Contour Band	***42,901***	***18,441***	***6,630***	***2,309***	***1,628***	***71,909***

In terms of noise receptors, Table 3-14 provides a list of representative locations exposed to noise contour bands 65 dB DNL and greater; they are the same receptors that were identified in the Relocation EA to be consistent with that evaluation (Tyndall AFB 2011). This list is not meant to be inclusive of all receptors, but illustrative of noise exposure levels which individuals underlying these noise contour bands might experience. Figure 3-5 shows receptor locations with overlying noise contour bands. Under baseline conditions, there are several receptors exposed to noise levels greater than 70 dB DNL. In accordance with Air Force policy, this noise level could potentially be associated with hearing loss if persons were exposed (with no structural sound attenuation) over a long period.

Table 3-14 Baseline Noise Levels at Representative Locations at/around TAFB

Location ID	*Location Description*	*dB DNL*
1	Wood Manor (on-base accompanied housing area)	69
2	City of Parker	71
3	Tyndall AFB Dorms	80
4	Parker Elementary School	59
5	Tyndall Elementary School	80
6	First Baptist Church of Parker	60

For the City of Parker, 71 dB DNL is generated under baseline conditions; however, with noise attenuation provided by structures, it is anticipated that individuals in Parker do not experience increased levels of annoyance due to aircraft operations generated by the base. At Tyndall AFB Dorms, while noise levels are 80 dB DNL, those living in the dorms are there little of the time during aircraft operational hours and are deployed to this particular base for a limited time period; therefore, hearing loss risk is considered minimal. For Tyndall Elementary School (at 80 dB DNL), students could be exposed for approximately 6 years (Kindergarten through fifth grade, but potentially less due to military personnel moves every 2 to 3 years) but teachers and staff could be exposed for a longer period. Outdoor-to-indoor noise attenuation provided by the school building reduces noise levels for persons indoors, but not for children playing outside and for teachers and other staff monitoring the children while they play. Since both teachers and students spend the majority of the school day indoors, actual exposure is less, and aircraft noise induced hearing loss risk is considered minimal (Tyndall AFB 2011).

For recreational purposes, open forest and public lands exposed to noise levels 65 to 75 dB DNL total 657 acres or less than 1 percent (refer to Table 3-13); none of these areas are exposed to noise levels exceeding 75 dB DNL. The visual landscape under baseline conditions primarily comprises the base and associated aircraft operations, coastal communities to the east and west (Panama City and Mexico Beach, respectively), commercial timber production to the north and west, as well as industrial and residential areas to the northeast.

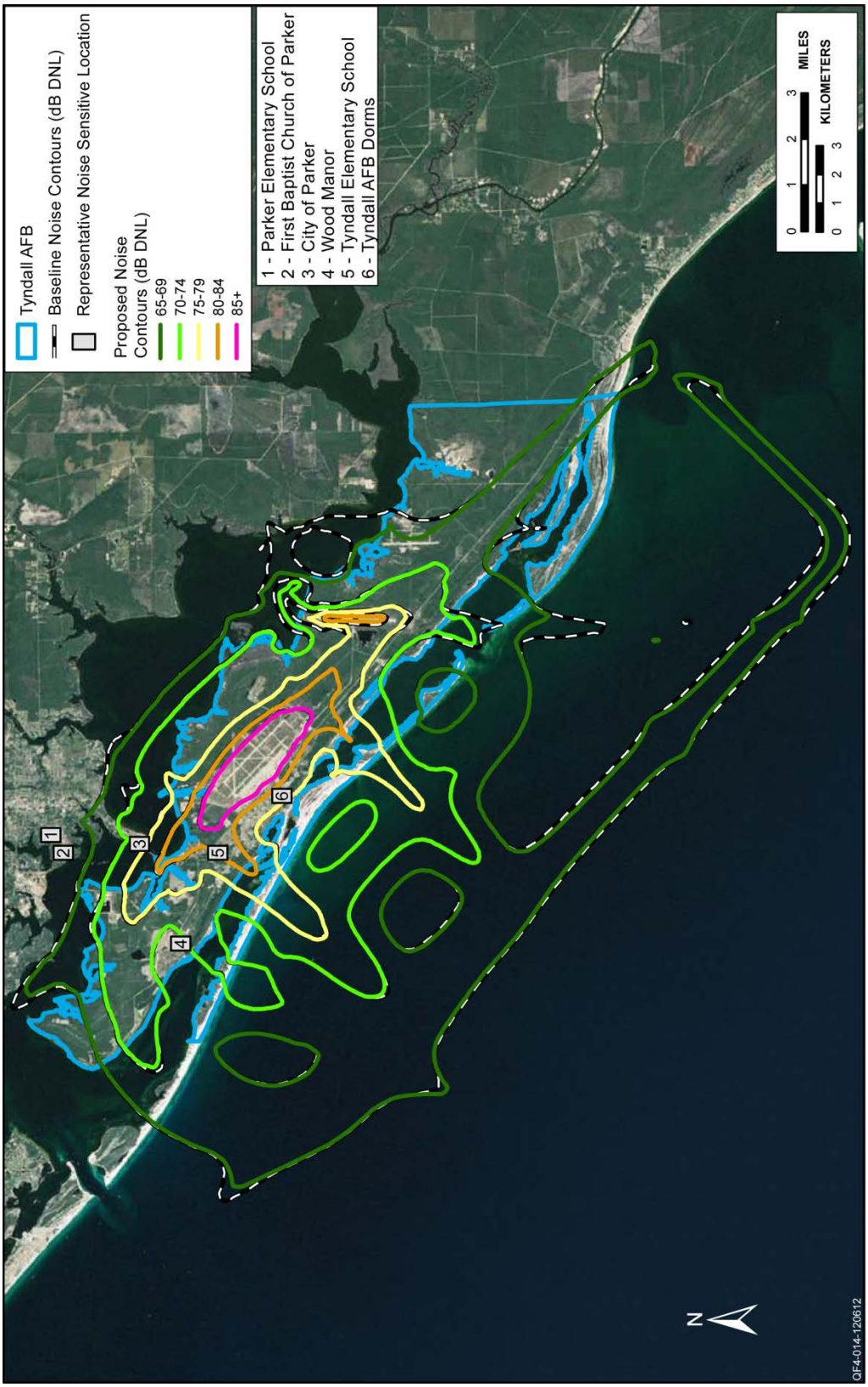


Figure 3-5 Representative Receptors Under Baseline and Projected Noise Contours at TAFB

3.5.2 Environmental Consequences

Significance of impacts under this resource is based on the level of land use sensitivity in areas affected by a Proposed Action/Preferred Alternative. In general, impacts would be significant if the action would: 1) be inconsistent or non-compliant with applicable land management plans or policies, 2) preclude the viability of an existing land use activity, 3) preclude continued use or occupation of an area, or 4) be incompatible with adjacent land uses.

Proposed Action/Preferred Alternative

Base. As discussed in Section 3.2.2, areas affected by noise levels 65 dB DNL and greater would decrease with the replacement of QF-4s with QF-16s. As present in Table 3-15, excluding lands on TAFB and areas over water, there would be an overall reduction of 66 acres (4.6 percent) exposed to noise levels 65 to 75 dB DNL in open space/forested areas, public lands, and residential areas (no changes to commercial or industrial areas). With off-base land uses such as these experiencing overall reductions in exposure to noise levels 65 dB DNL and greater, it is not anticipated there would be any changes in land uses if the Proposed Action/Preferred Alternative were implemented and therefore, no significant impacts.

Table 3-15 Proposed Noise Exposure/Land Uses at/around TAFB

Location	***Geographic Area (in acres) Exposed to Noise Levels (DNL)***						***Change Compared to Baseline***
	65-70	**70-75**	**75-80**	**80-85**	**>85**	***Total***	
Tyndall AFB	6,358	8,126	4,215	1,897	1,559	***22,154***	*-688*
Open Water	33,773	9,493	2,176	246	0	***45,688***	*-2,524*
Commercial	23	8	0	0	0	***31***	*0*
Industrial	0	0	0	0	0	***0***	*0*
Open/Forest	587	23	0	0	0	***610***	*-47*
Public	46	9	0	0	0	***54***	*-3*
Residential	81	13	0	0	0	***94***	*-16*
Total by Contour Band	***40,868***	***17,672***	***6,391***	***2,143***	***1,559***	***68,632***	*-3,277*
Change Compared to Baseline	*-2,033*	*-770*	*-240*	*-166*	*-69*	*-3,277*	

Under the Proposed Action/Preferred Alternative, there would be no perceptible changes in receptors exposed to noise levels 65 dB DNL and greater. As presented in Table 3-16 and depicted in Figure 3-5, noise levels at Wood Manor would experience an imperceptible decrease of 1 dB DNL, and the City of Parker, Parker Elementary School, and the First Baptist Church of Parker would experience no changes in noise levels when compared to baseline conditions. However, Tyndall Dorms and Tyndall Elementary School would continue to be exposed to 80 dB DNL. Actual exposure would be considerably less because dorms are predominantly occupied during non-operational hours, military personnel are deployed a limited of time to the base, and both teachers and students spend the majority of the school day indoors; therefore, noise induced hearing loss risk would be minimal and not significant (Tyndall AFB 2011).

Table 3-16 Proposed Noise Levels at Representative Locations at/around TAFB

Location ID	*Location Description*	*DNL*
1	Wood Manor (on-base accompanied housing area)	68
2	City of Parker	71
3	Tyndall AFB Dorms	80
4	Parker Elementary School	59
5	Tyndall Elementary School	80
6	First Baptist Church of Parker	60

In terms of recreation and visual resources, the Proposed Action/Preferred Alternative would not perceptibly change what is found under baseline conditions and, therefore, no change in impacts would when compared to baseline would be anticipated. Overall, open/forested and public lands exposed to noise levels 65 dB DNL and greater would actually decrease by 45 acres and there would be no changes to the visual landscape if the Proposed Action/Preferred Alternative were implemented.

Airspace. Noise exposure of lands underlying the airspace would not differ from that reported as TAFB baseline in the Relocation EA (Tyndall AFB 2011), as a matter of fact the QF-16 FSAT is a quieter aircraft than the QF-4 FSAT (refer to Table 3-2) and would imperceptibly reduce noise levels to lands underlying the airspace.

For recreational activities underlying the airspace, noise levels would not differ perceptibly from those already portrayed in the Relocation EA (Tyndall AFB 2011). In terms of the visual landscape, there would be no effects because: 1) no new construction is taking place and any infrastructure upgrades/improvements would be consistent with adjacent developed areas and 2) there would be no perceptible changes in how QF-16s fly when compared to the QF-4s so no perceptible changes would be experienced by lands underlying the airspace.

No Action Alternative

Under the No Action Alternative, the Air Force would not replace the QF-4 FSATs with QF-16 FSATs at TAFB. Land use, recreation, and visual resources would remain unchanged from those presented under baseline.

3.6 CULTURAL AND TRADITIONAL RESOURCES

Cultural resources are defined as archaeological, architectural, or traditional. Archaeological resources include prehistoric archaeological sites through recent 20th century historical components. All unevaluated resources are treated as eligible for the National Register until determined otherwise. Architectural resources include historic properties and structures, which are included in, or eligible to be included in, the National Register of Historic Places (National Historic Preservation Act [NHPA], as amended [16 USC Section 470 *et seq.*]). Section 106 of the NHPA, as amended, requires federal agencies to consider the effects of their actions on historic properties before undertaking a project. Compliance with Section 106 is outlined in the Advisory Council on Historic Preservation's regulations, "Protection of Historic Properties" (36 CFR Part 800).

Traditional resources are associated with specific Indian traditional resources, sacred sites, or areas. These resources are protected under the Archaeological Resource Protection Act (16 USC Sections 470aa-470mm, PL 96-95 and amendments), the Native American Graves Protection and Repatriation Act (PL 101-

601; 25 USC Sections 3001-3013), and the American Indian Religious Freedom Act (PL 95-341, 42 USC Sections 1996 and 1996a). The NHPA and associated Section 106 compliance also include guidance for American Indian consultation regarding cultural significance of potential religious and sacred artifacts (16 USC Sections 470a [a][6][A] and [B]).

Department of Defense and Air Force instructions mandate all bases have an Integrated Cultural Resources Management Plan (ICRMP) that will be a decision document for management and protection of cultural resources on the installation. The instructions include a provision that the ICRMP be a component of the base Master Plan and revised every 5 years.

3.6.1 Affected Environment

The affected environment for cultural and tradition resources includes the base and areas exposed to TAFB aircraft overflights. The Area of Potential Effect (APE) includes the sites proposed for construction, demolition, and infrastructure upgrades/improvements. TAFB archaeological investigations have documented 96 archaeological sites. Of these, 22 sites have been recommended as eligible or potentially eligible for the National Register of Historic Places (NRHP). The remaining sites were recommended as ineligible because they had been disturbed or were of a scattered or isolated character (Tyndall AFB 2010a).

All cultural resources sites identified as significant, potentially eligible, or eligible that are in established timber plantations are resurveyed to establish exact boundaries prior to any harvesting and regeneration activities. The areas identified will be managed in accordance to developed guidelines and procedures to ensure preservation of the site and conservation of the resources on the site. Sites that exist in natural areas are protected, preserved, and evaluated to ensure proper utilization of the resources while protecting the integrity of the site. The ICRMP provides recommendations for the routine maintenance of both NRHP eligible and potentially-eligible archeological and architectural resources (Tyndall AFB 2010a).

3.6.2 Environmental Consequences

Properties identified in the APE are evaluated according to the NRHP criteria, in consultation with the SHPO and other parties. Typically, if the SHPO and other parties and the Air Force agree in writing that a property is eligible or not eligible to the NRHP, that judgment is sufficient for Section 106 purposes (36 CFR 800.4[c][2]). Effects (i.e., impacts) to cultural resources are defined as "alteration to the characteristics of an historic property qualifying it for inclusion in or eligibility for the National Register" (36 CFR 800.16(i)). For the purposes of this analysis, "effects" are discussed as either adverse or not adverse. "An adverse effect is found when an undertaking may alter, directly, or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feelings, or association" (36 CFR 800.5(a)(1)). The APE includes the sites proposed for demolition and infrastructure upgrades/improvements: repair/add to Buildings 9310 and 45, repair/add to Hangar 5, and demolish/repair airfield and drone runways.

Proposed Action/Preferred Alternative

Base. No adverse effects to cultural resources are expected from implementation of the Proposed Action/Preferred Alternative. The entire APE was surveyed for cultural resource presence/absence. One

historic structure, Building 156/Hangar 3, is the only World War II hangar on TAFB. Because this structure would be affected by renovation activities under the Proposed Action/Preferred Alternative SHPO consultation was undertaken. In consultation with the Florida SHPO, they concurred with the Air Force conclusion of no adverse effects.

No archaeological resources within the APE have been identified to date as eligible for listing on the NRHP. In addition, no historic districts, cemeteries, sacred sites, or traditional cultural properties are identified within this alternative area. If during ground-disturbing activities, however, an inadvertent discovery of cultural resources were made, construction activity would cease; the 325 CES cultural resources manager would be notified; and prescribed procedures for protection, as set forth in the ICRMP, would be followed (Tyndall AFB 2010a).

Four federally-recognized American Indian Tribes were contacted for project-specific consultation both during IICEP (September 19, 2012) and as a follow-up with more detailed information regarding the Proposed Action/Preferred Alternative and alternatives on November 26, 2012. Only one response from the Muscogee (Creek) Nation was received in response to the November letter (Appendix A). In their response they recommended a finding of "No Effect" but noted that if any inadvertent discoveries were made then work should cease and the Muscogee (Creek) Nation and other appropriate agencies immediately notified.

Airspace. QF-16 training activities would operate in the same airspace and conduct similar missions as the QF-4 FSATs. Adverse effects to cultural resources resulting from any operational noise would not be expected under the Proposed Action/Preferred Alternative.

No Action Alternative

Under the No Action Alternative, the Air Force would not implement the proposed project activities and as a result, no adverse effects to cultural resources would occur.

3.7 EARTH RESOURCES

Soil refers to unconsolidated earthen materials overlying bedrock or other parent material and is described in this EA in terms of drainage, erosion, and flooding potential. As indicated in Section 3.1.2, topography and geology would not be affected and are not evaluated further in the EA. Soils, however, is analyzed due to the potential for construction, demolition, and infrastructure upgrades/ improvements to impact drainage, erosion, and flooding potential at TAFB.

3.7.1 Affected Environment

The affected environment includes areas that would be exposed to ground-disturbing activities on the base. Soils at TAFB are predominately sandy, acidic, poorly drained, have low shrink-swell potential, and are relatively close to the underlying water table (Tyndall AFB 2006).

3.7.2 Environmental Consequences

Impacts on soils can result from earth disturbance that expose soil to wind or water erosion. Analysis of impacts on soils examines the potential for such erosion at TAFB and describes typical measures employed to minimize erosion. In addition, soil limitations and associated typical engineering remedial measures are evaluated with respect to proposed construction. Impacts would be considered significant

if uncontrolled soil erosion and sedimentation occurred. No impacts would occur in the airspace due to aircraft or construction/renovation/upgrade activities and, therefore, is not evaluated here.

Proposed Action/Preferred Alternative

The Proposed Action/Preferred Alternative would involve construction, demolition, and modification of facilities in order to meet the operational and maintenance requirements for the proposed beddown of the QF-16 FSAT. Three new ground-disturbing activities are proposed within the industrial area of the base: 1) 4,900 linear ft of new water/sewer lines to Building 9310; 2) 2,466 sf expansion of Hangar 5; and 3) 900,000 sf of airfield pavement repair. Soils at TAFB would undergo temporary, short-term impacts during demolition and construction activities (see Section 3.8.2 [Water Resources] for potential impacts to wetlands). To minimize these potential impacts during construction and demolition activities, erosion and sedimentation control techniques would be used to stabilize soils. These techniques include (but are not limited to) using vegetative covers (e.g., permanent seeding, groundcover) and installing silt fencing and sediment traps. In the long term, proper stormwater design and management (e.g., breaking runoff flow and landscaping) would be implemented to decrease surface runoff and the associated risk of exposed soil erosion. No significant impacts would occur under the Proposed Action/Preferred Alternative.

No Action Alternative

Under the No Action Alternative, the Air Force would not replace the QF-4 FSATs with QF-16 FSATs for aircrew training. Baseline soil resources described above would remain unchanged.

3.8 WATER RESOURCES

Water resources include storm water, wetlands, floodplains, and coastal zone. Under the Proposed Action/Preferred Alternative, storm water, wetlands, floodplains, and coastal zones would be potentially affected.

Storm water is precipitation that falls onto surfaces, such as roofs, streets, the ground, etc., and is not absorbed or retained by that surface but flows off, collecting volume and energy. Stormwater runoff management addresses measures to reduce flow energy and pollutants in storm water and to control discharge from point and non-point sources. Non-point source pollution is pollution of surface-water and groundwater resources by diffuse sources. Point source pollution is that produced by a single, identifiable point source. Management of storm water associated with construction activities, including infrastructure/lineal projects, is covered under National Pollutant Discharge Elimination System (NPDES) Permits.

Federal Leadership in Environmental, Energy, and Economic Performance (EO 13514), requires a 2-percent annual reduction in potable, industrial, landscaping, and agricultural water intensity by FY20. In addition, the EO requires that all new construction comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. This includes employing design and construction strategies that reduce storm water runoff. Furthermore, Section 438 of the Energy Independence and Security Act of 2007 requires that any development or redevelopment project involving a federal facility with a footprint exceeding 5,000 square feet (sf) shall use site planning, design, construction, and maintenance strategies to maintain or restore the predevelopment hydrology

of the property with regard to temperature, rate, volume, and duration of flow. Compliance with this requirement can be met through the implementation of low impact development technologies.

Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands serve as the transition between terrestrial habitats and aquatic habitats, and are defined by the U.S. Army Corps of Engineers (USACE) as areas characterized by a prevalence of vegetation adapted to saturated soil conditions (USACE 1987). Wetlands can be associated with groundwater or surface water.

The USACE classification scheme serves as the national standard for wetland classification. Wetlands are broadly classified into five systems: 1) marine, 2) estuarine, 3) riverine, 4) lacustrine, or 5) palustrine. They are further classified by subsystems and classes based on substrate material and flooding regime, or vegetation.

- *Marine System* – Open ocean overlying the continental shelf including high energy shorelines such as beaches and rocky headlands.
- *Estuarine System* – Deep water and wetland areas that are usually semi-enclosed with an opening to the ocean and in which there is some mixing of fresh and sea water.
- *Riverine System* – Freshwater rivers and their tributaries along with most associated wetlands.
- *Lacustrine System* – Open freshwater wetlands situated in topographic depressions with less than 30 percent vegetative cover and greater than 20 acres in size.
- *Palustrine System* – All non-tidal freshwater wetlands dominated by trees, shrubs, and persistent emergent vegetation.

Coastal Zone discussion specifically refers to compliance with the Coastal Zone Management Act (CZMA) of 1972 (16 USC 1451, *et seq*., as amended). In accordance with Section 307 of the CZMA and 15 CFR 930 subpart C, federal agency activities affecting a land or water use or natural resource of a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of the state's coastal management program.

CZMA policy is implemented through state coastal zone management programs. Activities on federal lands are subject to CZMA federal consistency requirements if the activity could affect any land, water, or natural resource of the coastal zone, including reasonably foreseeable effects. For a proposed activity that would affect coastal resources, a Federal Coastal Consistency Determination is required. A Federal Coastal Consistency Determination is a determination supported by findings that a proposed activity in or affecting the resources of a coastal zone complies with, and would be conducted in a manner that is consistent to the maximum extent practicable with, the state's coastal zone enforceable policies unless ". . . full consistency is prohibited by existing law applicable to the federal government." A Negative Determination would be prepared for a proposed activity that does not have the potential to affect the state's coastal zone or any of the coastal resources.

3.8.1 Affected Environment

The affected environment comprises areas that would experience ground-disturbing activities.

Storm Water. Storm water results from rainfall or snowmelt that runs over the land surface and ultimately empties into a receiving water body. Currently TAFB operates under a Multi-Sector Generic Permit issued by the Florida DEP on 19 June 2006 and is permitted under the Industrial Sector "S," Air Transportation Facilities, of the NPDES to operate facilities and discharge storm water to surface waters.

The NPDES storm water permitting program is separate from Florida's storm water/environmental resource permitting programs and local storm water/water quality programs, which maintain their own regulations and permitting requirements (Tyndall AFB 2007).

Developed areas (less than 15 percent of the total base area has been developed) at TAFB have seven distinct drainage areas (A through G) from which surface waters in industrial areas of the base drain to receiving waters off-base. Outfalls A, B, E, and F discharge into Shoal Point Bayou, which is located to the northwest of the base and is the major receiving water to the north. Outfall C discharges into Little Cedar Bayou, located northeast of the base. Outfall D discharges into Saint Andrew Sound, located to the south of the base. Outfall G discharges into East Bay, located to the northeast of the base. Descriptions of outfall areas are taken from the base Storm Water Pollution Prevention Plan (SWPPP) (Tyndall AFB 2007). A summary of each outfall is provided in Table 3-17.

Table 3-17 Storm Water Outfall Areas in Industrial Areas of TAFB

Outfall	*Drainage Area (acres)*	*Impervious Surface Area (%)*	*Description of Primary Industrial Activity*	*Location*	*Receiving Water*
A	200	47	Runway, hangars	NW end or runway	Shoal Point Bayou
B	360	34	Runway, hangars	Northern 1/3 of runway	Shoal Point Bayou
C	760	40	Runway, hangars	Majority of active runway	Little Cedar Bayou
D	35	65	Hangars	West end of support side	Unnamed tributary of St Andrew Sound
E	14	87	Fuels Management Area	West of the runway	Shoal Point Bayou
F	13	61	Fuel barge off-loading area	Shoal Point Bayou (north of runway)	Shoal Point Bayou
G	1,544	7	Full-Scale Drone Runway	Central Portion of Base	East Bay

Source: Tyndall AFB 2007.

Drainage areas serviced by the outfalls include a variety of industrial activities which may include the use of jet fuel, oil, diesel fuel, hydraulic fluids, antifreeze, solvents, paints, degreasers, detergents, hazardous waste, and Aqueous Film Forming Foam agents. In particular, Outfall A includes approximately 30 buildings supporting these same industrial activities. Drainage areas serviced by Outfalls E and F include aboveground and underground storage tanks containing fuel liquids and contain the greatest volume of fuel and other materials.

Wetlands. Wet prairie, basin swamps, baygall, and floodplain swamps comprise extremely wet area habitats on Tyndall AFB (Tyndall AFB 2006). Wet prairie is a fire maintained wetland community and usually appears as a treeless savanna. Basin swamps are low, frequently inundated areas that develop in ancient coastal swales or lagoons. They are closed basins with no outlets and often dominated by pond cypress or swamp tupelo. Baygall habitats on TAFB are found at the margins of creeks and streams and are dominated by shrubs, such as black titi, swamp titi, and tall gallberry. Floodplain swamp habitats are most common on the eastern end of the main peninsula of TAFB, where they follow slow-gradient black water stream courses. Streams on TAFB meander through sandy soil, which contain very little fine

sediments of clay or silt. Stream water is stained dark brown or black by organic acids that leach from the deep litter lying in the Floodplain Swamp and Baygall habitats. Freshwater lakes are found throughout the base. Some are a result of excavation or impoundment while others developed naturally as a result of coastal land development (Tyndall AFB 2006).

Coastal Zone. The CZMA was enacted to develop a national coastal management program that comprehensively manages and balances the impact of competing uses of land and the impacts of those uses to a coastal use or resource. Florida's Department of Environmental Protection (DEP) is responsible for directing the implementation of the state-wide coastal management program. At TAFB, the preservation of coastal resources is part of the overall natural resources management program (Tyndall AFB 2006). To the maximum extent practicable, TAFB conducts its activities consistent with the goals of Florida's coastal zone management program.

The base is situated on a peninsula extending from the mainland and is separated from the Gulf of Mexico by a series of barrier islands that occupy over 2,300 acres of land. Not only do the barrier islands function in providing some protection from storms, they are dynamic cyclic, disturbance-based dune systems. The overall cycle is dependent upon frequency and severity of storms. The vegetation succession is dependent upon presence or absence of water, salinity gradient and the distribution of sand and development of sand dunes by prevailing winds. Most of the vertebrate listed species found on TAFB are associated with the barrier islands. There are 17.7 miles of Gulf shore frontage and a total of 128 miles of shoreline within base boundaries. In addition, there is a second coastal community type found on TAFB, the estuarine tidal marsh, a community found primarily along the bay/land interface of the main peninsula.

3.8.2 Environmental Consequences

Criteria for evaluating impacts related to water resources associated with the Proposed Action/Preferred Alternative are adherence to applicable local, state, and federal regulations and permits. Impacts to storm water, wetlands, and coastal zones are measured by the potential to violate laws or regulations adopted to protect or manage water resources. Land development changes the physical, chemical, and biological conditions of water resources. When land is developed, the hydrology (the natural cycle of water) can be altered. Impacts on hydrology can result from land clearing activities, disruption of the soil profile, loss of vegetation, introduction of pollutants, new impervious surfaces, and an increased rate or volume of runoff after major storm events. Without proper management controls, these actions can adversely impact water resources. The degree of impact considers the size of the affected area, the magnitude, and nature of change caused by the Proposed Action/Preferred Alternative.

Management of storm water under NPDES associated with construction activities, including infrastructure/lineal projects, is covered by Florida's DEP Section 403.0885 of the Florida Statutes. Similar to soil resources, management of storm water requires development and implementation of a SWPPP. The permittee (i.e., construction contractor) is required to develop and implement the SWPPP to reduce or minimize any impacts to water resources and to protect waterways from sedimentation due to eroding soil conditions. A notice of intent for construction-related storm water discharge must be submitted to the Florida DEP. For purposes of this analysis, the base is the focus of potential water

resources impacts; water resources underlying airspace would not be affected by the basic one-for-one replacement of QF-4s by QF-16s.

Proposed Action/Preferred Alternative

Under the Proposed Action/Preferred Alternative, there would be several upgrades and improvements to existing facilities and infrastructure such as internal building repairs, additions/upgrades to already paved areas, or include replacement of runway and taxiway asphalt surfaces with concrete.

Storm Water. All required stormwater protection measures and minimization efforts would be employed by the construction contractor(s) to eliminate adverse pollutant runoff, minimize soil erosion, and protect against undue sedimentation of adjacent wetlands or surface water bodies to avoid short-term direct and indirect impacts to storm water. The existing TAFB SWPPP would be updated to address the new facility and the base would continue to adhere to its SWPPP provisions.

Wetlands. In accordance with Florida DEP and the Northwest Florida Water Management District (NWFWMD) guidelines, a minimum buffer of 15 ft and an average buffer of 25 ft should be maintained between upland activities and adjacent wetlands. Impact to wetlands would not be considered adverse if these buffers remain undisturbed, except for drainage features such as spreader swales and discharge structures, provided the construction or use of these features does not adversely impact wetlands.

While it is not anticipated to affect any wetlands, if jurisdictional wetlands were identified, a CWA Section 404 permit through USACE would be required. Impacts to wetlands must also be coordinated with Florida DEP and NWFWMD including any specific agency required delineations and management actions. In coordination with Florida DEP and NWFWMD, TAFB would replace the loss of any wetlands with new, same quality wetlands or restore wetlands in a suitable on-base location. Therefore, because TAFB would replace disturbed wetlands with same quality wetlands there would be no net loss in wetlands and impacts to wetlands would not be significant.

Coastal Zone. The CZMA federal consistency requirement, CZMA Section 307, mandates that federal agency activities be consistent to the maximum extent practicable with the enforceable policies of a state management program. The federal consistency requirement applies when any federal activity, regardless of location, affects any land or water use or natural resource of the coastal zone. The question of whether a specific federal agency activity may affect any natural resource, land use, or water use in the coastal zone is determined by the agency implementing the action. Federal agencies make determinations as to whether their actions are consistent with approved state plans and submit these determinations for state agency review and concurrence. All relevant state agencies must review the Proposed Action/Preferred Alternative and alternatives and issue a consistency determination. To comply with the federal CZMA, TAFB is required to evaluate its proposal in terms of consistency with the CZMA. The Air Force has determined that the proposal is consistent with Florida's coastal management program and a draft consistency determination letter was sent to the Florida DEP and included in Appendix D.

No Action Alternative

Under the No Action Alternative the Air Force would not implement any of the new construction or facility and infrastructure upgrades/improvements; therefore conditions would continue as presented under the affected environment.

3.9 HAZARDOUS MATERIALS AND WASTES

This EA presents impacts related to hazardous materials and waste. Specifically, analyses were done to assess the potential for hazardous materials to be introduced TAFB during the course of construction activities; for hazardous wastes generated as a result of construction and demolition activities; and for encounters with contaminated media during the course of construction/demolition activities. This EA also presents impacts related to the continuing use of hazardous materials and generation of hazardous wastes during QF-16 FSAT operations and maintenance.

Hazardous materials are chemical substances that pose a substantial hazard to human health or the environment. Hazardous materials include hazardous substances, extremely hazardous substances, hazardous chemicals, and toxic chemicals. In general, these materials pose hazards because of their quantity, concentration, physical, chemical, or infectious characteristics. Resource Conservation and Recovery Act (RCRA) defines a hazardous waste as a solid waste, or combination of solid waste, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may: 1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or 2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Hazardous substances are defined and regulated under laws administered by OSHA, USEPA, and U.S. Department of Transportation (DOT). Each of these agencies incorporates hazardous substance terminology in accordance with its unique Congressional mandate: OSHA regulations categorize substances in terms of their impacts on employee and workplace health and safety; DOT regulations categorize substances in terms of their safety in transportation; and USEPA regulations categorize substances in terms of protection of the environment and public health.

With regard to environmental impacts, hazardous substances are regulated under several federal programs administered by the USEPA, including the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), Emergency Planning and Community Right-to-Know Act, Toxic Substances Control Act (TSCA), and RCRA. DoD installations are required to comply with these laws along with other applicable federal, state, and DoD regulations, as well as with relevant EOs.

In regulations promulgated under RCRA, the USEPA defines hazardous waste as a solid waste which is not excluded from regulation as a hazardous waste under 40 CFR Part 261.4(b) and exhibits any of the characteristics (ignitability, corrosivity, reactivity, and toxicity) described in 40 CFR Part 261; or is listed in 40 CFR Part 261 (D); or is a mixture containing one or more listed hazardous wastes. Hazardous wastes may take the form of solid, liquid, contained gaseous, semi-solid wastes (e.g., sludge), or any combination of wastes that pose a substantial present or potential hazard to human health or the environment and have been discarded or abandoned.

The promulgation of TSCA represented an effort by the federal government to address those chemical substances and mixtures for which it was recognized that the manufacture, processing, distribution, use, or disposal may present unreasonable risk of personal injury or health of the environment, and to effectively regulate these substances and mixtures in interstate commerce. The TSCA Chemical Substances Inventory lists information on more than 62,000 chemicals and substances. Toxic chemical substances regulated by USEPA under TSCA include asbestos and lead, which for the purposes of this EA,

are evaluated in the most common forms found in buildings, namely asbestos-containing materials (ACM) and lead-based paint (LBP).

ACMs have been classified as a hazardous air pollutant by USEPA in accordance with Section 112 of the Clean Air Act. Surveys would be conducted for ACMs, as required by 40 CFR Part 61.145, during the design phase of projects and prior to modification, demolition, or relocation of any structures.

LBP may also be present in buildings or other facilities that would be modified or demolished as part of the proposal. Similar to ACMs, LBP surveys would be conducted during project design phase and prior to any structural modification, demolition, or relocation. LBP sampling would be conducted on the structures to be removed and analyzed in accordance with USEPA-approved Toxicity Characteristic Leaching Procedure methodology. Based on this federal testing methodology, the paint would be considered hazardous if lead is detected at concentrations greater than 5 micrograms per liter. If LBP were detected at hazardous concentrations, these materials would be removed. LBP would be characterized, managed, transported, and disposed according to applicable state and federal requirements for protecting human health and safety and the environment.

Hazardous materials are identified and regulated under CERCLA, OSHA, and Emergency Planning and the Community Right-to-Know Act. Hazardous materials are defined in AFI 32- 7086, *Hazardous Materials Management,* to include any substance with special characteristics that could harm people, plants, or animals. Waste may be classified as hazardous due to its toxicity, reactivity, ignitability, or corrosivity. In addition, certain types of waste are listed or identified as hazardous in 40 CFR Part 263. The Environmental Restoration Program (ERP) and Installation Restoration Program (IRP) are DoD programs used to identify, characterize, and remediate contamination from past activities at DoD installations.

3.9.1 Affected Environment

The affected environment for this resource includes the facilities where hazardous and/or toxic materials and wastes are generated and disposed of, as well as where contaminated sites would be disturbed.

Hazardous materials used by TAFB are controlled through the AFI 32-7086 and Tyndall AFB Hazardous Waste Management Plan (HWMP) dated December 2010 (Tyndall AFB 2010b), which provide centralized management of the procurement, handling, storage, issuance, turn-in, recovery, reuse, or recycling of hazardous materials. Development of these plans included review and approval by Air Force personnel to ensure that users are aware of exposure and safety risks. Base-developed management plans further serve to ensure compliance with applicable federal, state, and local regulations.

Aircraft flight O&M and installation maintenance require storage and use of hazardous materials such as flammable and combustible liquids. These materials include acids, corrosives, caustics, glycols, compressed gases, aerosols, batteries, hydraulic fluids, solvents, paints, pesticides, herbicides, lubricants, fire retardants, photographic chemicals, alcohols, and sealants.

The base is a Large-Quantity Generator (USEPA ID Number FL1570024124) that generates more than 2,200 pounds of non-acute hazardous waste per month. Hazardous wastes are generated from a variety of functions including aircraft and vehicle operations and maintenance, medical and dental facilities, cleaning and degreasing operations, and various maintenance and paint operations. These wastes include solvents, paints, paint-related materials, absorbent materials, rags and debris, blast materials,

and materials with an expired shelf life. Tyndall AFB recycles all lubricating fluids, batteries, and shop rags and hazardous wastes are managed in accordance with the TAFB HWMP.

The Hazardous Waste Program Manager is responsible for characterizing and profiling each waste stream. Initial Accumulation Point (IAP) managers are responsible for properly segregating, storing, characterizing, labeling, marking, packaging, and transferring all hazardous wastes for disposal from the IAP to the established 90-day storage area according to federal, state, local, and Air Force regulations. Hazardous materials and wastes used and generated at TAFB are currently managed under existing management procedures and standard construction practices, which are sufficient to prevent any significant impact on the environment at the base or on the general public. Fuel tanks are currently operated under a Spill Prevention, Control, and Countermeasures Plan (SPCCP).

Environmental Restoration Program. The ERP was developed to identify, investigate, and remediate potentially hazardous material disposal sites that existed on DoD property prior to 1984. The Air Force initiated an IRP at TAFB in 1981. Investigation and cleanup activities have occurred under the requirements of CERCLA. The Military Munitions Response Program (MMRP) was established by Congress in 2001 under the ERP to address the issues of Unexploded Ordnance, Discarded Military Munitions, and Munitions Constituents on sites owned and operated by the DoD. There are currently 80 ERP sites at TAFB including 13 that are currently regulated under CERCLA, 31 petroleum cleanup sites, 11 MMRP sites, and 25 closed sites (Tyndall AFB 2010b). The Tyndall Site Management Plan (SMP) identifies the status of the IRP/ERP sites and the MMRP for the installation (Tyndall AFB 2009). The purpose of the SMP is to outline the TAFB strategy and timeline for conducting a CERCLA investigation and remediation program for the base. Air Force policy requires that any proposed project on or near a TAFB ERP site be coordinated through the TAFB ERP Manager and they must obtain construction waivers from the Air Force.

3.9.2 Environmental Consequences

The qualitative and quantitative assessment of impacts from hazardous materials and waste management focuses on how (and to what degree) the Proposed Action/Preferred Alternative may affect hazardous materials usage and management, hazardous waste generation and management, and hazardous waste disposal. An impact is considered significant if the following conditions are met:

1. The generation of hazardous waste types or quantities could not be accommodated by the current management system, or
2. There would be an increased likelihood of an uncontrolled release of hazardous materials, which could potentially contaminate the soil, surface water, groundwater, or air.

Proposed Action/Preferred Alternative

The number of sites storing, using, and handling hazardous materials may change slightly with the replacement of QF-4s with QF-16s at the installation; however, the authorization process already in place for the acquisition of these materials would ensure that only the specific types and quantities necessary to carry out the mission would be brought to TAFB. Under the Proposed Action/Preferred Alternative, however, a new hazardous material, hydrazine, associated with the QF-16 would be introduced.

Hydrazine is a colorless liquid with an ammonia-like odor which is highly reactive and easily catches fire. Air Force Policy Directive (APD) 21-1, *Airspace and Space Maintenance* covers hydrazine policies and procedures for F-16 installations. Accordingly, each F-16 base is required to develop operating instructions for maintenance and storage of hydrazine, responding to potential hydrazine spill/incident, and supplying specialized training and equipment for personnel dealing with hydrazine. With the transition to QF-16s, TAFB will develop operating instructions for hydrazine use and maintenance, the SPCCP updated to ensure that operational, maintenance, security, safety, and medical procedures are enforced, and that personnel are well trained in these procedures.

There would be no substantive changes to the quantities of hazardous materials and petroleum substances used at the installation, therefore, the status of TAFB as a large quantity generator pursuant to the RCRA would not change. Any additional hazardous waste generation or handling areas that are established due to the conversion of QF-16 FSAT aircraft would be managed in accordance with the installation's HWMP.

Environmental Restoration Program. Under the Proposed Action/Preferred Alternative construction of a new facility and renovation/expansion of existing infrastructure would occur. However, no construction or renovation footprints would impact any contaminated groundwater ERP sites or contaminated soils. Any potential impacts associated with unknown contamination, however, would be mitigated through existing regulations and procedures as well as worker awareness and safety training.

In summary, no significant impacts to hazardous materials and wastes are anticipated if the Proposed Action/Preferred Alternative were implemented.

No Action Alternative

Under the No Action Alternative, the replacement of QF-4 FSAT with QF-16 FSATs at TAFB would not occur and baseline conditions would continue.

4.0 CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

CHAPTER 4 CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

This section provides: 1) a definition of cumulative effects, 2) a description of past, present, and reasonably foreseeable actions relevant to cumulative effects, 3) an analysis of the incremental interaction the proposed action may have with other actions, and 4) an evaluation of cumulative effects potentially resulting from these interactions.

4.1 DEFINITION OF CUMULATIVE EFFECTS

CEQ regulations stipulate that the cumulative effects analysis within an EA should consider the potential environmental impacts resulting from "the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR § 1508.7). CEQ guidance in *Considering Cumulative Effects* (CEQ 1997) affirms this requirement, stating that the first steps in assessing cumulative effects involve defining the scope of the other actions and their interrelationship with the proposed action. The scope must consider geographic and temporal overlaps among the proposed action and other actions. It must also evaluate the nature of interactions among these actions.

Cumulative effects are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, actions that coincide, even partially, in time would tend to offer a higher potential for cumulative effects.

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

1. Does a relationship exist such that affected resource areas of the proposed action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
2. If one or more of the affected resource areas of the proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
3. If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the proposed action is considered alone?

4.2 SCOPE OF CUMULATIVE EFFECTS ANALYSIS

The scope of the cumulative effects analysis involves both the geographic extent of the effects and the time frame in which the effects could be expected to occur. For this EA the geographic extent, or region of influence, is: 1) the base itself, but specifically the areas proposed for construction and/or infrastructure upgrades/improvements and 2) areas off base affected by perceptible changes in the noise environment. The time frame for cumulative effects begins with initiation of the construction/ improvements (FY14) and extends 4 years into the future. This 4-year time frame is chosen because replacement of the QF-4s with QF-16s would be completed.

4.3 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

A thorough search for relevant related actions within the region of influence was performed to identify past, present, and reasonable foreseeable actions that could cumulatively interact with the Proposed Action/Preferred Alternative. This examination did not identify any actions that would cumulatively interact with conversion of the QF-4s with QF-16s at TAFB. The Proposed Action/Preferred Alternative would incur no changes in the number of airfield or the type of airspace operations that would take place, only the type of aircraft (i.e., QF-4 to QF-16) would change.

4.4 CUMULATIVE EFFECTS SUMMARY

In terms of cumulative effects, no significant impacts are anticipated because: 1) no past, present, or reasonably foreseeable actions would interact with the Proposed Action/Preferred Alternative at TAFB to cause any significant impacts; 2) noise levels would imperceptibly be reduced outside of base boundaries; and 3) air emissions would decrease for CO, VOCs, SO_2, PM_{10}, $PM_{2.5}$, and GHG, with only a minor increase in NO_x.

5.0 OTHER NEPA CONSIDERATIONS

CHAPTER 5 OTHER NEPA CONSIDERATIONS

5.1 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Implementation of the Proposed Action/Preferred Alternative would not result in the unavoidable adverse loss of any resources at either of the bases.

5.2 RELATIONSHIP BETWEEN SHORT-TERM USE OF THE HUMAN ENVIRONMENT, AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

NEPA requires analysis of the relationship between a project's short-term impacts on the environment and the effects those impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This means that choosing one option may reduce future flexibility in pursuing other options, or that committing a resource to a certain use may eliminate the possibility for other uses of that resource.

Implementation of the Proposed Action/Preferred Alternative would not result in impacts that would reduce environmental productivity, permanently narrow the range of beneficial uses of the environment, or pose long-term risks to health, safety, or the general welfare of the public.

5.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Primary irreversible effects result from permanent use of a nonrenewable resource. Irretrievable resource commitments involve the loss in value of an affected nonrenewable resource that cannot be restored or consumption of renewable resources that are not permanently lost. Secondary impacts could result from environmental accidents. Nonrenewable resources are those resources that cannot be replenished by natural means, including oil, natural gas, and iron ore. Renewable natural resources are those resources that can be replenished by natural means, including water, lumber, and soil.

The Proposed Action/Preferred Alternative would not impose irreversible impacts, and only minor irretrievable impacts to renewable or nonrenewable resources would occur. Minor impacts to soil (a renewable resource) would occur as a result of impervious surfaces being introduced. However, other renewable resources would not be affected because there would be no increases or decreases in water use and timber would not be removed. In terms of nonrenewable resources, implementation of either the Proposed Action/Preferred Alternative would result in a small *decrease* in these irretrievable resources. This would occur because QF-16 FSATs have a more efficient engine than the older QF-4 FSATs and would negligibly decrease overall fuel consumption. Therefore, no irretrievable or irreversible impacts are associated with implementing the Proposed Action/Preferred Alternative.

Under the No Action Alternative, fossil fuels would continue to be consumed at the current rate and no reductions in nonrenewable resources would occur. Though not significant, impacts would continue to nonrenewable resources should the No Action Alternative be chosen for implementation.

5.4 OTHER CONSIDERATIONS

Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, set goals for federal agencies in areas such as energy efficiency, renewable energy, toxic chemical reduction, recycling, sustainable buildings, electronics stewardship, and water conservation. *Federal Leadership in Environmental, Energy, and Economic Performance* (EO 13514), expands on the requirements set forth in EO 13423 and requires that all new construction comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. This includes employing design and construction strategies that increase energy efficiency, eliminate solid waste, and reduce stormwater runoff. EO 13423 sets as a goal for all federal agencies the improvement of energy efficiency and the "reduction of greenhouse gas emissions of the agency, through reduction of energy intensity by (i) 3 percent annually through the end of fiscal year 2015, or (ii) 30 percent by the end of fiscal year 2015, relative to the baseline to the agency's energy use in fiscal year 2003."

The Air Force has developed an energy plan to reduce energy demand, increase energy supply, and create a culture change where energy is a consideration in all actions (Air Force 2008, 2010). Implementation of this vision has resulted in a decrease in facility energy intensity by nearly 18 percent since 2003; reducing ground vehicle fleet fossil fuel consumption by 15 percent since 1999; purchasing over 190,000 Energy Star®-compliant computers since July 2007; and implementing cost efficiencies, such as reducing aircraft weight and optimizing flight routes, where mission appropriate. In addition, by 2016, the Air Force plans to cost-effectively acquire 50 percent of contiguous U.S. aviation fuel via a synthetic fuel blend, utilizing domestic feedstocks and produced in the U.S., with the intent requirements that the synthetic fuel purchases be sourced from suppliers with manufacturing facilities that engage in carbon dioxide capture and effective reuse (Air Force 2008).

While the Proposed Action/Preferred Alternative may contribute to the consumption of nonrenewable resources, it is anticipated that consumption would slightly decrease and not have an adverse impact on continued availability, and the energy resource commitment would not increase in terms of region-wide usage. Furthermore, the Air Force’s on-going efforts to comply with the requirements set forth in EO 13423 would assist in minimizing any further irreversible or irretrievable effects to multiple non-renewable and renewable resources.

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CHAPTER 6 REFERENCES CITED

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7.0 LIST OF PREPARERS

CHAPTER 7 LIST OF PREPARERS

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APPENDIX A

COORDINATION AND CONSULTATION

IICEP LETTER

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR COMBAT COMMAND
JOINT BASE LANGLEY-EUSTIS VA

17 September 2012

HQ ACC/A7PS
129 Andrews Street, Suite 331
Langley AFB, VA 23665-2769

See Distribution List

Dear Sir or Madam,

The United States Air Force is preparing an Environmental Assessment (EA) for the Replacement of the QF-4 Full Scale Aerial Target (FSAT) with the QF-16 FSAT at Tyndall Air Force Base (AFB), FL and Holloman AFB, NM. The EA will assess the potential environmental consequences associated with this proposed action. Details including the draft purpose, need, and the description of the proposed action and alternatives are attached for your information.

The EA will evaluate potential impacts resulting from implementation of the proposed action. It will also examine the cumulative effects when combined with past, present, and any future proposals. In support of this process, we request your input in identifying general or specific issues or areas of concern you feel should be addressed in the environmental analysis. The Air Force will initiate Section 106 and other consultation regarding this proposed action under a separate correspondence, as required.

The Air Combat Command point of contact for planning is Ms. Sarah Amthor (757)764-9228 and the Air Force Center for Engineering and the Environment point of contact for execution is Mr. Allen Richmond (210)395-8555. Please forward written issues or concerns to the attention of Mr. Allen Richmond at 2261 Hughes Avenue, Suite 155, Lackland AFB, TX 78236-9853 or allen.richmond@us.af.mil . Though we will consider comments received at any time during the environmental process, to the extent possible, we would like to hear from you within 30 days of receipt of this letter. Thank you in advance for your assistance in this effort.

Respectfully,

SIGNED

LARRY H. DRYDEN, P.E.
Chief, Sustainable Installations

Attachment:
1. Distribution List
2. Replacement of QF-4 Full Scale Aerial Target (FSAT) with QF-16 FSAT at Tyndall AFB, FL and Holloman AFB, NM, Environmental Analysis, Chapters 1 & 2 - Draft

IICEP MAILING LIST

Prefix	*First*	*Last*	*Title*	*Organization Name*	*Address1*	*Address2*	*City*	*State*	*Zip*
Regulatory Consultation									
Mr.	Robert F.	Bendus	Director	Florida Department of State	Divison of Historical Resources	500 S. Bronough Street	Tallahassee	FL	32399
Ms.	Cindy	Dohner	Regional Director	U.S. Fish and Wildlife Service		1875 Century Blvd.	Atlanta	GA	30345
General IICEP Coordination									
				Florida State Clearinghouse	Department of Environmental Protection	3900 Commonwealth Blvd., M.S. 47	Tallahassee	FL	32399
			NEPA Coordinator	NOAA Fisheries Service, SE Regional Office		263 13th Avenue South	St. Petersburg	FL	33701
Dr.	Don	Imm	Project Leader	U.S. Fish and Wildlife Service	Ecological Services	1601 Balboa Avenue	Panama City	FL	32405
			State Aviation Manager	Florida Department of Transportation		605 Suwannee Street	Tallahassee	FL	32399
	Mark	Thompson		National Marine Fisheries Service		3500 Delwood Beach Road	Panama City	FL	32408
				Fish and Wildlife Research Institute	Florida Fish and Wildlife Conservation Commission	100 Eighth Avenue SE	St. Petersburg	FL	33701

Prefix	*First*	*MI*	*Last*	*Title*	*Organization Name*	*Address1*	*Address2*	*City*	*State*	*Zip*
Ms.	Joyce		Bear	Cultural Preservation Manager	Muscogee (Creek) Nation	P.O. Box 580		Okmulgee	OK	74447
Mr.	Terry		Steven	Historic Preservation Officer	Miccosukke Tribe of Indians in Florida	P.O. Drawer 440021		Miami	FL	33144
Mr.	Robert		Thrower	Tribal Historic Preservation Officer	Poarch Band of Creek Indians	5811 Jack Springs Rd.		Ardmore	AL	36502
Mr.	Bill		Steele	Tribal Historic Preservation Officer	Seminole Tribe of Florida	Attn: Ah-tah-thi-ki Museum	34725 West Boundary Rd.	Clewiston	FL	33440

IICEP RESPONSES

Florida Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

September 25, 2012

Mr. Allen Richmond
Air Force Center for Engineering and the Environment
Department of the Air Force
2261 Hughes Avenue, Suite 155
Lackland AFB, TX 78236-9853

RE: Department of the Air Force – Scoping Notice – Replacement of the QF-4 Full Scale Aerial Target (FSAT) with the QF-16 FSAT at Tyndall Air Force Base – Bay County, Florida.
SAI # FL201209256376C

Dear Mr. Richmond:

Florida State Clearinghouse staff has reviewed the subject public notice under the following authorities: Presidential Executive Order 12372; § 403.061(42), *Florida Statutes*; the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended; and the National Environmental Policy Act, 42 U.S.C. §§ 4321-4347, as amended.

As indicated in the scoping notice, the proposed project activities will likely require an Environmental Resource Permit from the Department or Northwest Florida Water Management District (NWFWMD) under Chapter 62-346, *Florida Administrative Code*. Please contact the NWFWMD's Crestview Field Office at (850) 683-5044 for further assistance and permitting information. An NPDES permit may also be required from the Department's NPDES Stormwater Program in Tallahassee – please call (850) 245-7522 for additional information.

Please be advised that the proposed water and sewer line extensions will also likely require issuance of a drinking water distribution system permit and domestic wastewater collection/transmission system permit by the Department's Northwest District Office in Pensacola. Further inquiries concerning the state's drinking water and domestic wastewater facilities regulatory requirements should be directed to Mr. John Pope at (850) 595-0633 and Mr. Bill Evans, P.E., at (850) 595-0584.

In addition, any onsite or offsite improvements associated with the project that impact Florida Department of Transportation (FDOT) right-of-way on US 98 will require the appropriate FDOT permits. Required permits may include utility, access management,

drainage or other permits depending on the work planned. Please contact the FDOT's District Three Operations Office in Panama City at (850) 767-4990 for additional information.

Based on the information contained in the scoping notice and minimal project impacts, at this stage, the state has no objections to the proposed federal activities. To ensure the project's consistency with the Florida Coastal Management Program (FCMP), the regulatory concerns identified above must be addressed prior to project implementation. The state's continued concurrence will be based on the activities' compliance with FCMP authorities, including federal and state monitoring of the activities to ensure their continued conformance, and the adequate resolution of issues identified during subsequent reviews. The state's final concurrence of the project's consistency with the FCMP will be determined during the environmental permitting process, in accordance with Section 373.428, *Florida Statutes*.

Thank you for the opportunity to review the proposed project. Should you have any questions regarding this letter, please contact Ms. Lauren P. Milligan at (850) 245-2170.

Yours sincerely,

Sally B. Mann

Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/lm

FLORIDA DEPARTMENT of STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

Mr. Allen Richmond
Department of the Air Force
2261 Hughes Avenue, Suite 155
Lackland AFB, Texas

October 26, 2012

RE: DHR Project File Number: 2012-4821
Replacement of the QF-4 Full Scale Aerial Target (FSAT) with the QF-16 FSAT at Tyndall Air Force Base
Bay County

Dear Mr. Richmond:

Our office reviewed the referenced project for possible impact to historic properties listed, or eligible for listing, in the *National Register of Historic Places*. The review was conducted in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended and *36 CFR Part 800: Protection of Historic Properties*, the *National Environmental Policy Act of 1969, as amended* and the implementing state regulations.

We have reviewed the six projects associated with the proposed undertaking and concur with your finding that the proposed undertaking could have an adverse effect on historic properties. Please forward detailed project descriptions, plans, maps, etc. for the six operations and maintenance projects

We look forward to receiving the document and coordinating with you regarding cultural resources that may be impacted by this project.

If you have any questions concerning our comments, please contact Scott Edwards, Historic Preservationist, by electronic mail *scott.edwards@dos.myflorida.com*, or at 850.245.6333 or 800.847.7278.

Sincerely,

Barbara E. Mattick, DSHPO
for

Robert F. Bendus, Director
Division of Historical Resources
and State Historic Preservation Officer

PC: David D. O'Brian III, USAF

INFORMAL CONSULTATION AND GOVERNMENT-TO-GOVERNMENT CORRESPONDENCE

DEPARTMENT OF THE AIR FORCE
325TH FIGHTER WING (ACC)
TYNDALL AIR FORCE BASE FLORIDA

NOV 26 2012

Lt Col Brian M. Stumpe
Commander, 325th Civil Engineer Squadron
119 Alabama Ave, Mail Stop 42
Tyndall AFB FL 32403-5014

Ms. Cindy Dohner
Regional Director
U.S. Fish and Wildlife Service
1875 Century Blvd.
Atlanta GA 30345

Dear Ms. Dohner

The United States Air Force is preparing an Environmental Assessment (EA) for the Replacement of the QF-4 Full Scale Aerial Target (FSAT) with the QF-16 FSAT at Tyndall Air Force Base (TAFB) in Florida (FL) and at Holloman AFB (HAFB) in New Mexico (NM). The EA will assess the potential environmental consequences associated with replacing QF-4 drone aircraft with QF-16 drone aircraft under the command of the 82nd Aerial Target Squadron (82 ATRS) at TAFB and Detachment 1 (Det 1), 82 ATRS at HAFB. The 82 ATRS provides target support for the Air Force Weapon System Evaluation Program and Air Force Weapons Instructor Course. At TAFB, this includes support for Department of Defense users in the Gulf of Mexico Ranges. At HAFB, Det 1 of 82 ATRS provides support for the Air Force Weapons System Evaluation Program and White Sands Missile Range research, development, and test projects.

The Proposed Action would replace the current 40 QF-4s with up to 50 QF-16s at TAFB. At HAFB, the existing 35 QF-4s would be replaced with up to 35 QF-16s. Alternative A would replace the 40 QF-4s at TAFB with up to 60 QF-16s, but continue operating 35 QF-4 drone aircraft at HAFB. Under the No Action Alternative, the QF-4s would not be replaced with QF-16s and current QF-4 operations would continue.

At TAFB, in addition to replacing QF-4 aircraft, the Proposed Action includes upgrading and repairing existing airfield pavements, a maintenance facility, and drone runway, as well as constructing an 800-square foot hydrazine storage facility adjacent to Taxiway F (see construction/upgrades figure) and extending potable and wastewater lines to the storage facility. All construction and infrastructure upgrades would occur within already disturbed/developed sites along taxiways and aircraft parking areas. In terms of QF-16 airfield operations, there would be negligible changes in the number of operations generated at TAFB airfields. Similar to existing drone operations, it is not anticipated there would be QF-16 operations occurring after 10:00 p.m. or before 7:00 a.m. For airspace operations, the QF-16 would operate in the same regional airspace QF-4 aircraft currently use (see attached airspace figure). The same safety and

operational procedures would be followed by both piloted and unmanned, remotely-operated drone QF-16 aircraft. No new, modified, or enhanced airspace is proposed.

Under Alternative A, the same upgrades, repairs, construction, and operations would occur as described under the Proposed Action. Operations both at the airfields and within the airspace would remain unchanged; again no new, modified, or enhanced airspace would be required. For the No Action Alternative, QF-4 operations would continue in regional airspace.

The EA is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508, and Air Force NEPA regulation 32 CFR 989). This EA will evaluate the potential impacts on human health and the environment associated with the Proposed Action, Alternative A, and the No Action Alternative.

We look forward to and welcome your participation in this NEPA process. If you have additional information regarding impacts to the natural environment or other environmental aspects, we would appreciate receiving such information for inclusion and consideration in the EA. Please respond within 30 days of receipt of this letter to ensure your concerns are adequately addressed in the EA. Please send your written responses to NEPA Project Manager, 325CES/CEANC, 119 Alabama Avenue, Stop 42, Tyndall AFB, 32403-5014.

Sincerely

BRIAN M. STUMPE, Lt Col, USAF

2 Attachments:
1. Proposed Areas for Infrastructure Upgrades
2. TAFB Primary Airspace

DEPARTMENT OF THE AIR FORCE
325TH FIGHTER WING (ACC)
TYNDALL AIR FORCE BASE FLORIDA

NOV 26 2012

Lt Col Brian M. Stumpe
Commander, 325th Civil Engineer Squadron
119 Alabama Ave, Mail Stop 42
Tyndall AFB FL 32403-5014

Mr. Robert F. Bendus
Director
Division of Historical Resources
500 S. Bronough Street
Tallahassee FL 32399

Dear Mr. Bendus

The United States Air Force is preparing an Environmental Assessment (EA) for the Replacement of the QF-4 Full Scale Aerial Target (FSAT) with the QF-16 FSAT at Tyndall Air Force Base (TAFB) in Florida (FL) and at Holloman AFB (HAFB) in New Mexico (NM). The EA will assess the potential environmental consequences associated with replacing QF-4 drone aircraft with QF-16 drone aircraft under the command of the 82nd Aerial Target Squadron (82 ATRS) at TAFB and Detachment 1 (Det 1), 82 ATRS at HAFB. The 82 ATRS provides target support for the Air Force Weapon System Evaluation Program and Air Force Weapons Instructor Course. At TAFB, this includes support for Department of Defense users in the Gulf of Mexico Ranges. At HAFB, Det 1 of 82 ATRS provides support for the Air Force Weapons System Evaluation Program and White Sands Missile Range research, development, and test projects.

The Proposed Action would replace the current 40 QF-4s with up to 50 QF-16s at TAFB. At HAFB, the existing 35 QF-4s would be replaced with up to 35 QF-16s. Alternative A would replace the 40 QF-4s at TAFB with up to 60 QF-16s, but continue operating 35 QF-4 drone aircraft at HAFB. Under the No Action Alternative, the QF-4s would not be replaced with QF-16s and current QF-4 operations would continue.

At TAFB, in addition to replacing QF-4 aircraft, the Proposed Action includes upgrading and repairing existing airfield pavements, a maintenance facility, and drone runway, as well as constructing an 800-square foot hydrazine storage facility adjacent to Taxiway F (see construction/upgrades figure) and extending potable and wastewater lines to the storage facility. All construction and infrastructure upgrades would occur within already disturbed/developed sites along taxiways and aircraft parking areas. In terms of QF-16 airfield operations, there would be negligible changes in the number of operations generated at TAFB airfields. Similar to existing drone operations, it is not anticipated there would be QF-16 operations occurring after 10:00 p.m. or before 7:00 a.m. For airspace operations, the QF-16 would operate in the same regional airspace QF-4 aircraft currently use (see attached airspace figure). The same safety and

operational procedures would be followed by both piloted and unmanned, remotely-operated drone QF-16 aircraft. No new, modified, or enhanced airspace is proposed.

Under Alternative A, the same upgrades, repairs, construction, and operations would occur as described under the Proposed Action. Operations both at the airfields and within the airspace would remain unchanged; again no new, modified, or enhanced airspace would be required. For the No Action Alternative, QF-4 operations would continue in regional airspace.

The EA is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508, and Air Force NEPA regulation 32 CFR 989) and National Historic Preservation Act (NHPA) 36 CFR Section 106. This EA will evaluate the potential impacts on human health and the environment associated with the Proposed Action, Alternative A, and the No Action Alternative.

Pursuant to Section 106 of the NHPA, the Air Force evaluated the Area of Potential Effect (APE) for possible impacts. Because there are no National Register of Historic Places-eligible or potentially eligible buildings or sites located at or near the areas proposed for facility repairs, and infrastructure upgrades at TAFB, the Air Force has concluded that there would be no effects to historic properties and that a finding of "No Historic Properties Affected" is warranted. As a safeguard, the Air Force will incorporate a post-review discovery clause in the contract pursuant to 37 CFR 800.13 which will enjoin the contractor to stop work in the event that cultural resources are identified in the course of construction. For your information, government-to-government consultation is being undertaken with federally-recognized tribes with a potential interest in the Proposed Action.

Information you or your agency can provide on any environmental issues you foresee with this proposal would be appreciated. We look forward to and welcome your participation in this NEPA process. Please respond within 30 days of receipt of this letter to ensure your concerns are adequately addressed in the EA. Please send your written responses to Mr. Jose J. Cintron, NEPA Project Manager, 325CES/CEANC, 119 Alabama Avenue, Stop 42, Tyndall AFB, 32403-5014.

Sincerely

BRIAN M. STUMPE, Lt Col, USAF

2 Attachments:
1. Proposed Areas for Infrastructure Upgrades
2. TAFB Primary Airspace

DEPARTMENT OF THE AIR FORCE
325TH FIGHTER WING (ACC)
TYNDALL AIR FORCE BASE FLORIDA

Lt Col Brian M. Stumpe
Commander, 325th Civil Engineer Squadron
119 Alabama Ave, Mail Stop 42
Tyndall AFB FL 32403-5014

NOV 26 2012

Mr. Bill Steele, Tribal Historic Preservation Officer
Seminole Tribe of Florida
Attn: Ah-tah-thi-ki Museum
34725 West Boundary Road
Clewiston FL 33440

Dear Mr. Steele

The United States Air Force is preparing an Environmental Assessment (EA) for the Replacement of the QF-4 Full Scale Aerial Target (FSAT) with the QF-16 FSAT at Tyndall Air Force Base (TAFB) in Florida (FL) and at Holloman AFB (HAFB) in New Mexico (NM). The EA will assess the potential environmental consequences associated with replacing QF-4 drone aircraft with QF-16 drone aircraft under the command of the 82nd Aerial Target Squadron (82 ATRS) at TAFB and Detachment 1 (Det 1), 82 ATRS at HAFB. The 82 ATRS provides target support for the Air Force Weapon System Evaluation Program and Air Force Weapons Instructor Course. At TAFB, this includes support for Department of Defense users in the Gulf of Mexico Ranges. At HAFB, Det 1 of 82 ATRS provides support for the Air Force Weapons System Evaluation Program and White Sands Missile Range research, development, and test projects.

The Proposed Action would replace the current 40 QF-4s with up to 50 QF-16s at TAFB. At HAFB, the existing 35 QF-4s would be replaced with up to 35 QF-16s. Alternative A would replace the 40 QF-4s at TAFB with up to 60 QF-16s, but continue operating 35 QF-4 drone aircraft at HAFB. Under the No Action Alternative, the QF-4s would not be replaced with QF-16s and current QF-4 operations would continue.

At TAFB, in addition to replacing QF-4 aircraft, the Proposed Action includes upgrading and repairing existing airfield pavements, a maintenance facility, and drone runway, as well as constructing an 800-square foot hydrazine storage facility adjacent to Taxiway F (see construction/upgrades figure) and extending potable and wastewater lines to the storage facility. All construction and infrastructure upgrades would occur within already disturbed/developed sites along taxiways and aircraft parking areas. In terms of QF-16 airfield operations, there would be negligible changes in the number of operations generated at TAFB airfields. Similar to existing drone operations, it is not anticipated there would be QF-16 operations occurring after 10:00 p.m. or before 7:00 a.m. For airspace operations, the QF-16 would operate in the same regional airspace QF-4 aircraft currently use (see attached airspace figure). The same safety and

operational procedures would be followed by both piloted and unmanned, remotely-operated drone QF-16 aircraft. No new, modified, or enhanced airspace is proposed.

Under Alternative A, the same upgrades, repairs, construction, and operations would occur as described under the Proposed Action. Operations both at the airfields and within the airspace would remain unchanged; again no new, modified, or enhanced airspace would be required. For the No Action Alternative, QF-4 operations would continue in regional airspace.

On behalf of the Air Force, the 325th Civil Engineering Squadron (325 CES), is notifying you of the proposed action to replace QF-4 with QF-16 drone aircraft at TAFB. In accordance with Section 106 of the National Historic Preservation Act and its implementing regulations 36 Code of Regulations (CFR) Part 800, the 325 CES wishes to consult on this project specific proposal with appropriate, federally recognized tribes who historically used this region and continue to use the area. The areas proposed for construction and repairs have been evaluated and no cultural resources are anticipated to be affected. As a safeguard, the Air Force will incorporate a post-review discovery clause in the contract pursuant to 37 CFR 800.13 which will enjoin the contractor to stop work in the event that cultural resources are identified in the course of construction. We hope that these representations are sufficient to demonstrate our compliance with Section 106 and that you concur with our determinations.

We welcome your comments on this undertaking and look forward to hearing any concerns you may have regarding known sacred sites or other traditional cultural properties within the proposed project area. Please respond within 30 days of receipt of this letter to ensure your concerns are adequately addressed in the EA. Please send your written responses to Mr. Jose J. Cintron, NEPA Project Manager, 325CES/CEANC, 119 Alabama Avenue, Stop 42, Tyndall AFB, 32403-5014.

Sincerely,

BRIAN M. STUMPE, Lt Col, USAF

2 Attachments:
1. Proposed Areas for Infrastructure Upgrades
2. TAFB Primary Airspace

DEPARTMENT OF THE AIR FORCE
325TH FIGHTER WING (ACC)
TYNDALL AIR FORCE BASE FLORIDA

NOV 26 2012

Lt Col Brian M. Stumpe
Commander, 325th Civil Engineer Squadron
119 Alabama Ave, Mail Stop 42
Tyndall AFB FL 32403-5014

Ms. Joyce Bear
Cultural Preservation Manager
Muscogee (Creek) Nation
P.O. Box 580
Okmulgee OK 74447

Dear Ms. Bear

The United States Air Force is preparing an Environmental Assessment (EA) for the Replacement of the QF-4 Full Scale Aerial Target (FSAT) with the QF-16 FSAT at Tyndall Air Force Base (TAFB) in Florida (FL) and at Holloman AFB (HAFB) in New Mexico (NM). The EA will assess the potential environmental consequences associated with replacing QF-4 drone aircraft with QF-16 drone aircraft under the command of the 82nd Aerial Target Squadron (82 ATRS) at TAFB and Detachment 1 (Det 1), 82 ATRS at HAFB. The 82 ATRS provides target support for the Air Force Weapon System Evaluation Program and Air Force Weapons Instructor Course. At TAFB, this includes support for Department of Defense users in the Gulf of Mexico Ranges. At HAFB, Det 1 of 82 ATRS provides support for the Air Force Weapons System Evaluation Program and White Sands Missile Range research, development, and test projects.

The Proposed Action would replace the current 40 QF-4s with up to 50 QF-16s at TAFB. At HAFB, the existing 35 QF-4s would be replaced with up to 35 QF-16s. Alternative A would replace the 40 QF-4s at TAFB with up to 60 QF-16s, but continue operating 35 QF-4 drone aircraft at HAFB. Under the No Action Alternative, the QF-4s would not be replaced with QF-16s and current QF-4 operations would continue.

At TAFB, in addition to replacing QF-4 aircraft, the Proposed Action includes upgrading and repairing existing airfield pavements, a maintenance facility, and drone runway, as well as constructing an 800-square foot hydrazine storage facility adjacent to Taxiway F (see construction/upgrades figure) and extending potable and wastewater lines to the storage facility. All construction and infrastructure upgrades would occur within already disturbed/developed sites along taxiways and aircraft parking areas. In terms of QF-16 airfield operations, there would be negligible changes in the number of operations generated at TAFB airfields. Similar to existing drone operations, it is not anticipated there would be QF-16 operations occurring after 10:00 p.m. or before 7:00 a.m. For airspace operations, the QF-16 would operate in the same regional airspace QF-4 aircraft currently use (see attached airspace figure). The same safety and

operational procedures would be followed by both piloted and unmanned, remotely-operated drone QF-16 aircraft. No new, modified, or enhanced airspace is proposed.

Under Alternative A, the same upgrades, repairs, construction, and operations would occur as described under the Proposed Action. Operations both at the airfields and within the airspace would remain unchanged; again no new, modified, or enhanced airspace would be required. For the No Action Alternative, QF-4 operations would continue in regional airspace.

On behalf of the Air Force, the 325th Civil Engineering Squadron (325 CES) is notifying you of the Proposed Action to replace QF-4 with QF-16 drone aircraft at TAFB. In accordance with Section 106 of the National Historic Preservation Act and its implementing regulations 36 Code of Regulations (CFR) Part 800, the 325 CES wishes to consult on this project specific proposal with appropriate, federally recognized tribes who historically used this region and continue to use the area. The areas proposed for infrastructure upgrades and repairs have been evaluated and no cultural resources are anticipated to be affected. As a safeguard, the Air Force will incorporate a post-review discovery clause in the contract pursuant to 37 CFR 800.13 which will enjoin the contractor to stop work in the event that cultural resources are identified in the course of construction. We hope that these representations are sufficient to demonstrate our compliance with Section 106 and that you concur with our determinations.

We welcome your comments on this undertaking and look forward to hearing any concerns you may have regarding known sacred sites or other traditional cultural properties within the proposed project area. Please respond within 30 days of receipt of this letter to ensure your concerns are adequately addressed in the EA. Please send your written responses to Mr. Jose J. Cintron, NEPA Project Manager, 325CES/CEANC, 119 Alabama Avenue, Stop 42, Tyndall AFB, 32403-5014.

Sincerely,

BRIAN M. STUMPE, Lt Col, USAF

2 Attachments:
1. Proposed Areas for Infrastructure Upgrades
2. TAFB Primary Airspace

DEPARTMENT OF THE AIR FORCE
325TH FIGHTER WING (ACC)
TYNDALL AIR FORCE BASE FLORIDA

Lt Col Brian M. Stumpe
Commander, 325th Civil Engineer Squadron
119 Alabama Ave, Mail Stop 42
Tyndall AFB FL 32403-5014

NOV 26 2012

Mr. Terry Steven
Historic Preservation Officer
Miccosukee Tribe of Indians in Florida
P.O. Drawer 440021
Miami FL 33144

Dear Mr. Steven

The United States Air Force is preparing an Environmental Assessment (EA) for the Replacement of the QF-4 Full Scale Aerial Target (FSAT) with the QF-16 FSAT at Tyndall Air Force Base (TAFB) in Florida (FL) and at Holloman AFB (HAFB) in New Mexico (NM). The EA will assess the potential environmental consequences associated with replacing QF-4 drone aircraft with QF-16 drone aircraft under the command of the 82nd Aerial Target Squadron (82 ATRS) at TAFB and Detachment 1 (Det 1), 82 ATRS at HAFB. The 82 ATRS provides target support for the Air Force Weapon System Evaluation Program and Air Force Weapons Instructor Course. At TAFB, this includes support for Department of Defense users in the Gulf of Mexico Ranges. At HAFB, Det 1 of 82 ATRS provides support for the Air Force Weapons System Evaluation Program and White Sands Missile Range research, development, and test projects.

The Proposed Action would replace the current 40 QF-4s with up to 50 QF-16s at TAFB. At HAFB, the existing 35 QF-4s would be replaced with up to 35 QF-16s. Alternative A would replace the 40 QF-4s at TAFB with up to 60 QF-16s, but continue operating 35 QF-4 drone aircraft at HAFB. Under the No Action Alternative, the QF-4s would not be replaced with QF-16s and current QF-4 operations would continue.

At TAFB, in addition to replacing QF-4 aircraft, the Proposed Action includes upgrading and repairing existing airfield pavements, a maintenance facility, and drone runway, as well as constructing an 800-square foot hydrazine storage facility adjacent to Taxiway F (see construction/upgrades figure) and extending potable and wastewater lines to the storage facility. All construction and infrastructure upgrades would occur within already disturbed/developed sites along taxiways and aircraft parking areas. In terms of QF-16 airfield operations, there would be negligible changes in the number of operations generated at TAFB airfields. Similar to existing drone operations, it is not anticipated there would be QF-16 operations occurring after 10:00 p.m. or before 7:00 a.m. For airspace operations, the QF-16 would operate in the same regional airspace QF-4 aircraft currently use (see attached airspace figure). The same safety and

operational procedures would be followed by both piloted and unmanned, remotely-operated drone QF-16 aircraft. No new, modified, or enhanced airspace is proposed.

Under Alternative A, the same upgrades, repairs, construction, and operations would occur as described under the Proposed Action. Operations both at the airfields and within the airspace would remain unchanged; again no new, modified, or enhanced airspace would be required. For the No Action Alternative, QF-4 operations would continue in regional airspace.

On behalf of the Air Force, the 325th Civil Engineering Squadron (325 CES), is notifying you of the proposed action to replace QF-4 with QF-16 drone aircraft at TAFB. In accordance with Section 106 of the National Historic Preservation Act and its implementing regulations 36 Code of Regulations (CFR) Part 800, the 325 CES wishes to consult on this project specific proposal with appropriate, federally recognized tribes who historically used this region and continue to use the area. The areas proposed for construction and repairs have been evaluated and no cultural resources are anticipated to be affected. As a safeguard, the Air Force will incorporate a post-review discovery clause in the contract pursuant to 37 CFR 800.13 which will enjoin the contractor to stop work in the event that cultural resources are identified in the course of construction. We hope that these representations are sufficient to demonstrate our compliance with Section 106 and that you concur with our determinations.

We welcome your comments on this undertaking and look forward to hearing any concerns you may have regarding known sacred sites or other traditional cultural properties within the proposed project area. Please respond within 30 days of receipt of this letter to ensure your concerns are adequately addressed in the EA. Please send your written responses to Mr. Jose J. Cintron, NEPA Project Manager, 325CES/CEANC, 119 Alabama Avenue, Stop 42, Tyndall AFB, 32403.

Sincerely,

BRIAN M. STUMPE, Lt Col, USAF

2 Attachments:
1. Proposed Areas for Infrastructure Upgrades
2. TAFB Primary Airspace

DEPARTMENT OF THE AIR FORCE
325TH FIGHTER WING (ACC)
TYNDALL AIR FORCE BASE FLORIDA

NOV 26 2012

Lt Col Brian M. Stumpe
Commander, 325th Civil Engineer Squadron
119 Alabama Ave, Mail Stop 42
Tyndall AFB FL 32403-5014

Mr. Robert Thrower
Tribal Historic Preservation Officer
Poarch Band of Creek Indians
5811 Jack Springs Road
Ardmore AL 36502

Dear Mr. Thrower

The United States Air Force is preparing an Environmental Assessment (EA) for the Replacement of the QF-4 Full Scale Aerial Target (FSAT) with the QF-16 FSAT at Tyndall Air Force Base (TAFB) in Florida (FL) and at Holloman AFB (HAFB) in New Mexico (NM). The EA will assess the potential environmental consequences associated with replacing QF-4 drone aircraft with QF-16 drone aircraft under the command of the 82nd Aerial Target Squadron (82 ATRS) at TAFB and Detachment 1 (Det 1), 82 ATRS at HAFB. The 82 ATRS provides target support for the Air Force Weapon System Evaluation Program and Air Force Weapons Instructor Course. At TAFB, this includes support for Department of Defense users in the Gulf of Mexico Ranges. At HAFB, Det 1 of 82 ATRS provides support for the Air Force Weapons System Evaluation Program and White Sands Missile Range research, development, and test projects.

The Proposed Action would replace the current 40 QF-4s with up to 50 QF-16s at TAFB. At HAFB, the existing 35 QF-4s would be replaced with up to 35 QF-16s. Alternative A would replace the 40 QF-4s at TAFB with up to 60 QF-16s, but continue operating 35 QF-4 drone aircraft at HAFB. Under the No Action Alternative, the QF-4s would not be replaced with QF-16s and current QF-4 operations would continue.

At TAFB, in addition to replacing QF-4 aircraft, the Proposed Action includes upgrading and repairing existing airfield pavements, a maintenance facility, and drone runway, as well as constructing an 800-square foot hydrazine storage facility adjacent to Taxiway F (see construction/upgrades figure) and extending potable and wastewater lines to the storage facility. All construction and infrastructure upgrades would occur within already disturbed/developed sites along taxiways and aircraft parking areas. In terms of QF-16 airfield operations, there would be negligible changes in the number of operations generated at TAFB airfields. Similar to existing drone operations, it is not anticipated there would be QF-16 operations occurring after 10:00 p.m. or before 7:00 a.m. For airspace operations, the QF-16 would operate in the same regional airspace QF-4 aircraft currently use (see attached airspace figure). The same safety and

operational procedures would be followed by both piloted and unmanned, remotely-operated drone QF-16 aircraft. No new, modified, or enhanced airspace is proposed.

Under Alternative A, the same upgrades, repairs, construction, and operations would occur as described under the Proposed Action. Operations both at the airfields and within the airspace would remain unchanged; again no new, modified, or enhanced airspace would be required. For the No Action Alternative, QF-4 operations would continue in regional airspace.

On behalf of the Air Force, the 325th Civil Engineering Squadron (325 CES), is notifying you of the proposed action to replace QF-4 with QF-16 drone aircraft at TAFB. In accordance with Section 106 of the National Historic Preservation Act and its implementing regulations 36 Code of Regulations (CFR) Part 800, the 325 CES wishes to consult on this project specific proposal with appropriate, federally recognized tribes who historically used this region and continue to use the area. The areas proposed for construction and repairs have been evaluated and no cultural resources are anticipated to be affected. As a safeguard, the Air Force will incorporate a post-review discovery clause in the contract pursuant to 37 CFR 800.13 which will enjoin the contractor to stop work in the event that cultural resources are identified in the course of construction. We hope that these representations are sufficient to demonstrate our compliance with Section 106 and that you concur with our determinations.

We welcome your comments on this undertaking and look forward to hearing any concerns you may have regarding known sacred sites or other traditional cultural properties within the proposed project area. Please respond within 30 days of receipt of this letter to ensure your concerns are adequately addressed in the EA. Please send your written responses to Mr. Jose J. Cintron, NEPA Project Manager, 325CES/CEANC, 119 Alabama Avenue, Stop 42, Tyndall AFB, 32403-5014.

Sincerely,

BRIAN M. STUMPE, Lt Col, USAF

2 Attachments:
1. Proposed Areas for Infrastructure Upgrades
2. TAFB Primary Airspace

RESPONSES TO INFORMAL CONSULTATION

Creek Nation of Oklahoma
Cultural and Historic Preservation

November 14th, 2012

Terry D. Cole
Muscogee (Creek) Nation
P.O. Box 580
Okmulgee, OK 74447
918-732-7639
tdcole@mcn-nsn.gov

Lt Col Brian M. Stumpe
Commander, 325th Civil Engineer Squadron
119 Alabama Ave, Mail Stop 42
Tyndall AFB FL 32403-5014

Dear Lt Col Stumpe:

In keeping with the National Environmental Policy Act and Section 106 of the National Historic Preservation Act, 36 CFR Part 800, this letter is to acknowledge that the Muscogee (Creek) nation has received notice of upgrading and repairing existing airfield pavements, a maintenance facility, and drone runway, as well as construction of an 800 square foot hydrazine storage facility and extending potable and wastewater lines to the storage facility. After reviewing all pertinent information and our records, at this time we are unaware of any significant historical or cultural sites at this exact location. Therefore, we recommend a finding of "No Effect" for the proposed undertaking.

Due to the historic presence of our people in the project area, inadvertent discoveries of human remains and related NAGPRA items may occur, even in areas of existing or prior development. Should this occur, we request all work cease and the Muscogee (Creek) nation and other appropriate agencies be immediately notified. Thank you.

Sincerely,

Terry D. Cole,
Deputy Tribal Preservation Officer
NAGPRA Specialist
Muskogee (Creek) Nation
tdcole@msn-nsn.gov
918-732-7639

APPENDIX B

NOTICE OF AVAILABILITY

APPENDIX C

AIR EMISSIONS CALCULATIONS

TYNDALL AFB CONSTRUCTION

FY14	Footprint
Demolish asphalt and replace with concrete	1.5M sf
Addition to Hangar	2,466 sf
Water/Wastewater lines	4,900*

*Linear feet, the soil will be lifted out and then set back into place. Make a reasonable assumption about width of ditch.

Table 1. Construction Projects

Project Name	FY	FootPrint (AC)	Size (sy)	Clearing (AC)	Site Prep - Excavate/Fill (CY)	Demo Bldgs (SF)	Demo asphalt/ concrete (SF)	Trenching (LF)	Building Construction-structure (sf)	Grading (SY)	Gravel Work (CY)	Concrete Work - sidewalks, etc (CY)	Concrete Work -foundation (CY)	Paving - Surface area (SF)	Paving - HMA (CF)	Concrete Work-Runway (SF)	Concrete Work - Runway Thickness (yard)
Demolish asphalt and replace with concrete	FY14	21	100,000	0	27,778	0	900,000	0	0	100000	27778	0	0	0	0	900,000	1
Addition to Hangar	FY14	0.06	-	0	30	0	0	300	2466	274	0	5	137	0	0	0	0
Construct Hydrazine Facility (1 floor)	FY14	0.00	-	0	0	0	0	300		0	0	0	0	0	0	0	0
Water/Wastewater lines	FY14	0.45	-	0	6,533	0	0	4900	0	0	0	0	0	0	0	0	0
		21	100,000	0	34,342	0	900,000	5,500	2,466	100,274	27,778	5	137	0	0	900,000	1

Assumptions and Conversions:

Acre to SF	43560	SF per Acre
SF to SY	9	SF per SY

Assume no clearing for the demo of asphalt as is already cleared.
Assume 6 inch excavation for concrete due to probability of reconstructing runway/apron base course.
Assume gravel work for runway includes base course of 6 inches.
Trench for water/wastewater lines assumed to be 6 feet deep by 6 feet wide.
Added enough asphalt to the Hydrazine facility to account for 6 parking spaces.
Assume projects only take 1 year and are ready by end of FY14

Table 2. Construction Emissions Calculations Inputs FY14

Basic Conversions

453.59	grams per pound
43,560	Conversion from Acre to SF
0.03704	Cubic feet to Cubic Yards
0.1111	Square Feet to Square Yards
1.4	tons/CY for Gravel
80,000	lbs/Truck Load for Delivery
1.66	CY for each CY of asphalt/concrete demo
0.3	asphalt thickness for demolition
0.3	asphalt thickness for pavement
2000	pounds per ton
145	lb/ft^3 density of Hot Mix Asphalt
0.7	asphalt thickness for pavement on runways

Concrete Runway

Concrete Surface 900,000 SF 20.7 acres
99,990 SY 1.83 yards thick

[1]Off-road Equipment	[2]Cumulative Hours of Operation	[3]Engine HP	[4]Load Factor	[6,7]Emission Factors VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO_2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	CO_2 g/hp-hr	Annual Emissions VOC lb	CO lb	NOx lb	SO2 lb	PM_{10} lb	$PM_{2.5}$ lb	CO_2 lb
Grader (CAT 120M2 or similar)	139	150	0.61	1.06	3.52	8.24	0.06	0.47	0.47	568	29.79	98.80	231.10	1.60	13.16	13.16	15,942
Steel drum roller/soil compactor	1,391	401	0.56	0.70	3.18	7.20	0.05	0.28	0.28	568	479.87	2,191.43	4,954.29	34.42	194.15	194.15	391,261
Paving/Concrete Machine	1,391	164	0.53	1.14	3.71	8.87	0.49	0.49	0.49	568	302.46	987.34	2,364.55	131.65	131.65	131.65	151,445
Curbing Machine	70	130	0.59	1.14	3.71	8.87	0.49	0.49	0.49	568	13.35	43.56	104.33	5.81	5.81	5.81	6,682
Cement and Motar Mixer (3 total)	4,172	9	0.56	0.92	2.64	5.41	0.07	0.35	0.35	568	42.60	122.47	250.88	3.01	16.09	16.09	26,344
Tractor/Loader/Backhoe	1,391	75	0.55	1.50	4.22	8.33	0.06	0.80	0.80	568	189.58	533.70	1,052.85	7.59	101.43	101.43	71,872
[1]On-road Equipment	[2]Cumulative Hours of Operation	[3]Engine HP	[5]Productivity based Speed (miles/hour)	VOC lb/mile	CO lb/mile	NOx lb/mile	SO2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CO2 lb/mile	VOC lb	CO lb	NOx lb	SO2 lb	PM_{10} lb	$PM_{2.5}$ lb	CO_2 lb
Cement Truck	4,172	230	20	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	3	132.61	693.79	3,157.99	1.49	133.50	129.77	284,953
Water Truck	139	230	10	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	3	2.21	11.56	52.63	0.02	2.22	2.16	4,749
										Tons/year:	**0.60**	**2.34**	**6.08**	**0.09**	**0.30**	**0.30**	
										Metric tons/year:							**432**

Site Prep - Excavate/Fill - Trenching - Grading

Site Prep - Excavate/Fill (CY)	34,342 CY	Assume 10% hauled in or out	3,434 CY hauled		
Trenching (LF)	5,500 LF		7333.92 CY	Assume 5% hauled in or out	367 CY hauled
Grading (SY)	100,274 SY		100,274 SY	Assume compact 0.5 feet (0.166 yards)	16,712 CY compacted

[1]Off-road Equipment	[2]Cumulative Hours of Operation	[3]Engine HP	[4]Load Factor	[6,7]Emission Factors VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO_2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	CO_2 g/hp-hr	Annual Emissions VOC lb	CO lb	NOx lb	SO2 lb	PM_{10} lb	$PM_{2.5}$ lb	CO_2 lb
Excavator	11	243	0.59	0.34	1.21	4.03	0.12	0.22	0.22	536	1.24	4.38	14.58	0.42	0.81	0.78	1,939
Skid Steer Loader	14	160	0.23	0.38	1.47	4.34	0.12	0.31	0.30	536	0.43	1.64	4.83	0.13	0.34	0.33	597
Dozer (Rubber Tired)	12	145	0.59	0.38	1.41	4.17	0.12	0.30	0.29	536	0.88	3.32	9.79	0.27	0.69	0.67	1,257
Scraper Hauler Excavator	12	365	0.58	0.38	1.42	4.19	0.12	0.30	0.29	536	2.19	8.24	24.31	0.67	1.72	1.67	3,111
Compactor	124	103	0.58	0.40	1.57	4.57	0.12	0.32	0.31	536	6.44	25.60	74.44	1.88	5.20	5.05	8,733
Grader	36	285	0.58	0.34	1.21	4.07	0.12	0.23	0.22	536	4.46	15.67	52.82	1.50	2.93	2.84	6,953
Trenching with backhoe loader	105	87	0.59	0.35	1.25	4.23	0.12	0.24	0.23	536	4.13	14.80	50.19	1.37	2.83	2.75	6,352
[1]On-road Equipment	[2]Cumulative Hours of Operation	[3]Engine HP	[5]Productivity based Speed (miles/hour)	VOC lb/mile	CO lb/mile	NOx lb/mile	SO2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CO2 lb/mile	VOC lb	CO lb	NOx lb	SO2 lb	PM_{10} lb	$PM_{2.5}$ lb	CO_2 lb
Dump Truck (12 CY capacity)	27	230	16	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	3	0.70	3.64	16.57	0.01	0.70	0.68	1,495
Delivery Truck	13.75	365	45	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	3	0.98	5.14	23.42	0.01	0.99	0.96	2,113
										Subtotal (lbs):	**21**	**82**	**271**	**6**	**16**	**16**	**32,550**

Demo Asphalt/Concrete

900,000 SF 18,446 CY

[1]Off-road Equipment	[2]Cumulative Hours of Operation	[3]Engine HP	[4]Load Factor	[6,7]Emission Factors VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO_2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	CO_2 g/hp-hr	Annual Emissions VOC lb	CO lb	NOx lb	SO2 lb	PM_{10} lb	$PM_{2.5}$ lb	CO_2 lb
D-6K Crawler Dozer with attachments	2,177	125	0.58	0.34	1.21	4.08	0.12	0.23	0.22	535.79	119.63	420.16	1419.93	40.11	78.68	76.32	186,459
Wheel mounted air compressor	2,177	49	0.59	0.33	2.54	4.53	0.13	0.54	0.53	595.16	45.48	352.67	628.26	17.77	75.21	72.95	82,592
Pneumatic Paving Breaker and jackhammer on excavator (CAT 345D L or similar)	750	380	0.59	0.31	2.50	4.51	0.13	0.55	0.54	595.21	115.76	925.62	1670.70	47.46	204.60	198.46	220,650
[1]On-road Equipment	**[2]Cumulative Hours of Operation**	**[3]Engine HP**	**[5]Productivity based Speed (miles/hour)**	**VOC lb/mile**	**CO lb/mile**	**NOx lb/mile**	**SO2 lb/mile**	**PM10 lb/mile**	**PM2.5 lb/mile**	**CO2 lb/mile**	**VOC lb**	**CO lb**	**NOx lb**	**SO2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
Dump Truck	1,691	230	27	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	3	73.29	383.44	1745.33	0.82	73.78	71.72	157,486
										Subtotal (lbs):	**354.16**	**1698.45**	**3718.90**	**105.34**	**358.49**	**347.73**	**489,701**

Gravel Work

27,778 CY

[1]Off-road Equipment	[2]Cumulative Hours of Operation	[3]Engine HP	[4]Load Factor	[6,7]Emission Factors VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO_2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	CO_2 g/hp-hr	Annual Emissions VOC lb	CO lb	NOx lb	SO2 lb	PM_{10} lb	$PM_{2.5}$ lb	CO_2 lb
Dozer	278	185	0.59	0.34	1.21	4.08	0.12	0.23	0.22	536	22.98	80.70	272.73	7.70	15.11	14.66	35,814
Wheel Loader for Spreading	347	87	0.59	0.35	1.25	4.23	0.12	0.24	0.23	536	14	49	166	5	9	9	21,052
Compactor	206	103	0.43	0.36	1.34	4.45	0.12	0.26	0.25	536	7	27	89	2	5	5	10,764
[1]On-road Equipment	**[2]Cumulative Hours of Operation**	**[3]Engine HP**	**[5]Productivity based Speed (miles/hour)**	**VOC lb/mile**	**CO lb/mile**	**NOx lb/mile**	**SO2 lb/mile**	**PM10 lb/mile**	**PM2.5 lb/mile**	**CO2 lb/mile**	**VOC lb**	**CO lb**	**NOx lb**	**SO2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
Dump Truck (gravel delivery)	3,588	230	26	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	3	147.16	769.90	3504.43	1.66	148.14	144.01	316,214
										Subtotal (lbs):	**191**	**927**	**4,033**	**16**	**178**	**173**	**383,844**

Concrete Work - Foundation and Sidewalks - Year

Foundation Work 137 CY
Sidewalks, etc. 5 CY
Total 142 CY Note: Assume all excavated soil is accounted for in Excavate/Fill and Trenching

[1]Off-road Equipment	[2]Cumulative Hours of Operation	[3]Engine HP	[4]Load Factor	[6,7]Emission Factors VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO_2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	CO_2 g/hp-hr	Annual Emissions VOC lb	CO lb	NOx lb	SO2 lb	PM_{10} lb	$PM_{2.5}$ lb	CO_2 lb
Concrete Mixer (3 mixers total to one truck)	7	3.5	0.43	0.69	3.04	6.17	0.13	0.54	0.52	588	0.02	0.08	0.15	0.00	0.01	0.01	15
Concrete Truck	7	300	0.43	0.38	1.75	6.18	0.11	0.27	0.26	530	0.73	3.35	11.88	0.22	0.52	0.50	1,018
										Subtotal (lbs):	**0.75**	**3.43**	**12.03**	**0.22**	**0.53**	**0.51**	**1,033**

Building Construction- Structure

2,466 SF

[1]Off-road Equipment	[2]Cumulative Hours of Operation	[3]Engine HP	[4]Load Factor	[6,7]Emission Factors VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO_2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	CO_2 g/hp-hr	Annual Emissions VOC lb	CO lb	NOx lb	SO2 lb	PM_{10} lb	$PM_{2.5}$ lb	CO_2 lb
Crane	12	330	0.58	0.25	1.22	5.26	0.11	0.21	0.20	530	1.28	6.34	27.37	0.59	1.08	1.05	2,759
Concrete truck	12	300	0.43	0.19	1.45	4.32	0.12	0.21	0.20	536	0.66	5.10	15.15	0.40	0.74	0.71	1,880
Diesel Generator (Assume 5 generators at 40 HP each)	10	40	0.43	0.26	1.41	3.51	0.11	0.23	0.22	536	0.10	0.53	1.31	0.04	0.09	0.08	201
[1]On-road Equipment	**[2]Cumulative Hours of Operation**	**[3]Engine HP**	**[5]Productivity based Speed (miles/hour)**	**VOC lb/mile**	**CO lb/mile**	**NOx lb/mile**	**SO2 lb/mile**	**PM10 lb/mile**	**PM2.5 lb/mile**	**CO2 lb/mile**	**VOC lb**	**CO lb**	**NOx lb**	**SO2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
Diesel Pickup Truck	16	400	30	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	3	0.76	3.99	18.17	0.01	0.77	0.75	1,639
Delivery Truck	59	365	60	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	3	5.64	29.53	134.40	0.06	5.68	5.52	12,127
										Subtotal (lbs):	**8.44**	**45.49**	**196.39**	**1.11**	**8.35**	**8.12**	**18,606**

Paving Surface and Paving HMA

Pavement - Surface
Area 0 SF 0 CY
Paving - HMA 0 CF

[1]Off-road Equipment	[2]Cumulative Hours of Operation	[3]Engine HP	[4]Load Factor	[6,7]Emission Factors VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO_2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	CO_2 g/hp-hr	Annual Emissions VOC lb	CO lb	NOx lb	SO2 lb	PM_{10} lb	$PM_{2.5}$ lb	CO_2 lb
Grader	0	145	0.59	0.38	1.41	4.16	0.12	0.30	0.29	536	0.00	0.00	0.00	0.00	0.00	0.00	0
Steel drum roller/vibratory roller	0	401	0.59	0.34	2.46	5.53	0.12	0.34	0.33	536	0.00	0.00	0.00	0.00	0.00	0.00	0
Paving Machine	0	164	0.59	0.38	1.44	4.25	0.12	0.30	0.29	536	0.00	0.00	0.00	0.00	0.00	0.00	0
Asphalt Curbing Machine	0	130	0.59	0.40	1.57	4.57	0.12	0.32	0.31	536	0.00	0.00	0.00	0.00	0.00	0.00	0
[1]On-road Equipment	**[2]Cumulative Hours of Operation**	**[3]Engine HP**	**[5]Productivity based Speed (miles/hour)**	**VOC lb/mile**	**CO lb/mile**	**NOx lb/mile**	**SO2 lb/mile**	**PM10 lb/mile**	**PM2.5 lb/mile**	**CO2 lb/mile**	**VOC lb**	**CO lb**	**NOx lb**	**SO2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
Dump Truck	0	230	17	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	3	0.00	0.00	0.00	0.00	0.00	0.00	0
Hot Mix Asphalt (HMA)	**Volume of HMA (ft^3)**	**Weight of HMA (tons)**		**VOC lb/ton of asphalt**	**CO lb/ton of asphalt**	**NOx lb/ton of asphalt**	**SO_2 lb/ton of asphalt**	**PM10 lb/ton of asphalt**	**PM2.5 lb/ton of asphalt**	**CO_2 lb/ton of asphalt**	**VOC lb**	**CO lb**	**NOx lb**	**SO2 lb**	**PM_{10} lb**	**$PM_{2.5}$ lb**	**CO_2 lb**
Standard Hot Mix Asphalt	0	0		0.04	-	-	-	-	-	-	0.00	-	-	-	-	-	-
										Subtotal (lbs):	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0**

[1]Equipment list from National Estimator, PACES and CALEE information.
[2] Productivty of the Equipment is based on a number of sources including PACE and National Estimator. The following is more detail on Productivity Factors:
Assume runway with cement stabilzed base (8 in thick) and asphalt running course (8 in thick)
We are estimating 1.5 yards thick (36" base (PACES) plus flexible upper course of 30 inches (Boeing)
Base productivity factor from PACES/National Estimator is 0.076 hour/CY of runway/taxi way/ Apron that is 1 yard thick. The concrete for NAS Lemoore is estimated to be a total of 1.83yards, which will mean 1.83 times longer
Number of Mortar mixers based on National Estimator File (at least 3)
[3]Engine HP is based on information compiled from CALEE, Caterpillar, and National Estimator.
[4]Load Factor is Offroad Default Load Factor from Page 12, Table 3.3 of "California Emissions Estimator Model Appendix D Default Data Tables"
[5]Estimated speed based on Hendrickson, Chris. Department of Civil and Environmental Engineering, Carnegie Mellon University. Project Management for Construction. Fundamental Concepts for Owners, Engineers, Architects and Builders. Version 2.2. 2008
[6]Emission Factors from NONROAD. Assume 2005 year equipment.
[7]On-road emission factors are from MOVES2010

Table 3. Fugitive Dust Emissions

Year	PM_{10} tons/acre/mo	acres	days of disturbance	PM_{10} Total tons	$PM_{2.5}/PM_{10}$ Ratio	$PM_{2.5}$ Total tons
2014	0.42	7	180	18	0.1	2

Table 4. Construction Worker POV

42 workers

Vehicle Type	# vehicles	# days	mi/day	Emission Factors									Annual Emissions								
				[2] VOCs lb/mi	[2] CO lb/mi	[2] NOx lb/mi	[2] SO_2 lb/mi	[2] PM_{10} lb/mi	[2] $PM_{2.5}$ lb/mi	[3,4] CO_2 g/mi	[3,4] CH_4 g/mi	[3,4] N_2O g/mi	VOCs lb	CO lb	NOx lb	SO_2 lb	PM_{10} lb	$PM_{2.5}$ lb	CO_2 g	CH_4 g	N_2O g
carpool	2	240	5	1.185E-03	3.467E-02	4.863E-03	1.305E-05	0.00019687	0.000181446	364.00	0.03	0.03	2.97	86.99	12.20	0.03	0.49	0.46	913,251	80	80
cars	19	240	5	1.185E-03	3.467E-02	4.863E-03	1.305E-05	0.00019687	0.000181446	364.00	0.03	0.03	26.76	782.95	109.81	0.29	4.45	4.10	8,219,255	700	723
SUV/pickups	19	240	5	1.185E-03	3.467E-02	4.863E-03	1.305E-05	0.00019687	0.000181446	519.00	0.04	0.05	26.76	782.95	109.81	0.29	4.45	4.10	11,719,212	813	1,061
												Tons per Year	**0.03**	**0.83**	**0.12**	**0.00**	**0.00**	**0.00**			
												Metric Tons per Year							**21**	**0.00**	**0.00**
												CO2e in metric tons/year							**21**		

[1] Assume construction worker commute of 5 miles on-base round trip. Assume 50/50 split cars and SUV. Number of personnel based on 0.42 daily trips per SF (building) of construction + 0.010 daily trips per SF of paving (CALEE Model uses this)

[2] Emission Factors from MOVES2010

[3] Emission Factors from *Federal Greenhouse Gas Accounting and Reporting Guidance: Technical Support Document* (CEQ, 2010), Table D-11

[4] Emission Factors from *Federal Greenhouse Gas Accounting and Reporting Guidance: Technical Support Document* (CEQ, 2010), Table D-12

Table 5. FY 14 Construction Emissions

VOC tons/year	CO tons/year	NOx tons/year	SO2 tons/year	PM_{10} tons/year	$PM_{2.5}$ tons/year	CO_2 metric tons/year
0.32	2.20	4.23	0.06	18.07	2.05	874

Tyndall AFB, FL
Calculations for QF-4 to QF-16 Transitions

3,000 FT AGL Mixing Height

SOx % EFSOx = 20 * S where EFSOx = SOX emission factor [pounds SOX emitted per thousand pounds of fuel combusted (lb/1000 lb)]
20 = Factor which is derived by converting "weight percent" into units of "lb/1000 lb" and then multiplying times the ratio of the molecular weight of SO2 to the molecular weight of sulfur
S = Weight percent sulfur content of the fuel
SOx% 0.075% Sulfur oxides calculated based on weighted mean percent sulfur content of JP-8 in Petroleum Quality Information System 2009 Annual Report, page 27
SOx Emission Factor EF = 1.5 lb/1000 lb

SOx equation from IERA-RS-BR-SR-2001-0010, Air emissions Inventory Guidance Document for Mobile Sources at Air force Installations (revised December 2003)

JP-8 density = 6.933 lb/gal (based on average, calculated from mean for Region 5 listed in Table 4-9 page 34 in Petroleum Quality Information System 2009 Annual Report
JP-8 HHV= 0.135 MMBtu/gal default HHV from Table D-2 of Federal GHG Accounting and Reporting Guidance Technical Document, CEQ (2010) for kerosene-type jet fuel
72.22 kg CO2/MMBtu emission factor from Table D-2 of Federal GHG Accounting and Reporting Guidance Technical Document, CEQ (2010)
3.100 lb CO2/lb fuel burned

1 kilometer (km) 3,280.84 ft
1 knot= 1.852 km/h
1 knot = 101.2685914 ft/min

Table 1 Inputs to Emissions Calculations (QF-4) J79-GE-15 engine Aircraft has 2 engines

A/B Departure
Flight Profile F4D3TWTCAR or F4D3TWTCL

Point	Distance	Height	Speed, kts	Power % ETR
a	0	0	0	100
b	3,000	0	175	100
c	10,000	800	300	100
d	19,000	1,000	350	100
DE	51,800	3,000	350	100
e	60,000	3,500	350	100

										Emission Indices, lb/1000 lb							Emissions (lbs)						
segment	Distance	Height	Speed, kts	speed, ft/min	Power % ETR	Time (min)	Mode	FFR, lb/hr	Fuel Use lb	EICO2	EICO	EINOx	EIVOC	EISO2	EIPM10	EIPM2.5	CO_2	CO	NOx	VOC	SO_2	PM10	PM2.5
a-b	3,000	0	87.5	8,861.00	100	0.339	AB	70,678.24	398.8	3100	8.63	4.50	1.01	1.50	0.37	0.33	1236.38	3.442	1.795	0.403	0.598	0.148	0.132
b-c	7,000	400	237.5	24,051.29	100	0.291	AB	70,678.24	342.8	3100	8.63	4.50	1.01	1.50	0.37	0.33	1062.85	2.959	1.543	0.346	0.514	0.127	0.113
c-d	9,000	900	325	32,912.29	100	0.273	Military	20,193.78	92.0	3100	2.83	10.24	1.34	1.50	0.72	0.65	285.32	0.260	0.942	0.123	0.138	0.066	0.060
d-DE	32,800	2,000	350	35,444.01	100	0.925	Military	20,193.78	311.5	3100	2.83	10.24	1.34	1.50	0.72	0.65	965.55	0.881	3.189	0.417	0.467	0.224	0.202
																Emissions in lb for A/B Departure:		**3550.11**	**7.542**	**7.469**	**1.290**	**1.718**	**0.565**	**0.507**

Military Departure
WF4ED3

Point	Distance	Height	Speed, kts	Power % ETR
a	0	0	0	100
b	4,000	0	170	100
c	10,000	600	250	100
d	19,000	1,000	350	100
DE	29,513	3,000	350	100
e	60,000	8,800	350	100

										Emission Indices, lb/1000 lb							Emissions (lbs)						
segment	Distance	Height	Speed, kts	speed, ft/min	Power % ETR	Time (min)	Mode	FFR, lb/hr	Fuel Use lb	EICO2	EICO	EINOx	EIVOC	EISO2	EIPM10	EIPM2.5	CO_2	CO	NOx	VOC	SO_2	PM10	PM2.5
a-b	4,000	0	85	8,607.83	100	0.465	Military	20,193.78	156.4	3100	2.83	10.24	1.34	1.50	0.72	0.65	484.86	0.443	1.602	0.210	0.235	0.113	0.102
b-c	6,000	300	210	21,266.40	100	0.282	Military	20,193.78	95.0	3100	2.83	10.24	1.34	1.50	0.72	0.65	294.38	0.269	0.972	0.127	0.142	0.068	0.062
c-d	9,000	800	300	30,380.58	100	0.296	Military	20,193.78	99.7	3100	2.83	10.24	1.34	1.50	0.72	0.65	309.10	0.282	1.021	0.134	0.150	0.072	0.065
d-DE	10,513	2,000	350	35,444.01	100	0.297	Military	20,193.78	99.8	3100	2.83	10.24	1.34	1.50	0.72	0.65	309.47	0.283	1.022	0.134	0.150	0.072	0.065
																Emissions in lb for Military Departure:		**1397.80**	**1.28**	**4.62**	**0.60**	**0.68**	**0.32**	**0.29**

Closed Pattern VFR
Flight Profile F4S

Point	Distance	Height	Speed, kts	Power % ETR
a	0	0	160	100
b	6,000	50	220	100
c	14,000	1,000	250	90
d	81,000	1,000	230	88
e	108,000	300	200	85
f	111,132	50	160	85

										Emission Indices, lb/1000 lb							Emissions (lbs)						
segment	Distance	Height	Speed, kts	speed, ft/min	Power % ETR	Time (min)	Mode	FFR, lb/hr	Fuel Use lb	EICO2	EICO	EINOx	EIVOC	EISO2	EIPM10	EIPM2.5	CO_2	CO	NOx	VOC	SO_2	PM10	PM2.5
a-b	6,000	25	190	19,241.03	92.6	0.312	Military	20,193.78	105.0	3100	2.83	10.24	1.34	1.50	0.72	0.65	325.36	0.297	1.075	0.141	0.157	0.076	0.068
b-c	8,000	525	235	23,798.12	92.6	0.336	Military	20,193.78	113.1	3100	2.83	10.24	1.34	1.50	0.72	0.65	350.75	0.320	1.159	0.152	0.170	0.081	0.074
c-d	67,000	1,000	240	24,304.46	92.6	2.757	Approach	6,997.18	321.5	3100	20.00	4.22	2.80	1.50	0.63	0.57	996.64	6.430	1.357	0.900	0.482	0.203	0.183
d-e	27,000	650	215	21,772.75	80	1.240	Approach	6,997.18	144.6	3100	20.00	4.22	2.80	1.50	0.63	0.57	448.33	2.892	0.610	0.405	0.217	0.091	0.082
e-f	3,132	175	180	18,228.35	78	0.172	Approach	6,997.18	20.0	3100	20.00	4.22	2.80	1.50	0.63	0.57	62.12	0.401	0.085	0.056	0.030	0.013	0.011
																Emissions in lb for Closed Pattern VFR:		**2183.21**	**10.340**	**4.285**	**1.653**	**1.056**	**0.463**	**0.419**

Closed Pattern IFR
Flight Profile F41RADSW

Point	Distance	Height	Speed, kts	Power % ETR
a	0	10	160	100
b	6,000	10	250	100
c	18,000	1,600	250	92
d	80,000	1,600	250	100
e	86,000	2,600	250	92
f	216,352	2,600	250	82
g	255,000	1,600	225	82

h	295,000	1,600	185	82
i	375665	300	160	82
j	381665	10	160	82

										Emission Indices, lb/1000 lb							Emissions (lbs)						
segment	Distance	Height	Speed, kts	speed, ft/min	Power % ETR	Time (min)	Mode	FFR, lb/hr	Fuel Use lb	EICO2	EICO	EINOx	EIVOC	EISO2	EIPM10	EIPM2.5	CO_2	CO	NOx	VOC	SO_2	PM10	PM2.5
a-b	6,000	10	205	20,760.06	100	0.289	Military	20,193.78	97.3	3100	2.83	10.24	1.34	1.50	0.72	0.65	301.56	0.275	0.996	0.130	0.146	0.070	0.063
b-c	12,000	805	250	25,317.15	100	0.474	Military	20,193.78	159.5	3100	2.83	10.24	1.34	1.50	0.72	0.65	494.55	0.451	1.634	0.214	0.239	0.115	0.104
c-d	62,000	1,600	250	25,317.15	92	2.449	Military	20,193.78	824.2	3100	2.83	10.24	1.34	1.50	0.72	0.65	2555.19	2.333	8.440	1.104	1.236	0.593	0.536
d-e	6,000	2,100	250	25,317.15	100	0.237	Military	20,193.78	79.8	3100	2.83	10.24	1.34	1.50	0.72	0.65	247.28	0.226	0.817	0.107	0.120	0.057	0.052
e-f	130,352	2,600	250	25,317.15	92	5.149	Military	20,193.78	1732.9	3100	2.83	10.24	1.34	1.50	0.72	0.65	5372.16	4.904	17.745	2.322	2.599	1.248	1.126
f-g	38,648	2,100	237.5	24,051.29	82	1.607	Approach	6,997.18	187.4	3100	20.00	4.22	2.80	1.50	0.63	0.57	580.95	3.748	0.791	0.525	0.281	0.118	0.107
g-h	40,000	1,600	205	20,760.06	82	1.927	Approach	6,997.18	224.7	3100	20.00	4.22	2.80	1.50	0.63	0.57	696.60	4.494	0.948	0.629	0.337	0.142	0.128
h-i	80,665	950	172.5	17,468.83	82	4.618	Approach	6,997.18	538.5	3100	20.00	4.22	2.80	1.50	0.63	0.57	1669.45	10.770	2.273	1.508	0.808	0.339	0.307
i-j	6,000	155	160	16,202.97	82	0.370	Approach	6,997.18	43.2	3100	20.00	4.22	2.80	1.50	0.63	0.57	133.88	0.864	0.182	0.121	0.065	0.027	0.025
																Emissions in lb for Closed Pattern IFR:	**12051.60**	**28.065**	**33.825**	**6.660**	**5.831**	**2.710**	**2.447**

Approach
Flight Profile F4A18VOH

Point	Distance	Height	Speed, kts	Power % ETR
a	300,000	17,000	300	82
AB	121,477	3,000	300	82
b	110,000	2,100	300	88
c	58,000	1,600	300	81.9
d	28,000	1,600	300	80
e	20,000	1,600	250	86
f	14,000	1,600	200	86
g	6,000	300	200	86
h	0	50	150	68

										Emission Indices, lb/1000 lb							Emissions (lbs)						
segment	Distance	Height	Speed, kts	speed, ft/min	Power % ETR	Time (min)	Mode	FFR, lb/hr	Fuel Use lb	EICO2	EICO	EINOx	EIVOC	EISO2	EIPM10	EIPM2.5	CO_2	CO	NOx	VOC	SO_2	PM10	PM2.5
AB-b	11,477	2,550	300	30,380.58	82	0.378	Approach	6,997.18	44.1	3100	20.00	4.22	2.80	1.50	0.63	0.57	136.57	0.881	0.186	0.123	0.066	0.028	0.025
b-c	52,000	1,850	300	30,380.58	88	1.712	Approach	6,997.18	199.6	3100	20.00	4.22	2.80	1.50	0.63	0.57	618.81	3.992	0.842	0.559	0.299	0.126	0.114
c-d	30,000	1,600	300	30,380.58	81.9	0.987	Approach	6,997.18	115.2	3100	20.00	4.22	2.80	1.50	0.63	0.57	357.01	2.303	0.486	0.322	0.173	0.073	0.066
d-e	8,000	1,600	275	27,848.86	80	0.287	Approach	6,997.18	33.5	3100	20.00	4.22	2.80	1.50	0.63	0.57	103.86	0.670	0.141	0.094	0.050	0.021	0.019
e-f	6,000	1,600	225	22,785.43	86	0.263	Approach	6,997.18	30.7	3100	20.00	4.22	2.80	1.50	0.63	0.57	95.20	0.614	0.130	0.086	0.046	0.019	0.018
f-g	8,000	950	200	20,253.72	86	0.395	Approach	6,997.18	46.1	3100	20.00	4.22	2.80	1.50	0.63	0.57	142.80	0.921	0.194	0.129	0.069	0.029	0.026
g-h	6,000	175	175	17,722.00	86	0.339	Approach	6,997.18	39.5	3100	20.00	4.22	2.80	1.50	0.63	0.57	122.40	0.790	0.167	0.111	0.059	0.025	0.023
																Emissions in lb for Approach:	**1576.65**	**10.172**	**2.146**	**1.424**	**0.763**	**0.320**	**0.290**

									Emission Indices, lb/1000 lb							Emissions (lbs)						
				Time (min)	Mode	FFR, lb/hr	Fuel Use lb	EICO2	EICO	EINOx	EIVOC	EISO2	EIPM10	EIPM2.5	CO_2	CO	NOx	VOC	SO_2	PM10	PM2.5
Idle/Taxi				15	Idle	2,749.16	687.3	3100	111.18	1.33	37.37	1.50	0.88	0.79	2130.69	76.413	0.914	25.684	1.031	0.605	0.543

Table 2. Baseline QF-4 Annual Emissions

Type of Operation	Total Number of Operations	Emissions per Operation, lbs/operation							Total Emissions						
		CO2	CO	NOx	VOC	SO2	PM10	PM2.5	CO2	CO	NOx	VOC	SO2	PM10	PM2.5
Idle/Taxi out	1,136	2,130.69	76.41	0.91	25.68	1.03	0.60	0.54	1,210	43.40	0.52	14.59	0.59	0.34	0.31
After Burner Takeoff	1056	3,550.11	7.54	7.47	1.29	1.72	0.56	0.51	1,874	3.98	3.94	0.68	0.91	0.30	0.27
Military Power Takeoffs	80	1,397.80	1.28	4.62	0.60	0.68	0.32	0.29	56	0.05	0.18	0.02	0.03	0.01	0.01
Closed Pattern (VFR)	2,112	2,183.21	10.34	4.28	1.65	1.06	0.46	0.42	2,305	10.92	4.52	1.75	1.12	0.49	0.44
Closed Pattern (IFR)	1,584	12,051.60	28.06	33.82	6.66	5.83	2.71	2.45	9,545	22.23	26.79	5.27	4.62	2.15	1.94
Approach/Landing	1,136	1,576.65	10.17	2.15	1.42	0.76	0.32	0.29	896	5.78	1.22	0.81	0.43	0.18	0.16
Taxi in/Idle	1,136	2,130.69	76.41	0.91	25.68	1.03	0.60	0.54	1,210	43.40	0.52	14.59	0.59	0.34	0.31
								Tons/year	17,097	129.76	37.70	37.71	8.27	3.82	3.44
								Metric Tons/year	15,510						

Table 3 Inputs to Emissions Calculations (QF-16) F100-PW-220 engine Aircraft has 1 engine

A/B Departure
Flight Profile 16DG (from Holloman AFB)

Point	Distance	Height	Speed, kts	Power % ETR
a	0	0	0	92
b	2,700	0	145	92
c	12,000	600	330	92.4
CD	25,051	3,000	340	92.4
d	30,000	3,910	350	87

											Emission Indices, lb/1000 lb							Emissions (lbs)						
segment	Distance	Height	Speed, kts	speed, ft/min	Power % ETR	Time (min)	Mode	FFR, lb/hr	Fuel Use lb	EICO2	EICO	EINOx	EIVOC	EISO2	EIPM10	EIPM2.5	CO_2	CO	NOx	VOC	SO_2	PM10	PM2.5
a-b	2,700	0	72.5	7,341.97	92	0.367748566	AB	42,084.81	257.9	3100	6.41	8.35	2.11	1.50	0.88	0.79	799.66	1.653	2.154	0.544	0.387	0.227	0.204
b-c	9,300	300	237.5	24,051.29	92	0.386673639	AB	42,084.81	271.2	3100	6.41	8.35	2.11	1.50	0.88	0.79	840.81	1.739	2.265	0.572	0.407	0.239	0.214
c-CD	13,051	1,800	335	33,924.98	92.4	0.384712393	Military	9,776.36	62.7	3100	0.86	29.26	2.30	1.50	1.01	0.91	194.33	0.054	1.834	0.144	0.094	0.063	0.057
																Emissions in lb for A/B Departure:	**1834.80**	**3.446**	**6.253**	**1.261**	**0.888**	**0.529**	**0.475**

Military Departure
Flight Profile 16DF (from Holloman AFB)

Point	Distance	Height	Speed, kts	Power % ETR
a	0	0	0	92
b	3,300	0	145	92.4
c	21,000	1,200	300	92.4
CD	43,991	3,000	350	92.4
d	81,160	5,910	350	87

								Emission Indices, lb/1000 lb									Emissions (lbs)						
segment	Distance	Height	Speed, kts	speed, ft/min	Power % ETR	Time (min)	Mode	FFR, lb/hr	Fuel Use lb	EICO2	EICO	EINOx	EIVOC	EISO2	EIPM10	EIPM2.5	CO_2	CO	NOx	VOC	SO_2	PM10	PM2.5
a-b	3,300	0	72.5	7,341.97	92	0.44947047	Military	9,776.36	73.2	3100	0.86	29.26	2.30	1.50	1.01	0.91	227.04	0.063	2.143	0.168	0.110	0.074	0.067
b-c	17,700	600	222.5	22,532.26	92.4	0.785540321	Military	9,776.36	128.0	3100	0.86	29.26	2.30	1.50	1.01	0.91	396.80	0.110	3.745	0.294	0.192	0.129	0.116
c-CD	22,991	2,100	325	32,912.29	92.4	0.698556109	Military	9,776.36	113.8	3100	0.86	29.26	2.30	1.50	1.01	0.91	352.86	0.098	3.330	0.262	0.171	0.115	0.104
																Emissions in lb for Military Departure:	**976.71**	**0.271**	**9.218**	**0.725**	**0.473**	**0.318**	**0.287**

Closed Pattern VFR
Flight Profile F4S

Point	Distance	Height	Speed, kts	Power % ETR
a	0	0	160	100
b	6,000	50	220	100
c	14,000	1,000	250	90
d	81,000	1,000	230	88
e	108,000	300	200	85
f	111,132	50	160	85

								Emission Indices, lb/1000 lb									Emissions (lbs)						
segment	Distance	Height	Speed, kts	speed, ft/min	Power % ETR	Time (min)	Mode	FFR, lb/hr	Fuel Use lb	EICO2	EICO	EINOx	EIVOC	EISO2	EIPM10	EIPM2.5	CO_2	CO	NOx	VOC	SO_2	PM10	PM2.5
a-b	6,000	25	190	19,241.03	92.6	0.31183358	Military	9,776.36	50.8	3100	0.86	29.26	2.30	1.50	1.01	0.91	157.52	0.044	1.487	0.117	0.076	0.051	0.046
b-c	8,000	525	235	23,798.12	92.6	0.336161022	Military	9,776.36	54.8	3100	0.86	29.26	2.30	1.50	1.01	0.91	169.81	0.047	1.603	0.126	0.082	0.055	0.050
c-d	67,000	1,000	240	24,304.46	92.6	2.756695464	Military	9,776.36	449.2	3100	0.86	29.26	2.30	1.50	1.01	0.91	1392.50	0.386	13.143	1.033	0.674	0.454	0.409
d-e	27,000	650	215	21,772.75	80	1.240082375	Intermediate	5,843.05	120.8	3100	0.86	22.13	3.51	1.50	1.21	1.09	374.38	0.104	2.673	0.424	0.181	0.146	0.132
e-f	3,132	175	180	18,228.35	78	0.171820302	Intermediate	5,843.05	16.7	3100	0.86	22.13	3.51	1.50	1.21	1.09	51.87	0.014	0.370	0.059	0.025	0.020	0.018
																Emissions in lb for Closed Pattern VFR:	**2146.08**	**0.595**	**19.275**	**1.759**	**1.038**	**0.727**	**0.655**

Closed Pattern IFR
Flight Profile F41RADSW

Point	Distance	Height	Speed, kts	Power % ETR
a	0	10	160	100
b	6,000	10	250	100
c	18,000	1,600	250	92
d	80,000	1,600	250	100
e	86,000	2,600	250	92
f	216,352	2,600	250	82
g	255,000	1,600	225	82
h	295,000	1,600	185	82
i	375665	300	160	82
j	381665	10	160	82

								Emission Indices, lb/1000 lb									Emissions (lbs)						
segment	Distance	Height	Speed, kts	speed, ft/min	Power % ETR	Time (min)	Mode	FFR, lb/hr	Fuel Use lb	EICO2	EICO	EINOx	EIVOC	EISO2	EIPM10	EIPM2.5	CO_2	CO	NOx	VOC	SO_2	PM10	PM2.5
a-b	6,000	10	205	20,760.06	100	0.289016488	Military	9,776.36	47.1	3100	0.86	29.26	2.30	1.50	1.01	0.91	145.99	0.040	1.378	0.108	0.071	0.048	0.043
b-c	12,000	805	250	25,317.15	100	0.473987041	Military	9,776.36	77.2	3100	0.86	29.26	2.30	1.50	1.01	0.91	239.43	0.066	2.260	0.178	0.116	0.078	0.070
c-d	62,000	1,600	250	25,317.15	92	2.448933045	Intermediate	5,843.05	238.5	3100	0.86	22.13	3.51	1.50	1.21	1.09	739.34	0.205	5.278	0.837	0.358	0.289	0.260
d-e	6,000	2,100	250	25,317.15	100	0.236993521	Military	9,776.36	38.6	3100	0.86	29.26	2.30	1.50	1.01	0.91	119.71	0.033	1.130	0.089	0.058	0.039	0.035
e-f	130,352	2,600	250	25,317.15	92	5.148763231	Intermediate	5,843.05	501.4	3100	0.86	22.13	3.51	1.50	1.21	1.09	1554.43	0.431	11.096	1.760	0.752	0.607	0.547
f-g	38,648	2,100	237.5	24,051.29	82	1.606899225	Intermediate	5,843.05	156.5	3100	0.86	22.13	3.51	1.50	1.21	1.09	485.13	0.135	3.463	0.549	0.235	0.189	0.171
g-h	40,000	1,600	205	20,760.06	82	1.92677659	Intermediate	5,843.05	187.6	3100	0.86	22.13	3.51	1.50	1.21	1.09	581.70	0.161	4.152	0.659	0.281	0.227	0.205
h-i	80,665	950	172.5	17,468.83	82	4.617652737	Intermediate	5,843.05	449.7	3100	0.86	22.13	3.51	1.50	1.21	1.09	1394.08	0.387	9.952	1.578	0.675	0.544	0.490
i-j	6,000	155	160	16,202.97	82	0.370302376	Intermediate	5,843.05	36.1	3100	0.86	22.13	3.51	1.50	1.21	1.09	111.80	0.031	0.798	0.127	0.054	0.044	0.039
																Emissions in lb for Closed Pattern IFR:	**5371.61**	**1.490**	**39.507**	**5.885**	**2.599**	**2.064**	**1.859**

Approach
Flight Profile F4A18VOH

Point	Distance	Height	Speed, kts	Power % ETR
a	300,000	17,000	300	82
AB	121,477	3,000	300	82
b	110,000	2,100	300	88
c	58,000	1,600	300	81.9
d	28,000	1,600	300	80
e	20,000	1,600	250	86
f	14,000	1,600	200	86
g	6,000	300	200	86
h	0	50	150	68

								Emission Indices, lb/1000 lb									Emissions (lbs)						
segment	Distance	Height	Speed, kts	speed, ft/min	Power % ETR	Time (min)	Mode	FFR, lb/hr	Fuel Use lb	EICO2	EICO	EINOx	EIVOC	EISO2	EIPM10	EIPM2.5	CO_2	CO	NOx	VOC	SO_2	PM10	PM2.5
AB-b	11,477	2,550	300	30,380.58	82	0.377758128	Intermediate	5,843.05	36.8	3100	0.86	22.13	3.51	1.50	1.21	1.09	114.05	0.032	0.814	0.129	0.055	0.045	0.040
b-c	52,000	1,850	300	30,380.58	88	1.71161987	Intermediate	5,843.05	166.7	3100	0.86	22.13	3.51	1.50	1.21	1.09	516.74	0.143	3.689	0.585	0.250	0.202	0.182
c-d	30,000	1,600	300	30,380.58	81.9	0.987473002	Intermediate	5,843.05	96.2	3100	0.86	22.13	3.51	1.50	1.21	1.09	298.12	0.083	2.128	0.338	0.144	0.116	0.105
d-e	8,000	1,600	275	27,848.86	80	0.287264873	Intermediate	5,843.05	28.0	3100	0.86	22.13	3.51	1.50	1.21	1.09	86.73	0.024	0.619	0.098	0.042	0.034	0.030
e-f	6,000	1,600	225	22,785.43	86	0.263326134	Intermediate	5,843.05	25.6	3100	0.86	22.13	3.51	1.50	1.21	1.09	79.50	0.022	0.567	0.090	0.038	0.031	0.028
f-g	8,000	950	200	20,253.72	86	0.394989201	Intermediate	5,843.05	38.5	3100	0.86	22.13	3.51	1.50	1.21	1.09	119.25	0.033	0.851	0.135	0.058	0.047	0.042
g-h	6,000	175	175	17,722.00	86	0.338562172	Intermediate	5,843.05	33.0	3100	0.86	22.13	3.51	1.50	1.21	1.09	102.21	0.028	0.730	0.116	0.049	0.040	0.036
																Emissions in lb for Approach:	**1316.60**	**0.365**	**9.398**	**1.491**	**0.637**	**0.514**	**0.463**

Simulated Flame Out (SFO)
Flight Profile 16CA (Same as Holloman)

Point	Distance	Height	Speed, kts	Power % ETR
a	0	50	150	92.6
b	3,000	50	170	92.6

c	10,000	200	250	92.6
CD	20,426	3,000	235	92.6
d	38,708	7,910	220	80
e	57,416	7,910	220	55
EF	74,517	3,000	220	55
g	78,000	2,000	220	55
h	91,832	300	180	55
i	94831	50	180	55

										Emission Indices, lb/1000 lb							Emissions (lbs)						
segment	Distance	Height	Speed, kts	speed, ft/min	Power % ETR	Time (min)	Mode	FFR, lb/hr	Fuel Use lb	EICO2	EICO	EINOx	EIVOC	EISO2	EIPM10	EIPM2.5	CO_2	CO	NOx	VOC	SO_2	PM10	PM2.5
a-b	3,000	50	160	16,202.97	92.6	0.185151188	Military	9,776.36	30.2	3100	0.86	29.26	2.30	1.50	1.01	0.91	93.53	0.026	0.883	0.069	0.045	0.030	0.027
b-c	7,000	125	210	21,266.40	92.6	0.329157667	Military	9,776.36	53.6	3100	0.86	29.26	2.30	1.50	1.01	0.91	166.27	0.046	1.569	0.123	0.080	0.054	0.049
c-CD	10,426	1,600	242.5	24,557.63	92.6	0.42454143	Military	9,776.36	69.2	3100	0.86	29.26	2.30	1.50	1.01	0.91	214.45	0.059	2.024	0.159	0.104	0.070	0.063
EF-g	3,483	2,500	220	22,279.09	55	0.156330905	Military	9,776.36	25.5	3100	0.86	29.26	2.30	1.50	1.01	0.91	78.97	0.022	0.745	0.059	0.038	0.026	0.023
g-h	13,832	1,150	200	20,253.72	55	0.682936328	Approach	3,912.84	44.5	3100	1.92	12.32	4.88	1.50	1.03	0.93	138.07	0.086	0.549	0.217	0.067	0.046	0.041
h-i	2,999	175	180	18,228.35	55	0.164523974	Approach	3,912.84	10.7	3100	1.92	12.32	4.88	1.50	1.03	0.93	33.26	0.021	0.132	0.052	0.016	0.011	0.010
																Emissions in lb for Simulated Flame Out (SFO):	**724.54**	**0.260**	**5.902**	**0.680**	**0.351**	**0.237**	**0.214**

Idle/Taxi						Time (min)	Mode	FFR, lb/hr	Fuel Use lb	EICO2	EICO	EINOx	EIVOC	EISO2	EIPM10	EIPM2.5	CO_2	CO	NOx	VOC	SO_2	PM10	PM2.5
						15	Idle	2,291.84	573.0	3100	35.23	4.60	7.57	1.50	0.26	0.23	1776.25	20.185	2.636	4.337	0.859	0.149	0.132

Table 4. Proposed QF-16 Annual Emissions

Type of Operation	Total Number of Operations	Emissions per Operation, lbs/operation							Total Emissions, tons/year						
		CO2	CO	NOx	VOC	SO2	PM10	PM2.5	CO2	CO	NOx	VOC	SO2	PM10	PM2.5
Idle/Taxi out	1,136	1,776.25	20.19	2.64	4.34	0.86	0.15	0.13	1,009	11.47	1.50	2.46	0.49	0.08	0.07
After Burner Takeoff	116	1,834.80	3.45	6.25	1.26	0.89	0.53	0.48	106	0.20	0.36	0.07	0.05	0.03	0.03
Military Power Takeoffs	1,020	976.71	0.27	9.22	0.72	0.47	0.32	0.29	498	0.14	4.70	0.37	0.24	0.16	0.15
Closed Pattern (VFR)	2,112	2,146.08	0.60	19.28	1.76	1.04	0.73	0.65	2,266	0.63	20.35	1.86	1.10	0.77	0.69
Closed Pattern (IFR)	1,584	5,371.61	1.49	39.51	5.88	2.60	2.06	1.86	4,254	1.18	31.29	4.66	2.06	1.63	1.47
Approach/Landing	1,136	1,316.60	0.37	9.40	1.49	0.64	0.51	0.46	748	0.21	5.34	0.85	0.36	0.29	0.26
Simulated Flame Out	1,056	724.54	0.26	5.90	0.68	0.35	0.24	0.21	383	0.14	3.12	0.36	0.19	0.13	0.11
Taxi in/Idle	1,136	1,776.25	20.19	2.64	4.34	0.86	0.15	0.13	1,009	11.47	1.50	2.46	0.49	0.08	0.07
								Tons/year	10,273	25.42	68.16	13.09	4.97	3.18	2.86
								Metric Tons/year	9,320						

Table 5. Net Change from QF-4 to QF-16

Type	CO2 Metric tons/year	CO tons/year	NOx tons/year	VOC tons/year	SO2 tons/year	PM10 tons/year	PM2.5 tons/year
QF-4	15,510	129.76	37.70	37.71	8.27	3.82	3.44
QF-16	9,320	25.42	68.16	13.09	4.97	3.18	2.86
Net Change	**-6,190**	**-104**	**30**	**-25**	**-3.3**	**-0.6**	**-0.6**

Emissions Factors

			Emissions Factor in lb/1000 lb fuel burned				
	Power Setting	Fuel Flowrate (lb/hr)	NOx	CO	VOC	PM10	PM2.5
F100-PW-220	Idle	2291.84	4.60	35.23	7.57	0.26	0.23
	Approach	3912.84	12.32	1.92	4.88	1.03	0.93
	Intermediate	5843.05	22.13	0.86	3.51	1.21	1.09
	Military	9776.36	29.26	0.86	2.30	1.01	0.91
	AB	42084.81	8.35	6.41	2.11	0.88	0.79
J79-GE-15 J79-GE-10/10B	Idle	1,374.58	1.33	111.18	37.37	0.88	0.79
	Approach	3,498.59	4.22	20.00	2.80	0.63	0.57
	Intermediate	7,673.93	8.24	4.69	1.34	0.72	0.65
	Military	10,096.89	10.24	2.83	1.34	0.72	0.65
	AB	35,339.12	4.50	8.63	1.01	0.37	0.33

APPENDIX D

COASTAL CONSISTENCY DRAFT DETERMINATION

TYNDALL AIR FORCE BASE, FLORIDA
FEDERAL AGENCY COASTAL ZONE MANAGEMENT ACT (CZMA)
NEGATIVE DETERMINATION

Introduction

This document provides the State of Florida with the U.S. Air Force's Negative Determination under Section 307 of the Coastal Zone Management Act, 16 U.S.C. § 1456, and 15 C.F.R. Part 930.35. The information in this Negative Determination is provided pursuant to 15 C.F.R. Section 930.35.

This negative determination addresses the Proposed Action to renovate/extend waste water and potable water lines, and undertake airfield repairs to accommodate conversion of QF-4 to QF-16 full-scale aerial targets (FSATs) at Tyndall AFB (TAFB), Florida.

Proposed Federal agency action:

The Proposed Action would replace the 82nd Aerial Target Squadron (82 ATRS) QF-4 FSATs with QF-16 FSATs at TAFB, FL. Up to 60 QF-16 FSATs would replace the 50 QF-4s currently at TAFB. Aircraft replacement would occur over 4 years, starting in December 2013 (or Fiscal Year 2014 [FY14]).

Seven operations and maintenance (O&M) projects were identified to adequately support conversion from QF-4s to QF-16s at TAFB (Table 1); Figure 1 illustrates where these infrastructure upgrades are planned. It is estimated that demolition and infrastructure upgrade/improvement activities would be initiated in FY14 and be completed within 2 years from the initiation of construction activities. All demolition and upgrade/improvement activities would occur in already developed areas of the base.

Table 1 Tyndall AFB Proposed O&M Projects for QF-16

Description	Project Size	Project Detail
Addition/Repair Drone Maintenance Facility	NA	Install One Roll-Up Door, interior renovations, paint hangar doors, and add fire suppression in Building 9310
Addition/Repair Egress, Hangar 5	2,466 square feet (sf)	Addition to Life Support Section
Hydrazine Storage Facility	NA	Interior Renovation to Building 45 in Vicinity of Taxiway F
Water/Wastewater Lines	4,900 linear feet	Extend lines to Building 9310
Drone Runway/Ramp	900,000 sf	Maintenance and Repair
Interior Facility/Infrastructure for Integrated Maintenance Data Systems	NA	Repair

Figure 1 Proposed Areas for Construction and Infrastructure Upgrades/Improvements

The Proposed Action (and Preferred Alternative) would incorporate pollution prevention, energy, and water conservation and water quality initiatives into all facilities and activities where practicable. The objectives of the initiatives would be to improve waste reduction and management practices; energy efficiency and energy conservation practices; water resource conservation and management; and recycling and reuse practices. When applicable, waste generated during construction would be recycled according to the type of material.

Federal Review

After review of the Florida Coastal Management Program and its enforceable policies, the U.S. Air Force has made a determination that this activity is one that will not have an effect on the state of Florida coastal zone or its resources (Table 2).

Table 2 Florida Coastal Management Program Consistency Review

Statute	Consistency	Scope
Chapter 161 *Beach and Shore Preservation*	The Proposed Action would not adversely affect beach and shore management, specifically as it pertains to: • The Coastal Construction Permit Program. • The Coastal Construction Control Line (CCCL) Permit Program. • The Coastal Zone Protection Program. All land activities would occur on federal property.	Authorizes the Bureau of Beaches and Coastal Systems within DEP to regulate construction on or seaward of the states' beaches.
Chapter 163, Part II *Growth Policy; County and Municipal Planning; Land Development Regulation*	The Proposed Action would not affect local government comprehensive plans.	Requires local governments to prepare, adopt, and implement comprehensive plans that encourage the most appropriate use of land and natural resources in a manner consistent with the public interest.
Chapter 186 *State and Regional Planning*	The Proposed Action would not have a negative affect on state plans for water use, land development, or transportation.	Details state-level planning requirements. Requires the development of special statewide plans governing water use, land development, and transportation.
Chapter 252 *Emergency Management*	The Proposed Action would not increase the state's vulnerability to natural disasters. Emergency response and evacuation procedures would not be impacted by the proposed action.	Provides for planning and implementation of the state's response to, efforts to recover from, and the mitigation of natural and manmade disasters.
Chapter 253 *State Lands*	All activities would occur on federal property, therefore there would be no impact to state or public lands.	Addresses the state's administration of public lands and property of this state and provides direction regarding the acquisition, disposal, and management of all state lands.

Table 2 Florida Coastal Management Program Consistency Review

Statute	Consistency	Scope
Chapter 258 *State Parks and Preserves*	State parks, recreational areas, and aquatic preserves would not be affected by the Proposed Action.	Addresses administration and management of state parks and preserves (Chapter 258).
Chapter 259 *Land Acquisition for Conservation or Recreation*	Tourism and outdoor recreation would not be affected.	Authorizes acquisition of environmentally endangered lands and outdoor recreation lands (Chapter 259).
Chapter 260 *Recreational Trails System*	Opportunities for recreation on state lands would not be affected.	Authorizes acquisition of land to create a recreational trails system and to facilitate management of the system (Chapter 260).
Chapter 375 *Multipurpose Outdoor Recreation; Land Acquisition, Management, and Conservation*	Opportunities for recreation on state lands would not be affected.	Develops comprehensive multipurpose outdoor recreation plan to document recreational supply and demand, describe current recreational opportunities, estimate need for additional recreational opportunities, and propose means to meet the identified needs (Chapter 375).
Chapter 267 *Historical Resources*	The Proposed Action would not have an impact on historic and/or cultural resources.	Addresses management and preservation of the state's archaeological and historical resources.
Chapter 288 *Commercial Development and Capital Improvements*	The Proposed Action would occur on federal property. It would not have an effect on future business opportunities on state lands, or the promotion of tourism in the region.	Provides the framework for promoting and developing the general business, trade, and tourism components of the state economy.
Chapter 334 *Transportation Administration*	The Proposed Action would not have an impact on transportation.	Addresses the state's policy concerning transportation administration (Chapter 334).
Chapter 339 *Transportation Finance and Planning*	There would be no effect on the finance and planning needs of the state's transportation system.	Addresses the finance and planning needs of the state's transportation system (Chapter 339).
Chapter 370 *Saltwater Fisheries*	There would be no effect on saltwater fisheries.	Addresses management and protection of the state's saltwater fisheries.
Chapter 372 *Wildlife*	The Proposed Action would not have a negative impact on wildlife resources.	Addresses the management of the wildlife resources of the state.

Table 2 Florida Coastal Management Program Consistency Review

Statute	Consistency	Scope
Chapter 373 *Water Resources*	The Proposed Action would not change the stormwater rate and volume of runoff because no new impervious surfaces would be introduced. Best management practices will continue to be used to control existing erosion and stormwater runoff. Any applicable permitting requirements will be satisfied in accordance with 62-25 Florida Administrative Code (FAC) and National Pollutant Discharge Elimination System (NPDES). Tyndall AFB would submit a notice of intent to use the generic permit for stormwater discharge under the NPDES program prior to project initiation according to Section 403.0885, Florida Statutes (FS). The Proposed Action would also require coverage under the generic permit for stormwater discharge from construction activities that disturb one or more acres of land (FAC 62-621).	Addresses the state's policy concerning water resources.
Chapter 376 *Pollutant Discharge Prevention and Removal*	The Proposed Action would involve storage of hydrazine. The base's Spill Prevention, Control, and Countermeasure Plan (SPCCP) will be updated to ensure that operational, maintenance, security, safety, and medical procedures are enforced, and that personnel are well trained in these procedures.	Regulates transfer, storage, and transportation of pollutants, and cleanup of pollutant discharges.
Chapter 377 *Energy Resources*	Energy resource production, including oil and gas, and the transportation of oil and gas, would not be affected by the Proposed Action.	Addresses regulation, planning, and development of oil and gas resources of the state.
Chapter 380 *Land and Water Management*	The Proposed Action would occur on federally owned lands. Development of state lands with regional (i.e. more than one county) impacts would not occur. No changes to coastal infrastructure such as capacity increases of existing coastal infrastructure, or use of state funds for infrastructure planning, designing or construction would occur.	Establishes land and water management policies to guide and coordinate local decisions relating to growth and development.
Chapter 381 *Public Health, General Provisions*	The Proposed Action does not involve the construction of an on-site sewage or treatment system.	Establishes public policy concerning the state's public health system.
Chapter 388 *Mosquito Control*	There would be no effect to mosquito control efforts.	Addresses mosquito control effort in the state.

Table 2 Florida Coastal Management Program Consistency Review

Statute	Consistency	Scope
Chapter 403 *Environmental Control*	The Proposed Action would have no impact on water quality, air quality, pollution control, solid waste management, or other environmental control efforts. Reasonable precautions would be taken to minimize fugitive particulate emissions during ground-disturbing/construction activities in accordance with FAC 62-296.	Establishes public policy concerning environmental control in the state.