Military Family Housing Demolition, Construction, Renovation, and Leasing (DCR & L) Program

Eglin AFB, Florida
Hurlburt Field, Florida

DRAFT
ENVIRONMENTAL IMPACT STATEMENT

United States Air Force
Air Force Materiel Command
Air Force Special Operations Command

March 2005

Military Family Housing Demolition, Construction, Renovation, and Leasing (DCR & L) Program

Eglin AFB, Florida
Hurlburt Field, Florida

DRAFT
ENVIRONMENTAL IMPACT STATEMENT

Prepared For

96th Air Base Wing, Eglin Air Force Base
Air Force Materiel Command
And
16th Special Operations Wing, Hurlburt Field
Air Force Special Operations Command

March 2005

COVER SHEET
DRAFT ENVIRONMENTAL IMPACT STATEMENT
MILITARY FAMILY HOUSING DEMOLITION, CONSTRUCTION, RENOVATION, AND LEASING (DCR & L) PROGRAM; EGLIN AFB AND HURLBURT FIELD, FL

a. *Responsible Agency:* U.S. Air Force

b. *Cooperating Agencies*: None

c. *Proposals and Actions*: This Draft Environmental Impact Statement (DEIS) describes the potential consequences to the human and natural environment from the implementation of various Alternatives for accelerating the improvement of Military Family Housing (MFH) through the DCR & L Program.

- Proposed Action – The Proposed Action involves the demolition, construction, and renovation of MFH units. The Air Force proposes to convey 2,739 MFH housing units to a private developer, and that developer would demolish a minimum of 2,590 existing dwellings and construct 2,015 new units. Construction of between 90 and 180 units and up to 3 boat docks at Hurlburt Field's Soundside Manor location would be common across all Alternatives. The Air Force is considering Alternatives involving the demolition or reuse of the Camp Pinchot Historic District and the location and distribution of the 2,015 newly constructed units within the Eglin Reservation at unit densities of 3, 4, or 6 units per acre. The number of units to be constructed at each location would be dependent on the unit densities selected at the associated site. The Camp Pinchot Historic District is listed on the National Register of Historic Places.
- Alternative 1 – In addition to construction at Soundside Manor, construction of between 1,835 and 1,925 units at the Poquito Bayou Expansion site. Existing Camp Pinchot Historic District would not be demolished and would be used for purposes other than housing
- Alternative 2 – In addition to construction at Soundside Manor, construction of between 1,835 and 1,925 units on Eglin Main Base. Existing Camp Pinchot Historic District would not be demolished.
- Alternative 3 – In addition to construction at Soundside Manor, construction of between 660 and 1,320 units at the Camp Pinchot Expansion area and between 515 and 1,265 units at the Poquito Bayou Expansion area. Existing Camp Pinchot Historic District would be demolished.
- Alternative 4 – Same as Alternative 3, except the existing Camp Pinchot Histroic District would not be demolished and would be used for purposes other than housing. One single-craft boat dock may be constructed along the shoreline to the south of the Camp Pinchot Historic District.
- Alternative 5 – The Preferred Alternative, includes the construction of units at Soundside Manor, construction of between 660 and 1,320 units at the Camp Pinchot Expansion area, and between 515 and 1,265 units on Eglin Main Base. Existing Camp Pinchot Histroic District would be demolished.
- Alternative 6 – Same as Alternative 5, except the existing Camp Pinchot Histroic District would not be demolished and would be used for purposes other than housing. One single-craft boat dock may be constructed along the shoreline to the south of the Camp Pinchot Historic District.
- No Action Alternative – The Air Force would not implement the Proposed Action at Eglin or Hurlburt. No new housing areas would be developed and the existing historic buildings at Camp Pinchot would remain in place.

d. *Comments and Inquiries*: Written comments on this document should be directed to Ms. Julia Cantrell, HQ AFCEE/ISM 3300 Sydney Brooks Road, Brooks City-Base, TX 78235-5112. Ms. Cantrell may be reached by telephone at (210) 536-3515. Comments must be received by May 29, 2005, for inclusion in the Final EIS.

e. *Designation*: Draft Environmental Impact Statement

f. *Abstract*: This Draft Environmental Impact Statement has been prepared in accordance with the National Environmental Policy Act to analyze the potential environmental consequences of the proposed MILITARY FAMILY HOUSING DEMOLITION, CONSTRUCTION, RENOVATION, AND LEASING PROGRAM; EGLIN AFB AND HURLBURT FIELD, FL and the No Action Alternative. After considering the potential environmental consequences analyzed for the Alternatives, the U.S. Air Force will decide whether to implement the Preferred Alternative, another of the Alternatives, or the No Action Alternative.

LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS

µg/m^3	Micrograms per Cubic Meter
µmhos/cm	Micromhos per Centimeter
16 CES/CEV	16th Civil Engineering Squadron, Environmental Management Flight
96 CEG	96th Civil Engineer Group
96 CEG/CEV	96th Civil Engineer Group, Environmental Management Division
96 CEG/CEVC	96th Civil Engineer Group, Environmental Compliance Branch
96 CEG/CEVCE	96th Civil Engineer Group, Environmental Engineering Section
96 CEG/CEVR	96th Civil Engineer Group, Environmental Restoration Branch
96 CEG/CEVSNW	96th Civil Engineer Group, Natural Resources Section, Wildlife Element
AAC/SEU	Eglin Range Safety Office
AADT	Average Annual Daily Traffic
AAFES	Army and Air Force Exchange Service
ac	Acre
ACAM	Air Conformity Applicability Model
ACBM	Asbestos-Containing Building Material
ACC	Air Combat Command
ACHP	Advisory Council on Historic Preservation
AFB	Air Force Base
AFCEE(/ISM)	Air Force Center for Environmental Excellence (Installation Support)
AFI	Air Force Instruction
AFMC	Air Force Materiel Command
AFPD	Air Force Policy Directive
AICUZ	Air Installation Compatible Use Zones
AOC	Area of Concern
APZ	Accident Potential Zone
AST	Aboveground Storage Tanks
ATSDR	Agency for Toxic Substances and Disease Registry
bdrm	Bedroom
BMP	Best Management Practice
C&D	Construction and Demolition
CCA	Chromated Copper Arsenate
CCD	Eglin Community Census District
CE	Civil Engineering
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second
CGO	Company Grade Officer
CO	Carbon Monoxide
COC	Community of Concern
CZMA	Coastal Zone Management Act
dB	Decibel
dBA	A-Weighted Decibel
DCA	Okaloosa County Department of Community Affairs
DCR & L	Demolition, Construction, Renovation, and Leasing
DEIS	Draft Environmental Impact Statement
DoD	Department of Defense
EDC	Economic Development Council
EIAP	Environmental Impact Analysis Process

LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS CONT'D

EIS	Environmental Impact Statement
EO	Executive Order
EOD	Explosive Ordnance Disposal
EPCRA	Emergency Planning and Community Right-To-Know Act
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESQD	Explosive Safety Quantity-Distance
F(MC)	Federal Species of Management Concern
F.A.C.	Florida Administrative Code
FC	Federal Candidate Species
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FE	Federally Endangered
FEMA	Federal Emergency Management Agency
FFS	Free Flow Speed
FGO	Field Grade Officer
FNAI	Florida Natural Areas Inventory
FR	Federal Register
FT	Federally Threatened
ft	Foot (Feet)
FT(S/A)	Federally Threatened Due to Similarity of Appearance to Another Species
ft^2	Square Foot (Feet)
FW	Flatwoods
GERC	Graduate Education Research Center
GIS	Geographic Information System
GO	General Officer
GOQ	General Officers' Quarters
GPR	Ground-Penetrating Radar
HABS	Historic American Building Survey
HAER	Historic American Engineering Record
HCM	Highway Capacity Manual
HFLD	Hurlburt Field
Hr	Hour
HRMA	Housing Requirements Market Analysis
HUD	Housing and Urban Development
HVAC	Heating, Ventilation, Air Conditioning
Hwy	Highway
IMPLAN	An input-output model
ITE	Institute of Transportation Engineers
JNCO	Junior Noncommissioned Officer
lb	Pound
LBP	Lead-Based Paint
LBPH	Lead-Based Paint Hazards
lbs/ft^2	Pounds per Square Foot
L_{dn}	Day-Night Unweighted Average Sound Levels during a 24-hour Period
$L_{eq(24)}$	Noise Levels (Average Acoustic Energy) over a 24-Hour Period
$L_{eq(8)}$	Noise Levels (Average Acoustic Energy) over an 8-Hour Period
LOS	Level of Service
MCF	Million Cubic Feet
MDEQ	Mississippi Department of Environmental Quality

LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS CONT'D

MFH	Military Family Housing
mg/L	Milligrams per Liter
MGD	Million Gallons per Day
mL	Milliliter
MS4	Municipal Separate Storm Sewer Systems
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NCSHPO	National Conference of State Historic Preservation Officers
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NFA	No Further Action
NHPA	National Historic Preservation Act
NIOSH	National Institute for Occupational Safety and Health
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NSC	North-South Corridor
OCWS	Okaloosa County Water and Sewer
OCWS-West	Okaloosa County Water and Sewer West
OG	Open Grassland
OSD	Office of the Secretary of Defense
OSHA	Occupational Safety and Health Administration
P.L.	Public Law
PCB	Polychlorinated Biphenyl
pH	Potential of Hydrogen (a measure of acidity)
PM_{10}	Particulate Matter Less Than 10 Microns in Diameter
POI	Point of Interest
POL	Petroleum, Oils, and Lubricants
ppm	Parts per Million
ppt	Parts per Thousand
PSD	Prevention of Significant Deterioration
RC3	Range Configuration and Control Committee
RCRA	Resource Conservation and Recovery Act
RCW	Red-cockaded Woodpecker
RFP	Request for Proposal
ROI	Region of Influence
SAIC	Science Applications International Corporation
SARA	Superfund Amendments and Reauthorization Act
SCS	Soil Conservation Service
SE	State Endangered
SER	Significant Emissions Rate
SFHA	Special Flood Hazard Area
SGO	Senior Grade Officer
SH	Sandhills
SHPO	State Historic Preservation Officer
SNCO	Senior Noncommissioned Officer
SO_2	Sulfur Dioxide
Sq	Square
SR	State Road
SSC	State Species of Special Concern

LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS CONT'D

SSCC	State Species of Special Concern Candidate
ST	State Threatened
SWPPP	Stormwater Pollution Prevention Plan
TCP	Traditional Cultural Properties
THPO	Tribal Historic Preservation Officers
TSCA	Toxic Substance Control Act
U.S.C.	United States Code
UFL	University of Florida
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USDOC	U.S. Department of Commerce
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound
WR	Wetland/Riparian
yr	Year

EXECUTIVE SUMMARY

This Environmental Impact Statement (EIS) examines the potential environmental impacts resulting from the implementation of a program to demolish, construct, renovate, and lease (DCR & L) military family housing (MFH) at Eglin Air Force Base (AFB), Florida, and Hurlburt Field (Hurlburt), Florida. It identifies any required environmental permits relevant to the implementation of the Proposed Action and Alternatives (to include the No Action Alternative). Finally, this EIS identifies management actions, mitigation measures, and Best Management Practices (BMPs) to avoid or minimize environmental impacts, if required.

Eglin AFB and Hurlburt propose to demolish, construct, renovate, and lease MFH at both locations by leveraging private sector funds and expertise with Air Force resources (land and residents). The Air Force would "privatize" its housing assets. To implement the DCR & L Program, the Air Force would convey 2,739 housing units distributed among several parcels of land located on Eglin AFB and Hurlburt, including infrastructure and utilities, to a private real estate development and property management company, or "successful offeror." Of the 2,739 units, the successful offeror, referred to throughout this document as the "developer," would demolish a minimum of 2,590 existing dwellings, renovate two units in place, and accept the Air Force's conveyance of 138 existing units "as is." The private developer would construct 2,015 new units in phases and return five historic units located at Georgia Avenue on Eglin AFB to the Air Force for adaptive reuse for purposes other than residential housing (e.g., offices, meeting places, etc.) once replacement units are constructed. At completion of the project, a total of 2,155 units would be owned and operated by a private developer on behalf of Eglin AFB and Hurlburt. The four housing units at Camp Pinchot, as well as the other structures considered components of the Camp Pinchot Historic District, listed on the National Register of Historic Places (National Register), would either be demolished or adaptively reused for purposes other than housing, depending on the Air Force's decision on which Alternative it implements.

The exact number of housing units proposed for demolition by a private developer is dependent on the disposition of the Camp Pinchot Historic District. The Air Force is evaluating Alternatives involving the demolition or adaptive reuse of the Camp Pinchot historic buildings and the location and distribution of the newly constructed units within the Eglin Reservation as part of this EIS. Should the Air Force decide to demolish the Camp Pinchot Historic District, a total of 2,594 housing units (and an additional 10 other buildings of the Historic District) would be demolished. All demolition and construction activities would occur on Eglin AFB and Hurlburt (Air Force-owned) property. The Air Force would lease the real property underlying the units proposed for demolition to the developer until demolition is complete. The real

property on which the new housing is built would be leased to the developer for a period of 50 years.

ENVIRONMENTAL IMPACT ANALYSIS PROCESS

Congress enacted NEPA (Public Law (P.L.) 91-190, 42 U.S.C. 4321-4347, as amended) to establish a national policy for the protection of the environment. It requires Federal agencies to assess the environmental consequences of the Proposed Action and Alternatives systematically as part of the decision-making process. The intent of NEPA is to protect, restore or enhance the environment through well-informed decisions by the Federal decision maker. The Council on Environmental Quality (CEQ) was established under NEPA to implement the provisions of the Act and review and appraise Federal programs and activities in light of NEPA policy. The CEQ promulgated regulations for implementing the procedural provisions of NEPA (40 CFR 1500–1508). These regulations outline the responsibilities of Federal agencies and provide specific procedures for preparing EISs to comply with NEPA. 32 CFR 989, *Environmental Impact Analysis Process (EIAP),* which implements CEQ regulations with regard to Air Force actions, defines the steps and milestones in the environmental impact analysis process.

This EIS assesses the environmental impacts resulting from implementation of the Proposed Action or Alternatives for the DCR & L Program and location of housing at Eglin AFB and Hurlburt. It also identifies and describes the affected environment and evaluates the potential environmental impacts that could result from the implementation of the Proposed Action and Alternatives (to include the No Action Alternative). The analysis identifies environmental permits and specific mitigation measures to prevent or minimize environmental impacts, if required.

PURPOSE AND NEED FOR THE PROPOSED ACTION

Purpose

The purpose of the Proposed Action and Alternatives is to replace Eglin AFB and Hurlburt's on-base MFH through demolition, construction, renovation, and the leasing of housing implemented through privatization. Privatization utilizes private sector investment and efficiency to accelerate the improvement of base housing. It makes efficient use of limited resources for building and renovating military housing faster and at a lower cost—the end result being quality, affordable housing for Eglin AFB and Hurlburt service members.

Need for the Action

The need for the Proposed Action is to provide adequate housing to Eglin AFB and Hurlburt's military families. In evaluating its current stock of housing units, the DoD has determined that the current condition of DoD-owned housing is poor (OSD, 2004). About 60 percent of DoD units need to be renovated or replaced (OSD, 2004). At Eglin AFB and Hurlburt, approximately 76 percent of housing units are more than 30 years old and do not meet current Air Force housing standards as established by Military Family Housing size standards. The costs to renovate or replace the housing units are estimated to be $18.1 million for Hurlburt and $144 million for Eglin AFB (U.S. Air Force, 2003a, 2003).

Determining the need for housing units at Eglin AFB and Hurlburt involved estimating the number of appropriate adequate and affordable private sector housing units available to military families within 20 miles, or a 60-minute commute. In 2003, Eglin AFB and Hurlburt compiled Housing Requirements Market Analysis (HRMAs) reports in order to identify housing units available to military members in the private community. The Air Force factored in shortfalls in available private sector housing into the total military family housing requirement for Eglin AFB and Hurlburt to determine the number of units needed at both locations to support its military families. Cumulatively, Eglin AFB and Hurlburt require a total of 2,455 military family housing units. This total includes the 300 privately owned housing units at Commando Village, located just east of Hurlburt Field on Martin Luther King Boulevard in Fort Walton Beach, Florida. Military families also occupy 100 mobile homes located at the Bayou Village Mobile Home Park on Eglin's Main Base. However, these mobile home units are not military family housing, as they are privately owned by the tenants, and the mobile home park is scheduled for closure regardless of housing privatization. Since neither the 300 Commando Village homes nor the 100 mobile home units are owned by the Air Force, they are not included in the Proposed Action or Alternatives evaluated in this EIS.

PROPOSED ACTION AND ALTERNATIVES

Proposed Action

Table ES-1 provides a summary of the Proposed Action activities. Existing housing areas are shown in Figure 1-2 of the EIS.

Table ES-1. Proposed Project Activities Occurring Across All Alternatives (Except No Action)

Existing Housing Area	Current Number of Units	Year Built	Project-Related Activities		
			Action for Current Units	# Units Demolished	Number of Units Potentially Constructed*
Eglin AFB					
Georgia Avenue	5	1943	Adaptive Reuse	0	0
Hidden Oaks	126	2001	No Activity	0	0
Ben's Lake	236	1948	Demolition	236	0
Wherry	625	1951-58	Demolition	625	515 - 1,925
Capehart	498	1958	Demolition	498	
New Plew	300	1972	Demolition	300	
Old Plew	390	1966-68	Demolition	390	
Poquito Bayou (and Expansion Area)	150	1976	Demolition	150	515 - 1,925
Camp Pinchot (and Expansion Area)	4	1912-1940	Demolition or Adaptive Reuse[1]	4[1]	680 - 1,320
Camp Rudder	25	1975	Demolition	25	0
Hurlburt Field					
Live Oak Terrace	100	1976	Demolition	100	0
Pine Shadows	206	1957	Demolition	206	0
Soundside Manor	60	1957	Demolition	60	90 - 180
	2	1997	Renovation	0	
	12		No Activity	0	
Total	**2,739**			**2,590/2,594[1]**	

Source: HFLD Housing Office, 2003

[1] Disposition of the Camp Pinchot units is Alternative-dependent (i.e., demolition would occur under Alternatives 3 and 5, adaptive reuse under all others). In addition, there are 10 other non-housing historic buildings that may be either demolished or adaptively reused. The six buildings are considered part of the housing inventory.

* Numbers represent the range of units that could be constructed at each location based on the Alternative selected and associated density (i.e., 3, 4, or 6 units per acre)

The following activities comprise the Proposed Action, are common to all Alternatives, and will occur across all Alternatives (except the No Action Alternative). Therefore, they are referred to as *commonalities*. These commonalities are determined by the requirements of the Housing Privatization Request for Proposal (RFP), the 2003 HRMA, and future land use and planning needs, and are further discussed in Section 2.1.

- Demolition of 2,590 housing units (does not include Camp Pinchot historic buildings, as demolition is alternative-dependent).
- Construction of 2,015 new units consisting of a mixture of two-, three- and four-bedroom single-family structures and multiplex units.
- Leasehold interest in land areas with existing housing areas that are demolished but not utilized for redevelopment would terminate upon the demolition and removal of all required units and the Air Force's reasonable satisfaction with the developer's performance on the conditions of the lease agreement.

- Lease of all areas supporting family housing units (both conveyed and newly constructed, for a total of 2,155) to the developer for a period of 50 years.
- All phases of the transition/demolition/construction portion of the project will be completed within 10 years of lease closing.
- Hurlburt Field:
  - Soundside Manor:
    - 12 units conveyed to the developer as-is.
    - In-place renovation of two units.
    - At a density of 3, 4, or 6 units per acre, potentially 90, 120, or 180 units would be constructed at Soundside Manor respectively.
    - Potential construction of three boat docks at Soundside Manor, listed as a desired feature in the privatization RFP.
  - No new homes will be constructed on existing Live Oak Terrace and Pine Shadows housing areas. These areas will be reserved for other future military operational uses.
- Eglin AFB:
  - 126 units at Hidden Oaks conveyed to the developer as-is.
  - Five housing units at Georgia Avenue conveyed to the developer with a deed restriction requiring that the developer's interest terminate when five suitable housing units are constructed (effectively replacing Georgia Avenue's homes); subsequent reuse of the five Georgia Avenue units for offices or similar activities.
  - Depending on Alternative selection, the Camp Pinchot Historic District would either be demolished or adaptively reused for purposes other than residential housing.
  - Boat docks at Camp Pinchot would remain intact.

Overall, demolition activities would take place over approximately 1,000 acres of land area.

Alternatives

Through a site screening process, the following areas have been identified as potential development locations. These areas are shown in Figure 2-1 of the EIS.

Camp Pinchot Expansion Area – The Camp Pinchot Expansion area includes the Camp Pinchot Historic District and the adjacent land area to the southwest. While this site is approximately 257 acres, only 220 will be leased for development. The Camp Pinchot Historic District is 14 acres in size and consists of 14 structures. Four housing units and

six support structures are contributing elements of the District. The four non-contributing elements include a well house (Building 1565), guest house (Building 1559A), tennis courts (Facility 1550), and a greenhouse. The land area adjacent to the historic district consists of undisturbed land area covered by sand pine and live oak.

Poquito Bayou Expansion Area – This land area includes the existing Poquito Bayou housing area, the "North GERC (Graduate Education Research Center)" area (located next to the University of Florida GERC), and the land area between the housing area and the North GERC area. The North GERC area and the land area between it and the housing area consist of generally undisturbed land with sand pine and live oak. In total, the Poquito Bayou Expansion area is approximately 860 acres (not including wetlands).

Eglin Main Base – The Eglin Main Base area contains two separate areas:

- *Old Plew/New Plew Expansion Area* – This site consists of Eglin's Old Plew, New Plew, and Hidden Oaks housing areas, as well as several hundred acres of semi-improved land area to the west of the housing areas. It is approximately 680 acres.
- *Wherry/Capehart Area* – This site consists of Eglin's Capehart and Wherry housing areas. It is approximately 280 acres.

While the Air Force Housing Privatization RFP states that the developer should consider development of the housing areas at densities of 4 to 6 units per acre, Eglin has listed development at 3 units per acre as a desired feature. Consequently, each Alternative begins by first incorporating the commonalities as described above, then identifying the number of potential units to be constructed within a new or existing housing area at a density of 3, 4, or 6 units per acre. Due to the varying densities and sizes of potential development locations, higher densities may require only one location, while lower densities may be spread among more than one location. Accordingly, the Alternatives differ primarily in the location and density of new housing and are shown in Figure 2-3 of the EIS.

Alternative 1: Poquito Bayou Expansion Alternative – This Alternative would involve the construction of units at the approximately 860-acre Poquito Bayou Expansion site. Construction may occur at densities of 3, 4, or 6 units per acre. Upon completion of the replacement units, the Camp Pinchot Historic District would be adaptively reused for purposes other than residential housing. Table ES-2 shows the number of units that potentially could be constructed at the area under this Alternative for 3, 4, and 6 units per acre in relation to the units that potentially would be constructed at the Soundside Manor location under the same unit densities.

Table ES-2. Number of Units Potentially Constructed at the Poquito Bayou Expansion Area Under Alternative 1

Location	Available Construction Acreage	Max # Units		
		3/Acre	4/Acre	6/Acre
Soundside Manor	30	90	120	180
Poquito Bayou Expansion	860	1,925	1,895	1,835
Total		***2,015***		

Alternative 2: Eglin Main Base Alternative – Alternative 2 would involve the construction of housing units on Eglin Main Base, which includes the 280-acre Wherry/Capehart location and the 680-acre Old Plew/New Plew Expansion area. Construction may occur at densities of 3, 4, or 6 units per acre. Upon completion of the replacement units, the Camp Pinchot Historic District would be adaptively reused for purposes other than residential housing. Table ES-3 shows the number of units that potentially could be constructed at the area under this Alternative for 3, 4, and 6 units per acre in relation to the units that potentially would be constructed at the Soundside Manor location under the same unit densities.

Table ES-3. Number of Units Potentially Constructed at Eglin Main Base Under Alternative 2

Location	Available Construction Acreage	Max # Units		
		3/Acre	4/Acre	6/Acre
Soundside Manor	30	90	120	180
Eglin Main Base*	960	1,925	1,895	1,835
Total		***2,015***		

*Includes 280-acre Wherry/Capehart location and 680-acre Old Plew/New Plew Expansion location

Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area – This Alternative involves the construction of units at the Camp Pinchot and associated Camp Pinchot Expansion area (220 acres, to include the 15-acre historic district) as well as the 860-acre Poquito Bayou Expansion area. The entire Camp Pinchot Historic District (consisting of four housing units and 10 other non-residential buildings) would be demolished and new housing units would be constructed. Consequently, 2,594 housing units in total would be demolished (and an additional 10 buildings at Camp Pinchot). The boat docks at Camp Pinchot would remain intact. Table ES-4 shows the number of units that potentially could be constructed under this Alternative for 3, 4, and 6 units per acre given the units that potentially would be constructed at the Soundside Manor location.

Table ES-4. Number of Units Potentially Constructed at the Camp Pinchot Expansion Area Under Alternative 3

Location	Available Construction Acreage	Max # Units		
		3/Acre	4/Acre	6/Acre
Soundside Manor	30	90	120	180
Camp Pinchot Expansion	220*	660	880	1,320
Poquito Bayou Expansion	860	1,265	1,015	515
Total		***2,015***		

* Only 220 of 257 acres at Camp Pinchot will be leased for development.

Alternative 4: Alternative 3 with Camp Pinchot Adaptive Reuse – Alternative 4 is the same as Alternative 3 except that the Camp Pinchot Historic District would be conveyed to the developer until replacement units are constructed. Upon completion of the replacement units, the Camp Pinchot Historic District would be returned to the Air Force and adaptively reused for purposes other than residential housing; 2,590 units would be demolished. The number of units to be constructed at the Camp Pinchot Expansion area would be the same as Alternative 3. Listed as a desired feature in the privatization RFP, one boat dock may be constructed along the shoreline to the south of the Camp Pinchot Historic District.

Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative) – Alternative 5, Eglin AFB and Hurlburt's Preferred Alternative, includes the demolition of the Camp Pinchot Historic District and the construction of units at the Camp Pinchot Expansion Area (approximately 220 acres including the historic district) and Eglin Main Base (which includes the approximately 680-acre Old Plew/New Plew Expansion area and the approximately 280-acre Wherry/Capehart area). Under this Alternative, 2,594 housing units (and 10 other historic buildings at Camp Pinchot) would be demolished. Table ES-5 shows the number of units that could be potentially constructed at the area under this Alternative for 3, 4, and 6 units per acre in relation to the units that would be potentially constructed at the Soundside Manor location under the same unit densities.

Table ES-5. Number of Units Potentially Constructed at the Camp Pinchot Expansion Area and Eglin Main Base Under Alternative 5

Location	Available Construction Acreage	Max # Units		
		3/Acre	4/Acre	6/Acre
Soundside Manor	30	90	120	180
Camp Pinchot Expansion	220**	660	880	1,320
Eglin Main Base*	960	1,265	1,015	515
Total		***2,015***		

*Includes 280-acre Wherry/Capehart location and 680-acre Old Plew/New Plew Expansion location

** Only 220 of 257 acres at Camp Pinchot will be leased for development.

Alternative 6: Alternative 5 with Camp Pinchot Adaptive Reuse – Alternative 6 is the same as Alternative 5 except that the Camp Pinchot Historic District would be conveyed to the developer until replacement units are constructed. Upon completion of the replacement units, the Camp Pinchot Historic District would be returned to the Air Force and adaptively reused for purposes other than residential housing; 2,590 units would be demolished. The number of units to be constructed at the Camp Pinchot Expansion area would be the same as Alternative 5. Listed as a desired feature in the privatization RFP, one boat dock may be constructed along the shoreline to the south of the Camp Pinchot Historic District.

No Action Alternative – Under the No Action Alternative, the Air Force would not implement the MFH DCR & L Program at Eglin AFB or Hurlburt. Instead, the Air Force would continue to manage, maintain, and replace/upgrade military family housing in accordance with existing Air Force policy. No new housing areas would be developed, and the existing historic district at Camp Pinchot would remain in place.

PUBLIC INPUT ISSUE GUIDE

Public input during the public scoping and comment processes identified several common areas of public concern, listed in the bullets below. All of the areas were addressed in this analysis.

- Impacts to local surface water quality (Section 3.7 and Section 4.7)
- Impacts to wildlife and threatened and endangered species (Section 3.6 and Section 4.6)
- Impacts associated with land use compatibility and viewsheds, and the impact of those upon property values (Section 3.1 and Section 4.1)
- Impacts to traffic (Section 3.2 and Section 4.2)
- Impacts to cultural and archaeological resources (Section 3.5 and Section 4.5)

ENVIRONMENTAL CONSEQUENCES

This EIS analyzes each of the potential environmental consequences that could occur as a result of implementing the Alternatives. Thirteen categories of environmental issues were used to analyze the possibility of environmental impacts and to measure the magnitude of those impacts. A brief summary of the anticipated environmental consequences for each of the 13 issue areas is described in the following text.

Land Use and Planning

Activities associated with Alternative 2 and the No Action Alternative are consistent with installation future land use plans and are completely contained within Eglin Main

Base. There would be no land use conflicts between Eglin and communities in Okaloosa County. A portion of the existing Capehart housing area, which may be used for new construction, is within the Air Installation Compatible Use Zone (AICUZ) 65-70 L_{dn} airfield noise contour, which is typically considered as incompatible for residential development and, as such, discouraged for such use. Consequently, housing units constructed within this noise area would need to be constructed to specifications allowing for the dampening of aircraft noise within the dwellings to below 65 A-weighted decibels (dBA) to minimize potential impacts to housing residents. Particular specifications will be determined at the time of unit design.

Alternatives 1, 3, 4, 5, and 6 would involve development on Eglin lands, which are adjacent to established Okaloosa County communities (i.e., outside Eglin Main Base). Residential densities adjacent to the Camp Pinchot and Poquito Bayou Expansion areas consist of single family housing units at 2 to 4 units per acre. Consequently, no impacts associated with land use are anticipated at the density of 3 to 4 units per acre. However, multifamily or singly family units at a density of 6 units per acre would be inconsistent with adjacent housing communities, and may result in perceived aesthetic impacts or other land use conflicts. Consistency with the Okaloosa County Comprehensive Plan associated with aspects of new developments would likely lessen perceived aesthetic impacts through the planning/construction process. Examples of consistency would be to include setbacks, landscaped buffers, and open space.

Transportation Infrastructure

Traffic would increase on local roadways due to the relocation of families from Hurlburt Field and/or Eglin AFB. The impacts of the Alternatives on the traffic network and operations would be acceptable based on the criteria that they would not cause any roadways to have a worse Level of Service (LOS) than that anticipated in the adopted LOS standards of the Okaloosa County Comprehensive Plan. Alternative 2 would be least impactive to local roadways, as only Hurlburt Field personnel would need to add additional commuter travel to reach Hurlburt Field. Any new traffic signals proposed as a requirement of a specific housing proposal will need to be approved by Okaloosa County and the Florida Department of Transportation prior to construction of the proposed housing units. The new intersection and the new local road system will be developed to meet all local requirements and standards.

Site plans and related road systems and proposed highway interchanges for each new housing area developed as a part of the Proposed Action are subject to specific engineering design and traffic studies to minimize impacts on the existing arterial highways and to gain approval from Okaloosa County and the Florida Department of Transportation. The objective of these reviews is to make sure that future circulation patterns and new intersections do not create inadequate Levels of Service at new or existing intersections or along existing roads. Some of the proposed Alternatives would result in increases in traffic to installation access gates. Options to minimize

unacceptable delays at the gate may include staggered working hours, increasing gate staffing during peak traffic hours, or gate entrance improvements (more lanes or longer storage bays).

Socioeconomics / Environmental Justice / Special Risks to Children

Impacts to socioeconomic resources would be common across all Alternatives (with the exception of the No Action Alternative). No disproportionate impacts to minorities, low-income communities, or children have been identified under any of the Alternatives. Impacts to employment would be beneficial since the project would induce the creation of jobs that would help sustain low unemployment levels in the local and regional economy. The demand for labor associated with the implementation of the project would most likely be filled from the pool of locally available workers, thus negating the potential in-migration of workers (and their family members) from outside the region. In the absence of such an influx of new residents, negligible change would be expected in regional population or the demand for additional housing as a result of the project.

Although a redistribution of persons within the region can be anticipated, the total number would remain the same. Changes in enrollment levels at specific schools could be associated with this redistribution. Fluctuation in enrollment on a school-by-school basis is common and adjustments of personnel levels can be made. Additionally, students can be allocated to other, less capacitated, schools. Also, although the amount of Federal impact aid may be reduced since there would be a net reduction in personnel (and accompanying children) living on-base, state and local funds would become available to the school district.

No adverse impacts to property values are anticipated. Waterfront properties that are visually connected to Eglin facilities, including non-residential areas, have continued to increase in value at a much higher than average rate for the nation. For example, waterfront homes on Tom's Bayou that are visually connected to Eglin Post'l Point, where there are mobile homes, motel-like lodging facilities, an industrial marina, and a recreation area, have continued to increase in value at rates comparable to other waterfront areas. Even in areas with degraded aesthetics (i.e., previously undeveloped land developed with non-residential or non-single family housing) housing values continue to increase due to supply and demand. In areas adjacent to multi-family housing, such as town homes, waterfront property values have continued to rise.

Utility Infrastructure

Potential impacts associated with utility infrastructure are related to the potential for disruption of utility service and to the potential for utility use at site-specific locations to exceed the design or permit capacity of the respective utility system. Gulf Power and Okaloosa County Gas District serve the entire county, encompassing all existing

housing areas. The Proposed Action does not involve an increase in the number of families moving into the area. In addition, although the units constructed would be larger than existing units, the new units would use more energy efficient construction principles (e.g., better insulation, energy efficient appliances, etc.). Consequently, adverse impacts to electric and natural gas utility capacity are not expected from implementation of the Proposed Action at any of the Alternative locations.

Electric and gas utilities for newly constructed units would tie into existing gas and electric utility lines. Areas without existing lines, such as Camp Pinchot, would require the installation of new lines through coordination with Gulf Power and Okaloosa County Gas District. All utility lines installed as part of the Proposed Action would be underground. Interviews with electric and gas utility provider representatives identified no adverse impacts associated with the implementation of the Proposed Action at any of the Alternative locations.

The addition of new housing units to potable water and wastewater utility districts would result in a localized increase in the amount of potable water use and wastewater generation. However, analysis shows that implementation of any of the Alternatives would not place a considerable burden on potable water or wastewater utility providers. Overall, various beneficial impacts would result from the implementation of the Proposed Action at any of the Alternative sites. These benefits are associated with reduced usage of base utilities at both Eglin AFB and Hurlburt, freeing up capacity to allow for future growth, and increased revenues for local municipalities and counties.

Cultural Resources

Archaeological surveys and evaluation of the proposed locations, to include Level 1 Historic American Building Survey/Historic American Engineering Record (HABS/HAER) archival research and documentation, were completed in September 2004 in compliance with Section 110 of the National Historic Preservation Act (NHPA). Adverse impacts to archaeological or architectural cultural resources could occur under all of the Alternatives. Impacts would vary by housing area. Adverse impacts to identified cultural resources would be greater under Alternatives 3 and 5 than under the other Alternatives because both of these Alternatives include demolition of the National Register-listed Camp Pinchot Historic District.

Alternatives 1, 3, 4, 5, and 6 may result in impacts to a large National Register-eligible historic turpentine camp located between the Camp Pinchot Expansion Area and the Poquito Bayou Expansion Area due to disturbance by residents. Alternative 2 would have no impacts to cultural resources.

Consultation with the Florida State Historic Preservation Officer (SHPO) in compliance with the NHPA is currently underway for potential impacts associated with identified cultural resources. Mitigation measures for all historic properties will be developed

and implemented in consultation with the Florida SHPO and pursuant to a Memorandum of Agreement (MOA) prior to any ground-disturbing actions. In some locations, additional cultural resources could be identified as a result of this work. If newly identified resources are eligible for listing in the National Register, mitigation of adverse impacts would be required under the NHPA prior to the project implementation. Impacts to traditional American Indian resources are not expected under any of the Alternatives.

Biological Resources

Alternatives 1, 3, 4, 5, and 6, which use the Poquito Bayou Expansion area and Camp Pinchot Expansion area, have the greatest potential to impact biological resources due to the extensive amount of land that would be cleared. However, the potential for adverse impacts to wildlife or sensitive species and habitats is expected to be minimal given the percentage of area disturbed compared to the acreage of relatively undisturbed lands over the entire Eglin Reservation that will remain largely undeveloped. Construction would not take place in wetlands and floodplains. State-listed protected species are documented to occur at both the Poquito Bayou Expansion and Camp Pinchot Expansion areas. No evidence of federally listed threatened and/or endangered species was found on a recent site visit by Air Force natural resource personnel. Consequently, no adverse impacts to threatened or endangered species have been identified, and a "No Effect" determination has been made by the Air Force under the Endangered Species Act through informal consultation with the U.S. Fish and Wildlife Service.

Water Resources

Potential impacts associated with water resources are related to the potential for increased rate and volume of stormwater runoff, increased amounts of sediment and pollutant runoff during demolition/construction, turbidity and leaching from dock construction, and polluted stormwater runoff from everyday operations within the housing areas post-construction. Each of these has the potential to adversely affect aquatic systems, mainly through the degradation of water quality. Impacts to water quality associated with demolition and construction of housing units and boat docks would be temporary. All applicable regulatory requirements will be adhered to, which would serve to either offset or minimize potential impacts to water quality from demolition, construction, and housing operations. Specific mitigations and BMPs will be identified during the permitting process.

A portion of the Hurlburt Soundside Manor location, consisting of one housing unit, is currently within a 100-year floodplain. Under Executive Order (EO) 11988, 1977, Floodplain Management (42 Federal Register (FR) 26951), Federal agencies are prohibited from floodplain development and the occupancy and/or modification of floodplains unless there is no practicable alternative. Demolition of this unit will

require a Finding of No Practicable Alternative. However, there will be no construction activities under the Proposed Action in the floodplain, and no adverse impacts to the functionality or utility of the floodplain in this area are anticipated. No floodplains or wetland areas in the other project areas or Alternative sites would be filled, altered, or constructed in.

A National Pollutant Discharge Elimination System (NPDES) General Permit for stormwater discharge, a Stormwater Pollution Prevention Plan (SWPPP), a Works in the Water Permit, and adherence to Phase II Municipal Separate Storm Sewer Systems (MS4) permitting requirements would be required. Proper implementation and maintenance of Best Management Practices (BMPs) would reduce the peak flow and maximum runoff of stormwater to permit-mandated levels and retain the first 1 inch of runoff. Consequently, impacts to surface water resources from stormwater runoff across all Alternatives are anticipated to be minimal. No impacts to groundwater have been identified.

Soils/Erosion

At all locations soil erosion potentials are naturally low. However, due to the nature of the Proposed Action, which would potentially involve ground disturbance and vegetative clearing over several hundred acres, soil erosion would result across all Alternatives, with Alternative 2 being slightly less impactive than the other Alternatives. Minimization of soil erosion would be accomplished through the permitting requirements associated with the NPDES regulatory process.

Air Quality

Impacts to air quality would be related to air emissions from construction and demolition activities, as well as increased traffic emissions from longer commutes. Demolition and construction impacts would be temporary and emissions would dissipate with distance from the activity source. Based on baseline conditions, no potential adverse impacts to air quality associated with demolition or construction activities have been identified through analysis. Implementation of BMPs would reduce particulate (i.e., dust) emissions during construction and demolition activities. While increased traffic emissions would be permanent, they not affect the attainment status of Okaloosa County.

Hazardous Materials/Waste

No adverse impacts associated with hazardous materials/waste resulting from demolition of any of the units have been identified, provided that developers follow established state and local regulations and Air Force management actions for handling and disposal. Overall, various beneficial impacts would result from implementation of the Proposed Action at the Alternative sites. These benefits are associated with: (a) elimination of potential exposure of MFH residents to asbestos fibers from

asbestos-containing building materials and lead in lead-based paint, which both have been determined to be present in older housing units and (b) elimination of potential exposure to polychlorinated biphenyls (PCBs) that may be present within the ballasts of older fluorescent light fixtures in MFH residences.

Solid Waste

No adverse impacts to solid waste associated with demolition or construction of any of the units have been identified, either through analysis or through consultation with local landfill providers. The developer would recycle construction and demolition debris wastes to the maximum extent possible, especially wood and scrap metal/wiring. There would be no impact to the landfill capacity at this time and the developer would recycle where possible to minimize the amount of solid waste disposed of in the landfill.

Noise

Under all Alternatives, the relatively low time-averaged noise levels calculated for construction and demolition activities indicate that neither project-related activity would be excessively intrusive. Most, if not all of, the areas involving demolition and construction are situated within areas already exposed to elevated noise from airfield operations and vehicular highway traffic. Construction noise emanating off-site would probably be noticeable in the immediate site vicinity, but would not be expected to create adverse impacts. Furthermore, demolition and construction-related noise would be intermittent and transitory. The average residential noise levels for each area would be similar to those levels associated with urban/suburban residential communities, as identified by the U.S. Environmental Protection Agency (USEPA). At 6 units per acre, average noise levels would be above the noise level that is "requisite to protect the public health and welfare with an adequate margin of safety" (USEPA, 1974). However, levels are less than the benchmark often used by Federal agencies to determine residential land use compatibility around airports, highways, or other transportation corridors. Consequently, between approximately 3 percent and 12 percent of persons living in these areas or immediately adjacent to these areas may be annoyed by the noise levels. Bomb and detonation events occur on interior Eglin Reservation test areas. Since vegetation has little effect on dampening or reducing low-frequency bomb noise, no change in perception of these types of events is anticipated. Most importantly, the closest live ordnance test areas are located northwest of the Longwood and Poquito subdivisions. No construction would occur northwest of the Longwood area, and perception of bomb noise would not increase.

Safety

All demolition and construction activities would be conducted in accordance with Occupational Health and Safety Administration (OSHA) safety standards. No specific aspects of the Alternatives would create any unique impacts to safety from housing

demolition and construction activities or from the presence of unexploded ordnance (UXO) in the MFH areas. Although areas adjacent to Camp Rudder have a small potential for UXO, activities will be confined to areas already cleared of UXO concerns.

CUMULATIVE IMPACTS

Cumulative effects analysis considers the potential environmental impacts resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7). In this EIS, an effort has been made to identify all actions on or near the action area that are being considered and that are in the planning stage at this time. Cumulative impacts are addressed in the context of this EIS in order to assess the incremental contribution of the Proposed Action and Alternatives to impacts on affected resources from all factors. While any activity may potentially create an incremental, cumulative impact on the environment, it is the potential for significant cumulative impacts that is of concern. The significance of an impact is based on the context and intensity of the impact when gauged against the impacts of past, present, or reasonably foreseeable actions.

Although capacity improvements and associated land use changes related to right of way acquisition and conversion of natural areas to developed areas would incrementally contribute to the changing character of the area, cumulative impacts associated with land use and planning are not expected as a result of this action. All proposed activities are compatible with base and county future land use plans. No proposed or reasonably foreseeable road developments are expected to substantially affect the capacity of the existing road network in the study area (Showers, 2004). It is assumed that, as with typical community growth, county and state transportation boards would assess the need for road improvements and accommodate the need accordingly.

Potential adverse impacts are anticipated to be minimal and would be related to the possible movement of a small number of families from one side of Fort Walton Beach to another (i.e., movement of housing units from Hurlburt to an Alternative location). Future growth in the area would offset the potential for any adverse cumulative impacts. The closure of the Bayou Village Mobile Home Park (of which approximately 100 were occupied by military families as of the end of 2004) and the addition of new operations squadrons over the next six years may have an incremental effect on the local housing market. However, those seeking private sector housing would not put an appreciable drain on the local housing market given the average growth rate of the housing market, population, and economy.

The demolition of historic buildings or removal of archaeological artifacts may incrementally impact the cultural atmosphere of Eglin AFB, Hurlburt, and the surrounding communities. However, coordination with the Florida SHPO to meet

NHPA requirements and mitigate any potential impacts would serve to offset any considerable impacts.

Loss of habitat in the Poquito Bayou Expansion and Camp Pinchot Expansion areas, although the habitat is not considered high quality (Hagedorn, 2004), would have an incremental effect when taken in the context of past development in the area and the potential for future development along the shoreline of Choctawhatchee Bay and associated bayous. Loss of undeveloped area due to community growth and sprawl is an issue of concern along the shorelines of northwest Florida. Northwest Florida is a rapidly developing area. The non-military lands adjacent to the Proposed Action and Alternatives that have not already been developed would likely eventually be developed, contributing to potential cumulative impacts to the water resources of the area. New development would place increased demands on the local water supply distribution system and promote stormwater runoff leading to water quality degradation. Additionally, the military would likely redevelop some of the demolition sites with other structures, such as a potential hospital expansion, as well as develop other currently undeveloped areas. Site design plans, safety plans, and permits for new developments would need to address these potential problems so that water resources were protected.

Boat dock construction also may create potential cumulative impacts. Each new dock built in Santa Rosa Sound and Garnier Bayou impacts the natural shoreline vegetation, alters water circulation and bottom sediments around the dock, and potentially shades out seagrasses. Efforts would be taken to minimize these impacts through requirements associated with the environmental permitting process at the Camp Pinchot and Soundside Manor sites. The Florida Department of Environmental Protection (FDEP) and the U.S. Army Corps of Engineers are currently encouraging those considering dock construction to use more environmentally sensitive practices (such as using equipment that stirs up less sediment, shoreline stabilization, etc.), thus reducing the extent of future impacts.

Past development (e.g., housing developments) in the areas surrounding the Alternative locations have likely contributed to erosion and soil loss in the vicinity. However, the extent to which this has occurred is difficult to determine. Implementation of the Proposed Action would involve the utilization of erosion control measures to minimize the potential for erosion to adversely impact adjacent wetland areas and water quality. As a result, implementation of the Proposed Action would not likely contribute in any appreciable manner to erosion that has occurred in the past. The project would incrementally contribute air pollution emissions during construction and would allow for increased air pollutant emissions thereafter. This contribution would relate to regional air quality goals and attainment standards, but the contribution from the project would be negligible. Air emissions associated with the project represent only a small percentage of Okaloosa County's annual emissions. Project emissions would not contribute to other county emissions in any appreciable manner.

UNAVOIDABLE ADVERSE IMPACTS AND CONSIDERATIONS THAT OFFSET THESE IMPACTS

Temporary unavoidable adverse impacts associated with construction and demolition would occur under all Alternatives. Construction and demolition activities would temporarily increase noise and dust pollution and temporarily increase personnel and traffic density. Noise levels and air emissions would increase around the action areas. Hazardous waste disposal (e.g., asbestos) is an issue as well. Water quality and soil erosion impacts may also occur. Cultural resource impacts are associated with the disturbance of identified archaeological sites. In addition, loss of natural area would occur due to land-clearing activities.

Regulatory requirements and associated mitigations, and management actions would minimize or offset all of the above impacts. Normal construction/demolition management would mitigate noise or dust impacts. Air quality impacts would be minor due to the vast region of influence of this resource; any additional air emissions would be distributed over such a wide area as to be negligible. All hazardous materials would be handled and disposed of in accordance with applicable laws, regulations, and Air Force Instructions. Proper stormwater management designs and erosion control measures would minimize the potential for erosion and water quality impacts. Potential impacts to cultural resources would be offset through mitigations developed in consultation with the Florida SHPO. The loss of natural area may be offset somewhat by the maintenance of natural areas as parks and recreational areas.

RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

Across all Alternatives, there would be a long-term increase in employment, income, and net fiscal benefits and revenues to the surrounding community during the demolition and construction period (10 years). Additionally, there would be a long-term increase in the amount of local building supplies needed to execute the project. This increase would not necessarily result in a considerable short-term decrease in the availability of these resources for other users. Currently, Florida is experiencing a shortage of building supplies associated with the 2004 hurricane season recovery. However, this shortage is expected to be short-term in nature, and, given that the proposed project is not anticipated to start for a few more years, there should not be any coincidental impacts.

Under Alternatives 1, 3, and 4 the construction of new facilities would require the clearing of land within the Poquito Bayou Expansion area. However, this location is not considered a high quality natural area, is relatively segmented from the rest of the Eglin Reservation, and is not utilized for recreation, forestry, or agricultural purposes. As a result, the short-term clearance of this area would not result in long-term loss of quality natural habitat or productivity.

Alternatives 2, 5, and 6 would require the use of cleared land within the developed area of the base and would require some minor clearing to the southwest of the Eglin Main Base area. Most of these sites are highly disturbed.

Alternatives 3, 4, 5, and 6 would require the clearing of land within the Camp Pinchot Expansion area. As with the Poquito Bayou Expansion area, this location is not considered a high quality natural area, is relatively segmented from the rest of the Eglin Reservation, and is not utilized for recreation, forestry, or agricultural purposes. As a result, the short-term clearance of this area would not result in long-term loss of quality natural habitat or productivity.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site).

With the exception of cultural resources, resource commitments associated with the implementation of the Proposed Action at the Alternative locations are neither irreversible nor irretrievable. At both Eglin AFB and Hurlburt, cultural resource impacts would involve the potential disturbance to identified archaeological and historical sites. Such disturbances could result in the loss of the integrity of these sites in their natural state. On Eglin, adaptive reuse of the Georgia Avenue units would not result in the loss of the historical significance or utility of these units. The four Camp Pinchot historic housing units proposed for demolition are contributing members of the historic district. Their demolition and the demolition of other contributing members of the district would constitute an adverse impact, rendering the district ineligible for listing on the National Register. Consequently, mitigation measures involving recordation and data recovery would be developed through consultation with the Florida SHPO to minimize the loss of these resources.

Most environmental consequences are short-term and temporary (such as air emissions from construction) or longer lasting but negligible (e.g., utility increases). Construction of the housing units required for the Alternatives would require consumption of limited amounts of materials typically associated with interior and exterior construction (e.g., concrete, wiring, insulation, and windows). The amount of these materials used is not expected to decrease the availability of the resources.

PERMITTING AND REGULATORY REQUIREMENTS

All project-related actions would be in accordance with the then-current and most strict of all applicable codes, standards, regulations, and laws (federal, state, and local) existing at the time of project implementation, without regard to whether they would otherwise be applicable or enforced because the improvements are located on government-owned land. The developer would utilize sustainable development principles and practices as set forth in the Air Force Environmentally Responsible Facilities Guide, which seeks to reduce or eliminate the negative impact of buildings on the environment and occupants in five broad areas; sustainable site planning, safeguarding water and water efficiency, energy efficiency and renewable energy, conservation of materials and resources, and indoor environmental quality. State and Federal agency consultation and review of Eglin AFB and Hurlburt's privatization proposal are required, in compliance with Federal and state law. The developer is responsible for acquiring all applicable permits and the implementation of associated mitigations and BMPs. The following regulatory requirements would be mandatory for implementation of the Proposed Action and Alternatives.

- Consultation/Mitigation: Archaeological surveys and consultations with the Florida SHPO for potential impacts to cultural resources are currently underway. Mitigation measures identified during the consultation process will be incorporated into the lease with the developer.
- Discharge Permit: An NPDES Permit, required for construction activities covering more than 1 acre of land area, would be required, a component of which would be a Stormwater Pollution Prevention Plan.
- Coastal Zone Consistency Determination: The Florida State Clearinghouse will review the EIS for a Coastal Zone Consistency Determination in accordance with Florida's Coastal Zone Management Act (CZMA).
- Permits for construction of boat docks would require:
  - A Clean Water Act Section 404 Permit.
  - A state of Florida Environmental Resource Permit.
  - A state of Florida Submerged Lands Permit.
- Phase II Municipal Separate Storm Sewer Systems: adherence to permitting would be required.
- A Stormwater Discharge Permit (Florida Administrative Code (F.A.C.) Chapter 62-25) would be required.
- A Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System from the Florida Department of Environmental Protection (FDEP) would be required to establish new wastewater transmission systems.

- In accordance with F.A.C. 62-296.320 (4) (c), reasonable precautions would be taken to reduce fugitive emissions of particulate matter.

Other Federal and state laws, regulations, policies, and permits that may apply to the Alternatives are listed in the EIS Resources Appendices (Appendix C, *Laws and Regulations*). The potential permits that would be required, as listed above, to implement the Alternatives are identified in Section 1.6 and further discussed in Chapter 4 of this document.

(This page is intentionally blank.)

TABLE OF CONTENTS

Page

List of Acronyms, Abbreviations, and Symbols ..... INSIDE FRONT COVER
List of Tables viii
List of Figures xi

1. PURPOSE AND NEED FOR ACTION 1-1
   1.1 Introduction 1-1
   1.2 Background 1-2
   1.3 Purpose and Need 1-5
      1.3.1 Purpose of the Proposed Action 1-5
      1.3.2 Need for the Proposed Action 1-5
   1.4 Decision to be Made 1-7
   1.5 Environmental Impact Analysis Process 1-7
      1.5.1 Summary of Concerns Raised in the Public Scoping Process and Public Comment Period 1-8
   1.6 Other Regulatory and Permit Requirements 1-8
   1.7 Introduction to the Organization of the Document 1-10

2. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES 2-1
   2.1 Proposed Action 2-1
   2.2 Alternative Location Screening Process 2-7
      2.2.1 Screening Criteria 2-8
      2.2.2 Potential Development Locations Identified During the Screening Process 2-11
   2.3 Alternatives Considered But Not Carried Forward 2-13
   2.4 Alternatives Carried Forward 2-13
      2.4.1 Alternative 1: Poquito Bayou Expansion 2-14
      2.4.2 Alternative 2: Eglin Main Base 2-14
      2.4.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area 2-14
      2.4.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse 2-15
      2.4.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative) 2-15
      2.4.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse 2-16
      2.4.7 No Action Alternative 2-16
   2.5 Alternatives Summary 2-16
   2.6 Impact Analysis Summary 2-20
   2.7 Mitigations 2-27
      2.7.1 Land Use and Planning 2-28
      2.7.2 Transportation Infrastructure 2-29
      2.7.3 Socioeconomics 2-30
      2.7.4 Utility Infrastructure 2-30
      2.7.5 Cultural Resources 2-31
      2.7.6 Biological Resources 2-31
      2.7.7 Water Resources 2-33
      2.7.8 Soils 2-36
      2.7.9 Air Quality 2-36
      2.7.10 Hazardous Materials/Waste 2-37
      2.7.11 Solid Waste 2-38
      2.7.12 Noise 2-38
      2.7.13 Safety 2-39

3. AFFECTED ENVIRONMENT 3-1

TABLE OF CONTENTS CONT'D

Page

3.1 Land Use and Planning 3-2
3.1.1 Eglin Air Force Base 3-3
3.1.2 Hurlburt Field 3-8
3.1.3 Okaloosa County Land Use 3-10
3.1.4 Coastal Zone Management Act 3-10
3.2 Transportation Infrastructure 3-11
3.2.1 Existing Road Network and Planned Improvements 3-11
3.2.2 Existing Transit Services 3-13
3.2.3 Existing Pedestrian and Bicycle Facilities 3-13
3.2.4 Existing Operational Characteristics of the Roadway Network 3-13
3.2.5 Future Operational Characteristics of the Roadway Network 3-14
3.3 Socioeconomics / Environmental Justice / Special Risks to Children 3-15
3.3.1 Economic Activity 3-16
3.3.2 Population 3-16
3.3.3 Housing 3-18
3.3.4 Public Schools 3-19
3.3.5 Environmental Justice and Special Risks to Children 3-21
3.4 Utilities Infrastructure 3-25
3.4.1 Potable Water 3-25
3.4.2 Wastewater Treatment 3-26
3.4.3 Electricity 3-28
3.4.4 Natural Gas 3-28
3.5 Cultural Resources 3-28
3.5.1 Historical Setting 3-29
3.5.2 Identified Cultural Resources 3-29
3.5.3 Native American Indian Consultation and Coordination 3-36
3.6 Biological Resources 3-37
3.6.1 Ecological Associations 3-37
3.6.2 Sensitive Habitats 3-43
3.6.3 Sensitive Species 3-46
3.7 Water Resources 3-50
3.7.1 Groundwater 3-50
3.7.2 Surface Water 3-53
3.7.3 Wetlands and Floodplains 3-56
3.8 Soils 3-58
3.8.1 Soil Types Occurring at the Proposed Project Locations 3-59
3.8.2 Topography: Surface Drainage Features 3-62
3.9 Air Quality 3-63
3.9.1 Definition of the Resource 3-63
3.9.2 Regional Air Quality 3-64
3.9.3 Baseline Emissions 3-65
3.10 Hazardous Materials/Waste 3-66
3.10.1 Environmental Restoration Program Sites 3-68
3.10.2 Storage Tanks 3-69
3.10.3 Asbestos 3-70
3.10.4 Lead-Based Paint 3-71
3.10.5 Polychlorinated Biphenyls 3-72
3.10.6 Chlordane 3-73
3.10.7 Hazardous Material Management 3-73

TABLE OF CONTENTS CONT'D

Page

3.11 Solid Waste 3-74
3.11.1 Eglin AFB and Hurlburt Field Solid Waste Disposal....3-75
3.11.2 Local Solid Waste Disposal 3-76
3.12 Noise....3-77
3.13 Safety 3-79

4. ENVIRONMENTAL CONSEQUENCES 4-1
4.1 Land Use and Planning 4-3
4.1.1 Alternative 1: Poquito Bayou Expansion.... 4-4
4.1.2 Alternative 2: Eglin Main Base.... 4-6
4.1.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area.... 4-8
4.1.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse 4-8
4.1.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative).... 4-9
4.1.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse 4-9
4.1.7 No Action Alternative.... 4-9
4.1.8 Impact Analysis Summary 4-9
4.2 Transportation....4-10
4.2.1 Alternative 1: Poquito Bayou Expansion....4-16
4.2.2 Alternative 2: Eglin Main Base....4-18
4.2.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area....4-19
4.2.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse 4-20
4.2.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)....4-20
4.2.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse 4-21
4.2.7 No Action Alternative....4-21
4.2.8 Impact Analysis Summary 4-21
4.3 Socioeconomics / Environmental Justice / Special Risks to Children....4-22
4.3.1 Alternative 1: Poquito Bayou Expansion....4-31
4.3.2 Alternative 2: Eglin Main Base....4-32
4.3.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area....4-32
4.3.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse 4-32
4.3.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)....4-32
4.3.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse 4-32
4.3.7 No Action Alternative....4-33
4.3.8 Impact Analysis Summary 4-33
4.4 Utility Infrastructure....4-33
4.4.1 Alternative 1: Poquito Bayou Expansion....4-37
4.4.2 Alternative 2: Eglin Main Base....4-38
4.4.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area....4-39
4.4.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse 4-40
4.4.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)....4-40
4.4.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse 4-41
4.4.7 No Action Alternative....4-41
4.4.8 Impact Analysis Summary 4-41
4.5 Cultural Resources 4-41
4.5.1 Alternative 1: Poquito Bayou Expansion....4-46
4.5.2 Alternative 2: Eglin Main Base....4-46
4.5.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area....4-47
4.5.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse 4-47
4.5.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)....4-48

TABLE OF CONTENTS CONT'D

Page

4.5.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse 4-48
4.5.7 No Action Alternative....4-48
4.5.8 Impact Analysis Summary 4-48
4.6 Biological Resources....4-49
4.6.1 Alternative 1: Poquito Bayou Expansion....4-52
4.6.2 Alternative 2: Eglin Main Base....4-53
4.6.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area....4-53
4.6.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse 4-54
4.6.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)....4-54
4.6.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse 4-54
4.6.7 No Action Alternative....4-54
4.6.8 Impact Analysis Summary 4-54
4.7 Water Resources 4-55
4.7.1 Alternative 1: Poquito Bayou Expansion....4-66
4.7.2 Alternative 2: Eglin Main Base....4-67
4.7.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area....4-69
4.7.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse 4-70
4.7.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)....4-70
4.7.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse 4-71
4.7.7 No Action Alternative....4-71
4.7.8 Impact Analysis Summary 4-71
4.8 Soils....4-72
4.8.1 Alternative 1: Poquito Bayou Expansion....4-72
4.8.2 Alternative 2: Eglin Main Base....4-72
4.8.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area....4-73
4.8.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse 4-73
4.8.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)....4-73
4.8.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse 4-73
4.8.7 No Action Alternative....4-74
4.8.8 Impact Analysis Summary 4-74
4.9 Air Quality....4-74
4.9.1 Alternative 1: Poquito Bayou Expansion....4-77
4.9.2 Alternative 2: Eglin Main Base....4-77
4.9.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area....4-78
4.9.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse 4-78
4.9.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)....4-78
4.9.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse 4-78
4.9.7 No Action Alternative....4-78
4.9.8 Impact Analysis Summary 4-78
4.10 Hazardous Materials/Waste....4-79
4.10.1 Alternative 1: Poquito Bayou Expansion....4-82
4.10.2 Alternative 2: Eglin Main Base....4-82
4.10.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area....4-83
4.10.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse 4-83
4.10.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)....4-83
4.10.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse 4-84
4.10.7 No Action Alternative....4-84
4.10.8 Impact Analysis Summary 4-84
4.11 Solid Waste....4-84

TABLE OF CONTENTS CONT'D

Page

4.11.1 Alternative 1: Poquito Bayou Expansion....4-88
4.11.2 Alternative 2: Eglin Main Base....4-88
4.11.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area....4-88
4.11.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse....4-88
4.11.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)....4-89
4.11.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse....4-89
4.11.7 No Action Alternative....4-89
4.11.8 Impact Analysis Summary....4-89
4.12 Noise....4-89
4.12.1 Alternative 1: Poquito Bayou Expansion....4-93
4.12.2 Alternative 2: Eglin Main Base....4-94
4.12.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area....4-94
4.12.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse....4-95
4.12.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)....4-96
4.12.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse....4-96
4.12.7 No Action Alternative....4-97
4.12.8 Impact Analysis Summary....4-97
4.13 Safety....4-97
4.13.1 Alternative 1: Poquito Bayou Expansion....4-98
4.13.2 Alternative 2: Eglin Main Base....4-98
4.13.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area....4-98
4.13.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse....4-98
4.13.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)....4-99
4.13.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse....4-99
4.13.7 No Action Alternative....4-99
4.13.8 Impact Analysis Summary....4-99

5. CUMULATIVE IMPACTS....5-1
5.1 Relevant Past and Present Actions....5-1
5.2 Relevant, Reasonably Foreseeable Actions....5-2
5.3 Analysis of Cumulative Impacts....5-2
5.3.1 Land Use and Planning....5-2
5.3.2 Transportation....5-3
5.3.3 Socioeconomics....5-3
5.3.4 Utility Infrastructure....5-4
5.3.5 Cultural Resources....5-4
5.3.6 Biological Resources....5-4
5.3.7 Water Resources....5-4
5.3.8 Soils....5-5
5.3.9 Air Quality....5-5
5.3.10 Hazardous Materials/Waste....5-5
5.3.11 Solid Waste....5-6
5.3.12 Noise....5-6
5.3.13 Safety....5-6

6. UNAVOIDABLE ADVERSE IMPACTS AND CONSIDERATIONS THAT OFFSET THESE IMPACTS....6-1
6.1 Alternative 1: Poquito Bayou Expansion....6-1
6.2 Alternative 2: Eglin Main Base....6-1

TABLE OF CONTENTS CONT'D

Page

6.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area 6-2
6.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse 6-2
6.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative) 6-2
6.6 Alternative 6: Alternative 5 with Camp Pinchot Adaptive Reuse 6-2
6.7 No Action Alternative 6-2

7. RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY 7-1
7.1 Alternative 1: Poquito Bayou Expansion 7-1
7.2 Alternative 2: Eglin Main Base 7-1
7.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area 7-1
7.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse 7-2
7.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative) 7-2
7.6 Alternative 6: Alternative 5 with Camp Pinchot Adaptive Reuse 7-2
7.7 No Action Alternative 7-2

8. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES 8-1
8.1 Alternative 1: Poquito Bayou Expansion 8-1
8.2 Alternative 2: Eglin Main Base 8-2
8.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area 8-2
8.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse 8-2
8.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative) 8-3
8.6 Alternative 6: Alternative 5 with Camp Pinchot Adaptive Reuse 8-3
8.7 No Action Alternative 8-3

9. PUBLIC PARTICIPATION 9-1
9.1 Introduction 9-1
9.2 Scoping Process 9-1

10. REFERENCES 10-1

11. LIST OF PREPARERS 11-1

EIS RESOURCE APPENDICES

The EIS Resource Appendices can be found on the CD provided at the end of this EIS.

APPENDIX A	Distribution of Draft EIS
APPENDIX B	Public Involvement
APPENDIX C	Laws and Regulations
APPENDIX D	Glossary
APPENDIX E	Supporting Information for Land Use and Planning
APPENDIX F	Supporting Information for Transportation Infrastructure
APPENDIX G	Supporting Information for Socioeconomics
APPENDIX H	Supporting Information for Cultural Resources
APPENDIX I	Supporting Information for Biological Resources
APPENDIX J	Supporting Information for Water Resources
APPENDIX K	Supporting Information for Soils
APPENDIX L	Supporting Information for Air Quality
APPENDIX M	Supporting Information for Hazardous Materials
APPENDIX N	Supporting Information for Solid Waste
APPENDIX O	Supporting Information for Noise
APPENDIX P	Federal Agency Coastal Zone Management Act (CZMA) Consistency Determination
APPENDIX Q	Poquito Bayou Shoreline Photographs

LIST OF TABLES

Page

Table ES-1. Proposed Project Activities Occurring Across All Alternatives (Except No Action) ES-4
Table ES-2. Number of Units Potentially Constructed at the Poquito Bayou Expansion Area Under Alternative 1 ..... ES-7
Table ES-3. Number of Units Potentially Constructed at Eglin Main Base Under Alternative 2 ..... ES-7
Table ES-4. Number of Units Potentially Constructed at the Camp Pinchot Expansion Area Under Alternative 3 ..... ES-8
Table ES-5. Number of Units Potentially Constructed at the Camp Pinchot Expansion Area and Eglin Main Base Under Alternative 5 ..... ES-8
Table 1-1. Existing Housing Areas at Eglin AFB and Hurlburt Field 1-5
Table 2-1. Proposed Project Activities Occurring Across All Alternatives (Except No Action) 2-1
Table 2-2. Estimated Total Gross Square Footage of Construction and Demolition for the Proposed Action 2-6
Table 2-3. Projected Timeline Scenario for Demolition and Construction Activities Under the Proposed Action 2-7
Table 2-4. Number of Units Potentially Constructed at the Poquito Bayou Expansion Area Under Alternative 1 2-14
Table 2-5. Number of Units Potentially Constructed at Eglin Main Base Under Alternative 2 2-14
Table 2-6. Number of Units Potentially Constructed at the Camp Pinchot and Poquito Bayou Expansion Areas Under Alternative 3 2-15
Table 2-7. Number of Units Potentially Constructed at the Camp Pinchot Expansion Area and Eglin Main Base Under Alternative 5 2-16
Table 2-8. Summary of Alternatives, to Include the Proposed Action 2-18
Table 2-9. Potential Net Changes in Housing Distribution Under the Proposed Action and Alternatives 2-19
Table 2-10. Summary of Analysis Results by Alternative 2-20
Table 3-1. Average Annual Daily Traffic, Peak Hour Volumes, and Projected Average Annual Traffic Volume Growth Rate 3-15
Table 3-2. Hurlburt Field and Eglin AFB Housing Assets (Units) 3-18
Table 3-3. Percent Minority/Low-Income for Okaloosa County 3-23
Table 3-4. Major Public Water Supply Systems Associated With and Adjacent to the Project Areas 3-26
Table 3-5. Wastewater Treatment Systems Associated With and Adjacent to the Project Areas 3-27
Table 3-6. Ben's Lake Project Area Architectural Resources 3-30
Table 3-7. Camp Pinchot Historic District Buildings 3-31
Table 3-8. Eglin Field Historic District Buildings in Georgia Avenue Area 3-33
Table 3-9. Poquito Bayou Expansion Project Area Archaeological Resources 3-34
Table 3-10. Wherry/Capehart Housing Project Area Archaeological Resources 3-34
Table 3-11. Approximate Acreages of Ecological Association Types Present at Proposed and Alternative MFH Sites 3-39
Table 3-13. Typical Plant and Animal Species of Eglin AFB by Ecological Association 3-42
Table 3-14. Sensitive Habitats Found Within or Adjacent to the Project Proposed and Alternative Areas 3-43
Table 3-16. Potentially Occurring Sensitive Species Within, or Adjacent to, the Proposed and Alternative MFH Areas 3-48
Table 3-17. Proximity of Proposed Demolition and Construction Sites to Water 3-53
Table 3-18. Average Values of Water Quality Parameters in Longwood Park and Garnier Bayou (1998 – 2003) 3-55
Table 3-19. Wetland Areas (Acres) Located in Existing Housing Areas 3-57
Table 3-20. Wetland Areas Located in Alternative Housing Locations 3-57
Table 3-21. Soil Types and Erodibility at the Proposed Project Locations 3-59

LIST OF TABLES CONT'D

Page

Table 3-22. Baseline Emissions Inventory for Eglin AFB and Hurlburt 3-65
Table 3-23. Baseline Emissions Inventory for Okaloosa County 3-66
Table 3-24. Environmental Restoration Program Sites at Eglin and Hurlburt MFH Areas 3-69
Table 3-25. Storage Tanks Located Within or Near MFH Areas 3-70
Table 3-26. Construction and Demolition Debris Generated in Okaloosa, Santa Rosa, and Walton Counties 3-76
Table 3-27. Traffic Noise for Roads Within Okaloosa County 3-78
Table 3-28. Average Noise from Aircraft Operations 3-79
Table 4-1. Public Roadways Affected By Each Alternative 4-12
Table 4-2. Expected Peak Hour Trip Generation Gains by Alternative 4-13
Table 4-4. Expected Peak-Hour Trips Lost By All Alternatives from the Demolition of Existing Housing, by Housing Area 4-14
Table 4-5. Estimated LOS in 2014 and 2019 Near Hurlburt Main Gate on US-98 Assuming All Off-Base Hurlburt Traffic from 315 Units Would Be Carried on US-98 in Peak Hours 4-16
Table 4-6. Estimated LOS in 2014 and 2019 Near Hurlburt East Gate Assuming All Off-Base Hurlburt Traffic from 315 Units Would Be Carried on Martin Luther King Boulevard in Peak Hours 4-16
Table 4-7. Alternative 1 – Estimated Level of Service in 2014 and 2019 Assuming All Eglin Traffic on SR-189 4-17
Table 4-8. Alternative 1 – Estimated Level of Service in 2014 and 2019 Assuming All Eglin Traffic on SR-85 4-17
Table 4-9. Alternative 1 – Estimated Level of Service in 2014 and 2019 Assuming All Traffic Split Between SR-85 and SR-189 4-18
Table 4-10. Alternative 2 – Expected Level of Service in 2014 and 2019 4-18
Table 4-11. Alternative 3 – Expected Level of Service on SR-189 in 2014 and 2019 Assuming All Poquito Bayou Traffic Uses SR-189 4-19
Table 4-12. Alternative 3 – Expected Level of Service on SR-85 in 2014 and 2019 Assuming All Poquito Bayou Traffic Uses SR-85 4-19
Table 4-13. Alternative 3 – Expected Level of Service in 2014 and 2019 Assuming Poquito Bayou Traffic Splits Between SR-85 and SR-189 4-20
Table 4-14. Alternative 5 – Estimated Level of Service in 2014 and 2019 Assuming All Traffic on SR-189 4-20
Table 4-15. Expected Changes to Intersections Associated With the Alternatives 4-22
Table 4-16. Annual Total, Direct, and Secondary Employment Effects (Number of Jobs) 2005–2014 4-25
Table 4-17. Project-Related Employment Effects by Industry 4-26
Table 4-18. Persons and Children Likely to Relocate 4-27
Table 4-19. Current Estimated Average Daily Usage and Flow of Potable Water and Wastewater for Existing Housing Units 4-35
Table 4-20. Estimated Net Change in Average Daily Usage and Flow of Potable Water and Wastewater for Utility Systems Under Alternative 1 4-37
Table 4-21. Estimated Net Change in Average Daily Usage and Flow of Potable Water and Wastewater for Utility Systems Under Alternative 3 4-39
Table 4-22. Estimated Net Change in Average Daily Usage and Flow of Potable Water and Wastewater for Utility Systems Under Alternative 5 4-40
Table 4-23. Examples of Permanent BMPs Associated with Permit Requirements to Reduce Flow Volume and Rate of Runoff 4-60
Table 4-24. Current Impervious Surface for MFH Sites Calculated from GIS Coverages 4-60
Table 4-25. Peak Flow and Maximum Runoff: 25-yr/24-hr Storm for Existing and Alternative Development 4-61

LIST OF TABLES CONT'D

Page

Table 4-26. One-inch Rain Storage Volume....4-62
Table 4-27. Roadway Stormwater Runoff Constituents....4-63
Table 4-28. Estimated Project Construction Emissions by Activity....4-75
Table 4-29. Estimated Annual Project Emissions....4-76
Table 4-30. Estimated MFH Construction Debris....4-85
Table 4-31. Estimated MFH Demolition Debris....4-86
Table 4-32. Estimated Percent Increase of MFH Construction and Demolition Debris in Okaloosa and Santa Rosa County Class III Landfills....4-87
Table 4-33. Typical Equipment Sound Levels....4-90
Table 4-34. Demolition Noise....4-91
Table 4-35. Construction Noise....4-91
Table 4-36. Soundside Manor Estimated Residential Noise Levels....4-93
Table 4-37. Alternative 1 Estimated Residential Noise Levels....4-93
Table 4-38. Alternative 2 Estimated Residential Noise Levels....4-94
Table 4-39. Alternative 3 Estimated Residential Noise Levels....4-95
Table 4-40. Alternative 5 Estimated Residential Noise Levels....4-96
Table 9-1. Schedule of Sessions and Attendance....9-2

LIST OF FIGURES

Page

Figure 1-1. Location of Eglin AFB, Hurlburt Field, and Camp Rudder 1-3
Figure 1-2. Location of Existing Housing Areas 1-4
Figure 2-1. Proposed Action Project Activities 2-2
Figure 2-2. Alternative Location Screening Results 2-5
Figure 2-3. Alternative Development Locations 2-12
Figure 3-1. Existing Land Use at Eglin Main Base 3-4
Figure 3-2. AICUZ Noise Contours and APZs for Eglin AFB 3-5
Figure 3-3. Land Use in Okaloosa County Near Alternative Locations 3-6
Figure 3-4. AICUZ Noise Contours for Hurlburt Field 3-9
Figure 3-5. Existing Road Network Associated With the Action Area 3-12
Figure 3-6. Communities With High Minority and/or Low-Income Populations as Compared to County Averages Within the Project Area 3-22
Figure 3-7. Communities With a High Percentage of Children Under 18 as Compared to County Averages Within the Project Area 3-24
Figure 3-8. Ecological Associations Related to the Eglin Project Areas 3-38
Figure 3-9. Sensitive Habitats Associated With the Eglin Action Areas 3-44
Figure 3-10. Sensitive Habitats Associated With the Hurlburt Action Areas 3-45
Figure 3-11. Sensitive Species Associated With the Action Areas 3-49
Figure 3-12. Surface Waters, Wetlands, and Floodplains Associated With the Eglin AFB Project Areas 3-51
Figure 3-13. Surface Waters, Wetlands, and Floodplains Associated With the Hurlburt Field Project Areas 3-52
Figure 3-14. Soil Types and ERP Sites Associated With the Eglin AFB Action Areas 3-60
Figure 3-15. Soil Types and ERP Sites Associated With the Hurlburt Field Action Areas 3-61
Figure 4-1. Okaloosa County Future Land Use 4-5
Figure 4-2. Eglin Main Base Future Land Use 4-7
Figure 4-3. Road Segments Potentially Affected By the Proposed Action and Alternatives 4-11

(This page is intentionally blank.)

1. PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

This Environmental Impact Statement (EIS) examines the potential environmental impacts resulting from the implementation of a program to demolish, construct, renovate, and lease (DCR & L) military family housing (MFH) at Eglin Air Force Base (AFB), Florida, and Hurlburt Field (Hurlburt), Florida. It identifies any required environmental permits relevant to the implementation of the Proposed Action and Alternatives (to include the No Action Alternative), as well as any applicable management actions, mitigation measures, and Best Management Practices (BMPs) that would avoid or minimize environmental impacts. The Air Force prepared this EIS in accordance with the requirements of the *National Environmental Policy Act* (NEPA) (42 United States Code [U.S.C.] 4321 et seq.). The regulations for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] 1500–1508) outline the responsibilities of Federal agencies and provide specific procedures for preparing EISs to comply with NEPA. The *Environmental Impact Analysis Process (EIAP)* (32 CFR 989), which implements CEQ regulations with regard to Air Force actions, defines the steps and milestones in the environmental impact analysis process.

Eglin AFB and Hurlburt (Figure 1-1) propose to demolish, construct, renovate, and lease MFH at both locations by leveraging private sector funds and expertise with Air Force resources (land and residents). The Air Force would "privatize" its housing assets. To implement the DCR & L Program, the Air Force would convey 2,739 housing units distributed among several parcels of land located on Eglin AFB and Hurlburt (Figure 1-2), including infrastructure and utilities, to a private real estate development and property management company, or "successful offeror." Of the 2,739 units, the successful offeror, referred to throughout this document as the "developer," would demolish a minimum of 2,590 existing dwellings, renovate two units in place, and accept the Air Force's conveyance of 138 existing units "as is." The private developer would construct 2,015 new units in phases and return five historic units located at Georgia Avenue on Eglin AFB to the Air Force for adaptive reuse for purposes other than residential housing (e.g., offices, meeting places, etc.) once replacement units are constructed. At completion of the project, a total of 2,155 units would be owned and operated by a private developer on behalf of Eglin AFB and Hurlburt. The four housing units at Camp Pinchot, as well as the other structures considered components of the Camp Pinchot Historic District, listed on the National Register of Historic Places (National Register), would either be demolished or adaptively reused for purposes other than housing, depending on the Air Force's decision on which Alternative it implements.

The Air Force is evaluating Alternatives involving the demolition or adaptive reuse of the Camp Pinchot historic buildings and the location and distribution of the newly

constructed units within the Eglin Reservation as part of this EIS. Should the Air Force decide to demolish the Camp Pinchot Historic District, a total of 2,594 housing units (and an additional 10 other buildings of the Historic District) would be demolished. All demolition and construction activities would occur on Eglin AFB and Hurlburt (Air Force-owned) property. The Air Force would lease the real property underlying the units proposed for demolition to the developer until demolition is complete. The real property on which the new housing is built would be leased to the developer for a period of 50 years from the date of each housing phase's completion.

1.2 BACKGROUND

Eglin AFB is located in northwest Florida and comprises 724 square miles of land area and approximately 142,000 square miles of airspace overlying land and water ranges. Eglin's "Main Base" is located adjacent to Valparaiso, Florida, and about 10 miles east of Fort Walton Beach, Florida. Hurlburt Field is located within the south-southwest area of the base a few miles west of Fort Walton Beach, Florida.

For purposes of this EIS, the proposed project involves a real estate transaction with a developer in which the Air Force would convey 2,739 housing units distributed among several parcels located on Eglin AFB and Hurlburt (Figure 1-2), and certain associated improvements including infrastructure and utilities, as well as the long-term lease of a number of land parcels divided among Eglin Main Base, Hurlburt Field (Figure 1-2), and Alternative sites selected for potential development.

The MFH privatization process involves two steps. Step I involves the issuance of a Request for Proposal (RFP) from interested developers outlining their ideas for meeting the development requirements and their qualifications. The Air Force would then select no more than five developers to submit more detailed proposals and financial plans to proceed to Step II of the privatization process, where more detailed design and construction, property management, and financial proposals are developed. At the end of Step II, the Air Force makes a source selection decision and, after DoD and Congressional approval of the selection, the lease agreement between the Air Force and the successful developer is signed.

With this process, the developer would provide the necessary infrastructure (e.g., roads, utilities, etc.) to support the new housing units. Details of specific infrastructure requirements and site plan details for any new privatized housing areas would be prepared by the private developer and submitted as part of the Step II process and are not available for purposes of this EIS.

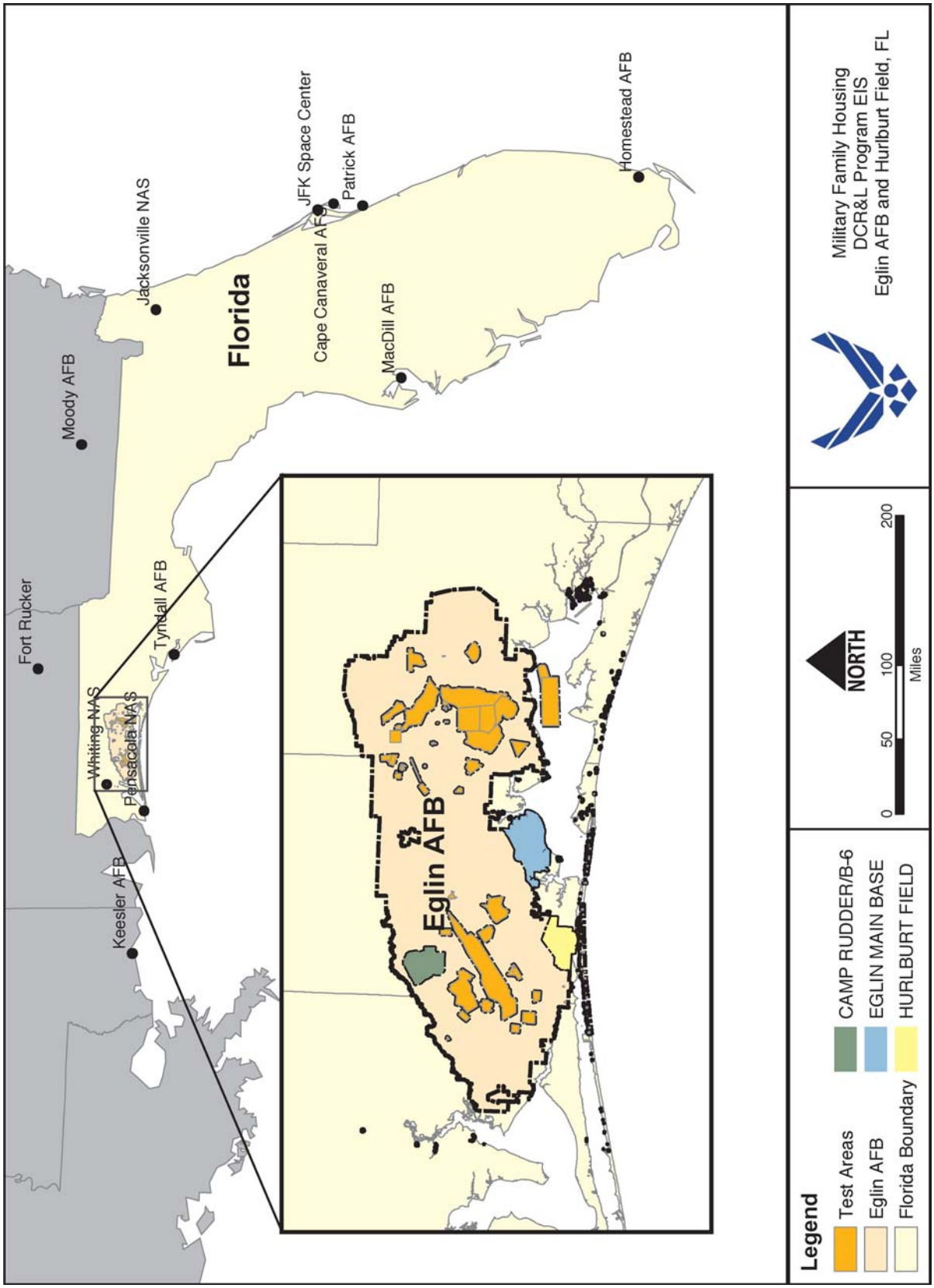

Figure 1-1. Location of Eglin AFB, Hurlburt Field, and Camp Rudder

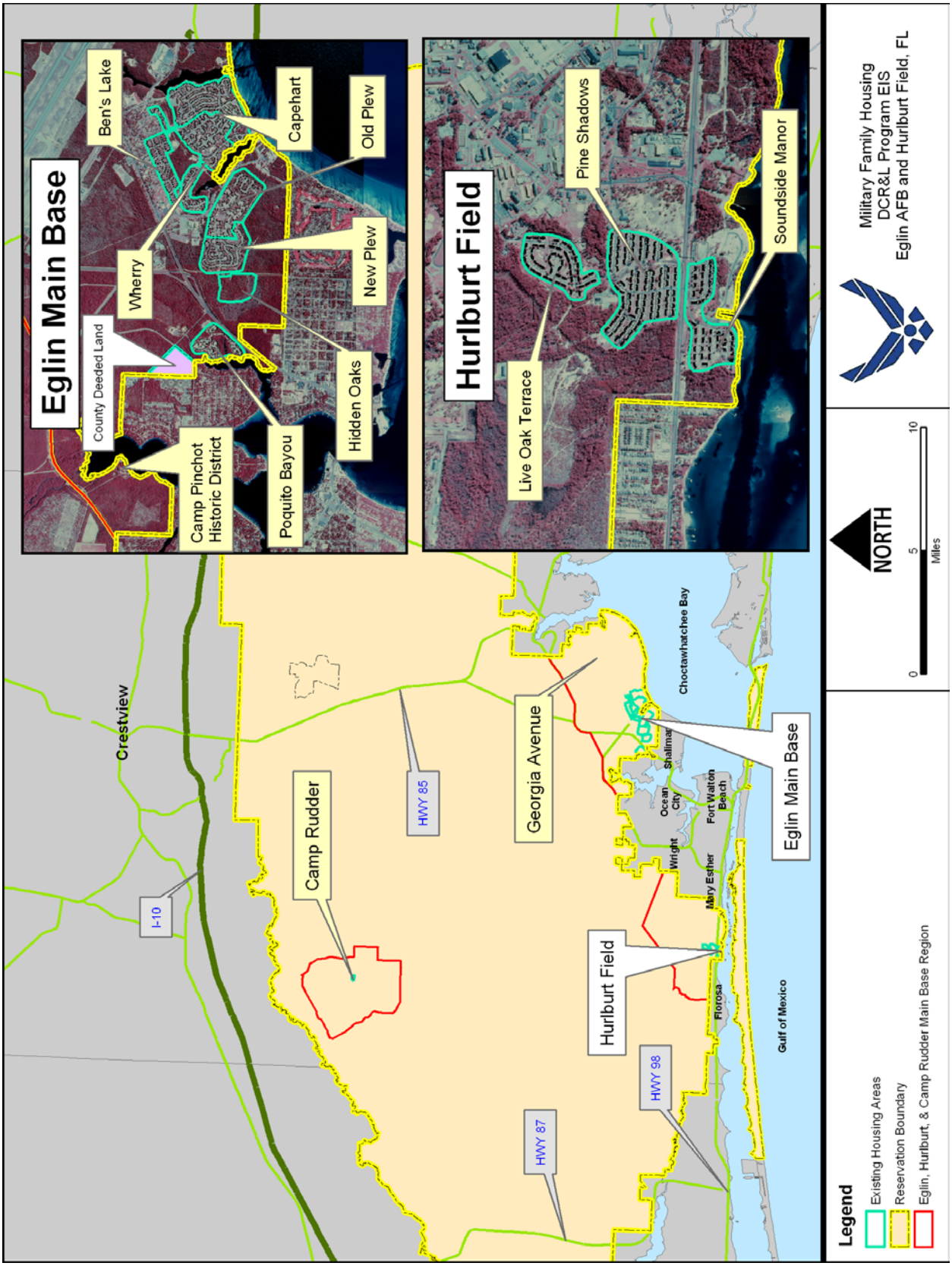

Figure 1-2. Location of Existing Housing Areas

The entire existing housing project area is composed of 13 residential areas as listed in Table 1-1.

Table 1-1. Existing Housing Areas at Eglin AFB and Hurlburt Field

Eglin AFB	Hurlburt Field
Hidden Oaks	Live Oak
Georgia Avenue	Pine Shadows
Ben's Lake	Soundside Manor
Wherry	
Capehart	
New Plew	
Old Plew	
Poquito Bayou	
Camp Rudder	
Camp Pinchot	

Chapter 2 details the site-specific locations proposed for development divided among four proposed areas. The boundaries for the family housing areas are generalized for purposes of illustration. However, more precise housing area boundary descriptions from survey data can be found in the *Privatization of Military Family Housing, Hurlburt Field and Eglin Air Force Base, Solicitation No. AFCEE-04-0004, Request for Proposal*. Interested parties may reference the RFP on the Internet at the website: http://jllpsc.com/Hurlburt_Field___Eglin_AFB/Request_for_Proposal/request_for_proposal.html.

1.3 PURPOSE AND NEED

1.3.1 Purpose of the Proposed Action

The purpose of the Proposed Action is to replace Eglin AFB and Hurlburt's on-base MFH through demolition, construction, renovation, and the lease of housing implemented through privatization. Privatization utilizes private sector investment and efficiency to accelerate the improvement of base housing. It makes efficient use of limited resources for building and renovating military housing faster and at a lower cost—the end result being quality, affordable housing for Eglin AFB and Hurlburt service members.

1.3.2 Need for the Proposed Action

The need for the Proposed Action is to provide adequate housing to Eglin and Hurlburt's military families. In evaluating its current stock of housing units, the DoD has determined that the current condition of DoD-owned housing is poor. About 60 percent of DoD units need to be renovated or replaced (OSD, 2004). At Eglin AFB and Hurlburt, approximately 76 percent of housing units are more than 30 years old and do not meet current Air Force housing standards as established by Military Family Housing size standards. The costs to renovate or replace the housing units are

estimated to be $18.1 million for Hurlburt and $144 million for Eglin AFB (U.S. Air Force, 2003a, 2003).

Additionally, a Quality of Life Task Force report concluded that the continuing decline in the quality of existing on-base military housing, an increase in the out-of-pocket expenses for service members living in private housing, and increased demands on service members and their families (such as more deployments and family separations) could result in potential adverse impacts to military readiness (OSD, 2004). The majority of service members that live in local communities are enlisted personnel whose salaries are at the lower end of the military pay scale. This makes it difficult for them to find quality, affordable housing within a reasonable commuting distance from their duty station. To compound this problem, some communities do not have enough affordable, quality rental housing to accommodate all service members and their families (OSD, 2004).

These factors create the need to supply service members with quality, affordable housing to compensate for shortfalls in the local community. To meet this need, Congress approved the *National Defense Authorization Act of 1996* authorizing the DoD to enlist the help of the private sector to build new and/or renovate existing housing. Under this authority, the DoD would rely on private sector housing developers to renovate or demolish existing housing units, build new ones, provide the infrastructure needed to support such developments, and manage the housing development for up to 50 years. The DoD's objective is to revitalize military family housing by 2007.

Determining the need for housing units at Eglin AFB and Hurlburt involved estimating the number of appropriate adequate and affordable private sector housing units available to military families within 20 miles, or a 60-minute commute. In 2003, Eglin AFB and Hurlburt compiled Housing Requirements Market Analysis (HRMA) reports in order to identify housing units available to military members in the private community. The Air Force factored shortfalls in available private sector housing into the total military family housing requirement for Eglin AFB and Hurlburt to determine the number of units needed to support its military families. Cumulatively, Eglin AFB and Hurlburt require a total of 2,455 military family housing units. This total includes the 300 privately owned housing units at Commando Village, located just east of Hurlburt on Martin Luther King Boulevard in Fort Walton Beach, Florida. There are 226 mobile home spaces, of which 100 are occupied (as of January 2005) by military families located at the Bayou Village Mobile Home Park on Eglin's Main Base. However, these mobile home units are not military family housing, as they are privately owned by the tenants, and are therefore not considered as part of the 2,455 needed units. Since neither the 300 Commando Village homes nor the 100 mobile home units are owned by the Air Force, and they are not included in the Proposed Action or Alternatives evaluated in this EIS.

Through privatization, the housing units would be an investment for the private developer, who would own the units on land leased from the Air Force, collect rent from service members, and provide maintenance and management. In return, the Air Force would be able to house their military families in quality, affordable housing. This information and more details regarding the housing privatization initiative can be found on the DoD housing privatization website at http://www.acq.osd.mil/housing.

1.4 DECISION TO BE MADE

The Air Force will make an informed decision regarding the selection of sites that best meet the purpose of and need for replacement housing. The decision on where to construct the new housing will be based on the resource area analysis presented in this EIS. A decision to proceed with the implementation of the Proposed Action or Alternatives would result in the demolition of existing housing, the construction of new replacement housing by a private developer, and the lease of Air Force-owned land. If the Air Force selects the No Action Alternative, then the Air Force would continue to manage, maintain, and replace/upgrade military family housing in accordance with existing Air Force policy. No new housing areas would be developed and the existing historic buildings at Camp Pinchot would remain in place.

1.5 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

Congress enacted NEPA (Public Law (P.L.) 91-190, 42 U.S.C. 4321-4347, as amended) to establish a national policy for the protection of the environment. It requires Federal agencies to assess the environmental consequences of the Proposed Action and Alternatives systematically as part of the decision-making process. The intent of NEPA is to protect, restore or enhance the environment through well-informed decisions by the Federal decision maker. The Council on Environmental Quality (CEQ) was established under NEPA to implement the provisions of the Act and review and appraise Federal programs and activities in light of NEPA policy. The CEQ promulgated regulations for implementing the procedural provisions of NEPA (40 CFR 1500–1508). These regulations outline the responsibilities of Federal agencies and provide specific procedures for preparing EISs to comply with NEPA.

This EIS assesses the environmental impacts resulting from implementation of the Proposed Action or Alternatives for the DCR & L Program and location of housing at Eglin AFB and Hurlburt. It also identifies and describes the affected environment and evaluates the potential environmental impacts that could result from the implementation of the Proposed Action and Alternatives (to include the No Action Alternative). The analysis identifies environmental permits and specific mitigation measures to prevent or minimize environmental impacts, if required.

1.5.1 Summary of Concerns Raised in the Public Scoping Process and Public Comment Period

NEPA and the Air Force implementing regulations require the action agency (in this case, the Air Force) to seek public participation throughout the conduct of the environmental impact analysis process. "Scoping" identifies potential issues and alternatives early in the EIS process. The Air Force hosted an industry forum for developers and the public on 14 January 2004. The Air Force filed a Notice of Intent with the U.S. Environmental Protection Agency regarding the intent to prepare an EIS, and it was published in the Federal Register (FR) on 26 January 2004. After public notification in newspapers, on radio, and on television, Eglin AFB and Hurlburt held two public scoping meetings in Mary Esther, Florida, and Fort Walton Beach, Florida, on 17 and 19 February 2004. Several individuals expressed interest in the proposal during the public scoping process. The public expressed support for the Air Force and DCR & L Program as well as concerns. The concerns are identified below with references to specific sections in later chapters where the concerns are addressed.

<u>Summary of Concerns</u>

- Impacts to local surface water quality (Section 3.7 and Section 4.7)
- Impacts to wildlife and threatened and endangered species (Section 3.6 and Section 4.6)
- Impacts associated with land use compatibility and viewsheds, and the impact of those upon property values (Section 3.1 and Section 4.1)
- Impacts to traffic (Section 3.2 and Section 4.2)
- Impacts to cultural and archaeological resources (Section 3.5 and Section 4.5)

In addition to the public, the Air Force notified local, state, and Federal agencies in writing of the intent to prepare an EIS, and they will receive copies of the EIS for review. A list of contacts can be found in the EIS Resource Appendices (Appendix B, *Public Involvement*).

1.6 OTHER REGULATORY AND PERMIT REQUIREMENTS

All project-related actions would be in accordance with the then-current and most strict of all applicable codes, standards, regulations, and laws (federal, state, and local) existing at the time of project implementation, without regard to whether they would otherwise be applicable or enforced because the improvements are located on government-owned land. The developer would utilize sustainable development principles and practices as set forth in the Air Force Environmentally Responsible Facilities Guide, which seeks to reduce or eliminate the negative impact of buildings on the environment and occupants in five broad areas: sustainable site planning,

safeguarding water and water efficiency, energy efficiency and renewable energy, conservation of materials and resources, and indoor environmental quality. State and Federal agency consultation and review of Eglin AFB and Hurlburt's privatization proposal are required, in compliance with Federal and state law. The developer is responsible for acquiring all applicable permits and the implementation of mitigations and BMPs. The following regulatory requirements would be mandatory for implementation of the Proposed Action and Alternatives.

- Consultation/Mitigation: Archaeological surveys and consultations with the State Historic Preservation Officer (SHPO) for potential impacts to cultural resources are currently underway. Mitigation measures identified during the consultation process will be incorporated into the lease with the developer.
- Discharge Permit: A National Pollutant Discharge Elimination System (NPDES) Permit, required for construction activities covering more than 1 acre of land area, would be required. Typical requirements associated with this permit include:
  - Utilization of temporary sediment traps/basins, silt fencing, hay bales, and seeding to minimize erosion during construction and demolition.
  - A Stormwater Pollution Prevention Plan (SWPPP) would be required for new development. Typical requirements associated with this plan would include:
    - Create site designs that would minimize the amount of impervious surface area in each development.
    - Design the site and accompanying stormwater controls in such a way as to return the peak discharge to a rate similar to that of the previously undeveloped area.
    - Design and construct paved surface areas to incorporate a slope sufficient enough to direct potential runoff away from surface waters and wetland areas.
    - Design and construct all drainage improvements and related infrastructure in such a manner that the natural hydrologic conditions are not severely altered.
    - Utilize permanent stormwater runoff minimization techniques, including concrete grid and modular pavement, detention basins, exfiltration trenches, level spreaders, stormwater retention basins, or similar techniques.
- Coastal Zone Consistency Determination: The Florida State Clearinghouse will review the Draft EIS for a Coastal Zone Consistency Determination in accordance with Florida's Coastal Zone Management Act (CZMA). The Air Force Coastal Consistency Determination is provided in Appendix P.

- Permits for construction of boat docks would require:
  - A Clean Water Act Section 404 Permit.
  - A state of Florida Environmental Resource Permit.
  - A state of Florida Submerged Lands Permit.
- Phase II Municipal Separate Storm Sewer Systems (MS4); adherence to permitting would be required.
- A Stormwater Discharge Permit (Florida Administrative Code [F.A.C.] Chapter 62-25) would be required.
- A Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System from the Florida Department of Environmental Protection (FDEP) is required to establish new wastewater transmission systems.
- In accordance with Rule 62-296.320 (4) (c) F.A.C., reasonable precautions would be taken to reduce fugitive emissions of particulate matter as identified under the commonalities section.

Other Federal and state laws, regulations, policies, and permits that may apply to the Alternatives are listed in the EIS Resource Appendices in Appendix C, *Laws and Regulations*. The potential permits that would be required, as listed above, to implement the Alternatives are further discussed in Chapter 4 of the EIS.

1.7 INTRODUCTION TO THE ORGANIZATION OF THE DOCUMENT

The EIS is organized into 11 chapters. Chapter 1 identifies the purpose and need for the Proposed Action. Chapter 2 describes the Proposed Action and Alternatives. Chapter 3 describes the environment that could potentially be affected by the Proposed Action or Alternatives. Chapter 4 presents an analysis of potential environmental consequences. Chapter 5 provides an analysis of potential cumulative impacts. Chapter 6 identifies any unavoidable adverse impacts and considerations that would offset those impacts. Chapter 7 discusses the relationship between short-term use and long-term productivity of environmental resources. Chapter 8 presents a discussion of irreversible and irretrievable commitment of resources. Chapter 9 discusses the public participation process. Chapter 10 lists the references used in the preparation of this document. Chapter 11 lists the preparers of this document.

The Appendices to this EIS are provided as an attachment to this document in electronic format (*EIS Resource Appendices*). Appendix A lists the agencies and associated contact information, as well as persons who requested copies of the Draft EIS for review and who received copies of the Draft EIS for review and comment. Appendix B includes information on the public scoping process, including correspondence received from government agencies and the public during the scoping period. Appendix C lists

pertinent laws and regulations associated with the Proposed Action and Alternatives. Appendix D provides a glossary of terms. Appendices E through O provide more detailed information regarding the resource areas discussed in Chapter 3 of the EIS. Appendix P provides a copy of the Coastal Zone Consistency Determination submitted to the Florida Department of Environmental Protection (FDEP) in compliance with the Florida Coastal Zone Management Program. Appendix Q provides photographs of the Poquito Bayou shoreline, taken in November 2003.

(This page is intentionally blank.)

2. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This section presents a detailed description of the Proposed Action to privatize Eglin AFB and Hurlburt's military family housing through the implementation of the MFH DCR & L Program. All activities would occur within the Eglin Reservation boundary. The details of the Proposed Action form the basis for the analyses of potential environmental impacts. This section also includes a discussion of the considerations used to identify candidate Alternatives. The No Action Alternative is also addressed.

2.1 PROPOSED ACTION

The Proposed Action involves the activities listed in Table 2-1 and shown in Figure 2-1.

Table 2-1. Proposed Project Activities Occurring Across All Alternatives (Except No Action)

Existing Housing Area	Current Number of Units	Year Built	Project-Related Activities		
			Action for Current Units	# Units Demolished	Number of Units Potentially Constructed*
Eglin AFB					
Georgia Avenue	5	1943	Adaptive Reuse	0	0
Hidden Oaks	126	2001	No Activity	0	0
Ben's Lake	236	1948	Demolition	236	0
Wherry	625	1951-58	Demolition	625	515 - 1,925
Capehart	498	1958	Demolition	498	
New Plew	300	1968	Demolition	300	
Old Plew	390	1966-68	Demolition	390	
Poquito Bayou (and Expansion Area)	150	1976	Demolition	150	515 - 1,925
Camp Pinchot (and Expansion Area)	4	1912-1940	Demolition or Adaptive Reuse[1]	4[1]	680 - 1,320
Camp Rudder	25	1975	Demolition	25	0
Hurlburt Field					
Live Oak Terrace	100	1976	Demolition	100	0
Pine Shadows	206	1957	Demolition	206	0
Soundside Manor	60	1957	Demolition	60	90 - 180
	2	1997	Renovation	0	
	12		No Activity	0	
Total	2,739			2,590/2,594[1]	

Source: HFLD Housing Office, 2003

[1] Disposition of the Camp Pinchot units is Alternative-dependent (i.e., demolition would occur under Alternatives 3 and 5, adaptive reuse under all others).

* Numbers represent the range of units that could be constructed at each location based on the Alternative selected and associated density (i.e., 3, 4, or 6 units per acre)

Under the Proposed Action and Alternatives, 2,015 new housing units would be constructed at locations described under Section 2.4. A total of 2,155 housing units would ultimately be in place if the Proposed Action were implemented.

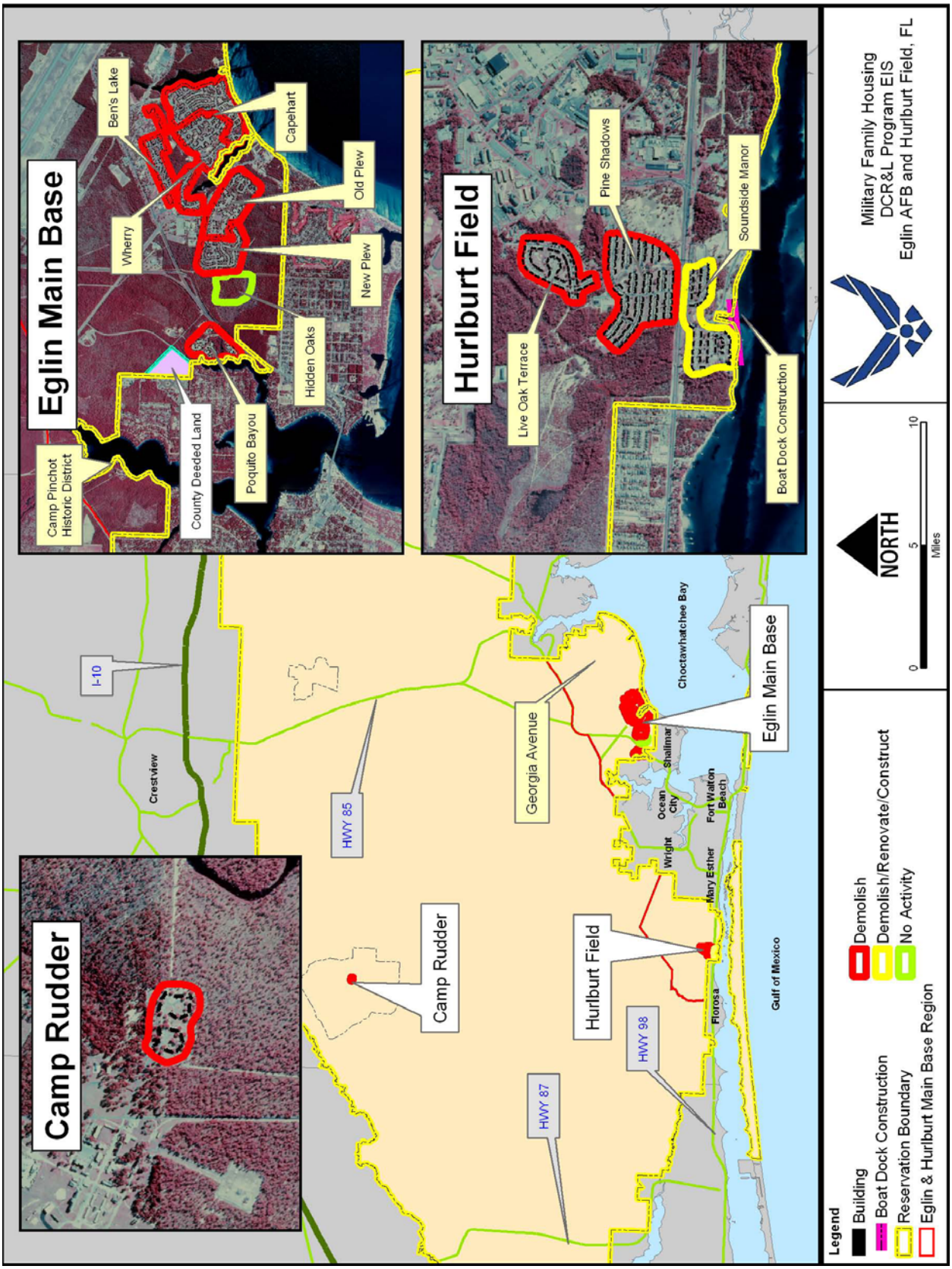

Figure 2-1. Proposed Action Project Activities

The following activities comprise the Proposed Action and will occur across all Alternatives (except the No Action Alternative). Therefore, they are referred to as *commonalities*. These commonalities are determined by the requirements of the Housing Privatization RFP, the 2003 HRMA, and future land use and planning needs.

- Due to the age and condition of the majority of AF housing at Eglin and Hurlburt, demolition of 2,590 housing units (see Tables 2-1, 2-2 and 2-3, and Figures 2-1 and 2-2)
- Based on HRMA requirements (discussed in Section 1.3), construction of 2,015 new units (see Tables 2-2 and 2-3, and Figure 2-3) consisting of a mixture of two-, three- and four-bedroom single-family structures and multiplex units.
- Leasehold interest in land areas with not utilized for redevelopment would terminate upon the demolition and removal of all required units and the Air Force's satisfaction with the developer's performance. These areas would be returned to the Air Force as the developer would not need areas that are not utilized for development.
- As is current Air Force housing privatization policy, and as allowed under the housing privatization statutes, lease of all areas supporting family housing units (both conveyed and newly constructed, for a total of 2,155) to the developer for a period of 50 years.
- All phases of the transition/demolition/construction portion of the project will be completed within 10 years of lease closing in accordance with Air Force policy.
- Hurlburt Field:
  - Soundside Manor:
    - 12 units conveyed to the developer as-is. These units are recently renovated and the Air Force fully expects them not to need any major reconstruction within the next 50 years.
    - In-place renovation of two units, which are in relatively good condition.
    - At a density of 3, 4, or 6 units per acre, potentially 90, 120, or 180 units would be constructed at Soundside Manor respectively. The purpose of construction at this location is to maintain readiness by keeping key and essential personnel nearby.
    - Potential construction of three boat docks at Soundside Manor, listed as a desired feature in the privatization RFP, and thus a reasonably foreseeable result of the lease, however the development is structured.
  - No new homes will be constructed on existing Live Oak Terrace and Pine Shadows housing areas. These areas are needed for other future military operational uses.

- Eglin AFB:
  - 126 recently constructed units at Hidden Oaks conveyed to the developer as-is.
  - Five housing units at Georgia Avenue conveyed to the developer with a deed restriction requiring that the developer's interest terminate when five suitable housing units are constructed (effectively replacing Georgia Avenue's homes); subsequent reuse of the five Georgia Avenue units for offices or similar activities. The location of these units (next to other workplaces on base) necessitates their reconveyance for a compatible adaptive reuse.
  - Boat docks at Camp Pinchot would remain intact, as they are currently in use and their demolition/removal is not a necessary component of this project.

Overall, demolition activities would take place over approximately 1,000 acres of land area.

The developer would plan, design, develop, renovate, demolish, construct, own, operate, maintain, and manage a rental housing development, to include all paving and drainage, as well as any utilities conveyed to or constructed by the developer. All newly constructed privatized units would be designated for occupancy by pay grade.

As the exact size and placement of each unit within the Alternative areas will be determined when the Air Force selects a developer's project concept, the actual construction of new units and infrastructure could take place anywhere within the areas identified in Table 2-1, depending on Alternative selection. To assess the maximum environmental impacts posed by construction of new units, it is assumed that they will be no larger than the maximum gross square footage allowed by pay grade and bedroom count. For example, a two-bedroom house for a Junior Noncommissioned Officer has a maximum square footage requirement of 1,500 square feet. All two-bedroom units would be constructed in compliance with the 2-Bedroom Modified Family Housing Standard (U.S. Air Force, 2004f). Similarly, because the details of the construction and location of these structures are unlikely to create many variances in the environmental impact, assumptions were made regarding the square footage of driveways and roadways and the location or size of the boat docks. Furthermore, so long as it is constructed outside sensitive areas, the environmental impacts of a road depend primarily upon the area of its impervious surface, not upon its exact location.

In the less-likely event that the developer's plans vary meaningfully from these assumptions (for instance, should they not avoid sensitive areas or new species become listed as endangered), the Air Force will assess the necessity for supplemental environmental documentation consistent with NEPA.

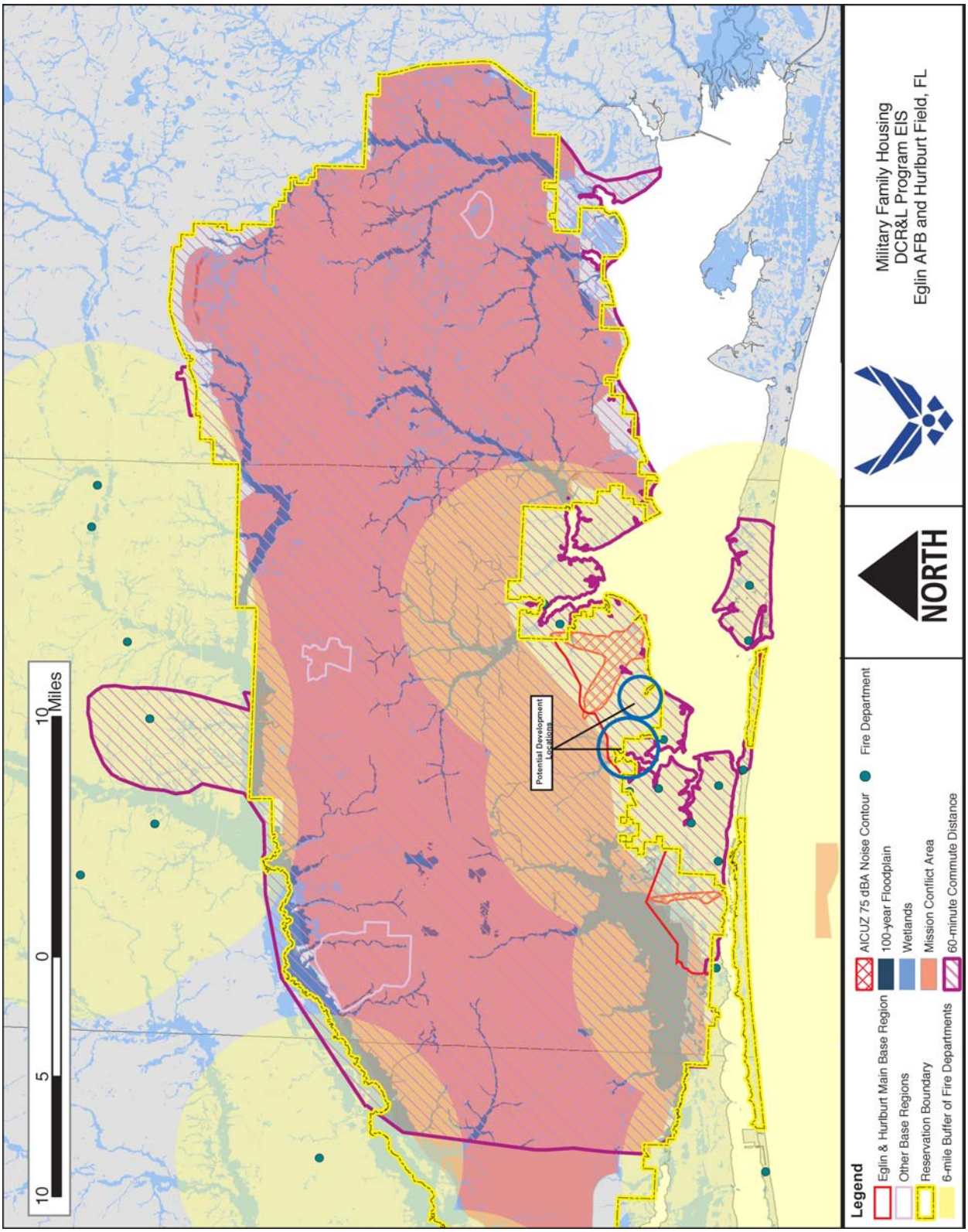

Figure 2-2. Alternative Location Screening Results

Table 2-2 provides an estimated total maximum square footage for both construction and demolition.

Table 2-2. Estimated Total Gross Square Footage of Construction and Demolition for the Proposed Action

Number of Bedrooms	Pay Grade*		Demolition		Construction		
			# of Units	Total Gross Sq Footage	# of Units	Max Gross Sq Footage/Unit	Total Max Gross Sq Footage
2	JNCO	E1-E6	974	3,517,466	1,023	1,663	3,849,047
	SNCO	E7-E9			0	1,978	
	CGO	O1-O3			116		
3	JNCO	E1-E6	1,105		193	1,760	
	SNCO	E7-E8			112	2,050	
	CGO	O1-O3			35		
	Prestige/FGO	E-9/O4-O5			77	2,300	
4	JNCO	E1-E6	511		264	2,220	
	SNCO	E7-E9			110	2,500	
	CGO	O1-O3			10		
	Prestige/FGO	E-9/O4-O5			48	2,700	
	SGO	O6			22	2,920	
	GO	O7-O10			5	4,060	
Total			***2,590***		***2,015***		

Source: U.S. Air Force, 2004

* JNCO = Junior Noncommissioned Officer; SNCO = Senior Noncommissioned Officer; CGO = Company Grade Officer; FGO = Field Grade Officer; SGO = Senior Grade Officer; GO = General Officer

The site development design will integrate the new housing community, to the extent practicable, with the surrounding community. The site development design shall create a network of neighborhoods within the community by creating a full range of compatible private and shared recreation and community-desired facilities, and would provide efficient and separate vehicular and pedestrian traffic patterns. The design would identify constraints such as easements, drainage, and offensive environments (i.e., blight, bright lights, and loud noises) to ensure activities within and surrounding the site are compatible. The site design would provide for common green spaces with native landscaping; recreational areas; appropriate buffer area/screening; street lighting; pedestrian and vehicular circulation; and sidewalks on both sides of the street. These site designs would be consistent with good land use planning, practices, and economics, and would incorporate green space, landscaping, underground utilities, and recreation areas.

Future plans may involve the addition of quality-of-life improvements to support the housing areas, which are listed as desired features of the Privatization RFP. Such improvements may include, but are not limited to "tot lots" (e.g., play areas and playgrounds) which may contain half-size or full-size basketball courts, soccer fields,

and a jogging trail/bike path. Other quality-of-life improvements listed as desired features include a community/youth/recreational center with a swimming pool, a fitness/walking/bike path connecting to existing trails and playgrounds, soccer/football fields, tennis and volleyball courts, sheltered group picnic areas, and recreational park area(s) along undeveloped waterfront.

Demolition and construction of the proposed housing units would take a phased approach throughout the life of the project (i.e., a certain number of units would be constructed and demolished each year). The exact phasing of the project would be identified by the developer chosen by the Air Force. However, the Air Force developed a phasing scenario for inclusion in the Housing Privatization RFP, and this phasing scenario is based in large part on offers received for other housing projects, which weighed considerations as varied as the desire not to lose tenants by demolishing their homes before new ones were complete and the number of qualified and available construction workers. While it is possible that the developers would submit a more aggressive schedule, it is unlikely that difference would result in environmental impacts meaningfully different from those presented by the Air Force's scenario. However, should there be such a difference, the Air Force would consider the necessity of supplemental environmental documentation in accordance with NEPA.

Table 2-3 provides a summary of the Air Force's project timeline scenario.

Table 2-3. Projected Timeline Scenario for Demolition and Construction Activities Under the Proposed Action

Activity	Year										
	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
Demolition											
2-Bedroom	79	122	202	225	203	0	92	4	44	0	971
3-Bedroom	134	0	5	0	236	171	213	75	88	190	1,112
4-Bedroom	0	0	2	0	0	0	0	223	172	110	505
Sub-Total	***213***	***122***	***209***	***225***	***439***	***171***	***305***	***302***	***304***	***309***	***2,590***
Construction											
2-Bedroom	200	200	201	207	0	83	219	0	0	0	1,110
3-Bedroom	134	0	4	6	200	0	27	0	75	0	446
4-Bedroom	0	0	5	0	10	199	39	0	206	0	459
Sub-Total	***334***	***200***	***210***	***213***	***210***	***282***	***285***	***0***	***281***	***0***	***2,015***

Source: U.S. Air Force, 2004a

2.2 ALTERNATIVE LOCATION SCREENING PROCESS

Unique aspects of the military mission mandate features in military housing neighborhoods that may not be of equally great importance to civilian housing residents. For instance, due to the nature of the military mission, military communities are composed of far more shift workers than civilian neighborhoods, and early-morning recalls, routinely conducted by any one of Eglin's or Hurlburt's many organizations, are

an integral part of most military exercises. Whether for exercises or real-world incidents, a high percentage of the military workforce must be able to arrive at their duty stations with nearly no notice, while for civilians it is an expediency to be located near their places of employment. Also, the military is subject to terrorist activities, both at work and at home, which necessitate security features that would not normally be present in a civilian neighborhood.

The Air Force Family Housing Guide balances these concerns with the concerns shared by non-military residents, such as noise and traffic avoidance, convenience, aesthetics, and price. Accordingly, it requires the installation to consider all these concerns when arriving at a decision on the housing density, and primary among these (as it would be for a civilian landowner) is the ability of the available land to satisfy these concerns. In this case, Eglin AFB and Hurlburt have available to them 2,070 acres and the necessity to provide 2,015 units. Because these relatively large land areas are readily available at no cost to the government and without impeding the military mission, the concerns particular to military members allow the designation of this area as "rural" housing. This designation sets the lower densities established in the Air Force Family Housing Guide, which is averaged, for analysis purposes, at 3, 4 or 6 units per acre. Multistory, multifamily homes up to six housing units per building are permitted.

Hurlburt Field's Soundside location was initially considered as a rebuild site due to the necessity to maintain readiness by keeping key and essential personnel nearby. Consequently, the following screening criteria were applied to Eglin's land area to determine the most suitable locations for development of the units that the Soundside location could not accommodate at the specified unit densities, thus forming the basis for Alternative development.

2.2.1 Screening Criteria

The Alternatives vary not just in location but also in the size of the project at each location. The preliminary process to find development locations first sought to determine what general areas throughout the three counties (Okaloosa, Walton, and Santa Rosa) surrounding Eglin might provide suitable military housing. Locations within these counties were screened based on criteria establishing Eglin and Hurlburt's purpose and need, as determined by housing requirements and project and mission constraints. These requirements and constraints were identified as a joint effort of Air Force Material Command (AFMC) and Eglin Civil Engineer and Environmental Management offices; the Air Force Special Operations Command and Hurlburt Field Civil Engineering offices; the 96th Air Base Wing; the Air Force Center for Environmental Excellence (AFCEE); the Eglin Encroachment Committee; and the Eglin Range Configuration and Control Committee (RC3). The Eglin Encroachment

Committee and RC3 ensure requests to use Eglin property are compatible with the mission. The following screening criteria were recommended by all parties.

60-minute Commute Time – Within the HRMA (U.S. Air Force, 2003, 2003a), the housing market area is defined as the further of 20 miles from the installation's headquarters building or a one-hour commute from the headquarters, assuming normal weather conditions. The Housing Market Area (Figure 2-2) was determined based on information from installation personnel and actual drives along major highways during peak traffic periods at no more than maximum speed. This criteria is based on the DoD requirement to ensure that all personnel can reach the base from housing within 60 minutes (DoD, 1993). Since both Eglin AFB and Hurlburt personnel would be living in the same area, the units could not be placed more than 60 minutes away from *either* Eglin or Hurlburt Field. The 60-minute commute area for both Eglin AFB and Hurlburt was applied to the tri-county area using the Geographic Information System (GIS) to determine overlap between the two areas.

Air Force Property – Given the project's requirements, mission constraints, and the limited funds for the Eglin/Hurlburt housing effort, neither the purchase of private property nor land swapping would be reasonable. Additionally, sufficient land area exists on-base to accommodate the Proposed Action. As a result, only those areas identified within the 60-minute commute area on Eglin property, shown in Figure 2-2, were considered as reasonable alternatives.

Areas with Mission/Safety Conflicts – Areas recently (within the last five years) utilized by Eglin users currently within safety footprints (potential danger areas associated with munition testing and other testing/training activities) were excluded from Alternative consideration. The Eglin Range Safety Office (AAC/SEU) identified an aggregated weapon impact limit line (the extent to which debris from munitions use could occur) to be utilized as screening criteria. Siting housing developments within potential weapon safety footprints creates safety conflicts and ultimately affects Eglin's ability to support various weapon testing and training scenarios. Areas identified as historic ranges used for weapon testing and training are considered safety hazards due to the potential presence of unexploded ordnance (UXO). These areas are generally off-limits for ground disturbance because of safety considerations, and such areas are not suitable for siting housing developments.

Other mission conflicts included: airspace (built-up areas under restricted airspace may decrease the capability of an already limited resource); water interface areas (built-up areas around the unique water interface range capability would limit current and potential use); and operational noise (proximity to active ranges would

eventually limit operations due to noise effects on housing areas). Included in operational noise are Air Installation Compatible Use Zones (AICUZ) (airfield noise profiles that limit surrounding land uses). Mission and safety conflict data from Fiscal Years 1997–2002 acquired from the Eglin AAC/SEU was used as a screening criteria (Figure 2-2), and those areas that exhibited potential for mission/safety conflicts were excluded.

Wetland/Floodplains – Under Executive Order (EO) 11988, *Floodplain Management* (1977, 42 FR 26951), Federal agencies are prohibited from the occupancy and modification of floodplains and floodplain development unless there is no practicable alternative. Additionally, EO 11988 requires Federal agencies to make every effort to reduce the risk of flood loss, minimize the impact of floods on human health, safety, and welfare, and preserve the natural beneficial value of floodplains. The order stipulates that Federal agencies proposing actions in floodplains consider alternative actions to avoid adverse effects, avoid incompatible development in the floodplains, and provide opportunity for early public review of any plans or proposals. Under EO 11990, *Protection of Wetlands* (1977, 42 FR 26961), Federal agencies are prohibited from undertaking or providing assistance for activities, including new construction, located in wetlands unless there are no practicable alternatives and all practicable measures to minimize harm to wetlands have been implemented. It also precludes Federal entities from leasing space in wetland areas unless there are no practicable alternatives. Given these EO requirements, Florida Department of Environmental Protection wetland data and Federal Emergency Management Agency (FEMA) floodplain data were added to the GIS (Figure 2-2). While a housing unit proposed for demolition at Hurlburt Field Soundside is within the 100-year floodplain, areas within wetlands or floodplains were otherwise excluded from Alternative consideration for new development.

Emergency Response – The proximity to emergency services was also considered during the site screening process. Sites should not be so remote that Eglin emergency services (fire and security) cannot reach them within a reasonable response time. The National Fire Protection Association Code 1710 provides a national guideline of four minutes or less for fire or emergency medical services first responders to arrive on scene (Brown, Ra., 2004). In addition, Okaloosa County Emergency Management maintains an average first response time of six to seven minutes, with any responses greater than 10 minutes considered unacceptable and requiring investigation as to the cause of the delay (McDaniel, 2004). Figure 2-2 shows the distance an emergency vehicle could travel under normal conditions from its stationed location in approximately six to seven minutes, which equates to about 6 miles. While, when faced with rapid growth, the municipalities may be forced to exceed the response guideline, the Air Force did not deem it reasonable to plan to do so.

2.2.2 Potential Development Locations Identified During the Screening Process

After consideration of all screening criteria, two general areas were identified as potentially suitable for housing areas, as shown in Figure 2-2. Within these two general areas, three potential housing development sites were identified, as shown on Figure 2-3.

Camp Pinchot Expansion Area – The Camp Pinchot Expansion area includes the Camp Pinchot Historic District and the adjacent land area to the southwest. While the Camp Pinchot Expansion Area is 257 acres total, approximately 220 acres (includes 15-acre historic district) will be leased for development. The Camp Pinchot Historic District consists of 14 structures. Four housing units and six support structures are contributing elements of the District. The four non-contributing elements include a well house (Building 1565), guest house (Building 1559A), tennis courts (Facility 1550), and a greenhouse. The land area adjacent to the historic district consists of undisturbed land area covered by sand pine and live oak.

Poquito Bayou Expansion Area – This land area comprises the existing Poquito Bayou housing area, the "North GERC (Graduate Education Research Center)" area (located next to the University of Florida GERC), and the land area between the Poquito Bayou housing area and the North GERC area. The North GERC area and the land area between it and the Poquito Bayou housing area consist of generally undisturbed land with sand pine and live oak. In total, the Poquito Bayou Expansion area is approximately 860 acres (not including wetlands).

Eglin Main Base – The Eglin Main Base area consists of two separate areas:

- *Old Plew/New Plew Expansion Area* – This site consists of Eglin's Old Plew, New Plew, and Hidden Oaks housing areas, as well as several hundred acres of semi-improved land area to the west of the housing areas. It is approximately 680 acres.
- *Wherry/Capehart Area* – This site consists of Eglin's Capehart and Wherry housing areas. It is approximately 280 acres.

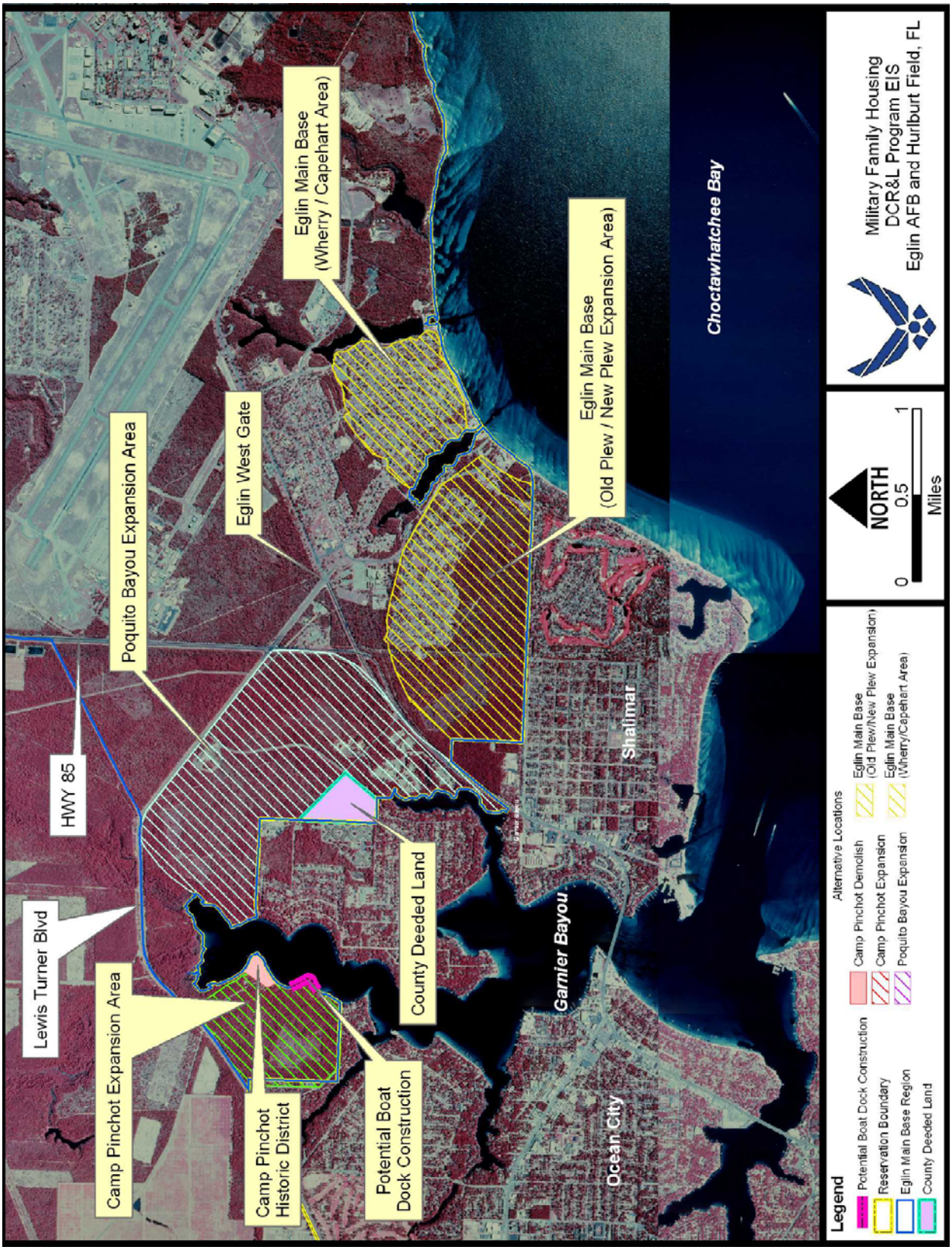

Figure 2-3. Alternative Development Locations

2.3 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

Throughout the screening process several potential alternative locations were identified and considered, but the application of subsequent screening criteria negated these locations due to their inability to meet the purpose and need of the Proposed Action. These alternative locations were therefore not carried forward as potential development alternatives.

As an example, areas outside the Eglin Reservation Boundary, such as the Crestview and Florosa areas, were initially considered for potential development as they fell within the 60-minute commute criteria. However, given the financial constraints of the MFH privatization effort, the purchase of non-Federal property is not financially feasible. In addition, "land-swapping" with private landowners is not considered a viable option, as Eglin has no "surplus" property to utilize for such purposes. Accordingly, the need to utilize Eglin property was identified as a screening criteria, which eliminated privately held land as an alternative.

In addition, the demolition of newer units (126 units at Hidden Oaks built in 2001 and 12 units at Hurlburt Field's Soundside Manor location built in 1997) was considered but not carried forward as it was considered wasteful to destroy recently constructed and renovated homes; therefore such demolition was deemed to be an unreasonable alternative.

Also, construction of new homes on Hurlburt north of U.S. Highway 98 (US-98) at Live Oak Terrace and Pine Shadows was considered but not carried forward due to Hurlburt's overcrowded mission and the need to support future expansion of existing and future missions. As a result, these areas would not be used for housing but would be left vacant to support future mission-related development.

2.4 ALTERNATIVES CARRIED FORWARD

While the Air Force Housing Privatization RFP states that the developer should consider development of the housing areas at densities of 4 to 6 units per acre, Eglin has listed development at 3 units per acre as a desired feature. Consequently, each Alternative begins by first incorporating the commonalities as described under Section 2.1, then identifying the number of potential units to be constructed within a new or existing housing area at a density of 3, 4, or 6 units per acre. Due to the varying densities and sizes of potential development locations, higher densities may require only one location, while lower densities may be spread among more than one location. Accordingly, the Alternatives differ primarily in the location and density of new housing and are shown in Figure 2-3.

2.4.1 Alternative 1: Poquito Bayou Expansion

This Alternative would involve the construction of units at the approximately 860-acre Poquito Bayou Expansion site. Construction may occur at densities of 3, 4, or 6 units per acre. Upon completion of the replacement units, the Camp Pinchot Historic District would be adaptively reused for purposes other than residential housing. Table 2-4 shows the number of units that potentially could be constructed at the area under this Alternative for 3, 4, and 6 units per acre in relation to the units that potentially would be constructed at the Soundside Manor location under the same unit densities.

Table 2-4. Number of Units Potentially Constructed at the Poquito Bayou Expansion Area Under Alternative 1

Location	Available Construction Acreage	Max # Units		
		3/Acre	4/Acre	6/Acre
Soundside Manor	30	90	120	180
Poquito Bayou Expansion	860	1,925	1,895	1,835
Total		***2,015***		

2.4.2 Alternative 2: Eglin Main Base

Alternative 2 would involve the construction of housing units on Eglin Main Base, which includes the 280-acre Wherry/Capehart location and the 680-acre Old Plew/New Plew Expansion area. Construction may occur at densities of 3, 4, or 6 units per acre. Upon completion of the replacement units, the Camp Pinchot Historic District would be adaptively reused for purposes other than residential housing. Table 2-5 shows the number of units that potentially could be constructed at the area under this Alternative for 3, 4, and 6 units per acre in relation to the units that potentially would be constructed at the Soundside Manor location under the same unit densities.

Table 2-5. Number of Units Potentially Constructed at Eglin Main Base Under Alternative 2

Location	Available Construction Acreage	Max # Units		
		3/Acre	4/Acre	6/Acre
Soundside Manor	30	90	120	180
Eglin Main Base*	960	1,925	1,895	1,835
Total		***2,015***		

* Includes 280-acre Wherry/Capehart location and 680-acre Old Plew/New Plew expansion location

2.4.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area

This Alternative involves the construction of units at the 220-acre Camp Pinchot and associated Camp Pinchot Expansion area as well as the 860-acre Poquito Bayou Expansion area. The entire Camp Pinchot Historic District (consisting of four housing units and 10 other non-residential buildings) would be demolished and new housing

units would be constructed. Consequently, 2,594 housing units in total would be demolished (and an additional 10 buildings at Camp Pinchot). The boat docks at Camp Pinchot would remain intact. Table 2-6 shows the number of units that potentially could be constructed under this Alternative for 3, 4, and 6 units per acre given the units that potentially would be constructed at the Soundside Manor location.

Table 2-6. Number of Units Potentially Constructed at the Camp Pinchot and Poquito Bayou Expansion Areas Under Alternative 3

Location	Available Construction Acreage	Max # Units		
		3/Acre	4/Acre	6/Acre
Soundside Manor	30	90	120	180
Camp Pinchot Expansion	220*	660	880	1,320
Poquito Bayou Expansion	860	1,265	1,015	515
Total		***2,015***		

* Only 220 of 257 acres at Camp Pinchot will be leased for development.

2.4.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse

Alternative 4 is the same as Alternative 3 except that the Camp Pinchot Historic District would be conveyed to the developer until replacement units are constructed. Upon completion of the replacement units, the Camp Pinchot Historic District would be returned to the Air Force and adaptively reused for purposes other than residential housing; 2,590 units would be demolished. The number of units to be constructed at the Camp Pinchot Expansion area would be the same as Alternative 3. Listed as a desired feature in the privatization RFP, one boat dock may be constructed along the shoreline to the south of the Camp Pinchot Historic District.

2.4.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)

Alternative 5, Eglin AFB and Hurlburt's Preferred Alternative, includes the demolition of the Camp Pinchot Historic District and the construction of units at the Camp Pinchot Expansion area (approximately 220 acres including the historic district) and Eglin Main Base (which includes the approximately 680-acre Old Plew/New Plew Expansion area and the approximately 280-acre Wherry/Capehart area). Under this Alternative, 2,594 housing units (and 10 other historic buildings at Camp Pinchot) would be demolished. Table 2-7 shows the number of units that could be potentially constructed at the area under this Alternative for 3, 4, and 6 units per acre in relation to the units that would be potentially constructed at the Soundside Manor location under the same unit densities.

Table 2-7. Number of Units Potentially Constructed at the Camp Pinchot Expansion Area and Eglin Main Base Under Alternative 5

Location	Available Construction Acreage	Max # Units		
		3/Acre	4/Acre	6/Acre
Soundside Manor	30	90	120	180
Camp Pinchot Expansion	220**	660	880	1,320
Eglin Main Base*	960	1,265	1,015	515
Total		***2,015***		

*Includes 280-acre Wherry/Capehart location and 680-acre Old Plew/New Plew Expansion location
** Only 220 of 257 acres at Camp Pinchot will be leased for development.

2.4.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse

Alternative 6 is the same as Alternative 5 except that the Camp Pinchot Historic District would be conveyed to the developer until replacement units are constructed. Upon completion of the replacement units, the Camp Pinchot Historic District would be returned to the Air Force and adaptively reused for purposes other than residential housing; 2,590 units would be demolished. The number of units to be constructed at the Camp Pinchot Expansion area would be the same as Alternative 5. Listed as a desired feature in the privatization RFP, one boat dock may be constructed along the shoreline to the south of the Camp Pinchot Historic District.

2.4.7 No Action Alternative

Under the No Action Alternative, the Air Force would not implement the MFH DCR & L Program at Eglin AFB or Hurlburt. Instead, the Air Force would continue to manage, maintain, and replace/upgrade military family housing in accordance with existing Air Force policy. No new housing areas would be developed and the existing historic buildings at Camp Pinchot would remain in place.

2.5 ALTERNATIVES SUMMARY

The following lists the activities that are common across all Alternatives, and therefore form the basis for the Proposed Action:

- Demolition of 2,590 housing units (see Tables 2-1, 2-2 and 2-3, and Figures 2-1 and 2-2)
- Construction of 2,015 new units (see Tables 2-2 and 2-3, and Figure 2-3) consisting of a mixture of two-, three- and four-bedroom single-family structures and multiplex units.

- Leasehold interest in land areas with existing housing areas that are demolished but not utilized for redevelopment would terminate upon the demolition and removal of all required units and the Air Force's reasonable satisfaction with the developer's performance on the conditions of the lease agreement.
- Lease of all areas supporting family housing units (both conveyed and newly constructed, for a total of 2,155) to the developer for a period of 50 years.
- All phases of the transition/demolition/construction portion of the project will be completed within 10 years of lease closing.
- Hurlburt Field:
  - Soundside Manor:
    - 12 units conveyed to the developer as-is.
    - In-place renovation of two units.
    - At a density of 3, 4, or 6 units per acre, potentially 90, 120, or 180 units would be constructed at Soundside Manor respectively.
    - Potential construction of three boat docks at Soundside Manor, listed as a desired feature in the privatization RFP.
  - No new homes will be constructed on existing Live Oak Terrace and Pine Shadows housing areas. These areas will be reserved for other future military operational uses.
- Eglin AFB:
  - 126 units at Hidden Oaks conveyed to the developer as-is.
  - Five housing units at Georgia Avenue conveyed to the developer with a deed restriction requiring that the developer's interest terminate when five suitable housing units are constructed (effectively replacing Georgia Avenue's homes); subsequent reuse of the five Georgia Avenue units for offices or similar activities.
  - Depending on Alternative selection, the historic units at Camp Pinchot would either be demolished or adaptively reused for purposes other than residential housing.
  - Boat docks at Camp Pinchot would remain intact.

Table 2-8 shows the number of units that would be demolished and constructed at each location under each Alternative. Included in each Alternative are the commonalities identified above.

Table 2-8. Summary of Alternatives, to Include the Proposed Action

Alternative (*units/acre*)	Demolition											Construction			
	Location														
	Soundside Manor	Pine Shadows	Live Oak Terrace	Camp Pinchot Housing	Poquito Bayou Housing	Capehart Housing	Wherry Housing	Ben's Lake Housing	Camp Rudder	Old Plew	New Plew	Soundside Manor	Camp Pinchot Expansion	Poquito Bayou Expansion	Eglin Main Base
	Maximum Number of Units														
1															
3												90		1,925	
4												120		1,895	
6				0								180		1,835	
2															
3												90			1,925
4												120			1,895
6												180			1,835
3															
3												90	660	1,265	
4				4								120	880	1,015	
6	60	206	100		150	498	625	236	25	390	300	180	1,320	515	
4															
3												90	660	1,265	
4				0								120	880	1,015	
6												180	1,320	515	
5															
3												90	660		1,265
4				4								120	880		1,015
6												180	1,320		515
6															
3												90	660		1,265
4				0								120	880		1,015
6												180	1,320		515
No Action	No Activity											No Activity			

Table 2-9 identifies the potential net change in housing distribution based on the activities that would occur under the Alternatives. These numbers are derived by first identifying the number of existing units at each location, then subtracting the number of units that would be demolished and the number of units that would be adaptively reused for uses other than residential housing, and then adding the number of units that would potentially be constructed under each Alternative at the respective location. As an example, Camp Rudder has 25 existing housing units. As a commonality, all 25 units would be demolished, and no new units would be constructed at that location. This results in a net loss of 25 housing units at Camp Rudder.

Table 2-9. Potential Net Changes in Housing Distribution Under the Proposed Action and Alternatives

Alternative *(units/acre)*	Housing Location				
	Hurlburt Field	Eglin Main Base	Camp Rudder	Camp Pinchot (& Expansion Area)	Poquito Bayou (& Expansion Area)
Potential Maximum Net Change in Number of Housing Units					
1					
3	-276	-2,054	-25	-4	+1,775
4	-246				+1,745
6	-186				+1,685
2					
3	-276	-129	-25	-4	-150
4	-246	-159			
6	-186	-219			
3					
3	-276	-2,054	-25	+556	+1,115
4	-246			+876	+865
6	-186			+1,316	+365
4					
3	-276	-2,054	-25	+556	+1,115
4	-246			+876	+865
6	-186			+1,316	+365
5					
3	-276	-789	-25	+556	-150
4	-246	-1,039		+876	
6	-186	-1,539		+1,316	
6					
3	-276	-789	-25	+556	-150
4	-246	-1,039		+876	
6	-186	-1,539		+1,316	
No Action	No Activity				

2.6 IMPACT ANALYSIS SUMMARY

Table 2-10. Summary of Analysis Results by Alternative

Alternative 1: Poquito Bayou Expansion	Alternative 2: Eglin Main Base	Alternative 3: Poquito Bayou Expansion/Camp Pinchot Expansion	Alternative 4: Alternative 3 w/Camp Pinchot Adaptive Reuse	Alternative 5: Eglin Main Base/Camp Pinchot Expansion	Alternative 6: Alternative 5 w/Camp Pinchot Adaptive Reuse	No Action
Land Use and Planning						
All new structures will adhere to local building codes.						
At densities of 3 and 4 units/acre housing is consistent with future land use plans and no adverse impacts are anticipated. At 6 units/acre housing would not be consistent with densities of adjacent neighborhoods, which consist of unit densities in the 2-4 units/acre range. Implementation of Okaloosa County Comprehensive Plan requirements associated with aspects of new developments would likely lessen perceived aesthetic impacts.	Activities would be consistent with future land use plans and completely contained within Eglin Main Base. There would be no land use conflicts with communities in Okaloosa County. Land use and existing land use patterns would remain the same; therefore, this Alternative would have no adverse impacts on land use. A portion of the existing Capehart housing area is within the AICUZ 65-70 L_{dn} airfield noise contour, typically considered as incompatible for residential development. Units constructed in these noise areas would need to be constructed to specifications for the dampening of aircraft noise within the dwellings to below 65 dBA to minimize potential impacts to housing residents.	Impacts associated with these Alternatives would be similar to those described under Alternative 1. However, the impacts would be somewhat less as the housing units would be split among two separate locations. While no adverse impacts to surrounding communities are anticipated at densities of 3 and 4 units/acre, housing at 6 units/acre would not be consistent with densities of adjacent neighborhoods. Implementation of Okaloosa County Comprehensive Plan requirements associated with aspects of new developments will likely lessen perceived aesthetic impacts. As a result, significant impacts are not anticipated.		Impacts associated with these Alternatives would be similar to those described under Alternative 2 for Eglin Main Base and Alternative 3 for Camp Pinchot Expansion. Implementation of Okaloosa County Comprehensive Plan requirements at Camp Pinchot Expansion associated with aspects of new developments will likely lessen perceived aesthetic impacts. As a result, significant impacts are not anticipated.		No new housing would be developed. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline and there would be no impacts associated with land use beyond the scope of normal conditions and influences at these locations

Table 2-10. Summary of Analysis Results by Alternative Cont'd

Alternative 1: Poquito Bayou Expansion	Alternative 2: Eglin Main Base	Alternative 3: Poquito Bayou Expansion/Camp Pinchot Expansion	Alternative 4: Alternative 3 w/Camp Pinchot Adaptive Reuse	Alternative 5: Eglin Main Base/Camp Pinchot Expansion	Alternative 6: Alternative 5 w/Camp Pinchot Adaptive Reuse	No Action
Transportation Infrastructure						
There would be increases in the amount of traffic on local roadways due to the relocation of families off Hurlburt Field and/or Eglin AFB. The impacts of the Alternatives on the traffic network and operations would be acceptable based on the criteria that they would not cause any roadways to have a worse Level of Service (LOS) than that anticipated in the adopted LOS standards of the Okaloosa County Comprehensive Plan. Alternative 2 would be least impactive to local roadways, as only Hurlburt Field personnel would need to add additional commuter travel to reach Hurlburt Field. With the exception of Alternative 2, new signalized intersections at State Road 189 and State Road 85 for the Poquito Bayou and Camp Pinchot Expansion areas would be required. Any new traffic signals proposed as a requirement of a specific housing proposal will need to be approved by Okaloosa County and the Florida Department of Transportation prior to construction of the proposed housing units. The new intersection and the new local road system will be developed to meet all local requirements and standards, including obtaining the best possible alignment, grade, sight distance, and drainage for new roads relative to the new development and associated terrain. Site plans and related road systems and proposed highway interchanges for each new housing area developed as a part of the Proposed Action will be subject to specific engineering design and traffic studies to minimize impacts on the existing arterial highways and to gain approval from Okaloosa County and the Florida Department of Transportation. The objective of these reviews is to make sure that future circulation patterns and new intersections do not create inadequate levels of service at new or existing intersections or along existing roads.						While changes to roadway LOS may occur from local community development, the local transportation environment within and adjacent to the Alternative locations would remain as baseline and there would be no impacts associated with transportation beyond the scope of normal conditions and influences at these locations.
Socioeconomics / Environmental Justice / Special Risks to Children						
Implementation of the project would result in the addition of 580 project-related jobs to the local economy of Okaloosa County (combined direct and secondary). This would have positive employment effects in all sectors of the local and regional economy. It is anticipated that any potential fiscal impacts to the Okaloosa School District resulting from student transfers would be relatively minor. No adverse impacts associated with population, the housing market, environmental justice, or special risks to children have been identified. No adverse impacts to property values are anticipated. Waterfront properties that are visually connected to Eglin facilities, including non-residential areas, have continued to increase in value at a much higher than average rate for the nation. Even in areas with degraded aesthetics (i.e., previously undeveloped land being developed with non-residential or non-single family housing), housing values continue to increase due to supply and demand. In areas adjacent to multi-family housing, such as town homes, waterfront property values have also continued to rise.						Continued utilization of substandard housing may negatively impact service member morale and retention. No adverse socioeconomic impacts to the local community or any impacts to military members or community members associated with environmental justice or special risks to children have been identified.

Table 2-10. Summary of Analysis Results by Alternative Cont'd

Alternative 1: Poquito Bayou Expansion	Alternative 2: Eglin Main Base	Alternative 3: Poquito Bayou Expansion/Camp Pinchot Expansion	Alternative 4: Alternative 3 w/Camp Pinchot Adaptive Reuse	Alternative 5: Eglin Main Base/Camp Pinchot Expansion	Alternative 6: Alternative 5 w/Camp Pinchot Adaptive Reuse	No Action
Utility Infrastructure						
No adverse impacts to gas and electric utility providers have been identified under any Alternative. However, coordination with these utility providers would be required prior to any ground disturbance activities. There would be a beneficial impact to all public utility providers associated with additional revenues resulting from increased usage. In addition, there would be a total reduction of potable water use and wastewater generation for both Eglin AFB and Hurlburt utility systems under all Alternatives.						Under the No Action Alternative the environment within and adjacent to the Alternative locations would remain as baseline and there would be no impacts associated with utility infrastructure beyond the scope of normal conditions and influences at these locations.
Potable water use for Okaloosa County Water and Sewer (OCWS) would increase, as would average daily flow to OCWS's wastewater treatment system. However, project phasing would not immediately increase wastewater flow. A new OCWS treatment facility (as part of a separate project) would be operational before housing project completion, thus minimizing any potential impacts. No significant adverse impacts associated with utility infrastructure are anticipated.	There would be no increases in the amount of service required from local or base utility systems. Consequently, there would be no adverse impacts to utility infrastructure under this Alternative.	Impacts associated with potable water use and wastewater use would be similar to those described under Alternative 1, as OCWS would serve both locations. As a result, no significant adverse impacts associated with utility infrastructure are anticipated.		There would be beneficial impacts to Eglin as a result of a total reduction in units on base. There would be increases in potable water use and wastewater flow at OCWS facilities resulting from use of the Camp Pinchot Expansion area. The increase would be less than that of Alternatives 1, 3, and 4. However, the impact of this increase would be minimal given the construction of a new OCWS treatment facility (as part of a separate project). No significant adverse impacts associated with utility infrastructure are anticipated.		
Cultural Resources						
Cultural resources inventory, site testing, and evaluation of all identified resources have been completed in compliance with Section 106 of the National Historic Preservation Act (NHPA). Mitigation measures for all historic properties will be developed and implemented in consultation with the Florida State Historic Preservation Officer (SHPO) prior to any ground-disturbing actions.						Under the No Action Alternative, no new housing would be. developed. Consequently, the environment within and adjacent to the Alternative locations
Six archaeological resources have been determined eligible for the National Register	There would be no demolition of historic properties on Eglin Main Base. Thus, no	Potential impacts associated with cultural resources present at the Poquito Bayou Expansion area would be the same as those described under Alternative 1.		Potential impacts associated with cultural resources present at Eglin Main Base would be the same as those described under Alternative 2.		

Table 2-10. Summary of Analysis Results by Alternative Cont'd

Alternative 1: Poquito Bayou Expansion	Alternative 2: Eglin Main Base	Alternative 3: Poquito Bayou Expansion/Camp Pinchot Expansion	Alternative 4: Alternative 3 w/Camp Pinchot Adaptive Reuse	Alternative 5: Eglin Main Base/Camp Pinchot Expansion	Alternative 6: Alternative 5 w/Camp Pinchot Adaptive Reuse	No Action
Cultural Resources Cont'd						
and one historic cemetery is potentially eligible. If these sites are avoided then no adverse impact would be anticipated. However, if mitigation is required due to anticipated disturbance, the disturbance, as well as the mitigation measures themselves, would constitute adverse effects. Disturbance would require mitigation in compliance with Section 106 of the NHPA. The Camp Pinchot Historic District would be adaptively reused. Renovation will be conducted in consultation with the Florida SHPO and in compliance with the *Secretary of the Interior's Standards for Rehabilitation*, the Eglin AFB Programmatic Agreement, the Eglin AFB Integrated Cultural Resources Management Plan, and Air Force regulations.	effects to cultural resources are expected there. However, demolition of units at Poquito Bayou could potentially cause adverse effects to the sites there. If these sites are avoided then no adverse impact would be anticipated. However, if mitigation is required due to anticipated disturbance, the disturbance, as well as the mitigation measures themselves, would constitute adverse effects. Disturbance would require mitigation in compliance with Section 106 of the NHPA.	The demolition of the Camp Pinchot Historic District constitutes an adverse The eligible archaeological site that underlies Camp Pinchot must be avoided or subjected to mitigation in the event of planned disturbance. Mitigation measures will be developed and implemented in consultation with the SHPO prior to project implementation.	Impacts associated with adaptive reuse of the Camp Pinchot historic buildings would be the same as those described under Alternative 1.	Potential impacts associated with demolition and construction activities at the Camp Pinchot Expansion area would be the same as those described under Alternative 3.	Impacts associated with adaptive reuse of the Camp Pinchot Historic District would be the same as those described under Alternative 1.	would remain as baseline and there would be no impacts associated with cultural resources beyond the scope of normal conditions and influences at these locations

Table 2-10. Summary of Analysis Results by Alternative Cont'd

Alternative 1: Poquito Bayou Expansion	Alternative 2: Eglin Main Base	Alternative 3: Poquito Bayou Expansion/Camp Pinchot Expansion	Alternative 4: Alternative 3 w/Camp Pinchot Adaptive Reuse	Alternative 5: Eglin Main Base/Camp Pinchot Expansion	Alternative 6: Alternative 5 w/Camp Pinchot Adaptive Reuse	No Action
Biological Resources						
Anecdotal and documented evidence suggests that the Poquito Bayou Expansion and Camp Pinchot Expansion areas may serve as a transit route or foraging area for some state-listed sensitive species; no federally listed threatened or endangered species have been documented to occur at these sites. Critical habitat for the Gulf sturgeon, a federally endangered fish, is designated for Santa Rosa Sound. Informal consultation with the U.S. Fish and Wildlife Service found no potential impacts to critical habitat or the species from boat dock construction. With the exception of Soundside Manor, no housing unit construction would occur within wetlands or floodplains, and boat dock construction would avoid seagrass beds. Land clearing may have a localized effect on native wildlife species (e.g., squirrels, raccoons, rabbits, etc.). However, these species would either move to another location or remain within the area and utilize remaining foliage for habitat. These areas represent only a small percentage of the total land area that Eglin maintains. Coordination with Eglin's Natural Resources Branch to survey for potential occurrences of sensitive species would be required prior to project initiation. It is anticipated that the potential for considerable adverse impacts to wildlife under any of the Alternatives would be minimal.						Under the No Action Alternative, no new housing would be developed. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline and there would be no impacts associated with biological resources beyond the scope of normal conditions and influences at these locations.
This Alternative would involve the conversion of approximately 787 acres of sandhills ecological association to landscaped/ urban area. This represents less than 1% of Eglin's total sandhills.	This Alternative would involve the conversion of approximately 363 acres of sandhills and 15 acres of flatwoods to landscaped/urban. This represents less than 1% of Eglin's total sandhill and flatwoods ecological associations.	These Alternatives would involve the conversion of approximately 787 acres of sandhills habitat to landscaped/urban at Poquito Bayou Expansion and approximately 245 acres of sandhills habitat to landscaped/urban at Camp Pinchot Expansion. These numbers represent less than 1% of each of Eglin's total acreage for the respective ecological associations.	Impacts associated with this Alternative would be the same as those identified under Alternative 2 for Eglin Main Base and Alternative 3 for Camp Pinchot Expansion area.	Impacts associated with this Alternative would be the same as those identified under Alternative 2 for Eglin Main Base and Alternative 3 for Camp Pinchot Expansion area.		
Water Resources						
Loose soils and construction and demolition (C&D) debris could potentially be picked up by stormwater runoff and transported to adjacent waters. At sites where demolition takes place with no future construction, there would be a decrease in the amount of impervious surface. This decrease in the amount of impervious surface would mean that there would be less runoff from these sites. A National Pollutant Discharge Elimination System (NPDES) General Permit for stormwater discharge, a Stormwater Pollution Prevention Plan (SWPPP), a Works in the Water Permit, and adherence to Phase II Municipal Separate Storm Sewer Systems (MS4) permitting requirements would be required. Additionally, proper implementation and maintenance of Best Management Practices (BMPs) would reduce the peak flow and maximum runoff of stormwater to permit-mandated levels and retain the first one-inch of runoff. No impacts to groundwater have been identified.						Under the No Action Alternative, no new housing areas or boat docks would be constructed. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline and there would be no impacts to water resources beyond the scope of
Modeling showed that there would be a substantial increase in peak flow and maximum runoff after the new development	Modeling showed a relatively large increase in peak flow and maximum runoff at the Old Plew/New Plew Expansion area (which	Modeling of the 25-year/24-hour storm showed that there would be a substantial increase in peak flow and maximum runoff at both locations after the new development was completed when compared to current conditions. The	Potential impacts would be similar to those identified under Alternative 2 for Eglin Main Base and Alternative 3 for the Camp Pinchot Expansion area. The increases at Eglin Main Base would be somewhat less in relation to the increases			

Table 2-10. Summary of Analysis Results by Alternative Cont'd

Alternative 1: Poquito Bayou Expansion	Alternative 2: Eglin Main Base	Alternative 3: Poquito Bayou Expansion/Camp Pinchot Expansion	Alternative 4: Alternative 3 w/Camp Pinchot Adaptive Reuse	Alternative 5: Eglin Main Base/Camp Pinchot Expansion	Alternative 6: Alternative 5 w/Camp Pinchot Adaptive Reuse	No Action
Water Resources Cont'd						
was completed when compared to current conditions. The required one-inch rain storage volume would also increase at the Poquito Bayou Expansion site. Mitigations will be required. Site design plans and permits will detail the required mitigations that must be put in place at specific periods throughout the construction process.	is largely undeveloped) when compared to current conditions. The required one-inch rain storage volume would also increase. These increases would be substantially less in relation to the increases that would be experienced at the Camp Pinchot and Poquito Bayou Expansions. Mitigations will be required. Site design plans and permits will detail the required mitigations that must be put in place at specific periods throughout the construction process.	required one-inch rain storage volume would also increase at both locations. The increases at the Poquito Bayou Expansion area would be somewhat less in relation to the increases that would be experienced under Alternative 1 due to the fewer number of units that would potentially be placed at the location. Mitigations will be required. Site design plans and permits will detail the required mitigations that must be put in place at specific periods throughout the construction process.		that would be experienced under Alternative 2 due to the lesser number of units that would potentially be placed at the location. Mitigations will be required. Site design plans and permits will detail the required mitigations that must be put in place at specific periods throughout the construction process.		normal conditions and influences at these locations.
Soils						
Soils and terrain at these locations are not naturally associated with erosion. However, land clearing and construction would modify the terrain such that BMPs would be required to minimize potential adverse impacts from loss of soil and increased sedimentation into surrounding water bodies during large storm events. With proper implementation of BMPs, no adverse impacts associated with soil erosion are anticipated.						There would be no impacts to soils beyond the scope of normal conditions and influences at these locations.
Air Quality						
Potential impacts associated with air quality are related to the demolition and construction activities and increased traffic emissons of the overall project as compared to Okaloosa County air emissions. As a result, impacts do not depend on the particular location of these activities as they all occur within Okaloosa County. Based on the established baseline (Ch. 3), no potentially adverse impacts to air quality associated with demolition or construction activities or increased traffic emissions have been identified through analysis.						There would be no impacts to air quality beyond the scope of normal conditions and influences at these locations.

Table 2-10. Summary of Analysis Results by Alternative Cont'd

Alternative 1: Poquito Bayou Expansion	Alternative 2: Eglin Main Base	Alternative 3: Poquito Bayou Expansion/Camp Pinchot Expansion	Alternative 4: Alternative 3 w/Camp Pinchot Adaptive Reuse	Alternative 5: Eglin Main Base/Camp Pinchot Expansion	Alternative 6: Alternative 5 w/Camp Pinchot Adaptive Reuse	No Action
Hazardous Materials/Waste						
Asbestos-containing building material (ACBM) and lead-based paint (LBP) have been identified in units proposed for demolition. As a result, adherence to established management requirements and regulations for handling and disposal would be required across all Alternatives. No adverse impacts associated with Environmental Restoration Sites or storage tanks are anticipated under any Alternatives, provided coordination with Eglin's Environmental Compliance Branch (96 CEG/CEVC) is conducted prior to initiation. Overall, benefits would occur across all Alternatives resulting from elimination of potential exposure of residents to asbestos fibers from ACBM and lead in LBP and elimination of potential exposure to polychlorinated biphenyls that may be present within the ballasts of older fluorescent light fixtures that are installed in older units.						There would be no impacts associated with hazardous materials and waste beyond the scope of normal conditions and influences at these locations.
Solid Waste						
Under all Alternatives there would be a potential estimated annual average 31% and 12% increase in C&D debris tonnage for Okaloosa and Santa Rosa Counties, respectively. The developer, through the lease agreement, would be required to recycle C&D waste, to the extent practicable. The amount of potential C&D debris from the proposed activities is not expected to create constraints on area landfills. Coordination of contractors with all local county and private landfill operators prior to demolition or construction would minimize any potential impacts associated with disposal of C&D debris.						There would be no impacts associated with solid waste beyond the scope of normal conditions and influences at these locations.
Noise						
Under all Alternatives, the relatively low time-averaged noise levels calculated for construction and demolition activities indicate that neither project-related activity would be excessively intrusive. Most, if not all of the areas involving demolition and construction are situated within areas already exposed to elevated noise from airfield operations and vehicular highway traffic. Construction noise emanating off-site would probably be noticeable in the immediate site vicinity, but would not be expected to create adverse impacts. Furthermore, demolition and construction-related noise would be intermittent and transitory. The average residential noise levels for each area would be similar to those levels associated with urban/suburban residential communities, as identified by the U.S. Environmental Protection Agency. At 6 units/acre, average noise levels would be above the noise level that is "requisite to protect the public health and welfare with an adequate margin of safety" (USEPA, 1974). However, levels are less than the benchmark often used by Federal agencies to determine residential land use compatibility around airports, highways, or other transportation corridors. Consequently, between approximately 3 percent and 12 percent of persons living in these areas or immediately adjacent to these areas may be annoyed by the noise levels.						There would be no impacts associated with noise beyond the scope of normal conditions and influences at these locations.
Safety						
No impacts associated with safety were identified under any of the Alternatives.						There would be no impacts associated with safety beyond the scope of normal conditions and influences at these locations.

2.7 MITIGATIONS

The following section lists the mitigations associated with the development of housing areas, by environmental resource issue area, that would either minimize or offset potential impacts to the respective resource area. Within the context of this discussion, the following definitions apply.

- *Mitigation* – Mitigations are regulatory requirements, permit requirements, best management practices, and Air Force "management actions." Mitigation measures may be required, in which case they are likely to be implemented, or may not be required, in which case they may or may not be implemented.
- *Required Mitigation Measures* – Within the context of this document, identified required mitigation measures are specifically tied to regulatory requirements or permitting actions identified in Section 1.6. Specific mitigations are developed through the permitting process in coordination with regulatory agencies. While applicable permits and regulations associated with this project are generally known (as identified in Section 1.6), specific mitigation measures associated with these permits and regulations are unknown at this time, as they are dependent on the ultimate project design as approved by the Air Force. Thus, the Air Force has identified mitigation measures typically associated with relevant permits (e.g., use of silt fences as a requirement of NPDES permits). These have been identified based on previous permitting actions for similar activities within the regional context of this action, and are provided as examples. Since these are likely to be implemented, they have been incorporated into the impact analysis.
- *Management Actions* – Management actions are mitigations associated with processes and/or coordination requirements the Air Force will require the successful offeror to implement as part of the lease agreement. Management actions are generally not specifically associated with any regulatory or permit requirements, but are nonetheless requirements that will be included in the lease agreement with the Air Force, and as such, legally enforceable via the lease. As with mitigation measures, the purpose of management actions is to offset or minimize potential impacts. As with required mitigations, they have been incorporated into the impact analysis.
- *BMPs* – BMPs are mitigations, but are not requirements. BMPs are actions that the Air Force or successful offeror may or may not implement to further offset or minimize potential impacts. Because the likelihood of implementation is uncertain, they have not been included within the impact analysis.

Any applicable permit requirements (and associated mitigations), management actions, and BMPs will be incorporated into the successful offeror's lease agreement, and the successful offeror will be contractually required to implement them. The Air Force will

be responsible for ensuring that requirements included in the lease are adhered to. The following language will be incorporated into the lease agreement with the developer:

> *The* [Developer] *shall comply with any mitigations or management requirements described in the Government's signed Record of Decision, which shall be prepared by the Government in compliance with the National Environmental Policy Act (42 USC §§ 4321* et seq.*; 40 CFR §§ 1500.1* et seq.*). The* [Developer] *shall at all times make records of the* [Developer's] *compliance available to the Government at the Government's request.*

2.7.1 Land Use and Planning

2.7.1.1 Required Mitigation Measures

In the absence of any identified specific regulatory or permitting requirements associated with land use, the Air Force has identified no required mitigation measures.

2.7.1.2 Management Actions

All structures will be constructed according to local building codes.

Housing units constructed within the 65-70 A-weighted decibels (dBA) AICUZ noise level at the Capehart housing area will be constructed to specifications allowing for the dampening of aircraft noise within the dwellings to below 65 dBA to minimize potential noise impacts to housing residents.

2.7.1.3 BMPs

For development activities at the Poquito Bayou and the Camp Pinchot Expansion areas, implementation of the following BMPs could minimize the potential for adverse impacts to surrounding communities.

- Development of the areas consistent with the *Okaloosa County Comprehensive Plan*. According to the Plan, compatibility could be achieved through:
  - Ensuring that new residential development is consistent with the predominant housing type in the surrounding neighborhood.
  - Ensuring that structures for residential and non-residential development are consistent with the predominant features of the surrounding neighborhood as defined by building orientation, building setbacks, building heights, and general building style or type.
  - Maintaining and/or complementing the fundamental development pattern of the surrounding neighborhood of the proposed development, by considering lot area, lot dimensions, and lot configuration, as well as the pattern and spacing of lots and buildings (DCA, 2000).
- Provide for tree line buffers along the borders of the housing developments.

- Create parks or walkways along the water's edge rather than building housing units right at the edge.
- Minimize the number of new units built within the 65-70 dBA exposure area at the Capehart area housing location.

2.7.2 Transportation Infrastructure

2.7.2.1 Required Mitigation Measures

In the absence of any identified specific regulatory or permitting requirements associated with transportation, the Air Force has identified no required mitigation measures.

2.7.2.2 Management Actions

Local road systems will meet all local requirements and standards.

Any proposed new signals external to the development area will need to be approved by Okaloosa County and Florida Department of Transportation (FDOT). Such approval would be possible, but not certain (Showers, 2004).

Site plans and related road systems and proposed highway interchanges will be subject to specific engineering design and traffic studies as required by Okaloosa County and the Florida Department of Transportation.

Provide sidewalk curb ramps at all crosswalks to accommodate persons with disabilities, bicyclists, and pedestrians.

2.7.2.3 BMPs

Implementation of the following BMPs at all development locations could further minimize any potential transportation-related impacts.

- Poquito Bayou Expansion area: Construction of a new signal for at least one of the exits, either SR-85 or SR-189
- Camp Pinchot Expansion area: Construction of a new signalized intersection on SR-189
- Provision for parking on one or both sides of the roadway
- Provision of pedestrian access to schools, parks, shopping areas, and transit shops
- Inclusion of room for future bus stops and shelters in rights of way and geometric design of the local and collector road systems

- Termination of local roadways at a collector road in less than 0.5 mile
- Provision of access to the existing arterial road system without passing through existing housing areas or collection road systems

2.7.3 Socioeconomics

2.7.3.1 Required Mitigation Measures

With respect to safety and protection of children and construction personnel, any mitigations would be associated with Occupational Safety and Health Administration (OSHA) requirements for worksite safety. The successful offeror will be required to meet all OSHA safety standards and requirements. Examples of typical of construction worksite safety requirements are summarized below.

- Provide adequate measures to restrict access to construction/demolition sites and consider all aspects of child safety during work and non-work hours.
- Include maintenance of restricted access both during work hours, site preparation, and non-work hours, and the minimization of slip/trip/fall hazards associated with demolition and construction activities.

2.7.3.2 Management Actions

Implementation of mitigations associated with OSHA requirements would offset the potential for any adverse impacts. Therefore, the Air Force has identified no management actions.

2.7.3.3 BMPs

Implementation of mitigations associated with OSHA requirements would offset the potential for any adverse impacts. Therefore, the Air Force has identified no BMPs.

2.7.4 Utility Infrastructure

2.7.4.1 Required Mitigation Measures

In the absence of any identified specific regulatory or permitting requirements associated with transportation, the Air Force has identified no required mitigation measures.

2.7.4.2 Management Actions

Coordination with all utility providers prior to ground disturbance activities is required to identify buried utility lines.

2.7.4.3 BMPs

Implementation of management actions would offset the potential for adverse impacts. Therefore, the Air Force has not identified any BMPs.

2.7.5 Cultural Resources

2.7.5.1 Required Mitigation Measures

Mitigation requirements identified through consultation with the SHPO, the Advisory Council on Historic Preservation, the National Trust for Historic Preservation, the Florida Trust, and the U.S. Forest Service will serve to avoid, minimize, or mitigate potential adverse impacts given the scope of the project. The Air Force has identified potential adverse impacts to National Register-eligible or listed historic and archaeological resources and is working to consult as required under Section 106 of the National Historic Preservation Act. There are a variety of mitigation measures for archaeological sites including avoidance, fencing, partial or complete data recovery excavation, archival research, archaeological monitoring, or other measures identified in consultation with the SHPO. Specific mitigation measures will be documented in a Memorandum of Agreement (MOA) and implemented prior to or during any ground-disturbing actions (depending on the measure to be implemented). For the Camp Pinchot Historic District, Level I Historic American Building Survey (HABS)/Historic American Engineering Record (HAER) documentation, video recording, oral history documentation, and archival research was completed in 2004.

2.7.5.2 Management Actions

Implementation of mitigations associated with the SHPO, Advisory Council, and consulting party consultation requirements would be required for any adverse impacts to historic resources as a result of implementation of this project. Therefore, the Air Force has identified no management actions.

2.7.5.3 BMPs

Implementation of required mitigations would offset the need for BMPs. Consequently, the Air Force has identified no BMPs.

2.7.6 Biological Resources

2.7.6.1 Required Mitigation Measures

While avoidance of wetlands during the project would result in no direct impacts to wetlands, there is the potential for indirect impacts (e.g., runoff) to wetlands. Consequently, permitting actions are required, and are discussed in Section 1.6 (e.g., NPDES permits). Specific mitigation requirements that would serve to either minimize or offset potential impacts to wetlands would be developed during the permitting

process. Typical mitigation measures for wetland protection are discussed further in Section 2.7.7.

2.7.6.2 Management Actions

There will be no construction of new units within identified wetlands or floodplains.

Coordination with 96th Civil Engineer Group, Natural Resources Section, Wildlife (96 CEG/CEVSNW) will be required to ensure the minimization of potential impacts to biological resources for the following.

- Removal of any invasive exotic plant species identified during the project
- Utilization of native vegetation for landscaping
- Sensitive species surveys for the Camp Pinchot area, Poquito Bayou Expansion area, and the Old Plew/New Plew Expansion Area on Eglin Main Base (No sensitive species surveys would be required for Hurlburt locations and Camp Rudder, as these areas are already developed and do not provide habitat for any listed species. In addition, no sensitive species have been documented to occur at these locations.)

2.7.6.3 BMPs

Implementation of the following BMPs at all development locations could further minimize any potential impacts to biological resources.

- For sea turtles, gopher tortoises, and the eastern indigo snake, implementation of the following would allow a "No Effect" determination for impacts to threatened and endangered species. Without implementation of these BMPs, an Endangered Species Act Section 7 Consultation with the U.S. Fish and Wildlife Service (USFWS) would be required. These BMPs include:
  - Use of "turtle friendly" street and dock lighting at Soundside Manor to minimize the contribution of area redevelopment to urban glow impacts associated with nesting sea turtles on Santa Rosa Island.
  - Relocation of any gopher tortoises or Indigo snakes found to another area on Eglin.
  - Provision of a description of the Eastern Indigo snake to all project personnel, including information of its habits, and protection under Federal law, and instructions not to injure, harm, or kill this species.
  - Direction to construction and other work site personnel to cease any activities and allow the Eastern Indigo snake sufficient time to move away from the site on its own before resuming such activities.

  - The avoidance of tortoise burrows to the greatest extent possible.
- Maintenance of a 50-foot buffer around all wetland areas.
- Avoidance of seagrass beds during boat dock construction.
- Maintenance of relatively undeveloped areas within the Alternative locations to the extent practicable to allow foraging habitat for native species.
- Education of residents to contain their household wastes to avoid the attraction of bears to the housings areas.

2.7.7 Water Resources

2.7.7.1 Required Mitigation Measures

Avoidance of wetlands during the project would result in no direct impacts to wetlands. However, there is the potential for indirect impacts (e.g., runoff) to wetlands. Consequently, permitting actions are required, and are discussed in Section 2.6 (e.g., NPDES permits). Site specific mitigation requirements that would serve to either minimize or offset potential impacts to wetlands would be developed during the permitting process, and are unknown at this time as these are dependent on what areas are ultimately selected for housing redevelopment. However, typical mitigation measures for wetland protection, based on previous permitting actions, are provided below as examples.

<u>Soil Runoff</u>

- Worker training for installation and maintenance of sediment runoff control measures
- Inspection and maintenance of sediment runoff control measures at least once per week and after rain events
- Stabilization of disturbed areas as soon as possible
- Avoiding disturbance of sensitive areas, such as steep/unstable slopes, surface waters (including wetlands and floodplains), areas with soils susceptible to erosion, and existing drainage channels
- Disturbance of areas only when necessary for construction to proceed
- Timed activities to minimize impacts from seasonal climate changes and weather events
- Installation of temporary perimeter controls downslope/sideslope prior to any land disturbing activities and removal of these controls only after all upstream areas are stabilized
- Designation of mulch/vegetation areas for demolition

- Construction of infiltration measures at the end of the construction project only after upstream drainage areas have been stabilized
- Minimization of soil disturbance and leaving vegetation in place whenever and wherever possible

Construction Waste Runoff

- Handling and disposal of demolition/construction site waste materials, hazardous wastes, and sanitary wastes generated on-site in accordance with state and local requirements
- Equipping all work sites with adequate waste disposal receptacles for liquid, solid, and hazardous wastes to prevent construction and demolition debris from leaving the work site
- Storage of chemicals, cements, solvents, paints or other potential water pollutants in locations where they cannot cause runoff pollution
- Designation of "staging areas" for use of construction equipment (i.e., cement mixers) designed to contain any chemicals, solvents, or toxins from entering surface waters
- Employment of dust control techniques to limit the transport of airborne pollutants
- Minimization of on-site equipment maintenance, with necessary maintenance performed in a controlled and contained area

2.7.7.2 Management Actions

Coordination with the 96th Civil Engineer Group, Environmental Engineering Section (96 CEG/CEVCE) and Hurlburt Civil Engineering Squadron, Environmental Management Flight (16 CES/CEV), regarding the final project designs for required permits will be required.

In accordance with the Eglin AFB Hazardous Waste Management Plan, a spill discharge report will be required for all spills and accidental discharges of petroleum, oils, lubricants, chemicals, hazardous waste, or hazardous materials, regardless of the quantity. The responsible party must hand carry or fax (882-3761) this spill report to 96th Civil Engineer Group, Environmental Compliance Branch (96 CEG/CEVC), Building 696, within four duty hours of the spill occurrence. The successful offeror must also report any spills to the FDEP in accordance with state regulations.

2.7.7.3 BMPs

Implementation of the following BMPs at all development locations could further minimize any potential impacts to water resources.

Housing Operation BMPs

- Continue to promote the use of native plants in landscaping
- Continue to provide guidance information on proper disposal of household hazardous waste and encourage MFH residents to take their wastes to on-base/off-base collection centers for recycling and disposal
- Provide educational materials to Eglin AFB/Hurlburt residents regarding ways that individuals can help prevent stormwater pollution
- Implement a minimum 100-foot vegetated buffer composed of native vegetation, preferably trees and shrubs, from water bodies at all development sites
- Continue to work with the University of West Florida Extension Service and periodically host Extension Service classes on lawn care

Groundwater Protection BMPs

- Avoid the use of oils, fuels, solvents, concrete wash water, and other potential contaminants near wellheads
- Immediately contain and clean up accidental spills of oils, fuels, solvents, concrete wash water, or any other potential contaminant
- Implement a buffer around any new well within the housing areas to avoid potential contamination from housing operations
- Promote water conservation methods such as watering lawns less frequently and using native vegetation that require less water

Dock Construction BMPs

- Utilize plastics, untreated wood, steel, and concrete as piling materials instead of lumber treated with chromated copper arsenate (CCA)
- During times of low water levels, utilize a low-pressure pump be used to create a starter hole and subsequent insertion of a sharpened pile with a drop hammer from a shallow-draft barge
- Issue a public notice to adjacent property owners prior to initiation of the project

Dock Operation BMPs

- Reduce watercraft to idle speeds as they approach the docks
- Maintain watercraft engines regularly
- In the absence of seawall construction, maintain the shoreline vegetation to the greatest extent possible

2.7.8 Soils

2.7.8.1 Required Mitigation Measures

Mitigation measures would be developed in association with the permitting process, and would be similar to those described in Section 2.7.7. All mitigation measures identified through the permitting process will be incorporated into the lease agreement and also as such are legally enforceable. They will also be included in the successful offeror's project plan.

2.7.8.2 Management Actions

The management actions associated with soils are similar to those described under Section 2.7.7 (Water Resources).

2.7.8.3 BMPs

Implementation of BMPs would further minimize any potential erosion impacts. The list of BMPs, a few of which are listed below, for controlling erosion during or after construction activities is extensive. More discussion on these BMPs is provided in the EIS Resource Appendices (see Appendix K, *Soils*). These BMPs include:

- Reconditioning of damaged soils.
- Stabilization of slope soils.
- Transporting runoff within non-erosive water conveyance systems.
- Intercepting and diffusing the erosive energy of runoff at predetermined intervals.
- Transitioning water flows to non-erosive discharge points.

2.7.9 Air Quality

2.7.9.1 Required Mitigation Measures

No regulatory or permitting requirements related to air quality in association with this project have been identified. As a result the Air Force has identified no required mitigation measures.

2.7.9.2 Management Actions

In order to minimize potential impacts to air quality and in accordance with F.A.C. 62-296.320 (4)(c), reasonable precautions will be taken to reduce emissions of unconfined particulate matter. These precautions include, but are not limited to:

- Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.

- Application of asphalt, water, oil, chemicals, or other dust suppressants to unpaved roads, yards, open stock piles, and similar activities.
- Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent re-entrainment, and from buildings or work areas to prevent particulate from becoming airborne.
- Landscaping or planting of vegetation.
- Use of hoods, fans, filters, and similar equipment to contain, capture, and/or vent particulate matter.
- Confining abrasive blasting where possible.
- Enclosure or covering of conveyor systems.

Specific measures that will be implemented to control fugitive dust emissions will be identified within the developer's proposal and documented in the lease agreement.

2.7.9.3 BMPs

The Air Force did not identify significant adverse impacts. Therefore, the Air Force has not identified BMPs.

2.7.10 Hazardous Materials/Waste

2.7.10.1 Required Mitigation Measures

Implementation of management actions, as described below, would serve to either minimize or offset any potential significant adverse impacts. The Air Force has identified no specific required mitigation measures.

2.7.10.2 Management Actions

Both the Eglin AFB and Hurlburt's Environmental Management Office must review all construction project programming documents, designs, and contracts.

- Lead-based paint (LBP) surveys are required for the alteration or demolition of an existing housing structure (unless conducted previously).
- Project designs must stipulate appropriate abatement and disposal requirements for LBP.
- Asbestos surveys must be performed on buildings (that have not already undergone survey) prior to renovation/demolition.

A certified contractor must be used when removing asbestos-containing building materials, and personnel must adhere to established procedures set forth for the safe handling and transport of these materials as outlined in Eglin's *Hazardous Materials*

Management Plan. Detailed hazardous waste handling procedures are given in the EIS Resource Appendices (see Appendix M, *Hazardous Materials*).

2.7.10.3 BMPs

The implementation of management actions would serve to either minimize or offset any potential significant adverse impacts. Therefore, the Air Force has identified no BMPs.

2.7.11 Solid Waste

2.7.11.1 Required Mitigation Measures

The implementation of management actions would serve to either minimize or offset any potential adverse impacts. As a result, no mitigations would be required.

2.7.11.2 Management Actions

Developers will be required to handle and dispose of all solid waste and construction and demolition debris in accordance with the *Eglin AFB Solid Waste Management Plan*. Detailed solid waste handling procedures are given in the EIS Resource Appendices (see Appendix N, *Solid Waste*).

Developers will be required to coordinate disposal of MFH construction and demolition debris with landfill owners or operators in the countywide area.

2.7.11.3 BMPs

In the absence of any potential adverse impacts, the Air Force has identified no BMPs.

2.7.12 Noise

2.7.12.1 Required Mitigation Measures

No regulatory or permitting requirements related to air quality in association with this project have been identified. As a result, no mitigations would be required.

2.7.12.2 Management Actions

Housing units constructed within the 65-70 dBA AICUZ noise level at the Capehart housing area will be constructed to specifications allowing for the dampening of aircraft noise within the dwellings to below 65 dBA to minimize potential impacts to housing residents.

2.7.12.3 BMPs

Implementation of the following BMP would minimize potential noise issues.

- Establishment of vegetative buffers between new developments and existing neighborhoods would minimize transfer of potential noise effects between Eglin and surrounding communities

2.7.13 Safety

2.7.13.1 Required Mitigation Measures

Regulatory requirements related to safety are associated with OSHA requirements for worker and jobsite safety. These would be similar to those discussed in Section 2.7.3.

2.7.13.2 Management Actions

A digging permit from Eglin's Safety Office will be required. Stipulations of this permit are typically as follows.

- Project personnel must be briefed on issues related to unexploded ordnance safety.
- Discovery of any unusual items during project activities must be reported to Explosive Ordnance Disposal personnel in order to initiate proper removal and disposal.

2.7.13.3 BMPs

The implementation of OSHA requirements and management actions would serve to either minimize or offset any potential significant adverse impacts. Therefore, the Air Force has identified no BMPs.

(This page is intentionally blank.)

3. AFFECTED ENVIRONMENT

Chapter 3, Affected Environment, describes the environment of the areas to be affected by the Alternatives under consideration. The areas include Eglin AFB, Hurlburt Field, and Okaloosa County and its municipalities (e.g., Shalimar, Fort Walton Beach, etc.). The objective of the Affected Environment chapter is to define, inventory, and generally characterize the nature and condition of the physical, biological, and anthropogenic resources within the region of influence (ROI) of the Proposed Action and Alternatives and develop a framework for impact analysis in Chapter 4, Environmental Consequences. Chapter 3 provides a summary of information for these resource areas in order to provide the reader with a sufficient understanding of the resources in question. The EIS Resource Appendices, submitted in electronic format as an attachment to this EIS, provide more detailed information on these issue areas.

The Affected Environment resources and sequence of discussions are listed below.

- *Land Use and Planning* – existing land use classifications of Eglin, Hurlburt, and surrounding communities (e.g., residential, industrial, etc.)
- *Transportation Infrastructure* – existing transportation routes and traffic patterns
- *Socioeconomics* – demographics, economics, environmental justice
- *Utility Infrastructure* – existing utilities, use, and capacity (e.g., wastewater, electricity, etc.)
- *Cultural Resources* – archaeological sites, historic structures, American Indian sites
- *Biological Resources*
  - *Threatened and Endangered Species* – plant and animal species
  - *Sensitive Habitats* – special natural areas, seagrasses
- *Water Resources* – water quality of surface and ground waters
  - *Wetlands*
  - *Floodplains*
- *Soils* – soil types and erodibility
- *Air Quality* – existing air emissions and quality of the surrounding area
- *Hazardous Materials/Waste* – asbestos, lead-based paint, previously contaminated Environmental Restoration Program (ERP) sites
- *Solid Waste* – amounts of solid waste generated and disposed of locally
- *Noise* – existing noise environment in and around the project areas
- *Safety* – existing safety concerns in and around the project areas

3.1 LAND USE AND PLANNING

Land use generally refers to human management and use of land. Specific uses of land typically include residential, commercial, industrial, agricultural, military, and recreational. Land use also includes areas set aside for preservation or protection of natural resources, wildlife habitat, vegetation, or unique features. Land use is described below for the current and proposed MFH areas on Eglin AFB and Hurlburt Field. The current and proposed housing areas are located within Okaloosa County.

Certain land use designations are particular to military installations. Areas at the end of each runway are identified as Accident Potential Zones (APZs) that delineate geographic areas around the airfield where historic aircraft mishap data have shown where most aircraft accidents occur. APZs were developed based on Air Force studies that evaluated the location of accidents that occurred within 10 nautical miles of airfields. Three zones were established based on these crash patterns: the clear zone, accident potential zone 1 (APZ I), and accident potential zone 2 (APZ II). The clear zone, the area closest to the runway's end, is the most hazardous and must be clear of any development. Some development is allowed in APZs I and II, although this development is usually limited to light industrial, manufacturing, transportation, and similar land uses. Uses that concentrate people in small areas are not considered acceptable.

Similarly, explosive safety quantity-distance (ESQD) clearance zones provide safe setback areas around explosive-handling facilities. The majority of explosive activities and facilities on Air Force bases are governed by Air Force Regulation 127-100, Explosives Safety Standards. This regulation defines safe clearances for similar activities, inhabited buildings, roadways, and personal contact with explosive activities (U.S. Air Force, 2001).

Noise is one of the major factors in determining appropriate land uses, since elevated sound levels are incompatible with residential areas. The Air Installation Compatible Use Zones program, which delineates both noise contours and APZs, promotes compatible development around Air Force installations. An AICUZ study provides installation commanders and local governments with recommendations for land use restrictions.

Sound levels are typically measured in decibels using Daily Day-Night Average Sound Levels (L_{dn}) as the standard of measurement. Numerous studies have shown a relationship between L_{dn} sound levels and the percentage of the population who are likely to be highly annoyed. These studies have shown that noise levels become geometrically more objectionable as the levels increase. For example, as L_{dn} increases from 40 to 60, the percentage of the population highly annoyed is shown to increase from less than 1 percent to about 6 to 7 percent. An additional increase from 60 L_{dn} to 65 L_{dn} will increase the percentage of people highly annoyed to about 12 to 13 percent, a

doubling in the annoyance factor for only a 5-decibel (dB) increase in noise level. (Note: Sound levels are discussed in more detail in Section 3.12, *Noise*.) Residential areas are typically inconsistent with noise levels above 65 L_{dn}.

3.1.1 Eglin Air Force Base

Eglin AFB housing is divided into two distinct areas: the built-up areas that include Eglin Main Base (the Cantonment Area) and Camp Rudder, and the other less-developed areas outside the Main Base, including Poquito Bayou and Camp Pinchot. Eglin Main Base houses the major administrative, operations, housing, and community functions within approximately 10,500 acres (U.S. Air Force, 2001). None of the housing areas are located within airfield APZs or within ESQDs at Eglin AFB (U.S. Air Force, 2001). The major land uses on Eglin Main Base include airfield and aircraft operations and maintenance (approximately 2,362 acres), industrial land use in nine separate areas (2,057 acres), open space (4,141 acres), and residential areas (over 1,000 acres) (Figure 3-1). Figure 3-2 depicts APZs, ESQDs, and airfield noise contours for Eglin AFB relative to the current MFH areas. Georgia Avenue Housing experiences noise levels between 75 L_{dn} and 80 L_{dn}, while portions of the Capehart and Ben's Lake Housing Areas are exposed to levels above 65 L_{dn}. All other housing areas experience noise levels below 65 L_{dn}. Outside Eglin Main Base near the major MFH area is the city of Shalimar to the south and southwest and Fort Walton Beach to the west (Figure 3-3). Fort Walton Beach and Shalimar are developed with single-family homes and are zoned for low (maximum of five units per acre) and medium density (four to 16 units per acre) residential uses.

The EIS Resource Appendices (Appendix E, *Land Use*) provides a description of the land use types shown in Figure 3-1. Eglin Main Base provides over 2,350 family units in over 1,100 buildings in several family (accompanied) housing areas (Figure 1-2). The larger of the family housing areas contains Capehart, Wherry, Old Plew, New Plew, Hidden Oaks, and Ben's Lake MFH and is located just inside the West Gate. Upper and Lower Memorial Lake border this housing area on the east, Choctawhatchee Bay borders it on the south, and open space borders it on the west. Eglin Boulevard borders the area to the north. Land uses associated with community services (e.g., Cherokee Elementary School, youth center, child care center, playground, etc.) are located north of the Ben's Lake housing area and immediately south of Eglin Boulevard. Medical land uses (Eglin Hospital complex) are located west of Wherry Housing, across from Boatner Road, and immediately north of Old Plew Housing. The Eglin Officers Club and Ben's Lake Marina are located to the southeast of the Old Plew housing area. Industrial land uses associated with the Plew Sewage Treatment Plant are located to the south of Old Plew Housing and southwest of the Officers Club. One of the two main Eglin AFB runways is approximately 3,200 feet from the closest point to this housing area.

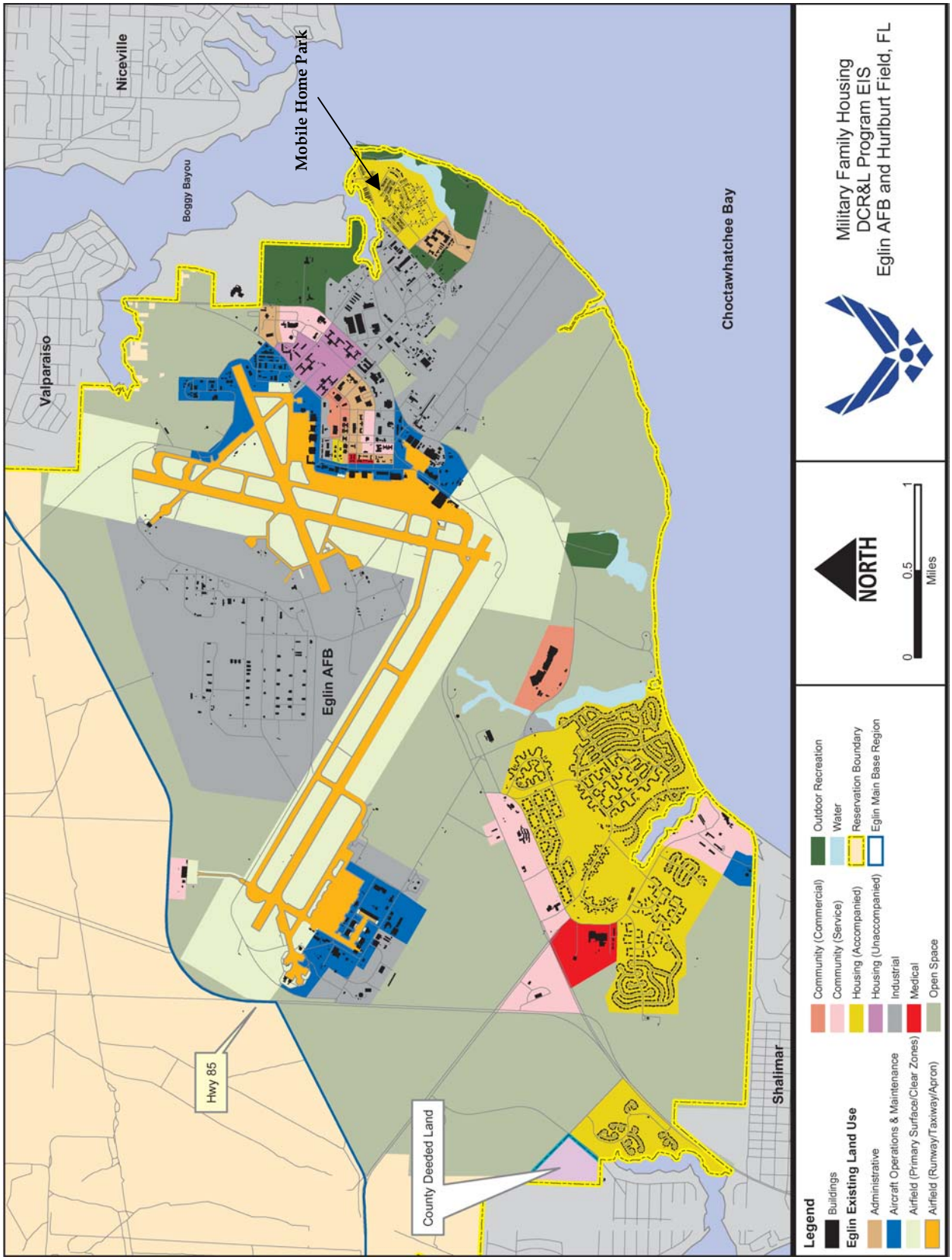

Figure 3-1. Existing Land Use at Eglin Main Base

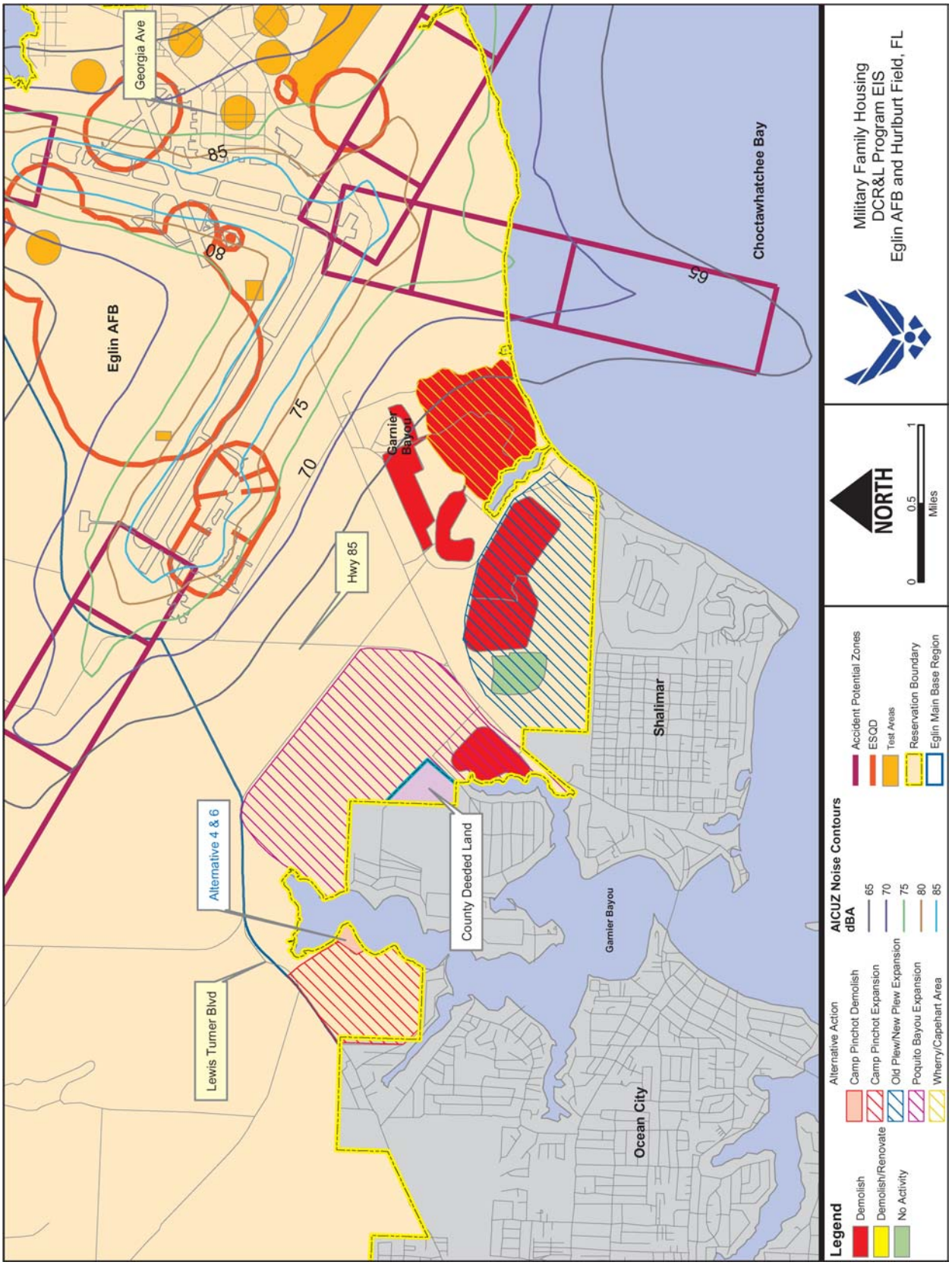

Figure 3-2. AICUZ Noise Contours and APZs for Eglin AFB

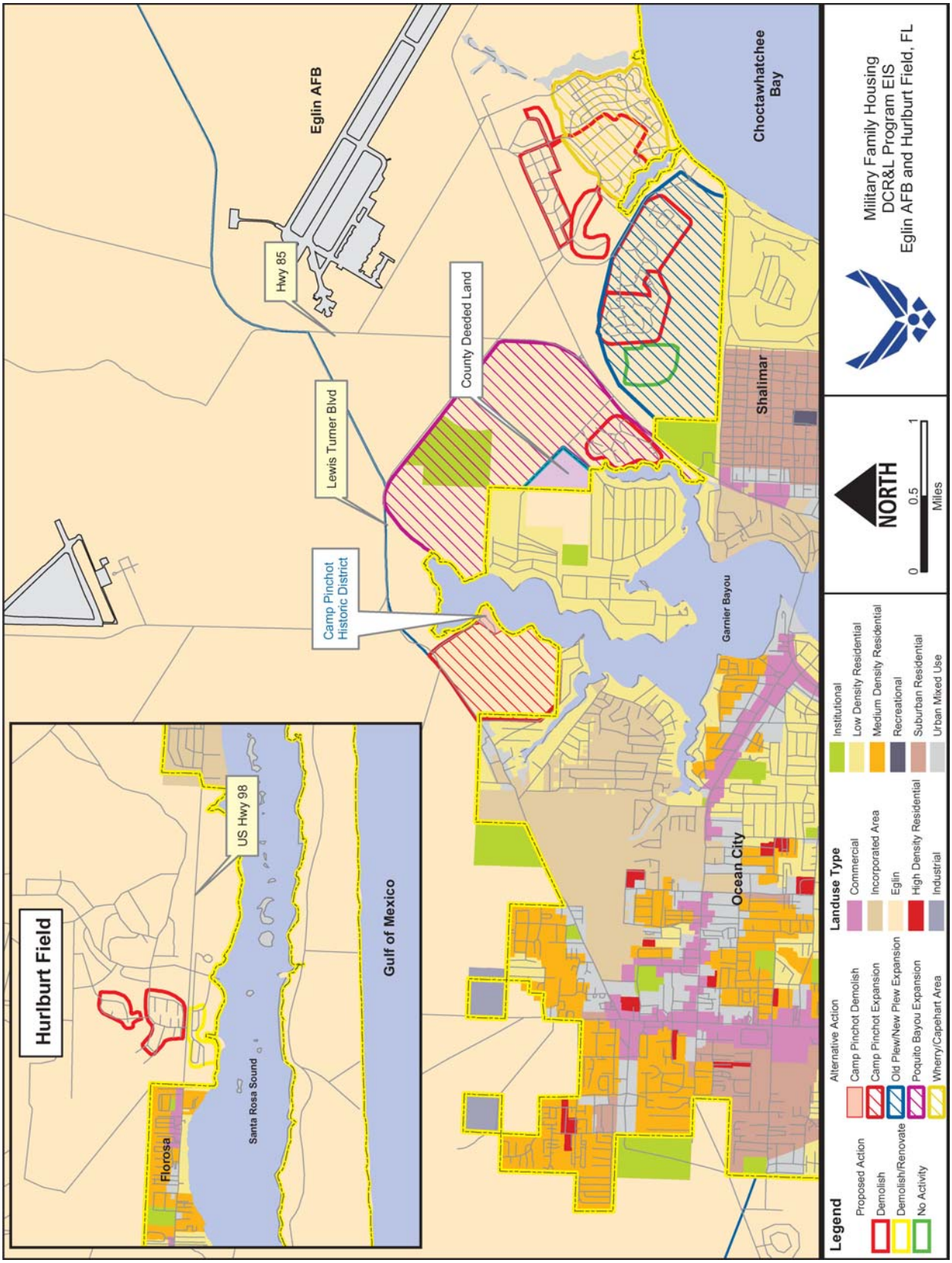

Figure 3-3. Land Use in Okaloosa County Near Alternative Locations

The Georgia Avenue housing area (Figure 1-2) lies along the northern edge of the Eglin Field Historic District. The Eglin Field Historic District is significant for its association with the establishment, development, and operation of Eglin AFB and because of the advanced engineering design related to specific weapons testing and development (U.S. Air Force, 2000). Additional information on this district is described in Section 3.5.2. The Georgia Avenue housing units were built in 1943. Land uses immediately surrounding this one-block area are associated with base operations and/or support and include light industrial, commercial, administrative, and aircraft operations and maintenance.

There are also 226 mobile home spaces and approximately 100 occupied units located at the Bayou Village Mobile Home Park on Eglin's Main Base. However, these mobile home units are not considered military family housing, as they are privately owned by the tenants.

Poquito Bayou and the Poquito Bayou Expansion area are located outside the Eglin Main Base West Gate, just north of the town of Shalimar (Figure 1-2). It is bordered on the east by Eglin Parkway (State Road [SR] 85), on the west by a small water body of the same name, and on the north by undeveloped/open areas (north of Sunset Lane). The nearest development is adjacent to the property in the Longwood Subdivision and consists of low density residential. The small area shown between the Expansion area and the Longwood subdivision is known as Bob Hope Village, and has been deeded to the County. It is no longer considered Eglin AFB property. The undeveloped land to the northwest of the Poquito Housing area is bordered on the west by Lewis Turner Boulevard (SR-189) and on the south by low density residential land uses.

Camp Pinchot is bordered on the east and north by Garnier Bayou water body and on the west by approximately 243 acres of undeveloped land (known as the Camp Pinchot Expansion) (Figure 1-2). The Camp Pinchot housing area includes the Camp Pinchot Historic District. (Section 3.5.2 has more details on the District.) Camp Pinchot Expansion is bordered on the west by urban mixed use and medium level residential land uses along Lewis Turner Boulevard (SR-189). Low density residential land use occupies the area immediately to the south. Institutional land uses associated with the University of Florida Graduate Education and Research Center are located east of Camp Pinchot.

Camp Rudder, located in the northwestern portion of the Eglin Reservation, is the home of the Army's 6th Ranger Training Battalion (Figure 1-2). The Camp Rudder housing area is located on the Eglin Reservation, approximately 16 miles northwest of Eglin Main Base and adjacent to Auxiliary Field 6. The housing area is bordered on the south, east, and north by open areas associated with the Eglin Reservation. Airfield, aircraft

operations, administrative, and other land uses associated with Field 6 activities are located approximately to the west.

Several plans and programs guide land use planning on Eglin AFB. The Eglin AFB Land Use Plan component of the Eglin AFB General Plan presents a comprehensive planning strategy to support military missions assigned to the installation. The Plan provides general information regarding the installation and describes existing land uses, a planning analysis of constraints and opportunities, future land use, and implementation guidelines (U.S. Air Force, 2001).

The General Plan presents factors affecting both on- and off-base land use and includes recommendations to on-base officials and local community leaders to ensure compatible development. In general, land use recommendations are made for areas affected by the potential for aircraft accidents, potential explosive safety zones around explosive facilities or locations, and aircraft noises. These areas are considered incompatible with residential use.

3.1.2 Hurlburt Field

Pine Shadows and Live Oak MFH areas are located within the boundaries of Hurlburt's "Main Base" (Hurlburt Field north of US-98) in southern Okaloosa County. Pine Shadows is located on the southwest portion of Hurlburt Main Base. The subdivision is bordered on the south by the installation perimeter fence and US-98 and on the west by a section of open area associated with Hurlburt Field. West of that open area are single–family residential and small-scale commercial uses (along US-98). Land uses immediately to the east are associated with base operations and include industrial, commercial, administrative, and aircraft operations and maintenance.

The Live Oak subdivision is located immediately to the north of Pine Shadows. Open areas of the Eglin Reservation border it to the north, with land uses to the east associated with airfield operations. Soundside Manor is located immediately south of Hurlburt Main Base, across US-98. Santa Rosa Sound, a part of the Gulf of Mexico, forms the southern border of Soundside Manor. The municipality of Mary Esther lies to the immediate east of Hurlburt Field, and Fort Walton Beach is approximately 7 miles farther east. The Town of Florosa is to the southwest.

Land use planning on Hurlburt is directed by their General Plan, which is similar to Eglin's General Plan (U.S. Air Force, 2000a). The Hurlburt General Plan identifies APZs, ESQDs, and noise contours for Hurlburt Field (Figure 3-4). No GIS data of Hurlburt's existing land use classifications were available. None of the housing areas are located within airfield APZs, ESQDs, or within noise levels greater than 65 L_{dn} at Hurlburt (U.S. Air Force, 2000a).

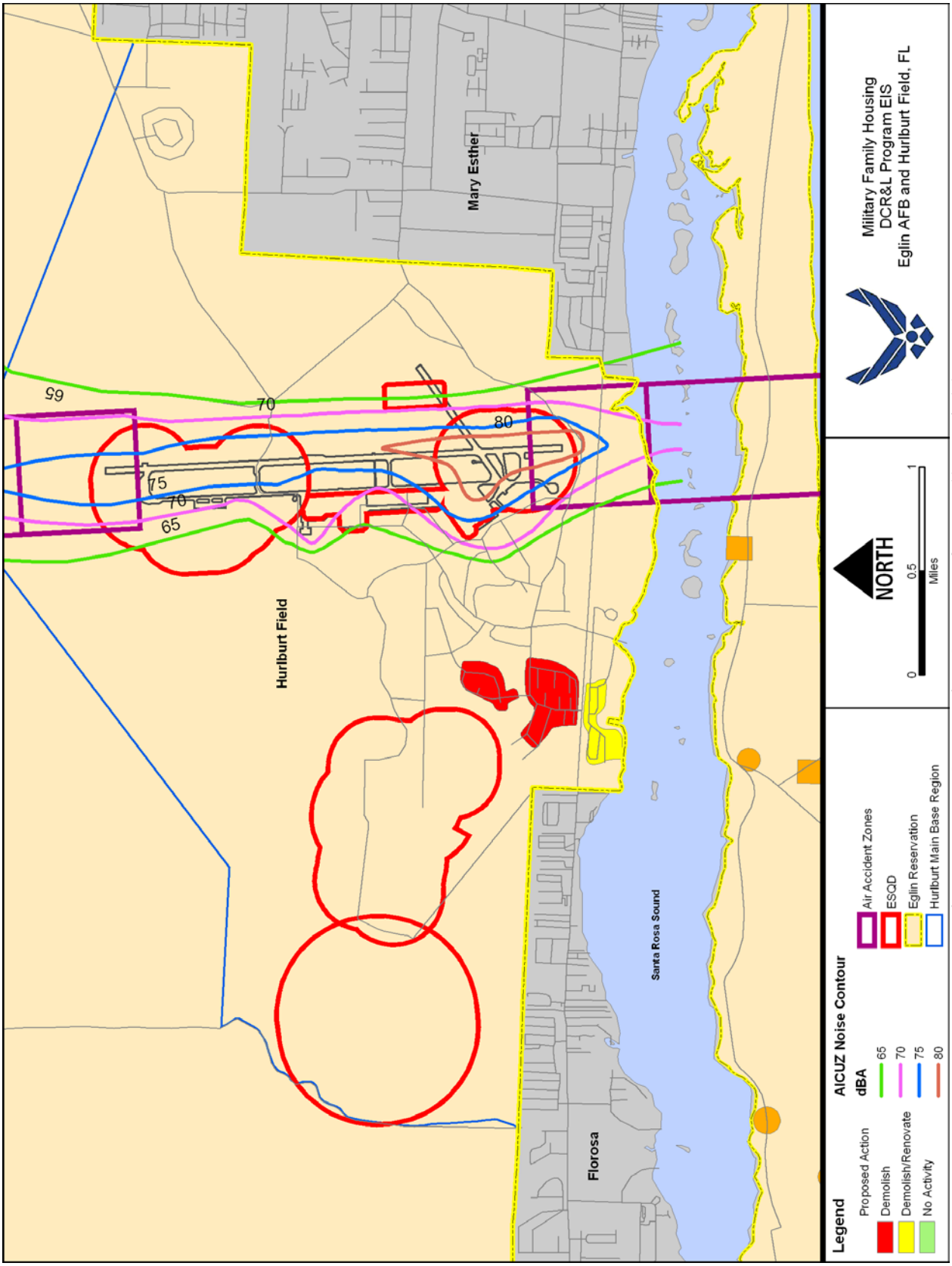

Figure 3-4. AICUZ Noise Contours for Hurlburt Field

Hurlburt's General Plan land use configuration for the South Shore area (south of US-98) is the same as the plan established in the Marina Area Development Plan, Marine Terminal Area Development Plan, and the South Shore Master Plan (U.S. Air Force, 2000a). These plans essentially establish two different types of land use: the western portion, which includes existing and proposed housing areas and the officers' club, and the eastern portion of the South Shore, which allows for minimal impact to preserve the natural assets of the site (U.S. Air Force, 2000a).

Land use in these areas is also directed by the Okaloosa County 2020 Comprehensive Plan (DCA, 2000). Land use at the boundary is generally compatible and no major conflicts have been identified (U.S. Air Force, 2000a).

3.1.3 Okaloosa County Land Use

The Okaloosa County 2020 Comprehensive Plan governs land use in the areas surrounding Eglin AFB and Hurlburt (DCA, 2000). The Comprehensive Plan requires that proposed projects be compatible with adjacent land uses, structures, developments, and the surrounding neighborhood. It dictates that allowable gross density for low density residential uses will be a maximum of four to five units per acre, while gross density for medium density residential uses will range from four to 16 units per acre (DCA, 2000). As previously stated, land use at the boundary of the military installation is generally compatible and no major conflicts have been identified (U.S. Air Force, 2000).

3.1.4 Coastal Zone Management Act

The CZMA provides for the effective, beneficial use, protection, and development of the U.S. coastal zone. The term "coastal zone" is defined as coastal waters and adjacent shorelands strongly influenced by each other and in proximity to the several coastal states, including islands, transitional and intertidal areas, salt marshes, wetlands, and beaches. "Coastal waters" are defined as any waters adjacent to the shoreline that contain a measurable amount of sea water, including but not limited to sounds, bays, lagoons, bayous, ponds, and estuaries. The outer boundary of the coastal zone is the limit of state waters, which for the Gulf coast of Florida is 9 nautical miles from shore. The seaward boundaries of the state of Florida coastal zone are defined in accordance with Section 304(1) of the CZMA, the Submerged Lands Act (43 U.S.C. 1301 et. seq.) and United States vs. Louisiana, 364 U.S. 502 (1960) as 3 nautical miles into the Atlantic Ocean and approximately 9 nautical miles into the Gulf of Mexico. The landward boundaries of the State of Florida are defined by the State, in accordance with Section 306(d)(2)(A) of the CZMA, as the entire state of Florida, excluding only federally owned property.

Federal agency activities potentially impacting the coastal zone are required to be consistent, to the maximum extent practicable, with approved state Coastal Zone Management Programs. Federal agencies make determinations as to whether their actions are consistent with approved State plans. Consistency determinations are

submitted to the State for review and concurrence. All relevant state agencies must review the Proposed Action and issue a consistency determination. The Florida Coastal Management Program is composed of 23 Florida statutes administered by 11 state agencies and four of the five water management districts. Components of the Proposed Action and Alternatives, such as the proposed construction of boat docks, would take place within the jurisdictional concerns of the state and therefore would require a consistency determination with respect to Florida's Coastal Management Plan (refer to the EIS Resource Appendices, Appendix P, *CZMA Consistency Determination*).

3.2 TRANSPORTATION INFRASTRUCTURE

This section discusses transportation infrastructure in the project area (the public roadway network) and existing operational characteristics of that network.

3.2.1 Existing Road Network and Planned Improvements

The existing road network serving the project area involves roads within the cities of Fort Walton Beach and Shalimar, as well as portions of unincorporated Okaloosa County, Florida. Figure 3-5 presents the existing road network. The key transportation facilities include: portions of SR-189 and SR-85. These roadways generally provide arterial highway corridors between Eglin AFB and Hurlburt. The intersection of these roadways is north and west of the Eglin Main Gate. SR-189 provides a route to the north of the cities of Shalimar and Fort Walton Beach, while SR-85 passes through both of those cities. From this intersection near Eglin Main Gate, SR-85 is generally aligned in a northeast and southwest direction, while SR-189 is generally aligned in a northwest and southeast direction. Both of these roadways are four-lane divided highways. The Florida Department of Transportation classifies SR-189 as a Minor Arterial and SR-85 as a Principle Arterial. The area is characterized by flat and open terrain.

The portion of SR-189 between Mooney Drive and General Robert W. Bond Boulevard and SR-85 between SR-189 and Twelfth Avenue are shown in the "2025 Adopted Fort Walton Beach Urbanized Area Transportation Study" prepared by the Okaloosa-Walton Transportation Planning Organization (available on the Internet at http://www.wfrpc.dst.fl.us/owtpo/2025update/default.htm). The 2025 Plan Update was adopted on 21 June 2001, and amended on 22 August 2002. Regional Planning Council revised it on 16 July 2002. The Long Range Transportation Plan is at least a 20-year plan for transportation improvements (roads, public transportation, and bicycle/pedestrian) within the urbanized area. This Study suggests that both SR-189 and SR-85 will need to be upgraded to six-lane roadways prior to 2025. This planning document also states that the implementation of a computer-based traffic signal control system is included as a component of the adopted needs plan. The effect of these future highway upgrades would be to increase the capacity and drivability of the project area transportation system. The timing and funding for these improvements is uncertain (Showers, 2004).

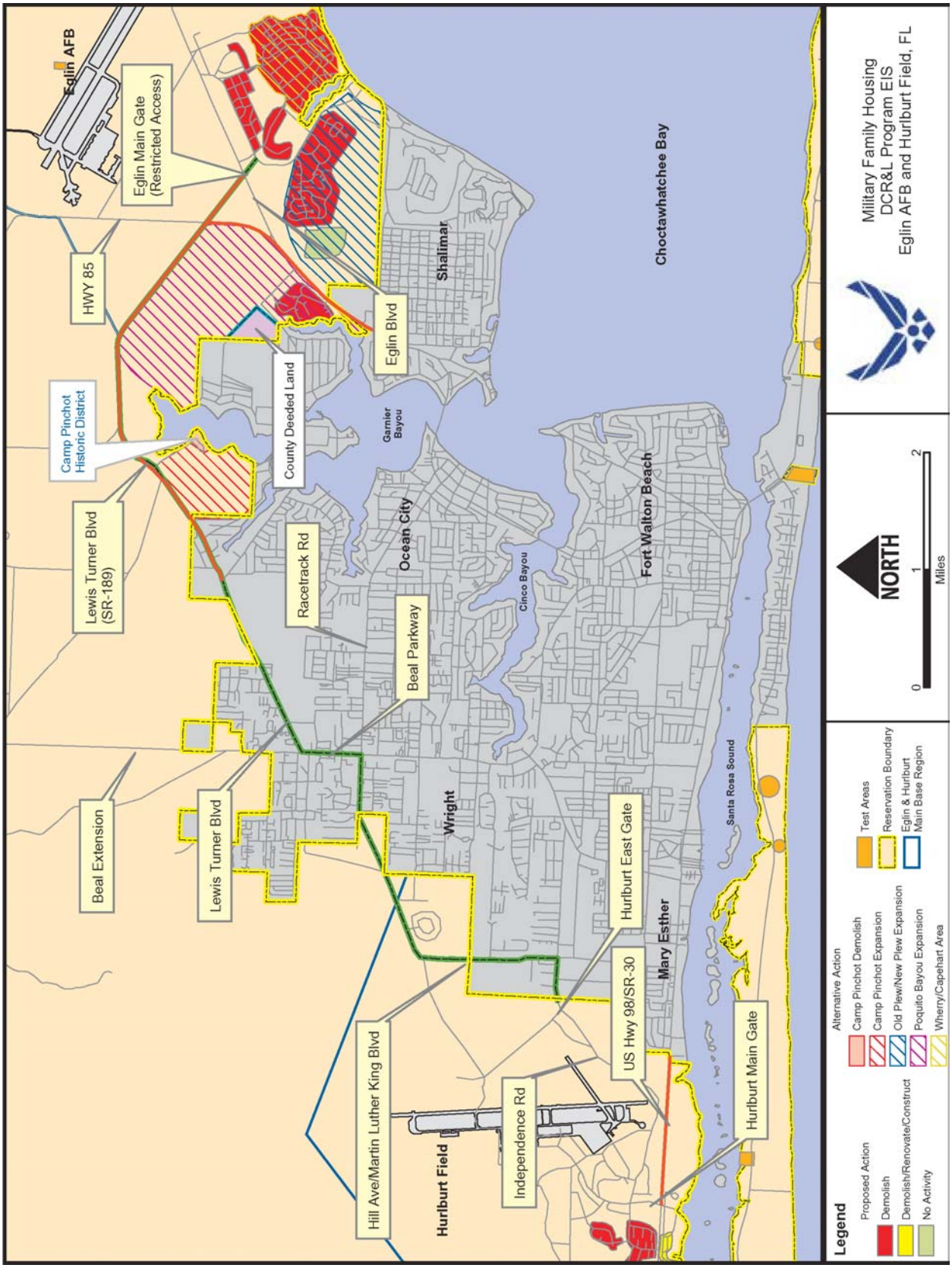

Figure 3-5. Existing Road Network Associated With the Action Area

In the Okaloosa County Comprehensive Plan, Ordinance Number 00-03, effective 7 November 2000, the portion of SR-85 between SR-189 and the Shalimar Bridge is listed as a "Constrained Facility." This Plan defines constrained facilities as "roads on the state highway system, which Florida Department of Transportation has determined will not be expanded by the addition of two or more lanes because of physical, environmental or policy constraints." Roadway size increases may be constrained by prior development in these areas. Highway bridges are required on SR-85 to cross over estuaries. It is expected that the cost to develop new bridges and to move existing development are the major constraints on the future expansion of SR-85.

3.2.2 Existing Transit Services

Okaloosa County provides public bus services. There is a deviated fixed route service in Fort Walton Beach, Crestview, and Destin. This means the service runs on fixed routes, but will deviate up to three-quarters of a mile on request. The service currently runs on a Monday through Friday or Saturday schedule, depending on the season. All buses accommodate bicycles and are wheelchair accessible. None of these routes currently serve any of the proposed Alternative areas. However, service could be extended to these areas if demand and funding were available (Peterson, 2004).

There is also a door-to-door transportation service available six days a week. This service is available to anyone in Okaloosa County, but is primarily intended to serve individuals who have no other means of transportation. This service covers some of the study area.

3.2.3 Existing Pedestrian and Bicycle Facilities

There are no known designated bicycle or pedestrian paths within the study area. There is an existing pedestrian overpass located near the Soundside Manor housing area. Some reduction in the use of this facility would be expected following the demolition of the Live Oak Terrace and Pine Shadows housing areas.

3.2.4 Existing Operational Characteristics of the Roadway Network

The classification of traffic performance on highways is determined by Level of Service (LOS). Generally, the desired LOS for Urban Arterial roadways is LOS D or better, although short periods of time with LOS E or even LOS F are sometimes acceptable in urban areas. In the Highway Capacity Manual 2000 (HCM), Chapters 10, 15, 16, and 17 discuss the characteristics of Urban Arterial roadways (NRC, 2000). In the HCM, LOS for Urban roadways is defined as follows.

LOS A describes free flowing traffic at average travel speeds, usually about 90 percent of the free flow speed (FFS) for the given street class. Vehicles are completely unimpeded in their ability to

maneuver within the traffic stream. Control delay at signalized intersections is minimal. LOS B describes reasonably unimpeded operation at average travel speeds, usually about 70 percent of the FFS. The ability to maneuver within the traffic stream is only slightly restricted, and control delays at signalized intersections are not significant. LOS C describes stable operations, however the ability to maneuver and change lanes in midblock locations may be more restricted than in LOS B, and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50% of the FFS. LOS D borders the range in which small increases in flow may cause substantial increases in delay and decreases in travel speed. LOS D may be due to adverse signal progression, inappropriate signal timing, high volumes, or a combination of these factors. Average travel speeds are about 40 percent of FFS. LOS E is characterized by significant delays and average travel speeds of 33 percent or less of the FFS. Such operations are caused by a combination of adverse progression high signal density, high volumes, extensive delays at critical intersections and inappropriate signal timing. LOS F is characterized by urban street flow at extremely low speeds, typically one third to one-forth of the FFS. Intersection congestion is likely at critical signalized locations, with high delays, high volumes, and extensive queuing.

The existing roadway network generally appears to be adequately sized to function within acceptable Levels of Service for the traffic volumes reported by Florida Department of Transportation. For those sections of roadway adjoining the Alternative locations, and in the northern and eastern directions, the current LOS is C or higher. The project location is a tourist destination and subject to seasonal variations in traffic volumes during the summer months.

Once SR-189 enters the city of Fort Walton Beach and becomes Beal Parkway, the current Level of Service is D. Once SR-85 enters the city of Shalimar, the current Level of Service is D.

Information on the existing traffic volumes was obtained from the Florida Department of Transportation from 2002 Florida Traffic Information (FDOT, 2002). The information provided was taken from traffic counts in the year 2002. This information provided the basis for the peak hour traffic counts used for analysis in Chapter 4, and is shown in Table 3-1 along with projected traffic growth in the area.

3.2.5 Future Operational Characteristics of the Roadway Network

The FDOT and local government officials were consulted to estimate future operational characteristics of the roadway network. Estimates of projected growth in Average Annual Daily Traffic (AADT) in 2014 and 2019 were developed (Table 3-1). The estimates were based on annual traffic volume percentage increases annually and corresponding Level of Service estimates. The estimating process applied the methods of the Highway Capacity Manual of the National Research Council (NRC, 2000) and software.

Table 3-1. Average Annual Daily Traffic, Peak Hour Volumes, and Projected Average Annual Traffic Volume Growth Rate

Primary Road Segments	AADT (2002)	Peak Hour (Two Way 2002)	Level Of Service (2002)	Projected Growth (% Per Year in Years 2014 and 2019)
SR-189				
Between 85 and Mooney Road	33,500	3,278	C	1.9%
Between 85 and Eglin Avenue	11,800	1,154	A	1.0%
Midtown (west of Mooney Road)	53,500	5,235	D	1.3%
SR-85				
Between 189 and Twelfth Avenue	19,000	1,947	A	2.1%
Midtown (west of Twelfth Avenue)	52,000	5,137	D	0.3%

3.3 SOCIOECONOMICS / ENVIRONMENTAL JUSTICE / SPECIAL RISKS TO CHILDREN

The following resources are addressed under socioeconomics: economic activity (employment and earnings), population, housing, and public schools. The influence of Eglin AFB and Hurlburt is distinguishable within a three-county region of influence composed of Okaloosa, Santa Rosa, and Walton Counties located in northwest Florida. Although the effects of activities taking place at both installations are manifest throughout the ROI, they are most evident in Okaloosa County.

The presence of the military is the primary generator of economic activity in Okaloosa County where the military installations of Eglin AFB, Hurlburt Field, and Duke Field support over 60,000 active duty military, civil service personnel, and military dependents. There is a sizeable concentration of technology-based and defense-contracting firms located in the county supported, in the main, by the award of $257 million in local employment contracts ($248 million from Eglin AFB and $9 million from Hurlburt). It is estimated that over 20,000 jobs in other industrial sectors are directly and indirectly related to military spending. Additionally, there are an estimated 37,000 retired military personnel in the region contributing to the local economy in the form of highly skilled labor as well as consumers (EDC, 2004).

Tourism is the second largest contributor to Okaloosa County's economy. It is estimated that tourism generates about $700 million annually and supports 32,000 jobs. The primary attractions are the beaches and sport fishing. Tourists are drawn to the area year-round, though peak activity occurs in the spring and summer. Tourism-related employment peaks in July and, in 2000, supported about 7,800 jobs in eating and drinking establishments, 1,200 jobs in the lodging sector of the economy, and over 1,400 jobs in the amusement and recreation sector (EDC, 2004a).

3.3.1 Economic Activity

Employment

Total full- and part-time employment in the ROI increased by an average annual rate of 3.3 percent, or over 46,000 jobs, between 1990 and 2000. This compares to a rate of 2.8 percent for Florida and 1.8 percent for the nation over the same time period. The growth rate experienced in the preceding decade was considerably higher (4.3 percent annually) and was also noticeably higher than that for the state (3.8 percent) and nation (2.0 percent) (USDOC, 2004). Of the growth in employment that occurred in the ROI between 1990 and 2000, the large majority (67 percent) occurred in Okaloosa County with lesser contributions made by Santa Rosa County (20 percent) and Walton County (13 percent) (USDOC, 2004).

Property Values

Okaloosa County has experienced unprecedented increases in residential property values in the past five years (2000-2004), and especially in the past two years (2003-2004). The housing market value increased an average of 17.07 percent per year from 2000-2004 and 34.93 percent during 2003-2004 (Emerald Coast Association of Realtors [ECAR], 2005). The highest demand, and thus value increase, for housing property has been in the areas within a 30-minute commute of Eglin's Main Base. The demand for residential properties in the area has exceeded the supply, and as a result houses are selling more quickly and for higher values. In the year 2000 in the Fort Walton Beach area, the average priced house stayed on the market an average of 90 days, and in 2004 the median priced house sold in an average of 22 days (ECAR, 2005). House values on Garnier's Bayou have followed this same trend, where the average selling price per square foot for waterfront homes has increased from $86 per square foot to $167 per square foot since 1999 (ECAR, 2005). Similar trends have occurred in the Niceville-Valparaiso community for both waterfront and non-waterfront properties. Waterfront properties that are visually connected to Eglin facilities, including non-residential areas have continued to increase in value at a much higher than average rate for the nation. For example, waterfront homes on Tom's Bayou that are visually connected to Eglin Post'l Point, where there are mobile homes, motel-like lodging facilities, an industrial marina, and a recreation area, have continued to increase in value at rates comparable to other waterfront areas. In 2000, the average price per square foot of this area was $72, and in 2004, it was $106 (ECAR, 2005).

3.3.2 Population

The population of the ROI increased by more than 75,000 persons (29.9 percent) over the period of 1990 to 2000 at an average annual rate of 2.65 percent. The greatest absolute contribution to this increase was derived from the population increase in Santa

Rosa County (over 36,000 persons), followed by Okaloosa County (over 26,000 persons). However, Walton County (the smallest county in terms of population) experienced the highest growth rate (3.88 average annual percent) of the three counties (U.S. Census Bureau, 2004).

In Okaloosa County, the two communities with the largest population experienced low (Niceville) and negative (Fort Walton Beach) population change. Although they are the largest in terms of resident population, they have limited land available for development and are approaching build-out. The community of Mary Esther is in a similar situation and experienced population decline. Conversely, the communities of Crestview (north of the Eglin Reservation) and Destin (in the extreme eastern coastal section of the county) experienced rapid growth. The population of Crestview increased by 4,880 additional residents or almost 50 percent between 1990 and 2000 (at an average annual rate of 4.09 percent), while that of Destin increased by 3,309 persons or almost 38 percent (at an average annual rate of 3.24 percent). Of the total increase in population in Okaloosa County, Crestview contributed over 18 percent while Destin contributed an additional 11 percent (U.S. Census Bureau, 2004).

Population located in the unincorporated portion of the county increased by just over 20 percent between 1990 and 2000, at an average annual rate of 1.89 percent. Just over 60 percent of the increase in population of Okaloosa County between 1990 and 2000 occurred in the unincorporated sections of the county (U.S. Census Bureau, 2004). During the early years of the 1990s (1991 through 1994), the population of Okaloosa County increased by between 2 and 3 percent annually. During the succeeding three years of the decade, population increased by between 1 and 2 percent annually with this rate falling below 1 percent in the remaining three years of the decade. In the first three years of the 1990s, migration contributed to the majority of population growth. For the remainder of the decade, natural increase was the primary cause of the annual population increase (UFL, 2002).

Over the period of 1990 to 2000, the population of Santa Rosa County increased by over 36,000 persons or just over 44 percent (at an average annual rate of 3.73 percent). Virtually all of this population increase (over 99 percent) occurred in the unincorporated sections of the county. In the case of Santa Rosa County, annual population increase exceeded 2 percent in all years of the 1990s and exceeded 4 percent in six of these years. Migration contributed a larger share of annual population increase than in the case of Okaloosa County. Migration contributed in excess of 75 percent of annual population growth in the county in all years of the 1990s (UFL, 2002). Between 1990 and 2000, the population of Walton County increased by over 12,800 persons or just over 46 percent (at an average annual rate of 3.88 percent). Virtually all of this population increase (almost 97 percent) occurred in the unincorporated sections of the county. The population of Walton County increased by more than 2.5 percent in each year of the 1990s, and migration contributed over 90 percent to this increase in all years

(UFL, 2002). About 49,000 combined active duty personnel and dependents are assigned to Eglin AFB and Hurlburt and reside locally. Of this number, over 11,000 reside in housing located on the installations with the remaining persons living in surrounding communities.

3.3.3 Housing

Government Housing

There is a combined total of 3,039 military family housing units between both installations: 2,359 on Eglin AFB, 380 on Hurlburt, and 300 located at Commando Village off Hurlburt Main Base on Martin Luther King Boulevard. Additionally, there are unaccompanied personnel units and temporary lodging units on each installation along with 100 occupied mobile home spaces (Bayou Village) on Eglin AFB as shown in Table 3-2.

Table 3-2. Hurlburt Field and Eglin AFB Housing Assets (Units)

Location	Military Family Housing Units	Unaccompanied Personnel Units	Temporary Lodging Units	Mobile Home Units	TOTAL Units
Hurlburt Field	380	1,103	24	0	1,507
Eglin AFB	2,359	1,232	87	100	3,778
Commando Village	300	0	0	0	300
TOTAL Units	3,039	2,335	111	100	5,585

Of the total 3,039 military family housing units, 39 percent are composed of 2-bedroom units, 41 percent are 3-bedroom units, and the remaining 20 percent are 4-bedroom units.

Community Housing

The total number of housing units in the ROI increased from about 114,000 in 1990 to over 156,000 in 2000. As of the year 2000, just over 8 percent of the housing units were for seasonal, recreational, or occasional use, and almost three-quarters of the housing is owner-occupied.

The largest share (50 percent) of the housing units in the ROI has three bedrooms, followed by 25 percent with two bedrooms, and almost 15 percent with four bedrooms. Walton County has a greater share of two-bedroom units (38 percent) and Santa Rosa County has a greater share (55 percent) of three-bedroom units in the ROI (U.S. Census Bureau, 2004). Residential construction activity is typically of a cyclical nature, as can be seen in the case of housing starts for Florida over the period of 1986 through 2002. Using 1990 as a benchmark, construction activity fell over six years to a low in 1996. Activity then increased each successive year (with one exception) through 2002. A cyclical pattern is also evident in the case of Okaloosa County; however, the pattern

differs from that of the state as a whole. Activity levels fell between 1987 and 1990 and then rose to attain a peak in 1998 before falling again. Santa Rosa County exhibits two cycles with declines between 1986 and 1991 and from 1994 to 1999 with rises between 1991 and 1994 and from 1999 to 2002. The pattern for Walton County differs in exhibiting a relative flat period between 1986 and 1992 with a steady rise to 2000 (U.S. Census Bureau, 2000).

Information regarding housing construction for communities is limited to Crestview, Fort Walton Beach, and Niceville in Okaloosa County. Over the period of 1996 through 2002, building permits were issued for an average of 236 units annually in Crestview. With the exception of 1997, virtually all these units were single-family homes. The average number of housing units permitted in Niceville over the same time period was 95, with multiple family structures being constructed in all but two of the years. An average of 45 housing units were permitted in Fort Walton Beach (U.S. Census Bureau, 2000).

3.3.4 Public Schools

Student Population

The Okaloosa School District provides public school education throughout Okaloosa County and operates 22 elementary schools, 10 middle schools, and 4 high schools. Over the period of 1988 through 2004, district enrollment increased by 25 percent (from 24,660 to 30,880) at an average annual rate of 1.33 percent. This period saw the addition of three elementary schools and two middle schools to the facilities as well as a number of smaller, specialized facilities. Enrollment in the school district increased steadily over the period of 1988 through 1998 and has stabilized since that time (Eachearn, 2004). The great majority of students attending schools reside in the attendance zone designated for each respective school. However, over 2,000 students (almost 7 percent of district-wide enrollment) are on zoning waivers (i.e., attend a school in an attendance zone other than the one in which they reside). The proportion of children on zoning waivers varies noticeably by individual school. For the elementary schools, that proportion ranges from less than 1 percent of school enrollment to almost 20 percent. The elementary schools having the highest proportion of students on zoning waivers are: Wright (19.2 percent); Walker (17.7 percent); Mary Esther (17.1 percent); Kenwood and Valparaiso (both with 14.1 percent); Northwood (13.8 percent); and Soundside (13 percent).

District Personnel

The total number of full-time personnel of the Okaloosa School District has remained relatively stable over the past five years at between 3,573 and 3,323. The proportion of different functional areas to total personnel have also remained relatively constant: 3 percent administrative; 21 percent elementary school teachers; 28 percent secondary school teachers; 2 percent guidance specialist; 5 percent support; 13 percent teacher's

aides; and 28 percent technical and service. Part-time employment has varied over the same period from 691 to 507 persons.

Revenue Sources

For the fiscal year ending 30 June 2004, general fund revenues totaled almost $174 million. The large majority (61 percent) of the revenues are derived from state of Florida sources. Local revenue sources (virtually all derived from property taxes) contribute almost 37 percent of general fund revenues with the remaining 2 percent derived from Federal sources. Of the revenues received from the Federal government, almost three-quarters come in the form of Federal impact aid (Eachearn, 2004).

Federal Impact Aid

As of school year 2004, Okaloosa School District contained a total of 9,994 federally connected children enrolled in the schools. These children fall into a number of categories, of which the ones listed immediately below are the most relevant for this analysis.

- Category C: Students residing on Federal property whose parent is on active duty in the uniformed services of the United States. The district contains 1,773 such students.
- Category F: Special Education students residing on Federal property who have a parent on active duty in the uniformed services of the United States. The district contains 281 such students.
- Category K: Students residing on non-Federal property with a parent employed on Federal property situated in Okaloosa County. The district contains 3,212 such students.
- Category O: Students residing on non-Federal property whose parent is on active duty in the uniformed services of the United States. The district contains 4,162 such students.
- Category P: Special Education students residing on non-Federal property who have a parent on active duty in the uniformed services of the United States. The district contains 330 such students.

Students who fall into Categories C and F comprise those living on the military installations in the county, and their parent(s) are on active duty. These students number 2,054 and comprise 6.7 percent of district enrollment. Students whose parent(s) are on active duty but who reside off-base (Categories O and P) number 4,492 and comprise 14.6 percent of district enrollment. Students whose civilian parents reside off-base but who work on-base (Category K) number 3,212 and comprise 10.4 percent of district enrollment. Thus, students attending district public schools who live both on-base and off-base and whose parents are active duty or civilian personnel working on-base number collectively 9,758 or almost 32 percent of the district-wide enrollment.

Although the proportion of federally connected students in the district is high, there are noticeable variations between schools. Cherokee and Oak Hill elementary schools are located on-base (at Eglin AFB), and over 80 percent of their respective enrollments are composed of students who reside on-base. Two other elementary schools, Florosa (near Hurlburt Field) and Longwood (near Eglin AFB), have 17 percent and 32 percent, respectively, of their students who reside on military installations. Of the 21 elementary schools operated by the district, five have over 50 percent and 13 have over 25 percent, respectively, of their enrollment composed of federally connected students. A large proportion of on-base middle school students attend Lewis Middle School, where they comprise 43 percent of the enrollment. Almost 66 percent of the students at Lewis Middle School are federally connected students. Other middle schools with sizeable shares of federally connected students are Ruckel and Meigs (36 percent), Bruner (32 percent), and Richbourg (28 percent). Almost 9 percent of the students attending Niceville High School reside on-base, while just over 45 percent of the students are federally connected. All four district high schools have over one-quarter of their enrollment consisting of federally connected students.

3.3.5 Environmental Justice and Special Risks to Children

The following sections describe legal requirements for evaluating impacts to Environmental Justice and Special Risks to Children by the Proposed Action and Alternatives.

Environmental Justice

Concern that minority populations and/or low-income populations bear a disproportionate amount of adverse health and environmental effects led to the issuance of EO 12898 in 1994. 32 CFR 989, *The Environmental Impact Analysis Process,* addresses the need for consideration of environmental justice issues in the impact analysis process. The purpose of an Environmental Justice analysis is to identify disproportionately high and adverse human health and safety and environmental impacts on minorities and low-income communities and to identify appropriate alternatives. This EO also requires the application of equal consideration for American Indian populations. Procedures for compliance with relevant laws are outlined in Eglin's Integrated Cultural Resource Management Plan (U.S. Air Force, 2003b). Procedures set forth in this management plan would be applied to this project and facilitate protection and equal consideration for American Indian populations. As a result, an additional analysis was not included in this EIS. The EIS Resource Appendices (Appendix G, *Socioeconomics*) provides more information on this EO and directives arising from it. Figure 3-6 shows the minority/low-income data for the project areas as compared to the minority/low-income percentages for Okaloosa County (percentages presented in Table 3-3). Communities with a minority or low-income percentage higher than percentages for the entire county are identified as communities of concern (COCs) for Environmental Justice.

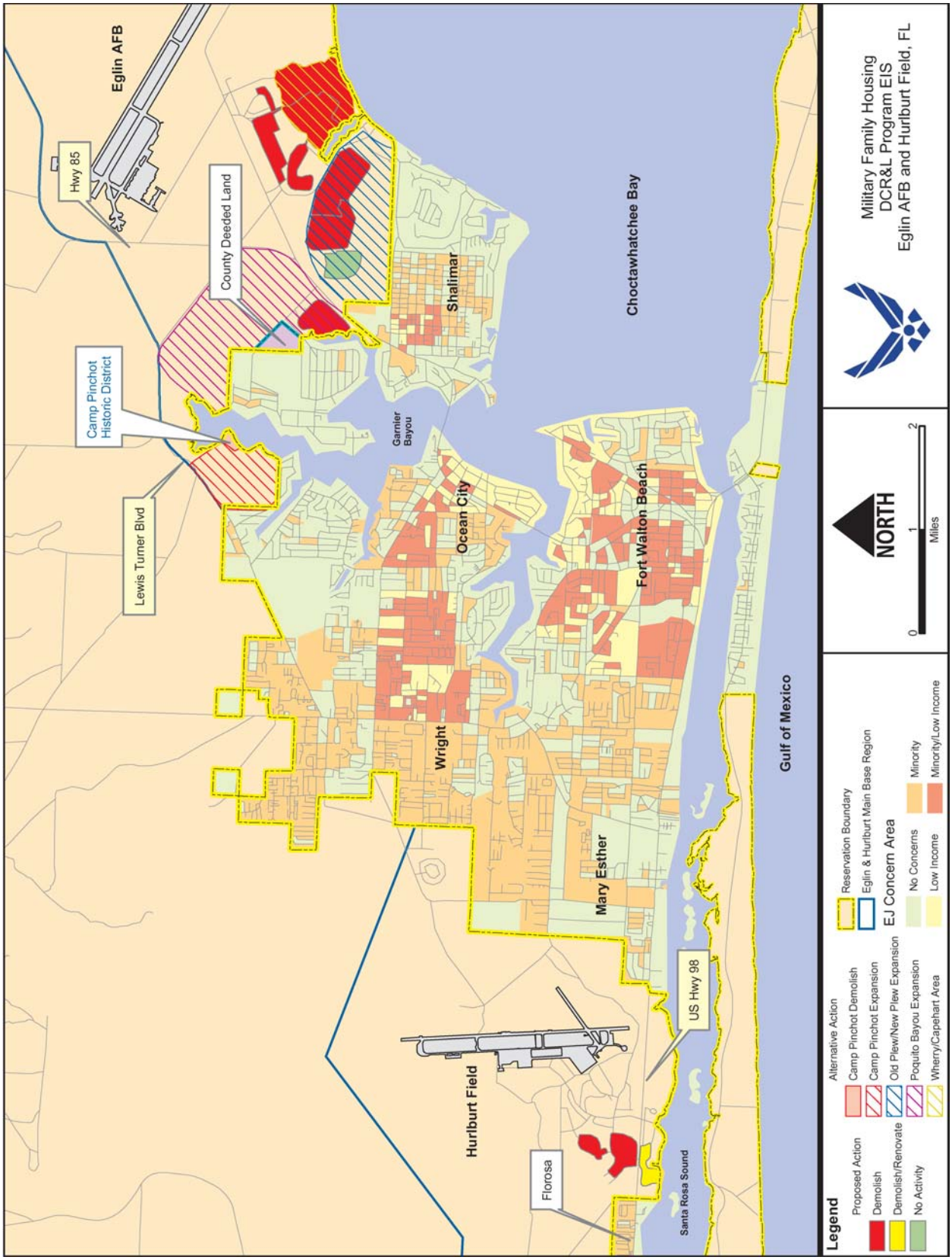

Figure 3-6. Communities With High Minority and/or Low-Income Populations as Compared to County Averages Within the Project Area

Table 3-3. Percent Minority/Low-Income for Okaloosa County

County	Percent Minority	Percent Low-Income
Okaloosa	19.03	8.84

Source: U.S. Census Bureau, 2000a.

Special Risks to Children

In 1997, Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* was signed. It mandates that all Federal agencies assign a high priority to addressing health and safety risks to children, coordinating research priorities on children's health, and ensuring that their standards take into account special risks to children.

The EO states that "*environmental health risks and safety risks" mean risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to).*

Children are more sensitive to some environmental effects than the adult population, such as airborne asbestos and lead paint exposures from demolition, safety with regard to equipment, trips/falls/traps within structures being demolished, and noise. Potential impacts to children may be further intensified if activities occur near areas that tend to have a higher concentration of children than the typical residential area during any given time, such as schools, churches, and community childcare facilities. These types of areas/facilities are shown in Figure 3-7.

The following are ways in which children may be at special risk.

- While children are no less or more vulnerable to asbestos fibers than adults, if they are living in a general area that has higher levels of environmental (airborne) asbestos levels, they are at special risk. Additionally, there have been some cases where children have developed asbestos-related respiratory complications after being exposed to "asbestos dust" brought home by adults on their clothes and in their hair after being exposed to asbestos fibers in their places of work (Anderson et al., 1976).
- Lead is a highly toxic metal and exposure to lead-based paint may cause a range of health effects, from behavioral problems and learning disabilities, to seizures and death. Children six years old and under are most at risk, because their bodies are growing quickly (Needleman, 1990).

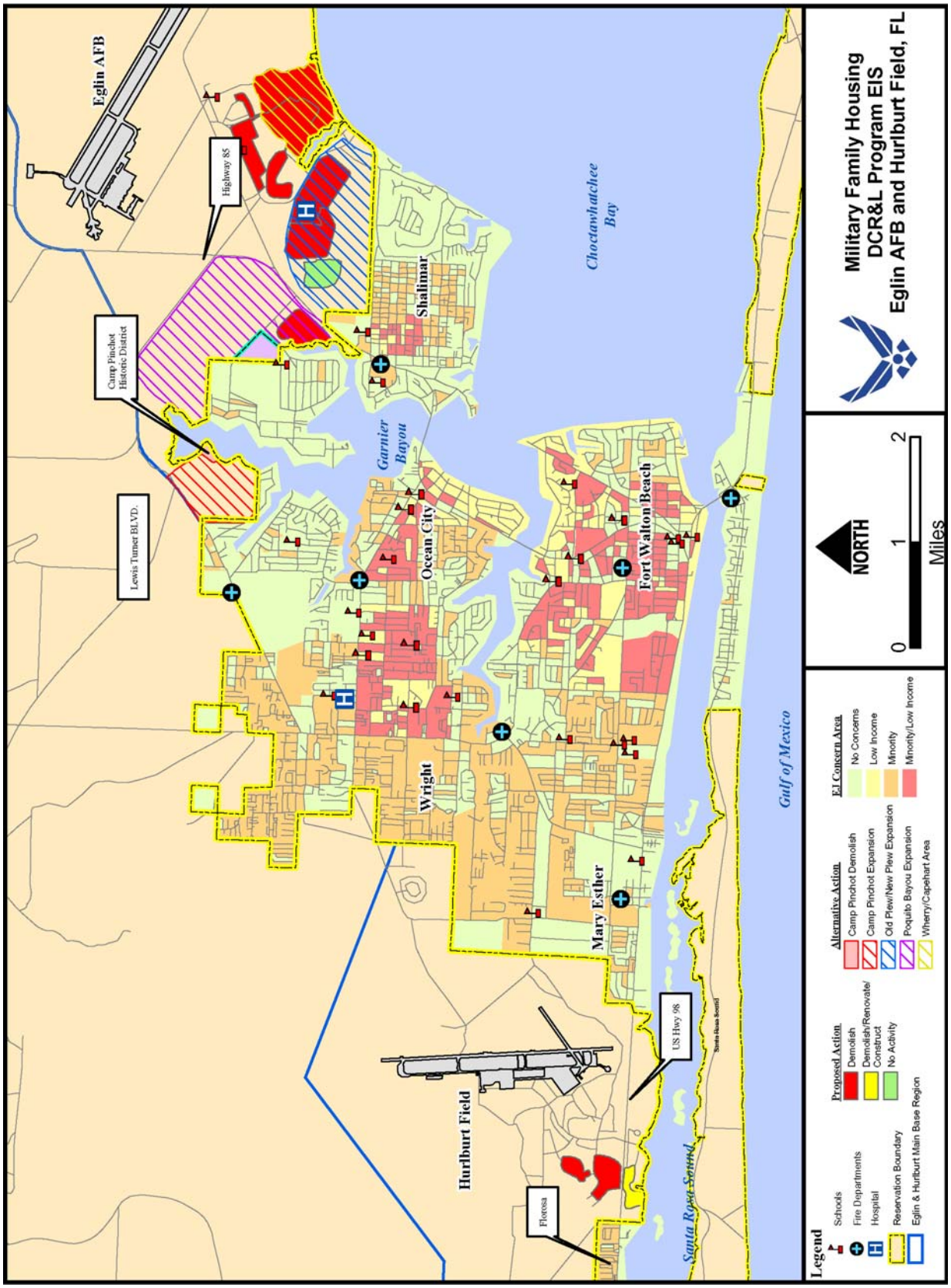

Figure 3-7. Communities With a High Percentage of Children Under 18 as Compared to County Averages Within the Project Area

- Children are also at risk in demolition/construction environments if the areas are not adequately secured. Children are curious and may use construction areas for playgrounds. Whether children can reasonably access construction and demolition sites and/or equipment would determine the risk associated with this safety concern.

Finally, children are at greater risk to hearing damage and loss than adults. The potential for a disproportionate impact to children would result from construction noises as children's hearing is more sensitive to harm than adults (NIOSH, 1999).

3.4 UTILITIES INFRASTRUCTURE

This section discusses utilities serving the existing and proposed project areas, which include water supply, wastewater treatment, electricity, and natural gas. Additionally, this section identifies utility providers and the major attributes of utility systems in these areas such as existing capacity and existing demand.

3.4.1 Potable Water

The Florida Department of Environmental Protection regulates potable water supply systems in Florida. The Florida Safe Drinking Water Act and FDEP rules have incorporated Federal primary and secondary drinking water standards as identified in the Safe Drinking Water Act (42 U.S.C. 201, 300 et seq.) and the National Primary Drinking Water Regulations. Public water supply systems are classified by the FDEP as a system that has at least 15 service connections or regularly serves 25 individuals daily at least 60 days of the year. The Florida Water Resources Act (Florida Statutes, Title 28 Section 373) requires a comprehensive approach to water management based on regional hydrological boundaries. The Act also provides for the creation of five regional water management districts, including the Northwest Florida Water Management District, of which the project areas are constituents.

The Floridan Aquifer supplies most of the water needs in Okaloosa County. Surface water sources are not currently used by water suppliers. Table 3-4 identifies the major public water supply systems associated with the project areas.

Areas on Eglin Main Base are serviced by Eglin's water supply systems (Georgia Avenue by the Main Base system and 96 CEG/Housing servicing all other housing areas). Hurlburt Field housing areas are serviced by Hurlburt's water supply system, while the areas surrounding Hurlburt Field are serviced to the east by the Town of Mary Esther and to the west by the Okaloosa County Water and Sewer West (OCWS-West) system. The Okaloosa County Water and Sewer System (OCWS) services Poquito Bayou, and surrounding areas, while Camp Pinchot receives its potable water via well system.

Table 3-4. Major Public Water Supply Systems Associated With and Adjacent to the Project Areas

Facility Name	Project Area				Average Daily Use Million Gallons/Day (MGD): 2004	Design Capacity (MGD)	Percent Capacity Used: 2004
	Eglin Main Base	Hurlburt Housing Area	Poquito Bayou Expansion Area	Camp Pinchot Expansion Area			
Eglin AFB [a]	✓				2	13.9	17%
Hurlburt [b]		✓			0.5 – 1.2 (change in values represents winter vs. summer)	1.2	42% - 100%
Okaloosa County Water & Sewer System [c]			✓		4.5	11.2 (permitted for 10)	40%

[a] Brown, 2004 [b] Williams, 2004 [c] Crews, 2004

3.4.2 Wastewater Treatment

The Clean Water Act (33 U.S.C. 1151 et seq., 1251 et seq.) is the basic Federal legislation governing wastewater discharges. The implementing Federal regulations include the NPDES permitting process (40 CFR 122), general pretreatment programs (40 CFR 403), and categorical effluent limitations, including limitations for pretreatment of direct discharges (40 CFR 405 et seq.).

The Florida Air and Water Pollution Control Act (Florida Statutes, Title 28 Section 403) governs industrial and domestic wastewater discharges in the state. The Northwest Florida Water Management District has been delegated as the enforcement authority by the Florida Department of Environmental Protection. The implementing state regulations are contained in F.A.C. 62. These regulations establish water quality standards, regulate domestic wastewater facility management and industrial waste treatment, establish domestic wastewater treatment plant monitoring requirements, and regulate stormwater discharge. There are no permitted discharges of wastewater effluent to Choctawhatchee Bay due to the use of land made available by Eglin for spray irrigation.

The 96th Civil Engineer Group (96 CEG/CEOIT) manages, operates, and maintains Eglin's wastewater treatment plants. Hurlburt Field's wastewater management programs are managed under the 16th Civil Engineering Squadron. The 96th Civil Engineer Group, Environmental Compliance Branch (96 CEG/CEVC) manages wastewater treatment facility permits and related compliance requirements, in accordance with applicable Air Force regulations.

The Garnier Wastewater Facility services the Poquito Bayou, Camp Pinchot, and surrounding areas. Hurlburt's wastewater facility services the Hurlburt Field housing areas. The Mary Esther Wastewater Facility provides services to the areas surrounding Hurlburt Field to the east. To the west, including Florosa, the Okaloosa West Wastewater Facility provides services. Industrial and administrative areas (to include the dormitories) are serviced by the Eglin Main Base Treatment Facility, while the Plew Heights Treatment Facility serves the housing areas, 33rd Fighter Wing, the High Explosive Research and Development Facility, and the Okaloosa County Airport. Details of wastewater daily flow for the respective treatment facilities are given in Table 3-5.

Table 3-5. Wastewater Treatment Systems Associated With and Adjacent to the Project Areas

Facility Name	Project Area				Average Daily Flow (MGD): 2004	Permitted Daily Flow (MGD)[a]	Percent Capacity Used: 2004
	Eglin Main Base	Hurlburt Field Housing Area	Camp Pinchot Expansion Area	Poquito Bayou Expansion Area			
Garnier Wastewater Facility			✓	✓	5.0	6.5 (will be upgraded to 9.6 w/in 3 years)	77%
Hurlburt Field Advanced Wastewater Facility		✓			1.0[b]	1.0	100%
Eglin Main Base Treatment Facility	✓				0.95[c]	1.0	95%
Plew Heights Treatment Facility	✓				0.657[c]	1.5	44%
Okaloosa County West Facility					0.4[d]	1.0	40%

[a] U.S. Air Force, 2003c [b] Stephonic, 2004 [c] Average based on Fiscal Year 2003 Data (Brown (Ru.), 2004)
[d] Pritchette, 2004.

The Garnier Facility is approaching its design capacity because of the increased population growth, area development, and additional wastewater from Okaloosa Island. The latest Capacity Analysis Report indicates that the design capacity will be reached during the summer of 2007. As a result, Okaloosa County Water and Sewer plans to construct a new 9.6 millions of gallons per day (MGD) wastewater treatment facility on 20 acres of the existing spray irrigation field previously leased to Okaloosa County off of Roberts Road, north of SR-189 in Fort Walton Beach (U.S. Air Force, 2004b).

The Camp Pinchot Historic District is currently serviced by a septic system.

3.4.3 Electricity

The Gulf Power Company serves all of Santa Rosa County and much of Okaloosa County (including the cities of Fort Walton Beach, Cinco Bayou, Destin, Mary Esther, Shalimar, Crestview, Niceville, and Valparaiso). Gulf Power is an operating company of the Southern Electric System, along with Georgia Power Company, Alabama Power Company, Mississippi Power Company, and Savannah Electric. As the largest system in the nation, Southern Electric pools power and draws as needed. The primary source of electrical power for the project areas is the combustion turbine plant near Freeport, Florida.

3.4.4 Natural Gas

Okaloosa County Gas District supplies natural gas to most of Okaloosa County, including Fort Walton Beach, Cinco Bayou, Destin, Mary Esther, Niceville, Okaloosa Island, Shalimar, Valparaiso, Eglin, and unincorporated areas. Okaloosa Gas District has contract reservations on two major pipelines, Gulf South Pipeline and Florida Gas Transmission, for a combined total maximum daily quotient of 34,000 million cubic feet (MCF) per day within the tri-county area of Santa Rosa, Okaloosa, and Walton Counties (Bruechner, 2002).

Natural gas is provided to Eglin AFB and Hurlburt from the Okaloosa Gas District through nine metering and three regulating stations. The theoretical capacity of the gas pipeline into Eglin is a maximum throughput in excess of 68,000 MCF per day. The total base demand for natural gas in 2001 was approximately 698,000 MCF or 1,900 MCF per day. Information on gas usage for Hurlburt was unavailable.

3.5 CULTURAL RESOURCES

Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, and any other physical evidence of human activity considered important to a culture or community for scientific, traditional, religious, or other reasons. They include archaeological resources (both prehistoric and historic), historic architectural resources, and American Indian sacred sites and traditional cultural properties. Historic properties (as defined in 36 CFR 60.4) are considered for potential adverse impacts from an action. Historic properties are significant archaeological, architectural, or traditional resources that are either eligible for listing, or listed in, the National Register. Under the National Historic Preservation Act (NHPA) of 1966, as amended, Eglin AFB is required to consider the effects of its undertakings on historic properties listed, or eligible for listing, in the National Register. On 21 November 1999, the DoD promulgated its American Indian and Alaska Native Policy, which emphasizes the importance of respecting and consulting with tribal governments on a government-to-government basis. The Policy requires that, before decisions are made by the Services, an

assessment be made, through consultation, of the effects of proposed DoD actions that may have the potential to significantly affect protected tribal resources, tribal rights, and Indian lands.

3.5.1 Historical Setting

People are thought to have inhabited Florida for about 12,000 years, initially hunting now extinct Pleistocene megafauna. As the climate gradually warmed, the resource base expanded and people developed new technologies and settlement patterns (Russo, 1990). Population growth was accompanied by the development of elaborate ceremonial complexes, mound burials, permanent settlements, and an increasing reliance on cultivated plants (Milanich, 1990). Spanish explorers entered the region in the early 1500s. After the Revolutionary War, Euroamericans moved south into the former Spanish and English lands. When Florida became part of the United States in 1821, Americans gradually moved into western Florida. In 1845, Florida achieved statehood, and in 1908, the Choctawhatchee National Forest was established (USFS, 2004).

In 1935, the Army Air Corps Tactical School established a bombing and gunnery range at the site of present-day Eglin AFB. Congress transferred the Choctawhatchee National Forest from the Forest Service to the War Department for military purposes in 1940. During World War II, Eglin served as a proving ground for aircraft armament, for gunnery training for Army Air Forces fighter pilots, as a major testing center for aircraft, equipment, and tactics, and was a pioneer in missile development (U.S. Air Force, 2004c). Hurlburt Field was one of the small training fields built on the sprawling Eglin Air Force Range in the 1940s (U.S. Air Force, 2004d). The Florida Ranger Camp was established at Eglin in 1951, and was renamed Camp James E. Rudder in 1974 (Global Security, 2002). In the 1950s, the Air Force established the Air Force Armament Center at Eglin, bringing development and testing together for the first time. The Air Force combined the Air Proving Ground Command and the Air Force Armament Center to form the Air Proving Ground Center in 1957, a major missile test center for weapons (U.S. Air Force, 2004c). After falling into disuse and disrepair following World War II, Hurlburt Field was reactivated in 1955 and the Air Commando Wing was established in 1963. The EIS Resource Appendices (Appendix H, *Cultural Resources*) provides a detailed overview of Eglin AFB's historical setting.

3.5.2 Identified Cultural Resources

This section describes known cultural resources within each of the project areas that are listed, eligible, or potentially eligible for listing in the National Register, or that may require further evaluation to determine their significance. More than 1,880 archaeological sites have been identified on Eglin AFB. Approximately 300 sites are eligible or potentially eligible for listing on the National Register. These historic properties must be considered during the planning and execution of any Federal undertaking that has the potential to affect them. Research has also identified at least

28 historic cemeteries on base. While historic cemeteries are not normally eligible for the National Register, they may be nominated as a component of a greater site complex (U.S. Air Force, 2004e). Since none of Eglin's cemeteries have been formally evaluated for eligibility, they are considered potentially eligible.

For the purpose of this project, Eglin CEVH determined that 603 acres required extensive cultural resource survey. This was required for the purpose of 1) determining if cultural resources were present in the subject areas, and 2) determining if the alternatives would result in the potential for adverse effects. The SHPO was consulted and did concur with Eglin AFB that the cultural surveys were necessary.

Eglin AFB

Ben's Lake – The Ben's Lake project area consists of the immediate area of existing housing constructed in 1948. The plans for these housing units were developed by the U.S. Army Corps of Engineers' Mobile office in 1947, prior to the Wherry and Capehart housing initiatives of 1949 and 1954. A 1998 evaluation of 118 duplex units, built between 1947 and 1948, found that all buildings were ineligible for listing in the National Register (Wright, 1998). However, the SHPO recommended that the demolition of the buildings involve State HABS Level III documentation (of each individual building type) be performed prior to demolition and that a Florida Master Site File form be completed for each documented building type. A study of 10 representative housing units in this area is presently underway, with reporting expected in early 2005. Table 3-6 lists architectural resources in the Ben's Lake area.

Table 3-6. Ben's Lake Project Area Architectural Resources

Range of Building Numbers*	Construction Date	National Register Status
2401 – 2414	1948	Under review
2415 – 2498	1948	Ineligible
2500 – 2595	1948	Ineligible

Source: Eglin AFB Cultural Resources Database, 2004
* Not all building numbers in these series are in use.

Camp Pinchot – The Camp Pinchot project area includes the Camp Pinchot Historic District and a portion of the adjacent land area (approximately 220 acres total) to the southwest that is proposed for housing area expansion. This project area includes one National Register-listed historic district and at least one eligible archaeological site (site identification number 8OK871) and another new site that has been recommended as not National Register-eligible (8OK2344). An additional site in the area (8OK1197) was previously determined as not eligible for listing in the National Register.

The Camp Pinchot Historic District encompasses 15 acres on the east bank of Garnier's Bayou. It was originally the Choctawhatchee National Forest headquarters compound, built between 1910 and 1920. The Historic District buildings and grounds are significant at the national, state, and local levels for their association with the

establishment and management of the Choctawhatchee National Forest, the first national forest in the southeastern United States (U.S. Air Force, no date). The property was named for Gifford Pinchot, America's first professionally trained forester who rose to national prominence as a conservationist and political progressive under Theodore Roosevelt and was elected governor of Pennsylvania twice (Bixler, 1976). Camp Pinchot was transferred to the War Department in 1940 and is also historically significant for its association with the establishment of Eglin AFB, a major military component in the American effort during World War II and the Cold War. Throughout the 1940s, the residences (Buildings 1556, 1557, 1558, and 1559) served as enlisted quarters (U.S. Air Force, no date). In 1950, the Air Force converted the residences to officers' housing.

The Historic District is considered to possess excellent integrity of both buildings and setting. With one exception, no changes in building placement have occurred since its development in the early twentieth century. In the 1960s, one office building originally located between Building 1559 and the boat dock was razed. During historic use by the War Department, porches were enclosed at the rear of the buildings and the interiors upgraded. Early photographs suggest the buildings were built on wooden piers; concrete foundations were added around 1957. Today the appearance of the buildings is not dramatically different from that displayed at the time of their construction (U.S. Air Force, no date). The Camp Pinchot site also includes a greenhouse, which was not constructed at the time of the district's nomination to the National Register. This building is considered as non-contributing to the historic district. Table 3-7 lists the buildings in the Camp Pinchot Historic District.

Table 3-7. Camp Pinchot Historic District Buildings

Bldg. No.	Construction Date	Building Name	National Register Status*
1550	NA	Tennis Courts	Non-contributing
1551	1943	Garage FAM HSG DET	Contributing
1552	1943	Garage FAM HSG DET	Contributing
1553	1943	BE STOR CV FCLTY	Contributing
1555	1943	Garage FAM HSG DET	Contributing
1556	1943	FAM HSG APPR PFY50	Contributing
1557	1943	FAM HSG APPR PFY50	Contributing
1558	1946	FAM HSG, Other	Contributing
1559	1946	FAM HSG APPR PFY50	Contributing
1559A	1946	FAM HSG APPR PFY50	Non-contributing
1561	1944	BT STOR	Contributing
1562	1943	BE STOR CV FCLTY	Contributing
1565	1952	BLDG WTR SUP	Non-contributing
1566	NA	WELL HOUSE	Non-contributing

Source: (U.S. Air Force, no date)

* Contributing/Non-contributing refers to whether or not the structure contributes to the historical status of the district.

Archaeological survey and subsurface testing at Camp Pinchot in 1993 and 1999 identified both prehistoric and historic cultural materials at the site (8OK871). The prehistoric component is a Deptford-period encampment (1,000 to 2,600 years ago); the historic component consists of remains of structures and cultural features associated with the Forest Service period. The integrity of the archaeological site is considered to be excellent with minimal shoreline erosion (Meyer et al., 2000).

Most of the proposed expansion area outside of Camp Pinchot has been surveyed for cultural resources. One archaeological site, 8OK1197, has been identified in this area, but is considered not eligible for listing in the National Register. In 2000, 842 artifacts were recovered from excavations north of Building 1562 where utility work had uncovered several artifacts. Most of these were architectural remains from previously demolished buildings (Thomas et al., 2004).

In 2004 a systematic archaeological sampling program and metal detector survey was conducted to further delineate the boundaries of Camp Pinchot. As a result of this survey a total of 47 discrete concentrations of metal were defined and the boundaries of the habitation area better delineated. A data recovery plan is being developed to provide guidance in further identifying and analyzing the nature of selected metal concentrations that may represent demolished historic structures or refuse locations. In addition, extensive archival research was conducted on the historic buildings, and HABS/HAER level 1 documentation (including photography) was completed.

Camp Rudder – The Camp Rudder project area consists of the immediate location of 25 housing units built in 1975. These units are not considered eligible for the National Register as Cold War resources and are not historic in age. The northern edge of the project area has been surveyed for cultural resources. No National Register-eligible properties have been identified within or near the project area.

Georgia Avenue – The Georgia Avenue project area lies along the northern edge of the Eglin Field Historic District. The Eglin Field Historic District is significant for its association with the establishment, development, and operation of Eglin AFB and because of the advanced engineering design related to specific weapons testing and development (U.S. Air Force, 2000). The buildings have statewide historical significance because of the use of structural clay tile and stucco to protect against harsh environmental conditions (U.S. Air Force, 2001). This historic district was listed in the National Register in 1998 for its significance from the years 1925 to 1949. It comprises 20 contributing and two non-contributing buildings on Eglin Main Base, including five housing units proposed for adaptive reuse under the Proposed Action (Buildings 25, 26, 27, 28, and 29). The Georgia Avenue housing units were built in 1943 in the Minimal Traditional style, popular immediately before World War II. In the 1950s, the Air Force added living space and a garage extension to each unit. The buildings retain their orientation, basic appearance, shape, function, and fabric and are contributing elements of the Historic District (U.S. Air Force, no date[a]). Table 3-8 lists buildings in the Eglin

Field Historic District. No National Register-eligible archaeological sites have been identified in this heavily developed part of the base.

Table 3-8. Eglin Field Historic District Buildings in Georgia Avenue Area

Bldg. No.	Construction Date	Building Name	National Register Status
2	1943	Law Center	Contributing
4	1943	ARMT RSCH Eng	Contributing
6	1943	HQ WG	Contributing
23	1948	Garage FAM HSG DET	Non-contributing
25	1944	FAM HSG APPR PFY50	Contributing
26	1944	FAM HSG APPR PFY50	Contributing
27	1944	FAM HSG APPR PFY50	Contributing
28	1944	FAM HSG APPR PFY50	Contributing
29	1944	FAM HSG APPR PFY50	Contributing
30	1943	HQ Group	Contributing
200	1943	FLT SURG Clinic	Contributing
201	1943	AF Clinic	Contributing
202	1943	AF Clinic	Contributing
214	1943	AF Clinic	Contributing
215	1943	AFOSI Office	Contributing
216	1943	HQ Center	Contributing
217	1943	FLT SURG Clinic	Contributing
218	1943	Med COMD & ADMIN	Contributing
220	1943	Admin OFC, NON-AF	Contributing
238	1943	HQ Center	Contributing
240	N/A	N/A	Non-contributing
246	1943	HQ Group	Contributing

Source: (U.S. Air Force, no date[a])

New Plew/Old Plew – The Old Plew and New Plew project areas consist of the location of housing constructed between 1966 and 1968, as well as a slightly expanded area to the south and east. Housing in this project area is not considered significant for Cold War associations, and is not historic in age. Archaeological survey has been in all high probability locales in the New Plew/Old Plew project areas. No sites have been located.

Poquito Bayou Housing/Expansion Area – The Poquito Bayou project area includes the location of existing housing near the bayou and a wide expansion area to the northeast and northwest up to Garnier Bayou. Existing housing in the Poquito Bayou project area was built in 1976. This housing is not historic in age and is not considered significant for the Cold War era. All high probability locales within the Poquito Bayou Housing/Expansion area have been surveyed for archaeological resources.

Fourteen archaeological sites have been identified in the expansion area. These sites include the following sites that have been determined as eligible for listing in the National Register (Thomas et al., 2004a): 8OK194, a twentieth century habitation and store site; 8OK107, a multi-component prehistoric site with two midden deposits associated with the Weeden Island cultural group and Elliots Point materials below the midden deposits; 8OK952, a site with a possible Paleoindian component; 8OK953, now a combined site with 8OK952; 8OK1835, a large historic site associated with early

twentieth century land claims; and 8OK1836, a historic site probably associated with an early twentieth century land claim. The Davis family cemetery is potentially eligible and is also located in the Poquito Bayou Expansion project area. Table 3-9 lists archaeological sites in the Poquito Bayou Expansion project area.

Table 3-9. Poquito Bayou Expansion Project Area Archaeological Resources

Site Number	Site Type	Cultural Association	National Register Status
8OK107	Prehistoric	Weeden Island, Elliots Point	Eligible
8OK135	Historic	19th/20th century American	Eligible
8OK194	Historic	19th/20th century American	Eligible
8OK952	Prehistoric	Paleoindian (possible)	Eligible
8OK954	Prehistoric	Unknown	Ineligible*
8OK1086	Prehistoric	Unknown	Ineligible
8OK1087	Prehistoric	Weeden Island	Ineligible
8OK1089	Prehistoric/Historic	Unknown prehistoric/ 20th century American	Ineligible
8OK1090	Prehistoric	Fort Walton/Pensacola	Ineligible
8OK1091	Prehistoric	Unknown	Ineligible
8OK1197	Prehistoric	Unknown	Ineligible
8OK1835	Historic	19th/20th century American	Eligible
8OK1836	Historic	19th/20th century American	Eligible
Davis Cemetery	Historic	19th/20th century American	Potentially eligible

Source: Eglin AFB Cultural Resources Database, 2004
* Sites previously identified as ineligible that require additional review.

Wherry/Capehart – The Wherry and Capehart project areas include the existing housing and limited adjacent undeveloped areas. A total of 1,123 units of Wherry/Capehart housing, built from 1951 through 1958 during the Cold War era, lie within this project area. The EIS Resource Appendices (Appendix H, *Cultural Resources*) provides a brief overview of Wherry/Capehart housing history. Table 3-10 lists Capehart and Wherry housing in the project area.

Table 3-10. Wherry/Capehart Housing Project Area Archaeological Resources

Range of Building Numbers*	Construction Date	National Register Status
Capehart Housing		
10062	1958	Under review
10129 – 10164	1958	Under review
10206 – 10255	1958	Under review
Wherry Housing		
10572 – 10583	1951	Ineligible
10606 – 10688	1951	Ineligible
10703 – 10721	1951	Ineligible
10887 – 10896	1951	Ineligible
10902 – 10932	1951	Ineligible
10940 – 10941	1958	Under review
10953 – 10963	1951	Ineligible
10964	1952	Ineligible
10971 – 10994	1951	Ineligible

Source: Eglin AFB Cultural Resources Database, 2004
* Not all building numbers in these series are in use.

One archaeological site (8OK961), considered ineligible for the National Register, has been identified in the Capehart project area.

For Capehart and Wherry housing, the Air Force, in cooperation with the Department of the Navy, completed consultation with the Advisory Council on Historic Preservation (Council), the National Conference of State Historic Preservation Officers (NCSHPO), and the National Trust for Historic Preservation, addressed Capehart and Wherry housing under 36 CFR §800.14(e). This provides that an agency may request a ''Program Comment'' from the Council allowing it to comply with Section 106 for a category of undertakings in lieu of conducting a separate review for each individual undertaking under the regular consultation process. For Capehart and Wherry housing, the Program Comment covers the maintenance, repair, layaway, mothballing, privatization, and transfer out of Federal agency ownership, substantial alteration through renovation, demolition, and demolition and replacement of Wherry- and Capehart-era housing, associated structures and landscape features that may be eligible for listing on the National Register of Historic Places.

The Air Force and Navy included in their request to the Council the public comments received from a 60-day public comment period provided through an earlier notice (69 FR 48462, 10 August 2004). The Council subsequently published a notice of intent to issue the Program Comment (69 FR 54763, 10 September 2004) and notified the State Historic Preservation Officers, the NCSHPO, the National Trust, Tribal Historic Preservation Officers (THPOs), and the National Association of Tribal Historic Preservation Officers, and requested their views on the Air Force and Navy's proposed Program Comment. On 18 November 2004, the Council approved and issued the Program Comment. The Air Force and Navy agreed to complete certain treatment measures within 24 months. In return, the Air Force and Navy may carry out management actions prior to the completion of all of the six treatment steps so long as the management actions do not interfere with completion of the treatments the Air Force has committed to completing. Demolition of Eglin's Wherry housing will not interfere with the Air Force's commitments under this agreement; therefore, no further consultation or mitigation is required to demolish Eglin's Wherry housing.

Hurlburt Field

Live Oak Terrace – The Live Oak Terrace project area consists of the location of existing housing. The 100 housing units in the project area were built in 1976. They are not historic in age and are not considered eligible for the National Register as Cold War resources. No archaeological resources have been identified in this housing area. An unnamed historic cemetery (#26) has been noted along the boundary of Live Oak Terrace. The exact location is unknown. Some of the cemetery may lie under the edge of the current housing area boundary. In 2004, a ground-penetrating radar (GPR) survey was conducted of the area in an attempt to locate the previously documented burials. The survey found no evidence of these burials, and it is presumed that such

burial sites were destroyed by previous construction episodes (Thomas et al., 2004). In the event burials are located during future ground-disturbing activities, procedures for unexpected discoveries should be followed.

Pine Shadows – The Pine Shadows project area consists of the location of the existing housing. The 206 housing units in the project area were built in 1957. These units were recently evaluated for historical significance and, in concurrence with the SHPO, found to be ineligible for listing on the National Register. The majority of the housing area has been surveyed for archaeological resources. No archaeological resources have been identified.

Soundside Manor – The Soundside Manor project area consists of the location of existing housing. Fourteen housing units were built in 1997 and are not historic resources. Sixty housing units were constructed in 1957. These units were recently evaluated for historical significance and, in concurrence with the SHPO, found to be ineligible for listing on the National Register. All of the Soundside Manor project area has been surveyed for archaeological resources. One prehistoric archaeological site (8OK168), with Weeden Island and Fort Walton cultural associations, has been recorded in this area. As of 2004, site testing and evaluation, in compliance with Section 106 of the NHPA, were completed for this site, and testing determined that, the site was ineligible for listing on the National Register.

3.5.3 Native American Indian Consultation and Coordination

The Native American Graves and Repatriation Act (NAGPRA) (1990) protects Native American burial sites and controls the removal of human remains, funerary objects, sacred objects, and items of cultural patrimony on Federal and tribal lands. At present, no American Indian traditional resources, sacred sites, or spiritual areas have been identified on the installation. However, the nature and extent of Eglin AFB's cultural resources and its geographic size suggest a possibility that such resources may be identified in the future (U.S. Air Force, 2000).

Research regarding American Indian groups with a potential interest in the Eglin AFB area identified five federally recognized tribes of primary concern: the Miccosukee Tribe of Indians of Florida, the Seminole Tribe of Florida, the Poarch Band of Creek Indians, Alabama, the Muskogee (Creek) Nation of Okalahoma, and the Muscogee Nation of Florida. All five of these tribal groups were notified by Eglin AFB, with letters dated 20 August 2004, that the U.S. Air Force was considering the demolition of the Camp Pinchot Historic District, formerly located in the Choctawatchee National Forest. Further, two of the tribal groups responded in writing to Eglin's CEVH division. They were: the Miccosukee Tribe of Indians of Florida and the Muscogee Nation of Florida (Stanley, 2005). The Miccosukee Tribe of Florida asked that alternatives be considered while the Muscogee Nation of Florida asked that a

government-to-government agreement be drawn to establish a formal relationship. The current undertaking was not addressed.

3.6 BIOLOGICAL RESOURCES

This section describes the biological resources within the region of influence of the military family housing project, which includes the following sites: Hurlburt, Poquito Bayou, Eglin Main Base (Wherry/Capehart and Old Plew/New Plew), Camp Rudder, and Camp Pinchot. Biological resources include the native and introduced terrestrial plants and animals found on and around Eglin AFB. The terrestrial habitats of Eglin AFB are home to an unusually diverse biological community including several sensitive species and habitats. This diversity is a result of the long history of natural resource-related activity that has changed the character of its native biota (U.S. Air Force, 2003c). Widespread logging activities and wildfire suppression, combined with reforestation efforts using slash and sand pine, changed the forested character of Eglin lands, which were historically covered by longleaf pine. However, much of Eglin remains in a relatively natural condition (U.S. Air Force, 2003c).

3.6.1 Ecological Associations

Eglin applies a classification system of ecological associations to all its lands, based on floral, faunal, and geophysical characteristics. These ecological associations are described in Eglin's *Integrated Natural Resources Management Plan, 2002-2006* (U.S. Air Force, 2002) and the *Environmental Baseline Study Resource Appendices* (U.S. Air Force, 2003c). Seven ecological associations occur throughout the Eglin Land Test and Training Range: the Sandhills ecological association, the Flatwoods ecological association, the Wetland/Riparian ecological association, the Open Grassland/Shrubland ecological association, the Barrier Island ecological association, Landscaped and Urban Areas, and Invasive Exotic/Non-native Plants (Figure 3-8).

Of Eglin's seven major ecological associations, only the Sandhills ecological association, the Flatwoods ecological association, the Wetland and Riparian ecological association, and the Landscaped/Urban ecological association are found within or adjacent to the project areas. Currently, residential housing exists on a majority of all sites. In fact, only the Poquito Bayou Expansion area, Old Plew/New Plew Expansion site, and the Camp Pinchot Expansion area are not covered by at least 75 percent of existing military housing. Wherry/Capehart is 100 percent covered by base housing (Figure 3-8). Therefore, the Landscaped/Urban Area association characterizes a majority of the land related to sites encompassed by the Proposed Action and Alternatives. Table 3-11 provides the approximate acreage of the ecological associations present at the proposed and alternative locations.

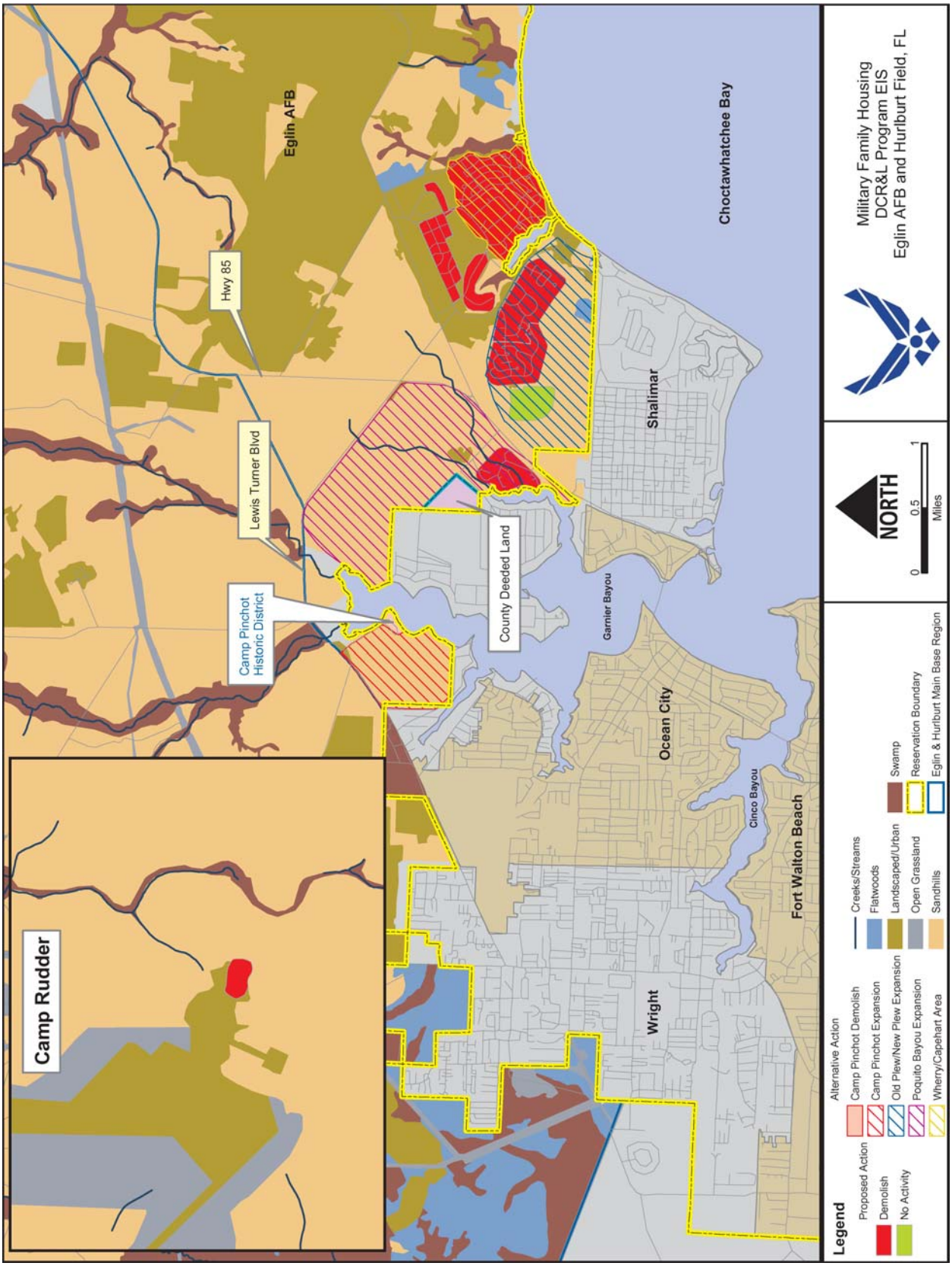

Figure 3-8. Ecological Associations Related to the Eglin Project Areas

Table 3-11. Approximate Acreages of Ecological Association Types Present at Proposed and Alternative MFH Sites

Site	Landscaped/ Urban (ac)	Sandhills (ac)	Flatwoods (ac)	Wetland/ Riparian (ac)
Eglin Main Base				
Hidden Oaks	52 (100%)			
Ben's Lake	66 (100%)			
Wherry/Capehart	280 (100%)			
New Plew	97 (100%)			
Old Plew	128 (100%)			
Old Plew/New Plew Expansion	28 (7%)*	363 (89%)	15 (4%)	<1 (<1%)
Poquito Bayou				
Poquito Bayou	67 (100%)			
Poquito Bayou Expansion	12 (1%)	788 (98%)	none	2 (0%)
Camp Pinchot				
Camp Pinchot	12 (100%)			
Camp Pinchot Expansion	14 (5%)	245 (94%)	none	1 (0%)
Hurlburt Main				
Live Oak Terrace	25 (100%)			
Pine Shadows	53 (100%)			
Soundside Manor	29 (100%)			

Percentages expressed as percent of Expansion areas not including area of existing housing; ac = acres

In general, the Sandhills ecological association borders all sites and comprises all of the Alternative expansion sites (Figure 3-8). Several freshwater tidal swamp communities (Wetland and Riparian ecological association) are located adjacent to various sites such as Capehart, Wherry, Old Plew, the Camp Pinchot Expansion site, and within the Poquito Bayou MFH area. Finally, there is a limited amount of the Flatwoods ecological association to the northeast of the Ben's Lake area and in the southern portion of the New Plew/Old Plew Expansion area (Table 3-11).

Sandhills Ecological Association

The Sandhills ecological association characterizes the largest extent of Eglin AFB land base, approximately 78 percent (U.S. Air Force, 2003c). This association is primarily underlain by Lakeland Sand soils. These soils are deep, sandy, and excessively drained, creating brownish-yellow, strongly acidic soils that are low in natural fertility and organic content. The Sandhills ecological association varies from areas predominately natural to substantially altered. It is characterized by rolling sandhill ridges, divided by streams, and includes pockets of habitat ranging from steeply sloped to flat and xeric (dry) to mesic (moist) (U.S. Air Force, 2003c). Most area of this association occurs between 20 and 295 feet above mean sea level (MSL).

In high quality sandhills habitat, dominant trees include stands of longleaf pine and to a lesser degree slash pine, along with turkey oak, sand live oak, and magnolia. However,

in poor quality sandhills habitat that is severely fire suppressed, sand pine encroaches and becomes the dominant tree type. This is evident at the Poquito Bayou and Camp Pinchot Expansion areas. Low shrubs comprise an important group and include saw palmetto, persimmon, dwarf huckleberry, gopher apple, and oaks (U.S. Air Force, 2003c). The groundcover consists of various grasses and herbs including, wiregrasses, bluestems, panic grasses, pinewoods dropseed, various asters, bracken fern, small-leaved milkpea, sensitive brier, and runner live oak. Vegetation surrounding ponds and the shoreline of creeks can include grasses and herbs or a dense shrub thicket. Typical plants include panicums, rushes, arrowheads, yellow-eyed grass, meadow beauty, and spike-rush.

Barking tree frogs, central newt, eastern fence lizard, gopher tortoise, box turtle, eastern diamondback rattlesnake, and gray rat snake typify the wildlife found in the Sandhills ecological association. Red-shouldered hawk, southeastern American kestrel, great horned owl, wild turkey, wood duck, bobwhite, woodpeckers, warblers, vireos, white-tailed deer, fox squirrel, armadillo, and raccoon can also be observed.

At all Alternative expansion sites, Camp Pinchot, Poquito Bayou, and the Old Plew/New Plew, the Sandhills ecological association is the dominant vegetative community, comprising approximately 94 percent, 98 percent, and 89 percent of the areas, respectively (Figure 3-8).

Flatwoods Ecological Association

Three Flatwoods communities, the Mesic, Wet, and Scrubby Flatwoods, are found throughout the Eglin Reservation. The Mesic Flatwoods is the most widespread and is associated with, and often grades into, Wet Flatwoods or Scrubby Flatwoods. It is characterized by open canopy forests of widely spaced longleaf pine trees with little or no midstory, but a dense groundcover including runner oak, saw palmetto, wiregrass, bitter gallberry, St. John's wort, and dwarf wax myrtle.

The Wet Flatwoods community can be characterized as having a relatively open canopy of scattered pines with a thick understory of hydrophytic herbs and shrubs (FNAI, 1994). Typical plants include slash pine, sweet bay, gallberry, titi, dwarf wax myrtle, and pitcher plants (U.S. Air Force, 2003c).

The Scrubby Flatwoods can be characterized as having an open canopy of longleaf pine, with a middle canopy of scrub oak, saw palmetto, and sparse groundcover. The Scrubby Flatwoods is mainly found in the southwestern portion of the Eglin Reservation.

The Flatwoods are home to many unique animals, including river otter, beaver, wood ducks, rails, Florida black bear, white-tailed deer, gray fox, bobcat, several bat species,

American alligator, black racer, corn snake cottonmouth, Alabama water dog, dwarf salamander, and several species of fish. Sensitive species observed in the Flatwoods might include flatwoods salamander, Bachman's sparrow, southeastern American kestrel, red-cockaded woodpecker, mimic glass lizard, and coal skink (FNAI, 1994). One community of Flatwoods (15 acres) occurs within the southern portion of the Old Plew/New Plew Expansion area (Figure 3-8).

Wetlands and Riparian Ecological Association

Wetlands and Riparian ecological associations on Eglin AFB can be divided into the following categories: (1) Wetlands that are dominated by plants adapted to anaerobic substrate conditions imposed by saturation or inundation for more than 10 percent of the growing season; (2) lacustrine wetlands that occur in non-flowing wetlands of natural depressions; (3) riverine communities, which are natural, flowing waters from their source to the downstream limits of tidal influence and are bounded by channel banks; and (4) estuarine communities found along bays and bayous, consisting of brackish waters. The above categories are further broken down into natural community types. In total, 24 community types have been identified on Eglin AFB. And although acreages for each community type have not been identified, nearly 61,000 acres of wetlands exist on Eglin with over 1,100 miles of streams and riparian areas.

Freshwater tidal swamps occur on river mouth floodplains just inland from salt marsh communities and are influenced by daily tides. These swamps often contain cabbage palm, bald cypress, southern magnolia, water tupelo, titi, saltbush, asters, and leather fern.

Salt marshes are found along Eglin's Choctawhatchee Bay coastlines and are influenced by tidal surges and freshwater influxes from nearby streams. Salt marsh vegetation is typified by non-woody, salt-tolerant plants like black needlerush, smooth cordgrass, glasswort, saltwort, and salt grass.

Please refer to Section 3.7.3, Wetlands, for additional information on wetlands.

Ecological Association Summary

Table 3-12 provides a summary of some of the plant and animal species commonly found within the ecological associations described above. The list below should not be considered a comprehensive inventory of the species found within these ecological associations. Rather, the table is provided as a reference summary.

Table 3-12. Typical Plant and Animal Species of Eglin AFB by Ecological Association

Plants		Animals	
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
Long Leaf Pine	*Pinus palustris*	Red-cockaded Woodpecker	*Picoides borealis*
Turkey Oak	*Quercus laevis*	Bobwhite Quail	*Colinus virginianus*
Blackjack Oak	*Q. marilandica*	Great Horned Owl	*Bubo virginianus*
Bluejack Oak	*Q. incana*	Gopher Tortoise	*Gopherus polyphemus*
Wiregrass	*Aristida stricta*	Indigo Snake	*Drymarchon corais*
Saw Palmetto	*Serona repens*	Diamondback Rattlesnake	*Crotalus adamanteus*
Bracken Fern	*Pteridium aquilinum*	Six-lined Racerunner	*Cnemidophorus sexlineatus*
Blueberry	*Vaccinium* spp.	Florida Black Bear	*Ursus americanus floridanus*
Yaupon	*Ilex vomitoria*	Fox Squirrel	*Sciurus niger*
Gallberry	*Ilex glabra*	Least Shrew	*Cryptodus parva*
Gopher Apple	*Licania michauxii*	Cottontail Rabbit	*Sylvilagus floridanus*
Blackberry	*Rubus cuneifolius*	Pocket Gopher	*Geomys pinetus*
Sand Pine	*Pinus Clausa*	White-tailed Deer	*Castor canadensis*
Pine-woods Bluestem	*Andropogon arctatus*	Feral Pig	*Sus scrofa*
Wiregrass	*Aristida stricta*	Raccoon	*Procyon lotor*
Flatwoods Ecological Association			
Longleaf Pine	*Pinus palustris*	Wood Duck	*Aix sponsa*
Runner Oak	*Quercus pumila*	Red-winged Blackbird	*Agelaius phoenicius*
Saw Palmetto	*Serona repens*	Cotton Mouth	*Agkistridon piscivorus*
St. John's Wort	*Hypericum brachyphyllum*	Flatwoods Salamander	*Ambystoma cingulatum*
Slash Pine	*Pinus elliottii*	River Otter	*Lutra canadensis*
Black Titi	*Cliftonia monophylla*	Beaver	*Castor canadensis*
Milkweed	*Asclepias humistrata*	Florida Black Bear	*Ursus americanus floridanus*
Pitcherplant	*Sarracenia* spp.	Gray Fox	*Urocyon cinereoargenteus*
Yellow Water Lilly	spp.	Raccoon	*Procyon lotor*
Saw Grass	*Cladium jamaicensis*	Florida Black Bear	*Ursus americanus floridanus*
Cattail	*Typha domingensis*	Sherman's Fox Squirrel	*Sciuris niger shermani*
Phragmites	*Phragmites australis*	American Alligator	*Alligator mississippiensis*
White Cedar	*Chamaecyparis thyoides*	Pine Barrens Tree Frog	*Hyla andersonii*
Water Tupelo	*Nyssa biflora*	Five-lined Skink	*Eumeces fasciatus*
Pitcher Plant	*Sarracenis purpurea*	Green Anole	*Anolis carolinensis*
Red Titi	*Cyrilla racemiflora*	Garter Snake	*Thamnophis sirtalis*
Tulip Poplar	*Liriodendrom tulipifera*	Indigo Snake	*Drymarchon corais*
Sweet Bay Magnolia	*Magnolia virginiana*	American Beaver	*Castor canadensis*
Red Bay	*Persea borbonia*	Parula Warbler	*Parula americana*
Wetland and Riparian Ecological Association (Saltwater)			
Black Needle Rush	*Juncus roemerianus*	Periwinkles	*Littorina irrorata*
Salt Marsh Cordgrass	*Spartina alterniflora*	Oyster	*Crassostrea virginica*
Salt Meadow Hay	*Spartina patens*	Gulf Crab	*Calinectes smilis*
Seaside Elder	*Iva imbricata*	Long-nosed Killifish	*Fundulus similis*
Saltgrass	*Distichylis spicata*	Sheepshead Minnow	*Cyprinodon variegatus*
Wax Myrtle	*Myrica certifera*	America Alligator	*Alligator mississippiensis*
Yaupon Holly	*Ilex vomitoria*	Great Blue Heron	*Ardea herodias*
Cattail	*Typha angustifolia*	Belted Kingfisher	*Megaceryle alcyon*
Palmetto	*Serenoa repens*	Raccoon	*Procyon lotor*
Marsh Elder	*Iva frutescens*	Salt Marsh Rabbit	*Sylvilagus aquaticus*

3.6.2 Sensitive Habitats

Sensitive habitats found on, or adjacent to, the action locations include critical habitat designations and seagrasses (Figures 3-9 and 3-10). While wetlands and floodplains are discussed in general terms in this section, they are discussed in more detail in Section 3.7, Water Resources. The management of sensitive habitats at Eglin is the responsibility of the 96th Civil Engineer Group, Natural Resources Division (96 CEG/CEVSN), and at Hurlburt Field, the Environmental Flight Division of the 16th Civil Engineering Squadron (16 CES). Habitats associated with sensitive species are often managed in conjunction with the U.S. Fish and Wildlife Service (USFWS) or the Florida Department of Environmental Protection, depending on the level of concern. Planned impacts to wetlands are required to follow a permitting process with the U.S. Army Corps of Engineers (USACE) and FDEP authorities. Table 3-13 provides an overview of the sensitive habitats on or adjacent to each proposed site.

Table 3-13. Sensitive Habitats Found Within or Adjacent to the Project Proposed and Alternative Areas

Site	Sensitive Habitats on Site	Sensitive Habitats Within 1 km of Site
Eglin Main Base		
Hidden Oaks	none	none
Georgia Avenue	none	none
Ben's Lake	none	none
Wherry	Wetlands, Floodplain	Wetlands, Floodplain, Seagrass
Capehart	Wetlands, Floodplain	Wetlands, Floodplain, Seagrass
New Plew	none	none
Old Plew	none	none
(Old Plew/New Plew Expansion)	none	Wetlands, Floodplain, Seagrass
Poquito Bayou		
Poquito Bayou	Wetlands, Floodplain	Wetlands, Floodplain, Seagrass
Poquito Bayou Expansion	Wetlands, Floodplain	Wetlands, Floodplain
Camp Pinchot		
Camp Pinchot	none	Wetlands, Floodplain
Camp Pinchot Expansion	none	Wetlands, Floodplain, Seagrass
Hurlburt Main		
Live Oak Terrace	none	none
Pine Shadows	none	none
Soundside Manor	none	Gulf Sturgeon Critical Habitat

Source: Eglin GIS Data, 2004; FDEP, 2004

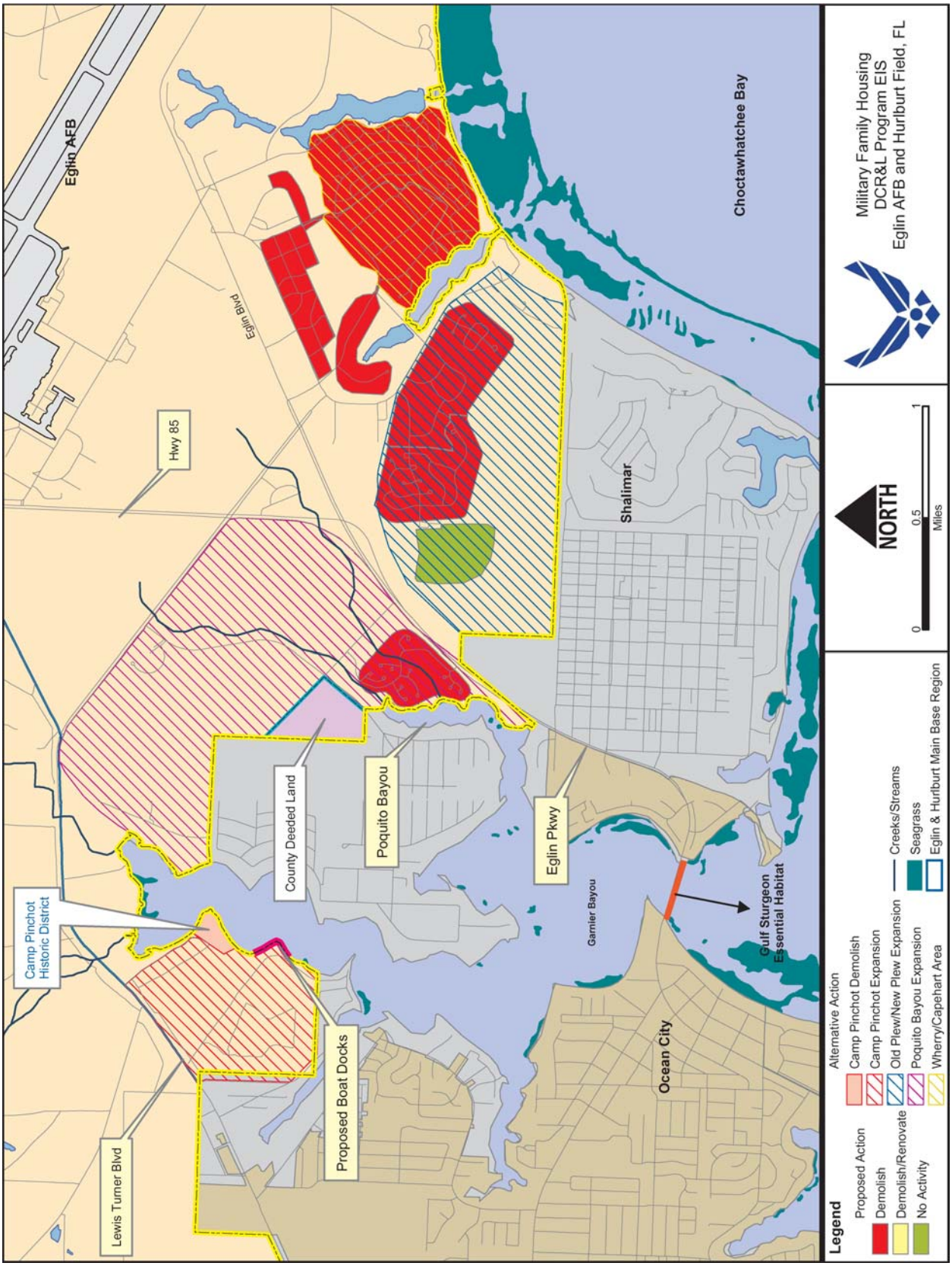

Figure 3-9. Sensitive Habitats Associated With the Eglin Action Areas

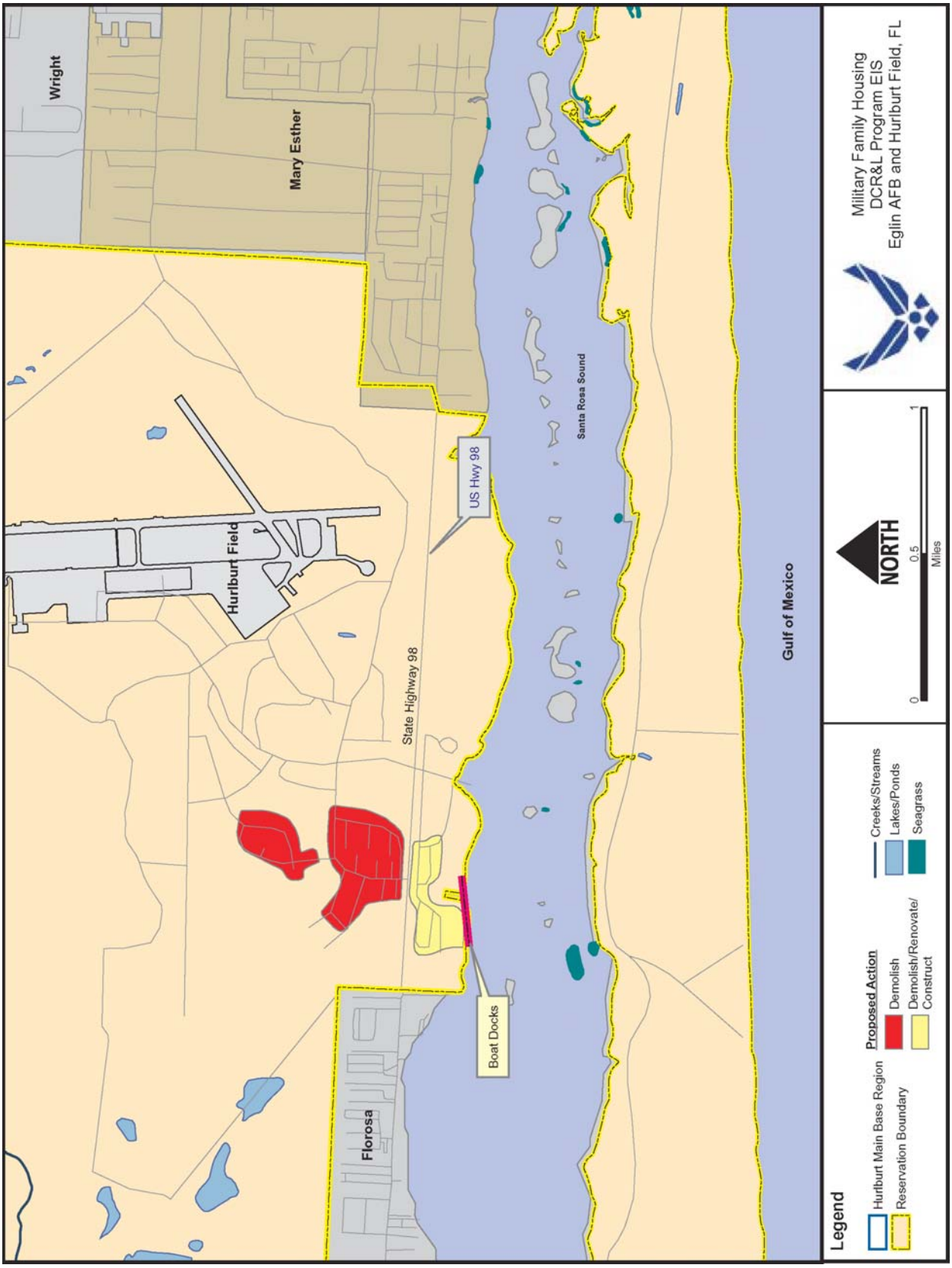

Figure 3-10. Sensitive Habitats Associated With the Hurlburt Action Areas

Submerged Aquatic Vegetation

Submerged aquatic vegetation, or seagrasses, are submerged grass-like plants that inhabit shallow coastal waters. Seagrasses are a vital component of Florida's coastal ecology and perform invaluable functions in aquatic ecosystems by filtering and trapping sediment and absorbing nutrients (i.e., nitrogen and phosphorus), which can adversely affect water quality (Sargent et al., 1995). Seagrasses are found along much of Santa Rosa Sound and in areas of Choctawhatchee Bay where the sunlight, salinity, water depth, and bottom sediment allow these grasses to flourish.

Seagrasses in Santa Rosa Sound have been in recent decline due in part to suspended sediment and solids that cloud the water column and block sunlight, runoff from development and construction, shoreline erosion, and increased boat traffic (Sargent et al., 1995). Sites that do not support seagrasses are proposed for the construction of a maximum of six boat docks. Figures 3-9 and 3-10 depict the location of seagrasses near areas of proposed boat dock construction.

Critical Habitat

Under the Endangered Species Act of 1973 (as amended, 16 U.S.C. 1531 et seq.), the USFWS is authorized to designate critical habitat for listed species. Critical habitat is defined by the Endangered Species Act (ESA) as "(i) the specific areas within the geographical area occupied by the species, at the time it is listed…on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed…that…are essential for the conservation of the species." The only critical habitat associated with the project areas is that designated for the Gulf sturgeon.

Critical Habitat for Gulf Sturgeon

The USFWS and National Marine Fisheries Service designated the Gulf sturgeon (*Acipenser oxyrhynchus desotoi*) as threatened under the ESA on 30 September 1991. Critical habitat designation for the Gulf sturgeon was published in the Federal Register on 19 March 2003. The only unit designation potentially impacted by the action areas is Unit 10. This unit, described in the Federal Register, includes the Santa Rosa Sound. Santa Rosa Sound is designated as critical habitat because the USFWS believes that it provides one continuous migratory pathway between Choctawhatchee Bay, Pensacola Bay, and the Gulf of Mexico for feeding and genetic interchange. The approximate length of the critical habitat unit is 33 miles, with an area of approximately 39 square miles (Federal Register, 2003).

3.6.3 Sensitive Species

Sensitive species are those species protected under Federal or state law, to include migratory birds (which are protected under the Migratory Bird Treaty Act [16 U.S.C.

703–712; 1997-Supp]), marine mammals (protected under the Marine Mammal Protection Act of 1972 (16 U.S.C. 1361 et seq.; 1997-Supp)), and threatened and endangered species (protected under the Endangered Species Act of 1973 [16 U.S.C. 1531–1544; 1997-Supp]).

An *endangered* species is one that is in danger of extinction throughout all or a significant portion of its range. A *threatened* species is any species that is *likely* to become endangered within the foreseeable future throughout all or a significant portion of its range. Eglin has developed an overall goal within the Integrated Natural Resources Management Plan to continue to protect and maintain populations of native threatened and endangered plant and animal species within the guidelines of ecosystem management (U.S. Air Force, 2002). Eglin's sensitive species also include species that have no Federal status but have special status within Florida.

State status categories include: state endangered, state threatened, state species of special concern, and state species of special concern candidate. Eglin Natural Resources Branch protects state-listed species through habitat management—specifically through the management of habitats identified as conservation targets by The Nature Conservancy. By addressing the needs of conservation targets, which are sensitive, essential habitat, and cornerstone species, 96 CEG/CEVSNW indirectly supports the management of other species and habitat, including state-listed species.

Eglin is known to support a number of sensitive plant and wildlife species. The only such species documented to occur in the project areas are the state-listed Florida black bear (through radio tracking from 96 CEG/CEVSNW), the state-listed gopher tortoise, and the federally listed endangered eastern indigo snake (based on pictures provided by a local resident of captured snakes during the late 1950s). Anecdotal evidence (e.g., local resident eye-witness reports) suggests that other sensitive species such as ospreys, red-cockaded woodpeckers, bald eagles, the Gulf sturgeon, and the Florida panther may, at times, occur in the area. However, the Gulf sturgeon feeds in the Gulf of Mexico and spawns in the upper reaches of river systems; Garnier's Bayou is not a likely feeding or spawning area for the Gulf sturgeon.

In addition, a survey of the area, conducted by 96 CEG/CEVSNW biologists on 12 March 2004, found no evidence of bald eagle nests, suitable red-cockaded woodpecker habitat, osprey nests, the Florida panther, or other species (Hagedorn, 2004). In addition, no gopher tortoise burrows (abandoned or active) were located. Since the indigo snake primarily utilizes abandoned gopher tortoise burrows as habitat, it is unlikely that any appreciable number of indigo snakes is present on a sedentary basis. Most of the species observed may occur intermittently during foraging activities, transit, or rest during transit.

Table 3-14 provides a summary of the sensitive species that may potentially occur within or near the Proposed and Alternative Action Sites based the identification of ecological classifications frequented by these species. Figure 3-11 provides a graphical

representation of those species that have been documented to occur on or near the project sites. The EIS Resource Appendices (Appendix I, *Biological Resources*) offers a more detailed natural history description of these species.

Table 3-14. Potentially Occurring Sensitive Species Within, or Adjacent to, the Proposed and Alternative MFH Areas

Scientific Name	Common Name	Status	Ecological Association
Amphibians			
Rana capito sevosa	Dusky gopher frog*	SSC	SH, WR, OG
Rana okaloosae	Florida bog frog*	SSC	FW, WR
Fish			
Acipenser oxyrhynchus desotoi	Gulf Sturgeon*	FE, SE	WR
Reptiles			
Alligator mississippiensis	American alligator*	FT(S/A), SSC	WR
Drymarchon corais couperi	Eastern indigo snake**	FT, ST	SH, OG
Gopherus polyphemus	Gopher tortoise**	SSC	SH, OG
Macroclemys temmincki	Alligator snapping turtle*	SSC	FW, WR
Pituophis melanoleucus	Florida pine snake	SSC	SH
Birds			
Pandion haliaetus	Osprey*	SSC	FW, WR
Haliaeetus leucocephalus	Bald Eagle*	FT/ST	FW, WR
Falco sparverius paulus	Southeastern American kestrel*	ST	SH, OG
Mammals			
Ursus americanus floridanus	Florida black bear**	ST	SH, FW, WR, OG
Plants			
Aristida simpliciflora	Southern Three-Awned Grass*	F(MC)	SH
Baptisia calycosa var villosa	Pineland (Hairy) Wild Indigo*	ST	SH
Calamovilfa curtissii	Curtiss' Sandgrass*	ST, F(MC)	FW, WR
Carex baltzellii	Baltzell's Sedge*	ST	SH
Kalmia latifolia	Mountain Laurel*	ST	SH
Lachnocaulon dignum	Bog Buttons*	SE	FW, WR
Lilium iridollae	Panhandle Lily*	SE, F(MC)	FW,WR
Magnolia ashei	Ashe's Magnolia*	SE, F(MC)	SH
Magnolia pyramidata	Pyramid Magnolia*	SE	SH
Panicum nudicaule	Naked-Stemmed Panic Grass*	ST, F(MC)	FW, WR
Rhodoendron austrinum	Orange Azalea*	SE	SH
Sarracenia rubra	Sweet (Red-Flowered) Pitcherplant*	ST, F(MC)	FW, WR
Stewartia malacodendron	Silky Camellia*	SE	SH
Tephrosia mohrii	Pineland Hoary Pea*	ST, F(MC)	SH
Xyris longisepala	Karst Pond Yellow-Eyed Grass*	SE, F(MC)	WR

Source: Eglin GIS Data, 2004; U.S. Air Force, 2002

Status: FT(S/A) = Federally threatened due to similarity of appearance to another species; FC= Federal candidate species; FE = Federally endangered; FT = Federally threatened; F(MC) = Federal species of Management Concern; ST = State threatened; SE = State endangered; SSC = State species of special concern; SSCC = State species of special concern candidate.

Ecological Associations: SH = Sandhills; FW = Flatwoods; WR = Wetland/Riparian; OG = Open Grassland.

* Not documented to occur, but potentially present based on ecological associations in the area.

** Documented to occur

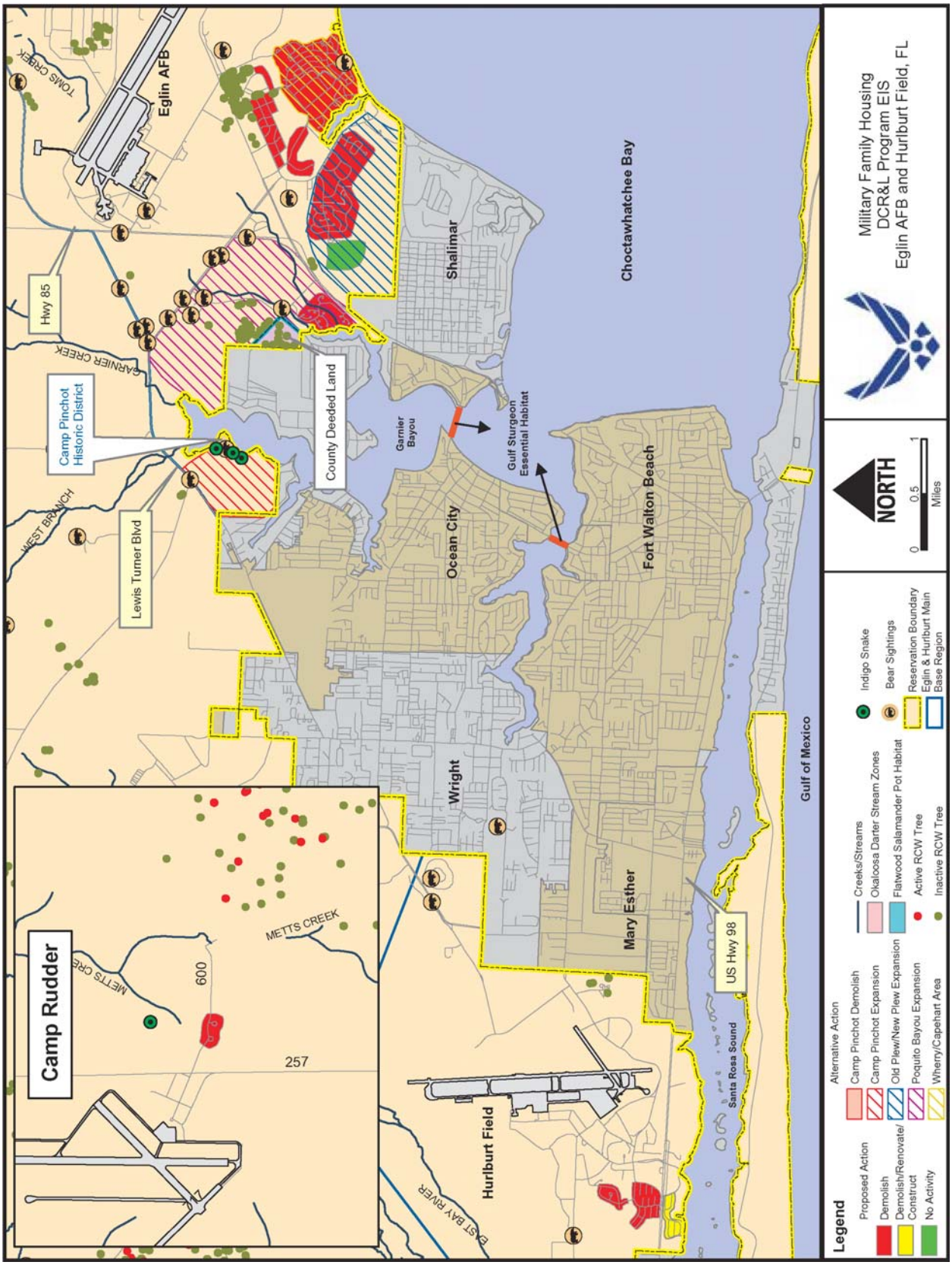

Figure 3-11. Sensitive Species Associated With the Action Areas

3.7 WATER RESOURCES

This section discusses water resources, which include groundwater, streams, lakes, bays, bayous, sounds, and wetlands located within or near the proposed project areas. The following surface water bodies are located within or near the proposed demolition and construction areas: Garnier Bayou, Poquito Bayou, Santa Rosa Sound, Choctawhatchee Bay, Metts Creek, Garnier Creek, Lighter Knot Creek, Bear Creek/Memorial Lake, Ben's Lake/wetland, and multiple small and ephemeral unnamed creeks on Main Base and Hurlburt (Figures 3-12 and 3-13). The bayous, sound, and bay are brackish, while the creeks are freshwater. The lakes are freshwater near their source and brackish near the bay. Adjacent wetlands and floodplains are associated with most of these water bodies (Figure 3-12 and 3-13), and may be either freshwater or brackish. Water quality within the project area is generally good, and no waters that are listed as impaired on the 1998 303(d) list fall within the project area (FDEP, 2004). Below is site-specific information on the water resources associated with the proposed demolition and construction areas. Further descriptions of surface and groundwater resources, water quality, and pertinent regulations are provided in the EIS Resource Appendices (Appendix J, *Water Resources*).

3.7.1 Groundwater

There are two significant aquifers at Eglin AFB and the surrounding area: the surficial aquifer, also known as the Sand and Gravel Aquifer, and the Floridan Aquifer. The Sand and Gravel Aquifer is a generally unconfined, near-surface unit segregated from the underlying limestone Floridan Aquifer by the low-permeability Pensacola Clay confining bed. In the vicinity of Fort Walton Beach, the aquifer consists of several distinct sandy units, the lowest of which is the main producing zone. Yields from wells within this zone vary considerably but are generally in the range of 200 to 400 gallons per minute (USACE, 1994). The Sand and Gravel Aquifer has been identified as an important source of water for Escambia, Okaloosa, and Santa Rosa Counties and is used primarily for irrigation in Okaloosa County.

The upper limestone of the Floridan Aquifer is the principal source of potable water used at Eglin AFB and in the surrounding communities. The Floridan Aquifer, which occurs beneath most of Florida, consists of a thick sequence of interbedded limestones and dolomites overlain by the Pensacola Clay confining bed. The Bucatunna Formation confining bed separates the Floridan Aquifer into upper and lower limestone units. The lower limestone unit is saline and is not used as a water source. The upper limestone of the Floridan Aquifer is the principal source of water used at Eglin AFB and Hurlburt and in the surrounding communities. Groundwater storage and movement in the upper limestone of the Floridan Aquifer occurs in interconnected, intergranular pore spaces, small solution fissures, and larger solution channels and cavities. Yields from wells are large, ordinarily in the range of 250 to more than 1,000 gallons per minute, and the water is found under confined conditions throughout the Eglin area (USGS, 2002).

The Northwest Florida Water Management District regulates the consumption of water from the Floridan Aquifer.

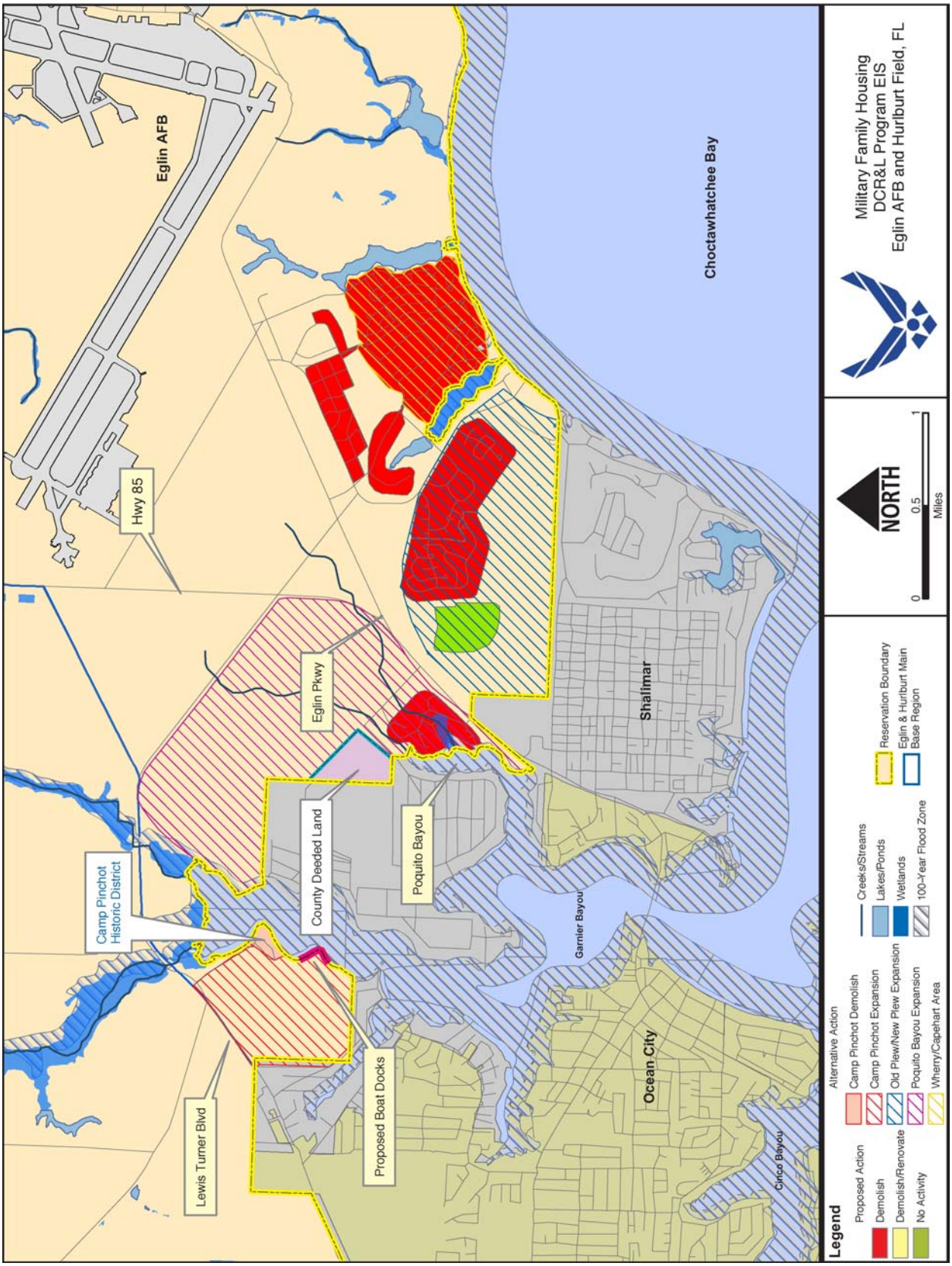

Figure 3-12. Surface Waters, Wetlands, and Floodplains Associated With the Eglin AFB Project Areas

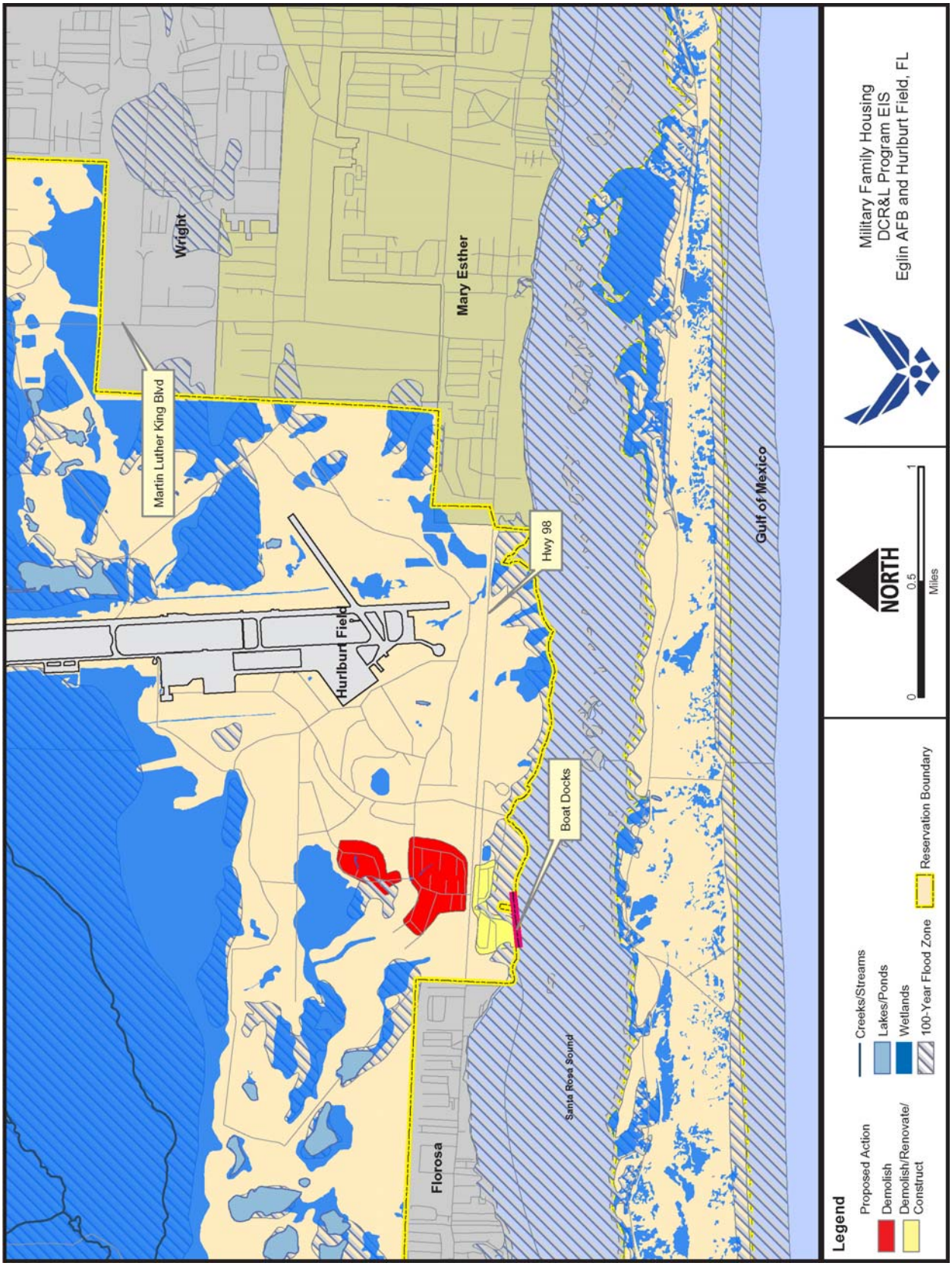

Figure 3-13. Surface Waters, Wetlands, and Floodplains Associated With the Hurlburt Field Project Areas

The top of the aquifer is about 50 feet below MSL in the northeast corner of the base and increases to about 700 feet below MSL in the southwestern area of the base. The top of the aquifer is about 400 to 450 feet below MSL in the main base area (McKinnon and Pratt, 1998). The thickness of the potable-water zone in the aquifer varies from less than 250 feet along the Gulf of Mexico to over 750 feet in central Okaloosa County. In general, the quality of the Sand and Gravel Aquifer is good, being very soft and relatively demineralized. Water from the upper limestone of the Floridan aquifer is generally of suitable quality for most uses.

3.7.2 Surface Water

The proximity of existing and proposed housing locations to surface waters is listed in Table 3-15.

Table 3-15. Proximity of Proposed Demolition and Construction Sites to Water

Housing Area	Shortest Distance to Water	Nearby Water Bodies
Hurlburt Field		
Soundside Manor	Located adjacent to Santa Rosa Sound	Santa Rosa Sound 2 ephemeral unnamed creeks
Pine Shadows	1210 ft to Santa Rosa Sound	Santa Rosa Sound 2 ephemeral unnamed creeks
Live Oak Terrace	2700 ft to Santa Rosa Sound	Santa Rosa Sound 1 ephemeral unnamed creek
Eglin Main Base		
Camp Pinchot Housing	Located adjacent to Garnier Bayou	Garnier Bayou 1 ephemeral creek
Poquito Bayou Housing	Located adjacent to Poquito Bayou	Poquito Bayou 2 small unnamed creeks
Capehart Housing	Located adjacent to Memorial Lake and Choctawhatchee Bay	Memorial Lake Choctawhatchee Bay
Wherry Housing	Located adjacent to Ben's Lake	Ben's Lake 1 ephemeral creek
Ben's Lake Housing	1805 ft to Ben's Lake	Ben's Lake Memorial Lake 1 ephemeral creek
Old Plew	390 ft to Ben's Lake	Ben's Lake 1 ephemeral creek
New Plew	2200 ft to Ben's Lake	Ben's Lake
Poquito Bayou Expansion	Located adjacent to Poquito Bayou	Poquito Bayou Garnier Bayou Garnier Creek 2 small unnamed creeks 2 ephemeral creeks
Camp Pinchot Expansion	Located adjacent to Garnier Bayou	Garnier Bayou 1 unnamed creek
Old Plew/New Plew Expansion	390 ft to Ben's Lake	Ben's Lake 1 ephemeral creek Choctawhatchee Bay
Other Locations		
Camp Rudder	570 ft to Metts Creek	Metts Creek

Source: Eglin GIS Data, 2004
No housing, including areas that are adjacent to water bodies, will be located in the floodplain.

Hurlburt Field

The three housing areas under consideration on Hurlburt Field all drain into Santa Rosa Sound.

Eglin Main Base

The housing areas on Eglin Main Base drain to a number of different water bodies. The current Camp Pinchot housing area and the Camp Pinchot Expansion area both drain into Garnier Bayou. The current Poquito Bayou housing area drains into Poquito Bayou, while the Poquito Bayou Expansion area drains into Poquito Bayou, Garnier Bayou, and Garnier Creek. The Capehart housing area is bordered on the east by Lower Memorial Lake and to the south by Choctawhatchee Bay, and drains to both. The Wherry housing area drains to Ben's Lake. Ben's Lake housing area drains to Ben's Lake, Memorial Lake, and Choctawhatchee Bay. Old Plew and New Plew drain to Ben's Lake. The Old Plew/New Plew Expansion area drains to Ben's Lake, Choctawhatchee Bay, and Poquito Bayou. All waters within the project area ultimately flow into Choctawhatchee Bay.

Camp Rudder

The Camp Rudder housing area drains into Metts Creek, which ultimately drains into the Yellow River.

Surface Water Quality

The state of Florida has developed and retains primacy for surface water quality standards for all waters of the state (F.A.C. 62-301 and F.A.C. 62-302) in accordance with the provisions of the Clean Water Act. The Act includes a classification system that classifies each water body based on its suitability for various purposes. No surface water in the ROI is currently defined as Class I (potable water supplies). The majority of streams on the Eglin Reservation and marine waters seaward of Santa Rosa Island are defined as Class III (recreation, propagation, and maintenance of a healthy, well-balanced population of fish and wildlife). Water quality criteria for Class I, II, and III waters are presented in the EIS Resource Appendices (Appendix J, *Water Resources*).

FDEP uses a scoring system to rate the quality of surface waters of the state. Florida surface waters are rated as follows.

- Fully Meets Use
- Partially Meets Use
- Does Not Meet Use
- Insufficient Data

Based on the above system, the surface water quality of streams, bayous, bays, and sounds in the action area was rated by the FDEP. According to the *FDEP Florida Water Quality Assessment 305(b) Report* (FDEP, 2000), each of the water bodies in the action area was rated as "Fully Meets Use." No water bodies within the action area are listed as impaired on the 1998 303(d) List (FDEP, 2004). No information regarding the water quality of Metts Creek, Ben's Lake, or Memorial Lake was available.

Choctawhatchee Bay Water Quality

Overall water quality in Choctawhatchee Bay is reported to be good, as defined by an FDEP water quality index (Hand et al., 1994). A portion of Choctawhatchee Bay and its tributaries, as well as East Bay and its tributaries, are delineated as Class II (shellfish propagation or harvesting).

Santa Rosa Sound Water Quality

The FDEP rates water quality in Santa Rosa Sound as "good" with little change over the last ten years (FDEP, 2000). Most of the waters in the Sound are Class II waters, approved for shellfish harvesting.

Garnier Bayou and Poquito Bayou Water Quality

The Northwest District of the FDEP Watershed Management Section partners with the Okaloosa County Board of Commissioner's Environmental Council to produce monthly water quality reports for Choctawhatchee Bay. Two sites that are monitored as a part of these monthly reports are located within the project area—Garnier Bayou, and Longwood Park—both of which are in Garnier Bayou. Historical measurements of water quality parameters from 1998 to present (Table 3-16) were consistently at acceptable levels at both sites (FDEP, 2004).

Table 3-16. Average Values of Water Quality Parameters in Longwood Park and Garnier Bayou (1998 – 2003)

Parameter	Longwood Park	Garnier Bayou
Fecal Coliform (#/100 mL)	<10	<10
Total Nitrogen (ppm)	0.4-0.5	0.4-0.5
Total Phosphorus (ppm)	0.01-0.02	0.01-0.02
Dissolved Oxygen (mg/L)	8.0	Not Available
Turbidity (ppm)	0-1	0-1
Conductivity (µmhos/cm)	3000	3000
pH	8.0	8.0
Salinity (ppt)	15-20	15-20

Source: FDEP, 2004
ppm = parts per million; mL = milliliters; µmhos/cm = micro-mhos per centimeter; ppt = parts per thousand

3.7.3 Wetlands and Floodplains

This section discusses wetlands, floodplains, and submerged aquatic vegetation, as well as the regulatory drivers that govern these resources. This discussion also assesses qualitative and quantitative characteristics of these resources and their relative locations to the proposed construction, renovation, and demolition activities.

Wetlands

Wetlands are defined in the U.S. Army Corps of Engineers Wetland Delineation Manual as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (USACE, 1987). These resources are protected under Section 404 of the Clean Water Act (33 U.S.C. Section 1344) and at the state level with the Environmental Resource Permit program under Part IV, Florida Statutes Section 373.

Before an action adversely impacting wetlands may proceed, EO 11990, Protection of Wetlands, 1977 (42 FR 26961), requires the head of the responsible Federal agency to find that there is no practicable alternative to conducting the action in wetlands. If, however, no practicable alternative exists to the Proposed Action, mitigation must be taken to minimize impacts in or adjacent to wetlands and would be implemented early in the site planning process to reduce or eliminate direct and indirect impacts. The USACE and FDEP both have a formal process for determining a jurisdictional wetland. This delineation process would be accomplished in coordination with 96 CEG/CEVCE, 96 CEG/CEVSNW, 16 CES/CEV, and the action agency or the developer.

FDEP's wetland program regulates dredge and fill activities in both fresh and salt waters under their jurisdiction. Waters adjoining Florida's coastline are also under the state's jurisdiction. Permit applications made to the FDEP can also serve as joint applications to initiate concurrent review by the USACE.

Wetlands are areas of transition between terrestrial and aquatic systems where the water table is usually at, or near, the surface, or the land is covered by shallow water (Cowardin et al., 1979). These sensitive habitat areas are inundated (water covered), or water is present at or near the surface of the soil for distinguishable periods of time throughout the year. Local hydrology and soil saturation largely affects soil formation and development, as well as the plant and animal communities found in wetland areas (USEPA, 1995). The term *wetlands* encompasses marshes, swamps, bogs, and similar areas. Wetland areas located on Eglin AFB and Hurlburt are depicted previously on Figures 3-12 and 3-13. Tables 3-17 and 3-18 identify and classify wetland areas (in acres) in the proposed worksites.

Some of the characteristics of these wetlands are given below. However, more detailed definitions of the wetland classifications used in these tables are provided in the EIS Resource Appendices (Appendix J, *Water Resources*).

Estuarine – Estuarine wetlands are brackish (part freshwater, part saltwater) tidal habitats and wetlands that are usually semi-enclosed by land but have open, partly obstructed, or sporadic access to the ocean.

Riverine – Riverine wetlands are wetlands and deepwater habitats contained within a channel.

Lacustrine – Lacustrine wetlands are wetlands that are situated in a topographic depression or dammed river channel.

Palustrine – Palustrine wetlands are dominated by trees, shrubs, persistent emergent vegetation, emergent mosses, or lichens.

Table 3-17. Wetland Areas (Acres) Located in Existing Housing Areas

Wetland Type	Existing Housing Areas										
	Camp Pinchot	Poquito Bayou	Hidden Oaks	New Plew	Old Plew	Wherry	Ben's Lake	Capehart	Live Oak	Pine Shadow	Soundside Manor
Lacustrine	0	0	0	0	0	0	0	0.007	0	0	0
Palustrine	0	7.480	0	0	0	0	0	0	0.313	0.035	0
Riverine	0	0	0	0	0	0	0	0	0	0	0
Estuarine	0	0	0	0	0	0.480	0	0.514	0	0	0

Areas shown above are in total acres.

Table 3-18. Wetland Areas Located in Alternative Housing Locations

Wetland Type	Alternative Sites			
	Wherry/ Capehart	Old Plew/ New Plew Expansion	Poquito Bayou Expansion	Camp Pinchot Expansion
Lacustrine System	0	0	0	0
Palustrine System	0	0.118	8.650	0
Riverine System	0	0	0	0
Estuarine System	1.080	0.423	0.007	0

Areas shown above are in total acres.

Floodplains

Under EO 11988, 1977, Floodplain Management (42 FR 26951), Federal agencies are prohibited from the occupancy and modification of floodplains and floodplain development unless there is no practicable alternative. The EO stipulates that Federal agencies proposing actions in floodplains consider alternative actions to avoid adverse

effects, avoid incompatible development in the floodplains, and provide opportunity for early public review of any plans or proposals. If adverse effects are unavoidable, the action agency must include mitigation measures in the action to minimize impacts.

Floodplains are lowland areas adjacent to surface water bodies (i.e., lakes, wetlands, and rivers) that are periodically covered by water during flooding events. Floodplains and riparian habitat are biologically unique and highly diverse ecosystems providing a rich diversity of aquatic and terrestrial species, acting as a functional part of natural systems. Floodplain vegetation and soils act as water filters, intercepting surface water runoff before it reaches lakes, streams, or rivers, and serve to store floodwaters during flood events. This process aids in the removal of excess nutrients, pollutants, and sediments from the water and helps reduce the need for costly cleanups and sediment removal. Floodplains also reduce downstream flooding by increasing upstream storage in wetlands, sloughs, back channels, side channels, and former channels.

Figure 3-12 and Figure 3-13 showed the location of floodplain areas in relation to the worksites associated with the Proposed Action and Alternatives. Floodplains are identified using Federal Insurance Mapping Agency flood hazard mapping data developed through the National Flood Insurance Program identification and mapping program. Areas identified as located within Special Flood Hazard Areas (SFHA), as determined by FEMA, are areas that would be inundated by a flood having a 1-percent chance of occurring in any given year. This occurrence was previously referred to as the 100-year floodplain (FEMA, 2004). Development may take place within the SFHA as long as the development is compliant with local floodplain management ordnances (which must meet minimum Federal requirements). Within the SFHA, several flood hazard zones correspond to different levels of detailed determination methods and flood insurance requirements.

Based on FEMA mapping data acquired from the FDEP, portions of the Hurlburt Soundside location, as well as one existing housing unit proposed for demolition, are within the SFHA AE zone designation (Figure 3-13). This designation corresponds to the 100-year floodplain as determined in the FEMA Flood Insurance Study by detailed hydraulic analysis methods. Within this zone, mandatory flood insurance purchase requirements apply (FEMA, 2004). No new construction is proposed within floodplain areas, and no other areas associated with the proposed sites are located within a SFHA zone.

3.8 SOILS

This section discusses soils within the region of influence, in particular the types of soil occurring at the proposed demolition and construction sites of the Alternative locations. Depending on their properties and the topography in which they occur, soils have varying degrees of susceptibility to erosion. Soil disturbance associated with the demolition and construction of military housing may potentially result in erosion and

the transport of eroded soils into nearby drainages. Portions of the affected environment that have been built up, such as areas of existing housing, are characterized by impervious surfaces (i.e., areas that water cannot seep into, such as roads, driveways, and structures). During rainfall events, water moves across impervious surfaces into stormwater drains and holding ponds, and is ultimately transported into local water bodies.

Even though the soils within the Alternative areas have limited erodibility and the natural terrain is generally flat in most places, ground disturbance through construction coupled with a lack of erosion minimization measures (best management practices) can lead to the transport of sediments (i.e., eroded soils) across impervious surfaces into local water bodies. The Clean Water Act prohibits the deposition of sediments into surface waters. Sediments affect water clarity, decrease oxygen levels in water, and transport pollutants. The following sections discuss the types of soil that occur at the Alternative locations, a description of the properties of these soils, and factors influencing erosion.

3.8.1 Soil Types Occurring at the Proposed Project Locations

Soils occurring at the Alternative locations are typical of the types of soil that occur over much of the Eglin Reservation. Sand is predominant, with Lakeland Sand being the most common soil type found within the region of influence. Table 3-19 lists soil types and basic erodibility characteristics for the Alternative locations. Figures 3-14 and 3-15 provide a graphical representation of the soil types located at the action areas. Additional information on soil types is provided in the EIS Resource Appendices (Appendix K, *Soils*).

Table 3-19. Soil Types and Erodibility at the Proposed Project Locations

Soil Type	Location / Approximate Percent Coverage													Erodibility	
	Camp Pinchot & Expansion	Poquito Bayou Housing	Poquito Bayou Expansion	Hidden Oaks	New Plew	Old Plew	Camp Rudder	Capehart	Wherry	Ben's Lake	Live Oak terrace	Pine Shadows	Soundside Manor	Water	Wind
Lakeland Sand	100	65	90	100	100	100	100	89	100	100			45	Very Low	High
Dorovan Muck		15	2					1			10	15	30		
Resota Sand		5										40	3		
Chipley & Hurricane Sand		15	2									15			
Foxworth Sand			3					10							
Udorthents			3											Slight	Slight
Rutledge Sand											90		2	Slight	N/A
Urban Land												25		Not Applicable (N/A)	
Mandarin Sand												5	20	Very Low	High

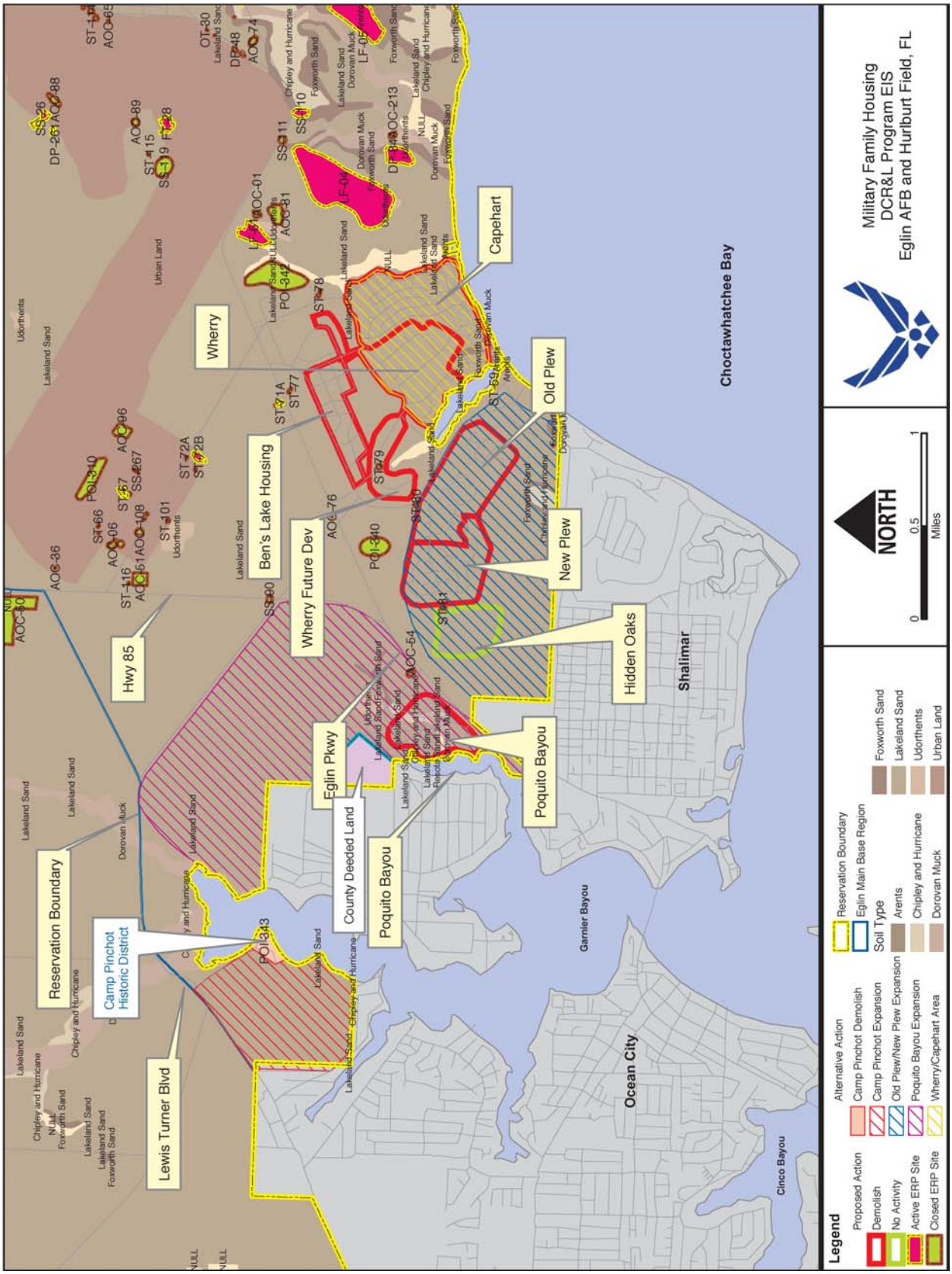

Figure 3-14. Soil Types and ERP Sites Associated With the Eglin AFB Action Areas

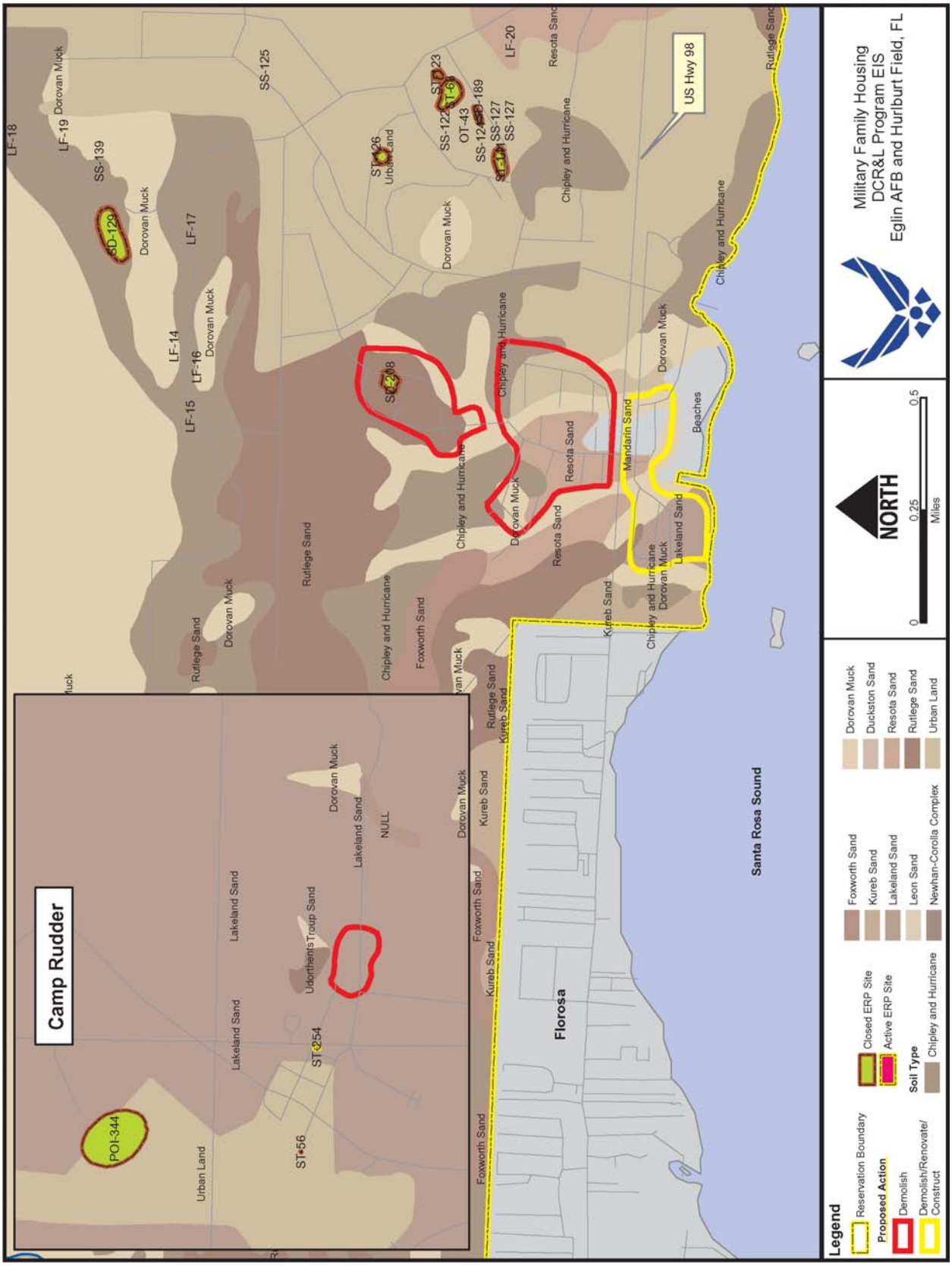

Figure 3-15. Soil Types and ERP Sites Associated With the Hurlburt Field Action Areas

In general all of the soils listed above in Table 3-19 are not susceptible to water erosion under natural conditions, though nearly all of the sandy soils have a high susceptibility to wind erosion. Soils classified as Udorthents are typical of a disturbed area, such as a borrow pit, and a small area of this soil type occurs within the Poquito Bayou Expansion area.

3.8.2 Topography: Surface Drainage Features

Surface drainage features, specifically the steepness of the terrain are important in understanding the effects of ground disturbance to soils. Like the soil characteristics described above, topography is another erosion factor to consider when undertaking construction activities. Topographical descriptions of the Alternative areas below are derived from U.S. Geological Survey maps.

Camp Pinchot

Northeast of Camp Pinchot, particularly east of the access road that leads from Lewis Turner Boulevard, the slope is relatively steep. Topography at this presently undeveloped location indicates natural drainage flows into Garnier Bayou. At its steepest, a slope of 12.5 percent, which is around the upper range of steepness for Lakeland soils on Eglin, extends for a length of about 1,500 feet along the waterfront. At the existing Camp Pinchot location and points south, slopes are gentle, averaging about 2.5 percent.

Poquito Bayou Expansion

Across from Camp Pinchot, within the Poquito Expansion area, slopes range from 2.5 percent to 8 percent along the west shore of Garnier Bayou.

Poquito Bayou Housing

Slopes at this location are about 7.5 percent. Poquito residents from the Longwood area, opposite existing military housing, have voiced complaints about erosion problems arising from construction of the Poquito family housing built in the 1970s.

Old Plew/New Plew Expansion Area

The existing Old Plew housing southwest of Ben's Lake is located on relatively flat terrain, except at the shoreline. The terrain at New Plew is relatively flat.

Wherry/Capehart Area

On the east shore of Ben's Lake, slopes are 7.5 to 10 percent directly along the shore, and essentially flat over most of the existing housing area. The east side of Capehart, which is bordered by Lower Memorial Lake, is characterized by slopes of less than 7.5 percent. Slopes at the south side, bordered by Choctawhatchee Bay, are less than 6 percent. The

northern portion of existing Wherry housing is located at the end of a wetland area associated with Ben's Lake. The slopes between the wetland area and the southernmost edge of the development are very steep at 25 percent.

Ben's Lake Housing

The Ben's Lake housing is located on slopes that range from 2 percent to 10 percent. The middle part of the subdivision is more sloping and the opposite ends are flat or slightly sloped.

Camp Rudder

Slopes at this location are approximately 1 percent. At approximately 150 feet north of the site, terrain steepens to about 16 percent; the change in topography marks the beginning of drainage for an unnamed tributary of Metts Creek.

Soundside Manor

Soundside Manor is located on terrain with relatively level slopes of about 2 percent.

Pine Shadows

The Pine Shadows housing area is predominantly flat with most areas having slopes of about 1 to 2 percent. Upper range of slopes approach 5 percent.

Live Oak Terrace

Slopes at Live Oak Terrace are flat overall with a slight decrease in elevation around the perimeter of the area proposed for demolition/renovation.

3.9 AIR QUALITY

Identifying the affected area for an air quality assessment requires knowledge of air emission sources, pollutant types, emissions rates and release parameters, proximity to other emissions sources, and local as well as regional meteorological conditions. Refer to the EIS Resource Appendices (Appendix L, *Air Quality*), for a review of air quality and associated methodologies used for emissions calculations.

3.9.1 Definition of the Resource

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin and the prevailing meteorological conditions. The levels of pollutants are generally expressed on a concentration basis in units of part per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). The air quality analysis centers on Okaloosa County, since the proposed activities will occur specifically in this county.

The baseline standards for pollutant concentrations are the National Ambient Air Quality Standards (NAAQS) and Florida air quality standards to determine potential effects. These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare, with a reasonable margin of safety. The NAAQS identify maximum allowable concentrations for the following criteria pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 microns in diameter (PM_{10}), and lead (40 CFR 50, 2003). In the case of SO_2, the state of Florida has established more stringent standards (F.A.C. 62-204-240). Details of the NAAQS and the state of Florida air quality requirements are provided in the EIS Resource Appendices (Appendix L, *Air Quality*).

Based on measured ambient air pollutant concentrations, the U.S. Environmental Protection Agency (USEPA) designates whether areas of the United States are meeting the NAAQS or not. Those areas demonstrating compliance with the NAAQS are considered "attainment" areas, while those that are not are known as "non-attainment." Those areas that cannot be classified on the basis of available information for a particular pollutant are "unclassifiable" and are treated as attainment until proven otherwise.

3.9.2 Regional Air Quality

The Florida Department of Environmental Protection operates air quality monitors in various counties throughout the state (FDEP, 2004a). Although there are no ambient monitors in Okaloosa County, there are monitors in neighboring Santa Rosa and Bay Counties. Both of these counties are classified as "attainment." The FDEP classifies Okaloosa County as "attainment" for criteria pollutants as well (FDEP, 2004b).

The Clean Air Act also establishes a national goal of preventing degradation or impairment in attainment areas. As part of the Prevention of Significant Deterioration Program (PSD), areas were designated as Class I, II, or III. Congress designated national parks and wilderness areas as Class I areas, where any appreciable deterioration in air quality is considered significant. Class II areas are those where moderate, well-controlled industrial growth could be permitted. Class III areas allow for greater industrial development. The area surrounding Eglin AFB is classified as Class II. Currently there are no designated Class III areas in the United States.

Under the PSD program, before a new major source of air emissions is constructed, its emissions are estimated to determine if significant emissions rate (SER) thresholds are exceeded. If a source is to be modified, then its emissions are evaluated and compared to the SER thresholds to determine if modifications are significant. The SER thresholds are used to ascertain whether pollution controls or air quality dispersion modeling are necessary for the construction project (USEPA, 1990). Eglin AFB is considered a major emissions source by FDEP with respect to the PSD program. Although Hurlburt is part

of the Eglin Reservation, its mission is quite different than Eglin and has been separated from the Reservation for permitting purposes.

There are three designated PSD Class I areas in Florida: Chassahowitzka National Wildlife Refuge Wilderness Area, Everglades National Park, and St. Marks Wilderness Area. However, all of these areas are more than 62 miles from the construction areas (F.A.C. 62-204-240). Details regarding PSD air quality evaluations are provided in the EIS Resource Appendices (Appendix L, *Air Quality*).

3.9.3 Baseline Emissions

An air emissions inventory qualitatively and quantitatively describes the amount of emissions from a facility or within an area. Emissions inventories are designed to locate pollution sources, define the type and size of sources, characterize emissions from each source, and estimate total mass emissions generated over a period of time, normally a year. These annual rates are typically represented in tons per year. Inventory data establishes relative contributions to air pollution concerns by classifying sources and determining the adequacy as well as the necessity of air regulations. Accurate inventories are imperative for the development of appropriate air quality regulatory policy.

The most recent air emissions inventories for Hurlburt and Eglin AFB quantify emissions from stationary and mobile sources based on calendar year activities. Stationary sources include equipment/processes such as boilers, electric generators, surface coating, and fuels handling operations. Mobile sources include motor vehicles, aerospace ground support equipment, and aircraft operations.

Summaries of the air emissions inventories are presented in Table 3-20. For comparison purposes, the USEPA's 1999 National Emissions Inventory (NEI) data for Okaloosa County is presented in Table 3-21. The county data includes emissions data from point sources, area sources, and mobile sources. *Point sources* are stationary sources that can be identified by name and location. *Area sources* are point sources whose emissions are too small to track individually, such as a home or small office building or a diffuse stationary source, such as wildfires or agricultural tilling. *Mobile sources* are any kind of vehicle or equipment with gasoline or diesel engine, an airplane, or a ship.

Table 3-20. Baseline Emissions Inventory for Eglin AFB and Hurlburt

Source Category	Pollutants (tons/year)					
	CO	NO_2	SO_2	VOCs	PM_{10}	Lead
Eglin Total Emissions	59.70	95.00	12.00	99.00	142.00	0.02
Hurlburt Total Emissions	4.24	7.59	0.2	27.98	6.33	<.01
Emissions Total	**63.9**	**102.6**	**12.2**	**127.0**	**148.3**	**≤0.03**

Source: U.S. Air Force, 2003d, 2003e VOC = volatile organic compound

Table 3-21. Baseline Emissions Inventory for Okaloosa County

Source Category	Pollutants (tons/year)					
	CO	NO_2	SO_2	VOCs	PM_{10}	Lead
Point Sources	50,295	1,458	16	8,718	5,502	NR
On-Road Sources	40,563	5,061	192	4,114	146	NR
Non-Road Sources	15,033	1,072	114	1,969	144	NR
Area Sources	46,093	1,196	345	5,385	10,864	NR
Okaloosa County – Total	**151,986**	**8,788**	**668**	**20,187**	**16,656**	**NR**

Source: USEPA, 1999 NR = Not reported; VOC = volatile organic compound

3.10 HAZARDOUS MATERIALS/WASTE

For the purposes of this discussion, *hazardous materials* and *hazardous substances* are defined under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. 9601 (4) as:

(a) Any substance designated pursuant to Section 311(b)(2)(A) of the Federal Water Pollution Control Act.

(b) Any element, compound, mixture solution, or substance designated pursuant to Section 102 of this Act.

(c) Any hazardous waste having the characteristics identified under or listed pursuant to Section 3001 of the Solid Waste Disposal Act (but not including any waste the regulation of which under the Solid Waste Disposal Act has been suspended by Act of Congress).

(d) Any toxic pollutant listed under Section 307 (a) of the Federal Water Pollution Control Act.

(e) Any hazardous air pollutant listed under Section 112 of the Clean Air Act.

(f) Any imminently hazardous chemical substance or mixture with respect to which the Administrator has taken action pursuant to Section 7 of the Toxic Substances Control Act. The term does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance under subparagraphs (a) through (f) of this paragraph, and the term does not include natural gas, natural gas liquids, liquefied natural gas, synthetic gas usable for fuel, or mixtures of natural gas and synthetic gas.

Hazardous materials are subject to and managed according to both Federal and Florida regulations. Federal laws regarding management of hazardous materials include the Emergency Planning and Community Right-To-Know Act (EPCRA) (42 U.S.C. 1001 et seq.) as part of the Superfund Amendments and Reauthorization Act (SARA) Title III

(10 U.S.C. Sections 2701 et seq.). Management of hazardous materials in the workplace is regulated under OSHA regulations at 29 CFR 1910.1200.

Under Federal law, the transportation of hazardous materials is regulated in accordance with the Hazardous Materials Transportation Act, 49 U.S.C. 5101 (replaced 1801) et seq. For the transportation of hazardous materials, Florida has adopted Federal regulations that implement the Hazardous Materials Transportation Act, found at 49 CFR 178.

State laws pertaining to hazardous materials management include the Florida Right-to-Know Act, Florida Statutes Title 17, Chapter 252, the Hazardous Waste section of the Florida Department of Environmental Protection and the Florida Department of Transportation Motor Carrier Compliance Department that implements 49 CFR 178 under Florida statute annotated Title 29 Section 403.721.

The following issue items were determined to be relevant for this assessment and are addressed in this section.

- *Environmental Restoration Program Sites* – ERP is used by the Air Force to identify, characterize, and remediate past environmental contamination on Air Force installations.
- *Storage Tanks* – Underground storage tanks (UST) and aboveground storage tanks (AST) containing hazardous materials are managed by 96 CEG/CEVC on Eglin and 16 CES/CEV on Hurlburt Field.
- *Asbestos-Containing Building Materials* – Renovation or demolition of buildings with ACBM has a potential for releasing asbestos fibers into the air. Asbestos fibers could be released due to disturbance or damage from various building materials such as pipe and boiler insulation, acoustical ceilings, sprayed-on fireproofing, and other material used for soundproofing or insulation.
- *Lead-Based Paint* – Lead-based paint is defined as paint on surfaces that contains lead in excess of 1.0 milligram per square centimeter as measured by an X-ray fluorescence spectrum analyzer, or 0.5 percent lead by weight. Waste containing levels of lead exceeding a maximum concentration of 5.0 milligrams per liter, as determined using the USEPA Toxic Characteristic Leaching Procedure, is defined as Resource Conservation and Recovery Act (RCRA)-regulated hazardous waste under 40 CFR 261, as adopted by FDEP, F.A.C. 62-730.030, and requires specific handling, storage, and disposal requirements
- *Polychlorinated Biphenyls* – PCBs are defined as any chemical substances or combination of substances that contain 50 parts per million or more of PCBs.

- *Chlordane* – Chlordane is a manufactured chemical that was used as a pesticide in the United States from 1948 to 1988. Because of concern about damage to the environment and harm to human health, the USEPA banned all uses of chlordane in 1983 except to control termites. In 1988, USEPA banned all uses. This pesticide may have been used for termite control in the housing areas. However, no records of the chemical's implementation are available.
- *Hazardous Materials Management* – Hazardous materials, listed under CERCLA, and EPCRA are defined as any substances that may present substantial danger to public health, welfare, or the environment due to quantity, concentration, or physical, chemical, or infectious characteristics. Examples of hazardous materials include petroleum products/fuels, natural gas, synthetic gas, and toxic chemicals. Hazardous wastes, listed under RCRA, are defined as any solid, liquid, or contained gaseous or semisolid waste, or any combination of wastes that pose a substantive present or potential hazard to human health or the environment. In addition, hazardous wastes must meet either a hazardous characteristic of ignitability, corrosivity, toxicity, or reactivity under 40 CFR 261, or be listed as a waste under 40 CFR 263.

3.10.1 Environmental Restoration Program Sites

Plans to manage ERP sites on Eglin AFB and Hurlburt are addressed in *Eglin Air Force Base Environmental Restoration Program Management Action Plan* (U.S. Air Force, 2002a) and *Hurlburt Field Installation Restoration Program Management Action Plan* (U.S. Air Force, 2002b). ERP sites are located adjacent or within close proximity to the Georgia Avenue, Eglin Main Base, and Camp Rudder housing areas. ERP sites are also shown previously in Figures 3-14 and 3-15. None of the ERP sites listed below in Table 3-22 are likely to cause or contribute to a release of any hazardous substance or any petroleum product on the subject properties.

Potential environmental contamination issues related to ERP sites and surrounding (non-government) properties have been identified within a 1-mile or greater radius of all of the military housing properties with the exception of those at Camp Rudder. There are no positive potential contamination findings associated with Camp Rudder MFH. Most of the findings were associated with the presence of storage tanks or past leaks/spills for on-base and off-base locations. Other findings were associated with the presence of off-base landfills, wastewater treatment facilities, or hazardous waste generators. Detailed information is in the *Draft Environmental Baseline Survey for the Eglin Air Force Base and Hurlburt Field Military Family Housing Privatization Program* (U.S. Air Force, 2003f). None of the findings is likely to cause or contribute to a release or migration of hazardous substances or petroleum products on the subject properties.

Table 3-22. Environmental Restoration Program Sites at Eglin and Hurlburt MFH Areas

Site Designation	Location	Site Description	Site Status
AOC 54	Poquito Bayou Expansion	Gulf Power Substation - Located at the intersection of State Route 85 and Sunset Road. PCB transformers, arsenic-based herbicides, and creosote may have been used on site.	AOC File Closed
POI-343	Camp Pinchot	Soil concentration of methylene chloride below screening criteria.	NFA
SD-208	Live Oak Terrace	Live Oak Terrace Housing Area. Contamination above cleanup levels in soil (calcium) and groundwater (iron, manganese). Discoloration of soil from iron-fixing bacteria.	NFA
ST-71	Ben's Lake	Army and Air Force Exchange (AAFES) West Gate Gasoline Station/Shoppette – Soil.	NFA
ST-71A	Ben's Lake	AAFES West Gate Shoppette (ST-71, described above) – UST	Groundwater monitoring
ST-59	Ben's Lake Old Plew	The Ben's Lake Marina – former tank field.	Post-active remediation
ST-80	Old Plew	Water Tower (Building 2830) Well 12.	NFA
ST-113	Georgia Avenue	Rapcon Building 104 – two USTs removed in November 1997.	NFA
ST-114	Georgia Avenue	The Airfield Lighting Building 116 – UST removed in October 1997.	NFA
ST-120	Old Plew	The Plew Sewage Treatment UST removed in December 1997.	NFA
ST-77	Ben's Lake	Water Tower (Building 2589) removal of lead-contaminated soil.	NFA
ST-78	Capehart	Water Tower (Building 10351) removal of lead-contaminated soil.	NFA
ST-79	Ben's Lake Old Plew	Water Tower (Building 2830) removal of lead-contaminated soil.	NFA
ST-81	New Plew	Water Tower (Building 2756) stripped and repainted to remove the potential source of contamination to site soils.	NFA
ST-254	Camp Rudder	Water Tower (Number 6100) lead-contaminated soils removed.	NFA

Source: U.S. Air Force, 2002a
NFA = No further action AOC = Area of Concern POI = Point of interest

3.10.2 Storage Tanks

Underground storage tanks and aboveground storage tanks that contain hazardous materials are managed by 96 CEG/CEVC on Eglin AFB and 16 CES/CEV on Hurlburt. Base personnel implement the *Oil and Hazardous Substance Pollution Contingency Plan*, 96 CEG Plan 32-6, which establishes responsibilities and provides procedures to base personnel in responding to and remediation of hazardous substance releases at Eglin (U.S. Air Force, 1997). The Spill Prevention and Response Plan is followed to

prevent/reduce the release of hazardous substances from storage tanks and to properly manage new and existing storage tanks.

Table 3-23 lists the several ASTs and USTs that contain hazardous materials located within or in close proximity to MFH areas. There have been no reported spills of fuel at any of the ASTs or USTs described in Table 3-23 (Chavers, 2004).

Table 3-23. Storage Tanks Located Within or Near MFH Areas

Tank Type	Location	Tank Purpose
AST	Camp Pinchot – located ~120 yards from nearest residence sitting within a concrete secondary containment berm.	Two 1,000 gallon single walled to store diesel fuel.
AST	Camp Pinchot within Building 1565.	100-gallon diesel day tank to supply fuel to backup generator.
AST	Poquito Bayou, Building 10478, west side of Loblolly Drive.	200-gallon diesel tank provides emergency power to sewage lift station generators.
AST	Eglin Main Base housing area, 100 yards east of Ben's Lake Drive in the Ben's Lake housing area.	500-gallon diesel tank provides emergency power to sewage lift station generators.
AST	Ben's Lake Marina.	1,000-gallon gasoline tank.
UST	Cherokee Elementary School, 2580 Gaffney Road, 100 yards from the Ben's Lake housing area.	3,000-gallon UST is used to store heating oil.
UST (removed)	Camp Pinchot, formerly located adjacent to Building 1565.	300-gallon tank was used to supply fuel to a backup generator.

Source: Chavers, 2004

3.10.3 Asbestos

Eglin manages ACBM by implementing the 2004 Asbestos Program Management Contingency Plan, 96 CEG Plan 32-3 in conjunction with Federal and state laws. The Plan provides policies and procedures used in controlling the health hazards created by ACBM and for the abatement of ACBM under controlled conditions. The Plan also addresses potential health hazards to building occupants and maintenance personnel. Incorporated in the Plan are the responsibilities of all individuals and organizations that support ACBM abatement activities. Civil Engineering is primarily responsible for implementing the Plan, although 96 CEG/CEVC is responsible for updating and coordinating the Plan. 96 CEG/CEVC receives ACBM identification and sampling support from the Bioenvironmental Engineer and abatement support from the Civil Engineering (CE) In-House Abatement Team. Additionally, an on-call developer is

retained for abatement that is beyond the capabilities of the in-house asbestos abatement team.

Asbestos is a naturally occurring mineral whose crystals form long, thin fibers. Asbestos was widely used in manufacturing in the late 1800s because of its insulating properties, its ability to withstand heat and chemical corrosion, and its soft, pliant nature. Building materials and processes that incorporated asbestos included sprayed-on fireproofing, acoustical plaster, pipe, boiler and mechanical equipment insulation, drywall joint compound, asbestos cement siding, roofing shingles and tars, floor tiles and mastic, and electrical wire insulation. In 1989, the USEPA prohibited the use of most commercially available asbestos-containing materials used in the United States. Since that time, knowledge of the adverse health effects associated with exposure to airborne asbestos has increased.

Forty-five percent of the buildings on Eglin are known to contain friable ACBM and 86 percent are known to contain non-friable ACBM (U.S. Air Force, 2003c). Prior to any construction or renovation work on buildings, the Bioenvironmental Engineer surveys the facility for ACBM. If ACBM is found in the construction zone, a work order for abatement is submitted. Eglin disposed of 280 cubic yards of ACBM in 2000 and 70 cubic yards of ACBM in 2001, not including ACBM removed by the base on-call developer or ACBM removed during facility demolition (U.S. Air Force, 2003c).

A preliminary survey for ACBM was conducted at Hurlburt Field housing at Soundside Manor, Pine Shadows, and Live Oak Terrace during 1995 and 1996. The survey confirmed the presence of ACBM in all three housing areas. ACBM identified in Soundside Manor units included vinyl composition tile, pipe insulation, flooring mastic, and roofing materials. ACBM identified in the Live Oak subdivision included textured acoustical ceiling/sheetrock material and roofing shingles. The Pine Shadows subdivision included asbestos-containing roofing shingles (Overstreet, 2004).

The ACBM survey databases are maintained by the CE In-House Asbestos Abatement Team. The Bioenvironmental Engineering Flight maintains a database containing asbestos sampling results. These systems contain information on the type, amount, location, and condition of ACBM recently and previously surveyed at Eglin, and are continuously updated to ensure that current ACBM information is available when needed.

3.10.4 Lead-Based Paint

The Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4821 et seq.), as amended by the Residential Lead-Based Paint Hazard Reduction Act of 1992 (P.L. 102-550, also known as Title X), requires that lead-based paint hazards in Federal housing be identified and eliminated. In 1993, OSHA, under 29 CFR 1926, extended the permissible

exposure limit for general industrial workers to 50 micrograms per cubic centimeter of air, which would include workers in the construction field.

To ensure that any threat to human health and the environment from lead-based paint has been identified, Air Force policy requires that a lead-based paint survey of high-priority facilities be conducted. High-priority facilities include military family housing, transient lodging facilities, schools, day care facilities, playgrounds, and other facilities frequented by children under the age of seven. The *Lead-Based Paint Management Plan* (96 CEG Plan 32-4), completed in October 2000, addresses all Federal, state, and Air Force guidance, assigns roles and responsibilities, and describes compliance methods. The Plan is executed by 96 CES with analysis and database management currently being performed by 96 CEG/CEVC. The management of lead-based paint at Hurlburt Field is the responsibility of the Environmental Management Flight (16 CES/CEV).

A survey conducted at Eglin AFB MFH areas during 1995 identified materials containing lead-based paint in all housing units, except those located at Poquito Bayou (constructed in 1976) and Camp Rudder (constructed in 1975). The survey collected and evaluated material samples from 240 housing units. Materials identified as containing LBP included exterior wood doors, including casings and jambs; porch and carport posts and rails; soffit; fascia; and gables. The 96th Air Base Wing published a memorandum based on this survey in 1996. The memo, which is distributed to new housing occupants, identifies specific LBP locations and advises occupants on potential health hazards associated with LBP exposure.

A lead-based paint survey at Hurlburt Field was completed in 1995 (Overstreet, 2004). The survey included a visual inspection of all military family housing units, sampling a representative number of units of each type of military family housing, and sampling of all high-priority facilities. LBP in Hurlburt Field housing units was identified on interior/exterior wood doors, wood baseboards, wood beams or columns, interior/exterior wood window frames and trim, wood cabinet doors, and exterior metal trim (Overstreet, 2004).

3.10.5 Polychlorinated Biphenyls

The management of these compounds is regulated under the Toxic Substance Control Act 15 U.S.C. 2605 and USEPA implementing regulations at 40 CFR 761, which banned the manufacture and distribution of polychlorinated biphenyls (PCBs), with the exception of PCBs used in enclosed systems. By Federal definition, PCB transformers contain 500 ppm PCBs or more, whereas PCB-contaminated transformers contain PCB concentrations of 50 ppm or greater, but less than 500 ppm. PCB items consist of any PCB-related containers or equipment that contain a concentration of 50 ppm or more. The USEPA, under TSCA, regulates the removal and disposal of all sources of PCB items containing 50 ppm or more. The rules are more stringent for PCB transformers

than for PCB-contaminated transformers. The entire set of Federal PCB regulations has been adopted under F.A.C. 62-34. Environmental Management Compliance Division (96 CEG/CEVC) is responsible for PCB management.

There are electric power transformers located in most MFH areas. All PCB-containing electric transformers on the installations have been removed and replaced with PCB-free units. The Exterior Electric shop of the 96th Civil Engineer Group was used to implement management protocols on previous existing PCB transformers. No spills of liquids from transformers have been recorded in MFH areas properties (U.S. Air Force, 2003c). PCBs may also be contained within the ballasts of older fluorescent light fixtures installed in MFH residences.

3.10.6 Chlordane

Chlordane is a man-made chemical that was used as a pesticide in the United States from 1948 to 1988. It is a thick liquid whose color ranges from colorless to amber, depending on its purity. It may have no smell or a mild, irritating smell. Before 1978, chlordane was used as a pesticide on agricultural crops, lawns, and gardens and as a fumigating agent. Because of concerns over cancer risk, evidence of human exposure and build up in body fat, persistence in the environment, and danger to wildlife, the USEPA canceled the use of chlordane on food crops and phased out other aboveground uses over the next five years. From 1983 until 1988, chlordane's only approved use was to control termites in homes. The pesticide was applied underground around the foundation of homes. When chlordane is used in the soil around a house, it kills termites that come into contact with it. In 1988, when the USEPA canceled chlordane's use for controlling termites, all approved use of chlordane in the United States stopped (ATSDR, 2004).

No records regarding chlordane use within Eglin or Hurlburt family housing areas are available. However, it may be reasonably assumed that older units may have been treated with chlordane in the past.

3.10.7 Hazardous Material Management

Routine household hazardous wastes are generated in Eglin AFB and Hurlburt military family housing areas, including batteries, fluorescent bulbs, pesticides, paint/paint cans, and pool chemicals. Used oil or other lubricants may also be generated as part of "do-it-yourself" vehicle maintenance activities. Both installations provide guidance information on proper disposal of household hazardous waste and encourage MFH residents to take their wastes to on-base/off-base collection centers for recycling and disposal. Household hazardous waste, except used oil, is currently allowed to be disposed of with other household trash. Used oil, filters, and greases may be disposed of at the Eglin AFB and Hurlburt Field Automotive Skills Development Centers. Other residential hazardous wastes may be turned in at the South County Road Department,

located on Ready Avenue in Fort Walton Beach. Okaloosa County's Mobile Household Hazardous Waste Collection Center also provides a convenient, on-site service to residents for the disposal of hazardous household wastes.

Small quantities of hazardous materials are stored at several locations within close proximity to MFH areas. There is a small hazardous materials storage shed located in the housing developer maintenance area at Hurlburt Field. This concrete hazardous materials storage shed has built-in secondary containment and is used to store small containers (5 gallons and less) of paint-related products and petroleum, oils, and lubricants (POLs). Small quantities of POLs are also stored at the maintenance building located in Camp Pinchot or in other maintenance areas/storage buildings. No signs of contamination were observed at these locations, and there have been no hazardous materials or POL spills associated with these areas.

A single spill of petroleum product has been reported in MFH areas. This spill occurred during October 1999 and was located adjacent to Choctaw Road in the Wherry housing area. The spill was the result of a leaking 100-gallon mobile fuel tank. A developer was using the tank during housing renovation activities. Several gallons of diesel fuel leaked to the ground. The leaking tank was removed from the base and the contaminated soil excavated and properly disposed.

3.11 SOLID WASTE

The Solid Waste Disposal Act (42 U.S.C. 3251 et seq.) established guidelines for solid waste collection, transport, separation, recovery, and disposal systems. The Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.) amended this Act by shifting the emphasis from disposal to recycling and reuse of recoverable materials. Florida also has solid waste management regulations pertaining to solid waste facilities, state resource recovery and management programs, certification of resource recovery equipment, used oil and domestic sludge classification, utilization, and disposal criteria. The FDEP develops and adopts rules that govern proper management of solid waste in the state. Most of the responsibility for solid waste management under the law rests with local governments. Generally, counties operate the solid waste disposal facilities to serve the cities and towns within their jurisdictions.

Florida Solid Waste Management Regulations include the following.

- **Florida Solid and Hazardous Waste Management Act (Florida Statutes 29 Chapter 403)**: Requires that counties establish and operate solid waste disposal facilities and that each county implement a recycling program to achieve reduction of levels in the disposal of solid waste.
- **Florida Resource Recovery and Management Regulations (F.A.C. 62-7)**: Establishes local resource recovery and management programs and regulate the

collection, transport, storage, separation, processing, recycling, and disposal of solid wastes including sludge.

- **Florida Solid Waste Disposal Facility Regulations (F.A.C. 62-701)**: Establishes regulations for the construction, operation, and closure of solid waste facilities.

Florida landfills are designated as Class I, II, or III. Class I landfills receive an average of 20 tons or more of solid waste per day (if weighed by scale), or 50 cubic yards or more of solid waste (as measured in place after covering). The permitting requirements for Class II landfills are the same as Class I landfills; Class II landfills are smaller in size. Class III landfills receive construction and demolition debris, asbestos, carpet, cardboard, paper, glass, plastic, furniture other than appliances, and other materials that are not expected to produce leachate.

Air Force regulatory requirements and management of solid waste are established by Air Force Policy Directive (AFPD) 32-70, Environmental Quality. AFPD 32-70 requires compliance with applicable Federal, state, and local environmental laws and standards. For solid waste, AFPD 32-70 is implemented by AFI 32-7042.

AFI 32-7042 requires that each installation have a solid waste management program that includes a solid waste management plan that addresses handling, storage, collection, disposal, and reporting of solid waste. AFI 32-7080 contains the solid waste requirement for preventing pollution through source reduction, resource recovery, and recycling.

Solid Waste Management programs are managed by Environmental Management at Eglin AFB and by the 16th Civil Engineering Squadron at Hurlburt.

3.11.1 Eglin AFB and Hurlburt Field Solid Waste Disposal

At Eglin AFB and Hurlburt Field, the Service Contracts Offices arranges for trash pickup and curbside recycling service in MFH areas. The current solid waste developer, Arrow Disposal (based in Abbeville, Alabama) collects the solid waste generated at both installations, including off-base housing areas (e.g., Camp Pinchot, Poquito Bayou). Hurlburt Field averages 240 tons per month of refuse and approximately 60 tons per month of yard waste (Casanova, 2004).

Collected waste is transported to either the Wright landfill or the Santa Rosa County landfill for disposal. Many of the wastes generated at MFH areas are recyclable (paper, cardboard, aluminum, and glass products). The refuse developer supplies waste and recycling containers to housing occupants. In addition, the developer provides initial briefings and educational materials to residents, followed up by the housing office, on an as-needed basis. Recyclable post consumer products are collected at curbside and separated by the developer for delivery to the Eglin AFB or the Hurlburt Field Recycling Centers. Arrow Disposal maintains records of recycling participation at

housing areas by recording the number of households placing recyclables at curbside. Yard waste and wood waste also are collected from specific dumpsters at each location and transported to the Wright Landfill in Okaloosa County for use as mulch (U.S. Air Force, 2003f). Combined, Eglin AFB and Hurlburt average about 10,753 tons of municipal solid waste and 1,871 tons of construction and demolition (C&D) debris per year (U.S. Air Force, 2003c; Long, 2004; Casanova, 2004; Armhold, 2004).

3.11.2 Local Solid Waste Disposal

Local solid waste is recycled or disposed of in landfills in Okaloosa, Walton, and Santa Rosa Counties. All landfills in this area are located, operated and maintained by the respective county or privately operated. All landfills are permitted by the FDEP.

Okaloosa County operates a Class I landfill near Baker, which is used for disposal of municipal solid waste generated in the northern part of the county including Crestview. The privately operated Point Center landfill, located southwest of Crestview and north of Eglin AFB, is a construction and demolition facility. This facility accepts approximately 630 tons of waste per day. The county also operates a yard trash mulching facility at the Wright Landfill located on out-leased land on Eglin AFB.

There are approximately three privately owned construction and demolition debris landfills in Walton County. Walton County operates and maintains a Class III landfill for construction and demolition debris that receives approximately 25 tons per day (Table 3-24). However, the Walton County Landfill will only accept C&D debris from Walton County (Miller, 2004). The landfill, located near DeFuniak Springs, has an approximate life span of five years. Municipal solid waste is transported to a state-permitted solid waste transfer facility located on SR-83 approximately 3 miles north of DeFuniak Springs.

Table 3-24. Construction and Demolition Debris Generated in Okaloosa, Santa Rosa, and Walton Counties

Year	Okaloosa County[1]	Santa Rosa County[2]	Walton County[3]
2000	36,414	89,954	No data
2001	42,487	138,880	7,168
2002	45,654	102,652	6,361
2003	64,758	No data	6,164
Average	**47,328**	**110,495**	**6,564**

Sources:
[1] Edge, 2004
[2] Harris, 2004
[3] Miller, 2004

Santa Rosa County owns and operates two landfills. The Central Landfill is a Class I facility, which primarily serves the central portion of the county and receives approximately 175 tons per day. The landfill is approximately 550 acres, after

combining the additional Class III facility on-site, with a life expectancy reaching the year 2075.

Bayside Development operates a construction and demolition facility in Santa Rosa County off of SR-87 just north of the East Bay River at the Eglin AFB boundary. Holley Dirt Company, Inc. removes fill from the borrow pit and backfills with land clearing debris.

The average annual amounts of C&D debris generated in Okaloosa, Santa Rosa, and Walton Counties from 2000 to 2003 are listed in Table 3-24.

3.12 NOISE

This section discusses noise sources and ambient noise levels within the Alternative areas. In the project region, ambient noise (the surrounding background noise) currently exists as a result of transportation-related and other human activities. Many types of civil and military aircraft operate throughout the region and make use of the military training airspace overlying the area. Vehicles on roads are other sources of noise. Military units currently conduct a wide range of training activities on and around Eglin AFB, including ground-based operations and testing and training for military pilots in designated military training airspace.

Noise Measurements and Thresholds

Based on numerous sociological surveys and recommendations of Federal interagency councils, the most common benchmark referred to is a Day-Night Average Sound Level of 65 dBA. This annual average threshold is often used to determine residential land use compatibility around airports, highways, or other transportation corridors. Two other average noise levels are also useful:

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

Public annoyance is the most common impact associated with exposure to elevated noise levels. When subjected to Day-Night Average Sound Levels of 65 dBA, approximately 12 percent of persons so exposed will be "highly annoyed" by the noise. At levels below 55 dBA, the percentage of annoyance is correspondingly lower (less

than 3 percent). The percentage of people annoyed by noise never drops to zero (some people are always annoyed), but at levels below 55 dBA, the noise is reduced enough to be essentially negligible (Finegold et al., 1994).

The Day-Night Average Sound Level (L_{dn}) sums individual noise events and averages the resulting level over a specified length of time, usually a 24-hour period. Thus, L_{dn} is a composite metric representing the maximum noise levels, the duration of the events, and the number of events that occur. However, this metric also considers the time of day during which noise events occur. This metric adds 10 dB to those events that occur between 10:00 P.M. and 7:00 A.M. to account for the increased intrusiveness of noise events that occur at night when ambient noise levels are normally lower than during the daytime.

Ambient Traffic Noise

A comprehensive characterization of surface vehicle traffic noise for roadways within the area of influence has not been accomplished. However, noise estimates for roadways adjacent to Eglin AFB are available (U.S. Air Force, 1996; SAIC, 2003). The data in Table 3-25 present typical noise levels for roads in and around Eglin AFB as modeled in 1997 and 2003 using the U.S. Department of Transportation's STAMINA traffic noise model. The STAMINA model uses one-hour traffic volumes and considers a mix of cars and light and heavy trucks.

Table 3-25. Traffic Noise for Roads Within Okaloosa County

Location	Avg. Daily Traffic	Noise Levels for all Vehicle Classes[b]		
		Day L_{eq}[c]	Night L_{eq}[d]	Cumulative L_{dn}
SR-85 and Hwy 190[a]	11,400	65.1	72.5	69.4
SR-85, South of I 10 [a]	24,500	68.5	75.9	72.8
SR-285, South of I-10 [a]	3,400	59.0	66.3	63.2
SR-285 and Hwy 190 [a]	4,300	60.1	67.4	64.3
Hwy 98, West of Hurlburt[c]	15,288	71.3	75.3	75.1

[a] Source: U.S. Air Force, 1996
[b] Number of vehicles (Source: FDOT, 1998)
[c] STAMINA (predicted noise levels at a distance of 70 feet from US-98 and 100 feet from noise source for all other roads)
[d] Night values include 10 dB penalty

Ambient Aircraft Noise

In addition to traffic, aircraft noise is a dominant feature of the existing noise environment. However, with the exception of a small portion of the Wherry/Capehart area, action areas under Alternatives are all located within compatible land-use areas as indicated by AICUZ noise maps (Figures 3-2 and 3-4). In addition to AICUZ information for the Eglin AFB and Hurlburt airfields, the ambient noise environment can also be described in terms of average noise levels of aircraft operating within airspace over the region of influence. Airspace utilized by Eglin is organized

into blocks. The Air Force has modeled the average noise within those airspace blocks using the noise program, MR_NMAP (U.S. Air Force, 1996). Modeled airspace blocks R-2915A and R-2915B partially overlay the area of the Proposed Action (Table 3-26). The North-South Corridor (NSC) overlies the Main Base Alternatives, Camp Pinchot, and the Poquito Bayou Expansion area. Noise for the NSC has not been modeled though it is used extensively by aircraft traveling to and from Eglin, and by commercial aircraft (U.S. Air Force, 2003c).

Table 3-26. Average Noise from Aircraft Operations

Airspace Block	Geographical Reference	Average Noise Level (L_{dn})
R-2915A	Overlays Western Eglin Reservation, including all of Camp Rudder.	56.3
R-2915B	Overlays Hurlburt Area including all of Soundside Manor, Pine Shadows, and Live Oak Terrace.	60.5
NSC	Overlays Main Base Alternatives, Camp Pinchot and Poquito Expansion areas.	No data

Source: U.S. Air Force, 1996

Overall, ambient noise levels around Eglin AFB are typically in the range of 60 to 65 dBA L_{dn} (U.S. Air Force, 1996). Additional noise-related discussion is provided in the EIS Resource Appendices (Appendix O, *Noise*).

3.13 SAFETY

This section describes potential safety issues associated with MFH privatization activities. Safety is defined as any issue with a potential to increase health risks to military or DoD civilian personnel, developer personnel, or the general public. With regard to this EIS, specific issues include construction site job safety and discovery of unexploded ordnance during housing demolition and/or construction activities. No issues associated with range safety or weapons safety have been identified, as all Alternative areas are outside known weapon safety footprints.

Job Site Safety

Day-to-day construction operations and maintenance activities conducted by staff at Eglin AFB and Hurlburt are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by Air Force Occupational Safety and Health requirements. Developers working on the installations are required to prepare appropriate job site safety plans explaining how job safety will be assured throughout the life of the project. Developers are also required to follow applicable OSHA requirements.

Unexploded Ordnance

Areas identified as historic ranges used for weapon testing and training are considered safety hazards due to the potential presence of UXO. The term UXO refers to ordnance that has failed to operate as designed and may pose a safety hazard. Ordnance may include bombs, missiles, rockets, small arms ammunition, mines, grenades, bulk explosives, mortar and artillery rounds, etc. Under current policy, prior to construction activities in potentially affected areas, trained UXO technicians conduct clearance operations in accordance with prescribed DoD standards. Any UXO that is discovered is removed and disposed by military Explosive Ordnance Disposal (EOD) personnel. There is no evidence that ordnance have ever been employed or stored in areas associated with current military family housing at Eglin AFB or Hurlburt Field. Additionally, areas with a potential for UXO contamination were eliminated as potential siting alternatives.

4. ENVIRONMENTAL CONSEQUENCES

Chapter 4, Environmental Consequences, presents the analysis of the potential impacts from the Alternatives (Chapter 2) on the environment of Eglin AFB, Hurlburt Field, and the surrounding community as described in Chapter 3.

Analysis focused on quantifying, where possible, potential environmental impacts using the best available data. When a quantifiable analysis could not be accomplished, a qualified analysis based on pertinent evidence, past experiences, and trends was conducted (e.g., while it is generally known that land clearing would have an effect on wildlife, it is difficult to quantify the extent of that effect given the potential for wildlife to move to other areas nearby). The existing condition of the resources, as described in Chapter 3, is treated as the environmental baseline. For ease of reference, this chapter is organized to correspond with the organization of Chapter 3.

Commonalities

The following activities, as part of the Proposed Action, are common to all Alternatives (except the No Action Alternative) and are referred to as *commonalities*. These activities would occur for all Alternatives (except the No Action). These commonalities are determined by the requirements of the Housing Privatization RFP, the 2003 HRMA, and future land use and planning needs.

- Demolition of 2,590 housing units (see Tables 2-1, 2-2 and 2-3, and Figures 2-1 and 2-2).
- Construction of 2,015 new units (see Tables 2-2 and 2-3, and Figure 2-3).
- Hurlburt Field:
  - Soundside Manor:
    - 12 units conveyed to the developer as-is.
    - In-place renovation of two units.
    - At a density of 3, 4, or 6 units per acre, potentially 90, 120, or 180 units would be constructed at Soundside Manor respectively.
    - Potential construction of three boat docks at Soundside Manor, listed as a desired feature in the privatization RFP.
  - No new homes will be constructed on existing Live Oak Terrace and Pine Shadows housing areas. These areas will be reserved for other future military operational uses.

- Eglin AFB:
  - 126 units at Hidden Oaks conveyed to the developer as-is.
  - Five housing units at Georgia Avenue conveyed to the developer with a deed restriction requiring that the developer's interest terminate when five suitable housing units are constructed (effectively replacing Georgia Avenue's homes); subsequent reuse of the five Georgia Avenue units for offices or similar activities.
  - Depending on Alternative selection, the historic units at Camp Pinchot would either be demolished or adaptively reused for purposes other than residential housing.
  - Boat docks at camp Pinchot would remain intact.

These activities would occur at the same location throughout each Alternative. As a result, the potential impacts associated with these activities would be the same across all Alternatives. Consequently, the potential impacts associated with these activities are analyzed under each section as commonalities.

Additionally, some resource areas, but not all, will have commonalities in addition to those identified above. For example, air quality impacts are assessed on a large geographical scale. The construction of 2,015 units would be considered a commonality for air quality analysis purposes regardless of location, as this action would occur across all Alternatives and impacts are gauged against county data. Such commonalities that are associated with some resource areas but not others are identified in the respective resource sections.

It should be noted that the impact analysis within each resource section assumes the incorporation of regulatory (permitting) requirements identified in Section 1.6, and mitigations and management actions identified in Section 2.7. Mitigations and BMPs to either offset or minimize potential impacts to particular resources from demolition, construction, and operation activities are specifically identified during the permitting process. As a result, the specific mitigations and BMPs that would be required for a particular Alternative cannot be identified at this time. However, for analysis purposes, typical mitigations and BMPs have been identified that are likely to be required under the permits identified in Section 1.6 for the demolition, construction, and operation of housing as described under the Alternatives based on similar, previous permitted actions at Eglin AFB and within Florida.

The impact analyses within this section therefore assume the incorporation of regulatory (permitting) requirements and associated mitigations and BMPs. Consequently, the potential impacts associated with the implementation of the Alternatives reflect the

potential impacts that would likely occur provided that regulatory requirements (and associated mitigations and BMPs identified during the permitting process), as well as management actions identified by the Air Force that will be included in the lease agreement with the developer, are incorporated as part of the Alternative. While specific mitigations and BMPs described within this section may not necessarily be incorporated into the lease agreement with the developer, the requirement for the developer to acquire all applicable permits and meet all permitting requirements (i.e., mitigations and BMPs) would be identified within the lease agreement.

Commonalities

This section discusses potential water resource impacts associated with the demolition of the existing housing units. Additionally, potential impacts from the construction of new housing units and boat docks that are common to all sites will be discussed here. Any site-specific potential impacts from construction activities will be discussed individually under each Alternative section below.

4.1 LAND USE AND PLANNING

Environmental Impact Analysis Process

Impacts on land use were considered based on whether actions associated with the commonalities or Alternatives are compatible with surrounding land uses and whether they are consistent with installation or county comprehensive plans. "Compatibility" addresses issues of safety and annoyance, as well as compliance with future land use and local zoning and development requirements.

Commonalities

For the Georgia Avenue MFH, the land use associated with these five buildings would be converted from Housing (accompanied or family) to Adaptive Reuse. Adaptive Reuse is a process that adapts buildings for new uses while retaining their historic features (Architecture Glossary, 2004). Adaptive Reuse may include administrative land use, such as office buildings. This is consistent with the Eglin AFB Land Use Plan, which identified the need for future development controls within the designated "Historic Area." This would include reorganization of the Eglin Field Historic District by relocating activities (such as residential housing) that do not require proximity to the airfield and using the buildings for administrative and airfield operations activities (U.S. Air Force, 2001).

Currently, Georgia Avenue housing is subject to noise levels between 75 L_{dn} and 80 L_{dn}, which are incompatible with residential land use criteria (i.e., noise levels less than 65 L_{dn}). Reclassifying the area from Residential to Adaptive Reuse would eliminate

current noise incompatibility issues. There are no other land use related issues associated with MFH areas at Eglin AFB.

After demolition, areas associated with the Live Oak Terrace and Pine Shadows subdivisions would not be redeveloped, but would be left vacant in order to provide Hurlburt Field with land to support future operational expansion. Other activities at Hurlburt Field associated with the commonalities would involve building between 90 and 180 units and three boat docks at Soundside Manor, south of US-98. These activities are consistent with the Hurlburt Field General Plan that establishes housing areas on the western portion of the South Shore (U.S. Air Force, 2000a).

Demolition of the Live Oak Terrace and Pine Shadows subdivisions at Hurlburt, demolition of the Camp Rudder housing units at Eglin AFB, and construction activities associated with Soundside Manor and the Hurlburt Field South Shore area would occur on the installation property and would be consistent with future land use plans (U.S. Air Force, 2000a). Although an increase in the number of units at Soundside Manor may occur (16 to 106 units depending on the density chosen), there would be no land use conflicts between Hurlburt and communities in Okaloosa County, as the area surrounding Soundside Manor is considered medium-to-high residential; therefore, activities associated with the commonalities at Eglin AFB and Hurlburt would have a negligible impact on land use.

Because the Proposed Action and Alternatives may impact coastal zone resources, a CZMA consistency determination is required and included in the EIS Resource Appendices (Appendix P, *CZMA Consistency Determination*).

The developer will be responsible for ensuring that housing units are constructed according to all applicable local building and construction codes (depending on the types of structures constructed) and for the acquisition and implementation of applicable permits and associated requirements identified in Section 2.7.1.

4.1.1 Alternative 1: Poquito Bayou Expansion

This Alternative is consistent with the Eglin AFB Land Use Plan, which identified future land use requirements, including expansion of the area designated for Accompanied (Family) Housing land use north of Poquito Housing to Lewis Turner Parkway (U.S. Air Force, 2001). At densities of 3 and 4 units per acre the project would be consistent with the future land use in the area surrounding the Poquito Bayou Expansion area, which is predominantly low-density, with one area of medium density (Figure 4-1) (DCA, 2000). Unit densities are between 2 and 4 units per acre adjacent to the site. Consequently, development at 6 units per acre would not be consistent with adjacent neighborhoods.

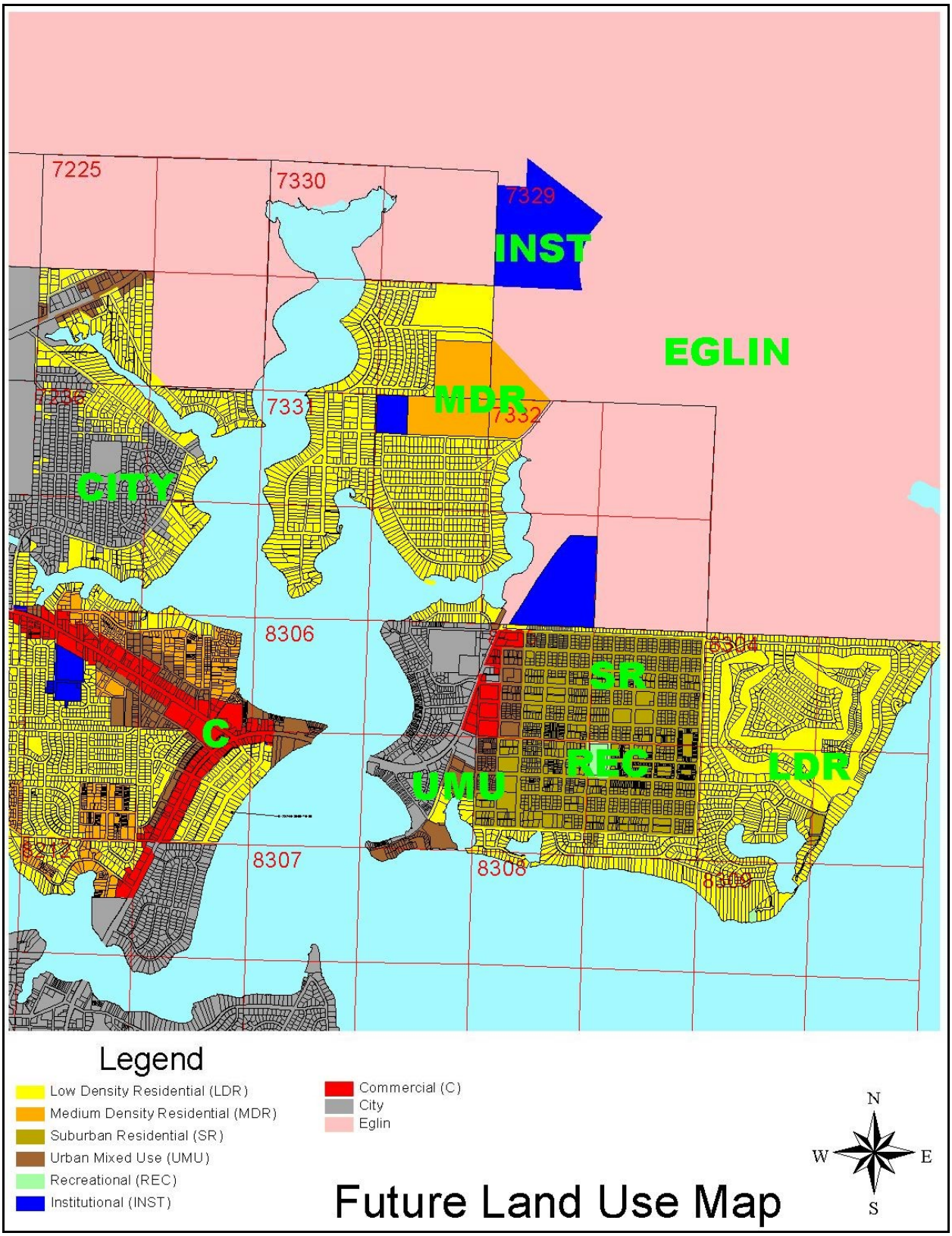

Figure 4-1. Okaloosa County Future Land Use
(DCA, 2000)

Perceived aesthetic impacts may be lessened through the implementation of the following BMPs, thereby minimizing the potential for adverse impacts to surrounding communities.

- Development of the areas consistent with the Okaloosa County Comprehensive Plan. According to the Plan, compatibility could be achieved through:
  - Ensuring that new residential development is consistent with the predominant housing type in the surrounding neighborhood.
  - Ensuring that structures for residential and non-residential development are consistent with the predominant features of the surrounding neighborhood as defined by building orientation, building setbacks, building heights, and general building style or type.
  - Maintaining and/or complementing the fundamental development pattern of the surrounding neighborhood by proposed development, considering lot area, lot dimensions, and lot configuration, as well as the pattern and spacing of lots and buildings (DCA, 2000).
- Provide for tree-lined buffers along the borders of the housing developments.
- Create parks or walkways along the water's edge rather than building housing units right at the edge.

In addition, local neighborhoods may have their own restrictive housing covenants. According to local residents, when neighborhoods in the Poquito Bayou area were first established, they adopted restrictive covenants calling for "no boat ramps" or boat houses on the water, and maintenance of the water's edge to maintain a "natural" look as much as possible. These covenants have long since expired, but residents say they still adhere to them (Nabors, 2004).

4.1.2 Alternative 2: Eglin Main Base

This Alternative is consistent with the Eglin AFB Land Use Plan, which identified future land use requirements, including expansion of the area designated for Accompanied (Family) Housing land use south of Plew Housing to the installation boundary (U.S. Air Force, 2001). There would be no land use conflicts between Eglin AFB and communities in Okaloosa County. The expansion of Eglin Main Base family housing to either Poquito Bayou Expansion or Camp Pinchot Expansion would change the land use from Open Space to Housing (Accompanied) (Figure 4-2).

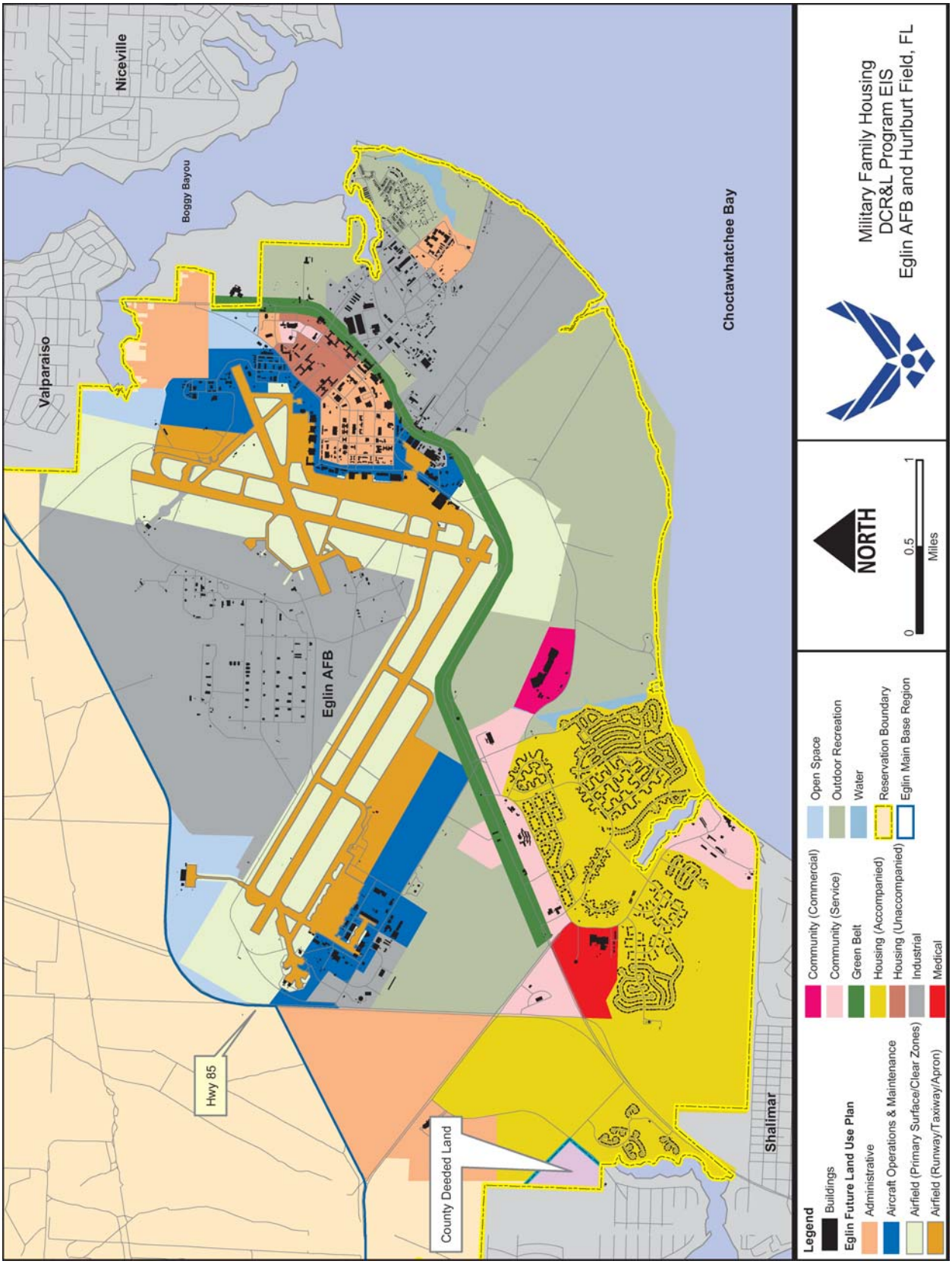

Figure 4-2. Eglin Main Base Future Land Use
(U.S. Air Force, 2001)

A portion of the existing Capehart housing area is within the AICUZ 65-70 L_{dn} airfield noise contour (as shown in Figure 3-2 in Chapter 3). Areas exposed to noise levels above 65 L_{dn} are typically considered as incompatible for residential development and, as such, discouraged for such use. Under this Alternative, portions of the Capehart area within the 65-70 L_{dn} exposure area could be used for new housing unit construction. Consequently, housing units constructed within these noise areas would be constructed to specifications allowing for the dampening of aircraft noise within the dwellings to below 65 dBA to minimize potential impacts to housing residents. Such specifications would include the use of noise-dampening materials such as sound boards and insulation. Specific specifications will be determined at the time of unit design. Overall, land use and existing land use patterns would remain the same; thus, Alternative 2 would have no considerable adverse impacts on land use.

4.1.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area

Specific aspects of this Alternative associated with land use at the Poquito Bayou Expansion area, as well as potential impacts, are similar to those described under Alternative 2.

The future land use map for Okaloosa County classifies areas associated with the Camp Pinchot Expansion as "Eglin" lands, while areas immediately to the south and west are zoned as Low Density Residential, with some Urban Mixed Use along Lewis Turner Boulevard (SR-189), to the west (Figure 4-1). Housing construction requirements associated with the Camp Pinchot Expansion area at 3 and 4 units per acre would be classified as low density; therefore, no compatibility issues with nearby communities regarding these unit densities are anticipated. However, a density of 6 units per acre would be inconsistent with surrounding neighborhoods, as densities in these areas range from 2 to 4 units per acre.

As discussed in Section 4.1.1, the Okaloosa County Comprehensive Plan also has specific requirements associated with the aesthetic aspects of new developments, such as setbacks, landscaped buffers, and open space. As a "good neighbor," Eglin AFB will evaluate these requirements for inclusion in the developer's bid package. Implementation of Okaloosa County Comprehensive Plan requirements associated with new developments could likely lessen perceived aesthetic impacts through the planning/construction process. All housing units would be developed in accordance with local building code requirements.

4.1.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse

Alternative 4 is the same as Alternative 3, except the existing Camp Pinchot historic units would not be demolished. There are no specific aspects of this Alternative that

would create any impacts to land use not already addressed under Alternative 2 and Alternative 3.

4.1.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)

Specific aspects and potential impacts of this Alternative associated with land use at the Camp Pinchot Expansion area and at Eglin Main Base would be the same as those described under Alternatives 3 and 2, respectively.

4.1.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse

Alternative 6 is the same as Alternative 5, except the existing Camp Pinchot historic units would not be demolished. There are no specific aspects of this Alternative that would create any impacts to land use not already addressed under Alternative 5.

4.1.7 No Action Alternative

Under the No Action Alternative, no new housing would be developed. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline, and no impacts would be associated with land use beyond the scope of normal conditions and influences at these locations.

4.1.8 Impact Analysis Summary

Activities associated with Alternative 2 and the No Action Alternative are consistent with installation future land use plans and are completely contained within Eglin Main Base. There would be no land use conflicts between Eglin and communities in Okaloosa County. Additionally, land use and existing land use patterns would remain the same; therefore, these Alternatives would pose no adverse impacts on land use. A portion of the existing Capehart housing area, which may be used for new construction, is within the AICUZ 65-70 L_{dn} airfield noise contour (as shown in Figure 3-2 in Chapter 3). Areas exposed to noise levels above 65 L_{dn} are typically considered as incompatible with residential development and, as such, are discouraged for such use. Consequently, housing units constructed within these noise areas would be constructed to specifications allowing for the dampening of aircraft noise within the dwellings to below 65 dBA to minimize potential impacts to housing residents. Such specifications would include use of noise-dampening materials such as sound boards and insulation. Particular specifications will be determined at the time of unit design.

Alternatives 1, 3, 4, 5, and 6 would involve development on Eglin lands that are adjacent to established Okaloosa County communities (i.e., outside Eglin Main Base). Construction in the Camp Pinchot or Poquito Bayou Expansion areas at densities of

6 units per acre (typically associated with highly urbanized areas) would be inconsistent with adjacent housing communities, which consist of unit densities in the 2 to 4 units per acre range. Implementation of Okaloosa County Comprehensive Plan requirements associated with aspects of new developments, such as setbacks, landscaped buffers, and open space could likely lessen perceived aesthetic impacts through the planning/construction process. All new structures will adhere to local building codes.

4.2 TRANSPORTATION

This section discusses the potential impacts of the Alternatives on transportation infrastructure in the project area (roadway network, bus services, and pedestrian and bicycle facilities) and operational characteristics such as Levels of Service (levels of congestion). The analysis focuses on assessing the ability of the existing roadway system, primarily highways, to accommodate increased utilization of particular road segments, and identifying related impacts on Levels of Service.

Environmental Impact Analysis Process

The impact analysis process began with consultation with key state and local government officials involved with transportation infrastructure and facilities. Based on this input and public input obtained during the scoping process, impacts of the Alternatives were evaluated with respect to the roadway network relative to existing and future conditions. Potential shifts in population created by the Alternatives and corresponding trip generation were estimated, as were trip assignments (what routes people would use during the estimated trips). Based on these assumptions, net changes in vehicle volumes due to the Alternatives were developed.

For each Alternative, three housing densities have been considered, resulting in 18 possible configurations for the new housing units. The first step of the impact analysis identified the major highways associated with the potential project and surrounding areas. Figure 4-3 shows the location of these road segments. Table 4-1 summarizes how each housing area relates to particular roadway segments. The Poquito Bayou Expansion area can be accessed by two arterial highways, SR-189 to the north and SR-85 to the south. For those Alternatives involving the Poquito Bayou Expansion area (Alternatives 1, 3, and 4) the possible traffic effects are complex. The traffic for this area could be subject to any of three assumptions: all traffic goes to SR-189, all traffic goes to SR-85, or traffic goes to both SR-85 and SR-189. For Alternatives 1, 3, and 4, each of the three possible traffic assumptions was analyzed.

Figure 4-3. Road Segments Potentially Affected By the Proposed Action and Alternatives

Table 4-1. Public Roadways Affected By Each Alternative

New Housing Area	Accessed By	Highway Segment Description	Used In Alternative #
Camp Pinchot Expansion	SR-189	Between 85 and Mooney Road	3, 4, 5, 6
Poquito Bayou Expansion	SR-189, or SR-85	189 - Between 85 and Mooney Road, 85 - Between 189 and Twelfth Avenue	1, 3, 4
Eglin Main Base	SR-189	Between 85 and Eglin Avenue (SR-397) and Between 85 and Mooney Road	2, 5, 6
Soundside Manor	US-98	Between Hurlburt Main Gate and Fort Walton Beach	1, 2, 3, 4, 5, 6

For each Alternative, the expected project-related traffic was added to the FDOT traffic volumes forecast for 2014 and 2019 for the affected arterial roadway. Those years were selected because all construction is expected to be complete by 2014, and 2019 is five years after that estimated project completion. Five years after completion is the typical period used to analyze traffic impacts for residential developments.

Adding anticipated project-related traffic to existing forecasts relies on the assumption that those forecasts do not already account for potential development on the sites selected for the proposed Alternatives. Consequently, this impact assessment may overestimate project impacts and future conditions associated with the project. The expected change in traffic for each Alternative was then modeled using the methods and software of the Transportation Research Board National Research Council's Highway Capacity Manual 2000.

The benefits of reduced traffic generation from housing demolition were not considered, except in those areas where the new housing physically replaces the existing housing. In those cases, the units of demolished housing were used to reduce the number of replacement housing used to estimate new trip generation. Table 4-2 shows the estimated trip generation associated with each Alternative, at each housing area, based on the potential net change in the number of units that would occur at each area after project completion.

The 2002 traffic volumes reported by Florida Department of Transportation for the span of SR-189 between its intersections with SR-85 and with Mooney Road is an Annual Average Daily Traffic (two-way) of 33,500. The 2002 traffic volumes generated by FDOT for the length of SR-189 between its intersections with SR-85 and with SR-389 results in an AADT of 11,800. The FDOT generated 2002 traffic volumes for SR-85 to have an AADT (two-way) of 19,800. Additional information on the 2002 traffic data used is provided in the EIS Resource Appendices (Exhibit B of Appendix F, *Transportation Infrastructure*).

Table 4-2. Expected Peak Hour Trip Generation Gains by Alternative

Housing Area To Be Affected	Density (units/acre)	Net Change on Nearest Arterial Roadway (# of peak hour trips)
Soundside Manor (Across All Alternatives)		
Soundside Manor	3	36
	4	68
	6	127
Alternative 1 – Poquito Bayou Expansion		
Poquito Bayou Expansion Area	3	1,434
	4	1,412
	6	1,368
Alternative 2 – Eglin Main Base		
Eglin Main Base	3	223
	4	196
	6	141
Alternative 3 – Camp Pinchot Expansion/Poquito Bayou Expansion ***Alternative 4 – Alternative 3 with Camp Pinchot Adaptive Reuse***		
Camp Pinchot	3	588
Poquito Bayou		943
Camp Pinchot	4	762
Poquito Bayou		750
Camp Pinchot	6	1,098
Poquito Bayou		345
Alternative 5 – Camp Pinchot Expansion/Eglin Main Base ***Alternative 6 – Alternative 5 with Camp Pinchot Adaptive Reuse***		
Camp Pinchot	3	588
Eglin Main Base		N/A*
Camp Pinchot	4	762
Eglin Main Base		N/A*
Camp Pinchot	6	1,098
Eglin Main Base		N/A*

*There is a net reduction in Eglin Main Base units and this effect was not modeled.

The number of trips per day per household is a function of the number of persons in the household and the number of vehicles per household. Traffic volumes are typically based on the number of expected vehicles in a one-hour period, also called the Peak Hourly Volume (PHV). Daily volumes are not typically used since the daily capacity of a highway is much higher than what is typically utilized. For example, the capacity of a highway is typically 2,200 to 2,400 passenger cars per hour per lane, so the daily capacity of a 4-lane roadway would theoretically be approximately 220,800 cars per day. This is far larger than the 33,500 vehicles listed by FDOT as the AADT for SR-189 between SR-85 and Mooney Road. Instead, in order to understand the function of the roadway under its peak traffic loading, the Level of Service is determined based on the PHV, which is defined by traffic engineers as the thirtieth highest traffic volume expected in any 60-minute period of a 365-day calendar year. To better model the function of the highways under their peak loadings (rush hours), the capacity of roads

and streets are measured in terms of the Level of Service based on the highest expected 15-minute period within that PHV.

Commonalities

At each location, the difference between the number of units demolished and constructed and the spatial difference between the distribution of trips now and the distribution of trips in the future (e.g., the difference between the number of trips associated with existing Hurlburt Field "on-base" residents and the number of trips that may be anticipated if those residents were to move to another location) characterizes a particular Alternative's net impact. In all Alternatives, a range of units may be moved from Hurlburt to another site.

The methods contained in the Institute of Transportation Engineers Trip Generation Manual, 6th Edition (ITE, 2001) were employed to calculate the number of peak-hour trips expected to be gained or lost in each defined housing area. The expected trips developed from the Trip Generation methodology were modified to allow for the expected travel assumed for commuters from the new housing areas to the assumed base assigned to those units. It was assumed that the maximum number of units removed from Hurlburt Field in all Alternatives would be replaced at the new housing areas physically closest to Hurlburt and that the commuting trips from these units would be trips beginning or ending at Hurlburt Field. The methods and assumptions used for each Alternative are shown in greater detail in the EIS Resource Appendices (Appendix F, *Transportation Infrastructure)*. Table 4-3 shows the number of trips made obsolete by the anticipated demolition of units. These units are to be demolished in all Alternatives.

Table 4-3. Expected Peak-Hour Trips Lost By All Alternatives from the Demolition of Existing Housing, by Housing Area

Housing Area to be Demolished	Served by Highway	Highway Segment Description	Number of Units to be Demolished	Expected Peak Hour Trips Lost
Soundside Manor	US-98	South of Hurlburt	60	68
Pine Shadows	US-98	South of Hurlburt	206	208
Live Oak Terrace	US-98	South of Hurlburt	100	108
Camp Pinchot	SR-189	Between 85 and Mooney Road	4	6
Poquito Bayou Housing	SR-85	Between 189 and Twelfth Avenue	150	156
Capehart Housing	SR-189	Between 85 and Eglin Avenue	498	461
Wherry Housing	SR-189	Between 85 and Eglin Avenue	625	565
Ben's Lake Housing	SR-189	Between 85 and Eglin Avenue	236	235
Camp Rudder	Ranger Road	Ranger Road	25	31
Old Plew	SR-189	Between 85 and Eglin Avenue	390	370
New Plew	SR-189	Between 85 and Eglin Avenue	300	292

Trip generation was checked for PM peak hours on weekdays, Saturday, and Sunday. The weekday PM rush hour has been selected as the critical time period for the study area. This time period would experience the largest volume of traffic associated with commuters to and from Hurlburt Field from the Alternative housing areas. Therefore the analysis of the traffic effects is determined based on modeling the PM rush hour traffic and determining the expected LOS. Peak-hour trip generation is forecasted using the regression equations published in the Trip Generation Manual, 6th Edition (Section 210, "Single Family Detached Housing").

In all of the Alternatives, development would occur at the Soundside Manor site, and the extent of that development is dependent on the selection of a housing density. Construction at Soundside Manor would result in an increase in the total number of units at the Soundside Manor location, resulting in an increase in traffic on the adjoining roadway. However, the RFP for housing privatization lists an end-state of only 51 units at the Soundside Manor location as a desired feature. This end-state would reflect an overall reduction in Soundside Manor units, and the relocation of 315 housing units to another area. This scenario would result in an increased amount of Hurlburt personnel having to commute to Hurlburt on a daily basis.

Consequently, Hurlburt Field traffic analysis assumes that 315 units of off-base housing will need to access Hurlburt Field, either at the Hurlburt Main Gate or at the Hurlburt East Gate. The location of all 315 of these units has been assumed to be at the new housing development area physically closest to Hurlburt, which would be the Camp Pinchot location.

To analyze the effects of the off-base Hurlburt traffic, the traffic generated from the 315 off-base units was assumed to affect those roadways near the Hurlburt gates. This is a very conservative assumption since it assumes that all of the trips generated by the 315 units would be associated with Hurlburt Field when it is probable that many of these estimated trips would not be work-related.

Both US-98 and Martin Luther King Boulevard are listed in the Okaloosa County Comprehensive Plan as having adopted Level of Service standards of E. These results indicate that the roadways near Hurlburt are already functioning near their capacity. The addition of more traffic from housing units off of Hurlburt places additional stress on the LOS of these roadways. Table 4-4 shows the analysis of US-98 near the Hurlburt Main Gate. A large directional component to the traffic flow exists in this location, resulting in the differences in LOS based on traffic direction.

As the table shows, no change would occur in the LOS on US-98, and therefore, no impacts to US-98 are anticipated from any of the Alternatives, if all traffic were to utilize US-98 for access to Hurlburt.

Table 4-4. Estimated LOS in 2014 and 2019 Near Hurlburt Main Gate on US-98 Assuming All Off-Base Hurlburt Traffic from 315 Units Would Be Carried on US-98 in Peak Hours

Year/Direction of Travel	Estimated LOS	
	No Build	Build
US-98 Near Hurlburt Main Gate		
2014 Westbound	E	E
2014 Eastbound	D	D
2019 Westbound	F	F
2019 Eastbound	D	D

Table 4-5 shows the results of the same assumptions, but where it is also assumed that all new traffic would use the Hurlburt Field East Gate. The build option results in the northbound lanes becoming LOS E earlier than would otherwise occur.

Table 4-5. Estimated LOS in 2014 and 2019 Near Hurlburt East Gate Assuming All Off-Base Hurlburt Traffic from 315 Units Would Be Carried on Martin Luther King Boulevard in Peak Hours

Year/Direction of Travel	Estimated LOS	
	No Build	Build
Martin Luther King Near Hurlburt East Gate		
2014 Southbound	D	E
2014 Northbound	E	E
2019 Southbound	F	F
2019 Northbound	F	F

The best traffic outcome for Martin Luther King Boulevard occurs if Hurlburt Field off-base traffic is split between and Martin Luther King Boulevard and US-98. Expected LOS would be less impacted in such a scenario than in those where all traffic utilizes the Hurlburt East Gate.

4.2.1 Alternative 1: Poquito Bayou Expansion

The Poquito Bayou Expansion site can be accessed by SR-85, between SR-189 and Shalimar, or from SR-189, between SR-85 and Mooney Road. The new housing units constructed under this Alternative can be accessed by either or both roadways. Analyses have been performed assuming that all traffic could access the site from SR-189, or all traffic could access the site from SR-85, or the traffic could be divided between the two roadways. This area currently has limited access from both SR-85 and SR-189. It would be desirable to provide access from both roads. If access is provided from both roads, over time drivers who have a choice of routes would move to the roadway that provides the best overall Level of Service.

Assuming that all traffic uses SR-189 to access the Poquito Bayou Expansion area, access would occur at the section of SR-189 between SR-85 and Mooney Road. This section of

SR-189 is expected to be at a Level of Service C in 2014 under the no build alternative. The build alternative results in a reduction in the expected LOS by 2014 to LOS D, which would be acceptable for an Urban Arterial roadway. Based on the Okaloosa County Comprehensive Plan, a minimum standard of LOS E has been established as the lowest allowable Level of Service on this section of highway. This Alternative scenario does not cause a reduction of LOS to E. These results are shown in Table 4-6.

Table 4-6. Alternative 1 – Estimated Level of Service in 2014 and 2019 Assuming All Eglin Traffic on SR-189

Year/Direction of Travel	Estimated LOS			
	No Build	Unit Density / Acre		
		3	4	6
SR-189 Between 85 and Mooney Road				
2014 Southbound	C	D	D	D
2014 Northbound	C	D	D	D
2019 Southbound	C	E	E	E
2019 Northbound	C	D	D	D

If all traffic were assumed to use SR-85, then access would occur at the section of SR-85 between SR-189 and Twelfth Street. This section of SR-85 is expected to be at LOS B in 2014 under the no build alternative. Under the build alternative there is an expected reduction in LOS by 2014 to LOS C, which would be adequate for an Urban Arterial roadway. Based on the Okaloosa County Comprehensive Plan, a minimum standard of LOS E has been established as the lowest allowable level of service on this section of highway. These results are shown in Table 4-7.

Table 4-7. Alternative 1 – Estimated Level of Service in 2014 and 2019 Assuming All Eglin Traffic on SR-85

Year/Direction of Travel	Estimated LOS			
	No Build	Unit Density / Acre		
		3	4	6
SR-85 between SR-189 and Twelfth Street				
2014 Southbound	B	C	C	C
2014 Northbound	B	C	C	C
2019 Southbound	B	C	C	C
2019 Northbound	B	C	C	C

The best outcome for this Alternative occurs if traffic were assumed to split and to utilize either SR-85 or SR-189. This scenario results in less of a reduction to LOS for SR-189 and does not reduce the expected LOS for SR-85. For this scenario, using both roadways for access minimizes the traffic effects of the project. These results are shown in Table 4-8.

Table 4-8. Alternative 1 – Estimated Level of Service in 2014 and 2019 Assuming All Traffic Split Between SR-85 and SR-189

Year/Direction of Travel	Estimated LOS			
	No Build	Unit Density / Acre		
		3	4	6
SR-85 Between SR-189 and Twelfth Street				
2014 Southbound	B	B	B	B
2014 Northbound	B	B	B	B
2019 Southbound	B	C	C	C
2019 Northbound	B	C	C	C
SR-189 Between SR-85 and Mooney Road				
2014 Southbound	C	D	D	D
2014 Northbound	C	D	D	D
2019 Southbound	C	D	D	D
2019 Northbound	C	D	D	D

Alternative 1 under any density would not cause these roadways to violate the adopted Level of Service standards of the Okaloosa County Comprehensive Plan.

4.2.2 Alternative 2: Eglin Main Base

The Highway Capacity Manual modeling of this assumption results in no change in LOS on SR-189 (NRC, 2000). The sections of SR-189 between SR-85 and SR-397 (Eglin Boulevard) and SR-85 and Mooney Road have each been modeled. Table 4-9 depicts the expected level of service in 2014 and 2019 under Alternative 2, for each of the three proposed housing densities, for the section of SR-189 between SR-85 and Mooney Road and between SR-85 and SR-397. There is no change to LOS projected under this Alternative.

Table 4-9. Alternative 2 – Expected Level of Service in 2014 and 2019

Year/Direction of Travel	Estimated LOS			
	No Build	Unit Density / Acre		
		3	4	6
SR-189 Between SR-85 and Mooney Road				
2014 Southbound	C	C	C	C
2014 Northbound	C	C	C	C
2019 Southbound	C	C	C	C
2019 Northbound	C	C	C	C
SR-189 Between SR-85 and SR-397				
2014 Southbound	A	A	A	A
2014 Northbound	A	A	A	A
2019 Southbound	A	A	A	A
2019 Northbound	A	A	A	A

This proposed Alternative does not cause these roadways to violate the adopted Level of Service standards of the Okaloosa County Comprehensive Plan.

4.2.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area

Units in the Poquito Bayou area could affect either SR-189 or SR-85. The best traffic outcome for this Alternative occurs if the Poquito Bayou traffic is directed only to SR-85 and a density of 3 or 4 units per acres is used. Any of the scenarios where the Poquito Bayou Traffic is allowed to split and use either SR-189 or SR-85 have a lesser impact to expected traffic LOS than those scenarios where all traffic is directed to SR-189. In general, those scenarios using lower densities of housing have better traffic results, since they have fewer units in the Camp Pinchot Expansion area. These results are shown in Tables 4-10 through 4-12.

This proposed Alternative does not cause these roadways to violate the adopted Level of Service standards of the Okaloosa County Comprehensive Plan.

Table 4-10. Alternative 3 – Expected Level of Service on SR-189 in 2014 and 2019 Assuming All Poquito Bayou Traffic Uses SR-189

Year/Direction of Travel	Estimated LOS			
		Unit Density / Acre		
	No Build	3	4	6
SR-189 Between SR-85 and Mooney Road				
2014 Southbound	C	D	D	D
2014 Northbound	C	D	D	D
2019 Southbound	C	E	E	E
2019 Northbound	C	D	D	D

Table 4-11. Alternative 3 – Expected Level of Service on SR-85 in 2014 and 2019 Assuming All Poquito Bayou Traffic Uses SR-85

Year/Direction of Travel	Estimated LOS			
		Unit Density / Acre		
	No Build	3	4	6
SR-85 Between SR-189 and Shalimar				
2014 Southbound	B	C	C	B
2014 Northbound	B	B	B	B
2019 Southbound	B	C	C	B
2019 Northbound	B	B	B	B
SR-189 Between 85 and Mooney Road				
2014 Southbound	C	D	D	D
2014 Northbound	C	C	C	D
2019 Southbound	C	D	D	E
2019 Northbound	C	C	C	D

Table 4-12. Alternative 3 – Expected Level of Service in 2014 and 2019 Assuming Poquito Bayou Traffic Splits Between SR-85 and SR-189

Year/Direction of Travel	Estimated LOS			
	No Build	Unit Density / Acre		
		3	4	6
SR-85 Between SR-189 and Shalimar				
2014 Southbound	B	B	B	B
2014 Northbound	B	B	B	B
2019 Southbound	B	B	B	B
2019 Northbound	B	B	B	B
SR-189 Between 85 and Mooney Road				
2014 Southbound	C	D	D	D
2014 Northbound	C	C	D	D
2019 Southbound	C	D	D	E
2019 Northbound	C	D	D	D

4.2.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse

The amount of housing units placed at the Camp Pinchot Expansion area and on Eglin Main Base would be the same as Alternative 3. As a result, potential impacts to transportation corridors under Alternative 4 would be the same as those described under Alternative 3.

4.2.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)

Potential impacts associated with construction of units on Eglin Main Base and the Camp Pinchot Expansion area would be the same as those identified under Alternatives 2 and 3, respectively (Table 4-13). The least amount of traffic generated under this Alternative occurs when using a density of 3 units per acre. This results in the fewest number of new units being constructed at the Camp Pinchot area.

Table 4-13. Alternative 5 – Estimated Level of Service in 2014 and 2019 Assuming All Traffic on SR-189

Year/Direction of Travel	Estimated LOS			
	No Build	Unit Density / Acre		
		3	4	6
SR-189 Between 85 and Mooney Road				
2014 Southbound	C	D	D	D
2014 Northbound	C	C	C	C
2019 Southbound	C	D	D	D
2019 Northbound	C	C	C	C

This proposed Alternative does not cause these roadways to violate the adopted Level of Service standards of the Okaloosa County Comprehensive Plan.

4.2.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse

The amount of housing units placed at the Camp Pinchot Expansion area and on Eglin Main Base would be the same as Alternative 5. As a result, potential impacts to transportation corridors under Alternative 6 would be the same as those described under Alternative 5.

4.2.7 No Action Alternative

While changes to roadway LOS may occur from local community development, the local transportation environment within and adjacent to the Alternative locations would remain as baseline, and no impacts would be associated with transportation beyond the scope of normal conditions and influences at these locations.

4.2.8 Impact Analysis Summary

In summary, for most Alternatives, the demolition of existing units somewhat offsets the impact of new unit construction. This is especially true where the new units are not concentrated in one location, but are spread out over several new housing sites. Alternatives that allow the new units to be served by more than one roadway would minimize potential impacts to existing transportation infrastructure.

The impacts of the Alternatives on the traffic network and operations would be acceptable based on the criteria that the impacts would not cause any roadways to have a worse LOS than that anticipated in the adopted Level of Service standards of the Okaloosa County Comprehensive Plan. Alternative 2 and the No Action Alternative would have the least impact to traffic among the Alternatives considered.

Site plans and related road systems and proposed highway interchanges for each new housing area developed as a part of the Proposed Action will be subject to specific engineering design and traffic studies to minimize impacts on the existing arterial highways and to gain approval from Okaloosa County and the Florida Department of Transportation. Such reviews strive to ensure that future circulation patterns and new intersections do not create inadequate Levels of Service at new or existing intersections or along existing roads. Expected changes to intersections associated with the Alternatives are shown in Table 4-14.

Table 4-14. Expected Changes to Intersections Associated With the Alternatives

Alternative	Housing Area to be Affected	New Signalized Intersection Anticipated	Improvement to Existing Intersections Anticipated
Alternative 1	Poquito Bayou	Yes, on SR-189 and/or SR-85	Unlikely
Alternative 2	Eglin Main Base	No	Unlikely
Alternative 3, 4	Camp Pinchot and Poquito Bayou	Yes, one on SR-189 for Camp Pinchot and for Poquito Bayou on SR-189 and/or SR-85	Possible Improvements to adjoining intersections on SR-189
Alternative 5, 6	Camp Pinchot and Eglin Main Base	Yes on SR-189	Possible Improvements to adjoining intersections on SR-189
All Alternatives	Soundside Manor	Unlikely	Unlikely

Any new traffic signals proposed as a requirement of a specific housing proposal will need to be approved by Okaloosa County and the Florida Department of Transportation prior to construction of the proposed housing units. The new intersection and the new local road system will be developed to meet all local requirements and standards.

4.3 SOCIOECONOMICS / ENVIRONMENTAL JUSTICE / SPECIAL RISKS TO CHILDREN

This section discusses potential impacts to socioeconomic resources, including environmental justice and special risk to children impacts.

Socioeconomics

Potential impacts to socioeconomic resources are addressed by first describing the impact methodology. This includes an explanation of how implementation of the Alternatives could influence: (i) regional employment associated with demolition and construction activities and (ii) the future distribution (by place of residence) of active duty military members and their families within the ROI.

Environmental Justice and Special Risks to Children

This section discusses potential impacts that would expose low-income and minority populations to disproportionate negative impacts or pose special risks to children (under 18 years old) associated with noise, pollutant transport, and other conditions in

the existing and proposed project areas associated with the Alternatives. Analysis focuses on the exposure of these communities to anticipated environmental effects, identifying potential areas of concern by demographics of known population distributions.

Environmental Impact Analysis Process

Socioeconomics

Impact analysis focused on actions and outcomes likely to take place during: (i) the construction phase and (ii) the operations phase associated with the implementation of the project. Project-related effects were compared to existing conditions and trends in order to assess the level of impact likely to occur. The description of pertinent conditions of regional socioeconomic resources are described in Chapter 3, Section 3.3.

Construction Phase Impacts

For purposes of analysis, the following distribution of new housing units by bedroom size is assumed: (i) 1,110 (55 percent) would be 2-bedroom units; (ii) 446 (22 percent) would be 3-bedroom units; and (iii) the remaining 459 (23 percent) would be 4-bedroom units (Table 2-5 in Chapter 2, Section 2.1).

The direct labor required to accomplish the demolition and construction of the housing units is estimated to range between 20 and 490 jobs annually. Project-related expenditures on materials and services, as well as the personal spending by direct workers, provide an added stimulus to the regional economy. In order to fulfill the demand for these materials and services, local and regional businesses must increase their output resulting in additional economic activity and attendant employment. This cycling effect of repeated demand for goods and services is referred to as the "multiplier effect." The sum of the employment multiplier is referred to as "indirect" employment. Standard methods of estimating the magnitude of the "multiplier effect" include the use of IMPLAN, an input-output model (Minnesota IMPLAN Group, Inc., 2000). Inputs and assumptions for the IMPLAN model are provided in the EIS Resource Appendices (Appendix G, *Socioeconomics*).

It is estimated that the employment effect associated with the implementation of the project would average a total of 580 jobs annually, comprising 305 direct jobs and 275 indirect jobs. An assessment of the locally available labor force is undertaken to determine the likelihood that workers (and any accompanying dependents) might move into the area in response to employment opportunities generated by the project. The effects that such potential in-migration could have on population, housing, and the local school district are analyzed.

Operations Phase Impacts

The project involves the demolition and construction of housing resources for active duty military personnel and their dependents. The result of these combined actions is a net reduction of over 500 family housing units located on government property (Eglin AFB and Hurlburt) and a redistribution of those units currently located on the installations. Implementation of the project could result in a redistribution of population on and off the installations. This could, in turn, especially affect school attendance patterns and school funding sources.

Future Population Distribution

It is not possible to definitively identify which families would occupy the newly constructed military family housing. For example, families that previously resided at Camp Rudder and Hurlburt Field would, in the future, have opportunities to reside in new housing units constructed on Eglin AFB or off-base in surrounding communities. Similarly, families that previously would have resided on-base at Eglin AFB would also have the choice of residing in new housing located on-base at Eglin AFB or in surrounding communities.

Environmental Justice

Potential impacts under each resource area were evaluated to identify any relationship to communities of concern identified in Section 3.3. Any relationships were then assessed to determine whether the potential impacts to these COCs were disproportionate to other communities in the area.

Special Risks to Children

In order to evaluate the greatest potential for special risks to children, the impact analysis was conducted by evaluating the relationship between potential impacts under each resource area and the sensitivity of children to that particular impact.

Commonalities

Socioeconomics

For the purposes of socioeconomic analysis, the following outcomes are assumed to be commonalities across all Alternatives.

- Based on the desired feature of 51 remaining units at Hurlburt Field's Soundside Manor, Hurlburt Field would support a maximum of 315 fewer on-base housing units.
- Camp Rudder housing would no longer exist with a loss of 25 housing units.

- Surrounding communities would accommodate 584 military families previously housed in government-owned housing units.

Economics

Construction Effects – Implementation of the project would generate jobs annually as displayed in Table 4-15. There is considerable activity and employment in all but two of the years of the project period. During these two years (2012 and 2014), demolition of housing units would occur. However, no construction of new units would occur and the number of jobs generated by the activity is modest (40 jobs). New housing construction peaks in the first year of the project and contributes 460 direct and 415 secondary jobs, for a total of 875 jobs, to the regional economy.

Table 4-15. Annual Total, Direct, and Secondary Employment Effects (Number of Jobs) 2005–2014

Employment Category	Year										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Average
Total	**875**	**510**	**570**	**570**	**650**	**820**	**790**	**40**	**930**	**40**	**580**
Direct	460	270	300	300	340	430	415	20	490	20	305
Secondary	415	240	270	270	310	390	375	20	440	20	275

Over the 10-year time period during which demolition and construction would extend, an average of about 200 housing units would be built each year. The direct employment effect associated with this activity would average about 305 jobs annually with an additional 275 indirect jobs for a total employment effect of 580 jobs. The impact of this increased activity on the local and regional economy would be beneficial.

The relative magnitude of this economic stimulus can be gauged by a comparison with: (i) recent past housing construction activity in Okaloosa County and the ROI and (ii) construction industry employment levels in Okaloosa County and the ROI.

Over the period of 1990–2002, an average of almost 1,750 housing units were constructed annually in Okaloosa County. Within the three-county ROI, that average exceeded 3,900 annually. Currently, a number of residential developments that exceed 200 units are planned and under construction in the northern section of Okaloosa County as well as in Walton County. The level of project-related activity likely to occur annually thus falls within the bounds of recent experience.

In 2000, there were about 6,300 full- and part-time jobs in the construction industry in Okaloosa County and over 11,300 jobs in the ROI. Over the period of 1990 through 2000, employment in the construction industry grew at an average annual rate of over 5 percent. The additional number of direct project-related jobs generated in the construction sector would comprise almost 5 percent of current construction industry employment in Okaloosa County and about 3 percent of construction industry employment in the three-county ROI.

It is anticipated that the local and regional construction industry is capable of meeting the demand for labor associated with construction of the required housing units. Any influx of workers as a result of this increased activity would be negligible and would be mostly daily and/or weekly commuters. In-migration of workers (and their dependents) over the 10-year construction time period directly attributable to implementation of the project is not expected.

In terms of total employment (combined direct and secondary), the addition of 580 project-related jobs to the local economy of Okaloosa County comprises less than 1 percent of current wage and salary employment.

Implementation of the project would have positive employment effects in all sectors of the local and regional economy. The greatest stimulus would occur in the construction sector; however, other sectors would benefit in measurable ways. The distribution of employment effects across major industry sectors is shown in Table 4-16.

Table 4-16. Project-Related Employment Effects by Industry

Industry	Percent Increase
New Residential Construction	43.1%
Highway Construction	2.9%
Water/Sewer Pipeline Construction	4.7%
Food and Beverage Stores	3.7%
General Merchandise Stores	2.5%
Architectural and Engineering Services	3.1%
Employment Services	2.3%
Food Services and Drinking Places	2.6%

Operation Effects – Changes in personnel assigned to either of the installations in the foreseeable future are negligible; therefore, no impacts to regional employment levels are anticipated. Although difficult to estimate the actual amount, it is reasonable to assume that local utility providers (e.g., water and sewer) would benefit from increased fee revenues due to new service connections.

Property Values – No adverse impacts to property values are anticipated. Waterfront properties that are visually connected to Eglin facilities, including non-residential areas, have continued to increase in value at a much higher than average rate for the nation. For example, waterfront homes on Tom's Bayou that are visually connected to Eglin Post'l Point, where there are mobile homes, motel-like lodging facilities, an industrial marina, and a recreation area, have continued to increase in value at rates comparable to other waterfront areas. Even in areas with degraded aesthetics (i.e., previously undeveloped land developed with non-residential or non-single family housing) housing values continue to increase due to supply and demand. In areas adjacent to multi-family housing, such as town homes, waterfront property values have continued to rise.

Population

Construction Effects – In the absence of in-migration of workers to the ROI associated with construction of the project housing units over the 10-year time period, no change in local or regional population is anticipated.

Operation Effects – The tri-county ROI functions as an integrated economic region within which family members typically commute some distance from home to work. For example, active duty military members and civilian employees assigned to both Hurlburt Field and Eglin AFB currently commute on a daily basis from residences in the northern section of Okaloosa County, especially in the vicinity of Crestview, from western Walton County, and from Santa Rosa County. The likely future distribution of families under all Alternatives would not differ appreciably from the existing distribution of persons within the ROI. Table 4-17 presents estimates of the number of persons (including children by age group) likely to change their place of residence at an aggregate level.

Table 4-17. Persons and Children Likely to Relocate

	Military Housing	Non-Military Housing
	Hurlburt Field	Off-Base Communities
Housing Units	-315	584
Population	-1,093	2,026
Children		
Age: Less than 5 years	-171	317
5 to 9 years	-135	250
10 to 14 years	-93	172
15 to 19 years	-64	119

Note: Average family size is assumed to be 3.47 based on information in the 2000 Census for the Eglin Community Census District (CCD). The proportion of children by age category is based on the same information source. It is also assumed that each family has two adult parents and other family members are school-age dependents.

Housing

Construction Effects – It is not expected that workers (and their dependents) would migrate into the ROI as a result of implementation of the project. Thus, project-related activities during the construction phase would not have an effect on local and regional housing markets.

Operation Effects – Detailed analysis conducted on behalf of both Eglin AFB and Hurlburt housing programs concluded that there is a housing deficit of 145 units at Hurlburt and a surplus of 729 units at Eglin AFB, resulting in a combined surplus of 584 units. The studies also concluded that the local housing market was capable of accommodating this need through existing suitable vacant housing units (U.S. Air Force, 2003).

Public Schools

Construction Effects – In the absence of an increase in resident population attributable to project implementation, no effect on district-wide school enrollment is expected.

Operation Effects – Elementary school students whose parents are active duty military members residing on Eglin AFB attend two on-base schools: (i) Cherokee Elementary School (where they comprise 83 percent of the student population) and (ii) Oak Hill Elementary School (where they comprise 81 percent).

In addition, the number of students whose parents are active duty military members (located both on-base and off-base) comprise sizeable shares of the student population at other schools. Such off-base schools are: (i) Longwood Elementary School (where students residing on-base comprise 32 percent of the student population and students residing off-base comprise 15 percent of the student population); (ii) Florosa Elementary School (on-base residents comprise 17 percent and off-base residents comprise 27 percent); (iii) Mary Esther Elementary School (on-base residents comprise 7 percent and off-base residents comprise 32 percent); and (iv) Lewis Middle School (on-base residents comprise 43 percent and off-base residents comprise 13 percent of the student population).

In the case of Eglin AFB, implementation of the Proposed Action could result in 244 fewer on-base housing units. The population associated with these could number almost 850 persons (active duty military members and dependents), of which about 225 could be school-age children. The majority of these children (about 105) could attend elementary schools, most likely either of the two on-base elementary schools (Cherokee and Oak Hill). The attendance zones for each of these schools encompass the existing on-base military family housing areas. It remains to be seen how the attendance zone boundaries might be re-drawn by the school district to reflect the shift in location of future housing on Eglin AFB. For analysis purposes, it is assumed that changes in on-base population would directly affect each of these on-base schools as well as Longwood Elementary School located just off base.

Over the period of 1990 to 2004, the student population at Cherokee Elementary School has varied by about 150 students from a low of 513 students (in 1997) to a high of 667 students (in 1998). Over the same time period, the student population of Oak Hill Elementary School has varied by about 100 students from a low of 485 students (in 2004) to a high of 587 students (in 2003). The student population of Longwood Elementary School has varied by 175 students from a low of 428 students (in 2004) to a high of 603 students (in 1995). A potential decrease in school attendance of the magnitude anticipated here (about 105 students), distributed over the three schools, would fall well within the historic variation of their combined student populations.

With the implementation of the project, there could be 315 fewer on-base housing units located at Hurlburt Field. It is estimated that the population associated with these units could number almost 1,100 persons (active duty military members and dependents), of which about 290 could be school-age children. The majority (about 135) of these children could attend elementary schools located off-base. In the absence of detailed information regarding which specific elementary schools these children currently attend, it is assumed that the majority attend the closest available schools: Florosa Elementary School, located adjacent and west of Hurlburt Field and Mary Esther Elementary School, adjacent and east of the installation.

Over the period between 1990 and 2004, the student population at Florosa Elementary School has varied by 200 students from a low of 549 students (in 2004) to a high of 749 students (in 1997). Over the same time period, the student population of Mary Esther Elementary School has varied by 110 students from a low of 476 students (in 1997) to a high of 586 students (in 2004). A potential decrease in school attendance of the magnitude anticipated here (about 135 students) would fall well within the combined historic variation of their student populations.

Attendance at middle schools and high schools within the district can be expected to shift also, but to a much smaller degree than would be the case for elementary schools. Effects (even at the individual school level) are expected to fall within the historic student population variation.

The existing housing units that would be replaced are government-owned, in contrast to the new housing that would be privately owned, operated, and maintained. The new housing units would, however, be located on government-owned land on Eglin AFB, presumably fully occupied by active duty military members and their families. Thus, it is expected that the school children of the families residing in the new housing would continue to fall within Category C and Category F for purposes of calculating Federal Impact Aid payments to the local school district. These categories are defined, respectively, as (i) students residing on Federal property whose parent is on active duty in the uniformed services of the United States, and (ii) special education students residing on Federal property who have a parent on active duty in the uniformed services of the United States.

It is estimated that there could be a reduction of about 540 students that fall into Categories C and F. This potential reduction would be associated with families who would likely reside in community housing but who previously resided on-base. This reduction comprises just over 25 percent of the total number of students in these two categories. The Federal Impact Aid payments received by the local school district would be reduced for these students. Although the proportion of federally connected

students in the Okaloosa School District is substantial (almost 32 percent of enrollment), the contribution made to total district revenues by Federal funding is only about 2 percent. The largest share (61 percent) of funding is derived from the state of Florida, followed by funds from local property taxes (37 percent). Funding received by the school district for federally connected students does not comprise payments in addition to those received from the state, but rather a substitute for state funding. Thus the funding received by the school district for a student whose place of residency changes from on-base to off-base will not change dramatically, although the source of the funding will. As a result, it is anticipated that any potential fiscal impacts to the Okaloosa School District would be relatively minor.

Environmental Justice

Minority or low-income communities of concern would not be disproportionately impacted by the construction and demolition of family housing on Eglin AFB and Hurlburt Field. The environmental justice issues that could potentially be associated with the decision regarding the Proposed Action for the military family housing project are noise and water quality impacts from construction and demolition activities.

Analysis completed in Sections 4.4, Utility Infrastructure, and Section 4.7, Water Resources, later in this chapter found that no impacts to water quality or drinking water would occur under any of the Alternatives. As a result, no impacts to low-income or minority populations in the Eglin-Hurlburt area would occur.

Any increase in noise would primarily affect communities located near the development areas. Communities of concern are generally equally distributed among other portions of the population near project sites. One community near Hurlburt contains a high proportion of the minority population in comparison to the other communities of the population. The sites encompass areas adjacent to Live Oak Terrace, Pine Shadows, and Soundside Manor. Although minorities represent a high percentage of residents here, the waterfront communities adjacent to the area are composed of upper-level income individuals who would be subject to the same impacts. Therefore, disproportionate environmental justice impacts are not anticipated.

Special Risks to Children

Children have physiologic and behavioral characteristics that make them more vulnerable to damage from environmental effects than adults. Case studies show that children have become ill or died from environmental exposures that did not affect adults or affected them less severely. Among the characteristics leading to children's sensitivity are their limited diets, dividing cells, differentiating organs and organ systems, slow or absent detoxification mechanisms, long life expectancy with the

resulting ability to express damage with delayed consequences, and the severe metabolic demands of growth (Johnson et al., 1999).

The risks that could potentially be associated with the Alternatives for the housing project are exposure to asbestos, lead-based paint exposure, safety concerns, and noise from construction and demolition.

Asbestos and lead-based paint will be removed from the area, thus providing beneficial impacts through elimination of potential exposure of MFH residents to asbestos and lead-based paints. Risk from potential exposure to these materials during demolition and construction are discussed in Sections 3.10 and 4.10. As discussed, project planning and implementation of proper handling and disposal techniques would offset the potential for impacts to any age group.

Safety concerns associated the construction/demolition activities under the Proposed Action may pose special risks to children. While construction and demolition activities will not use explosive or hazardous materials, other unique risks to children exist. The project design and lease agreement for the developer performing these activities will be required to include safety precautions to protect children in the residential areas surrounding the work sites. Such mitigations would include adequate measures to restrict access to construction/demolition sites, given that children may be attracted to these areas to play. Additionally, the developer will be required to consider all aspects of child safety during work and non-work hours. This would include maintenance of restricted access during work hours, site preparation, and non-work hours, and the minimization of slip/trip/fall hazards associated with demolition and construction activities.

Children are more sensitive to noise than adults. Mild hearing loss as a child or young adult may set the stage for significant premature hearing loss. Some studies suggest a "damaged-ear" theory, proposing that even minor hearing damage at a young age may make a person more susceptible to permanent loss (NIOSH, 1999). Noise associated with the military family housing project would mostly come from construction and demolition equipment. Noise analysis, presented in Section 4.12, finds that the sounds from these activities would be intermittent and short in duration, and would not contribute in any appreciable manner to the existing noise environment. As a result, special risks to children from construction noise are not anticipated.

4.3.1 Alternative 1: Poquito Bayou Expansion

No socioeconomic impacts in addition to those potential beneficial and/or adverse impacts addressed as commonalities at the beginning of this section have been identified.

No impacts associated with environmental justice or special risks to children have been identified.

4.3.2 Alternative 2: Eglin Main Base

No socioeconomic impacts in addition to those potential beneficial and/or adverse impacts addressed as commonalities at the beginning of this section have been identified.

No impacts associated with environmental justice or special risks to children have been identified.

4.3.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area

No socioeconomic impacts in addition to those potential beneficial and/or adverse impacts addressed as commonalities at the beginning of this section have been identified.

No impacts associated with environmental justice or special risks to children have been identified.

4.3.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse

No socioeconomic impacts in addition to those potential beneficial and/or adverse impacts addressed as commonalities at the beginning of this section have been identified.

No impacts associated with environmental justice or special risks to children have been identified.

4.3.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base Alternative (Preferred Alternative)

No socioeconomic impacts in addition to those potential beneficial and/or adverse impacts addressed as commonalities at the beginning of this section have been identified.

No impacts associated with environmental justice or special risks to children have been identified.

4.3.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse

No socioeconomic impacts in addition to those potential beneficial and/or adverse impacts addressed as commonalities at the beginning of this section have been identified.

No impacts associated with environmental justice or special risks to children have been identified.

4.3.7 No Action Alternative

Under the No Action Alternative, there would be no change in the socioeconomic environment of local communities attributed to the disposition of housing at Eglin AFB and Hurlburt Field. However, continued utilization of substandard housing may negatively impact service member morale and retention, as discussed in Section 1.3.2.

No adverse impacts associated with environmental justice or special risks to children have been identified under the No Action Alternative. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline and there would be no additional impacts associated with socioeconomics, environmental justice, or special risks to children beyond the scope of normal conditions and influences at these locations.

4.3.8 Impact Analysis Summary

In summary, impacts to socioeconomic resources would be common across all Alternatives (with the exception of the No Action Alternative). Impacts to employment would be beneficial since the project would induce the creation of jobs that would help sustain low unemployment levels in the local and regional economy. It is most probable that the demand for labor associated with the implementation of the project would be filled from the pool of locally available workers, thus negating the potential in-migration of workers (and their family members) from outside the region. In the absence of an influx of new residents, negligible change would be expected in regional population or the demand for additional housing as a result of the project. Although a redistribution of persons within the region could result in potential impacts to the local school district in terms of facility capacity, staffing levels, and revenue sources, these potential impacts would be relatively minor.

No impacts associated with environmental justice have been identified under any of the Alternatives. If appropriate permit requirements, mitigations, and BMPs for preserving a safe environment are followed, children would not be at special risk environmentally by the construction and demolition of military family housing at Eglin AFB and Hurlburt Field. No special risks to children from noise have been identified.

4.4 UTILITY INFRASTRUCTURE

This section discusses potential impacts to utilities, which include water supply, wastewater treatment, electricity, and natural gas serving the existing and proposed

project areas associated with the Alternatives. Analysis focuses on assessing the ability of existing utility capacity to accommodate increased/decreased utilization, identifying potential problems related to connecting to existing utilities, and identifying coordinating and procedural requirements associated with establishing new utility infrastructure.

Environmental Impact Analysis Process

Impact analysis was conducted by assessing the potential increases or decreases in utility usage associated with the Alternatives and the impacts to existing utility capacity.

Electricity and Natural Gas

Impacts to electric and natural gas utility capacity would not occur from implementation of the Proposed Action at any of the Alternative locations. Gulf Power and Okaloosa County Gas District serve the entire county, which encompasses all existing housing areas. Because the Proposed Action does not involve an increase in the number of families moving into the area, no net change in the amount of electricity or natural gas used in the county is expected. Therefore, potential impacts to electrical or natural gas utility capacity are not addressed. Potential impacts to these utility providers are associated with the potential for conflicts related to establishing new utilities at sites without utility connections and identifying buried utility lines that would be avoided during ground disturbance activities.

Potable Water and Wastewater

The addition of new housing units to utility districts would increase potable water use and wastewater generation. As a result, potential shifts in population associated with the Alternatives have been assessed to determine whether any increases in utility use would exceed the existing utility provider's design or permitted capacity.

For potable water consumptive use and wastewater use, Florida Department of Environmental Protection (FDEP) estimation standards for residential wastewater flows were used to estimate potential usage increases associated with increases in population at project specific sites. Section II.5.A.1 of FDEP Form 62-604.300(8)a, *Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System*, requires that any wastewater collection or transmission system be designed to accommodate an average daily flow of 350 gallons per day, the FDEP estimate for the average daily wastewater generation per housing unit. That number, 350 gallons, is derived based on the FDEP's assumption that a single housing unit is occupied by 3.5 people, with each person producing 100 gallons of wastewater per day. This estimation is based on measurements of residential indoor water use, not by actual

wastewater flow measurements. As a result, this number can be used to estimate potential increases in potable water use as well.

For purposes of comparison, the estimated average daily use/flow measurements for the existing housing areas were calculated for each of the respective utility providers using the FDEP standards, as shown in the following Table 4-18.

Table 4-18. Current Estimated Average Daily Usage and Flow of Potable Water and Wastewater for Existing Housing Units

Existing Housing Area	No. of Units	Estimated Average Daily Use/Flow (MGD) For Housing Units (based on FDEP standard)						
		Potable Water Supply System			Wastewater Treatment System			
		Okaloosa County Water & Sewer	Hurlburt Field	Eglin Main Base	Garnier Wastewater Facility	Hurlburt Field Advanced Wastewater Facility	Eglin Main Base Treatment Facility	Plew Heights Treatment Facility
Eglin								
Main Base								
Hidden Oaks	126			0.044				0.044
Georgia Avenue	5			0.002			0.002	
Ben's Lake	236			0.081				0.081
Wherry	625			0.219				0.219
Capehart	498			0.174				0.174
New Plew	300			0.105				0.105
Old Plew	390			0.137				0.137
Poquito Bayou								
Poquito Bayou	150	0.053			0.053			
Camp Pinchot								
Camp Pinchot	4	0.001			Septic			
Camp Rudder								
Camp Rudder	25	Supplied by Well			Septic			
Hurlburt								
Hurlburt Main								
Live Oak Terrace	100		0.035			0.035		
Pine Shadows	206		0.072			0.072		
Sound Side								
Soundside Manor	74		0.026			0.026		

ACC = Air Combat Command

Based on the socioeconomic analysis in Section 4.3 of this Chapter, 584 families would need to seek housing in the local community due to a total reduction in the number of housing units. It is assumed, based on the Housing Requirements Market Analysis

conducted in 2003 (U.S. Air Force, 2003a), that the existing housing supply in the local community is sufficient to provide housing for these families. The housing units in the local community that would be occupied by these families are considered in the average daily use/flow measurements of the respective utility providers. Thus, the shift of 584 families into the local community would not impact average daily use/flow of potable water and/or wastewater of local municipalities.

For each Alternative, estimations of potential increases in potable water use and wastewater flow were derived by multiplying the maximum number of units potentially occurring at each location by 350 gallons per day. This product was then compared to existing use.

Commonalities

Electricity and Natural Gas – Demolition of the 2,590 units would require coordination with all utility providers to ensure that all utilities are turned off prior to demolition activities. Coordination with utility providers is necessary to identify the exact location of utility lines prior to ground-disturbing activities associated with both demolition and construction.

For areas with existing gas and electric utility lines, such as Soundside Manor, the Plew areas, and Wherry/Capehart, electric and gas utilities for newly constructed units would tie into these lines. Areas without existing lines, such as Camp Pinchot, would require the installation of new lines. These would be established through coordination with Gulf Power and Okaloosa County Gas District. All utility lines installed as part of the Proposed Action would be underground. Interviews with utility provider representatives identified no impacts associated with the implementation of the Proposed Action at any of the Alternative locations other than the need for coordination with utility providers (Roberts, 2004; Richardson, 2004).

Hurlburt Utilities – All remaining Soundside units would utilize local utility providers for water, sewer, and power. As a result, there would be a reduction in usage of Hurlburt utility systems. Additionally, existing utility connections are available at the Soundside location. For Hurlburt, there would actually be a beneficial impact to the base's potable water and wastewater systems, as a reduction in base housing units would free up capacity for these systems. For wastewater, all Soundside units would utilize the OCWS-West facility, resulting in a potential increase to the facility of approximately 0.06 MGD of wastewater. Given the current percent utilization of the facility (about 40 percent), this increase would be negligible, and would provide beneficial impacts to Okaloosa County from the establishment of new service and associated revenues.

In summary, coordination with all utility providers prior to demolition or construction would minimize any potential impacts to existing utility infrastructure associated with

disruption of buried utility lines. Areas with existing utilities would provide tie-ins for new lines, and new utility infrastructure would be coordinated with utility providers. As a result, there would be no adverse impact to electricity or natural gas utility infrastructure associated with the implementation of the Proposed Action at any of the Alternative locations. In addition, there would be beneficial impacts to Hurlburt's utility systems due to reduced usage, resulting in increased capacity for future expansion.

4.4.1 Alternative 1: Poquito Bayou Expansion

Under this Alternative, there would be a reduction of 2,054 housing units on Eglin Main Base, with 126 remaining at the Hidden Oaks location.

Potable Water and Wastewater

Existing Poquito Bayou housing units (150) are provided potable water by Okaloosa County Water and Sewer at an estimated potable water average daily usage rate and average daily flow of wastewater of approximately 0.053 MGD. Currently, all Hurlburt units (to include Soundside) are serviced by Hurlburt potable water and wastewater utility services. Under this Alternative, OCWS would provide potable water for both Soundside units and Poquito Bayou Expansion units. Table 4-19 shows the estimated net change in daily usage and flow for potable water and wastewater under this Alternative, based on information presented in Table 4-18.

Table 4-19. Estimated Net Change in Average Daily Usage and Flow of Potable Water and Wastewater for Utility Systems Under Alternative 1

Housing Density (units/acre)	Location / Number of Units		Estimated Net Change in Average Daily Use/Flow (MGD) for Utility Systems (based on F.A.C. standard)						
			Potable Water System			Wastewater Treatment Facility			
	Soundside Manor	Poquito Bayou Exp.	Okaloosa County Water & Sewer	Hurlburt Field	Eglin Main Base	Garnier Wastewater Facility	Hurlburt Advanced Wastewater Facility	OCWS-West	Plew Heights Treatment Facility
3	90	1,925	+0.66	-0.13	-0.72	+0.62	-0.10	+0.03	-0.72
4	120	1,895				+0.61	-0.09	+0.04	
6	180	1,835				+0.59	-0.07	+0.06	

ACC = Air Combat Command

OCWS has an overall potable water average daily usage rate of about 4.5 MGD, which is about 40 percent of its total design capacity. The increase identified above represents an approximate 15-percent increase in the amount of potable water OCWS would need

to supply. This increase would not create a large burden on OCWS, as it would still maintain approximately nearly 50 percent of unused capacity for future growth of the municipality. Additionally, OCWS would benefit from increased fee revenues resulting from new service connections.

For wastewater, the OCWS-West facility would experience a maximum increase of approximately 0.06 MGD in daily flow, equating to about a 15-percent increase. OCWS-West would still maintain 45-percent of its capacity under the maximum development scenario (6 units per acre) of this Alternative. No adverse impacts to the OCWS-West facility are anticipated.

Garnier's Wastewater Facility has an overall average flow rate of about 5 MGD, which is about 77 percent of its permitted daily flow of 6.9 MGD. A maximum increase of 0.62 MGD represents an approximate 13-percent increase in the average daily flow of OCWS's wastewater treatment system, which then equates to an average daily flow rate at about 90 percent of its total permitted daily flow. While this increase may seem noteworthy at first, the following factors must be taken into consideration.

- OCWS has begun the process of building a new wastewater treatment facility to increase its permitted daily flow to 9.6 MGD. This facility is expected to be operational within the next three years (Crews, 2004).
- The housing project would be phased, allowing for a few hundred houses to be built each year.

A phased approach to housing development would not create an immediate increase in wastewater flow. Additionally, the new wastewater treatment facility would be operational before housing project completion.

At completion of both projects, OCWS would retain nearly 59 percent of its permitted daily flow capacity under the new facility. As a result, there would not be a considerable burden on the OCWS wastewater treatment system. Although difficult to estimate the actual amount, it is reasonable to assume that OCWS would benefit from increased fee revenues due to new service connections.

In addition, Eglin's utility systems would experience beneficial impacts due to the total reduction in housing units.

4.4.2 Alternative 2: Eglin Main Base

Under Alternative 2, there would be a net decrease of 90 housing units on Eglin Main Base.

Potable Water and Wastewater

There would be no change to the Eglin Main wastewater treatment system from adaptive reuse of the five Georgia Avenue units. The rest of the housing locations would maintain the use of the Plew Heights wastewater treatment facility and Eglin's main water supply system. A net reduction of 90 units on Eglin Main Base would result in the reduction of average daily potable water use and average daily flow of wastewater by approximately 0.03 MGD. As a result, there would be a slight beneficial impact to Eglin's water utilities and no adverse impact under Alternative 2.

4.4.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area

All activities and potential beneficial and/or adverse impacts addressed as commonalities at the beginning of this section apply to Alternative 3.

Potable Water and Wastewater

Table 4-20 shows the estimated net change in daily usage and flow for potable water and wastewater under this Alternative, based on information presented in Table 4-18.

Table 4-20. Estimated Net Change in Average Daily Usage and Flow of Potable Water and Wastewater for Utility Systems Under Alternative 3

Housing Density (units/acre)	Location/ Number of Units			Estimated Net Change in Average Daily Use/Flow (MGD) for Utility Systems (based on F.A.C. standard)						
				Potable Water System			Wastewater Treatment Facility			
	SM	CPE	PBE	Okaloosa County Water & Sewer	Hurlburt Field	Eglin Main Base	Garnier Wastewater Facility	Hurlburt Advanced Wastewater Facility	OCWS-West	Plew Heights Treatment Facility
3	90	660	1,265	+0.66	-0.13	-0.72	+0.62	-0.10	+0.03	-0.72
4	120	880	1,015				+0.61	-0.09	+0.04	
6	180	1,320	515				+0.59	-0.07	+0.06	

ACC = Air Combat Command; CPE = Camp Pinchot Expansion; PBE = Poquito Bayou Expansion; SM = Soundside Manor

OCWS and OCWS-West would provide service to Soundside Manor, and OCWS and the Garnier Wastewater Facility would provide service to the Poquito Bayou Expansion and Camp Pinchot Expansion locations. Consequently, calculations show that the potential net changes and associated consequences to all respective utility providers would be the same as those described under Alternative 1. As a result, there would be

no adverse impacts to utility infrastructure and a slight beneficial impact for OCWS and Eglin Main utilities.

4.4.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse

The amount of housing units placed at the Camp Pinchot Expansion and on Poquito Bayou Expansion areas would be the same as Alternative 3. Consequently, the impacts to utility infrastructure would be the same as those described under Alternative 3: no adverse impacts to utility infrastructure and a beneficial impact to local and Eglin utilities.

4.4.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)

Potable Water and Wastewater

Table 4-21 shows the estimated net change in daily usage and flow for potable water and wastewater under this Alternative, based on information presented in Table 4-18.

Table 4-21. Estimated Net Change in Average Daily Usage and Flow of Potable Water and Wastewater for Utility Systems Under Alternative 5

Housing Density (units/acre)	Location / Number of Units			Estimated Net Change in Average Daily Use/Flow (MGD) for Utility Systems (based on F.A.C. standard)						
				Potable Water System			Wastewater Treatment Facility			
	SM	CPE	EMB	Okaloosa County Water & Sewer	Hurlburt Field	Eglin Main Base	Garnier Wastewater Facility	Hurlburt Advanced Wastewater Facility	OCWS-West	Plew Heights Treatment Facility
3	90	660	1,265	+0.21	-0.13	-0.28	+0.18	-0.10	+0.03	-0.28
4	120	880	1,015	+0.30		-0.36	+0.26	-0.09	+0.04	-0.36
6	180	1,320	515	+0.47		-0.54	+0.41	-0.07	+0.06	-0.54

ACC = Air Combat Command; CPE = Camp Pinchot Expansion; EMB = Eglin Main Base; SM = Soundside Manor

OCWS and OCWS-West would provide service to Soundside Manor, and OCWS and the Garnier Wastewater Facility would provide service to the Camp Pinchot Expansion location. ACC/Housing and the Plew Heights Treatment Facility would provide potable water and wastewater utilities to Eglin Main Base housing units. Calculations show that the potential net increases and associated consequences to all respective utility providers would be similar, though less in scope, to those described under the other Alternatives. As a result, there would be no adverse impacts to utility infrastructure and a slight beneficial impact for OCWS and Eglin Main utilities.

4.4.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse

The amount of housing units placed at the Camp Pinchot Expansion area and on Eglin Main Base would be the same as Alternative 5. Consequently, the impacts to utility infrastructure would be the same as those described under Alternative 5: no adverse impacts to local utilities and a beneficial impact to Eglin's utilities.

4.4.7 No Action Alternative

Under the No Action Alternative, no change would occur to the existing utility infrastructure of Eglin AFB, Hurlburt, or the local community associated with the MFH DCR & L Program. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline, and no impacts associated with utility infrastructure beyond the scope of normal conditions and influences at these locations would occur.

4.4.8 Impact Analysis Summary

In summary, potential impacts associated with utility infrastructure are related to the potential for disruption of utility service and the potential for utility use at site-specific locations to exceed the design or permit capacity of the respective utility system.

No adverse impacts to utility infrastructure design or permit capacity associated with demolition or construction of any of the units have been identified, either through analysis or through consultation with local utility providers.

Overall, various beneficial impacts would result from implementation of the Proposed Action at any of the Alternative sites. These benefits are associated with:

- Reduced usage of base utilities at both Eglin AFB and Hurlburt, freeing up capacity to allow for future growth.
- Although likely minimal, increased revenues for local municipalities.

4.5 CULTURAL RESOURCES

This section discusses potential impacts to cultural resources, including archaeological, architectural, and traditional resources, in the proposed project areas.

Environmental Impact Analysis Process

Impact analysis for cultural resources focuses on assessing whether implementation of the Proposed Action at the Alternative locations has the potential to affect cultural resources that are eligible for listing in the National Register or have traditional significance for American Indian groups. Under Section 106 of the National Historic

Preservation Act, when a Federal action meets the definition of an undertaking, the Federal agency must consult with the State Historic Preservation Officer and other identified consulting parties. The Federal agency is responsible for determining whether any historic properties are located in the area; assessing whether the proposed undertaking would adversely affect the resources; and notifying the SHPO of any adverse effects. An adverse effect is any action that may directly or indirectly change the characteristics that make the historic property eligible for listing in the National Register. If an adverse effect is identified, the Federal agency consults with the SHPO and federally recognized American Indian tribes to develop measures to avoid, minimize, or mitigate the adverse effects of the undertaking.

Direct adverse effects to archaeological sites eligible for listing on the National Register may result from construction or demolition activities including clearing, grading, paving, utility installation, and earth moving. Indirect effects can occur from increased use of areas near or adjacent to archaeological sites resulting in vandalism, erosion, and other adverse effects.

Direct adverse effects to historic buildings and structures eligible for listing in the National Register typically occur as a result of demolition or renovation. According to the *Eglin Air Force Base General Plan* (U.S. Air Force, 2001):

> *It is extremely important to note that legitimate historic facilities do not fall into the category of excess facilities – historic facilities are those that are listed (or are eligible for listing) on the National Register of Historic Places, having been found to have cultural significance based on specific criteria. Demolition of historic buildings cannot be considered when any other reasonable alternatives are available.*

While in this case other reasonable alternatives to demolition exist (and are discussed as alternatives in this document), the Eglin AFB leadership, which is responsible for the General Plan, determined that if the Record of Decision signatory elects an Alternative involving demolition of the historic district, an exception to the general rule will be made.

The Native American Graves and Repatriation Act (1990) (25 U.S.C. 3001 et seq; 40 CFR 10) protects Native American burial sites and controls the removal of human remains, funerary objects, sacred objects, and items of cultural patrimony on Federal and tribal lands.

Commonalities

For development, most impacts to cultural resources are specific to the individual site. The exception to this is American Indian Traditional Cultural Properties (TCP). Impacts to TCPs are not expected under any of the Alternatives. All potential project areas have

undergone Phase I Cultural Resource Surveys, and no TCPs have been identified. Eglin AFB has initiated contact with interested American Indian groups regarding this action.

Potential impacts to cultural resources associated with demolition activities could occur under the Proposed Action. As demolition activities would occur at the same sites across all Alternatives (with the exception of Camp Pinchot), potential impacts associated with demolition activities are addressed as commonalities. These impacts are discussed below by installation and housing area. In the event that additional resources are inadvertently discovered during construction, all work at that location would be temporarily halted and the base cultural resources manager notified. Identified resources would be managed in compliance with Federal law and AFI 32-7065.

Camp Rudder – Impacts to cultural resources are not expected in this housing area. The housing units are not considered eligible for the National Register as Cold War resources and are not historic in age. No National Register-eligible archaeological resources have been identified within or near the project area.

Poquito Bayou – Impacts to architectural resources in the Poquito Bayou housing area are not expected. Existing housing is not historic in age and is not considered significant for the Cold War era. Impacts to archaeological resources could occur under the Proposed Action. This 53-acre project area was considered to possess a high potential for archaeological resources (Survey Area X-700). Archaeological survey, testing, and evaluation, in compliance with Section 106 of the NHPA were completed in 2004 (Thomas et al., 2004a). As a result of survey and site evaluations, six sites have been determined as eligible for listing on the National Register and one historic cemetery is considered potentially eligible (Thomas et al., 2004a).

- 8OK135, a late nineteenth/early twentieth century naval stores associated site – site is adjacent to Poquito Bayou Expansion
- 8OK194, a twentieth century habitation and store site – site is adjacent to Poquito Bayou Expansion
- 8OK107, a multi-component prehistoric site with two midden deposits associated with the Weeden Island cultural group and Elliots Point materials below the midden deposits
- 8OK952/8OK953, a combined site with a possible Paleoindian component, a site with a possible Paleoindian component
- 8OK1835, a large historic site associated with early twentieth century land claims
- 8OK1836, a historic site probably associated with an early twentieth century land claim

The Davis family cemetery is potentially eligible and is also located in the Poquito Bayou Expansion area. Sites eligible and potentially eligible for listing on the National Register will require mitigation or avoidance prior to any proposed ground-disturbing activities to fulfill legal obligations under Section 106 of the NHPA.

Eglin Main Base

Ben's Lake – Impacts to architectural resources could occur in this housing area. Ten units of Ben's Lake housing constructed in 1948 are being evaluated for National Register eligibility. This evaluation is expected to be complete in Spring 2005. It is highly unlikely that these units will be found eligible. However, if the inventory finds the properties to be eligible for the National Register, mitigation measures will be developed and implemented in consultation with the Florida SHPO prior to demolition actions.

Georgia Avenue – Adverse impacts to the five historic housing units planned for adaptive reuse are not expected. Because these units are contributing members of the Eglin Field Historic District, renovation associated with adaptive reuse will be conducted in consultation with the Florida SHPO, and in compliance with the *Secretary of the Interior's Standards for Rehabilitation* (36 CFR Part 67); Eglin AFB's 2003 Programmatic Agreement regarding the preservation and protection of historical and archaeological resources; the Eglin AFB Cultural Resources Management Plan; and Air Force regulations.

Old Plew/New Plew – Impacts to architectural resources are not expected in the Old Plew and New Plew project areas. Housing in these project areas is not considered significant for Cold War associations and is not historic in age. Previously, the southern portion of the project area was identified as a high-probability area for archaeological resources (Survey Area X-701). Archaeological survey and evaluation, in compliance with Section 106 of the NHPA, were completed in the project area in 2004 (Thomas et al., 2004). Management recommendations from the 2004 archaeological survey state that no eligible or potentially eligible resources would be affected.

Wherry/Capehart – Impacts to architectural resources are not expected in the Wherry housing area. All housing is considered ineligible for the National Register. In 1998, the Florida SHPO concurred with Eglin AFB that similar buildings planned for demolition were not eligible for the National Register (Percy, 1998). Impacts to architectural resources could also occur in the Capehart housing area. Seven units of Capehart housing are under review for National Register eligibility and this survey is to be completed early 2005. It is highly unlikely that these will be found eligible. However, if any of these are determined eligible, mitigation measures will be identified in consultation with the Florida SHPO. An agreement is underway between the Advisory Council on Historic Preservation (ACHP) and the Air Force as part of a one-time compliance action for the NHPA for all Air Force Wherry/Capehart housing

(Cantrell, 2003). The Wherry and Capehart housing at Eglin AFB will be managed in compliance with this agreement.

An 89-acre portion of this area was previously considered to possess a high probability for archaeological resources (Survey Area X-702). Cultural resources inventory and evaluation of all identified resources, in compliance with Section 106 of the NHPA were completed in the project area in 2004 (Thomas et al., 2004). Management recommendations from the 2004 archaeological survey suggest that no effect on eligible or potentially eligible resources is expected.

Hurlburt Field

Live Oak Terrace – Impacts to architectural or archaeological resources are not expected in the Live Oak Terrace housing area. The housing units are not historic in age and are not considered eligible for the National Register as Cold War resources. The area has not been surveyed for archaeological resources, but intensive development makes the location of such resources unlikely.

Impacts could occur to an unnamed historic cemetery (#26) located along the boundary of Live Oak Terrace. Some of the cemetery may lie under the edge of the current housing area. Prior to ground-disturbing actions in the area, ground-penetrating radar was used to delineate grave locations and cemetery boundaries. The GPR survey detected no anomalies that suggested the presence of burials. Future ground-disturbing activities will follow established unexpected discovery procedures should burials be discovered as a result of construction activities.

Pine Shadows – Impacts to architectural resources could occur in this housing area. The 206 housing units in the project area were built in 1957. These units were recently evaluated for historical significance and, in concurrence with the SHPO, found to be ineligible for listing on the National Register. Impacts to archaeological resources are not expected. The majority of the housing area has been surveyed for archaeological resources, and no resources have been identified. Intensive development makes the location of such resources unlikely.

Soundside Manor – Impacts to architectural resources could occur in this housing area. The 60 housing units constructed in 1957 were recently evaluated for historical significance and, in concurrence with the SHPO, found to be ineligible for listing on the National Register. As of 2004, site testing and evaluation, in compliance with Section 106 of the NHPA, were completed for the sole potentially eligible site in the area (Thomas et al., 2004a). This testing determined that no eligible or potentially eligible prehistoric archaeological resources are present in this area.

4.5.1 Alternative 1: Poquito Bayou Expansion

Impacts to the archaeological resources in, or adjacent to, the Poquito Bayou Expansion area could occur under this Alternative. Six archaeological resources have been determined eligible for the National Register (8OK107; 8OK135 (located between the Poquito Bayou and Camp Pinchot Expansion Areas); 8OK194; 8OK1835; 8OK1836; 8OK952/8OK953) and one historic cemetery, the Davis Cemetery, is potentially eligible. These sites will require mitigation or avoidance prior to any proposed ground-disturbing activities to fulfill legal obligations under Section 106 of the NHPA.

Ground-disturbing activities will follow established unexpected discovery procedures should any burials associated with the Davis Cemetery be discovered as a result of construction activities. If an unmarked burial is discovered during earthmoving activities, all activity that could disturb the burial site will cease immediately, and the district medical examiner will be notified in compliance with the Unmarked Human Burial Act (Florida Statutes Section 872.05). Activity will not resume unless specifically authorized by the district medical examiner or the State Archaeologist. Access to the cemetery for Davis family members will remain consistent with current Eglin policy for access to this area.

Under this Alternative, the Camp Pinchot Historic District would be adaptively reused. Currently, an adaptive reuse study is underway to determine the best possible uses for the district. Because these units are contributing members of the historic district, renovation associated with adaptive reuse will be conducted in consultation with the Florida SHPO, and in compliance with the *Secretary of the Interior's Standards for Rehabilitation* (36 CFR Part 67), the Eglin AFB Programmatic Agreement, the Eglin AFB Cultural Resources Management Plan, and Air Force regulations.

4.5.2 Alternative 2: Eglin Main Base

The northern edge of the Capehart project area was considered to have a high probability for cultural resources (Survey Area X-702) and was subjected to archaeological survey and evaluation, in compliance with Section 106 of the NHPA (Thomas et al., 2004). One ineligible archaeological site has been identified in the area (8OK961). Due to the absence of eligible or potentially eligible sites, management recommendations from the 2004 archaeological survey suggest that there would be no effect to significant resources in this area. Consequently, no adverse impact is anticipated.

The area south of existing housing at the Old Plew/New Plew Expansion area (Survey Area X-701) was considered a high probability area for cultural resources. Archaeological survey and evaluation, in compliance with Section 106 of the NHPA, were completed in the project area in 2004 (Thomas et al., 2004). Management recommendations from the 2004 archaeological survey suggest that no effect is expected

to eligible or potentially eligible resources in this area. No adverse impact is anticipated here as well.

4.5.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area

Adverse impacts to the Camp Pinchot Historic District would occur under this Alternative. Potential impacts associated with cultural resources present at the Poquito Bayou Expansion area would be the same as those described under Alternative 1.

The buildings and grounds of the Camp Pinchot Historic District are significant at the national, state, and local levels for their association with the establishment and management of the Choctawhatchee National Forest, the first national forest in the southeastern United States. The demolition of the historic district would constitute an adverse impact, rendering it ineligible for listing on the National Register. The historic district is considered to possess excellent integrity of both buildings and setting. New construction within the Camp Pinchot Historic District will be required to comply with the 2003 Programmatic Agreement among Eglin AFB, the Florida SHPO, and the Advisory Council on Historic Preservation, which stipulates that all construction within a historic district shall be compatible with the scale, massing, color, and materials of the nearby historic properties.

Adverse impacts to archaeological resources at Camp Pinchot would also occur. One eligible archaeological site at Camp Pinchot (8OK871) is a multi-component prehistoric and historic site with evidence of American Indian use as early as 1,000 to 2,600 years ago. The integrity of the archaeological site is considered to be excellent and must be avoided or subjected to mitigation in the event of planned disturbance.

Consultation with the Florida SHPO, in compliance with Section 106 of the NHPA and the Eglin AFB Programmatic Agreement, is required under this Alternative, and is currently underway. Mitigation measures for both archaeological and architectural resources will be developed and implemented in consultation with the SHPO prior to project demolition.

4.5.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse

Alternative 4 would be the same as Alternative 3, with the exception that none of the buildings in the Camp Pinchot Historic District would be demolished. Under this Alternative, four of the nine contributing properties in the Camp Pinchot Historic District would be adaptively reused. Because these units are contributing members of the historic district, renovation associated with adaptive reuse will be conducted in consultation with the Florida SHPO, and in compliance with the *Secretary of the Interior's Standards for Rehabilitation* (36 CFR Part 67), the Eglin AFB Programmatic Agreement,

the Eglin AFB Cultural Resources Management Plan, and Air Force regulations. No adverse impact is expected.

Since no construction or demolition would take place within Camp Pinchot proper, no impacts to archaeological resources in the area would occur under this Alternative. In the Camp Pinchot Expansion area, no eligible or potentially eligible sites would be impacted under Alternative 4.

4.5.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)

Impacts to historic buildings and archaeological resources could occur on Eglin Main Base and in the Camp Pinchot area. The impacts associated with these locations would be the same as those described under Alternatives 2 and 3, respectively. Since the four Camp Pinchot historic units would be demolished under this Alternative, consultation and mitigation in accordance with Section 106 of the NHPA is required for this Alternative.

4.5.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse

Alternative 6 would be the same as Alternative 5, with the exception that none of the buildings in the Camp Pinchot Historic District would be demolished. Potential impacts associated with Camp Pinchot adaptive reuse would be the same as those described under Alternative 4. No adverse impact is expected.

4.5.7 No Action Alternative

Under the No Action Alternative, no new housing would be developed. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline, and no impacts associated with cultural resources beyond the scope of normal conditions and influences at these locations would occur.

4.5.8 Impact Analysis Summary

Adverse impacts to archaeological or architectural cultural resources could occur under the Proposed Action and all of the Alternatives. Adverse impacts to identified cultural resources would be greater under Alternatives 3 and 5 than under the other Alternatives because both Alternatives include impacts to the nationally significant National Register-listed Camp Pinchot Historic District. Cultural resources mitigation measures would be extensive under these Alternatives. Alternatives 1, 4, and 6 are likely to have more moderate impacts to cultural resources with some mitigation measures required. Impacts would vary by housing area. Additional cultural resources could be identified as a result of this work. Alternative 2 is not expected to result in any adverse impacts to cultural resources. If newly identified resources are eligible for listing in the National Register, mitigation of adverse impacts will be required prior to

the Proposed Action taking place. Impacts to traditional American Indian resources are not expected under the Proposed Action or Alternatives.

Regulatory Requirements

NHPA Section 106 consultation with the Florida SHPO is required. Currently the state of the 106 Consultation process is in progress. The next stage of effort would follow any decision following a choice of Alternatives. Once the undertaking is more clearly defined, any necessary compliance efforts will begin. The various significant properties present in all Alternatives, save the No Action Alternative, will need to be avoided or subjected to mitigation in the event of planned disturbance.

Mitigations

Mitigation measures for adverse impacts to National Register-eligible cultural resources are identified in consultation with the Florida SHPO during the Section 106 compliance process. Mitigation measures for archaeological sites can include avoidance, fencing, partial or complete data recovery excavation, archival research, archaeological monitoring, or other measures identified in consultation with the SHPO. These measures will be developed and implemented prior to any ground-disturbing actions. For National Register-eligible buildings that require demolition, mitigation measures could include Historic American Building Survey/Historic American Engineering Record documentation, video recording, oral history documentation, archival research, public education programs, interpretive signage, and potential off-site mitigation measures. Such measures are identified in consultation with the Florida SHPO and will be developed and implemented prior to any demolition actions. Eglin has completed HABS/HAER documentation for the Camp Pinchot Historic District.

4.6 BIOLOGICAL RESOURCES

This section discusses potential impacts to biological resources, sensitive species, and sensitive habitats by the proposed activities associated with the Alternatives. Analysis focuses on assessing the impacts to each of the resources.

Environmental Impact Analysis Process

Until specific development plans are available, site-specific impacts cannot be completely identified and have to be predicted within certain assumptions. Therefore, the maximum impact was assumed at each Alternative expansion site. Analysis also assumed that any proposed construction within an expansion area would affect the entire site regardless of the number of units to be constructed there. The following is a list of assumptions made for this analysis.

- Construction occurring within an expansion area would affect the entire area.

- While demolition of one unit at Hurlburt Field's Soundside location would occur within the 100-year floodplain, no new construction activities would take place within wetlands and floodplains.
- The Air Force and developer would adhere to all applicable Federal, state, and local regulations.
- Regulatory requirements and mitigations would be identified and executed.

Commonalities

There are no known sensitive habitats or sensitive species occurring in the vicinity of the Hurlburt Field activities or the Camp Rudder demolition. Therefore, there would be no impacts to sensitive species or habitat resulting from the proposed activities at these locations.

Sensitive Species

Implementation of certain BMPs could minimize the potential for impacts to sensitive species that may occur within the project areas. For sea turtles, gopher tortoises, and the eastern indigo snake, a "No Effect" determination for impacts to threatened and endangered species has been made by the Air Force, with the assumption that these BMPs are likely to be implemented, and would be identified within the ROD. Without implementation of these BMPs, an Endangered Species Act Section 7 Consultation with the USFWS would be required. Potential impacts and associated BMPs are discussed in the following narrative.

With the exception of Camp Rudder, the Wherry/Capehart, and Hurlburt areas, all Alternative locations provide potential habitat for the gopher tortoise, which is a state-listed species of special concern. Abandoned burrows of this species are utilized as habitat by the federally threatened eastern indigo snake. Potential impacts may result due to burrow collapse or destruction during demolition and construction activities. A survey of the Alternative areas to evaluate the presence of any gopher tortoise burrows and relocation of identified tortoises would minimize any potential impacts. Eglin's Natural Resources Branch has a permit with the state of Florida to relocate gopher tortoises.

Providing project personnel with a description of the eastern indigo snake, its habits, and protection under Federal law, and giving them instructions not to injure, harm, or kill this species would minimize any potential impacts to this species. Should an indigo snake be sighted, project personnel should be directed to cease any activities and allow the eastern indigo snake sufficient time to move away from the site on its own before resuming such activities. Because the indigo snake utilizes abandoned gopher tortoise burrows for habitat, to the extent possible gopher tortoise burrows should be avoided.

With the exception of the Camp Rudder and the Wherry/Capehart and Hurlburt areas, all Alternative locations have documented occurrences of the Florida black bear. Impacts are associated with the potential for increased human-bear interaction. Numerous bear sightings are documented at the Poquito Bayou Expansion and Camp Pinchot Expansion areas each year (Hagedorn, 2004), and it is unknown what attracts the bear to these areas. Since the area is not considered high-quality habitat, it is possible that the bears are attracted to the area due to a human presence (e.g., garbage, etc). However, loss of habitat is not necessarily an issue, as the Alternative locations represent less than one-half of 1 percent of the total area of Eglin AFB, which provides black bear habitat throughout the Reservation. To minimize the attraction of bears to the area, thereby minimizing the potential for human-bear interaction, residents should be educated to contain their household wastes in such a manner as to not attract bears. Preventing bears from entering the area may result in an ancillary benefit to the bear, in that bears would no longer cross SR-189, thus reducing the potential for bear-automobile incidents.

Land clearing may have a localized effect on native wildlife species such as squirrels, raccoons, rabbits, and so on. However, these species would either move to another location or remain within the area and utilize remaining foliage for habitat. In addition, the proposed areas represent only a small percentage of the total land area that Eglin maintains. It is anticipated that the potential for considerable adverse impacts to wildlife under any of the Alternatives would be minimal.

The Soundside Manor location sits across from Santa Rosa Island, which is utilized by several species of sea turtles for nesting. Urban glow associated with street and house lighting can misorient or disorient nesting turtles and hatchlings. The use of "turtle friendly" lighting for new street or dock lights would minimize the effect of urban glow to sea turtles and hatchlings on Santa Rosa Island.

Sensitive Habitats

While demolition of a single unit at Soundside would occur within the 100-year floodplain, no new construction in wetlands or floodplains would occur under any Alternative. As a result, there would be no direct impacts to wetlands or floodplains under any of the Alternatives.

Boat dock construction permit requirements typically include the avoidance of any seagrass beds. As a result, adverse impacts to seagrasses under any of the Alternatives are not anticipated.

Non-native Invasive Species

Executive Order 13112 requires Federal agencies to identify actions that may affect the status of invasive species and to use appropriate programs and authorities to:

- Prevent invasive species introductions.
- Detect populations of invasive species and rapidly institute cost-effective and environmentally sound control measures.
- Monitor invasive species populations.
- Restore native species and habitat conditions in areas that have been invaded.
- Conduct research and develop technologies to prevent introduction of, and control spread of, invasive species.
- Promote public awareness of invasive species and the means to address them.

The EO also states that Federal agencies are not to authorize, fund, or carry out actions that are likely to promote the introduction or spread of invasive species unless the agency has made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species and that all reasonable measures to minimize the risk of harm will be taken in conjunction with the actions. Any invasive exotic plant species identified during the project at any location will be removed in coordination with 96 CEG/CEVSNW. Additionally, coordination with 96 CEG/CEVSNW will be required to ensure the utilization of native vegetation for landscaping.

4.6.1 Alternative 1: Poquito Bayou Expansion

This Alternative would involve the conversion of approximately 787 acres of Sandhills ecological association to Landscaped/Urban association. This represents less than 1 percent of Eglin's total Sandhills ecological association (U.S. Air Force, 2003g).

Sensitive Habitats

There are no known sensitive habitats at these locations other than wetlands, which are addressed under the commonalities section. No impacts to wetlands would occur.

Sensitive Species

In addition to the potential beneficial/adverse impacts identified under commonalities, inactive red-cockaded woodpecker (RCW) nest trees within the Poquito Bayou Expansion area would be removed. The trees have been abandoned, and at the present time, the area does not provide suitable habitat for the RCW. Removal of these trees would have no effect on existing RCW populations (Miller, 2003). The Poquito Bayou Expansion area is also known to provide habitat for the southeastern American kestrel. Conversion of the expansion area to a Landscaped/Urban ecological association would result in the loss of some kestrel habitat and may adversely affect individuals through displacement. However, several thousand acres of kestrel habitat exist on Eglin AFB, and no effects to the greater southeastern American kestrel population inhabiting Eglin lands are anticipated. Additionally, this location may provide habitat for the

state-listed osprey. Removal of an osprey nesting tree would require a state permit. However, a visual survey of the area found no evidence of osprey nests (Hagedorn, 2004). Should an osprey nest be identified during the course of the project, identified osprey roosts would not be removed. Furthermore, ospreys typically roost within or near wetland areas. (Note: No construction will occur within wetland areas.)

4.6.2 Alternative 2: Eglin Main Base

This Alternative would involve the conversion of approximately 363 acres of Sandhills ecological association and 15 acres of Flatwoods to Landscaped/Urban. This represents less than 1 percent of Eglin's total Sandhills and Flatwoods ecological associations (U.S. Air Force, 2003g).

Sensitive Habitats

There are no known sensitive habitats at these locations other than wetlands near the Wherry/Capehart area, which are addressed under the commonalities section. No wetland impacts would occur.

Sensitive Species

No sensitive species have been identified in the project area. A gopher tortoise survey will be conducted by 96 CEG/CEVSNW in the Old Plew/New Plew Expansion area prior to ground disturbance.

4.6.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area

This Alternative would involve the conversion of approximately 245 acres of Sandhills habitat to a Landscaped/Urban ecological association at the Camp Pinchot Expansion area and approximately 787 acres of Sandhills ecological association to Landscaped/Urban association at the Poquito Bayou Expansion area. These numbers represent less than 1 percent of each of Eglin's total acreage for the respective ecological associations (U.S. Air Force, 2003g).

Sensitive Habitats

Potential impacts to sensitive habitats would be the same as those described under the commonalities section and Alternative 2. No significant adverse impacts to sensitive habitats are anticipated.

Sensitive Species

Potential impacts to sensitive species would be the same as those described under the commonalities section and Alternative 2. No significant adverse impacts to sensitive species are anticipated.

4.6.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse

Alternative 4 is the same as Alternative 3, except the four existing Camp Pinchot units would not be demolished and three boat docks would be constructed. The proposed boat docks would be located in areas with a sandy bottom and no aquatic vegetation. This Alternative would have no impacts beyond those previously identified in Alternative 3.

4.6.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)

Activities at Camp Pinchot would be similar to those described under Alternative 3, while activities at Eglin Main Base would be similar to those described under Alternative 2.

Sensitive Habitats

Potential impacts to sensitive habitats would be the same as those described under the commonalities section and Alternative 2. No significant adverse impacts to sensitive habitats are anticipated.

Sensitive Species

Potential impacts to sensitive species would be the same as those described under the commonalities section and Alternatives 2 and 3. No significant adverse impacts to sensitive species are anticipated.

4.6.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse

Alternative 6 is the same as Alternative 5 except the four existing Camp Pinchot units would not be demolished and three boat docks would be constructed. The proposed boat docks would be located in areas with a sandy bottom and no aquatic vegetation. This Alternative would have no impacts beyond those previously identified in Alternative 5.

4.6.7 No Action Alternative

Under the No Action Alternative, no new housing would be developed. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline, and no impacts associated with biological resources beyond the scope of normal conditions and influences at these locations would occur.

4.6.8 Impact Analysis Summary

Alternatives 1, 3, 4, 5, and 6, which use the Poquito Bayou Expansion area and Camp Pinchot Expansion area, have the greatest potential to impact biological resources due

to the extensive amount of land that would be cleared. However, the potential for adverse impacts to wildlife or sensitive species and habitats is expected to be minimal given the percentage of area disturbed compared to the entire Eglin Reservation. Construction would not take place in wetlands and floodplains. State-listed protected species are documented to occur at both the Poquito Bayou Expansion and Camp Pinchot Expansion areas.

4.7 WATER RESOURCES

This section discusses potential impacts to water resources, which include groundwater, streams, lakes, bays, bayous, sounds, and wetlands located within or near the proposed project areas associated with the Alternatives. The main potential issue is stormwater runoff, which is the water that does not soak into the soil but rather flows off cleared lands, rooftops, and paved areas during and after a rainstorm. This runoff can carry sediment, nutrients, pesticides, fertilizers, oil, grease, debris, litter, metals, and many other pollutants into nearby water bodies. Analysis focuses on assessing the potential for water quality impacts to these waters from housing demolition, land clearing, construction, and operations, as well as boat dock construction and operations; identifying potential issues associated with the increased volume and velocity of stormwater runoff; identifying required permits; and identifying methods to reduce the potential for negative impacts to water resources from these activities.

Environmental Impact Analysis Process

The potential for adverse water resource impacts was based on the regulations and concerns listed below. Impacts were considered adverse if any of the following conditions would occur as a result of an Alternative.

- A discharge creating pollution as defined in the F.A.C. 62-302.
- A discharge that degrades designated beneficial uses of water (F.A.C. 62-4.242 and F.A.C. 62-302.300).
- A change in the absorption rates, drainage patterns, or rate and amount of runoff that would in turn exceed the capacity of storm drain systems.
- Release of contaminants to the groundwater in such concentrations as to exceed maximum contaminant levels.
- A discharge that violates the Safe Drinking Water Act.

Any demolition or construction area larger than 1 acre will require a NPDES General Permit for stormwater discharge associated with construction/demolition activities. The NPDES permit process is used to control the amounts and types of contaminants that are introduced into waters of the United States from nonpoint sources such as stormwater runoff from construction sites. In Florida, the Florida Department of Environmental

Protection implements the NPDES stormwater permitting program. In addition to the NPDES permit, it will be necessary to acquire a Stormwater Discharge Permit (F.A.C. Chapter 62-25), a program that is also administered by the FDEP.

As part of the NPDES permit, the developer will be required to prepare and implement a Stormwater Pollution Prevention Plan before beginning construction activities. The SWPPP would include: (i) site evaluation of how and where pollutants may be mobilized by stormwater; (ii) site plan for managing stormwater runoff; (iii) identification of appropriate erosion and sediment controls and stormwater mitigations; (iv) maintenance and inspection schedule; (v) record keeping process; and (vi) identification of stormwater exit areas. When preparing the SWPPP, developers would follow the guidance provided in the USEPA publication, *Stormwater Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices* (USEPA, 1992).

Eglin AFB and Hurlburt Field both have been issued permits for the discharge of stormwater from Phase II Municipal Separate Storm Sewer Systems from the FDEP under the provisions of Section 403.0885, Florida Statutes, 40 CFR 122.32-37, and applicable rules of the Florida Administrative Code. Military installations are required to attain MS4 permits under Phase II of the NPDES stormwater permitting program. Under these MS4 permits, Eglin AFB and Hurlburt are required to implement a number of mitigations, each of which has measurable goals, a schedule for implementation/completion, and a list of responsible entities/departments. These mitigations, goals, schedules, and names are provided in the EIS Resource Appendices (Appendix J, *Water Resources*). As part of the mitigations detailed in their MS4 permits, Eglin AFB and Hurlburt have committed to the following with respect to construction: (i) developing contractual language requiring mitigation usage at construction sites; (ii) reviewing construction site plans for potential stormwater quality impacts through the comprehensive environmental impact analysis review program; (iii) formalizing a method of tracking construction projects and control measures; and (iv) performing periodic inspections of construction sites to ensure that mitigations are in place and operational.

Developers must abide by all requirements in the MS4 permits. Additionally, developers will be responsible for obtaining all necessary permits, including the NPDES permit and the F.A.C. 62-25 permit. Mitigations and BMPs to either offset or minimize potential impacts to water resources from demolition, construction and operation activities are specifically identified during the permitting process. As a result, the specific mitigations and BMPs that would be required for a particular Alternative cannot be identified at this time. However, for analysis purposes, typical mitigations and BMPs have been identified that are likely to be required under the permits identified above for the demolition, construction, and operation of housing as described under the Alternatives based on similar, previous permitted actions at Eglin AFB and within Florida.

The impact analyses within this section therefore assume the incorporation of regulatory (permitting) requirements and associated mitigations and BMPs. Consequently, the potential impacts associated with the implementation of the Alternatives reflect the potential impacts that would likely occur provided that regulatory requirements (and associated mitigations and BMPs identified during the permitting process) are incorporated as part of the Alternative. While specific mitigations and BMPs described within this section may not necessarily be incorporated into the Housing Privatization RFP, the requirement for the developer to acquire all applicable permits and meet all permitting requirements (i.e., mitigations and BMPs) would be identified within the lease agreement with the developer.

Analyses under the commonalities and Alternatives estimated the current and projected amounts of impervious surface and the predicted increase in stormwater runoff at each Alternative site. Details on the analyses are provided in the EIS Resource Appendices (Appendix J, *Water Resources*).

Commonalities

This section discusses potential water resource impacts associated with the demolition of the existing housing units. Additionally, potential impacts from the construction of new housing units and boat docks that are common to all sites will be discussed here. Any site-specific potential impacts from construction activities will be discussed individually under each Alternative section below.

Surface Waters

Housing Demolition and Construction Impacts

Activities associated with the Alternatives include demolition, clearing, grading, paving, utility installation, and building construction. These activities have the potential to increase the rate and volume of stormwater runoff and to introduce pollutants into nearby water bodies, thereby causing adverse impacts to water quality. For example, erosion of disturbed ground profile during storm events could result in increased sedimentation of nearby surface waters. Construction and demolition debris could be carried off by stormwater runoff and transported to adjacent waters. Mitigations would be necessary to ensure that disturbed soil is retained on-site, that any pollutant-laden stormwater runoff is contained, and that the rate and volume of stormwater are reduced to acceptable levels. However, it should be noted that any potential impacts to surface waters specifically associated with demolition and construction activities would be short-term and temporary, the potential being minimized as these activities move away from surface waters and concluding once demolition and construction have been completed.

Soil Runoff – The project areas may experience erosion due to a combination of high-energy rain events, erosive soils, and in some areas, steep topography. Because of

this erosion potential, during demolition, land clearing, and construction activities, exposed soils are extremely vulnerable to runoff, making it necessary to take measures to minimize soil erosion. Mitigations for minimizing sediment runoff, identified during the permitting process (such as temporary sediment traps/basins, entrenched silt fencing, staked hay bales, and seeding) will be used at these sites. Perimeter controls such as entrenched silt fencing and staked hay bales are especially important near low areas and adjacent to wetlands and water bodies. Proper installation, inspection, and maintenance are vital to the effectiveness of these mitigations. Permits and site plan designs will include site-specific mitigations for erosion and sediment control. With the proper implementation and maintenance of erosion and sediment control mitigations, impacts to surface water resources from soil runoff from housing demolition and construction activities are anticipated to be minimal.

Construction Waste Runoff – Construction and demolition debris could potentially be picked up by stormwater runoff and transported to adjacent waters. To minimize the potential for impacts to water resources, demolition/construction site waste materials, hazardous wastes, and sanitary wastes that are generated on-site will be handled and disposed of in accordance with state and local requirements. The Hazardous Materials section details additional practices to minimize the risk of spills or accidental releases of waste or hazardous materials. With the proper implementation and maintenance of construction waste mitigations, impacts to surface water resources from wastes produced by demolition and construction activities are anticipated to be minimal.

Post Construction Impacts

Volume and Rate of Stormwater Runoff – Consideration must also be given to the potential impacts to stormwater runoff flow rates and volumes after construction is completed. The construction developer will be responsible for designing the project to meet certain runoff-related regulations and will also be responsible for putting mitigations into place to handle the increased runoff.

Once an area is cleared for development and impervious surface is increased (i.e., new construction of houses, roads, driveways, etc.), stormwater runs off much more quickly than before development and the volume of runoff increases because the infiltration capacity of the land has been decreased. Impervious surfaces are mainly constructed surfaces that are made of impermeable materials such as concrete, brick, and asphalt. These materials do not allow for water to percolate through to the soils, and often result in increases in stormwater runoff. For that reason, it is beneficial for new developments to minimize impervious surface area.

Depending upon the change in the type of land use, the volume, rate, and quality of stormwater runoff can change considerably. Site developers will assume the responsibility and challenge of designing the site and accompanying stormwater controls in such a way as comply with the applicable stormwater regulations. The peak

runoff discharge typically increases as developed conditions increase. This increased flow must be addressed in the design of the site through the implementation of mitigations that can return the peak discharge to a rate similar to that of the previously undeveloped area.

Single-family detached units are not required by Okaloosa County to have on-site storage for 1-inch rain events as is required for townhouses. The county does require that the site be designed to handle a 25-year storm, provided a suitable "pop-off" is available for the site. That is, the on-site stormwater system must only handle the peak flow of a 25-year storm as long as a county drainage system, such as a conveyance along a road, is available and has the capacity to handle the stormwater runoff in excess of the 25-year volume. If a pop-off is not available, the site stormwater system must be designed to handle the peak flow of a 100-year storm (Mixon, 2004).

During the actual design, soil investigation and water table data are required in detail. These two factors are critical to determining the ability of the site area to percolate, store, and convey rainfall. Finally, only the stormwater runoff in excess of the original undisturbed site volume would need to be considered in site designs.

While Okaloosa County does not have a requirement for developments such as those considered in the Proposed Action to store the stormwater runoff on-site, the state of Florida does. F.A.C. 62-25 regulates stormwater discharge facilities and 62-25.035(b) identifies facilities which provide retention, or detention with filtration, of the runoff from the first 1 inch of rainfall; or as an option for projects or project subunits with drainage areas less than 100 acres, the first 0.5 inch of rainfall. The "first flush" is considered to be the primary source of pollutants associated with stormwater runoff. The retention or detention with filtration of the first 1 inch or 0.5 inch of rainfall greatly assists in capturing the pollutants associated with stormwater runoff. A development can be exempt from the storage regulations under F.A.C. 62-25 if the project is designed such that the swale exemption criteria are met under F.A.C. 62-25.030(1)(c).

There are many different types of mitigations that can reduce the rate of runoff and flow volume, as well as lower the loading and concentration of pollutants in the runoff. Table 4-22 lists examples of permanent stormwater runoff mitigations that are available to mitigate increases in the rate of runoff, flow volume, and pollutant loading and concentration.

A site developer may use these mitigations or other similar ones to effectively control stormwater runoff at development sites. Mitigations will be put in place at the end of construction activities. Specific details on the types of structures and necessary mitigations will be included in the site design and detailed in the permits. The implementation of these types of mitigations as part of the permitting requirements associated with this action has been taken into consideration during the impact analysis process.

Table 4-22. Examples of Permanent BMPs Associated with Permit Requirements to Reduce Flow Volume and Rate of Runoff

Mitigation	Description
Concrete Grid and Modular Pavement	A pavement surface consisting of strong structural material having regularly interspersed void areas that are filled with pervious materials such as sod, gravel or sand. Reduces runoff flows and water pollution from low-volume traffic areas.
Detention Basin	An impoundment or excavated basin for the short-term detention of stormwater runoff from a completed development area. Control release from the structure to that of downstream, pre-development flow rates.
Exfiltration Trenches	Below-ground retention of stormwater runoff for release into the soil. Stormwater runoff is temporarily stored in perforated pipe or coarse aggregate and allowed to infiltrate the trench walls and, to some extent, the trench bottom for disposal and treatment. Assists in retaining the "first flush" of stormwater runoff, filters contaminants, and reduces runoff volume and peak discharge from a site.
Level Spreader	An outlet for concentrated slightly depressional runoff, allowing water to collect and then disperse uniformly over the surrounding vegetated area.
Stormwater Retention Basin	A basin or depressional area to temporarily retain stormwater on-site providing for infiltration, pollution reduction, and downstream water quality improvement.
Constructed Wetland	A modified natural or constructed shallow basin for retention and treatment of contaminated waters by wetland vegetation. Treats runoff contaminated by oils, pesticides, nutrients, and fertilizers.

Source: MDEQ et al., 1994.

Geographic Information System coverages were used to estimate the current amount of impervious surface at all MFH sites. A table showing the current amounts and percentages of impervious surface at the MFH sites is presented below (Table 4-23). Details on the method used to determine the amount of impervious surface are provided in the EIS Resource Appendices (Appendix J, *Water Resources*). Table 4-24 shows the baseline and potential peak flow and maximum runoff for the 25-year storm for each of the Alternatives with respect to existing and potential unit densities (3, 4, or 6 units per acre). Table 4-25 depicts the existing and potential 1-inch rain storage volume needs for the proposed Alternative locations.

Table 4-23. Current Impervious Surface for MFH Sites Calculated from GIS Coverages

Site	Impervious Surface (Acres)	Impervious Surface (%)
Existing Development Sites		
Poquito Bayou	23	34
Hidden Oaks	34	65
New Plew	63	65
Old Plew	78	61
Capehart	123	75
Camp Pinchot	3	29
Wherry	97	75
Ben's Lake Housing	55	84
Live Oak Terrace	15	61
Pine Shadows	45	84
Soundside Manor	22	76
Camp Rudder	4	50
Alternative Sites		
Eglin Main Base		
Wherry/Capehart	212	75
Old Plew/New Plew Expansion	205	30
Camp Pinchot Expansion	9	3
Poquito Bayou Expansion	73	8

Table 4-24. Peak Flow and Maximum Runoff: 25-yr/24-hr Storm for Existing and Alternative Development

Alt.	25-Year/24-Hour Storm (10.23 inches of rain)	Soundside Manor			Camp Pinchot Expansion			Poquito Bayou Expansion						Eglin Main Base								
														Old Plew/New Plew Expansion Area						Wherry/Capehart		
		Drainage Area / *Density (Units/Acre)*																				
		1			1			1			2			1			2			1		
		3	*4*	*6*	*3*	*4*	*6*	*3*	*4*	*6*	*3*	*4*	*6*	*3*	*4*	*6*	*3*	*4*	*6*	*3*	*4*	*6*
1	*Peak Flow (cfs)*																					
	Existing	127.10						104.71			503.68											
	Proposed	135.42	151.50	200.72				725.41	806.69	1117.21	1192.70	1320.46	1773.76									
	Maximum Runoff (inches)																					
	Existing	4.55						1.08			1.57											
	Proposed	4.82	5.37	7.23				4.28	4.69	6.32	4.55	4.96	6.45									
2	*Peak Flow (cfs)*																					
	Existing	127.10												254.06			752.96			824.08		
	Proposed	135.42	151.50	200.72										638.18	703.77	954.01	935.46	1027.57	1345.06	790.82	889.76	1172.46
	Maximum Runoff (inches)																					
	Existing	4.55												1.70			2.90			4.96		
	Proposed	4.82	5.37	7.23										3.32	3.59	4.69	3.45	3.73	4.69	4.96	5.51	7.50
3/4	*Peak Flow (cfs)*																					
	Existing	127.10			94.34			104.71			505.84											
	Proposed	135.42	151.50	200.72	774.18	872.85	1195.94	537.35	591.42	810.11	858.66	946.58	1286.69									
	Maximum Runoff (inches)																					
	Existing	4.55			1.08			1.08			1.57											
	Proposed	4.82	5.37	7.23	4.96	5.51	7.50	3.32	3.59	4.69	3.45	3.73	4.83									
5/6	*Peak Flow (cfs)*																					
	Existing	127.10			94.34									254.06			752.96			824.08		
	Proposed	135.42	151.50	200.72	774.18	872.85	1195.94							511.25	544.38	736.28	711.85	800.92	1030.46	544.35	596.33	820.90
	Maximum Runoff (inches)																					
	Existing	4.55			1.08									1.70			2.90			4.96		
	Proposed	4.82	5.37	7.23	4.96	5.51	7.50							2.77	2.90	3.73	2.77	3.04	3.73	2.77	3.87	5.10

cfs = cubic feet per second; yr = year; hr = hour

Post-development estimates do not take into account that mitigations that would be implemented to reduce the maximum runoff and peak flow to permitted levels.

Table 4-25. One-inch Rain Storage Volume

Alternative	Soundside Manor		Camp Pinchot Expansion		Poquito Bayou Expansion		Eglin Main Base			
							Old Plew/New Plew Expansion Area		*Wherry/Capehart*	
	Existing	**Proposed**	**Existing**	**Proposed**	**Existing**	**Proposed**	**Existing**	**Proposed**	**Existing**	**Proposed**
	1″ Rain Storage For Developed Areas (Cubic Feet)									
1	83,490.2	87,120.2			196,020.5	2,551,897.0				
2							755,042.1	2,174,376.0	1,063,592.9	1,023,662.8
3/4			7,260.0	889,352.5	196,020.5	1,702,474.7				
5/6							755,042.1	1,346,733.7	1,063,592.9	885,722.4

At sites where demolition takes place with no future construction, the amount of impervious surface would decrease, resulting in a reduction in runoff from these sites. For areas experiencing increases in impervious surfaces, proper site planning, low-impact design principles, and adequately engineered stormwater mitigations would help to manage stormwater (on-site) and prevent discharges into nearby wetlands and surface waters.

Dock Construction Impacts

Construction of boat docks has the potential to locally increase turbidity levels and to leach chemicals into the water, depending on the type of materials used to construct the boat docks. The lumber most commonly used for pilings is wood that has been pressure-treated with a chromated copper arsenate. Research has shown that some leaching does occur from CCA-treated lumber in saline waters, but this leaching generally occurs only when the dock is new (Kelty and Bliven, 2003). Additionally, the affected area around a dock is relatively small, and tidal flushing typically dilutes any accumulations in the water column. However, consideration will be given to alternatives to CCA-treated lumber, including plastics, untreated wood, steel, and concrete.

Construction of the boat docks, mainly the installation of pilings, could increase turbidity levels in the construction area. The two main methods of piling installation are jetting and driving. Driving causes less disruption of sediments than jetting. Jetting suspends the sediments and can destroy vegetation, which leads to bare areas that are subject to scour. Use of a low-pressure pump to create a starter hole and subsequent insertion of a sharpened pile with a drop hammer from a shallow-draft barge creates much less disturbance of sediments, and would be the preferred method of installation. Use of a barge would minimize impacts to sediments and existing shoreline vegetation, but would require timing construction for when water levels were up, avoiding low-water levels common during the winter and during low tides. In either case, the turbidity caused by these activities would be short-term and temporary, ending when the construction phase has been completed.

Prior to construction, it will be necessary to obtain a Works in the Water of Florida permit per F.A.C. 62-312 to build the dock as well as obtain written authorization from FDEP to use the State's submerged lands. The construction of docks, piers, and associated structures present navigation concerns for the USACE. As such, these activities fall within the USACE's jurisdiction under Section 10 of The Rivers and Harbor Act of 1899 (33 U.S.C. 403). This jurisdiction allows the USACE to review the permit as a joint permit application between the FDEP and the USACE. The developer will be responsible for obtaining all necessary permits. In the course of obtaining the permits, it may also be necessary to conduct surveys to determine whether seagrasses or oyster beds are present in the area. Prior to initiation of the project, a public notice to adjacent property owners will be issued.

Housing Operation Impacts

After construction is completed, the potential still exists for polluted stormwater runoff from everyday activities within the proposed housing areas. Stormwater can potentially pick up pollutants and debris as it flows over lawns, houses, driveways, and streets, and can transport these pollutants to adjacent water bodies. Pollutants may include fuel, oil, grease, fertilizers, pesticides, pet wastes, metals, debris, litter, and other materials used by homeowners. Table 4-26 below lists potential pollutants associated with stormwater runoff from roadways.

Table 4-26. Roadway Stormwater Runoff Constituents

Constituents	Primary Sources
Nitrogen, phosphorous	Atmosphere, roadside fertilizer application
Lead	Auto exhaust, tire wear
Iron	Auto body rust
Zinc	Tire wear, motor oil, grease
Copper	Metal plating, bearing wear, engines, brakes, insecticides
Cadmium	Tire wear, insecticide application
Chromium	Metal plating, engines, brake lining wear
Nickel	Diesel fuel, gasoline exhaust, oil, metal plating, asphalt
Manganese	Moving engine parts
Petroleum	Spills, leaks, antifreeze

Source: Melby and Cathcart, 2002

With the increase in cleared area and impervious surface, a potential exists for an increase in freshwater runoff to nearby brackish waters. However, the presence of a minimum 100-foot vegetated buffer along all water bodies, in addition to the high permeability of the soils in this area, will minimize the potential for any additional freshwater runoff to reach a local water body directly. Most or all of the water would percolate through the soil or be absorbed by vegetation in the buffer.

Reducing the rate, volume, and pollutant content of stormwater runoff requires the implementation of stormwater management controls. As part of the Stormwater

Pollution Prevention Plan mentioned above in the Permits section, stormwater controls must be selected before construction is completed. These controls are meant to help slow the velocity of the water, allow infiltration, allow sediments to settle out, and treat pollutants in the runoff. Common controls are listed in Table 4-22.

In addition to the structural mitigations listed above in Table 4-22, non-structural BMPs are also necessary to reduce stormwater impacts, especially those related to runoff of soils, nutrients, and toxic materials. As part of the MS4 Stormwater Management Programs (refer to the EIS Resource Appendices, Appendix J, *Water Resources*) at Eglin AFB and Hurlburt, informative materials are being designed to provide stormwater education to the Eglin/Hurlburt community. As part of this effort, a program focusing on ways that individual housing residents can help prevent stormwater pollution is being developed.

Because housing residents maintain their lawns independently, educational efforts would be key to reducing the potential for fertilizer and pesticide runoff. Using fertilizers and pesticides at the wrong time or in excessive amounts can lead to runoff issues. The University of West Florida Extension Service has in the past worked with the Eglin Self-Help Center and periodically offered classes on lawn care, covering topics from what to plant to how to properly apply herbicides/pesticides. Additionally, the Self-Help Center encourages the use of native plants that are suited for the area and thus do not require excessive amounts of fertilizer, pesticides, or water (Horlacher, 2004).

One of the most effective BMPs for reducing the water quality impacts of stormwater runoff is a vegetative buffer adjacent to a water body. A buffer zone is a natural, undisturbed strip or "green belt" surrounding a development or land disturbance activity bordering a water body. Vegetative buffers are a proven method to reduce polluted runoff to water bodies. These buffers allow increased infiltration opportunity time for nutrients and contaminants from runoff, trap sediment, and help to stabilize shorelines and reduce erosion. *A Review of the Scientific Literature on Riparian Buffer Width, Extent, and Vegetation* (Wenger, 1999) determined that the most effective buffers are at least 100 feet wide and are composed of native vegetation, preferably trees and shrubs versus turf grass. Ideally, these buffers would increase where necessary to include floodplains and wetlands. Additionally, certain activities would be restricted from buffers, including construction resulting in land disturbance, impervious surfaces, and stormwater detention ponds (except for those designed as wetlands) (Wenger and Fowler, 2000). Buffers may be implemented as a result of permitting requirements.

Where appropriate, constructed wetlands can also be effective in treating stormwater runoff. A constructed wetland is a modified natural or constructed shallow basin for treatment of contaminated waters by wetland vegetation. These wetlands treat runoff contaminated by oils, pesticides, nutrients, and fertilizers. Proper design and maintenance of constructed wetlands are vital to their proper functioning.

With the proper implementation and maintenance of structural and non-structural stormwater management mitigations and BMPs, as developed through the permitting process, impacts to surface water resources from housing operations are expected to be minimal.

Dock Operation Impacts

If boats and/or jet skis are to be operated in association with the docks, then there is the potential for increases in erosion, turbidity, and oil/gas residuals. Watercraft leaving and approaching docks push waves out that can increase the erosion of the shoreline if the waves hit the shore at a sufficient velocity and frequency. At Soundside Manor, a seawall is already present. This seawall currently serves to minimize the potential for shoreline erosion, but to further decrease this potential, watercraft could reduce to idle speed as they approach the docks, thus minimizing wave action and subsequent shoreline erosion potential. Additionally, boats and jet skis leave residual oils and gas in the water. Regular maintenance of watercraft engines would help to minimize the amount of oil and gas released from watercraft. The boat docks that would be constructed would only be large enough to accommodate one or two boats, thus minimizing the amount of boat traffic associated with these docks.

Groundwater

Demolition and Construction Impacts

Ground disturbance activities would occur only a few feet in depth from the ground surface, and thus are not anticipated to impact groundwater. Demolition and construction activities may result in potential accidental spills/leaks of oils, fuels, solvents, or concrete wash water. However, avoidance of the use of these materials near wellheads and the implementation of the mitigations listed in the SWPPP to reduce pollutant sources would minimize this potential. With the implementation of BMPs, no impacts to groundwater quality are anticipated.

Housing Operation Impacts

As detailed in the Utilities section, groundwater supplies are adequate to support the proposed development. There would actually be a net decrease in the number of housing units across the entire project area. To further reduce demands on the local water supply, water conservation methods will be promoted, such as watering lawns less frequently and using native vegetation that require less water. No impacts to groundwater supply are anticipated from the housing operation.

No existing wells are located near the proposed housing areas. Any new well will have a buffer around it to avoid potential contamination. Because no new houses would be located near existing or new wellheads, no impacts to groundwater quality are anticipated from daily operations.

Wetlands

No demolition or construction activities would occur within wetland areas. As a result, there would be no direct impacts to wetlands. Indirect impacts, such as erosion and sediment transport into wetland areas associated with demolition activities would be minimal given the implementation of mitigations and BMPs associated with permitting requirements.

For construction activities, maintenance of a 50-foot buffer from any adjacent wetlands or surface waters would result in no permitting issues with the U.S. Army Corps of Engineers and FDEP. As stated previously, studies show that this buffer would help control erosion and protect water resources from neighboring land uses and nutrient inputs such as fertilizers, leaking sewage lines, and animal waste (Wenger, 1999).

Floodplains

Portions of the Hurlburt Soundside location currently reside within a 100-year floodplain. Demolition of one unit would occur within the floodplain, but no new construction would occur. Demolition activities in this area would not result in the alteration of the existing condition of the floodplain as this area is currently a residential area. No adverse impacts to the existing, baseline functionality or utility of the floodplain in this area are anticipated. No floodplains in any of the other project areas or Alternative locations would be filled, altered, or constructed in.

4.7.1 Alternative 1: Poquito Bayou Expansion

Surface Waters

Potential water resource impacts associated with the construction of housing units at the Poquito Bayou Expansion site are discussed below. Water bodies within or adjacent to the site include Poquito Bayou, Garnier Bayou, Garnier Creek, two small unnamed creeks, and two ephemeral creeks (Figure 3-12). Wetlands are also present. Not counting wetlands, this site covers approximately 860 acres. Land clearing would be necessary for the majority of this site.

Housing Construction Impacts – At the Poquito Bayou Expansion site, land clearing, grading, and construction activities would take place. Potential impacts from construction are similar to those detailed in the commonalities section. To minimize the potential for impacts from polluted stormwater runoff from the construction site, all of the mitigations detailed under the commonalities section and those that would be required by permits will be implemented.

Modeling of the 25-year/24-hour storm showed that there would be a substantial increase in peak flow and maximum runoff after the new development was completed when compared to current conditions (Table 4-24). The required 1-inch rain storage

volume would also increase at the Poquito Bayou Expansion site (Table 4-25). In order to reduce the peak flow and maximum runoff to permit-mandated levels and to retain the first 1 inch of runoff, mitigations will be required. Site design plans and permits will detail the required mitigations that must be put in place at specific periods throughout the construction process. The types of mitigations that would likely be used are detailed in the commonalities section.

The proper implementation and maintenance of mitigations and BMPs resulting from permitting actions for controlling soil erosion, construction waste runoff, and increased volumes and rate of stormwater runoff, would either offset or minimize any potential impacts to surface water resources from housing construction at the Poquito Bayou Expansion area.

Housing Operation Impacts – The proper implementation and maintenance of mitigations and BMPs resulting from permitting actions for controlling soil erosion, construction waste runoff, and increased volumes and rate of stormwater runoff, would either offset or minimize any potential impacts to surface water resources from housing construction at the Poquito Bayou Expansion area.

Groundwater

Potential issues, mitigations, and BMPs are the same as those detailed under the commonalities section. No negative impacts to groundwater supply or quality are anticipated from activities associated with Alternative 1.

Wetlands

Construction would not take place in wetlands. Mitigations and BMPs developed during the permitting process will be incorporated to avoid potential indirect or cumulative impacts to aquatic resources.

Floodplains

Floodplains have been eliminated as potential development sites. Alternative 1 is expected to have no direct or indirect impacts to the existing functionality of floodplains.

4.7.2 Alternative 2: Eglin Main Base

Water bodies within or adjacent to the project area(s) include Memorial Lake, Ben's Lake, Choctawhatchee Bay, and two ephemeral creeks (Figure 3-12). Construction at the Old Plew/New Plew Expansion area would require land clearing for a portion of the site. No land clearing would be necessary at the Wherry/Capehart location.

Surface Waters

Housing Construction Impacts – Under the Eglin Main Base Alternative, land clearing, grading, and construction activities would take place. Potential impacts from construction are similar to those detailed in the commonalities section. To minimize the potential for sediment and stormwater runoff from the construction site, all of the mitigations detailed under the commonalities section and those that would be required by permits will be implemented.

Modeling of the 25-year/24-hour storm showed that there would be a relatively large increase in peak flow and maximum runoff from the Old Plew/New Plew Expansion site after the new development was completed when compared to current conditions, while these factors would remain essentially the same at the Wherry/Capehart site (Table 4-24). The required 1-inch rain storage volume would also increase at the Old Plew/New Plew Expansion area and decrease at the Wherry/Capehart (Table 4-25). In order to reduce the peak flow and maximum runoff to permit-mandated levels and to retain the first 1 inch of runoff, mitigations will be required. Site design plans and permits will detail the required mitigations that must be put in place at specific periods throughout the construction process. The types of mitigations that would likely be used are detailed in the commonalities section.

The proper implementation and maintenance of mitigations and BMPs resulting from permitting actions for controlling soil erosion, construction waste runoff, and increased volumes and rate of stormwater runoff, would either offset or minimize any potential impacts to surface water resources from housing construction under this Alternative.

Housing Operation Impacts – The proper implementation and maintenance of mitigations and BMPs resulting from permitting actions for controlling soil erosion, construction waste runoff, and increased volumes and rate of stormwater runoff, would either offset or minimize any potential impacts to surface water resources from housing operations under this Alternative.

Groundwater

Potential issues, mitigations, and BMPs are the same as those detailed under the commonalities section. No negative impacts to groundwater supply or quality are anticipated from activities associated with Alternative 2.

Wetlands

Mitigations associated with permitting actions will also be incorporated to avoid potential indirect or cumulative impacts to aquatic resources. The overall decrease in housing units at this location would reduce potential stormwater runoff and would minimize secondary impacts to nearby wetlands. Demolition sites will be restored using native vegetative cover to reduce soil erosion.

Floodplains

Floodplains have been eliminated as potential development sites. Alternative 2 is expected to have no direct or indirect impacts to the existing functionality of floodplains.

4.7.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area

Water bodies within or adjacent to the site include Poquito Bayou, Garnier Bayou, Garnier Creek, three small unnamed creeks, and two ephemeral creeks (Figure 3-12). Wetlands are also present. Land clearing would be necessary at both sites.

Surface Waters

Housing Construction Impacts – At the Camp Pinchot Expansion/Poquito Bayou Expansion sites, demolition, land clearing, grading, and construction activities would take place. Potential impacts from demolition and construction are similar to those detailed in the commonalities section. To minimize the potential for sediment and stormwater runoff from the construction site, all of the mitigations detailed under the commonalities section and those that would be required by permits will be implemented.

Modeling of the 25-year/24-hour storm showed that there would be large increases in peak flow and maximum runoff from the Camp Pinchot Expansion and Poquito Bayou Expansion sites after the new development was completed when compared to current conditions (Table 4-24). There would also be large increases in the volume of rainfall that must be retained in order to meet the 1-inch requirement (Table 4-25). To reduce the peak flow and maximum runoff to permit-mandated levels and to retain the first 1 inch of runoff, mitigations will be required. Site design plans and permits will detail the required mitigations that must be put in place at specific periods throughout the construction process. The types of mitigations that would likely be used are detailed in the commonalities section.

The proper implementation and maintenance of mitigations and BMPs resulting from permitting actions for controlling soil erosion, construction waste runoff, and increased volumes and rate of stormwater runoff, would either offset or minimize any potential impacts to surface water resources from housing construction under this Alternative.

Housing Operation Impacts – The proper implementation and maintenance of mitigations and BMPs resulting from permitting actions for controlling soil erosion, construction waste runoff, and increased volumes and rate of stormwater runoff, would either offset or minimize any potential impacts to surface water resources from housing operations under this Alternative.

Groundwater

No negative impacts to groundwater supply or quality are anticipated from activities associated with Alternative 3.

Wetlands

Construction would not occur in wetland areas. Mitigations and BMPs resulting from permitting actions will also be incorporated to avoid potential indirect or cumulative impacts to aquatic resources. The Camp Pinchot Expansion site does not support wetlands.

Floodplains

Floodplains have been eliminated as potential development sites. Alternative 3 is expected to have no direct or indirect impacts to the existing functionality of floodplains.

4.7.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse

The amount of housing units placed at the Camp Pinchot Expansion and on Poquito Bayou Expansion would be the same as Alternative 3. This Alternative also calls for the construction of three boat docks just to the south of Camp Pinchot in Garnier Bayou. Consequently, this Alternative would have no additional impacts to surface waters, wetlands, or floodplains other than those previously identified under Alternative 3 or the commonalities section, and impacts are anticipated to be minimal.

4.7.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)

Water bodies within or adjacent to the Alternative sites include Ben's Lake, Memorial Lake, Choctawhatchee Bay, Garnier Bayou, one small unnamed creek, and two ephemeral creeks (Figure 3-12). Wetlands are also present. This Alternative would require land clearing at the Camp Pinchot Expansion area and the Old Plew/New Plew Expansion area. No new land clearing would occur at the Wherry/Capehart area. Potential impacts associated with surface waters, groundwater, wetlands, and floodplains at Eglin Main Base and the Camp Pinchot Expansion area would be similar to those described under Alternatives 2 and 3, respectively.

Modeling of the 25-year/24-hour storm showed that there would be a relatively large increase in peak flow and maximum runoff from the Camp Pinchot Expansion and Old Plew/New Plew Expansion sites after the new development was completed when compared to current conditions, while these factors are actually predicted to decrease at the Wherry/Capehart site (Table 4-24). The 1-inch rain storage volume also increases at Camp Pinchot and Old Plew/New Plew, while it decreases at the Wherry/Capehart

site (Table 4-25). Mitigations will be implemented in order to reduce the peak flow and maximum runoff to permit-mandated levels and retain the first 1 inch of rainfall. Site design plans and permits will detail the required mitigations that must be put in place at specific periods throughout the construction process. The types of mitigations that would likely be used are detailed in the commonalities section.

The proper implementation and maintenance of mitigations and BMPs resulting from permitting actions for controlling soil erosion, construction waste runoff, and increased volumes and rate of stormwater runoff, would either offset or minimize any potential impacts to surface water resources from housing construction under this Alternative.

4.7.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse

The amount of housing units placed at the Camp Pinchot Expansion and at Eglin Main Base would be the same as Alternative 5. This Alternative also calls for the construction of three boat docks just to the south of Camp Pinchot in Garnier Bayou. Consequently, this Alternative would have no additional impacts to surface waters, wetlands, or floodplains other than those previously identified under Alternative 5 or the commonalities section.

4.7.7 No Action Alternative

Under the No Action Alternative, no new housing areas or boat docks would be constructed. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline, and no impacts to water resources beyond the scope of normal conditions and influences at these locations would occur.

4.7.8 Impact Analysis Summary

In summary, potential impacts associated with water resources are related to the potential for increased rate and volume of stormwater runoff, increased amounts of sediment and pollutant runoff during demolition/construction, turbidity and leaching from dock construction, and polluted stormwater runoff from everyday operations within the housing areas post-construction. Each of these has the potential to adversely affect aquatic systems, mainly through the degradation of water quality. All applicable regulatory requirements will be adhered to, which would serve to either offset or minimize potential impacts to water quality from demolition, construction, and housing operations. Specific mitigations and BMPs will be identified during the permitting process. Consequently, impacts to water quality associated with demolition and construction of housing units and boat docks would be temporary, and are not anticipated to result in any significant, long-term impact.

4.8 SOILS

This section discusses impacts to the environment from soil erosion that could potentially arise from demolition or construction activities. The key issue of concern is the potential for the transport of soils through erosion caused by stormwater runoff from increased impervious surface area (i.e., roads, buildings, and compacted soil). Generally soils within the affected environment are flat and sandy—characteristics not conducive to a highly erosive situation. However, land disturbance and the creation of impervious surfaces can magnify the potential for erosion. The potential for surface runoff to impact water bodies is discussed in Section 4.7.

Environmental Impact Analysis Process

Quantifying the amount of soil that would potentially erode from a given area is difficult due to several variables. Many unpredictable factors affect erosion potential, such as the duration and intensity of storm events, the amount of vegetative loss, and so on. Consequently, analysis focused on assessing the vulnerability of the soil types identified at Alternative locations in Chapter 3 to erosion from construction and demolition activities rather than attempting to quantify the amount of potential soil loss at each location impact.

Commonalities

Erosion impacts are site specific due to the different soil types and proximity to water resources at each Alternative location. As a result, no commonality analysis has been conducted.

4.8.1 Alternative 1: Poquito Bayou Expansion

Construction and demolition activities at this location would occur on soils and terrain that are not naturally associated with erosion. However, given the proximity of water bodies, land clearing and construction would modify the terrain such that the potential for erosion is a concern. Mitigations and BMPs associated with construction permitting requirements, as discussed in Section 4.7, will be required and implemented. These would then serve to offset or minimize the potential for significant soil erosion, thus resulting in minimal impacts. Additional analysis on anticipated stormwater increases and erosion, as well as associated mitigations and BMPs are provided in Section 4.7.

4.8.2 Alternative 2: Eglin Main Base

Under normal conditions, the potential for soil erosion at this location is low. Though there are some isolated areas with sloping terrain, the majority of the locations under this Alternative are flat with soils of low erodibility. However, issues from construction

and resulting stormwater runoff outweigh natural soil erosion concerns. This Alternative occurs on the Eglin Main Base, which currently manages stormwater according to the base's stormwater management plan.

Mitigations and BMPs associated with construction permitting requirements, as discussed in Section 4.7, will be required and implemented. These would then serve to offset or minimize the potential for significant soil erosion. Additional analysis on anticipated stormwater increases and erosion, as well as associated mitigations and BMPs are provided in Section 4.7.

4.8.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area

Soil type and terrain are similar to that of other Alternatives, having a natural low susceptibility to erosion with the exception of steeper slopes along the shore of Garnier's Bayou at Camp Pinchot. However, construction over the widespread areas of the Camp Pinchot Expansion site and the Poquito Bayou Expansion site would involve soil disturbance, the removal of stabilizing vegetation, and increases in impervious surfaces. These factors would potentially lead to substantial amounts of soil being transported off-site and into Garnier and Poquito Bayous. However, mitigations and BMPs associated with construction permitting requirements, as discussed in Section 4.7, will be required and implemented. These would then serve to offset or minimize the potential for significant soil erosion. Additional analysis on anticipated stormwater increases and erosion, as well as associated mitigations and BMPs are provided in Section 4.7.

4.8.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse

Soil and erosion impacts under this Alternative are the same as for Alternative 3. Mitigations and BMPs associated with construction permitting requirements, as discussed in Section 4.7, will be required and implemented, thus minimizing any potential impacts.

4.8.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)

Potential erosion impacts on Eglin Main Base areas and Camp Pinchot would be the same as those identified under Alternatives 2 and 3, respectively. Mitigations and BMPs associated with construction permitting requirements, as discussed in Section 4.7, will be required and implemented, thus minimizing any potential impacts.

4.8.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse

Potential erosion impacts under this Alternative would be the same as those identified under Alternative 5. Mitigations and BMPs associated with construction permitting

requirements, as discussed in Section 4.7, will be required and implemented, thus minimizing any potential impacts.

4.8.7 No Action Alternative

Under the No Action Alternative, no new housing would be constructed. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline, and no impacts to soils beyond the scope of normal conditions and influences at these locations would occur.

4.8.8 Impact Analysis Summary

At all locations, soil erosion potentials are naturally low. However, the Alternatives would potentially involve ground disturbance over several hundred acres. Soil erosion coupled with the potential for stormwater runoff is an important issue across all Alternatives. As a result, mitigations and BMPs associated with construction permitting requirements, as discussed in Section 4.7, will be required and implemented. These would then serve to offset or minimize the potential for significant soil erosion. Additional analysis on anticipated stormwater increases and erosion, as well as associated mitigations and BMPs are provided in Section 4.7.

4.9 AIR QUALITY

This section discusses the potential impacts to air quality as a result of the Alternatives. For the analysis, a threshold on an individual pollutant-by-pollutant basis has been established (Chapter 3). The individual pollutant emissions from the project would not exceed 10 percent of the total Okaloosa County emissions for each corresponding pollutant as represented in the USEPA 1999 National Emissions Inventory. While the emissions from increased traffic associated with longer commutes for residents would be of a long-term nature, they would not impact Okaloosa County's attainment status. Consequently, the air analysis focuses on the emissions associated with demolition and construction activities—the main issues generated by the Alternatives. Air quality issues associated with operation of facilities other than housing units (e.g., community centers) after the completion of construction are not included in this evaluation, as it is unknown at this time whether and what types of these facilities would be constructed.

Environmental Impact Analysis Process

Based on evaluation using the USEPA's *Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I:* Stationary Point and Area Sources (known as AP-42) values, as well as the Air Force Air Conformity Applicability Model (ACAM), the increase in emissions would not exceed the established 10-percent criterion for Okaloosa County emissions on an individual pollutant basis. Although a conformity determination is not required since Okaloosa County is designated "attainment," the

ACAM was used to provide a level of consistency with respect to emissions factors and calculations. Specific details regarding the assumptions and calculations associated with the emissions estimates are located in the EIS Resource Appendices (Appendix L, *Air Quality*).

Demolition Emissions

Demolition of structures involves two primary sources of emissions: destruction of the building and site removal of debris. Emissions calculations from mechanical dismemberment, debris loading, and on-site truck traffic to remove debris have been individually developed. The individual calculations for these three events have been summed to develop a recommended PM_{10} emissions factor based on the square footage of the demolished area. Based on 3,517,466 of gross square footage demolished (Table 2-2), the PM_{10} emissions are approximately 19 tons across all Alternatives. Details regarding emissions factor and calculations development can be found in the EIS Resource Appendices (Appendix L, *Air Quality*).

Construction Emissions

Fugitive dust and carbon monoxide constitutes the majority of the emissions from construction activities and the project overall. However, construction operations include more than just actual construction of the residential structures. It incorporates grading operations, construction worker trips, stationary equipment (e.g., generators and saws), mobile equipment, residential architectural coatings, and acres paved. Approximately 96 percent of the total PM_{10} emissions for the project are associated with grading activities during the early stages of each construction phase. PM_{10} and CO are the two primary pollutants of concern constituting 77 percent of overall project emissions. A majority of the CO emissions are associated with stationary equipment (e.g., saws and generators). Table 4-27 provides a summary on the basis of activity, while Table 4-28 provides a detailed breakdown of the likely project emissions by year.

Table 4-27. Estimated Project Construction Emissions by Activity

Source Category		Emissions (Tons/Yr)				
		CO	NO_x	SO_2	VOC	PM_{10}
Life of Project	Grading Equipment	3.78	14.25	1.43	1.51	1.16
	Grading Operations	0.00	0.00	0.00	0.00	417.96
	Acres Paved	0.00	0.00	0.00	0.08	0.00
	Mobile Equipment	51.19	122.01	15.11	11.13	9.85
	Residential Arch. Coatings	0.00	0.00	0.00	69.51	0.00
	Stationary Equipment	347.04	8.97	0.48	12.97	0.25
	Workers Trips	32.77	1.79	0.00	1.80	0.29
	Totals	**434.78**	**147.02**	**17.02**	**97**	**429.51**

Table 4-28. Estimated Annual Project Emissions

Year	Pollutant Emissions (Tons/Yr)				
	CO	NO_x	SO_2	VOC	PM_{10}
2005	80.44	27.24	3.16	16.02	74.00
2006	53.25	17.98	2.09	9.92	45.19
2007	55.05	18.15	2.10	13.81	47.33
2008	53.47	18.08	2.10	10.37	47.95
2009	53.43	18.06	2.10	10.27	47.32
2010	54.66	18.54	2.15	12.68	60.45
2011	29.83	10.41	1.17	11.28	61.50
2012	0.00	0.00	0.00	0.00	1.93
2013	54.65	18.56	2.15	12.65	61.21
2014	0.00	0.00	0.00	0.00	1.93
Totals	**434.78**	**147.02**	**17.02**	**97.00**	**448.86**
Okaloosa County	151,986.19	8,788.63	667.49	20,187.15	16,656.12
Percentage of County Emissions	**0.29%**	**1.67%**	**2.55%**	**0.48%**	**2.69%**

As indicated in Table 4-28, the individual pollutant emissions from the project would not exceed 10 percent of the total Okaloosa County emissions for each corresponding pollutant. The highest pollutant percentage is PM_{10}, which is approximately 2.69 percent of Okaloosa County's total PM_{10} emissions based on the USEPA 1999 NEI. Certain assumptions were made regarding the amount of acres disturbed and time frame of grading activities. Those assumptions are detailed in the EIS Resource Appendices (Appendix L, *Air Quality,* under the Construction Emissions section).

Land clearing emissions associated with combustion activities (i.e., burning) were not included within these calculations since it was undetermined as to whether these activities would occur. If they were to occur, the calculations methodology illustrated in the Air Quality Appendix would be used to evaluate the emissions. In addition, land-clearing activities must meet Florida Administrative Code requirements, which prohibit open burning that results in creating a nuisance or potential fire safety or air pollution problem (F.A.C. 62-256.500(4)). Environmental compliance with potential nuisance issues would be the responsibility of the Florida Department of Environmental Protection, but that does not diminish the authority of any other regulatory body with respect to Florida statutes or rules of the Division of Forestry.

Commonalities

The proposed project activities would occur within the confines of Okaloosa County. Since emissions associated with the project would occur within Okaloosa County and are being evaluated in comparison to the overall county emissions, Alternative locations within the county are not of major consequence with respect to the air quality baseline

established for this EIS. However, the project emissions are evaluated in this EIS for potential air quality permitting efforts.

PM_{10} emissions are approximately 39 percent of the total emissions portfolio. As previously indicated, grading activities associated with the construction phase create the majority of those emissions. However, the emissions produced would be on a temporary basis and create an elevated short-term PM_{10} concentration, which would fall off rapidly with distance from the source. Therefore, overall air quality impacts would be minimal. In order to minimize the potential impact to air quality and in accordance with F.A.C. 62-296.320 (4)(c), reasonable precautions will be taken to reduce emission of unconfined particulate matter. These precautions include, but are not limited to:

- Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.
- Application of asphalt, water, oil, chemicals, or other dust suppressants to unpaved roads, yards, open stock piles, and similar activities.
- Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent re-entrainment, and from buildings or work areas to prevent particulate from becoming airborne.
- Landscaping or planting of vegetation.
- Use of hoods, fans, filters, and similar equipment to contain, capture, and/or vent particulate matter.
- Confining abrasive blasting where possible.
- Enclosure or covering of conveyor systems.

4.9.1 Alternative 1: Poquito Bayou Expansion

Air quality impacts associated with this Alternative would be the same as those identified under the commonalities section. Consequently, no potentially adverse air quality impacts would occur from implementation of this Alternative.

4.9.2 Alternative 2: Eglin Main Base

Air quality impacts associated with this Alternative would be the same as those identified under the commonalities section. Consequently, no potentially adverse air quality impacts would occur from implementation of this Alternative.

4.9.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area

Air quality impacts associated with this Alternative would be the same as those identified under the commonalities section. Accordingly, no potentially adverse air quality impacts would occur from implementation of this Alternative.

4.9.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse

Air quality impacts associated with this Alternative would be the same as those identified under the commonalities section. Accordingly, no potentially adverse air quality impacts would occur from implementation of this Alternative.

4.9.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)

Air quality impacts associated with this Alternative would be the same as those identified under the commonalities section. Accordingly, no potentially adverse air quality impacts would occur from implementation of this Alternative.

4.9.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse

Air quality impacts associated with this Alternative would be the same as those identified under the commonalities section. Accordingly, no potentially adverse air quality impacts would occur from implementation of this Alternative.

4.9.7 No Action Alternative

Under the No Action Alternative, no new housing would be constructed. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline, and no impacts to air quality beyond the scope of normal conditions and influences at these locations would occur.

4.9.8 Impact Analysis Summary

In summary, potential impacts associated with air quality are related to the demolition and construction activities of the overall project and do not depend on the particular location of those activities as long as they occur within the established baseline county. Based on the established baseline (Chapter 3), no potentially adverse impacts to air quality associated with demolition or construction activities have been identified through analysis.

4.10 HAZARDOUS MATERIALS/WASTE

Impacts associated with hazardous materials and wastes are associated with the potential for the use of hazardous materials or the generation hazardous waste to pose risks to the environment or public health and safety.

Environmental Impact Analysis Process

Several units within multiple housing areas have documented occurrences of asbestos-containing materials and lead-based paint. As a result, the presence of hazardous building materials such as ACBM and LBP and the potential for adverse health and safety impacts was analyzed. Chlordane and PCBs are also hazardous materials of concern (as described in Section 3.10), and may be present in the housing areas. Analysis evaluated the presence of Environmental Restoration Program, CERCLA, or RCRA contaminated sites and the potential for ground-disturbing activities to impact these sites, as well as the potential for residential exposure if housing areas are placed in close proximity to these sites.

Commonalities

Environmental Restoration Program Sites

No active ERP sites are located within the existing MFH areas. Should any unusual odor or soil or groundwater coloring be encountered during activities, 96th Civil Engineer Group, Environmental Restoration Branch (96 CEG/CEVR) or Hurlburt Environmental Management will be contacted immediately.

Storage Tanks

Both aboveground storage tanks and underground storage tanks are located within or adjacent to existing MFH sites. It is assumed that the developer would avoid disturbance of these tanks during construction and demolition activities, thereby negating impacts associated with disturbance of storage tanks. Coordination with 96 CEG/CEVC and Hurlburt Environmental Management will be required prior to project implementation to identify avoidance areas.

Asbestos

MFH units at Eglin are suspected of, or have been identified as, having some asbestos-containing building material. At Hurlburt, several units from Soundside Manor, Pine Shadows, and Live Oak Terrace have a confirmed presence of ACBM. Contamination identified in Soundside Manor units included vinyl composition tile, pipe insulation, flooring mastic, and roofing materials. ACBM identified in the Live Oak subdivision included textured acoustical ceiling/sheetrock material and roofing shingles, while ACBM identified in the Pine Shadows subdivision included roofing shingles (U.S. Air Force, 1997a).

ACBM will be removed from units prior to demolition. A certified contractor must be used when removing asbestos-containing building materials, and personnel must adhere to established procedures set forth for the safe handling and transport of these materials. With management requirements met, there are no anticipated long-term adverse impacts resulting from asbestos contamination from demolition of buildings.

New units constructed will not have ACBM. As a result, there would be beneficial impacts to MFH residents upon the removal of potential exposure to ACBM.

Lead-Based Paint

Materials containing lead-based paint have been found in all housing units in Eglin MFH areas, except those located at Poquito Bayou (constructed in 1976) and Camp Rudder (constructed in 1975). Materials identified as containing LBP included exterior wood doors, including casings and jambs; porch and carport posts and rails; soffit; fascia; and gables. The 96th Air Base Wing published a memorandum based on this survey in 1996. LBP has also been identified in Hurlburt Field housing units, on interior/exterior wood doors, wood baseboards, wood beams or columns, interior/exterior wood window frames and trim, wood cabinet doors, and exterior metal trim.

According to the U.S. Air Force Memorandum addressing *Lead-Based Paint Hazards in Air Force Military Family Housing Approved for Privatization*, issued 14 May 2003, "the developer must manage any LBP and abate any lead-based paint hazards (LBPH)" and utilize HUD regulations as a guide to such management and abatement. Consequently, project designs will stipulate appropriate abatement and disposal requirements for LBP. LBP containing materials do not have to be treated as hazardous waste as long as these materials are not removed from a structure prior to demolition, and the Toxicity Characteristic Leaching Procedure of 5.0 milligrams per liter is not exceeded (Kauffman, 2004). The USEPA issued a memorandum on 31 July 2000 that stated waste generated as part of LBP activities conducted at residences including single-family homes, apartment buildings, public housing, and military barracks are no longer classified as hazardous wastes but are considered as household waste. Thus, they are excluded from RCRA's hazardous waste management and disposal regulations.

New units constructed will not contain LBP, resulting in beneficial impacts to MFH residents as the potential for exposure to LBP would be eliminated.

Polychlorinated Biphenyls

All PCB-containing electric transformers in MFH areas have been removed and replaced with PCB-free units (U.S. Air Force, 2003f). PCBs may be contained within the ballasts of older fluorescent light fixtures that are installed in MFH residences. The installation's master specification instructs housing developers to properly dispose of all hazardous

materials, including fluorescent light ballasts, in accordance with 40 CFR 261 or Florida Department of Environmental Protection requirements.

No PCB-containing materials will be utilized during construction. Therefore, no adverse impacts associated with PCBs would occur.

Chlordane

A chlordane assessment will be required for all housing areas prior to ground disturbance to determine the presence of the substance in soils. This will be coordinated with 96 CEG/CEVC. Any soils found to be contaminated with chlordane will need to be handled in accordance with 40 CFR 261 or Florida Department of Environmental Protection requirements.

Hazardous Materials and Hazardous Waste

The proposed MFH units would be constructed following normal residential construction, which will limit the use, to the extent possible, of hazardous materials. Petroleum, oil, and lubricant products may be used for construction equipment. These materials will be stored in the proper containers, and secondary containment will be used to prevent the spread of accidental spills. All spills and accidental discharges of POLs, chemicals, hazardous waste, or hazardous materials on Eglin, regardless of the quantity, must be reported. A spill discharge report must be filled out and the responsible party must hand carry or fax (882-3761) this spill report to 96 CEG/CEVC, Building 696, within four duty hours of the spill occurrence. Any spill that poses a threat to life, health, environment, or has the potential to cause a fire, will be reported to 96 CEG/CEF by dialing 911. If the Fire Department declares an emergency condition, they can take control of the situation, including the tasking of the organization's cleanup detail. Spills over 25 gallons are required to be reported to the Florida Department of Environmental Protection (through 96 CEG/CEVC).

Routine household hazardous wastes, including batteries, fluorescent bulbs, pesticides, paint/paint cans, pool chemicals, and used oil or other lubricants may be generated in Eglin AFB and Hurlburt Field military family housing areas. Both installations provide guidance information on proper disposal of household hazardous waste and encourage MFH residents to take their wastes to on-base/off base collection centers for recycling and disposal. Used oil, filters, and greases may be disposed of at the Eglin AFB and Hurlburt Field Automotive Skills Development Center. Other residential hazardous wastes may be turned in at the South County Road Department, located on Ready Avenue in Fort Walton Beach. Okaloosa County's Mobile Household Hazardous Waste Collection Center also provides a convenient, on-site service to residents for the disposal of hazardous household wastes.

No impacts from hazardous materials and hazardous wastes are expected, provided developers adhere to respective requirements outlined within associated regulations and Air Force guidance documents (e.g., Eglin AFB Hazardous Waste Management Plan).

4.10.1 Alternative 1: Poquito Bayou Expansion

Environmental Restoration Program Sites

AOC 54, a former Gulf Power substation, is located on Eglin property at the intersection of SR-85 and Sunset Road and is approximately 3,150 square feet in size. A site visit found that all electrical equipment had been removed and a concrete pad had a large black stain; no other staining was observed. The site is under a FDEP Consent Order with Gulf Power for environmental assessment because PCB transformers, arsenic-based herbicides, and creosote may have been used on site. No construction activities would occur at or near the site; thus, no impacts to the site would occur. No other active or closed ERP sites are located within the Poquito Bayou project area; therefore, there would be no impacts associated with ERP sites under this Alternative.

Storage Tanks

A 200-gallon diesel AST provides emergency power to a sewage lift station's generators at Poquito Bayou (Building 10478), located on the west side of Loblolly Drive. Assuming developers avoid disturbance of the tank area, no impacts to this AST are anticipated.

4.10.2 Alternative 2: Eglin Main Base

Environmental Restoration Program Sites

No active ERP sites are located within the Eglin Main Base project area. 96 CEG/CEVR will be contacted immediately in the event of any unusual odor or soil or groundwater coloring encountered during ground-breaking activities. No impacts are anticipated for MFH activities at Eglin Main Base with respect to ERP sites.

Storage Tanks

Two ASTs (500- and 1,000-gallon) and one 3,000-gallon UST are located in the Eglin Main Base housing area, as detailed in Section 3.10. There have been no reported spills of fuel at any of the ASTs or USTs (Chavers, 2004). No impacts from the ASTs or UST are anticipated, provided building developers avoid disturbance of the tank areas.

4.10.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area

A beneficial impact to MFH residents from the removal of both asbestos-containing materials and LBP exposure is expected. The impacts from hazardous material/waste would be the same as those described under and Alternative 1 for Poquito Bayou. For the Camp Pinchot Expansion area, the following would apply.

Environmental Restoration Program Sites

No active ERP sites are located within at the Camp Pinchot project area. Active ERP site ST-59, the Ben's Lake Marina, a former tank field, is located near Ben's Lake and Old Plew. Post-active remediation is occurring at this location. Demolition and construction activities would not take place in this area. 96 CEG/CEVR will be contacted immediately in the event of any unusual odor or soil or groundwater coloring encountered during construction. No impacts are anticipated for MFH activities at Eglin Main Base with respect to ERP sites.

Storage Tanks

Two 1,000-gallon and one 100-gallon ASTs are located at Camp Pinchot, as identified in Section 3.10. Three ASTs (100-, 200-, and 500-gallon) and one 3,000-gallon UST are located at Poquito Bayou and Eglin Main Base. There have been no reported spills of fuel at any of the ASTs or USTs (Chavers, 2004). No impacts from the ASTs or UST are anticipated, provided building developers avoid disturbance of the tank areas.

4.10.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse

The impacts associated with hazardous materials/waste would be the same as those described under Alternative 3: no adverse impacts, and beneficial impacts to MFH residents from the removal of both asbestos-containing materials and LBP from military housing.

4.10.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)

The impacts associated with hazardous materials/waste would be the same as those described under Alternative 2 for Eglin Main Base and Alternative 3 for Camp Pinchot: no adverse impacts, and beneficial impacts to MFH residents from the removal of both asbestos-containing materials and LBP from military housing.

4.10.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse

The impacts associated with hazardous materials/waste would be the same as those described under Alternative 5: no adverse impacts, and beneficial impacts to MFH residents from the removal of both asbestos-containing materials and LBP from military housing.

4.10.7 No Action Alternative

Under the No Action Alternative, no new housing would be constructed. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline, and no impacts associated with hazardous materials and waste beyond the scope of normal conditions and influences at these locations would occur.

4.10.8 Impact Analysis Summary

In summary, no adverse impacts to hazardous materials/waste associated with the demolition of any of the units have been identified, provided that developers follow established regulations and guidance for handling and disposal.

Overall, various beneficial impacts would result from implementation of the Proposed Action at any of the Alternative sites. These benefits are associated with:

- Elimination of potential exposure of MFH residents to asbestos fibers from ACBM and lead in LBP, both of which have been determined to be present in older housing units.
- Elimination of potential exposure to PCBs that may be present within the ballasts of older fluorescent light fixtures that are installed in MFH residences.

4.11 SOLID WASTE

This section discusses potential impacts from solid waste generation, which includes municipal, construction, and demolition debris from the existing and proposed project areas associated with the Alternatives. Analysis focuses on assessing the ability of existing landfill capacity to accommodate increased utilization.

Environmental Impact Analysis Process

Impact analysis first estimated the potential amounts of solid waste generated from the Alternatives and then compared these amounts to the current capacity for solid waste disposal in surrounding areas (as described in Chapter 3, Section 3.11).

MFH Solid Waste Generation

The net population would not increase in the county under any of the Alternatives (potential increases in population from temporary construction workers would be negligible since the local and regional construction industry is capable of meeting the demand, and workers that may be needed would commute daily or weekly). Consequently, no net change in the amount of household solid waste generated in the county and no impacts to local municipal solid waste landfill capacity would occur. As a result, potential impacts from MFH household solid waste are not addressed.

MFH Construction and Demolition Debris

Solid waste would be generated during demolition and construction of MFH units. Non-hazardous solid waste includes construction and demolition debris such as removed building materials and land clearing debris. Based on sampling studies documented in *"Characterization of Building-Related Construction and Demolition Debris In The United States"* (USEPA, 1998), it was determined that 4.38 pounds per square foot (lbs/ft^2) and 77.6 lbs/ft^2 of debris would be generated during residential construction and demolition, respectively. The total amount of debris that could potentially be generated during the construction of 2,015 new MFH units and demolition of the 2,590 housing units is shown in Tables 4-29 and 4-30. Detailed information and calculations regarding C&D debris generation is located in the EIS Resource Appendices (Appendix N, *Solid Waste*).

Table 4-29. Estimated MFH Construction Debris

Year	*Square footage by pay grade and number of bedrooms*										TOTAL SQ FT	Total C&D Debris generated (tons)[a]
	*JNCO**			*SNCO**			*Prestige/FGO**		*SGO**	*GO**		
	2-bdrm	3-bdrm	4-bdrm	2-bdrm	3-bdrm	4-bdrm	3-bdrm	4-bdrm	4-bdrm	4-bdrm		
2005	300,000	235,840									535,840	1,173
2006	300,000										300,000	657
2007	301,500						9,200		8,760	8,120	327,580	717
2008	196,500	10,560		136,040							343,100	751
2009		144,320	22,200		157,850		94,300				418,670	917
2010	124,500		441,780								566,280	1,240
2011	268,500		86,580	71,600	55,350						482,030	1,056
2012											0	0
2013			35,520		88,150	300,000	73,600	129,600	55,480	12,180	694,530	1,521
2014											0	0
										Grand Total	3,668,030	8,033

Source: USEPA, 1998 - No construction is proposed for years 2012 and 2014. Figures do not include driveways or roadway; recycling of C&D debris would reduce this amount.

[a] Calculation based on average C&D debris generated (4.38lb/ft^2) during new construction.

* JNCO = Junior Noncommissioned Officer; SNCO = Senior Noncommissioned Officer; FGO = Field Grade Officer; SGO = Senior Grade Officer; GO = General Officer; bdrm = bedroom

Table 4-30. Estimated MFH Demolition Debris

Year	*Square footage by pay grade and number of bedrooms*										TOTAL SQ FT	Total C&D Debris generated (tons)[b]
	*JNCO**			*SNCO**			*Prestige/FGO**		*SGO**	*GO**		
	2-bdrm	3-bdrm	4-bdrm	2-bdrm	3-bdrm	4-bdrm	3-bdrm	4-bdrm	4-bdrm	4-bdrm		
2005	89,428	184,786									274,214	10,640
2006	138,104										138,104	5,358
2007	227,532				1,650		6,668		7,110[a]		235,850	9,151
2008	254,700										254,700	9,882
2009	229,796	325,144									554,940	21,532
2010		235,809									235,809	9,149
2011	104,144	293,727									397,871	15,437
2012		77,224	290,785	5,312	26,400	60,192	5,001				464,914	18,039
2013			267,460	58,432	145,200						471,092	18,278
2014		16,548			232,650	127,452	61,679	46,984		14,223[a]	485,313	18,830
										Grand Total	3,512,807	136,297

Source: USEPA, 1998

[a] Square footage calculations are based on weighted averages for each category of home, e.g., of the approximately 1000 JNCO 2-bedroom homes, square footage ranges from 30 units with 781 ft^2 to 1 unit with 1410 ft^2, with the most prevalent being 240 units with 979 ft^2. The weighted average square footage is 1132 ft^2. For this analysis, a weighted average square footage was used to provide an estimate of debris potentially generated during demolition. Figures do not include driveways or roadways. Recycling of C&D debris would reduce this amount.

[b] Calculation based on average C&D debris generated (77.6 lb/ft^2) for homes on concrete slabs.

* JNCO = Junior Noncommissioned Officer; SNCO = Senior Noncommissioned Officer; FGO = Field Grade Officer; SGO = Senior Grade Officer; GO = General Officer.

Asbestos-Containing Building Material

Hurlburt Demolition/Renovation – ACBM identified in Soundside Manor units included vinyl composition tile, pipe insulation, flooring mastic, and roofing materials. ACBM identified in the Live Oak subdivision included textured acoustical ceiling/sheetrock material and roofing shingles, while ACBM identified in the Pine Shadows subdivision included roofing shingles (refer to U.S. Air Force, 1997a, for specific ACBM and locations). Prior to any housing unit renovation/demolition activities, a follow-up survey will be performed and any ACBM found will be properly disposed of in a Class I landfill.

Eglin Demolition – Although comprehensive surveys for asbestos-containing building material have not been conducted at Eglin AFB, MFH units at the installation are suspected of or have been identified as having some ACBM. Prior to any housing unit renovation/demolition activities, a comprehensive survey will be performed. ACBM will be disposed of in a Class I landfill; however, floor tile and roofing materials can be disposed of in a C&D landfill (Kauffman, 2004). AFI-9004, *Disposal of Real Property*, also requires that any ACBM found be properly abated/disposed of.

Commonalities

All Alternatives involve the demolition of a minimum of 2,590 housing units and construction of 2,015 new units. Consequently, the following activities are common to all Alternatives.

MFH Demolition/Renovation and Construction Debris

Materials such as wood and scrap metal and wiring must be disposed of at a Class III landfill (C&D debris and yard waste) designated for this type of material. The analysis used the average amount of C&D debris produced in Okaloosa and Santa Rosa Counties. Demolition of the 2,590 units and construction of 2,015 units could potentially produce from 700 to 1,500 tons of C&D debris per year (Tables 4-29 and 4-30).

The analysis calculated the amount of debris generated during C&D of MFH units and compared that to the average amount of C&D generated in Santa Rosa and Okaloosa Counties. Although it is unlikely that all MFH material would enter only one county's C&D landfill, this assumption was used for comparative analysis. For each respective landfill, the MFH debris would increase percent use at Okaloosa County from 13 percent to 47 percent and at the Santa Rosa County Landfill by 5 percent to 20 percent (Table 4-31).

Table 4-31. Estimated Percent Increase of MFH Construction and Demolition Debris in Okaloosa and Santa Rosa County Class III Landfills

Year	Percent Increase of MFH C&D Debris in Okaloosa County (tons)	Percent Increase of C&D Debris in Santa Rosa County (tons)
2005	25	11
2006	13	5
2007	21	9
2008	22	10
2009	47	20
2010	22	9
2011	35	15
2012	38	16
2013	42	18
2014	40	17

Percentage estimates are based on the total amount of C&D debris generated during MFH activities compared to county yearly average.

C&D Landfill Capacity

Increases in the amounts of C&D debris to the countywide Class III landfills would not result in the landfills exceeding their capacities. Many of the Class III landfills are owned and operated by private companies. A common method of increasing landfill capacity is the harvesting of fill dirt on landfill property (digging a large hole) to

expand the landfill into the newly created hole. The new portion is then licensed by FDEP (Harris, 2004). Another technique used by Santa Rosa County to increase capacity is "high rising" the existing Class I landfill with a Class III landfill. This technique utilizes Class I landfills that are at capacity by expanding upward with Class III landfill debris. The FDEP provides a permitting process for this approach. Santa Rosa County's Class I landfill is large, and provides considerable room to "high rise" with Class III debris (Harris, 2004).

The developer has the responsibility of the hauling and disposal of vegetation waste produced from C&D activities. C&D waste will be recycled, especially wood and scrap metal/wiring, to the maximum extent possible.

Based on the information provided above, the amount of potential C&D debris from MFH activities is not expected to create constraints on area landfills. Coordination of developers with all local county and private landfill operators prior to demolition or construction will minimize any potential impacts associated with disposal of demolition and construction debris.

4.11.1 Alternative 1: Poquito Bayou Expansion

The amount of MFH C&D debris that would be generated would be the same as that calculated under the commonalities section. No negative impacts associated with solid waste disposal are anticipated.

4.11.2 Alternative 2: Eglin Main Base

The amount of C&D debris generated and associated impacts would be the same as identified under the commonalities section. Thus, no negative impacts to area landfills associated with solid waste are anticipated.

4.11.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area

The amount of C&D debris generated and associated impacts would be the same as identified under the commonalities section. Thus, no negative impacts to area landfills associated with solid waste are anticipated.

4.11.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse

Impacts would be the same as those discussed under the commonalities section. Thus, no negative impacts from solid waste disposal are anticipated.

4.11.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)

The amount of C&D debris generated and associated impacts would be the same as identified under the commonalities section. Thus, no negative impacts to area landfills associated with solid waste are anticipated.

4.11.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse

Impacts associated with solid waste would be the same as those described under the commonalities section. Thus, no negative impacts to area landfills associated with solid waste are anticipated.

4.11.7 No Action Alternative

Under the No Action Alternative, no new housing would be constructed. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline, and no impacts associated with solid waste beyond the scope of normal conditions and influences at these locations would occur.

4.11.8 Impact Analysis Summary

In summary, no adverse impacts to solid waste associated with demolition or construction of any of the units have been identified, either through analysis or through consultation with local landfill providers.

Overall, various beneficial impacts would result from implementation of the Proposed Action at any of the Alternative sites. These benefits are associated with increased revenues for local private landfills.

4.12 NOISE

Concerns regarding noise relate to certain potential impacts such as hearing loss, non-auditory health effects, annoyance, speech interference, and sleep interference. Construction and demolition noise was analyzed using a representative maximum noise scenario based on the upper range housing unit density of six units per acre. Additionally, residential noise represents a long-term change to the existing noise environment. Therefore, potential impacts to the existing noise environment associated with additional residential noise were also analyzed using this scenario.

Environmental Impact Analysis Process

Noise associated with operational activities, human presence at the installation, transportation-related noise, and demolition and construction activities associated with

the Alternatives are considered and compared with current conditions to assess impacts. Data developed during this process also supports analyses in other resource areas. In addition, the potential to residents from military aircraft over-flights within newly developed areas is addressed.

Several aspects of this proposal have the potential to create noise impacts in the region of influence.

Demolition and construction would occur over a multi-year period, and at any one time, a few projects at multiple locations would be expected to be ongoing simultaneously. Therefore, noise associated with active construction sites would be expected to be intermittent and transitory over time.

A hypothetical scenario was developed to assess potential noise associated with the proposed demolition and construction activities. Primary sources of noise during these activities would be expected to be truck and vehicle traffic, heavy earth-moving equipment, and other construction equipment or infrastructure powered by internal combustion engines used on-site. Table 4-32 shows sound levels associated with typical heavy construction equipment under varying modes of operation.

Table 4-32. Typical Equipment Sound Levels

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

[1] Measured at 125 feet
Source: U.S. Air Force, 1998

Representative Demolition and Construction Noise Analysis Scenarios

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

These data were then used to normally distribute the total site energy throughout the site. Finally, the normally distributed energy from multiple source points throughout

the site was aggregated at a range of points at varying distances from the site edge. This allowed a determination at those points of the total acoustic energy that had emanated off-site.

Calculations based on this conservative scenario provided equivalent noise levels (average acoustic energy) over an eight-hour period ($L_{eq(8)}$), which was then normalized to a full day $L_{eq(24)}$. Since no construction activity would be expected to occur at night, this would be equivalent to day-night average noise levels (L_{dn}). The 8-hour and 24-hour equivalent noise levels emanating off-site are shown in Table 4-33. Due to the conservative nature of the scenario, and the fact that only sound attenuation due to spherical spreading was considered, actual levels resulting off-site would be expected to be lower.

Table 4-33. Demolition Noise

Distance From Site Edge (In Feet)	8 Hour Equivalent Noise Level (In dBA)	24-Hour Equivalent Noise Level (In dBA)
100	61.9	57.2
500	55.8	51.0
1,000	53.0	48.2

For construction-related noise assessments, the assessment also used the evaluative techniques described above. Analogous results are shown in Table 4-34.

It should be noted that specific noise events associated with these calculations would vary in terms of intensity and duration.

Table 4-34. Construction Noise

Distance From Site Edge (In Feet)	8 Hour Equivalent Noise Level (In dBA)	24-Hour Equivalent Noise Level (In dBA)
100	59.4	54.6
500	52.7	47.9
1,000	50.2	45.4

On-site, all workers potentially exposed to elevated noise associated with their activities will comply with all hearing protective requirements specified by the Occupational Safety and Health Administration. Any military/Federal civilians visiting on-site will adhere to the Air Force standard, which is more stringent (85 dBA versus the 90 dBA OSHA standard).

Off-site, noise experienced on a day-to-day basis would depend on the specific activity underway and its proximity to the site edge where a receptor may be present. Nevertheless, the relatively low time-averaged noise levels calculated indicate that

neither project-related demolition nor construction activities would be excessively intrusive.

Also, it should be noted that most, if not all, of the areas involving demolition and construction are situated within areas already exposed to some form of noise from airfield operations and vehicular highway traffic. Construction noise emanating off-site would probably be noticeable in the immediate site vicinity, but would not be expected to create adverse impacts. Furthermore, demolition and construction-related noise is intermittent and transitory, ceasing at the completion of the project.

Average Noise from Residential Population Increases

The number of 2, 3, 4, and 5 bedroom units was considered in estimating the population change that would occur at each of the Alternatives. The assumption was made that three persons would live in a two-bedroom unit, four persons would live in a 3-bedroom unit, and so on. Based on information provided in Chapter 2, the ratio of unit sizes was determined to be 57 percent 2-bedroom, 21 percent 3-bedroom, 21 percent 4-bedroom and 1 percent 5-bedroom. An equation for calculating noise from residential areas based on population was then used to estimate average long-term noise that would result from the change in population at each Alternative. More information on this method is available in the EIS Resource Appendices (Appendix O, *Noise*).

Commonalities

Demolition of existing housing areas would occur under all Alternatives. An increase in noise associated with demolition activities would be minor compared to present conditions (see analysis above). Both demolition and construction noise are brief daytime-only occurrences that would not appreciably alter the current average noise environment. Noise from elements common to all Alternatives occurs on a lesser scale where demolition and construction over a wider area would take place.

Soundside Manor

Demolition and construction at 3, 4, or 6 units per acre would occur at this location across all Alternatives. Construction noise at this location would be minor as indicated by analysis. Noise levels would not exceed 55 L_{dn} for construction at this location. Once construction is complete, primary noise sources would be related to the increase in residential population, resulting in an increase in average long-term noise levels. Average noise levels for residential areas can be estimated based on population density, which would vary based on the unit density selected. The estimated average noise levels for each unit density, based on the associated population density, are shown in Table 4-35.

Table 4-35. Soundside Manor Estimated Residential Noise Levels

Location	Available Construction Acreage	Estimated Residential Noise Levels (L_{dn})		
		3/Acre	4/Acre	6/Acre
Soundside Manor	30	60.44	61.69	63.45

Estimated population noise levels at Soundside Manor under these densities are above the 55 dBA noise level that is "requisite to protect the public health and welfare with an adequate margin of safety" (USEPA, 1974). However, levels are less than 65 dBA, which is the benchmark often used by Federal agencies to determine residential land use compatibility around airports, highways, or other transportation corridors. Consequently, between approximately 12 percent and 3 percent of persons so exposed may be annoyed by the noise levels at Soundside Manor. This is due to high population densities that would occur within such a small area (30 acres).

4.12.1 Alternative 1: Poquito Bayou Expansion

Potential impacts associated with noise at Soundside Manor would be the same as those described under the commonalities section. Noise levels at Poquito Bayou Expansion would not exceed 55 L_{dn} for construction at this location. Average long-term noise related to the increase in population would increase at this location. For Alternative 1, the estimated average noise levels for each unit density, based on the associated population density, are shown in Table 4-36 below.

Table 4-36. Alternative 1 Estimated Residential Noise Levels

Location	Available Construction Acreage	Estimated Residential Noise Levels (L_{dn})		
		3/Acre	4/Acre	6/Acre
Soundside Manor	30	60.44	61.69	63.45
Poquito Bayou Expansion	860	59.17	59.10	58.96

Presently, average day-night noise levels extending from the airfield approach 55 dBA at the eastern edge of the proposed Poquito Expansion area. This level of noise is determined by the USEPA to be compatible with residential land use. Residents of housing at the Poquito Bayou Expansion area would experience a day-night average of between 58 and 59 dBA, depending on the unit density selected. These levels are similar to those levels associated with urban and suburban residential communities (USEPA, 1974). Increases in ambient noise would occur gradually as construction would take place over a period of several years.

Highway traffic noise may be more perceptible but would not be considerable, meaning noise levels would remain compatible with residential areas. Additionally, new residences would buffer noise from the highway, and grassy surfaces attenuate (reduce) noise.

Bomb and detonation events occur on interior Eglin Reservation test areas. Since vegetation has little effect on dampening or reducing low-frequency bomb noise, no change in perception of these types of events is anticipated. Most importantly, the closest live ordnance test areas are located northwest of the Longwood and Poquito subdivisions. No construction would occur northwest of the Longwood area. In summary, perception of bomb noise would not increase. The noise levels from these events will not change. No mitigations or monitoring would be required at the Poquito Bayou Expansion area under any of the proposed unit densities.

The net reduction of units on Eglin Main Base would result in lower average noise levels, but the change would probably be imperceptible since ambient noise on base is dominated by aircraft overflights and traffic. Overall, there would be no potentially significant adverse noise impacts from this Alternative.

4.12.2 Alternative 2: Eglin Main Base

Potential impacts associated with noise at Soundside Manor would be the same as those described under the commonalities section. Noise levels at the Eglin Main Base residential areas would not exceed 55 L_{dn} for construction at this location. Average long-term noise related to the increase in population would increase at this location. For Alternative 2, the estimated average noise levels for each unit density, based on the associated population density, are shown in Table 4-37 below.

Table 4-37. Alternative 2 Estimated Residential Noise Levels

Location	Available Construction Acreage	Estimated Residential Noise Levels (L_{dn})		
		3/Acre	4/Acre	6/Acre
Soundside Manor	30	60.44	61.69	63.45
Eglin Main Base	960	58.96	58.63	58.49

Residents at the Eglin Main Base area would experience a day-night average of about 58 dBA. These levels are similar to those levels associated with urban and suburban residential communities (USEPA, 1974). Increases in ambient noise would occur gradually as construction would take place over a period of several years. No mitigations or monitoring would be required at this site.

4.12.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area

Potential impacts associated with noise at Soundside Manor would be the same as those described under the commonalities section. The Camp Pinchot site is bordered by Garnier Bayou to the east, Lewis Turner Boulevard to the north, and a residential area to the south and west. Residential areas are located south of and north of the Poquito Expansion area. Construction noise at Poquito Bayou and Camp Pinchot would potentially affect residents living adjacent to these sites. However, construction noise of

less than 55 L_{dn} would be produced at any given area within this Alternative, which is similar to average residential noise levels. For Alternative 3, the estimated average noise levels for each unit density, based on the associated population density, are shown in Table 4-38 below.

Table 4-38. Alternative 3 Estimated Residential Noise Levels

Location	Available Construction Acreage	Estimated Residential Noise Levels (L_{dn})		
		3/Acre	4/Acre	6/Acre
Soundside Manor	30	60.44	61.69	63.45
Camp Pinchot Expansion	220	60.44	61.69	63.45
Poquito Bayou Expansion	860	57.35	56.39	53.49

Residents of housing at the Camp Pinchot Expansion area would experience a day-night average of between 60 and 63.5 dBA, depending on the unit density selected. At the higher unit densities, average noise levels would be well above the 55 dBA noise level that is "requisite to protect the public health and welfare with an adequate margin of safety" (USEPA, 1974). However, levels are less than 65 dBA, which is the benchmark often used by Federal agencies to determine residential land use compatibility around airports, highways, or other transportation corridors. Consequently, between approximately 12 percent and 3 percent of persons so exposed may be annoyed by the noise levels. Poquito Bayou Expansion area would experience a day-night average of between 58 and 59 dBA, depending on the unit density selected. These levels are similar to those levels associated with urban and suburban residential communities (USEPA, 1974). Increases in ambient noise would occur gradually as construction would take place over a period of several years.

The net reduction of units on Eglin Main Base would result in lower average noise levels, but the change would probably be imperceptible since ambient noise on base is dominated by aircraft overflights and traffic. Overall, there would be no potentially significant adverse noise impacts from this Alternative, and no mitigations or monitoring would be required at this site.

4.12.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse

With respect to noise, the difference between Alternative 3 and Alternative 4 would not be discernable. The retention of the four historic Camp Pinchot units would mean that slightly less construction noise would be produced, but this amount is negligible compared to the noise that would occur from the construction of new units (an action common to Alternative 3 and 4). No potentially significant adverse impacts from noise are anticipated under this Alternative.

4.12.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)

Under this Alternative, noise would be distributed between several locations. Potential impacts associated with noise at Soundside Manor would be the same as those described under the commonalities section. For Alternative 5, the estimated average noise levels for each unit density, based on the associated population density, are shown in Table 4-39 below.

Changes in average long-term noise levels at the Eglin Main Base locations would be minimal since the land use would be the same. Population density and associated noise levels at Eglin Main Base would be less than those identified under Alternative 2.

Table 4-39. Alternative 5 Estimated Residential Noise Levels

Location	Available Construction Acreage	Estimated Residential Noise Levels (L_{dn})		
		3/Acre	4/Acre	6/Acre
Soundside Manor	30	60.44	61.69	63.45
Camp Pinchot Expansion	220	60.44	61.69	63.45
Eglin Main Base	960	56.87	55.91	52.97

Construction noise and long-term average noise levels from new residences would increase noise at the Camp Pinchot Expansion area. Residents of housing at the Camp Pinchot Expansion area would experience a day-night average of between 60 and 63.5 dBA, depending on the unit density selected. At the higher unit densities, average noise levels would be well above the 55 dBA noise level that is "requisite to protect the public health and welfare with an adequate margin of safety" (USEPA, 1974). However, levels are less than 65 dBA, which is the benchmark often used by Federal agencies to determine residential land use compatibility around airports, highways, or other transportation corridors. Consequently, between approximately 12 percent and 3 percent of persons so exposed may be annoyed by the noise levels. Eglin Main Base housing areas would experience a day-night average of between 53 and 57 dBA, depending on the unit density selected. These levels are similar to those levels associated with urban and suburban residential communities (USEPA, 1974). Increases in ambient noise would occur gradually as construction would take place over a period of several years. No potentially significant adverse impacts from noise are anticipated under this Alternative.

4.12.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse

With respect to noise, the difference between Alternative 5 and Alternative 6 would not be discernable. The retention of the four historic Camp Pinchot units would mean that slightly less construction noise would be produced, but this amount is negligible

compared to the noise that would occur from the construction of new units (an action common to Alternative 5 and 6). In summary, no potentially significant adverse noise impacts would occur under this Alternative.

4.12.7 No Action Alternative

Under the No Action Alternative, no new housing would be constructed. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline, and no impacts associated with noise beyond the scope of normal conditions and influences at these locations would occur.

4.12.8 Impact Analysis Summary

In summary, potential noise impacts are associated with demolition and construction activities, and an increase in population within some Alternative areas. Overall, given the extensive area within which construction would occur and the timeframe over which the project would be completed, construction noise would result in a minimal change in average annual noise levels. Unsafe noise levels would not occur off of the construction site. Long-term annual noise related to the increase in population would be minimal.

4.13 SAFETY

This section addresses potential impacts to safety. The issues that have a potential to affect safety are evaluated relative to the degree to which the activity increases safety risks to military personnel, the public, and property. Issues addressed in this section are construction site job safety and discovery of UXO during housing demolition and/or construction activities. No issues associated with range safety or weapons safety have been identified, as all Alternative areas are outside known weapon safety footprints.

Environmental Impact Analysis Process

Impacts on safety were considered based on whether construction activities associated with the commonalities or Alternatives would pose any unique or unusual health hazards to military or DoD civilian personnel, developer personnel, or the general public. Additionally, the potential for encountering UXO during housing demolition and/or construction activities was evaluated in order to assess related safety hazards.

Commonalities

Common elements of the Alternatives involve the demolition of 2,590 housing units and construction of 2,015 new units. Construction and demolition activities would be

accomplished using traditional methods without the use of high explosive or other similar hazardous materials. Qualified housing developers would perform these activities. Developers will also be required to follow applicable OSHA requirements during construction and demolition activities, which typically include the preparation of appropriate job site safety plans explaining how job safety would be assured throughout the life of the project. No issues associated with housing construction and/or demolition activities would pose any unique adverse impacts to safety.

There is no evidence that ordnance have ever been employed or stored in areas associated with MFH located on Eglin Main Base or Hurlburt Main Base. (Note: Areas with a potential for UXO contamination were eliminated as potential siting alternatives.) The only exception may be the Camp Rudder MFH area, which is located on the northwest side of the Eglin Reservation, north of Test Area B-70. Based on the extensive historic use of the Range for weapon testing and training activities, there may be a small potential for UXO to be located in areas adjacent to Camp Rudder MFH.

4.13.1 Alternative 1: Poquito Bayou Expansion

There are no specific aspects of this Alternative that would create any impacts to safety from housing construction activities or UXO not already addressed under the commonalities section.

4.13.2 Alternative 2: Eglin Main Base

There are no specific aspects of this Alternative that would create any impacts to safety from housing construction activities or UXO not already addressed under the commonalities section.

4.13.3 Alternative 3: Camp Pinchot Expansion Area/Poquito Bayou Expansion Area

There are no specific aspects of this Alternative that would create any impacts to safety from housing construction activities or UXO not already addressed under the commonalities section.

4.13.4 Alternative 4: Alternative 3 With Camp Pinchot Adaptive Reuse

Alternative 4 would be the same as Alternative 3, with the exception of the demolition of the Camp Pinchot units. There are no specific aspects of this Alternative that would create any impacts to safety from housing construction activities or UXO not already addressed under the commonalities section.

4.13.5 Alternative 5: Camp Pinchot Expansion/Eglin Main Base (Preferred Alternative)

There are no specific aspects of this Alternative that would create any impacts to safety from housing construction activities or UXO not already addressed under Alternative 3 and the commonalities section.

4.13.6 Alternative 6: Alternative 5 With Camp Pinchot Adaptive Reuse

Alternative 6 would be the same as Alternative 5, with the exception of the demolition of the Camp Pinchot units. There are no specific aspects of this Alternative that would create any impacts to safety from housing construction activities or UXO not already addressed under Alternative 4.

4.13.7 No Action Alternative

Under the No Action Alternative, no new housing would be constructed. Consequently, the environment within and adjacent to the Alternative locations would remain as baseline, and no impacts associated with safety beyond the scope of normal conditions and influences at these locations would occur.

4.13.8 Impact Analysis Summary

There are no specific aspects of the Alternatives that would create any unique impacts to safety from housing construction activities or from the presence of UXO in MFH areas.

(This page is intentionally blank.)

5. CUMULATIVE IMPACTS

According to Council on Environmental Quality regulations, cumulative effects analysis in an EIS should consider the potential environmental impacts resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7).

Cumulative effects may occur when there is a relationship between a Proposed Action or Alternative and other actions expected to occur in a similar location or during a similar time period. This relationship may or may not be obvious. The effects may then be incremental (increasing) in nature, resulting in a cumulative impact. Actions overlapping with or in close proximity to the Proposed Action or Alternatives can reasonably be expected to have more potential for cumulative effects on "shared resources" than actions that may be geographically separated. Similarly, actions that coincide temporally will tend to offer a higher potential for cumulative effects.

In this EIS, an effort has been made to identify all actions on or near the action area that are being considered and that are in the planning stage at this time. These actions are included in the cumulative analysis to the extent that details regarding such actions exist and the actions have a potential to interact with the Proposed Action or Alternatives outlined in this EIS. Although the level of detail available for those future actions varies, this approach provides the decision maker with the most current information to evaluate the consequences of the Alternatives. Cumulative impacts are addressed in the context of this EIS in order to assess the incremental contribution of the Alternatives to impacts on affected resources from all factors.

The analysis first discusses past actions, events, and circumstances that are relevant to the environments associated with the MFH DCR & L Program Alternatives. Following is a discussion of other actions that, when combined with the MFH DCR & L Program, may result in incremental impacts.

5.1 RELEVANT PAST AND PRESENT ACTIONS

The relevant past and present actions associated with the impacts of the Proposed Action include existing Base development and operations, plus nearby land development and infrastructure improvements such as roads, pipelines, and power transmission lines. Past and present actions in and around the action areas associated with these activities may have an additive effect on the local environment.

5.2 RELEVANT, REASONABLY FORESEEABLE ACTIONS

Talks with community planning organizations found no indication of future actions relevant to the Proposed Action near the project or Alternative locations that would need to be addressed (Blackshear, 2004). On Eglin, there are plans to use the Ben's Lake area and a portion of the Wherry housing area for future development of community services and hospital expansion. However, these plans are in the early concept phase and are only mentioned as "desirables" for these areas.

Live Oak Terrace and Pine Shadows areas on Hurlburt are planned for mission expansion. Though no definite plans exist regarding how these areas would be used, some type of construction is anticipated.

The closure of Bayou Village Mobile Home Park is a relevant and related action. This mobile home park is currently planned for closure in June 2008. Although the trailer park is not included within the official privatization initiative, as of the writing of this document, it does house 100 families, with that number decreasing on a regular basis. Thus, the closure's effect involves the trailer park residents seeking private sector housing, moving their trailers to sites off base, or utilizing new MFH.

Over the next six years, Hurlburt is expected to accommodate several additional operations squadrons, along with the staff to support and maintain the respective units. Under the first phase, through 2007, it is anticipated that an additional 375 military personnel would be stationed at Hurlburt, and more squadrons are expected by 2010 (Wahl, 2004).

Base Realignment and Closure studies are currently being conducted across the DoD, with determinations expected in 2005. Base realignment and closures may result in additional operations and personnel being transferred to or from Eglin and/or Hurlburt.

Eglin AFB and the Veterans Administration are currently developing a proposal for a 16,200 square foot (0.372 acre) community-based outpatient clinic on a 10-acre parcel of land adjacent to the Eglin Regional Hospital. In addition to the facility parking lots and sidewalks, an access road and a stormwater retention pond would be built. The total amount of land to be cleared for this development would be approximately 4.02 acres.

5.3 ANALYSIS OF CUMULATIVE IMPACTS

5.3.1 Land Use and Planning

Although capacity improvements and related land use changes associated with right of way acquisition and conversion of natural areas to developed areas would incrementally contribute to the changing character of the area, cumulative impacts

associated with land use and planning are not expected as a result of this action. The closure of the Mobile Home Park, as well as any actions occurring within or outside Hurlburt or Eglin Main Base boundaries, are all consistent with future land use plans for these areas.

5.3.2 Transportation

No proposed or reasonably foreseeable road developments are expected to substantially affect the capacity of the existing road network in the study area (Showers, 2004). The project would not involve a net population change in the area, but would involve a redistribution of residents. This, coupled with the potential for additional military personnel moving to the area as part of other future actions could result in incremental impacts to the local road network. However, it is assumed that, as with typical community growth, county and state transportation boards would assess the need for road improvements and accommodate the need accordingly.

5.3.3 Socioeconomics

Potential adverse impacts are anticipated to be minimal and would be related to the potential movement of a small number of families from one side of Fort Walton Beach to another (i.e., 315 housing units from Hurlburt to an Alternative location). Future growth in the area would offset the potential for any adverse cumulative impacts. The creation of jobs as a result of the implementation would provide a long-term benefit over the 10-year life of the project.

Under the Proposed Action and Alternatives, 584 families would be required to acquire housing within the private sector due to the elimination of surplus MFH units. This, combined with the potential for families moving to the private sector after closure of the Bayou Village Mobile Home Park, may have an incremental effect on the local housing market. However, the HRMA studies conducted for Eglin AFB and Hurlburt in 2003 found that the local housing market could support 584 military families. In addition, any number of Bayou Village residents may choose to relocate their trailers to vacant lots elsewhere. The remainder seeking private sector housing would not put an appreciable drain on the local housing market given the average growth rate of the housing market, population, and economy.

The addition of new operations squadrons over the next six years would also contribute to incremental beneficial impacts to the economy in terms of more jobs and consumer revenues. It may, however, incrementally contribute to a drain on the local housing market if military housing units are unavailable.

Given the nature of the economy to grow to meet local demands and the length of time over which these factors may occur, these incremental impacts are anticipated to be minimal.

5.3.4 Utility Infrastructure

Incremental impacts related to utility infrastructure are associated with increasing the use of utilities in the area. The Garnier Wastewater Treatment Facility, operated by OCWS, currently operates at 77 percent of its permitted capacity. At completion of the construction of a new facility currently underway on Eglin property as part of an unrelated project, and at completion of the housing project, OCWS would retain nearly 55 percent of its permitted daily flow capacity. As a result, future activities associated with the development of a new wastewater treatment facility will prove beneficial to the surrounding community, as would the elimination of septic tanks at Camp Pinchot. In regards to potable water, the water distribution systems for new housing units should have less leakage and loss from breakages and repairs. Likewise, the impact of larger units on energy use may be substantially or even totally offset by the greater energy efficiency of modern construction and HVAC equipment. This would offset the potential for adverse impacts associated with an incremental increase in utility use due to future growth and development of the surrounding area.

5.3.5 Cultural Resources

The loss of integrity of cultural resources can have a cumulative impact if that loss or impact is compounded by other events with the same end result. The demolition of historic structures or removal of archaeological artifacts may incrementally impact the cultural atmosphere of Eglin AFB, Hurlburt, and the surrounding community. However, coordination with the SHPO to meet NHPA requirements and mitigate any potential impacts would serve to offset any considerable cumulative impacts.

5.3.6 Biological Resources

Much like cultural resources, localized loss of habitat or direct impacts to species can have a cumulative impact when viewed on a regional scale if that loss or impact is compounded by other events with the same end result. Analysis of potential impacts has not identified any direct impacts to threatened or endangered species. Loss of habitat in the area, although not considered high quality, would have an incremental effect when taken in context of past development in the area and the potential for future development along the shoreline of Choctawhatchee Bay and associated bayous. Loss of undeveloped area due to community growth and sprawl is an issue of concern along the shorelines of northwest Florida.

5.3.7 Water Resources

Northwest Florida is a rapidly developing area. It is likely that the non-military lands adjacent to the Alternatives that have not already been developed would eventually be developed, contributing to potential cumulative impacts to the water resources of the area. New development would place increased demands on the local water supply and promote stormwater runoff leading to water quality degradation. Additionally, the

military would likely redevelop some of the demolition sites with other structures, such as a potential hospital expansion, as well as develop other currently undeveloped areas. Site design plans, safety plans, and permits for new developments would need to address these potential problems so that water resources were protected.

Boat dock construction also may create potential cumulative impacts. Each new dock built in Santa Rosa Sound and Garnier Bayou impacts the natural shoreline vegetation, alters water circulation and bottom sediments around the dock, and potentially shades out seagrasses (if present). Permit requirements associated with boat dock construction would serve to minimize these impacts at the Camp Pinchot and Soundside Manor sites. FDEP and the U.S. Army Corps of Engineers are currently encouraging those considering dock construction to use environmentally sensitive practices, thus reducing the extent of future impacts.

5.3.8 Soils

Past development (e.g., housing developments) in the areas surrounding the Alternative locations have likely contributed to erosion and soil loss in the vicinity. However, the extent to which this has occurred is difficult to determine. Implementation of the Proposed Action would involve the utilization of erosion control measures to minimize the potential for erosion to adversely impact adjacent wetland areas and water quality. As a result, implementation of the Proposed Action would not likely contribute in any appreciable manner to erosion that has occurred in the past.

5.3.9 Air Quality

The project would incrementally contribute air pollution emissions during construction and would allow for increased air pollutant emissions thereafter. This contribution would relate to regional air quality goals and attainment standards, but the contribution from the project would be negligible on a regional scale as construction and demolition impacts would be short-term, ending when the project has been completed. Air emissions associated with the project represent only a small percentage of Okaloosa County's annual emissions. Project emissions would not contribute to other county emissions in any appreciable manner.

5.3.10 Hazardous Materials/Waste

No adverse impacts associated with hazardous waste have been identified with respect to the implementation of the Proposed Action under any of the Alternatives. Beneficial impacts associated with the removal of ACBM and LBP would provide a long-term benefit to housing residents.

5.3.11 Solid Waste

No adverse impacts associated with solid waste have been identified with respect to the implementation of the Proposed Action under any of the Alternatives. A slight beneficial impact to local landfill operators may occur from increased revenues during the project. However, this benefit would expire once the project has been completed. As a result, the Proposed Action would not contribute to any cumulative impacts associated with solid waste.

5.3.12 Noise

No adverse noise impacts have been identified with respect to the implementation of the Proposed Action under any of the Alternatives. As a result, the Proposed Action would not contribute to any cumulative impacts associated with noise.

5.3.13 Safety

No adverse impacts associated with safety have been identified as a result of the implementation of the Proposed Action under any of the Alternatives. As a result, the Proposed Action would not contribute to any cumulative impacts associated with safety.

6. UNAVOIDABLE ADVERSE IMPACTS AND CONSIDERATIONS THAT OFFSET THESE IMPACTS

Temporary unavoidable adverse impacts associated with construction and demolition would occur under all Alternatives.

Construction and demolition activities would temporarily increase noise and dust pollution and temporarily increase personnel and traffic density. Noise levels and air emissions would increase around the action areas. Water quality and soil erosion impacts may also occur. Cultural resource impacts are associated with disturbance of identified archaeological sites. In addition, loss of relatively undisturbed areas at the Camp Pinchot Expansion and Poquito Bayou Expansion areas would occur due to land-clearing activities.

Considerations and BMPs would mitigate all the above impacts. Normal construction/demolition management would mitigate noise or dust impacts. Air quality impacts would be minor due to the vast region of influence of this resource; any additional air emissions would be distributed over such a wide area as to be negligible. All hazardous materials would be handled and disposed of in accordance with applicable laws, regulations, and Air Force management action requirements. Stormwater management designs and erosion control measures would minimize the potential for erosion and water quality impacts. Potential impacts to cultural resources would be offset through mitigations developed in consultation with the Florida SHPO. The loss of natural area may be offset somewhat by the maintenance of natural areas as parks and recreational areas, as well as maintaining a minimal unit density in these areas.

6.1 ALTERNATIVE 1: POQUITO BAYOU EXPANSION

Potential adverse impacts under this Alternative would be the same as those identified above. While land clearing and demolition could be avoided considering the other alternatives available, implementation of BMPs and considerations identified above would serve to offset any long-term adverse impacts.

6.2 ALTERNATIVE 2: EGLIN MAIN BASE

Potential adverse impacts under this Alternative would be the same as those identified above. However, accounting for the BMPs and considerations identified above, no unavoidable, long-term adverse impacts are anticipated.

6.3 ALTERNATIVE 3: CAMP PINCHOT EXPANSION AREA/POQUITO BAYOU EXPANSION AREA

Potential adverse impacts under this Alternative would be the same as those identified above. In addition, Camp Pinchot, a nationally registered historic district under the NHPA, would be demolished. While land clearing and demolition of historic units could be avoided considering the other alternatives available, implementation of BMPs and considerations identified above would serve to offset any long-term adverse impacts.

6.4 ALTERNATIVE 4: ALTERNATIVE 3 WITH CAMP PINCHOT ADAPTIVE REUSE

Potential adverse impacts under this Alternative would be the same as those identified under Alternative 3, with the exception of the Camp Pinchot Historic District. While land clearing could be avoided considering the other alternatives available, implementation of BMPs and considerations identified above would serve to offset any long-term adverse impacts.

6.5 ALTERNATIVE 5: CAMP PINCHOT EXPANSION/EGLIN MAIN BASE (PREFERRED ALTERNATIVE)

Potential adverse impacts under this Alternative would be the same as those identified above. In addition, Camp Pinchot, a nationally registered historic district under the NHPA, would be demolished. While land clearing and demolition of historic units could be avoided considering the other alternatives available, implementation of BMPs and considerations identified above would serve to offset any long-term adverse impacts.

6.6 ALTERNATIVE 6: ALTERNATIVE 5 WITH CAMP PINCHOT ADAPTIVE REUSE

Potential adverse impacts under this Alternative would be the same as those identified under Alternative 5. While land clearing at Camp Pinchot could be avoided considering the other alternatives available, implementation of BMPs and considerations identified above would serve to offset any long-term adverse impacts.

6.7 NO ACTION ALTERNATIVE

Under the No Action Alternative, no adverse impacts would be encountered beyond those resulting from existing conditions. However, under this Alternative, the Air Force would not be able to adequately meet the requirements of the DoD mandate.

7. RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

Across all Alternatives there would be a long-term increase in employment, income, and net fiscal benefits and revenues to the surrounding community during the demolition and construction period (10 years). Additionally, there would be a long-term increase in the amount of local building supplies needed to execute the project. Nevertheless, this increase would not necessarily result in a considerable short-term decrease in the availability of these resources for other users. Currently, Florida is experiencing a shortage of building supplies associated with the 2004 hurricane season recovery. However, this shortage is expected to be short-term in nature, and, given that the proposed project is not anticipated to start until 2006, there should not be any coincidental impacts.

7.1 ALTERNATIVE 1: POQUITO BAYOU EXPANSION

Under this Alternative, the construction of new facilities would require the clearing of land within the Poquito Bayou Expansion area. However, this location is not considered a high quality natural area, is relatively segmented from the rest of the Reservation, and is not utilized for recreation, forestry, or agricultural purposes. As a result, the clearance of this area would not result in long-term loss of quality natural habitat or productivity of this area under Alternative 1.

7.2 ALTERNATIVE 2: EGLIN MAIN BASE

Alternative 2 would require the use of cleared land within the industrial area of the base and would require some minor clearing to the southwest of the main base area. Most of these sites are highly disturbed. The undisturbed sites are not considered a high quality natural area, are segmented from the rest of the Reservation, and are not utilized for recreation, forestry, or agricultural purposes. Thus, there would be no loss of high quality natural habitat or loss of long-term productivity under this Alternative.

7.3 ALTERNATIVE 3: CAMP PINCHOT EXPANSION AREA/POQUITO BAYOU EXPANSION AREA

Under this Alternative, the construction of new facilities would require the clearing of land within the Camp Pinchot and Poquito Bayou Expansion areas. However, these locations are not considered high quality natural areas, are relatively segmented from the rest of the Reservation, and are not utilized for recreation, forestry, or agricultural purposes. Consequently, there would be no loss of high quality natural habitat or loss of long-term productivity under Alternative 3.

7.4 ALTERNATIVE 4: ALTERNATIVE 3 WITH CAMP PINCHOT ADAPTIVE REUSE

For the purposes of this analysis, impacts would be the same as those described under Alternative 3. As a result, there would be no loss of high quality natural habitat or loss of long-term productivity under this Alternative.

7.5 ALTERNATIVE 5: CAMP PINCHOT EXPANSION/EGLIN MAIN BASE (PREFERRED ALTERNATIVE)

Under this Alternative, the construction of new facilities would require the clearing of land within the Camp Pinchot Expansion area. However, this location is not considered a high quality natural area, is relatively segmented from the rest of the Reservation, and is not utilized for recreation, forestry, or agricultural purposes.

This Alternative would also require the use of cleared land within the industrial area of the Base and would require some minor clearing to the southwest of the Main Base area. Most of these sites are highly disturbed. The undisturbed sites are not considered to be high quality natural areas, are segmented from the rest of the Reservation, and are not utilized for recreation, forestry, or agricultural purposes. Thus, there would be no loss of high quality natural habitat or loss of long-term productivity under this Alternative.

7.6 ALTERNATIVE 6: ALTERNATIVE 5 WITH CAMP PINCHOT ADAPTIVE REUSE

For the purposes of this analysis, impacts would be the same as those described under Alternative 5. As a result, there would be no loss of high quality natural habitat or loss of long-term productivity under this Alternative.

7.7 NO ACTION ALTERNATIVE

The No Action Alternative proposes no action and does not involve any short-term uses of the environment beyond existing uses. However, under this Alternative, the Air Force would not be able to adequately meet the requirements of the DoD mandate.

8. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that environmental analysis includes identification of any irreversible and irretrievable commitments of resources involved in the implementation of the Proposed Action or Alternatives. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site).

With the exception of cultural resources, resource commitments associated with the implementation of the Proposed Action at the Alternative locations are neither irreversible nor irretrievable. At Eglin AFB and Hurlburt, cultural resource impacts would involve the potential disturbance to identified archaeological and historical sites. Such disturbances could result in the loss of the integrity of these sites in their natural state. As a result, mitigation measures involving recordation and data recovery would be developed through consultation with the SHPO to minimize the loss of these resources.

On Eglin AFB, adaptive reuse of the Georgia Avenue units would not result in the loss of the historical significance or utility of these units.

Most environmental consequences are short-term and temporary (such as air emissions from construction) or longer lasting but negligible (e.g., utility increases). Construction of the housing units required for the Alternatives would require consumption of limited amounts of materials typically associated with interior and exterior construction (e.g., concrete, wiring, insulation, and windows). The amount of these materials used is not expected to decrease the availability of the resources.

8.1 ALTERNATIVE 1: POQUITO BAYOU EXPANSION

The Poquito Bayou Expansion area, while undeveloped, is not considered a high quality natural area (Hagedorn, 2004) and represents less than 0.5 percent of Eglin's reservation lands. No sensitive species are known to occur in the area at this time (Hagedorn, 2004). While this area is relatively undisturbed, development of this area may not necessarily result in an irreversible and/or irretrievable commitment of natural resources. Although difficult, this area could be returned to its existing state if, in the future, proposed housing and infrastructure were removed and the area was allowed to revert back to its present state.

Six archaeological resources have been determined eligible for the National Register and one historic cemetery, the Davis Cemetery, is potentially eligible. Construction in these areas would result in the loss in integrity of these sites in their natural state. Although mitigation measures involving recordation and data recovery would be developed through consultation with the SHPO to minimize the loss of these resources, their loss would nonetheless be irreversible and irretrievable.

8.2 ALTERNATIVE 2: EGLIN MAIN BASE

No sensitive species or eligible or potentially eligible cultural resource sites have been identified at the locations utilized under this Alternative. As a result, there would be no irreversible and/or irretrievable commitment of resources associated with the implementation of this Alternative.

8.3 ALTERNATIVE 3: CAMP PINCHOT EXPANSION AREA/POQUITO BAYOU EXPANSION AREA

The Poquito Bayou and Camp Pinchot Expansion areas, while undeveloped, are not considered high quality natural areas and no sensitive species are known to occur in the area at this time (Hagedorn, 2004). While this area is relatively undisturbed, development of this area may not necessarily result in an irreversible and/or irretrievable commitment of natural resources. Although difficult, this area could be returned to its existing state if, in the future, proposed housing and infrastructure were removed and the area was allowed to revert back to its present state.

The four Camp Pinchot historic housing units proposed for demolition are contributing members of the historic district. Their demolition and the demolition of other contributing members of the district would constitute an adverse impact, rendering it ineligible for listing on the National Register. One archaeological site would also potentially be impacted. Potential cultural resource impacts associated with Poquito Bayou would be the same as those under Alternative 1. Construction in these areas would result in the loss in integrity of these sites in their natural state. Although mitigation measures involving recordation and data recovery would be developed through consultation with the SHPO to minimize the loss of these resources, their loss would nonetheless be irreversible and irretrievable.

8.4 ALTERNATIVE 4: ALTERNATIVE 3 WITH CAMP PINCHOT ADAPTIVE REUSE

Issues associated with this Alternative would be the same as those described under Alternative 3, with the exception of the Camp Pinchot historic units. Renovation of the Camp Pinchot historic units associated with adaptive reuse would be conducted with

all applicable requirements, and no adverse impact is expected. Therefore, adaptive reuse of the Camp Pinchot historic units would not result in the loss of the historical significance or utility of these units.

8.5 ALTERNATIVE 5: CAMP PINCHOT EXPANSION/EGLIN MAIN BASE (PREFERRED ALTERNATIVE)

Potential issues associated with Camp Pinchot development and Eglin Main Base development under Alternative 5 would be the same as those described under Alternatives 3 and 2, respectively.

8.6 ALTERNATIVE 6: ALTERNATIVE 5 WITH CAMP PINCHOT ADAPTIVE REUSE

Potential issues associated with Camp Pinchot development and Eglin Main Base development under Alternative 6 would be the same as those described under Alternatives 4 and 2, respectively.

8.7 NO ACTION ALTERNATIVE

No irretrievable or irreversible commitment of resources would occur with this Alternative.

(This page is intentionally blank.)

9. PUBLIC PARTICIPATION

9.1 INTRODUCTION

This section presents a summary of the public participation efforts associated with the MFH DCR & L Program Air Force environmental impact analysis process. NEPA requires that Federal agencies involve the public in the decision-making process for major Federal actions that may significantly affect the environment.

Several opportunities for public involvement are available during the MFH DCR & L Program EIAP, including:

- Public scoping meetings and comment period.
- Receiving and commenting on handouts and fact sheets.
- Conducting public hearings and comment period.

9.2 SCOPING PROCESS

The scoping period for the Air Force MFH DCR & L Program EIAP began when a Notice of Intent was published in the *Federal Register* on 26 January 2004 (refer to the EIS Resource Appendices, Appendix B, *Public Participation*). The closing date for the scoping period was set for 23 March 2004. Although the receipt of public comments is most useful during the early stage of the EIAP, the Air Force stated during the scoping sessions that they would welcome comments throughout the EIS analysis and preparation process.

The Air Force's intent during the scoping process was to provide the greatest level of opportunity for government agencies, special interest groups, and the general public to learn about the Air Force's proposal and to offer several ways for those interested to express their thoughts regarding the proposal. Display ads and press releases placed in local newspapers announced the following dates for the scoping sessions (Appendix B, *Public Participation*).

- 17 February 2004 Mary Esther
- 19 February 2004 Fort Walton Beach

Public service announcements were also aired on regional radio and television stations.

The scoping sessions were designed with an open house format in order to create a comfortable atmosphere for attendees. This format encouraged participants to speak individually to Air Force personnel. During the sessions, attendees were encouraged to ask questions and provide input.

At the sign-in table at every scoping session location, Air Force personnel greeted attendees and requested they write their name and address on the registration sheet. Attendees were provided with a fact sheet and invited to view a poster display presentation regarding the MFH DCR & L Program. The display consisted of mounted maps on easels. The maps illustrated the current and proposed use of existing special use airspace.

During the more formal presentation, Air Force representatives explained why the MFH DCR & L Program was necessary, described the proposed Alternatives, summarized the EIAP, and provided a tentative schedule of milestones.

During the scoping sessions, the public could make comments in three different ways.

- Give verbal testimony to a court reporter
- Turn in comments written prior to the scoping session or complete a written comment form provided by the Air Force
- Take written forms with them to be filled out at a later time and be submitted by other interested persons

Scoping sessions were held at two locations in support of the proposed MFH DCR & L Program. A schedule of the sessions is provided in Table 9-1.

Table 9-1. Schedule of Sessions and Attendance

Date	Location
17 February 2004	Hurlburt Soundside Club, Mary Esther, FL
19 February 2004	Okaloosa/Walton Community College Fort Walton Beach, FL

Transcripts of these meetings and written comments submitted during the scoping period are provided in the EIS Resource Appendices (Appendix B, *Public Participation*).

A meeting and site visit was held on 19 March 2004 at the Poquito Bayou Expansion area to hear concerns from residents of the Longwood subdivision. Several representatives from the Air Force and from the Garnier's Bayou Community Association were present. The meeting minutes for this meeting are also presented in Appendix B.

Other "Town Hall" meetings have also been held, one in December 2003 and another in June 2004 to provide the public with information regarding the privatization effort and to relay the status of the environmental studies.

10. REFERENCES

Agency for Toxic Substances and Disease Registry (ATSDR), 1999. Toxic FAQs for Lead. http://www.atsdr.cdc.gov/tfacts13.html.

Anderson, H., R. Lilis, S. Daum, A. Fischbein, and I. Selikoff, 1976. Household contact asbestos neoplastic risk. New York Academy of Science 271:311-323 accessed 15 April 2004 via the Internet at http://ehis.niehs.nih.gov/members/1995/Suppl-6/rogan-full.html.

Architecture Glossary, 2004. http://architecture.about.com/library/blgloss-reuse.htm.

Armhold, R., 2004. Personal communication with Ms. Robin Armhold, 16 CES/CEV and SAIC (Kathryn Tucker), 24 February 2004.

Bixler, P. E., 1976. Gifford Pinchot. Historic Pennsylvania Leaflet No. 39. Pennsylvania Historical & Museum Commission.

Blackshear, P., 2004. Personal communication between Ms. Patricia Blackshear and SAIC regarding future development in Okaloosa County. January.

Brown, Randy, 2004. The National Fire Protection Association Code 1710 provides a national guideline. Chief Randy Brown, Ocean City Fire Department.

Brown, Russell, 2004. Personal contact with Russell Brown (96 CEG/CEVCE) and SAIC regarding the Average Daily Flow of Eglin's wastewater treatment facilities. February.

Bruechner, P., 2002. Personal communication between Paul Bruechner (Okaloosa Gas Company) and SAIC regarding natural gas supply to Eglin Air Force Base. 10 January 2002.

Cantrell, J. 2003. Capehart-Wherry Housing: AF Strategy for Addressing Section 106 of the NHPA. Program Support Division Headquarters Air Force Center for Environmental Excellence (AFCEE)/ECS. 12-15 May.

Casanova, B., 2004. Personal communication with Barbara Casanova, 796 CES/CEOCV with SAIC (Kathryn Tucker) regarding solid waste generated at Hurlburt Field MFH. 25 February 2004.

Chavers, L., 2004. Personal communication with Mr. Larry Chavers, 96 CEG/CEV, with Kathryn Tucker, SAIC, on information provided for Storage Tanks. 23 February 2004.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe, 1979. "Classification of wetlands and deepwater habitats of the United States," FWS/OBS-79/31, U.S. Fish and Wildlife Service, Washington, D.C.

Crews, J., 2004. Personal communication between Joey Crews (Okaloosa County Water and Sewer) and SAIC regarding potential impacts associated with the MFH DCR & L Program at Eglin AFB. 17 February 2004.

Department of Community Affairs (DCA), 2000. Okaloosa County 2020 Comprehensive Plan. Okaloosa County Department of Community Affairs. Okaloosa County, FL. November. Available on the Internet at http://www.co.okaloosa.fl.us/plan_complan.html.

Department of Defense (DoD), 1993. DoD 4165.63-M, DoD Housing Management, Office of the Under Secretary of Defense (Acquisition and Technology). September.

Eachearn, R., 2004. Personal communication between Dr. Robert Eachearn, (Assistance Superintendent, Central School Operations, Okaloosa County School District) and SAIC regarding school district information. 3 February 2004.

Economic Development Council (EDC) of Okaloosa County, 2004. Available on the Internet at: http://www.florida-edc.org/Military.htm.

--------, 2004a. http://www.florida-edc.org/Tourism.htm.

Edge, G., 2004. Personal communication with Gail Edge, Okaloosa County Solid Waste and SAIC (Kim Kennedy). 24 February 2004.

Eglin AFB Cultural Resources Database, 2004.

Eglin GIS Data, 2004.

Emerald Coast Association of Realtors (ECAR), 2005. Multiple Listing Service. 27 January 2005.

Executive Order (EO) 11988, 1977. 42 FR 26951, Floodplain Management. Office of the President. United States of America. 24 May 1977. Available at: http://www.archives.gov/federal_register/executive_orders/1977_carter.html.

-------- 11990, 1977. 42 FR 26961, 1977. Protection of Wetlands. Office of the President. United States of America. 24 May 1977.

-------- 12898, 1994. Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations. Office of the President. United States of America. 11 February 1994.

Federal Emergency Management Agency (FEMA), 2004. www.fema.gove/fhm/fq_term.

Federal Register, 2002. Program Comment for Capehart and Wherry Era Army Family Housing and Associated Structures and Landscape Features (1949–1962). Advisory Council on Historic Preservation. Federal Register 39332 Vol. 67, No. 110. 7 June 2002.

--------, 2003. 68 FR 13369-13418; Department of the Interior, Fish and Wildlife Service, 50 CFR (Code of Federal Regulations) Part 17; Department of Commerce, National Oceanic and Atmospheric Administration, 50 CFR Part 226. Endangered and Threatened Wildlife and Plants, Designation of Critical Habitat for the Gulf Sturgeon; Final Rule. 19 March 2003.

Finegold, L. S., C. S. Harris, and H. E. vonGlerke, 1994. Community Annoyance and Sleep Disturbance: Updated Criteria for Assessing the Impacts of General Transportation Noise on People. Noise Control Engineering Journal. January-February.

Florida Administrative Code (F.A.C.) 62-204.240 (1)(a-b) Ambient Air Quality Standards; Florida Department of Environmental Protection. March 1996.

--------, (F.A.C.) 62-204.360 (4)(b). Prevention of Significant Deterioration Areas; Florida Department of Environmental Protection. March 1996.

Florida Department of Environmental Protection (FDEP), 2000. 2000 Florida Water Quality Assessment 305(b) Main Report and Technical Appendix, Bureau of Surface Water Management.

--------, 2004. GIS data. http://www.dep.state.fl.us/water.

–––––––, 2004a. Florida's Environmental Protection, State Air Monitoring Reports. Available on the Internet at http://www.dep.state.fl.us/air/ozone/RollingAttain.asp; Ad Hoc Air Monitoring Report 2000 – 2004.

–––––––, 2004b. Electronic mail communication with Mr. Kevin White, NWD Air Permitting Supervisor; Subject: Attainment status of Okaloosa County. February.

Florida Department of Transportation (FDOT), 1998. Historical traffic survey data for regional state/county roads. Provided to SAIC by Florida Department of Transportation. Chipley, FL. February.

–––––––, 2002. 2002 Florida Traffic Information CD.

Florida Natural Areas Inventory (FNAI), 1994. Eglin Natural Community Survey, Year One Report Florida Natural Areas Inventory. Tallahassee, FL.

–––––––, 1997. Personal communication to Erica Mitchell by Carolyn Kindell, 28 May 1997.

Global Security, 2002. Camp James E. Rudder Florida Ranger Camp Eglin AFB, Auxiliary Field #6) http://www.globalsecurity.org/military/facility/camp-rudder.htm.

Hagedorn, B., 2004. Personal communication between Bruce Hagedorn, Wildlife Section Chief, 96 CEG/CEVSNW, Eglin Natural Resources Section. March.

Hand, J., J. Col, and E. Grimson, 1994. Northwest Florida District Water Quality Assessment, 1994, 305 (b) Technical Appendix. Prepared by the Standards and Monitoring Section Bureau of Surface Water Management Division of Water Facilities. Florida Department of Environmental Protection. Tallahassee, FL.

Harris, R., 2004. Personal communication with Rick Harris, Santa Rosa County Recycling Coordinator, and SAIC (Kim Kennedy). 19 February 2004.

Hurlburt Field (HFLD) Housing Office, 2003. Personal communication between SAIC and HFLD regarding housing logistics. December.

Horlacher, I., 2004. Personal communication with Irma Horlacher, Eglin AFB Self Help Center on 27 February 2004.

Institute of Transportation Engineers (ITE), 2001. 6th Edition of Trip Generation. ITE, 2001, 44 pp., ISBN No: 0-935403-55-8.

Johnson, K., F. Swanson, M. Herring, and S. Greene, eds., 1999. *Bioregional Assessments, Science at the Crossroads of Management and Policy*, pgs. 65-69, Island Press. Washington, D.C.

Kauffman, S., 2004. Personal communication with Stephen Kauffman and SAIC (Kathryn Tucker) regarding lead-based paint and asbestos disposal, 24 February 2004.

Kelty, R. A. and S. Bliven, 2003. Environmental and Aesthetic Impacts of Small Docks and Piers, Workshop Report: Developing a Science-Based Decision Support Tool for Small Dock Management, Phase 1: Status of the Science. NOAA Coastal Ocean Program Decision Analysis Series No. 22. National Centers for Coastal Ocean Science. Silver Spring, MD. 69 pp.

Long, W., 2004. Personal communication with Mr. William Long 96 CEG/CEVCP and SAIC (Kathryn Tucker), 25 February 2004.

McDaniel, R. (Okaloosa County Emergency Management), 2004. Okaloosa County Emergency Management information, Division Chief Randy McDaniel, Okaloosa County Emergency Management.

McKinnon, E. C., and T. R. Pratt, 1998. A Compilation of Water Quality and Pumpage Data for Select Wells in Santa Rosa, Okaloosa, Walton, and Bay County Florida. Northwest Florida Water Management District Technical File Report 98-1. November.

Melby, P., and T. Cathcart, 2002. Regenerative Design Techniques Practical Applications in Landscape Design. John Wiley & Sons, Inc.; New York, NY. pp. 383-391.

Meyer, J., L. J. Campbell, and J. H. Mathews, 2000. Excavation at Camp Pinchot. Cultural Resources Investigations Eglin Air Force Base, Okaloosa, Santa Rosa, and Walton Counties, Florida. Prepared by Prentice Thomas & Associates, Inc. Report of Investigations No. 575.

Milanich, G. T., 1990. Northwest Florida. In Florida Historical Contexts. G.T. Milanich, Project Director. State of Florida Division of Historical Resources. Tallahassee, FL.

Miller, B., 2003. Personal communication between SAIC and Mr. Bob Miller, Endangered Species Biologist, Eglin Natural Resources 96 CEG/CEVSNW. November.

--------, 2004. Personal communication with Ms. Betty Miller, Walton County Sanitary Landfill with SAIC (Kathryn Tucker), 1 March 2004.

Minnesota IMPLAN Group, Inc., 2000. IMPLAN Professional Version 2.0, Social Accounting and Impact Analysis Software User's Guide, Analysis Guide, Data Guide.

Mississippi Department of Environmental Quality (MDEQ), Mississippi Soil & Water Conservation Commission (MSWCC), and USDA Soil Conservation Service (USDA SCS), 1994. Planning & Design Manual for the Control of Erosion, Sediment & Stormwater. April.

Mixon, S., 2004. Personal communication between Stephanie Hiers (SAIC) with Steve Mixon (Engineer, Okaloosa County Public Works Department) regarding stormwater requirements. February.

Nabors, Jim. 2004. Statement made at MFH DCR & L EIS Public Scoping Meeting. 17 February 2004.

National Institute for Occupational Safety and Health (NIOSH), 1999. Fact Sheet: Work-Related Hearing Loss. Washington, D.C.: HHS.

National Research Council (NRC), 2000. Highway Capacity Manual 2000. pp. 1134. ISBN: 0-309-06746-4. Transportation Research Board of the National Academies.

Needleman, H. 1990. Low-level lead exposure and the IQ of children. A meta-analysis of modern studies. Journal of the American Medical Association 263:673-678.

Occupational Safety and Health Administration (OSHA), 1983. Occupational Noise Exposure Standard. CFR, Title 29, Part 1910, Section 1910.95 (29 CFR 1910.95).

Office of the Secretary of Defense (OSD), 2004. Website: http://www.acq.osd.mil/housing/.

Overstreet, C., 2004. Personal communication with C. Overstreet and SAIC (Kathryn Tucker), 5 March 2004.

Percy, G. W., 1998. Letter from the Florida Division of Historical Resources to Eglin AFB regarding demolition of Wherry housing. 18 December 1988.

Peterson, B., 2004. Personal communication between Mr. Barry Peterson, Program Manager, Okaloosa County Transit and SAIC regarding future development. 3 March 2004.

Pritchette, B., 2004. Personal Communication between Mr. Benny Pritchette (OCWS-West Facility Operator) and SAIC. April 2004.

Richardson, T., 2004. Personal communication between Tom Richardson (Gulf Power Company) and SAIC regarding potential impacts associated with the MFH DCR & L Program at Eglin Air Force Base. 18 February 2004.

Roberts, T., 2004. Personal communication between Tracy Roberts (Okaloosa Gas Company) and SAIC regarding potential impacts associated with the MFH DCR & L Program at Eglin Air Force Base. 17 February 2004.

Russo, M., 1990. The Archaic Period. In Florida Historical Contexts. G. T. Milanich, Project Director. State of Florida Division of Historical Resources. Tallahassee, FL.

Sargent, F., T. J. Leary, and D. W. Crew, 1995. Scarring of Florida's Seagrasses: Assessment and Management Options. Florida Marine Research Institute. Technical Report TR-1. St. Petersburg, FL.

Science Applications International Corporation (SAIC), 2003. Vehicle Traffic Noise Levels, STAMINA Traffic Noise Prediction Model, output.

Showers, R., 2004. Personal communication between Mr. Randy Showers, Okaloosa County Traffic Engineer and SAIC regarding future land and roadway development. 2 March 2004.

Stanley, M., 2005. Personal communication between Mark Stanley, 96 CEG/CEVH, and Sherri Baker-Littman, SAIC, regarding disposition of Native American Consultations. January 2005.

Stephonic, J., 2004. Personal contact with John Stephonic (Hurlburt Field) and SAIC regarding the Average Daly Flow of Hurlburt Field's wastewater treatment facilities. February.

Thomas, P, L.J. Campbell, L. Rosborough, W.R. Mallory, B. Aubuchon, A.F. Servello, J. Matthews, J. Pope, E. Meyer, 2004. Cultural Resource Evaluation Delineation of Archaeological Deposits Camp Pinchot. Report prepared for Science Applications International Corporation.

Thomas, P, L.J. Campbell, L. Rosborough, W.R. Mallory, B. Aubuchon, A.F. Servello, J. Matthews, J. Pope, E. Meyer, 2004a. Multiple Cultural Resource Investigations of Military Family Housing Project Areas. Report prepared for Science Applications International Corporation.

Transportation Research Board National Research Council, 2000. Highway Capacity Manual.

University of Florida (UFL), 2002. (Lenze, D.) University of Florida, Bureau of Economic and Business Research, Florida Long Term Economic Forecast 2002, Volume 2 – State and Counties. August.

U.S. Air Force, 1996. Eglin AFB Draft Noise Study. Air Force Development Test Command. Eglin AFB, FL.

–––––––, 1997. AFDTC Plan 32-6, *Eglin AFB Oil and Hazardous Substance Pollution Contingency Plan*, Eglin AFB, FL, May 1997.

–––––––, 1997a. Hurlburt Field Asbestos Identification Survey - Final Report.

–––––––, 1998. 307 Red Horse EA Noise Survey. Kelly Air Force Base, TX. 27 October 1998.

–––––––, 2000. *Environmental Baseline Study-Resource Appendices*. Appendix M. Cultural Resources; Appendix B. Land Use. www.eglin.af.mil.

–––––––, 2000a. *Hurlburt Field General Plan*. 16 Civil Engineering Squadron, Hurlburt Field, FL.

–––––––, 2001. *Eglin AFB General Plan – Eglin Main and Duke Field*. 796 Civil Engineering Squadron (796 CES/CEORT), Eglin AFB, FL. November.

–––––––, 2001a. *FY 2001 Secretary of Defense Environmental Award*. Cultural Resources Management. https://www.denix.osd.mil/denix/Public/News/OSD/SecDef01/CR/cr_eglin.pdf.

–––––––, 2002. *Integrated Natural Resources Management Plan, 2002-2006*. 96 CEG/CEVSNW, Eglin AFB. May.

–––––––, 2002a. *Eglin Air Force Base Environmental Restoration Program Management Action Program*. October.

–––––––, 2002b. *Hurlburt Field Installation Restoration Program Management Action Plan*. October.

–––––––, 2003. Housing Requirements Market Analysis, 2003 – 2008, Eglin Air Force Base, Florida. August.

–––––––, 2003a. Housing Requirements Market Analysis, 2003 – 2008, Hurlburt Field, Florida. August

–––––––, 2003b. *Cultural Resources Management Plan*, Eglin Air Force Base, Okaloosa, Santa Rosa, and Walton Counties. Prepared by 46th Test Wing, Range Environmental Planning Office (46TW/XPE), Eglin AFB, FL.

–––––––, 2003c. *Eglin Military Complex Environmental Baseline Study Resource Appendices, Volume I – Eglin Land Test and Training Range.* December.

–––––––, 2003d. *Calendar Year 2002 Air Emissions Inventory Report, Eglin Air Force Base, Florida*; Department of Air Force Materiel Command Air Armament Center. September.

–––––––, 2003e. *Calendar Year 2002 Air Emissions Inventory Report, Hurlburt Field, Florida*; Special Operations Command. September.

–––––––, 2003f. *Draft Environmental Baseline Survey for the Eglin Air Force Base and Hurlburt Field Military Family Housing Privatization Program*. August.

–––––––, 2003g. *Integrated Natural Resources Management Plan, Eglin AFB, FL 2002–2006*, May 2003.

–––––––, 2004. *Draft Privatization of Military Family Housing Hurlburt Field and Eglin Air Force Base Request for Proposal*. January.

–––––––, 2004a. Eglin AFB/Hurlburt Field Housing Privatization Project Proforma. January.

–––––––, 2004b. *Final Environmental Assessment For Okaloosa County Wastewater Treatment Facility Eglin Air Force Base, Florida*. January.

–––––––, 2004c. *Eglin Air Force Base History*. http://www.eglin.af.mil/history.htm.

–––––––, 2004d. *Commando Heritage & Park Guide*. 16th Special Operations Wing 2004. Hurlburt Field, Florida. www.hurlburt.af.mil/heritage/guide/#HF.

–––––––, 2004e. *Environmental Management Virtual Tours*. http://www.eglin.af.mil/em/virtualtours.

–––––––, 2004f. Policy Memorandum – 2-Bedroom Modified Family Housing Size Standard. HQ USAF/ILE. March 2004.

–––––––, no date. National Register of Historic Places Registration Form. *Camp Pinchot Historic District.* Florida.

–––––––, no date[a]. National Register of Historic Places Registration Form. *Eglin Field Historic District.* Eglin AFB, FL.

–––––––, no date[b]. Cultural Resource Management Program Issue Paper. *A Consideration of Interested Parties Among Native American Tribes*. Report of Investigations No, 787. Prepared by Prentice Thomas & Associates, Inc.

U.S. Army Corps of Engineers (USACE), 1987. Wetlands Delineation Manual.

–––––––, 1994. Water Well Inventory: Eglin Air Force Base, Florida. Mobile District, Geotechnical and Environmental Branch. Mobile, AL.

U.S. Census Bureau, 2000. United States Census Bureau, 2000 Building Permits. Accessed via the Internet at http://censtats.census.gov/.

–––––––, 2000a. Accessed via the Internet at http://www.census.gov/.

–––––––, 2004. United States Census Bureau, American FactFinder, http://factfinder.census.gov/.

U.S. Coast Guard, 1996. Biological Assessment of Effects on Listed Species of Region IV Regional Response Team Oil Spill Dispersant Use Policy. Letter and Biological Assessment from G. W. Abrams, Captain of U.S. Coast Guard to F. Carmody, U.S. Fish and Wildlife Service.

U.S. Department of Commerce (USDOC), 2004. United States Department of Commerce, Bureau of Economic Analysis, http://www.bea.doc.gov/bea/regional.

U.S. Environmental Protection Agency (USEPA), 1974. Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety. EPA Report 550/9-74-004.

–––––––, 1990. Draft New Source Review Workshop Manual: *Prevention of Significant Deterioration and Nonattainment Permitting*, Office of Air Quality Planning and Standards. October.

–––––––, 1992. *Stormwater Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices* Office of Water, EPA 833-8-92-001.

–––––––, 1995. America's Wetlands: Our Vital Link Between Land and Water.

–––––––, 1998. Prepared by Franklin Associates for U.S. Environmental Protection Agency, Municipal and Industrial Solid Waste Division, Office of Solid Waste, Report No. EPA530-R-98-010. June.

–––––––, 1999. *1999 National Emissions Inventory Database*; Office of Air Quality Planning and Standards, Technology Transfer Network, Clearing House for Inventories and Emissions Factors, http://www.epa.gov/ttn/chief/net/1999inventory.html. February.

U.S. Forest Service (USFS), 2004. What is the Choctawhatchee? Available on the Internet at www.southernregion.fs.fed.us/florida/about/index.shtml.

U.S. Geological Survey (USGS), 2002. The Relation Between Structure and Saltwater Intrusion in the Floridan Aquifer System, Northeastern Florida. Rick M. Spechler. Altamonte Springs, FL.

Wahl, Thomas, 2004. Personal communication between Thomas Wahl, AFSOC/CEP, and SAIC regarding potential growth at Hurlburt Field. E-mail dated 2 April 2004.

Wenger, S., 1999. *A Review of the Scientific Literature on Riparian Buffer Width, Extent, and Vegetation.* Office of Public Service & Outreach, Institute of Ecology, University of Georgia.

Wenger, S., and L. Fowler, 2000. *Protecting Stream and River Corridors: Creating Effective Local Riparian Buffer Ordinances*. Carl Vinson Institute of Government, The University of Georgia.

Williams, D., 2004. Personal communication between Don Williams (Hurlburt Field) and SAIC regarding potable water use at Hurlburt Field. 17 February 2004.

Wright, N., 1998. Letter to the State Historic Preservation Office with attached report on Ben's Lake housing. 12 November 1998.

11. LIST OF PREPARERS

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION (SAIC)

1140 Eglin Parkway
Shalimar, FL 32579

Name/Title	Project Role		Qualifications
Kevin D. Akstulewicz Environmental Scientist B.S. Environmental Science/Policy	Project Manager Author GIS	Utility Infrastructure / Sensitive Species	7 years environmental science
Sherri Baker-Littman Archaeologist/Geomorphologist M.S. Geology and Geophysics B.A., Anthropology	Author	Cultural Resources	11 years experience environmental sciences
Catherine Brandenburg Document Production	Administrative Record, Document Production		3 years experience in document management
William Brown GIS Analyst/Senior Environmental Engineer M.S. Civil and Environmental Engineering B.S. Civil Engineering	GIS Analyst		13 years GIS, computer modeling, statistical analysis
Dr. Christopher Clayton Senior Analyst PhD Geography M.A. Geography B.A. Geography	Author	Socioeconomics	38 years environmental science
Karen Daniels Environmental Scientist M.S. Applied Statistics M.S. Fisheries B.S. Biology	Technical Reviewer		25 years environmental science
Luis Diaz Environmental Engineer M.E. Environmental Engineering B.S. Aerospace Engineering	Author	Land Use and Planning	17 years environmental science
Claudia Druss Archaeologist M.A. Anthropology B.A. Fine Arts	Author	Cultural Resources	27 years historical and cultural resources
Jake Fruhlinger Archaeologist M.A. Archaeology B.A. Anthropology	Author	Cultural Resources	7 years historical and cultural resources
Stephanie Hiers Environmental Scientist M.S. Conservation Ecology B.S. Biology	Author	Water Resources	4.5 years environmental science

Name/Title	Project Role	Subject Area	Qualifications
Brian Kennedy Senior Environmental Planner B.A. Environmental Planning and Design	Author	Transportation Infrastructure	20 years environmental science
Jason Koralewski Archaeologist/Historian M. Liberal Studies, Archaeology M.A. Anthropology B.A. Anthropology	Author	Cultural Resources	9 years environmental science
Jennifer Latusek Environmental Scientist M. Environmental Management B.S. Marine Biology	Author	General Support	2.5 years environmental science
Alexandra Locklear Environmental Scientist M. Environmental Management B.S. Biology	Author	Environmental Justice / Special Risks to Children	5 years environmental science
Laurel Mattrey Public Information Specialist M. Urban and Environmental Planning B.S. Natural Resources	Author	Public Affairs	6 years environmental public affairs
Delores (Kim) Matyskiela Environmental Planner B.S. Biology	Author	Solid Waste	11.75 years environmental planning
W. James McKee Environmental Scientist B.S. Marine Biology	Author	Soils / Noise	18 years environmental science
Henry McLaurine Environmental Scientist M.S. Biology B.S. Environmental Science	Author	Air Quality	12 years environmental science
Michael Nation Environmental Scientist B.S. Environmental Science/Policy, Minor in Geography A.A. General Science	GIS		3 years experience as an environmental consultant; GIS Arc View applications
Jennifer Poirier Environmental Scientist B.S. Environmental Science	Author	Coastal Zone Consistency	1 year environmental science
Jeff Reece Senior Analyst M.S. Civil and Sanitary Engineering, Sc.B. Chemical Engineering	Author	Socioeconomics	20 years environmental experience
Lee Reynaud Ecologist B.S. Forestry	Author	Biological Resources	13 years environmental science
Dave Robau Environmental Scientist B.S. Environmental Science	Author	Water Resources / Wetlands	3 years environmental science

Name/Title	Project Role	Subject Area	Qualifications
Edward Schauster Wildlife Ecologist M.S. Wildlife Biology B.A. Zoology, Minor in Natural Resource Economics	Author	Biological Resources	10 years environmental science
Michael Smith Civil Engineer Doctor of Jurisprudence B.S. Engineering of Mines	Author	Transportation Infrastructure	23 years environmental engineering
Heather Stepp Environmental Engineer B.S. Environmental Engineering Technology	Author	Water Resources	6 years environmental science
Kathryn Tucker Environmental Toxicologist M.S. Biological Sciences (Toxicology) B.S. Environmental Health Sciences	Author	Hazardous Materials/Waste	8 years environmental science
Tara Utsey Technical Editor B.A. Liberal Arts	Editor		9 years editing; 11 years document production
William Wuest Environmental Analyst M.S. Public Administration B.S. Political Science	Author	Noise	37 years noise

(This page is intentionally blank.)