TABLE OF CONTENTS

LIST OF TABLES

LIST OF EXHIBITS

APPENDICES

A. INTRODUCTION

The purpose of the Airport Layout Plan Update for the Virginia Highlands Airport is to provide the Virginia Highlands Airport Commission with useful, understandable information and guidance to develop and maintain a safe and efficient airport. It also provides the Federal Aviation Administration (FAA) and the Virginia Department of Aviation with information concerning the planned development at Virginia Highlands Airport. This Airport Layout Plan Update was financed jointly by the FAA, Virginia Department of Aviation, and the Airport Commission. The inventory chapter of this report provides information pertaining to the airport history and description of existing airport facilities. The inventory is based on conditions as they existed in August 2002.

B. AIRPORT LOCATION AND SETTING

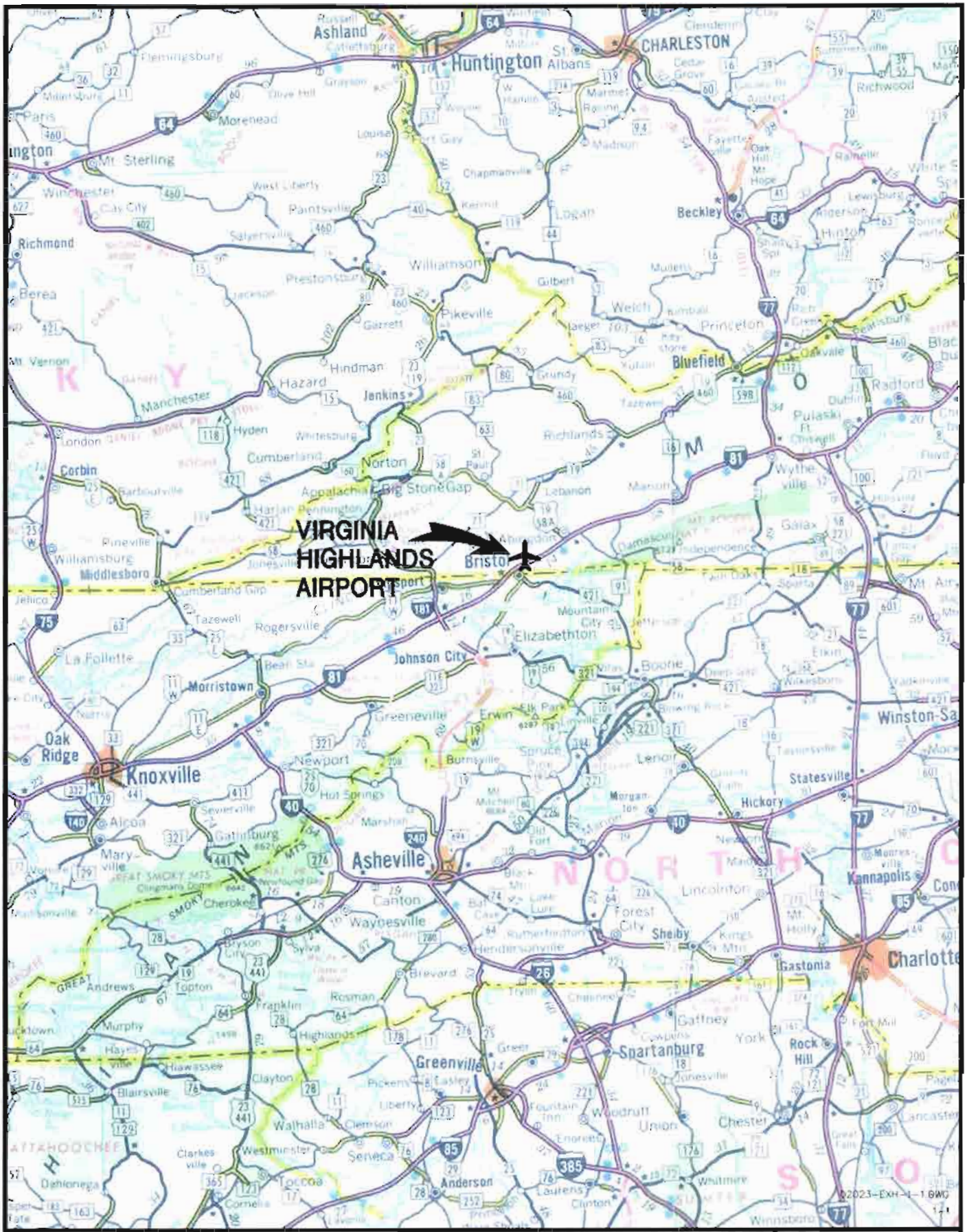
The Virginia Highlands Airport is located one mile west of Abingdon, Virginia in Washington County. The Airport is accessible from I-81, via U.S. Route 11. The Airport is operated by the Virginia Highlands Airport Commission and presently consists of approximately 260 acres.

The topography of the area immediately surrounding the Airport consists of rolling terrain. The airport has a published elevation of 2,087.4 feet above Mean Sea Level (MSL). The mean maximum temperature of the hottest month is 85 degrees F (Southeast Regional Climate Center).

Exhibit 1-1, Airport Location Map, locates the Airport relative to the Commonwealth of Virginia. **Exhibit 1-2**, Airport Vicinity Map, identifies the immediate vicinity around the Airport.

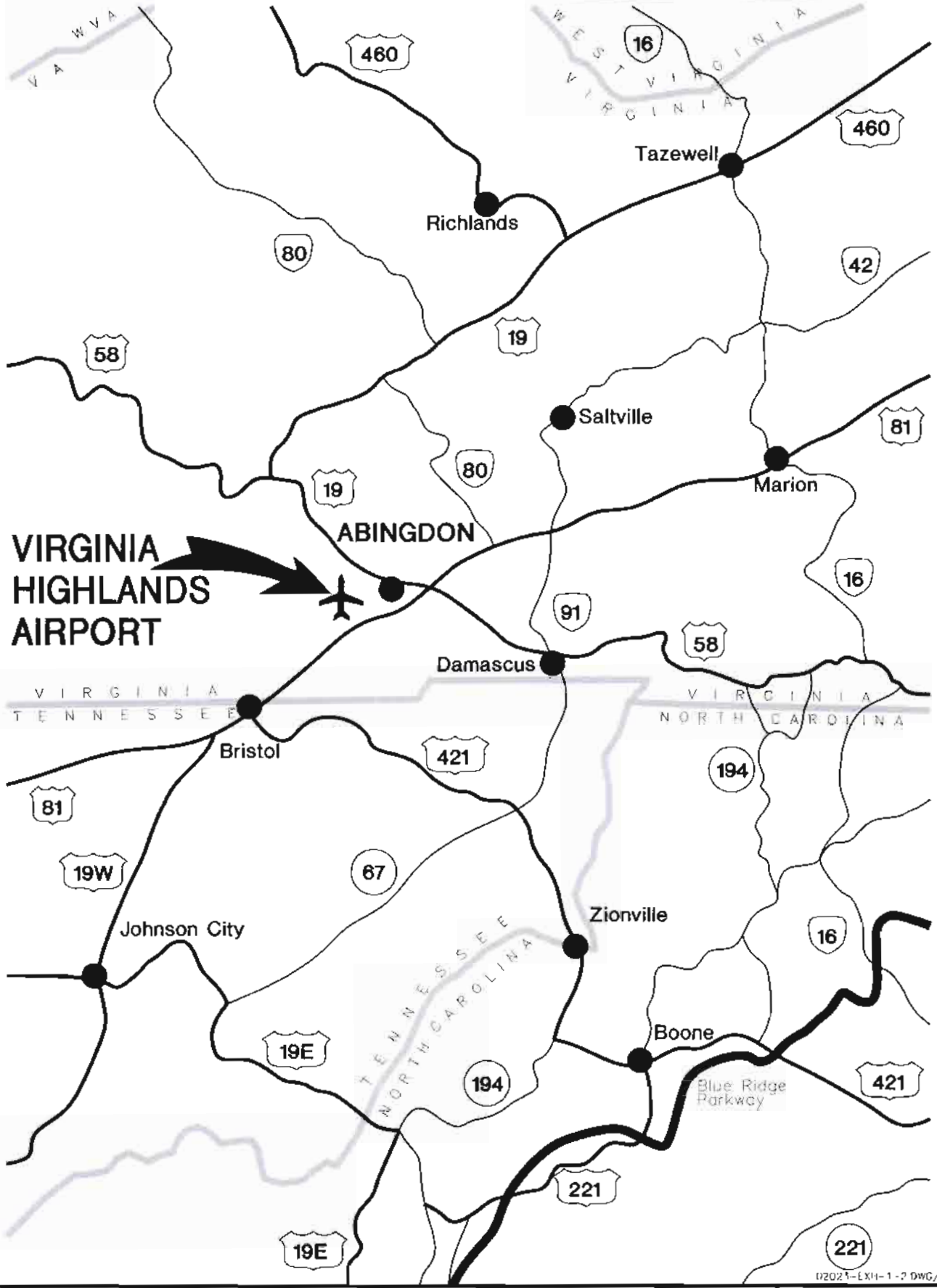
C. EXISTING FACILITIES

The existing airport facilities are summarized in **Table 1-1**. The inventory information is current as of August 2002.



VIRGINIA HIGHLANDS AIRPORT
LOCATION MAP

EXHIBIT
1-1



VIRGINIA HIGHLANDS AIRPORT VICINITY MAP

EXHIBIT 1-2

TABLE 1-1
VIRGINIA HIGHLANDS AIRPORT
EXISTING FACILITIES

ITEM	DESCRIPTION
General Airport Information	
Coordinates:	N 36°41'13.80" W 82°02'00.00"
Three Letter Identifier:	VJI
Field Elevation:	2087.4' MSL
Communications:	122.8 UNICOM/CTAF 128.125 AWOS-III
Airport Reference Code (ARC)	B-II Small
Land	
Fee Simple:	262.01 acres
Easement:	15.36 acres
Runway 6-24	
Length:	4471'
Width:	75'
Type:	Asphalt
Pavement Strength:	12,500 lbs Single Wheel
Instrument Approaches	
Precision:	None
Non-Precision:	Runway 24
NAVAIDS:	Localizer RW 24, VOR/DME or GPS-B RW 24
Weather Source	AWOS-III on field
Taxiways	
Parallel:	Yes, 5 Exit Taxiways 40' Wide
Lighting	
Runway:	MIRL
Parallel Taxiway:	MITL
Visual Approach:	36" Rotating Beacon, Segmented Circle, Lighted Wind Cone
Apron	
Size:	Based - Approximately 15,000 SY Transient - Approximately 15,000 SY
Condition:	Excellent
Tiedowns:	60
Hangars	
T-Hangars:	1-4 units, 2-10 units, 1-14 units
Corporate Hangars:	4-Approx. 8,000 SF, 1-Approx. 10,000 SF
Maintenance Hangar:	1-Approx. 5,000 SF
Fuel Farm	
Type:	Above ground
Jet A Fuel Storage:	12,000 gallon
Avgas Fuel Storage:	12,000 gallon
Terminal Building	9,000 SF
Auto Parking (Spaces)	124
Security and Fire Protection	Washington County Volunteer Fire Dept.

TABLE 1-1 (CONTINUED)
EXISTING FACILITIES

ITEM	DESCRIPTION
Snow Removal	Airport Staff
Utilities	
Electricity	Appalachian Power Company
Water	Washington County Service Authority
Natural Gas	United Cities Gas Company
Sanitary	Septic

Source: Delta Airport Consultants, Inc. Site Visit July 2002
Airport Management
1996 Master Plan Update

D. AIRCRAFT ACTIVITY

The FAA is required to publish the "National Plan of Integrated Airport Systems" (NPIAS) as mandated by the Airport and Airways Improvement Act of 1982. This FAA planning document is intended to identify the nation's airport needs over a ten year planning period, representing a continuous planning effort. Likewise, the Virginia Air Transportation System Plan (VATSP) identifies the state's airport needs. The VATSP currently classifies Virginia Highlands Airport as a general aviation regional airport.

Airports contained in the NPIAS are categorized by their role. The role reflects one of five basic airport service levels which describe the type of service that the airport is expected to provide to the community at the end of the five year planning period. The service level also represents funding categories for the distribution of federal aid. The five basic service levels include:

I. commercial service/primary
II. commercial service/other
III. commercial service which also serves as a reliever
IV. reliever
V. general aviation airports

In addition to defining the role of the airport, the FAA has a system to correlate airport design criteria to the physical (wingspan) and operating (approach speed) characteristics of the most demanding aircraft currently using or expected to use an airport with greater than 500 annual operations. This airport classification system is contained in FAA Advisory Circular (AC) 150-5300-13. The Airport Reference Code (ARC) system is comprised of two components. The first component, depicted by a letter (A-E), designates the aircraft approach category, determined by

approach speed, and the second component, depicted by a roman numeral (I-VI), designates the airplane design group, determined by the wingspan. **Table 1-2** identifies the Aircraft Approach Categories and Aircraft Design Groups that have been established by the FAA.

TABLE 1-2
VIRGINIA HIGHLANDS AIRPORT
APPROACH CATEGORIES AND DESIGN GROUPS

APPROACH CATEGORY	AIRCRAFT DESIGN GROUP
A - Less than 91 knots	I - Wing span less than 49 feet
B - 91 to 120 knots	II - Wing span 49 feet to 78 feet
C - 121 to 140 knots	III - Wing span 79 feet to 117 feet
D - 141 to 165 knots	IV - Wing span 118 feet 170 feet
E - Greater than 165 knots	V - Wing span 171 feet to 213 feet VI - Wing span 214 feet to 261 feet

Source: FAA AC 150/5300-13 "Airport Design"

The NPIAS lists Virginia Highlands Airport as a general aviation airport. The current airport reference code is B-II small. Examples of aircraft to give a perspective of various airport reference code classifications are listed in **Table 1-3.**

TABLE 1-3
VIRGINIA HIGHLANDS AIRPORT
TYPICAL AIRCRAFT

AIRCRAFT	ARC	APPROACH SPEED (KNOTS)	WING SPAN (FT.)	MAX TAKEOFF WEIGHT(LBS)
Beech Baron 58P	B-I	101	37.8	6,200
Beech Bonanza F33A	A-I	70	33.5	3,400
Beech King Air B200	B-II	103	54.5	12,500
Cessna Citation I	B-I	108	47.1	11,850
Cessna Citation II	B-II	108	51.7	13,300
Cessna Citation V	B-II	130	52.2	16,100
Cessna 150	A-I	55	32.7	1,600
Cessna 441 Conquest	B-II	100	49.3	9,925
Dassault Falcon 20	B-II	114	53.5	30,650
Dassault Falcon 50	B-II	113	61.9	37,480
Gates Learjet 55	C-I	128	43.7	21,500
Canadair Regional Jet	C-II	140	69.7	53,000
Piper Navajo	B-I	100	40.7	6,200

Source: FAA AC 150/5300-13 "Airport Design"

According to Airport records there are 71 aircraft based at Virginia Highlands Airport. A breakdown of the current based aircraft is presented in **Table 1-4**. There are currently four (4) Cessna Citation Business Jets and one (1) King Air 200 based at the Airport. However, other corporations have expressed interest in housing corporate jet aircraft at VJI if the space becomes available. **Table 1-5** contains a listing of the based aircraft tail number, type and owner at Virginia Highlands Airport. The based aircraft listing is current as of August 2002.

TABLE 1-4
VIRGINIA HIGHLANDS AIRPORT
BASED AIRCRAFT

	SE PISTON	ME PISTON	ME TURBO-PROP	ME JET	ROTORCRAFT	OTHER*	TOTAL
Number Based	49	8	1	4	4	5	71
Percent of Fleet	69%	11%	1%	6%	6%	7%	100%

* Denotes ultra-lights, gliders and unmanned aircraft
Source: Delta Airport Consultants, Inc Analysis

TABLE 1-5
VIRGINIA HIGHLANDS AIRPORT
BASED AIRCRAFT LISTING

TAIL NUMBER	MAKE/MODEL	OWNER	ADDRESS
92822	Cessna 182	C. D. Porter	Castlewood, VA
8914Y	Piper Twin Camanche	W. L. Nininger	Bristol, VA
735MT	Cessna 182	Susan Lapis	Bristol, VA
877OY	Piper Twin Camanche	C. R. Quensenberry, Inc.	Abingdon, VA
5209N	Cessna 182	Emmitt F. Yeary	Abingdon, VA
9059X	Cessna 182	William E. Hunt	Bristol, TN
904BL	Citabria	Va. Highlands Machining	Abingdon, VA
193T	Super Cub	F. Ellison Conrad	Abingdon, VA
401RP	J-6 Karatoo	Robert Tipton	Bristol, TN
35658	J-3 Cub	Mark Goodman	Abingdon. VA
402BC	Hughes	Rodney R. Farris	Bristol, VA
7618R	Beechcraft B23	Walt Mitchell	Bristol, TN
15739	Piper 180	William Venable	Abingdon, VA
6022R	Cessna 172	Gene Cunningham	Bristol, VA
321DJ	Phantom Ultralight	David L. Jones	Bluff City, TN
7165L	Kolb	Roy Fricker	Bristol, TN
4153Y	Citabria	David Blair	Abingdon, VA
5299G	Cessna L-19	Richard Kiser	Abingdon, VA
4910D	Cessna 172	Vernon D. Johnson	Lebanon, VA
370AC	Citabria Adventurer	Greg Quesenberry	Abingdon, VA

TAIL NUMBER	MAKE/MODEL	OWNER	ADDRESS
36656	Aeronca Chief	William P. Sheffield	Abingdon, VA
225RT	Hummer Ultralight	Robert Tapscott	Abingdon, VA
2634L	Cessna 172	Raymond Williams	Glade Springs, VA
201XF	Mooney M/20J	James Arrington	Bristol, VA
212PT	Piper Tomahawk	Leon Powers/Danny Goodson	Bristol, VA
9419L	Grumman AA1A	Glenn E. Altizer	Bristol, VA
	Phantom	Jack E. Arnold	Bristol, VA
7295M	Cessna 175	Roby L. Orr	Damascus, VA
8595J	Cessna 150G	Larry Hillman	Bristol, VA
91KX	Skymaster	Keith Latham	Bristol, VA
3304R	Cessna 182	Tom & Betsy Hulvey	Abingdon, VA
333YT	Cessna 182	Daryl Addison	Bristol, TN
2599R	Piper 180	Va. Highlands Machining	Abingdon, VA
97630	Cessna 182	Larry R. Runyon	Abingdon, VA
11JW	Champion	James F. White	Abingdon, VA
48JW	Pitts	James F. White	Abingdon, VA
8507S	Cessna 182	Dennis Custance	Abingdon, VA
8861F	Cherokee Warrior	Danny Goodson/Leon Powers	Bristol, VA
66246	Cessna 150	Clark Fleming	Abingdon, VA
42682	Stearman	Mark Goodman	Abingdon, VA
	Stearman	Mark Goodman	Abingdon, VA
57JM	Cessna 172XP	Henderson Motorsports, Inc.	Abingdon, VA
43671	Piper Cherokee	Kevin Reap	Abingdon, VA
2334L	Beechcraft 19	Ronald Harr	Abingdon, VA
71467	Luskeombe	Jackie Bise	Meadowview, VA
18692	Cessna 150L	Shawn Barr	Abingdon, VA
55123	Piper Cherokee	William Roeser	Kingsport, TN
8907G	Cessna 182	Carl Greer	Abingdon, VA
70809	Cessna 182	William P. Sheffield	Abingdon, VA
60793	Cessna 150	Phillip Tillison	Bristol, VA
4260J	Cherokee	Leonard Lavasser	Bristol, TN
5262L	Grumman	Danny Sorrell	Bristol, VA
34VA	Bell 206 Jet Ranger	Va. State Police	Abingdon, VA
39VA	BO-105LS	Va. State Police	Abingdon, VA
33VA	Cessna 182	Va. State Police	Abingdon, VA
242SW	Cessna Citation II Bravo	Strongwell, Inc.	Bristol, VA
24344	Cessna 172XP	Henderson Motorsports, Inc.	Abingdon, VA
32959	Seneca	Ron Dickerson	
66BE	Citation Jet	Nicewonder Aviation	Bristol, VA
30372		George Morgan	Radford, VA
54096	Piper Aztec	Ron Dickerson	
2YC	Baron	Ron Dickerson	
4MM	Citation V	Morgan McClure Motorsports	Abingdon, VA
206WL	B-206	Food City Aviation	Abingdon, VA
843FC	King Air	Food City Aviation	Abingdon, VA

TAIL NUMBER	MAKE/MODEL	OWNER	ADDRESS
679BC	Citation	Rapoca	Bristol, VA
97HA	Caravan	Rapoca	Bristol, VA
237DE	Cessna 182	Rapoca	Bristol, VA
8101U	Cessna 172	Judy Hayes	Atlanta, GA
321SS	Taifun 17E	Susan Van Fleet	Abingdon, VA
50PS	Navajo	Byrd & Goff Construction	Abingdon, VA
2016K	Baron B-55	Ken Air Aviation, Inc.	Bristol, VA

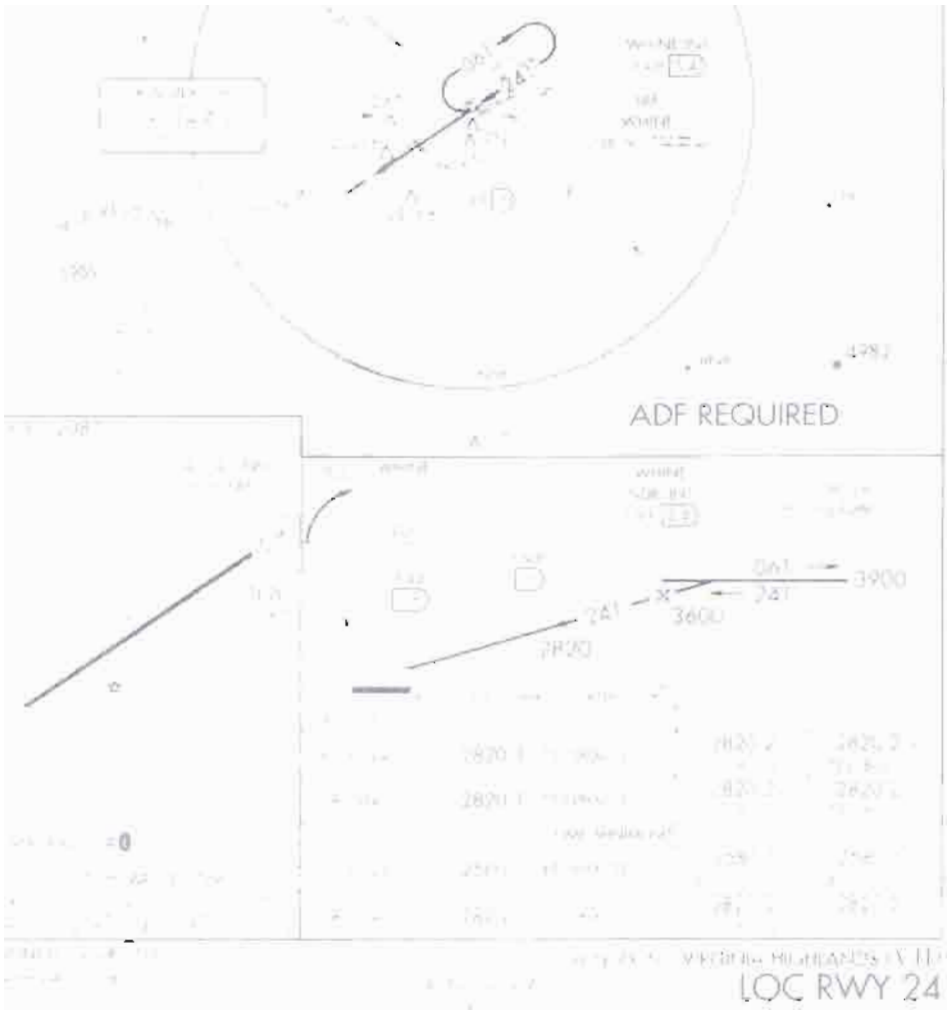
Source: Airport Management

E. AIRSPACE STRUCTURE AND NAVAIDS

Virginia Highlands Airport is surrounded by Class E Airspace. The Class E controlled airspace around the Airpark starts at 700 feet Above Ground Level (AGL) and extends vertically to 3,500 feet Mean Sea Level (MSL). Class E airspace are controlled areas or airspace corridors identified as federal airways, or which accommodate jet traffic at low altitudes.

This section discusses both visual and electronic Navigational Aids (NAVAIDS) as related to Virginia Highlands Airport. There are various types of electronic NAVAIDS that provide a special purpose to the system of air navigation. VJI has two published instrument approach procedures to Runway 24 at the Airport. The non-precision approaches include the localizer approach **(Exhibit 1-3)**, and the VOR/DME or GPS-B approach **(Exhibit 1-4)**.

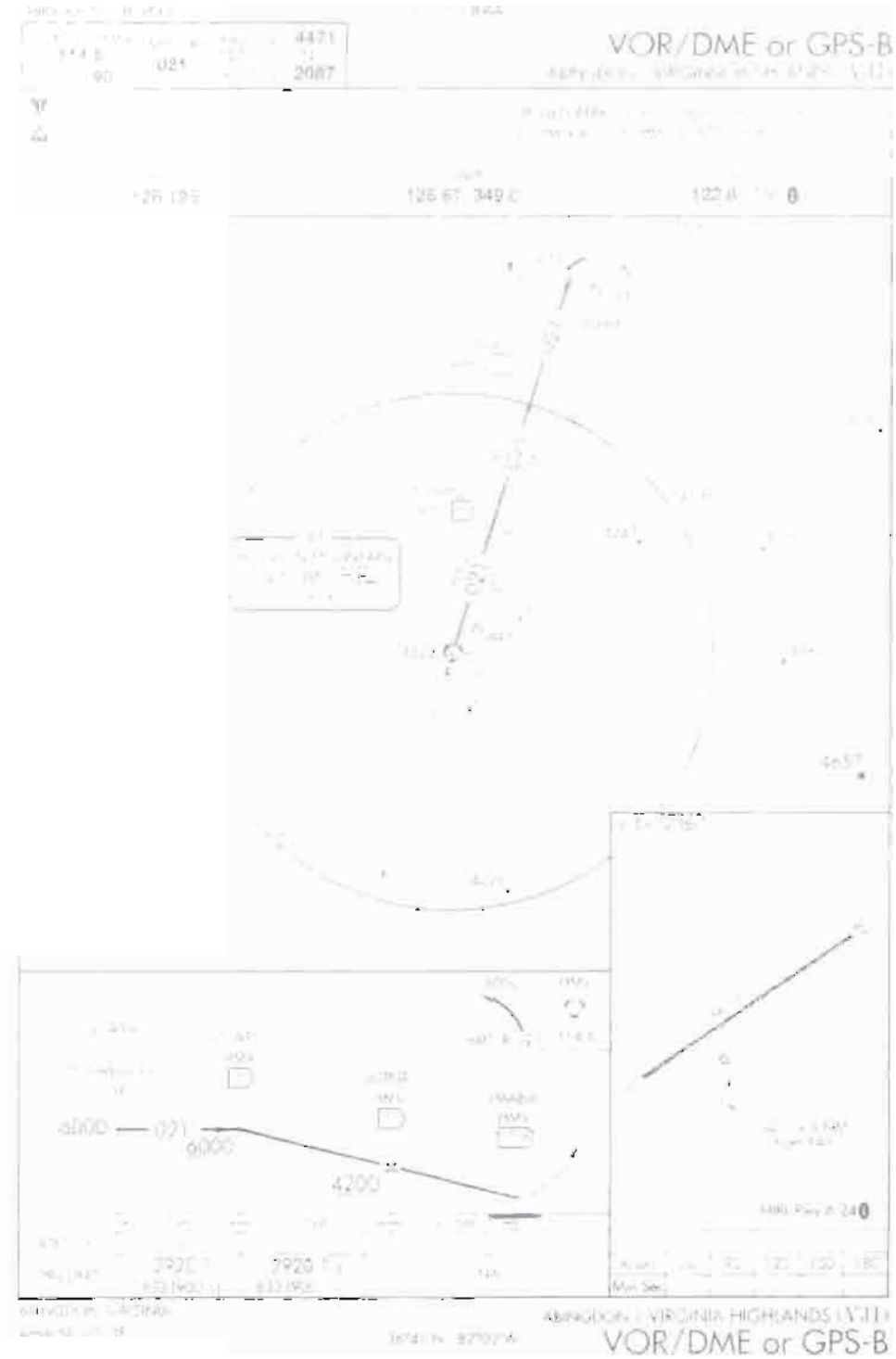
There are several levels of an AWOS that report a variety of weather statistics. Virginia Highlands Airport has an AWOS-III. The AWOS system reports altimeter settings, wind data, temperature, dew point, density altitude, visibility and cloud/ceiling data. The antenna for this system is located approximately 1,470 feet from the Runway 6 end, and about 600 feet northwest from the runway centerline.



02023--EXH-1-3.DWG
1-3

VIRGINIA HIGHLANDS AIRPORT TERMINAL PROCEDURES

EXHIBIT
1-3



	VIRGINIA HIGHLANDS AIRPORT TERMINAL PROCEDURES	EXHIBIT 1-4

F. FUELING

There are two (2) above ground fuel tanks at Virginia Highlands Airport. The fuel farm is located west of the apron/hangar area. The fuel farm consists of one (1) 12,000 gallon tank for 100 Low Lead AvGas and one (1) 12,000 gallon tank dedicated to Jet-A fuel. **Table 1-6** provides total gallons of fuel metered for the period 1993 to 2001. The growth was mainly the result of a significant increase in metered Jet-A fuel sales from the rising number of corporate jet aircraft utilizing Virginia Highlands Airport.

TABLE 1-6
VIRGINIA HIGHLANDS AIRPORT
FUEL SALES

	AVGAS	ANNUAL GROWTH RATE (AVGAS SALES)	JET-A	ANNUAL GROWTH RATE (JET-A SALES)	TOTAL	ANNUAL GROWTH RATE (TOTAL SALES)
1993	50,429.0	-	57,380.9	-	107,809.9	-
1994	49,134.0	-2.6%	87,899.8	53.2%	137,033.8	27.1%
1995	46,867.4	-4.6%	82,611.6	-6.0%	129,479.0	-5.5%
1996	52,596.8	12.2%	95,998.9	16.2%	148,595.7	14.8%
1997	58,596.5	11.4%	177,935.8	85.4%	236,532.3	59.2%
1998	58,959.4	0.6%	157,949.5	-11.2%	216,908.9	-8.3%
1999	65,398.4	10.9%	150,053.5	-5.0%	215,451.9	-0.7%
2000	76,258.5	16.6%	187,222.5	24.8%	263,481.0	22.3%
2001	73,284.4	-3.9%	210,425.0	12.4%	283,709.4	7.7%
2002	57,970.9	-20.9%	217,572.0	3.4%	275,542.9	-2.9%

Source: Delta Airport Consultants, Inc. Analysis
Airport Management
1996 Master Plan Update

G. GROUND ACCESS FACILITIES

The Virginia Highlands Airport is located adjacent to U.S. Route 11 and has direct access to the highway at two locations. Interstate 81 is located one-half mile from the Airport and offers a

northeast/southwest access route through the Commonwealth of Virginia and Tennessee. Additional vehicular access is also provided by U.S. 19/Alternate 58 and U.S. 460.

Rail access is provided by a Norfolk Southern mainline which runs through Washington County. The mainline provides access to the surrounding airport area, and runs parallel to Interstate 81 north of Virginia Highlands Airport. Bulk and mixed freight service, containerized piggyback, and team track service are available.

H. ENGINEERING CONSIDERATIONS

Engineering consideration taken into account during the planning process was the area topography. Virginia Highlands Airport is located in the central portion of Washington County in an area known as the Great Valley region of Virginia. Terrain consists mainly of mountainous terrain and rolling hills which will need to be considered while planning the airport layout development. The airport has had sinkhole problems in the past. New facilities should include geotechnical investigations of the sub-strata.

I. COUNTY PLANNING

A meeting was held July 8, 2002 with the Washington County Planner. A copy of the 1978 Comprehensive Development Plan and a draft copy of pending excerpts from the 2002 Comprehensive Plan were obtained for Washington County. The county planning documents, as well as the Zoning Ordinance of Washington County, Virginia were taken into consideration during the ALP Update process at Virginia Highlands Airport. The Zoning Ordinance of Washington County is excerpted from the 1997 Code of Washington County, Virginia. The ordinance creates an Airport Safety Overlay Zone to protect the airspace over and around Virginia Highlands Airport from obstructions which may be harmful to the users of the airport and the residents of Washington County.

A. GENERAL

The forecast of aviation demand establishes the nature and magnitude of aeronautical activity and the need for airport development for the ensuing planning period. The resulting forecasts will be used in the next chapter to determine facility requirements. The general aviation forecast provides projections of general aviation activity for based aircraft; based aircraft by type; local vs. itinerant total operations; and operations by aircraft type. The following phases of development are presented in this study:

- Phase I Short Term (0-5 years) 2002-2007
- Phase II Intermediate Term (6-10 years) 2008-2012
- Phase III Long Term (11-20 years) 2013-2022

The Virginia Air Transportation System Plan and FAA's Terminal Area Forecast were reviewed in preparation for developing the based aircraft forecast for Virginia Highlands Airport. The latest Airport Master Plan Update of 1996 (1996 AMP) was also reviewed. The most recent VATSP Draft and the TAF both list 55 based aircraft currently and for the foreseeable future. As acknowledged in Chapter One Inventory, we have documented 71 based aircraft at the airport in August 2002 (after the forecast was completed another based aircraft was added by the Airport and was not included in the study). Therefore, our forecast will use this documented figure as a starting point.

The 1996 AMP utilized a growth rate of 2.1% for based aircraft. In contrast, the VATSP Draft and the TAF have utilized a 0% growth rate for based aircraft. Using the actual based aircraft of 57 documented in 1996, and the actual based aircraft of 71 documented in this study yields an annual growth rate of 2.8%. Clearly, the issues of September 11, 2001 will impact general aviation for several years; however, the strong growth rate at VJI cannot be ignored. Therefore, for this study, a conservative growth rate of about 1% will be used. **Table 2-1** presents data on the historical based aircraft for VJI, and **Table 2-2** displays the forecast summary for the VATSP, TAF, and this ALP Update study.

TABLE 2-1
VIRGINIA HIGHLANDS AIRPORT
HISTORICAL BASED AIRCRAFT

YEAR	1996 MASTER PLAN UPDATE	VATSP	TAF
1975	26		
1980	44		
1985	51		
1990	64	60	
1994	57		
1995		57	
1996			55
2000		55	55

Source: Delta Airport Consultants, Inc. Analysis
1996 Master Plan Update
APO Terminal Area Forecast (www apo.data.faa.gov) accessed July 2002
Draft VATSP Update 2000

TABLE 2-2
VIRGINIA HIGHLANDS AIRPORT
FORECAST OF BASED AIRCRAFT

YEAR	1996 MASTER PLAN UPDATE	VATSP	TAF	STUDY
2002		55	55	71
2005	75	55	55	
2007			55	74
2010	83			
2012			55	76
2015	93	55	55	
2020		55		
2022				83

Source: Delta Airport Consultants, Inc. Analysis
1996 Master Plan Update
APO Terminal Area Forecast (www.apo.data.faa gov) accessed July 2002
Draft VATSP Update 2000

B. BASED AIRCRAFT BY TYPE

The mix of based aircraft was generated to reflect historical trends at the airport. **Table 2-3** presents data on the average annual growth rate of based aircraft by type since the latest AMP update of 1996. A breakdown of future based aircraft by type is presented in **Table 2-4** and **Table 2-5**. The forecast for Virginia Highlands Airport differs from the VATSP draft and the FAA's TAF because both of the reports present a zero percent growth rate. As presented in Table 1-4 of Chapter One, there are 71 based aircraft at VJI. The documented number of 71 is much larger than the VATSP and TAF number of 55. Therefore, the number 71 was used as the based aircraft starting figure for this study. Since the 1996 AMP, the airport has attracted four Cessna Citation Business jets and a King Air 200. Other corporations have contacted the Airport Manager about available space; however, no hangar space is currently available for larger aircraft.

TABLE 2-3
VIRGINIA HIGHLANDS AIRPORT
HISTORICAL BASED AIRCRAFT BY TYPE

	SE & ME PISTON	ME TURBO-PROP & JET	ROTORCRAFT	OTHER*	TOTAL
1996 AMP Update	48	1	3	5	57
2002 Study	57	5	4	5	71
Average Annual Growth Rate	2.20%	22.30%	3.70%	0.00%	2.80%

* Denotes ultra-lights, gliders, and unmanned aircraft.

Source: Delta Airport Consultants, Inc. Analysis
1996 Master Plan Update (1994 Inventory Data)

TABLE 2-4
VIRGINIA HIGHLANDS AIRPORT
FORECAST OF BASED AIRCRAFT BY TYPE

YEAR	SE PISTON	ME PISTON	ME TURBO-PROP	ME JET	ROTOR CRAFT	OTHER *	TOTAL
2002	49	8	1	4	4	5	71
2007	50	8	1	5	5	5	74
2012	51	9	1	5	5	5	76
2022	52	10	2	6	7	6	83

* Denotes ultra-lights, gliders, and unmanned aircraft.
Source: Delta Airport Consultants, Inc. Analysis

TABLE 2-5
VIRGINIA HIGHLANDS AIRPORT
BASED AIRCRAFT BY TYPE (Average Annual Growth Rate Percent)

PERIOD	SE PISTON	ME PISTON	ME TURBO-PROP	ME JET	ROTOR CRAFT	OTHER*	TOTAL
2002-2007	0.30%	1.00%	5.00%	4.60%	4.60%	0.00%	0.83%
2008-2012	0.30%	1.50%	5.00%	0.00%	0.00%	0.00%	0.68%
2013-2022	0.20%	1.50%	5.00%	1.80%	3.40%	0.90%	0.78%

* Denotes ultra-lights, gliders, and unmanned aircraft.
Source: Delta Airport Consultants, Inc. Analysis

C. AIRCRAFT OPERATIONS BY TYPE

An aircraft operation is defined as either a take-off or landing. A touch and go (landing and take-off without a full stop) is counted as two operations. This section will initially quantify total general aviation operations. The next section identifies the share of total operations attributed to local and itinerant operations.

The forecast of general aviation operations was derived using the 2000 Virginia Air Transportation System Plan Update (VATSP). The VATSP operation forecast for VJI in the year 2000 and 2005 was 22,527 and 24,292 respectively. The annual growth rate during the five year forecast period was 1.5 percent. Using the VATSP growth rate of 1.5 percent, the number for 2002 airport operations was interpolated to be 23,200. This figure and the VATSP growth rate of 1.5 percent were both used to help develop the operations forecast for this study. **Table**

2-6 presents the historical general aviation operations at Virginia Highlands Airport and **Table 2–7** presents the forecast of general aviation operations for the planning period.

TABLE 2-6
VIRGINIA HIGHLANDS AIRPORT
HISTORICAL GENERAL AVIATION OPERATIONS

YEAR	1996 MASTER PLAN UPDATE	TAF
1980	19,339	
1985	17,567	
1990	14,600	
1993	12,600	
1996		15,000
2000		15,000

Source: Delta Airport Consultants, Inc. Analysis
1996 Master Plan Update (1994 Inventory Data)

TABLE 2-7
VIRGINIA HIGHLANDS AIRPORT
FORECAST OF GENERAL AVIATION OPERATIONS

YEAR	VATSP	TAF	STUDY
2000	22,527	15,000	
2002			23,200
2005	24,292	15,000	
2007		15,000	25,050
2012		15,000	27,000
2022			31,500

Source. Delta Airport Consultants, Inc. Analysis
APO Terminal Area Forecast (www.apo.data.faa.gov) accessed July 2002
Draft VATSP Update 2000

The 2000 Virginia Air Transportation System Plan Update indicates a projected trend in operations toward a heavier, more sophisticated aircraft fleet. It is anticipated that during the planning period this trend will continue. It is expected that future operations by aircraft type will generally follow the based aircraft forecast, but reflect an increasing number of jet operations. **Table 2-8** presents data on the average annual growth rate of operations by aircraft type from the 2000 VATSP Update. A breakdown of future operations by aircraft type is presented in **Table 2-9** and **2-10.**

TABLE 2-8
VIRGINIA HIGHLANDS AIRPORT
VATSP FORECAST OPERATIONS BY AIRCRAFT TYPE

	SE PISTON	ME PISTON	ME TURBO-PROP	ME JET	ROTOR CRAFT	OTHER*	TOTAL
2000	15,113	1,948	473	203	1,728	3,063	22,527
2005	15,128	1,924	1,038	903	1,896	3,402	24,292
Average Annual Growth Rate	0.02%	-0.25%	17.00%	34.80%	1.90%	2.10%	1.50%

* Denotes ultra-lights, gliders, and unmanned aircraft.

Source: Draft VATSP Update 2000
Delta Airport Consultants, Inc. Analysis

TABLE 2-9
VIRGINIA HIGHLANDS AIRPORT
FORECAST OPERATIONS BY AIRCRAFT TYPE

YEAR	SE PISTON	ME PISTON	ME TURBO-PROP	ME JET	ROTOR CRAFT	OTHER*	TOTAL
VATSP**							
2000	15,113	1,948	473	203	1,728	3,063	22,527
2005	15,128	1,924	1,038	903	1,896	3,402	24,292
1996 AMP Update							
1994	9,806	3,915	1,723	156	1,968	0	17,568
2000	10,733	4,259	1,874	379	984	0	18,229
2005	11,677	4,634	2,038	412	1,317	0	20,078
2010	12,704	5,041	2,218	448	1,762	0	22,173
2015	13,822	5,485	2,413	500	2,359	0	24,579
Study							
2002	15,776	1,856	1,473	1,160	1,299	1,636	23,200
2007	16,533	2,004	1,601	1,528	1,581	1,804	25,050
2012	17,415	2,025	1,944	2,025	1,601	1,990	27,000
2022	19,845	2,205	2,502	2,678	2,054	2,199	31,500

* Denotes ultra-lights, gliders, and unmanned aircraft.
** VATSP operations by aircraft type derived from 55 based aircraft.

Source: Delta Airport Consultants, Inc. Analysis
1996 Master Plan Update (1994 Inventory Data)
Draft VATSP Update 2000

TABLE 2-10
VIRGINIA HIGHLANDS AIRPORT
OPERATIONS BY AIRCRAFT TYPE (Average Annual Growth Rate Percent)

PERIOD	SE PISTON	ME PISTON	ME TURBO-PROP	ME JET	ROTOR-CRAFT	OTHER*
2002 - 2007	0.9	1.5	1.7	5.7	4.0	2.0
2008 - 2012	1.0	0.2	4.0	5.8	0.3	2.0
2013 - 2022	1.3	0.9	2.6	2.8	2.5	1.0

* Denotes ultra-lights, gliders, and unmanned aircraft.

Source: Delta Airport Consultants, Inc. Analysis

D. AIRCRAFT OPERATIONS – LOCAL VS. ITINERANT

Aircraft operations are classified into two broad types: local and itinerant. A local operation is defined as a take-off or landing performed by an aircraft that:

(a) operates in the local traffic pattern or within sight of the airport;

(b) is known to be departing for, or arriving from, flights in a local practice area located within a 20-mile radius of the airport; or

(c) executes simulated instrument approaches or low passes at the airport.

Itinerant operations are defined as all aircraft operations other than local operations. The local/itinerant split is useful as one indicator in evaluating an airport's overall capacity. For instance, if there are a large percentage of local operations, this would indicate that the airport is used for training purposes.

The local/itinerant division of operations for the Virginia Highlands Airport is a 40 percent (local)/60 percent (itinerant) ratio. This ratio is consistent with the previous Master Plan Update conducted in 1996, and the Owner has concurred the ratio is still applicable. The figure is expected to remain constant throughout the planning period. **Table 2-11** presents the local/itinerant split for the planning period.

TABLE 2-11
VIRGINIA HIGHLANDS AIRPORT
LOCAL/ITINERANT OPERATIONS

	2002	2007	2012	2022
Total Operations	23,200	25,050	27,000	31,500
Local Operations	9,280	10,020	10,800	12,600
Itinerant Operations	13,920	15,030	16,200	18,900

Source: Delta Airport Consultants, Inc. Analysis

E. FORECAST SUMMARY

Table 2-12 presents a summary of the forecasts for Virginia Highlands Airport over the 20-year planning period. These forecasts indicate that all aspects of aviation demand at the airport will continue to grow during the planning period. Many corporate entities within the racing, coal and banking industries are becoming active within the service area of Virginia Highlands Airport. Therefore, ongoing development of facilities will enable the airport to continue to accommodate the growth in aviation demand and contribute to the economic vitality of the service area.

TABLE 2-12
VIRGINIA HIGHLANDS AIRPORT
FORECAST SUMMARY

FORECAST ELEMENT	YEAR			
	2002	2007	2012	2022
Total Based Aircraft	**71**	**74**	**76**	**83**
SE Piston	49	50	51	52
ME Piston	8	8	9	10
ME Turbo-Prop	1	1	1	2
ME Jet	4	5	5	7
Rotorcraft	4	5	5	7
Other*	5	5	5	6
Total G. A. Operations	**23,200**	**25,050**	**27,000**	**31,500**
SE Piston	15,776	16,533	17,415	19,845
ME Piston	1,856	2,004	2,025	2,205
ME Turbo-Prop & Jet	1,473	1,601	1,944	2,502
ME Jet	1,160	1,528	2,025	2,678
Rotorcraft	1,299	1,581	1,601	2,054
Other*	1,636	1,804	1,990	2,199

* Denotes ultra-lights. gliders. and unmanned aircraft.

Source: Delta Airport Consultants, Inc. Analysis

Chapter Three
FACILITY REQUIREMENTS

A. GENERAL

The purpose of this chapter is to determine the airport's capacity in relation to the forecast of aviation demand presented in Chapter Two. This section will also identify the facility requirements to accommodate the existing through 20-year forecasted demand. An analysis of the forecasts presented in Chapter Two indicates an increase of aviation activity at Virginia Highlands Airport. To accommodate these increases, airport improvements and/or facility development will be necessary to meet the area's aviation needs.

The methodology used to determine facility requirements begins with an examination of the airport system's major components: airspace, airfield, buildings and surface access. It is important to note that each of these system components must be balanced to achieve system optimization. As previously discussed in Chapter One, the Virginia Highlands Airport has an existing airport reference code (ARC) of B-II small, i.e., aircraft of 12,500 pounds or less. Since the ARC is projected to remain the same throughout the planning period, any deficiencies in the airport's facilities will be identified based upon standards presented in FAA AC 150/5300-13 "Airport Design". Recommended improvements to facilities will be noted as required. It should be noted that the airport is currently undertaking land acquisition and obstruction removal in the approach to Runway 24. Once this is completed, the airport will be able to convert to B-II for large airplanes, i.e., aircraft greater than 12,500 pounds.

B. CRITICAL AIRCRAFT

Airports are planned and designed to accommodate the most demanding aircraft intended to regularly operate at a particular airport. Demands imposed by the design or "critical" aircraft relate to the aircraft's approach to landing speed and/or the aircraft wingspan. Based on this study (Chapter One – Inventory) the Cessna Citation family of aircraft represents the critical aircraft for VJI and should be used for analyzing the runway length requirement at the Airport. Although the Airport may occasionally serve C-I or C-II aircraft, the prominent aircraft utilizing

the airport are classified as B-II. **Table 3-1** presents representative business jet aircraft that utilize Virginia Highlands Airport. A detailed discussion of B-II standards and C-II standards will be presented in Chapter 4, Airport Development Alternatives.

TABLE 3-1
VIRGINIA HIGHLANDS AIRPORT
CRITICAL AIRCRAFT

AIRCRAFT	ARC	APPROACH SPEED (KNOTS)	WINGSPAN (FT)	TAKEOFF WEIGHT (LBS)
Cessna Citation II	B-II	108	51.7	13,300
Cessna Citation V	B-II	130	52.2	16,100
Dassault Falcon 200	B-II	114	53.5	30,650
Gates Learjet 25	C-I	137	35.6	15,000

Source: Delta Airport Consultants, Inc. Analysis
FAA AC 150/5300-13 "Airport Design"

C. RUNWAYS & TAXIWAYS

Virginia Highlands Airport has one (1) paved runway, 4,471' x 75'. The runway was constructed in 1984 and underwent an extension and overlay in 1991. The runway pavement strength is listed as a 12,500 pound single wheel gear configuration (U.S. Department of Commerce Airport/Facility Directory). The actual pavement strength of Runway 6-24 is 30,000 pounds single gear. However, the actual strength cannot be published until obstructions are removed from the Runway 24 end to allow a 34:1 approach slope. Currently, Runway 6-24 has a medium intensity runway lighting (MIRL) system that was installed when the runway was constructed in 1984, and extended in 1991.

In addition to analyzing the runway capacity, length and width requirements, this section includes an examination of the Taxiway System, Runway Safety Area (RSA), Runway Object Free Area (ROFA), and Runway Protection Zone (RPZ) requirements.

1. Runway Length and Width

Required runway length is a function of an airport's elevation, mean maximum temperature of the hottest month, aircraft take-off weight, aircraft engine performance, runway gradient and wet or dry pavement surfaces. All of these variables affect the runway take-off and landing length. Runway length can be determined using the respective manufacturer's performance curves and/or by using the FAA Airport Design Computer Program and procedures outlined in FAA Advisory Circular 150/5300-13 "Airport Design".

Table 3-2 presents the runway length requirements using the above referenced FAA Airport Design software version 4.2D. Using the mean maximum temperature of 85° for the hottest month, and an airport elevation of 2,087 feet, the required runway lengths were determined for the families of aircraft shown in the table.

TABLE 3-2
VIRGINIA HIGHLANDS AIRPORT
RUNWAY LENGTH REQUIREMENTS

AIRPORT AND RUNWAY DATA	
Airport elevation	2,087'
Mean daily maximum temperature of the hottest month	85°
Maximum difference in runway centerline elevation	25'
Stage length for airplanes of more than 60,000 pounds	500 miles
RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN	
Small airplanes with approach speeds of less than 30 knots	360'
Small airplanes with approach speeds of less than 50 knots	970'
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	3,160'
95 percent of these small airplanes	3,810'
100 percent of these small airplanes	4,400'
Small airplanes with 10 or more passenger seats	4,590'
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	5,500'
75 percent of these large airplanes at 90 percent useful load	7,000'
100 percent of these large airplanes at 60 percent useful load	6,130'
100 percent of these large airplanes at 90 percent useful load	8,900'

Source: Delta Airport Consultants, Inc. Analysis
FAA Airport Design Software Version 4.2D

A runway length of 5,500 feet is required to serve 75 percent of large aircraft of 60,000 pounds or less given the Airport's mean daily maximum temperature, field elevation and assuming the aircraft is operating at 60 percent useful load capacity. The existing runway is not adequate to serve the Airport's critical aircraft during the planning period. **Therefore, it is recommended that a 1,029 foot extension be ultimately shown on the Airport Layout Plan Set allowing Virginia Highlands Airport a total runway length of 5,500 feet. An environmental assessment, land acquisition, and relocation of SR 611 are expected to be accomplished in Phase I. Construction of the runway extension is anticipated in Phase II.**

For airports with an airport reference code (ARC) of B-II with a visual or non-precision approach, the required runway width is 75 feet. **The existing runway width at VJI is 75 feet and meets FAA standards.**

2. Pavement Strength and Pavement Condition

The pavement strength at Virginia Highlands Airport is currently published at 12,500 pounds single wheel capacity for Runway 6-24. The actual pavement strength of Runway 6-24 is 30,000 pounds single gear. However, the actual strength cannot be published until obstructions are removed from the Runway 24 end to allow a 34:1 approach slope. In 1991, the runway and taxiway at VJI were extended and overlayed. In 2001, a pavement management study was conducted by ERES Consultants, Inc. for the Commonwealth of Virginia Department of Aviation (DOAV). The report stated that the pavement at VJI is in very good to excellent condition. There was one area of the apron that was rated to be in fair condition; however that portion was partially reconstructed and overlayed during the apron expansion project conducted in 2001. Although the existing pavement is in excellent condition, most bituminous concrete surfaces have a life span of 15 to 20 years before oxidation and cracking result in the need for a preservation overlay. **Therefore, an overlay of the runway and taxiways should be anticipated during Phase III of the planning period. In conjunction with the overlay the runway should also be marked and grooved.**

3. Runway Safety Area

A runway safety area (RSA) is defined as a surface surrounding the runway which is suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot or excursion from the runway. FAA AC 150/5300-13 "Airport Design" designates a minimum runway safety area based on the airport reference code of the runway. As discussed previously, Runway 6-24 is expected to remain as B-II.

The standard design for a B-II runway safety area is 150 feet wide centered on the runway centerline and is extended 300 feet beyond the end of the runway. **The RSA for Runway 6 and 24 at VJI currently meets the required safety area standards.**

4. Runway Object Free Area

The runway object free area (ROFA) is a two dimensional area on the ground centered on the runway centerline. It is provided to enhance the safety of aircraft operations by having the area free of objects, except for those that need to be located in the ROFA for air navigation or aircraft ground maneuvering purposes and to taxi and/or hold in the object free area. The standard design dimensions for a category B-II runway object free area with approach visibility minimums not lower than three-quarter-statute mile is 500 feet in width, centered on the runway, with extensions 300 feet beyond each runway end. Runway 6 meets the standard criteria. However, on the existing 1996 Airport Layout Plan for VJI a modification to standards was requested for Runway 24 stating that a fence on the airport side of Jerry Lane is at or above the ROFA elevation at a distance of 280 feet from the runway end. **It is recommended that the ROFA be brought into compliance.**

5. Runway Protection Zones

The function of the Runway Protection Zone (RPZ) is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZs. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ.

While the FAA prefers that all objects be cleared from the RPZ, some uses are permitted, provided they do not attract wildlife. FAA AC 150/5300-13, Paragraph 212 expressly prohibits land uses within the RPZ such as residences and places of public assembly, and notes that fuel storage facilities should not be located in the RPZ.

The Airport Authority owns the property in the Runway 6 RPZ area at the Virginia Highlands Airport. However, SR 611 passes through the RPZ. The Airport Authority owns, in fee simple and easement, the property for the RPZ area on Runway 24. **It is recommended that the Airport Commission ultimately acquire the farm implement business in fee simple, as opposed to the existing easement the Airport currently holds.**

6. Runway Designation

Runway numerals are determined from the approach direction to the runway end and should be equal to one-tenth of the magnetic azimuth of the runway centerline, measured in a clockwise direction from the magnetic north. Although the true bearing of the runway will not change over time, the magnetic bearing will change as the location of magnetic north shifts. The magnetic declination in the Washington County area is 6 degrees 19 minutes west (2002). **Table 3-3** provides a summary of bearing information for Virginia Highlands Airport. The magnetic declination changes six minutes per year. Therefore, the runway marking should be adequate until the year 2012.

TABLE 3-3
VIRGINIA HIGHLANDS AIRPORT
RUNWAY BEARING

RUNWAY	6-24
True Bearing	N 56.02° W
Magnetic Declination	6°19' W
Magnetic Bearing	62°20'35.7036"

Source: Delta Airport Consultants, Inc. Analysis
http://avnwww.jccbi.gov/datasheet/
http://www.ngdc.noaa.gov/cgi-bin/seg/gmag/

7. Taxiways

FAA AC 150/5300-13 "Airport Design" also presents design standards for taxiway and taxilane development. A taxiway is defined as a path established for the taxiing of aircraft from one part of an airport to another. A taxilane is defined as the portion of the aircraft movement area used for access between taxiways and aircraft parking positions.

The existing taxiway system at Virginia Highlands Airport consists of a full length parallel taxiway serving the existing apron and terminal building. **The taxiway centerline is located 240 feet from the runway centerline, which meets the FAA B-II standard separation.**

Due to the limited amount of space on the east side of Runway 6-24, it is anticipated that the Airport will develop future general aviation facilities on the west side of Airport property. The west side provides generous room for expansion. **The construction of apron and hangar space on the west side of the airport will require that a second full length parallel taxiway be constructed during Phase II and III to allow aircraft located on the west side access to Runway 6-24.**

When the runway is extended in Phase II, a parallel taxiway will be constructed to serve this extension. There is a small creek which runs along SR 611 that will have to be boxed when the runway is extended. Due to the alignment of this creek, a parallel taxiway on the north side of the runway will be more practical and economical to build. The full parallel will not be completed until west side development/activity warrant its construction.

D. GENERAL AVIATION DEVELOPMENT

General aviation accounts for the bulk of civil aircraft operations in our nation. It encompasses everything from crop dusting in small aircraft to passenger and cargo charters in larger aircraft. It comprises 98 percent of all registered civil aircraft and 95 percent of all airports in the U.S. Pipeline patrol, search and rescue operations, medical transport, business and executive flying,

charters, air taxi, flight training, personal transportation, and many other uses of airplanes and helicopters which fall in the segment of general aviation.

General aviation support facilities must be evaluated to meet the needs of the flying public. It is important to discuss all services which are provided to general aviation users. A wide range of services are often offered by the Airport, such as aircraft maintenance services, hangar/tie down facilities, flight training, and rental car availability.

1. Aircraft Apron Space

An aircraft apron must be sufficient in size to accommodate based aircraft not requiring hangar space and transient aircraft visiting the facility. The existing aircraft apron, approximately 30,000 square yards is located in front of the terminal building, a storage hangar and a T-hangar building. As mentioned earlier, an apron expansion on the east side of the runway was constructed in 2001.

The newly constructed apron, approximately 10,000 SY, is used primarily for transient tie-down space. The apron in front of the terminal, approximately 5,000 SY, is used primarily for large transients that are short term and not tied down. The remaining 15,000 SY of apron space is dedicated to a cargo carrier and to based tie-downs. No additional apron space is proposed on the east side of the airport.

There is ample space on the west side for development. As the number of corporate aircraft utilizing Virginia Highlands Airport increases, it is anticipated that an apron will be constructed as part of the West Side Development. Under this concept, the west side of the airport will serve larger based aircraft while the east side of the airport will serve smaller based aircraft. As the airport continues to grow, a specialty FBO(s) is anticipated on the west side. **It is recommended that additional apron space be constructed on the west side of Runway 6-24 during Phase III of the planning period, if and when, demand warrants.**

2. Aircraft Tie-Downs

There are currently eleven (11) aircraft assigned to tie-downs at Virginia Highlands Airport. The Airport has apron space to accommodate up to 49 additional aircraft in tie-down positions. However, on peak days when larger transient aircraft are parked in tie-down areas, multiple spaces may be lost to a single larger aircraft. The tie-downs are expected to be adequate during the planning period.

3. Helicopter Parking

The airport currently has three (3) helicopter parking pads. The aviation forecast projects based rotorcraft to increase from 4 to 7 by 2022. It is anticipated that based helicopters will be stored in hangars. Therefore, helicopter parking is expected to be adequate during the planning period.

4. Aircraft Hangars

There are four (4) types of aircraft hangars typically available at most general aviation facilities. They include T-hangars, community hangars, corporate hangars, and maintenance hangars, the latter of the three of which are often referred to as "conventional hangars." T-hangars are generally grouped in units of ten (10) or more and typically house single engine and multi-engine piston aircraft. Community hangars are large hangars that store various types of aircraft within one structure. At many general aviation airports, community hangars also serve as maintenance hangars for the repair and servicing of aircraft. Corporate hangars are usually privately owned or leased buildings that house corporate aircraft. Hangar space requirements include demand generated by based aircraft, normal fixed base operations and conventional use.

Currently, Virginia Highlands Airport has four T-hangar buildings (consisting of 38 units) and six conventional hangars. As the number of based aircraft increases, the percentage of aircraft owners who desire hangar space is expected to increase. At the present time there is space available for one (1) corporate hangar expansion on the east side of the runway. Therefore, hangars for future based aircraft will need to be constructed on the west side of Runway 6-24, as

demand warrants. The West Side Development will also need to include a large maintenance storage hangar to serve the growing number of larger aircraft.

a. T-Hangars

Virginia Highlands Airport has two (2) 10-unit, one (1) 14-unit, and one (1) 4-unit T-hangars. **A future 10-unit T-hangar building is recommended for Phase I on the west side of the airport (Building #21). Additional T-hangars should be planned for future phases of development.**

b. Maintenance Hangars

There is currently one (1) maintenance facility at Virginia Highlands Airport. This facility is located on the east side of Runway 6-24 and is occupied by Classic Planes, Inc. and Hangar 7, Inc. **A site should be reserved for an aircraft maintenance facility to be included in the West Side Development.**

c. Corporate/Storage Hangars

There are currently five (5) corporate hangars at Virginia Highlands Airport. One final corporate hangar is proposed on the east side during Phase I (Building #15). **Two (2) additional corporate hangar sites and associated ramp are recommended during Phase I on the west side of the airport (Building #17 and #19). It is recommended that prospective tenants be identified and secured prior to the development of additional corporate hangar facilities.**

5. General Aviation Terminal Building

A 9,000 square foot terminal building was constructed in 1991 at Virginia Highlands Airport. The Virginia Department of Aviation (DOAV) used a computer program to calculate general aviation terminal space requirements for a planning period of twenty years. The facility is located at mid-field approximately 490 feet from the runway centerline. The facility is attended from 7:00 a.m. to 9:00 p.m., Sunday through Saturday. Jet-A and 100LL aviation fuel are

available, along with general services such as aircraft maintenance. The existing terminal should satisfy the airport's needs.

6. Airport Access/Automobile Parking

The Airport has direct access to U.S. Route 11 at two locations. It is recommended that these access points be maintained throughout the duration of the planning period and continue to serve as the primary entrance to the Airport. The existing auto parking in the terminal area has approximately 124 spaces. Additional automobile parking will not be necessary during the planning period for the east side of the airport.

Airport access from SR 611 will be needed in conjunction with the West Side Development. During Phases I and II, automobile parking is anticipated in the hangars or in areas designated by the airport. Access to the west side will be from SR 611 or relocated Route 611 after the runway extension. **It is recommended that public parking be added in Phase III to support the development and growth of the future West Side Development.**

7. Instrument Approach Procedures

Currently there are two (2) published instrument approach procedures for Virginia Highlands Airport, a localizer (LOC RWY 24) approach to Runway 24 and a VOR/DME or GPS-B approach. The terminal procedures for the non-precision approaches are located in Chapter One (Exhibit 1-3 and 1-4). The Airport is currently conducting obstruction removal and land acquisition projects. The completion of these projects will allow the localizer approach minimums to be lowered. Buildings on Church property in the Runway 24 approach penetrate the 34:1 surface by six feet. Since this does not penetrate the 20:1, the approach minima should not be affected. If determined necessary by FAA, the church building will be lighted. Visibility minimums at or below ¾ mile would significantly increase airport impacts to the surrounding properties and are therefore not recommended or anticipated at VJI.

8. Visual Aids/Vault

Terminal area visual aids serve as position indicators of the specific airport and/or runway that are used to assist the pilot in final visual approach procedures for landing at the airport. The following are available at Virginia Highlands Airport:

a. Rotating Beacon

The existing beacon is in good condition and it is recommended that the existing 36 inch rotating beacon be maintained throughout the 20-year planning period.

b. Runway Lights

Runway 6-24 is equipped with Medium Intensity Runway Lights (MIRLs). The lighting system has not been replaced or updated since the construction of the original runway in 1984 and the extension in 1991. **It is anticipated that the lights will need to be upgraded during Phase III of the planning period. A 3° aiming angle will be required for all 4-Box PAPI installations.**

c. Precision Approach Path Indicators (PAPI)

Runway 24 currently has Precision Approach Path Indicators (PAPIs-2 Box) which provide visual reference to the proper approach slope angle to the pilot when making approaches to the airport. The PAPI system was installed in November 2002. It is recommended that the existing PAPI be upgraded to a 4-Box PAPI in Phase II. **It is also recommended that a 4-Box PAPI system be installed on the Runway 6 end during Phase II of the planning period. A 3° aiming angle will be required for all 4-box PAPI installations.**

d. REIL

In November 2002 the airport completed installation of Runway End Identifier Lights (REILs) in conjunction with ODALS on Runway 24 to improve the visibility of the

landing environment. REILS are proposed for Runway 6 when the runway extension is constructed in Phase II.

e. ODALS

An OMNI Directional Approach Lighting System (ODALS) was installed at Virginia Highlands Airport in November 2002. It is recommended that the existing ODALS be maintained during the twenty year planning period. The airport should not accept any visibility credit for the ODALS since the primary surface width would be doubled and obstruction removal would be next to impossible. A letter has been sent to FAA requesting that no visibility credit be considered.

f. Wind Cone/Segmented Circle

The existing wind cone and the segmented circle is in good condition and it is recommended that it be maintained throughout the 20-year planning period.

g. AWOS

Virginia Highlands Airport currently has an Automated Weather Observation System (AWOS) III. This system reports altimeter settings, wind data, temperature, dew point, density, altitude, visibility, and cloud/ceiling data. The AWOS provides pilots with current weather information and enhances the safety of operations. This system may have to be relocated to accommodate the west side development.

h. Electrical Vault

A new airfield electrical vault building was constructed in November 2002 at Virginia Highlands Airport. The previous vault did not have adequate space to fulfill Airport needs and could not be expanded. The new electrical vault building is located near the old vault behind the aircraft storage building. The electrical vault is anticipated to be adequate for the planning period.

9. Fueling Requirements

The existing fuel facility at Virginia Highlands Airport was constructed in March 1992 and is located west of the apron/hangar area. The fuel farm consists of one (1) above ground 12,000 gallon tank for Jet-A fuel, and one (1) above ground 12,000 gallon tank for 100LL AvGas fuel. As discussed in Chapter One, fuel sales at VJI have grown significantly since 1993.

10. Fencing

The Airport recently installed a six foot chain link fence that runs the east perimeter of Airport property. Field fence surrounds the balance of the perimeter. Fencing helps support security of the airport and discourage inadvertent entry by animals. As the West Side Development occurs, the perimeter fencing should be upgraded to chain-link. It is recommended that the fence be maintained throughout the 20-year planning period. It is also recommended that the physical condition of the fence be continuously observed throughout the 20-year planning period. Chain-link fence should be installed on the west side in the terminal area with construction of associated hangar facilities and with the runway/taxiway extension.

E. Property Requirements

Based on the analysis presented earlier in this chapter, there will be the need for a runway extension. The runway extension will require the Virginia Highlands Airport Commission to acquire property on the Runway 6 end. The land acquisition will protect the area needed for the expansion, the RPZ and transitional surfaces, and for the relocation of SR 611. **It is recommended that airport property limits be extended to Westinghouse Road during Phase I to allow for the runway extension in Phase II. The parcels are shown on the airport Property Map (sheet 9 of 10) and are listed in the Airport Property Tabulation (sheet 10 of 10). Rationale for property purchases will be provided in Chapter Five, Airport Layout Plan Set.**

The ongoing easement acquisition for removal of obstructions from the approach to Runway 24 should be completed during Phase I of the planning period.

Chapter Four
AIRPORT DEVELOPMENT ALTERNATIVES

A. GENERAL

This chapter deals with the description and evaluation of development issues for airside and landside development at the Virginia Highlands Airport. The facility requirements considered necessary at the Airport to handle the forecast demand were discussed in the previous chapter. The overall objective of this chapter is to evaluate airport development concepts in a straight forward and logical manner. Each alternative was evaluated for facility requirements, aircraft operational needs, public access and future development capability. The alternatives are evaluated based on the FAA standards in Advisory Circular 150/5300-13 (Change 7), Airport Design, and Federal Aviation Regulation, Part 77, Objects Affecting Navigable Airspace.

B. DEVELOPMENT OF ALTERNATIVES

This subsection considers options that need to be evaluated. Every airport endeavors to afford the lowest instrument approach minima possible. However, the requirements of the FAA often cannot be achieved because of the underlying terrain. Another alternative relates to the aircraft family that the airport can reasonably serve. Many existing airports have physical and cultural restraints which prohibit them from reasonable expansion. Finally, the plan should consider long term solutions, sometimes beyond the 20-year period, to address development ideas which cannot now be justified, but have merit in the long term.

Four (4) development alternatives were considered during the evaluation phase to reflect some of the feasible concepts of future development, and the advantages and disadvantages of each are presented in this chapter. The alternatives are listed as follows:

(1) Precision Instrument Approach Capability

(2) Airport Reference Code: B-II versus C-II

(3) Runway Extension and State Road 611 Relocation

(4) West Side Airport Development

These alternatives and options were presented to the Virginia Highlands Airport Commission on October 14, 2002. The alternatives are discussed individually in the following sections.

1. Precision Instrument Approach Capability

Instrument approach procedures developed by the FAA for large airplanes (>12,500#) impose certain geometric clearing standards which must be free of obstructions in order to implement the approach. The more precise, or lower to the aircraft touchdown point, the approach becomes, the wider and flatter the protected surfaces become. The three types of approach surfaces are precision ½ mile visibility (50:1), non-precision ¾ mile or less visibility (34:1), and non-precision greater than ¾ mile visibility (34:1).

Table 4-1 lists the advantages and disadvantages for each of the three options.

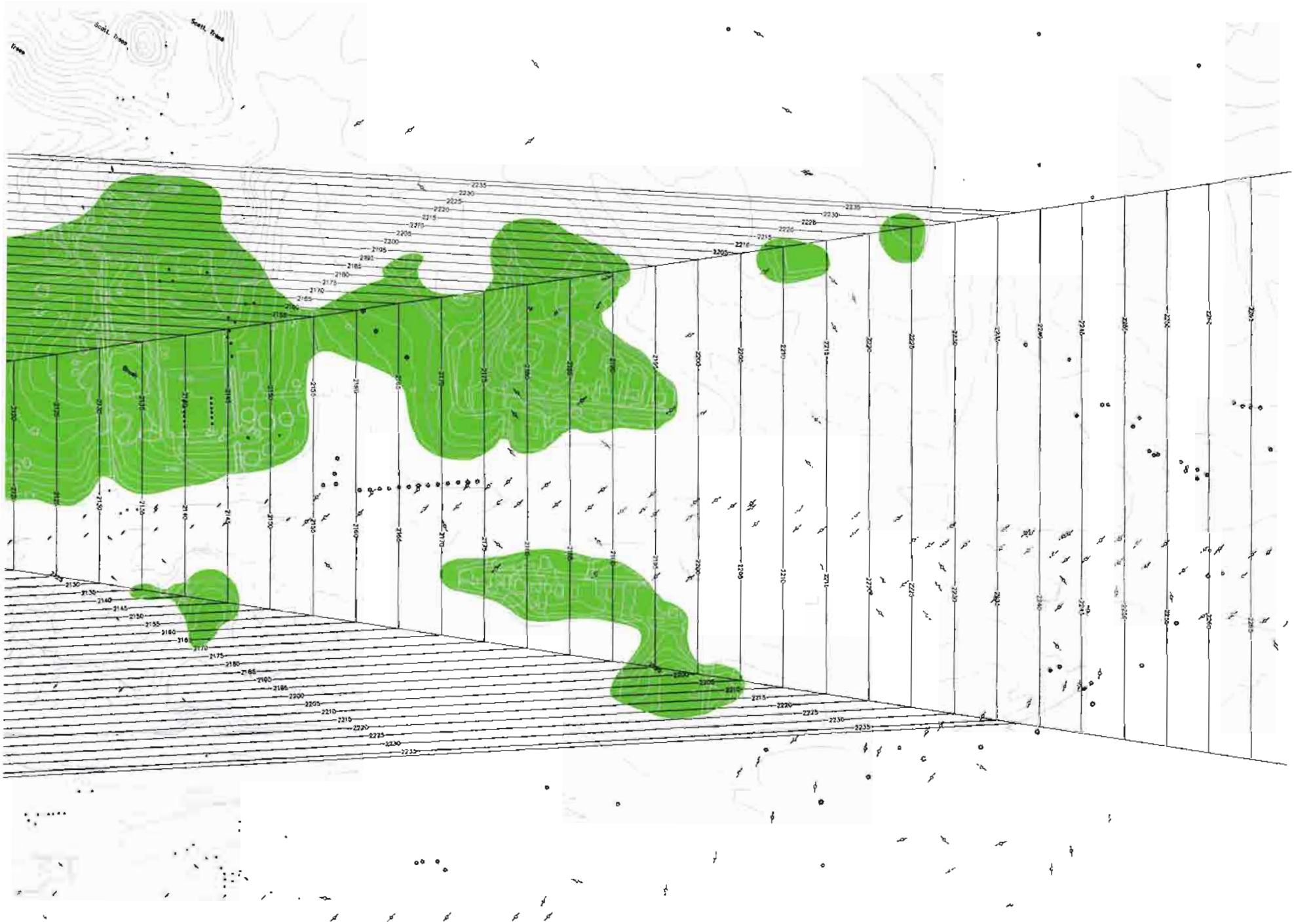
TABLE 4-1
VIRGINIA HIGHLANDS AIRPORT
APPROACH PROCEDURES

	ADVANTAGES	DISADVANTAGES
Precision ½ Mile (50:1)	• Best approach to RW • Provides lowest minimums	• Purchase some 34:1 easement properties • Revise 34:1 easements to 50:1 easements • Purchase and relocate Wright Equipment and Stockyard • Devastates southeast side of Airport
Non-Precision ¾ Mile or Less (34:1)	• Better approach to RW	• Purchase some 34:1 easement properties • Revise transition zone easements to wider 34:1 easements • Purchase and relocate Wright Equipment and Stockyard • Devastates southeast side of Airport
Non-Precision greater than ¾ Mile (34:1)	• Good approach to RW • Least impact to airport • Least impact to neighbors	• Less precise approach

Source: Delta Airport Consultants, Inc. Analysis
FAA AC 150/5300-13 "Airport Design"

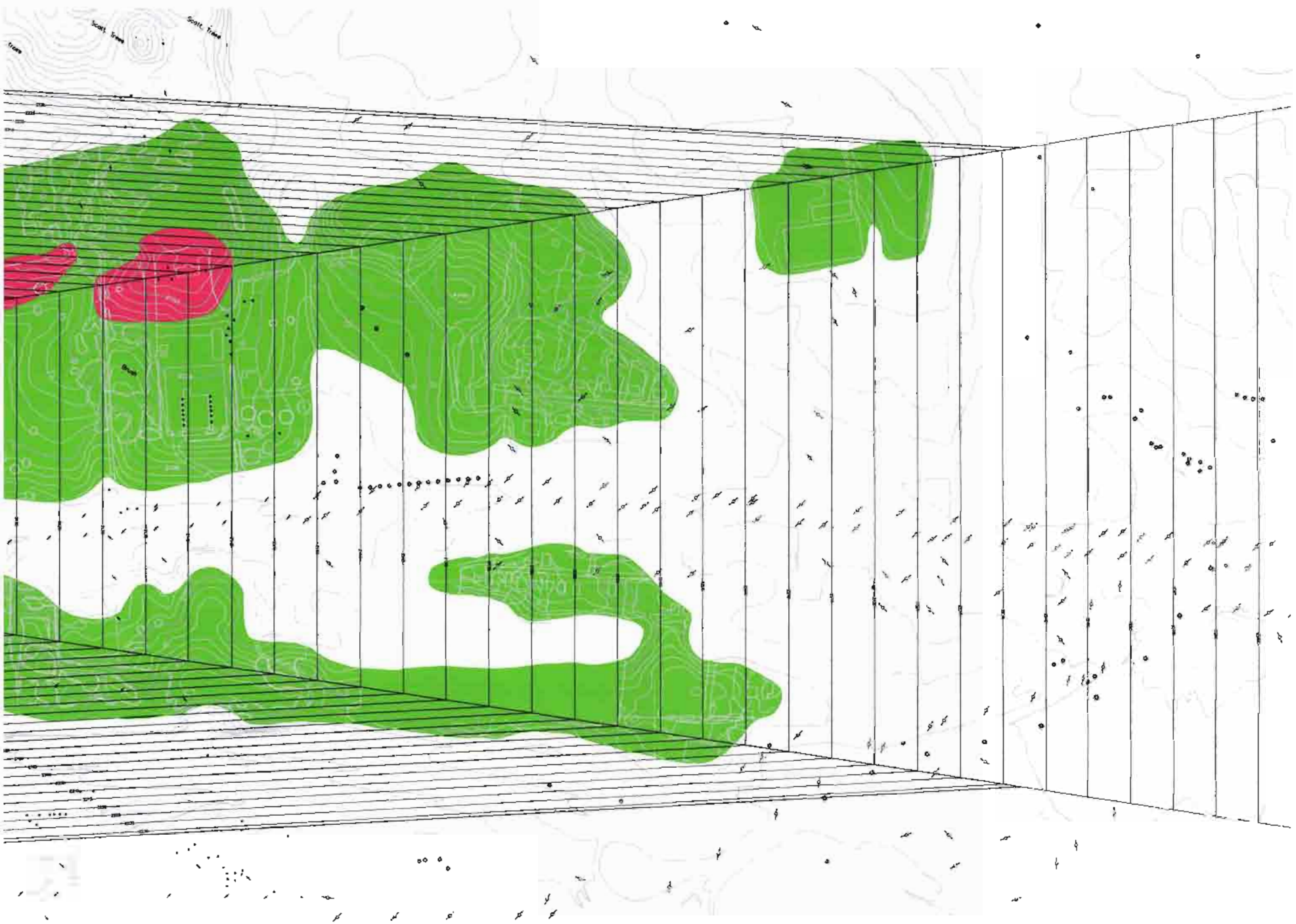
Virginia Highlands Airport currently has a non-precision instrument approach for Runway 24, and the approach slope is 20:1, for small aircraft (less than 12,500 pounds). The Airport is presently conducting an obstruction program to acquire avigation easements and to remove penetrations (primarily trees) to the Runway 24 34:1 approach surface. Once the obstructions are removed, the approach slope for Runway 24 can be published to a slope of 34:1, allowing large aircraft (greater than 12,500 pounds) to utilize the runway.

However, it is important to consider at this time, if the airport may eschew for an even more precise approach capability. The analysis consisted of looking at the three types of approach surfaces in relation to the existing buildings, roads, and topography to determine if one or all are prudent and reasonable at VJI. A non-precision approach of greater than ¾ mile requires the primary surface to be 500 feet wide. For the non-precision as low as ¾ mile and the precision approaches, the primary surface must be 1,000 feet wide. This has a devastating impact at the airport. The airport's ongoing obstruction program in the RW 24 approach corridor would have to be expanded for the non-precision as low as ¾ mile approach and totally revised for the precision approach. The additional 250 foot width of restricted use devastates the existing terminal area on the southeast side of the runway and buries deeper into the hillside on the northwest side. The existing terminal, two sets of T-hangars, corporate hangars, and the State Police hangar would all be within the primary surface. **Exhibits 4-1, 4-2, and 4-3** show the impact of these approaches. Ground penetrations to the approach are shown in red and areas where the ground is within 50 feet of the approach surface are shown in green. The impact acreages are shown for comparison.



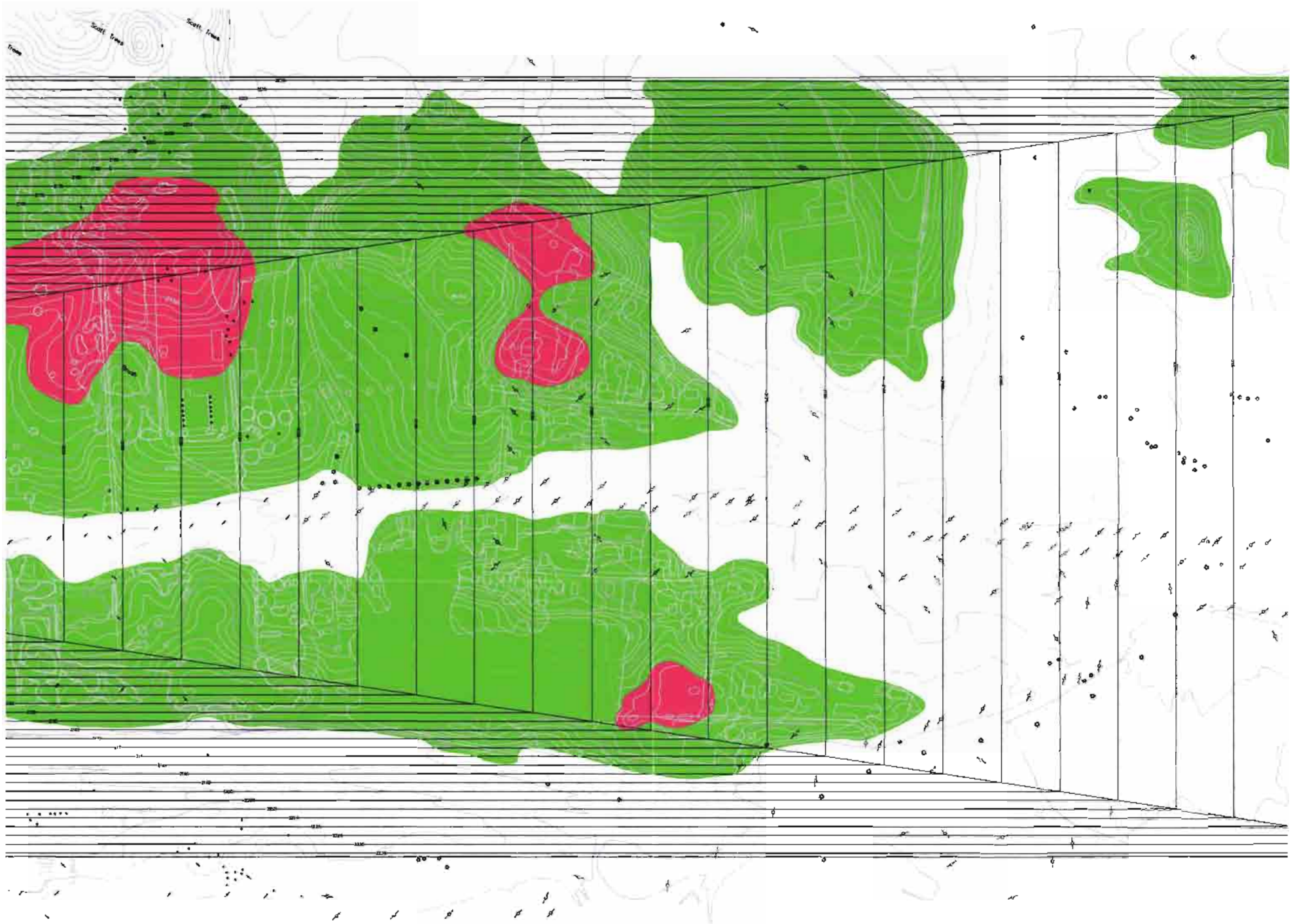
LEGEND

TOTAL AREA (ACRES)



LEGEND

TOTAL AREA (ACRES)



LEGEND

TOTAL AREA (ACRES)

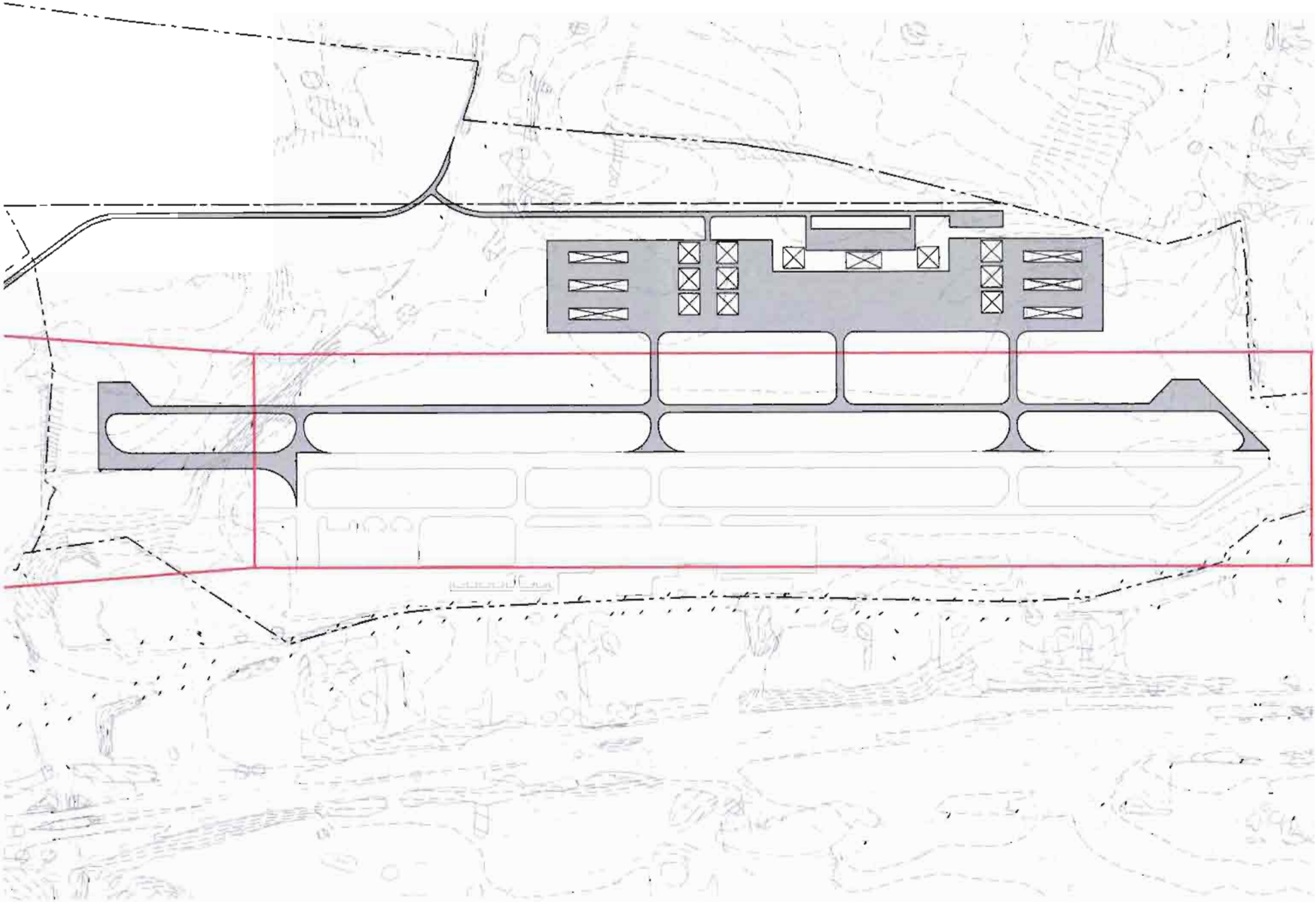
As shown in Table 4-1, there are many disadvantages to pursuing a precision or non-precision ¾ mile or less approach. Both of these alternatives require additional land acquisition, current easement revisions, major expansion of the obstruction removal program, and a severe restriction in the use of existing airport facilities. As shown on **Exhibit 4-4**, the primary surface would preclude utilization of the entire existing aircraft apron on the south side of the airport. Both T-hangar units and the corporate hangar would also violate the primary surface. The existing localizer non-precision approach with Omni-directional approach lights (ODALS) provides a very functional approach for the airport.

Based on all of the factors discussed above, **it is recommended that the Airport maintain the non-precision greater than ¾ mile visibility approach surface.**

2. Airport Reference Code: B-II Versus C-II

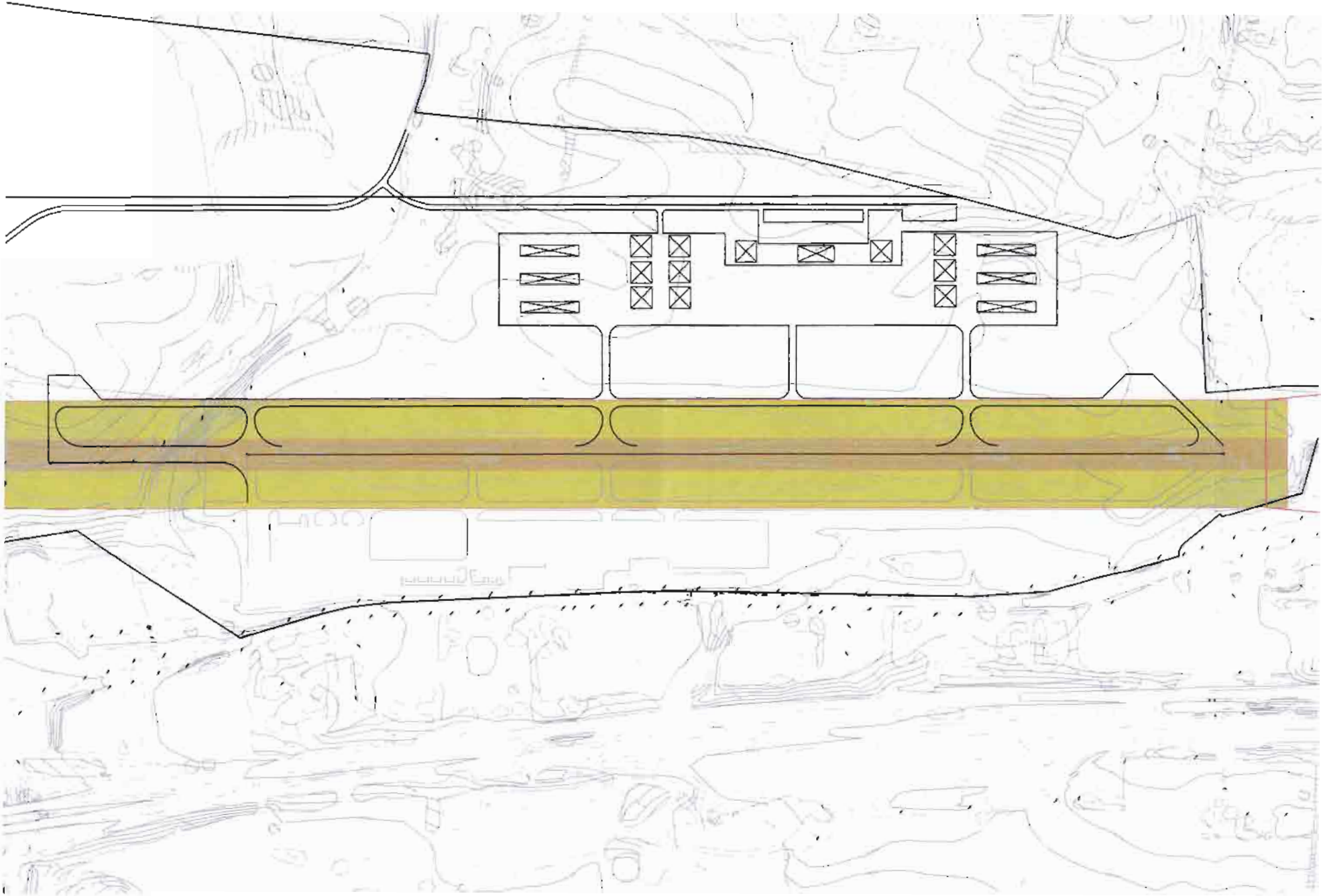
This development alternative analyzes the advantages and disadvantages for developing the airport to Airport Reference Code B-II versus C-II standards. Chapter Two, Aviation Forecast and Chapter Three, Facility Requirements has documented that the Airport currently serves primarily A/B-I/II aircraft, with occasional use by C-I and C-II aircraft.

Exhibits 4-5 and 4-6 show the differences in the geometric runway standards for the ARC categories above. The Runway Safety Area (RSA) encompasses the runway within a graded rectangular area. The Runway Object Free Area (ROFA) extends wider than the RSA and precludes "objects" which are higher than the runway, unless fixed by an airport function. Although the two categories have aircraft of the same wingspan, the faster approach speed of the C category results in wider dimensions for the RSA, ROFA and the Runway Protection Zone (RPZ). **Exhibit 4-7** shows the C-II criteria imposed over the B-II criteria. A listing of the associated acreages of each area is shown on the exhibit. The faster approaching aircraft in the C category result in a 2-4 fold increase in the dimensional areas. **Exhibits 4-8 and 4-9** show the proposed airport layout with the



LEGEND

PROPOSED DEVELOPMENT

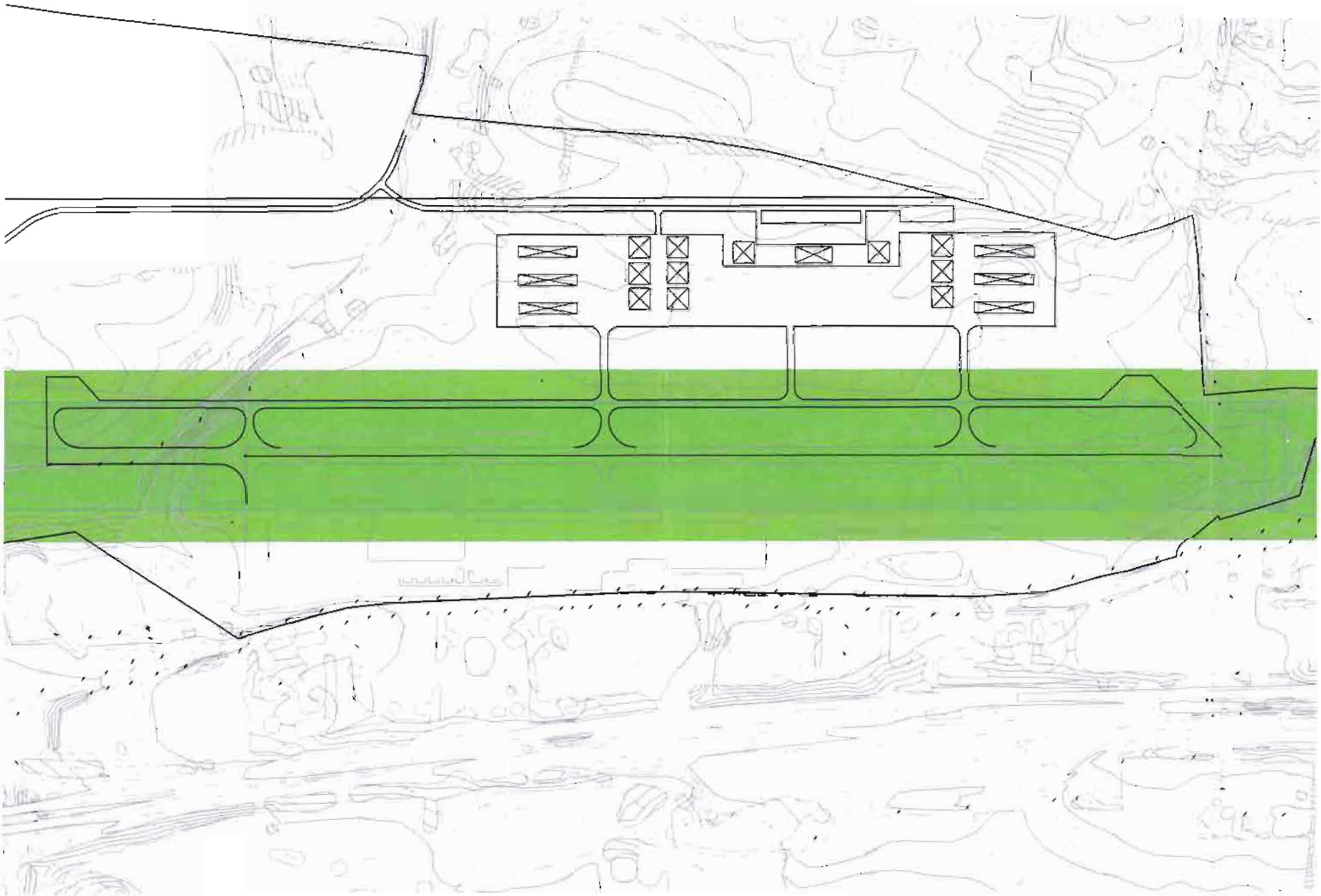


LEGEND

	B-II	C-II
RUNWAY SAFETY AREA		

B-II RUNWAY SAFETY AREA

B-II RUNWAY OBJECT FREE AREA

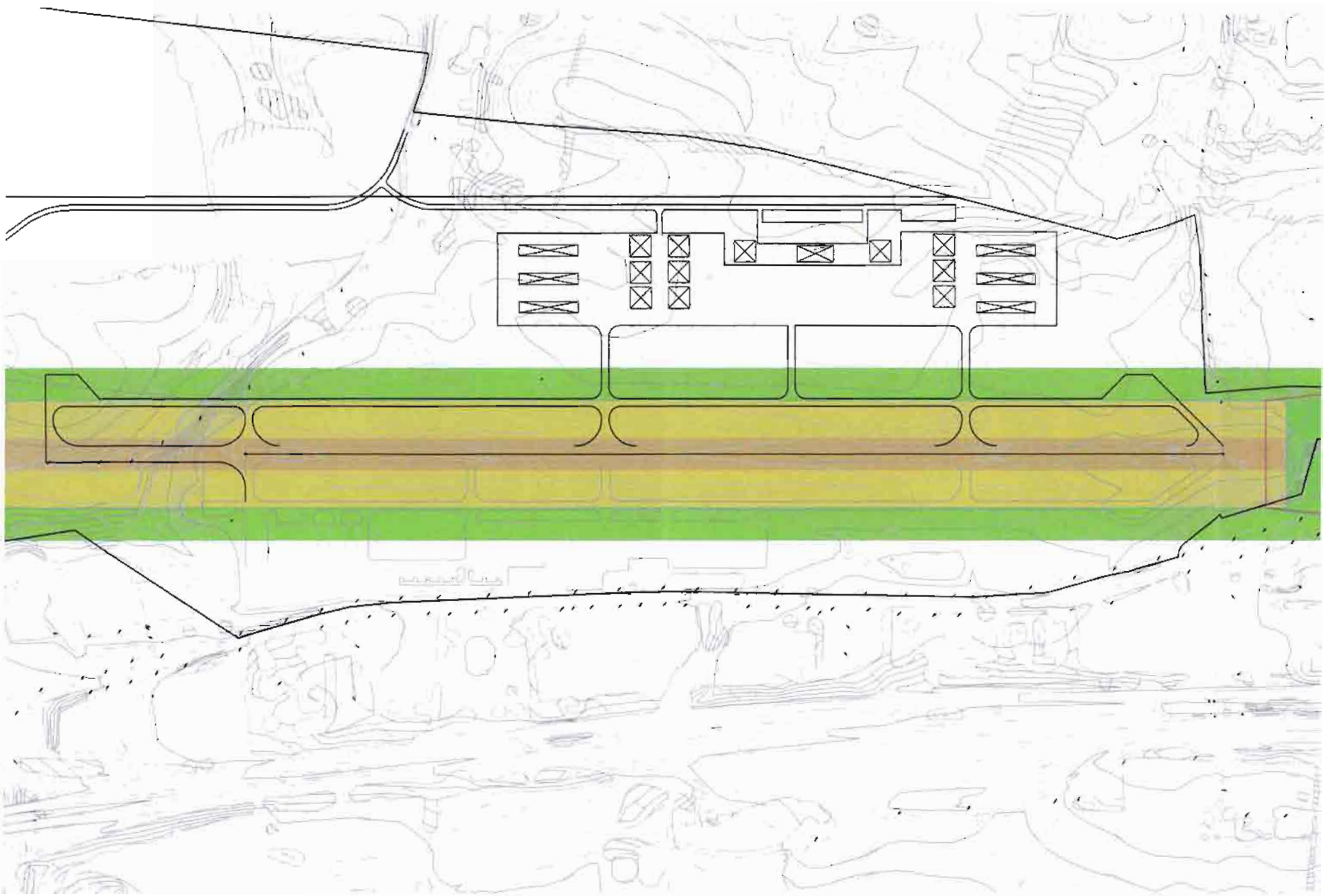


LEGEND

	B-II	C-II
RUNWAY SAFETY AREA		

C-II RUNWAY SAFETY AREA

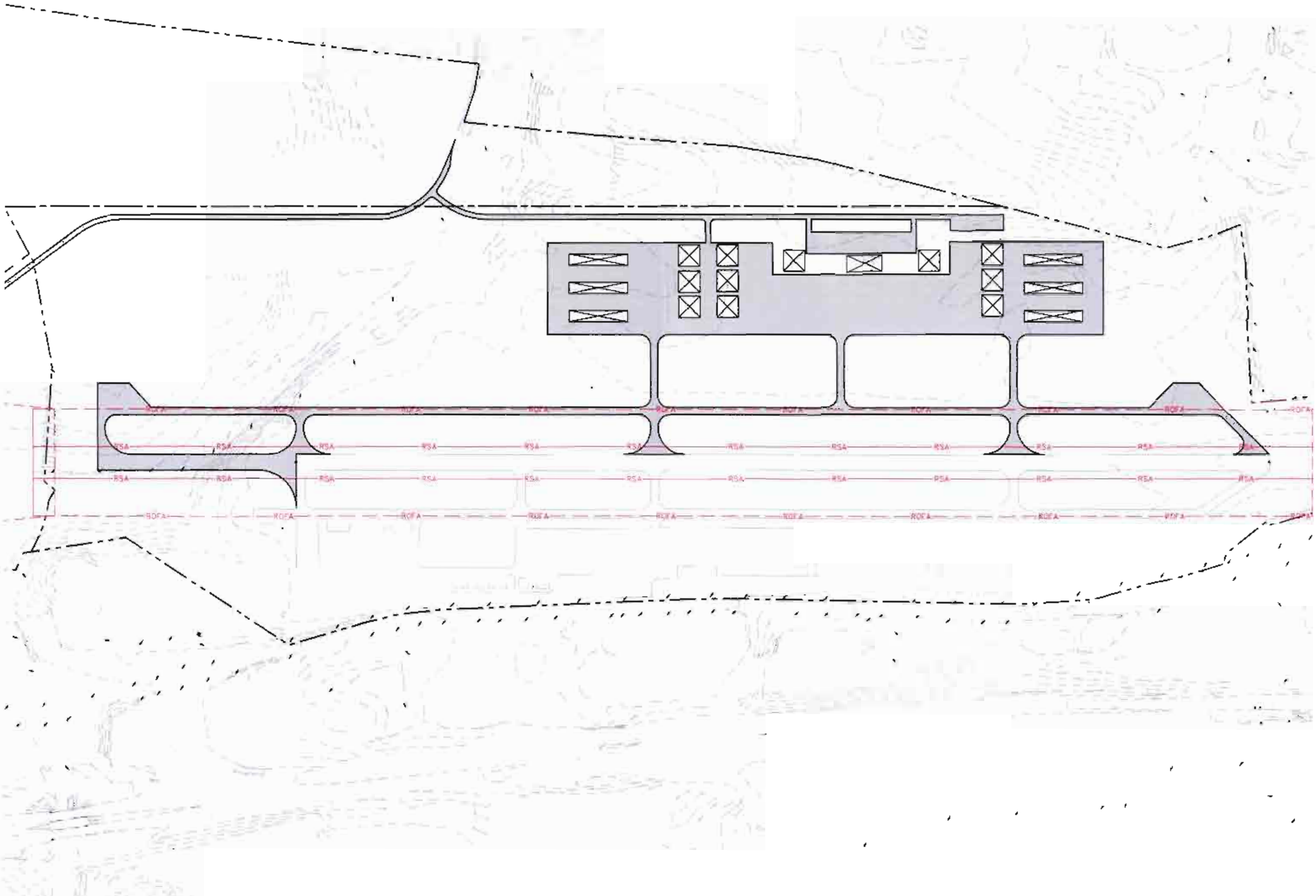
C-II RUNWAY OBJECT FREE AREA



LEGEND

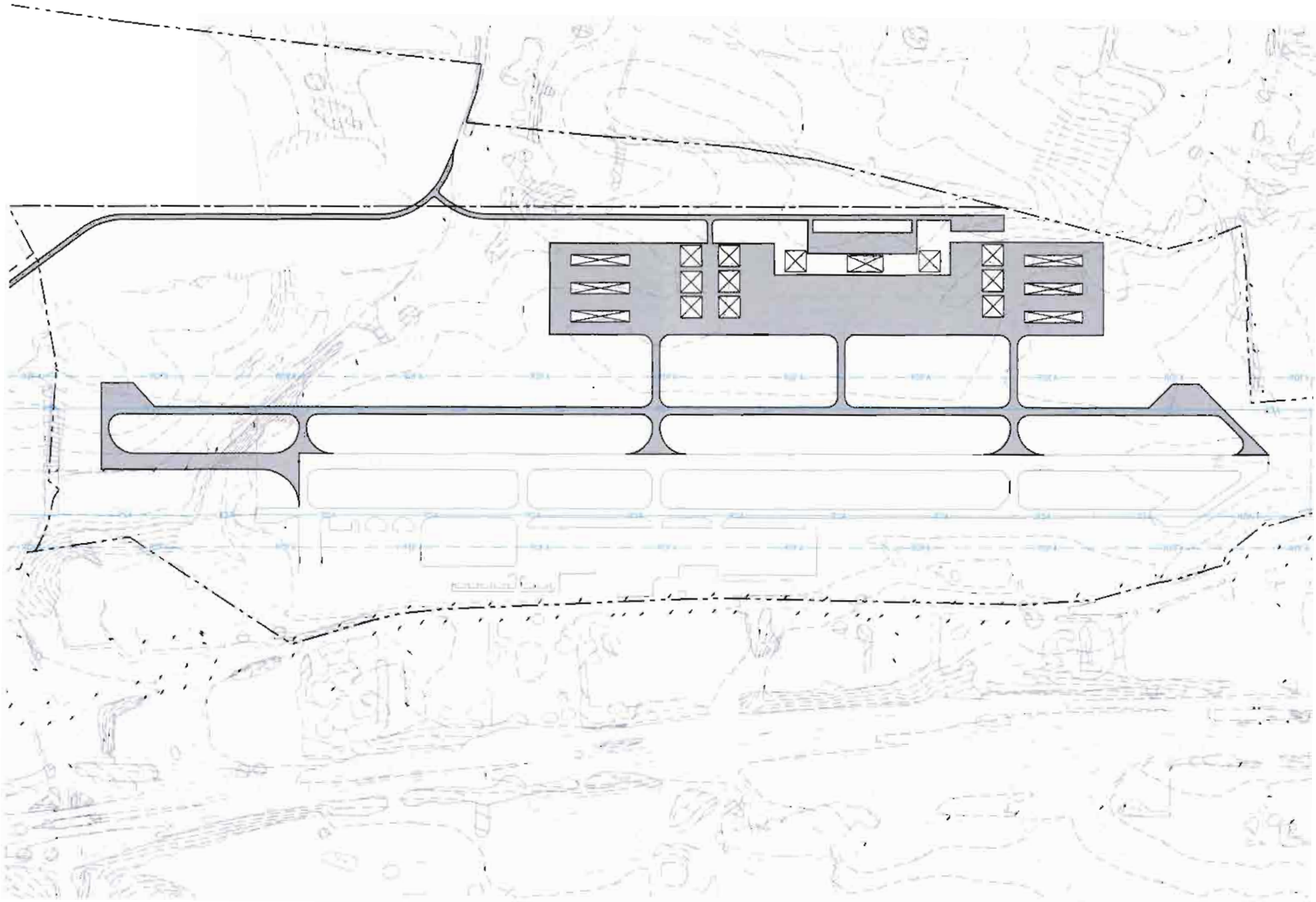
- B-II RUNWAY SAFETY AREA
- B-II RUNWAY OBJECT FREE AREA
- C-II RUNWAY SAFETY AREA
- C-II RUNWAY OBJECT FREE AREA

	B-II	C-II
RUNWAY SAFETY AREA		



LEGEND

PROPOSED DEVELOPMENT


LEGEND
PROPOSED DEVELOPMENT

standards for B-II and C-II, respectively. Key elements to observe are the RSA/ROFA limits to the east relative to Wright Equipment Company and the ROFA width to the south side of the runway relative to existing improvements.

As outlined in Chapter Three, the airport currently meets the standards for a B-II facility. However, for "C" Category, there are significant constraints to the airport's ability to comply. These factors are outlined as follows:

(1) Runway Gradient. The runway gradient for the first/last quarter of the runway shall not exceed a gradient of 0.8% for "C" runways. The existing gradient for the east end of Runway 24 is 1.7%, which is satisfactory for B-II standards. However, to meet the "C" standard, the eastern 2,500 feet of the runway would have to be reconstructed. Although the threshold will be maintained at 2,087, embankment of nine feet on the centerline will be required at the deepest point. In addition, due to the depth of fill and inadequate space for drainage between the runway and taxiway on the east side, the existing parallel taxiway would have to be abandoned. The order of magnitude cost to accomplish this gradient correction is estimated at $2 million.

(2) Purchase/Relocate Wright Equipment Company and the Stockyard. In order to construct the extended runway safety area and relocate Jerry Lane, these properties will have to be acquired. The existing businesses would be entitled to relocation assistance. Due to their unique business, these relocations could be quite costly. Order of magnitude costs are estimated at 1.5 million dollars for Wright and 1.2 million dollars for the stockyard for a total of $2.7 million.

(3) Construct 400' X 1000' Runway Safety Area for Runway 24. This safety area grading will require special grading and drainage considerations. In order to accomplish the grading, the existing Wright Equipment building(s) will have to be demolished. Embankment fills will range up to 60-70 feet. Material can

be taken from the future object free area (uphill) and moved to the runway safety area (downhill). Existing terrain will tend to shape the safety area from a high edge along the north side to a lower edge along the south side. However, the south side (US 11) of the safety area will not be able to tie into existing grade due to terrain and due to the adjoining Runway Object Free Area. In fact, a retaining wall extending 450-500 feet long is envisioned for the south edge of the safety area. This wall will be 15-20 feet tall to assure vehicles (15' per FAR Part 77) on US Route 11 and any remaining utility poles are below the edge elevation of the Runway Safety Area. Cost for the Runway 24 safety area construction is estimated at $2.5 million.

(4) Relocate Jerry Lane. In order for the C-II safety area to be constructed, Jerry Lane will need to be relocated eastward. With the purchase of Wright Equipment and the Stockyard properties, the stockyard road can be abandoned. It would appear prudent to improve the existing road which crosses airport property at the back portion of the Runway Protection Zone. This road serves the Self families north of the Runway 24 approach. An intersection or curve in the road could be directed back to the west and connect with the existing Jerry Lane north of the airport environment. This road relocation would involve approximately 2,500 linear feet of roadway. Order of magnitude cost would be in the $800,000 range.

(5) Construct 400' X 1000' Runway Safety Area for Runway 6. The extended runway safety area for C-II on this end will require embankment fills of 60-70 feet. Estimated quantities for the safety area are projected to reach 900,000-1,000,000 cubic yards of embankment. This includes the wider safety area on the east side of the runway extension, which is predominately embankment, and no fill. The longer safety area will require boxing of a stream which runs down from Westinghouse Road and from the north. This results in an order of magnitude cost of $5 million.

(6) Widen Runway 6-24 by 25 feet, Widen Safety Area and Relocate MIRLs. This item will increase the runway width to 100 feet and widen the safety area from 75 feet to 200 feet west of the runway centerline. Obviously, the runway will have to be shut down to accomplish this development. Estimated cost for this work is $2 million.

(7) Widen West Side Taxiway to 50 feet with 5 foot Shoulders. This work will allow the airport to remain open during the construction of items which require the existing runway to be closed, which are expected to take a minimum of 8-10 months. Once the runway rehabilitation and widening are complete, the taxiway will be reduced to 50 feet and the 5 foot shoulders marked with chevrons. This work is estimated to cost about $1.5 million.

(8) Acquire Property for the ROFA South of the Runway. Several properties will need to be acquired south of US 11 for the Runway 24 ROFA and additional property will need to be acquired from HTW for the Runway 6 ROFA. Order of magnitude for these properties is $500,000.

(9) Construct New GA Terminal on the West Side. Since the C-II ROFA will reduce the existing apron areas on the east side of the airport to a depth of less than 100 feet, the GA Terminal should be relocated to the west side of the airport. This item would not be eligible for FAA funding. Estimated construction cost is put at $1.5 million.

(10) Construct New GA Apron on the West Side. To compliment the new GA Terminal, and apron will need to be constructed coincident with the terminal. This item is estimated at $1.0 million.

(11) Demolish Four (4) T-hangar Units on the East Side. In order to clear the ROFA for C-II on the East Side, four T-hangar units will need to be demolished. Cost for this demolition is estimated at $200,000.

(12) Lengthen the Drainage Below the RW Extension. Due to the wider safety area associated with C-II standards, the drainage pipe(s) below the extension will need to be several hundred feet longer. This will involve not only the increased length of pipe, but also more grading and realignment of the existing creek. A retaining wall will probably be required to keep the embankment out of the creek. Order of magnitude costs are anticipated to reach $2.0 million.

The development items listed above are tabulated below to quantify the additional costs resulting from a change of B-II to C-II. It should be remembered that this will not include precision instrument approach capability, which would have devastating results as presented earlier in this chapter.

(1)	Correct Runway Gradient	$2.0 Million
(2)	Purchase/Relocate Wright Equipment and Stockyard	$2.7 Million
(3)	Construct Runway 24 Safety Area	$2.5 Million
(4)	Relocate Jerry Lane	$0.8 Million
(5)	Construct Runway 6 Safety Area	$5.0 Million
(6)	Widen Runway 25 feet, Safety Area, Relocate MIRLs	$2.0 Million
(7)	Construct/Widen West Side Taxiway to 50' w/5' Shoulders	$1.5 Million
(8)	Acquire Property for ROFA East Side	$0.5 Million
(9)	Construct New GA Terminal on West Side	$1.5 Million
(10)	Construct New GA Terminal Apron on West Side	$1.0 Million
(11)	Demolish Four T-hangars on East Side	$0.2 Million
(12)	Lengthen Stream Drainage for Runway Extension	$2.0 Million

C-II Construction Increase	$22.7 Million
Contingency (10%)	$2.2 Million
Admin, Engr, Testing (15%)	$3.4 Million
C-II Development Premium	$28.3 Million
FAA Share	$23.8 Million
DOAV share	$3.0 Million
Local Share	$1.5 Million

It is recommended that the Virginia Highlands Airport maintain an airport reference code (ARC) of B-II throughout the planning period. Although the Airport classification will be B-II, this does not prevent the Airport from serving occasional C-I and C-II aircraft. As presented above, the disadvantages of developing an ARC C-II airport significantly outweigh the disadvantages of remaining B-II. In addition, the order of magnitude development cost for C-II standards at the existing site exceeds what a new site could reasonably be expected to cost.

3. Runway Extension & State Route 611 Relocation

In Chapter Three, Facility Requirements, it was recommended that Runway 6-24 at Virginia Highlands Airport be extended to 5,500 feet in Phase II. The existing runway length is not adequate to serve the Airport's critical aircraft during the planning period. An extension of 1,029 feet to the existing runway length of 4,471 feet, would be sufficient to serve 75 percent of large aircraft of 60,000 pounds or less throughout the twenty year planning period. The required length was determined using the FAA Airport Design Computer Program and procedures outlined in FAA AC 150/5300-13 "Airport Design". The logical direction for the extension is to the west. Terrain and development to the east, towards the City of Abingdon, precludes an extension in this direction. Undeveloped land lies west of the airport out to Westinghouse Road, about 3,000 feet from the end of the RW 6 existing threshold pavement.

In order to accommodate the runway extension, State Route 611 will need to be relocated. Conversations with the VDOT Resident Engineer confirmed that the road could not simply be closed. In addition, a westerly relocation was preferred to a easterly relocation. The proposed relocation route has been coordinated with the Virginia Department of Highways. In their letter dated November 6, 2002, the Virginia Department of Highways concurred with our proposed layout for planning purposes. There are also environmental issues that will need to be considered prior to completion of a runway extension. An Environmental Assessment Report (EAR) will need to be prepared for coordination with FAA and environmental agencies. A cursory wetlands review of the area west of the airport revealed two small areas warranting investigation in the environmental document. Water quality and relocation of a stream will be other environmental factors for consideration. The runway extension and road relocation option is depicted in Exhibit 4-8.

Finally, the FAR Part 77 approach surfaces to Runway 24 are the subject of a major land acquisition (primarily avigation easement) and obstruction removal program. Although the 20:1 approach surface is clear of obstructions, the 34:1 non-precision approach surface has numerous obstructions. Most of these obstructions are trees, however, there are two buildings on the church property, one house just beyond the cemetery property, and one recently constructed communication tower at the Forestry Service which all penetrate. Based on surveys conducted under this planning effort, the obstructions are as follows:

	Elevation (MSL)	Part 77 34:1 Elevation (MSL)	Penetration (Feet)
(1) Emmanuel Baptist Church	2145.56	2141.60	4.00
(2) Church Activity Building	2149.52	2143.38	6.14
(3) Caudill House Chimney	2185.72	2179.50	6.22
(4) Forestry Service Tower	2219.36	2191.62	27.74

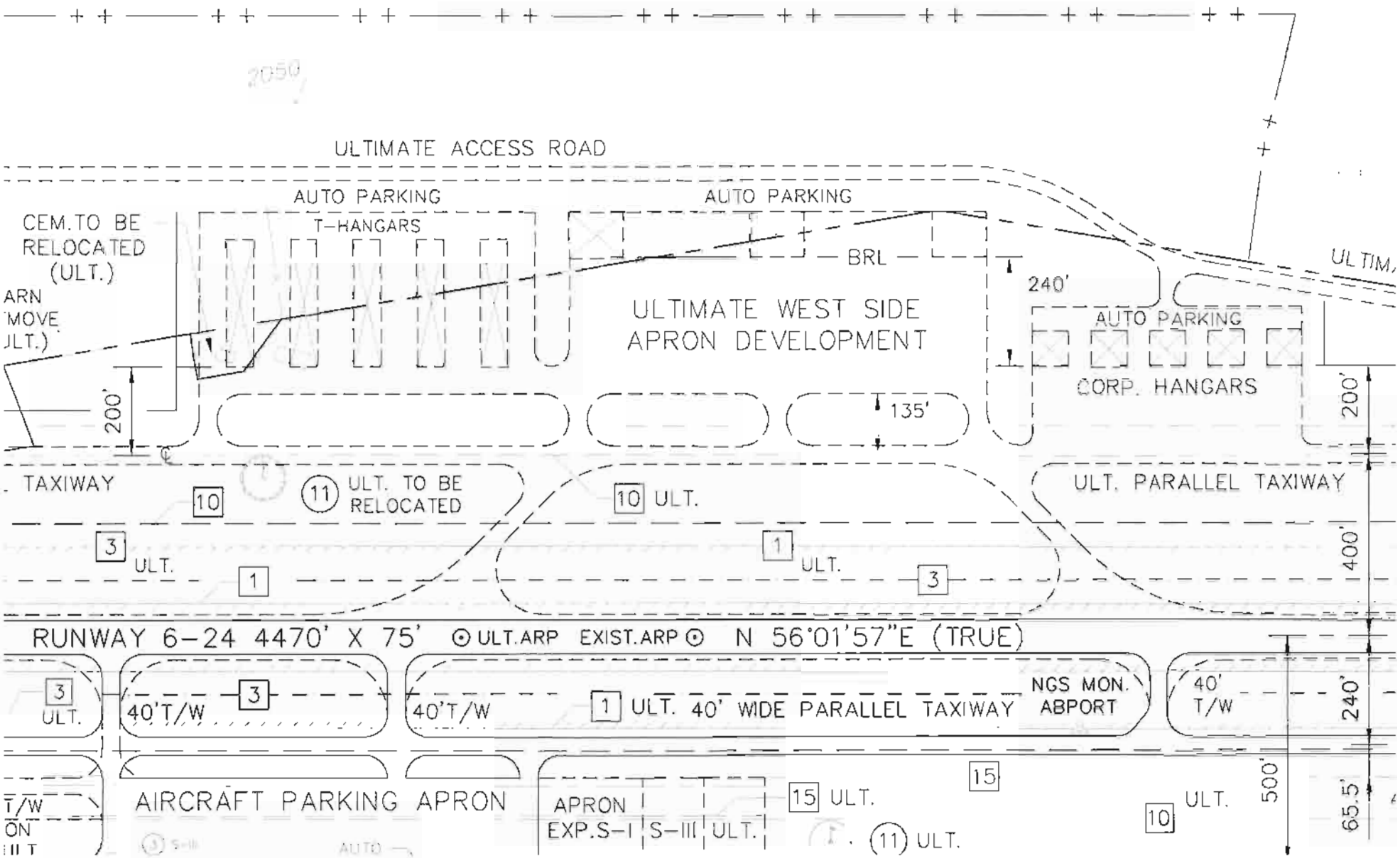
The Forestry Service Tower significantly penetrates the 34:1 approach, but does not penetrate the 20:1 surface. This tower should be obstruction lighted to comply with FAR

Part 77 requirements. The elevation is being coordinated with FAA Airspace Procedures Branch to confirm that it does not, or will not impact non-precision approaches to Runway 24.

It is recommended that the buildings be obstruction lighted if an FAA obstruction study determines that lighting is necessary. During the conduct of this study, the Forestry Service Tower was lowered below the 34:1 approach surface.

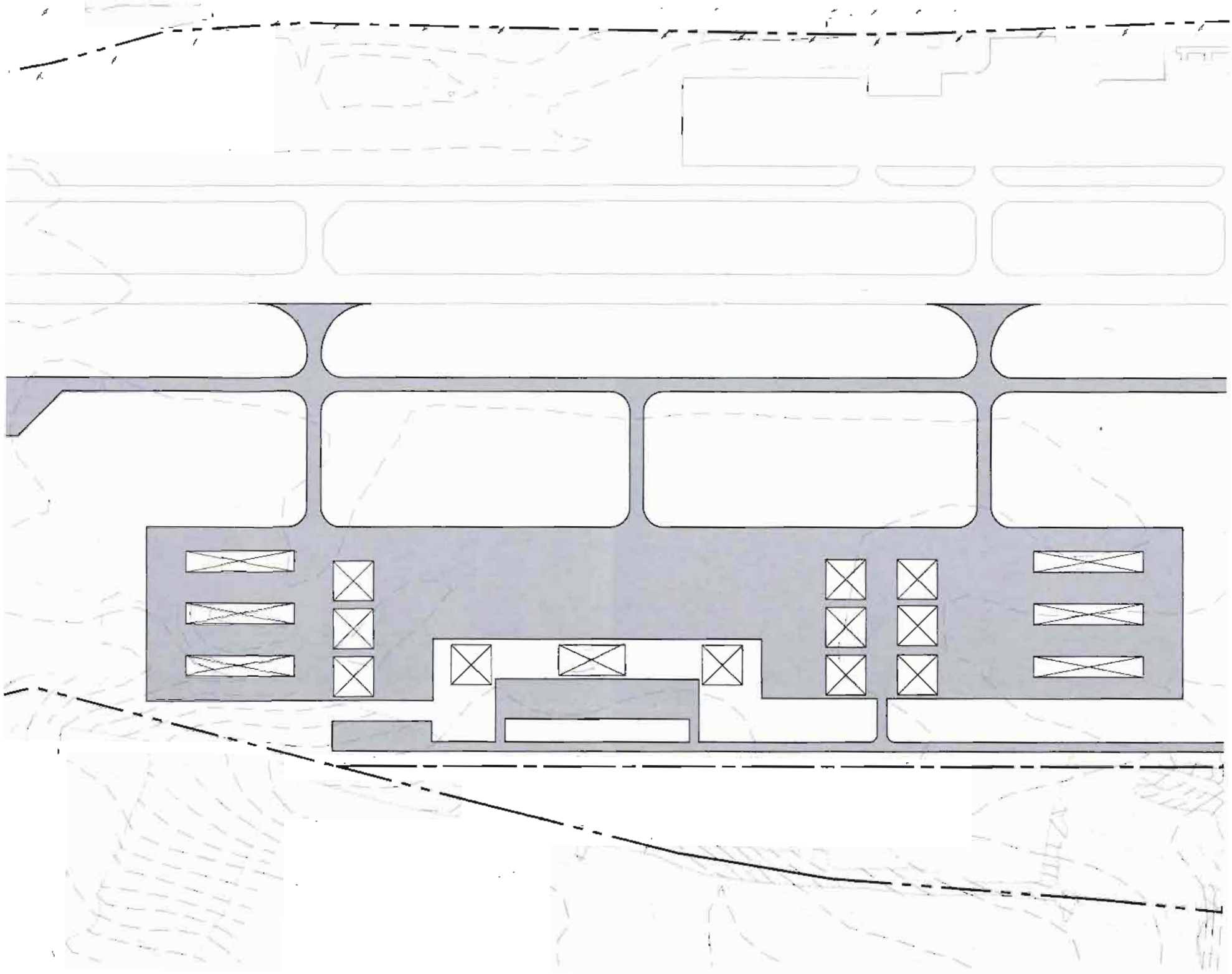
4. Proposed West Side Development

The final issue to be evaluated for Virginia Highlands Airport was the layout of facilities for the West Side GA Development. **Exhibit 4-10** represents the layout for the West Side Development as presented in the 1996 Master Plan Update. The configuration in that plan was based on C-II standards. In addition, it envisioned that SR 611 would be closed and an ultimate access road would connect from east of the airport to SR 611 north of the airport. To develop this concept, the airport would need to acquire the Livestock Market since the proposed road would pass immediately in front of the building. In addition, a portion of the road providing access to the Self families would have to be widened and improved. The VDOT District Office has confirmed that SR 611 cannot be closed. The alignment on the previous ALP moved SR 611 7,400 feet or 1.4 miles east. This update proposes to relocate SR 611 about 1,800 feet or .034 miles west, utilize the existing Westinghouse Road, then connect back to SR 611 west of the proposed runway extension.


ULTIMATE ACCESS ROAD
AUTO PARKING
AUTO PARKING
CEM.TO BE RELOCATED (ULT.)
T-HANGARS
BRL
240'
ULTIMATE WEST SIDE APRON DEVELOPMENT
AUTO PARKING
CORP. HANGARS
200'
135'
200'
TAXIWAY
10
11 ULT. TO BE RELOCATED
10 ULT.
ULT. PARALLEL TAXIWAY
3
ULT.
1
1
ULT.
3
400'
RUNWAY 6-24 4470' X 75' ⊙ ULT.ARP EXIST.ARP ⊙ N 56°01'57"E (TRUE)
3
ULT.
40'T/W
3
40'T/W
1 ULT. 40' WIDE PARALLEL TAXIWAY
NGS MON. ABPORT
40' T/W
240'
15
AIRCRAFT PARKING APRON
APRON EXP.S-I
S-III
ULT.
15 ULT.
10 ULT.
500'
65.5'
11 ULT.

Currently there is a no viable space available for corporate hangar and T-hangar expansion on the east side of Runway 6-24. Therefore, it is anticipated that as the number of transient and/or corporate aircraft utilizing VJI increases, the west side will provide apron and hangar space to accommodate new and existing based aircraft. Currently, the Airport Manager has demand for two corporate hangars at the airport.

The revised layout of the West Side Development **(Exhibit 4-11)** maximizes the use of Airport property. The access road was placed parallel to the property line to allow room for development along the entire length of the runway. Since corporate hangars are the immediate need, these hangars are proposed closest to existing SR 611. Accordingly, their development cost should be cheaper with this change. As previously described, additional T-hangars are needed, as well. With previous layouts, the corporate hangar and T-hangar buildings were separated into two distinct locations. However, this results in two site preparations, two detention basins, two taxiways, and construction of the entire west side access road. By combining the hangar areas, the west side can develop from west to east, as demand warrants. The relocation of SR 611 has now been shown from the west, which results in less length of road relocation and all property acquisition would be contiguous. It is anticipated that a detention basin for storm water management will be required for the stream, north of the runway/taxiway embankment. When the runway is extended, the material for the embankment should be readily available for the west side development which is almost entirely terrain much higher than the runway. Therefore, much of the site grading for the GA development should be accomplished with the runway extension project.



The center portion of the west side development, basically, the future apron area remains unchanged. The future T-hangar area has been reoriented so the hangars parallel the runway alignment. With the predominant winds from the west, the clearing of snow from the taxiways between the buildings should be easier. In addition, the building size (length) should preclude the necessity for interior fire walls. The West Side Development was planned to C-II standards. This is to ensure that the facilities located on the west side will remain in compliance if the Airport Commission needs to develop into an ARC C-II airport at some point beyond the end of the current twenty year planning period.

Finally, the taxiway has been adjusted to eliminate the high speed exits which were previously shown. Typically, 400 feet is inadequate separation for high speed taxiways. In addition, the connector taxiway to Runway 24 is proposed as an angled taxiway to avoid conflict with Jerry Lane.

C. CONCLUSIONS AND RECOMMENDATIONS

Based on the Virginia Highlands Airport Commission meeting held on October 14, 2002, a B-II airport with a runway length of 5,500 feet and a non-precision greater than ¾ mile (34:1) visibility approach is the preferred option for development. These parameters were determined to best meet the requirement needs of Virginia Highlands Airport during the 20-year planning period. The development options will provide for the efficient operation of aircraft at the airport, meet FAA design standards, minimize the effects on the surrounding community and environment, minimize development costs, meet the facility requirements identified in Chapter Three, and provide a feasible implementation program.

On June 4, 2003, the Airport Manager, FAA, and Delta Airport Consultants conferred at length regarding B-II versus C-II standards for Virginia Highlands Airport. It was concluded that FAA would not be able to obtain the funds needed to reconstruct the airport to fully compliant C-II standards. At the Airport Commission meeting on June 9, 2003, the Commission reaffirmed its previous decision to remain as a B-II airport.

Chapter Five
AIRPORT LAYOUT PLAN SET

A. GENERAL

The Airport Layout Plan (ALP) is a graphic representation of the existing and future development at Virginia Highlands Airport. The ALP and supporting drawings are used as a guide by the airport, the Virginia Department of Aviation (DOAV), and the Federal Aviation Administration (FAA) for needed improvements. The requirements for these facilities were outlined earlier in Chapter Three, and the Development Issues were evaluated in Chapter Four. In this chapter, the preceding chapters and FAA design standards are applied to develop and update the set of Airport Layout Plan drawings.

The Airport Layout Plan Update must achieve several specific goals, among them are the items listed below:

- Achieve FAA design standards,
- Depict a reasonable development program for new facilities to satisfy current and future demand,
- Evaluate obstructions to FAR Part 77 surfaces and present an obstruction removal plan,

These items, as well as others, will be necessary for the Airport's long-term development and operation, as a safe, dependable facility for Washington County and the surrounding area.

The following gives a brief description of the individual Airport Layout Plan sheets included as part of the study. Some of these sheets have been totally recreated since the last Master Plan update in 1996. As outlined in the scope of work, other sheets have just been updated with more recent information. The updated sheets will be so noted in the revision block. A reduced size copy of each of the drawings addressed in this narrative is included at the end of this chapter.

The **Cover Sheet** (sheet 1 of 10) is an index of each drawing in the Airport Layout Plan Set. In addition, a location and vicinity map are shown to aid in identifying the location of the Airport.

The **Airport Layout Plan (ALP) Drawing** (sheet 2 of 10) is a graphic representation of existing airport facilities and proposed improvements during the planning period. The ALP drawing indicates pertinent clearance and dimensional information required to show conformance with applicable FAA standards. The ALP depicts the recommended location and configuration of facilities required to meet the needs of the airport during the 20-year planning period (2002-2022). It is important to note that the ALP drawing serves as a guide for proposed development and is a key document that should be kept current. When formally approved by the FAA, the ALP drawing serves as a public document that is a record of aeronautical requirements, both present and future. An approved ALP drawing is also required for any funding consideration by the FAA and the DOAV. The Airport Layout Plan drawing was newly created for this study.

The **Airport Airspace Plan** (sheet 3 of 10) is the plan view of all Part 77 surfaces based on the ultimate runway length. The current USGS 7.5 minute Quad sheet was used for the base map. The previous airspace drawing was updated under this study.

The **Inner Portion of the Approach Surface Drawing** (sheets 4 and 5 of 10) for Runway 6 and 24 are plan and profile views for each runway end to depict the Part 77 approach and transitional surfaces, as well as the runway protection zones. Buildings, trees, and other objects are shown relative to the end of the runway. The drawings include obstruction tables for existing and ultimate approaches and roadway clearances for each runway end. These sheets were developed under this planning effort.

The **Terminal Area Plan (TAP)** sheet graphically displays the existing and proposed layout of terminal facilities such as aprons, buildings and hangars in a much larger scale than the ALP. Two (2) separate terminal area drawings are provided for Virginia Highlands Airport. The East Side GA Plan (sheet 6 of 10) is an update of the previous plan, and the West Side GA Plan (sheet 7 of 10) depicts the newly developed general aviation hangars, tie-down area and terminal areas.

The **Land Use Plan** (sheet 8 of 10) presents off-airport land uses surrounding Virginia Highlands Airport. Noise exposure contours for the 65, 70 and 75 DNL are also shown for the future (2022) planning horizon. The existing sheet was updated with new noise contours based on the forecast in this planning study.

The **Airport Property Map** (formerly Exhibit "A") (sheets 9 and 10 of 10) depicts the boundaries of the existing airport property and identifies the parcels within the boundary. In addition, future property acquisition is shown for recommended improvements. The second sheet contains a tabulation providing historical transaction data and preliminary data for proposed land acquisitions. The property map sheets were recreated for this ALP update to include the extensive easement acquisition program for the Runway 24 approach.

B. AIRPORT LAYOUT AND TERMINAL AREA PLAN

This section discusses details concerning the development of the ALP drawing and the TAP. The ALP sheet and TAP sheets are discussed interchangeably as both represent existing and future airport development for Virginia Highlands Airport. The following narrative briefly describes future development and phasing for the 20-year planning period (2002-2022). Additional narrative is provided where necessary to explain design decisions concerning future developmental items such as the West Side GA Development, west side access road, and the Runway 6-24 extension.

1. Runways

As identified in the facility requirements chapter (Chapter Three), Runway 6-24 will remain as an Airport Reference Code (ARC) category B-II throughout the 20-year planning period. The demand/capacity and facility requirements chapter evaluated Runway 6-24 with respect to length, width, strength, safety area and object free area for existing and future aircraft. This section discusses the runway geometrics and respective runway safety and object free areas.

a. Runway 6-24

Runway 6-24 serves as the primary runway for Virginia Highlands Airport. The runway is 4,471 feet long and 75 feet wide, and is not adequate to serve the critical aircraft for the duration of the 20-year planning period. Since the last update of 1996, the airport has attracted a significantly heavier corporate fleet. There are currently four Citation business jets based at the airport. These aircraft have all located at the airport since 1996. Other corporate jets are at present awaiting hangar space at Virginia Highlands Airport. A runway extension of 1,029 feet, to achieve a 5,500 foot total runway length, is documented in Chapter Three.

Runway lighting (MIRLs) and MITLs were installed during the initial construction of the runway in 1984 and the extension of the runway in the late 1980's. It is recommended that the runway lighting be rehabilitated during Phase III of the planning period.

The pavement is in excellent condition for its 20 year age. However, due to the life span of bituminous concrete surfaces, an overlay of the runway and taxiways should be anticipated during Phase III of the planning period. Any cracks which may form in the interim should be sealed, whenever possible.

b. Runway Safety Area

The standard design for a B-II runway safety area (RSA) is 150 feet wide centered on the runway centerline and extended 300 feet beyond the end of the runway. The RSA for Runway 6-24 at Virginia Highlands Airport currently meets the standard for a B-II runway.

c. Runway Object Free Area

The required runway object free area (ROFA) for a B-II runway is 500 feet in width, centered on the runway, with extensions 300 feet beyond each runway end. The previous ALP notes the Runway 24 end currently has a fence at 280 feet from the threshold that projects above the edge of the runway object free area. It is recommended that this fence, which is within the ROFA, be evaluated and corrected during Phase I of the development period.

2. Terminal Development

As discussed in Chapter Three, Facility Requirements, the existing general aviation terminal building is located on the east side of Runway 6-24. The 9,000 square foot terminal building was constructed in 1991 and should satisfy the airport's long term needs.

3. Hangar Development

It is important to note that the timing of hangar development is subject to demand. Hangar development built on speculation is quite risky, therefore actual documented demand should be demonstrated prior to construction. The construction of suitable corporate and T-hangars will aid the Airport in attracting additional aircraft. The proposed dimensions for corporate hangars are approximate and will vary according to the particular needs of each tenant.

The layout of hangars on the west side was carefully considered with this update. The airport is in need of hangar space today. The terrain on the west side of the airport is significantly higher than the runway. When the runway is extended, this material can be used to fill in the extension area, which will be primarily embankment. After the extension, the west side development area will be much closer to final development grades. However, until that time, it is essential to develop in the area which affords the most reasonable cost, as discussed in Chapter Four. The plan should also allow for corporate and T-hangar development since the east side of the airport is almost totally

depleted of hangar space. The final plans depicted on the ALP and TAP for the west side shows a phased approach which works effectively for the airport and results in more reasonable funding from the FAA and DOAV.

a. **Corporate Hangars**

The Airport currently has five (5) corporate hangars. Three (3) of these corporate hangars have been constructed since 1996. It is anticipated that five (5) corporate hangars will be constructed on the west side of Runway 6-24 as part of the west side development. The hangar development will require access paving and associated lighting. It is recommended that two (2) corporate hangars be developed during Phase I (2002-2007) to coincide with the proposed west side development.

b. **T-Hangars**

Virginia Highlands Airport currently has 38 T-hangar spaces available for the storage of small general aviation aircraft. It is recommended that the west side area be developed to include construction of one ten unit T-hangar in Phase I. The development is recommended in Phase I (2002 - 2007) based on the forecast and the current interest for T-hangars at Virginia Highlands Airport. The Airport Manager reports a current waiting list of 25 aircraft owners.

4. Auto Parking

The existing auto parking in the terminal area has approximately 124 spaces. The existing terminal area auto parking on the east side of the airport will be sufficient to meet forecast requirements. However, additional parking to support the future expansion and development on the west side of the airport is anticipated in Phase III.

5. Airport Access

Primary vehicular access to Virginia Highlands Airport is via U.S. Route 11. This highway will continue to serve as the primary access throughout the duration of the planning period.

Access to the west side development will initially be connected to the existing State Route 611. In order to accommodate the runway extension, SR 611 will have to be rerouted. It is proposed that SR 611 be relocated to tie into Westinghouse Road west of the airport, as described in Chapter Four. This concept was coordinated with the local VDOT office which agreed in principle with the proposed realignment.

6. Ancillary Facilities and Development

This section describes the ancillary facilities and developmental items shown on the Airport Layout Plan and Terminal Area Plan. These facilities support overall airport operations.

a. Fuel Farm

The fuel facilities at Virginia Highlands Airport are anticipated to be adequate for the planning period. However, the existing facility can be expanded when demand warrants.

b. Electrical Vault

The Airport constructed a new electrical vault building in November of 2002. The new electrical vault building is located near the old vault behind the aircraft storage building. The electrical vault should serve throughout the planning period.

c. **Fencing**

The Airport recently installed 6 foot chain-link fence along the east perimeter of the property boundary along US Route 11. The remaining airport boundary is surrounded by 4 foot field fence. As the west side of the Airport is developed, the perimeter fencing should be upgraded to chain-link. It is recommended that the fence be maintained throughout the 20-year planning period and relocated along the new property boundary as adjacent land is acquired.

C. AIRPORT PROPERTY MAP

The Airport Property Map (sheets 9 and 10 of 10) depicts the existing boundaries of the airport property. Future property acquisitions, both in fee simple and avigation easement, are also shown on the property map. Like the ALP drawing, it is critical to keep this document current. As property is acquired, the Airport Property Map should be revised accordingly.

Virginia Highlands Airport currently owns approximately 260 acres of land and the Airport Layout Plan and Airport Property Map identify an additional 65 ± acres fee simple to be acquired. The land is recommended for acquisition to improve control of the airfield by protecting the primary surface, RSA and RPZ at both runway ends, and the land required for the relocation of SR 611. Sufficient property interest in the RPZs at Virginia Highlands Airport should be gained to ensure the Commission is empowered to control the area. Fee simple acquisition is the preferred method of control, but compatible land use criteria are specified in FAA AC 150/5300-13, Chapter Two, where it is determined to be impractical for the airport owner to acquire and plan the land uses within the entire RPZ. The RPZs function is to enhance the protection of people and property on the ground, an effort that is achieved through airport owner control of the RPZ area.

The airport has an on-going easement acquisition program to remove obstructions from the proposed 34:1 approach to Runway 24. Over 40 parcels are included in this program. Negotiations should begin in the Spring of 2003. One parcel, #49 Caudill, is recommended for fee simple purchase because the chimneys and roof penetrate the 34:1 approach to Runway 24. The Caudill property has also been targeted as a life estate.

Proposed property acquisition recommended in Phase I includes properties needed for the runway extension and the purchase of Wright Equipment Company. The properties for the runway extension and SR 611 road relocation are:

Parcel			(acres)
41	Hairston		2.8
90	Snead		19.59
91	Gent		8.95
92	Johnson		13.04
		Total	44.38

Although the airport currently owns an avigation easement over the Wright Equipment Company property, it is recommended that this property be acquired in fee simple. Most of this property is within the Runway 24 Runway Protection Zone.

The last proposed acquisition, which could be Phase III or ultimate, is the Tri-State Livestock Market. Although this property is outside the Runway Protection Zone for Runway 24, its elevation penetrates FAR Part 77 surfaces. Although it is currently obstruction lighted, it would be preferable to own the property and grade the terrain to clear standards.

D. AIRPORT AIRSPACE PLAN

Federal Aviation Regulation (FAR) Part 77, "Objects Affecting Navigable Airspace", establishes criteria for evaluation obstructions. This section presents a discussion of FAR Part 77 standards and their relationship to the physical features and terrain on and around Virginia Highlands Airport. A plan sheet has been prepared to depict FAR Part 77 surfaces (sheet 3 of 11).

Airport Imaginary Surfaces (Part 77) are established relative to runways at the Airport. The size of each imaginary surface is based on the runway category and the existing/proposed approaches (visual, non-precision, or precision). The slope and dimensions of the respective approach surfaces are determined by the most precise existing or future approaches for the runway end. The following is a definition of the individual surfaces:

- **Primary Surface** – A rectangular area symmetrically located about the runway centerline and extending a distance of 200 feet beyond each runway threshold. Its elevation is the same as that of the runway. The total width of the primary surface for Runway 6-24 is 500 feet.
- **Approach Surface** – These surfaces begin at the ends of the primary surface (200 feet beyond the runway threshold) and slope upward vertically. The width and elevation of the inner ends conform to that of the primary surface, while the slope, length, and width of the outer end are governed by the Runway Service Category and existing or proposed Instrument Approaches.
- **Transition Surface** – There are three different transition surfaces. One is off the sides of the primary surface, the second is off the sides of the approach surface, and the last is outside the conical surface and pertains to precision instrument runways only. All transition surface slopes are seven foot horizontally for every one foot vertically measured perpendicular to the runway centerline.
- **Horizontal Surface** – An oval shaped, level area situated 150 feet above the established Airport elevation. Its dimensions are governed by the Runway Service Category. The horizontal surface elevation for Virginia Highlands Airport is 2,238 feet above mean sea level.

- **Conical Surface** – A sloping area whose inner perimeter conforms to the shape of the horizontal surface. It extends outward for a distance of 4,000 feet measured horizontally, and slopes upward at 20 feet horizontally for every one foot vertically.

The FAR Part 77 Imaginary Surfaces for Virginia Highlands Airport are overlayed on a United States Geologic Survey (USGS) 7.5 minute quadrangle (1"=2,000') composite for the area around the Airport. These surfaces include the 34:1 non-precision approach to Runway 24 and Runway 6. It is recommended that the Airport Commission encourage the County Planning office to utilize this drawing to protect the airspace in and around the Virginia Highlands Airport. The Airport and localities should also be aware of FAA Form 7460-1 which notifies the FAA of any proposed development which could potentially become an obstruction to airspace around the Airport.

E. INNER PORTION OF THE APPROACH SURFACE DRAWING

The Runway 6-24 Inner Portion of the Approach Surface Drawing (sheets 4 and 5 of 10) were used to evaluate each runway end for close-in obstructions. Roadways were also evaluated according to criteria outlined in Federal Aviation Regulation (FAR) Part 77. FAR Part 77 requires a minimum clearance of 10 feet over private roadways, 15 feet over public roadways, and 17 feet over interstates from the approach surface.

The approach slope for each runway end varies with the type of navigational aid available. As a general rule, the more precise the approach, the flatter the approach surface will be. Obstruction data tables are provided which show some existing and future penetrations. It is recommended that obstructions be removed, or lighted as soon as property interest is acquired and funding can be arranged.

F. LAND USE MAP

The Land Use Map provides a guide to Washington County in their efforts to achieve compatible development on and around Virginia Highlands Airport. Washington County established an "Airport Safety Overlay Zone" in the 1997 Zoning Ordinance of Washington County. The City of Abingdon and Washington County should continue to consult the Airport Commission on proposed developments that could affect the continued efficiency of Virginia Highlands Airport. Coordination between the localities and the Airport should also occur on proposed development within the Airport environment.

The projected 2022 operational forecast (Chapter Two) was used to develop the future noise contours for the Airport. Sound exposure from aircraft operations can be mitigated quite effectively if the proper land use and zoning ordinances are in place around the airport environment. It should be noted that the future noise contours remain on airport property with the exception of two small segments which overly commercial properties. Based on FAR Part 150 regarding Airport Noise Compatibility Planning, the airport is compatible with the adjacent development.

G. FAA REMARKS AND CONCLUSIONS

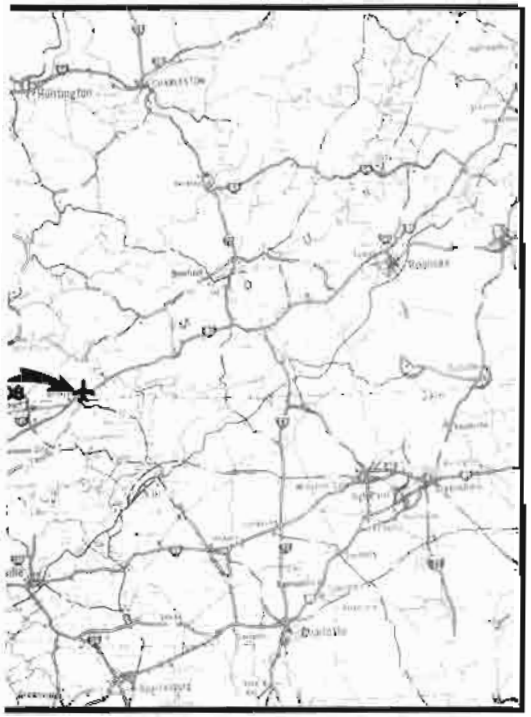
FAA completer the review and revisions of the Airport Layout Plan (ALP) study for Virginia Highlands Airport and provided comments in a letter dated November 13, 2003. The letter stated that the FAA did not concur with planning to have permanent penetrations to the Runway 24 Part 77 34:1 approach surface. In order to meet airport design standards, including obtaining clear Part 77 surfaces, the Runway 24 threshold needed to be relocated 470 feet. The ALP drawing set was revised to illustrate the 470 foot shift required to clear the church activity building. In addition, an extra 470 feet was added to the runway extension to maintain a proposed runway length of 5,500 feet.

ABINGDON, VIRGINIA

AIRPORT LAYOUT PLAN DRAWINGS

DELTA PROJECT NO. VA 02023
FAA AIP NO. 3-51-0001-18

MARCH 2003

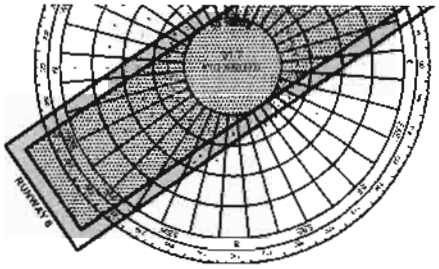


LOCATION MAP

INDEX OF DRAWINGS

VICINITY MAP

DELTA AIRPORT CONSULTANTS, INC.



RUNWAY	10.5 KNOTS	13 KNOTS	16 KNOTS
6-24	98.60	99.75	99.87

WIND DATA PERIOD: 1985-1994
SOURCE: NATIONAL CLIMATIC DATA CENTER
STATION: BRISTOL TENNESSEE

BUILDING RESTRICTION LINE (BRL)	
AIRPORT PAVEMENT	
AIRPORT REFERENCE POINT	
AIRPORT BUILDINGS	
AIRPORT PROPERTY LINE	
RAILROAD	
FENCE	
ROADS	
TREE LINE	
WETLANDS	
LOCALIZER CRITICAL AREA	
ROTATING BEACON	
APPROACH/SEGMENTED CIRCLE VASI/PAPI	
GROUND ELEVATION CONTOURS	
NAVIGATION EASEMENTS	
PAVEMENT DEMOLITION	

DATE OF MAGNETIC VARIATION	09/2002	2022
NPIAS SERVICE LEVEL	GENERAL AVIATION	SAME
FAA SERVICE LEVEL	GENERAL AVIATION REGIONAL	SAME
WIND COVERAGE CROSSWIND COMPONENT		
VFR	98.60	SAME
IFR	96.68	SAME
AIRPORT REFERENCE CODE	B-II SMALL	B-II LARGE
DESIGN AIRCRAFT	KING AIR 200	CITATION II
TAXIWAY LIGHTING	MITL	SAME
TAXIWAY MARKING	ENTER, HS HOLD, LRS	SAME

7	T-HANGAR	2075
8	CORPORATE HANGAR	2080
9	CORPORATE HANGAR	2080
10	CORPORATE HANGAR	2080
11	STATE POLICE HANGAR	2057
12	MAINTENANCE BUILDING	2052
13	FUEL FARM	2043
14	ELECTRICAL VAULT	2093

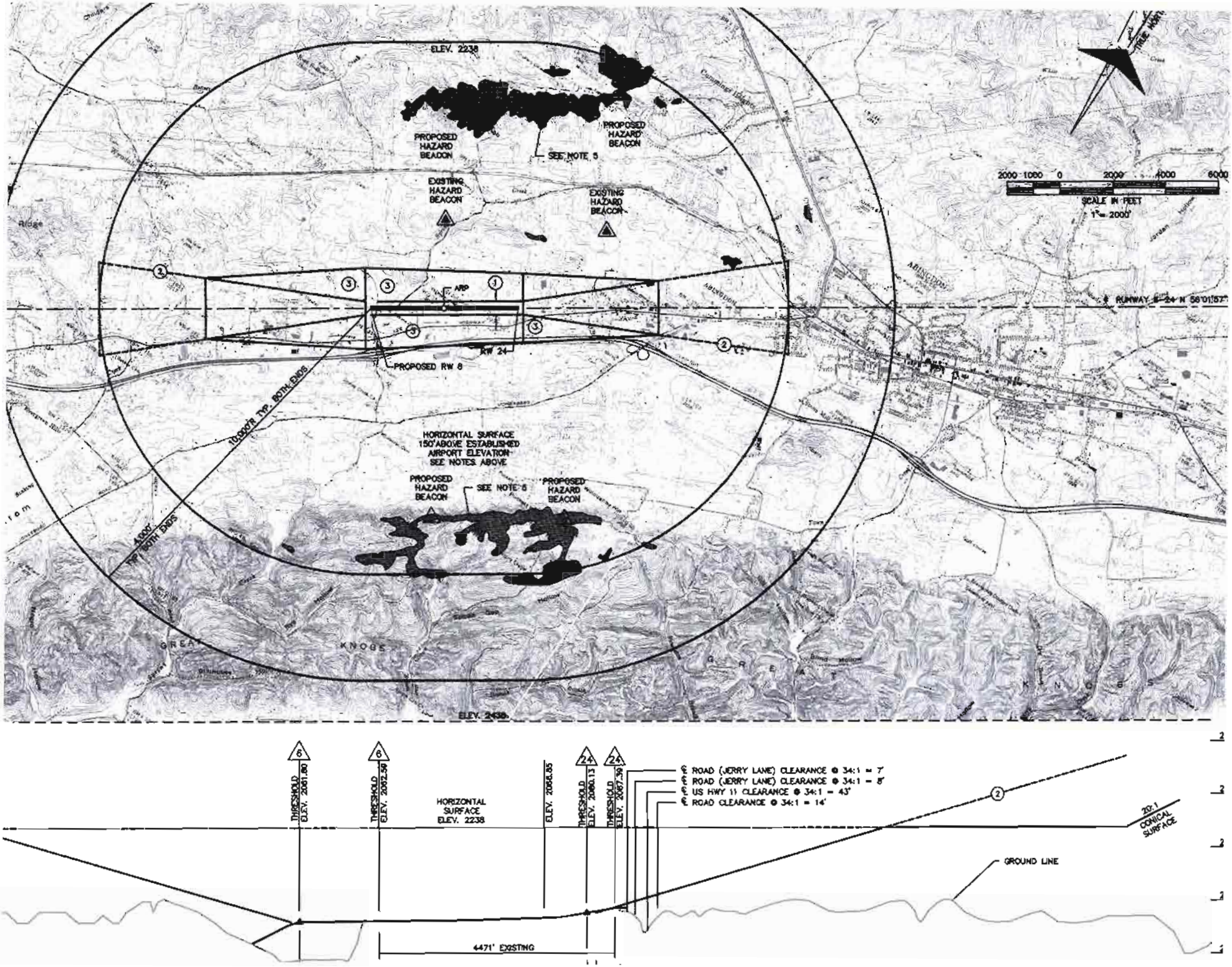
21	T-HANGAR
22	CORPORATE HANGAR
23	CORPORATE HANGAR
24	STORAGE/MAINTENANCE HANGAR

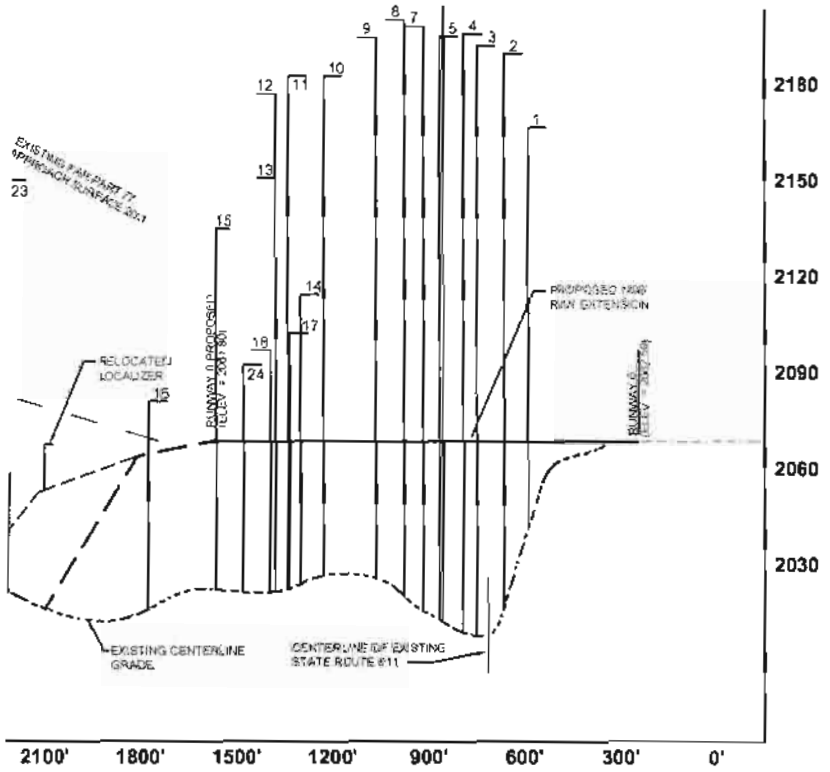
DEVELOPMENT PROGRAM

PHASE I DEVELOPMENT (2000-2005)	
PHASE II DEVELOPMENT (2006-2010)	
PHASE III DEVELOPMENT (2011-2020)	
ULTIMATE DEVELOPMENT (BEYOND 2020)	

MAGNETIC DECLINATION
6° 19' (2002)

WASHINGTON COUNTY
RELOCATE S.R. 811 PHASE I
WASHINGTON COUNTY
PARKING
PARKING
PARKING
PROPOSED PROPERTY ACQUISITION PHASE I
WETLANDS
INSTALL SECURITY FENCING PHASE II
EXISTING RUNWAY PROTECTION ZONE 500'x1000'x700' 20:1 APPROACH SLOPE (VISUAL ARC ARC)
WETLANDS
PROPOSED 4-BOX PAPI PHASE II
STORMWATER DETENTION BASIN
RELOCATE CEMETARY PHASE I
RELOCATE AWOS PHASE I
RELOCATED AWOS
TO BE DEMOLISHED PHASE I
FUTURE GA TERMINAL (BEY)
FUTURE PARALLEL TAXIWAY
EL 2080.13
PROPOSED PROPERTY ACQUISITION PHASE I
PROPOSED REILS PHASE II
EXISTING REILS
EL 2067.39
EL 2062.59
ULTIMATE ARP
EXISTING 6-24 (4471'x75')
ULTIMATE 6-24 (5500'x75')
EXISTING ARP
RELOCATE LOCALIZER PHASE II
500' WIDE PRIMARY SURFACE
HOLDLINES (TYP)
EXISTING LOCALIZER SHED
PROPOSED 4-BOX PAPI PHASE II
STORMWATER DETENTION BASIN
RELOCATED 2-BOX PAPI
RELOCATE EXISTING 2 BOX PAPI
PAVEMENT DEMOLITION PHASE II
PROPOSED PROPERTY ACQUISITION PHASE I
RELOCATE S.R. 811 PHASE I
EXISTING ROTATING BEACON
US ROUTE 11 (SR 11/HIGHWAY)
INTERSTATE 81
EXIT 13
DENNISON DRIVE
FEDERAL AVIATION ADMINISTRATION
NO.
REVISIONS
BY
APP


ELEV. 2238
PROPOSED HAZARD BEACON
PROPOSED HAZARD BEACON
SEE NOTE 5
EXISTING HAZARD BEACON
EXISTING HAZARD BEACON
TRUE NORTH
2000 1000 0 2000 4000 6000
SCALE IN FEET
1" = 2000'
ARP
RUNWAY 6-24 N 56°01'57"
RW 24
PROPOSED RW 6
10,000' TYP. BOTH ENDS
HORIZONTAL SURFACE
150' ABOVE ESTABLISHED
AIRPORT ELEVATION
SEE NOTES ABOVE
PROPOSED HAZARD BEACON
SEE NOTE 5
PROPOSED HAZARD BEACON
10,000' TYP. BOTH ENDS
ELEV. 2438
ABINGDON
GREAT KNOBS
THRESHOLD ELEV. 2061.80
THRESHOLD ELEV. 2052.50
HORIZONTAL SURFACE ELEV. 2238
ELEV. 2068.85
THRESHOLD ELEV. 2060.13
THRESHOLD ELEV. 2057.39
℄ ROAD (JERRY LANE) CLEARANCE @ 34:1 = 7'
℄ ROAD (JERRY LANE) CLEARANCE @ 34:1 = 8'
℄ US HWY 11 CLEARANCE @ 34:1 = 43'
℄ ROAD CLEARANCE @ 34:1 = 14'
20:1 CONICAL SURFACE
GROUND LINE
4471' EXISTING



RUNWAY 6 APPROACH PROFILE

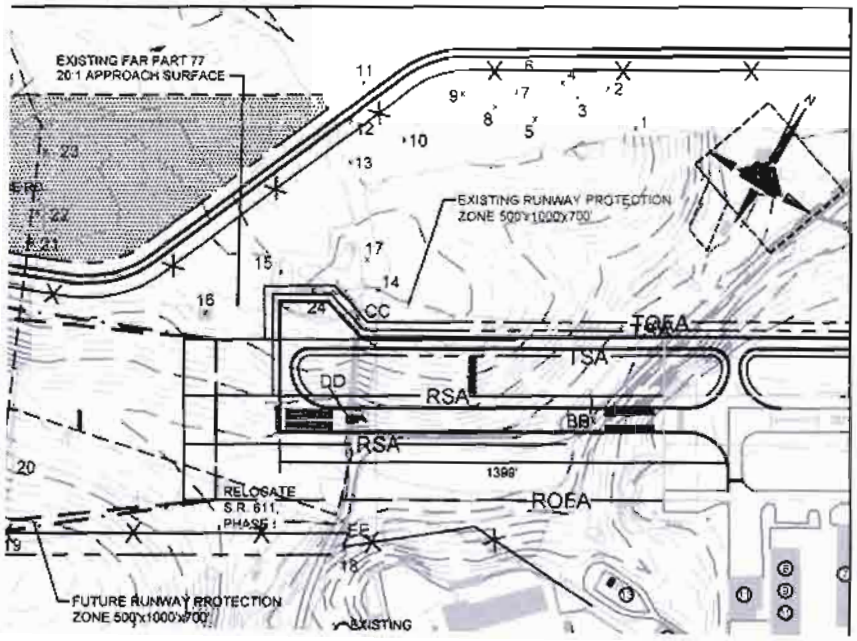
NOT TO SCALE

5	GROUP OF TREES	2206'	7:1 TRANSITIONAL	2181.5	21
6	GROUP OF TREES	2218'	7:1 TRANSITIONAL	2202.5'	21
7	GROUP OF TREES	2210'	7:1 TRANSITIONAL	2195.5'	21
8	GROUP OF TREES	2212'	7:1 TRANSITIONAL	2192'	21
9	GROUP OF TREES	2183'	7:1 TRANSITIONAL	2202'	21
10	GROUP OF TREES	2192'	7:1 TRANSITIONAL	2188.5'	2
11	GROUP OF TREES	2192'	7:1 TRANSITIONAL	2218.5'	2
12	GROUP OF TREES	2186'	7:1 TRANSITIONAL	2202'	21
13	GROUP OF TREES	2156'	7:1 TRANSITIONAL	2185'	21
14	GROUP OF TREES	2115'	7:1 TRANSITIONAL	2131'	2
15	GROUP OF TREES	2138'	7:1 TRANSITIONAL	2143.5'	2
16	BUILDING	2077'	20:1/7:1 TRANSITIONAL	2139'	2
17	GROUP OF TREES	2101'	20:1/34:1 APPROACH	2114'	20
18	GROUP OF TREES	2095'	7:1 TRANSITIONAL	2130'	20
19	GROUP OF TREES	2116'	20:1/7:1 TRANSITIONAL	2172'	20
20	GROUP OF TREES	2098'	20:1/34:1 APPROACH	2171'	20
21	GROUP OF TREES	2137'	7:1 TRANSITIONAL	2187'	21
22	GROUP OF TREES	2159'	7:1 TRANSITIONAL	2199'	21
23	GROUP OF TREES	2155'	7:1 TRANSITIONAL	2226.5'	2
24	BUILDING	2090'	7:1 TRANSITIONAL	2132'	2

NOTE: IT IS RECOMMENDED THAT ITEM #'S 1-10 BE REMOVED AS SOON AS CLEA

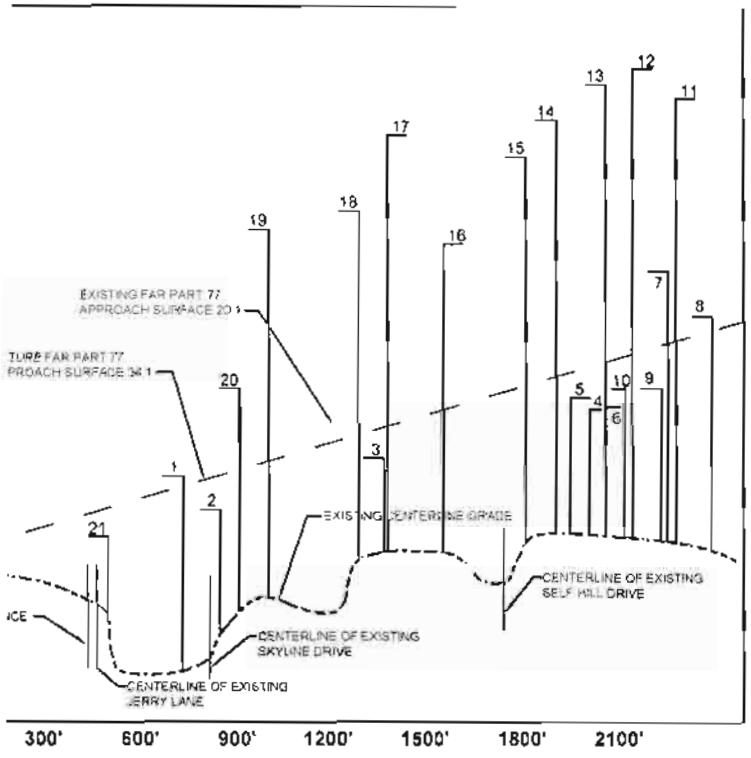
RUNWAY 6 VERTICAL ROAD C

OBJECT		TOP ELEVATION	PART 77 SURFACE	SURFACE ELEV	
NO.	DESCRIPTION			EXISTING	F
AA	STATE ROUTE 611	2017'	20:1 APPROACH/7:1	2066'	2
BB	STATE ROUTE 611	2010'	20:1 APPROACH	2079'	1
CC	PRIVATE ROAD	2078.5'	20:1 APPROACH/7:1	2116'	2
DD	PRIVATE ROAD	2020'	20:1 APPROACH	2116.5'	1
EE	STATE ROUTE 611	2013.5'	20:1 APPROACH/7:1	2118.5'	2
FF	WESTINGHOUSE RD.	2053.5'	7:1/34:1 APPROACH		
GG	WESTINGHOUSE RD.	2055.5'	20:1/34:1 APPROACH	2199'	2
HH	WESTINGHOUSE RD.	2058.5'	7:1/34:1 APPROACH		



NOTES:

1. NUMBER DENOTES OBSTRUCTIONS, DOUBLE LETTER DENOTES VERTICAL ROAD CLEARANCE.
2. ALL ELEVATIONS ARE IN ACCORDANCE WITH NATIONAL MAP ACCURACY STANDARDS. SPOT ELEVATIONS AND GROUND CONTOURS ARE DERIVED FROM AERIAL PHOTOGRAMMETRY AND ARE APPROXIMATE. GROUND SURVEYS ARE REQUIRED TO VERIFY ACCURACY OF OBSTRUCTIONS.
3. ALL ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL.
4. RUNWAY 6 APPROACH PROFILE IS PRESENTED AT A 1"=300' SCALE (HORIZONTAL) TO SHOW OBSTRUCTIONS WELL BEYOND THE EXISTING AND FUTURE RPZ's.
5. GROUND CONTOURS AND OBSTRUCTION ELEVATIONS ARE BASED UPON AERIAL PHOTOGRAPHY PREPARED BY:
   POTOMAC AERIAL SURVEYS, INC.
   FREDERICK COUNTY AIRPORT
   1319 BUCHEIMER ROAD
   FREDERICK, MARYLAND
6. FAR PART 77 REQUIRES THE FOLLOWING CLEARANCES:
   10 FEET ABOVE PRIVATE ROADS
   15 FEET ABOVE PUBLIC ROADS
   17 FEET ABOVE INTERSTATE HIGHWAYS
   23 FEET ABOVE RAILROADS
   ELEVATION = ACTUAL ROADWAY ELEVATION + FAR PART 77 CLEARANCE



RUNWAY 24 APPROACH PROFILE

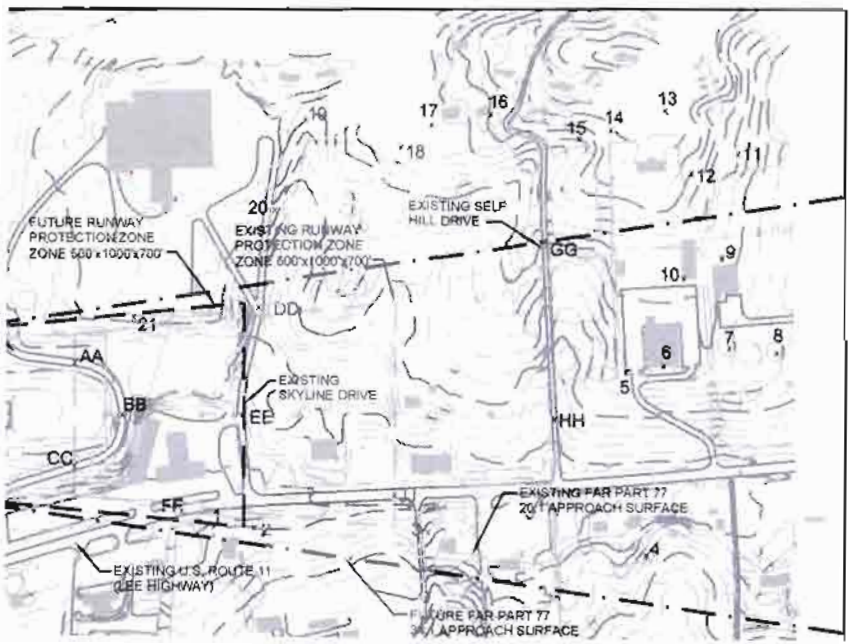
NOT TO SCALE

NO.	OBJECT DESCRIPTION	TOP ELEVATION	PART 77 SURFACE	SURFACE ELE EXISTING	
3	TREE	2126'	34:1 APPROACH	2142.5'	2
4	GROUP OF TREES	2142'	34:1 APPROACH	2176.5'	2
5	GROUP OF TREES	2148'	34:1 APPROACH	2171.5'	2
6	BUILDING	2145.58'	34:1 APPROACH	2177.02'	21
7	GROUP OF TREES	2181'	34:1 APPROACH	2189.5'	2
8	GROUP OF TREES	2173'	34:1 APPROACH	2197'	2
9	TREE	2149'	34:1 APPROACH	2188.5'	2
10	BUILDING	2149.52'	34:1 APPROACH	2182.29'	21
11	GROUP OF TREES	2245'	7:1 TRANSITIONAL	2225'	
12	GROUP OF TREES	2255'	7:1 TRANSITIONAL	2213'	
13	GROUP OF TREES	2250'	7:1 TRANSITIONAL	2238.5'	2
14	GROUP OF TREES	2238'	7:1 TRANSITIONAL	2225'	2
15	GROUP OF TREES	2226'	7:1 TRANSITIONAL	2218.5'	2
16	TREE	2197'	7:1 TRANSITIONAL	2222'	2
17	GROUP OF TREES	2233'	7:1 TRANSITIONAL	2212'	2
18	GROUP OF TREES	2208'	7:1 TRANSITIONAL	2200'	2
19	GROUP OF TREES	2202'	7:1 TRANSITIONAL	2203'	2
20	TREE	2149'	7:1 TRANSITIONAL	2160'	
21	TERRAIN	2100'	7:1 TRANSITIONAL/34:1	2095'	2

NOTE: IT IS RECOMMENDED THAT OBJECT #'S 11–15 AND 17–19 BE REMOVED A
BEEN ACQUIRED AND CLEARING CAN BE ARRANGED.

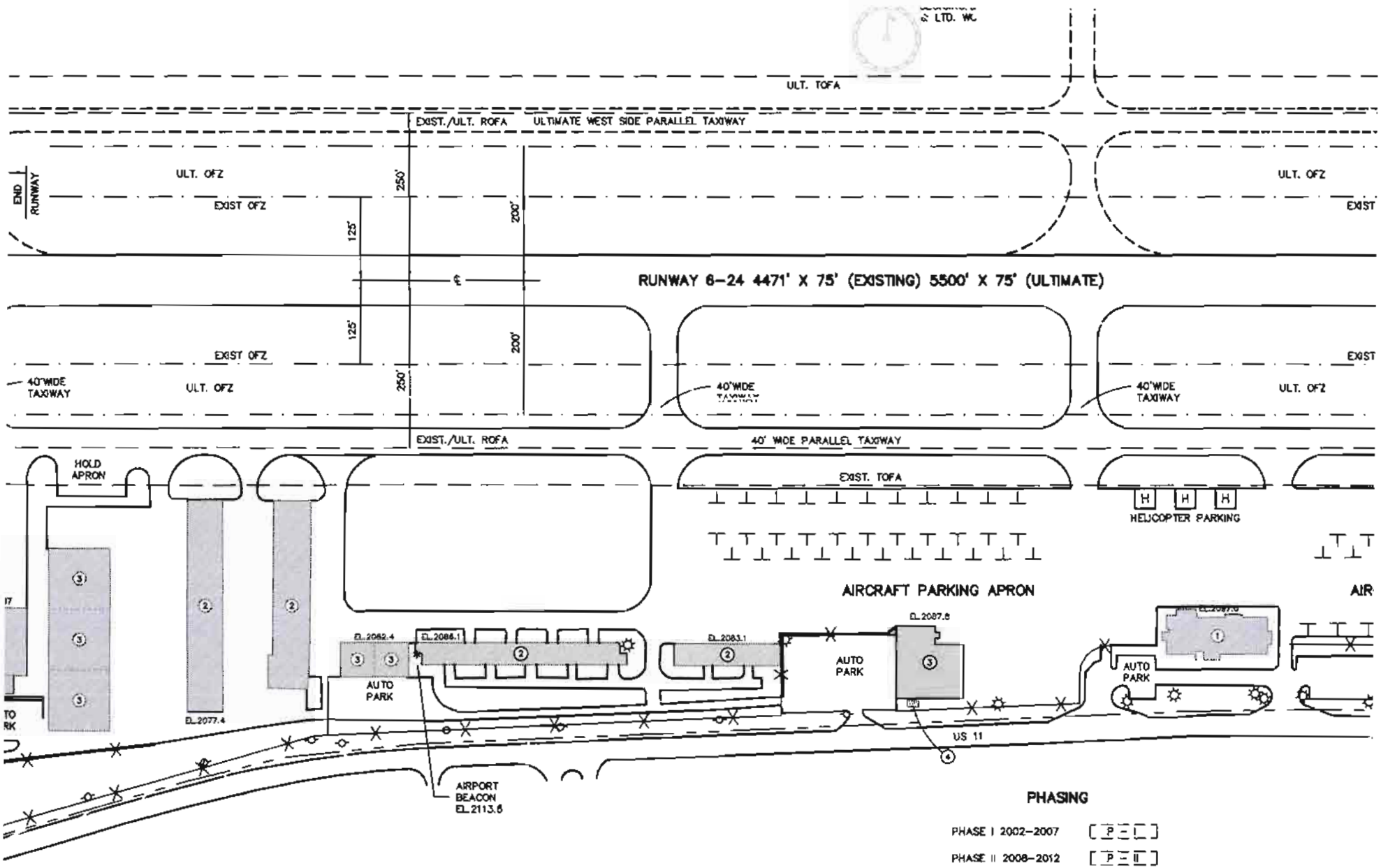
RUNWAY 24 VERTICAL ROAD

NO.	OBJECT DESCRIPTION	TOP ELEVATION	PART 77 SURFACE	SURFACE ELE EXISTING	
AA	JERRY LANE	2087'	34:1 APPROACH	2087.5'	
BB	JERRY LANE	2090'	34:1 APPROACH	2094'	
CC	JERRY LANE	2087'	34:1 APPROACH	2087.5'	
DD	SKYLINE DRIVE	2097'	34:1 APPROACH	2116'	
EE	SKYLINE DRIVE	2075'	34:1 APPROACH	2113.5'	
FF	U.S. ROUTE 11	2060.5'	34:1 APPROACH	2104'	
GG	SELF HILL DRIVE	2138'	34:1 APPROACH	2161'	
HH	SELF HILL DRIVE	2099'	34:1 APPROACH	2162.5'	
JJ	U.S. ROUTE 11	2072'	34:1 APPROACH	2137'	



NOTES:

1. NUMBER DENOTES OBSTRUCTIONS, DOUBLE LETTER DENOTES VERTICAL ROAD CLEARANCE.
2. ALL ELEVATIONS ARE IN ACCORDANCE WITH NATIONAL MAP ACCURACY STANDARDS. SPOT ELEVATIONS AND GROUND CONTOURS ARE DERIVED FROM AERIAL PHOTOGRAMMETRY AND ARE APPROXIMATE. GROUND SURVEYS ARE REQUIRED TO VERIFY ACCURACY OF OBSTRUCTIONS.
3. ALL ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL.
4. RUNWAY 6 APPROACH PROFILE IS PRESENTED AT A 1"=300' SCALE (HORIZONTAL) TO SHOW OBSTRUCTIONS WELL BEYOND THE EXISTING AND FUTURE RPZ's.
5. GROUND CONTOURS AND OBSTRUCTION ELEVATIONS ARE BASED UPON AERIAL PHOTOGRAPHY PREPARED BY:
   POTOMAC AERIAL SURVEYS, INC.
   FREDERICK COUNTY AIRPORT
   1319 BUCHEIMER ROAD
   FREDERICK, MARYLAND
6. FAR PART 77 REQUIRES THE FOLLOWING CLEARANCES:
   10 FEET ABOVE PRIVATE ROADS
   15 FEET ABOVE PUBLIC ROADS
   17 FEET ABOVE INTERSTATE HIGHWAYS
   23 FEET ABOVE RAILROADS
   ELEVATION = ACTUAL ROADWAY ELEVATION + FAR PART 77 CLEARANCE



PHASING

PHASE I 2002–2007 [P I]

PHASE II 2008–2012 [P II]

PHASE III 2013–2022 [P III]

ULTIMATE 2023–BEYOND [ULT.]

S DIMENSIONAL DATA

	EXISTING	S-I S-II S-III	ULTIMATE
	150'	— SAME —	SAME
	300'	— SAME —	SAME
	250'	SAME	400'
	200'	— SAME —	SAME
	EL 2238	— SAME —	SAME

NOTES

1. THERE ARE NO PLANNED MODIFICATIONS TO THE AIRPORT DESIGN STANDARDS WITHIN THE TERMINAL AREA.

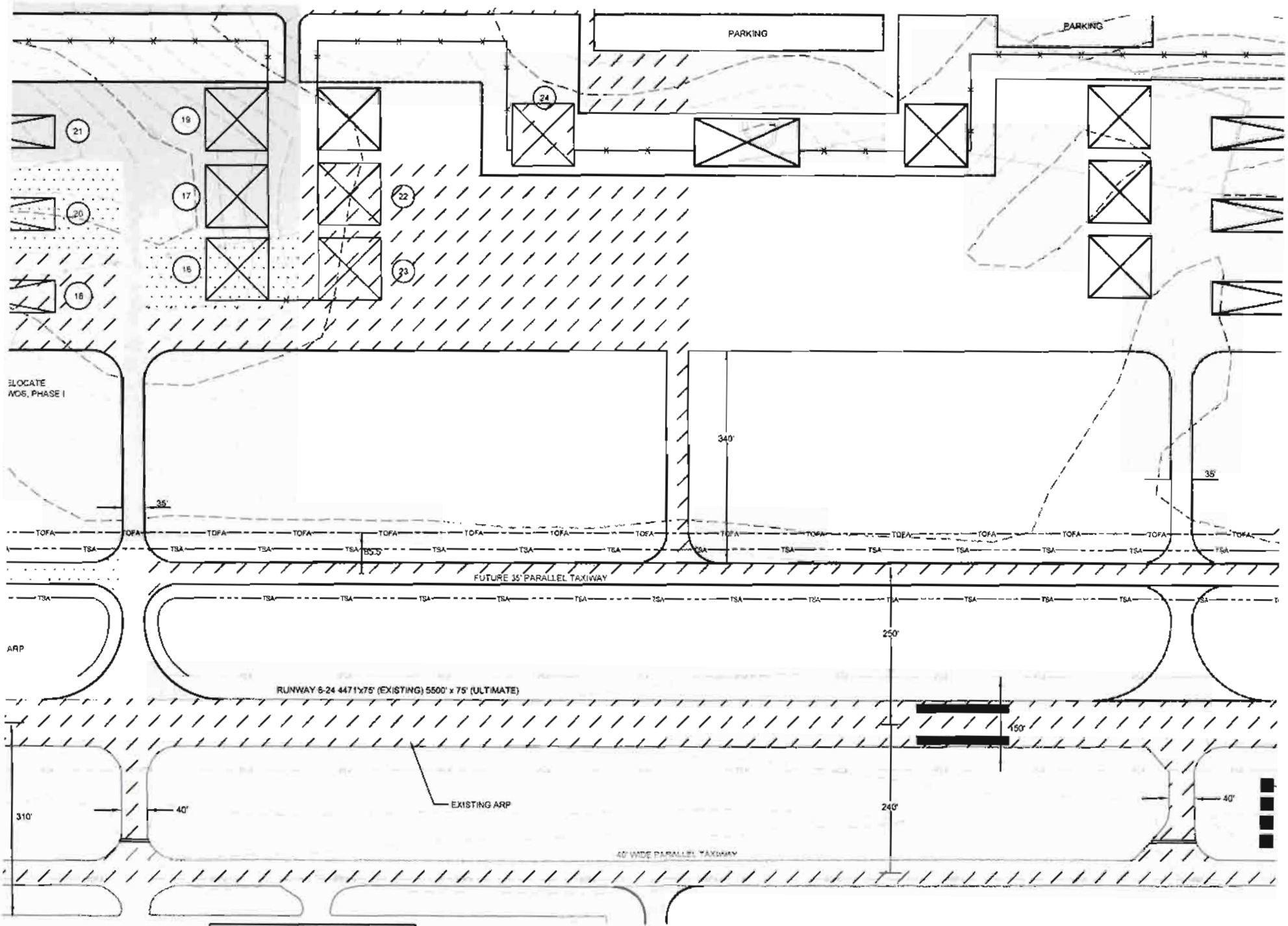
LEGEND		
ITEM	EXISTING	ULTIMATE

BUILDINGS

① TERMINAL

② T-HANGAR

③ CORPORATE HANGAR

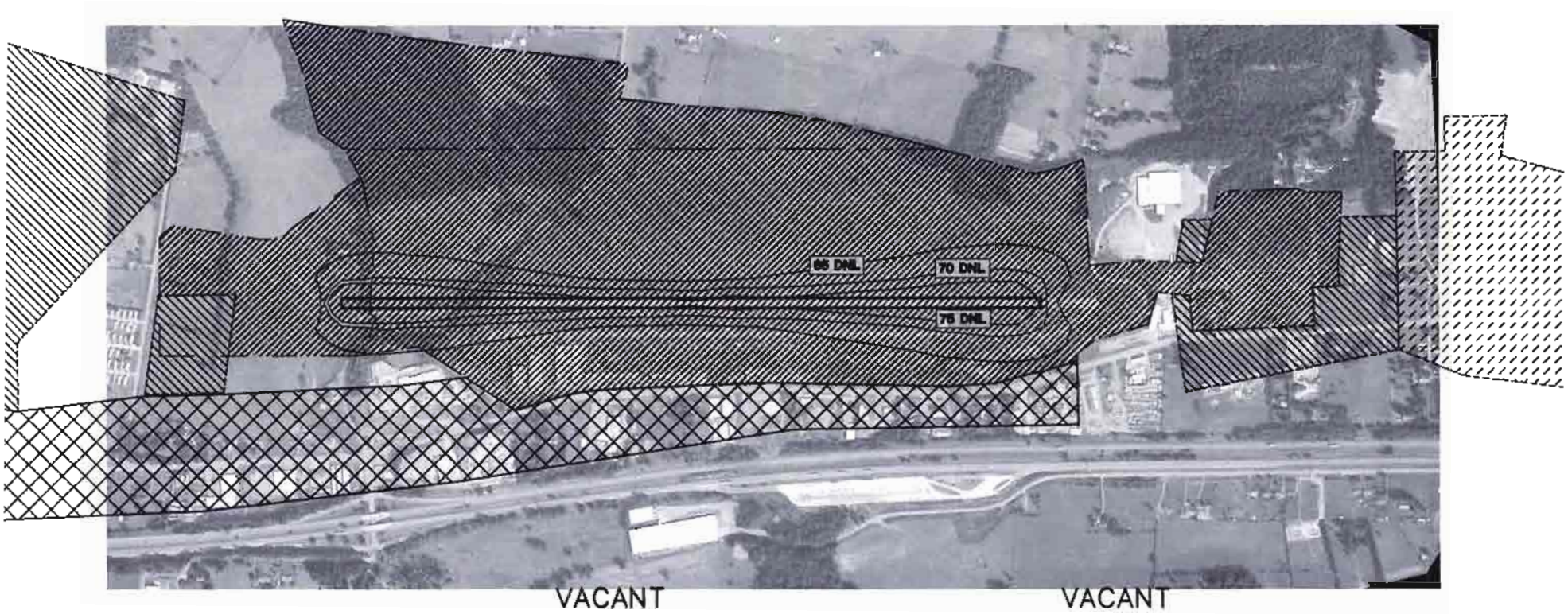


ND	
TION	PROPOSED

FACILITIES INDEX	
#	FACILITY NAME
16	CORPORATE HANGAR
17	CORPORATE HANGAR
18	T-HANGAR

RUNWAY DATA TABLE		
DESCRIPTION	EXISTING	FUTURE
RUNWAY OBJECT FREE AREA (ROFA)		
LENGTH BEYOND RUNWAY	300'/280'	300
		SAME

DEVELOPMENT PROGRAM	
PHASE I DEVELOPMENT (2000-2005)	
PHASE II DEVELOPMENT (2006-2010)	
PHASE III DEVELOPMENT (2011-2020)	
ULTIMATE DEVELOPMENT (BEYOND 2020)	



ECOMMENDED LAND USE COMPATIBILITY WITH YEARLY DAY–NIGHT AVERAGE SOUND LEVELS

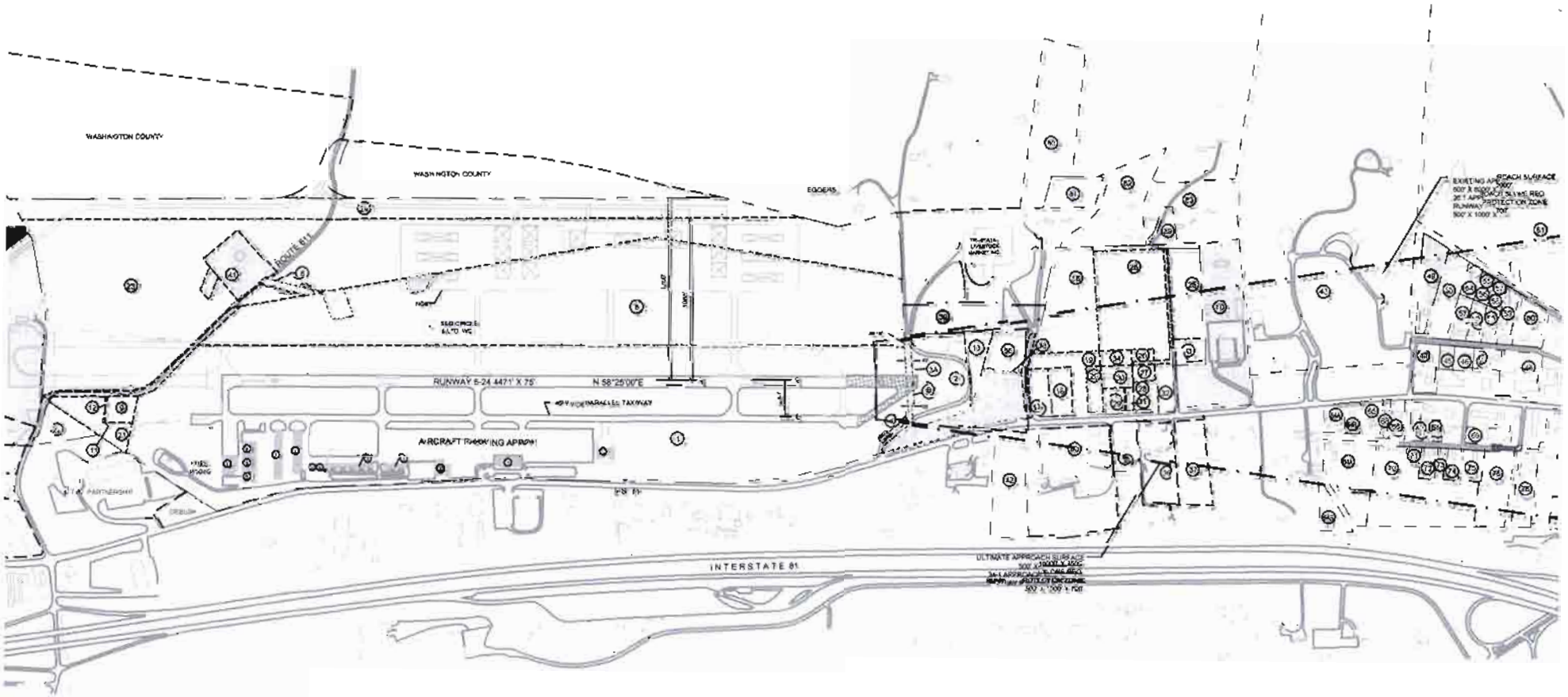
	YEARLY DAY–NIGHT AVERAGE SOUND LEVEL (Ldn) IN DECIBELS		
LAND USE	BELOW 65	65–75	OVER 75
RESIDENTIAL	Y	30	N
SCHOOLS	Y	30	N
HOSPITALS AND NURSING HOMES	Y	30	N
CHURCHES AND AUDITORIUMS	Y	30	N
GOVERNMENTAL SERVICES	Y	30	N
PARKING	Y	Y	Y
OFFICE USE	Y	30	N
WHOLESALE AND RETAIL	Y	Y	Y
MANUFACTURING	Y	Y	Y
AGRICULTURAL	Y	Y	Y
LIVESTOCK	Y	Y	N
OUTDOOR SPORTS ARENA	Y	Y	N
NATURE EXHIBITS AND ZOOS	Y	Y	N
PARKS, RESORTS, CAMPS	Y	Y	N

LEGEND

RESIDENTIAL

COMMERCIAL

MIXED USE, COMMERCIAL AND SCATTERED RESIDENTIAL



PHASING	BUILDINGS
PHASE I 2003-2007	1 TERMINAL
PHASE II 2008-2012	2 T-HANGAR
PHASE III 2013-2022	3 CORPORATE HANGAR
ULTIMATE 2023 BEYOND	

TA

SIGN MATERIALS BY CLIENT
THE REVIEW AND WRITTEN APPROVAL
RISK OF THE CLIENT. FURTHERMORE
D DESIGN PROFESSIONAL HARMLESS
XPENSES, AND ATTORNEY'S FEES
F THESE MATERIALS

T, INC., AS PART OF THE VIRGINIA
E OF THIS MAP IS TO DEPICT THE
T RELATIVE TO THE EXISTING AND
ANDS AIRPORT AND IS NOT THE RESULT
IGHT, INC. ALL PARCEL BOUNDARY AND
I THE CADD FILE 93108EXA.DWG, VIRGINIA
ENTS ALL KNOWN PROPERTY
ORT PREPARED BY DELTA AIRPORT
ISE APPROVED WITH ALL DISCLAIMERS
ALL OTHER PARTIES

X MAPS AND HAVE NOT BEEN SURVEYED
DWG) PREPARED BY TALBERT & BRIGHT
PROPERTY EXHIBIT

VIDED BY POTOMAC AERIAL SURVEY
VIDED BY WASHINGTON COUNTY GIS

NO.	REVISIONS	BY	APP.

634 D50			N/A		
634'419	51.96	158.84			
894'419			N/A		
894'419			0.80	0.92	
894'419			0.34	0.96	
704'680	0.73	159.52			
704'671			0.62	9.61	
713'129	19.09	156.39			
718'179	0.09	158.37			
754'650	1.10	160.47			
760'565	11.09	159.37			
769'660			5.75	15.36	
769'653			N/A		
832'946	5.43	164.16			
830'68	0.69	165.68			
1095'429	1.03	166.71			FINAL DECREE 1095/251
838'741	1.75	168.46			
836'741	0.57	169.13			
835'796	2.05	171.18			
840'847	1.36	172.54			
4 88'875	60.0	232.54			
4 88'875	15.2	247.74			
853'748	9.60	257.34			
828'485	0.37	257.71			
879'236	0.38	258.10			
875'220	0.84	258.93			
895'400	0.47	259.39			
906'815	0.74	260.04			
878'64	0.12	260.2			
885'632	0.72	260.91			
875'219	0.02	261.53			
883'588	0.46	262.01			
			1.02		PROPOSED AVIGATION EASEMENT
			2.53		" " "
			2.67		" " "
18A			N/A		
	4.25				PROPOSED FEE SIMPLE PART 77
			4.0		PROPOSED AVIGATION EASEMENT
	2.9				FAWE TRANSITION PHASE II
			5.2		PROPOSED AVIGATION EASEMENT
			75.54		" " "
			1.2		" " "
			0.4		" " "
			9.5		" " "
			2.73		" " "
			1.6		" " "
	3.5				PROPOSED FEE SIMPLE
			7.2		PROPOSED AVIGATION EASEMENT
			0.45		" " "
			9.4		" " "
			0.4		" " "
			0.4		" " "
			0.2		" " "
			9.2		" " "
			8.2		" " "
			0.2		" " "
			0.74		" " "
			9.16		" " "
			85.54		" " "
			37.01		" " "
			3.87		" " "
			1.34		" " "
			0.73		" " "
			1.18		" " "
			0.0		" " "
			0.3		" " "
			1.0		" " "
			3.0		" " "
			9.27		" " "
			0.50		" " "
			0.21		" " "
			0.50		" " "
			0.20		" " "
			3.0		" " "
			5.0		" " "
			5.7		PROPOSED AVIGATION EASEMENT
			2.0		" " "
			1.0		" " "
			4.36		" " "

90		[illegible]	[illegible]	[illegible]						
91		[illegible] GENT	PHASE I	PD			0.95			" " "
92		E H JOHNSON	PHASE I	PD			13.54			" " "
93		E H JOHNSON	PHASE I	PE					5.18	PROPOSED AVIGATION EASEMENT
94		[illegible]	PHASE I	PE					7.33	PROPOSED AVIGATION EASEMENT

PROPOSED EASEMENT
PROPOSED DEED

A. INTRODUCTION

This chapter details the various projects required for the development of the Virginia Highlands Airport over the 20-year planning period. These projects, by phase (time period), include estimates of probable construction costs in constant 2002 dollars. These estimates are intended as **order of magnitude costs only**. They represent not only construction costs, but allowances for incidental expenses such as engineering, administration, surveying, testing, and legal fees. Also, since these are order of magnitude estimates for planning purposes, a contingency amount was added to cover unforeseen conditions which may occur during actual development. This approach is an industry standard used to prepare preliminary estimates and it may reduce the likelihood of budget overruns when detailed design is completed and bids are received. More detailed project definitions and associated estimates must be developed prior to the implementation of any project identified herein.

The 20-year Airport Improvement Program has three (3) development phases:

- **PHASE I (2002-2007)**
- **PHASE II (2008-2012)**
- **PHASE III (2013-2022)**

Each development item is shown on the Airport Layout Plan and was discussed in Chapters Three, Four and/or Five. The phasing of the projects is a recommendation since changes in demand; local priorities, economy, or funding may alter the need or timing of any proposed project. This chapter also includes a funding description of the four (4) primary sources of funds.

B. FUNDING SOURCES

There are four (4) potential funding sources for development at Virginia Highlands Airport. These sources include the Federal Aviation Administration (FAA), the Virginia Department of Aviation (DOAV), local funding, and private developers.

1. Federal Aviation Administration

An aviation trust fund was created by Congress during the 1960s. Airline ticket fares, aviation fuel taxes, and other aviation "user" taxes have since been collected to provide capital resources for the trust fund. The FAA provides 95 percent funding for eligible items under the current Airport Improvement Program (AIP). The funding breakdown is based on a particular project's funding eligibility and does not represent a commitment of funds by the FAA. When AIP was last authorized, GA airports were included in the "entitlement" category, based on numbers of aircraft, up to the maximum of $150,000. Although this provision is anticipated in future legislation, it is not absolute.

2. Virginia Department of Aviation

The Virginia Department of Aviation administers funding for airport improvements for the Commonwealth of Virginia as authorized by the Virginia Aviation Board. Similar to the federal trust fund, funding from the State is derived from user fees (aircraft fuel tax and state sales tax on aircraft). On a larger scale, a percentage of gasoline tax is assigned to fund aviation infrastructure development.

The Virginia Department of Aviation can fund eighty (80) percent of the non-Federal share for AIP projects. It is the goal of the Commonwealth to assist airport sponsors in maximizing federal financial assistance to Virginia's airports. When an airport sponsor is not eligible for federal funding, or federal funds are not available, the Department may provide up to eighty (80) percent of the total eligible project costs. The Sponsor would then provide the remaining twenty (20) percent.

State funding for general aviation terminals can be up to 100 percent for "public use" space. Public use space includes all areas of the terminal building that are non-revenue producing such as lobby areas, conference rooms, rest rooms, and pilot lounges. Areas considered as revenue producing are office space, food service, and vending machine areas.

3. Local Funding

Local funding must be used to make up the balance after FAA and State participation has been established. When outside funding cannot be obtained, the Airport Commission can construct projects with local funding as long as they comply with the ALP. These funds have three (3) principal sources: airport revenues, taxes for the support of local government as a whole, and sale of general obligation bonds.

4. Private Funding

Private funding sources are usually relegated to the development of hangar facilities on land leased from the airport. These custom-built facilities are normally financed by the tenant(s) with the ownership of the facility reverting to airport ownership after a specified period, associated with investment authorization.

5. Funding Sources

The total development costs for the Virginia Highlands Airport is approximately $29,136,000. This development is projected to accommodate the aviation demand for the 20-year planning horizon. The following tables (**Table 6-1, 6-2, and 6-3**) contain the order of magnitude costs for Phases I, II, and III. **Table 6-4** contains a summary of all three (3) phases.

C. FAA REMARKS AND CONCLUSIONS

The CIP development program was revised on February 20, 2004 to reflect the increased cost associated with the 470 foot runway shift.

TABLE 6-1
VIRGINIA HIGHLANDS AIRPORT
PHASE I (2002-2007) DEVELOPMENT PROGRAM

NO.	PROJECT	TOTAL ESTIMATED COST	FAA ELIGIBLE	DOAV ELIGIBLE	MINIMUM LOCAL	PRIVATE AND OTHER
1	East Side Corporate Hangar (#15)	$ 1,400,000	$ -	$ 104,000	$ 26,000	$ 1,270,000
2	Construct Access Road (West)	$ 450,000	$ 427,500	$ 18,000	$ 4,500	$ -
3	West Side Site Prep & Connector Taxiway	$ 1,100,000	$ 1,045,000	$ 44,000	$ 11,000	$ -
4	Security Fencing West Side	$ 50,000	$ -	$ 45,000	$ 5,000	$ -
5	Two (2) West Side Corporate Hangars (#17, 19)	$ 3,400,000	$ -	$ 240,000	$ 60,000	$ 3,100,000
6	West Side T-Hangar (10 unit) (#21)	$ 500,000	$ -	$ 120,000	$ 380,000	$ -
7	Land Acquisition (Fee/Easements - Obstructions)	$ 600,000	$ 570,000	$ 24,000	$ 6,000	$ -
8	Obstruction Removal (34:1 Approach Trees)	$ 650,000	$ 617,500	$ 26,000	$ 6,500	$ -
9	Environmental Assessment (Runway 6 Extension)	$ 400,000	$ 380,000	$ 16,000	$ 4,000	$ -
10	Land Acquisition (Runway Extension)	$ 850,000	$ 807,500	$ 34,000	$ 8,500	$ -
11	Land Acquisition (Parcels 14, 15 and 87 - Wright)	$ 1,000,000	$ 950,000	$ 40,000	$ 10,000	$ -
12	Land Acquisition (Parcel 39 - Livestock Market)	$ 260,000	$ 247,000	$ 10,400	$ 2,600	$ -
13	Relocate State Route 611	$ 650,000	$ 617,500	$ 26,000	$ 6,500	$ -
	TOTAL PHASE I	$ 11,310,000	$ 5,662,000	$ 747,400	$ 530,600	$ 4,370,000

Source: Delta Airport Consultants, Inc. Analysis

ACIP – Airport Capital Improvement Project – Project is recommended for AIP funding

NPIAS – National Plan of Integrated Airport System – Project is eligible for AIP funding

TABLE 6-2
VIRGINIA HIGHLANDS AIRPORT
PHASE II (2008-2012) DEVELOPMENT PROGRAM

NO.	PROJECT	TOTAL ESTIMATED COST	FAA ELIGIBLE	DOAV ELIGIBLE	MINIMUM LOCAL	PRIVATE AND OTHER
1	West Side Corporate Hangar (#16)	$ 1,700,000	$ -	$ 136,000	$ 34,000	$ 1,530,000
2	Runway Extension (1,399' x 75')	$ 5,800,000	$ 5,220,000	$ 464,000	$ 116,000	$ -
3	West Partial Parallel Taxiway Construction	$ 2,000,000	$ 1,800,000	$ 160,000	$ 40,000	$ -
4	West Side T-Hangar (10 unit) (#20)	$ 700,000	$ 77,400	$ 216,640	$ 405,960	$ -
5	Security Fencing Runway/Taxiway Extension	$ 250,000	$ 237,500	$ 10,000	$ 2,500	$ -
6	Relocate Runway 6 Localizer (600' from Threshold)	$ 250,000	$ 237,500	$ 10,000	$ 2,500	$ -
7	Relocate/Upgrade AWOS-III	$ 120,000	$ 108,000	$ 9,600	$ 2,400	$ -
8	Relocate Runway 24 ODALS	$ 60,000	$ 57,000	$ 2,400	$ 600	$ -
9	Install Runway 6 PAPI-4/Relocate Runway 24 PAPI	$ 75,000	$ 71,250	$ 3,000	$ 750	$ -
10	Install REILs Runway 6	$ 50,000	$ 47,500	$ 2,000	$ 500	$ -
	TOTAL PHASE II	$ 11,005,000	$ 7,856,150	$ 1,013,640	$ 605,210	$ 1,530,000

Source Delta Airport Consultants, Inc. Analysis

ACIP – Airport Capital Improvement Project – Project is recommended for AIP funding

NPIAS – National Plan of Integrated Airport System – Project is eligible for AIP funding

TABLE 6-3
VIRGINIA HIGHLANDS AIRPORT
PHASE III (2013-2022) DEVELOPMENT PROGRAM

NO.	PROJECT	TOTAL ESTIMATED COST	FAA ELIGIBLE	DOAV ELIGIBLE	MINIMUM LOCAL	PRIVATE AND OTHER
1	Two (2) West Side Corporate Hangars (#22, 23)	$ 3,600,000	$ -	$ 400,000	$ 100,000	$ 3,100,000
2	Construct West Side Apron, Approx. 12,500 SY	$ 700,000	$ 630,000	$ 56,000	$ 14,000	$ -
3	Construct Access Road (West) Extension	$ 50,000	$ 45,000	$ 4,000	$ 1,000	$ -
4	Construct Auto Parking	$ 60,000	$ -	$ 38,640	$ 21,360	$ -
5	West Side Security Fencing	$ 110,000	$ 99,000	$ 8,800	$ 2,200	$ -
6	West Side T-Hangar (10 unit) (#18)	$ 550,000	$ 49,500	$ 122,380	$ 378,120	$ -
7	Maintenance Hangar (#24)	$ 1,600,000	$ -	$ 40,000	$ 10,000	$ 1,550,000
8	West Partial Parallel Taxiway Construction	$ 1,700,000	$ 1,530,000	$ 136,000	$ 34,000	$ -
9	Runway Overlay/Mark/Groove	$ 800,000	$ 720,000	$ 64,000	$ 16,000	$ -
10	Taxiway Overlay/Mark	$ 500,000	$ 450,000	$ 40,000	$ 10,000	$ -
12	Upgrade MIRL/MITL	$ 500,000	$ 450,000	$ 40,000	$ 10,000	$ -
	TOTAL PHASE III	$ 10,170,000	$ 3,973,500	$ 949,820	$ 596,680	$ 4,650,000

Source: Delta Airport Consultants, Inc. Analysis

ACIP – Airport Capital Improvement Project – Project is recommended for AIP funding

NPIAS – National Plan of Integrated Airport System – Project is eligible for AIP funding

TABLE 6-4
VIRGINIA HIGHLANDS AIRPORT
TOTAL DEVELOPMENT PROGRAM

NO.	PROJECT	TOTAL ESTIMATED COST	FAA ELIGIBLE	DOAV ELIGIBLE	MINIMUM LOCAL	PRIVATE AND OTHER
1	PHASE I	$ 11,310,000	$ 5,662,000	$ 747,400	$ 530,600	$ 4,370,000
2	PHASE II	$ 11,005,000	$ 7,856,150	$ 1,013,640	$ 605,210	$ 1,530,000
3	PHASE III	$ 10,170,000	$ 3,973,500	$ 949,820	$ 596,680	$ 4,650,000
	TOTAL	$ 32,485,000	$ 17,491,650	$ 2,710,860	$ 1,732,490	$ 10,550,000

Source: Delta Airport Consultants, Inc. Analysis

ACIP – Airport Capital Improvement Project – Project is recommended for AIP funding

NPIAS – National Plan of Integrated Airport System – Project is eligible for AIP funding

Appendix A

Glossary of Terms

Delta Airport Consultants, Inc.

GLOSSARY OF TERMS

A

A-Weighted Sound Level (dBA):-The ear does not respond equally to sound frequencies. It is less efficient at low and high frequencies than it is at medium or speech-range frequencies. Thus, to obtain a single number representing the sound level of a noise having a wide range of frequencies in a manner representative of the ear's response, it is necessary to reduce the effects of the low and high frequencies with respect to the medium frequencies. The resultant sound level is said to be A-weighted, and the units are decibels (dB); hence, the abbreviation is dBA. The A-weighted sound level is also called the noise level. Sound level meters have an A-weighting network for measuring A-weighted sound level.

Access Taxiway: A taxiway that provides access to a particular location or area.

Active Based Aircraft: Aircraft that have a current airworthiness certificate and are based at an airport.

Actual Runway Length: The length of full width, usable runway from end to end or full strength pavement where those runways are paved.

Administration Building: A building or buildings accommodating airport administration activity and public facilities for itinerant and local flying, usually associated with general aviation fixed base operations.

Administration Space: The space including, but not limited to, space for offices, cafeterias, conference rooms, lobbies, waiting rooms, garages, parking lots.

Advisory Circular: A series of FAA publications consisting of all nonregulatory material of a policy, guidance, and informational nature.

Aeronautical Chart: A map representing a portion of the earth, made especially for use in air navigation.

AFSS (Automated Flight Service Station) A (non-air traffic control) FAA facility providing pilots with weather briefing and flight-plan filing by radio, telephone and in person. Monitors flight plans for overdue aircraft and initiates search and rescue services. "Automated" refers to telephone call handling equipment and computer information systems aiding pilot briefers.

Air Cargo: All commercial air express and air freight except air mail and air parcel post.

Air Carrier Airport: An airport (or runway) designated by design and/or use for air carrier operations.

Air Carrier – All Cargo: A certificated route air carrier authorized to perform scheduled air freight, express, and mail transportation service as well as the conduct of nonscheduled operations (which may include passengers over specified routes).

Air Carrier – Certificated Route: An air carrier holding a Certificate of Public Convenience and Necessity issued to conduct scheduled services over specified routes and a limited amount of nonscheduled operations.

GLOSSARY OF TERMS

Air Carrier – Commuter: An air taxi operator which: (1) performs at least five round trips per week between two or more points and publishes flight schedules that specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air under a current contract with the U.S. Postal Service.

Air Carrier – Intrastate: An air carrier licensed by a state to operate wholly within its borders but not permitted to carry interline passengers from out of state.

Aircraft Approach Category: A grouping of aircraft based on 1.3 times their stall speed in their landing configuration at their maximum certificated landing weight.

Aircraft Design Group (ADG): A grouping of airplanes based on wingspan.

Aircraft Operations: The airborne movement (landing or taking off) of aircraft. There are two types of operations – local and itinerant.

1. Local operations are performed by aircraft that:
    a. Operate in the local traffic pattern or within sight of the airport.
    b. Are known to be departing for, or arriving from, flight in local practice areas within a 20-mile radius of the airport.
    c. Execute simulated instrument approaches or low passes at the airport.
2. Itinerant operations are all aircraft operations other than local operations.

Aircraft Rescue And Fire Fighting (ARFF): The aircraft rescue and fire fighting capability required at airports under Federal Aviation Regulations (FAR) Part 139.

Aircraft Tiedown: Positions on the ground surface that are available for securing aircraft.

Airfield Capacity (Hourly): The maximum number of aircraft operations (landings or takeoffs) that can take place on an airfield in one hour under specific conditions.

Air Freight: A system or service set up for the carrying of freight by air.

Airman's Meteorological Information (AIRMET): An in-flight weather advisory concerning weather phenomena of less severity than that covered by SIGMETs, which are potentially hazardous to certain aircraft, e.g., those having limited equipment, instrumentation, or pilot qualifications. These advisories cover moderate icing and turbulence, winds of 40 knots or more within 2,000 feet of the surface, and the initial onset of visibilities less than 2 miles or ceilings less than 1,000 feet.

Air Navigation Facility (NAVAID): Any facility used or designed for use as an aid to air navigation.

Airport: An area of land or water that is used or intended to be used for the landing and takeoff of aircraft, including its buildings and facilities. (FAR Part 1)

GLOSSARY OF TERMS

Airport Advisory Service (AAS): A service provided by flight service stations at airports not served by a control tower. This service consists of providing information to landing and departing aircraft concerning wind direction and velocity, favored runway, altimeter setting, pertinent known traffic, pertinent known field conditions, airport taxi routes and traffic patterns, and authorized instrument approach procedures.

Airport Beacon: A navigational aid emitting alternating white and green flashes to indicate a lighted airport or white flashes only for an unlighted airport.

Airport Elevation: The highest point on an airport's usable runways expressed in feet above mean sea level (MSL).

Airport Environs: The area surrounding an airport that is considered to be directly affected by the presence and operation of the airport.

Airport Imaginary Surfaces: Imaginary surfaces established at an airport for obstruction determination purposes.

Airport Improvement Program (AIP): A program administered by the Federal Aviation Administration to provide financial grants-in-aid for airport planning, airport development projects, and noise compatibility programs. The program was established through the Airport and Airway Improvement Act of 1982, which was incorporated as Title V of the Tax Equity and Fiscal Responsibility Act of 1982 (P.L. 97-248).

Airport Land Use Plan: A generalized plan depicting proposed land uses within the airport boundary. The land use plan is a required element of an airport master plan.

Airport Layout Plan (ALP): The plan for an airport showing the layout of existing and proposed airport facilities and structures.

Airport Master Plan: Appropriate documents and drawings concerning the development of a specific airport from a physical, economic, social, and political jurisdictional perspective. The airport layout plan is a part of this plan.

Airport Operation: A landing or a takeoff at an airport. (A low approach below traffic pattern altitude or a touch-and-go operation are counted as both a landing and a takeoff; i.e., two operations.)

Airport Reference Point (ARP): The airport reference point is the latitude and longitude of a point that is the approximate center of all existing and proposed landing and takeoff areas.

Airport Sponsor: A public agency or tax-supported organization such as an airport authority, that is authorized to own and operate an airport, obtain property interests, obtain funds, and be legally, financially, and otherwise able to meet all applicable requirements of current laws and regulations.

Airport System Planning: The development of information and guidance to determine the extent, type, nature, location, and timing of airport development needed to establish a viable and balanced system of public airports.

GLOSSARY OF TERMS

Airports Closed to the Public: An airport not available to the public without permission from the owner.

Airports Open to the Public: An airport open to the public without prior permission and without restrictions within the physical capacities of available facilities.

Air Route: Navigable airspace between two points which is identifiable.

Air Route Surveillance Radar (ASR): A remote radar facility connected to an air route traffic control center and used to detect and display the azimuth and range of enroute aircraft operating between terminal areas, enabling the ATC controller to provide air traffic control services in the air route traffic control system.

Air Route Traffic Control Center (ARTCC): A facility that provides air traffic control service to aircraft operating on an IFR flight plan within controlled airspace.

Airspace: Space in the air above the surface of the earth or a particular portion of such space, usually defined by the boundaries of an area on the surface projected upward.

Air Traffic: Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas. (FAR Part 1)

Air Traffic Control (ATC): A service operated by appropriate authority to promote the safe, orderly, and expeditious flow of air traffic. (FAR Part 1)

Air Traffic Hub: Air traffic hubs are not airports; they are the cities and Standard Metropolitan Statistical Areas requiring aviation services. Communities fall into four classes as determined by each community's percentage of the total enplaned passengers in scheduled and nonscheduled service of the domestic certificated air carriers in the 50 states, the District of Columbia, and other U.S. areas designed by the Federal Aviation Administration. The four hub types are: "L" (large), "M" (medium), "S" (small), and "N" (non-hub).

Airway: A path through navigable airspace within which air traffic service is provided.

Alignment (Azimuth): The azimuth or actual magnetic bearing of a course.

Alignment (Elevation): The actual angle above a horizontal plane, originating at a specific point of a course used for altitude guidance.

Alternate Airport: An airport where an aircraft, may land if a landing at the intended airport becomes inadvisable. (FAR Part I)

Ambient Noise-The total of all noise in a system or situation, independent of the presence of the specific sound to be measured. In acoustical measurements, strictly speaking, ambient noise means electrical noise in the measurement system. However, in popular usage, ambient noise is also used to mean "background noise" or "residual noise."

Approach Area: The defined area over which landing and takeoff operations are made.

Approach Clearance: Authorization issued by air traffic control to the pilot of an aircraft for an approach for landing under Instrument Flight Rules.

Approach Control Facility: A terminal air traffic control facility (TRACON, CST, RAPCON, RATCF, Tower, etc.) providing approach control service.

Approach Fix: The fix from or over which final approach (IFR) to an airport is executed.

Approach Gate: That point on the final approach course which is one mile from the approach fix on the side away from the airport or five miles from the landing threshold, whichever is farther from the landing threshold.

Approach Lighting System (ALS): An airport lighting facility that emits radiating light beams in a directional pattern by which the pilot aligns the aircraft with the runway on his final approach and landing.

Approach Path: A specific flight course laid out in the vicinity of an airport and designed to bring aircraft in to safe landings; usually delineated by navigational aids.

Approach Slope Ratio: The ratio of horizontal to vertical distance indicating the degree of inclination of the approach surface.

Approach Sequence: The order in which aircraft are positioned while awaiting approach clearance or while on approach.

Approach Surface: An imaginary surface longitudinally centered on the extended centerline of the runway, beginning at the end of the primary surface and rising outward and upward to a specified height above the established airport elevation.

Apron: A defined area, on a land airport, intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking, or maintenance.

Area Navigation (RNAV): A method of navigation that permits aircraft operations on any course within the coverage of available navigation signals or within the limits of self contained-system capability. (FAR Part 1)

Area Navigation Low Route: Means an area navigation route within the airspace extending upward from 1,200 feet above the surface of the earth to, but not including 18,000 feet MSL. (FAR Part 1)

Area Navigation High Route: Means an area navigation route within the airspace extending upward from, and including 18,000 feet MSL to flight level 450. (FAR Part 1)

ASOS (Automated Surface Observation System) The primary surface weather observing system in the U.S., supporting aviation operations and weather forecasting. Automated sensors record wind direction and speed, visibility, cloud ceiling, precipitation, etc. Data sent automatically to the National Weather Service. At many locations, a computer-generated voice broadcasts the minute-

by-minute weather reports to pilots on a discrete radio frequency.

ATIS (Automated Terminal Information System) A continuous broadcast on a separate ATC frequency of an airport's current weather (updated at least hourly). Eliminates controller requirement to read local weather data to each landing or departing aircraft.

Automated Radar Terminal Systems (ARTS): Computer-aided radar display capable of associating alphanumeric data with radar returns.

Automatic Direction Finder (ADF): A radio device that uses radio transmissions from ground stations to automatically indicate the bearing of an aircraft in relation to the ground transmitter.

Automatic Terminal Information Service (ATIS): The repetitive transmission of recorded noncontrolling information in selected high activity terminal areas.

Avigation Easement: A grant of property interest in land over which a right of unobstructed flight in the airspace is established.

Aviation Safety And Noise Abatement Act Of 1979: Public Law 96-193, enacted February 18,1980. The purpose of the Act is to provide assistance to airport sponsors in preparing and carrying out noise compatibility programs and in assuring continued safety for aviation. The Act also contains the requirement for certain types of aircraft to comply with FAR Part 36, *Noise Standards: Aircraft Type and Airworthiness Certification.*

AWOS (Automated Weather Observing System) Provides automated airport weather observations to pilots on a discrete radio frequency via a computer-generated voice. Less sophisticated than ASOS, usually installed using state funds.

B

Base Leg: A flight path in the traffic pattern at, right angles to the landing runway off the approach end and extending from the downwind leg of the extended runway centerline.

Bearing: The horizontal direction of an object or point, measured as an angle, usually clockwise, from true or magnetic north through 360 degrees.

Blast Fence: A barrier used to divert or dissipate jet blast or propeller wash.

Building Restriction Line (BRL): A line shown on the airport layout plan beyond which airport buildings must not be positioned in order to limit their proximity to aircraft movement areas and impact on airport imaginary surfaces.

Bypass Taxiway: A taxiway located adjacent to an area that accommodates moving or parked aircraft specifically designed to achieve efficient aircraft passing movements.

C

Capital Improvement Program (CIP): A multiyear (sometimes a single year) schedule of capital expenditures for construction or equipment at an airport.

Category II Operations: An aircraft operation using a straight-in ILS approach to the runway of an airport under a Category II ILS instrument approach procedures.

Ceiling: Means the height above the surface of the earth of the lowest layer of clouds or obscuring phenomena that is reported as "broken," "overcast," or "obscuration."

CEQ (Council On Environmental Quality) Regulations: CEQ Regulations implementing the National Environmental Policy Act of 1969 (NEPA) were published in the Federal Register on November 29,1978. References to the Regulations in FAA Order 5050.4A *(Airport Environ-mental Handbook)* identify a given section, e.g., CEQ 1500 or CEQ 1508.8.

Circling Approach Area: An area in which aircraft circle to land under visual conditions after completing an instrument approach.

CLASS A Airspace: Airspace between 18,000 and 60,000 feet MSL over the conterminous United States. IFR clearances are required for all aircraft operating in CLASS A airspace. Formerly called the Positive Control Area.

CLASS B Airspace: Airspace area around the businest U.S. hub airports, typically toa radious of 20 nautical miles and up to 10,000 feet above ground level. Operations within CLASS B airspace require an ATC clearance and at least a Private pilot certificate (local waivers available), radio communication, and an altitude-reporting (Mode C) transponder. Formerly called TCA.

CLASS C Airspace: Airspace area around busy U.S. Airports (other than CLASS B). Radio contact with approach control is mandatory for all traffic. Typically includes an area from the surface to 1,200 feet AGL out to 5 miles and from 1,200 to 4,000 feet AGL to 10 miles from the airport. Formerly called Airport Radar Service Area (ARSA).

CLASS D Airspace: Airspace around an airport with an operating control tower; typically to a radius of 5 miles from the surface to 2,500 feet AGL. Radio contact with the control tower required prior to entry. Formerly call Airport Traffic Area (ATA).

CLASS E Airspace: General controlled airspace comprising control areas, transition areas, Victor airways, the Continental Control Area, etc.

CLASS F Airspace: International airspace designation not used in the U.S.

CLASS G Airspace: Uncontrolled airspace, generally the airspace from the surface up to 700 or 1,200 feet AGL in most of the U.S., but up to as high as 14,500 feet in some remote Western and sparsely populated areas.

Co-Location: To place coaxially oriented components such as in a VOR and a T ACAN one above the other or a VOR/DME combination.

Compass Calibration Pad: An airport facility for calibrating an aircraft compass.

Conical Surface: A surface extending from the periphery of the horizontal surface outward and upward at a slope of 20:1 as prescribed by FAR Part 77.

Continental Control Area: The continental control area consists of the airspace of the 48 contiguous states; the District of Columbia and Alaska, excluding the Alaska peninsula west of Longitude 160 degrees 00' 00" W., at and above 14,500 feet MSL, but does not include:

a. The airspace less than 1,500 feet above the surface of the earth; or

b. Prohibited and restricted areas, other than the restricted areas listed in FAR Part 71 Subpart D.

Controlled Airspace: Airspace within which aircraft may be subject to air traffic control.

Control Zone: Airspace extending upward from the surface of the earth which may include one or more airports and is normally a circular area of five statute miles in radius with extensions where necessary to include instrument approach and departure paths.

Coverage: The designated volume of airspace within which reliable information is produced by a facility.

Critical Aircraft: In airport design, the aircraft that controls one or more design items such as runway length, pavement strength, lateral separation, etc., for a particular airport. The same aircraft may not be critical to all design items.

Crosswind: A wind blowing across the line of flight of an aircraft.

Crosswind Runway: A runway that provides for wind coverage not adequately provided by the primary runways.

CTAF (Common Traffic Advisory Frequency) The radio frequency, also called the UNICOM frequency, used by all traffic at an airport without an operating control tower to coordinate approaches and landings, takeoffs and departures. Pilots announce their positions, intentions and actions in the traffic pattern for the benefit of other traffic.

D

Day-Night Average Sound Level (DNL): A method for predicting, by a single number rating, cumulative aircraft noise that affects communities in airport environs. The DNL value represents decibels of noise as measured by an A-weighted sound-level meter. In the DNL procedure, the noise exposure from each aircraft takeoff or landing at ground level around an airport is calculated, and these noise exposures are accumulated for a typical 24-hour period. (The 24-hour period often used is the average day of the peak month for aircraft operations

during the year being analyzed.) Daytime and nighttime noise exposures are considered separately. A weighting factor equivalent to a penalty of 10 decibels is applied to \ operations between 10 p.m. and 7 a.m. to account for the increased sensitivity of people to nighttime noise. The DNL values can be expressed graphically on maps using either contours or grid cells. DNL may also be used for measuring other noise sources, such as automobile traffic, to determine combined noise effects.

dBA: See A-Weighted Sound Level.

Decibel (dB): A unit for measuring the volume of a sound, equal to the logarithm of the ratio of the intensity of the sound to the intensity of an arbitrarily chosen standard sound.

Decision Height (DH): The height at which a decision must be made, during an ILS or PAR instrument approach, to either continue the approach or to execute a missed approach. (FAR Part 1)

de minimis: *Below* the level of significance requiring formal determination of project conformity.

Designated Instrument Runway: A runway that has been selected as being suitable for the installation of a precision approach aid such as an ILS, for which there is an existing or forecast need.

DF Fix: The geographical location of an aircraft obtained by the direction finder.

Direction Finder (DF, VDF, UVD): A radio receiver equipped with a directional sensing antenna used to take bearings on a radio transmitter.

Displaced Threshold: A threshold that is located at a point on the runway other than the beginning.

Distance Measuring Equipment (DME): Electronic equipment used to measure, in nautical miles, the slant range of the aircraft from a navigation aid.

DME Fix: A geographical position determined by reference to a navigational aid which provides distance and azimuth information as defined by a specified distance in nautical miles and a radial in degrees magnetic from that aid.

DME Separation: Spacing of aircraft in terms of distance (miles) determined by reference to distance measuring equipment. (DME).

E

Enplaned Passengers: The total number of revenue passengers boarding aircraft, including originating, stopover, and transfer passengers, in scheduled and nonscheduled services.

En Route Air Traffic Control Service: Air traffic control service provided aircraft on an IFR flight plan when these aircraft are operating between departure and destination terminal areas.

Environmental Assessment (EA): A statement prepared under the requirements of the National Environmental Policy Act of 1969 (NEPA), Section 102(2) (c). The EA represents a Federal agency's evaluation of the effects of a proposed action on the environment. Regulations relating to the preparation of an EA are published in FAA Order

5050.4A, *Airport Environmental Handbook.*

Exit Taxiway: A taxiway used as an exit from a runway to another runway, apron, or other aircraft operating area.

F

FAA (Federal Aviation Administration) The Department of Transportation's agency for aviation. In addition to regulating airports, aircraft manufacturing and parts certification, aircraft operation and pilot certification ("licensing"), the FAA operates Air Traffic Control, purchases and maintains navigation equipment, certifies airports and aids airport development, among other activities.

FAA Order 5050.4A: This document, entitled *Airport Environmental Handbook,* was published by the FAA on October 8,1985. It contains all of the essential information an airport sponsor needs to meet both procedural and substantive environmental requirements.

FAR (Federal Aviation Regulations) Commonly used term for the rules and regulations covering every aspect of aviation. Codified into Parts.

FAR PART 36: Federal Aviation Regulations Part 36, *Noise Standards: Aircraft Type and Airworthiness Certif1cation.* Establishes noise standards for the civil aviation fleet. Some extensions for compliance are included in the Aviation Safety and Noise Abatement Act of 1979.

FAR PART 77: Federal Aviation Regulations Part 77, *Objects Affecting Navigable Airspace.* Establishes standards for determining obstructions and conducting aeronautical studies to determine the potential effects of obstructions on air- craft operations. Objects are considered to be obstructions to air navigation according to FAR Part 77 if they would exceed certain heights or penetrate certain imaginary surfaces established in relation to airports. Objects classified as obstructions are subject to an aeronautical study by the FAA to determine their potential effects on aircraft operations.

FAR PART 91: Federal Aviation Regulations Part 91, *General Operating and Flight Rules.* On September 25,1991, the FAA issued an amendment to FAR Part 91 (14CFR91) in conformance with the requirements of the Airport Noise and Capacity Act of 1990. The amendment to the aircraft operating rules requires a phased transition to an all Stage 3 fleet operating in the 48 contiguous United States and the District of Columbia by December 31, 1999. The amendment places a cap on the number of Stage 2 aircraft allowed to operate in the United States and provides for a continuing reduction in the population exposed to noise from Stage 2 aircraft.

FAR PART 15O: -Federal Aviation Regulations Part 150, *Airport Noise Compatibility Planning.* An FAR Part 150 Program is an FAA-assisted study designed to increase the compatibility of land and facilities in the areas surrounding an airport that are most directly affected by operation of the airport. The specific purpose is to reduce the adverse effects of noise as much as possible by implementing both on-airport noise abatement measures and off-airport noise mitigation programs. The basic

products of an FAR Part 150 program typically include (1) noise exposure maps for the existing condition and for 5 years in the future; (2) workable on-airport noise abatement measures, such as preferential runway use programs, new or preferential flight tracks, curfews; (3) off-airport noise mitigation measures (land use control programs and regulations), such as land acquisition, soundproofing, or special zoning; (4) an analysis of the costs and the financial feasibility of the recommended measures; and (5) policies and procedures related to the implementation of on- and off-airport programs. A community involvement program is carried on throughout all phases of program development.

Federal Aviation Administration (FAA): The FAA is the agency of the U.S. Department of Transportation that is charged with (1) regulating air commerce to promote its safety and development; (2) achieving the efficient use of navigable airspace of the United States; (3) promoting, encouraging, and developing civil aviation; (4) developing and operating a common system of air traffic control and air navigation for both civilian and military aircraft; and (5) promoting the development of a national system of airports.

Final Approach Area(s): Areas of defined dimensions protected for aircraft executing instrument approaches.

Final Approach (IFR): The flight path of an aircraft that is inbound to the airport on an approved final instrument approach course, beginning at the final approach fix or point.

Final Approach (VFR): A flight path of a landing aircraft in the direction of landing along the extended runway centerline.

Flight Track: The average flight path flown by aircraft within specific corridors. Deviation from these tracks occurs because of weather, pilot technique, air traffic control, and aircraft weight. Individual flight tracks within a corridor are "averaged" for purposes of modeling noise exposure using the Integrated Noise Model (INM).

G

General Aviation: The 92% of U.S. aircraft and more than 65% of U.S. flight hours flown by other than major and regional airlines or the military. Often misunderstood as only small, propeller-driven aircraft. Even a large corporate jet or cargo plane operated under FAR Part 91 can be a general aviation aircraft.

General Aviation Aircraft: all civil aircraft except those used by air carriers.

Glide Slope (GS): An ILS navigation facility providing vertical guidance for aircraft during approach and landing.

GPS (Global Positioning System) Satellite based navigation system operated by Department of Defense, providing extremely accurate position, time, and speed information to civilian and military users. Based on a "constellation" of 24 satellites, GPS will replace ground-based navigation system (VOR, ILS) as the primary worldwide air navigation system in the 21st Century.

Ground Controlled Approach (GCA): A radar landing system operated from the

ground by air traffic control personnel transmitting instructions to the pilot by radio.

H

Handoff: Passing control of an aircraft from one controller to another.

Holding Apron: (see holding bay)

Holding Bay: An area where aircraft can be held, or bypassed, to facilitate efficient ground traffic movement.

Holding Point: A designated point or location, identifiable by the pilot by visual reference to the ground or by NAVAJOs, near which he maneuvers his aircraft while awaiting further clearance.

I

IFR Airport: An airport with an authorized approach procedure.

IFR Conditions: Weather conditions below the minimums for flight under visual flight rules. (FAR Part 1)

ILS Category I: An ILS that provides acceptable guidance information from the coverage limits of the ILS to the point at which the localirer course line intersects the glide path at a height of 100 feet above the horizontal plane containing the runway threshold. A Category I ILS supports landing minimums as low as 200 feet, HAT and 1800 RVR.

ILS Category II: An ILS that provides acceptable guidance information from the coverage limits if the ILS to the point at which the localirer course line intersects the glide path at a height of 50 feet above the horizontal plane containing the runway threshold. A category II ILS supports landing minimums as low as 100 feet, HAT and 1200 RVR.

ILS Category III: An ILS that provides acceptable guidance information from the coverage limits if the ILS with no decision height specified above the horizontal plane containing the runway threshold. (See ILS-CA T III A operations.)

ILS-CAT III A Operations: Operation, with no decision height limitation, to and along the surface of the runway with a runway visual range not less than 700 feet.

Impact: In environmental analyses, the word "impact" is used to express the extent or severity of an environmental problem, e.g., the number of persons exposed to a given noise environment. As indicated in CEQ 1500 (Section 1508.8), impacts and effects are considered to be synonymous. Effects or impacts may be ecological, aesthetic, historic, cultural, economic, social, or health related, and they may be direct, indirect, or cumulative.

Inner marker (IM): An ILS navigational facility that indicates to the pilot, both aurally and visually, that he is directly over the facility at an altitude of 100 feet on final ILS approach, providing he is on the glide path.

Instrument Approach: An approach to an airport, with intent to land, when the visibility is less than 3 miles and/or when the ceiling is at or below the minimum initial altitude.

Instrument Approach Runway: A runway served by an electronic aid providing directional guidance adequate for a straight-in approach.

Instrument Approach System: An air navigation system used to guide aircraft to a safe landing beginning at an initial-approach point and ending at a point near enough to the ground to permit a visual landing.

Instrument Flight Rules (IFR): FAR rules that govern the procedures for conducting instrument flight. (FAR Part 91)

Instrument Landing System (ILS): A system that provides the lateral, longitudinal, and vertical guidance necessary for a landing.

Instrument Operation: An aircraft operation in accordance with an IFR flight plan or an operation where IFR separation between aircraft is provided by a terminal control facility or air route traffic control center.

Instrument Runway: A runway equipped with electronic and visual navigation aids and for which a straight-in (precision or non-precision) approach procedure has been approved or is planned.

Integrated Noise Model (INM): A computer model developed by the FAA and required by the FAA for use in environmental assessments, environmental impact statements, and FAR Part 150 studies for developing existing and future aircraft noise exposure maps.

K

KNOT (nautical mile per hour) Most common measure of aircraft speed. 100 knots equals 115 statute miles per hour. (For mph, multiply knots by 1.15.)

L

LAAS (Local Area Augmentation System) An enhancement of the Global Positioning Sytem (GPS) providing greater navigation accuracy and system integrity.

Land Use Compatibility Assurance: Documentation provided by an airport sponsor to the FAA. The documentation is related to an application for an airport development grant. Its purpose is to assure that a reasonably appropriate action, including the adoption of zoning laws, has been taken or will be taken to restrict the use of land adjacent to the airport or in the immediate vicinity of the airport. Such uses are limited to activities and purposes compatible with normal airport operations, including the landing and takeoff of aircraft.

Large Airplane: An airplane of more than 12,500 pounds maximum certificated takeoff weight.

Localizer (LOC): An ILS navigation facility providing horizontal guidance to the runway centerline during approach and landing.

Localizer Type Directional Aid (LDA): A facility of comparable utility and accuracy to a localizer that is not aligned with the runway having an angle of divergence exceeding 3 degrees but not exceeding 30 degrees.

Longitudinal Separation: The longitudinal spacing of aircraft at the same altitude by a minimum distance expressed in units of time or miles.

Loudness: The judgment of the intensity of a sound by a person. Loudness depends primarily on the sound pressure of the stimulus. Over much of the loudness range, it takes about a threefold increase in sound pressure (approximately 10 decibels) to produce a doubling of loudness.

Low Altitude Airway Structure: The airways serving aircraft operations up to but not including 18,000 feet MSL.

M

Minimum Descent Altitude (MDA): Means the lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering. (FAR Part 1)

Missed Approach: An instrument approach not completed by landing due to: (1) visual contact not established at authorized minimums; or (2) landing not completed due to other reasons; or (3) instructions from air traffic control.

Missed Approach Procedure (MAP): Flight procedures prescribed when an aircraft fails to land after completing an instrument approach.

Mitigation Measure: An action that can be planned or taken to alleviate (mitigate) an adverse environmental impact. Mitigation consists of:

(1) Avoiding the impact altogether by not taking a certain action or parts of an action.

(2) Minimizing the impact by limiting the degree or magnitude of the action and its implementation.

(3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

(4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

(5) Compensating for the impact by replacing or providing substitute resources or environments. A proposed airport development project, or alternatives to that project, may constitute a mitigation measure.

MOA (Military Operations Area) Airspace, depicted on navigational charts, in which military flight operations (training and practice combat) are conducted. May be transited by VFR civilian traffic, but special vigilance is recommended. (See also Restricted Area)

MSL (Mean Sea Level) Altitude expressed as feet above sea level, rather than above local terrain (AGL). To ignore varying terrain elevations, all navigational altitudes and barometric altimeters are based on height above mean sea level. Only radar altimeters, which measure the distance between the aircraft and the ground at low altitudes, indicate actual height above the ground.

N

Nautical Mile: Most common distance measurement in aviation, equivalent to 1.15 statute (standard U.S.) miles.

NAVAID: Any facility used in aid of air navigation, including lights, equipment for disseminating weather information, for signaling, for radio direction finding, or for radio or other electronic communication, and any other structure or mechanism having a similar purpose for guiding or controlling flight in the air or the landing or take-off of aircraft.

Noise: Any sound that is considered to be undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying.

Noise Abatement Procedures: Changes in runway use, flight approach and departure routes and procedures, and other air traffic procedures that are made to shift adverse aviation effects away from noise-sensitive areas (such as residential neighborhoods).

Noise Contours: Lines drawn on a map that connect points of equivalent DNL values. They are usually drawn in 5 dB intervals, such as connections of DNL 75 values, DNL 70 values, DNL 65 values, and so forth.

Noise-Sensitive Land Use: Land uses that can be adversely affected by high levels of aircraft noise. Residences, schools, hospitals, religious facilities, libraries, and other similar uses are often considered to be sensitive to noise.

Nonprecision Instrument Runway: A runway having only horizontal navigation guidance for which a straight-in, nonprecision instrument approach procedure has been approved.

Normally Unacceptable (DNL) above 65 but not exceeding 75 decibels): The noise exposure is significantly more severe; barriers may be necessary between the site and prominent noise sources to make the outdoor environment acceptable; special building constructions may be necessary to ensure that people indoors are sufficiently protected from outdoor noise.

0

100-Year Floodplain - An area subject to flooding with an annual frequency of 1: 100.

Obstacle Free Area (OFA): A two dimensional ground area surrounding runways, taxiways, and taxilanes which is clear of objects except for objects whose location is fixed by function.

Obstacle Free Zone (OFZ): The airspace centered about the runway that is clear of object penetrations other than frangible NAVAIDS.

Outer Marker (OM): An ILS navigation facility located four to seven miles from the runway edge on the extended centerline which indicates both aurally and visually, that the aircraft is passing over the facility and can begin its final approach.

P

Pattern: The configuration or form of a flight path flown by an aircraft, or prescribed to be flown, as in making an approach to a landing.

Precision Approach Procedure: A standard instrument approach procedure in which an electronic glide slope is provided, such as ILS or PAR. (FAR Part I)

Precision Approach Radar (PAR): A radar facility used to detect and display azimuth, range, and elevation of an aircraft on the final approach to a runway.

Primary Surface: A rectangular surface longitudinally centered about a runway. Its width is a variable dimension and it usually extends 200 feet beyond each end of the runway. The elevation of any point on this surface coincides with the elevation of its nearest perpendicular point on the runway centerline or extended runway centerline.

Project: The whole of an action that has a potential for resulting in a physical change in the environment, directly or ultimately, and that is any of the following:

(1) An activity directly undertaken by any public agency, including but not limited to public works construction and related activities, clearing or grading of land, improvements to existing public structures, enactment and amendment of zoning ordinances, and the adoption and amendment of local General Plans or elements thereof pursuant to Government Code Sections 65100-65700.

(2) An activity undertaken by a person, which is supported in whole or in part through public agency contracts, grants, subsidies, loans, or other forms of assistance from one or more public agencies.

(3) An activity involving the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies.

R

Radar Approach Control (RAPCON): Ajoint use air traffic control facility, located at a U.S. Air Force Base, utilizing surveillance and precision approach radar equipment in conjunction with air/ground communication equipment.

Reliever Airport: An airport to serve general aviation aircraft that might otherwise use a congested airport served by air carriers.

Restricted Area: Airspace which (when "Active" or "Hot") usually excludes civilian aircraft. Examples,: airspace for rocket flights, practice air-to-air combat or ground-based artillery practice. Temporary restricted areas are established for events such as forest fires, natural disasters or major new stories. Flight through a restricted area may be authorized by the "controlling agency" or by FAA.

RNAV Way Point (w/p): A predetermined geographical position used for route or instrument approach definition or progress reporting procedures that is relative to a VORTAC station position (FAR Part 1).

Runway Alignment Indicator Light (RAIL): An airport lighting facility

consisting of five or more sequenced flashing lights installed on the extended centerline of the runway.

Runway End Identification Light (REIL.): An airport lighting facility consisting of a single flashing high intensity white light installed at each approach end comer of a runway and directed toward the approach zone, enabling the pilot to identify the threshold of a usable runway.

Runway Gradient (effective): The average difference in elevation of the two ends of the runway divided by the runway length if no intervening point lies more than five feet above or below a straight line joining the two ends of the runway. If the criteria are not met the runway profile will be segmented and aircraft data will be applied for each segment separately.

Runway Orientation: The magnetic bearing of the centerline of the runway.

Runway Protection Zone (RPZ): An area (formerly referred to as the clear zone) used to enhance the safety of aircraft operations.

Runway Safety Area (RSA): A defined surface surrounding the runway prepared or suitable for reducing risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

Runway Strength: The ability of a runway to support aircraft of a designated gross weight for single wheel, dual wheel, and dual tandem wheel gear types.

Runway Visual Range (RVR): The horizontal distance a pilot can see down the runway from the approach end; based on the sighting of either high intensity runway lights or the visual contrast of other targets, whichever yields the greater visual range.

S

Segmented Circle: A basic marking device used to aid pilots in locating airports.

Separation: The spacing of aircraft to achieve safe and orderly movement in flight and while landing and taking off.

Separation Minima: The minimum longitudinal, lateral, or vertical distances by which aircraft are spaced through the application of air traffic control procedures.

Severe Noise Exposure: Exposure to aircraft noise that is likely to interfere with human activity in noise-sensitive areas; repeated vigorous complaints can be expected and group action is probable. This exposure may be specified by a cumulative noise descriptor as a level of noise exposure, such as DNL 75. (See also Significant Noise Exposure.)

Significant Effect On The Environment: A substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself is not considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.

Significant Noise Exposure: Exposure to aircraft noise that is likely to interfere with human activity in noise-sensitive areas; individual complaints may be expected and group action is possible. This exposure may be specified by a cumulative noise description as a level of noise exposure, such as DNL 65. (See also Severe Noise Exposure.)

Sound Level (Noise Level): The weighted sound pressure level obtained by the use of a sound level meter having a standard frequency filter for attenuating part of the sound spectrum.

Small Airplane: An airplane of 12,500 pounds or less maximum certificated takeoff weight.

Special VFR Operations: Aircraft operating in accordance with clearances within certain control zones in weather conditions less than the basic VFR weather minimums.

Standard Terminal Arrival Route (STAR): A preplanned coded air traffic control IFR arrival routing.

Statute Mile: A statute mile equals 5,280 feet.

Straight-In Approach: An instrument approach wherein the final approach is commenced without first having executed a procedure turn (not necessarily completed with a straight-in landing.

T

Tactical Air Navigation (TACAN): A radio transponder facility utilized by airborne equipment to compute bearing and distance relative to the facility.

Taxilane: The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

Taxiway: A defined path established for the taxiing of aircraft from one part of the airport to another.

Terminal Building: A building or buildings designed to accommodate the enplanning and deplanning activities of air carrier passengers.

Terminal Facilities: The airport facilities providing services for air carrier operations that serve as a center for the transfer of passengers and baggage between surface and air transportation.

Terminal Radar Approach Control (TRACON): A terminal air traffic control facility co-located with an Airport Traffic Control Tower.

Terminal Radar Service Area (TRSA): A specified area around a terminal in which participating VFR pilots are provided separation from other participating VFR aircraft and IFR aircraft.

Terminal VOR (TVOR): Very high frequency terminal omnirange station (located on or near an airport and used as an approach aid).

Threshold: The designated beginning of the runway that is available and suitable for the landing of aircraft. When the threshold is located at a point other than at the beginning of the pavement, it is referred to as either a displaced threshold or a relocated threshold depending on how the pavement behind is marked.

Traffic Pattern: A standard rectangular flight pattern around the landing runway at an airport. Includes 45 degree or crosswind entry to the rectangle, with downwind, base and final legs as sides of the rectangle. Standard are 90-degree left turns around the rectangle (non-standard right-hand traffic patter is noted in Airport Facility Directories) with downwind flown at a specified altitude, usually 1,000 or 1,500 feet above the airport elevation. At airports with a control tower; the pattern may be modified or short-cut according to ATC instructions.

Transport Airport: An airport designed, constructed, and maintained to serve airplanes in Aircraft Approach Category C and D.

Turboprop: An airplane using a turboprop engine, a jet rather than piston engine connected to a propeller. Such aircraft can be single- or multi-engine. Turboprop engines are increasingly used when more horsepower is needed for speed or payload than the 300-400 horsepower available from current light-aircraft piston engines.

U

Unicom: A common, multi-purpose radio frequency used at most nontowered airports as the Common Traffic Advisory Frequency. AOPA coined the term (derived from the words "universal communications") in the 1950s. UNICOM is also used by a Fixed Base Operator for general administrative uses, including fuel orders, parking instructions, etc. Originally 122.8 MHz universally, now includes 122.7, 123.0 and other frequencies.

Utility Airport: An airport designed, constructed, and maintained to serve airplanes in Aircraft Approach Category A and B.

V

VFR Airport: An airport without an authorized or planned instrument approach procedure.

Victor Airway: Phonetic designation of VOR airways.

Visual Approach: An approach wherein an aircraft having an air traffic control authorization may deviate from the prescribed instrument approach procedure and proceed to the airport of destination, served by an operational control tower, by visual reference to the ground.

Visual Approach Slope Indicator (VASI): An airport lighting facility that provides vertical visual guidance to aircraft during approach and landing, by radiating a directional pattern of high intensity red and white focused light beams.

Visual Flight Rules (VFR): Rules that govern the procedures for conducting flight under visual conditions (FAR Part 91).

Visual Meteorological Conditions (VMC): Weather conditions that permit aircraft to be operated in accordance with visual flight rules.

VOR/DME: A VOR to which a specific kind of distance measuring device has been added. (See VORTAC.)

W

WAAS (Wide Area Augmentation System) An enhancement to the GPS system providing greater navigation accuracy and system integrity and permitting GPS to be used for precision instrument approaches to most airports.

Wake Turbulence: Turbulent air condition caused by small, tornado-like horizontal whirlwinds training an aircraft's wingtips (wingtip vortices). Wake turbulence associated with larger aircraft flying at slow speeds (as on take-off or landing approach) is the most severe and can cause loss of control for smaller aircraft following close behind. Controllers use defined separation standards to avoid the problem for take-off, landing, approach and departure operations.

Waypoint (w/p): A predetermined geographical position used for route definition and/or progress reporting purposes that is defined relative to a VORT AC station position.

Wind Cone: A free rotating fabric cone that indicates wind direction and wind force.

Wind Rose: A diagram for a given location showing relative frequency and velocity of wind from all compass directions.

Wind Tee: A tee-shaped free rotating device that indicates wind direction.

Appendix B

2000 VATSP Forecasts

Delta Airport Consultants, Inc.

TABLE 1
VATSP UPDATE BASED AIRCRAFT FORECAST

Airport Name	Historic Based Aircraft 1990	1995	2000	Annual Growth Rates Based Aircraft per Year 1990 - 2000	1995 - 2000	BAC 2000	Future Growth Rates Baseline Projection	Manual Adjustment	Forecast Based Aircraft 2005	2015	2020
General Aviation Airports											
Smith Mountain Lake	9	16	13	0.4	(0.6)	13	0.0	0.0	13	13	1
Stafford (New)	N/A	N/A	N/A	N/A	N/A		N/A	1.4	39	53	6
Suffolk Municipal	40	47	80	4.0	6.6	80	2.0	2.0	90	110	12
Tangier Island	0	0	0	0.0	0.0	-	0.0	0.0	-	-	-
Tappahannock Municipal	12	10	14	0.2	0.8	14	0.5	0.5	17	-	-
Tappahanock (Replacement)	N/A	N/A	N/A	N/A	N/A		N/A	1.0	-	31	
Tazewell County	13	12	10	(0.3)	(0.4)	10	0.0	0.0	10	10	
Twin County	10	11	14	0.4	0.6	14	0.5	0.5	17	22	
Virginia Highlands	60	57	55	(0.5)	(0.4)	55	0.0	0.0	55	55	
Virginia Tech	29	30	33	0.4	0.6	33	0.5	0.5	36	41	
Wakefield Municipal	14	10	28	1.4	3.6	28	2.0	1.4	35	49	
Warrenton-Fauquier	90	92	98	0.8	1.2	98	1.0	1.0	103	113	
Waynesboro	46	35	26	(2.0)	(1.8)	26	0.0	0.0	26	26	
Whitman Stnp	12	14	15	0.3	0.2	15	0.3	0.3	16	19	
William M Tuck	25	27	19	(0.6)	(1.6)	19	0.0	0.0	19	19	
Williamsburg-Jamestown	47	47	56	0.9	1.8	56	1.4	1.4	63	76	
Winchester Regional	62	69	79	1.7	2.0	79	1.9	1.9	88	107	
Total	2,055	2,141	2,437	38.2	59.2	2,446			2,663	3,082	
Annual Growth Rate vs 2000	1.8%	2.7%	-						1.7%	1.6%	
Carrier Airports											
Charlottesville-Albemarle	60	55	93	3.3	7.6	93	2	2	103	123	
Lynchburg Regional	47	32	47	0.0	3.0	47	1.9	1.9	52	62	
Newport News-Williamsburg Intl	126	99	114	(1.2)	3.0	114	0.9	0.9	119	128	
Norfolk International	109	78	107	(0.2)	5.8	107	2.8	0.0	107	107	
Richmond International	75	92	108	3.3	3.2	108	3.3	1.0	113	123	
Roanoke Regional	101	113	117	1.6	0.8	117	1.2	1.6	125	141	
Ronald Reagan Washington Nat	37	23	20	(1.7)	(0.6)	20	0.0	0.0	20	20	
Shenandoah Valley Regional	46	80	87	4.1	1.4	87	2.0	1.4	94	108	
Washington Dulles Intl	49	59	52	0.3	(1.4)	52	0.0	0.0	52	52	
Total	650	631	745	9.5	22.8	730			785	864	
Annual Growth Rate vs 2000	1.2%	3.0%	-						1.5%	1.1%	
Total	2,705	2,772	3,182	47.7	82.0	3,176			3,448	3,946	
Annual Growth Rate vs 2000	1.6%	2.8%	-						1.7%	1.5%	

Notes:

Growth rate constrained between 0 and 2 based aircraft per year for airports with less than 100 BAC in 2000

Growth rate constrained between 0 and 4 based aircraft per year for airports with more than 100 BAC in 2000

Boxed cells indicate manual adjustments due to new airports

TABLE 2
VATSP UPDATE, FAA, AND MASTER PLAN FORECASTS

Airport Name	Historic Based Aircraft			VATSP Update Forecast			FAA Terminal Area Forecasts			Master Plan Forecasts			
	1990	1995	2000	2005	2015	2020	2000	2005	2015	2000	2005	2015	2020
General Aviation Airports													
New London	48	43	58	68	88	98	-	-	-	-	-	-	-
New Market	14	38	33	35	40	42	-	-	-	-	-	-	-
New River Valley	30	21	24	24	24	24	21	21	21	23	24	27	29
Orange County	26	21	22	22	22	22	22	22	22	29	35	41	43
Shannon	133	136	141	139	145	148	170	170	170	-	-	-	-
Smith Mountain Lake	9	16	13	13	13	13	-	-	-	-	-	-	-
Stafford (New)	-	-	-	39	53	60	-	-	-	-	-	-	-
Suffolk Municipal	40	47	80	90	110	120	50	55	65	-	-	-	-
Tangier Island	0	0	0	-	-	-	-	-	-	-	-	-	-
Tappahannock Municipal	12	10	14	17	-	-	-	-	-	16	17	20	22
Tappahannock (Replacement)	-	-	-	-	31	36	-	-	-	-	-	-	-
Tazewell County	13	12	10	10	10	10	13	13	13	14	17	21	22
Twin County	10	11	14	17	22	24	9	9	9	12	14	16	17
Virginia Highlands	60	57	55	55	55	55	55	55	55	68	75	93	103
Virginia Tech	29	30	33	36	41	43	28	28	28	-	-	-	-
Wakefield Municipal	14	10	28	35	49	56	-	-	-	-	-	-	-
Warrenton-Fauquier	90	92	98	103	113	118	109	119	140	116	128	152	164
Waynesboro	46	35	26	26	26	26	-	-	-	37	49	75	88	
Whitman Stnp	12	14	15	16	19	20	-	-	-	-	-	-	-
William M. Tuck	25	27	19	19	19	19	25	25	25	24	29	35	37
[illegible]sburg-Jamestown	47	47	56	63	76	83	52	52	52	50	54	60	62
Winchester Regional	62	69	79	88	107	116	96	101	111	109	122	147	159
Total	2,055	2,141	2,437	2,663	3,082	3,287	2,099	2,168	2,309	2,096	2,333	2,782	3,009
Annual Growth Rate vs 2000	1.7%	2.6%	-	1.8%	1.6%	1.5%		0.6%	0.6%		2.2%	1.9%	1.8%
Air Carrier Airports													
Charlottesville-Albemarle	60	55	93	103	123	133	61	65	74	70	77	92	99
Lynchburg Regional	47	32	47	52	62	67	42	46	52	44	49	59	64
Newport News-Williamsburg Intl	126	99	114	119	128	132	68	74	84	-	-	-	-
Norfolk International	109	78	107	107	107	107	102	110	125	-	-	-	-
Richmond International	75	92	108	113	123	128	251	262	281	122	122	122	122
Roanoke Regional	101	113	117	125	141	149	122	122	122	127	130	136	139
Ronald Reagan Washington Natl	37	23	20	20	20	20	24	24	24	-	-	-	-
Shenandoah Valley Regional	46	80	87	94	108	115	80	80	80	-	-	-	-
Washington Dulles Intl	49	59	52	52	52	52	40	40	40	-	-	-	-
Total	650	631	745	785	864	903	790	823	882	363	378	409	424
Annual Growth Rate vs 2000	1.4%	3.4%	-	1.0%	1.0%	1.0%		0.8%	0.7%		0.8%	0.8%	0.8%
Total	2,705	2,772	3,182	3,448	3,946	4,190	2,889	2,991	3,191	2,459	2,711	3,190	3,433
Growth Rate vs 2000	1.6%	2.8%	-	1.6%	1.4%	1.4%		0.7%	0.7%		2.0%	1.8%	1.7%

TABLE 3
BASED AIRCRAFT FLEET MIX

Airport Name	2000 Fleet Mix SEP	MEP	MET	MEJ	HEL	OTH	TOT	2005 Projected Fleet Mix SEP	MEP	MET	MEJ	HEL	OTH	TOT
General Aviation Airports														
Smith Mountain Lake	9	4	0	0	0	0	13	9	4	0	0	0	0	13
Stafford (New)	0	0	0	0	0	0	0	31	0	6	2	0	0	39
Suffolk Municipal	72	6	1	0	2	0	80	81	5	1	0	3	0	90
Tangier Island	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tappahannock Municipal	14	0	0	0	0	0	14	17	0	0	0	0	0	17
Tappahannock (Replacement)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tazewell County	5	1	1	0	0	3	10	5	1	1	0	0	3	10
Twin County	10	0	0	0	0	4	14	11	0	0	0	0	5	17
Virginia Highlands	40	5	0	0	3	7	55	37	5	1	1	3	8	55
Virginia Tech	24	3	2	0	1	3	33	24	3	2	1	1	4	36
Wakefield Municipal	26	1	0	0	0	1	28	32	1	0	0	0	1	35
Warrenton-Fauquier	81	11	0	0	0	6	98	85	11	0	0	0	7	103
Waynesboro	15	2	0	0	0	9	26	14	2	0	0	0	10	26
Whitman Strip	0	0	0	0	0	15	15	0	0	0	0	0	16	16
William M. Tuck	19	0	0	0	0	0	19	19	0	0	0	0	0	19
Williamsburg-Jamestown	50	5	0	0	1	0	56	58	5	0	0	1	0	63
Winchester Regional	66	11	1	1	0	0	79	74	12	1	2	0	0	88
	2,015	221	54	35	23	69	2,437	2,174	229	66	81	27	105	2,683
	82.7%	9.1%	2.2%	1.4%	0.9%	3.7%	100.0%	81.8%	8.8%	2.5%	2.3%	1.0%	3.9%	100.0%
Air Carrier Airports														
Charlottesville-Albemarle	62	13	5	7	1	5	93	66	14	6	10	1	6	103
Lynchburg Regional	37	6	3	1	0	0	47	41	6	3	1	0	0	52
Newport News-Williamsburg Intl	85	9	3	16	1	0	114	84	9	3	22	1	0	119
Norfolk International	54	15	23	12	3	0	107	51	14	23	16	3	0	107
Richmond International	33	24	12	30	8	1	108	31	22	12	38	9	1	113
Roanoke Regional	90	17	6	3	1	0	117	95	18	7	4	1	0	125
Ronald Reagan Washington Natl	5	4	3	8	2	0	20	4	13	3	7	2	0	20
Shenandoah Valley Regional	58	24	4	0	1	0	87	63	25	5	0	1	0	94
Washington Dulles Intl	12	11	0	28	1	0	52	10	9	0	32	1	0	52
Total	436	123	59	103	18	6	745	446	120	61	131	20	7	785
	58.5%	16.5%	7.9%	#####	2.4%	0.8%	100.0%	56.8%	15.3%	7.8%	#####	2.5%	0.9%	100.0%
Total	2,451	344	113	138	41	85	3,182	2,619	349	127	192	47	112	3,448
	77.0%	10.8%	3.6%	4.3%	1.3%	3.0%	100.0%	76.0%	10.1%	3.7%	5.8%	1.4%	3.3%	100.0%

Notes:

Fleet mix assumed to change at average of Historic VA rate and rate of FAA active aircraft forecasts for first 5 years, at FAA rate for next ten years, and at FAA rate with jet growth tempered by 25% for the final 6 years

TABLE 3
BASED AIRCRAFT FLEET MIX

Airport Name	2015 Projected Fleet Mix							2020 Projected Fleet Mix						
	SEP	MEP	MET	MEJ	HEL	OTH	TOT	SEP	MEP	MET	MEJ	HEL	OTH	TOT
General Aviation Airports														
Smith Mountain Lake	9	4	0	0	0	0	13	9	4	0	0	0	0	13
Stafford (New)	41	0	8	3	0	0	53	46	0	10	4	0	0	60
Suffolk Municipal	99	6	2	0	3	0	110	108	7	2	0	4	0	120
Tangier Island	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tappahannock Municipal	29	0	2	0	0	0	31	33	0	3	0	0	0	36
Tappahannock (Replacement)	29	0	2	0	0	0	31	33	0	3	0	0	0	36
Tazewell County	5	1	1	0	0	3	10	5	1	1	0	0	4	10
Twin County	14	0	0	0	0	7	22	16	0	0	0	0	8	24
Virginia Highlands	37	4	1	2	3	8	55	36	4	1	2	3	8	55
Virginia Tech	27	3	2	2	1	4	41	28	3	3	3	2	5	43
Wakefield Municipal	45	2	0	0	0	2	49	52	2	0	0	0	3	56
Warrenton-Fauquier	93	11	0	0	0	8	113	97	12	0	0	0	9	118
Waynesboro	14	2	0	0	0	10	26	14	2	0	0	0	11	26
Whitman Strip	0	0	0	0	0	19	19	0	0	0	0	0	20	20
William M. Tuck	19	0	0	0	0	0	19	19	0	0	0	0	0	19
[illegible]liamsburg-Jamestown	68	6	0	0	2	0	76	75	7	0	0	2	0	83
[illegible]nchester Regional	89	13	1	3	0	0	107	97	14	2	3	0	0	116
Total	2,545	240	86	100	32	125	3,129	2,711	245	93	121	34	138	3,341
	81.3%	7.7%	2.8%	3.2%	1.0%	4.0%	100.0%	81.1%	7.3%	2.8%	3.6%	1.0%	4.1%	100.0%
Air Carrier Airports														
Charlottesville-Albemarle	76	14	7	17	1	8	123	80	15	7	21	2	8	133
Lynchburg Regional	48	7	4	3	0	0	62	52	7	5	3	0	0	67
Newport News-Williamsburg Intl	83	8	3	32	1	0	128	83	8	3	36	1	0	132
Norfolk International	48	12	23	21	3	0	107	46	11	22	24	3	0	107
Richmond International	29	19	12	53	9	1	123	28	18	12	60	9	1	128
Roanoke Regional	106	18	8	7	1	0	141	112	18	8	9	2	0	149
Ronald Reagan Washington Natl	4	3	3	9	2	0	20	4	2	2	10	2	0	20
Shenandoah Valley Regional	73	28	6	0	2	0	108	79	28	6	0	2	0	115
Washington Dulles Intl	6	7	0	37	1	0	52	7	6	0	38	1	0	52
Total	475	116	64	179	20	9	864	491	114	67	201	21	9	903
	55.1%	13.4%	7.5%	20.7%	2.3%	1.0%	100.0%	54.4%	12.7%	7.4%	22.2%	2.3%	1.0%	100.0%
Total	3,020	356	151	280	52	134	3,993	3,202	359	160	322	55	146	4,244
	75.6%	8.9%	3.8%	7.0%	1.3%	3.4%	100.0%	75.5%	8.5%	3.8%	7.6%	1.3%	3.4%	100.0%

Notes:

Fleet mix assumed to change at average of Historic VA rate and rate of FAA active aircraft forecasts for first 5 years, at FAA rate for next ten years, and at FAA rate with jet growth tempered by 25% for the final 5 years.

TABLE 4
VATSP UPDATE OPERATIONS FORECAST

Airport Name	2000 Ops Forecast by Type - Preferred							2005 Ops Forecast by Type - Preferred						
	SEP	MEP	MET	MEJ	HEL	OTH	TOT	SEP	MEP	MET	MEJ	HEL	OTH	TOT
Tappahannock (Replacement)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tazewell County	2,299	397	619	43	100	1,283	4,740	2,325	393	642	45	104	1,453	4,962
Twin County	3,872	182	128	55	128	1,710	6,074	4,602	225	158	68	158	2,291	7,501
Virginia Highlands	15,113	1,948	470	203	1,728	3,069	22,527	16,128	1,924	1,038	903	1,896	3,402	24,292
Virginia Tech	9,129	1,177	1,329	124	708	1,338	13,805	9,870	1,256	1,479	886	835	1,608	15,936
Wakefield Municipal	8,948	671	221	95	221	482	10,639	11,510	727	286	123	286	701	13,633
Warrenton-Fauquier	28,857	3,920	786	337	786	2,734	37,421	31,188	4,160	857	367	857	3,361	40,789
Waynesboro	6,594	753	-	-	349	3,834	11,530	8,763	743	-	-	356	4,332	12,204
Whiteman Strip	2,178	186	-	-	269	6,328	8,963	2,434	210	-	-	301	7,072	10,017
William M. Tuck	6,390	210	147	63	147	42	6,999	6,582	217	152	65	152	43	7,220
Williamsburg-Jamestown	17,956	1,708	-	-	1,043	125	20,833	20,760	1,938	-	-	1,277	145	24,120
Winchester Regional	23,365	3,692	1,145	786	626	179	29,794	26,929	4,171	1,354	1,127	725	207	34,513
Subtotal	727,414	80,227	42,361	21,808	31,338	42,929	946 076	815,855	88,056	52,384	36,091	36,611	51,833	1,080,830
OPBA	361	363	784	623	1,363	482	388	376	384	789	689	1,395	494	406
Growth vs 2000														2.7%
Air Carrier Airports														
Charlottesville-Albemarle	40,335	6,553	4,263	3,598	1,746	341	56,836	44 878	7 144	4,918	5,229	2,053	386	64,608
Lynchburg Regional	34 095	4,805	3,625	1 645	936	267	44,574	38,710	5,133	4,276	1,455	1,070	306	50,949
Newport News-Williamsburg Intl	143,334	14,666	8,928	20,346	5,528	1,164	193,966	148,283	15 024	9,576	27,768	6,064	1,248	207,964
Norfolk International	27 872	5 365	10,782	4 698	2,199	303	50,419	27,683	5,239	11,123	5,347	2,372	312	52,077
Richmond International	29,142	10,758	8 503	13 494	5,730	409	68,136	29 855	10,434	8.862	17,712	6,312	442	73,617
Roanoke Regional	51,060	7 700	4,715	1,792	1,913	406	67,585	55,915	8,270	5,354	2,437	2,184	448	74,607
Ronald Reagan Washington Natl	30,520	11 272	12,648	16 475	8 247	478	79,632	29,900	10 386	12,293	20 443	8,610	493	82,127
Shenandoah Valley Regional	14,823	2 660	919	171	441	114	19,027	16,562	2,912	939	191	499	127	21,230
Washington Dulles Intl	25,744	10,601	1,411	26,449	2,506	403	67,173	24,705	9,312	1,462	31,117	2,604	418	69 618
Subtotal	396,725	74,178	55,795	87,469	29,306	3,884	647 348	416,492	73,855	58,804	111,700	31,767	4,181	696,797
OPBA	918	603	946	849	1 628	647	869	934	617	962	853	1,617	578	848
Growth vs 2000														1 5%
Total	1,124,138	154,405	98 147	109,275	60,644	46,813	1,593,424	1,232 347	161,911	111,187	147 790	68,378	56,013	1,777 627
OPBA	459	449	869	782	1,479	493	501	470	464	872	769	1,453	499	515
rowth vs 2000														2.2%

Appendix C

ALP Checklist

Delta Airport Consultants, Inc.

DRAFT

Airport Layout Plan Checklist

AIRPORT LAYOUT PLAN CHECKLIST

Washington Airports District Office
Federal Aviation Administration
November 28, 1997

This checklist is recommended for use by consultants, airport sponsors, and FAA Airports District Office (ADO) personnel to help insure that all pertinent information is reflected on the Airport Layout Plan (ALP) set of drawings. This checklist can be used for the small airports as well as for the larger, more complex ones and therefore every drawing or item in the checklist may not apply in all airport situations. However, certain drawings in the checklist are required in every case for FAA approval. These include (1) the Airport Layout Drawing, (2) the airport airspace drawing, and (3) the inner portion of the approach surface drawing. The need for the other drawings should be decided on a case-by-case basis. This decision as well as the determination as to which of the individual checklist items for each drawing apply to a given airport situation should be made at the time the workscope is prepared for the development of the new or updated ALP. This involves the ADO working closely with the airport sponsor and their consultant to evaluate and reach agreement on the use of the checklist in the ALP project. The individual checklist items as well as the case-by-case drawings that apply to a given airport situation depend on the nature and complexity of the facility and the evaluation during the ALP workscope determination process. Sound planning and understanding of local needs and conditions should be taken into account during this process. If during or after this process, the airport sponsor or their consultant disagrees with the ADO regarding the applicability of any element of the checklist to a given ALP project, they should provide the rationale for any such disagreement to the ADO. The ADO shall determine whether or not the rationale is acceptable and make the appropriate determination. In summary, this checklist can be used as part of the ALP Workscope process, during the preparation of the ALP, and in the draft and final ALP reviews.

AIRPORT: Virginia Highlands **LOCATION:** Abingdon, Virginia

SPONSOR: Virginia Highlands Airport Commission **DATE:** _____

CONSULTANT: Delta Airport Consultants, Inc. **DATE:** 02/05/2002 03/28/2003

DOAV/MAA: _____ **DATE:** _____

FAA PROJECT MGR: _____ **DATE:** _____

THIS CHECKLIST WAS COMPLETED FOR (check one):

( ) ALP Workscope Purposes
( ) ALP Preparation Purposes
(X) ALP Review Purposes

DRAFT
Airport Layout Plan Checklist

Note: The following information provides specific instructions on its use in terms of checking **YES** or **NO**, with or without **REMARKS**, for each of these purposes.

Specific Instructions:

1. If used for **ALP Workscope preparation purposes**, **YES** or **NO** should be checked for each checklist item to indicate whether or not it is required for the ALP drawings for the given airport. Or, to avoid having to check every single item and help facilitate the process, only check NO for items that are not required with the understanding that if an item is not checked YES or NO (i.e., left blank or unchecked), then it is required. This should be done as a joint effort by the airport sponsor (and their consultant) and the ADO in developing the ALP Workscope. Any item requiring explanations should be given as remarks.

2. If used for **ALP preparation purposes**, the preparer (airport sponsor and their consultant) should check **YES** or **NO** to indicate whether or not the appropriate checklist items are reflected on the ALP drawings. Any item requiring explanations should be given as remarks. The checklist completed by the preparer should (shall, if so stated in an agreed to ALP Workscope) be submitted to the ADO with the draft ALP drawings.

3. If used for **ALP review purposes**, the ADO reviewer should check **YES** or **NO** to indicate whether or not all appropriate checklist items were reflected on the ALP drawings in a satisfactory manner. Any item requiring explanations should be given as remarks. The checklist completed by the ADO should be submitted to the preparer with the marked-up draft ALP drawings.

References:

The ALP checklist below is based primarily on Appendix 7 of AC 150/5300-13, Airport Design, including changes 1 through 5. Change 5 is dated 2/14/97. Appendix 7 covers ALP components and preparation. The Airport Property Map (formerly Exhibit "A") component of the ALP checklist is based primarily on AC 150/5100-17, Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects, dated 3/29/96.

Use the space below for any detailed remarks.

DRAFT
Airport Layout Plan Checklist

I. The ALP Set of Drawings.	Yes	No	REMARKS
1. Required Drawings.			
a. Airport Layout Drawing.	X	( )	NEW
b. Airport Airspace Drawing	X	( )	UPDATE
c. Inner Portion of the Approach Surface Drawing.	X	( )	NEW (2)
2 Case-by-Case Drawings.			
a. Terminal Area Drawing.	X	( )	UPDATE EAST GA NEW WEST GA
b. Land Use Drawing.	X	( )	UPDATE (NEW NOISE)
c. Airport Property Map Drawing, (Formerly Exhibit. "A").	X	( )	UPDATE

Note: Normally, the Airport Layout Drawing and the Airport Airspace Drawing should be presented on separate sheets. The Property Map (formerly Exhibit "A"), if done as part of a new or updated ALP set of drawings, should also be depicted on a separate sheet (or sheets for large airports). The other drawings do not necessarily need to be on separate sheets, depending on scale and size of the drawings.

II. AIRPORT LAYOUT DRAWING

	Yes	No	REMARKS	
1 Features				
a. Layout of existing and ultimate facilities and features.	X	( )	UPDATE	✓
b. Wind rose and coverage analysis.	( )	X	EXISTING	✓
c. Basic airport and runway data tables	( )	( )	UPDATE	
d Legend and building tables.	( )	( )	"	
e Title and revision blocks.	( )	( )	"	
f. Sponsor approval block.	( )	( )	"	
g List of approved modifications to FAA Airport Design Standards (with dates), including proposed and planned modification to Standards, i.e., use of declared distances for airport design, expected to approved as part of the ALP review and approval process	( )	( )	UPDATE	
h. List of non-std. conditions and proposed disposition	( )	( )	UPDATE	
2. Preparation Guidelines:				
a. Sheet Size, recommended 22"x34".	X	( )		✓
b. Scale, Determined by airport size 1"=200' to 1"=600'				
(1) Show graphic Scale.	X	( )		✓
(2) Metric conversion table, (opt.. per Appendix 6, AC 150/5300-13, Airport Design)	( )	X		N/A
c. North Point:				
(1) True	( )	X	EXISTING	✓
(2) Magnetic and year of magnetic declination.	( )	X	"	✓
(3) North is to top left of drawing	( )	X	"	NO CHANGE TO ORIENTATI
d. Wind Rose Explain in Remarks for Data source if wind data not available for ALP wind rose.				
(1) Data source and time period covered (latest 10-yr period, using 36 point) Individual & Combined coverage	( )	X	EXISTING	✓

DRAFT
Airport Layout Plan Checklist

	Yes	No	REMARKS	
(2) Individual and combined coverage, see paragraph 203b of AC 150/5300-13, Airport Design for information on wind conditions				
(a). Runways with 10 5 knots crosswind	( )	(X)	EXISTING	✓
(b). Runways with 13 knots crosswind	( )	(X)	"	✓
(c). Runways with 16 knots crosswind	( )	(X)	"	✓
(d). Runways with 20 knots crosswind	( )	(X)	"	✓
(e). IFR Windrose	( )	(X)	"	✓
e. Airport Reference Point (ARP)				
(1) Existing (nearest second NAD 83).	(X)	( )		✓
(2) Ultimate (nearest second NAD 83).	(X)	( )		✓
f. Topographic Information - Ground contours at intervals of 2 ' to 10', lightly drawn. Show any principal drainage features	(X)	( )	NEW	✓
g. Elevations:				
(1). Runways - Indicate at existing and ultimate ends, displaced thresholds, touchdown zones, Intersections, high and low points - accuracy to the nearest 1/10 ft.	(X)	( )		✓
(2). Structures on Airport - If no Terminal Area Plan Drawing , show top elevations on this sheet. Use table and numbering system	( )	(X)	TAP SHEETS	✓ ADDED TO ALP
h Building Restriction Lines (BRL) and Runway Visibility Zone (NA)	( )	(X)		N/A
i. Runway Details - (existing/ultimate).				
(1). Dimensions - Length and width.	(X)	( )		✓
(2) Orientation.				
(a). Show runway end numbers.	(X)	( )		✓
(b). True bearing nearest 1/10 degree	(X)	( )		✓
(3). Lighting,				
(a). Show threshold lights	(X)	( )		✓
(b). No runway edge lights on drawing	(X)	( )		✓
(4). Marking				
(5). Show stage lengths if new runway or if runway extensions will be developed in stages	( )	(X)	NA	✓
(a). Show interim stage lengths on stage development sketches in ALP Narrative Report.	( )	(X)	NA	✓
(6). End Coordinates				
(a). Show surveyed existing runway end coordinates (nearest 1/10 second, NAD 83) and elevations (nearest 1/10 ft)	(X)	( )	UPDATE	✓
(b). For interim stage runway development show end coordinates (nearest 0 01 second, NAD 83) and elevation (nearest 1/10 ft).	( )	(X)	NA	✓

DRAFT
Airport Layout Plan Checklist

	Yes	No	REMARKS
(7) Monuments - (Show location of all survey monuments and reference markers. Note how monuments are protected).	( )	(X)	NA
(8). Declared Distances, for each runway direction. Identify any distances and clearway/stopway portions in the declared distances and any runway portions not included in the declared distances.	( )	( )	IF APPLICABLE (RW24) N/A
(9). Any displaced thresholds.	( )	( )	" " "
(10). Any clearways.	( )	(X)	NA
(11) Any stopways	( )	(X)	NA
(12). Separation dimensions from BRL and any parallel runways.	( )	(X)	NA
(j). Object Free Area (OFA)	(X)	( )	
(k). Safety Areas.	(X)	( )	
(l). Obstacle Free Zone (OFZ). - Specify "NO OFZ PENETRATIONS" when no object other than frangible NAVAIDS penetrates the OFZ. Otherwise show the object penetration and indicate how they will be eliminated. The OFZ may be depicted on the drawing with dimensions to facilitate identifying object penetrations.	(X)	( )	SEE RW DATA TA
(m) Threshold Details - Depict the threshold with coordinates - accuracy to nearest 0.01 second, elevation, displacement from runway end, and print "No Threshold Siting Surface Object Penetrations" with no object penetrations". Otherwise show the object penetrations and indicate how they will be eliminated.	(X)	( )	
(n). RPZ details per paragraph 212, Table 2-4, and Fig 2-3 of AC 150/5300-13, Airport Design.	(X)	( )	
(1). Show size with dim., (existing and ultimate)	(X)	( )	
(2). Airport interest in RPZ (fee or easement, or non-airport). NOTE: Boundary of existing property interest may, or may not, coincide with current RPZ boundary.	(X)	( )	
(3). For each RPZ, indicate in a note the approach visibility minimum and aircraft served (i.e , small aircraft, aircraft approach Cat A/B, Cat C/D, or all aircraft).	(X)	( )	
o. Holding position signs and markings. Depict the holding position signs and marking distance from runway centerline, with dimension lines	( )	(X)	HOLDLINES SHOWN
p. Taxiway Details - Include the following:			
(1). Dimensions (width and length).	(X)	( )	WIDTH ONLY
(2). Separation dimensions from parallel runways and taxilanes	(X)	( )	
(3). Clearance dimensions to objects, including aircraft parking areas	(X)	( )	
q. Apron details (existing/ultimate)			
(1) Dimensions (width and length).	( )	(X)	SEE TAP

DRAFT
Airport Layout Plan Checklist

	Yes	No	REMARKS
(2). Aircraft parking arrangement.	( )	X	
(3). Any taxilanes.	( )	X	
r. Navaids and landing light systems (existing./ultimate).			
(1). Location and type	X	( )	
(2). Critical area outlined and dimensioned	X	( )	
s. Terminal area (existing/ultimate).			
(1). Show and identify all main structures. Also show and identify by using building table and numbering system if no terminal area drawing.	X	( )	NO BLDG TABLE
(2). Hangar areas and related taxiways.	X	( )	
(3). Auto parking and entrance road.	X	( )	
t. Wind cone/tee and segmented circle.	X	( )	
u. Any weather equipment (e g., AWOS, ASOS, etc., including related critical areas)	X	( )	
v. Airport service roads.	X	( )	
w. Airport fencing.	X	( )	
y. Airport Data Table	X	( )	UPDATE
(1). Airport elevation (nearest 1/10 ft).	X	( )	
(2). ARP lat /long., nearest second/NAD-83.	X	( )	
(3). Mean daily max temperature.	X	( )	
(4). Combined wind coverage VFR/IFR (%).	( )	X	EXISTING
(5). Airport magnetic variation and date	( )	X	NORTH ARROW
(6). ARC for most demanding aircraft accommodated at the airport for approach purposes.	X	( )	
(7). NPIAS service level, GA, RL, P, etc.	( )	X	
(8). DOAV/MAA/DC equivalent service role (local, community, regional, etc)	( )	X	
(9) Taxiway lighting.	X	( )	
(10) Taxiway marking.	( )	X	
(11). Airport and Terminal Navaids.	X	( )	
(12). Others (indicate in remarks).	( )	X	
z. Runway Data Table for each runway ends (existing/ultimate.)			
(1). Approach visibility minimums (include existing/ultimate, i.e ; V, 1 mile, 3/4 mile, 1/2 mile, CAT II/III.	X	( )	UPDATE
(2). FAR Part 77 approach slope.	X	( )	UPDATE
(3) Dimensions (width and length).	X	( )	
(4) Pavement type.	X	( )	
(5). Pavement design strength	X	( )	
(6). Lighting.	X	( )	
(7). Marking.	X	( )	
(8). Percent gradient	X	( )	
(9). Maximum grade within runway length.	( )	X	
(10). Line of sight requirements	( )	X	NA
(11). Percent wind coverage	( )	X	EXISTING
(12) Visual approach aids (PAPI, REIL, etc.).	X	( )	
(13). Instrument approach aids (ILS, LOC, etc.).	X	( )	

DRAFT
Airport Layout Plan Checklist

	Yes	No	REMARKS
(14). ARC for the runway.	( )	(X)	SEE AIRPORT TABLE
(15). Identify the critical aircraft. If more than one aircraft involved, then identify further as follows:			
(a). Critical aircraft by wingspan.	( )	(X)	
(b). Critical aircraft by approach speed.	( )	(X)	
(c). Critical aircraft by weight.	( )	(X)	
(16). Length of haul if critical aircraft over 60Klb	( )	(X)	N/A
(17). RSA dimensions	(X)	( )	
(18). OFA dimensions.	(X)	( )	
(19). OFZ. Specify "No OFZ object penetrations" if no object other than frangible Navaids penetrates the OFZ.	(X)	( )	
(20). Surveyed end coordinates. (Nearest 0.01 second), NAD 83.	(X)	( )	EXISTING
(21). Runway elevations (nearest 0.01 ft).			
(a). Existing end	(X)	( )	
(b). Ultimate end.	(X)	( )	
(c). Displaced threshold.	(X)	( )	N/A
(d). Touchdown zone.	( )	(X)	NO SURVEYS
(e). Runway intersection.	( )	(X)	" "
(f). High and low points.	( )	(X)	" "
(22). Declared distances for each Runway direction.			
(a). TORA.	( )	( )	IF APPLICABLE N/A
(b). TODA.	( )	( )	
(c). ASDA.	( )	( )	
(d). LDA.	( )	( )	
(23). Others (indicate in Remarks)	( )	(X)	
(aa). Legend Table. Use standard symbols, (existing/ultimate).	(X)	( )	UPDATE
(bb). Building Table, identify by number and description. Show top building elevation if no terminal area drawing (existing/ultimate)	( )	(X)	NO BLDG TABLE SEE TAP
(cc). Location and vicinity maps.	( )	(X)	EXISTING Cover Sheet
(dd). Title and Revision Blocks.	(X)	( )	
(ee). Approval Block.	(X)	( )	

III. AIRPORT AIRSPACE DRAWING

1. Includes:	Yes	No	REMARKS
a. Plan view of all Part 77 surfaces based on ultimate runway lengths.	(X)	( )	UPDATE NEW Quad Sheet
b Profile views of Part 77 approaches (exist./ultimate).	(X)	( )	UPDATE
c. Obstruction Data Table, as appropriate.	( )	(X)	NOT ON EXISTING Bas
2. Preparation Guidelines:			
a. Sheet Size, Same as ALP Drawing	(X)	( )	

DRAFT
Airport Layout Plan Checklist

	Yes	No	REMARKS
b. Scale, recommended; 1" = 2000' for plan view			
1" = 1000' (horizontal) and			
1" = 100' (vertical) for approach profiles.	(X)	( )	EXISTING
c. Title and Revision Blocks, format sees ALP Drawing.	(X)	( )	"
d Plan view details.			
(1). Use current USGS 71/2 minute Quad for base map when available (latitude/longitude grid tick on map). Show area under all applicable. Part 77 airport imaginary surfaces.	(X)	( )	EXISTING
(2). Show runway end numbers.	(X)	( )	"
(3). 50-ft elevation contours on all sloping imaginary surfaces.	( )	(X)	NA
(4). When horizontal and/or conical surfaces overlap the approach surface, show the most demanding surfaces with solid lines and others with dashed lines.	(X)	( )	
(5). Show objects, by numbers and top elevation of any that are obstructions. Note and refer to inner portion of approach surface drawing for details on any close-in approach obstruction.	( )	(X)	NOT ON EXISTING
(6). For precision instrument approaches, show entire 50,000' approach surface, (may show outer approach on separate sheet)	( )	(X)	NA N/A
(7). Include a note specifying any height restriction zoning ordinances/statutes in the airport environs.	( )	(X)	IF APPLICABLE
(8) Identify land uses in the FAR Part 77 area, especially those incompatible with normal airport operations.	(X)	( )	UPDATE SEE ALP
(9). RPZ based on ultimate runway lengths	(X)	( )	"
(10). Airport property lines and easements (exist./ultimate).	(X)	( )	SEE ALP PROPERTY MAP
(e). Approach Profile Details			
(1). Ground profile use highest terrain across length and width of the approach surfaces.	( )	(X)	EXISTING
(2). Show top elev., by number, all significant objects within the approach surface; e.g., roadway, towers, etc	( )	(X)	NOT ON EXISTING
(3). Show existing and ultimate runway ends and Part 77 approach slopes.	(X)	( )	EXISTING
(4). Show threshold and slope based on threshold siting requirements per Appendix 2 of AC 159/5300-13, Airport Design, if applicable.	( )	(X)	NOT ON EXISTING
(f). Show profile of entire runway if space available on sheet. As minimum, show end elev & high/low points (nearest 1/10 ft).	(X)	( )	EXISTING

DRAFT
Airport Layout Plan Checklist

	Yes	No	REMARKS
(g). Obstruction data table details.			
(1). List all obstructions shown in the plan and profile views.	( )	(X)	NOT ON EXISTING
(2). Identify obstructions by number in plan & profile, description and amount of Part 77 surface penetrations and proposed disposition of the obstruction including no action.	( )	(X)	"
(3). For any close-in obstructions in the approach areas, include note and refer to the obstruction tables on the inner portion of the approach surface drawing.	( )	(X)	"

IV. INNER PORTION OF THE APPROACH SURFACE DRAWING

ONE SHEET RW 6
ONE SHEET RW 24

1. Includes:			
a. Show each runway end, large scale plan view of the inner portion of the approach (existing/ultimate.). Limit to area where Part 77-approach surface reaches a 100-foot height above the runway end.	(X)	( )	NEW SHEETS (2)
b. Projected profile views of item a. above, for each runway end.	(X)	( )	
c. Obstruction tables for the existing and ultimate inner portion of the approach area for each runway end.	(X)	( )	
2. Preparation Guidelines:			
a. Sheet Size, Same as ALP Drawing.	(X)	( )	
b. Scale, recommend; horizontal 1" = 200', Vertical 1" = 20'	(X)	( )	1"=300'
c. Title and Revision Blocks- Same format as ALP Drawing.	(X)	( )	
d. Plan View Details			
(1) Use aerial photos for base maps when available	(X)	( )	AERIAL TOPO
(2). Use numbering system to identify obstruction.	(X)	( )	
(3) Depict property line when it is located within the area	(X)	( )	
(4). Show elevations and clearances for roads, railroads, waterways, etc , at the approach surface edges and extended runway centerline. Number these points and key to profile view and obstruction table, as appropriate.	(X)	( )	
(5). Depict ends of runways, stopways, clearways, safety areas, and object free areas (existing/ultimate).	(X)	( )	
(6). Show ground contours within the area	(X)	( )	
(7). Show existing/ultimate approach and departure RPZ's	(X)	( )	

DRAFT
Airport Layout Plan Checklist

	Yes	No	REMARKS
(8). Indicate existing/ultimate Part 77 approach slopes.	(X)	( )	
(e). Profile View Details			
(1). Depict the ground along runway safety area and significant items such as fences, stream beds, roadways, etc., regardless of whether the items are obstructions	(X)	( )	EXCEPT FENCES
(2). Identify obstructions with number from plan.	(X)	( )	
(3). Depict cross- section of roads and railroads where they intersect outer edges of approach surface.	(X)	( )	APPROX SCALE NOT APPR
(f) Runway Centerline Profile			
(1) Scale (vertical sufficient to show line-of-sight requirements)	( )	(X)	RW ENDS SEE PART 77
(2) Elevations (stations and elev at runway ends and at all points of grade change)	( )	(X)	RW ENDS
(g) Obstruction Table Details			
(1). Prepare separate table for each approach surface (existing /ultimate) and specify type and slope of the Part 77 approach surface	(X)	( )	
(2). List obstructions. by number in plan and amount of Part 77 surface penetrations and proposed disposition of obstructions, also no action.	(X)	( )	

V. TERMINAL AREA DRAWING

(The need for this plan will be decided on a case-by-case basis. For small airports, where the ALP Drawing is prepared to a fairly large scale, a separate drawing for the terminal area may not be needed.) UPDATE EAST GA / NEW SHEET WEST GA

	Yes	No	REMARKS
1. Includes:			
a. Large scale plan view of the area (or areas) where the aprons, buildings, hangars, parking lots, etc., are located	(X)	( )	
2. Preparation Guidelines:			
a. Sheet Size, Same as ALP Drawing.	(X)	( )	
b. Scale, 1" = 50' to 1" = 100'	(X)	( )	
c. Large-scale plan view of terminal area (or areas) showng details of aprons, buildings, hangars, parking lots, etc. (Existing/Ultimate.).	(X)	( )	
d. Building restriction line.	( )	( )	
e Depict separation between objects and taxiways, taxilanes, and tiedowns	(X)	( )	
f. Title and Revision Blocks, Same as ALP Drawing.	(X)	( )	
g. Building Data Table			
(1). Structure identification number (identify structures on plan view with numbers instead of words)	(X)	( )	

DRAFT
Airport Layout Plan Checklist

	Yes	No	REMARKS
(2) Top elevation on structures.	(X)	( )	
(3). Obstruction marking (Existing/Ultimate).	(X)	( )	
h. Legend, Include symbol for planned removal, abandonment., etc.	(X)	( )	

VI. LAND USE DRAWING

1. Definition

A drawing depicting existing and recommended use of all land within the ultimate airport property line (on airport) and in the vicinity of the airport (off airport) to at least 65 LDN.) Typical land use categories are, (e g., agriculture, recreational, industrial, commercial, etc).

2. Purposes

Provide plan for leasing revenue producing areas on the airport, for guidance on compatible land uses in close proximity to runways, for line of sight between runway ends and within runway visibility zones, and for guidance to local authorities for establishing appropriate zoning in the vicinity of the airport.

3. Preparation Guidelines:

a. Sheet Size, Same as ALP Drawing	(X)	( )	UPDATE
b. Scale, Same as ALP Drawing.	(X)	( )	EXISTING
c. Title and Revision Blocks, Same as ALP Drawing			
d. Base Map, Use aerial photos when available	(X)	( )	EXISTING
e. Legend, Use std. drafting symbols to show various parcels and/or areas on and off the airport (existing /ultimate). Show uses by general category	(X)	( )	"
f. Public Facilities			
(1). Depict the location of all public facilities (e.g., schools, hospitals, prisons, parks, etc.) in the vicinity of the airport.	( )	(X)	NOT ON EXISTING
(2). Show current noise contours, if available (date of data used).	(X)	( )	NEW CONTOURS
g. Drawing Details			
(1) Normally limited to existing and ultimate features (i.e., runways, taxiways, RPZ's, terminal buildings and Navaids, etc.)	( )	(X)	
(2). Show details to determine aeronautical areas versus non-aeronautical areas.	( )	(X)	

VII. AIRPORT PROPERTY MAP (Formerly Exhibit "A")

Purposes:

1. The primary intent of the airport property map (formerly Exhibit "A") drawing, is to identify all land which is designated airport property and to provide an inventory of all parcels which make up the airport. It is a document that must be on file in the ADO as part of the development project process. If it is not on file, or needs updating, this drawing can be prepared as part of the ALP set of drawings.

DRAFT
Airport Layout Plan Checklist

	Yes	No	REMARKS

Definition

2. As a minimum, the Property Map (formerly Exhibit "A") must show the current airport research, available mapping/surveys, and field verification, as required. Physical survey of boundaries is generally not required. In those instances where field survey may be considered necessary, the property line and runway should be tied to the State grid system. Standards for precision and accuracy would be part of this review

a. Sheet Size, Same as ALP drawing.	X	( )	1" = 400'
b. Scale, Same as ALP drawing.	X	( )	1" = 400'
c Title and Revision Blocks, See ALP Drawing. Clearly label as Airport Property Map (formerly Exhibit "A")	X	( )	
d Legend, Use standard drafting symbols and legend table to indicate the type of acquisition involved with each tract or area.	X	( )	

4. Specific Property Map required items:

a. Identify outside airport property boundary.	X	( )	
b. Each parcel making up the entire airport must be shown and numbered. In addition, parcels, which were once airport property, must also be shown.	X	( )	
c. Both fee and easement interest must be shown and separately designated	X	( )	
d. Delineate runways, taxiways, RPZ's, TSA's, RSA's, OFA's, BRL's, Terminal Buildings, and Navaids (existing/ultimate).	X	( )	No TSA, RSA, OFA, BRL
e. Magnetic and true north arrows.	X	( )	
f. Show each line type that identifies airport boundary, parcel boundary, RPZ's, BRL's, easements, etc. clearly in the legend.	X	( )	
g. The plan view with related data table and/or notes must show an inventory of all parcels by number, including the grantor, grantee, and type of interest, acreage, deed book and page, and date of recording. They must also show FAA project number if acquired under a grant: PFC application number if acquired with PFC; Surplus Property Transfer or AP-4 Agreement if applicable; type of easement (clearing, avigation, utility, right-of-way, etc); and if released, date of FAA approval.	X	( )	EXISTING
h. The purpose of acquisition if acquired under a Federal grant (approach protection., aeronautical, noise compatibility, current or future development.) based on the grant description must be indicated, plus any special conditions.	X	( )	EXISTING
i. If the Property Map is being prepared for submittal as part of a land acquisition project, parcels being acquired must be shown.	( )	X	NA

DRAFT
Airport Layout Plan Checklist

	Yes	No	REMARKS
j. The Property Map must be drawn to scale, all information must be on one sheet if possible, and should be no larger than the ALP drawing sheet size and be legible. There should be an index sheet if the Property Map (formerly Exhibit "A") involves several sheets for larger airports.	(X)	( )	
k. The Property Map must be dated and amended whenever there is a change to any airport property.	(X)	( )	
l. There should be sufficient descriptive data (i.e., section, city, county, lot and block, metes and bounds, etc) to enable accurate location of current and future parcels on the drawing.	( )	(X)	TAX MAP INFO
m. Points of reference for tracing parcels from a deed description by scaling should be shown. As new parcels are acquired, the property map should add their associated bearings and lengths to enable quick confirmation of the parcel's location	( )	(X)	WHEN SURVEYED
n. Fencing, if it does not obscure airport boundary lines.	( )	(X)	" "