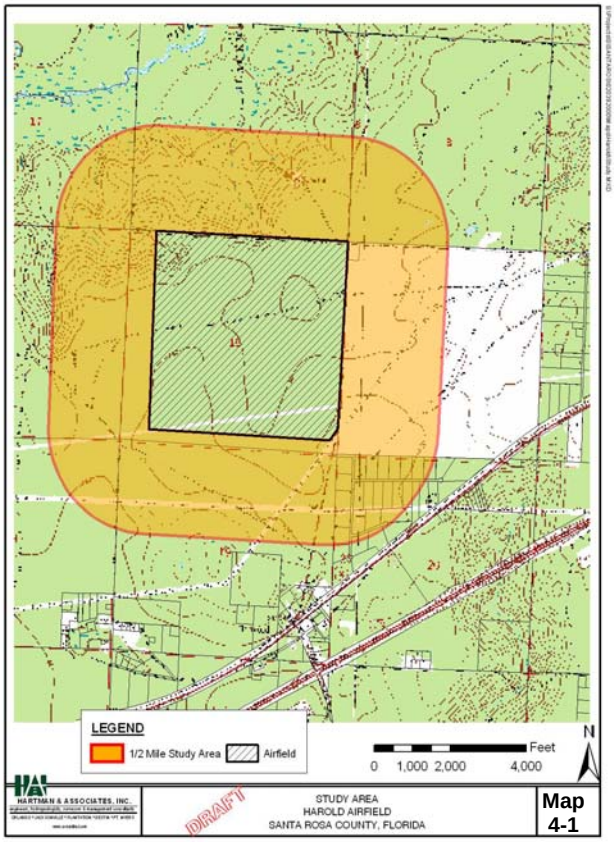
CHAPTER 4
NOLF HAROLD JLUS



Executive Summary

Primary Airfield Use	Rotary-wing (helicopter) TH-57 aircraft supporting flight training for NAS Whiting Field
Airfield Capability	Primarily grass airfield. No paved landing pads or runways
Time of Use	Daylight hours only; year-round
Other Uses	Fixed-wing, turboprop or prop aircraft occasionally use airspace above field, Model aircraft, National Guard and Reserve Signal Training
Planned Uses	Same as current use. Possible Night Vision Goggle (NVG) Training Site

Study Area Population	**Current**	**Potential**
	42	1,087

Study Area Issues and General Recommendations

All adjacent lands from NOLF Harold's northeast to southwest corners (counterclockwise on Map 4-1) are located within Blackwater River State Forest for a distance of at least one mile. A narrow strip of land abutting the airfield's south boundary is also owned by the State of Florida. For non-military lands in the study area, 58% are owned by the State, 37% by International Paper, and only 5% (89 acres) by others clustered at the southeast corner of the study area. International Paper represents the only potential for any significant development in the study area. International Paper lands to the south and east are projected to be purchased under the Yellow River Ravines Florida Forever Project

Recommendation: Emphasis on cluster development, supporting Florida Forever .

Chapter Contents

Note: with exception to Map 4-1 above, maps referenced in this chapter are placed in Appendix 4A, located in the back of this chapter.

SECTION 1
INTRODUCTION AND STUDY BACKGROUND

1.1 Study Purpose

In 1973, the United States Department of Defense (DoD) created the Air Installation Compatible Use Zones (AICUZ) program to encourage local governments to manage growth and development in a manner compatible with present and future military installation operations. The program evaluates existing land uses, identifies potential conflicts between growth and military operations, and offers recommendations for compatible growth patterns. Program emphasis is placed on areas most susceptible to noise impacts and safety concerns associated with military operations. To accomplish this program objective, noise contours and accident potential zones have been established for all military airfields, including Naval Air Station (NAS) Whiting Field (North and South) and its fourteen outlying landing fields (NOLF), which includes NOLF Harold.

The Commanding Officer at NAS Whiting Field recognizes that any successful plan to realize compatible growth near airfields requires involvement by the Santa Rosa County Board of County Commissioners (BCC). While NAS Whiting Field can manage military activity at its airfields, the BCC holds authority to manage land use and development on properties outside of military installations and within unincorporated Santa Rosa County. By working together, mutually acceptable growth management strategies can be developed to avoid conflicts between NAS Whiting Field's mission and Santa Rosa County's desired growth patterns and quality of life.

This joint endeavor involves a two-step process. Once a joint land use study (JLUS) has identified compatible land uses and growth management guidelines, the second step will involve formation of specific development regulations and land management implementation programs. This report addresses the first step -- a joint land use study. All together, a JLUS has been prepared for seven US Navy (USN) airfields (North and South combined) and the County Airport, Peter Prince Field. These eight separate and distinct studies comprise the Santa Rosa JLUS. The seven USN installations evaluated in the Santa Rosa JLUS are NAS Whiting Field (North and South) and six of its fourteen outlying landing fields – NOLFs Harold, Holley, Choctaw, Santa Rosa, Spencer, and Pace. This chapter addresses only NOLF Harold and non-military lands within its study area.

1.2 NOLF Harold Location

NOLF Harold is located south of Blackwater River State Forest, north of US Highway 90, and approximately five miles from the eastern boundary of Santa Rosa County. NOLF Harold lies approximately ten miles east of NAS Whiting Field South. The general proximity of NOLF Harold with other airfields in Santa Rosa County appears in Map 1-1 of Chapter 1. The east boundary of the airfield runs adjacent to Deaton Bridge Road.

The US Navy organizes airspace into operational "areas" within the Federal Aviation Administration (FAA) designated Alert Area 292 airspace. NOLF Harold is located in Area 3H of Alert Area 292. The boundaries of Alert Area 292 and Area 3H appear in Map 4-2. Area 3H is primarily allocated for helicopter use.

1.3 Harold Study Area

The study area boundaries for NOLF Harold JLUS (hereafter called Harold Study Area) are illustrated on Map 4-1, which is located on the first page of this chapter. The Harold Study Area covers 2,289 acres while military–owned property comprising NOLF Harold contains 578 acres, or 25% of the total study area. All property within the Harold Study Area is situated in unincorporated Santa Rosa County and not within any municipal boundaries.

The Harold Study Area includes all areas within Accident Potential Zones or areas located within Noise Level Contours established by the existing Air Installation Compatibility Use Zones (AICUZ) study for NOLF Harold. To take into consideration lands outside the AICUZ that may also be affected by military operations, study boundaries were expanded to encompass areas within one-half miles from NOLF Harold's perimeter. Also, the eastern boundary of the study area was extended to encompass areas inside noise level contours beyond one-half mile.

The NOLF Harold JLUS presented in this chapter emphasizes evaluation of non-military lands within the study area boundaries. The study area consists of three components – Accident Potential Zones, Noise Zones, and non-military lands. Each component is a separate entity and overlaps with portions of the other components. Acreage for the Harold Study Area is shown in Table 4-1 according to these study area components. Note that acreage for the total study area will not equal a summation of its components. This anomaly occurs because some areas in the Noise Level Zone overlap with the Accident Potential Zone, creating a double counting of acreage if sub-categories are added together.

Table 4-1
Study Area Components
Harold Study Area

Study Area Component	Acres
Total Study Area (Map 4-1)	*2,289*
Non-Military Property	*1,711*
Noise Level Zone (Current)	1,279
Clear Zone/Accident Potential Zone	171
Clear Zone "A"	30
APZ I "B"	141
APZ II "C"[1]	0
Military	*578*

[1]No non-military lands surrounding NOLF Harold qualify for APZ "C" designation.

A. **Clear Zones (Helicopters).** Aviation history has demonstrated that property along primary flight paths and immediately beyond the ends of runway have a higher potential exposure to aircraft accidents than areas further out from an airfield. The takeoff safety zone for Visual Flight Rules (VFR) rotary-wing facilities shall be used as the clear zone. The takeoff safety zone is that area that is under the VFR approach/departure surface until that surface is 50 feet above the established landing area elevation. The Clear Zone is an area that possesses a high potential for accidents and is usually part of the airfield. For the NOLF Harold JLUS, and for ease of reading maps, the Clear

Zone designated area "A". All portions of the Clear Zone are located within the boundaries of NOLF Harold. Figure 4-1 graphically depicts the Clear Zone and its relationship with the APZ designations applied for helicopters.

B. **Accident Potential Zones (Helicopters).** Beyond the Clear Zone is an area along the flight path that possesses a significant potential for accidents. Created as part of the AICUZ program, Accident Potential Zones (APZ) are intended to delineate areas exposed to higher risk for accident occurrences. Intended to serve as guidelines only, APZs function to heighten the general public's awareness to areas exposed to potentially higher risks. They also help local governments to identify where to direct zoning regulations and land use standards designed to reduce potential conflicts between airfield operations and civilian populations. Figure 4-1 graphically explains APZ boundaries and their geographical relationship with the Clear Zone applied for fixed-wing aircraft.

APZ's are divided into two designations based on accident potential. APZ-I is the area beyond the clear zone for the remainder of the approach/departure zone, which is defined as the area under the VFR approach/departure surface until the surface is 150 feet above the established landing area elevation. This zone is labeled area "B". While a portion of APZ I lies within the boundaries of NOLF Harold, most is situated within non-military property adjacent to the field boundary.

APZ–I is outward from the Clear Zone and along the flight track and has a measurable potential for accidents. APZ-II is normally not applied to helicopter flight paths unless local accident history exhibits a need for additional caution.

Maps placed in Appendix 4A as well as the aerial image (Figure 2) provided in Appendix 4B delineate boundaries of the Clear Zones and APZ-I's in relationship to NOLF Harold and adjacent non-military property.

NOLF Harold operates solely for rotary-wing (i.e., helicopter) aircraft. While fixed-wing aircraft must use runways for landing and take-off, helicopters typically arrive or depart an airfield facing the direction of the wind. Flight paths for helicopters taking-off or landing will vary based on wind direction as well as air traffic. To accommodate aerodynamic requirements for safe helicopter aviation, separate point for entry and departure have been established for NOLF Harold. There are several designated flight paths (cardinal headings of 090, 180, 270, and 360). These flight paths were established based on normal weather and wind conditions. Because wind direction often deviates from prevailing trends, helicopter flight paths will also adjust flight patterns.

C. **Noise Level Zone.** In addition to addressing safety concerns, the AICUZ also addresses noise exposure over non-military lands near military installations. Noise exposure can create conflicts with public welfare and quality of life for those living or working near airfields. For the NOLF Harold JLUS, noise level contours extending from the airfield are incrementally measured from the highest typical decibels (dB) generated within a military installation to 50 dB within non-military property. Within the Harold Study Area, non-military lands inside the 50 dB contour are referred to as the Noise Zone. Maps placed in Appendix 4A delineate noise contours associated with NOLF Harold. The outer-most noise contour represents the boundary for the Noise Zone.

Noise direction and impacts change with wind and weather conditions. Similar to aircraft operational conditions described above for APZs, helicopters must face oncoming wind to create optimal conditions for safe take-off and landing. Subject to aerodynamic wind effects, landing and take-off flight paths for helicopters experience wider variations than flight paths for fixed-wing aircraft, which must be aligned with a runway. Helicopter approach and departure to and from an airfield follow pre-determined flight paths referred to as the "normal flight path." Deviation from a normal helicopter flight path occurs to take advantage of safer flight patterns created by wind direction or to accommodate air traffic in pattern at or near the airport. Noise patterns for helicopters will change with flight patterns, which can vary for the dynamic conditions stated. A Noise Zone for helicopters must allow for more flexibility than that for fixed-wing aircraft because of aerodynamic and safety requirements.

SECTION 2
AIRFIELD OPERATIONS AND NAVY GROWTH OBJECTIVES

This section inventories and analyzes current air and ground operations performed at NOLF Harold. Any current conflicts with military operations, whether air or ground, are also identified and described.

2.1 Airfield Use and Mission – Current and Future

One of fourteen NOLFs supporting NAS Whiting Field, NOLF Harold's sole military use is for helicopter primary and advanced flight training conducted by NAS Whiting Field. Ground operations at this airfield are primarily limited to emergency response crew, referred to as crash crews by the Navy, when flight-training is being conducted at NOLF Harold. Ground crews return to their home station at NAS Whiting Field when no flight training activities are scheduled. A manned control tower is not located at this field, but communications is established with the crash crew prior to field entry or departure.

NOLF Harold's primary role supporting NAS Whiting Field is for tactical helicopter training, which includes formation flying, landing in confined areas, and external load training[1]. The airfield and local flight patterns are designed to specifically facilitate these training functions, as shown in the aerial image placed in Appendix 4B.

Operating procedures established by NAS Whiting Field for NOLF Harold limit activities assigned to this airfield to a maximum of eight helicopters in pattern. When formation flight training takes place, no more than three flights can occur on each half of the airfield, limiting aircraft operating at the field to no more than six.

NAS Whiting Field operating procedures identify NOLFs, civilian airfields (grass and paved) that must be avoided by fixed-wing aircraft except in the event of an emergency. NOLF Harold is one of the fields that must be avoided by fixed-wing aircraft. Fixed-wing flight training may occur at higher altitudes above NOLF Harold but primarily occurs in Area 1, Area 2, or Area 3 of Alert Area 292 further to the south in Santa Rosa County (reference Map 4-2 for Area boundaries). NOLF Harold is located in Area 3H.

On occasion, NAS Whiting Field grants authorization to model aircraft enthusiasts and clubs to use outlying fields for club events. This activity also occurs at NOLF Harold. National Guard and reserve Signal Groups also use the NOLF for training.

NOLF Harold's mission for future years will continue to support current helicopter flight training activities supporting NAS Whiting Field. This airfield serves a critical role for NAS Whiting Field because it is uniquely designed to serve specific portions of the curriculum established for military aviators. Transfer of training functions from NOLF Harold to other fields would be difficult because of the unique field layout and design. NAS Whiting Field plans to keep this field assigned for the specific roles currently established for NOLF Harold. This NOLF will not be used to accommodate

[1] External load training involves take-off and maneuvering a helicopter carrying a weighted load.

the Joint Primary Aircraft Training System (JPATS)[1] to be stationed at NAS Whiting Field. Also, NAS Whiting Field does not have any plans to use this field for the unmanned aerial vehicle (UAV) program. Future training will be conducted using Night Vision Goggles (NVG) and NOLF Harold will most likely support this training as no airfield lighting is required.

2.2 Facilities and Aircraft

NOLF Harold is a grass field. The only facilities located on-site are structures occupied by crash crew members when they are on-site. The crash crew facilities are located on the east side of the field, accessible from Deaton Bridge Road, as depicted in Figure 4-2 placed in Appendix 4B. This airfield is not equipped for night use, thus no ground lighting is in place. No fueling facilities are available at this airfield.

TH-57 *Sea Ranger* is primarily used for training, but these aircraft are also used by the Navy for aerial photography, chase and utility missions. At NAS Whiting Field and its NOLFs, the TH-57 is predominantly used for primary and advanced helicopter training.

Figure 4-3
Aircraft Using NOLF Harold

Only helicopters typically use NOLF Harold. The primary aircraft seen at this airfield is the TH-57, as shown in Figure 4-3. Powered by a single turbofan engine, the Sea Ranger can seat a pilot and up to two students. The TH-57 rotary-wing aircraft is used by NAS Whiting Field to train flight students and experienced USN aviators. On occasion, fixed-wing aircraft – the T-34C turboprop – may use airspace above NOLF Harold.

The US Navy has a capital improvement program to schedule and budget infrastructure and equipment at its military installations and facilities. This program is known as the Military Construction Program, or MILCON. Infrastructure improvements are not currently proposed in MILCON for NOLF Harold.

2.3 Airfield Operations and Procedures

NOLF Harold is utilized for helicopter operations. A control tower is not present to direct helicopter traffic; however, the crash crew maintains radio communications with pilots and provides information regarding field activity and status. Inside the airfield boundaries, flight training typically occurs between the surface and 500 feet above ground level.

The Commanding Officer of NAS Whiting Field administers policy consistent with all Federal Aviation Administration (FAA) Regulations and the Office of the Chief of Naval Operations Instructions (OPNAVINST's) regarding safe aviation operations, flight altitudes, and noise abatement.

[1] JPATS components consists of the T-6A Texan II turboprop aircraft, simulators and associated ground-based training devices, a training integration management system, instructional courseware, and contractor logistics support.

NAS Whiting Field is sensitive to the effects of noise at all its airfields and the impact on surrounding communities. When appropriate, actions are taken to reduce aircraft noise. Operating procedures are in place for fixed-wing and helicopter aircraft to reduce and avoid noise impacts to non-military lands as well as to promote public safety. To this endeavor, operating procedures and policy have been established to address specific circumstances associated with conditions unique to each airfield, including the character of the adjacent community.

A. **Operation Areas and Flight Planning** West Florida and South Alabama are home to numerous USN and USAF air bases generating substantial air traffic. For safety and operation purposes the US Navy organizes airspace into "areas." Horizontal (geographic) and vertical (altitude) areas have been established within Federal Aviation Administration (FAA) designated Alert Area 292 NOLF Harold is located in Area 3 of Alert Area 292. The boundaries of Alert Area 292 and Area 3 appear in Map 4-2. Area 3H is allocated for helicopter use. For safety purposes, helicopters in Area 3H are approved to fly from the surface to an altitude of 3,000 feet MSL.

   To implement safety objectives, NAS Whiting Field manages aircraft flight patterns, altitudes, and traffic volumes within its control areas through standard operating procedures and authorized flight plans. All flights must be authorized by a Commanding Officer.

   Student aviators follow trainings programs set forth as part of an approved curriculum. Their flight training programs require them to follow specific flight plans and operating procedures.

B. **Flight Patterns.** Operating procedures established address two types of flight patterns for helicopters using NOLF Harold. The first set of operating procedures addresses flight patterns to enter or depart NOLF Harold airspace. The second set addresses flying operations within the field itself.

   1. **Entry and Departure Flight Patterns**. Helicopters approach NOLF Harold from the northeast following the utility lines into the airfield or from the west or southwest. As helicopters reach the vicinity of the Harold Study Area, they typically fly at a height of 700 MSL. When helicopters enter NOLF Harold, operating procedures dictate a pattern splitting across the center of the field, then turning left or right at the other end of the airfield to maneuver to the intended practice area. Map 4-3 illustrates flight patterns established by NAS Whiting Field for NOLF Harold. Once in the local pattern, descent follows a pattern generally aligned with the APZ patterns appearing in Map 4-4 and other maps within Appendix 4A. Aircraft departing NOLF Harold from its northeast corner typically head directly north to enter course rules to return to NAS Whiting Field.

      Once in the local pattern, arriving helicopters eventually align with an landing course generally at strategic locations where APZ appear in Map 4-4 and other maps appearing in Appendix 4A of this chapter. The landing pattern selected by the pilot will vary based on wind direction and the type of training to be conducted. Departure from the field will be from the northeast corner of the airfield.

      Map 4-3 illustrates four different landing patterns.

2. **Field Flight Pattern**. NOLF Harold serves several flight-training functions for NAS Whiting Field. Local flight patterns within and adjacent to the airfield will vary based on the type of training activity that is performed. All areas of the airfield are used to accommodate a training activity.

C. **Flight Operating Procedures and Restrictions.** Protection of the health and safety for civilian and military population is a top priority administered and enforced by the USN and NAS Whiting Field. To reduce aircraft accident potential, standard operating procedures have been established for flight operations at all airfields, including NOLF Harold. Also, to protect health, safety, and welfare of civilian populations, aircraft may be restricted from operating within certain sensitive areas or below certain altitudes.

Fixed-wing aircraft and helicopters have different performance and aerodynamic capabilities. Separate standard operating procedures have been developed for each type of aircraft. However, some operating standards and restrictions apply uniformly to all types of aircraft. Other procedures and restrictions may apply to designated geographical areas, such as an airfield or operating area, or subject to altitude. And some may apply only to specific aircraft types, pilot training level, or calendar schedule.

Restrictions and operating procedures applicable to aircraft within Area 3H airspace and NOLF Harold, in addition to the flight pattern procedures and maximum aircraft restrictions, are listed below.

1) Crash crews must be in position and ready for duty prior to commencing any flight operation at NOLF Harold.
2) NOLF Harold is used for daytime operations only at the present time.

The Commanding Officer for NAS Whiting Field may also issue temporary directives regarding flight operations, flight paths, or hours of operation.

2.4 Current Air Operation Conflicts

Air and ground operations conducted at NOLF Harold will impact non-military lands within the Harold Study Area. The normal flight pattern entering NOLF Harold brings aircraft over State-owned lands to the west and timberlands owned by International Paper to the east. The departure flight pattern does overfly near the commercial operation just northeast of the airfield. This commercial operation is located within the APZ. Flight patterns also overfly or pass near the residential area close to the southeast corner of the field. Based on the unique airfield design and specific training functions, modification of entry and departure patterns to avoid existing development near the airfield would likely curtail use or value of the field for training purposes. While residential development does exist southeast of the field, field operations occur only during daytime hours.

No locations within the Harold Study Area have been designated by NAS Whiting Field as resort areas or noise sensitive areas. Operating procedures mandate that aircraft avoid such areas unless necessary Map 4-4 compares existing land use with APZ and Noise Zones.

SECTION 3
COMMUNITY PROFILE AND DEVELOPMENT CHARACTERISTICS

The general area surrounding NOLF Harold predominantly consists of conservation lands within Blackwater River State Forest or lands owned by International Paper. Over 97% of the NOLF Harold's perimeter abuts public lands or International Paper property. All of the north, west and south airfield boundaries adjoin Blackwater River State Forest or other State-owned lands. All but a few hundred feet of the airfield's east boundary abuts International Paper property. A canoe rental business is situated at the far north end of NOLF Harold's eastern boundary, and a small portion of a residential lot abuts the point forming its southeast corner.

3.1 Study Area Profile

Within the Harold Study Area, military property comprising NOLF Harold amounts to 578 acres, or one-quarter of the entire study area. For non-military lands comprising the Harold Study Area, 58% of non-military lands are owned by the State of Florida. International Paper controls 37% of the non-military lands, leaving only 5% of non-military lands used currently for non-agricultural or conservation purpose. Table 4-2 provides a summary profile for existing land uses within the non-military lands within the Harold Study Area. Map 4-4 shows the existing land use appearing in the Harold Study Area as well as the proximity of Accident Potential Zones and the Noise Zone to these land uses.

Table 4-2
Existing Land Use Profile by Acreage
Harold Study Area

Existing Land Use	Study Area[1]		Clear Zone/Accident Potential Zone[1] (acres)				Noise Zone[1]
	Acres	Percent	A	B	C[4]	Total APZ	(acres)
Single Family Residential[2]	58	3.4%					26
Commercial/Office	3	0.2%	0.5	1		1.5	3
Agriculture	626	36.6%	16	106		122	612
Publicly Owned Property	512	29.9%	12	18		30	306
Recreation/Open Space[3]	473	27.7%	0.5	16		16.5	303
Vacant	31	1.8%					24
Right-of-Way	8	0.4%					4
Study Area (non-military)	1,711	100%	29	141		170	1,279

Source: Santa Rosa County, 2003.
[1] Land uses and acreages appearing in the table are for non-military lands within the Harold Study Area. Zone "A" is the Clear Zone.
[2] May include single family, townhouses, mobile homes or condominiums.
[3] Recreation lands located within Blackwater River State Forest, property of the State of Florida.
[4] No APZ-II " C" has been assigned to NOLF Harold.
Note: Due to rounding, totals may not match with summation of sub-categories.

Eighteen single-family homes, most of which are mobile homes, are located at the southeast corner of the study area. This is the only location within the study area where single-family homes are present. The only other structure that exists in the Harold Study Area is a commercial building housing a canoe rental business that caters to outdoor enthusiasts visiting Blackwater River State Forest. The building housing this business is one-story with a floor area covering approximately 1,400 square feet.

Land subdivision within the Harold Study Area exhibits large tracts typically exceeding 40 plus acres in size within its north, west, and south sections. Single-family residential lots at the southeast corner of the study area are formed in lots with a typical size of five acres. Map 4-5 illustrates the distribution of parcels according to parcel size. Contiguous parcels may have a same owner.

Less than 4% of the non-military land in the study area is currently used for residential homes. The only commercial operation occupies approximately three acres.

Power utility transmission lines run across parcels located to the south and east of NOLF Harold. Map 4-6 illustrates the proximity of these power lines in relationship to the airfield boundaries and the study area. Map 4-6 also provides land use coverage information for the Harold Study Area.

In 1996-1997 FNAI conducted a survey to identify the endangered, threatened, and rare vertebrate and plants species occurring at NAS Whiting Field and all but one of its NOLFs. NOLF Harold was surveyed by FNAI. Rare plants documented at this site include hairy wild indigo, Florida anise, spoon-flower, and the white-top pitcher-plant. FNAI also observed rare vertebrates consisting of gopher tortoise, gopher frog, and Bachman's sparrow.

3.2 Current Housing and Population

In 2003, residential development comprised of 4 single-family homes and 14 mobile homes, primarily clustered at the southeast corner of the study area near US 90. Current population inside the study area is estimated at 42 persons, based on 2.63 persons per household and an occupancy rate of 89% as recorded by the US Census 2000 for Santa Rosa County. In regards to the type of housing construction, about 75% of the dwellings are mobile homes while the remaining are single-family houses. No multiple family dwellings are located within the Harold Study Area. Table 4-3 summarizes the number of housing units by study area location and dwelling type.

Population and housing estimates were determined by comparing land use records from the Santa Rosa County Property Appraiser's Office with statistical and demographic data from the 2000 U.S. Census. The average number of persons per household for Santa Rosa County was applied to the number of estimated occupied housing units. Occupancy rates for Santa Rosa County were applied to the total number of residential units in the Harold Study Area to obtain total occupied housing unit figures. Housing units shown below are the total number of housing units, not the occupied housing units.

Table 4-3
Existing Housing Unit Profile
Harold Study Area

Residential Type	Housing Units					
	Study Area	Clear Zone/Accident Potential Zone				Noise Zone
		A[1]	B	C[2]	Total	
Single Family	4				0	1
Mobile Home	14				0	11
Multiple Family					0	
Total	18				0	12

[1] Zone "A" is the Clear Zone.
[2] NOLF Harold AICUZ study does not identify a need to delineate APZ "C" for this field.

3.3 Clear Zone\Accident Potential Zone (APZ) Profile

Within the Harold Study Area, the Accident Potential Zone covers 249 acres, of which 169 acres fall on non-military lands. For non-military lands in the Harold Study Area, 29 acres is located in the Clear Zone "A" and 141 acres in the APZ-I "B". About 16.5 acres of privately owned land is affected by Clear Zone "A". As apparent in Map 4-4, nearly all of APZ designations are placed within or adjacent to NOLF Harold's east boundary. Located underneath the entry flight path, a sole APZ straddles the airfield's west property line.

No residential homes currently occur within the Clear Zone "A". Sixteen acres are used for timber by International Paper and less than one acre is used by a canoe rental business located just outside the airfield's northeast boundary. The building supporting this business appears to be located outside of the Clear Zone "A" designation but within the APZ-I "B" designation. Outside the airfield, all but two acres of the APZ-I "B" designation are owned by the State of Florida or International Paper. The canoe rental business occupies that one acre. Figure 4-4 shows the proximity of the canoe business to NOLF Harold.

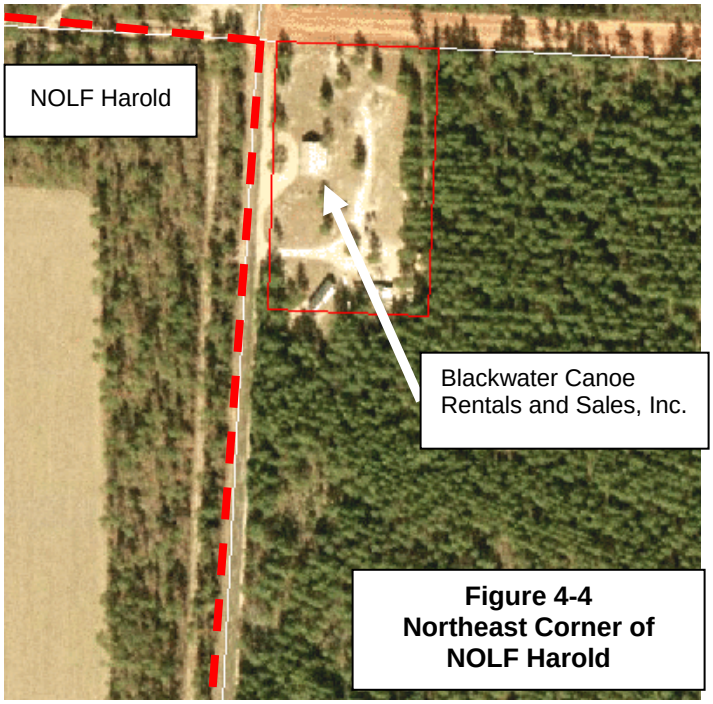


Figure 4-4
Northeast Corner of NOLF Harold

The residential neighborhood at the southeast corner of the Harold Study Area is not located within the APZ.

No APZ-II "C" designations have been assigned to lands under NOLF Harold airspace. As shown in Table 4-4, all but two acres within the APZ are used for timber or open space.

Map 4-6 provides information regarding land use coverage, vegetative communities, and known occurrences of endangered species, if any have been identified, in the Harold Study Area.

As shown in Map 4-4 APZ boundaries located on lands north and west of the airfield occur on lands owned by the State of Florida. The Clear Zone "A" designation south of the airfields southeast corner is also on lands owned by the State. East of the airfield, though the APZ-I "B" falls completely on private property as does a portion of Clear Zone "A". All but three acres of the lands inside the eastern APZ is controlled by International Paper. As for the APZ along the south airfield boundary and near the southeast corner of the airfield, the Clear Zone "A" sits on land owned by the State of Florida while the APZ-I "B" portion of the APZ occurs on International Paper property.

Table 4-4
Clear Zone/ Accident Potential Zone Profile: Existing Land Use
Harold Study Area
(Non-Military Lands)

Zone	Use	Activity	Acres
Clear Zone	Agriculture	timber	16
	Commercial/Office	canoe rental business	0.5
	State Owned Property	State of Florida	12
	Blackwater River State Forest	recreation/open space	0.5
	Total Zone A		29
APZ-I "B"	Agriculture	timber	106
	Commercial/Office	canoe rental business	1
	State Owned Property	State of Florida	18
	Blackwater River State Forest	recreation/open space	16
	Total Zone B		141
Total APZ\Clear Zone --- Non-Military Lands			170

3.4 Noise Zone Profile

Within the Harold Study Area, the Noise Zone within non-military property covers 1,279 acres, or 70% of the study area. On the east side of the study area, the noise zone extends beyond the half-mile distance from the airfield. As shown in Table 4-3 above, 12 residential units – nearly all mobile homes – lie within the Noise Zone. The close proximity of this residential neighborhood to the airfield is shown in Figure 4-5. All affected dwelling units are located in the residential neighborhood at the southeast corner of the Harold Study Area. The distribution of existing land uses is summarized in Table 4-5. Only less than three percent of the non-military lands in the Noise Zone are developed for residential or commercial uses. A canoe rental business located at the northeast corner of the Study Area is the only commercial use inside the Noise Zone. Predominant uses inside

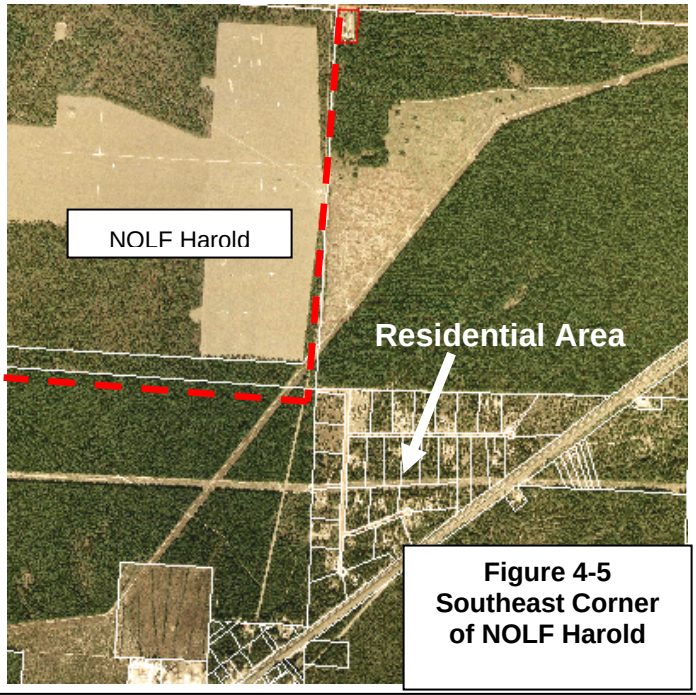


Figure 4-5
Southeast Corner of NOLF Harold

the Noise Zone are agriculture (timber) and open space associated with Blackwater River State Forest and other state owned lands abutting the airfield.

Similar to property ownership conditions associated the APZ, a substantial share of the non-government owned lands within the Noise Zone are controlled by International Paper.

Table 4-5
Noise Zone: Existing Land Use Profile
Harold Study Area
(Non-Military Lands)

Existing Land Use	Acres
Single Family Residential	26
Agriculture	612
Commercial/Office	3
State Owned Property	306
Blackwater River State Forest	303
Right-of-Way	4
Vacant	24
Total Non-Military Lands	1,279

3.5 Summary of Existing Airfield and Land Use Conflicts

Currently, one business and 18 residential homes are located within the Harold Study Area. The location of the business does conflict with departure flight patterns and local patterns. This business is located within the APZ. Both the existing business and twelve residential homes are located within the Noise Zone. All existing development occurs in areas that are affected by impacts created with aircraft flight training. Other than buildings or mobile homes already described, the only other structure that does conflict with flight operations is the power transmission line running across parcels to the south and east of the airfield. The power line easement abuts the point forming the southeast boundary of NOLF Harold.

SECTION 4
FUTURE DEVELOPMENT POTENTIAL AND ASSESSMENT OF FUTURE LAND USE CONFLICTS

People living or working near a military airfield can expect impacts such as noise, smoke, or dust generated from ground and air operations. Quality of life for those living or working near an airfield can be negatively affected when these impacts reach levels creating a nuisance. A potential risk to public safety also exists from the possibility of aircraft crashing at or near an airfield. The extent and frequency of negative impacts affecting people living near airfields will vary based on the type of aircraft, airfield operating hours, airfield ground activities, frequency of flight and ground training activities, proximity to the airfield, and the individual tolerance level for affected persons. Future residents choosing to live within the Harold Study Area will be impacted by flight and ground activities at NOLF Harold.

Population growth and certain types of non-residential development, such as commercial, retail and office uses, are considered to create future potential conflicts between airfield operations and the civilian population's expectations for the enjoyment and use of privately-owned property, particularly a residential home environment. The purpose of this section is to identify potential population and non-residential development that could occur within the Harold Study Area as well as inside Noise Zone and APZ boundaries, the areas where airfield impacts are known to create the greatest potential land use conflicts.

4.1 Housing and Population Methodology

Population and housing estimates were prepared using maximum residential densities allowed by the Santa Rosa County Comprehensive Plan, future land use designations assigned to property within the Harold Study Area, occupancy rates and average persons per household for Santa Rosa County in the 2000 US Census, and Article 11 (Airport Environs) of the Santa Rosa County Land Development Code. Housing and population figures estimated for year 2005 through 2020 are based on an annual growth rate of 3.4%, which is identical to the growth rate applied in the Santa Rosa County Comprehensive Plan to project population through 2020.

For purposes of this study, build-out potential represents development of all land according to the maximum densities allowed by a property's assigned zoning category, as determined by the Santa Rosa County Land Development Code. Article 11 of the County's Land Development Code establishes specific development densities for property located within the APZ or Noise Zone. Lands inside the APZ may be subject to restrictions reducing residential density below that allowed by the underlying zoning or land use designation. For some properties, the APZ restrictions will have minimal or no affect because maximum residential density is already lower than that permitted for the APZ. The lower density prevails in such cases. Population and housing projections take into account effects that Article 11, Airport Environs, as on the development potential for properties situated within an APZ or Noise Zone.

Other factors that were considered to estimate housing and population include environmental characteristics and infrastructure needs. Based on land coverage information mapped by the NWFWMD, a substantial portion of the land surrounding NOLF Harold is not affected by

environmental conditions that may limit development potential. Soils in the Harold Study Area are loamy sand or sand, pursuant to the US Soil Conservation Service's most recent soil survey for Santa Rosa County. Based on the County's Comprehensive Plan and Land Development Code, central water and sewer are not required development within the study area. The development densities allowed for property within the study area do not require central water and sewer.

For the estimation of population and residential development for build-out conditions (i.e., all developable land is built-on at maximum densities permitted by the Comprehensive Plan or zoning code), developable land was reduced by 10% to acknowledge right-of-way and drainage needs to accommodate new development. Population and housing estimates could be higher or lower based on the extent and type of wetlands and land needs to accommodate infrastructure.

A substantial portion of the land within the Harold Study Area lies within Blackwater River State Forest or other State-owned property. All portions of the study area north and west of NOLF Harold will not be available development. Some State-owned lands still appear in official zoning maps as an Agriculture zoning category. These parcels were disqualified from the analysis for future development.

Development potential for land within the study area was determined by applying the maximum density allowed by the zoning category assigned to property. For the Harold Study Area, zoning was used to evaluate development potential rather than using the future land use designation. While Map 4-7 provides information regarding future land use designation assigned to property, Map 4-8 illustrates zoning for the Harold Study Area. Regulatory policy and code may reduce development potential within the APZ or Noise Zone. Housing and population methodology for the build-out scenario includes any effect that Santa Rosa County's development regulations could place on development potential of land within the study area

4.2 Study Area Development Potential

Currently, an estimated 42 residents occupy 18 homes located within the Harold Study Area. Based on undeveloped lands that could potentially accommodate new development, population in the Harold Study Area has a potential to reach 1,087 or more. The number of homes could rise to as many as 463 or more, if development occurs at maximum densities (i.e., build-out conditions) allowed by the County's Land Development Code and Comprehensive Plan. With commercially zoned lands located within the Harold Study Area, development potential for commercial buildings could reach 26,100 square feet. Tables 4-5 and 4-6, respectively, list the number residents and homes that could potentially occur within the Harold Study area in the future.

All lands evaluated for potential residential development are located south and east of the airfield within two large tracts, each owned by International Paper. These properties are assigned an Agriculture zoning category. These two parcels are on the Florida Forever Acquisition List - "Yellow Ravine Project". This study considers the development potential of these properties if this acquisition is not completed. Map 4-7 identifies the property owned by International Paper within the Harold Study Area. The shaded area in Map 4-7 represents the area where substantial future residential development could be located.

Development densities within areas designated as Accident Potential Zones will have a residential density less than that allowed in some zone categories. No residential development was estimated within the Clear Zone "A" designation. The methodology used to estimate housing and population account for variations in density because of development limitations placed on areas inside the APZ. Table 4-7 summarizes dwelling unit potential for the APZ and areas outside the APZ.

Table 4-6
Potential Future Population
Harold Study Area

	Year				
Residential Unit	**2005**	**2010**	**2015**	**2020**	**Build-Out Potential**
Single Family[1]	51	59	67	75	1,087
Multiple Family	0	0	0	0	0
Total	51	59	67	75	1,087[2]

[1]Includes mobile homes.
[2]This total will be significantly decreased by the Yellow River Ravine Project.

Table 4-7
Potential Future Housing Units and Commercial Space
Harold Study Area

	Year				Build-Out Potential	
Residential Units	**2005**	**2010**	**2015**	**2020**	**Residential**	**Non-Residential**
Single Family Units[1]	19	22	25	28	463	n/a
Multiple Family U\nits	0	0	0	0	0	n/a
Total Residential Units	19	22	25	28	463	n/a
Non-Residential						
Commercial building						26,100 sq. ft.[2]

[1] Includes mobile homes.
n/a – not applicable.
[2]This total will be significantly decreased by the Yellow River Ravine Project.

Table 4-8
Build-Out Potential for Dwelling Units and Commercial

Zoning Category	Development Density/ Intensity	Acres	Adjusted Zoning Acreage[2]	Dwelling Units	APZ-II"B" Acreage	Dwelling Units[3]	Total
Residential	**Max. U/A[1]**						
Agriculture/Rural Residential (AG)	1/1	925	492	443	114	20	463
Non-Residential	**FAR[4]**	**Acres**	**Adjusted Zoning Acreage[2]**	**Floor Area (sq. ft.)**	**Acres**	**Floor Area (sq. ft.)**	**Total**
Commercial Highway	.20 per acre	3	1	8,700	2	17,400	26,100[5]

[1] Maximum units per acre.
[2] Area within the APZ I was subtracted from the total acreage for the zoning category. APZ located on State-owned lands was also not included in this analysis.
[3] Dwelling unit projection based on maximum density of one unit per five acres for APZ- I "B" and no units within Clear Zone "A" , the maximum allowed by County Airport Environs Ordinance.
[4] For analysis purposes, analysis assumes ground floor coverage equal to 20% of parcel area and one-story building.
[5] This total will be significantly decreased by the Yellow River Ravine Project.

4.3 APZ, Clear Zone, and Noise Zone Development Potential

No residential structure is situated within the APZ or Clear Zone. One business, a canoe rental and tour outfit, is located on a parcel within the APZ. One third is inside the Clear Zone "A" designation while two-thirds of the parcel is located within APZ-I "B". No other property is assigned a commercial zoning category within the Harold Study Area. Table 4-8 lists the estimated population and housing units that could potentially develop within the APZ, all of which would be located in the APZ-I "B" designations east and south of the airfield.

Eleven mobile homes and a residential house at the southeast corner of the study area are located in the Noise Zone. Table 4-8 lists potential population and housing units that potentially could occur within the Noise Zone. Any future residential development within the Noise Zone will occur on lands south of the airfield non-owned by the State of Florida and lands east of the airfield. In both cases, available developable land is all owned by International Paper.

Table 4-9
Potential Future Population and Housing Units, Build-Out Conditions

Study Area Component	Population	Housing Units	Maximum Density (units/acre)
APZ I "B"	32	14	1 unit/5 acres[1]
Noise Zone[2]	201	86	1 unit/5 acres[2]

[1] For analysis purposes APZ-I "B" residential densities limits are one unit per five acres, consistent with maximum density allowed in APZ-I by County Land Development Code Article 11, Airport Environs.
[2] APZ lands located within the Noise Zone were evaluated at one unit per five acres. Approximately 57 acres within the Noise Zone are also within APZ-I "B" designation.

4.4 Other Development Issues

Lands within the study area and south and east of the airfield are located within close proximity to US Highway 90. These lands comprise two major parcels, one east and one south of the airfield and both owned by International Paper. Both subject parcels extend from the study area to US Highway 90, making developable lands within the study area accessible to a major transportation corridor. Access to US 90 will eventually make these parcels attractive to residential development, as it did for the current residential neighborhood at the southeast corner of the Harold Study Area.

Both parcels currently contain regional power transmission lines extending across the length of the property. The power lines are contained within utility easements granted to the utility provider. While the power lines lower attractiveness for residential development, they also are uninviting for aircraft safety.

SECTION 5
STUDY RECOMMENDATIONS

Map 4-9 provides illustrations to help identify areas affected by recommendations offered below.

5.1 Clustering Development Away from Airfield

A. **Findings.** Except for the two large land tracts owned by International Paper, most major tracts of land within the Harold Study Area are owned by the State of Florida. The two International Paper properties are zoned under the Agriculture category, allowing for a potential maximum residential density of one unit per acre. Close access to US Highway 90 and suitable soils increase the potential for development of these parcels. The power lines crossing these parcels will reduce some of the development potential of these parcels, but relocation could remedy that situation.

Based on the size of the International Paper properties, development can be directed away from NOLF Harold, Noise Zones, and APZ boundaries by moving potential residential development from portions of the parcel closest to the airfield to parcel areas furthest away from the airfield. A potential exists to move all potential residential homes on the International Paper properties to portions of the parcels located entirely outside the Harold Study Area boundary. Clustering development in this manner could move home as much as a half-mile from the airfield's boundary but retain the overall residential density of one unit per acre.

An alternative would accommodate the transfer of development rights from areas close to the airfield to other parcels owned by International Paper or from the eastern parcel to the southern parcel outside of the study area. The eastern parcel owned by International Paper contains substantial areas within the APZ-I "B" designation.

Currently, a Florida Forever Project (Yellow River Ravine) is being considered for fee simple purchase of these parcels. The recommendation can serve as an interim approach if acquisition does not occur prior to the land owner pursuing development of the property.

B. **Recommendation.** If the Yellow River Ravine Project is not completed expeditiously, the recommendation to cluster development would protect the airfield from encroachment while retaining property rights. Map 4-9 illustrates the general location where potential residential development could be clustered away from the airfield or entirely outside the study area. The International Paper properties are identified as R1, recommendation number one. The dashed line in Map 4-9 generally divides the parcel into areas that should be left undeveloped and the areas where residential development should concentrate using the clustering approach.

5.2 Purchase of Development Rights

A. **Findings.** Only two large land tracts represent a potential future conflict with air operations at NOLF Harold. Both tracts are owned by International Paper. Development rights for these properties could be purchased with the property owner retaining rights to use the property solely for agricultural purposes. Volusia County implemented such a program and purchased development rights on land owned by a paper company. Under such a program, lands would only be used for agriculture, conservation, or other similar uses, precluding any construction of structures on the property. Currently, a Florida Forever Project (Yellow River Ravine) is being considered for fee simple purchase of these parcels.

B. **Recommendation.** NAS Whiting Field and Santa Rosa County should jointly evaluate the merits of establishing a program to purchase development rights from agriculture lands owned by International Paper. Such a program would consider the use of federal and state conservation and environmental land acquisition funds as a source of revenue to acquire development rights. If the Yellow River Ravine Project is not completed, this recommendation should be considered.

5.3 Land Acquisition of Large Land Tracts

A. **Findings.** Land acquisition of undeveloped property represents the most effective means within the study area to eliminate potential for future conflicts. Whereas two large undeveloped tracts could contain any substantial future development, opportunity exists today to prevent over 1,000 people from living within one-half mile of NOLF Harold. One property owner – International Paper – controls both land tracts. Acquisition of the International Paper property located within the study area would place public lands on all four sides of the airfield, excepting the existing commercial property (3 acres) and the residential subdivision as the southeast corner of the study area. Both tracts abut lands owned by the State of Florida. These properties would expand the natural habitats protected within Blackwater River State Forest, serving additional public purpose if purchased by the County or State. Currently, a Florida Forever Project (Yellow River Ravine) is being considered for fee simple purchase of these parcels.

B. **Recommendations.** If land acquisition is feasible within the Harold Study Area, NAS Whiting Field or the County should consider acquisition of all International Paper property within the Harold Study Area. If the Yellow River Ravine Project is not completed, this recommendation should be considered.

5.4 Land Acquisition of Residential Tracts

A. **Findings.** Vacant lots are located within the area delineated as R3 in Map 4-9. These lots are not developed and are closer to the airfield and flight paths than most other lots within the subdivision.

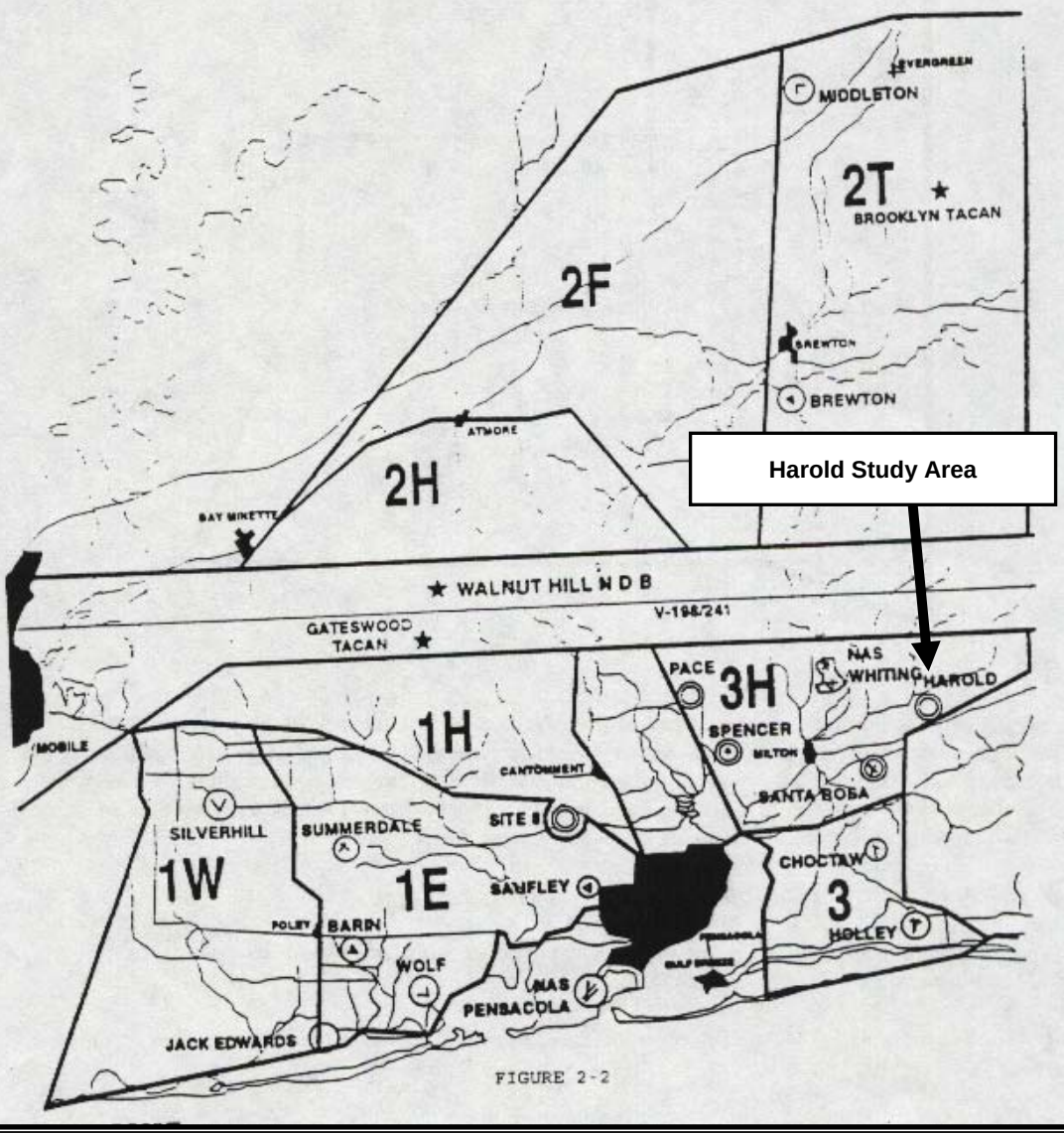
B. **Recommendation**s. Santa Rosa County and NAS Whiting Field should evaluate the merits of including strategic residential vacant lots as part of any land acquisition program associated with the protection of NOLF Harold.

5.5 General Recommendations

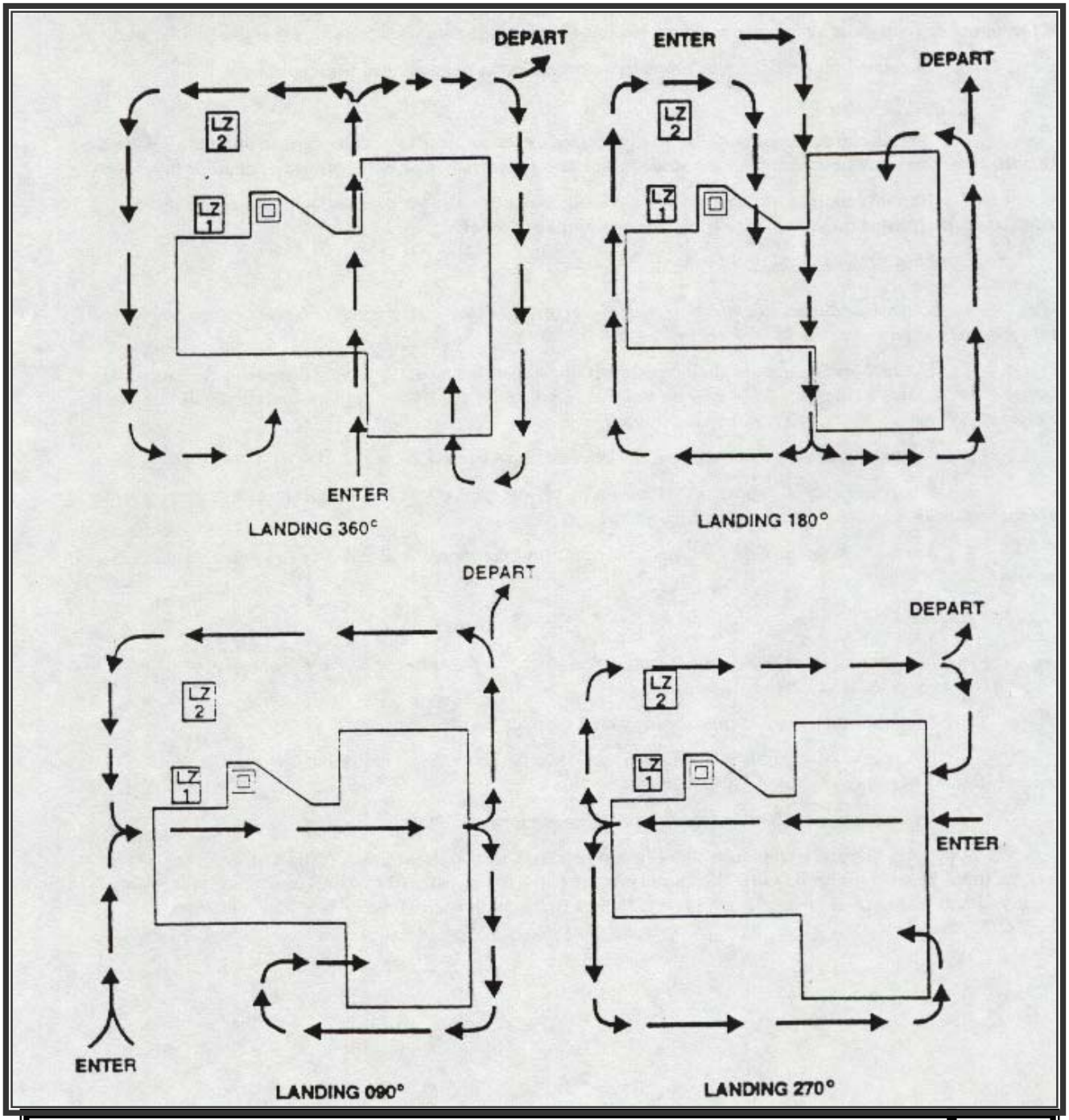
Chapter 1 may include additional recommendations affecting the use of land or construction methods applicable to areas near all or a number of airfields evaluated as part of the Santa Rosa Joint Land Use Study.

APPENDIX 4A

NOLF HAROLD JLUS MAPS



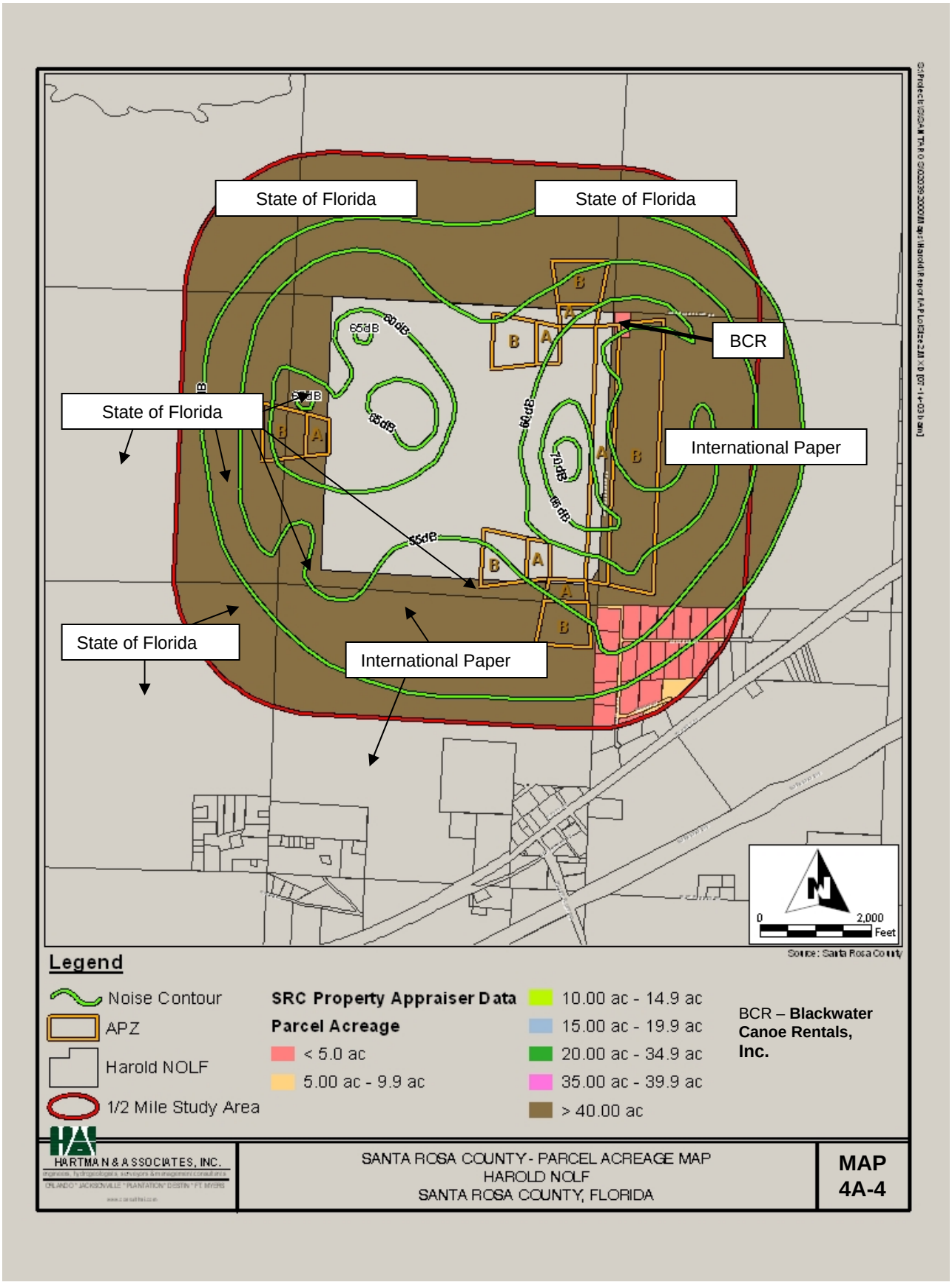
ALERT AREA 292	Map 4A-1



ENTRY AND DEPARTURE POINTS AND FLIGHT PATTERNS NOLF HAROLD

MAP 4A-2


S:\Projects\SSANTAROS\02039200\Maps\Harold\Report\APEL.MXD [08-06-03 bam]
REC/OS
POP
COMM
AG
MILITARY
VACANT
SFR
AG
VACANT
SFR
65dB
50dB
60dB
70dB
55dB
0
2,000
Feet
Source: Santa Rosa County
Legend
Noise Contour
APZ/Clear Zone
A - Clear Zone
B - APZ I
C - APZ II
Harold NOLF
1/2 Mile Study Area
EXISTING LAND USE MAP
Category
Agriculture
Commercial/Office
Military
Publicly Owned Property
Recreation/Open Space
Single Family Residential
(Includes Townhomes/Condos)
Vacant
Airfield Ownership
US Navy
Field Aircraft
Helicopters
Airfield Primary Function
Flight Training
HARTMAN & ASSOCIATES, INC.
engineers, hydrogeologists, surveyors & management consultants
ORLANDO * JACKSONVILLE * PLANTATION * DESTIN * FT. MYERS
www.consulthai.com
SANTA ROSA COUNTY EXISTING LAND USE MAP
HAROLD NOLF
SANTA ROSA COUNTY, FLORIDA
MAP
4A-3


State of Florida
State of Florida
BCR
State of Florida
International Paper
State of Florida
International Paper
65dB
60dB
55dB
70dB
75dB
80dB
0
2,000
Feet
Source: Santa Rosa County
Legend
Noise Contour
APZ
Harold NOLF
1/2 Mile Study Area
SRC Property Appraiser Data
Parcel Acreage
< 5.0 ac
5.00 ac - 9.9 ac
10.00 ac - 14.9 ac
15.00 ac - 19.9 ac
20.00 ac - 34.9 ac
35.00 ac - 39.9 ac
> 40.00 ac
BCR – Blackwater Canoe Rentals, Inc.
HARTMAN & ASSOCIATES, INC.
SANTA ROSA COUNTY - PARCEL ACREAGE MAP
HAROLD NOLF
SANTA ROSA COUNTY, FLORIDA
MAP 4A-4


S:\Projects\SSANTAROS\02039200\Maps\Harold\Report\APCC_CN.MXD [08-6-03 bam]
630
630
630
162
410
441
441
434
434
434
140
65dB
410
210
441
50dB
65dB
65dB
60dB
60dB
311
70dB
65dB
410
55dB
210
441
410
441
832
410
410
441
443
441
0
2,000
Feet
Source: Santa Rosa County, NWFWMD, FNAI
Legend
Noise Contour
APZ/Clear Zone
A - Clear Zone
B - APZ I
C - APZ II
Harold NOLF
1/2 Mile Study Area
Florida Natural Areas Inventory
Species, State and Federal Listing
Gopher Frog
(State: Species of Special Concern)
NWFWMD Land Use
Category
140, Commercial and Services
162, Sand and Gravel pits
210, Cropland and Pastureland
320, Shrub and Brushland
410, Upland Coniferous Forests
434, Mixed Coniferous/Hardwood
441, Coniferous Plantations
443, Forest Regeneration Areas
630, Wetland Forested Mixed
811, Airports
832, Electrical Power Transmission Lines
Airfield Ownership
US Navy
Field Aircraft
Helicopters
Airfield Primary Function
Flight Training
HARTMAN & ASSOCIATES, INC.
engineers, hydrogeologists, surveyors & management consultants
ORLANDO * JACKSONVILLE * PLANTATION * DESTIN * FT. MYERS
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NWFWMD EXISTING LAND USE AND ENDANGERED SPECIES MAP
HAROLD NOLF
SANTA ROSA COUNTY, FLORIDA
MAP
4A-5

Legend

- Noise Contour
- APZ
- Harold NOLF
- 1/2 Mile Study Area

FUTURE LAND USE

Category

- AGRICULTURE
- CONSERVATION/RECREATION
- COMMERCIAL
- CONSERVATION/US GOVT

Undeveloped lands with Development Potential

Airfield Ownership

US Navy

Field Aircraft

Helicopters

Airfield Primary Function

Flight Training

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SANTA ROSA COUNTY FUTURE LAND USE MAP
HAROLD NOLF
SANTA ROSA COUNTY, FLORIDA

Map 4A-6


S:\Projects\SSANTAROS\02039200\Maps\Harold\Report\APZ.MXD [08-06-03 bam]
AG
STAT
HCD
65dB
50dB
60dB
70dB
55dB
MIL
0
2,000
Feet
Source: Santa Rosa County
Legend
Noise Contour
APZ/Clear Zone
A - Clear Zone
B - APZ I
C - APZ II
Harold NOLF
1/2 Mile Study Area
ZONING
Category
Agriculture/Rural Residential (AG)
Highway Commercial Development (HCD)
Military
State
Airfield Ownership
US Navy
Field Aircraft
Helicopters
Airfield Primary Function
Flight Training
HARTMAN & ASSOCIATES, INC.
engineers, hydrogeologists, surveyors & management consultants
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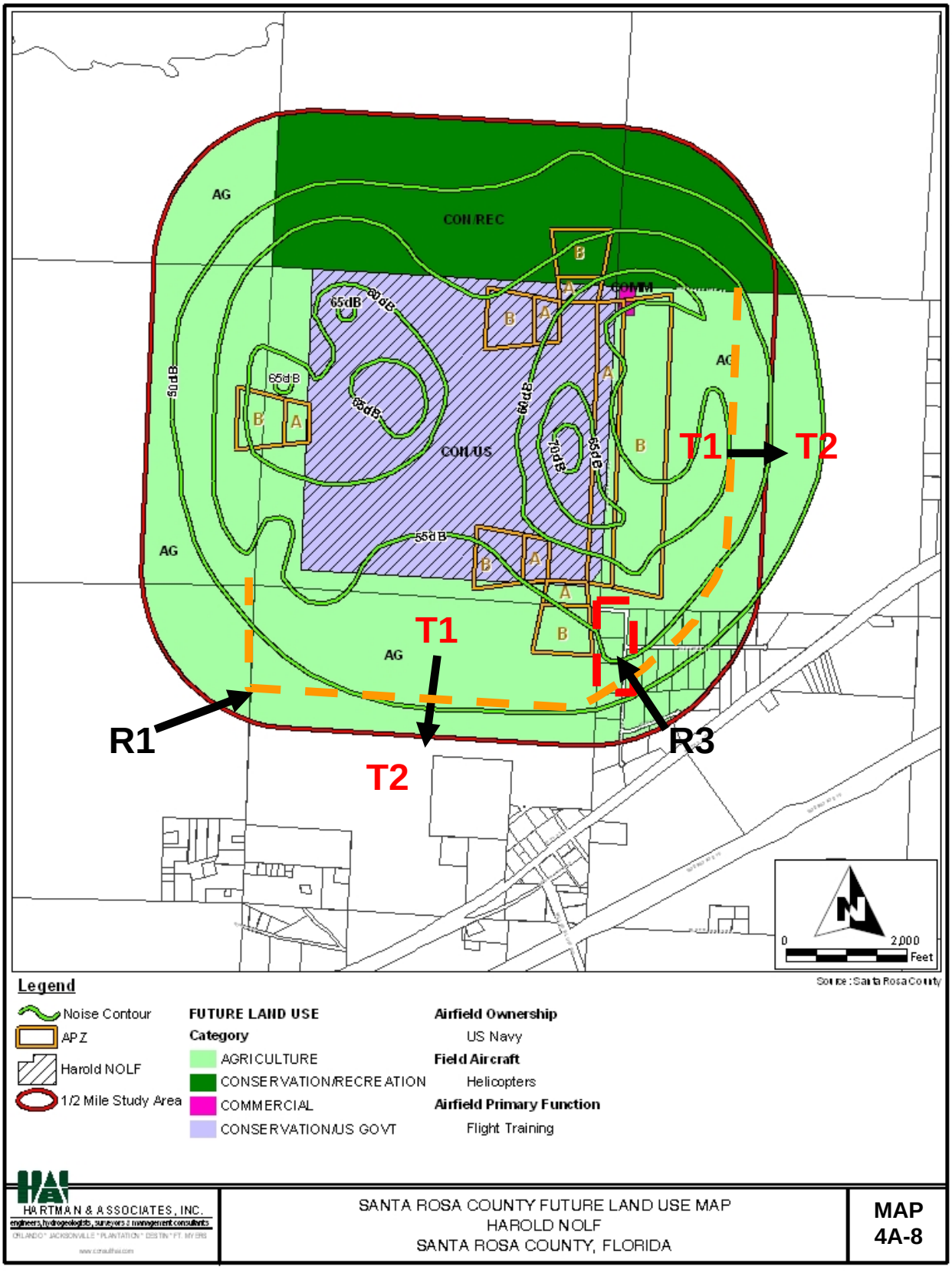
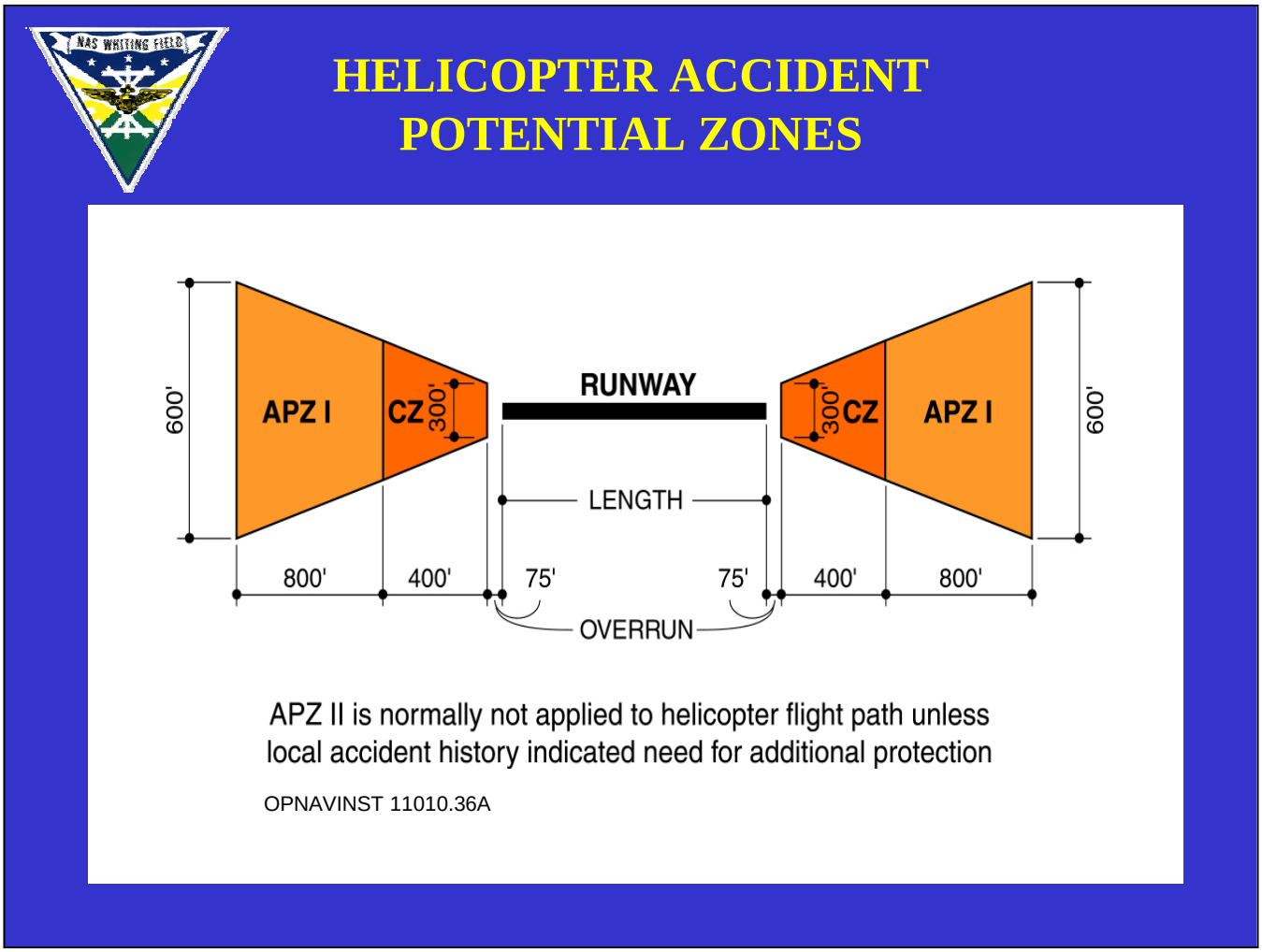
www.consulthai.com
SANTA ROSA COUNTY ZONING MAP
HAROLD NOLF
SANTA ROSA COUNTY, FLORIDA
MAP
4A-7


AG
CON/REC
COMM
65dB
60dB
50dB
55dB
CON/US
T1
T2
R1
R3
0
2,000
Feet
Source: Santa Rosa County
Legend
Noise Contour
APZ
Harold NOLF
1/2 Mile Study Area
FUTURE LAND USE
Category
AGRICULTURE
CONSERVATION/RECREATION
COMMERCIAL
CONSERVATION/US GOVT
Airfield Ownership
US Navy
Field Aircraft
Helicopters
Airfield Primary Function
Flight Training
HARTMAN & ASSOCIATES, INC.
engineers, hydrogeologists, surveyors & management consultants
SANTA ROSA COUNTY FUTURE LAND USE MAP
HAROLD NOLF
SANTA ROSA COUNTY, FLORIDA
MAP
4A-8

APPENDIX 4B



ACCIDENT POTENTIAL ZONES FOR HELICOPTERS	Figure 4B-1

NOLF HAROLD AERIAL IMAGE	Figure 4B-2