

**TYNDALL AIR FORCE BASE  
DIGITAL AIRPORT SURVEILLANCE RADAR  
ENVIRONMENTAL ASSESSMENT  
FINAL**



**Prepared by:**



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## EXECUTIVE SUMMARY

This environmental assessment (EA) has been completed as part of the National Environmental Policy Act (NEPA) process, in compliance with U.S. Air Force (USAF) instruction AFI 32-7061. According to this instruction, the EA provides analysis sufficient to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI) and to aid federal agencies in complying with NEPA when no EIS is required.

This EA describes the proposed project to install a Digital Airport Surveillance Radar (DASR) at Tyndall Air Force Base (AFB) in Florida. This proposed action is part of the National Airspace System (NAS) Program, the aviation system capital investment plan developed by the Federal Aviation Administration (FAA) in cooperation with the Department of Defense (DoD) to modernize approach control systems in the United States and its territories. DASR is a DoD-lead contract to install airport surveillance radar equipment for both the DoD and FAA.

The NAS program will comprehensively upgrade air traffic control systems infrastructure by systematically replacing analog systems with state-of-the-art, digital technology. The purpose of the DASR component of the NAS program is to detect and process aircraft position and weather conditions at airfields. The DASR system will use the ASR-11 radar to accurately locate aircraft, in terms of range, azimuth, and altitude; provide information regarding aircraft identification code; identify emergency conditions; and report six discrete weather precipitation levels. The ASR-11 at Tyndall AFB is needed to replace the older existing AN/GPN-20 airport surveillance radar.

The DASR facilities at Tyndall AFB would consist of: a 20-foot tall rotating radar antenna mounted on an 87-foot tower (or 77-foot tower if Site 7 is chosen), a concrete radar equipment shelter, an emergency engine generator in a concrete shelter, utility cabling, electronic equipment grounding systems, and a 1,000-gallon above-ground fuel storage tank. Facility construction would include separate concrete foundations for the antenna tower, the equipment shelter and the engine generator shelter, and a 140-foot by 140-foot site fence. Site work should be within a 0.59-acre site (160 feet by 160 feet). Additional site improvements would include an unpaved access road (no access road required at Site 3), minor re-grading, installation of geotextile fabric

beneath six inches of crushed stone within the site fence, and up to 9,720 feet of utility trenching to connect the site to existing duct banks or manholes. The total structure height, including lightning rods on the antenna tower, would be 116 feet (or 106 feet if Site 7 is chosen). Once the new DASR system is operational, the existing GPN-20 will be dismantled and structures will be razed. Tyndall AFB would reclaim the ground.

Seven areas were initially identified and evaluated as potential ASR-11 sites. Three of these sites were eliminated after preliminary assessment indicated that they were located within wetlands. A fourth site was eliminated due to potential aesthetic impacts and future land use/growth conflicts. The three remaining alternative sites on Tyndall AFB have been identified as potential locations for the ASR-11, based on operational, construction, and environmental siting criteria contained in the Tyndall AFB Integrated Site Survey Report (USAF, 2001a). The three remaining sites (3, 6, and 7) are evaluated in this EA.

Site 3 is located on an abandoned portion of Taxiway B, 400 feet east of Taxiway F. Site 6 is located within a wooded area containing wetlands along a former logging road, approximately 3,250 feet north of runway end 13L. Existing ditches along the logging road(s) that leads to Site 6 support a state-protected plant species within the *Drosera* genus (sundew). Site 7 is approximately 1,000 feet southeast of the SEADS building, within an area maintained as lawn off of Florida Avenue.

Issues that must be addressed during construction at any of the sites are elevated noise levels, increased dust, traffic and access disruption, aesthetic effects, site stability, and storm water management issues. Potential impacts in these areas would be reduced using standard mitigation measures as outlined below. Additional measures are discussed in Chapter 6, Mitigation.

- During the construction period, sheeting or supports of some kind may be used in the areas excavated for the tower footings and utility trenches in order to prevent collapse of these excavated areas.
- To minimize noise impacts during construction, mufflers would be used on construction equipment and vehicles.

- All equipment and vehicles used during construction would be maintained in good operating condition so that emissions are minimized, thus reducing the potential for air quality impacts.
- Dust will be controlled on-site by using water to wet down disturbed areas.
- All areas disturbed for the DASR system construction would be seeded with a native seed mixture or covered with a geotextile fabric and crushed stone to stabilize the disturbed soils, in order to minimize the potential for erosion and sedimentation.
- All hazardous materials used during construction of the ASR-11 would be handled and disposed of in accordance with Tyndall AFB policies and protocols and all applicable state and federal regulations.
- Traffic management measures will be developed to facilitate traffic flow and pedestrian access.

Potential future impacts associated with operation of the ASR-11 facility would be minimized through use of mitigation measures including the following:

- All hazardous materials used during operation of the ASR-11 would be handled and disposed of in accordance with Tyndall AFB policies and protocols and all applicable state and federal regulations.
- Due to the potential for radio frequency radiation (RFR) hazards during operation, warning signs, indicating the safe distance from the operating radar, would be installed at the facility perimeter.

Two of the three sites are acceptable from an environmental perspective. The impacts to wetlands and potential impacts to a state-protected plant species if Site 6 were chosen do not meet the restrictive and selective screening criteria as defined in the Integrated Site Survey Report (USAF, 2001a). Table ES-1 provides a summary of the potential environmental impacts associated with each of the alternative sites. The Air Force has selected Site 3 as the preferred ASR-11 location; however, this EA identifies potential impacts associated with placing the ASR-11 at each of the alternative sites.

**Table ES-1. Environmental Impact Summary Matrix for the Alternative ASR-11 Sites at Tyndall AFB**

Category	No Action Alternative	Existing GPN-20 Removal	Site 3	Site 6	Site 7
<b>Land Use</b>	No Impact	Tyndall AFB could reclaim land currently occupied by the AN/GPN-20.	Construction and operation of ASR-11 are anticipated to be compatible with adjacent land uses.		
<b>Socioeconomics</b>	No Impact	Dismantling of AN/GPN-20 expected to have short-term minor contributions to the local economy; no long-term impacts are expected.	Installation of ASR-11 expected to have short-term minor contributions to the local economy; no long-term impacts are expected.		
<b>Utilities and Transportation</b>	No Impact	No impacts to utilities anticipated. Minor short-term impacts are possible to on-base traffic during dismantling.	Connection of fiber optic line to the RAPCON would require installation of approximately 5,780 feet of cable that would potentially cross under existing runways. Connections to both telephone and electricity are available within 380 feet of site.	Connection of fiber optic line to the RAPCON would require installation of approximately 9,720 feet of cable that would potentially cross under existing runways. Connections to both telephone and electricity are available within 1,300 feet of site.	Connection of fiber optic line to the RAPCON would require installation of approximately 6,100 feet of cable. Connections to both telephone and electricity are available within 150 feet of site.
<b>Noise</b>	No Impact	Dismantling of AN/GPN-20 would occur in an area dominated by aircraft sound levels, thus only slight potential for noise impacts during construction.	Construction of the ASR-11 would generally occur in an area dominated by aircraft sound levels with no occupied buildings nearby, thus only slight potential for noise impacts during construction. Operation of the ASR-11 system would not generate excessive or persistent levels of noise; therefore, no long-term impacts are anticipated.		
<b>Air Quality</b>	No Impact	Short-term impacts from removal of existing AN/GPN-20 are expected to consist of dust generation from construction activities and are anticipated to be minimal.	Short term impacts from removal of existing AN/GPN-20 and installation of ASR-11 expected to consist of dust generation from construction activities and anticipated to be minimal; however, greater short-term impacts are expected at Site 6 due to the area required for utility trenching and access road. Long term impacts associated with all alternatives consist of evaporative fuel loss from aboveground storage tank and emissions from on-site emergency generator. Neither source is anticipated to represent a substantial impact to air quality.		
<b>Geology and Soils</b>	No Impact	No Impact	No Impact	The soils at site do not possess properties conducive to ASR-11 construction. Grading and filling would be required due to the wetland area upon which the site encroaches.	No Impact
<b>Surface Water and Groundwater</b>	No Impact	No Impact	No surface water resources are located proximate to sites. Construction activities are expected to encounter groundwater due to the high water table; however, no long-term impact to groundwater anticipated.		
<b>Biological Resources</b>	No Impact	No Impact	No vegetation currently exists at site (since it is paved); thus biological impacts limited to vicinity of utility trenches.	Clearing of ½ acre of vegetation within an area that potentially supports state-protected sundew ( <i>Drosera</i> sp.); wetlands on site; one of the few remaining longleaf pine ( <i>Pinus palustris</i> ) stands nearby.	Clearing of ½ acre of maintained lawn; possible limited wildlife displacement at site.
<b>Aesthetic Resources</b>	No Impact	No Net Impact	Site is located on abandoned portion of Taxiway northeast of active runways; not likely to have aesthetic impact during construction or operation.	Site is within a wooded area with low traffic volume and a natural barrier of a high tree canopy.	Site would be located 500 feet from US Highway 98. Base expressed concern of aesthetic impact; however, nearby buildings and partial tree barrier along highway lessen potential impacts.
<b>Cultural Resources</b>	No Impact	No known cultural resources exist within or near existing or proposed radar locations, therefore no impacts are anticipated. Base environmental personnel require procedures to be followed if potential resources are uncovered during construction.			
<b>Pollution Prevention and Hazardous Waste</b>	Hazardous materials used during operation of facility will continue being handled in compliance with all applicable regulations and base policies; therefore, no impacts are expected.	Portions of the radar contain lead paint, which has potential to chip off during the dismantling.	No contaminated soils anticipated to be encountered during construction. Hazardous materials used during facility operation will be handled in compliance with base policies and regulations.		Trenching along proposed fiber optic route would encounter contaminated soils requiring proper handling procedures. Hazardous materials used during facility operation will be handled in compliance with base policies and regulations.
<b>Electromagnetic Energy</b>	No impact expected - due to the potential for RFR hazards during operation, warning signs, indicating the safe distance from the existing radar, are installed at the facility perimeter	No Net Impact	No impacts expected – due to the potential for RFR hazards during operation, warning signs, indicating the safe distance from the operating radar, would be installed at the facility perimeter.		

## **1.0 PURPOSE AND NEED FOR ACTION**

### **1.1 INTRODUCTION**

The National Environmental Policy Act (NEPA; 42 U.S.C. Sections 4321-4347) is the basic national charter for protection of the environment (CEQ, 1978). NEPA establishes policy, sets goals, and provides the process for carrying out the policy and achieving the goals. NEPA procedures were established to ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. To implement NEPA, the U.S. Air Force (USAF) has issued internal instruction AFI 32-7061 (USAF, 2000a) that contains policies, responsibilities, and procedures dictating how NEPA should be implemented for USAF projects.

This environmental assessment (EA) has been prepared in compliance with AFI 32-7061. According to this instruction, the environmental assessment is a written analysis which serves to (1) provide analysis sufficient to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI); and (2) aid federal agencies in complying with NEPA when no EIS is required. If this EA were to determine that the proposed project would significantly degrade the environment, significantly threaten public health or safety, or generate significant public controversy, then an EIS would be completed. An EIS involves a comprehensive assessment of project impacts and alternatives and a high degree of public input. Alternatively, if this EA results in a FONSI, then the action would not be the subject of an EIS. The EA is not intended to be a scientific document. The level and extent of detail and analysis in the EA is commensurate with the importance of the environmental issues involved and with the information needs of both the decision-makers and the general public.

The proposed action addressed in this EA is the construction of a Digital Airport Surveillance Radar (DASR; specifically, an ASR-11) at Tyndall Air Force Base (AFB) in Florida. This proposed action is part of the Department of Defense (DoD) National Airspace System (NAS) Program, which involves installation of new air traffic control equipment on U.S. Army, U.S. Navy, and USAF bases. These radars are also being installed at commercial airports under the authority of the Federal Aviation Administration (FAA). The implementation of the NAS program at DoD bases was previously evaluated in a programmatic EA and FONSI (USAF,

1995a), which fully detailed the need for the program. The programmatic EA and FONSI are available on the internet at <http://www.hanscom.af.mil/ESC-BP/pollprev/products.htm>. Environmental review at FAA airfields is being conducted separately by the FAA.

The programmatic EA for the NAS program committed to completing site-specific NEPA documentation tiered from the programmatic EA for individual NAS sites. This EA addresses the site-specific impacts of locating an ASR-11 on Tyndall AFB, and evaluates the consequences of constructing and operating an ASR-11 on both the natural and man-made environments.

## **1.2 PURPOSE OF THE ACTION**

The NAS program was developed to modernize military air traffic control systems in the United States and its territories. DoD NAS is a component of the aviation system capital investment plan developed by the FAA. Pursuant to the Program Management Directive (USAF, 1994), the DoD must provide services within its delegated airspace that are comparable to the services which FAA provides to civil aircraft in civilian airspace. These services include flight following, separation, expeditious handling, radar approach control, and landing.

The purpose of the DASR component of the USAF NAS program is to detect and process aircraft position and weather conditions in the vicinity of USAF airfields. The DASR will serve to accurately locate aircraft, in terms of range, azimuth, and altitude; provide information regarding aircraft identification code; identify emergency conditions; and report six discrete weather precipitation levels. The new radar facility will not increase or decrease the current number of flights, change aircraft patterns, or otherwise alter existing base operations.

## **1.3 NEED FOR THE ACTION**

The NAS program is comprehensively upgrading air traffic control systems infrastructure by systematically replacing analog systems with state-of-the-art digital technology. The ASR-11 at Tyndall AFB is needed to replace the existing AN/GPN-20 airport surveillance radar, which was installed in 1980. The ASR-11 will improve system reliability, provide additional weather data, reduce maintenance cost, improve performance, and provide digital data input to proposed new digital automation system air traffic controller displays. The proposed new ASR-11 will take advantage of the significantly increased capabilities of digital technology.

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## **2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES**

The proposed action is the installation of an ASR-11 at Tyndall AFB in Florida (Figure 2-1) to replace the existing AN/GPN-20 radar facility. The Air Force has selected a preferred site (Site 3) for the radar based on operational, environmental and base considerations. Alternatives to the proposed action include no action, and installation of the ASR-11 at an alternative site. The no-action alternative consists of **not** constructing the ASR-11 facility and would involve the continued use of the existing AN/GPN-20 system. Three sites, including Sites 3, 6, and 7 (Figure 2-2), were identified on Tyndall AFB in accordance with the NAS Siting Plan and site-specific criteria identified in the Tyndall AFB Integrated Site Survey Report (USAF, 1995a; USAF, 2001a). This EA discusses and evaluates potential impacts associated with the placement of the ASR-11 at each of the three alternative sites and also summarizes the potential impacts associated with the no-action alternative.

### **2.1 PROPOSED ACTION: DASR AT TYNDALL AFB**

#### **2.1.1 DASR System**

The DASR system would detect and process aircraft position and weather conditions at the airfield. The DASR system would consist of two subsystems: the Primary Surveillance Radar and the Monopulse Secondary Surveillance Radar. The purpose of the subsystems would be to accurately locate aircraft, in terms of range, azimuth, and altitude.

The Primary Surveillance Radar would transmit electromagnetic waves in the form of radio frequency pulses, which backscatter from the surface of aircraft. The radar would measure the time required for an echo to return and the direction of the signal in order to determine the aircraft range and azimuth, respectively. By comparing variations in returned signal parameters, such as phase differences between pulses, the radar could separate moving targets from stationary clutter, such as mountains and trees. The primary radar would also report six discrete weather precipitation levels (from mild to hazardous) via a processing channel dedicated to weather detection and reporting. The DASR system would provide highly accurate target data to the Tyndall AFB Local Control Facilities and Military Control Towers. The ASR-11 would have clutter rejection, target accuracy, and probability of detection that are equal to or better than

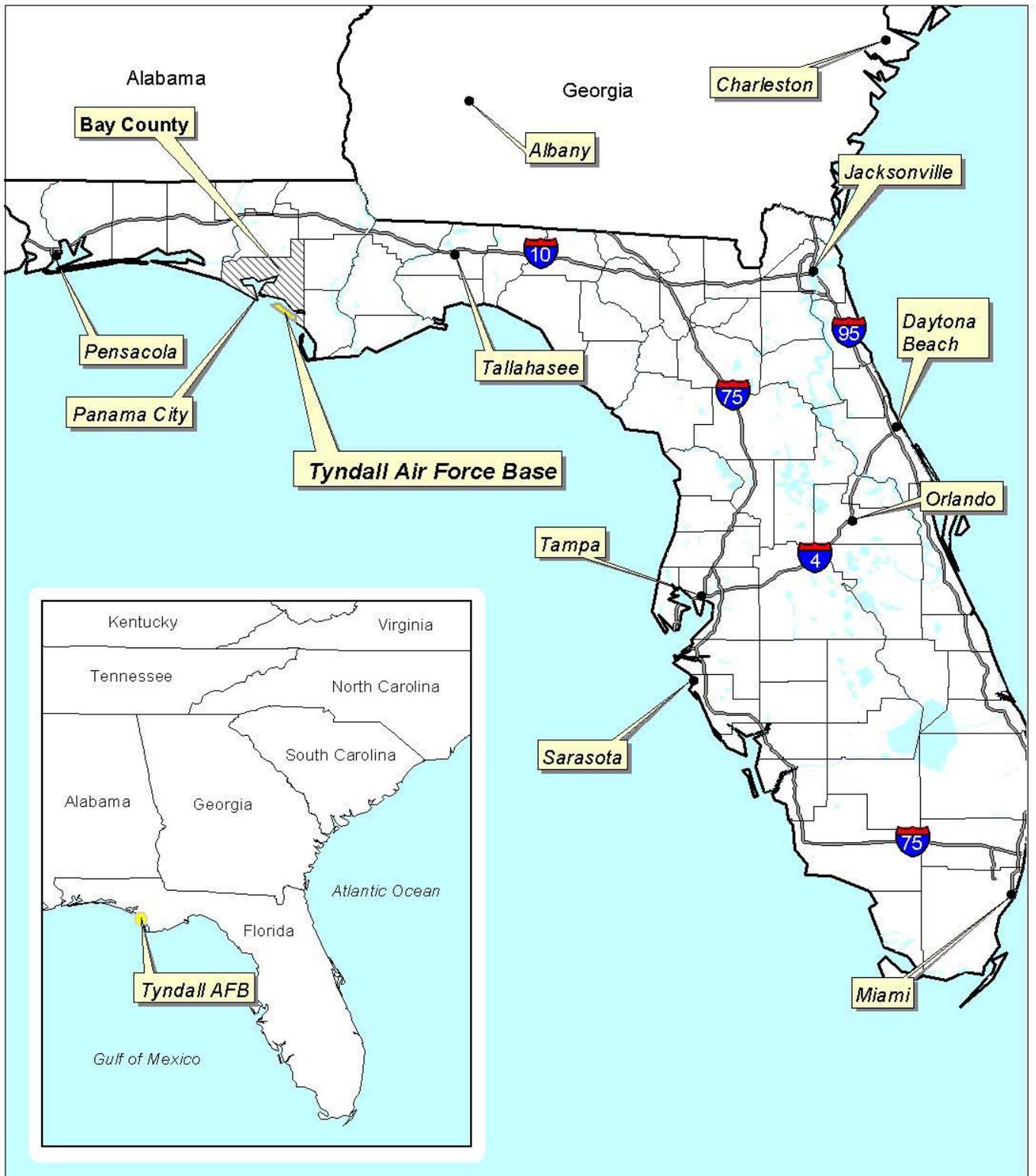
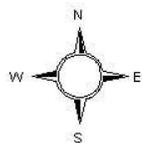


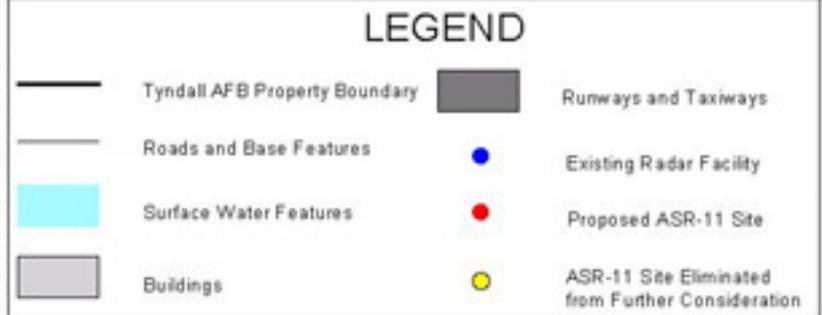
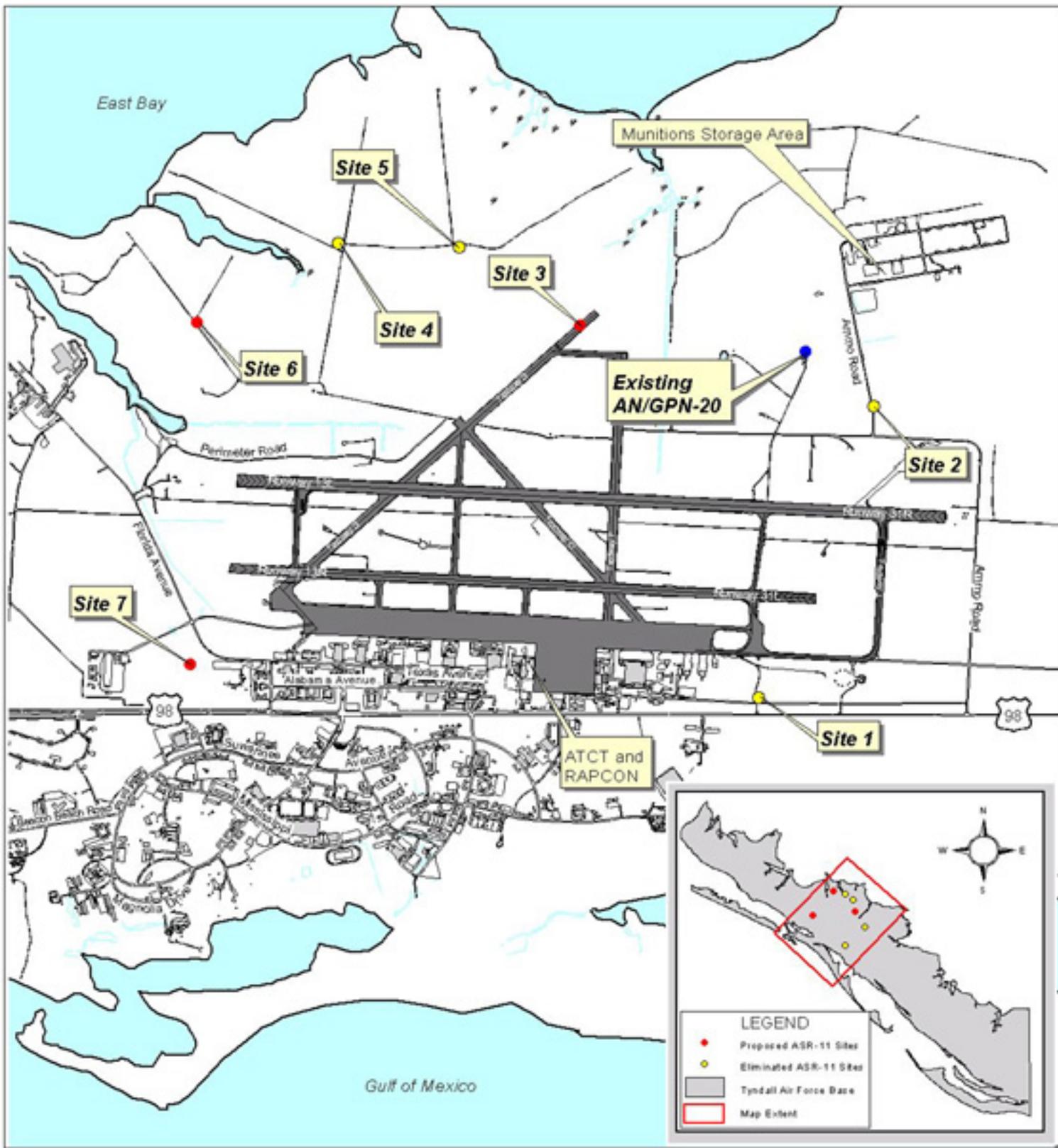
FIGURE 2-1.

TYNDALL AFB LOCATION MAP



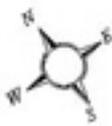
Source: ESRI, 1999

Tyndall01.apr : locmap : 2-1 tyndallloc



**Figure 2-2.**  
**LOCATION OF EXISTING RADAR FACILITY**  
**AND PROPOSED ALTERNATIVE ASR-11 SITES**

**TYNDALL AIR FORCE BASE**  
**DIGITAL AIRPORT SURVEILLANCE RADAR**  
 Bay County, Florida



Source: Tyndall Air Force Base

the existing AN/GPN-20. Operational characteristics of the new ASR-11 as compared to the existing AN/GPN-20 are shown in Table 2-1.

**Table 2-1. Comparison of Characteristics of Existing AN/GPN-20 and Proposed ASR-11**

	Existing AN/GPN-20	Proposed ASR-11
<b>Frequency</b>	2875 MHz 2800 MHz	2 frequencies separated by at least 30 MHz: 2700-2900 MHz
<b>Power Peak</b>	550 kW	19.5 kW (1 microsec) 18.0 kW (89 microsec)
<b>Average</b>	460W	1600 Watts (Solid state)
<b>Pulse Repetition Frequency</b>	1040 pulses/second	720-1050 pulses/second

Sources: USAF, 2001b; MITRE, 1997; Belden, 1999

The Monopulse Secondary Surveillance Radar (also called the beacon radar) would be a cooperative system consisting of ground-based beacon interrogator/receiver systems and existing aircraft based transponders. The secondary radar would obtain additional information, such as identification code, barometric altitude, and emergency conditions, from an aircraft transponder. Various processing techniques would be used to decipher both overlapping responses from multiple aircraft (synchronous garble) and aircraft responses to other beacon systems (asynchronous interference). The beacon radar would also provide rapid identification of aircraft in distress. The Monopulse Secondary Surveillance Radar transmits at a frequency of 1030 MHz and receives at a frequency of 1090 MHz.

The DASR facilities at Tyndall AFB would consist of: a 20-foot tall rotating radar antenna mounted on a 77- or 87- foot tower (depending on the selected site), a concrete radar equipment shelter, an emergency engine generator in a concrete shelter, utility cabling, electronic equipment grounding systems, and a 1,000-gallon above-ground fuel storage tank (Figure 2-3). Facility construction would include separate concrete foundations for the antenna tower, the equipment shelter and the engine generator shelter and a 140-foot by 140-foot site fence. Site work should be within a 0.59-acre site (160 feet by 160 feet). Additional site improvements would include: an unpaved access road (except at Site 3, which would not require an access road), minor re-



**Figure 2-3. Typical ASR-11 Facility**

grading, installation of geotextile fabric beneath six inches of crushed stone within the site fence and up to 10,000 feet of utility trenching to connect the site to existing duct banks, manholes or utility hook-ups. The total structure height, including lightning rods on the antenna tower, would be 106-116 feet depending on the site chosen.

Approximately 150 to 1,300 feet of utility trenching between the edge of the site and existing duct banks/manholes would be required to connect the ASR-11 to existing electric and telephone lines in the vicinity of the alternative sites. Also depending on the site chosen, between 5,780 and 9,720 feet of fiber optic cable would be required to connect the ASR-11 to the Radar Approach Control (RAPCON; USAF, 2001a).

Once the new DASR system is operational, the existing AN/GPN-20 would be dismantled and structures would be removed to existing grade. Any subsequent subsurface activities (removal of footings, etc.) would be the responsibility of Tyndall AFB. Upon completion, the base would reclaim the ground.

### 2.1.2 Alternative ASR-11 Sites

Three alternative sites on Tyndall AFB have been identified as potential locations for the ASR-11, based on the siting criteria contained in the Tyndall AFB Integrated Site Survey Report (USAF, 2001a) prepared by Raytheon Systems Company (see Appendix B). The three sites evaluated in this EA were identified based on operational, construction, and environmental criteria. The operational criteria included the following (FAA, 1992):

- C The site should not be located closer than 0.5 mile from the end of any existing or planned runway.
- C The site should not be located closer than 0.5 mile from any point of required detection coverage.
- C The site should not be located closer than 2,500 feet from any existing or planned electronic equipment installation or facility.
- C The site should not be located less than 0.5 mile from National Weather Bureau radars and radiosonde equipment.
- C The site should not be located closer than 1,500 feet to any above-ground object that would interfere or cause degradation in the ASR-11 operation.

Construction criteria included siting the ASR-11 in an area with a slope of less than 20 percent and away from occupied existing structures, railroads, highways, runways and taxiways, or power lines. The environmental criteria for siting included avoiding a number of sensitive resources, including: ecological/wildlife refuges, preserves, conservation areas and sanctuaries; wild and scenic rivers; prime and unique farmlands; historical, archaeological, and cultural sites; wetlands; threatened and endangered species habitat; designated hazardous waste sites; and floodplains. The details of the siting process are described in the Integrated Site Survey Report prepared by Raytheon Systems Company (USAF, 2001a).

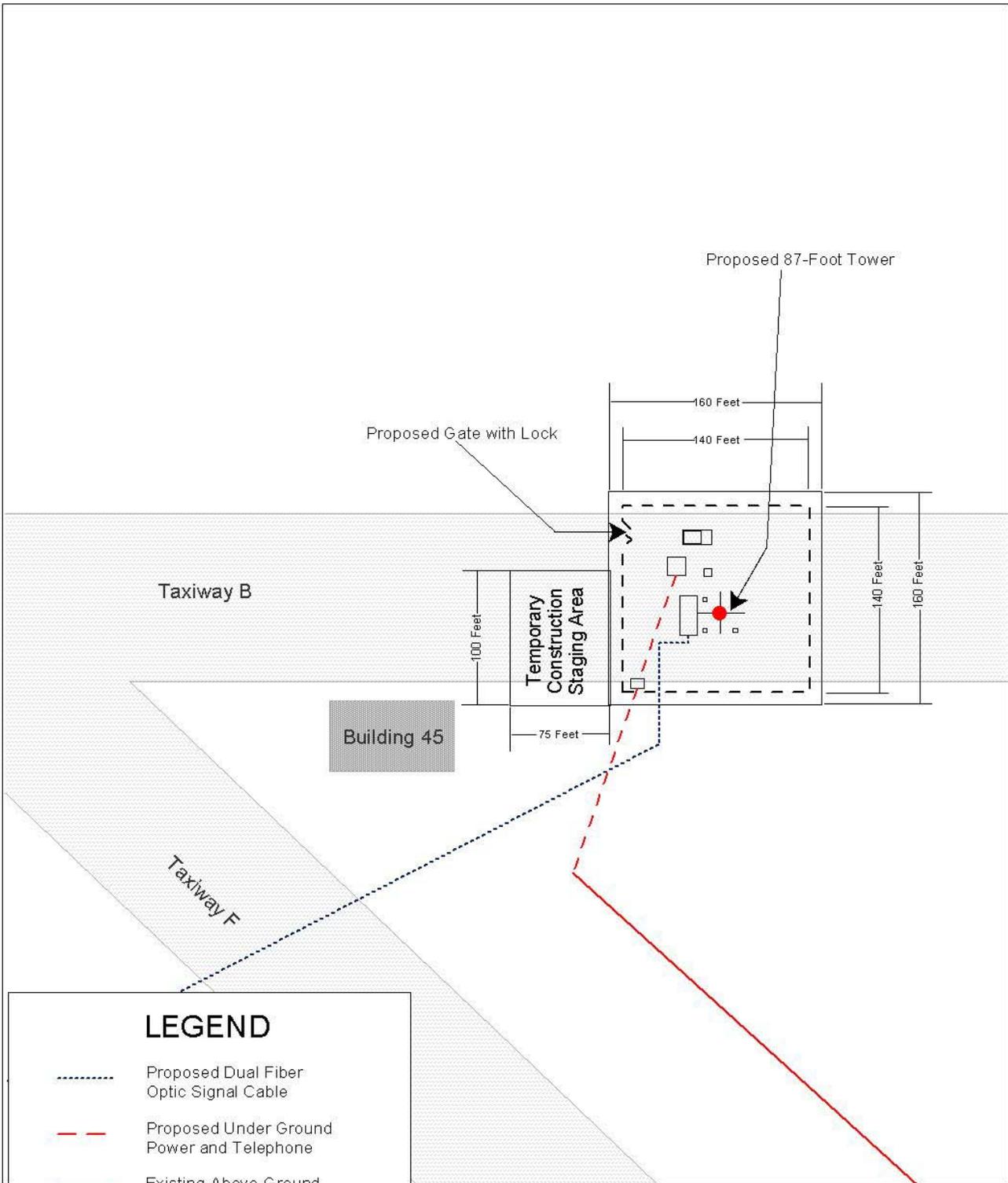
Initial site selection screening criteria applied in February 2001 identified seven candidate sites (Sites 1 through 7, Figure 2-2) for consideration at the downselect telephone conference call held on July 31, 2001. During the conference call, Sites 2, 4 and 5 were noted to be within wetland resource areas on the base. Site 2 is located east of the airfield, just off Ammo Road, while Sites 4 and 5 are located in the northeastern portion of the base along unpaved roads that were

previously used for logging. In an effort to avoid wetland impacts that would result from a site survey and construction, these sites were eliminated from further consideration. Site 1 was eliminated for aesthetic reasons given its close proximity to US Highway 98 and the lack of visual barriers from this roadway. Potential future development of Site 1 was another factor contributing to its removal from the candidate list.

Sites 3, 6 and 7 were selected for further investigation as potential locations for the proposed ASR-11. Site 3 is located at the eastern end of Taxiway “B” approximately 5,780 feet northeast of the existing Air Traffic Control Tower (ATCT) and approximately 3,600 feet north of the existing AN/GPN-20 site (Figure 2-4). This portion of Taxiway “B” has been abandoned and the previously paved surface has deteriorated significantly and is overgrown with grasses. Wooded areas, including tall pines, surround Site 3 on three sides. No access road would need to be constructed for this site since the portion of Taxiway B to the west of the site is still maintained with a paved ground surface.

Site 6 is located between Chatterson Bayou and Fred Bayou approximately 8,130 feet north of the existing ATCT at the intersection of two unpaved access roads (Figure 2-5). An access road of approximately 2,980 feet would need to be constructed if this site were chosen. The area around Site 6 is densely forested and would require tree clearing for construction. Prior to the site survey, Site 6 was not thought to be within a wetland area; however, a subsequent review by base personnel of aerial photographs and National Wetland Inventory (NWI) mapping indicated that Site 6 is located within a wetland area. In addition, one of the few stands of natural long-leaf pine (*Pinus palustris*) on Tyndall AFB is located to the north across the east-west access road.

Site 7 is located approximately 300 feet west of Florida Avenue (Figure 2-6). The site is located within an open grassy area approximately 5,600 feet west of the existing ATCT. The site is bordered by a wooded area to the northwest and US Highway 98, approximately 500 feet, to the southwest. The area is routinely mowed.



**LEGEND**

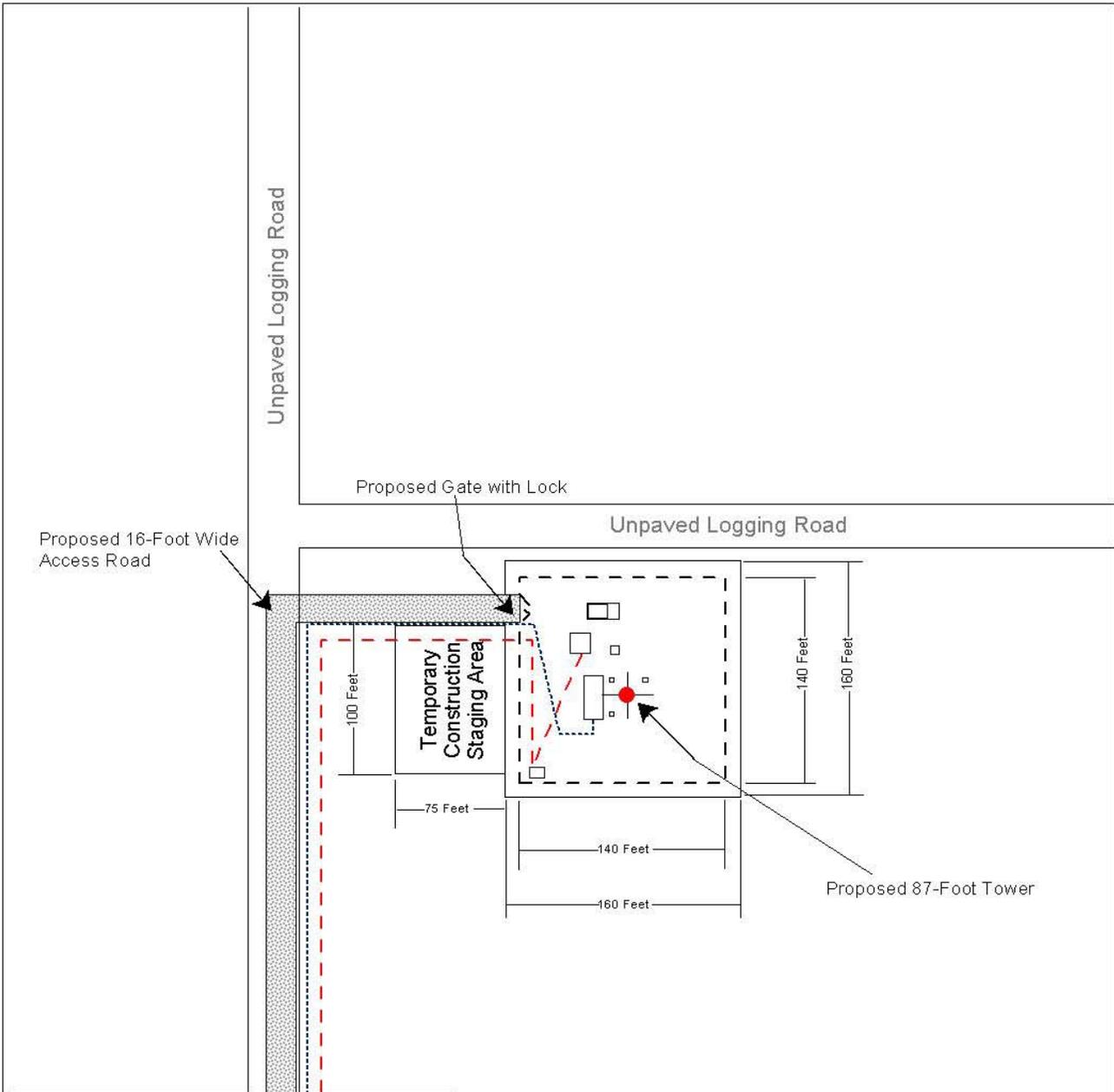
- Proposed Dual Fiber Optic Signal Cable
- Proposed Under Ground Power and Telephone
- Existing Above Ground Power and Telephone
- Proposed ASR-11 Site Fence
- Buildings
- Runways and Taxiways
- Proposed ASR-11 Tower

**Figure 2-4**  
**ALTERNATIVE ASR-11 SITE 3**

Tyndall Air Force Base  
Digital Airport Surveillance Radar

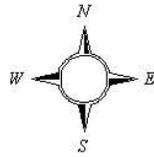
Tyndall02.apr : s3view : site3layout

Source: Tyndall AFB, US4AF, 2001a



**LEGEND**

-  Proposed Dual Fiber Optic Signal Cable
-  Proposed Under Ground Power and Telephone
-  Proposed ASR-11 Site Fence
-  Proposed ASR-11 Tower
-  Proposed Access Road

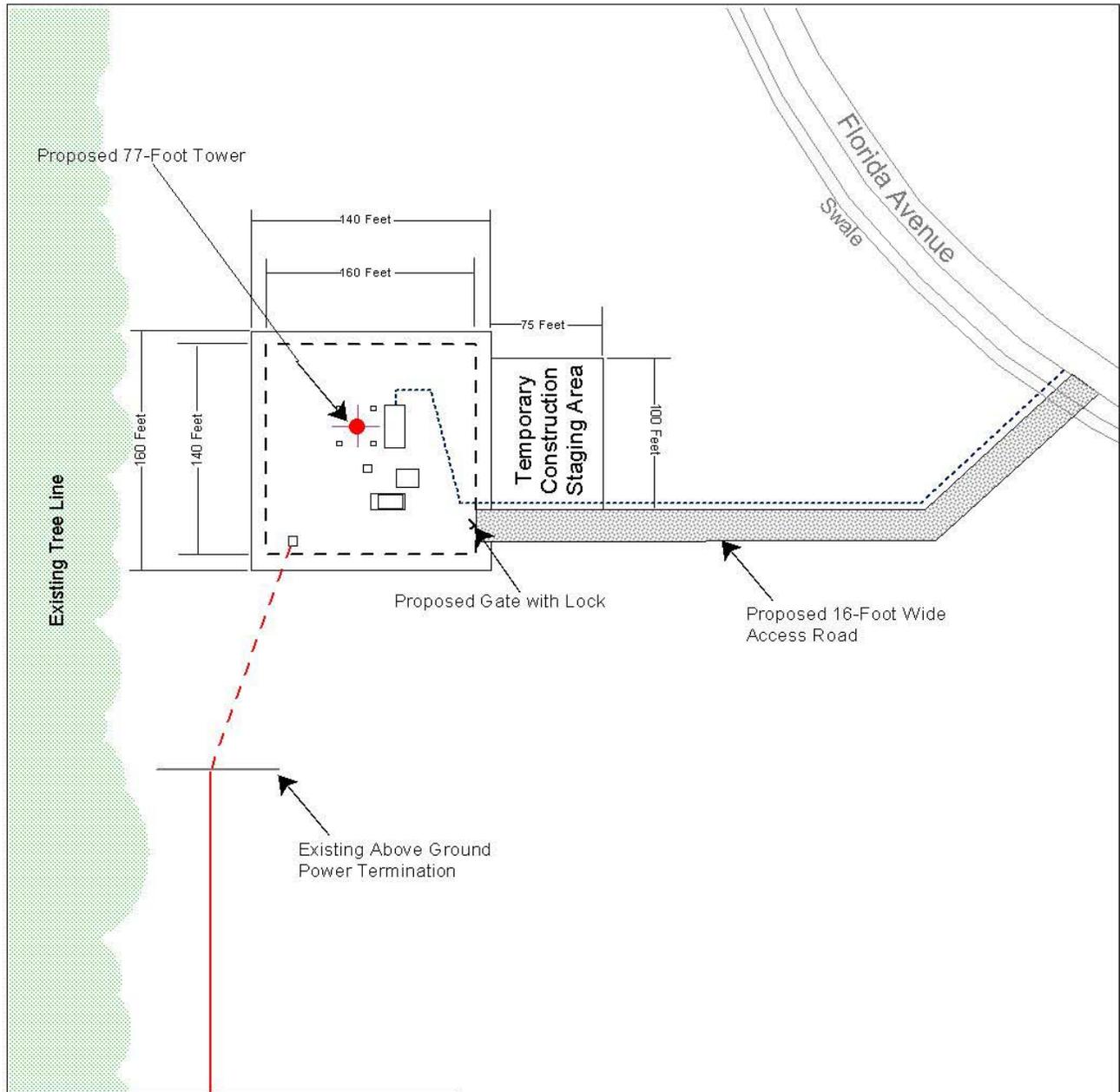


**Figure 2-5**  
**ALTERNATIVE ASR-11 SITE 6**

Tyndall Air Force Base  
 Digital Airport Surveillance Radar

Source: Tyndall AFB: US4F\_2001a

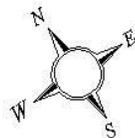
Tyndall02.apr : s6view : site6layout



Source: Tyndall AFB, USAF, 2001a

### LEGEND

-  Proposed Dual Fiber Optic Signal Cable
-  Proposed Under Ground Power and Telephone
-  Existing Above Ground Power and Telephone
-  Proposed ASR-11 Site Fence
-  Proposed ASR-11 Tower
-  Proposed Access Road



100 0 100 Feet

**Figure 2-6**  
ALTERNATIVE ASR-11 SITE 7

Tyndall Air Force Base  
Digital Airport Surveillance Radar

Tyndal002.apr : s7view : site7layout

## **2.2 NO ACTION ALTERNATIVE**

Implementation of the No Action Alternative would result in the continued use of the AN/GPN-20 radar. Continued use and reliance on the AN/GPN-20 would deny Tyndall AFB of the improved technology offered by the new DASR system. Tyndall AFB would not benefit from the improved system reliability, additional weather data, reduced maintenance costs, and improved performance provided by the ASR-11 radar.

Conditions reflecting the No Action Alternative are discussed for each of the twelve main environmental parameters evaluated in Chapter Three. For each parameter, the No Action alternative is characterized in the section addressing Future Baseline Without the Project.

### **3.0 AFFECTED ENVIRONMENT**

The existing environmental conditions and future conditions without the project are described for each site to provide a baseline against which potential impacts related to construction and operation of the ASR-11 can be determined. General conditions on Tyndall AFB are presented for each of the parameters and site specific detail is included, as available. Environmental conditions at the existing AN/GPN-20 site are also described to assess any potential issues associated with its removal. The following information was obtained from several documents/reports obtained from Tyndall AFB Environmental Flight staff and Natural Resources Management staff and supplemented with data collected during a site visit conducted in August 2001. Subsequent communications with base personnel contributed additional information that is included in this document.

#### **3.1 LAND USE**

The purpose of this section is to characterize land uses throughout Tyndall AFB. Specifically, the land use attributes of the existing AN/GPN-20 site and the alternative ASR-11 sites (Site 3, Site 6, and Site 7) are addressed.

##### **3.1.1 Existing Conditions**

Tyndall AFB, owned and operated by the United States Air Force, is located along the gulf coast of northwest Florida, on a peninsula bisected by US Highway 98. The base is located in the southwest corner of Bay County, approximately six miles from the city center of Panama City, Florida. The major cities of Tallahassee and Pensacola are located approximately 130 miles to the northeast and 120 miles to the northwest, respectively. Other cities immediately surrounding Tyndall AFB include Springfield, Callaway, Parker, Lynn Haven, and Panama City Beach. The AFB is accessible from US Highway 98, which runs northwest-southeast through the base (Figure 2-2).

The peninsula upon which Tyndall AFB lies is approximately 18 miles long and three miles wide. East Bay borders the peninsula to the northeast, with St. Andrews Bay and St. Andrews Sound to the southwest. Tyndall AFB property also extends onto the peninsula known as Shell

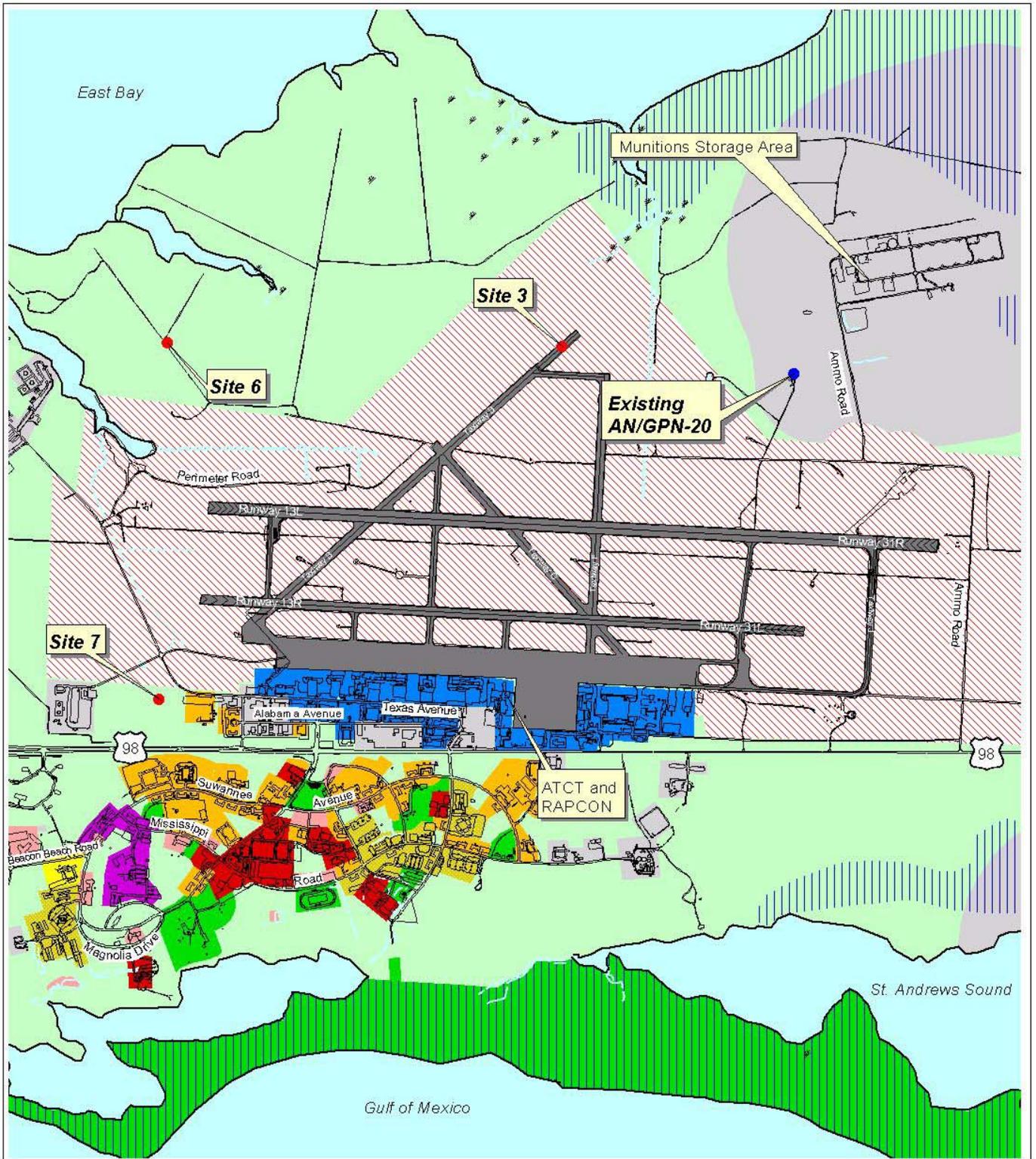
Island. Tyndall AFB encompasses over 29,000 acres, which includes land on the main base in addition to lands purchased or leased in nearby areas such as Lynn Haven, Cove Gardens, and Carrabelle.

Tyndall AFB is characterized by thirteen land use categories including: water, airfield, airfield pavements, airfield operations and maintenance, industrial, administrative, community (commercial), community (service), medical, housing (accompanied), housing (unaccompanied), outdoor recreation, and open space (USAF 2000b; Table 3.1-1). An additional notation is made on the land use map indicating those areas that should remain undeveloped as a conservation measure (Figure 3.1-1). Less than 15 percent of the land on the base is developed, with the remaining portion classified predominantly as open space. Outdoor recreation areas are scattered along the coastal perimeter, with various small surface waters both north and south of US Highway 98. Airfields, airfield pavements and airfield operation and maintenance areas are situated north of US Highway 98 within the center of the main base, while housing, medical and community service areas are situated on the south side of US Highway 98 surrounded by abundant open space.

**Table 3.1-1 Land Use Definitions**

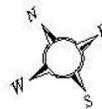
<b>Land Use Category</b>	<b>Typical Facilities and Features</b>
Water	Pond, lake, bayou
Airfield	Airfield operations areas
Airfield Pavements	Runways, taxiways, aprons
Aircraft Operations & Maintenance	Base operations, control tower, fire station, aircraft maintenance hangars, shops, docks
Industrial	Base engineering, maintenance shops, storage, warehousing, utilities
Administrative	Headquarters, civilian personnel, law center, security operations
Community (Commercial)	Commissary, exchange, club, dining hall, recreation center, gym, theater
Community (Service)	Post office, library, chapel, child care center, education center
Medical	Clinic, medical storage
Housing (Accompanied)	Dormitories, visitor housing
Outdoor Recreation	Outdoor courts and field, swimming pool, ranges, riding stables, golf course
Open Space	Conservation area, buffer space, undeveloped land

Source: Tyndall AFB, *General Plan* (USAF, 2000b)



**LEGEND**

	Administrative		Open Space
	Airfield		Outdoor Recreation
	Aircraft Operations and Maintenance		Constrained Open Space
	Community - Commercial		Surface Water Features
	Community - Service		Railways and Taxiways
	Hosting - Accompanied		Roads and Base Features
	Hosting - Unaccompanied		Tyndall AFB Property Boundary
	Industrial		Existing Radar Facility
	Medical		Proposed ASR-11 Site



**Figure 3.1-1.**  
**LAND USE ON TYNDALL AFB IN THE VICINITY OF THE EXISTING RADAR FACILITY AND PROPOSED ALTERNATIVE ASR-11 SITES**

**TYNDALL AIR FORCE BASE  
 DIGITAL AIRPORT SURVEILLANCE RADAR**

Bay County, Florida

2000 0 2000 4000 Feet

**Site 3** is located within an area designated as airfield approximately 3,600 feet north of the existing AN/GPN-20 site at the eastern end of Taxiway “B”. This portion of the taxiway has been abandoned and contains a paved surface that has deteriorated significantly and is overgrown with grasses. Wooded areas, including tall pines, surround Site 3 on three sides, with access to the site located to the west along Taxiway B. No access road would need to be constructed for this site since Taxiway B has a paved surface. Building #45, which appears to be an unoccupied maintenance building, is the closest structure this site and is located less than 100 feet to the west. The two main runways of Tyndall AFB are located approximately 3,500 feet to the west of Site 3. An explosives storage area is located approximately 4,000 feet to the southeast.

**Site 6** is located on land identified as open space, which is defined as conservation area, buffer space, or undeveloped land, according to the base’s *General Plan* (USAF, 2000b). The site lies within a densely forested area along the edge of two intersecting unpaved access roads between Fred and Chatterson Bayous. Vegetated drainage ditches run adjacent to the access roads on the north and west sides of the site. The site also encroaches upon an area of wetland, as identified on NWI maps of Tyndall AFB. In all directions across the access roads, the land is heavily forested.

**Site 7** is located within an open area of maintained lawn designated as open space. A dense stand of trees lines the site to the northwest, while the remainder of the site is bordered by administrative and airfield land use (USAF, 2000b). Approximately 1,000 feet to the southeast, the Southeast Air Defense Sector (SEADS) facility/building is located on Florida Avenue, which continues in a northeasterly direction past the site towards the airfield. US Highway 98 is approximately 500 feet to the southwest, beyond a chain-link fence.

The existing **AN/GPN-20** is located at the end of an access road within an area categorized as industrial approximately 3,000 feet northeast of the airfield. The area within the site contains maintained lawn, with a perimeter of trees on three sides. An explosives storage area is located less than 2,000 feet east of the AN/GPN-20.

### **3.1.2 Future Baseline Without the Project (No Action Alternative)**

The Tyndall AFB General Plan, completed in 2000, indicates that future plans for the base include the introduction of the F-22 into the training program for pilots and maintenance personnel. The training program currently uses F-15 fighter planes. Construction directly related to housing the F-22 program is proposed mostly within areas of airfield operations and maintenance north of US Highway 98, with the exception of classrooms, which are proposed within an industrial area on the southern portion of the base.

No land use changes in the vicinity of **Sites 3** or **6** are anticipated. However, the base's *General Plan* notes a future change in land use in the area of **Site 7**. The site itself, as well as nearby administrative areas, are anticipated to change from the current open space designation to airfield operations and maintenance. Land use within the areas surrounding the existing **AN/GPN-20** is not anticipated to change. A document entitled *F-22 Area Development Plan* has been produced to assist in the planning, siting and programming decisions of the F-22 introduction to promote compatible land uses within the base (USAF, 2000b).

## **3.2 SOCIOECONOMIC**

### **3.2.1 Existing Conditions**

This section addresses the population, employment, general economic condition, and housing of Tyndall AFB and the surrounding area. Socioeconomic data specific to the alternative ASR-11 site locations and the existing AN/GPN-20 radar system do not exist. However, there are data for the general area of Tyndall AFB, including Panama City and Bay County.

**3.2.1.1 Population.** According to the U.S. Bureau of the Census, the population of Florida in 2000 was almost 16 million (Table 3.2-1). This represents a population increase of approximately 23.5 percent over one decade. Bay County had a population of 148,217 in the year 2000, representing a population increase of approximately 16.7 percent over one decade. Panama City had a population increase of 5.9 percent over the same 10-year period (USCB, 1990 and 2000).

**Table 3.2-1. Population Trends for Florida, Bay County, and Panama City**

Area	1990 Census	2000 Census	% Change (1990-2000)	2010 Predicted	Predicted % Change (2000-2010)
Florida	12,937,926	15,982,378	23.5	17,958,371	12.4
Bay County	126,994	148,217	16.7	173,965	13.8
Panama City (proper)	34,378	36,417	5.9	-	-

Sources: U.S. Bureau of the Census, 1990 and 2000

Predicted Population: Bay County Economic Development Alliance

- : Data not available

The population of Tyndall AFB is approximately 12,000 persons, some of which reside on the base and some that live in the surrounding community. The base population consists of 4,190 military personnel, 5,400 military dependents, and about 2,700 civilian employees (USAF, 2000b; Table 3.2-2). In addition, there are approximately 9,000 retirees that live in the communities surrounding Tyndall AFB (BCEDA, 2001).

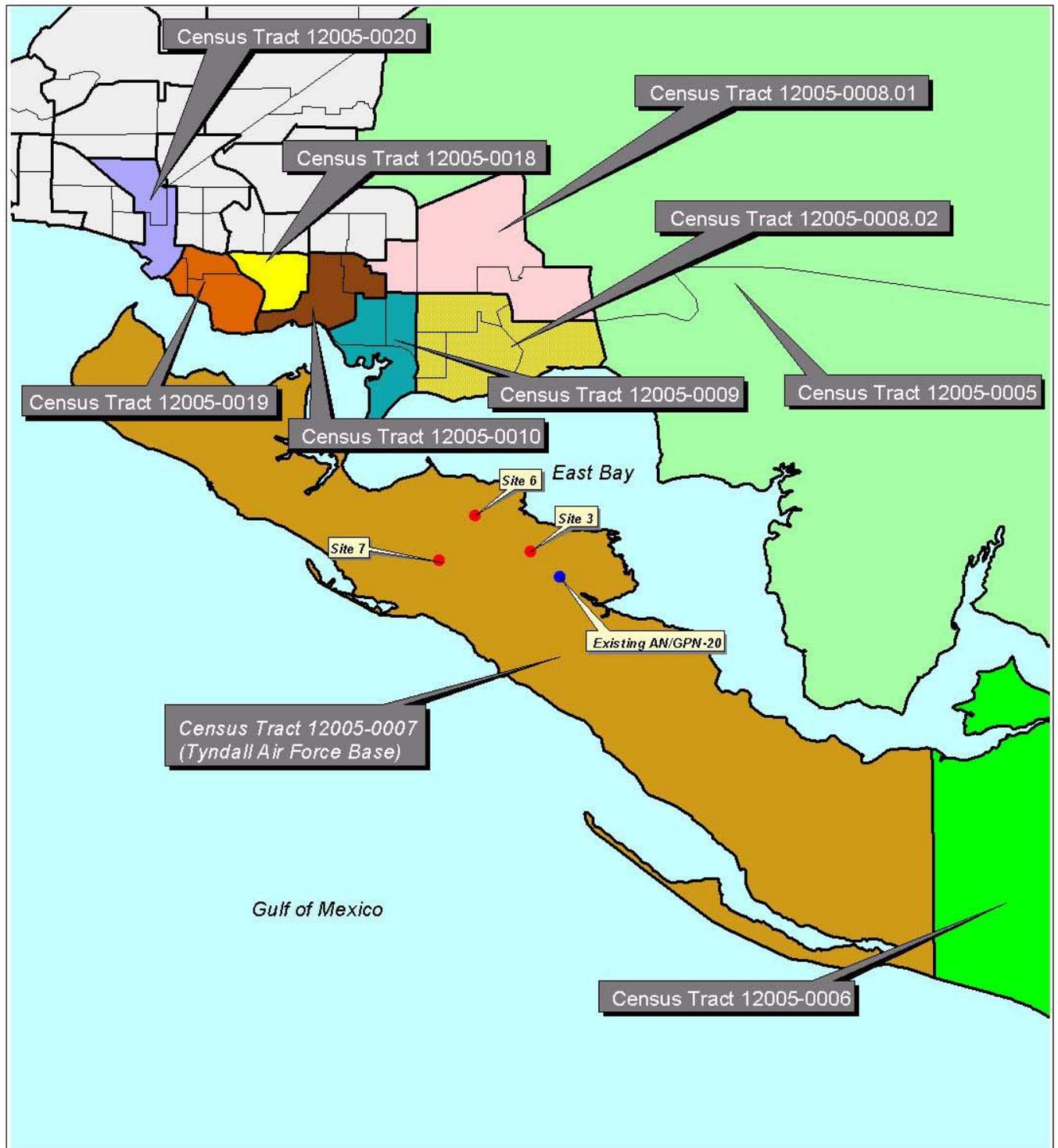
**Table 3.2-2. Tyndall Air Force Base  
Approximate Population Breakdown**

Category	Number	Percent of Total
Military Personnel	4,190	34.1
Civilian Personnel	2,700	22.0
Dependents	5,400	43.9
Total	12,290	100.0

Source: USAF, 2000b

Note: Numbers represent persons associated with Tyndall AFB, not persons residing on the base.

As shown on Figure 3.2-1, Tyndall AFB is located entirely within the Census Tract number 120005-0007 (USBC, 2000). This census tract consists of the main base operations, military exercise area, the Bay County wastewater treatment plant, mix of high density and single-family housing, and a golf course. Eight other census tracts (12005-5, -6, -8, -9, -10, -18, -19, and -20) border the base across East Bay to the north and northeast, with census tract 6 located adjacent to the base's southeastern end. All of the census tracts included in this analysis about the bay except Tract 18, which was included because of its relative position to the other tracts and the base.

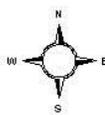


**LEGEND**

	Census Tract Boundary Lines		Existing Radar Facility
	Census Block Group Boundary Lines		Proposed ASR-11 Site
	Surface Water Features		

**Figure 3.2-1.**  
**CENSUS TRACTS IN THE VICINITY**  
**OF TYNDALL AIR FORCE BASE**

**TYNDALL AIR FORCE BASE**  
**DIGITAL AIRPORT SURVEILLANCE RADAR**  
 Bay County, Florida


Source: ESRI, 1999

Among these census tracts, population ranges from 1,017 to 8,695 (Table 3.2-3). Although Tyndall AFB has a relatively large area, it has a population on the lower end of the range, with a population of 2,757.

In 1990, the number of persons in Florida below the poverty level was at 12.7 percent, while that of Bay County was 14.4 percent (USCB, 1999). The percentage of persons below the poverty level in the census tract containing Tyndall AFB (Tract 12005-7), along with two thirds of the tracts adjacent to Tyndall AFB, fell well below the Florida and Bay County rates. The rate in Tract 12005-7 was less than a quarter of Florida's percentage rate, and at 3.1 percent it was less than half of any of the adjacent tracts. While the majority of the tracts surrounding Tyndall AFB have lower percentages of persons below the poverty level than the state, there are three tracts with significantly higher percentages of persons below the poverty level. Census Tracts 12005-10, -18 and -20, which range from 31 to 42 percent persons below poverty, are located in the more densely populated/urban environment of Panama City (Figure 3-2.1).

Ethnicity throughout the area is fairly consistent. In general, the white population comprises the majority of all census tracts, however, there is some variability in the percentage of white and black population among the census tracts. In Tract 12005-7, where Tyndall AFB is located, whites represent approximately 72 percent of the population and blacks represent approximately 15 percent. In the census tracts adjacent to Tyndall AFB, the percentage of white/black population, respectively, ranges from 95 percent/1 percent in Tract 12005-6 to 65 percent/29 percent in Tract 12005-10. The Hispanic population in all census tracts is lower than that reflected across the state. The percentage of Hispanic population across the state was 16.8 percent.

**3.2.1.2 Employment.** As of September 2001, the total labor force was estimated at 7,809,000 in the state of Florida and 65,450 in Bay County. The unemployment rates of Florida and Bay County differ by one half of one percent, Bay County being lower than the statewide unemployment rate (Table 3.2-4). Tyndall AFB employs approximately 6,900 people, of which approximately 2,700 are civilians (USAF, 2000b). Including civilian and non-civilian employment, the base is the single largest employer in the area (USAF, 2000b).

**Table 3.2-3. Income and Ethnicity Statistics for Florida, Bay County, Panama City and Census Tracts in Vicinity of Tyndall AFB**

AREA	Florida	Bay County	Panama City	Census Tract Groups for Bay County – Tract #12005-									
				0005	0006	0007	0008.01	0008.02	0009	0010	0018	0019	0020
<b>Total Persons</b>	15,982,378	148,217	36,417	3,751	1,017	2,757	7,017	8,695	4,583	2,431	1,680	4,506	1,960
<b>Number of Households</b>	6,337,929	59,597	14,819	1,214	526	663	2,802	3,327	1,985	930	684	2,061	856
<b>Percent Below Poverty Level *</b>	12.7/13.5	14.4	19.6	7.4	8.7	3.1	10.1**		11.1	31.1	36.0	8.0	42.2
<b>ETHNICITY PERCENTAGES</b>													
<b>White</b>	65.4	82.8	72.3	83.6	94.9	71.7	79.3	77.4	84.2	65.2	78.7	93.9	82.9
<b>Black/African American</b>	14.2	10.5	21.0	7.4	1.1	14.8	12.5	12.5	8.6	28.5	13.2	2.0	11.5
<b>American Indian or Alaskan</b>	0.3	0.7	0.6	1.0	0.6	0.4	0.8	0.7	0.6	1.1	0.9	0.07	0.5
<b>Asian</b>	1.6	1.7	1.5	1.1	0.8	3.4	3.2	4.2	2.7	2.3	4.0	0.9	0.7
<b>Hawaiian or Pacific Islander</b>	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1
<b>Hispanic</b>	16.8	2.4	2.9	5.6	1.7	7.7	2.5	3.5	2.4	1.8	1.4	1.4	3.3
<b>Other</b>	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.2	0.0	0.0
<b>Two or more races reported.</b>	1.5	1.7	1.6	1.2	0.8	1.9	1.6	1.5	1.4	1.0	1.5	1.1	1.0

Source: USBC, 1990 & 2000

\* Most recent available Poverty data is from 1990 Census data, except at the State level - 1990/2000 reported.

\*\* Tracts 8.01 & 8.02 are not individually distinguished in the Poverty category.

The main economic sectors in Florida include the services and retail trade industries. The single largest economic sector is services, employing approximately 3,133,863 people (USBC, 2000). Retail trade, the second largest industry, provides approximately 962,542 jobs. Many of these jobs are related to tourism, either directly or indirectly. Similar to the state, the main economic sectors for Bay County are services and retail trade, employing approximately 29 percent and 26 percent of the labor force, respectively. Tourism in Bay County puts approximately 1.5 billion dollars into the local economy, supporting many jobs in the area. The next largest is government, which employs greater than 16 percent of the labor force in Bay County (Figure 3.2-2; BCEDA, 2001).

**Table 3.2-4. Labor Force, Employment, and Unemployment Data for Florida and Bay County - September 2001**

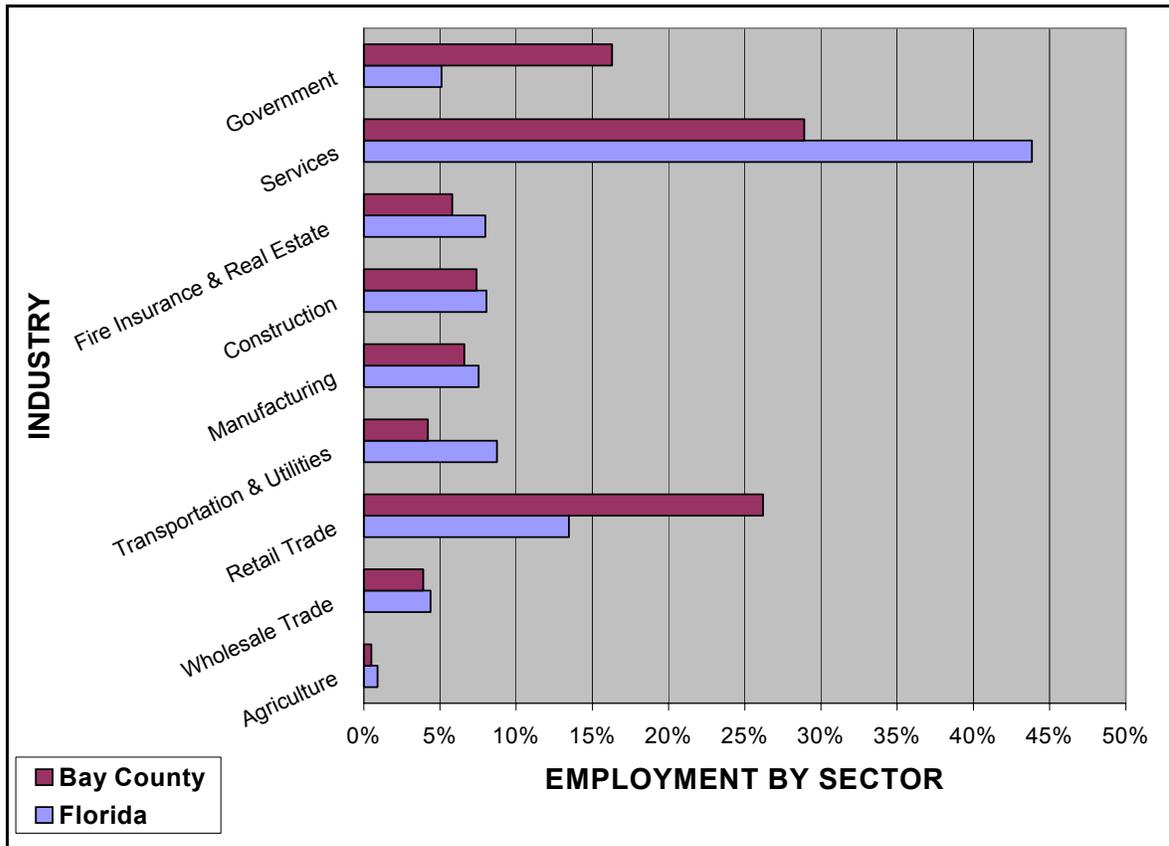
<b>Area</b>	<b>Labor Force</b>	<b>Employed</b>	<b>Unemployed</b>	<b>Unemployment Rate (percent)</b>
Florida	7,809,000	7,456,000	353,000	4.5
Bay County	65,450	62,819	2631	4.0

Sources: AWI, 2000; Bureau of Labor Statistics, 2000;  
Bay County Economic Development Alliance

**3.2.1.3. Expenditures of Tyndall Air Force Base.** Tyndall AFB contributes approximately \$422 million to the economy of Bay County through its direct employment and purchases from local businesses. The military payroll is approximately \$127 million and the civilian payroll is approximately \$29 million. Secondary jobs created by the base are estimated at 2,245 within Bay County (BCEDA, 2001). The Navy’s Coastal Systems Station also contributes greatly to the Bay County economy, injecting approximately \$290 million dollars and 200 secondary jobs.

**3.2.1.4 Housing.** In 2000, there were 7,302,947 housing units in Florida, of which approximately 6.6 percent were vacant and 6.6 percent were seasonal housing. Of the occupied housing units in the state of Florida, approximately 70 percent were owner occupied and 30 percent were renter occupied (USBC, 2000). Occupied housing in Bay County mimics that of Florida, however, vacancy/seasonal housing rates (12.8/11.2) were nearly double that of the state. Panama City had a slightly higher percentage of renter occupied housing and a vacancy rate of 9.5 percent. Seasonal housing in Panama City was less than one percent (Table 3.2-5).

**Figure 3.2-2. Employment by Industry for Florida and Bay County**



Source: BCEDA, 2001; USBC, 2000

Tyndall AFB has 1,064 family housing units, 448 unaccompanied quarters for permanent personnel, and 665 visiting quarters for transient personnel. The housing, located to north and northwest of the main base, is contained in several developments: Redfish Point, Felix Lake, Wood Manor, Shoal Point, and Bay View housing (USAF, 2000b). Although a large amount of housing exists on base, it is not enough for the military personnel assigned to Tyndall AFB. Hence, many military personnel live in the surrounding community.

**Table 3.2-5. Housing Units and Vacancy (2000)**

AREA	OCCUPIED		VACANT		TOTAL UNITS
	By Owner	By Renter	Empty	Seasonal	
Florida	4,441,799	1,896,130	482,074	482,944	7,302,947
Bay County	40,887	18,710	10,028	8,810	78,435
Panama City (proper)	8,565	6,254	1,576	153	16,548

Source: USBC, 2000

### **3.2.2 Future Baseline Without the Project (No Action Alternative)**

The socioeconomic characteristics of Florida, Bay County, and the City of Panama are not expected to change substantially in the future without the proposed project. Projections by the University of Florida, Bureau of Economic and Business Research, indicate that the population of Florida will increase by approximately 12 percent in the next ten years while that of Bay County is expected to increase approximately 14 percent (BCEDA, 2001). The only anticipated change at Tyndall AFB is the conversion of the base from an F-15 Fighter squadron and training facility to an F-22 Fighter squadron and training facility. This conversion at the base is anticipated to trigger a temporary increase in population both on the base and in nearby communities, however, as the F-15s are phased out, a slow decline is expected to follow (USAF, 2000b). While the conversion will bring more money into the economy due to the population increase, this is anticipated to be a temporary benefit to the economy.

## **3.3 UTILITIES AND TRANSPORTATION**

### **3.3.1 Existing Conditions**

The utility service at Tyndall AFB, including availability in the vicinity of the alternative ASR-11 sites, is discussed in this section. The utilities include water, wastewater, solid waste, electricity, telephone, fiber optic and natural gas. Transportation is described in section 3.3.1.8.

**3.3.1.1 Water Supply and Distribution.** Tyndall AFB, which uses approximately 1.3 million gallons of water a day, is supplied with water by Bay County Utilities. The water is stored in three elevated water tanks located south of US Highway 98 (USAF, 2000b). Although four groundwater wells are located south of US Highway 98 and are connected to the water distribution system, they are not permitted by the state of Florida and are only available as a back-up supply source.

Site 3, Site 6 and the existing AN/GPN-20 are not located in the vicinity of any water distribution lines (USAF, 2000b). Site 7 is located at least 750 feet from the nearest water line located to the south of the site where the water line crosses US Highway 98.

**3.3.1.2 Wastewater Treatment.** The wastewater treatment plant for Tyndall was built by Bay County in 1999 on land leased from Tyndall AFB (USAF, 2000b). This Advance Wastewater Treatment (AWT) plant, providing service to approximately 45,000 people, processes an average of 6.7 million gallons per day. Previously, the base used its own wastewater treatment plant, which has been re-engineered to act as a pump station for wastewater flows from Tyndall AFB and Mexico Beach, Florida.

**Site 3, Site 6** and the existing **AN/GPN-20** are not located in the vicinity of any wastewater system structures. **Site 7** is located at least 500 feet from the nearest sewer main, which conveys flows along US Highway 98, and greater than 1,000 feet from any pressurized force mains.

**3.3.1.3 Solid Waste.** A contractor collects solid waste from the base housing, industrial and aircraft maintenance and operation areas on Tyndall AFB. The 325<sup>th</sup> Services Squadron conducts the base recycling program. There is curbside recycling/trash pick-up for the base housing and collection points for recyclable materials (glass, plastic, paper, newspaper and cardboard) around the base. Although Bay County does not recycle solid waste, it does operate a waste-to-energy incinerator that receives trash from Tyndall and other communities. No on-base landfills are in operation. A Pollution Prevention Management Plan was implemented in 1998 to reduce solid waste and other waste on the base by either (or in combination) eliminating, reducing, or using more environmentally sound alternatives.

**3.3.1.4 Electricity.** The base electrical distribution system, which is supplied by Gulf Power at 12.47 kilovolts (kV), comes from two 44kV feeders to the main base substation. There are five feeders, owned by the base, from the substation to various parts of the base. One additional feeder, owned by Gulf Power, feeds the Tyndall Elementary School and the Bay Housing Complex. Overall, the electrical demand on base is about half of the available capacity (20 megawatts); however, one of the feeders, namely the Wherry Feeder, is operating near its maximum capacity. The base is served by 207 miles of primary distribution and 130 miles of secondary distribution lines that supply electrical power via overhead and underground line circuits (USAF, 2000b).

Approximately 87 percent of the primary and 67 percent of the secondary electrical transmission lines are above ground. This includes the majority of the lines in the vicinity of proposed DASR

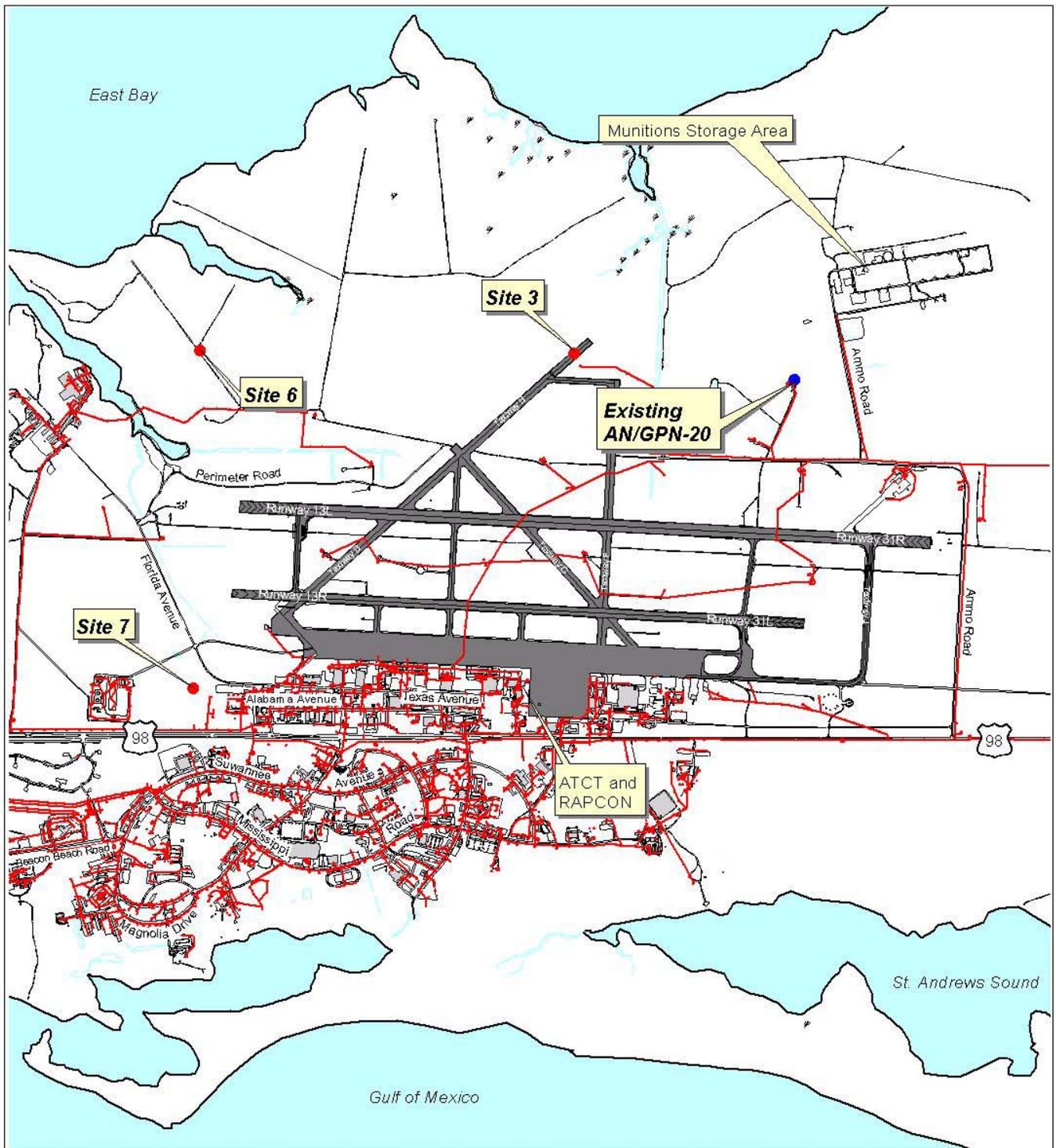
sites. Tyndall AFB has a long-range program called Poleaway, which is aimed at removing all overhead power/utility lines and placing them underground. Backup electrical power is supplied to mission-critical facilities by 54 fixed diesel generators (USAF, 2000b). The main electrical lines at Tyndall AFB are shown on Figure 3.3-1.

Electrical overhead power exists in the vicinity of each of the alternative ASR-11 sites. At two of the sites (Site 3 and Site 6) the feeder is the Wherry Feeder, while Site 7 is proximate to both the Wherry and Suwannee feeders (USAF, 2001a). **Site 3** is located approximately 380 feet from power lines that run adjacent to Taxiway F. **Site 6**, the most remote site, is located approximately 1,300 feet from power lines that run along Perimeter Road. **Site 7** is located 150 feet from power lines that currently run to the south of this location. The existing **AN/GPN-20** is connected to the Mississippi Feeder.

**3.3.1.5 Telephone.** The communications system for Tyndall AFB includes the main telephone facility in building 649. This facility contains a 6,400-line switching station, which currently runs above 85 percent capacity. The system also supports a 1,200-line remote switching station in building 1120, an 800-line remote switching station at Silver Flag, and a tactical switchboard. GT COMM, located in building 4040, serves all family housing dormitories, and billeting. A program to upgrade the telephone system with fiber optic cable is currently 85 percent complete (USAF, 2000b).

Overhead dial-up telephone lines exist in the vicinity of each of the alternative ASR-11 sites. **Site 3** is located approximately 380 feet from telephone lines that run adjacent to Taxiway F. **Site 6**, the most remote site, is located approximately 1,300 feet from telephone lines that run along Perimeter Road. **Site 7** is approximately 150 feet from telephone lines that are located to the south.

**3.3.1.6 Fiber Optic.** An upgrade of the fiber optic communication system at Tyndall AFB was completed at the end of the year 2001. It consists of a main fiber optic backbone that connects the base area network. This distribution system supports data, digitized voice, and digitized video at very high transmission rates.



**LEGEND**

	Electrical Distribution System		Buildings
	Electric Poles, Lights, Transformers		Runways and Taxiways
	Tyndall AFB Property Boundary		Existing Radar Facility
	Roads and Base Features		Proposed ASR-11 Site
	Surface Water Features		

**Figure 3.3-1.**  
**ELECTRICAL DISTRIBUTION SYSTEM ON TYDALL AFB IN THE VICINITY OF THE ALTERNATIVE ASR-11 SITES AND THE EXISTING RADAR FACILITY**

**TYNDALL AIR FORCE BASE**  
**DIGITAL AIRPORT SURVEILLANCE RADAR**  
 Bay County, Florida

Source: Tyndall Air Force Base

Although fiber optic lines may be located in the vicinity of each site (with the exception of Site 6), the Air Force prefers to connect the DASR facilities directly to the RAPCON, as opposed to splicing into existing fiber optic cables. **Site 3** and **Site 6** are located on the opposite side of the runways 13L/31R and 31R/13L. Therefore, these sites would require several runway/taxiway crossings, although a portion of the new cabling might be installed within existing conduits beneath one or more of the runways/taxiways. Site 3 is approximately 5,780 feet and Site 6 is approximately 9,720 feet from the RAPCON. **Site 7** is located approximately 6,100 feet northwest of RAPCON from which the new cabling would run parallel to the runways, with no runway/taxiway crossings. The fiber optic line from Site 7, however, would have to cross an abandoned liquid fuel line, a septic tank/package treatment site, a CAR site and two IRP sites in order to reach the RAPCON. Proper base procedures would need to be followed closely during the construction of a trench line between Site 7 and RAPCON (see Section 4.3).

**3.3.1.7 Natural Gas.** Natural gas at Tyndall AFB is provided by TECO Peoples Gas, via the Defense Fuel Supply Center. The base is delivered gas at 120 psi via the Dupont Bridge, where the regulating station is located. The base distribution system, which is at 40 psi, distributes natural gas to most of the base, with future plans to extend to areas not yet serviced. The maximum one-day demand is 1,703 million cubic feet (mcf) or 26 percent of capacity. The 14 miles of gas mains are predominantly located south of US Highway 98, except for a small area north of the highway where airfield operations and maintenance are located. No natural gas lines are located in the vicinity of **Site 3**, **Site 6** or the existing AN/GPN-20. **Site 7** is located approximately 750 feet from a natural gas main that crosses under US Highway 98.

**3.3.1.8 Transportation.** One major (primary) highway is located in the vicinity of Tyndall AFB. US Highway 98, which runs northwest - southeast through the length of the base (along the lower 1/3 of the peninsula), is the only major road onto or off of the base. Commercial airline service for the Panama City area is provided by Panama City-Bay County International Airport.

On the base, there are a number of secondary roads that are accessible through one of six gates/interchanges with US Highway 98. Of the six gates, only the Main gate and the Sabre gate are open 24 hours a day. The Main Gate entrance off US Highway 98 is onto Illinois Avenue and the Sabre Gate entrance is onto Sabre Drive. The secondary roads on the base provide

access to the airfields and airfield operations and maintenance north of US Highway 98; and to administrative, medical, and housing areas south of US Highway 98.

Tyndall AFB loads and expends a large amount of live explosives. Most of these explosives are stored at the Munitions Storage Area (MSA) located northeast of the main base. Designated routes for the transportation of explosives have been established along US Highway 98 and several secondary and tertiary roads. A number of areas on the base are designated as Explosive Clear Zones (ECZ) and allow only limited construction activities. These safety distance zones encompass the MSA, the runways, runway aprons, and surrounding testing areas.

**Site 3** is located in close proximity to the runways, but is outside the ECZ. The road/taxiways leading to Site 3 are designated as a Primary Explosives Route (PER). **Site 6** is located in a wooded area, secluded from the main operations area and ECZs. Access to the site can by-pass PER and Secondary Explosive Routes (SER), but a more direct route would require crossing a PER. **Site 7**, located outside the ECZs, is adjacent to Florida Avenue, which is a PER. The PER designation, however, ends prior to the section of Florida Avenue at which the DASR is proposed. The existing AN/GPN-20 is located off an unnamed tertiary road that is off of a PER; however, the PER is greater than 2000 feet from the radar site, thus no conflict has been noted. According to the Explosive Safety information contained in the Tyndall AFB *General Plan* (USAF, 2000b), the existing radar is within the ECZ of the MSA. However, the Base Planner has indicated that the figures in that document are general in nature and the radar is not likely in an ECZ. In addition, information in the Preliminary Site Survey Report, dated 18 October 2001 indicates that the existing AN/GPN-20 site is outside the ECZ (referred to as the “Distance Safety Zone”).

### **3.3.2 Future Baseline Without the Project (No Action Alternative)**

With the exception of a proposed sewer main to be located approximately 2,000 feet south of the AN/GPN-20, no substantial changes in water, wastewater treatment, solid waste, or natural gas are anticipated at Tyndall AFB in the near future. The base is working on developing several by-pass roads to ease congestion/traffic flow through the residential areas of the base south of US Highway 98. Tyndall is also working on developing more parking lots to ease the current street-side parking problems. Consolidation of offices/operations and building demolition are providing areas to ease the parking situation (USAF, 2000b). However, no major change to the system of

roads is planned for Tyndall. Some improvements to the electrical, telephone, and fiber optic systems, including the conversion of the telephone systems to technologically advanced systems, are anticipated. None of the anticipated projects would be affected in the future without the project.

### **3.4 NOISE**

The existing noise environment of Tyndall AFB in general is discussed in this section, as well as the noise environments of the three alternative ASR-11 sites and the existing AN/GPN-20 location. Many federal agencies use the day-night average sound level to describe noise and to predict community effects from long-term exposure to noise. In addition, this noise level classification system is used to determine the appropriateness of a given use of specific land (land use compatibility) relative to the average level of environmental noise experienced at the location. These guidelines are described in the *Air Installation Compatible Use Zone (AICUZ) Program Handbook* (USAF, 1991). Noise levels below 65 decibels are considered to be compatible with residential land use. Residential land use is discouraged in areas with a noise level between 65-70 decibels, strongly discouraged in areas with sound levels between 70 and 75 decibels, and considered generally unacceptable for areas with noise levels exceeding 75 decibels.

#### **3.4.1 Existing Conditions**

The primary source of noise in the vicinity of Tyndall AFB is a result of normal base operation and aircraft usage and maintenance. Noise generated independent of aircraft flight noise on Tyndall AFB (ground traffic, construction, etc.) is comparable to the noise generated in the surrounding community; therefore, noise generated during aircraft flight operations represents the most substantial noise source on the base. According to the *Final Integrated Natural Resource Management Plan*, the associated noise contours generally follow the shape of the runways with the area of highest decibels (80 and higher) in the immediate vicinity of the runways and extended areas of higher level noise following the aircraft approach and departure corridors (USAF, 1999).

**Site 3** is within an airfield operation noise contour characterized as having day-night levels (DNL) of approximately 70-75 dBA or greater. **Sites 6 and 7**, which are characterized as having the highest ambient noise levels of the three alternative sites, are located along the 80 dBA noise contour. The existing **AN/GPN-20** is located in an area where estimated DNLs average between 75 and 80 dBA (USAF, 1999).

### **3.4.2 Future Baseline Without the Project (No Action Alternative)**

The proposed conversion from F-15 aircraft to F-22 aircraft at Tyndall AFB may alter the noise levels at the base in the future without the project. While preliminary noise level data for the F-22 suggest that it will produce noise levels slightly louder than the F-15 aircraft that are currently operated and maintained at Tyndall AFB, sufficient data has yet to be collected to substantiate this claim (USAF, 2000c). Thus far only one noise level test has been conducted on one F-22 prototype, which has yet to be cleared for full throttled flight. Modifications in the engines may still occur before production of the F-22 begins (USAF, 2000c), thus conclusive statements regarding the generation of noise are not yet available.

Other than the introduction of the F-22s, no substantial change in ambient noise conditions on the base is anticipated. No major changes in land use activities are expected to occur in the vicinity of the alternative sites. Thus, future noise levels are anticipated to be affected only by the introduction of the F-22s on Tyndall AFB in the future without the project.

## **3.5 AIR QUALITY**

Existing air quality characteristics of Tyndall AFB in the vicinity of the three alternative ASR-11 sites are discussed in this section. Information was compiled from regional and local data and is expected to be representative of site-specific characteristics.

The United States Environmental Protection Agency (EPA) defines ambient air in 40 CFR Part 50 as “that portion of the atmosphere, external to buildings, to which the general public has access.” In compliance with the 1970 Clean Air Act and the 1977 and 1990 Clean Air Act Amendments, EPA has developed ambient air quality standards and regulations. The National Ambient Air Quality Standards (NAAQS) were enacted for the protection of the public health and welfare, allowing for an adequate margin of safety. To date, EPA has issued NAAQS for six

criteria pollutants (Table 3.5-1): carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), lead (Pb), and particulates (e.g., PM-10, particles with a diameter less than or equal to 10 micrometers (µm)). The Air Pollution Control Division of the Florida Department of Environmental Protection regulates pollutant emissions from Tyndall AFB. Currently, the air quality standards set forth by the state are identical to the NAAQS, with the exception of the standard for sulfur dioxide, where the state is more stringent (USAF, 2000c).

**Table 3.5-1. National and Florida DEP<sup>1</sup> Ambient Air Quality Standards**

<b>Air Pollutant</b>	<b>Averaging Time</b>	<b>NAAQS (µg/m<sup>3</sup>)</b>	<b>FDEP AQS (µg/m<sup>3</sup>)</b>
Particulate matter of diameter less than 2.5 microns (PM <sub>2.5</sub> )	24-hour	65	65
	Annual	15	15
Particulate matter of diameter less than 10 microns (PM <sub>10</sub> )	24-hour	150	150
	Annual	50	50
Sulfur Dioxide	3-hour	1,300	1,300
	24-hour	365	260
	Annual	80	60
Ozone	1-hour	235	235
	8-hour	157	157
Carbon Monoxide	1-hour	40,000	40,000
	8-hour	10,000	10,000
Nitrogen Dioxide	Annual	100	100
Lead	Quarterly	1.5	1.5

<sup>1</sup> Florida DEP has adopted all NAAQS except Sulfur Dioxide.

FDEP AQS = Florida Department of Environmental Protection Air Quality Standards

NAAQS = National Ambient Air Quality Standards: Primary Standards except Sulfur Dioxide 3-Hour is Secondary.

N/A = Not applicable

µg/m<sup>3</sup> = micrograms per cubic meter

Source: USAF, 2000c, Florida DEP-ARM

### 3.5.1 Existing Conditions

Tyndall AFB is located in the Gulf of Mexico on the Florida Panhandle. The Florida Panhandle climate is very humid, with annual precipitation of 56-60 inches. Temperature ranges from a mean low of 26 degrees Fahrenheit in January to a mean high of 93 degrees Fahrenheit in

August. May and October are the driest months, while July through September are the wettest. Because of the base's location, it is prone to tropical storms, hurricanes and their associated storm surges and high winds (USAF, 2000b). Tyndall AFB does not suffer from serious air pollution due to the lack of heavy industry in the area and geographic location. Bay County, in which Tyndall AFB lies, is currently in attainment as defined by the USEPA NAAQS.

In August of 1998, the US Department of Defense (DoD) applied for and received a ranking as a non-major source of hazardous air pollutants (HAPs) (September 1998) based on limits established by the Federally Enforceable State Operating Permit (FESOP #0050024-002-AF). This permit for Tyndall AFB was later replaced by FESOP #0050024-006-AF which sets prescribed limits on HAPs for the entire facility (USAF, 2000c). Tyndall, through the FESOP permit and by limiting their emissions to levels that preclude them from being categorized as a major source, have obtained a synthetic non-Title V source ("synthetic minor") status, thereby not subjecting them to a Title V operating permit.

Air pollutant emissions are generated at Tyndall AFB from various sources including military aircraft, paint booths, fuel fill stands, jet engine testing, cogeneration combustion units, boilers, and abrasive blasting. Tyndall AFB, however, has low emissions and implements pollution prevention measures as described in the base's *Draft Pollution Prevention Management Plan* (see section 3.11). Due to these two factors, the base may maintain its status as a non-major emissions facility and therefore not need Title V permitting. Aircraft, being considered a transient source, are not included in the calculations for the base. As a comparison of the base's emissions to Bay County, a 1998 baseline emissions inventory summary of Bay County and Tyndall AFB is presented in Table 3.5-2. Note that the Panama City airport is not included in the county calculations.

### **3.5.2 Future Baseline Without The Project (No Action Alternative)**

Air quality in the vicinity of the three proposed ASR-11 sites and the existing AN/GPN-20 is expected to remain stable under future baseline conditions. Incremental improvement in automotive emissions and continuing pollution prevention efforts at the base aimed at reducing the use of volatile organic compounds will tend to improve air quality, while the increasing

**Table 3.5-2. Baseline Emissions Inventory for Bay County and Tyndall AFB, 1998**

<b>Emission Inventory</b>	<b>EMISSIONS (TONS/YEAR)</b>				
	<b>Carbon Monoxide</b>	<b>Volatile Organic Emissions</b>	<b>Nitrogen Dioxide</b>	<b>Sulfur Dioxide</b>	<b>PM<sub>10</sub></b>
Bay County 1998	69,485	12,661	16,684	52,138	7,586
Tyndall AFB 1998	44.4	65.0	50.4	2.1	37.6

Source: USAF, 2000c

population of Bay County and Panama City will contribute to emissions due to increasing traffic and use of small engines. These two tendencies may counteract each other resulting in no appreciable overall change. Without the installation of the ASR-11, the base will still be required to monitor diesel HAP emissions to remain in compliance with limits set forth in the FESOP permit. Therefore, the FESOP would need to be reopened during the F-22 introduction to add any new emissions sources such as boilers, the proposed Fuel System Maintenance Hangar and others.

### **3.6 GEOLOGY AND SOILS**

#### **3.6.1 Existing Conditions**

General characteristics of soils and geology (including topography and geologic hazards) on the base are discussed in this section. Site-specific data relevant to the three alternative ASR-11 sites are provided as available.

**3.6.1.1 Geology.** Tyndall AFB is located on the gulf coast of the Florida Panhandle in the eastern portion of Bay County. It lies entirely within the East Gulf Coastal Plain Physiographic Province, which at one time was sea floor. More specifically, Tyndall AFB is comprised of two sub-physiographic provinces, the Beach Dunes/Wavecut Bluffs and the Flatwoods Forests. The Citronelle formation, which covers much of the coastal plain, was deposited during Plio-Pleistocene times by high-energy streams that delivered upland sand, gravel and clay to coalescing alluvial fans on the coastal plain. Rivers cut deeply into these fans during Pleistocene glacial periods when sea level dropped 100-200 meters (300-600 feet). Later, during interglacial periods when sea level rose, the river valleys were submerged and began to collect new

sediments from the uplands. The result of these changes in sea level and continued influx of sediment created the East Bay and St. Andrew Bay to the north and west, respectively, of Tyndall AFB and the bayous which are characteristic of the region. Gulf currents formed the Crooked Island spits, which enclose St. Andrew Sound on the south side of Tyndall AFB. Further north, evidence of the limestone/karst terrain underlying the area is apparent by the sinkholes, streams and wetlands that dot the landscape. These features are apparent in the headwaters of the St. Andrew Bay basin because the limestone, which contains the Floridan Aquifer, is at the land surface (USAF, 1996).

Seismic considerations are negligible in this region, which is very stable. None of the proposed ASR-11 sites (**Site 3**, **Site 6** or **Site 7**) or the existing **AN/GPN-20** appear to be located in a geologically hazardous location.

**3.6.1.2 Soil Resources.** Tyndall AFB is characterized by broad, coalescing alluvial fans deposited during the Pliocene and early Pleistocene epochs and subsequently modified during the later Pleistocene glacial periods. Cut deeply by rivers during glacial periods when sea level fell and then flooded during inter-glacial sea level rise, the deep river cut valleys have been partially filled by sediments to form the shallow bay systems that surround half of Tyndall AFB (USAF, 1996).

Five soil series occur on the base, including the Kureb-Resota-Mandarin, Hurricane-Chipley-Albany, Pottsburg-Leon-Rutlege, Rutlege-Allanton-Pickney, and the Bayvi-dirego (USAF, 1999). Four out of five of these soils fall into the spodosol order, typical of sandy, acidic marine environments where there is a fluctuating water table due to tidal influences. The exception is the Kerb-Resota-Mandarin soils, which fall into the entisol order. Soils in this order typically have little horizontal layering, are not developed and reflect the parent material from which they were formed. These latter soils are found on the northwestern end of the base and on the spits to the south (USAF, 2000c; USAF, 1999).

The underlying soils in the vicinity of **Sites 3**, **6** and **7** have been generally characterized as Pottsburg-Leon-Rutlege. More specifically, Sites 3 and 7 lie in Arents soils, a man-made/disturbed soil with variable water table, drainage and permeability. The Arents soil suffers

only slight construction limitations. Site 6 lies on Leon Sands (typical of the Flatwoods ecological environment), which are poorly drained with very slow runoff and rapid permeability. Construction on Leon Sands is more severely limited because of ponding and wetness. (USAF, 2001a). The existing AN/GPN-20 is on Osier Sand, which is highly permeable, but is poorly drained, occasionally flooded and tends to be located in lowlands.

Tyndall AFB occupies a low-lying peninsula and several barrier spits. The highest elevation of the base is less than 9 meters (30 ft.) above sea level and the gradient across most of the site is very shallow. At this latitude and longitude, the base is prone to hurricanes and tropical storms spawned in the tropics of the Atlantic Ocean. It is also subject to the tidal surges that are associated with such storms, though most of the time the weather is moderate (USAF, 2000b). These events may have the potential to alter the soils on Tyndall AFB primarily through erosion.

### **3.6.2 Future Baseline Without the Project (No Action Alternative)**

The geology and soil conditions at the base may potentially change in the future without the project due to the continued potential for tropical storms or hurricanes and their associated storm surges. The barrier spits that have developed along the southern side of Tyndall AFB, however, are expected to provide some buffering against meteorological events. Therefore, it is expected that the existing soil types will continue to represent the area of the alternative ASR-11 sites and the existing AN/GPN-20.

## **3.7 SURFACE WATER AND GROUND WATER**

### **3.7.1 Existing Conditions**

The characteristics for surface water and groundwater on the base are discussed in this section and are expected to generally describe the area around the three alternative ASR-11 sites and existing AN/GPN-20.

**3.7.1.1 Surface Water.** Tyndall AFB has few well-developed surficial drainages. The high permeability of the sandy soils permits storm water to quickly recharge to the shallow groundwater system. Tyndall AFB receives an average of 56 inches of precipitation annually, with the highest amount occurring during the months of June through September (USAF, 2000c).

Precipitation is the dominant source of recharge to the peninsula. The portion that runs off as overland flow is absorbed by the wetlands/bayous (which cover 40 percent of the base) or runs off into the East and St. Andrew bays north of US Highway 98, and into the Gulf of Mexico and St. Andrew Sound south of US Highway 98. Wetlands on the base are broadly classified into three categories, each of which has many sub-types. The three categories are Palustrine Forested, Palustrine Aquatic/Emergent, and Estuarine (USAF, 2000b). Of the three proposed ASR-11 sites, only **Site 6** encroaches upon a wetland as confirmed by base aerial photography and National Wetland Inventory (NWI) mapping. The 100-year floodplain, which primarily covers the perimeter of the base and several inlets/bayous, approaches **Sites 3** and **6**, but does not intersect them. **Site 7** is not located adjacent to or within the 100-year floodplain. The existing **AN/GPN-20** site lies adjacent to palustrine forested wetlands, but outside the 100-year floodplain (USAF, 2001a). Storm water which does not run-off or recharge to the shallow aquifer is collected by a 51-mile long network of subsurface drainage pipes and two pump stations on Tyndall AFB. The subsurface drainage appears to mostly discharge to the south shore of the peninsula (USAF, 2000b).

Potable water for Tyndall AFB is drawn from the Deer Point Lake Reservoir (DPLR) surface water impoundment located in the northernmost bayou of North Bay. Most of Bay County, including Panama City, is also served by the DPLR. The reservoir receives a large portion of its water from Econfina Creek, which in turn receives groundwater discharge from the Floridan Aquifer (see section 3.7.1.2). The Econfina River is the largest tributary of the DPLR; covering 129 square miles, it provides most of the fresh water to the DPLR and to the bays surrounding Tyndall AFB (USAF, 2000c).

Natural perennial surface waters (lakes/bayous) are located predominantly along the northern perimeter of Tyndall AFB property. They include Big Ammo Lake, Fred Bayou, Cedar Bayou, Chatterson Bayou and about six to eight other smaller bayous. **Site 3**, **Site 6**, **Site 7** and the existing **AN/GPN-20** are not located near a natural surface water body.

**3.7.1.2 Groundwater.** Tyndall AFB is located in the Northwest Florida Water Management District (NFWFMD), which covers the northwestern part of the state, including Bay County. As mentioned in section 3.3.1.1, ground water at Tyndall AFB is not used as a potable water source on the base. The base's four wells are maintained for emergency purposes only. Depth to

ground water on the base is between 1.5 to 6.5 feet below grade. Recharge to the groundwater system is predominantly from precipitation. The aquifer that underlies Tyndall AFB is a fresh water lens that ‘floats’ on top of the more brackish water which surrounds and underlies the peninsula. The groundwater aquifer under Tyndall AFB is similar to that of island aquifer hydrology. However, the influence from the ‘fresher’ water in the bays to the north and the fresh ground water to the east (where the peninsula connects to the mainland) probably influence the typical island ‘fresh water lens’ model.

The Floridan Aquifer is one of four geologic units that underlay the state of Florida. From the shallowest to the deepest, the units are: 1) Surface Sand and Gravel Aquifer (SGA), 2) Intermediate System (IS), 3) Floridan Aquifer (FA), and 4) Sub-Floridan Aquifer (SF). The IS and SF are both aquitards, which means that they inhibit vertical groundwater flow. The IS prevents the shallow ground water, which is easily susceptible to contamination, of the SGA from mixing with the pristine water of the FA. The SF layer, which underlies the FA, acts as a bottom confining unit or liner. The FA unit underlies the entire state and is between 100 and 2,800 feet thick, although only the top 2,000 feet are used for fresh water. In areas where the FA extends below 2,000 feet the water becomes brackish. The FA is hydraulically connected through a system of limestone and dolomite beds, which are close to or at the surface in the Bay County area. As mentioned above, the ground water contained in this unit feeds the Econfinia River, which in turn recharges the DPLR.

### **3.7.2 Future Baseline Without the Project (No Action Alternative)**

No substantial changes in surface water conditions are expected to occur in the future without the project. Implementation of Best Management Practices during normal activities on the base will help to reduce both point and non-point source pollution from storm water. Ground water is not used as a potable water source on the base. The base would be required to consult with the FDEP regarding permitting if the need arises to tap the on-site ground water for use as potable water. Otherwise, no changes to the groundwater system are anticipated.

## **3.8 BIOLOGICAL RESOURCES**

This section contains descriptions of biological resources, including vegetation, wetlands, and wildlife, for Tyndall AFB and its vicinity, including the proposed ASR-11 sites and the existing AN/GPN-20 site.

### 3.8.1 Existing Conditions

**3.8.1.1 Vegetation.** Tyndall AFB has a long history of timber harvesting as a major industry in the area. In the 1960s the Natural Resources Management Branch of Tyndall AFB was established in an effort to create a more sustainable program to manage the flora and fauna located in this warm-weather region. The base has the ability to support a wide variety of vegetation due to its unique location on a peninsula with both freshwater and saltwater wetlands and adjacent uplands. Thirteen natural community types and representative vegetation on Tyndall AFB have been identified and described within the *Integrated Natural Resources Management Plan (NRMP) for Tyndall Air Force Base, Florida, 1999-2003* (USAF, 1999). The dominant community type is the slash, longleaf and sand pine plantations, which have been planted with seedlings to spur the population growth. This community type encompasses over 8,000 acres on the main base. Longleaf pine (*Pinus palustris*) is a species that dominated the area of Tyndall AFB before it was converted to pasture. Much of it has now been converted to slash pine plantations, although remnants of the community are found scattered throughout the pine plantations. Tyndall AFB has very few acres of natural longleaf pine (187 total on base). Florida Natural Areas Inventory (FNAI) recommends that all remnants of the community be protected; therefore, Tyndall AFB is striving to protect all remaining remnants of naturally occurring longleaf pine stands. The other community types that occupy a major portion of the remainder of the base include mesic/wet slash flatwoods, coastal dune swales, and developed mission activities. The first two are freshwater and coastal vegetated areas, while developed mission activities includes buildings, roadways, airfields, housing and developed recreational areas with maintained lawn as the dominant vegetation type.

The area of Tyndall AFB supports habitat for federally-listed threatened, state-listed threatened and candidate (species potentially listed in the future) plant species. FNAI identifies additional plant species that are not protected by state or federal laws, but are identified as species of concern that need monitoring and special management (USAF, 1999). Table 3.8-1 provides a list of the unique plant species on Tyndall AFB and their level of protection.

**Site 3** is in a previously developed area with pavement covering the ground surface. The pavement limits the vegetation on the site to sporadic grasses within the cracks. The site is surrounded on three sides by large stands of pine trees.

Vegetation at **Site 6** is dominated by tall pines with a thick shrubby understory. The logging/access roads that border to the north and west sides of the site are lined with vegetated drainage swales that collect stormwater throughout the year. According to Tyndall AFB NRMP, several different sundew species (*Drosera* sp.) are located on the base. The base biologist has indicated that occurrence of the sundew species is known within the drainage ditches along the access roads that lead to Site 6, and potentially occurs on the site itself. At least one sundew (the spoon-leafed sundew) found on Tyndall AFB is a state-listed threatened species. The site is also located adjacent to a natural stand of longleaf pine that occurs to the north, just across the adjacent logging road.

The vegetation on **Site 7** is dominated by grasses that are maintained as lawn. No trees or shrubs are located on the site; however, a large stand of pine trees border the northwestern side of the site.

**Table 3.8-1 Protected Species or Species of Concern on Tyndall AFB**

<b>Common Name</b>	<b>Level of Protection or Concern</b>
Violet-flowered Butterwort	Federally Listed - Threatened
Chapman's Crown Beard	Federal Candidate species
Large-leafed Joint-weed	Federal Candidate species
Chapman's Butterwort	Federal Candidate species
Drummond's Yellow-eyed Grass	Federal Candidate species
Godfrey's Golden Aster	Federal Candidate species
Gulf Coast Lupine	Federal Candidate species
Harper's Yellow-eyed Grass	Federal Candidate species
Southern Red Lily	State Listed - Threatened
Spoon-leafed Sundew	State Listed - Threatened
Apalachicola Dragonhead	FNAI Species of Concern
Carolina Lilaeopsis	FNAI Species of Concern
Giant Water-dropwort	FNAI Species of Concern
Gulf Rockrose	FNAI Species of Concern
Spoon-Flower	FNAI Species of Concern

Source: Natural Resource Management Plan (USAF, 1999)

**3.8.1.2 Wetlands.** A survey completed on behalf of the NWI identifies 40 percent of the land of Tyndall AFB as wetlands. NWI broadly categorizes the various types of wetlands as palustrine forested, palustrine aquatic/emergent, and estuarine. As expected, the estuarine wetlands are scattered along the perimeter of the peninsula upon which Tyndall AFB is located. Palustrine aquatic/emergent wetlands and palustrine forested wetlands occupy much of the interior space of the base, with palustrine forested wetlands covering significantly more ground surface. Due to the base's geographic location, it is subject to hurricanes and tropical storms that produce both precipitation and tidal surges that flood the local area. Although most of the developed portions of the base are located in the areas less likely to be impacted by storm surges, careful planning is required when new construction or reconstruction is proposed. Tyndall AFB, through the efforts of the Natural Resources Management branch, is striving to meet the goals of the base's mission with no net loss of wetlands.

**Site 3** is located in an upland area; however, the site is immediately adjacent to palustrine forested wetlands. In addition, palustrine aquatic/emergent wetlands are present just west of the site along the north side of Taxiway B. The zone of the base with the highest flood elevations due to storm surges extends along Taxiway B to Site 3, while an area prone to lower flood elevations borders the eastern side of the site. Site 3 is outside the 100-year floodplain, as indicated in Tyndall's NRMP (USAF, 1999). According to a review by base personnel of aerial photographs and NWI maps, **Site 6** is partially within palustrine forested wetlands that extend east from the site toward Chatterson Bayou. The site is also located within an area subject to tidal surges resulting in significant flooding, however, the area is outside of the closest 100-year floodplain, which borders Chatterson Bayou to the east (USAF, 1999). **Site 7** is not within the boundaries of any wetland areas. As indicated earlier, the site is covered with grasses that are maintained as lawn. Neither storm surge flood areas nor the 100-year floodplain extends within the vicinity of the site (USAF, 1999).

The existing **AN/GPN-20** appears to be in an upland area that is surrounded by palustrine forested and palustrine aquatic/emergent wetland areas (USAF, 2001a). However, the site is not located within a 100-year floodplain.

**3.8.1.3 Wildlife.** The Natural Resources Management branch of the base monitors and regulates the areas containing a majority of the wildlife on-base. Management techniques employed by Tyndall AFB to support a variety of wildlife species include hunting and prescribed burning. The burning assists in the natural process of vegetation regeneration, diversifying habitat for wildlife. Hunting of white-tailed deer, wild turkey, wood ducks, mourning doves and gray squirrels is allowed in various areas on base. The specific habitats for these species vary around the base, and management regulations vary accordingly in terms of hunting season and vegetation burning frequencies.

Non-game animal populations found on base include four species of reptiles, 18 species of birds and four species of mammals (USAF, 1999). Of the reptiles and amphibians potentially on base, the American alligator, loggerhead turtle, Kemp's ridley turtle, leatherback turtle and the green turtle are currently federally-listed as endangered. The American alligator has a wide presence on the base, being identified in almost every water body on or adjacent to Tyndall AFB. The only turtle species that has a constant presence, specifically during nesting season, is the loggerhead. Tyndall AFB biologists provide nest protection and monitor hatchings to promote the success of this species. Federal candidate species of reptiles on Tyndall AFB include the gopher tortoise, Gulf salt marsh snake, and potentially the alligator snapping turtle. The alligator snapping turtle is thought to be present on the base, but a detailed survey of the area has yet to be completed.

Seventeen species of birds known to utilize Tyndall AFB are either federally, state or FNAI listed. The bald eagle is the only federally listed endangered bird species known to occur on base, while the piping plover is the only federally-listed threatened species. Snowy plovers and reddish egrets are federal candidate species. The bird species that are state-listed include brown pelicans, little blue heron, tri-colored heron, American oystercatch, least tern and black skimmer. The FNAI has identified the following four species as species of concern: yellow-crowned night heron, Florida clapper rail, royal tern, and sandwich terns.

Tyndall AFB is known to support four species of mammals that are considered rare. The manatee, Choctawhatchee beach mouse, and the St. Andrew beach mouse are all federally-listed

endangered species. The single-known federal candidate mammal species on Tyndall AFB is the black bear.

**Site 3, Site 6, Site 7** and the existing **AN/GPN** site could all potentially serve as habitat to one or more of the threatened or endangered species listed above due to the wide variety of species and their preferred habitats. However, Tyndall AFB biologists have reviewed all four of these sites and determined that no threatened or endangered species currently exist at any of the locations (USAF, 2001a).

### **3.8.2 Future Baseline Without the Project (No Action Alternative)**

Without the project, the status of the vegetation, wetlands, and wildlife is expected to remain similar to existing conditions in the areas of the proposed ASR-11 and the existing AN/GPN-20 site. Efforts of the Natural Resources Management branch are anticipated to continue to enhance and protect the numerous biological resources of the base. There are no anticipated land use changes that would alter the characteristics of the biological resources at **Sites 3, 6, and 7** or the existing **AN/GPN-20** site.

## **3.9 AESTHETIC RESOURCES**

The purpose of this section is to characterize the aesthetic resources of the project area in order to provide a framework for determining the potential changes that could occur as a result of the construction and operation of the ASR-11 at the alternative sites. Figures 3.9-1, 3.9-3, and 3.9-5 show the locations from which photographs of the proposed sites (Figures 3.9-2, 3.9-4 and 3.9-6) were taken during the site survey in August of 2001.

### **3.9.1 Existing Conditions**

There is what may be described as a functional aesthetic quality on the main portion of the base, with features like runways, aircraft hangars, lights, antennae, and towers considered to be an integral part of the Tyndall AFB landscape. These basic features and the typical base activities give the impression of an organized and functional military installation. The Tyndall AFB *General Plan*, published in July of 2000, addresses current and future land use and aesthetics, and acts as a resource for the future development of Tyndall AFB. The Facility Excellence Plan

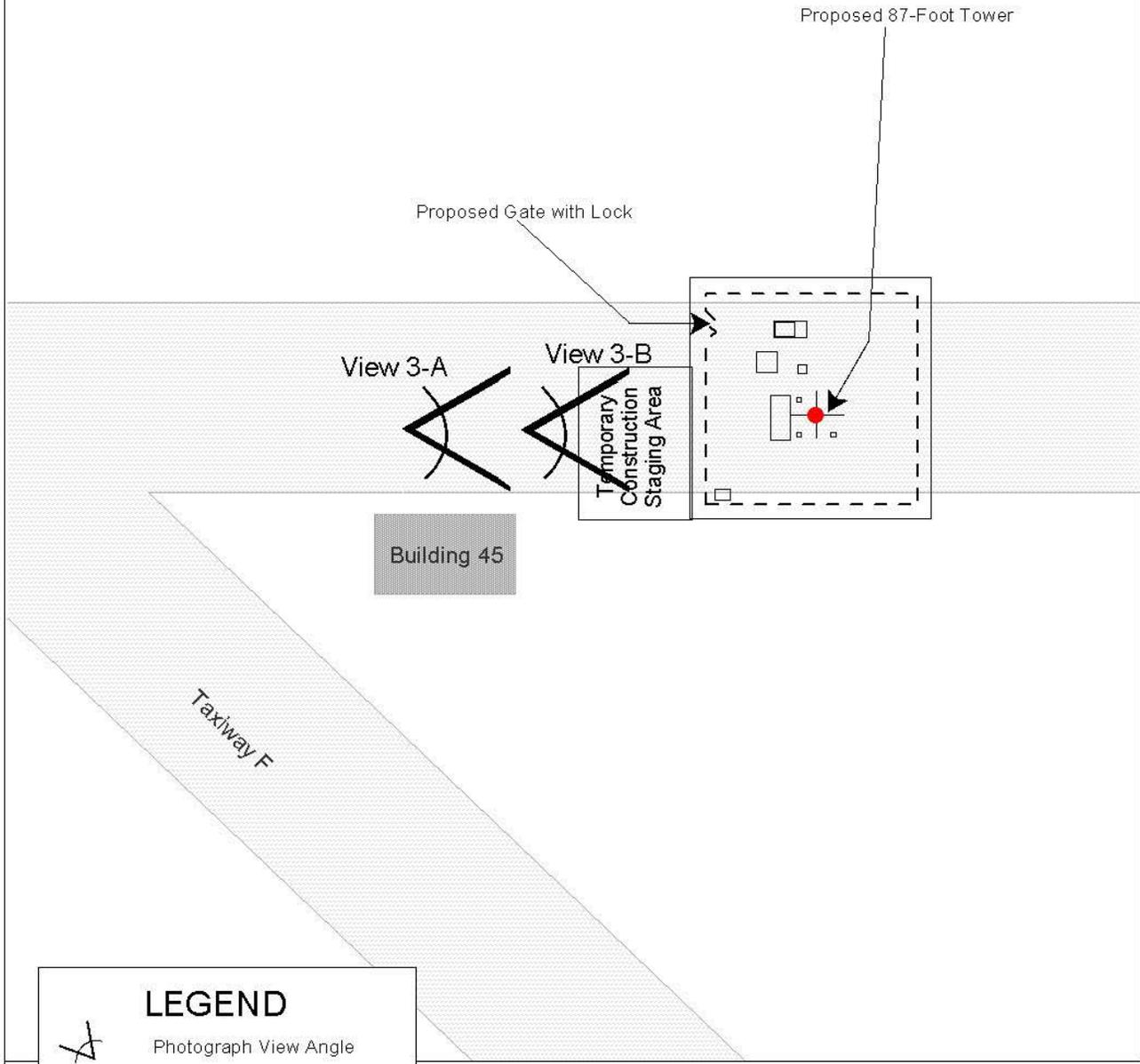
(FEP), published in August of 1998, provides direction for the overall landscape development, including landscape architecture, and maintenance of the base. The FEP sets standards for planners and design engineers to follow including, but not limited to, landscape design themes, architectural compatibility and interior design.

Located in a clearing at the abandoned end of Taxiway “B”, **Site 3** is a generally level area adjacent to the existing runways and approximately 3,600 feet north of the existing GPN-20 site. Site 3 contains only deteriorated asphalt runway and grass. Figure 3.9-1 shows the location from which photographs were taken of Site 3. The land use designation of Site 3 is currently airfield, with no expectations for future change in use. Due to the site location, pictures to the south and west were not permitted, therefore a limited view of Site 3 is shown in Figure 3.9-2. View 3A shows the deteriorated surface of the taxiway that would be used to access the site. View 3B looks east across the site, and depicts the nature of the land surrounding the runways. Building 45, located behind the photographer in View 3A, is the closest building, which is unoccupied.

**Site 6** is located just north of the north-northwest end of the runways, approximately 8,130 feet north of the existing ATCT. It is situated at the unpaved crossroads in the vicinity of Fred and Chatterson Bayous, on land designated as open space in the current and future land use maps. The site is heavily wooded and in a low-lying area. Figure 3.9-3 shows the locations from which photographs were taken of Site 6. Figure 3.9-4, Views 6A and 6B show the wooded site and the north/south and east/west access roads, respectively. Site 6 is somewhat secluded from military/non-military activities, routinely traveled roads and other areas of development.

**Site 7** is located on open grassland approximately 2,700 feet northwest of the existing AN/GPN-20. This land is currently designated open space, but Tyndall AFB future land use maps indicate a change in land use to airport operations and maintenance. Figure 3.9-5 shows the location of photographs taken of Site 7. The site abuts a wooded area to the west and open land on the other sides, with Florida Avenue located to the east. Figure 3.9-6, View 7A shows a view of the site looking northwest. US Highway 98 is located to the left-hand side of View 7A, behind the line of trees. Figure 3.9-6, View 7B shows a view from the site location looking southeast towards the nearest building (known as the SEADS Building). East of the site are the ends of the main runways.

NOTE: Per request of Air Force personnel, Site 3 photographs were taken only to the east to avoid photographing flight-line.



**LEGEND**

- Photograph View Angle
- Proposed ASR-11 Tower
- Buildings
- Runways and Taxiways
- Proposed ASR-11 Site Fence

100 0 100 Feet

**Figure 3.9-1**  
VIEW ANGLE FOR  
PHOTOGRAPHS TAKEN  
AT ALTERNATIVE ASR-11 SITE 3

Tyndall Air Force Base  
Digital Airport Surveillance Radar

Source: Tyndall AFB, USAF, 2001a

Tynda102.apr : s3viewL : site3angle

Figure 3.9-2: Photographs Taken During August 2001 Site Visit Of Tyndall AFB ASR-11 Candidate Site 3

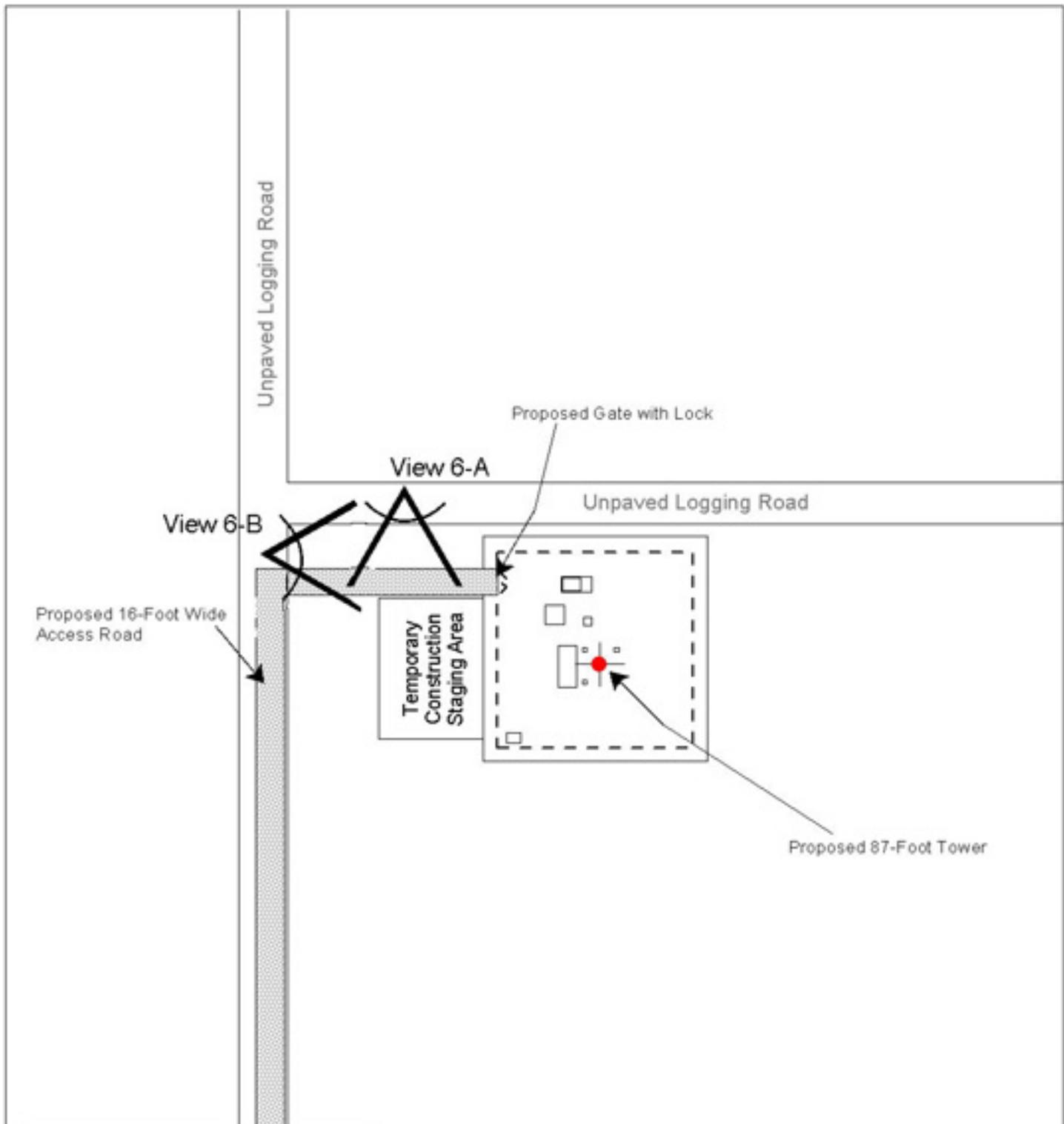


View 3A: Typical ground cover across Site 3.



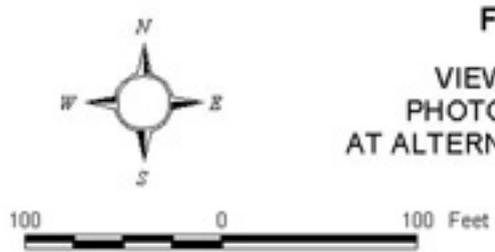
View 3B: Facing east across Site 3.

NOTE: Limited access in this area. These were the only angles available for photographs. Behind the photographer is the active portion of Taxiway B. An access road to building 45 is also located behind the photographer.



**LEGEND**

-  Photograph View Angle
-  Proposed ASR-11 Tower
-  Proposed Access Road
-  Proposed ASR-11 Site Fence



A compass rose indicates North (N), South (S), East (E), and West (W). Below it is a scale bar showing 100 feet on either side of a 0-foot center point.

**Figure 3.9-3**  
**VIEW ANGLES FOR**  
**PHOTOGRAPHS TAKEN**  
**AT ALTERNATIVE ASR-11 SITE 6**

Source: Tyndall AFB, USAF, 2001a

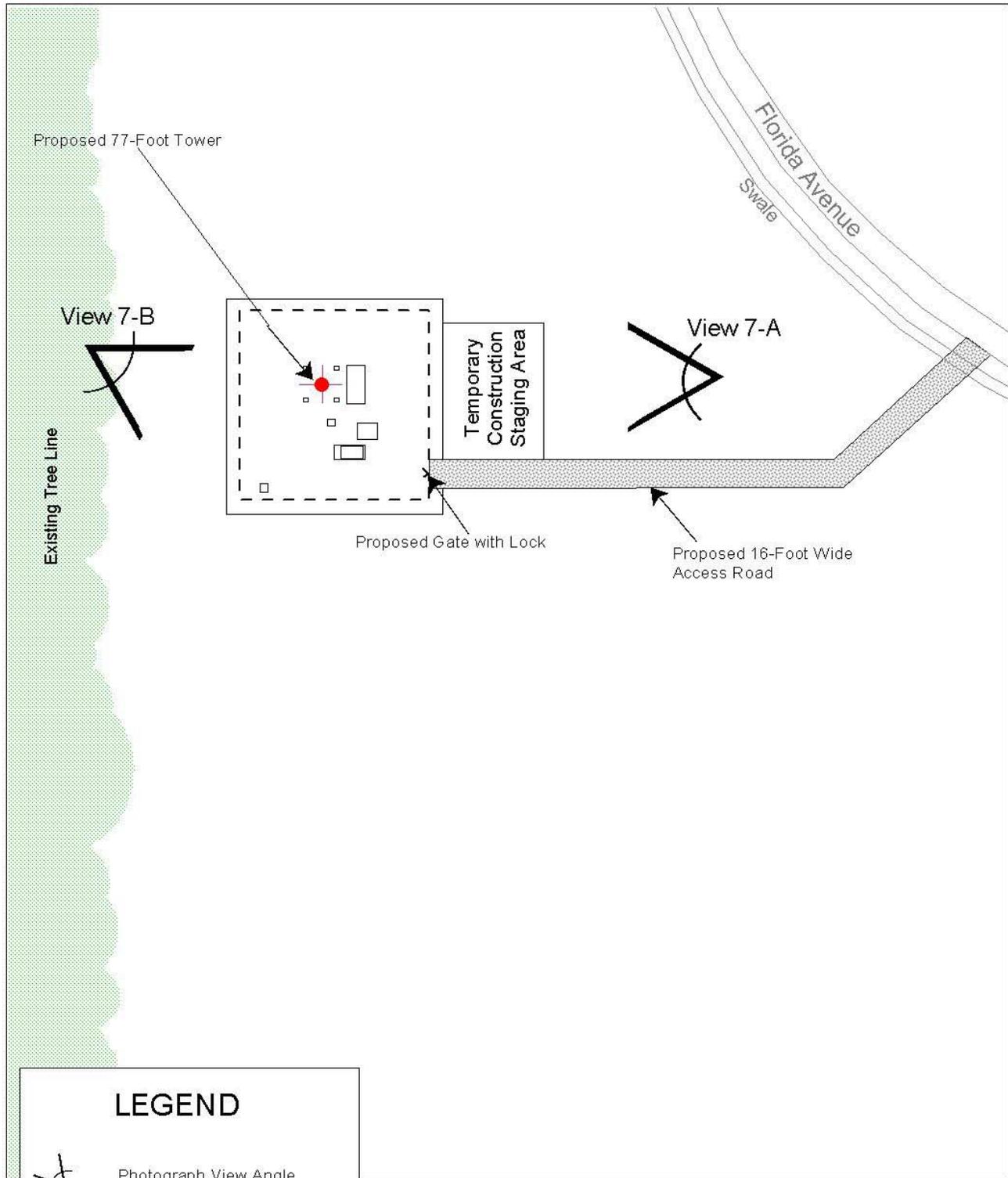
Figure 3.9-4: Photographs Taken During August 2001 Site Visit of Tyndall AFB ASR-11 Candidate Site 6



View 6-A: Facing south toward the northwest corner of Site 6.

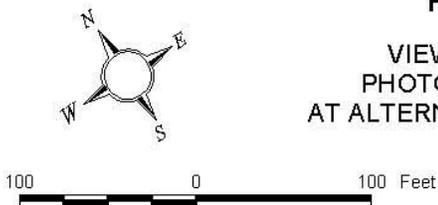


View 6-B: Facing east with Site 6 on the south side of the east/west access road.



**LEGEND**

-  Photograph View Angle
-  Proposed ASR-11 Tower
-  Proposed Access Road
-  Proposed ASR-11 Site Fence



**Figure 3.9-5**  
**VIEW ANGLES FOR**  
**PHOTOGRAPHS TAKEN**  
**AT ALTERNATIVE ASR-11 SITE 7**

Tyndall Air Force Base  
 Digital Airport Surveillance Radar

Figure 3.9-6: Photographs Taken During August 2001 Site Visit of Tyndall AFB ASR-11 Candidate Site 7



View 7-A: Facing northwest across Site 7.



View 7-B: Facing southeast across Site 7 toward the SEADS building.



**Figure 3.9-7: Existing AN/GPN-20**

The existing **AN/GPN-20** radar is located approximately 1,000 feet east of the southerly end of runway 31R. This area of the base is generally devoid of buildings or other activities. The land use is designated as industrial. The existing radar, along with associated equipment shelters, is shown to the left in Figure 3.9-7.

### **3.9.2 Future Baseline Without the Project (No Action Alternative)**

Tyndall AFB, through its plan of development, is attempting to develop in a manner that accomplishes its mission, optimizes existing facilities, and provides the most efficient, professional surroundings possible (USAF, 2000b). The base has developed its five-year plan of capital improvement projects for the period 2001 through 2006. At this time, there are no planned land use changes in the immediate vicinity of **Sites 3, 6, or 7** that would substantially alter the future aesthetic conditions of its surroundings. The construction proposed as part of the F-22 conversion is not anticipated to alter the aesthetic characteristics of the base. Although the land use at Site 7 is slated to change from open space to airfield operations and maintenance, it is not a change that would affect aesthetics. The aesthetic characteristics of the area of the existing **AN/GPN-20** are not anticipated to change in the future.

### **3.10 CULTURAL RESOURCES**

This section identifies cultural resources that have been identified at Tyndall AFB and indicates if any known resource areas are located in the vicinity of the existing AN/GPN-20 location or the alternative ASR-11 sites.

#### **3.10.1 Existing Conditions**

A Historical Preservation Plan (HPP) was completed for Tyndall AFB in 1996 and is being revised with completion expected in early 2003 (USAF, 2003). The purpose of the plan was to facilitate the implementation of procedures to assist Tyndall AFB with the management of its cultural resources, and compliance with federal historical preservation statutes. The plan was constructed from archeological data that had been collected from 1902-1993. Archeological investigations over this ninety-year period predominantly centered on coastal areas, with investigations in interior sites. Historical buildings were evaluated in 1995. Responsibility for implementation of the HPP lies with the Tyndall AFB Base Civil Engineer and, specifically, with the Cultural Resource Manager (USAF, 1996 and USAF, 2003).

**3.10.1.1 Archaeological Sites.** The HPP identifies 100 known archeological sites across the base. Sixty-three of the sites were coastal, while 18 were inland. Fourteen sites could not be properly plotted for lack of information or alteration of the coastline and five sites were isolated finds that could not be connected to an encampment/larger area. The sites were divided into four categories: Native American Coastal Shell Middens, Native American Interior Middens, Euro-American Pre-World War II and World War II Military-Related. Of the 100 known sites, 20 have been determined ineligible or too scattered to be eligible for the National Register of Historic Places (NRHP) by base officials and the State Historic Preservation Officer (SHPO). Twenty-two sites have been found eligible for the NRHP, of which 17 have SHPO concurrence. The remaining 58 sites are considered ineligible by the base, however, concurrence by the SHPO has not yet been obtained and therefore, these sites are formerly listed as “unknown”. In addition there are 11 cemeteries, covering almost eight acres, spread across the base. Tyndall historically and presently maintains these cemeteries (which are not generally eligible as NRHP sites, except

in special circumstances) and has no intentions to disturb them. Currently, no sites are formally listed on the NRHP.

Deficiencies of the cultural resource investigations, as listed in the HPP, include the lack of interior surveys, need to re-survey some areas of the coast, and the lack of a survey of “object” resources pre-dating 1956. Each of these categories carries a list of specific prioritized items to be completed. The HPP also lists two long-term goals. The first is to conduct archeological surveys of sites not yet cleared by the SHPO. The other is to develop a maintenance and rehabilitation plan for historical buildings (see Section 3.10.1.2).

The known archaeological sites described above are not proximate to any of the three alternative ASR-11 sites (**Site 3**, **Site 6**, or **Site 7**) or the existing **AN/GPN-20**. Tyndall AFB cultural resources contact has indicated a low probability of disturbing historical or archaeological artifacts at any of the sites.

**3.10.1.2 Historic Properties.** Federal regulations define historic properties as prehistoric and historic sites, buildings, structures, districts, or objects included in, or eligible for inclusion in, the NRHP, as well as artifacts, records, and remains related to such properties. To be determined eligible for inclusion in the NRHP, properties must be important in American history, architecture, archaeology, engineering, or culture. Ordinarily on Tyndall AFB, only properties 50 years or older, directly associated with the Air Force’s military mission, are evaluated for National Register listing. In view of the fact that, like World War II, the Cold War had a tremendous impact on cultural and political developments throughout the world, the USAF requires its installations in the US to consider Cold War-era properties for National Register eligibility. The concern is that highly significant properties may be destroyed prior to reaching the 50-year mark.

As of 1994, Tyndall AFB contained 549 operations facilities and 604 residential buildings. In a 1995 survey of pre-1956 structures, 152 of the operation/facilities buildings and 604 of the housing facilities were surveyed. Of these, 19 operations buildings were recommended as eligible for the NRHP and all housing was recommended as ineligible. Formal concurrence from

the SHPO has yet to be obtained for either determination. None of the alternative ASR-11 sites (**Site 3**, **Site 6**, or **Site 7**) nor the current location of the **AN/GPN-20** are located near any of the 19 buildings currently eligible for the NRHP.

### **3.10.2 Future Baseline Without the Project (No Action Alternative)**

It is not anticipated that there would be any substantial change in cultural resource conditions at the alternative sites or the existing AN/GPN-20 location in the future without the project due to the absence of known cultural resources in the respective areas. Human disturbance around the sites, specifically **Sites 3** and **7**, decreases the likelihood of the presence of such resources. Intensive timber harvesting and plantings and resultant disturbance during the 1800s and early 1900s in the vicinity of **Site 6** decrease the likelihood of any historical or archaeological remains in the area.

## **3.11 POLLUTION PREVENTION AND HAZARDOUS WASTE**

### **3.11.1 Existing Conditions**

The following sections describe current conditions and practices on the base with regard to pollution prevention and hazardous waste.

**3.11.1.1 Pollution Prevention.** A number of pollution prevention policies and procedures have been implemented, including: development and implementation of a hazardous waste management plan; a base pollution prevention program; and, a plan for spill prevention, control, and countermeasures. The overall implementation of these policies and procedures on the base has and is expected to reduce existing and potential pollution. The base *Draft Pollution Prevention Management Plan* encourages the use of environmentally friendly substances in place of hazardous chemicals whenever possible (USAF, 1998). The use of alternative cleaners containing grease-eating enzymes, for instance, has lessened the need for petrochemical based cleaning substances in the aircraft and ground vehicle maintenance shops. Oil-water separators are used to prevent hydrocarbons such as oil and grease from entering the sewage system. Separation of hazardous waste and non-hazardous waste streams also reduces management/disposal costs and makes the process more efficient (USAF, 1998).

**3.11.1.2 Hazardous Waste.** Hazardous waste generated at Tyndall AFB includes antifreeze, paint, stripping elements, batteries, oils, spent solvents, contaminated gasoline and other wastes associated with aircraft operation and maintenance. Most of the hazardous wastes are stored in buildings on the base. These storage areas can contain less than 55 gallons of waste for an unlimited duration. Once 55 gallons is reached, however, the waste barrel must be sealed and dated by the generator, who then has 72 hours to transfer the waste to one of two facilities that are permitted for 90-day storage. Disposal of waste is contracted through an outside vendor and is usually maintained on a monthly schedule. The Hazardous Materials Management Office is responsible for ordering, tracking, storing, distributing, the use of and disposal of hazardous materials. By use of a single-point control, hazardous waste can be more effectively tracked and managed. Spill response management and preparedness is the responsibility of the Primary Hazardous Waste Accumulation Site and Flight Line Fire Station (USAF, 2000c).

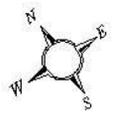
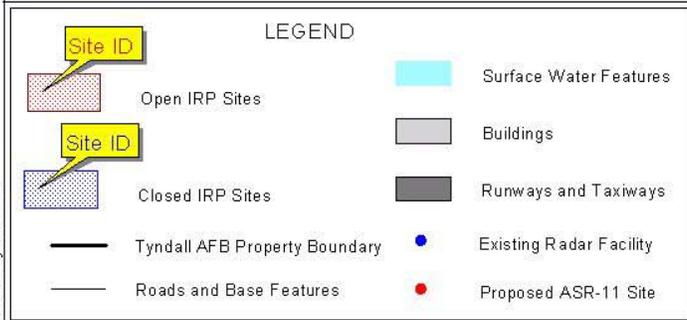
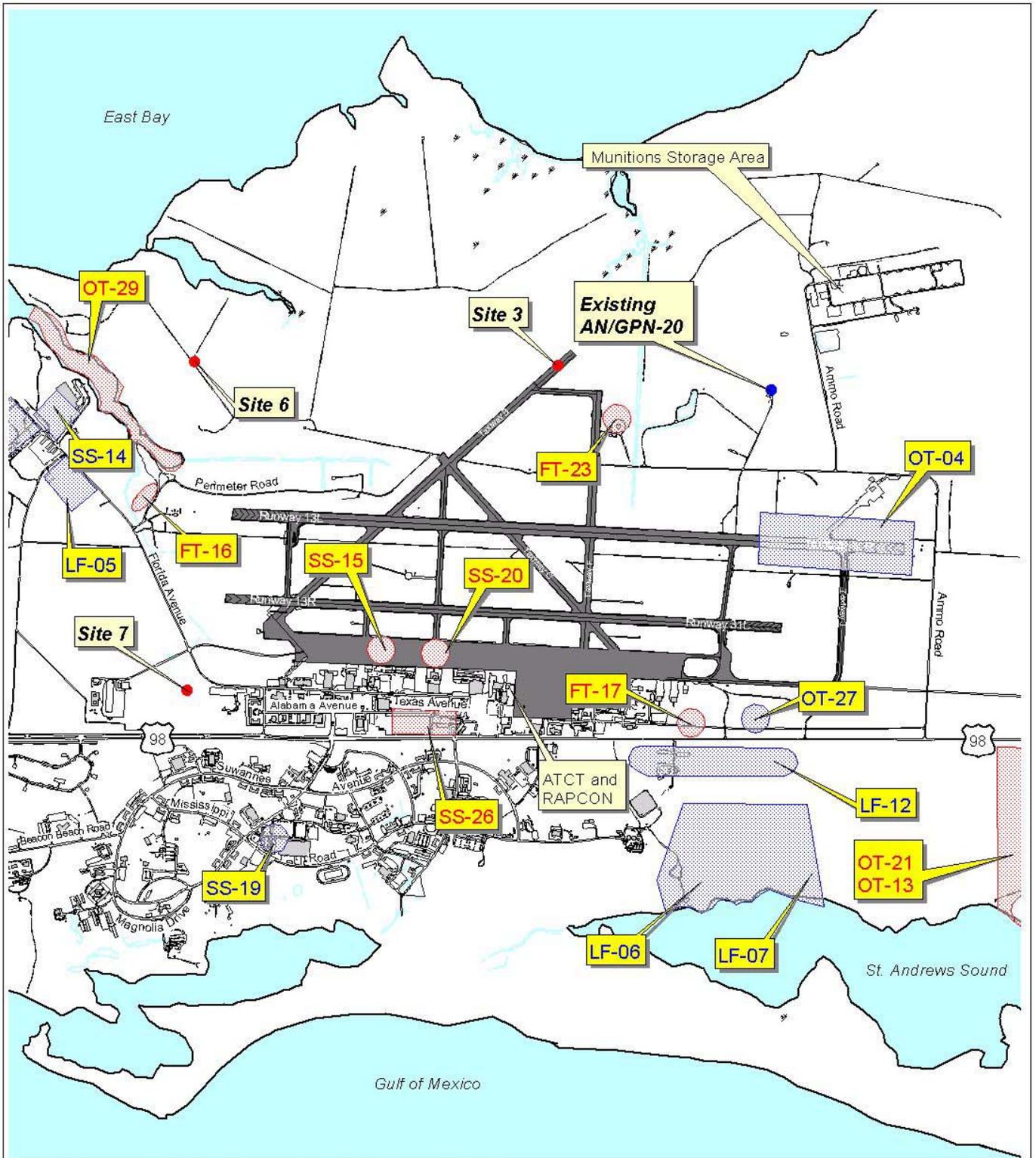
By 1999, the base had removed, upgraded, or replaced all liquid fuel storage tanks. Of the 53 tanks located on the base, 50 are above ground storage tanks (ASTs) and three are underground storage tanks (USTs). The six largest ASTs have been fitted with double bottoms and the three USTs are all located at the base exchange gas station. Propane fuel tanks, several of which are USTs, are also located on the base (USAF, 2000b).

Contaminated sites located on the base are addressed under two programs, depending on the date and/or contamination. The first is the Installation Restoration Program (IRP) run by the Department of Defense (DoD). This program identifies, investigates and remediates sites contaminated prior to 1984. The 1984 cut off is linked to the Environmental Restoration Account which funds the work. Investigation and remediation are conducted under Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and/or Florida regulations (for petroleum contamination). The second program is the Base Environmental Compliance program, which is subject to state, local and federal regulation (USAF, 2003).

The DoD began comprehensive environmental investigations at Tyndall AFB in 1981 as part of the IRP, initially identifying 18 sites. As investigations continued over the next decade, a number of sites were added; eventually the number of IRP sites more than doubled the initial finding, totaling 37 potential sources of contamination. Currently 21 sites have been formally closed, requiring no further remedial action planned (NFRAP). Three sites are awaiting Records of Decision (RODs). The remaining 13 sites are in the remedial investigation and/or feasibility study process. The EPA added Tyndall AFB to the National Priorities List (NPL) in 1997 due to several site risks, but the primary site responsible for inclusion in the NPL is the Shoal Point (also known as Fred) Bayou, located along the northern shore of the base. DDT pesticide contamination was found in the sediments of the bayou.

Sites falling under the Base Environmental Compliance Program are petroleum sites. The sites are in or awaiting compliance investigation action and/or funding. Over 300 wells are situated across the base to monitor groundwater quality.

In relation to the three ASR-11 sites, **Site 7** is over 1,000 feet southeast from the nearest Contamination Assessment Report site, the designation used for petroleum contamination sites. The proposed fiber optic route for Site 7 crosses an abandoned fuel line and two petroleum contamination sites. The abandoned fuel line crosses Florida Avenue just east of Site 7 and consists of an 8-inch steel pipe that has been purged and remains empty (USAF, 2001c). The first of the two petroleum sites is a result of former fueling operations near the apron located southwest of runway 13R/31L. The second petroleum contaminated site is a result of a former AST that was leaking and has been replaced with an underground storage tank (UST). No free product remains at these sites; however, contaminated soils are located in the area (USAF, 2001c). **Site 6** is over 2,000 feet from the nearest contaminated site (OT-29), which is Fred Bayou, known for DDT in its sediments (Figure 3.11-1). **Site 3** is approximately 1,000 feet from the Little Cedar Bayou Fire Training Area (FT-23). Used from 1980 to approximately 1995, the Little Cedar site contained a concrete-lined fire pit into which JP-4 fuel was pumped from ASTs, and ignited. Investigations indicate that the contamination is moving towards the southeast,



**Figure 3.11-1.**  
**LOCATION OF IRP SITES IN THE VICINITY**  
**OF THE EXISTING RADAR FACILITY AND**  
**PROPOSED ALTERNATIVE ASR-11 SITES**

**TYNDALL AIR FORCE BASE**  
**DIGITAL AIRPORT SURVEILLANCE RADAR**

Bay County, Florida



Source: Tyndall AFB

away from Site 3 (USAF, 2001c). The current **AN/GPN-20** is located approximately 800-1,000 feet from the nearest contamination assessment report site.

### **3.11.2 Future Baseline Without the Project (No Action Alternative)**

It is anticipated that remediation of hazardous waste sites will continue, as Tyndall AFB advances in the process of being de-listed from the NPL. Continuing pollution prevention measures on the base, such as management of hazardous materials and newly generated wastes may reduce potential for new sources of contamination to arise at any of the candidate sites, or the existing **AN/GPN-20**.

## **3.12 ELECTROMAGNETIC ENERGY**

### **3.12.1 Existing Conditions**

Electrical currents and components generate electrical fields and magnetic fields. These may be stationary or dynamic. Depending on the equipment, electromagnetic radiation that propagates outward may be created. Electromagnetic radiation, electrical fields and magnetic fields are localized effects. The electromagnetic environment at a particular location and time is the sum of all the localized electric and magnetic fields plus electromagnetic radiation arriving from both natural and manmade sources. Electric fields, magnetic fields, and electromagnetic radiation are of interest here because of the potential for health effects from some frequency ranges and the potential for electromagnetic interference on other electronic equipment. Electromagnetic radiation is discussed first in this introduction.

Electromagnetic radiation travels at a uniform speed ( $3 \times 10^8$  m/sec in a vacuum; the speed of light). It is often useful to consider electromagnetic radiation as a wave, and to describe it in terms of frequency (where 1 Hz means 1 cycle per second and 1 kHz means 1000 cycles per second). Some parts of the electromagnetic spectrum are more commonly described in terms of wavelength, which is inversely related to frequency.

The spectrum of electromagnetic radiation includes visible light, which has frequencies on the order of  $5 \times 10^{14}$  Hz (specifically, wavelengths from 400 nanometers (nm) to 760 (nm)).

Electromagnetic radiation frequencies higher than that of visible light include ultraviolet light, X-rays, and gamma rays. These types of electromagnetic radiation are described as “high energy” and have the potential to “excite” electrons, to thereby ionize molecules, and to thus affect body chemistry. Especially in high absorbed doses, high frequency electromagnetic radiation can adversely affect health (NSC, 1979).

Electromagnetic radiation with frequencies lower than that of visible light include infrared light and radio waves. Frequencies below  $10^{12}$  Hz ( $10^6$  MHz) are categorized as radio waves. These include frequencies used for AM radio; short wave, television, and FM broadcast bands; pagers; cellular telephones; mobile radios; radar; and microwave technologies. These frequencies are non-ionizing, and have the following known health effects: (1) effects caused by directly heating body tissues and (2) electromagnetic interference with electronic medical devices such as pacemakers.

The heating of tissues caused by exposure to radio frequency radiation (RFR) at relatively low incident power densities can normally be accommodated. However, in some tissues, heat produced at higher radiation intensities may exceed temperature-regulating mechanisms so compensation for heat gain may be inadequate. Thus, exposure at high intensities can cause thermal distress or irreversible thermal damage. Eye tissues are particularly vulnerable (NSC, 1979).

Electromagnetic interference with medical devices has become an issue because medical devices increasingly use sensitive electronics at the same time that RFR and other electromagnetic sources are proliferating (FDA, 1996). Medical equipment that may be susceptible to interference from RFR includes cardiac pacemakers, defibrillators, ventilators, apnea monitors, and electric wheelchairs (VTDPS, 1996; IEEE, 1998). Medical device manufacturers are expected to design and test their products to ensure conformance with standards for protection against radio frequency interference (IEEE, 1998). Nevertheless, users of medical devices are generally advised to keep RFR emitters as far away from their devices as is practical (IEEE, 1998).

There is currently considerable interest on the part of some researchers, the news media, and the public regarding the possibility of other health effects from non-ionizing radiation (and/or other electrical or magnetic fields). However, there is no scientific consensus that non-ionizing radiation presents any other health risks (USAF, 1995a) and no consensus about a mechanism by which non-ionizing radiation could have any such effects (i.e., effects other than those associated with heating of tissue and interference with medical devices).

Existing equipment at the **AN/GPN-20** radar emits electromagnetic radiation in the radio frequency range. Locations close to and directly in front of the antenna (whether rotating or stationary) are considered unsafe when the radar is operating, on the basis of the potential for heating of body tissues. Similarly, the tower immediately below the antenna is considered unsafe. The intensity of the radar energy diminishes with distance, so there would be less tissue heating at greater distances.

Within electronic systems for radar, any high-voltage tubes capable of emitting X-rays are typically shielded with lead, and shielding on other equipment is typically adequate to limit transmitted radiation to acceptable levels. While there are unshielded components present at the AN/GPN-20 site such as incandescent light bulbs, there is no indication or expectation that significant levels of electromagnetic radiation other than RFR is emitted into the environment by the AN/GPN-20 system.

Magnetic fields and electric fields other than electromagnetic radiation are also created by electrical equipment. In everyday situations, high-voltage power lines, televisions, computer monitors, fluorescent lights, light dimmer controls, improperly grounded equipment, and appliances used with non-polarized extension cords create measurable electric fields. Transformers, alternating current (A/C) adapters, motors (e.g., analog clocks and kitchen appliances), low-voltage power lines, vehicles, and old electric blankets also create measurable magnetic fields.

The presence of various electrical components in the AN/GPN-20 radar system inevitably means that there are a variety of magnetic and electrical fields in the vicinity of the AN/GPN-20 equipment. As noted above, there is currently considerable interest on the part of some

researchers, the news media, and the public regarding the possibility of health effects from electrical or magnetic fields. However, no scientific consensus exists that electrical or magnetic fields present health risks other than those associated with medical devices. A 1996 National Academy of Science report, *Possible Health Effects of Exposure to Residential Electric and Magnetic Fields*, concluded that:

*The current body of evidence does not show exposure to these fields presents a human-health hazard. Specifically, no conclusive and consistent evidence shows that exposures to residential electric and magnetic fields produce cancer, adverse neurobehavioral effects, or reproductive and developmental effects.* (National Academy of Science, 1996).

### **3.12.2 Future Baseline Without the Project (No Action Alternative)**

Without the project, the future electromagnetic field conditions in the vicinity of **Site 3**, **Site 6** and the existing **AN/GPN-20** are expected to remain similar to those currently present. A communications antenna proposed for installation on top of or adjacent to the SEADS building may alter the electromagnetic field characteristics in the immediate vicinity. However, since **Site 7** is located approximately 1,000 feet from the proposed antenna, no significant changes on the site are anticipated. There is no planned change in land use at the site locations that would substantially alter the electromagnetic field characteristics in the area.

## **4.0 ENVIRONMENTAL CONSEQUENCES**

The No Action alternative would leave the existing AN/GPN-20 and air traffic control equipment in place. In addition, no new construction, renovation, or operations would be required. Since the No Action alternative would involve no alteration to any of the three proposed ASR-11 sites at Tyndall AFB, this alternative would result in no impact to environmental resources. Thus, the environmental consequences of the No Action alternative would be identical to those identified in Section 3.0, Future Baseline Without the Project. However, selecting the No Action alternative, and thereby having to maintain the existing AN/GPN-20, would require relying on existing radar equipment that is not capable of meeting future user requirements for transmitting digital signal data to new digital automation system air traffic controller displays. The existing radar also does not meet user requirements for increased target detection, weather reporting, and improved reliability.

The proposed action would involve the construction of a new ASR-11 facility and the removal of the existing AN/GPN-20. Potential impacts associated with the action alternative involve those resulting from construction (short-term) and operation (long-term) of the DASR system. The potential impacts are described in this section for each of the alternative ASR-11 sites (Site 3, Site 6, and Site 7). Impacts are presented by environmental parameter. Mitigation measures that may be required to reduce impacts are described in Section 6.0.

### **4.1 LAND USE**

#### **4.1.1 Short-term Impacts**

Short-term impacts associated with the construction of the ASR-11 and removal of the AN/GPN-20 would include the temporary disruption of land uses due to elevated noise levels, increased dust, interference with roadway access, and visual effects. Construction of the ASR-11 facility would also include the utilization of a temporary construction staging area approximately 75 feet by 100 feet adjacent to the ASR-11 site. This staging area would be used by construction personnel to store equipment for use during installation of the ASR-11.

The installation of utilities, such as power, telephone, and fiber optic cable to each of the sites could temporarily affect land uses along the proposed alignment routes. While specific alignments would not be defined until final design, it is anticipated that some land uses along the alignments would be affected by elevated noise levels and increased dust associated with open trench excavation. **Sites 3 and 7** are relatively similar with regard to the distance/area of impact for installing telephone and electric utilities (between 150 and 380 feet) and fiber optic connection (between 5,780 feet and 6,100 feet). Since Site 3 is within an area surrounded by airfield with no occupied buildings in the vicinity, noise and dust impacts area anticipated to be minimal. However, it is anticipated that the route that construction vehicles would use to access Site 6 would require coordination with airport personnel to avoid disruption of flight activities on the nearby runways. **Site 6** would require a 1,300-foot utility connection with almost 10,000 feet of fiber optic cabling. It is likely that many wildlife species live in the area within and surrounding Site 6 due to its location in a forested area. The noise and increased dust may affect plant and animal species; however, these impacts would be limited to the small construction area and short construction period typical of routine utility construction. Construction at Site 6 would require filling of the portion of wetland within the site boundaries. Adjacent upland areas may experience some erosion during construction activities due to construction vehicle and equipment use. Temporary impacts to the adjacent wetland may result from the placement of erosion controls along the work limits. Although **Site 7** is located in an area of open space, airfield operations and administrative buildings border the site on two sides. The closest building (SEADS facility) is located 1,000 feet to the southeast and may potentially be impacted by increased noise and dust, as well as traffic disruptions generated during construction. The future land use designation of Site 7 as airfield operations and maintenance appears appropriate, and construction in this area would be consistent with ongoing base activities.

Upon the successful completion of the construction of the ASR-11, the existing **AN/GPN-20** radar would be dismantled. Impacts to surrounding land uses related to removal of the AN/GPN-20 would be minimal due to the location of the radar in an industrial area in a relatively remote location. Increased noise and dust during the short duration of the dismantling activities are anticipated to be minimal.

#### **4.1.2 Long-term Impacts**

Installation of the ASR-11 at **Site 3** would be generally compatible with the surrounding airfield land use. This area at the abandoned end of Taxiway B has a distinct military character due to its former use as a taxiway and the adjacent airstrips. Although the site is surrounded on three sides by tall pines, the immediate area is designated as airfield, and construction of the DASR is not anticipated to interfere with this land use.

Construction of the ASR-11 at **Site 6** would require vegetation clearing within an area designated as open space, which, by definition, consists of conservation area, buffer space and undeveloped land. The base planner has indicated that construction of an ASR-11 at this site would be considered a compatible land use. However, wetlands on the site would be permanently lost due to fill required for the permanent placement of the radar facility. As stated in the *General Plan*, development on base should be restricted upland areas to prevent further damage of the natural environment (USAF, 2000b).

As confirmed by the Base Planner, an ASR-11 facility at **Site 7** would be compatible with existing land use designation of open space and the future land use designation of the area as airfield operations and maintenance. It has not yet been determined when the land use designation at Site 7 will change.

## **4.2 SOCIOECONOMICS**

### **4.2.1 Short-term Impacts**

Construction of the ASR-11 at any of the three alternative sites would require similar work efforts, and therefore, would have similar effects on socioeconomic conditions at the base. Construction at **Site 3**, **Site 6**, or **Site 7** would not adversely impact the socioeconomic conditions at Tyndall AFB. There would be a slight short-term increase in the revenue generated in the surrounding area due to construction employees utilizing local businesses for supplies and personal use. During the construction period, the work crew would consist of approximately 10 persons.

Upon the successful completion of the construction of the ASR-11, the existing **AN/GPN-20** radar would be dismantled and packed for shipment and possible reuse at another location. No effects on socioeconomic conditions are anticipated to result from this activity.

#### **4.2.2 Long-term Impacts**

In the absence of other independent activities at Tyndall AFB, socioeconomic conditions would return to the existing conditions once the ASR-11 construction was completed. The new radar facility would not be staffed, and therefore, would have no long-term effects on socioeconomic conditions.

#### **4.2.3 Environmental Justice**

Under its instructions for the Environmental Impact Analysis Process (32 CFR Part 989), the Air Force must demonstrate compliance with Executive Order 12898, entitled *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, to determine the effects of federal programs, policies, and activities on minority and low income populations.

**Sites 3, 6, and 7** are all located within the same Census Tract (120005-0007; See Figure 3.2-1). Similarly, all three sites are located within the interior of the base and, therefore, do not have the potential to impact off-base private property. To the south of the Tyndall AFB Census Tract are the Gulf of Mexico and the Atlantic Ocean, both of which are open waters. East, north and northwest of the Tyndall Census Tract, there are seven Census Tracts (12005-5, -6, -8, -9, -10, -19 and -20) that abut the opposite side of East Bay from Tyndall AFB. All but two (Tracts 12005-10 and -20) of these tracts have socioeconomic conditions similar to Tract 7. Tracts 12005-10 and -20 both differ in that the percent below poverty rates are much higher than the other tracts; and Tract 12005-10 has a substantially higher percentage of blacks.

The proposed ASR-11 site locations are within the interior of Tyndall AFB and at a distance from any areas containing an unduly high minority or low-income population. As described throughout Section 4.0, the proposed DASR installation is not expected to have significant human health or environmental impacts. Therefore, the proposed project is not expected to pose

adverse health or environmental impacts to residents of neighborhoods in adjacent census tracts, regardless of income or ethnicity. Thus, the proposed project is consistent with the objectives of Executive Order 12898.

### 4.3 UTILITIES AND TRANSPORTATION

The following describes potential short- and long-term effects to utilities as a result of the installation of a DASR system at any of the three alternative sites. Connections to existing electrical and telephone service can be made in close proximity to each of the proposed sites. Fiber optic cable connections, which must be made from each alternative site to the existing RAPCON, are depicted in Figures 4.3-1, 4.3-2, and 4.3-3.

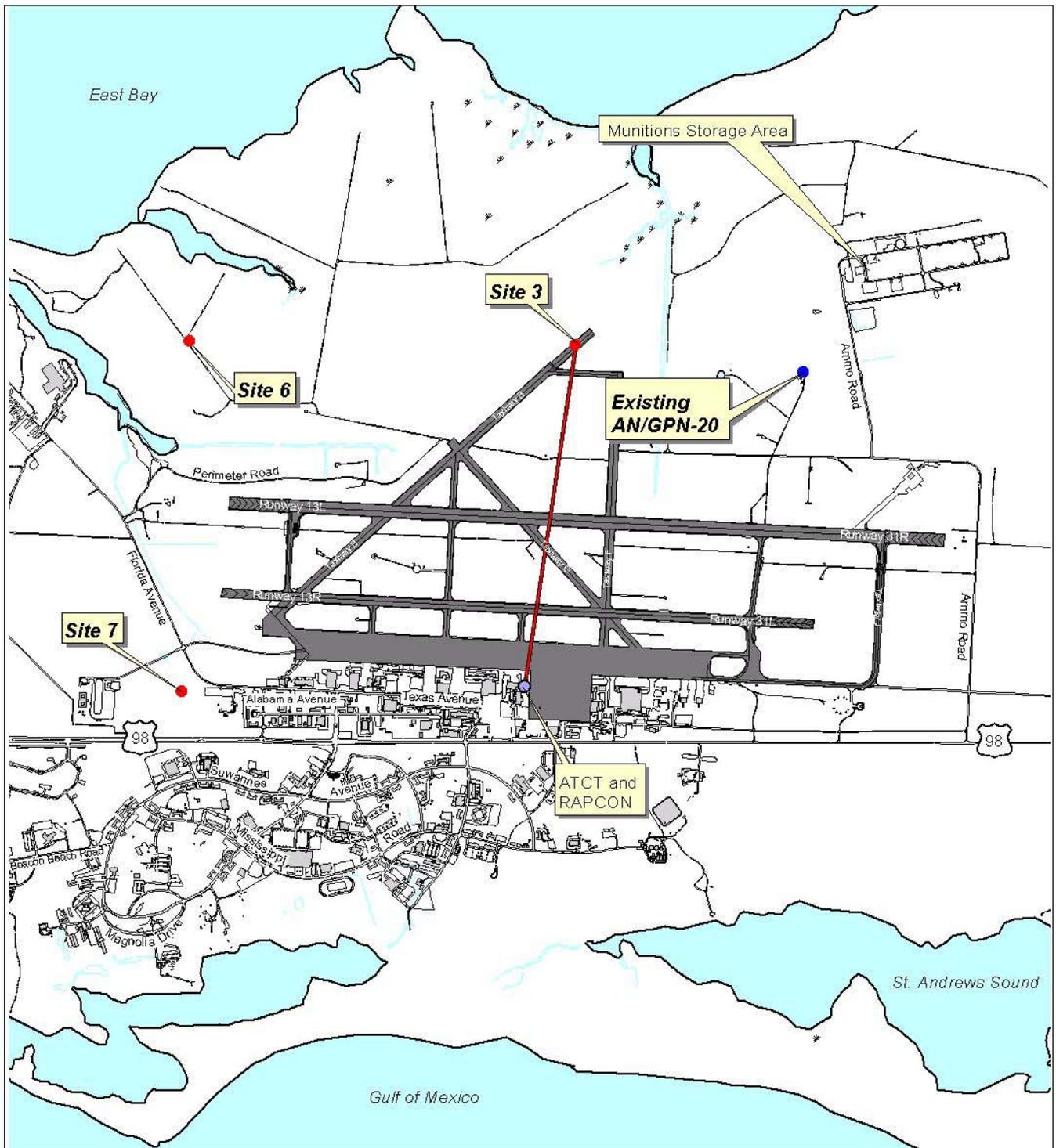
#### 4.3.1 Short-term Impacts

Various lengths of open trench excavation would be needed to provide utility connections, such as electrical, telephone, and fiber optic for the ASR-11 future operation (Table 4.3-1). The ASR-11 would not require water or wastewater service for operation, although these utilities would be required, to a limited extent, during construction.

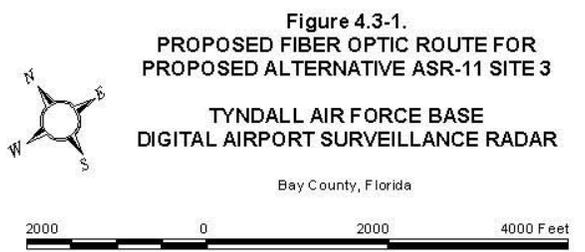
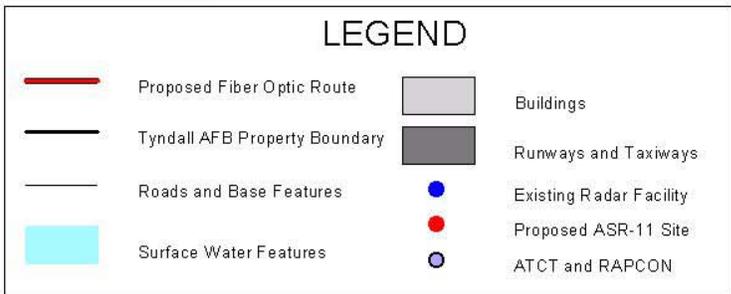
**Table 4.3-1 Required Lengths of New Utility Connections**

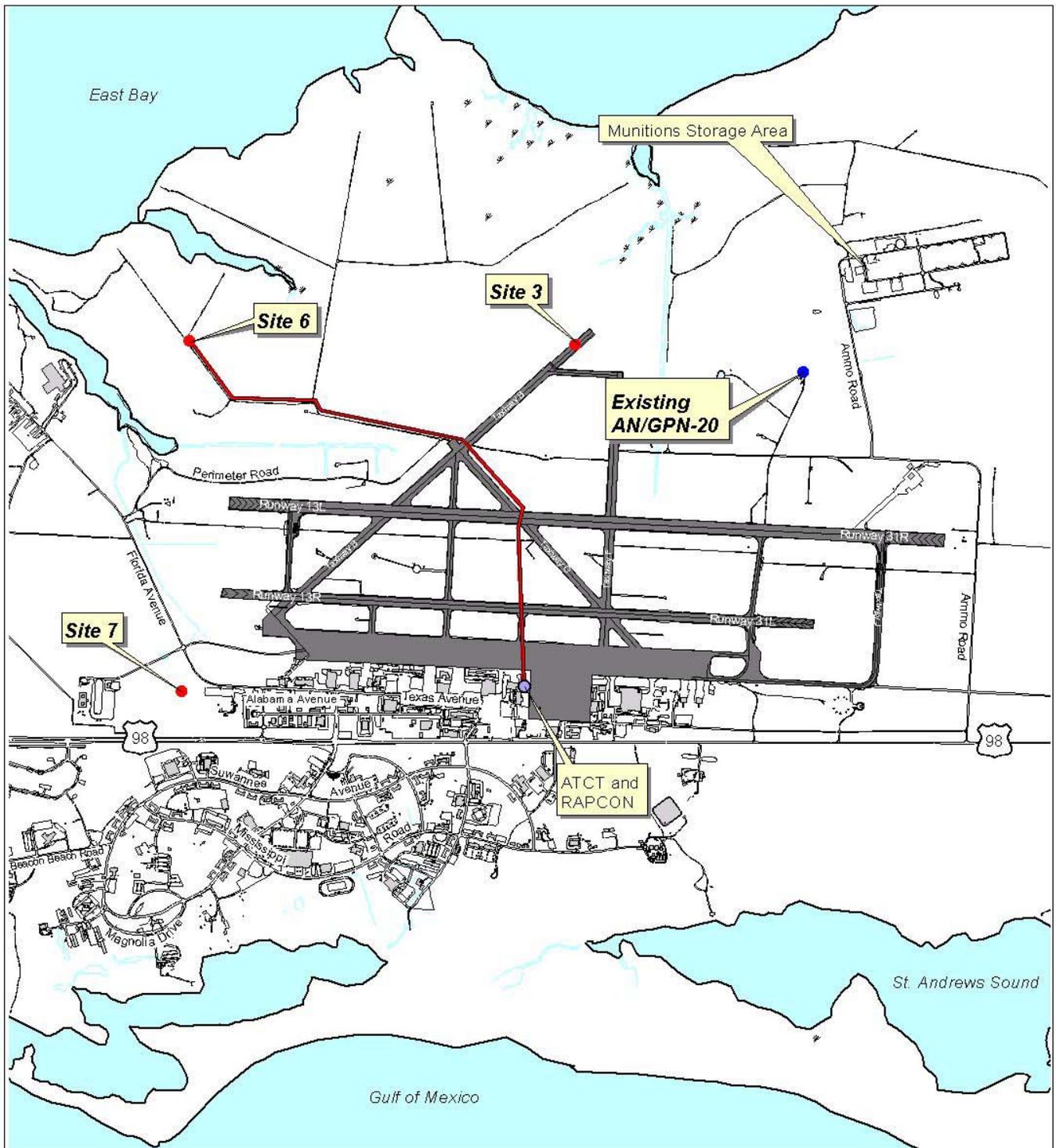
<b>ASR-11 Alternative Site</b>	<b>Length of Electric Power Conduit Required</b>	<b>Length of Telephone Cable Required</b>	<b>Length of Fiber Optic Cable Required</b>
Site 3	380 feet	380 feet	5,780 feet (1.1 miles)
Site 6	1,300 feet	1,300 feet	9,720 feet (1.9 miles)
Site 7	150 feet	150 feet	6,100 feet (1.2 miles)

Source: USAF, 2001a

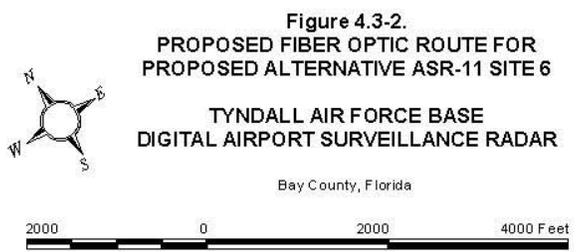
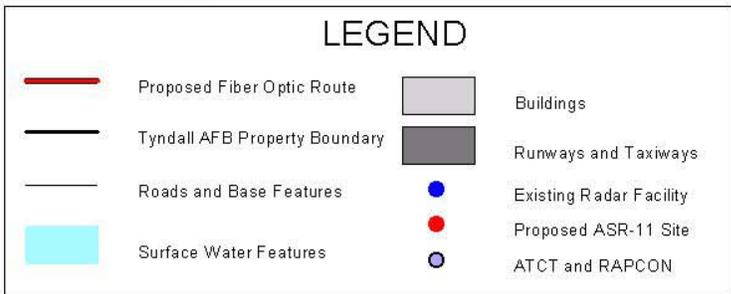


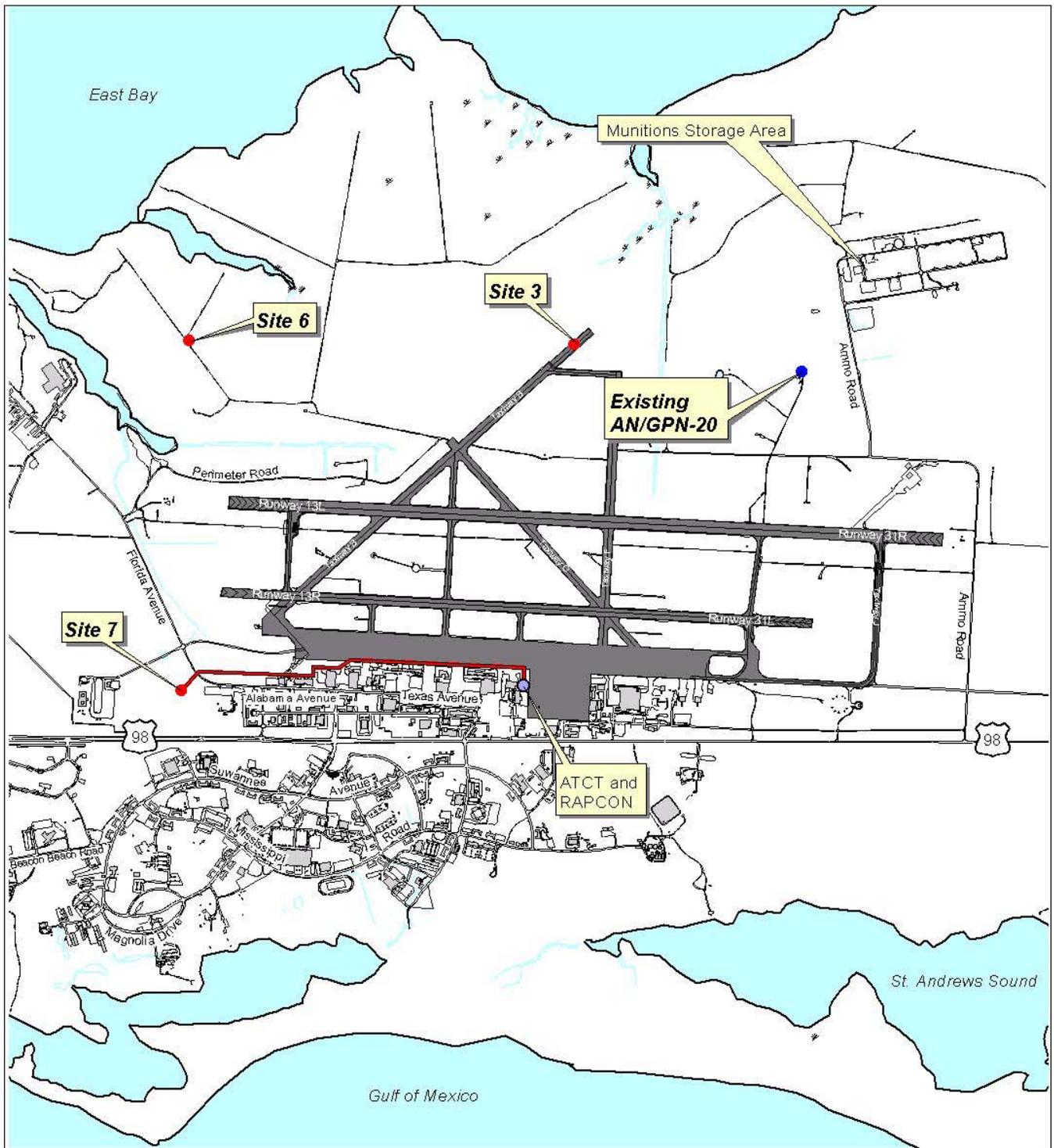
Source: Tyndall AFB, USAF, 2001a



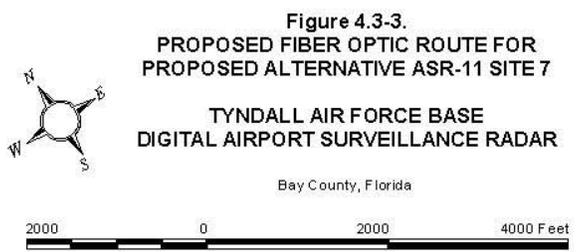
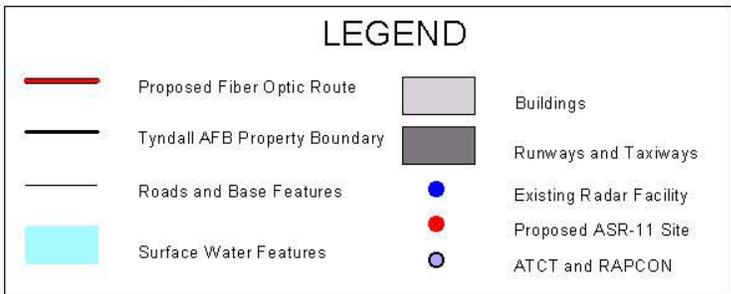


Source: Tyndall AFB, USAF, 2001a





Source: Tyndall AFB, USAF, 2001a



**4.3.1.1 Water Supply and Distribution.** A temporary increase in water demand would occur during construction. A water source would be supplied on site by mobile water tanks. Due to the limited number of construction workers, short construction period, and the adequate water supply from Bay County Utilities, it is not anticipated that the water demand (both for workers' personal need and dust control) during construction of the ASR-11 would adversely impact the water supply at Tyndall AFB.

**4.3.1.2 Wastewater Treatment.** There would be an insignificant short-term increase in demand for sewage treatment during construction. The existing wastewater system would not be impacted since portable wastewater units would be on-site and waste would be transported to the nearby treatment facility.

**4.3.1.3 Solid Waste.** As the existing AN/GPN-20 is dismantled, material that is not suitable for reuse or recycling would need to be removed. All solid waste would be handled in accordance with standard base procedures. Any hazardous materials would be disposed of following Tyndall AFB policies and protocols and relevant state and federal regulations (see Section 4.11 on hazardous waste).

**4.3.1.4 Electricity.** Adequate electrical power is available to each of the alternative ASR-11 sites. Although the Wherry Feeder is operating at maximum capacity, the base has indicated that sufficient power would be available for construction any of the sites. Power would be provided to **Site 3**, **Site 6** and **Site 7** through underground conduits at a length of 380 feet, 1,300 feet, and 150 feet, respectively. Short-term impacts causing disruption of power to the immediate area around connection points may occur while links are made.

**4.3.1.5 Telephone.** Telephone lines would be extended from the existing locations identified in Section 3.3.1.5. While the final route and distance to the new ASR-11 site will be determined when the final site and design are selected, it is expected that telephone line connections for **Sites 3, 6 and 7** would coincide with the power lines as mentioned in the preceding section. All lines will come from the same existing aboveground lines/power poles. If power disruption occurs

during installation, then telephone service in the immediate area of the alternative ASR-11 sites may be temporarily lost.

**4.3.1.6 Fiber Optic Cable.** Fiber optic cable would either be run through a newly built conduit or through pre-existing conduits. The fiber-optic cable connecting **Site 3** or **Site 6** to the RAPCON would span a total distance of approximately 5,780 or 9,720 feet, respectively. Installation of fiber optic cable will require crossing the two runways (13L/31R and 13R/31L) if either Site 3 or Site 6 were chosen. The number of feet of new conduit would depend on existing conduits that may underlie the runways. The existence of these conduits has yet to be determined and, regardless of the conduits, Site 6 would require over 2,000 feet of trenching. **Site 7**, which would require 6,100 feet of cabling, would run adjacent to existing buildings and would require only one secondary road crossing. However, the path between Site 7 and RAPCON would also require crossing an abandoned fuel line and two petroleum contamination sites. The fuel line is located approximately three to four feet below the ground surface; therefore, any excavation to this depth over the line would result in exposing this pipe. Since the pipeline has been purged, no petroleum product is anticipated to be encountered at this site. The petroleum contamination sites also contain no free product; however, contaminated soils are anticipated to be encountered. These soils would be handled in accordance with Tyndall AFB policies and regulations. If trenching activities encounter groundwater, there could also be groundwater contamination which would need to be addressed during all dewatering activities, in accordance with base policies and regulations.

**4.3.1.7 Natural Gas.** Natural gas is not required for the proposed ASR-11 radar. Therefore, no impacts are expected to occur with regard to natural gas on Tyndall AFB. No natural gas lines exist in the vicinity of **Sites 3** and **6**. Natural gas lines are located in the airfield maintenance and operations area (north of US Highway 98) within the vicinity of **Site 7**, but utility/and fiber optic lines will not need to cross any natural gas lines.

**4.3.1.8 Transportation.** Impacts to transportation systems at Tyndall AFB during construction would be minimal. Increased activity in the vicinity of the ASR-11 site, including connecting the ASR-11 to existing utilities, could temporarily disrupt local traffic due to trenching activities.

Personal vehicles and small trucks of the contractor and subcontractors would be on site or at an area designated by the Air Force. There would be a period of approximately 10 hours when cement trucks would enter the base for the foundation placement. The foundation concrete must be placed continuously, thus necessitating the 10-hour period. Heavy vehicles, including cement trucks, are frequently on base roads. Therefore, the cement trucks and other construction vehicles necessary for construction are not expected to have an impact on base roads. **Sites 3, 6 and 7** are not located on any primary or alternative munitions convoy routes; however, travel along primary and secondary munitions convoy routes would be required to access all three sites. The limited amount of travel to and from the chosen site would have minimal impact on munitions transport. The largest disruption of traffic is anticipated to result from the utility installations. Both Sites 3 and 6 would require runway crossings of fiber optic cable to reach RAPCON. The potential to disrupt air traffic could be considerable, depending on the methods and planning during construction. Site 7 would require crossing only one secondary road. Dismantling the existing **AN/GPN-20** would require slightly increased traffic on the primary, secondary and tertiary roads that lead to it; however, the limited number of vehicles required to dismantle the radar is not anticipated to impact transportation conditions on the base.

#### **4.3.2 Long-term Impacts**

It is not anticipated that future utility and transportation conditions at Tyndall AFB would be affected as a result of operating the proposed ASR-11 radar system. The operation of the ASR-11 radar system would not require water resources, wastewater treatment, collection of solid waste, or natural gas resources; therefore, no impacts to those utilities are anticipated. The addition of electrical power, telephone lines, and fiber optic cable at any of the alternative radar sites would not have a significant effect on the utilities in the area. No long-term impacts to traffic are anticipated. **Site 3** would not require the construction of an access road, while **Sites 6 and 7** would require gravel access roads of 2,980 and 350 feet (respectively), which would not affect the existing transportation network on base. Discontinuing the operations at the existing **AN/GPN-20** radar is not expected to significantly affect area utilities or transportation.

## **4.4 NOISE**

### **4.4.1 Short-term Impacts**

Construction of the radar tower and supporting infrastructure, including connections to power and telephone, and installation of the fiber optic cable, would result in elevated noise levels as grading and minor excavation occur. Noise impacts are expected to be minimal at any of the three alternative sites due to the existing elevated noise levels associated with base operations. **Sites 6 and 7** are located in areas designated as open space, very near the 80 dBA noise contour line adjacent to the runways on the base. **Site 3**, which is located on land designated as airfield, is between the 70 and 75 dBA contour lines. Typical construction equipment noise levels may be reduced by using well-maintained equipment and by installing mufflers and engine jackets. Construction of the tower and supporting infrastructure is anticipated to take approximately three weeks: therefore, any elevated noise levels would be restricted to this short-term period.

Dismantling of the existing **AN/GPN-20** would result in a localized, temporary elevation of noise levels. However, the AN/GPN-20 also lies adjacent to the airfield where existing noise levels are around 80+ dBA. Due to the expected short duration of the dismantling activity, noise impacts are expected to be minimal.

### **4.4.2 Long-term Impacts**

No long-term noise impacts are anticipated to result from operation of the proposed ASR-11 radar. Noise levels generated by the ASR-11 would be maintained at a level consistent with current Occupational Safety and Health Administration (OSHA) regulations as specified in CFR Title 29, Part 1910. Noise from ASR-11 equipment located in operational areas would be designed not to exceed 55 decibels at any time. Noise from the ASR-11 system equipment located in general work areas should not exceed 65 decibels, including periods when the cabinet doors are open. The antenna pedestal with its drives, mounted on the tower, will be designed to produce noise levels at or below 55 decibels outdoors on the ground at a distance of 100 feet from the tower. The contribution to noise in the surrounding areas is expected to be negligible, particularly when compared to the persistent nature of existing noise produced from the surrounding aircraft operations. In addition, the ambient noise generated from air flight

operations is anticipated to be louder than existing conditions following the proposed conversion of F-15 fighter jets to the F-22 fighter jets.

## **4.5 AIR QUALITY**

### **4.5.1 Short-term Impacts**

The short-term air quality impacts of constructing an ASR-11 would be similar at each of the three alternative sites. Site clearing and construction vehicle traffic at any of the alternative sites may generate fugitive dust during the construction period. Humid conditions typical of the area may suppress fugitive dust during construction activities. **Site 6** would require a 2,980-foot access road in addition to clearing and fill activities, **Site 7** would require a 350-foot access road off a paved road, and **Site 3** would require demolition of a portion of abandoned Taxiway B, however no access road would be required. All of these activities would result in a slight degradation of air quality during the construction period.

Trenches for underground utilities (electrical, telephone and fiber optic cable) would also increase the amount of dust in ambient air conditions along the utility corridors. None of the sites are located near sensitive receptors and the application of dust suppressant as needed during construction would minimize adverse air quality impacts. Consequently, no substantial adverse short-term dust impacts are anticipated at any of the sites.

All construction vehicles and some equipment would produce emissions that could temporarily affect air quality. However, because the number of vehicles and duration of construction required to perform the work is limited, emissions are not anticipated to exceed the NAAQS or HAPs set forth in the FESOP, in the vicinity of the selected ASR-11 radar site. Similar to the installation of the new ASR-11, dismantling of the existing **AN/GPN-20** radar would generate limited fugitive dust and some vehicle and equipment emissions. However, due to the small site and short construction period the AN/GPN-20 dismantling is not anticipated to cause an exceedence of either the federal or county air quality standards.

#### **4.5.2 Long-term Impacts**

Operation of the ASR-11 radar station at any of the three alternative sites would produce identical emissions. Since the base monitors its emissions of HAPs and is required to maintain a preset limit, the new ASR-11 site is not anticipated to have adverse impacts on air quality. Sources of emissions during the operation of the ASR-11 would include the operation of the emergency diesel generator at the ASR-11 site, and evaporative loss of fuel from the AST at the radar site. As described in the Programmatic EA for the NAS program (USAF, 1995a), the emergency generator is anticipated to be operated approximately once a week for testing and during occasional power outages. The emissions anticipated to be produced by the emergency generator would be far below the 100 tons per year threshold, which requires review under the Prevention of Significant Deterioration regulations. Emissions are therefore expected to have no adverse impact on air quality (USAF, 1995a). The evaporative loss from the associated AST is also expected to be minimal, and to have no adverse impact on air quality. At all three of the alternative sites, minimal fugitive dust is expected to be generated by maintenance vehicles.

Tyndall AFB, which operates as a “synthetic minor” non-Title V source, is shielded from Title V, but must operate within the base FESOP, which limits its emissions of HAPs. The AST associated with the new ASR-11 would need to be added to the base permit, because the 1,000-gallon diesel tank exceeds the 660 gallon tank threshold. However, the corresponding removal of the existing AST and generator at the AN/GPN-20 site should result in no net increase in emissions from generator operation. Assuming the new generator is more efficient than the existing generator, the base may be able to receive credit for a slight reduction in emissions from the active diesel generators on the current permit (USAF, 2000c).

## **4.6 GEOLOGY AND SOILS**

### **4.6.1 Short-term Impacts**

The construction of the ASR-11 facility would have similar effects on the soil at each of the three alternative ASR-11 sites. Excavation for the footings of the radar tower typically does not exceed eight feet in depth; however, **Site 6** may require additional construction consideration due to the presence of wetlands on site. Differential settling of the soils beneath the proposed ASR-

11 tower could have a detrimental effect on the stability of the tower unless addressed during construction. Excavation for the utility trench is typically four feet deep and may be up to 10 feet wide. None of the utility trenches are anticipated to intercept any geological or soil feature that would create an impact.

The temporary construction staging area would be removed upon project completion and would not be anticipated to substantially impact geology or soils. The dismantling of the **AN/GPN-20** would not require any ground disturbance. Therefore, there would be no impact to the soil or geology from this activity.

#### **4.6.2 Long-term Impacts**

No long-term impacts to the existing soils or geology are anticipated if the ASR-11 were constructed at any of the alternative sites. Similarly, dismantling of the existing AN/GPN-20 is not anticipated to result in any long-term impact to the existing soils or geology.

### **4.7 SURFACE WATER AND GROUNDWATER**

#### **4.7.1 Short-term Impacts**

Tyndall AFB contains few open water bodies (lakes, bayous), however, as indicated in Section 3.8.1.2, wetlands cover 40 percent of the base. According to NWI maps, Site 3 is located approximately 100 feet from the nearest wetland area, while Site 7 is greater than 300 feet from the nearest wetland area. No surface waters, including wetlands, are located on **Sites 3** and **7**. Therefore, no adverse impacts on surface waters are anticipated due to the installation of an ASR-11 facility at either of these alternative sites. Construction at **Site 6**, situated between Fred and Chatterson Bayous, would require filling wetlands as part of the installation of the ASR-11 facility. Hay bales and silt fencing would be installed along the work limits at Site 6 to avoid further impacts to the adjacent wetlands and nearby drainage swales that may discharge into the bayous. Regardless of the site chosen, all construction activities would follow the base best management practices (BMP) guidelines to minimize sedimentation and erosion during storm events.

Excavation for the radar tower footings (approximately 7 to 8 feet deep) may penetrate the water table. The three alternative sites are located a distance of approximately 1,000-2,000 feet from the nearest known contamination spots; therefore, impacts resulting from contact with contaminated groundwater are unlikely.

Trenching activities along the proposed utility corridor for **Site 3** are not anticipated to adversely affect surface waters on base. The proposed fiber optic route for **Site 6** is anticipated to require the filling of wetlands. The fiber optic cable route selected for **Site 7** passes through two IRP sites, a CAR site related to a septic tank/package treatment source, and an abandoned liquid fuel line. In the event that any contaminated soils/groundwater are encountered, proper base procedures would be followed (see Section 4.11) to avoid the migration of the contaminants within the utility trench toward any surface or ground water.

#### **4.7.2 Long-term Impacts**

There would be no long-term impacts to the surface water or groundwater if the ASR-11 were to be constructed at **Site 3** or **Site 7**. An area of wetlands would be permanently lost if construction of the ASR-11 occurred at **Site 6**. Final design of the DASR facility at any location would accommodate surface drainage. There would be minimal change in stormwater runoff at any of the three sites and along access roads, where applicable. Removal of the **AN/GPN-20** is not anticipated to have an impact on stormwater runoff or groundwater.

### **4.8 BIOLOGICAL RESOURCES**

The following describes potential short- and long-term effects of the installation of the DASR system on biological resources. The biological resources addressed in this section consist of vegetation, wildlife, and wetlands.

#### **4.8.1 Short-term Impacts**

The short-term impacts of installing an ASR-11 would be relatively similar at **Sites 3** and **7**; however, **Site 6** possess a very different biological environment in terms of vegetation, wildlife habitat and wetland resources.

**4.8.1.1 Vegetation.** If **Site 3** is chosen for construction of the ASR-11 facility, no vegetation clearing is anticipated due to the paved ground surface on and around the site and proposed construction staging area. The construction of the ASR-11 (i.e. the installation of the antenna foundation and tower, utilization of a temporary construction staging area, and other site improvements and grading) would require the most clearing of vegetation in the immediate areas of the facility, within the temporary construction staging area, and within the corridor of the access road of **Site 6**. The entire site, including the construction staging area, is forested with pine trees and a shrubby understory. A Tyndall AFB biologist has indicated that several species of sundews (*Drosera* sp.) are located in the drainage ditches adjacent to Site 6, and the presence of a protected sundew species within the site itself is likely. The access road is proposed to follow an existing unpaved logging road. Therefore, the minimal vegetation growing within the layout of the existing access road would also be lost. The anticipated total area of clearing is just greater than one-half acre.

**Site 7** would require the excavation of just greater than one-half acre of maintained lawn within the area of the proposed facilities and access road. No removal of trees or shrubs is anticipated for any of the construction activities if this were chosen.

**4.8.1.2 Wetlands.** There are no wetlands in the vicinity of **Site 3** or **Site 7**; therefore, no impacts to wetlands are anticipated to result from the construction of the ASR-11 facility at either of these locations. **Site 6** is located within a wetland area, thus permanent wetland impacts would result if construction of the ASR-11 were to occur on this site. If this site were selected for the ASR-11 a Finding of No Significant Impact (FONSI) could not be signed as part of the NEPA documentation. Instead, a Finding of No Practicable Alternative (FONPA) would be required. According to the *General Plan*, Tyndall AFB tries to avoid undeveloped areas as alternatives for proposed construction on base. Therefore, selection of Site 6 would be inconsistent with the goals of Tyndall AFB Natural Resources Program. State and federal regulations may require a replication area to compensate for any wetland area lost.

**4.8.1.3 Wildlife.** Construction of the ASR-11 would require disturbing greater than one-half acre at each of the alternative sites. Some brief displacement of wildlife populations may occur in the area of each site during construction. Since **Site 3** has a paved surface, little wildlife would be anticipated to occur within the site itself, although some species may utilize areas adjacent to the site.

**Site 6** contains habitat for a variety of animal species that exist on the base. Both large and small animals potentially use the area of Site 6 as a source of food and cover. More mobile species would be able to leave the area during construction if this site was chosen, while less transient species would be lost.

**Site 7** contains a minimal wildlife population that would likely experience brief displacement during construction. Wildlife is more likely to utilize the wooded area located adjacent to Site 7 to the northwest than the site itself. Wildlife in the vicinity of Sites 3, 6 and 7 are likely to be accustomed to periodic noise intrusions because of the persistent nature of the nearby airfield operations.

The dismantling of the **AN/GPN-20** may have minor adverse impacts, such as temporary displacement, on wildlife habitat in the vicinity. However, the disturbance is anticipated to be short in duration.

## **4.8.2 Long-term Impacts**

Operation of the ASR-11 at any of the three alternative sites has the potential to result in limited long-term impacts on biological resources, as noted below.

**4.8.2.1 Vegetation.** Installation of the ASR-11 facility at **Sites 3** and **7** would result in clearing of approximately one-half acre of vegetation for the facility site. **Site 6** would require clearing at the site and in the location of the proposed access road along the unpaved access road. Upon project completion, disturbed areas outside of the permanently cleared areas, including the temporary staging area, would be landscaped. The area within a 140-foot by 140-foot perimeter fence would be covered with gravel. Given the existing ground cover at Sites 3 and 7,

construction at these sites would not significantly impact vegetation. The potential loss of state-protected species (sundews) at Site 6 would be a potentially significant impact on vegetation and would be a deterring factor for selecting this site.

**4.8.2.2 Wetlands.** Although **Site 3** contains no wetlands on the site itself, it does have wetland areas in close proximity to the north, east and south. Stormwater drainage from the completed site would be treated and/or directed in accordance with base policies (which address state and federal requirements) to avoid permanent impacts to these wetland areas. An area of wetlands on **Site 6** would be permanently lost during the construction phase. The long-term operation and maintenance of an ASR-11 facility at this site would require stormwater drainage to be treated and/or directed in accordance with base policies to avoid degradation of the remaining adjacent wetlands. Due to the absence of wetlands from proposed ASR-11 **Site 7**, and the existing AN/GPN-20, no long-term impacts to wetlands are anticipated in these areas.

**4.8.2.3 Wildlife.** Given the relatively small area required for the DASR facility, as well as the general lack of suitable habitat indicators in the vicinity of the **Sites 3** and **7**, the presence and operation of a DASR system should not interfere with wildlife. Although **Site 6** provides wildlife habitat, similar biological features extending for thousands of feet in all directions surround the site. Therefore, the permanent displacement of wildlife due to the operation and maintenance of a DASR facility is not anticipated to be significant since similar habitat for wildlife exists immediately adjacent to the proposed alternative site.

The ASR-11 tower could theoretically pose an obstacle to birds flying through the area of the chosen site. However, as discussed in the Programmatic EA for the NAS program (USAF, 1995a), the relatively low height of the ASR-11 antenna is not anticipated to pose a substantial threat to birds flying through the area. Removal of the AN/GPN-20 from its existing site is not anticipated to adversely impact wildlife in the area.

## 4.9 AESTHETIC RESOURCES

### 4.9.1 Short-term Impacts

In general, the aesthetic values of **Sites 3** and **7** are linked to the military function of the base; thus, views of ASR-11 construction activity at these two sites would not significantly impact the aesthetic resources of these areas. Although Site 3 is bordered on three sides by tall pines, the site is located on a former taxiway and the main function of this portion of the base is airfield operations, thus, construction activities related to ASR-11 installation would not likely result in an aesthetic impact. Although Site 7 is located in a functional portion of the base, Tyndall AFB has expressed concern of an aesthetic impact due to the proximity of the both the SEADS facility and US Highway 98. However, due to a short construction period and the small area in which staging and installation would be located, no significant aesthetic impacts are anticipated. The location of the **AN/GPN-20** is also within an area of military activities; therefore, dismantling of this facility is not anticipated to adversely affect the aesthetic resources of the area. Construction of an ASR-11 facility at **Site 6** is not anticipated to result in aesthetic impacts since traffic through this heavily forested area is limited to vehicles along the unpaved access roads and low-flying aircrafts overhead.

### 4.9.2 Long-term Impacts

The long-term presence and operation of the ASR-11 at **Site 3** would be consistent with the aesthetic character of the military structures and facilities, including active taxiways and runways, in the vicinity. An ASR-11 facility at **Site 7** would be visible from US Highway 98. The area is currently open space and maintained as lawn, thus construction of a radar facility could potentially result in an aesthetic impact. Views from the highway include the northwest ends of the active runways and the existing SEADS facility, as well as other administrative buildings. A row of existing trees located parallel to the highway may provide some screening of the facility. These views from the highway may lessen the potential for a significant aesthetic impact. **Site 6** is the most secluded of the candidate sites, located in the woods along access roads to the Fred and Chatterson Bayous approximately 2,000 feet from the base's northern shoreline. In all other directions forested areas exist with actively used military areas beyond the woodlands. There would be few occupied areas on base and off base that could potentially view

the radar constructed within a heavily forested area with a thick tree canopy. Therefore, no aesthetic impacts are anticipated to result if the ASR-11 were constructed at Site 6.

Operation of the ASR-11 facility at any of the alternative sites would require the installation of security lighting. The lighting fixtures to be installed at the ASR-11 facility would generally consist of the following: two red, steady burning, 116-watt obstruction lights on top of the antenna; 200-watt area lights on each stair landing of the tower to provide illumination for authorized personnel; two 1,000-watt outdoor area lights to be projected downward to illuminate the area within the fenced footprint; and fluorescent indoor area lighting installed in the two buildings on the site. The tower stairway lights and outdoor area lighting would be illuminated only when needed for nighttime maintenance activities. Impacts associated with lighting at Site 3 and Site 7 are expected to be minimal due to their location within the functional areas of the base. The additional lighting at Site 6, located in a more remote portion of the base, would not be highly visible from areas within and adjacent to the base due to the thick forest surrounding the site. Therefore, no impacts associated with the lighting at this site would be anticipated. The dismantling of the existing AN/GPN-20 is not anticipated to result in an aesthetic impact.

#### **4.10 CULTURAL RESOURCES**

##### **4.10.1 Short-term Impacts**

Based on cultural resource surveys for Tyndall AFB, cultural resources are not likely to be present within the proposed project areas for the three alternative sites or the existing AN/GPN-20 facility. Neither the construction activities associated with the installation of the ASR-11 nor the dismantling of the existing AN/GPN-20 is anticipated to impact any cultural resources. In addition, trenching that would be required for utility connections at any of the three potential ASR-11 sites is not anticipated to impact cultural resources, based on the current knowledge of the locations of such resources.

##### **4.10.2 Long-term Impacts**

No long-term impacts to cultural resources are anticipated to result from the operation of the ASR-11 at any of the three alternative sites or the removal of the existing AN/GPN-20.

## **4.11 POLLUTION PREVENTION AND HAZARDOUS WASTE**

### **4.11.1 Short-term Impacts**

**4.11.1.1 Pollution Prevention.** Construction of the ASR-11 radar system would comply with applicable Tyndall AFB policies and guidelines for pollution prevention. In addition, a pollution prevention plan has been developed for the NAS program. This plan prohibits the use of all Class I ozone depleting chemicals and directs the contractor to minimize the use of Class II ozone depleting chemicals, and toxic substances. These requirements are applicable regardless of whether **Site 3**, **Site 6** or **Site 7** is chosen. Consequently, hazardous waste generation would be avoided to the maximum extent possible during construction of the radar facility and the dismantling of the existing **AN/GPN-20** facility.

**4.11.1.2 Hazardous Waste.** At each of the three alternative ASR-11 sites, some hazardous materials and waste would likely be used and generated during the ASR-11 construction, including: equipment fuel, engine oil, hydraulic oil, grease, and other equipment operation and maintenance material. Refueling of equipment may also take place at the alternative ASR-11 site selected for construction. Any hazardous materials used during ASR-11 construction would be used, stored, transported, and disposed in accordance with base, military, state, and federal regulations. In addition, no contaminated groundwater or contaminated soils are anticipated to be encountered.

The existing AN/GPN-20 radar may have been painted with lead paint. The AN/GPN-20 would be dismantled and transported off-site. The contractor would be required to separately and properly package, mark, and dispose of hazardous materials encountered during the dismantling of the AN/GPN-20 and facilities equipment. Small pieces of lead paint may chip off of the AN/GPN-20 radar during the dismantling process; however, substantial amounts of lead paint would not be left on site as a consequence of the decommissioning of the radar. As part of the dismantling, the area would be surveyed prior to final site decommissioning, and, if present, lead

paint chips would be collected and disposed of in accordance with applicable Tyndall AFB policies and procedures.

#### **4.11.2 Long-term Impacts**

The potential long-term pollution and hazardous waste impacts resulting from operation of the ASR-11 are discussed in the following sections. No pollution and hazardous waste impacts are anticipated to result from the dismantling of the existing AN/GPN-20.

**4.11.2.1 Pollution Prevention.** As indicated above, the NAS program has a pollution prevention plan, which prohibits the use of all Class I ozone depleting chemicals, and directs the contractor to minimize the use of Class II ozone depleting chemicals and toxic substances. In addition, operation of the ASR-11 system would comply with all applicable Tyndall AFB policies and guidelines for pollution prevention. Consequently, hazardous waste generation is anticipated to be reduced to the maximum extent possible during the operation of the ASR-11 facility.

**4.11.2.2 Hazardous Waste.** Operation of the radar facility at any of the three alternative sites would include the installation of a 1,000-gallon AST for the storage of diesel fuel to be used for emergency power generation. The fuel tank would be affixed with the National Fire Protection Agency Fire Diamond label to indicate the presence of hazardous material/chemicals. The tank would comply with all federal, state, and base spill control requirements, including a leak detention system overflow alarm and double-wall and/or secondary containment as specified in 40 CFR 112.

In addition, hazardous materials and waste would likely be used and generated during operation, including: equipment fuel, engine oil, hydraulic oil, grease, and other equipment operation and maintenance material. All hazardous materials and waste would be used and disposed of in accordance with applicable regulations and base policies. Consequently, it is not anticipated that any soil or groundwater contamination would occur as a result of operating the radar at any of the alternative sites.

## **4.12 ELECTROMAGNETIC ENERGY**

### **4.12.1 Short-Term Impacts**

Construction at any of the ASR-11 alternative sites on Tyndall AFB is not expected to generate RFR at levels that would be harmful to human health. Some low levels of RFR could be generated from commonly used devices at construction sites, such as cellular telephones or portable computers. However, any RFR generated, and any other electric or magnetic fields, would be typical of that which exists throughout the developed human environment and is not anticipated to be harmful to human health.

Dismantling of the existing AN/GPN-20 would occur only after its operation has ceased. Consequently, there should be no RFR hazard to workers involved in the AN/GPN-20 dismantling. Similar to the ASR-11 construction, dismantling activities at the AN/GPN-20 site could generate low levels of RFR from commonly used devices; however, these are not anticipated to be harmful to human health.

### **4.12.2 Long-Term Impacts**

Operation of the ASR-11 radar at any of the three alternative sites would generate identical levels of electric and magnetic fields, including RFR. As discussed in Section 3.12, the RFR generated by the existing AN/GPN-20 is only hazardous at close distances to the radar when it is operating. Similarly, the RFR generated by the ASR-11 would only be hazardous at close ranges, while the radar is operating (see below). The tower immediately below the radar would be in the spillover region, and would be hazardous to humans during radar operation. At any of the three alternative sites, the facility would be sited a sufficient distance from occupied buildings and recreational areas that the radar operation would not pose a RFR hazard to personnel within the general vicinity of any of the ASR-11 sites. To advise personnel in the area of the RFR hazard at close ranges, the perimeter of the ASR-11 facility would be posted with signs warning against approaching the antenna while it is in operation. When the antenna is not in operation, no RFR would be generated, and therefore no RFR hazard would exist.

The following comparison to various RFR safety standards is adapted from the October 1997 *Radiofrequency Impact Analysis for Airport Surveillance Radar-11* (FAA, 1997), prepared for the FAA.

Terms such as “safety standards” and “exposure standards” generally refer to, and are frequently used interchangeably with, specifications or guidelines on maximum public or occupational exposure levels to electromagnetic fields. Such levels are usually expressed as maximum power densities or field intensities in specific frequency ranges for stated exposure durations. Exposure guidelines have been developed by private organizations such as the American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE), and the National Council on Radiological Protection (NCRP, now called the National Council on Radiation Protection and Measurements) as voluntary guidelines for occupational or general public exposure, or both. Governmental agencies such as the Federal Communications Commission (FCC) and various state and municipal bodies have adopted such guidelines or variations thereof as enforceable stands. The draft version of FAA Order 3910.3B, Radiation Safety Program (1997) adopts the ANSI/IEEE exposure guidelines.

The ANSI/IEEE (1992) guidelines cover the frequency range from 0.003 MHz to 300,000 MHz, and separately specify the maximum permissible exposure (MPE) in “uncontrolled environments” (accessible by the general population) and “controlled environments” (such as occupational exposure). In the ASR-11 frequency band of 2,700-2,900 MHz, the MPE for uncontrolled environments is 1.80-1.93 milliwatts per square centimeter ( $\text{mW}/\text{cm}^2$ ) averaged over a 30-minute period. The guideline level for controlled environments is 9-10  $\text{mW}/\text{cm}^2$  averaged over a 6-minute period.

In 1988, the International Radiation Protection Association (IRPA) published guidelines (1988) for occupational and public exposure to RFR in the frequency range 0.001 MHz to 300,000 MHz. At the ASR-11 frequency, the MPE for occupational exposure is 5  $\text{mW}/\text{cm}^2$  averaged over a 6-minute period. The MPE for non-occupational exposure is 1  $\text{mW}/\text{cm}^2$  averaged over a 6-minute period. The MPE for pulsed RFR is set at 1,000 times the MPE for time-averaged exposure. Thus, at ASR-11 frequency, the MPE for pulsed RFR is 1,000  $\text{mW}/\text{cm}^2$  peak pulse

power density. The NCRP also published guidelines for human exposure. For RFR at ASR-11 frequency, the MPE for occupational exposure is  $5 \text{ mW/cm}^2$ , averaged over 6 minutes. The corresponding MPE for exposure of the general population is  $1 \text{ mW/cm}^2$ , averaged over 30 minutes.

In August 1996, the FCC adopted a hybrid standard based in part on the ANSI/IEEE (1992) guidelines and in part on the NCRP guidelines. For occupational exposure to RFR in the ASR-11 frequency band, the FCC MPE is the same as the NCRP guideline level.

The power density of the ASR-11 beam varies considerably between the near-field (within 260 feet of the antenna) and the far-field (greater than 260 feet away) (FAA, 1997). Thus, far-field conditions apply to almost all the receptors near the proposed radar sites and are presented herein. Any differences in power densities would be conservative, because near-field calculations lead to lower predicted power densities than do far-field calculations. The power density of the ASR-11 signal can be represented by peak pulse power - the maximum power level of a single pulse - or as the power averaged over a time period, usually several or more minutes. At a distance of 23 meters (75 feet) from the ASR-11 antenna, the peak power density of the ASR-11 signal will be  $945 \text{ mW/cm}^2$ , less than the  $1,000 \text{ mW/cm}^2$  MPE for peak power density established by the IRPA, as discussed above. The peak power density will decrease rapidly with distance from the antenna. At all locations more than 23 meters (75 feet) from the ASR-11 antenna, the ASR-11 signal will comply with the MPE for peak power density established by the IRPA.

The average (mean) power radiated by the ASR-11 is 2.1 kilowatts (kW). At any point near the ASR-11 in normal operation (i.e. antenna is rotating), the average power density is lower than the peak density by the factor 0.00034. For the ASR-11 frequency range (uncontrolled environments), the ANSI/IEEE MPE is  $1.8$  to  $1.93 \text{ mW/cm}^2$ , averaged over 30 minutes. The average power density of the ASR-11 signal decreases with distance from the antenna and will fall below  $1.9 \text{ mW/cm}^2$  at a distance of 10 meters (33 feet) from the radar antenna. Since the ASR-11 will be mounted on a tower greater than 10 meters in height, persons at ground level would not be exposed to RFR levels exceeding the ANSI/IEEE MPE. At distances of more the

13 meters (43 feet) from the ASR-11 antenna, the ASR-11 signal will comply with the MPE levels for the general population,  $1.0 \text{ mW/cm}^2$ , set forth in IRPA, NCRP, and FCC guidelines, discussed above. Thus, no impacts to nearby receptors are anticipated at any of the three alternative sites. At all locations near the radar, the ASR-11 signal will comply by an even wider margin with the guideline levels for occupational exposure set forth by ANSI/IEEE, IRPA, NCRP, and FCC. As a precautionary measure, signs would be posted at the perimeter of the DASR facility advising personnel and the public against approaching the radar facility during operation.

## **5.0 COMPARISON OF ENVIRONMENTAL CONSEQUENCES AND SELECTION OF ENVIRONMENTALLY PREFERRED ALTERNATIVE**

The three alternative sites are located within the main portion of Tyndall AFB north of US Highway 98. Although located in slightly different environments, the sites share similar socioeconomic, air quality, geologic, and archaeological and cultural resource conditions. Site 3 is located on the abandoned portion of Taxiway B, to the north of Taxiway F, with an existing and future land use designation of airfield. Sites 6 and 7 are within areas designated as open space; however, Site 7 has a future land use designation of airfield operations and maintenance. All three sites share similar ambient noise levels given their similar distances from the active runways. Site 3 has a paved ground surface, and thus supports minimal vegetation. Site 6 is within a heavily forested area with a diverse environment of tall trees, with a thick shrub and herbaceous layer, while Site 7 is covered with grasses maintained as lawn. Site 6 has been identified as an area with the potential to support sundew species (*Drosera* sp.), some of which may be state-listed as threatened. It has been confirmed by the base biologist that protected sundews are present within the drainage ditches that border Site 6; however, there has been no confirmation of whether any individuals are located within the proposed site limits. All of the sites are over 1,000 feet from the nearest IRP or other known contaminated sites (e.g. CARs) on base. None of the sites are located within a FEMA-designated 100-year floodplain; however, Site 6 is located within a palustrine forested wetland; therefore a FONSI could not be signed if Site 6 were chosen as the preferred alternative. Instead, a Finding of No Practicable Alternative (FONPA) would be required.

No short-term impacts are expected at any of the three sites for geologic, socioeconomic, archaeological and cultural resources, and hazardous waste. Installation of the DASR facility, regardless of the site chosen, has the potential to result in short-term impacts to land use, air quality, noise, and biological resources, either at the ASR-11 site itself, the nearby staging areas, or along utility connection routes. No construction activities required for installation at Site 3 or Site 6 would occur within or near existing IRP sites. The proposed fiber optic route for Site 7, however, would require crossing several hazardous waste sites. The biological resources at Site 3 are limited due to its paved surface, so the potential for biological impacts is somewhat less than at the other two sites. Construction at Site 6 would require filling a portion of a wetland

resource area and would have the potential to impact the known state-protected sundew species located in the adjacent ditches during construction. Sites 3 and 7 are at relatively similar distances (fewer than 400 feet) from existing electric and telephone lines; however, Site 6 would require approximately 1,300 of utility connections for electric and telephone. The distance for the connection to fiber optic lines would vary between 5,780 and 9,720 feet, depending on the site chosen. Construction at any of the three sites would result in the generation of fugitive dust and similar levels of emissions from construction vehicles.

No long-term impacts are anticipated at any of the three sites for land use, socioeconomic, utilities, noise, air quality, geologic, and archaeological and cultural resources. The three sites have relatively different aesthetic characteristics. Site 3 has a paved surface that is surrounded on three sides by tall pine trees at the abandoned end of Taxiway B. The siting and operation of an ASR-11 at Site 3 would be consistent with the military aesthetic value of the base. Site 6 is located in a remote portion of the base in between Fred Bayou and Chatterson Bayou near the northern coast of the peninsula upon which Tyndall AFB lies. An ASR-11 facility at Site 6 is not anticipated to have significant aesthetic impacts due to the existing natural barrier, consisting of a thick forest, which surrounds the site in all directions. Site 7 is west of the active runways on base, with the SEADS building located 1,000 feet to the southeast and US Highway 98 located 500 feet to the west. The base has expressed concern of an aesthetic impact due to the proximity of both the SEADS facility and the public highway. Although installation of the radar facility at Site 7 would result in the loss of a vegetated area, the area to be cleared is small, and the vegetation is limited in diversity to maintained lawn. No rare, threatened, or endangered species are anticipated to be impacted by the construction and operation of an ASR-11 at either Site 3 or Site 7. If threatened sundew species were found on Site 6, they would be permanently lost upon completion of site development. A portion of Site 6 is also located within a wetland area, which would be permanently filled upon ASR-11 installation. Although the radar would generate RFR while operating at any of the sites, persons at ground level would not be exposed to RFR levels exceeding the maximum permissible exposure (MPE) levels for the general population, since the ASR-11 will be mounted on a tower greater than 47 feet in height. As a precautionary measure, signs would be posted at the perimeter of the DASR facility advising personnel and the public against approaching the radar facility during operation. During the DASR operation at any of the

candidate sites, fuel and other hazardous materials, such as engine oil and grease, may be used at the site. However, use and disposal of any hazardous materials would occur in compliance with Tyndall AFB protocols and guidelines as well as applicable state and federal regulations. Consequently, it is anticipated that operational use of hazardous materials would not adversely affect the natural or human environments.

In summary, construction and operation of the ASR-11 facility would result in minimal short-term and long-term impacts at Site 3. Construction and operation of the ASR-11 at Site 6 would result in the loss of wetlands in the area and has the potential to impact a threatened plant species. Selection of Site 7 would result minimal short-term impacts; however, the base has expressed a concern for impacting the aesthetic value of the area due to the presence of US Highway 98. Due to operational and other base considerations, the Air Force has selected Site 3 as the preferred ASR-11 location.

## 6.0 MITIGATION

Most of the impacts that may occur at any of the sites during construction and operation of the DASR system are minor in nature and few mitigation measures would be required. If Site 6 is chosen for siting of the ASR-11, then a Finding of No Practicable Alternative (FONPA) would be required and compliance with state and federal regulations would be necessary. At a minimum during construction, erosion controls at Site 6 would be used to avoid adverse impacts to the undisturbed portions of the wetland area, in addition to protecting the adjacent drainage ditches from sedimentation. To minimize noise impacts during construction, mufflers would be used on construction equipment and vehicles. In addition, all equipment and vehicles used during construction would be maintained in good operating condition so that emissions are minimized, thus reducing the potential for air quality impacts. Dust would be controlled on-site by using water to wet down disturbed areas. Sheeting or supports of some kind may be used in the areas excavated for tower footings and utility trenches in order to prevent collapse of these excavations. The area within the 140-foot by 140-foot fence and the access road would be permanently cleared for the DASR facility and would be covered with a geotextile fabric and crushed stone to stabilize disturbed soils, in order to minimize the potential for erosion. In addition, all other areas disturbed outside of the 140 by 140-foot site fence along the perimeter of the ASR-11 facility area, including surrounding area required for grading and the temporary staging area, would be seeded to restore the vegetative covering unless the area is currently paved (Site 3). In this instance, the Air Force will determine what type of ground cover over the disturbed area they prefer. All hazardous materials used during construction would be handled and disposed of in accordance with Tyndall AFB policies and protocols and all applicable state and federal regulations. Traffic management measures will be developed to facilitate traffic flow and pedestrian access.

During operation of the ASR-11, diesel fuel would be stored at an AST and hazardous materials, such as equipment oil or grease, may be used at the site. Similar to the construction period, all hazardous materials used during operation would be used and disposed of in accordance with Tyndall AFB policies and protocols and all applicable state and federal regulations in order to minimize the potential for media contamination. Additionally, due to the potential for RFR

hazards at close distance during operation of the ASR-11, warning signs indicating the safe distance from the operating radar will be installed at the facility perimeter.

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## **8.0 LIST OF PREPARERS**

Metcalf & Eddy prepared this document to fulfill the requirements of the National Environmental Policy Act (NEPA) for the proposed action of constructing a DASR facility at Edwards AFB (High Desert) in California. Other entities that provided information on an as-needed basis included Edwards AFB Environmental Management personnel, including hired contractors, and various technical personnel at URS Corporation. The following persons authored and provided direct oversight for the preparation of this environmental assessment:

### **MANAGEMENT**

Charles Freeman, ESC/GAA. B.S. in Biology; Master of Landscape Architecture; registered Landscape Architect, Commonwealth of Massachusetts. Oasis Systems Inc. As the environmental coordination lead for the DASR program site survey, provided technical review and oversight for preparation of the environmental assessment and acted as liaison among hired contractors.

Shreve-Gibb, Betsy. M.R.P. Urban and Regional Planner. M&E. As Senior Project Manager responsible for all NEPA compliance on National Airspace System (NAS) projects, with extensive experience preparing environmental assessments and permits, provided technical review and oversight for preparation of all sections of the environmental assessment.

### **TASK LEADERS**

Hoffman, Christina. B.S. Plant Science, Chemistry. M&E. As a Senior Environmental Scientist with extensive experience with inland wetlands and preparing technical and scientific sections of environmental permitting documents, focusing on compliance with the NEPA, provided the lead role in data collection and authored portions and reviewed all sections of the environmental assessment.

## **PRIMARY AUTHORS**

Abrahams-Dematte, William. M.S. Hydrogeology. M&E. As a Hydrogeologist with broad experience in soils, geology/hydrogeology, hazardous waste, and CAD applications, and the preparation of technical and scientific documents, provided oversight of the preparation of maps and figures for the environmental assessment, and authored portions of the baseline and impact sections.

Athey, James. B.S. Biology. M&E. As a Senior Environmental Scientist with broad experience in aquatic and terrestrial ecology, GIS and CAD applications, the preparation of technical and scientific documents, and the implementation of environmental protection measures, provided GIS oversight and prepared maps and figures for the environmental assessment and authored portions of the baseline and impact sections.

Petras, James. B.S. Biology. M&E. As a Project Scientist with diverse experience in preparing environmental assessments and impact reports for federal, municipal, and commercial entities, provided review of the environmental assessment.

**APPENDIX A: LISTING OF AGENCIES AND INDIVIDUALS CONTACTED**

## **LISTING OF AGENCIES AND INDIVIDUALS CONTACTED**

Tyndall AFB, Jack Mobley, Wildlife Biologist

Tyndall AFB, William (Wes) Smith, Base Comprehensive Planner

Tyndall AFB, Dan Childs, Natural Resources Branch

Tyndall AFB, SSgt. Heather Megee, CES

Tyndall AFB, Bridget Keegan, Cultural Resources

Tyndall AFB, Ernie Griffin, 325 CS/SCX, Architecture

Tyndall AFB, John Dingwall, NEPA Coordinator, Environmental Flight

Tyndall AFB, Joseph McLernan, IRP Manager, Environmental Flight

Tyndall AFB, Steve McLellan, Air Quality Specialist, Environmental Flight

**APPENDIX B: PRELIMINARY SITE SCREENING CRITERIA FOR  
TYNDALL AFB**

## PRELIMINARY SITE SCREENING CRITERIA FOR TYNDALL AFB

### EXCLUSIONARY CRITERIA

These criteria consider the essential environmental, constructional, and operational constraints that could eliminate a site from further consideration as a potential site for the ASR-11 System. These criteria relate to environmental parameters that could lead to unmitigable significant impacts and physical parameters regarding a site's suitability for construction.

<b>E</b>	<b>Criteria</b>	<b>Site 1</b>	<b>Site 2</b>	<b>Site 3</b>	<b>Site 4</b>	<b>Site 5</b>	<b>Site 6</b>	<b>Site 7</b>
E1	Impacts occupied existing structures	No	No	No	No	No	No	No
E2	Within railroad ROW	No	No	No	No	No	No	No
E3	Within highway ROW	No	No	No	No	No	No	No
E4	Within runways and/or taxiways	No	No	No <sup>3</sup>	No	No	No	No
E5	Within power line ROW	No	No	No	No	No	No	No
E6	Impacts wilderness areas	No	No	No	No	No	No	No
E7	Impacts national natural landmarks	No	No	No	No	No	No	No
E8	Site less than 160 by 160 feet	No	No	No	No	No	No	No
E9	Lacks coverage of departing aircraft within 1 nmi of the exiting runway ends	No	No	No	No	No	No	No
E10	Lacks coverage of aircraft targets on final approach up to the missed approach point	No	No	No	No	No	Yes <sup>1</sup>	Yes <sup>2</sup>
E11	Within 1,500 feet of any non-removable above ground screening/reflecting object	No	No	No	No	No	No	No
E12	Airport specific exclusions	No	No	No	No	No	No	No

No = Meets Criteria

Yes = Does Not Meet Criteria

- 1 The missed approach point for ILS runway 13L will not be covered due to the .5 nmi minimum detection range.
- 2 The missed approach point for ILS runway 13R will not be covered due to the .5 nmi minimum detection range.
- 3 Site 3 is located within an abandoned/inactive runway.

Source: U.S. Air Force, 2001a

## RESTRICTIVE SCREENING CRITERIA

These criteria could eliminate a site from further consideration due to the extensive mitigation required to offset potentially significant impacts. Many of these criteria originate from Federal law. In these cases, the law has been noted. Additionally, many of the criteria are covered by state and local laws, which were consulted as appropriate.

R	Criteria	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7
R1	Ecological or wildlife refuges	5	5	5	5	5	5	5
R2	Wild and scenic rivers	5	5	5	5	5	5	5
R3	Prime and unique farmland	5	5	5	5	5	5	5
R4	Parks and recreation areas	5	5	5	5	5	5	5
R5	Historical, archeological, and cultural sensitive sites	TBD						
R6	Wetlands	5	1 <sup>1</sup>	3 <sup>2</sup>	1 <sup>2</sup>	1 <sup>1</sup>	1 <sup>5</sup>	5
R7	Endangered and threatened species habitat	5	5	TBD	5	5	1 <sup>7</sup>	TBD
R8	Non-airfield or non-federal land	5	5	5	5	5	5	5
R9	Designated unremediated hazardous waste site	5	5	3 <sup>2</sup>	5	5	5	5
R10	Capped land fill	5	5	5	5	5	5	5
R11	Scenic highways	5	5	5	5	5	5	5
R12	Coastal zones	3 <sup>6</sup>						
R13	Steep terrain	5	5	5	5	5	5	5
R14	Floodplain	5	5	5	5	5	5	5
R15	Within 2,500 feet of existing electronic facilities or high tension power lines	5	1 <sup>3</sup>	1 <sup>3</sup>	5	5	1 <sup>3</sup>	5
R16	Cone of silence impacts coverage of radar/instrument approaches, navigational fixes, airway/route, and special air traffic coverage requirements	5	5	5	5	5	5	5
R17	Within 2,500 feet of industrial operations that could interrupt or contaminate the site	5	5	5	5	5	5	5
R18	Within 0.5 nmi of ends of any operational runways and approach and departure paths	1 <sup>4</sup>	1 <sup>4</sup>	5	5	5	5	1 <sup>4</sup>
R19	Violates FAR Part 77 requirements	5	5	5	5	5	5	5

Shaded columns identify the sites that have been selected as the three alternative sites.

<sup>5</sup> = No Adverse Impacts/Meets Criteria

<sup>3</sup> = Partially Impacted/Marginal

<sup>1</sup> = Significantly Impacted/Does Not Meet Criteria

TBD – (To Be Determined) Data is unavailable at the present time.

- 1 Sites 2 and 5 are located in Palustrine Forested Wetlands.
- 2 Site 4 is located in wetland areas according to NWI maps, but field investigations indicated that this site is in the uplands.
- 3 Site 2 is approximately 1,800 feet south of the Existing GPN-20, Site 3 is approximately 1,900 feet east of the TACAN, and Site 6 is approximately 2,300 feet north of the Radio Receiver Site.
- 4 Sites 1, 2 and 7 are located within 0.5 nmi. End of runway restrictive zone.
- 5 According to NWI Maps, a portion of Site 6 is located in a wetland area.
- 6 All sites are designated as Coastal Zone areas.
- 7 In preliminary correspondence received from the Tyndall AFB Natural Resource Department, a state-protected plant, the sundew (*Drosera* sp.) is located in the vicinity of Site 6.

Source: U.S. Air Force, 2001a

## SELECTIVE SCREENING CRITERIA

These criteria provide positive or negative considerations that will form the basis for comparison of candidate sites. Much of the information required is obtained/confirmed during site visits.

S	Criteria	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7
S1	Visual sensitivity	+	+	+	+	+	+	0 <sup>1</sup>
S2	Accessibility to roads	+	+	+	+	+	0 <sup>2</sup>	+
S3	Soils	TBD	TBD	+	TBD	TBD	1 <sup>3</sup>	+
S4	Geology	+	+	+	+	+	+	+
S5	Proximity to power	+	+	+	+	+	+	+
S6	Proximity to telephone lines	+	+	+	+	+	+	+
S7	Zoning	+	+	+	+	+	+	+
S8	Subsurface rights	+	+	+	+	+	+	+
S9	Unique habitat	+	+	+	+	+	0 <sup>4</sup>	+
S10	Utilities	+	+	+	+	+	+	+
S11	Planned use of site	+	+	+	+	+	+	0 <sup>5</sup>
S12	Roadways	+	+	+	+	+	+	+
S13	Water resources	+	+	+	+	+	+	+
S14	Recreational use	+	+	+	+	+	+	+
S15	Underground cable routing	+	+ <sup>1</sup>	+ <sup>1</sup>	+ <sup>1</sup>	+ <sup>1</sup>	+ <sup>1</sup>	+
S16	LOS visibility to air traffic coverage requirements	N/A	N/A	+ 16 of 29	N/A	N/A	+ 16 of 29	+ 15 of 29
S17	Secondary radar coverage, on the surface, over the entire length of runways	N/A	N/A	+	N/A	N/A	+ <sup>6</sup>	+

+ = Positive

- = Negative

0 = Neutral

TBD – (To Be Determined) Data is unavailable at the present time.

- 1 Site 7 has visual sensitivity issues being in such close proximity to HWY 98.
- 2 Site 6 is located off a narrow logging road and will require an access road of approximately 2,980 feet in length.
- 3 According to the Soil Survey of Bay County, FL, the soil at Site 6 is Leon Sand which is poorly drained with slow runoff and rapid permeability and would not be conducive to ASR-11 site development.
- 4 Site 6 is located adjacent to a natural community of longleaf pines and a state protected plant, the sundew.
- 5 Site 7 is within 1,000 feet of the site proposed for a new communications tower.
- 6 Site 6 will not have secondary radar coverage to runways 13L and 13R due to screening from nearby trees.

Source: U.S. Air Force, 2001a

## **APPENDIX C: ACRONYMS AND ABBREVIATIONS**

## ACRONYMS AND ABBREVIATIONS

A/C	Alternating current
AFB	Air Force Base
AICUZ	Air Installation Compatible Use Zone
AM	Amplitude modulation (radio)
AN/GPN-12	airport surveillance radar designation
ANSI	American National Standards Institute
ASR-11	airport surveillance radar designation
AST	above-ground storage tank
ATCT	Air Traffic Control Tower
CAR	Contamination assessment report
CFR	Code of Federal Regulations
DASR	Digital Airport Surveillance Radar
dBA	decibel, A-weighted
DNL	Day-night (noise) level
DoD	(US) Department of Defense
DRMO	Defense Reutilization and Marketing Office
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	(US) Environmental Protection Agency
?F	degrees Fahrenheit (temperature)
FAA	Federal Aviation Administration (Department of Transportation)
FCC	Federal Communications Commission
FM	Frequency modulation (radio)
FONPA	Finding of no practicable alternative
FONSI	Finding of no significant impact
Hz	hertz
IEEE	Institute of Electrical Electronics Engineers
IRP	Installation Restoration Program
IRPA	International Radiation Protection Association

kHz	kilohertz
kVA	kilovolt-amperes
kW	kilowatts
$L_{eq}$	equivalent sound level
m	meters
MCL	Maximum Concentration Level
m/sec	meters per second
$mg/m^3$	milligrams per cubic meter
MHZ	megahertz
MPE	Maximum Permissible Exposure
MSA	Munitions Storage Area
MW	megawatts
$mW/cm^2$	milliwatts per square centimeter
$\mu g/m^3$	micrograms per cubic meter
$\mu m$	micrometers (microns)
NAAQS	National Ambient Air Quality Standards
NAS	National Airspace System
NCRP	National Council on Radiological Protection
NEPA	National Environmental Policy Act
nm	nanometers
nmi	nautical miles
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NWI	National Wetlands Inventory
OSHA (U.S.)	Occupational Safety and Health Administration
PAH	polyaromatic hydrocarbons
PCBs	polychlorinated biphenyls
PM-2.5	Particulate matter below 2.5 microns
PM-10	Particulate matter below 10 microns
POL	petroleum, oil, lubricants
ppm	parts per million (by volume in air)

PRG	Program remediation goal
psi	pounds per square inch
RAPCON	Radar Approach Control
RCRA	Resource Conservation and Recovery Act
RFR	Radiofrequency radiation
SAGE	Semi-Automatic Ground Environment
SHPO	State Historic Preservation Officer
SVOC	semi-volatile organic compounds
TSP	total suspended particulates
USAF	United States (Department of the) Air Force
USFWS	United States Fish & Wildlife Service
UST	Underground storage tank
VOC	Volatile Organic Compound

**APPENDIX D: COMMENT LETTERS RECEIVED REGARDING DRAFT EA**



December 1 , 2002

**BOARD OF COUNTY  
COMMISSIONERS**

POST OFFICE BOX 1818  
PANAMA CITY, FLORIDA 32402

COMMISSIONERS:

JOHN G. NEWBERRY, JR.  
DISTRICT I

GEORGE B. GAINER  
DISTRICT II

CORNEL BROCK  
DISTRICT III

JERRY L. GIRVIN  
DISTRICT IV

MICHAEL J. ROPA  
DISTRICT V

AMELA D. BRANGACCIO  
COUNTY MANAGER

Ms. Ann Garner  
Environmental Manager  
325<sup>th</sup> Civil Engineering Squadron  
119 Alabama Avenue  
Tyndall AFB, Florida 32403-5014

Dear Ms. Garner:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (EA) associated with the replacement of the AN/GPN-20 Radar with the ASR-11 at Tyndall AFB. Based on our review we find that the Draft EA appears to provide the data to support a Finding Of No Significant Impact (FONSI).

We do have two comments relating to the project. First, in paragraph 3.3.1.2, page 27, the AWT average daily flow is on the order of 3.8 MGD verses the 6.7 MGD reflected in the EA. Second, we trust that consideration has been given to eliminating or minimizing interference with the County's newly installed 800 MHZ communications system. I understand that the Emergency Management staff is already working with Tyndall AFB representatives on this issue.

The proposed ASR-11 Digital Airport Surveillance Radar will no doubt be another enhancement at Tyndall AFB which will contribute to the heightened defense of our country. Should you wish to discuss this response please give me a call at (850) 784-4069.

Sincerely,

A handwritten signature in black ink that reads "John E. Goin".

John E. Goin, P.E.  
Assistant County Manager  
for Community Services

JEG/ml

Cc: Pamela D. Brangaccio, County Manager  
Clifton "Travis" Windham, P.E., Utility Services Director  
Bob Majka, Chief of Emergency Services  
Ken Schnell, P.E., Public Works Director

DIVISIONS OF FLORIDA DEPARTMENT OF STATE  
Office of the Secretary  
Office of International Relations  
Division of Elections  
Division of Corporations  
Division of Cultural Affairs  
Division of Historical Resources  
Division of Library and Information Services  
Division of Licensing  
Division of Administrative Services



MEMBER OF THE FLORIDA CABINET  
State Board of Education  
Trustees of the Internal Improvement Trust Fund  
Administration Commission  
Florida Land and Water Adjudicatory Commission  
Siting Board  
Division of Bond Finance  
Department of Revenue  
Department of Law Enforcement  
Department of Highway Safety and Motor Vehicles  
Department of Veterans' Affairs

FLORIDA DEPARTMENT OF STATE  
**Jim Smith**  
Secretary of State  
DIVISION OF HISTORICAL RESOURCES

Lt Col Jerry K. Weldon II  
Department of the Air Force  
325<sup>th</sup> Civil Engineer Squadron  
119 Alabama Avenue  
Tyndall Air Force Base, Florida 32403-5014

December 18, 2002

JKW/3  
CEC  
CEV

RE: DHR Project File No. 2002-11613  
Received by DHR December 12, 2002  
Draft Environmental Assessment – Digital Airport Surveillance Radar  
Tyndall Air Force Base, Bay County, Florida

Dear Lt Col Weldon:

Our office received and reviewed the above referenced project in accordance with Section 106 of the *National Historic Preservation Act of 1966*, as amended and *36 CFR Part 800: Protection of Historic Properties*. The State Historic Preservation Officer is to advise Federal agencies as they identify historic properties (listed or eligible for listing, in the *National Register of Historic Places*), assess effects upon them, and consider alternatives to avoid or minimize adverse effects.

Based on a review of sections 3.10 and 4.10, both dealing with Cultural Resources, this office concurs with your finding that no historic properties will be affected by this undertaking.

If you have any questions concerning our comments, please contact Scott Edwards, Historic Preservation Planner, by electronic mail [sedwards@mail.dos.state.fl.us](mailto:sedwards@mail.dos.state.fl.us), or at 850-245-6333 or 800-847-7278.

Sincerely,

*Barbara C. Mattick, Deputy SHPO*

*for* Janet Snyder Matthews, Ph.D., Director, and  
State Historic Preservation Officer

500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

Director's Office  
(850) 245-6300 • FAX: 245-6435

Archaeological Research  
(850) 245-6444 • FAX: 245-6436

Historic Preservation  
(850) 245-6333 • FAX: 245-6437

Historical Museums  
(850) 245-6400 • FAX: 245-6433

Palm Beach Regional Office  
(561) 279-1475 • FAX: 279-1476

St. Augustine Regional Office  
(904) 825-5045 • FAX: 825-5044

Tampa Regional Office  
(813) 272-3843 • FAX: 272-2340



IN REPLY REFER TO:

# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Field Office  
1601 Balboa Avenue  
Panama City, FL 32405-3721

Tel: (850) 769-0552

Fax: (850) 763-2177

January 29, 2003

Lt Col Jerry K. Weldon II  
Commander, 325th Civil Engineer Squadron  
119 Alabama Avenue  
Tyndall AFB FL 34403-5014

Re: FWS No. 4-P-03-070  
Airport Surveillance Radar Installation  
Tyndall AFB, Bay County, Florida

Dear Lt Col Weldon:

Thank you for your letter of December 11, 2003, requesting our review and comment on the Draft Environmental Assessment (DEA) and Draft Finding of No Significant Impact (DFONSI) for the project referenced above. This response is provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and Section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

Proposed activities consist of the installation of a new digital Airport Surveillance Radar Model 11 (ASR-11) that would serve Tyndall Air Force Base (AFB). Site work would be within a 0.59 acre site. Depending on the site chosen, the total structure height of the AS-11 would be 106 or 116 feet. The ground area where the ASR-11 system would be installed would be covered in crushed stone. Associated facilities would include a concrete radar equipment shelter, an emergency engine generator in a concrete shelter, utility cabling, electronic equipment grounding systems, and a 1,000-gallon above-ground fuel storage tank. Up to 10,000 feet of utility trenching would be required to connect the site to existing duct banks, manholes, or utility hook-ups. You identified three sites (referred to as Sites 3, 6, and 7) on Tyndall AFB that are under consideration for installing and operating the ASR-11. Sites 3 and 7 are located in previously disturbed areas. Site 6 is described as being located in a wooded area and includes a wetland that would be permanently filled if the ASR-11 were constructed at this site. Furthermore, a state listed sundew (*Drosera* genus) has been identified within the drainage ditches that line Site 6.

We offer the following comments on your project. Based on the information that you provided, it appears that the construction of either sites 3 or 7 would not likely adversely affect listed species protected under the Act. We concur with the selection of Site 3 as the preferred alternative.

CE JW 4/3  
CEU APB  
CEC



# Department of Environmental Protection

Jeb Bush  
Governor

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

JKW 2/7  
David B. Struhs  
Secretary

LEV ALC  
CEC \_\_\_\_\_

January 31, 2003

Lt. Colonel Jerry K. Weldon II  
Commander  
325<sup>th</sup> Civil Engineer Squadron  
Department of the Air Force  
119 Alabama Avenue  
Tyndall Air Force Base, Florida 32403-5014

RE: Department of the Air Force - Tyndall Air Force Base - Draft Environmental Assessment and Finding of No Significant Impact - Digital Airport Surveillance Radar - Tyndall Air Force Base, Bay County, Florida  
SAI: FL200212133170C

Dear Lt. Colonel Weldon:

The Florida State Clearinghouse, pursuant to Presidential Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§4321, 4331-4335, 4341-4347, as amended, has coordinated the review of the above-referenced environmental assessment (EA).

Based on the information contained in the above-referenced EA and the enclosed comments provided by our reviewing agencies, the state has determined that the project is consistent with the Florida Coastal Management Program (FCMP).

Thank you for the opportunity to review this project. If you have any questions regarding this letter, please contact Ms. Rosalyn Kilcollins at (850) 245-2161.

Sincerely,

Sally B. Mann, Director  
Office of Intergovernmental Programs

SBM/rk  
Enclosures

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT  
Project Review Form

TO: State Clearinghouse  
Department of Environmental Protection  
3900 Commonwealth Boulevard, MS 47  
Tallahassee, FL 32399-3000

DATE: January 6, 2003

SUBJECT: Project Review: Intergovernmental Coordination  
Title: Department of the Air Force-Draft Environmental Assessment to  
Evaluate the Potential Environmental Consequences of a Proposed  
Action and Preliminary Draft Finding of No Significant Impact-Digital  
Airport Surveillance Radar-Tyndall Air Force Base-Bay County, FL  
SAI #: FL200212133170C

The District has reviewed the subject application and attachments in accordance with its responsibilities and authority under the provisions of Chapter 373, Florida Statutes. As a result review, the District has the following responses:

ACTION

- No Comment.
- Supports the project.
- Objects to the project; explanation attached.
- Has no objection to the project; explanation optional.
- Cannot evaluate the project; explanation attached.
- Project requires a permit from the District under\_\_\_\_\_.

DEGREE OF REVIEW

- Documentation was reviewed.
- Field investigation was performed.
- Discussed and/or contacted appropriate office about project.
- Additional documentation/research is required.
- Comments attached.

RECEIVED  
JAN 07 2003  
OIP/OLGA

SIGNED Maia Culbertson

Duncan Jay Cairns  
Chief, Bur. Env. & Res. Plng.

COUNTY: BAY

DATE: 12/13/02

COMMENTS DUE DATE: 1/12/03

Message:

CLEARANCE DUE DATE: 2/1/03

SAI#: FL200212133170C

STATE AGENCIES	WATER MNGMNT. DISTRICTS	OPB POLICY UNITS
COMMUNITY AFFAIRS FISH and WILDLIFE COMMISSION STATE TRANSPORTATION ENVIRONMENTAL PROTECTION	X NORTHWEST FLORIDA WMD	ENVIRONMENTAL POLICY UNIT

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized one of the following:

- Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.
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 (850) 414-0479

- No Comment
- Comment Attached
- Not Applicable

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- Consistent/Comments Attached
- Inconsistent/Comments Attached
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NO COMMENT

From: NFWFMD  
 Division/Bureau: Resource Management Div.  
 Reviewer: Duncan J. Cairns  
 Date: 6 JAN 03  
 Date: \_\_\_\_\_

COUNTY: BAY

DATE: 12/13/02

COMMENTS DUE DATE: 1/12/03

Message:

CLEARANCE DUE DATE: 2/1/03

SAI#: FL200212133170C

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- Inconsistent/Comments Attached
- Not Applicable

From

Division/Bureau: FDOT AVIATION OFFICE  
 Reviewer: ABDUL HATIM  
 Date: 12/19/02

COUNTY: BAY

DATE: 12/13/02

COMMENTS DUE DATE: 1/12/03

CLEARANCE DUE DATE: 2/1/03

Message:

SAI#: FL200212133170C

STATE AGENCIES

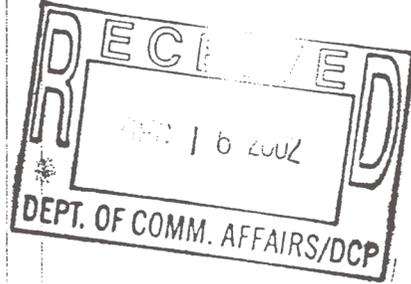
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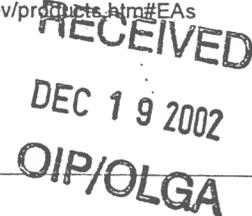


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- Not Applicable

From:

Division/Bureau: DCA/DCP

Reviewer: \_\_\_\_\_

Date: 12/17/02

COUNTY: BAY

DATE: 12/13/02

COMMENTS DUE DATE: 1/12/03

message:

CLEARANCE DUE DATE: 2/1/03

SAI#: FL200212133170C

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Bay  
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2002-11771  
X: 02-11613 (NHPT)

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Jan Matthews 1/09/03

From:

Division of Historical Resources  
Bureau of Historic Preservation

Division/Bureau:

Reviewer: S. Edwards

Date: 1-7-02

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From:

Division/Bureau: OS/OIP

Reviewer: Rosalyn K...

Date: 1/30/03



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#### Project Information

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**Keywords:** USAF - EA/FONSI - Digital Radar - Tyndall AFB, Bay

**Program:**

#### Review Comments

Page:  Page 8/9

**Agency:** WEST FLORIDA RPC

**Date:**  (mm/dd/yyyy)

**Description:**

**Comment Type:**  Draft  Final

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