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Introduction

Recognizing the important relationship between air transportation and the economic well being of the surrounding region, the City of Arlington has initiated a new aviation planning study to investigate various options for improving and/or enhancing aviation facilities at Arlington Municipal Airport. This planning effort, which will be conducted as an element of the Airport Layout Plan Update (ALP Update) for the facility, will evaluate several future aviation-related development issues. These issues include:

- Compliance with specified airfield dimensional criteria.
- Runway length determination.
- Airfield configuration enhancements.
- Aviation User Compatibility.
- Aviation Development Area Site Planning.
- Vehicular access improvements.
- NAVAID, approach, and lighting revisions.

The existing master planning document, entitled *Arlington Municipal Airport Master Plan Update 1995-2015* (i.e., the 1995 MP) was completed in 1996. This planning effort will examine the existing airport facilities (i.e., runway, taxiways, hangars, ground access, etc.) and their relationship to the airport environs. Airport forecasts will be developed detailing both the existing and anticipated aviation activity. An evaluation of the airport facilities' ability to meet the projected aviation demand in a safe and efficient manner will be included. Finally, development alternatives will be analyzed and presented in a later working paper, as will the airport plan and the estimated costs of development. Additional design issues associated with the ALP

Update include identification of future land use compatibility requirements, an update of the airport's future property/easement acquisition requirements, and an evaluation of future general aviation expansion alternatives. In addition, the current Airport Layout Plan (ALP) drawing set will be updated to reflect the new development recommendations.

Airport Role and Facilities

Arlington Municipal Airport is a vital part of the national system of airports, as well as an integral component of the transportation infrastructure that serves the City of Arlington, Snohomish County, and the northern portion of the Seattle-Tacoma Metropolitan Area. The airport provides transportation facilities that are an absolute necessity for some businesses and are a "required" convenience for others. Not to be overlooked, the airport, along with the aviation-related businesses and facilities, represents a vital and significant regional economic asset. In addition to the many aviation-related assets, the airport also provides benefits to local businesses and industries, as well as encourages additional economic development and expansion throughout the City and surrounding communities.

As illustrated in the following figure, entitled *AIRPORT LOCATION/VICINITY MAP*, Arlington Municipal Airport is located north of the Seattle-Tacoma Metropolitan Area, approximately three (3) miles southwest of the Arlington Central Business District (CBD), approximately (1/3) miles from the Highway Commercial District, and twelve (12) miles north of the City of Everett. The airport is owned and operated by the City of Arlington, with all of airport property being contained within the corporate boundaries. A listing of specific airport data for the Arlington facility is presented in the following text.

- Airport Reference Point (ARP): Latitude 48° 09' 38.694"N, Longitude 122° 09' 32.475"W. (O.C. 645/February 1993)
- FAA Site number: 26099.A.
- National Plan of Integrated Airport Systems (NPIAS) classification: General Aviation
- Acreage: 1,189.0 acres.
- Elevation: 137 feet above mean sea level (AMSL).
- Mean normal maximum temperature: 75° F.

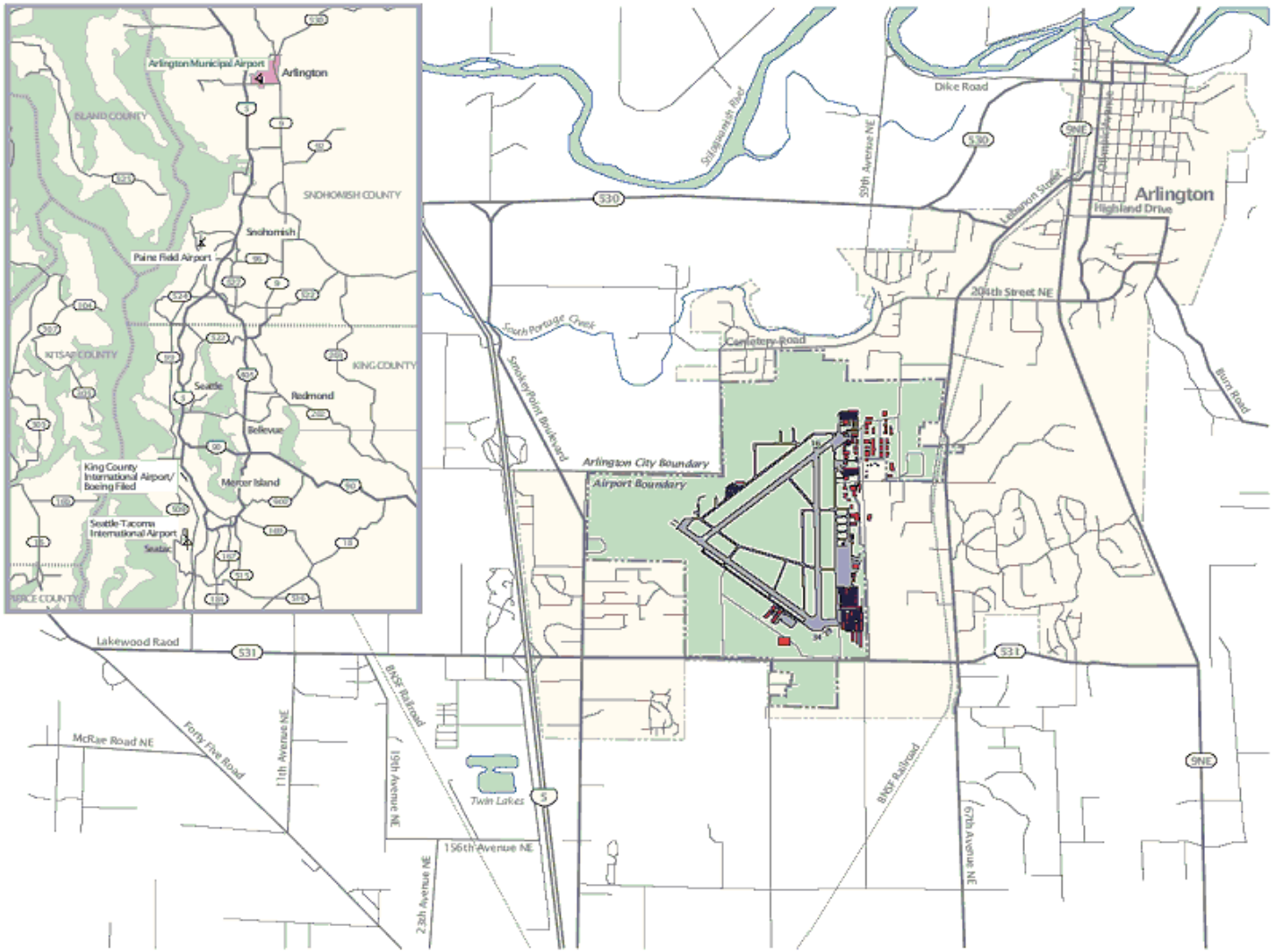


Figure A1 Airport Location/Vicinity Map

Arlington Municipal Airport
Airport Layout Plan Update

Source: Everett Street Map, Everett Chamber of Commerce—Thomas Bros. Maps 1999.

Airside Facilities

The following information was compiled from data recorded on the 1998 FAA Form 5010-1 Airport Master Record, the *Washington State Aviation System Plan* data base, and the February 1997 Airport Layout Plan.

Runway System. The airport is currently operated with two (2) runways: Runway 16/34 (i.e., the primary runway) and Runway 11/29 (i.e., the crosswind runway), along with parallel and connecting taxiways that provide aircraft access to the various aviation development areas on the airport. Figure A2, entitled *EXISTING AIRPORT LAYOUT,* provides a graphic presentation of the existing airport facilities.

Runway 16/34

- *Dimensions:* 5,333 feet in length and 100 feet in width.
- Pavement: Constructed of asphalt with a gross weight bearing capacity of 114,000 pounds single wheel, 150,000 pounds dual-wheel, and 270,000 pounds dual tandem-wheel main landing gear configuration. The current pavement condition is rated as good, with a Pavement Condition Index (PCI) rating of 98.
- *Lighting:* Medium intensity runway lights (MIRLs) and threshold lights are located at each runway end. Runway 34 is equipped with a Medium Intensity Approach Lighting System (MALS) and a 2-box Precision Approach Path Indicator (PAPI), while Runway 16 is also provided with a 2-box Precision Approach Path Indicator (PAPI).
- *Landing Aids:* Runway 34 has two published non-precision approaches consisting of a Non-Directional Beacon/Global Positioning System (NDB/GPS) and a Localizer (LOC) located approximately 785 feet north of the approach end to Runway 16.
- *FAR Part 77 obstruction data:* Obstruction data for the airport was obtained from Obstruction Chart (OC) 795/2nd Edition, which was surveyed in July 1992. There are several obstructions noted for Runway 16, with the majority being associated with vegetation. If future programming calls for a lowering of the current approach minimums, there is the possibility additional obstructions will likely occur off both runway ends. (An update of the runway's existing obstruction data is presented on the Height Hazard Zoning Map contained in Appendix Two.)
- *Traffic Pattern:* Runway 16/right traffic, Runway 34/left traffic.

Runway 11/29

- *Dimensions:* 3,500 feet in length and 75 feet in width.
- Pavement: Constructed of asphalt with a gross weight bearing capacity of 32,000 pounds single wheel, 34,000 pounds dual-wheel, and 59,000 pounds dual tandem-

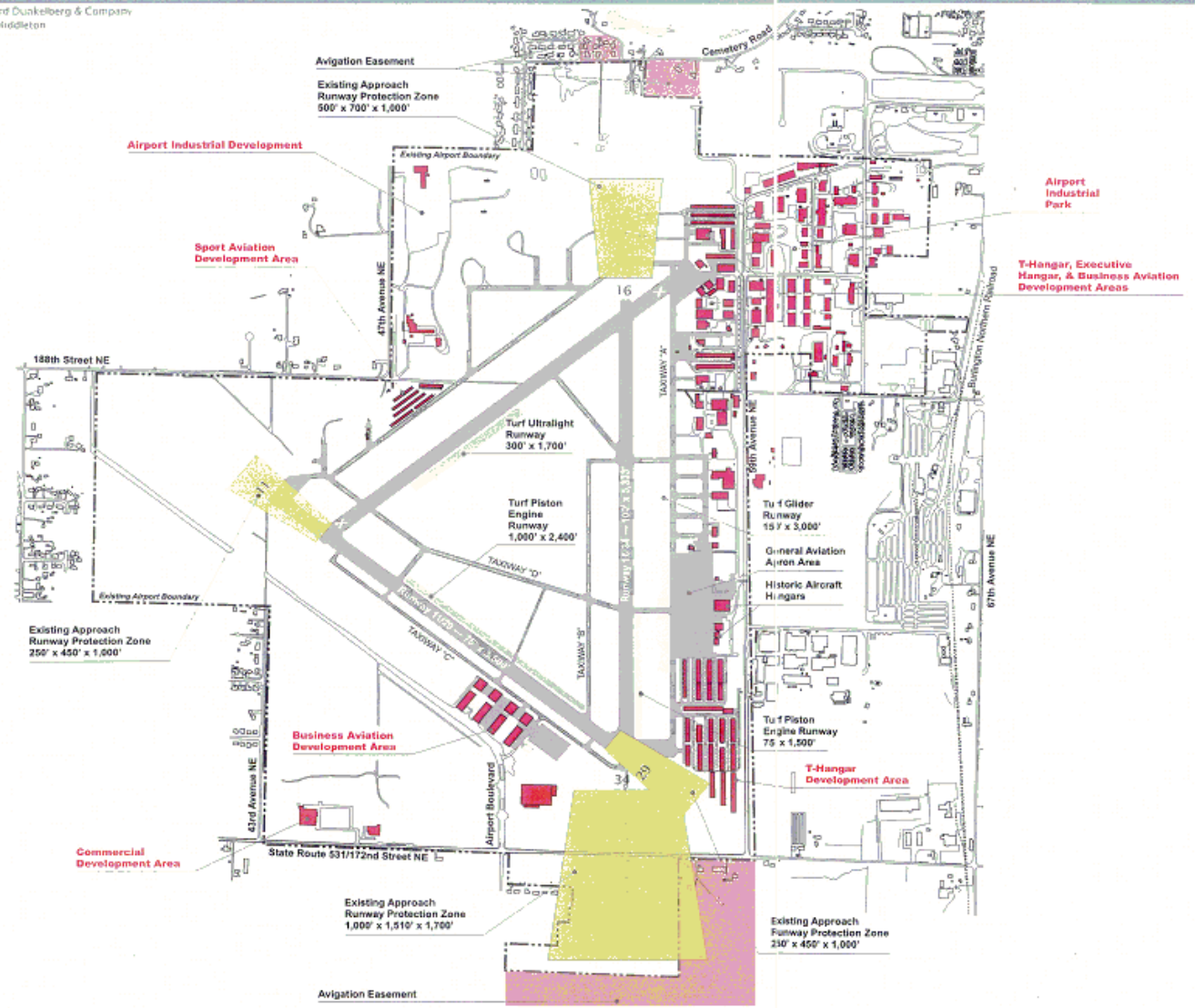


Figure A2 Existing Airport Layout

Approximate Scale 1" = 1,200'

Arlington Municipal Airport
Airport Layout Plan Update

Source: Airport Layout from 1995 Master Plan document.

wheel main landing gear configuration. The current pavement condition has a PCI rating of 96.

- *Lighting:* none.
- *Landing Aids:* Runway end identifier lights (REILs) and PAPIs are provided at each runway end.
- *FAR Part 77 obstruction data:* There are no known obstructions to either runway end.
- *Traffic Pattern:* Runway 11/right traffic, Runway 29/left traffic.

Taxiway System. Due to the evolution of airfield landing areas and pavements at Arlington portions of the existing taxiway system reflect an atypical layout configuration. This assessment is premised on the fact that the airport previously operated with three runways, which included numerous connecting taxiways that have evolved into the taxiway system footprint that is utilized today. At present, Taxiways "A", "B" and "C" are the dominant use taxiways at the airport, with Taxiway "D" also being utilized commensurate with the utilization of Runway 11/29 and during the annual EAA Fly-In event. A description of the individual taxiways associated with each runway facility is presented in the following tables.

Table A1
RUNWAY 16/34 TAXIWAY SYSTEM
Arlington Municipal Airport Layout Plan Update

Taxiway	Type	Location	Width	Condition	Lighting/ Signage	PCI
Taxiway "A"	Full Parallel	Eastside	50'	Good	None/Yes	97
Taxiway "B"	Partial Parallel & Connector	Westside	35'	Good	None/Yes	100
Taxiway "D"	Connector	Westside	50'	Poor	None/Yes	30
Taxiway "A1"	Connector	Eastside	200'	Good	LITLs/Yes	98
Taxiway "A2"	Connector	Eastside	50'	Good	LITLs/Yes	100
Taxiway "A3"	Connector	Eastside	50'	Good	LITLs/Yes	100
Taxiway "A4"	Connector	Eastside	150'	Good	LITLs/Yes	100
Taxiway "B2"	Connector	Westside	40'	Poor	None/Yes	27
Taxiway "B3"	Connector	Westside	35'	Good	None/Yes	93

Source: WSASP Airport Data Condition Assessment Database.

Table A2
RUNWAY 11/29 TAXIWAY SYSTEM
Arlington Municipal Airport Layout Plan Update

Taxiway	Type	Location	Width	Condition	Lighting/ Signage	PCI
Taxiway "B"	Connector	Northside	35'	Good	None/Yes	100
Taxiway "C"	Full Parallel	Southside	35'	Good	None/None	100
Taxiway "D"	Partial Parallel	Northside	50'	Poor	None/Yes	30
Taxiway "C1"	Connector	Southside	35'	Good	None/Yes	97
Taxiway "C2"	Connector	Southside	35'	Good	None/Yes	97
Taxiway "C3"	Connector	Southside	35'	Good	None/Yes	97
Taxiway "D2"	Connector	Northside	35'	Poor	None	23

Source: WSASP Airport Data Condition Assessment Database.

Approaches/Airspace Utilization. There are presently two (2) published instrument approach procedures to the airport, which are listed in the following table, entitled *INSTRUMENT APPROACH PROCEDURES*.

Table A3
INSTRUMENT APPROACH PROCEDURES
Arlington Municipal Airport Layout Plan Update

Type of Approach	Runway Designation	Ceiling Minimums	Visibility Minimums
NDB or GPS	34	860'	3/4 mile
LOC	34	600'	3/4 mile

Source: Jeppesen Airway Manual.

Future FAA programming calls for a Category-I (CAT I) GPS precision approach to Runway 34 and GPS non-precision approach to Runway 16 with visibility minimums

of not less than ¾ mile. Runway 11/29 will continue to retain its visual approach status.

As can be seen in the following illustration, *AIRSPACE/NAVAIDS SUMMARY,* several regional navigational facilities are located in the Seattle area, which are available to pilots. The City of Arlington has also adopted specific noise abatement procedures for the airport in efforts to minimize noise impacts to neighboring sensitive areas (see Appendix One for detailed description). These procedures also dictate the specified non-standard right traffic patterns published for Runways 16 and 11 and left traffic patterns for Runways 34 and 29. These patterns are depicted on Figure A4, entitled *EXISTING AIRPORT TRAFFIC PATTERNS*.

Landside Facilities

General Aviation Facilities. The majority of the airport's existing general aviation facilities are located along the east side of Runway 16/34, positioned between 59th Avenue NE and Taxiway "A". This portion of the airport is intensely developed with a variety of aircraft storage facilities, which includes over 400 T-hangars and apron area to accommodate over eighty tiedown spaces. The City of Arlington presently owns 108 of the existing T-hangars located adjacent to the approach end of Runway 34. There are also numerous Fixed Base Operator (FBO), maintenance, and individually owned aircraft storage hangars located throughout this quadrant of the airport. One FBO offers fueling, with 24-hour self-service credit card access.

The development of additional general aviation facilities has also begun to occur along the south side of Runway 11/29, adjacent to the east end of the runway. These facilities presently include tiedown apron space for approximately 30 aircraft (11 tiedowns are currently unoccupied) and a complex of four new business-related aircraft storage hangars. In addition, the existing ultra-light hangar complex is located within the northwest quadrant of the airport and accommodates the storage of approximately 62 ultralight aircraft.

According to current records obtained from airport personnel, there are approximately 475 based aircraft at the airport, which includes 6 helicopters, 5 gliders, and 61 ultralights. The airport's existing hangar occupancy rate is 100 percent, with significant existing demand for the development of additional aircraft storage facilities. According to current hangar waiting lists maintained by the airport manager's office, there are approximately 85 aircraft owners wanting to base aircraft at Arlington.

Figure A3 *Airspace/NAVAIDS Summary*

Source: Seattle Sectional, 59th Edition, January 1999

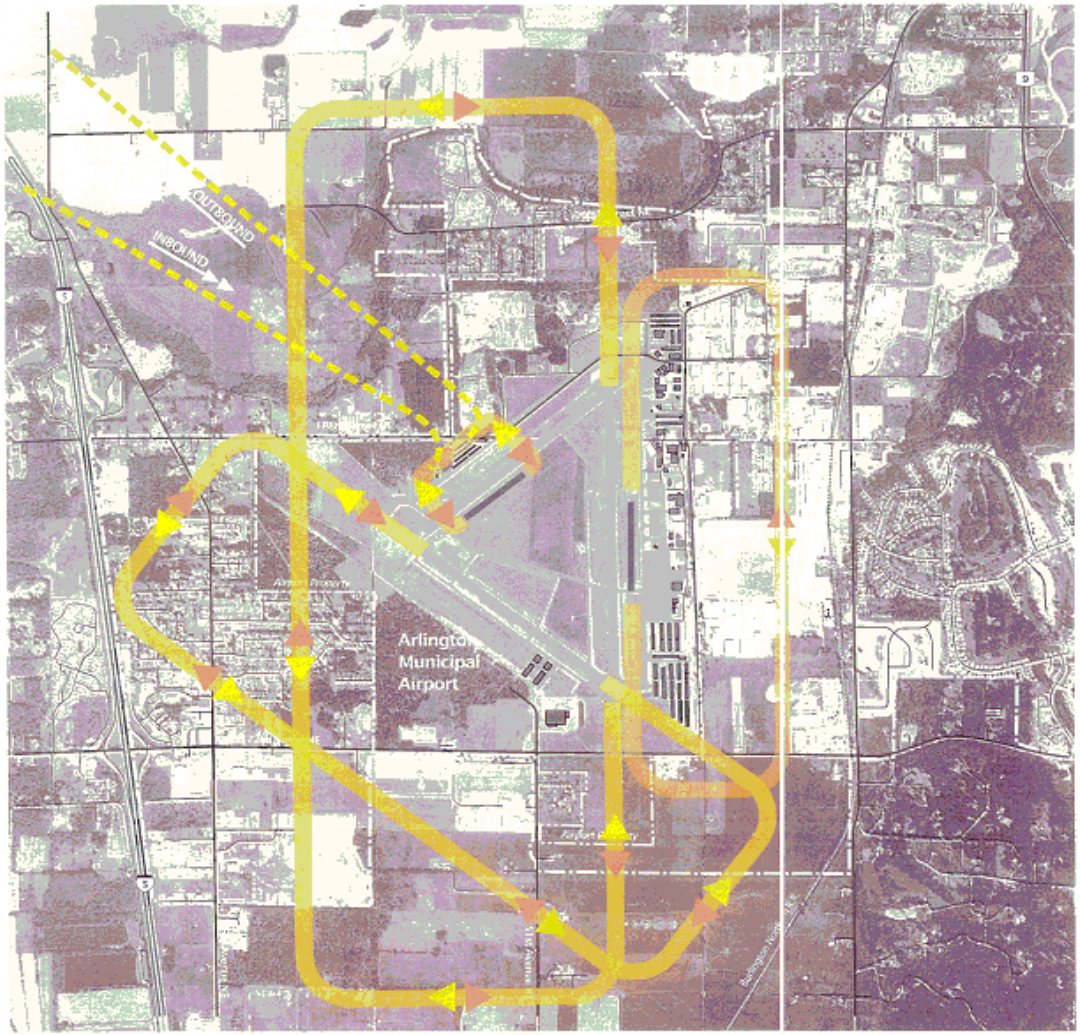


Figure A4 ***Existing Airport Traffic Patterns***

- *Paved Runways*
- *Turf Runways*
- *North Flow Configuration*
- *South Flow Configuration*

Approximate Scale: 1" = 2,000'

Source: 1997 Aerial Photography provided by Sourcview Aerial.

Municipal Airport
Airport Layout Plan Update

Table A4
SUMMARY OF HANGAR FACILITIES
Arlington Municipal Airport Layout Plan Update

Lot Number	Hangar Type	Number of Bays	Size
2	T-hangar	11	255 x 45
3	T-hangar	14	295 x 50
4	T-hangar	13	295 x 50
5	T-hangar	12	255 x 50
6	T-hangar	13	270 x 45
7	T-hangar	12	295 x 50
8	T-hangar	6	200 x 60
9	T-hangar	12	270 x 50
10	T-hangar	12	270 x 50
11	T-hangar	12	270 x 50
12	T-hangar	15	430 x 30
13	T-hangar	15	430 x 30
14	T-hangar	8	200 x 50
15	T-hangar	8	200 x 50
16	T-hangar	8	200 x 45
17	T-hangar	26	540 x 50
18	T-hangar	12	250 x 45
19	T-hangar	12	250 x 50
20	T-hangar	12	250 x 50
45	T-hangar	20	470 x 50
46	T-hangar	20	470 x 50
64	T-hangar	16	560 x 50
65	T-hangar	26	470 x 50
001A	T-hangar	16	355 x 50
001B	T-hangar	20	440 x 50
001C	T-hangar	24	525 x 50
Total	26	375	

Source: Arlington Airport Personnel.
WSASP Airport Data Condition Assessment Database (www.wsdot.wa.gov)

Table A4
SUMMARY OF HANGAR FACILITIES (Continued)
Arlington Municipal Airport Layout Plan Update

Lot Number	Hangar Type	Number of Bays	Size
22	Air Transport	0	50 x 40
22	Air Transport	1	50 x 50
60	Condo Hangar	7	200 x 100
60	Condo Hangar	6	360 x 50
63	Condo Hangar	5	280 x 50
63	Condo Hangar	5	280 x 50
62	Hangar	1	150 x 170
400	Hangar	4	120 x 100
400	Hangar	4	120 x 100
28	Commercial	1	60 x 60
30-A	Commercial	2	110 x 50
32-B	Commercial	1	170 x 80
33	Commercial	1	80 x 40
34-A	Commercial	1	100 x 40
37	Commercial	1	140 x 70
39	Commercial	1	80 x 80
44	Commercial	1	140 x 70
48-A	Commercial	1	50 x 60
50	Commercial	1	100 x 100
52	Commercial	1	180 x 100
54	Commercial	1	100 x 60
57	Corporate	1	100 x 60
	Corporate	1	80 x 70
58	Commercial	1	130 x 80
	Commercial	1	130 x 60
59	Private	1	60 x 70
	Private	1	60 x 70
62	Corporate	1	120 x 140
400	Hangar	4	240 x 80
	Hangar	4	240 x 80

Source: Arlington Airport Personnel.
WSASP Airport Data Condition Assessment Database (www.wsdot.wa.gov)

Table A4
SUMMARY OF HANGAR FACILITIES (Continued)
Arlington Municipal Airport Layout Plan Update

Lot Number	Hangar Type	Number of Bays	Size
401	Hangar	4	120 x 100
	Hangar	4	120 x 100
	Hangar	4	240 x 80
	Hangar	4	240 x 80
Total	34	77	

Source: Arlington Airport Personnel.
WSASP Airport Data Condition Assessment Database (www.wsdot.wa.gov)

The majority of the airport's existing general aviation development is located within this portion of the airport, which abuts 59th Avenue S.E. There is some limited area available for the development of additional T-hangar facilities and possible redevelopment alternatives for a few of the older T-hangar structures; however, the majority of this area is currently developed.

Apron
- thirty-one (31) based tiedowns w/concrete anchors (south)/paved/good condition/ 10,095 yds.^{2}
- eighty-one (81) based tiedowns w/concrete anchors (east)/paved/fair condition/53,333 yds.^{2}

Support Facilities.

- Aircraft Rescue and Fire Fighting (ARFF) Facility: The airport presently does not maintain a limited operating certificate to provide ARFF capabilities in accordance with FAR Part 139 guidelines. The City of Arlington, however, does maintain a fire protection facility at the airport which doubles to serve the surrounding community, as well as the occasional aircraft emergency. Currently, Arlington Fire Station No. 47, responds to aircraft incidents and is located on airport property at 188th and 63rd.

- Fuel Storage: The airport has several commercial and private fueling facilities located at various locations on airport property. Commercially, there are three (3) under ground storage tanks located at Fliteline Services, at the northeast side of the airport. These include two (2) 10,000 gallon tanks containing 100LL and one (1) 10,000 gallon tank containing Autogas. Additionally, Pro Aire, located on the west ramp, has two (2) fuel trucks providing 1,250 and 5,000 gallon 100LL, and one (1) fuel truck providing 2,500 gallons of JetA. Privately owned fuel storage consists of two JetA, under ground storage tanks with 12,000 gallon capacities operated by Pacific Marine Management and the U.S. Marine Corp. Additionally, Airlift Northwest, located on the west ramp, operates a 1,250 gallon JetA fuel truck.

- Automated Weather Observing System (AWOS): The airport is served by an AWOS facility, located west of Runway 16/34, north of Runway 11/29, and south of Taxiway "D", that provides weather data observations updated every minute, 24 hours a day, every day of the year. The weather observations provided include temperature, dew point, wind, altimeter setting, visibility, sky condition, and precipitation. Typically, the AWOS provides computer-generated voice directly to aircraft in the vicinity of airports using FAA VHF ground-to-air radio communications.

Aviation-Related or Non-Aviation Development. Arlington Municipal Airport is unique in the sense that, not only does it host a nationally recognized annual aviation event, the Northwest EAA Fly-In, but it also has sufficient area to accommodate both aviation and non-aviation related development areas. Currently, these development areas consist of an airport industrial park and future airport business park, but also include an existing development area for the EAA Fly-In. The following illustration, entitled *ANCILLARY AIRPORT DEVELOPMENT AREAS*, identifies each of these specified development areas.

- Arlington Northwest EAA Fly-In: Each year Arlington Municipal Airport hosts the annual Northwest Experimental Aircraft Association Fly-in and Sport Aviation Convention. Aircraft from all over the state, as well as the U.S. and Canada, attend this event, and consist of a litany of historic/warbird aircraft, experimental aircraft, aerobatic aircraft, utlra-lights, and hot air balloons. Programs and events consist of numerous exhibits, educational services, and aerobatic performances. The event takes place on the northwest portion of the airport, adjacent to the closed runway.

- Future Airport Business Park Development: There are current plans to construct an Airport Business Park, consisting of approximately 123 acres, within the

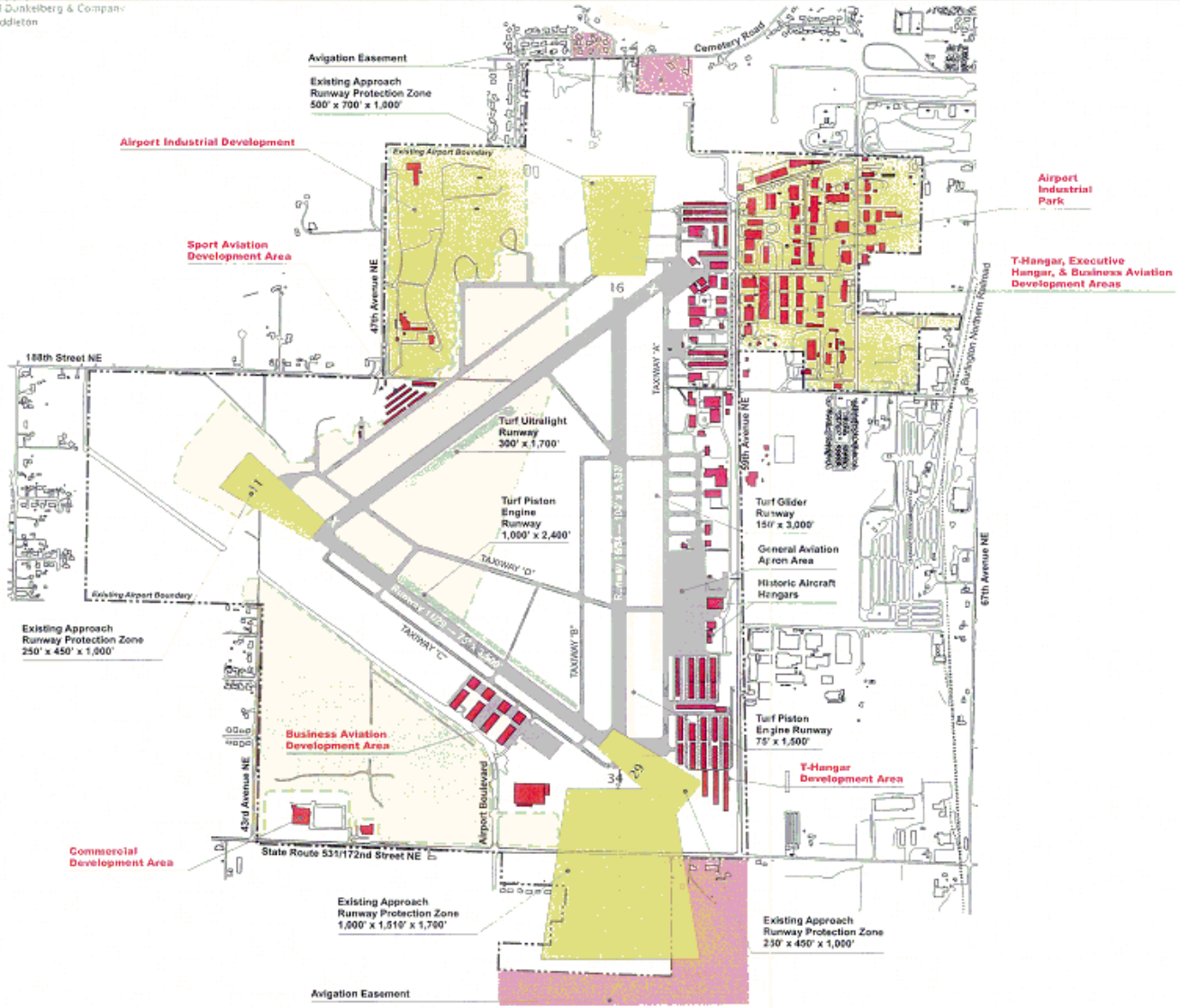


Figure A5 Ancillary Airport Development Areas

- *Existing Arlington Airport Business Park (105.4 Acres)*
- *Existing Arlington Industrial Park (173.8 Acres)*
- *Future EAA Fly-In Development Area (179.1 Acres)*

Approximate Scale 1"=1,200'

Source: Airport Layout from 1995 Master Plan document.

Arlington
Municipal Airport
Airport Layout
Plan Update

southwest quadrant of airport property. The project includes business support services, offices, research and development manufacturing, light manufacturing, and aviation uses along the Runway 11/29 flightline. Lots would range in size from less than 2 acres to combinations of 15 acres or more. Phase One development of the business park is projected to commence in 2001, with completion of development anticipated by 2016.

- Airport Industrial Park Development: According to current lease data provided by airport management, there are approximately 130 businesses located on airport property that lease land and/or facilities from the City of Arlington. Approximately 25% of these businesses involve aviation or aviation-related uses associated with the airport. The remaining businesses consist primarily of non-aviation uses located within the Arlington Airport Industrial Park. The industrial park consists of approximately 102 acres and is located east of 59th Avenue NE, within the northeast quadrant of the airport. Additionally, one of the mills located on the northwest portion of the airport will not be renewing its lease at the end of the year. This area will be available for new development.

Vehicular Access. The airport is easily accessible to vehicles utilizing the existing state and federal highway system. 172nd St/SR531 NE, which is located adjacent to the southern boundary of the airport, provides direct access to Interstate 5 (I-5) located less than one mile west of the airport. Access to downtown Arlington from the airport, located approximately two miles to the northeast, is provided by 188th St. NE and 67th Ave. NE. Based on the functional classification of roadways presented in the City of Arlington Final Comprehensive Plan completed in June 1995 (i.e., 1995 Comp Plan), 172nd St/SR531 NE is classified as "Principal Arterial" street. In addition, 67th Ave. NE is classified as a "Minor Arterial" street, with 188th NE being designated as a "Collector" street.

All of the existing general aviation facilities located along the east side of Runway 16/34 are accessible to vehicles via 59th Ave. NE (classified as a "Minor Arterial" street), which also links 172nd St/SR531 NE to 188th St. NE. The southwest portion of the airport (i.e., the proposed Airport Business Park development area) is currently accessed by the phase one development of Airport Boulevard, which serves the existing general aviation development located adjacent to the approach end of Runway 29. The northwest portion of the airport, which is presently utilized by the ultralight aircraft operators, is accessible via either 188th St. NE or 47th Ave. NE. Each of these roadways is classified as "Collector" street.

The 1995 Comp Plan also identifies several proposed roadway improvements and new roadway development projects in the vicinity of the airport. It is proposed that

172nd St/SR531 NE would be upgraded to a "Highway" designation, with 59th Ave. N.E, 47th Ave. NE and that portion of 188th St. NE located on the west side of the airport being upgraded to the "Principal Arterial" classification. The proposed new street projects include the extension of Airport Boulevard linking 172nd St/SR531 NE with 188th St. NE (serving the future Airport Business Park) and the extension/realignment of 195th St. NE linking 67th Ave. NE with 47th Ave. NE. A future "park and ride" lot has also been recommended for development within the southeast corner of airport property, adjacent to the approach end of Runways 34 and 29.

The ultimate alignment of these new roadways and location of the new parking facility must be carefully coordinated with current FAA design criteria and regulations. For example, the FAA is now strongly discouraging the development of new roadways within runway protection zones. These new guidelines could impact the proposed extension/realignment of 195th St. NE associated with the Runway 16 RPZ due to potential changes in the runway's Airport Reference Code (ARC) and/or proposed runway extension considerations. In addition, the future development of a "park and ride" lot must not violate runway object free area (ROFA) clearing criteria or height restrictions associated with Part 77 approach surfaces.

Airport Environs

A proper inventory of the existing land uses, zoning patterns, and the various land use planning and control documents used to guide development of property surrounding the airport is an important element in the airport planning process. Land use compatibility with airport development can be insured with a thorough knowledge of what land uses are proposed and what, if any, changes need to be made.

Existing Land Use

Arlington Municipal Airport is located approximately three (3) miles southeast of the Arlington CBD and 1/3 of a mile east of Arlington (Smokey Point) HC, but contained within the corporate boundaries of the city. The airport presently consists of approximately 1,189.0 acres and includes some industrial, commercial, and public land uses, in addition to the existing aviation operational areas. The airport is also surrounded by a variety of land uses allocated to agriculture/open space. Residential land uses are primarily located adjacent to airport property along the northern and western boundaries, with a small area located south of the airport. A large area of residential land use is also located east of 67th Avenue NE, and extends both north and

south of 172nd St/SR531 NE. The majority of industrial development within the vicinity of the airport is concentrated east, located west of 67th Avenue NE and continuing northeasterly towards the Arlington Central Business District (CBD). As previously indicated, there are two areas of existing industrial development located within the northern portion of the airport. The majority of commercial, office, and business park development is located south and west of the airport and concentrated along 172nd St/SR531 NE, near the Interstate 5 (I-5) interchange. Generally, the area south of the airport is dominated by agricultural land uses with a mixture of rural residential. The following figure entitled, *GENERALIZED EXISTING LAND USE,* illustrates the current land use patterns in the vicinity of Arlington Municipal Airport.

Future Land Use

In 1996 the *Washington State Growth Management Act* of 1990 was amended by Washington State Senate Bill 6422, which recognized airports as essential public facilities. This bill requires every city, town, code city, charter city, and county having a general aviation airport in its jurisdiction to discourage the siting of land uses that are incompatible with the airport.

The City of Arlington has adopted a Comprehensive Plan in 1995 that specifies future land use development recommendations within a study area boundary that includes both the City and an expanded area of northern Snohomish County. The plan identifies those portions of the airport that are "Airport Restricted" for aviation development and includes the identification of extended "Airport Approach Zones" from each end of the paved runways. The airport-restricted areas are generally surrounded by industrial development designations. Office, commercial, and business park uses are concentrated southwest of the airport, along 172nd St/SR531 NE and I-5; however, these uses are also located northeast of the airport, primarily east of 67th Avenue NE. Future residential land uses are located on the north, east, and west sides of the airport, generally abutting the designated industrial uses. Figure A7 entitled, *GENERALIZED FUTURE LAND USE,* illustrates the currently recommended future land uses in the vicinity of Arlington Municipal Airport.
This map also illustrates portions of several "Urban Growth Area Boundaries" located south of the airport. These areas were obtained from the *Snohomish County GMA Comprehensive Plan 1999 Future Land Use Map.* The UGA located directly south of the airport is of particular importance to the City of Arlington, given the recommended precision instrument approach upgrades proposed for Runway 34.

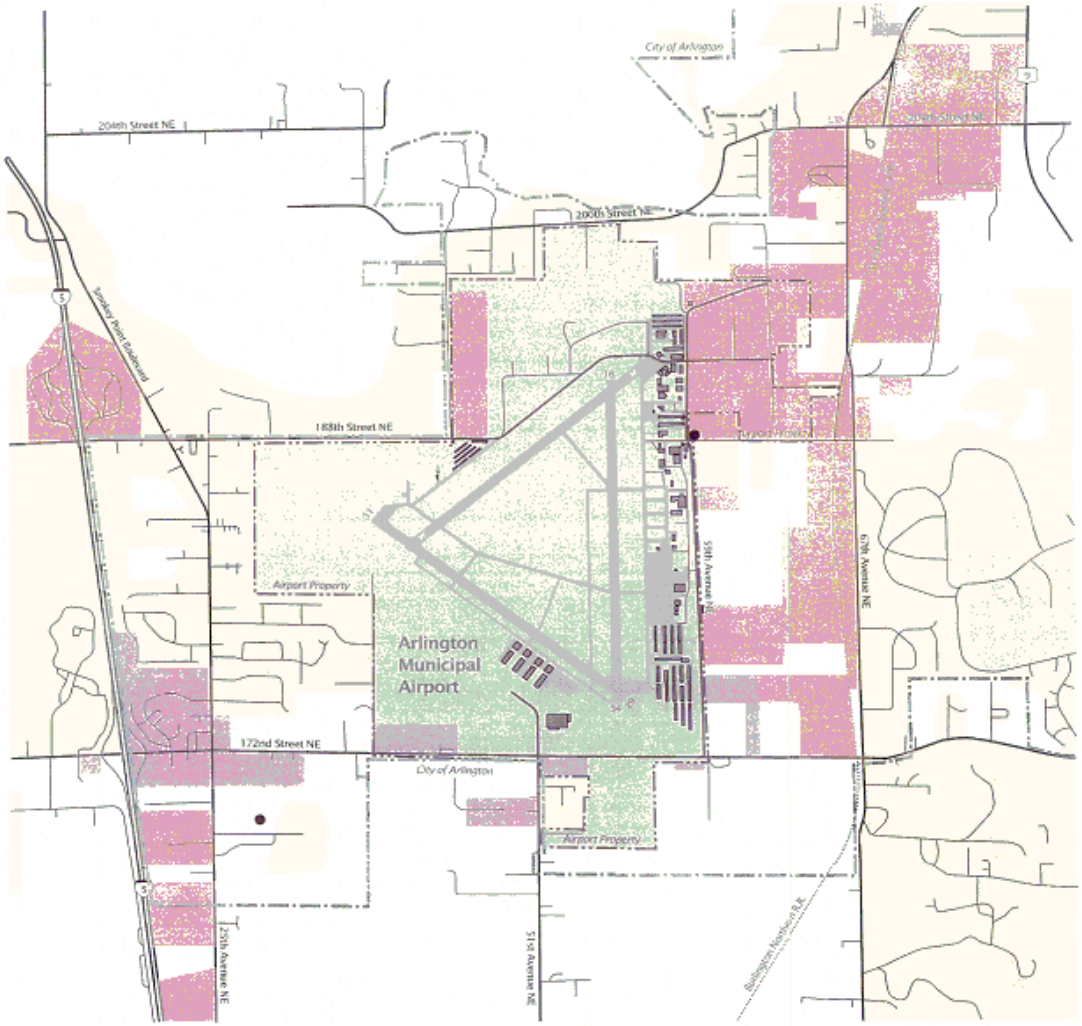


Figure A6 Generalized Airport Environs Existing Land Use

- *Airport Property*
- *Residential*
- *Office, Commercial, Business Park*
- *Industrial*
- *Parks/Golf Courses*
- *Public/Community Owned Facilities*
- *Agriculture/Undeveloped*
- *Schools*

Approximate Scale 1"=2,000'

Arlington Municipal Airport
Airport Layout Plan Update

Source: 1997 Aerial Photography provided by SoundWest Aerial, City of Arlington Mapping from the 1995 Final Comprehensive Plan

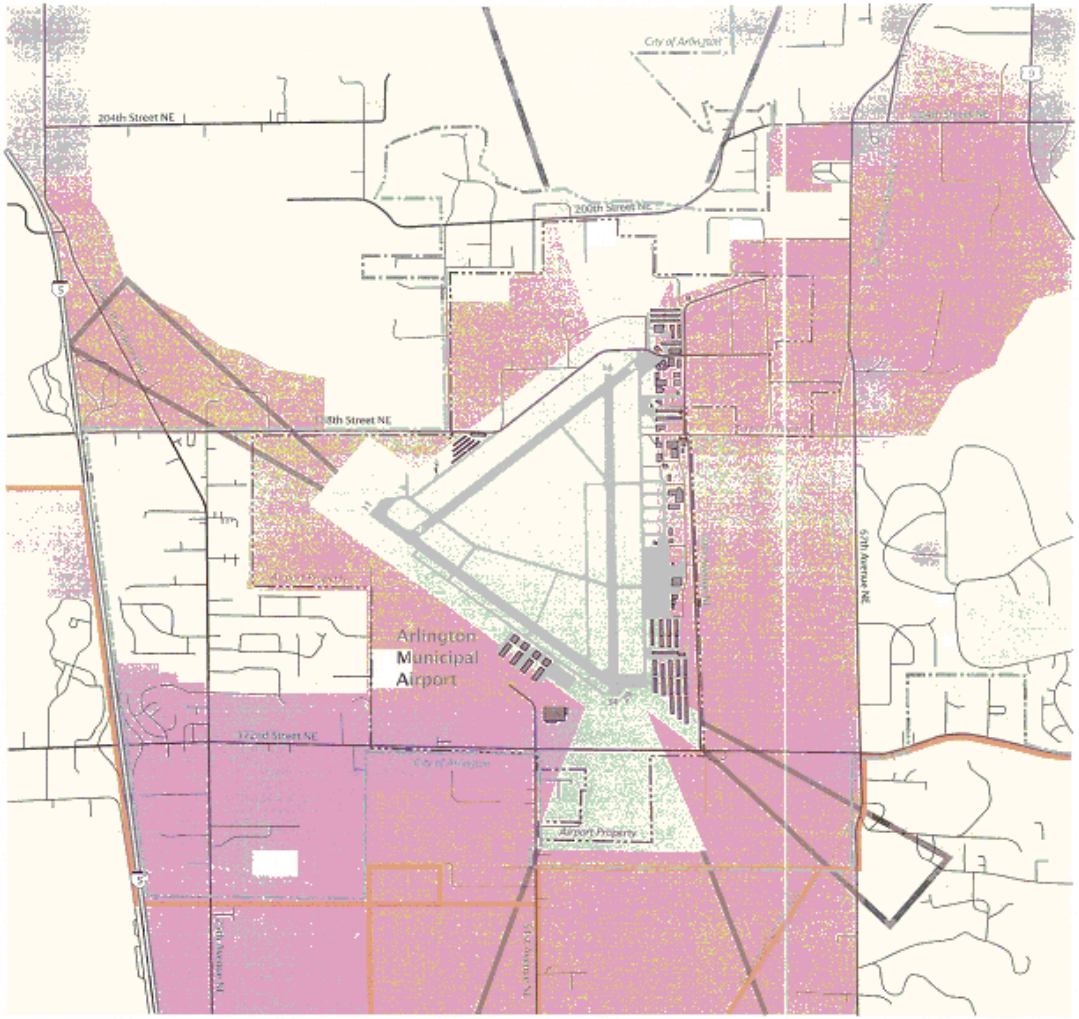


Figure A7 ***Generalized Airport Environs Future Land Use***

- *Airport Restricted*
- *Airport Approach Zone*
- *Residential*
- *Office, Commercial, Business Park*
- *Public/Semi-Public*
- *Parks/Public Open Space/Golf Courses*
- *Future Parks*
- *Industrial*
- *Agriculture/Undeveloped*
- *Urban Growth Area Boundary*

Approximate Scale 1"=2,000'

Source: City of Arlington Mapping from the 1995 Final Comprehensive Plan, Snohomish County GMA Comprehensive Plan Future Land Use Map.

Arlington Municipal Airport
Airport Layout Plan Update

Existing Zoning

The City of Arlington has an adopted zoning ordinance and map to guide the development of property within the Arlington corporate boundary within the defined Urban Growth Area Boundary. The airport is currently recognized within the *Unified Development Code* of the City of Arlington as an Airport Industrial (AI) Zone. The AI Zone encompasses all of the existing airport property. A large area of industrial zoning is located directly east of the airport between 59th Ave. NE and 67th Ave. NE. East of 67th Ave. NE, zoning consists of various densities of residential use. Office, commercial, and business park zoning is located south and west of the airport, while north of the airport, zoning consists of residential with small pockets of industrial and commercial.

The existing zoning ordinance also references "Aeronautical Over-Zones" and overlay zoning requirements in conjunction with the navigable airspace associated with Arlington Municipal Airport. In addition, the City of Arlington, City of Marysville, and Snohomish County have not adopted an official Height Zoning Ordinance for the area around the airport. However, a model Height Zoning Ordinance and map has been developed with this planning study and is included in Appendix Two of this document. Airport management personnel have indicated plans to initiate establishment and adoption of a Height Zoning Ordinance for Arlington Municipal in 2002. Generalized existing zoning boundaries, as reflected by the *Unified Development Code,* are depicted in the following figure entitled, *GENERALIZED EXISTING ZONING.*

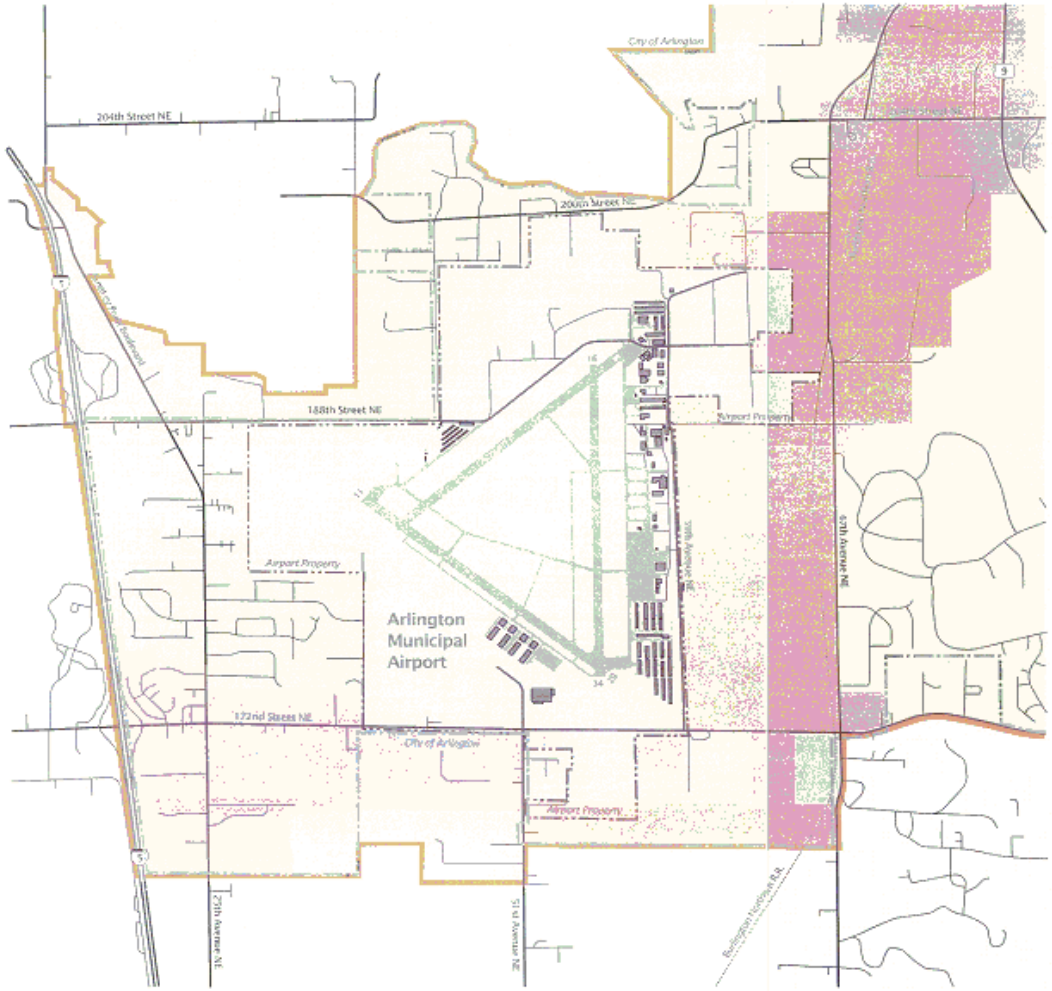


Figure A8 **Generalized Airport Environs Existing Zoning**

- *Airport Industrial*
- *Residential*
- *Office, Commercial, Business Park*
- *Industrial*
- *Urban Growth Boundary*

Approximate Scale 1"=2,000'

Arlington Municipal Airport
Airport Layout Plan Update

Source: Base Map: City of Arlington Mapping from the 1995 Final Comprehensive Plan
Zoning: City of Arlington Official Zoning Designations

Airport Activity Forecasts

Introduction

Forecasting is a key element in the planning process. Forecasts are essential for analyzing existing airport facilities and identifying future needs and requirements for these facilities. Forecasting, by its very nature, is not exact, but it does identify some general parameters for development and, when soundly established, provides a defined rationale for various development activities as demands increase. The amount and kind of aviation activity occurring at an airport are dependent upon many factors, but are usually reflective of the services available to aircraft operators, the businesses located on the airport or within the community, and the general economic conditions prevalent within the surrounding area.

Regional Socioeconomic Conditions

Historically, the socioeconomic conditions of a particular region impact aviation activity within that region. The most often analyzed indicators are population, employment, and income.

Population. Source: US Census data compiled by the Office of Financial Management, Forecasting Division.

- Arlington: 4,037 (1990), 7,350 (1999 estimate); an average annual increase of approximately 6.2%. Projected to increase to 16,755 by the year 2013, the highest year projected for Arlington (an average annual growth rate of 3.6%).
- Snohomish County: 465,628 (1990), 583,300 (1999 estimate); an average annual increase of 2.3%. Projected to increase to 833,661 by the year 2020 (an average annual growth rate of 1.6%).

- State of Washington: 4,866,663 (1990), 5,757,400 (1999 estimate); an average annual growth rate of approximately 1.85%. Projection of 7,496,120 by 2020 (average annual growth rate of 1.2%).

Employment. Source: Office of Financial Management, 1999, EPIC Community Reports, and Washington State Employment Security Department.

- Snohomish County: 2000 unemployment rate of 4.1%.
- State of Washington: July 2000 unemployment rate of 4.9%, 2020 projection of 5.8%.
- Major sectors of employment by industry for Arlington area: Public Administration @ 21.7%, Retail Trade @ 16.3% and Education @ 9.9%.
- Major sectors of employment by industry for State of Washington: Local, State and Federal Government @ 15.1%, Retail Trade @ 18.3% and Services @ 28.5%.

Most of the projected employment growth for the state, through the year 2020, will be in the retail and services industries. This should result in an increasingly diversified state economy with stable economic growth.

Income. Source: Office of Financial Management, 1999, and Puget Sound Regional Council (PSRC).

- Snohomish County: $22,500 per capita income (1998), $27,500 (2020 estimate); a 22% increase.
- State of Washington: $25,722 per capita income (1999), $34,458 (2020 projection); a 33.9% increase.
- United States: $24,012 per capita income (1999), $32,857 (2020 projection); a 36.8% increase.

Historic and Existing Airport Activity

A tabulation of historical aviation activity since 1989 at Arlington Municipal Airport is presented in the following table, entitled *HISTORICAL AVIATION ACTIVITY, 1989-1999*. As can be noted from this table, total aircraft operations at the airport (an operation is defined as either a takeoff or a landing) have generally increased since 1989, with an average annual increase of approximately 1.3% for the period. The airport also accommodates a wide variety of users, ranging from single engine aircraft to business jets, but also includes a substantial number of operations by helicopters, gliders, and ultralights. Therefore, aviation activity forecasts will be developed in consideration

of each of these user groups, reflecting their inherent relationships and operational compatibility issues.

Table B1
HISTORICAL AVIATION ACTIVITY, 1989-2000
Arlington Municipal Airport Layout Plan Update

Year [1]	Air Taxi	General Aviation Local	General Aviation Itinerant	Military	Total
1989	2,640	64,800	48,950	550	116,940
1990	2,640	64,800	48,950	550	116,940
1991	---	---	---	---	---
1992	2,640	64,800	48,950	550	116,940
1993	---	---	---	---	---
1994	2,640	75,860	48,950	550	128,000
1995	2,640	75,860	50,950	550	130,000
1996	---	---	---	---	---
1997	---	---	---	---	---
1998	2,640	75,860	55,950	550	135,000
1999	---	---	---	---	---
2000	520 [2]	76,167 [3]	58,293 [3]	20 [2]	135,000

Source: Airport Master Record, FAA Form 5010-1 unless noted otherwise.
[1] Complete Calendar Year Figures.
[2] Operational total estimated by Airport Management.
[3] Operational total revised by Barnard Dunkelberg & Company based on military operational estimates.

Existing Operations By Aircraft Type

The current level of aviation activity by aircraft type is summarized in the following table, entitled *EXISTING OPERATIONS BY AIRCRAFT TYPE, 2000*.

Table B2
EXISTING OPERATIONS BY AIRCRAFT TYPE, 2000
Arlington Municipal Airport Layout Plan Update

Aircraft Type	Operations	
Air Taxi	*520*	*0.4%*
Multi-Engine	520	100.0%
General Aviation	*134,460*	*99.6%*
Single Engine (1)	124,944	92.9%
Multi-Engine	3,240	2.4%
Turboprop	85	0.1%
Business Jet	875	0.7%
Helicopter	3,453	2.6%
Glider	1,863	1.4%
Military	*20*	*0.0%*
Helicopter	20	20.0%
TOTAL	135,000	100.0%

Source: Data compiled from Arlington Airport Personnel and Barnard Dunkelberg & Company, Inc. estimates.

(1) Total includes ultralight operations.

Based Aircraft

Historic based aircraft numbers are presented in the following table, entitled *SUMMARY OF BASED AIRCRAFT, 1989-2000*.

Table B3
SUMMARY OF BASED AIRCRAFT, 1989-2000
Arlington Municipal Airport Layout Plan Update

Year	Single Engine	Multi-Engine Piston	Multi-Engine Turboprop	Business Jet	Helicopter	Total
1989	350	15	---	3	2	370
1990	350	15	---	3	2	370
1991(1)	---	---	---	---	---	---
1992(1)	362	15	---	3	2	382
1993(1)	---	---	---	---	---	---
1994	330	16	---	7	6	359
1995	330	16	---	7	6	359
1996	---	---	---	---	---	---
1997	---	---	---	---	---	---
1998	330	16	---	7	6	359
1999	---	---	---	---	---	---
2000(2)	390	10	1	2	6	409 (3)

Source: Airport Master Record, FAA Form 5010-1 unless noted otherwise.
(1) 1996 Arlington Airport Master Plan Update.
(2) Data compiled from Airport Management estimates.
(3) Total does not include five (5) gliders and sixty-one (61) ultralight aircraft.

Aviation Activity Forecasts

Factors and Conditions

Prior to the development of aviation activity forecasts, several factors that have an influence, either positive or negative, in the planning process should be identified. These factors are presented in the following text.

- There are a number of factors having a positive influence in certain segments of the general aviation industry. The passage of the General Aviation Revitalization Act of 1994, which provides an eighteen (18) year limit on product liability lawsuits against general aviation aircraft and component manufacturers, has

renewed interest and optimism among US aircraft manufacturers. According to data presented by the General Aviation Manufacturers Association (GAMA), industry billings for the first three quarters were at all time highs, increasing 10.4% over 1999 figures. Aircraft shipments were also up 16.3% for the first three quarters of 2000 to 2,000 aircraft. In addition, the growth of the amateur-built aircraft market, and the strength of the used aircraft market, indicate that demand for inexpensive personal aircraft is still strong. Increased general aviation instrument operations at FAA towered airports and those handled at FAA en route centers point to continued growth of the more sophisticated general aviation users. Additionally, operations at non-towered U.S. airports have increased; supporting the belief held by many that much of general aviation has been displaced out of towered airports because of the increased commercial air carrier activity.

- The key negative factor associated with future aviation development at Arlington Municipal Airport is determining the operational impacts to ultralight and glider operators following the implementation of precision approach standards at the airport. These more restrictive standards (i.e., the runway object free area and primary surface width) would encompass the existing glider runway, as well as trigger the establishment of a Control Zone and Class E airspace designation at the airport that would impact or restrict ultralight operations. An FAA determination on these issues will be required to assist the City of Arlington with the selection of long-term development recommendations for the airport.

- One additional negative factor is the substantial population growth that has occurred in Arlington and within this portion of Snohomish County since 1990 (estimated at 6.2% and 2.3% annually). This rapid growth and expansion has created significant growth pressures for city services and transportation facilities, including increased development demands on and in the vicinity of the airport. Therefore, recommendations for the future implementation of height hazard and land use overlay zoning will be included in later sections of this document.

General Aviation Activity Forecasts

In developing the general aviation activity forecasts, several forecasts and local and national trends were reviewed. Included in this assessment, and as presented in the following table, entitled *GENERAL AVIATION OPERATIONS FORECAST SCENARIOS, 2000-2020*, are the forecasts contained in the 1996 Arlington Airport Master Plan Update (1996 MP), the FAA nationwide general aviation growth rate, a system plan forecast published by the Puget Sound Regional Council (PSRC), and two (2) forecast scenarios developed for this study. As can be noted in the following table, the 1995 MP Update forecast projected 2.5% annual growth through the year 2015. According

to the forecast contained in the *FAA Aviation Forecasts Fiscal Years 2000-2011*, general aviation activity is projected to grow at approximately 1.48% annually, and the Puget Sound Regional Council (PSRC) projects an average annual growth rate of 1.0%.

Scenario One: Scenario one assumes an average annual growth rate of 1.6%, based on the projected annual population growth rate for Snohomish County, for the planning period and is representative of a continued presence of both glider and ultralight activity for the forecast outlook. Assumptions taken into account for these projections include maintaining the current airport reference code (ARC) B-I or II design criteria for Runway 16/34, and the future implementation of a precision instrument approach to Runway 34. It should also be noted that this scenario would require a favorable determination from the FAA regarding the future operation of gliders and ultralights at Arlington following the implementation of the precision approach. Based on these criteria, each aircraft operational category (i.e., single-engine, helicopter, turbo-prop, etc.) will experience steady growth throughout the planning period.

Scenario Two: This scenario assumes a 0.59% average annual growth rate for the overall planning period. However, by the year 2010, both glider and ultralight activity will have been phased out, decreasing the total number of operations occurring at the airport from 158,223 to 128,129 for that year. This reduction of glider/ultralight activity will likely enhance the capability to attract turbo-prop and business jet activity to the airport. Additional assumptions made include an upgrade in the ARC to the approach Category C design criteria, as well as the above mentioned instrumentation procedures.

Table B4
GENERAL AVIATION OPERATIONS FORECAST SCENARIOS, 2000-2020
Arlington Municipal Airport Layout Plan Update

	1995 MP (2.5%)	FAA Forecast (1.48%)	PSRC (1.0%)	Scenario One (1.6%)	Scenario Two (0.59%)
2000	141,700	135,000	135,000	135,000	135,000
2001	---	136,998	138,327	137,160	137,160
2002	---	139,026	141,653	139,355	139,355
2003	---	141,083	144,980	141,584	141,584
2004	---	143,171	148,306	143,850	143,850
2005	156,200	145,290	151,633	146,180	146,180
2010	---	156,365	155,953	158,240	128,110
2015	190,100	168,283	160,394	171,240	139,060
2020	---	181,110	164,959	185,420	150,870

1995 MP Arlington Municipal Airport Master Plan Update, 1995.
FAA *FAA Aviation Forecasts Fiscal Years, 2000-2010*.
PSRC Puget Sound Regional Council system plan forecast (August 2000).
Scenario One Applies projected average annual population growth rate of 1.6% for Snohomish County (i.e., 1999-2020).
Scenario Two Applies projected average annual growth rate of 0.59%.

Military Operations Forecast

There are generally three components in determining military aircraft use at an airport. The first is Department of Defense (DOD) funding, which has been declining in recent years. The second is a fueling contract the airport or FBO may have with the DOD. The third is the location, or proximity of the airport with adjacent aviation-related military bases or training areas. The existing military operational activity at the airport consists of a limited number of helicopter operations that originate from area military bases (i.e., McChord AFB and Gray AAF). None of the FBOs at Arlington has a fueling contract with the DOD and none is anticipated in the future. Therefore, no significant increase in aviation-related military activity is projected to occur at the airport within the 20-year planning period of this document. As presented in the following table, entitled *MILITARY OPERATIONS FORECAST, 2000-2020*, the *existing* annual level of military operational activity is selected for the 20-year planning period of this study.

Table B5
MILITARY OPERATIONS FORECAST, 2000-2020
Arlington Municipal Airport Layout Plan Update

Year	Local Operations	Total Operations
2000 [(a)]	20	20
2005	50	50
2010	50	50
2015	50	50
2020	50	50

[(a)] Actual

Operations Forecast By Aircraft Type

The types of aircraft expected to use the airport assist in determining the amount and type of facilities needed to meet the aviation demand. The following tables, entitled *SUMMARY OF OPERATIONS FORECAST BY AIRCRAFT TYPE, 2000-2020 (SCENARIO ONE)* and *SUMMARY OF OPERATIONS FORECAST BY AIRCRAFT TYPE, 2000-2020 (SCENARIO TWO)* depict the approximate level of use by aircraft types that are projected to use Arlington Municipal Airport.

Table B6
SUMMARY OF OPERATIONS BY AIRCRAFT TYPE, 2000-2020 (SCENARIO ONE)
Arlington Municipal Airport Layout Plan Update

Operations By Type	**2000** [a]	**2005**	**2010**	**2015**	**2020**
Air Taxi	*520*	*1,000*	*1,500*	*2,000*	*2,500*
Multi-Engine	520	1,000	1,500	2,000	2,500
General Aviation [1]	*134,460*	*145,130*	*156,690*	*169,190*	*182,870*
Single Engine Piston	124,944	134,460	144,450	154,860	166,250
Multi-Engine Piston	3,240	3,480	3,760	4,390	5,190
Turboprop	85	220	410	630	820
Business Jet	875	1,020	1,330	1,690	2,010
Helicopter	3,453	3,920	4,390	4,910	5,490
Glider	1,863	2,030	2,350	2,710	3,110
Military	*20*	*50*	*50*	*50*	*50*
TOTAL ANNUAL OPERATIONS	135,000	146,180	158,240	171,240	185,420

Source: Arlington Municipal Airport Management and Barnard Dunkelberg & Company, Inc. estimates.

(a) Actual

(1) Total includes ultralight operations.

Table B7
SUMMARY OF OPERATIONS BY AIRCRAFT TYPE, 2000-2020 (SCENARIO TWO)
Arlington Municipal Airport Layout Plan Update

Operations By Type	2000 (a)	2005	2010	2015	2020
Air Taxi	*520*	*1,000*	*1,500*	*2,000*	*2,500*
Multi-Engine	520	1,000	1,500	2,000	2,500
General Aviation	*134,460*(1)	*145,130*(1)	*126,550*	*137,010*	*148,320*
Single Engine Piston	124,944	133,780	115,950	124,560	133,220
Multi-Engine Piston	3,240	3,480	3,760	4,390	5,190
Turboprop	85	410	630	1,030	1,510
Business Jet	875	1,510	2,030	2,510	3,500
Helicopter	3,453	3,920	4,180	4,520	4,900
Glider	1,863	2,030	---	---	---
Military	*20*	*50*	*50*	*50*	*50*
TOTAL ANNUAL OPERATIONS	135,000	146,180	128,110	139,060	150,870

Source: Arlington Municipal Airport Management and Barnard Dunkelberg & Company, Inc. estimates.
(a) Actual
(1) Total includes ultralight operations.

Local and Itinerant Operations Forecast

The *Air Traffic Control Handbook* defines a local operation as any operation performed by an aircraft operating in the local traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the airport. According to current FAA Form 5010-1 records, local operations constituted 56% of the total operations at the airport for 2000. This existing percentage of local activity can be attributed to the fact that, with respect to general aviation, the airport accommodates a significant amount of training-related activity and pleasure flying, as well as corporate and business-related activity.

In scenario one, it is forecast that the level of itinerant-related aviation activity will likely increase to approximately sixty percent (60%) of the total operations conducted at Arlington Municipal Airport. In scenario two, it is forecast that the level of itinerant-related aviation activity will decrease to approximately fifty percent (50%)

of the total operations conducted at Arlington Municipal Airport due to the day to day aviation demands associated with local businesses and industries, and the current lack of commercial passenger service. The forecast of local and itinerant aircraft operations is illustrated on the following table, entitled *SUMMARY OF LOCAL AND ITINERANT OPERATIONS FORECAST, 2000-2020 (SCENARIO ONE/SCENARIO TWO).*

Table B8
SUMMARY OF LOCAL AND ITINERANT OPERATIONS FORECAST, 2000-2020 (SCENARIO ONE/SCENARIO TWO)
Arlington Municipal Airport Layout Plan Update

Year	Local Scenario One/Scenario Two	Itinerant Scenario One/Scenario Two	Total Scenario One/Scenario Two
2000 [(a)]	75,600/75,600	59,400/59,400	135,000/135,000
2005 [(1)]	81,861/79,522	64,319/66,658	146,180/146,180
2010 [(1)]	90,197/67,422	68,043/60,468	158,240/128,110
2015 [(1)]	99,319/71,199	71,921/67,861	171,240/139,060
2020 [(1)]	111,252/75,435	74,168/75,435	185,420/150,870

[(a)] Data compiled from Airport Traffic Record/FAA Form 5010-1, Arlington Municipal Airport
[(1)] Barnard Dunkelberg & Company, Inc. estimates.

Based Aircraft Forecast

The number and type of aircraft anticipated to be based at an airport are vital components in developing a plan for the airport. Generally, there is a relationship between aviation activity and based aircraft, stated in terms of operations per based aircraft (OPBA). Sometimes a trend can be established from historical information of operations and based aircraft. The national trend has been changing with more aircraft being used for business purposes and less for pleasure flying. This impacts the OPBA in that business aircraft are usually flown more often than pleasure aircraft. It is expected that the number of operations per based aircraft will increase at the airport as more aircraft based there are used for business purposes. It should also be noted that airport management maintains a hangar waiting list with eighty-five (85) current inquiries for aircraft storage facilities.

Several based aircraft forecast scenarios are presented in the following table, entitled *BASED AIRCRAFT FORECAST SCENARIOS, 2000-2020*. These include forecasts from the 1997 *Master Plan Update*, the *Terminal Area Forecasts*, *PSRC Regional Airport System Plan*, and two (2) forecast scenarios related to various factors and influences.

- 1995 *Master Plan Update*: Projected an approximate 1.35% average annual growth rate through the year 2015.
- *Terminal Area Forecasts* (TAF): Depicts an average annual growth rate of 1.1% through the year 2015.
- *PSRC Regional Airport System Plan*: Depicts an average annual growth rate of 1.3% through the year 2020.
- *Scenario One*: Projects an average annual growth rate of 1.33%, based upon the current operations per based aircraft (OPBA) number of 276. This scenario, which corresponds to the *Scenario One* operational projections, assumes that this ratio of based aircraft to total operations will continue throughout the planning period.
- *Scenario Two*: Projects an average annual growth rate of 0.29%, based upon the current operations per based aircraft (OPBA) number of 276. This scenario, which corresponds to the *Scenario Two* operational projections, reflects the phase out of glider and ultralight activity at the airport by the year 2010.

Table B9
BASED AIRCRAFT FORECAST SCENARIOS, 2000-2020
Arlington Municipal Airport Layout Plan Update

Year	1995 MPU (1.35%)	TAF (1.1%)	PSRC (1.3%)	Scenario One (1.33%)	Scenario Two (0.29%)
2000	410	509	---	475 (a)	475 (a)
2001	---	513	---	485	485
2002	---	518	---	495	495
2003	---	522	---	505	505
2004	---	527	---	515	515
2005	420	531	572	528	528
2010	---	557	607	545	457
2015	450	582	639	570	480
2020	---	---	674	618	503

(a) Actual (total includes based glider and ultralight aircraft).
1995 MP Arlington Municipal Airport Master Plan Update, 1995. Projected a 1.35% average annual growth rate through the year 2013.
TAF FAA/APO Terminal Area Forecast Detail Report for Arlington Municipal Airport/February 2000.
PSRC Puget Sound Regional Council, Regional Airport System Plan, 2000.

Based Aircraft Forecast By Aircraft Type

The mix of based aircraft is presented on the following tables, entitled *BASED AIRCRAFT FORECAST BY TYPE, 2000-2020 (SCENARIO ONE) and BASED AIRCRAFT FORECAST BY TYPE, 2000-2020 (SCENARIO TWO).*

Table B10
BASED AIRCRAFT FORECAST BY TYPE, 2000-2020 (SCENARIO ONE)
Arlington Municipal Airport Layout Plan Update

Aircraft Type	2000 [1]	2005 [2]	2010 [2]	2015 [2]	2020 [2]
Single Engine	390 (82.1%)	432 (81.8%)	442 (81.1%)	459 (80.5%)	496 (80.3%)
Multi-Engine	10 (2.1%)	13 (2.5%)	14 (2.5%)	15 (2.6%)	16 (2.6%)
Turboprop	1 (0.2%)	2 (0.3%)	3 (0.5%)	4 (0.7%)	6 (1.0%)
Jet	2 (0.4%)	3 (0.5%)	3 (0.6%)	4 (0.7%)	4 (0.7%)
Helicopter	6 (1.3%)	7 (1.4%)	8 (1.5%)	9 (1.5%)	10 (1.6%)
Glider	5 (1.1%)	6 (1.2%)	7 (1.3%)	9 (1.5%)	10 (1.6%)
Ultralight	61 (12.8%)	65 (12.3%)	68 (12.5%)	71 (12.5%)	75 (12.2%)
TOTAL	475 (100%)	528 (100%)	545 (100%)	570 (100%)	618 (100%)

(1) Arlington Municipal Airport Management.
(2) Barnard Dunkelberg & Company, Inc. estimates.

Table B11
BASED AIRCRAFT FORECAST BY TYPE, 2000-2020 (SCENARIO TWO)
Arlington Municipal Airport Layout Plan Update

Aircraft Type	2000 [1]	2005 [2]	2010 [2]	2015 [2]	2020 [2]
Single Engine	390 (82.1%)	432 (81.8%)	423 (92.5%)	439 (91.5%)	457 (90.8%)
Multi-Engine	10 (2.1%)	13 (2.5%)	16 (3.5%)	17 (3.5%)	18 (3.5%)
Turboprop	1 (0.2%)	2 (0.3%)	5 (1.2%)	8 (1.6%)	9 (1.7%)
Jet	2 (0.4%)	3 (0.5%)	5 (1.1%)	8 (1.6%)	10 (2.0%)
Helicopter	6 (1.3%)	7 (1.4%)	8 (1.7%)	9 (1.8%)	10 (2.0%)
Glider	5 (1.1%)	6 (1.2%)	--- (0.0%)	--- (0.0%)	--- (0.0%)
Ultralight	61 (12.8%)	65 (12.3%)	--- (0.0%)	--- (0.0%)	--- (0.0%)
TOTAL	475 (100%)	528 (100%)	457 (100%)	480 (100%)	503 (100%)

(1) Arlington Municipal Airport Management.
(2) Barnard Dunkelberg & Company, Inc. estimates.

Airport Reference Code (ARC) Analysis

The types of aircraft presently utilizing an airport and those projected to utilize the facility in the future are important considerations for planning airport facilities. An airport should be designed in accordance with the Airport Reference Code (ARC) standards that are described in AC 150/5300-13 "Airport Design". The ARC is a coding system used to relate and compare airport design criteria to the operational and physical characteristics of the aircraft intended to operate at the airport. The ARC has two components that relate to the airport's "Design Aircraft". The first component, depicted by a letter (i.e., A, B, C, D or E), is the aircraft approach category and relates to aircraft approach speeds based upon operational characteristics. The second component, depicted by a roman numeral (i.e., I, II, III, IV, V or VI), is the aircraft design group and relates to aircraft wingspan (physical characteristic). Generally speaking, aircraft approach speed applies to runways and runway-related facilities, while aircraft wingspan is primarily related to separation criteria associated with taxiways and taxilanes.

At Arlington Municipal Airport, the Beech Super King Air B200 is the most critical aircraft that regularly utilizes Runway 16/34. This aircraft has an approach speed of 103 knots and a wingspan of 54.5 feet, which indicates that Runway 16/34 should be designed in accordance with ARC B-II dimensional criteria. However, it is projected that the most critical aircraft that will regularly utilize Runway 16/34 in the future are a combination of the IAI-1124 Westwind and the Beech Super King Air B200. The Westwind has an approach speed of 129 knots and the Super King Air has a wingspan of 54.5 feet, which indicates that Runway 16/34 should ultimately be designed in accordance with ARC C-II dimensional criteria (the next chapter will present a more detailed discussion). For Runway 11/29, the Cessna 172 Skyhawk, which has a wingspan of 36 feet and an approach speed of 70 knots, will continue to be the critical aircraft. This indicates that Runway 11/29 should be designed in accordance with ARC A-I (Small Aircraft Only) dimensional criteria. The following tables, entitled *SUMMARY OF OPERATIONS BY AIRPORT REFERENCE CODE, 2000-2020 (SCENARIO ONE) and SUMMARY OF OPERATIONS BY AIRPORT REFERENCE CODE, 2000-2020 (SCENARIO TWO),* present an estimated operations breakdown at the airport, by ARC, for the twenty-year planning period. As can be noted from the tables, the Scenario Two projections reflect a future upgrade of the airport's ARC to C-II design standards within the twenty-year planning period.

Table B12
SUMMARY OF OPERATIONS BY AIRPORT REFERENCE CODE, 2000-2020 (SCENARIO ONE)
Arlington Municipal Airport Layout Plan Update

Operations by ARC	2000 [(a)]	2005	2010	2015	2020
A-I through B-II	134,869	146,117	158,040	170,986	185,118
C-I through D-II	131	153	200	254	302
TOTAL	135,000	146,180	158,240	171,240	185,420

Source: Operational estimates generated by Barnard Dunkelberg & Company.
(a) Actual

Table B13
SUMMARY OF OPERATIONS BY AIRPORT REFERENCE CODE, 2000-2020 (SCENARIO TWO)
Arlington Municipal Airport Layout Plan Update

Operations by ARC	2000 [(a)]	2005	2010	2015	2020
A-I through B-II	134,869	145,953	127,704	138,558	150,170
C-I through D-II	131	227	406	502	700
TOTAL	135,000	146,180	128,110	139,060	150,870

Source: Operational estimates generated by Barnard Dunkelberg & Company.
(a) Actual

Summary

A summary of the aviation forecasts for each scenario prepared for this study are presented in the following tables, entitled *SUMMARY OF AVIATION ACTIVITY FORECASTS, 2000-2020 (SCENARIO ONE)* and *SUMMARY OF AVIATION ACTIVITY FORECASTS, 2000-2020 (SCENARIO TWO)*. These forecast scenarios have been developed to illustrate two possible development scenarios for the future expansion of Arlington Municipal

Airport. Following the presentation and discussion of each forecast scenario during public information meetings, the *Scenario One* forecasts were selected as the preferred operational forecast scenario. This data will be utilized in subsequent chapters to analyze facility requirements, to aid development of alternatives, and to guide the preparation of the plan and program of future airport facilities. In other words, the aviation activity forecasts are the foundation from which future plans will be developed and implementation decisions will be made.

Table B14
SUMMARY OF AVIATION ACTIVITY FORECASTS, 2000-2020 (SCENARIO ONE)
Arlington Municipal Airport Layout Plan Update

Operations	**2000** [a]	**2005** [1]	**2010** [1]	**2015** [1]	**2020** [1]
Air Taxi	*520*	*1,000*	*1,500*	*2,000*	*2,500*
Air Taxi	520	1,000	1,500	2,000	2,500
General Aviation	*134,460*	*145,130*	*156,690*	*169,190*	*182,870*
Single Engine	124,944	134,460	144,450	154,860	166,250
Multi-Engine	3,240	3,480	3,760	4,390	5,190
Turboprop	85	220	410	630	820
Business Jet	875	1,020	1,330	1,690	2,010
Helicopter	3,453	3,920	4,390	4,910	5,490
Glider	1,863	2,030	2,350	2,710	3,110
Military	*20*	*50*	*50*	*50*	*50*
TOTAL OPERATIONS	135,000	146,180	158,240	171,240	185,420
Local Operations	75,600	81,861	90,197	99,319	111,252
Itinerant Operations	59,400	64,319	68,043	71,921	74,168
Based Aircraft By Type					
Single Engine	390	432	442	459	496
Multi-Engine	10	13	14	15	16
Turboprop	1	2	3	4	6
Business Jet	2	3	3	4	4
Helicopter	6	7	8	9	10
Glider	5	6	7	9	10
Ultralight	61	65	68	71	75
TOTAL	475	528	545	570	618

[a] Actual.
[1] Barnard Dunkelberg & Company, Inc. estimates.

Table B15
SUMMARY OF AVIATION ACTIVITY FORECASTS, 2000-2020 (SCENARIO TWO)
Arlington Municipal Airport Layout Plan Update

Operations	**2000** [(a)]	**2005** [(1)]	**2010** [(1)]	**2015** [(1)]	**2020** [(1)]
Air Taxi	*520*	*1,000*	*1,500*	*2,000*	*2,500*
Air Taxi	520	1,000	1,500	2,000	2,500
General Aviation	*134,460*	*145,130*	*126,550*	*137,010*	*148,320*
Single Engine	124,944	133,780	115,950	124,560	133,220
Multi-Engine	3,240	3,480	3,760	4,390	5,190
Turboprop	85	410	630	1,030	1,510
Business Jet	875	1,510	2,030	2,510	3,500
Helicopter	3,453	3,920	4,180	4,520	4,900
Glider	1,863	2,030	---	---	---
Military	*20*	*50*	*50*	*50*	*50*
TOTAL OPERATIONS	135,000	146,180	128,110	139,060	150,870
Local Operations	75,600	79,522	67,642	71,199	75,435
Itinerant Operations	59,400	66,658	60,468	67,861	75,435
Based Aircraft By Type					
Single Engine	390	432	423	439	457
Multi-Engine	10	13	16	17	18
Turboprop	1	2	5	8	9
Business Jet	2	3	5	8	10
Helicopter	6	7	8	9	10
Glider	5	6	---	---	---
Ultralight	61	65	---	---	---
TOTAL	475	528	457	480	503

(a) Actual.
(1) Barnard Dunkelberg & Company, Inc. estimates.

Facility Requirements

Introduction

The ability of an airport to accommodate the existing and forecasted aviation activity is primarily a function of the major aircraft operating surfaces that compose the facility and the configuration of those surfaces (runways and taxiways). However, it is also related to and considered in conjunction with weather conditions, the surrounding airspace, the availability and type of navigational facilities, the type and arrangement of aircraft storage facilities, the supporting facilities, and the type and amount of landside access.

Knowledge of the types of aircraft currently using and those that are expected to use Arlington Municipal Airport provides information concerning the Airport Reference Code (ARC). FAA Advisory Circular 150/5300-13, *Airport Design*, provides guidelines for this determination. The ARC is based on the "Design Aircraft" that is judged the most critical aircraft using, or projected to use, the airport. The ARC relates aircraft operational and physical characteristics to design criteria that are applied to various airport components.

The current Airport Layout Plan for Arlington Municipal Airport specifies an ARC B-I designation for Runway 16/34 and an ARC A-I (Small Aircraft Only) designation for Runway 11/29. FAA guidelines indicate that at least 500 annual operations by an aircraft or group of aircraft are required to designate a runway in the representative ARC. Given the existing level of multi-engine, turboprop, and business jet activity (estimated at approximately 4,200 operations for 2000), it is recommended that the existing ARC designation for Runway 16/34 be upgraded to ARC B-II design standards. It is recognized that based on the selected forecast scenario, 500 annual operations of ARC C-II aircraft are not projected. However, given the increase in business jet activity that has occurred at the airport in recent years, coupled with the fact that a Category C business jet is based at the airport, the previous master plan document

proposed a future upgrade to ARC C-II standards, and because the expanded ARC C-II RSA and ROFA can be accommodated, this runway will be reevaluated for a future upgrade to ARC C-II design standards. The existing ARC A-I (Small Aircraft Only) designation for Runway 11/29 will be retained.

Airside Requirements

The analysis of airside requirements focuses on determining needed facilities and the spatial considerations for these facilities that are related to the actual operation of aircraft on the airport. This evaluation includes the delineation of airfield dimensional criteria, establishment of design parameters for the runway and taxiway systems, and an identification of airfield instrumentation and lighting needs.

Wind Coverage

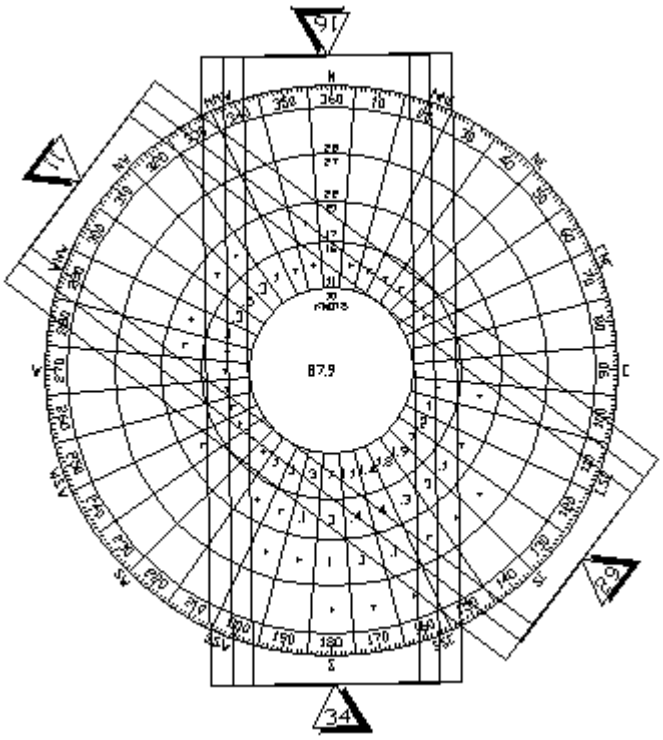
- All Weather: To determine wind velocity and direction at Arlington Municipal Airport, wind data from the National Oceanic and Atmospheric Administration has been reviewed. This data is presented in the following illustration, entitled *ALL WEATHER WIND ROSE: 10.5-, 13-, AND 16-KNOT CROSSWIND COMPONENTS,* with a summary of the data being presented in the following table, entitled *ALL WEATHER WIND COVERAGE SUMMARY.* The desirable wind coverage for an airport's runway system is 95%. This means that the runway orientation and configuration should be developed so that the maximum crosswind component is not exceeded more than 5% of the time annually. This analysis indicates that, both the primary and secondary runways provide adequate combined wind coverage of 99% for all crosswind components of 10.5-, 13-, & 16-knots. Therefore, no additional runways are required from a *wind coverage* standpoint and each runway independently satisfies the minimum 95% criteria. It should also be noted that this finding that each runway independently satisfies the minimum 95% criteria represents an update from previous planning documents, which utilized limited wind data for the airport from the early 1940's. Based on this new data, future AIP improvements to Runway 11/29 may no longer be eligible for FAA funding.

Table C1
All WEATHER WIND COVERAGE SUMMARY: 10.5-, 13-, AND 16-KNOT CROSSWIND COMPONENTS
Arlington Municipal Airport Layout Plan Update

	Wind Coverage Provided Under All Weather Conditions		
	10.5-Knot	**13-Knot**	**16-Knot**
Runway 16/34 (Combined)	98.29%	99.57%	99.94%
Runway 16	70.67%	71.52%	71.75%
Runway 34	63.70%	64.12%	64.42%
Runway 11/29 (Combined)	97.44%	98.75%	99.56%
Runway 11	69.31%	70.57%	71.33%
Runway 29	64.20%	64.25%	64.30%
All Runways	94.06%	99.75%	100.00%

Source: National Oceanic and Atmospheric Administration, National Climatic Data Center. Station #72794 Arlington, Washington. Period of Record 1996-1999. FAA Airport Design Software supplied with AC 150/5300-13.

Figure C1
ALL WEATHER WIND ROSE: 10.5-, 13-, AND 16-KNOT CROSSWIND COMPONENTS
Arlington Municipal Airport Layout Plan Update



Source: National Oceanic and Atmospheric Administration, National Climatic Data Center. Station #72794 Arlington, Washington. Period of Record 1996-1999. FAA Airport Design Software supplied with AC 150/5300-13.

- IFR Weather: In an effort to analyze the need and/or opportunities to reduce approach visibility minimums or provide additional instrument approaches, Instrument Flight Rules (IFR) wind data has been reviewed. The wind rose is presented in the following figure, entitled *IFR WIND ROSE: 10.5-, 13-, & 16-KNOT CROSSWIND COMPONENTS*. From this IFR wind coverage summary, it can be determined that Runway 16 provides slightly better wind coverage for each crosswind component on the primary runway, with Runway 11 providing slightly better wind coverage on Runway 11/29. As can be noted from the data, the airport's existing Runway 34 LOC and NDB approach provides good wind coverage to small general aviation aircraft in consideration of the 10.5-knot

crosswind component; however, either end of Runway 11/29 would provide slightly better coverage. The information provided by this analysis will be incorporated into the formulation of various future airside development alternatives.

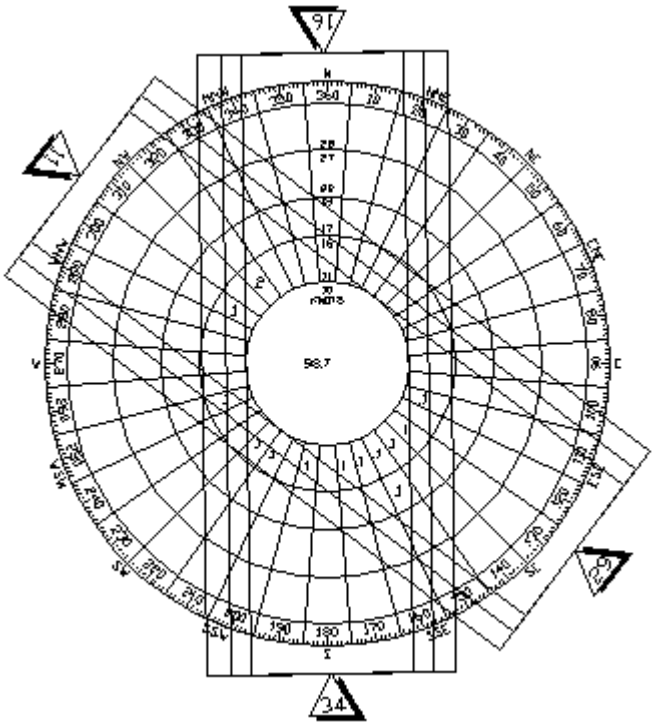
Table C2
IFR WIND COVERAGE SUMMARY: 10.5-, 13-, & 16-KNOT CROSSWIND COMPONENTS
Arlington Municipal Airport Layout Plan Update

	Wind Coverage Provided Under IFR Conditions[1]		
	10.5-Knot	**13-Knot**	**16-Knot**
Runway 16/34 (Combined)	99.71%	99.91%	100.00%
Runway 16	95.61%	99.75%	99.84%
Runway 34	92.43%	99.05%	99.14%
Runway 11/29 (Combined)	99.74%	99.87%	99.99%
Runway 11	94.51%	99.42%	99.53%
Runway 29	95.12%	99.18%	99.29%

Source: National Oceanic and Atmospheric Administration, National Climatic Data Center. Station #72794 Arlington, Washington. Period of Record 1996-1999. FAA Airport Design Software supplied with AC 150/5300-13.

(1) Ceiling of less than 1,000 feet, but equal to or greater than 200 feet and/or visibility less than three miles, but equal to or greater than one-half mile.

Figure C2
IFR[(1)] WIND ROSE: 10.5-, 13-, AND 16-KNOT CROSSWIND COMPONENTS
Arlington Municipal Airport Layout Plan Update



Source: National Oceanic and Atmospheric Administration, National Climatic Data Center. Station #72794 Arlington, Washington. Period of Record 1996-1999. FAA Airport Design Software supplied with AC 150/5300-13.

(1) Ceiling of less than 1,000 feet, but equal to or greater than 200 feet and/or visibility less than three miles, but equal to or greater than one-half mile.

Airport Standards Compliance Inventory

The specified dimensional criteria applicable to the individual runways at Arlington Municipal Airport are presented in the following tables.

- Runway 16/34 Dimensional Standards: As can be seen in the following table, entitled *RUNWAY 16/34 ARC B-I, B-II & C-II DIMENSIONAL STANDARDS, IN FEET,* this runway complies with the ARC B-I & B-II criteria based on existing approach visibility minimums, but would be deficient for some of the dimensional standards associated with ARC C-II.

- Runway 11/29 Dimensional Standards: According to Table C4, entitled *RUNWAY 11/29 ARC A-I SMALL AIRCRAFT ONLY DIMENSIONAL STANDARDS, IN FEET,* this runway complies with the ARC A-I criteria based on existing approach visibility minimums.

Table C3
RUNWAY 16/34 ARC B-I, B-II & C-II DIMENSIONAL STANDARDS, IN FEET
Arlington Municipal Airport Layout Plan Update

Item	Existing Dimension [1] (Not Lower Than ¾-Mile Visibility)	ARC B-II (Not Lower Than ¾-Mile Visibility)	ARC C-II (Not Lower Than ¾-Mile Visibility)
Runway:			
Width	100	75	100
Safety Area Width	120	150	500
Safety Area Length (beyond runway end)	240/240	300	1,000 [2]
Object Free Area Width	400	500	800 [3]
Object Free Area Length (beyond runway end)	240/240	300	1,000 [2]
Obstacle Free Zone Width	N.D.	400	400
Taxiway:			
Width	35	35	35
Safety Area Width	79	79	79
Object Free Area Width	131	131	131
Runway Centerline to:			
Holdline	200	200	200
Parallel Taxiway Centerline	400	240	300 [4]
Aircraft Parking Area	675	250	400 [5]

Source: FAA Advisory Circular 150/5300-13, *Airport Design*.

N.D. Not Designated in current planning information, however, the standard appears to be met.
[1]Existing condition dimensions reflect ARC B-I criteria.
[2]Dimension can not be accommodated from existing threshold location due to location of 172nd Street N.E..
[3]Increased object free area width would encompass existing glider operations area.
[4]Dimension increases to 400' for visibility minimums lower than ¾ statute mile.
[5]Dimension increases to 500' for visibility minimums lower than ¾ statute mile.

Table C4
RUNWAY 11/29 ARC A-I (SMALL AIRCRAFT ONLY) DIMENSIONAL STANDARDS, IN FEET
Arlington Municipal Airport Layout Plan Update

Item	Existing Dimension (Visual Approach)	ARC A-I (Small Aircraft Only/ Visual Approach)
Runway 11/29:		
Width	75	60
Safety Area Width	120	120
Safety Area Length (beyond runway end)	240/240	240
Object Free Area Width	250	250
Object Free Area Length (beyond runway end)	240/240	240
Obstacle Free Zone Width	N.D.	250
Taxiway:		
Width	35 (1)	25
Safety Area Width	49	49
Object Free Area Width	131 (1)	89
Runway Centerline to:		
Holdline	125	125
Parallel Taxiway Centerline	240 (1)	150
Aircraft Parking Area	N.D.	125

Source: FAA Advisory Circular 150/5300-13, *Airport Design*.
ND: "Not Defined" on existing Airport Layout Plan.
Existing runway has visual approach minimums.
(1) Existing criteria meets ARC B-II design standards.

- Runway Line-of-Sight: According to the elevation data contained on the Arlington Airport Obstruction Chart, OC #795, May 1993, the line-of-sight criteria is met for Runway 16/34 and Runway 11/29.

- Runway Protection Zones (RPZs): The existing RPZs meet the dimensions of the specified standard for the existing approach capabilities. The following table, entitled *RUNWAY PROTECTION ZONE DIMENSIONS,* lists the existing RPZ dimensions

and the requirements for improved approach capabilities. Planning for enhanced instrument approach capabilities, and recommendations concerning future RPZ easement or property acquisition, will be incorporated in this study.

Table C5
RUNWAY PROTECTION ZONE DIMENSIONS
Arlington Municipal Airport Layout Plan Update

Item	Width at Runway End (feet)	Length (feet)	Width at Outer End (feet)
Existing RPZ Dimensions:			
Runway 16	500	1,000	700
Runways 34	1,000	1,700	1,510
Runway 11 & 29	250	1,000	450
Required RPZ Dimensions for Various Visibility Minimums:			
Small Aircraft Exclusively			
Approach Categories A & B	250	1,000	450
Visual and not lower than 1-mile,			
Approach Categories A & B	500	1,000	700
Visual and not lower than 1-mile,			
Approach Categories C & D	500	1,700	1,010
Not lower than 3/4-mile, all aircraft	1,000	1,700	1,510
Lower than 3/4-mile, all aircraft	1,000	2,500	1,750

Source: FAA Advisory Circular 150/5300-13, *Airport Design*.

- Threshold Siting: Criteria met. However, these requirements must be reexamined in conjunction with any future improvements or changes to the airport's approach visibility minimums. The following table, entitled *THRESHOLD SITING CRITERIA, IN FEET*, lists the existing threshold siting criteria applicable to each runway end, as well as the requirements for improved approach capabilities.

Table C6
THRESHOLD SITING CRITERIA, IN FEET
Arlington Municipal Airport Layout Plan Update

Item	Distance From Threshold	Width at Threshold	Width at Outer End	Length of First Segment	Length of Second Segment	Slope
Existing Threshold Siting Criteria:						
Runways 16	0	400	1,000	1,500	8,500	20:1
Runway 34	200	1,000	4,000	10,000	0	20:1
Runway 11, 29	0	250	700	2,250	2,750	20:1
Required Threshold Siting Criteria for Various Aircraft Types and Visibility Minimums						
Small aircraft with approach speeds less than 50-knots	0	120	250	500	2,500	15:1
Small aircraft with approach speeds greater than 50-knots	0	250	700	2,250	2,750	20:1
Visual and not lower than 1-mile, Large Aircraft	0	400	1,000	1,500	8,500	20:1
Not lower than 3/4-mile, all aircraft	200	1,000	4,000	10,000	0	20:1
Lower than 3/4-mile, all aircraft	200	1,000	4,000	10,000	0	34:1

Source: FAA Advisory Circular 150/5300-13, *Airport Design*.

Runway System

- Runway Length: The runway length requirements at Arlington Municipal Airport are provided in the following table, entitled *RUNWAY LENGTH REQUIREMENTS*. The data indicates that Runway 16/34 can accommodate between 75% and 100% of the large aircraft fleet weighing less than 60,000 pounds at 60% useful load, while Runway 11/29 can accommodate 100% of the small aircraft fleet weighing less than 12,500 pounds with less than 10 seats. This generalized length data will be analyzed in consideration of the selected aviation forecasts and in the development of airside alternatives to determine if an extension of Runway 16/34 will be recommended. The current Airport Layout Plan does recommend an approximate 667-foot extension to the north end of the runway to provide an ultimate length of 6,000 feet. In addition, there are no current plans to lengthen or

modify Runway 11/29.

Table C7
RUNWAY LENGTH REQUIREMENTS
Arlington Municipal Airport Layout Plan Update

Aircraft Category	Length (Feet) Dry	Wet
Airplanes less than 12,500 lbs. with less than 10 seats		
75% of Small Aircraft Fleet	2,390	2,390
95% of Small Aircraft Fleet	2,940	2,940
100% of Small Aircraft Fleet	3,480	3,480
Airplanes less than 12,500 lbs. with 10 or more seats	4,030	4,030
Airplanes greater than 12,500 lbs. and less than 60,000 pounds		
75% of fleet at 60% useful load	4,720	5,260
75% of fleet at 90% useful load	5,920	6,650
100% of fleet at 60% useful load	5,100	5,500
100% of fleet at 90% useful load	7,300	7,300
Runway 16/34 (existing)	5,333	5,333
Runway 11/29 (existing)	3,500	3,500

Source: FAA Advisory Circular 150/5300-13, *Airport Design*.
Lengths based on 137' AMSL, 75° F NMT and a maximum difference in runway centerline elevation of 14'.

- Runway Pavement Strength: Based on current and projected levels of business jet and turbo-prop activity, it's recommended that the existing gross weight bearing capacity of Runway 16/34 (i.e., 114,000 pounds single wheel, 150,000 pounds dual-wheel, and 270,000 pounds dual tandem-wheel main landing gear configuration) be maintained. However, the existing 32,000 pounds single wheel, 34,000 pounds dual-wheel, and 59,000 pounds dual-tandem gross weight bearing capacity of Runway 11/29 should be reevaluated to consider a reduced design strength at the next pavement reconstruction interval in consideration of the small

aircraft only ARC runway designation.

- Runway Approach Instrumentation: The proposed Runway 34 precision instrument approach would offer excellent wind coverage under IFR conditions. It is recommended that FAA Flight Procedures personnel, in consideration of the latest Terminal Instrument Procedures (TERPs) criteria, conduct a WAAS precision instrument approach evaluation for Runway 34 to determine potential ceiling and visibility minimums. It is anticipated that the ceiling and visibility minimums could likely be reduced to 200 feet and ½-mile respectively. In addition, the implications of improving instrument approach capabilities to Runway 34 will also be investigated in the following chapter. The existing visual approaches to Runway 11/29 will be maintained.

- Airport Lighting: The existing Runway 16 precision approach path indicators (PAPIs) and localizer would need to be relocated in conjunction with the proposed runway extension to the north. In conjunction with the examination of improved instrument approaches described above and the preparation of airside development alternatives, the potential requirements for new approach lighting systems (ALSs) will also be evaluated. For Runway 11/29, medium intensity runway lights (MIRLs) are to be installed to compliment the existing PAPIs and REILs that serve each runway end.

Taxiway System

- Recommended Improvements: Regarding Runway 16/34, Taxiway "A" (i.e., the east side parallel taxiway) should be extended as needed to accommodate a future runway extension to the north. In addition, Taxiway "B" (i.e., the west side parallel taxiway) should be extended to the north to serve both existing and future approach end of Runway 16. Regarding Runway 11/29, Taxiway "C" currently satisfies the south side requirement as a full parallel taxiway. However, this taxiway should be designed to Airplane Design Group (ADG) II standards to accommodate the future basing of ADG II aircraft along Runway 11/29 that will be primary users of Runway 16/34. In addition, airport staff and EAA Fly-In representatives have recommended consideration for the development of a new connector taxiway located along the south side of the closed northeast/southwest runway, linking Taxiway "B" and the approach end of Runway 11. This taxiway will be needed to reduce taxi times to Runway 16 for based aircraft located adjacent to the west end of Runway 11/29, and facilitate the movement of aircraft during the annual NWEAA Fly-In. All future taxiway development associated with Runway 16/34, including Taxiway "C" serving Runway 11/29 should be equipped

with medium intensity taxiway lights (MITLs), with edge reflectors being installed on Taxiway "D" and the associated connector taxiways. Additional improvements will be contingent upon future development recommendations arising from the airfield alternatives evaluation.

Landside Requirements

Landside requirements are those facilities that support the airside facilities, but are not actually part of the aircraft operating surfaces. These consist of such facilities as terminal buildings, aprons, access roads, hangars, and support facilities. From an analysis of the existing facilities, deficiencies can be noted in terms of accommodating both existing and future needs. The accompanying tables, entitled *GENERAL AVIATION FACILITY REQUIREMENTS (SCENARIO ONE)* and *GENERAL AVIATION FACILITY REQUIREMENTS (SCENARIO TWO)*, shows the type of facilities and the number of units or acres needed for that facility in order to meet the projected demand for each forecast scenario.

- Aircraft Storage: At present, approximately 89% of the airport's based aircraft (i.e., 418 aircraft) are stored in some type of hangar facility, with existing hangars being at or near 100% occupancy. There are eighty-five (85) names on the current hangar waiting list at the airport, representing potential newly based aircraft to the facility. It is assumed future aircraft storage will reflect the same characteristics as current storage patterns, with near 90% of based aircraft stored in some type of hangar facility (i.e., T-hangars, executive hangars, or a large storage hangar). There does appear to be adequate expansion area along the Runway 11/29 flightline and infill redevelopment sites along the Runway 16/34 flightline to accommodate the projected based aircraft storage requirements through the specified planning period.

- Tiedown Storage/ Itinerant Aircraft: Approximately 4.2 acres required for Scenario One by 2020, and approximately 4.3 acres required for Scenario Two.

- Tiedown Storage/Based Aircraft: Approximately 3.8 acres required for Scenario One by 2020, and approximately 3.1 acres required for Scenario Two.

- Other Requirements: Actual number, size, and location of FBO/bulk storage hangars will depend on user needs and financial feasibility. Therefore, future numbers of these facilities have not been projected. Access and perimeter roadway locations, auto parking requirements, and land requirements will be a function of the location of other facilities as well as the most effective routing of

roadways.

Table C8
GENERAL AVIATION FACILITY REQUIREMENTS (SCENARIO ONE)
Arlington Municipal Airport Layout Plan Update

Facility	Total Number Required (In Acres) 2000 (1)	2005 (2)	2010 (2)	2015 (2)	2020 (2)
Itinerant Apron (Paved)	2.8	3.7	3.9	4.1	4.2
Based Aircraft Apron (Paved)	8.7	3.3	3.4	3.5	3.8
Hangars	400	445	458	480	523
T-hangars (no./ac.)	390/22.1	430/25.4	440/26.2	460/27.9	500/31.2
Executive/Corporate (no./ac.)	10(3) /4.8	15/5.8	18/6.4	20/6.8	23/7.4
TOTAL	38.4	38.2	39.9	42.3	46.6

Source: (1) Actual.
(2) Barnard Dunkelberg & Company, Inc. projections based on FAA AC 150/5300-4B.
(3) Approximately twenty-five (25) aircraft are stored in these existing hangars.

Table C9
GENERAL AVIATION FACILITY REQUIREMENTS (SCENARIO TWO)
Arlington Municipal Airport Layout Plan Update

Facility	Total Number Required (In Acres) 2000 (1)	2005 (2)	2010 (2)	2015 (2)	2020 (2)
Itinerant Apron (Paved)	2.8	3.7	3.5	3.9	4.3
Based Aircraft Apron (Paved)	8.7	3.3	2.9	3.0	3.1
Hangars	400	445	449	469	491
T-hangars (no./ac.)	390/22.1	430/25.4	430/26.2	440/27.0	460/28.7
Executive/Corporate (no./ac.)	10(3) /4.8	15/5.8	19/6.8	29/8.8	31/9.8
TOTAL	38.4	38.2	39.4	42.7	45.9

Source: (1) Actual.
(2) Barnard Dunkelberg & Company, Inc. projections based on FAA AC 150/5300-4B.
(3) Approximately twenty-five (25) aircraft are stored in these existing hangars.

As can be determined from the previous two tables, a sufficient amount of future aeronautical development property will be available at the airport for the twenty-year development period of this document and beyond. A more detailed assessment of long-term aviation development property needs (i.e., post-planning period is provided in the *Airport Plans & Development Program* chapter of this document.

Support Facilities

- Aircraft Rescue and Fire Fighting (ARFF) Facility: There are no plans to construct an ARFF facility at the airport. Therefore, fire protection services will continue to be provided by Fire Station No. 47, which is located on airport property at 188th and 63rd. In addition, plans for the current business park development include the addition of new city fire station. Whether this station is located on, or adjacent to airport property has yet to be determined.

- Fuel Storage Facility: The airport currently dispenses an average of 400,000 gallons of fuel annually. Based on the aviation activity forecasts, the existing centralized fuel storage area, consisting of three (3) underground storage tanks should be adequate for the twenty-year planning period..

Summary

Although many of the existing airport facilities are adequate to meet the expected aviation demand, others will need improvement, replacement, or upgrading to provide a safe and efficient aircraft-operating environment. The facility requirements detailed in this chapter will be utilized to generate future development alternatives for the airfield. Each of these alternatives will be carefully evaluated to formulate the overall future Development Plan for the airport.

Development Concepts and Recommendations

Introduction

The purpose of this chapter is to present the Development Plan Recommendations for Arlington Municipal Airport, in terms of both their concept and reasoning. Therefore, several basic assumptions have been established, which are intended to direct the future expansion of airport development. These assumptions are supported by the aviation activity forecasts and include a commitment for continued airport expansion, which supports the needs of the region and generates economic development.

The first assumption states that Runway 16/34 will be maintained initially to Airport Reference Code (ARC) B-II design standards with approach visibility minimums not lower than ¾-mile. However, future ARC C-II and precision approach upgrade capabilities will be preserved to this runway facility to accommodate the future operation of Airplane Approach Category C aircraft. This proposed ARC upgrade and precision approach enhancement was proposed in the 1996 Airport Master Plan Update and is illustrated on the current Airport Layout Plan.

The second assumption states that Runway 11/29 should be maintained in accordance with ARC A-I (Small Aircraft Only) design standards, and preserves the existing visual approaches to each runway end. This determination was concluded in an alternatives evaluation that was presented to the City of Arlington and the FAA in March of 2000. This proposal maximizes the future aviation development expansion capabilities of the property located between Runway 11/29 and Airport Boulevard.

The third assumption states that the existing glider and piston engine turf runways can be maintained and continue to be utilized in their present locations. According to an FAA response letter, dated January 5, 2001 (see Appendix One letter), the alternating operational use of Runway 16/34 and the adjacent/parallel turf runways can continue,

with the approach surface of the turf runways being incorporated within the approach surface of Runway 16/34. However, the runway object free area (ROFA) standards must be met for each runway during its use.

The fourth assumption states that the existing ultralight activity at Arlington can be maintained if a future precision approach is established to Runway 34. FAA air traffic control (ATC) personnel has indicated that the establishment of a future Class E Airspace surface area at Arlington could be designed to exclude the ultralight area if a written Letter of Agreement (LOA) is established between ATC and the ultralight pilots (see Appendix One letter).

Goals for Development

Accompanying these assumptions are several goals, which have been established for purposes of directing the plan and establishing continuity in the future development of the airport. These goals take into account several categorical considerations relating to the needs of the airport both in the short-term and the long-term, including safety, noise, capital improvements, land use compatibility, financial and economic conditions, public interest and investment, and community recognition and awareness. While all are project oriented, some obviously represent more tangible activities than others; however, all are deemed important and appropriate to the future of the airport.

The following goals are intended to guide the preparation of this Airport Layout Plan Update and direct the future expansion of Arlington Municipal Airport:

- Plan the airport to be able to safely accommodate the forecast aircraft fleet with facilities properly sized to accommodate forecast demand.
- Program facilities to be constructed when demand is realized (construction is to be driven by actual demand, not forecast demand).
- Ensure that the future development of the airport will continue to accommodate a variety of general aviation activities, ranging from ultralight and glider operators to corporate aviation users.
- Enhance the self-sustaining capability of the airport and ensure the financial feasibility of future airport development.

- Develop land acquisition priorities (i.e., fee simple and/or easement) related to airport safety, future airport development, and land use compatibility.
- Encourage the protection of existing public and private investment in land and facilities, and advocate the resolution of any potential land use conflicts both on and off airport property.
- Plan and develop the airport to be environmentally compatible with the community and minimize environmental impacts on both airport property and property adjacent to the airport.
- Provide effective direction for the future development of Arlington Municipal Airport through the preparation of a rational plan and adherence to the adopted development program.
- Integrate the airport's ground transportation access requirements with the area's regional transportation goals.
- Maintain/update minimum standards, rules, and regulations for future development of the airport and the maintenance of existing facilities.

Airside Development Concepts

Introduction

To accommodate the projected operational demand at Arlington Municipal Airport through the year 2020 (i.e., the end of the twenty-year planning period), two development alternatives for the airport have been prepared and are presented in the following illustrations. Both the forecast operations and the goals of the City of Arlington, relative to aviation development and economic enhancement, were incorporated into the planning effort.

Alternatives

The following airside development alternatives were evaluated.

Alternative One. Preserve a future ARC C-II upgrade and precision instrument approach capabilities to Runway 16/34, while maintaining the small aircraft design and visual approach standards to Runway 11/29. In addition, the airport's glider and ultralight operational capabilities will be maintained.

Runway 16/34.

- *Dimensions:* Relocate the Runway 34 approach threshold approximately 38 feet to the north to comply with previous FAA and State Highway Department recommendations concerning future ARC C-II dimensional criteria (i.e., Runway 34 SA and OFA length requirements). This proposed threshold relocation would initially reduce the useable length of the runway from 5,333 feet to 5,295 feet; however, the runways existing capability to accommodate 75% of the fleet (i.e., airplanes greater than 12,500 lbs. and less than 60,000 lbs.) at a 60% useful load for the wet pavement condition would be maintained. This alternative will also illustrate a future 205-foot extension to the approach end of Runway 16 to provide an ultimate length of 5,500 feet. The ultimate 5,500-foot length would accommodate approximately 100% of the fleet (i.e., airplanes greater than 12,500 lbs. and less than 60,000 lbs.) at 60% useful load for the wet pavement condition. The existing runway width of 100 feet is to be maintained.
- *Pavement:* Maintain the existing gross weight bearing capacity (114,000 pounds single wheel, 150,000 pounds dual-wheel, and 270,000 pounds dual tandem-wheel). However, future runway development and rehabilitation projects will require a new pavement strength evaluation based on the projected critical aircraft.
- *ARC Dimensional Criteria:* Maintain existing ARC B-II design standards, but preserve the option to upgrade to ARC C-II criteria within the planning period of this document.
- *Instrument Approach Criteria:* Maintain existing non-precision approach standards (i.e., ¾-mile visibility minimums) to Runway 34; however, preserve future precision approach enhancement capabilities (i.e., ½-mile visibility minimums). In addition, future non-precision approach standards (i.e., ¾-mile visibility minimums) are to be implemented to Runway 16. The size of the Runway 34 runway protection zone (RPZ) would ultimately be increased to 1,000' x 1,750' x 2,500' to accommodate the precision approach standards. In addition, the size of the Runway 16 runway protection zone (RPZ) would increase to 1,000' x 1,510' x 1,700' to accommodate the future non-precision approach standards.
- *Runway Lighting:* Relocate the existing Runway 16 PAPIs in conjunction with the proposed runway extension and extend the medium intensity runway lights (MIRLs). It is also recommended that Medium Intensity Approach Lighting System (MALS) be installed to serve Runway 16. Relocate one of the existing Runway 34 MALS fixtures to accommodate the widening of State Route 531/172nd Street NE, and upgrade the MALS with Runway Alignment Indicator Lights (RAILs) to provide a future MALSR. In addition, the existing Runway 34 threshold

VICINITY MAP

AIRPORT DATA

ITEM	EXISTING	FUTURE
AIRPORT REFERENCE POINT		
AIRPORT ELEVATION (MSL)	130.4'	
RUNWAY 16/34 - DIMENSIONS	100' X 5,331'	100' X 5,500'
RUNWAY 16/34 - PAVEMENT STRENGTH	30,000 LBS. SINGLE WHEEL	
RUNWAY 16/34 - SURFACE TREATMENT	GRADED & COMPACTED	
RUNWAY 16/34 - EDGE LIGHTING	MIRL	
RUNWAY 16/34 - RUNWAY MARKING	NONPRECISION	
RUNWAY 16/34 - APPROACH & DEPARTURE VISIBILITY MINIMUMS	1 MILE	3/4 MILE
RUNWAY 16/34 - APPROACH LIGHTING	MALSR	
TAXIWAY SYSTEM	PARTIAL PARALLEL	
TAXIWAY SURFACE	ASPHALT	
TAXIWAY LIGHTING	NONE	MITL
TAXIWAY MARKING	CENTERLINE	
AIRPORT & GENERAL NOTAMS	PAPI, BEACON	
WIND INDICATOR	LIGHTED	
CONTROL TOWER	NONE	
AIRPORT ACREAGE	1,000	1,000

LAYOUT PLAN LEGEND

ITEM	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
AIRPORT IMPROVED AREA		
FENCE		
RUNWAY SAFETY AREA		
RUNWAY PROTECTION ZONE		
RUNWAY		
TAXIWAY		
FUEL STORAGE		
BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
INSTRUMENT APPROACH PROCEDURE (IAP)		
RUNWAY END IDENTIFIER LIGHTS (REIL)		
RUNWAY DATA AND ZONE		
RUNWAY OBJECT FREE AREA (ROFA)		

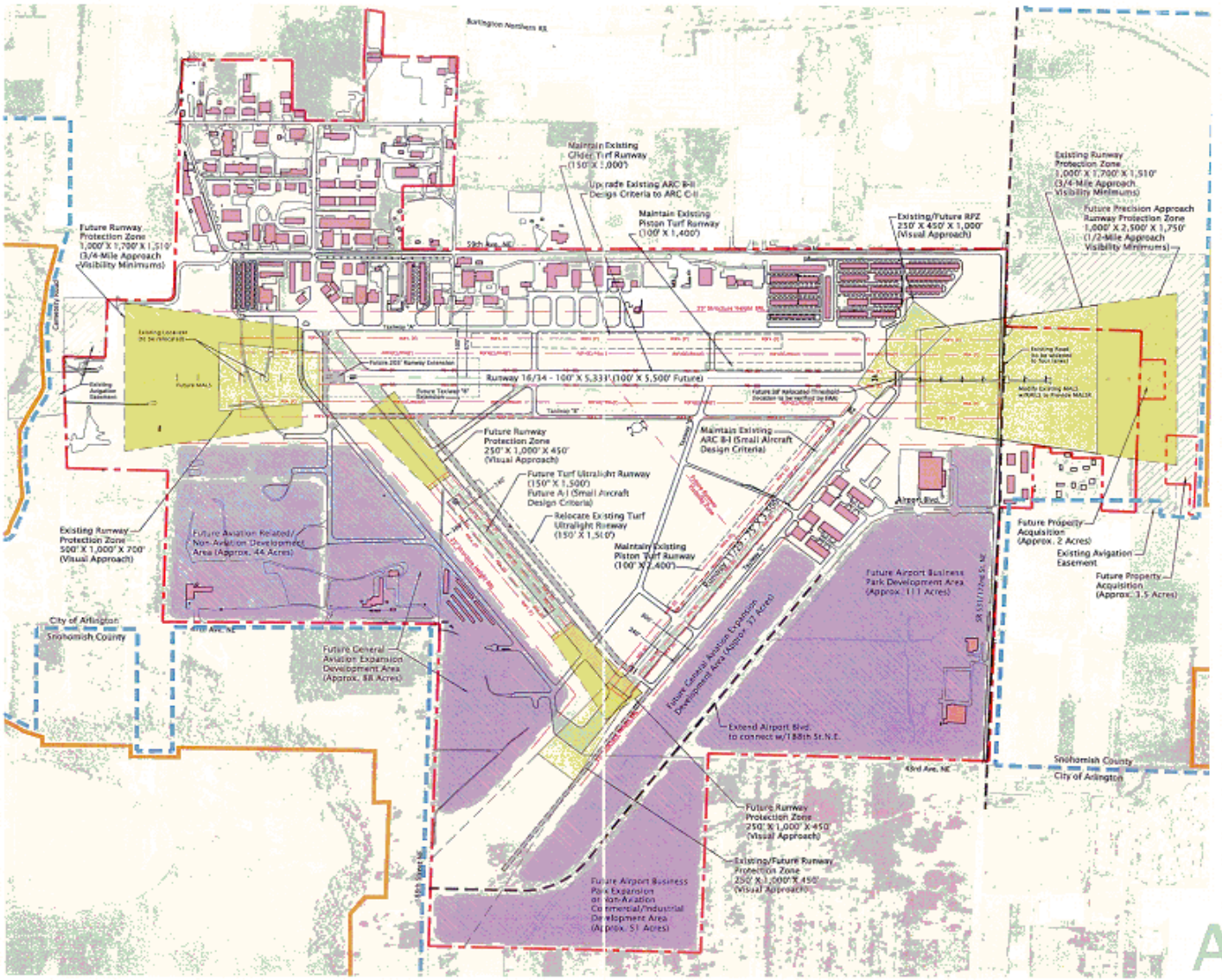


Figure D1 ***Alternative One***

Arlington Municipal Airport
Airport Layout Plan Update

lights will have to be repositioned in conjunction with the future threshold relocation.

- *Landing/Navigational Aids:* The Runway 16 localizer antenna array will have to be relocated in conjunction with either the runway extension or the ARC C-II design standard upgrade. Since the future precision approach to Runway 34 would be provided utilizing GPS Wide Area Augmentation System (WAAS) a future glide slope antenna and associated critical area will not be illustrated.
- *Taxiway System:* Construct new Taxiway "A4" connector to serve future approach end of Runway 16. Extend Taxiway "B" and construct a new Taxiway "B4" connector to serve the future approach end of Runway 16. Also, install medium intensity taxiway lights (MITLs) to serve both the Taxiway "A" and "B" parallel taxiway system.

Runway 11/29.

- *Dimensions:* Maintain existing operational length 75' x 3,500'.
- *Pavement:* Reduce existing gross weight bearing capacity to 12,500 pounds single wheel gear configuration at next pavement rehabilitation interval.
- *ARC Dimensional Criteria:* Maintain existing ARC A-I (Small Aircraft Only) design standards.
- *Instrument Approach Criteria:* Maintain existing visual approaches to each runway end in efforts to maximize the available property for future aviation expansion and development. The size of the RPZs will be maintained at each runway end.
- *Runway Lighting:* Install medium intensity runway lights (MIRLs) and precision approach path indicators to each runway end. There are no approach lighting system (ALS) enhancements recommended for this runway.
- *Landing/Navigational Aids:* No improvements are recommended.
- *Taxiway System:* Maintain existing parallel taxiway (Taxiway "C") to serve future general aviation expansion development and provide access to Runway 16/34. Install MITLs and signage on Taxiway "C" and connector taxiway system. Also, maintain Airplane Design Group (ADG) II standards on Taxiway "C" and increase pavement strength commensurate with future Runway 16/34 pavement strength.

Runway 16/34 Turf Piston Engine Runway.

- *Dimensions:* Maintain existing location adjacent to Runway 16/34 and current operational width and length of 75' x 1,500'.

- *Pavement:* Maintain existing turf operating surface.
- *ARC Dimensional Criteria:* ARC A-I (Small Aircraft Only).
- *Instrument Approach Criteria:* Maintain existing visual approaches to each runway end.
- *Runway Lighting:* No improvements are recommended.
- *Landing/Navigational Aids:* No improvements are recommended.
- *Taxiway System:* Maintain existing use of Taxiway "A" as needed.

Runway 11/29 Turf Piston Engine Runway.

- *Dimensions:* Maintain existing location adjacent to Runway 11/29 and current operational width and length of 75' x 2,400'.
- *Pavement:* Maintain existing turf operating surface.
- *ARC Dimensional Criteria:* ARC A-I (Small Aircraft Only).
- *Instrument Approach Criteria:* Maintain existing visual approaches to each runway end.
- *Runway Lighting:* No improvements are recommended.
- *Landing/Navigational Aids:* No improvements are recommended.
- *Taxiway System:* Maintain existing use of Taxiway "C" and Taxiway "D" as needed.

Turf Glider Runway.

- *Dimensions:* Maintain existing location adjacent to Taxiway "A" and existing operational width and length of 150' x 3,000'.
- *Pavement:* Maintain existing turf operating surface.
- *ARC Dimensional Criteria:* Not defined.
- *Instrument Approach Criteria:* Maintain existing visual approaches to each runway end.
- *Runway Lighting:* No improvements are recommended.
- *Landing/Navigational Aids:* No improvements are recommended.
- *Taxiway System:* Maintain existing use of Taxiway "A" as needed.

Turf Ultralight Runway.

- *Dimensions:* Remove segment of the closed northeast/southwest runway and construct a new turf runway at a width and length of 150' x 1,500'.
- *Pavement:* Construct new turf operating surface.
- *ARC Dimensional Criteria:* Implement ARC A-I (Small Aircraft Only) design standards.
- *Instrument Approach Criteria:* Maintain existing visual approaches to each runway end.
- *Runway Lighting:* No improvements are recommended.
- *Landing/Navigational Aids:* No improvements are recommended.
- *Taxiway System:* Construct new connector taxiway, Taxiway "E", along the south side of the new ultralight runway to connect the approach end of Runway 16 with the approach end of Runway 11.

Landside Development

The following landside development areas have been identified and are presented in the following text.

General Aviation Development:

Eastside, along the Runway 16/34 flight line (Existing). Re-develop as needed to maintain aviation use facilities. Also, convert existing non-aviation development to future aviation uses as needed.

- *Acreage:* 88.0 acres.

Southside, along the Runway 11/29 flight line (Existing). Maintain existing aviation development.

- *Acreage:* 11.0 acres.

Southside, along the Runway 11/29 flight line (Future). Expand existing aviation development with the construction of additional aircraft storage facilities.

- *Acreage:* 37.0 acres.

Northwest Quadrant, adjacent to the ultralight turf runway (Existing/Future). Expand the existing Sport Aviation Development Area as needed through the planning period.

- *Acreage:* 88.0 acres.

Airport Business Park Development:
Southside (Future). Develop a business park within the southwest quadrant of the airport that is bounded by Airport Boulevard, 43rd Avenue NE, and State Route 531/172nd Street NE.

- *Acreage:* 111.0 acres.

Non-Aviation or Aviation-Related Development:
Westside (Future). This property, which is located adjacent to the approach end of Runway 11, could be utilized for expansion of the Airport Business Park or other non-aviation related development.

- *Acreage:* 51.0 acres.

Non-Aviation Industrial Development:
Northwest (Existing/Future). The lease area of the existing mill site is to be reconfigured for future industrial uses.

- *Acreage:* 44.0 acres.

Property/Easement Acquisition

The City of Arlington does presently own or control those portions of the existing RPZs that extend beyond the current boundary of the airport. Based on the previous runway development alternative, the following property acquisition recommendations are presented.

Runway 34 RPZ & Light Lane (Future).

- Property Acquisition: 2.0 acres.

Runway 34 Extended Approach Surface (Future).

- Property Acquisition: 3.5 acres.

The implementation of Alternative One reflects many of the development recommendations reflected on the current Airport Layout Plan (ALP). The ARC for Runway 16/34 is to be upgraded to ARC C-II precision approach design standards, while the ARC A-I (Small Aircraft Only) visual approach standards are to be maintained to Runway 11/29. However, Runway 16/34 is to be extended to 5,500 feet instead of the 6,000 feet reflected on the current ALP. In addition, the existing glider and ultralight operations are to be maintained, with a new turf ultralight runway to be developed in accordance with recommendations presented by Arlington Northwest EAA Fly-In representatives.

Alternative Two. Preserve a future ARC C-II upgrade and precision instrument approach capabilities to Runway 16/34, while preserving the small aircraft design and visual approach standards to Runway 11/29. In addition, the airport's glider and ultralight operational capabilities will be maintained; however, the ultralight turf runway is to be relocated on the west side, and parallel to Runway 16/34.

Runway 16/34.

- *Dimensions:* Relocate the Runway 34 approach threshold approximately 57 feet to the north to comply with future ARC C-II dimensional criteria (i.e., Runway 34 SA and OFA length requirements). This proposed threshold relocation would initially reduce the useable length of the runway from 5,333 feet to 5,276 feet; however, the runways existing capability to accommodate 75% of the fleet (i.e., airplanes greater than 12,500 lbs. and less than 60,000 lbs.) at a 60% useful load for the wet pavement condition would be maintained. This alternative will also illustrate a future 724-foot extension to the approach end of Runway 16 to provide an ultimate length of 6,000 feet. The proposed 6,000-foot length is currently identified on the Airport Layout Plan and would accommodate between 100% of the fleet (i.e., airplanes greater than 12,500 lbs. and less than 60,000 lbs.) at 60% useful load and 75% of the fleet at 90% useful load for the wet pavement condition. The existing runway width of 100 feet is to be maintained.
- *Pavement:* Maintain the existing gross weight bearing capacity (114,000 pounds single wheel, 150,000 pounds dual-wheel, and 270,000 pounds dual tandem-wheel). However, future runway development and rehabilitation projects will require a new pavement strength evaluation based on the projected critical aircraft.
- *ARC Dimensional Criteria:* Maintain existing ARC B-II design standards, but preserve the option to upgrade to ARC C-II criteria within the specified planning period.
- *Instrument Approach Criteria:* Maintain existing non-precision approach standards (i.e., ¾-mile visibility minimums) to Runway 34; however, preserve future precision approach enhancement capabilities (i.e., ½-mile visibility minimums). In addition, future non-precision approach standards (i.e., 1-mile visibility minimums) are to be implemented to Runway 16. The size of the Runway 34 runway protection zone (RPZ) would ultimately be increased to 1,000' x 1,750' x 2,500' to accommodate the precision approach standards. The size of the Runway 16 RPZ would increase to 500' x 1,010' x 1,700' to accommodate the future non-precision approach standards in conjunction with the future Aircraft Approach Category C design standards.

VICINITY MAP

AIRPORT DATA

LAYOUT PLAN LEGEND

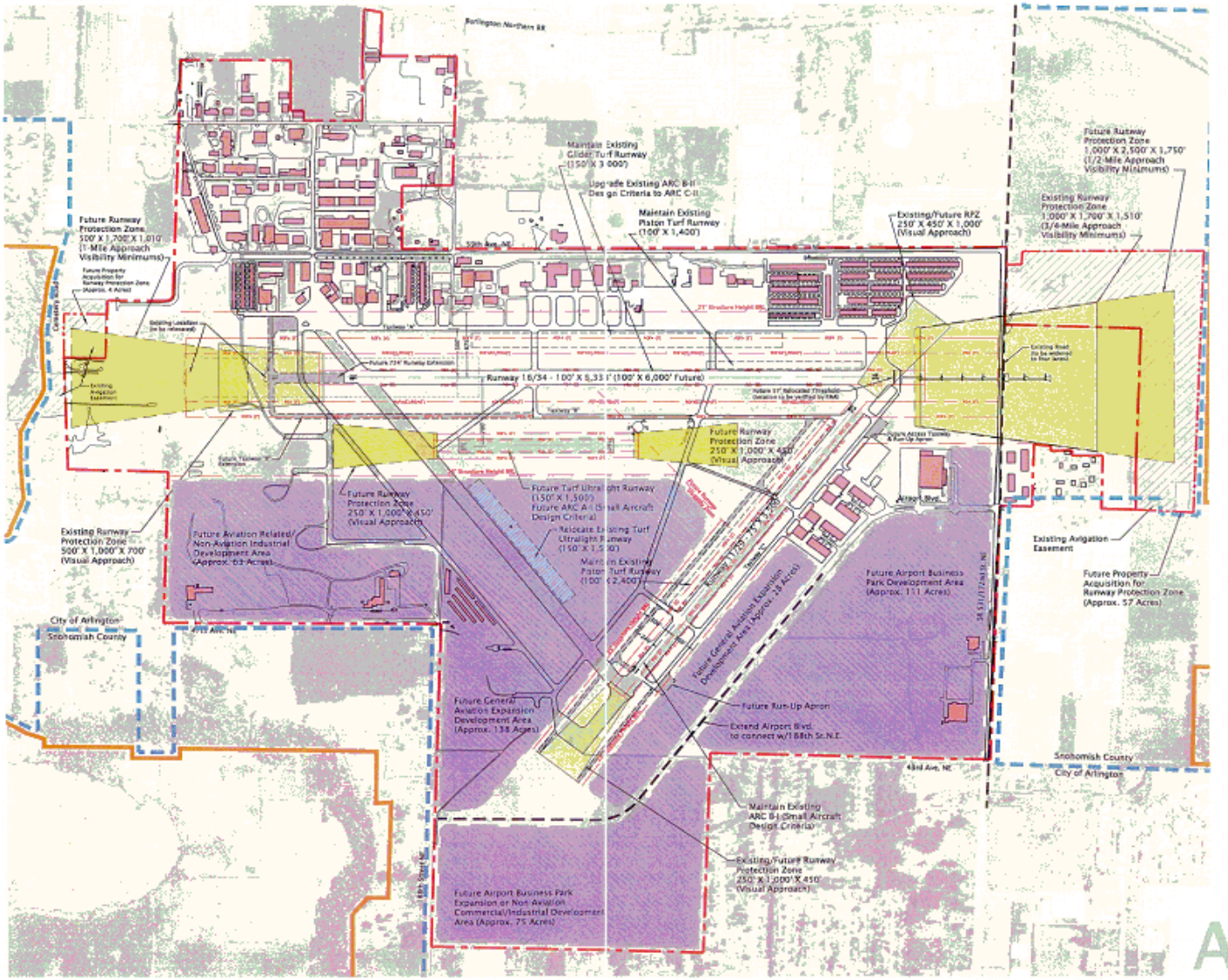


Figure D2 ***Alternative Two***

- Existing RPZ
- Future RPZ
- Airport Property Line
- Future Airport Property Line
- Building Restriction Line
- Runway Visibility Zone
- Future Roadway
- Corporate Boundary
- Urban Growth Boundary
- Existing Turf Runway
- Future Turf Runway
- Future Airfield Pavement
- Potential Airport Development Are
- Existing Airfield Pavement (to be removed)

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- *Runway Lighting:* Relocate the existing Runway 16 PAPIs in conjunction with the proposed runway extension and extend the medium intensity runway lights (MIRLs). It is also recommended that Runway End Identifier Lights (REILs) be installed to serve Runway 16. Relocate one of the existing Runway 34 MALS fixtures to accommodate the future widening of State Route 531/172nd Street NE and upgrade the MALS with Runway Alignment Indicator Lights (RAILs) to provide a future MALSR. In addition, the existing Runway 34 threshold lights will have to be repositioned in conjunction with the future threshold relocation.
- *Landing/Navigational Aids:* The Runway 16 localizer antenna array will have to be relocated in conjunction with either the runway extension or the ARC C-II design standard upgrade. The future precision approach to Runway 34 and thed non-precision approach to Runway 16 would be provided utilizing GPS Wide Area Augmentation System (WAAS); therefore, no additional ground based navigational aids are required.
- *Taxiway System:* Extend Taxiway "A" and construct a Taxiway "A5" connector to serve future approach end of Runway 16. Extend Taxiway "B" and construct a new Taxiway "B4" connector to serve the future approach end of Runway 16. Also, install medium intensity taxiway lights (MITLs) to serve both the Taxiway "A" and "B" parallel taxiway system.

Runway 11/29.

- *Dimensions:* Maintain existing operational length 75' x 3,500'.
- *Pavement:* Reduce existing gross weight bearing capacity to 12,500 pounds single wheel gear configuration at next pavement rehabilitation interval.
- *ARC Dimensional Criteria:* Maintain existing ARC A-I (Small Aircraft Only) design standards.
- *Instrument Approach Criteria:* Maintain existing visual approaches to each runway end in efforts to maximize the available property for future aviation expansion and development. The size of the RPZs will be maintained at each runway end.
- *Runway Lighting:* Install medium intensity runway lights (MIRLs) and precision approach path indicators to each runway end. There is no approach lighting system (ALS) enhancements recommended for this runway.
- *Landing/Navigational Aids:* No improvements are recommended.
- *Taxiway System:* Maintain existing parallel taxiway (Taxiway "C") to serve future general aviation expansion development and provide access to Runway 16/34. In addition, install MITLs and signage on Taxiway "C" and connector taxiway

system, construct runup/holding aprons at each runway end, and maintain Airplane Design Group (ADG) II standards. Also, reconstruct/realign Taxiway "D" to a 240-foot centerline separation from Runway 11/29 and implement Airplane Design Group (ADG) II standards. Also, increase pavement strength of Taxiway "C" and construct Taxiway "D" commensurate with future Runway 16/34 pavement strength.

Runway 16/34 Turf Piston Engine Runway.

- *Dimensions:* Maintain existing location adjacent to Runway 16/34 and current operational width and length of 75' x 1,500'.
- *Pavement:* Maintain existing turf operating surface.
- *ARC Dimensional Criteria:* ARC A-I (Small Aircraft Only).
- *Instrument Approach Criteria:* Maintain existing visual approaches to each runway end.
- *Runway Lighting:* No improvements are recommended.
- *Landing/Navigational Aids:* No improvements are recommended.
- *Taxiway System:* Maintain existing use of Taxiway "A" as needed.

Runway 11/29 Turf Piston Engine Runway.

- *Dimensions:* Maintain existing location adjacent to Runway 11/29 and current operational width and length of 75' x 2,400'.
- *Pavement:* Maintain existing turf operating surface.
- *ARC Dimensional Criteria:* ARC A-I (Small Aircraft Only).
- *Instrument Approach Criteria:* Maintain existing visual approaches to each runway end.
- *Runway Lighting:* No improvements are recommended.
- *Landing/Navigational Aids:* No improvements are recommended.
- *Taxiway System:* Maintain existing use of Taxiway "C" and Taxiway "D" as needed.

Turf Glider Runway.

- *Dimensions:* Maintain existing location adjacent to Taxiway "A" and existing operational width and length of 150' x 3,000'.
- *Pavement:* Maintain existing turf operating surface.
- *ARC Dimensional Criteria:* Not defined.

- *Instrument Approach Criteria:* Maintain existing visual approaches to each runway end.
- *Runway Lighting:* No improvements are recommended.
- *Landing/Navigational Aids:* No improvements are recommended.
- *Taxiway System:* Maintain existing use of Taxiway "A" as needed.

Turf Ultralight Runway (Future).
- *Dimensions:* Relocate/realign runway parallel with Runway 16/34 (on the west side) at a centerline separation of 700 feet. Construct new turf runway at a width and length of 150' x 1,500'.
- *Pavement:* Construct new turf operating surface.
- *ARC Dimensional Criteria:* Implement ARC A-I (Small Aircraft Only) design standards.
- *Instrument Approach Criteria:* Maintain existing visual approaches to each runway end.
- *Runway Lighting:* No improvements are recommended.
- *Landing/Navigational Aids:* No improvements are recommended.
- *Taxiway System:* No taxiway development is recommended.

Landside Development

The following landside development areas have been identified and are presented in the following text.

General Aviation Development:
Eastside, along the Runway 16/34 flight line (Existing). Re-develop as needed to maintain aviation facilities. Also, convert existing non-aviation development to future aviation uses when feasible.
- *Acreage:* 88.0 acres.

Southside, along the Runway 11/29 flight line (Existing). Maintain existing aviation development.
- *Acreage:* 11.0 acres.

Southside, along the Runway 11/29 flight line (Future). Expand existing aviation development, with the construction of additional aircraft storage facilities.
- *Acreage:* 28.0 acres.

Infield Development, adjacent to the ultralight turf runway and along side the north side of

Runway 11/29 (Existing/Future). Relocate/expand the existing Sport Aviation Development Area and provide long-term aviation expansion area through the planning period.

- *Acreage:* 138.0 acres.

Airport Business Park Development:
Southside (Future). Develop business park within the southwest quadrant of the airport, bounded by Airport Boulevard, 43rd Avenue NE, and State Route 531/172nd Street NE.

- *Acreage:* 111.0 acres.

Non-Aviation Related Development:
Westside (Future). This property, which is located adjacent to the approach end of Runway 11, could be utilized for expansion of the Airport Business Park or other non-aviation related development.

- *Acreage:* 75.0 acres.

Non-Aviation Related Industrial Development:
Northwest (Existing/Future). The lease area of the existing mill site is to be marketed for future industrial uses.

- *Acreage:* 63 acres.

Property/Easement Acquisition

The City of Arlington does presently own or control those portions of the existing RPZs that extend beyond the current boundary of the airport. However, based on the previous runway development alternative and the recommended land use overlay zoning recommendations specified by Washington State Statutes, RCW 36.70.547 and RCW 36.70A.510, the following property acquisition recommendations are presented.

Runway 34 RPZ, Light Lane, and Extended Approach Surface (Future).

- Property Acquisition: 57.0 acres.

Runway 34 RPZ (Future).

- Property Acquisition: 4.0 acres.

The implementation of Alternative Two reflects many of the development recommendations reflected on the current Airport Layout Plan. The ARC for Runway 16/34 is to be upgraded to ARC C-II precision approach design standards, while the ARC A-I Small Aircraft Only visual approach standards are to be maintained to

Runway 11/29. This alternative proposes a future length of 6,000 feet for Runway 16/34 and recommends additional property acquisition at each runway end to facilitate the implementation of future airport overlay zoning recommendations. In addition, the existing glider and ultralight operations are to be maintained, with a new turf ultralight runway to be developed along the west side, and parallel to Runway 16/34. This proposed relocation/realignment of the ultralight runway would maximize the long-term aviation development capabilities of airport property.

Alternatives Summary

The proposed development alternatives for Arlington Municipal Airport are intended to present the City of Arlington and Airport Commission with a variety of options for future facility expansion. Following a careful assessment of the potential impacts of each alternative, in conjunction with a detailed FAA evaluation, the City must select a recommended Development Plan, which will be presented in the *AIRPORT PLANS* chapter of this document. It is possible that the Recommended Development Plan will represent a combination, or phasing, of the two alternatives, utilizing portions of each to represent the ultimate airport configuration.

Landside Development Concepts

Introduction

With alternatives for the framework of the airport's ultimate airside development identified, the placement of needed landside facilities can now be analyzed. In general, landside facilities consist of terminal area development, aircraft parking aprons, support facility development, hangar development areas, and airport access. The overall objective of the landside development planning at the airport is the provision of facilities, which are conveniently located and accessible to the community, and which accommodate the specific requirements of airport users.

Based on the forecast aviation activity levels and resultant facility requirements determination, it is anticipated that the projected demand for both apron and aircraft storage facilities can likely be accommodated at the airport through the planning period. However, various undeveloped parcels of airport property, including potential reuse development areas will be evaluated with respect to long-term general aviation development capability.

General Aviation Development

The primary general aviation development area, located along the Runway 16/34 flight line, is effectively built-out, with only limited areas of infill or redevelopment available for evaluation. However, there are some existing non-aviation land uses within this quadrant that should be re-evaluated for future aviation uses as demand dictates. The primary general aviation expansion area on the airport is located along the south side of the Runway 11/29 flight line. It is recommended that this area be developed to accommodate a variety of aircraft storage facilities and aviation-related business hangars. With approximately 28-37 acres of property available for development in this location, it is estimated that this area can accommodate the projected demand for aircraft storage facilities within the twenty-year planning period. The ALP will also identify the expansion of general aviation and the sport aviation development areas located within the northwest quadrant of the airport. It is projected that this additional development area will support the general aviation expansion requirements for the airport well beyond the planning period of this document.

Airport Business Park Development

A proposed airport business park, consisting of approximately 111 acres, is to be located within the southwest quadrant of the airport. This development area is to be bounded by Airport Boulevard, 43rd Avenue NE, and State Route 531/172nd Street NE. Vehicular access to the site is to be provided via Airport Boulevard.

Non-Aviation or Aviation-Related Development

A future non-aviation or aviation-related development area, ranging from approximately 51-75 acres, will be identified within the western quadrant of the airport. This property, which is located adjacent to the approach end of Runway 11, could be utilized for expansion of the Airport Business Park or other non-aviation related development. Vehicular access to the area will be provided via a proposed extension of Airport Boulevard to 43rd Avenue NE. Due to the unique economic development opportunities that exist between the airport and adjacent property, the City should continue to market and attract additional aviation-related industry to this important revenue-generating component of the airport.

Non-Aviation Industrial Development

An existing non-aviation industrial development area, consisting of approximately 44 acres, will soon be available for redevelopment within the northwest quadrant of the

airport. This property, which is located adjacent to 47th Avenue NE, is well suited for a variety of industrial development reuses.

Arlington Northwest EAA Fly-In Development

The annual EAA Fly-In Event is currently held within a portion of the northwest quadrant of the airport and the airport infield area, with the current development area consisting of approximately 179 acres. Representatives of the Fly-In are developing long-term expansion plans for the event, and these final recommendations, as accepted by the City of Arlington, will be incorporated into the Recommended Development Plan for the airport.

Vehicular Access

Ground access is an important element in the overall ability of an airport to function properly. Not only is it vital that airport users have easy access to and from the airport's general aviation facilities using ground transportation, but also surface transported freight must be easily shipped to and from industries located in the vicinity of the airport. Also, because airports are employment centers, proper access for people employed on airport property must be provided.

The recommended airport development plan will illustrate the proposed widening of 172nd St./SR531 NE from two lanes to four, with the additional roadway width being constructed along the south side of the road to minimize the impacts to the airport. In addition, Airport Boulevard is to be extended to the northwest, around the Runway 11 RPZ, to connect with 188th Street NE. Additional access roads will also be developed to serve the Airport Business Park from Airport Boulevard.

Aviation Support Development

Aviation support functions are those that are required for the airport to operate properly, but are not part of the runway/taxiway system and do not relate directly to aircraft storage facilities. At present, there are no plans to implement an Air Traffic Control Tower (ATCT) at the airport; however, a new site for a commercial fueling facility is being examined adjacent to Runway 11/29. In addition, Fire Station No. 47 will continue to provide fire protection services for the airport for the foreseeable future; however, site plans for the Airport Business Park reflect the future development of new fire station on the airport. It is anticipated that this station would continue to operate as multi-use facility, providing fire protection services for both the airport and the Smokey Point area, but there are no plans to construct a dedicated Aircraft Rescue and Fire Fighting (ARFF) Facility at the airport.

Airport Environs Land Use Plan & Noise Analysis

Introduction

The relationship between airports and surrounding land uses is a very sensitive issue in most communities today, and must be carefully monitored and regulated to avoid future airport/community conflicts. Therefore, local efforts to maximize the public benefit of airports, while preserving the substantial public investment in these facilities, must be balanced with obligations of public safety and policies to prevent, minimize or eliminate any potential negative affects of aircraft operations. Local governmental entities have the responsibility of implementing compatible land use development in the vicinity of airports, with this obligation being set forth in the grant assurance agreements between the Federal Aviation Administration (FAA) and the local airport sponsor. In addition, the Washington State Growth Management Act requires every city and town, code city, charter city, and county that is located adjacent to a general aviation airport to discourage the siting of land uses that are considered to be incompatible with the airport.

Land use planning considerations set forth in this document are intended to present clear and concise recommendations regarding the ownership and development of land within the Arlington Municipal Airport influence area. Interested parties would include homeowners and buyers, homebuilders, developers, area representatives, and local jurisdictions having land use control authority.

These recommendations will be developed from technical information presented in the following documents:

- *Airports And Compatible Land Use Volume 1,* 1999/prepared by the Washington State Department of Transportation (WSDOT) Aviation Division.
- *Land Use Compatibility and Airports*, 1999/prepared by FAA Airports Division Southern Region.

The following narrative will identify the primary issues associated with airport land use compatibility, present options that are available to the City of Arlington, the City of Marysville, and Snohomish County for resolving or preventing future land use incompatibility issues, and make recommendations as to which options are most appropriate for implementation by the local governmental entities to achieve land use compatibility within the airport influence area.

Land Use Compatibility Issues

The two primary issues associated with land use planning in the vicinity of airports are safety and noise. The issue of safety pertains to both the public on the ground and the public involved with the flight operation. The issue of noise is related to the operation of an aircraft and its impact upon the surrounding influence area of the airport. Each of these issues will be examined in the following narrative.

Safety

The safety issue can be subdivided into two categories: 1) the safety of the public on the ground, and 2) the safety of the public in the air (i.e., the aircraft operator and passengers). Because specific areas on and around airports are subject to varying degrees of accident potential, it is incumbent upon the airport sponsor (e.g., the City of Arlington) and surrounding jurisdictions to implement land use controls that minimize public impact from potential aircraft accidents. To assist communities and counties in the appropriate designation of these land use control boundaries, the FAA has published three documents:

1) 14 CFR Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace.*
2) *Land Use Compatibility and Airports,* 1999/prepared by FAA Airports Division Southern Region.
3) Advisory Circular (AC) 150/5300-13, *Airport Design.*

FAR Part 77, *Objects Affecting Navigable Airspace,* defines specific airspace areas around airports, referred to as "Imaginary Surfaces", that should remain clear of objects for the protection of aircraft operators. *Land Use Compatibility and Airports* was developed by a Compatible Land Use Planning Task Force headed by an FAA Regional Environmental Program Manager. This document provides assistance to local governments and airports in identifying and implementing appropriate compatible land use planning tools. In addition, AC 150/5300-13, *Airport Design,* provides specific requirements for airfield design, as well as recommendations for land use control, that should be implemented to protect both the public in the air and

on the ground. The general structure of most airport-related land use regulations incorporate the guidelines set forth in these FAA documents.

The Washington State Department of Transportation (WSDOT) Aviation Division has published a document, entitled *Airports and Compatible Land Use Volume 1,* 1999, that also provides assistance to local governments and airports in identifying and implementing appropriate compatible land use planning tools. The generalized planning strategies and land use guidelines presented in this document will be utilized to establish both city and county overlay zoning recommendations for Arlington Municipal Airport. The specified *Aircraft Accident Safety Zone Diagram* and *Airport Compatible Land Use Matrix* presented in the WSDOT document are included for reference at the end of this chapter. The *Aircraft Accident Safety Zone Diagram* was developed utilizing National Transportation Safety Board (NTSB) accident data for general aviation aircraft.[1]

Noise

The issue of aircraft noise and its impact on surrounding land uses must be carefully addressed at all airports to avoid future community conflicts. In general, the impact of aircraft noise within the airport influence area is affected by the number of aircraft operations, the types of aircraft conducting the operations, and the degree to which aircraft noise intrudes upon existing ambient noise levels.

The Federal threshold for determining whether a land use is compatible or non-compatible with aircraft noise is the 65 DNL noise contour. The Day-Night Noise Level (DNL) represents an annualized average cumulative noise level with a nighttime penalty (see later sections within this chapter for additional information concerning the DNL methodology). According to data presented in later sections of this document, the size of the 65 DNL noise contour will not expand beyond the boundary of Arlington Municipal Airport through the planning period, due to the estimated operational activity levels and specified aircraft types. However, experience has shown, especially with general aviation airports, that significant noise complaints

[1] *As of 2002 the accident database was expanded. The total number of data points was increased from 400 to 873 (445 arrivals and 428 departures). The data covers all 50 states and contains data on only accidents, not incidents. Data was collected within a 5-mile radius as measured from the airport center. The data supported previous study conclusions. However, this data has not yet been incorporated into the WSDOT document. It should be restated that the document published by WSDOT Aviation Division is a tool developed to help Local governments implement RCW 35.63, 35A,63, 36.70, and 36.70A, "General Aviation Airports – Siting of Incompatible Uses".*

occur beyond the 65 DNL contour, with surrounding land uses being subject to increasing numbers of over flights. Therefore, local land use planning and control measures at general aviation airports are often based on more defined boundaries that extend well beyond the 65 DNL contour.

For Arlington Municipal Airport, noise complaints are anticipated to occur in areas well beyond the 65 DNL noise contour, especially under the approach and departure paths off the extended centerline of the runway and in the areas just to the sides of the runway as aircraft turn on departure. In addition, touch-and-go operations result in a pattern under which land uses will experience aircraft noise. All of these areas are beyond the 65 DNL noise contour and as such, will experience aircraft noise based on single-event flyovers. Single event noise levels are always higher than the DNL contour. A single event flyover noise level is expressed in terms of Sound Exposure Level (SEL). Research has shown that the 80 to 85 SEL is the point that individuals may experience sleep disturbance and other noise related annoyance. Since the 85 SEL contour boundary for many general aviation aircraft corresponds very closely to the aircraft accident safety zones located along the extended runway centerline and corresponds to areas experiencing a concentrated number of aircraft over flights, it is suggested that the same safety zone boundaries be utilized to specify noise reduction levels. Therefore, it is recommended that *new* residential structures and public spaces within *new* areas of permitted uses be sound attenuated (sound insulated) to achieve a noise level reduction of 25 to 30 dB from outside noise levels to inside noise levels, depending upon proximity to over flights. This applies to *new structures only* and this recommendation may be incorporated in the building code or zoning ordinance to address only these specific areas. Most modern energy codes achieve approximately 25 to 28 dB noise reduction, and an additional noise reduction of several dB is not onerous on the builder or prospective homeowner.

Land Use Compatibility Strategies

The Washington State Growth Management Act *requires* that the comprehensive plan of each county and city that plan under GMA, include a process for identifying and siting essential public facilities. Airports are designated as essential public facilities within the State of Washington; therefore, the implementation of both land use and development controls is vested within the authority of local city, county or state governments and they are responsible for ensuring compatible land use and appropriate zoning requirements around airports.

It is much easier and less costly to prevent the development of incompatible land uses within the vicinity of an airport, than it is to resolve these issues after they occur.

Therefore, the benefits of utilizing the following preventative land use control measures (i.e., planning, ordinances and acquisition) will be presented.

Planning

Community and/or regional planning efforts designed to promote compatible land uses in the vicinity of airports must be structured to achieve specified safety and noise-related guidelines through the preparation or update of comprehensive planning documents and development regulations. The City of Arlington has taken the first step with the preparation of an Airport Layout Plan Update, which documents the importance of land use compatibility within the airport influence area and illustrates the additional planning requirements necessary to minimize the potential impact of the airport on surrounding land uses. It is the intent of the City of Arlington, through the preparation of this document, to facilitate this process and to promote land use compatibility adjacent to the Arlington Municipal Airport.

Utilization of the Airport Layout Plan Update should be a basis for the establishment of goal and policy guidelines within the general land use element, transportation element, capital facilities element, and economic development element of a comprehensive plan. The comprehensive land use map developed from this process should reflect accident safety areas, height obstruction areas, and land use densities and intensities as applicable to the policy guidelines. (The comprehensive land use map can be a series of maps.)

Ordinances

The next step in the planning process for communities or counties wishing to protect the airport and its environs from the development of obstructions or incompatible land uses is the implementation of the comprehensive plan goals and policies through the adoption of specific airport-related zoning ordinances. The “airport environs” is defined by a geographical area surrounding the airport that is affected by the facility’s air traffic operations. In general, zoning defines the uses permitted on a parcel of land within an established boundary, and is enforced through the use of the police power of the state or local government. Therefore, zoning should be used carefully to accommodate the specific characteristics of the airport and the unique conditions affecting both the community and surrounding area.

In 1996, the Washington State Legislature took additional steps to protect general aviation airports from the future development of incompatible land uses. Washington State Senate Bill 6422, which amended the Washington State Growth Management Act and was codified as RCW 36.70.547 and RCW 36.70A.510, *requires* every city, town, code city, charter city, and county adjacent to a general aviation airport to

discourage the siting of land uses that are incompatible with the airport through its comprehensive plans and development regulations. Such plans and regulations may only be adopted or amended after formal consultation with airport owners and managers, private airport operators, general aviation pilots, ports and the WSDOT Aviation Division. (The role of the Aviation Division, through the land use compatibility program, is to provide the best available information and research available to decision makers and to advocate for the preservation of Washington State's public use airports.)

Height Restrictions. Generally speaking, airport zoning regulations are developed to provide political subdivisions with the authority to adopt and enforce airport height hazard zoning ordinances and maps to prevent the construction of hazards to air navigation. In Washington State, the standard for height hazards subscribes to the Federal delineation, as described in *14 CFR Part 77, Objects Affecting Navigable Airspace.*

Arlington Municipal Airport is owned and operated by the City of Arlington, which maintains the overall management and operational responsibility for the airport. Under Washington State Statute, RCW 14.12.030, every political subdivision having an airport hazard area within its territorial limits *may* adopt, administer, and enforce airport zoning regulations for the specified airport hazard area. The airport hazard area may be subdivided into zones within which permitted land uses would be specified and height of structures or trees may be restricted or regulated. In the case of Arlington Municipal Airport, the political subdivision owning and controlling the airport (i.e., the City of Arlington) and the adjacent political subdivisions (i.e., the City of Marysville and Snohomish County) may create an individual or joint airport zoning board to adopt, administer and enforce airport zoning regulations for the facility.[2]

The FAA has created FAR Part 77 to assist the airport sponsor and government jurisdictions in identifying and governing those objects around airports which may, or may become, an obstruction or a hazard to air navigation. At many airports current obstructions within the existing defined FAR Part 77 surfaces are identified on Airport Obstruction Charts published by the National Ocean Service. Obstruction information for Arlington Municipal Airport is contained on the airspace drawing within the Airport Layout Plan Update drawing set. The FAA also requires that an "airspacing form" (i.e., FAA Form 7460-1 *Notice of Proposed Construction or*

[2] RCW 36.70 and 36.70A also gives the City of Arlington and the adjacent jurisdictions of Snohomish County and City of Marysville authority to adopt airport zoning regulations. Height hazards are considered by the State as an incompatible land use activity.

Alteration) be completed by any person or entity wanting to erect an object within 20,000 feet of a runway at Arlington that would exceed a slope of 100:1 from the established airport elevation. In many instances, the FAA Form 7460-1 submittal is administered through the building permitting process of the controlling jurisdiction, which in this case would be the Cities of Arlington and Marysville and Snohomish County. The FAA has also published AC 150/5190-4A, *A Model Zoning Ordinance to Limit Height of Objects Around Airports,* for use by local jurisdictions to regulate the height of objects in the vicinity of airports. It should be noted however, that the FAA has limited authority to insure that the imaginary surfaces around airports are maintained free of obstructions. Therefore, the intent of the City of Arlington, through the preparation of this document; is to facilitate the implementation of height hazard overlay zoning in the vicinity of Arlington Municipal Airport. The height hazard overlay zoning will be administered pursuant to the authority conferred by Washington State Statute, RCW 14.12.030 and 37.70A.510. The Appendix of this document includes a *Model Height Hazard Zoning Ordinance* for Arlington Municipal Airport, as well as a Sample Avigation Easement and Sample Fair Disclosure Statement.

Acquisition

Acquisition strategies, when utilized for land use control and development, are most effective (i.e., less costly and less controversial) if implemented under preventative conditions. However, land acquisition can also be used to resolve existing nonstandard
design or development issues, which can result from upgrades in a runway's Airport Reference Code (ARC) or improvements in approach visibility minimums. The two types of acquisition generally employed by airport sponsors include fee simple land purchases and easements.

Land Purchase. Fee simple land acquisition is an effective, but sometimes costly, means of land use control. The FAA recommends that airport sponsors own in fee that property which is typically required for the operation and protection of the airport (i.e., airside and landside development), as well as the property within the boundary of the runway protection zones (RPZs). RPZ acquisition is typically eligible for FAA funding participation when the airport is included in the National Plan of Integrated Airport Systems (NPIAS), and this funding eligibility can also apply to properties which have existing noise sensitive uses as specified by FAR Part 150 guidelines.

Easements. Easement acquisition can be a useful and less costly method for land use control when compared to fee simple property acquisition. An avigation easement is the standard easement acquired within the airport influence area. The purchase of these easements is most common within RPZs or along the extended approach surface,

where existing development (either the airport or the adjacent community) has encroached upon the other, making property acquisition too costly. Avigation easements are typically structured to contain all, or portions of, the following rights: right of flight of aircraft; the right to cause noise, dust, etc.; the right to prohibit or remove all objects that penetrate the defined airspace; and the right to access the property as needed to exercise the rights acquired. In addition, avigation easements acquired on undeveloped property within the RPZ (i.e., an RPZ easement) should include a restriction on the current and future use of the land surface to preclude incompatible development. It should also be noted that the acquisition costs of an RPZ easement can often approach the cost of acquiring the entire property in fee.

In the case of Arlington Municipal Airport, several avigation easements already exist. The use of future avigation easements would likely be limited to the expansion of existing development within the vicinity of the airport (e.g., the construction or expansion of homes within existing subdivisions or lots platted prior to the implementation date of the overlay zoning ordinances).

Airport Environs Land Use Plan

All future land use compatibility planning efforts undertaken by the City of Arlington, the City of Marysville and Snohomish County, within the airport influence area, should address specific safety, height restriction and noise issues associated with the operation of the airport. The authority set forth in existing Washington State statutes permit the existing City of Arlington Unified Development Code, the City of Marysville Development Code and the Snohomish County Zoning Ordinance to be amended with the preparation of applicable goals and policies within comprehensive plan documents and the implementation of an Airport Overlay Zoning District. In this instance, the specified restrictions and requirements of the overlay district would be supplemental to those of the underlying district.

The first step in implementing state statutes through the land use planning process is to accurately define the appropriate boundaries of the proposed Airport Influence Area. A definition of the Airport Influence Area and a description of its various components are described in the following text.

Airport Influence Area

The Airport Influence Area (AIA) is defined as that property within the environs of the airport, where particular land uses are either influenced by, or will influence the operation of the airport, in a positive or negative manner. The AIA at Arlington Municipal Airport delineates a specified area within the cities of Arlington and

Marysville, including Snohomish County where residents may hear or see aircraft operating at the airport, or where certain types of land uses may impact the safe operation of the facility.

The AIA boundary presented on the following illustrations, entitled *RECOMMENDED AIRPORT LAND USE OVERLAY DISTRICTS WITH EXISTING LAND USE* and *RECOMMENDED AIRPORT LAND USE OVERLAY DISTRICTS WITH EXISTING ZONING* was established based on a combination of factors, including: airport characteristics, typical flight paths for aircraft operating at the airport; aircraft noise contours associated with the operation of these aircraft; and, FAR Part 77 regulations defining the height of objects that may affect the navigable airspace. Therefore, a portion of the airport's Part 77 horizontal surface is recommended to be designated as the AIA. In addition, based on the airport's published traffic patterns for each runway, the eastern boundary of the AIA will extend approximately 2,500 feet east and parallel to Runway 16/34, 6,000 feet to the west of the runway, and 10,200 feet beyond each runway end. The AIA boundary also extends approximately 1,100 feet northeast of the extended centerline of Runway 11/29, 4,500 feet to the southeast, 5,200 feet beyond the Runway 11 threshold, and approximately 8,000 feet beyond the Runway 29 threshold. The AIA is further subdivided into six (6) individual zones, each containing various land use regulations and guidelines. These individual zones which are presented in WSDOT's *Airports And Compatible Land Use Volume 1,* 1999, include the *Runway Protection Zone,* the *Inner Safety Zone*, the *Inner Turning Zone,* the *Outer Safety Zone*, the *Sideline Safety Zone*, and the *Traffic Pattern Zone*. In addition, as specified previously, these zones will also be utilized to delineate various noise reduction level recommendations.

Aircraft Accident Safety Zones

Runway Protection Zone (RPZ)/Zone 1. The RPZ boundary is trapezoidal in shape and centered about the extended runway centerline. It begins 200 feet beyond the end of the area usable for takeoff or landing. The RPZ dimensions are a function of the type of aircraft operating at the airport and the approach visibility minimums associated with each runway end. Based on the potential instrument approach improvements that are recommended in the Airport Layout Plan Update, larger future RPZ boundaries have been identified. The future Runway 16 RPZ boundary may be described as being 1,000 feet at the inner width, 1,510 feet at the outer width, and 1,700 feet in length, with the Runway 34 RPZ boundary being 1,000' x 1,750' x 2,500' respectively. In addition, both the Runway 11 and 29 RPZ boundaries may be described as 250 feet at the inner width, 450 feet at the outer width, and 1,000 feet in length. These areas are identified as Zone 1 on the aforementioned illustrations.

The function of the RPZ is to enhance the protection of people and property on the ground beyond the runway ends; therefore, the clearance of all objects within the RPZ boundary is desirable. Land use development restrictions within the zone should

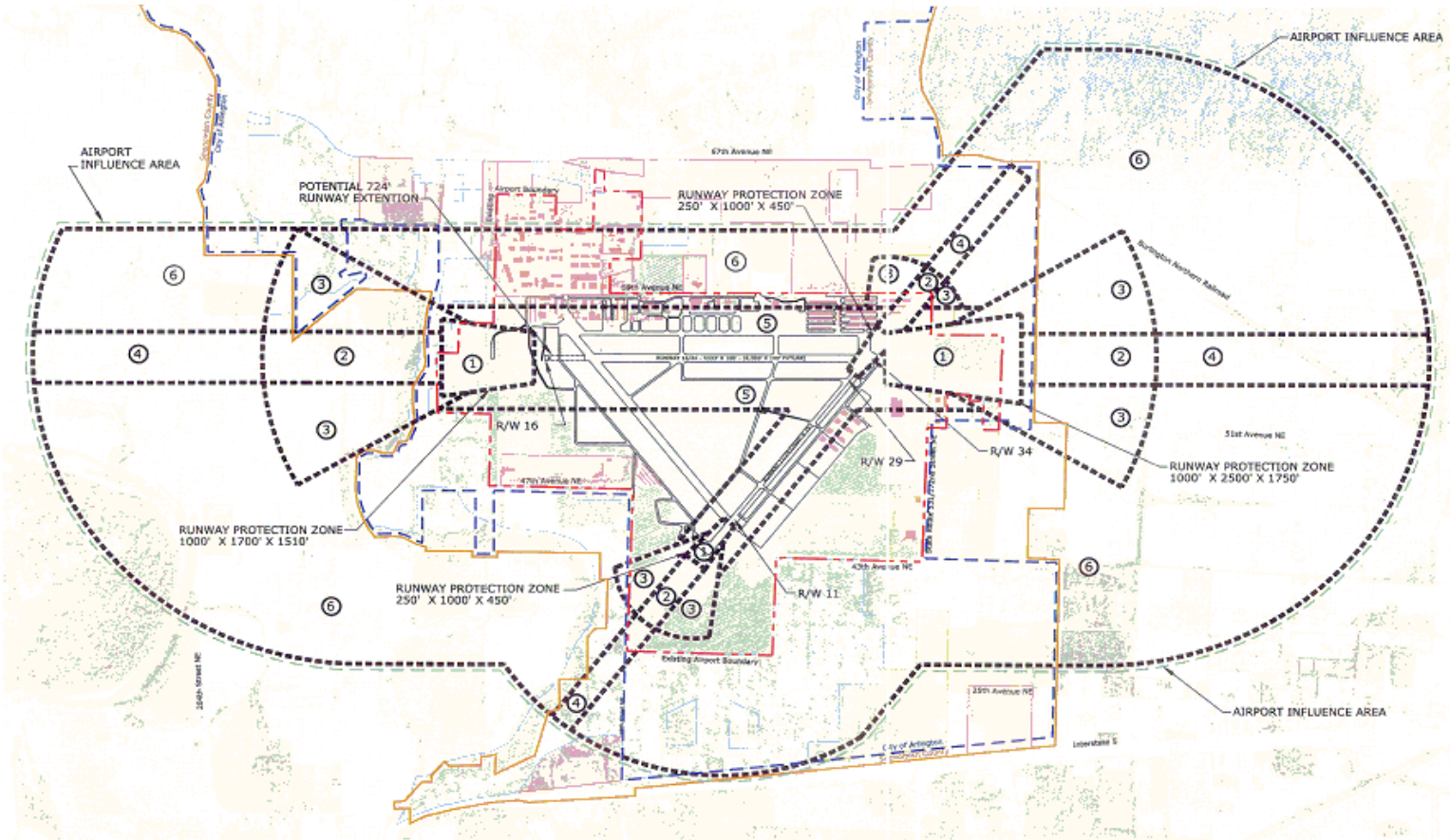


Figure E1 **Recommended Airport Overlay Districts w/ Existing Land Use**

- *Airport Influence Area*
- *Overlay Zone Districts*
- *Corporate Boundary*
- *Urban Growth Boundary*
- *Existing Airport Property*
- *Residential*
- *Office/Commercial/Business Park*
- *Industrial*
- *Parks/Golf Courses*
- *Public/Community Owned Facilities*
- (1) *Runway Protection Zone (RPZ)*
- (2) *Inner Safety Zone*
- (3) *Inner Turning Zone (60 Degree Sector)*
- (4) *Outer Safety Zone*
- (5) *Sideline Safety Zone*
- (6) *Traffic Pattern Zone*

Note: Overlay zoning boundaries generated by Barnard Dunkelberg & Company, Inc. in accordance with guidelines specified by Washington State Department of Transportation/Aviation Division, and contained in Airports and Compatible Land Use, Volume 1, February 1999.

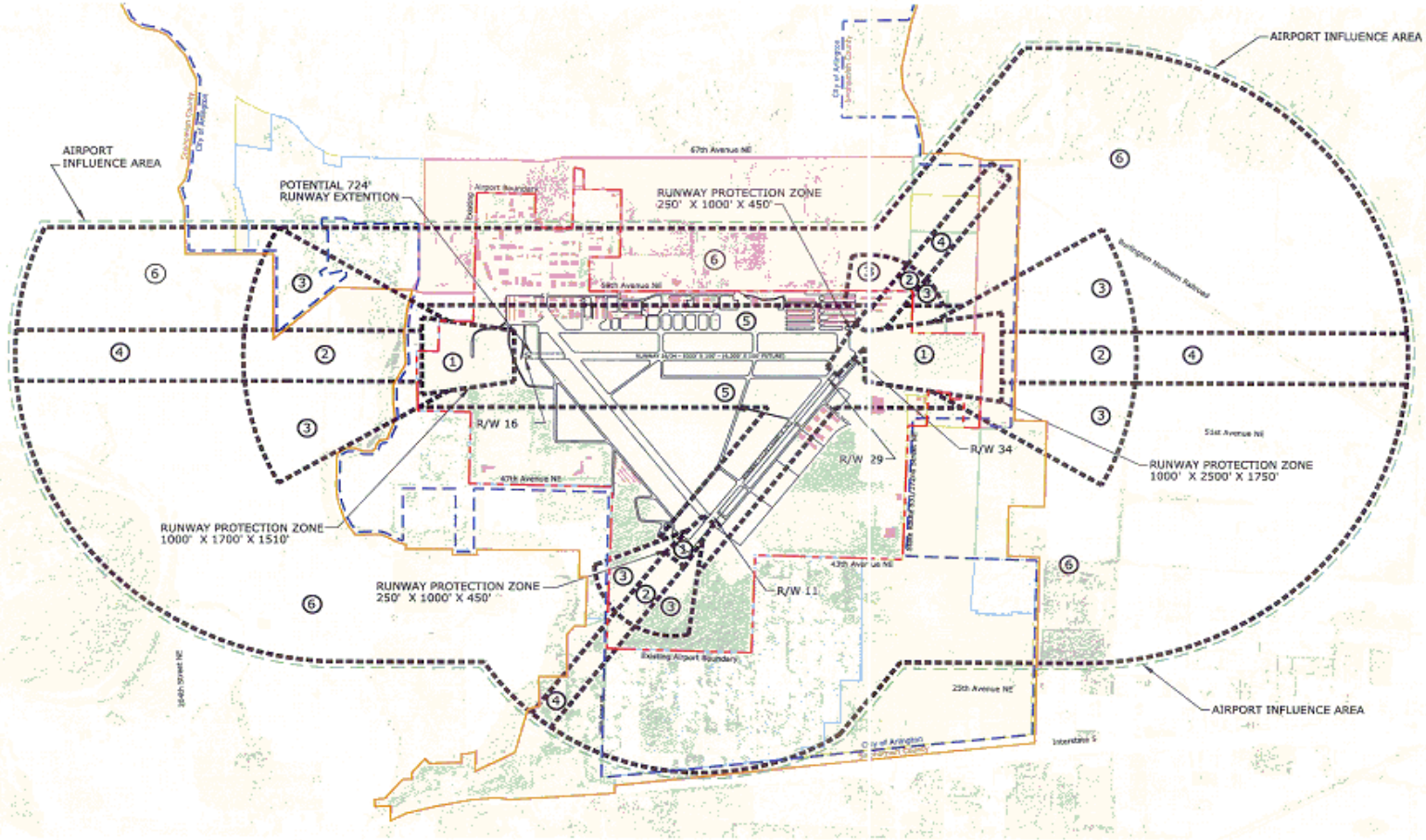


Figure E2 **Recommended Airport Overlay Districts w/ Existing Zoning**

- Airport Influence Area
- Overlay Zone Districts
- Corporate Boundary
- Urban Growth Boundary
- Existing Airport Property
- Residential
- Office/Commercial/Business Park
- Industrial
- Airport Industrial
- (1) Runway Protection Zone (RPZ)
- (2) Inner Safety Zone
- (3) Inner Turning Zone (60 Degree Sector)
- (4) Outer Safety Zone
- (5) Sideline Safety Zone
- (6) Traffic Pattern Zone

Note: Overlay zoning boundaries generated by Barnard Dunkelberg & Company, Inc. in accordance with guidelines specified by Washington State Department of Transportation/Aviation Division, and contained in Airports and Compatible Land Use, Volume 1, February 1993.

apply to all residential and non-residential uses, including any uses that could create hazards to flight (e.g., distracting lights, glare, smoke, electronic interference, explosive/hazardous storage, overhead utilities, wildlife hazards, etc.). Activities or areas of public assembly and large concentrations of people should be prohibited. The majority of the area should remain as open space.

Inner Safety Zone (ISZ)/Zone 2. The ISZ boundary is defined by a rectangular area that
is positioned on the extended runway centerline, and adjacent to the RPZ boundary. For Runway 16/34, the ISZ is 1,000 feet wide overall (extending 500 feet laterally from the runway centerline) and extends approximately 2,500 feet beyond each end of the RPZ boundary. For Runway 11/29, the ISZ is 450 feet wide overall (extending 250 feet laterally from the runway centerline) and extends approximately 1,500 feet beyond each end of the RPZ boundary. These areas are identified as Zone 2 on the previous illustration.

Land use development restrictions within the zone should apply to residential uses, uses that promote public assembly or large concentrations of people (e.g. schools, churches, hospitals, civic centers, etc.), uses that could create hazards to flight (e.g., distracting lights, glare, smoke, electronic interference, explosive/hazardous storage, overhead utilities, wildlife hazards, etc.) and noise sensitive uses. This zone should be relatively unoccupied by people, i.e. mini-storage, small parking lots and future structures should be located away from the runway centerline. The majority of the area should remain as open space. Future land use development guidelines should also require dedication of an avigation easement, plat notification to future purchaser of property, and include construction methods to achieve a minimum 30 dB noise reduction level within the public spaces of permitted uses to achieve noise compatibility.

Inner Turning Zone (ITZ)/Zone 3. The ITZ boundary is defined by a triangular shaped area that is positioned along each side of the RPZ and ISZ boundaries. For Runway 16/34, the ITZ extends approximately 5,000 feet from the inner width of the RPZ, within a 60° sector of the extended runway centerline. For Runway 11/29, the ITZ extends approximately 2,500 feet from the inner width of the RPZ, within a 60° sector of the extended runway centerline. These areas are identified as Zone 3 on the previous illustration.

Land use development restrictions within the zone should apply to uses that promote public assembly or large concentrations of people (e.g. schools, churches, hospitals, multifamily, civic centers, etc.) and uses that could create hazards to flight (e.g., distracting lights, glare, smoke, electronic interference, explosive/hazardous storage,

overhead utilities, wildlife hazards etc.), and noise sensitive uses. This zone should be relatively unoccupied by people, i.e. mini-storage, small parking lots and future structures should be located away from the runway centerline. A large percentage of the area should remain as open space. However, residential development, excluding mobile home parks, would be permitted at densities of one dwelling unit per five acres. Development densities within non-residential areas would be limited to less than 25 people per acre. Future land use development guidelines should require dedication of an avigation easement, plat notification to future purchaser of property, and include construction methods to achieve a minimum 25 dB noise reduction level within residential development and the public spaces of permitted uses to achieve noise compatibility.

Outer Safety Zone (OSZ)/Zone 4. The OSZ boundary is defined by a rectangular area that is also centered on the runway. For Runway 16/34, the OSZ is 1,000 feet wide overall (extending 500 feet laterally from the runway centerline) and extends approximately 5,000 feet beyond the ISZ. For Runway 11/29, the OSZ is 450 feet wide overall (extending 225 feet laterally from the runway centerline) and extends approximately 2,500 feet beyond the ISZ. These areas are identified as Zone 4 on the previous illustration.

Land use development restrictions should apply to uses that promote public assembly or large concentrations of people (e.g. schools, churches, hospitals, multifamily, civic centers, etc.), uses that could create hazards to flight (e.g., distracting lights, glare, smoke, electronic interference, explosive/hazardous storage, overhead utilities, wildlife hazards etc.), and noise sensitive uses. Future structures should be located away from the runway centerline. A large percentage of the area should remain as open space. Residential development, excluding mobile home parks, would be permitted at densities of one dwelling unit per five acres. Development densities within non-residential areas would be limited to less than 40 people per acre. Future land use development guidelines should require dedication of an avigation easement, plat notification to future purchaser of property, and include construction methods to achieve a minimum 25 dB noise reduction level within residential development and the public spaces of permitted uses to achieve noise compatibility.

Sideline Safety Zone (SSZ)/Zone 5. For Runway 16/34, the SSZ boundary is defined by a 1,000-foot centerline offset on each side of the runway that connects the ITZs on each end of the runway. For Runway 11/29, the SSZ boundary is defined by a 500-foot centerline offset on each side of the runway that connects the ITZs on each end of the runway. These areas are identified as Zone 5 on the previous illustration.

Land use development restrictions within the zone should apply to residential uses, uses that promote public assembly or large concentrations of people (e.g. schools, churches, hospitals, civic centers, etc., uses that could create hazards to flight (e.g.,

distracting lights, glare, smoke, electronic interference, explosive/hazardous storage, overhead utilities, wildlife hazards, etc.), and noise sensitive uses. A large percentage of the area should remain as open space. Most of the open space should be concentrated towards the runway ends. Future land use development guidelines should also require dedication of an avigation easement, plat notification to future purchaser of property, and include construction methods to achieve a minimum 30 dB noise reduction level within the public spaces of permitted uses to achieve noise compatibility.

Traffic Pattern Zone (TPZ)/Zone 6. For Runway 16/34, the TPZ boundary is defined by an approximate 2,500-foot offset on the east side of the runway centerline, and an approximate 6,000-foot offset on the west side of the runway centerline, which is connected by an approximate 10,200-foot arc that extends from each runway end. For Runway 11/29, the TPZ boundary is defined by an approximate 1,100-foot offset on the north side of the runway centerline, and an approximate 4,500-foot offset on the south side of the runway centerline, which is connected by an approximate 5,200-foot arc that extends from Runway 11. The TPZ boundary that extends beyond the Runway 29 end is encompassed by the TPZ boundary for Runway 16/34. These areas are identified as Zone 6 on the previous illustration, and are generally defined by typical traffic pattern airspace boundaries for approach Category B aircraft. It should also be noted that the differing offset distances for the TPZ boundary on each side of each runway is dictated by the specified traffic patterns for each runway.

Land use development restrictions should apply to uses that promote public assembly or large concentrations of people (e.g., schools, churches, hospitals, civic centers, etc.), and noise sensitive uses; however, residential development, excluding mobile home parks and multifamily uses, would be permitted. Development densities within non-residential areas would be limited to less than 100 people per acre. At least fifteen percent or more of the area should be left in useable open space. Open space should be placed throughout the zone. Future land use development guidelines should require dedication of an avigation easement, plat notification to future purchaser of property, and include construction methods to achieve a minimum 25 dB noise reduction level within residential development and the public spaces of permitted uses to achieve noise compatibility.

Summary

The land use planning recommendations set forth in this document are intended to provide the City of Arlington, the City of Marysville and Snohomish County with comprehensive plan, future land use guidance and zoning recommendations to prevent or minimize future land use incompatibilities within the airport influence

area. The comprehensive plan goals/policies and airport safety overlay and height hazard overlay zoning regulations should apply to those lands within the defined Airport Influence Area; however, *their application would be limited to only future development or reconstruction of non-conforming uses*.

In conjunction with comprehensive plan goals/policies and zoning ordinances and classifications, the City of Arlington, the City of Marysville and Snohomish County should develop specific compatibility criteria identifying those land uses which are *prohibited*, *acceptable with restrictions,* and *accepted* within each zone. These land use guidelines should also specify any unique development conditions (e.g., avigation easement requirements, recorded disclosure notice, subdivision plat notification, building permit requirements, residential dwelling unit and non-residential density requirements, etc.) required of future property owners concerning their proximity to existing and future airport development. The following table, entitled *RECOMMENDED OVERLAY ZONING GUIDELINES* identifies proposed development recommendations within the specified overlay zoning boundaries for five (5) generic land uses within the specified Airport Influence Area (AIA) boundary.

It should be restated that the City of Arlington efforts to promote compatible land use planning adjacent to, or in the vicinity of the airport is an obligation set forth in all grant assurance agreements with the FAA and in state statute. But more importantly, these regulations are designed to enhance the safety of those citizens that live and work within the AIA and to minimize the impacts from airport generated noise.

Table E1

RECOMMENDED OVERLAY ZONING GUIDELINES

Arlington Municipal Airport Layout Plan Update

Land Use[1]	**Zone 1/ RPZ**	**Zone 2/ ISZ** [2]	**Zone 3/ ITZ** [3]	**Zone 4/ OSZ** [3]	**Zone 5/ SSZ** [2]	**Zone 6/ TPZ** [3]
Residential	▨	▨			▨	
Commercial	▨					
Industrial	▨					
Recreational	▨	▨				
Public [4]	▨	▨	▨	▨	▨	

Source: Overlay zoning recommendations generated by Barnard Dunkelberg & Company, Inc. in accordance with guidelines specified by Washington State Department of Transportation/Aviation Division, and contained in Airports and Compatible Land Use/Volume 1, February 1999.

Legend:

Prohibited ▨

Acceptable w/ Restrictions

Acceptable (Not shown) ▥

(1) These development guidelines are not retroactive and shall not be construed to require a change or alteration in the use of any property not conforming to these regulations, or otherwise interfere with the continuance of a nonconforming use. Nothing contained herein shall require any change in the use of any property, the platting, construction, or alteration of which was begun prior to the effective date of this amendment, and is diligently prosecuted.

(2) Specified development guidelines will include dedication of an avigation easement, use of non-reflective roofing and siding material, mandatory disclosure of the overlay zoning boundaries to the purchaser of property, subdivision plat requirements, construction methods to achieve a minimum 30 dBA noise reduction level within the public spaces of permitted uses, and adherence to height restriction development guidelines as specified by (reference local code) FAR Part 77 imaginary surfaces.

(3) Specified development guidelines will include recorded property discloser notice that indicates the property is located adjacent to an airport and may experience low overhead flights, odor, noise, vibration, and other aviation related impacts. The overlay zoning district requires the use of non-reflective roofing and siding material, mandatory disclosure of the overlay zoning boundaries to the purchaser of property, subdivision plat requirements, construction methods to achieve a minimum 25 dB noise reduction level within the public spaces of permitted uses, and adherence to height restriction development guidelines as specified by FAR Part 77 imaginary surfaces.

(4) Restrictions would apply to congregations of people and noise sensitive uses (i.e., schools, hospitals, nursing homes, churches, auditoriums, and concert halls).

RPZ: Runway Protection Zone
ISZ: Inner Safety Zone
ITZ: Inner Turning Zone
OSZ: Outer Safety Zone
SSZ: Sideline Safety Zone
TPZ: Traffic Pattern Zone

Noise Analysis

In predicting the approximate noise impacts that could occur from the development of Arlington Municipal Airport, several assumptions were made to determine the number of operations, type of aircraft, and the airport configuration that would be most reasonable to model for the 2000 base year, and for the end of the planning period, year 2020. If land use development is strictly controlled within these contours, then most noise related land use problems should be alleviated before they develop. The two sets of total operations, defined by aircraft type, that were used as a basis for generating the noise contours are shown in the following table, entitled *EXISTING AND FUTURE AIRCRAFT OPERATIONS BY AIRCRAFT TYPE, 2000 & 2020.*

Table E2
EXISTING AND FUTURE AIRCRAFT OPERATIONS BY AIRCRAFT TYPE, 2000-2020
Arlington Municipal Airport Layout Plan Update

Operations By Type	**2000** [a]	**2005**	**2010**	**2015**	**2020**
Air Taxi	*520*	*1,000*	*1,500*	*2,000*	*2,500*
Multi-Engine	520	1,000	1,500	2,000	2,500
General Aviation [1]	*134,460*	*145,130*	*156,690*	*169,190*	*182,870*
Single Engine Piston	124,944	134,460	144,450	154,860	166,250
Multi-Engine Piston	3,240	3,480	3,760	4,390	5,190
Turboprop	85	220	410	630	820
Business Jet	875	1,020	1,330	1,690	2,010
Helicopter	3,453	3,920	4,390	4,910	5,490
Glider	1,863	2,030	2,350	2,710	3,110
Military	*20*	*50*	*50*	*50*	*50*
TOTAL ANNUAL OPERATIONS	135,000	146,180	158,240	171,240	185,420

Source: Arlington Municipal Airport Management and Barnard Dunkelberg & Company, Inc. estimates.
(a) Actual
(1) Total includes ultralight operations.

Day-Night Sound Level. Noise is generally defined as unwanted sound, and as such the determination of acceptable levels is subjective. The day-night sound level (DNL) methodology is used to determine both the noise levels resulting from existing conditions and the potential noise levels that could be expected to occur with the proposed project. The basic unit in the computation of DNL is the Sound Exposure Level (SEL). A SEL is computed by adding the dB(A) level for each second of a noise event above a certain threshold. For example, a noise monitor located in a quiet residential area [40 dB(A)] receives the sound impulses of an approaching aircraft and records the highest dB(A) reading for each second of the event as the aircraft approaches and departs the site. Each of these one-second readings is then added

logarithmically to compute the SEL. Table E3, entitled *COMPARATIVE NOISE LEVELS*, depicts the typical dB(A) values of noise commonly experienced by people. This illustrates the relative impact of single event noise in "A" weighted level.

Table E3
COMPARATIVE NOISE LEVELS
Arlington Municipal Airport Layout Plan Update

Activity	dBA Levels
Rustling Leaves	20
Room in Quiet Dwelling at Midnight	32
Soft Whisper (at 5 feet)	34
Men's Clothing Department of Large Store	53
Window Air Conditioner	55
Conversational Speech	60
Household Department of Large Store	62
Busy Restaurant	65
Typing Pool	65
Vacuum Cleaner in House (at 10 feet)	69
Ringing Alarm Clock (at 2 feet)	80
Loudly Reproduced Orchestral Music in Large Room	82
Printing Press Plant (medium size automatic)	86
Heavy City Traffic	92
Heavy Diesel-Propelled Vehicle (at 25 feet)	92
Air Grinder	95
Cut-off Saw	97
Home Lawn Mower	98
Turbine Condenser	98
150 Cubic Foot Air Conditioner	100
Banging of Steel Plate	104
Air Hammer	107
Jet Airliner (500 feet overhead)	115

Note: Prolonged levels over 85 dB(A) represent beginning of hearing damage.
Adapted from Impact of Noise on People, Federal Aviation Administration.

The computation of DNL involves the addition, weighting, and averaging of each SEL to achieve the DNL level in a particular location. The SEL of any single noise event occurring between the hours of 10:00 p.m. and 7:00 a.m. is automatically weighted by adding 10 dB(A) to the SEL to account for the assumed additional irritation perceived during that time period. All SELs are then averaged over a given time period (day, week, year) to achieve a level characteristic of the total noise environment. Very simply, a DNL level for a specified area over a given time is approximately equal to the average dB(A) level that has the same sound level as the intermittent noise events. Thus, a DNL 65 level describes an area as having a constant noise level of 65 dB(A)

that is the approximate average of single noise events even though the area would experience noise events much higher than 65 dB(A) and periods of quiet.

The main advantage of DNL is that it provides a common measure for a variety of differing noise environments. The same DNL level can describe both an area with very few high level noise events and an area with many low level events. DNL is thus constructed because it has been found that the total noise energy in an area predicts community response.

DNL levels usually are depicted as grid cells or contours. Grid cells are squares of land of a specific size that are entirely characterized by a noise level. Contours are interpolations of noise levels based on the centroid of a grid cell and drawn to connect all points of similar level. Contours appear similar to topographical contours and form concentric "footprints" about a noise source. These footprints of DNL contours drawn about an airport are used to predict community response to the noise from aircraft using that airport.

Computer Modeling. The DNL noise contours were generated using the Integrated Noise Model (INM) Version 6.0a, specifically developed by the Federal Aviation Administration (FAA) to plot noise contours for airports. The original version was released in 1977, and the present Version 6.0c was released in 2002 (FAA-AEE-120). The program is provided with standard aircraft noise and performance data that can be tailored to the characteristics of individual airports.

The INM program requires the input of the physical and operational characteristics of the airport. Physical characteristics include runway coordinates, airport altitude, and temperature. Operational characteristics include aircraft mix, flight tracks, and approach profiles. Optional data that is contained within the model includes departure profiles, approach parameters, and aircraft noise curves. All of these options were incorporated in order to model the noise environment at Arlington Municipal Airport.

Land Use Compatibility Matrix. The Land Use Compatibility Matrix, presented on the following page, indicates those land uses that are compatible within certain DNL noise contours. It identifies land uses as being compatible, incompatible, or compatible if sound attenuated. The matrix can act as a guide to the town, city and county for land use planning and control and a tool to compare relative land use impacts that would result from the different development alternatives. It must be remembered that the DNL noise contours do not delineate areas that are either free from excessive noise or areas that will be subjected to excessive noise. In other words, it cannot be expected that a person living on one side of a DNL noise contour will have a markedly different reaction than a person living nearby, but on the other side. What can be expected is that the general aggregate community response to noise within the DNL 65 noise contour, for example, will be less than the public response from the DNL 75 noise contour.

This study generated the 60, 65, 70, and 75 DNL noise contours to determine land use impacts. The area between the 60 and 65 DNL noise contours is an area within which

Land Use	Yearly Day-Night Noise Level (DNL) in decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)1	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail-building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade-general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Numbers in parentheses refer to notes.

* The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

Key to Table 1

SLUCM Standard Land Use Coding Manual.
Y(Yes) Land Use and related structures compatible without restrictions.
N(No) Land Use and related structures are not compatible and should be prohibited.
NLR Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30 or 35 Land Use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 dB must be incorporated into design and construction of structure.

Notes

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB to 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(5) Land use compatible provided that special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

SOURCE: FAR Part 150

Figure E3 ***Land Use Compatibility Matrix***

most land uses are compatible, but is an area where single event noise complaints are often received. The area between the 65 and 70 DNL noise contours is an area of significant noise exposure where many types of land uses are normally unacceptable and where land use compatibility controls are recommended. Finally, the areas inside the 70 DNL and 75 DNL noise contours identify land uses that are subjected to a significant level of noise and the sensitivity of various uses to noise is increased.

2000 Noise Impacts. Using the existing 2000 aircraft operation counts and types previously presented in Table 1, noise contours were generated and are presented in Figure E4, entitled *EXISTING (2000) NOISE CONTOURS WITH GENERALIZED EXISTING LAND USE.* As can be seen, the existing 65, 70, and 75 DNL contours are contained entirely within the existing airport boundary, and only a small portion of the 60 DNL contour extends beyond the property line. There are no existing noise sensitive land uses contained within any of the contours. The 75 DNL noise contour encompasses approximately 5.2 acres, the 70 DNL noise contour encompasses approximately 59.4 acres, the 65 DNL noise contour encompasses approximately 133.0 acres, and the 60 DNL noise contour encompasses approximately 320.6 acres.

2020 Noise Impacts. The 2020 aircraft operation counts and types presented in Table E2 were used to generate the noise contours that are illustrated in Figure E5, entitled *FUTURE 2020 NOISE CONTOURS WITH GENERALIZED EXISTING LAND USE*. In comparison, the 2020 noise contours are slightly larger than the 2000 contours. The 75 DNL noise contour encompasses approximately 51.2 acres, the 70 DNL noise contour encompasses approximately 123.3 acres, the 65 DNL noise contour encompasses approximately 229.1 acres, and the 60 DNL noise contour encompasses approximately 562.3 acres. As with the 2000 contours, the 65, 70, and 75 DNL noise contours are contained within the existing airport boundary, with a slightly larger portion of the 60 DNL noise contour extending off airport property. In addition, there is no existing noise sensitive land uses contained within any of the noise contours.

Nationally, the aircraft fleet, particularly the jet fleet, is becoming quieter. The majority of the business jet aircraft that produce the greatest noise levels will, by age, be removed from service during the twenty-year planning period on which this study is based. In addition, the National Business Aviation Association (NBAA) has passed a voluntary resolution to eliminate the operation of all Stage 1 business jets by the year 2005, and all newly manufactured business jets comply with Stage 3 noise reduction criteria. As can be seen from the previous illustrations, the larger future 2020 noise contours are dictated by a projected increase in aviation activity at the airport throughout the twenty-year planning period, which includes a slight increase in business jet activity for the period.

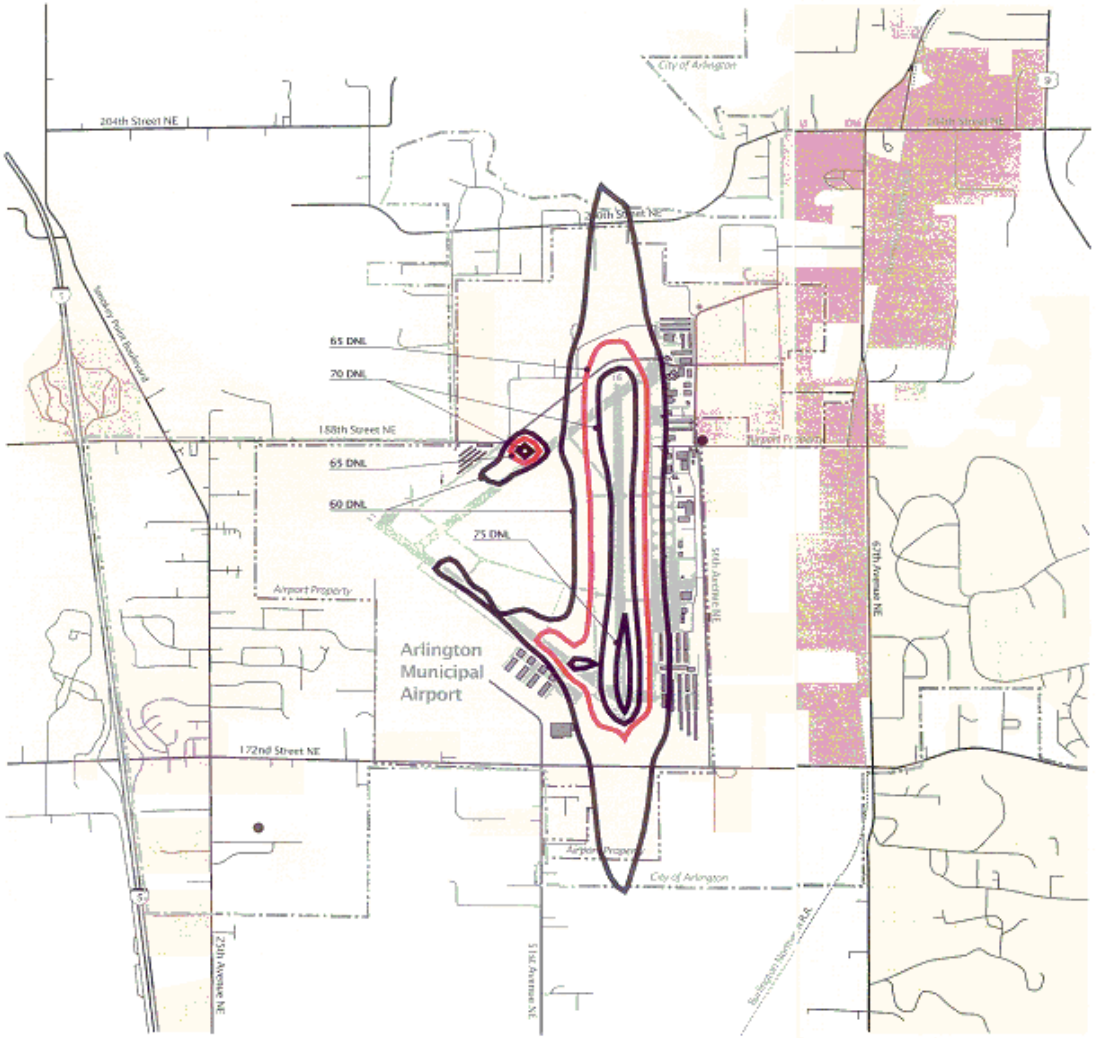


Figure E4 ***Existing (2000) Noise Countours with Generalized Existing Land Use***

- *Airport Property*
- *Residential*
- *Office, Commercial, Business Park*
- *Industrial*
- *Parks/Golf Courses*
- *Public/Community Owned Facilities*
- *Agriculture/Undeveloped*
- *Schools*

Approximate Scale 1"=2,000'

Source: 1991 Aerial Photography provided by Soundview Aerial, City of Arlington Mapping from the 1995 Final Comprehensive Plan

Arlington Municipal Airport
Airport Layout Plan Update

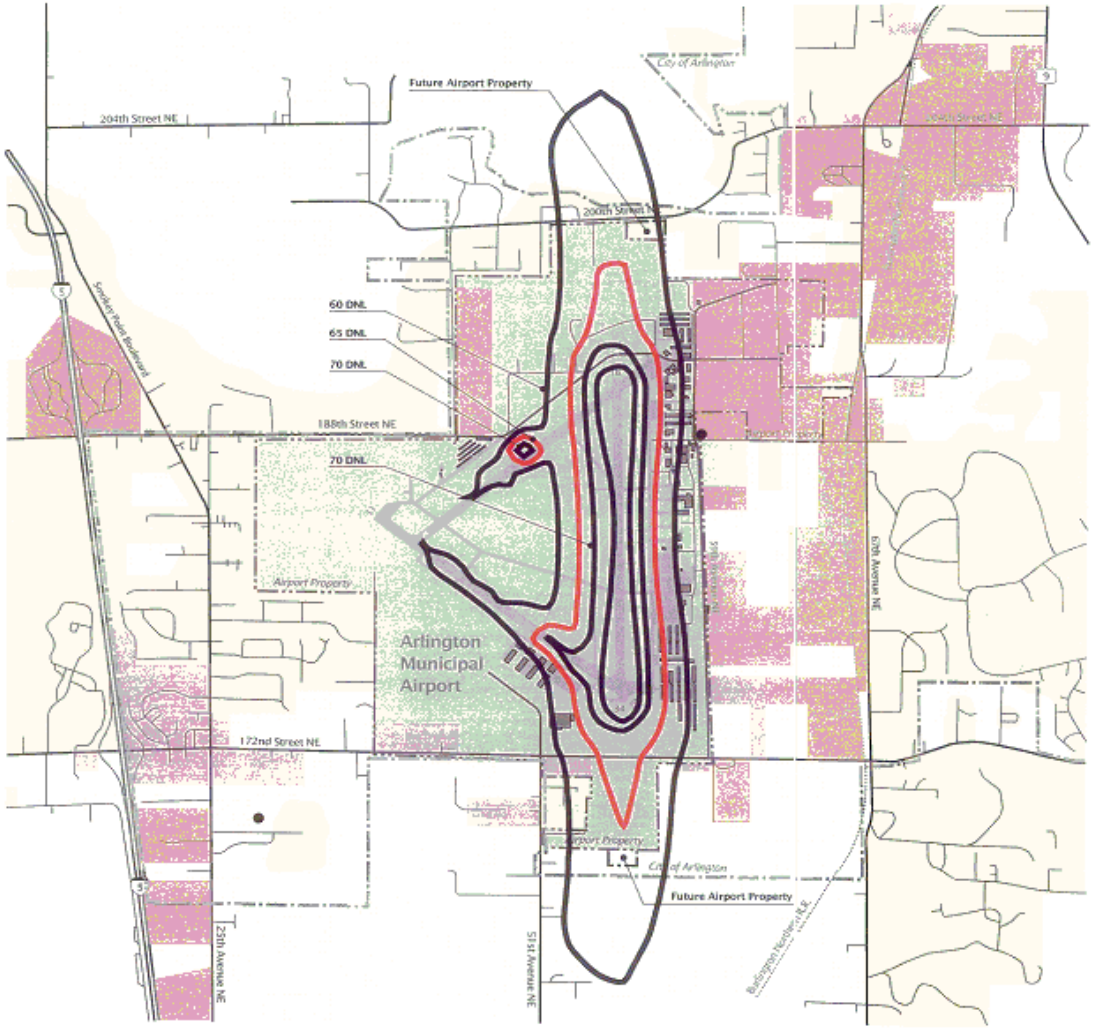


Figure ES Future (2020) Noise Countours with Generalized Existing Land Use

- Airport Property
- Residential
- Office, Commercial, Business Park
- Industrial
- Parks/Golf Courses
- Public/Community Owned Facilities
- Agriculture/Undeveloped
- Schools

Approximate Scale 1"=2,000'

Municipal Airport
Airport Layout Plan Update

Source: 1997 Aerial Photography provided by Soundview Aerial, City of Arlington Mapping from the 1995 Final Comprehensive Plan

Airport Plans & Development Program

Introduction

The plan for the future development of Arlington Municipal Airport has evolved from an analysis of many considerations. Among these are: aviation demand; aviation activity forecasts; aircraft operational characteristics; facility requirements; and environmental considerations. In addition, the general direction or thrust of future airport development, as expressed by the City of Arlington and as characterized in the previously noted statement of goals, served as a basis for this airport planning process.

Airport Plans

Because previous chapters have established and quantified the future development needs of the airport, the various elements of the selected plan are categorically reviewed here in an outline and graphic format. A brief written description of the individual drawings, represented in the set of *Airport Plans* for Arlington Municipal Airport, is accompanied by a graphic description presented in the form of the *Airport Layout Plan*, the *Terminal Area Development Plans*, the *Airport Property Map*, and the *On-Airport Land Use Plan.*

Airport Layout Plan

The Airport Layout Plan (ALP), which illustrates both airside and landside facilities, is a graphic depiction of the existing and ultimate airport facilities that will be required to enable the airport to properly accommodate the forecast future demand. In addition, the ALP also provides detailed information on both airport and runway design criteria, which is necessary to define relationships with applicable standards. The following illustration, entitled *AIRPORT LAYOUT PLAN,* and the following

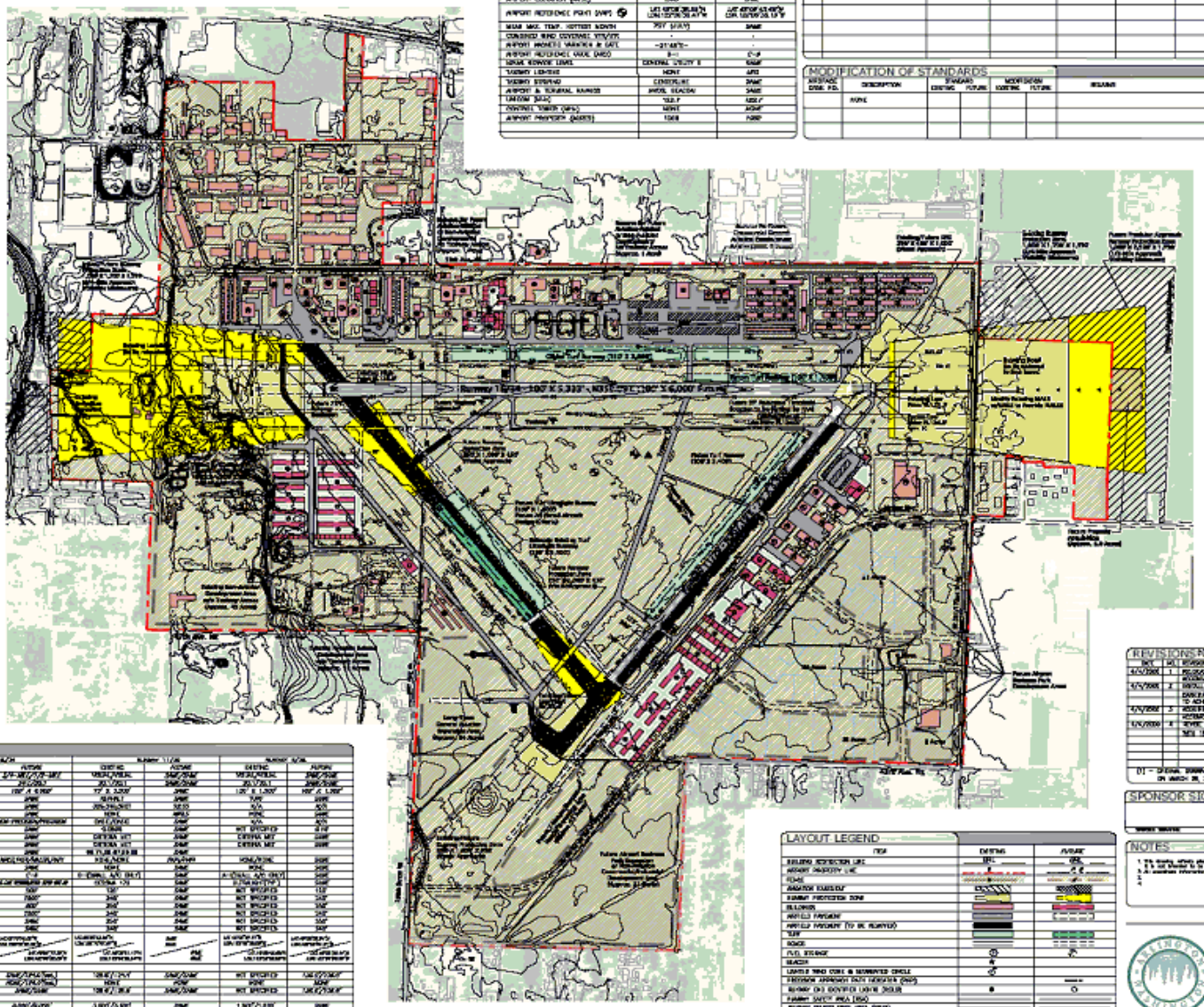
paragraphs describe the major components of the future airport Development Plan.

Airside Development

Runway 16/34. The runway's existing ARC B-II design standards are to be maintained, but preserve the option to implement Approach Category C criteria in conjunction with the projected increase in business-related jet aircraft activity at the airport. This will require the Runway 34 approach threshold to be relocated approximately 57 feet to the north to comply with future ARC C-II dimensional criteria. The Airport Layout Plan (ALP) will also continue to illustrate a proposed 6,000-foot runway length, requiring an approximate 724-foot extension to the north; however, at this time the FAA would only support a future extension to 5,500 feet. The actual length of the extension would ultimately be determined by the specific requirements of a future critical aircraft. The proposed 6,000-foot length would accommodate between 100% of the fleet (i.e., airplanes greater than 12,500 lbs. and less than 60,000 lbs.) at 60% useful load and 75% of the fleet at 90% useful load for the wet pavement condition. In addition, current airport land ownership could support a 6,000-foot runway length with the exception of one parcel. The existing runway width of 100 feet is to be maintained, which is supported by both ARC B-II precision approach standards, or future upgrade to ARC C-II standards. In addition, the existing pavement strength (i.e., 114,000 pounds single wheel, 150,000 pounds dual-wheel, and 270,000 pounds dual tandem-wheel) is to be maintained.

It is recommended that the airport preserve the option to upgrade the approach capabilities to each end of the runway. The existing non-precision approach to Runway 34 will reflect a potential upgrade to precision approach standards (i.e., ½-mile visibility minimums), with the existing visual approach on Runway 16 being protected for an upgrade to non-precision approach standards (i.e., ¾-mile visibility minimums).

The existing Runway 16 PAPIs and localizer antenna array are to be relocated in conjunction with the proposed runway extension, and the MIRLs are to be extended. A future MALS is also to be installed to serve Runway 16. One of the existing Runway 34 MALS fixtures is to be relocated to accommodate the future widening of State Route 531/172nd Street NE and the MALS is to be upgraded with RAILs to provide a future MALSR. In addition, the existing Runway 34 threshold lights are to be repositioned in conjunction with the future threshold relocation.



AIRPORT DATA

ITEM	EXISTING	FUTURE
AIRPORT ELEVATION (MSL)	106.6'	106.6'
AIRPORT REFERENCE POINT (ARP)	LAT 48°06'46.8"N LONG 122°09'34.13"W	LAT 48°06'46.8"N LONG 122°09'34.13"W
MEAN MAX. TEMP. - HOTTEST MONTH	75°F (24°C)	SAME
CONTROLLING AIRCRAFT	-	-
AIRPORT WINDROSE - MARKER & DATE	~21 MAR'01~	-
AIRPORT REFERENCE CODE (ARC)	B-II	C-II
SENIOR RUNWAYS	CENTRAL UTILITY II	SAME
TAXIWAY LIGHTING	NONE	APPR
TAXIWAY STRIPING	CENTERLINE	SAME
AIRPORT & TERMINAL RAMPS	APRON, TERMINAL	SAME
STATION ELEV.	102.7'	102.7'
CONTROL TOWER (MSL)	NONE	200'+/-
AIRPORT PROPERTY (ACRES)	1,068	1,068

NON-STANDARD CONDITIONS

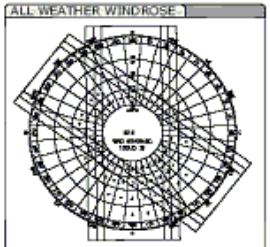
NO.	DESCRIPTION	EXISTING CONDITION	EXISTING STANDARD	FUTURE CONDITION	FUTURE STANDARD	DISPOSITION
	NONE					

MODIFICATION OF STANDARDS

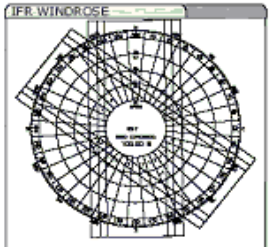
AIRSPACE ANAL. PG.	DESCRIPTION	STANDARD EXISTING	STANDARD FUTURE	MODIFICATION EXISTING	MODIFICATION FUTURE	RELEASE	APPROVAL DATE
	NONE						

VICINITY MAP

ALL WEATHER WINDROSE



IFR WINDROSE



BUILDINGS

NO.	DESCRIPTION	REMARKS
1	AIR TRANSPORT INDUSTRIES (TO BE REMOVED)	
2	HANGAR	
3	AIRPORT OFFICE	
4	PROP SHOP	
5	MIL AVIATION ASSOCIATES	
6	37 MISCELLANEOUS	
7	DIVERSIFIED AEROSPACE	
8	FLIGHT SIMULATORS	
9	YACHT CENTER	
10	STEWART AVIATION SUPPLY	
11	AIRPLANE BY OWNER/AIR	
12	NORTH COUNTY AVIONICS/FBO	
13	STEWART AVIATION SUPPLY	
14	INDUSTRIAL SERVICE	
15	STEWART AVIATION SUPPLY	
16	DATA LIGHT	
17	AEROMOTIVE TOWING SERVICES	
18	WINDMILL ELECTRONICS	
19	SOUND AVIATION	
20	FLYING J FUEL	
21	ARLINGTON HOTEL	
22	PIC N' TIE PAVEMENT STORE	
23	AVIATION DIRECTION & REPAIR	
24	F1 RECOVERY	
25	FBO COMMANDER AIRCRAFT SP.	
26	WELDING	
27	MORROW AIRCRAFT REFURBISH	
28	MORROW AIRCRAFT SVC	
29	ARLINGTON GLASS	
30	MB PRODUCTION	
31	MB PRODUCTION	
32	U.S. SPARS	
33	AIR METAL LABORATORY	
34	BOEING HANGAR	
35	PACIFIC MARINE MANAGEMENT	
36	CORPORATE AIRCRAFT CENTER	
37	T-HANGAR	
38	T-HANGAR	
39	BUILDING	
40	HANGAR	
41	HANGAR	
42	DETACHED T-HANGAR	
43	BUILDING	
44	BUILDING	
45	BUILDING	
A	FUTURE T-HANGAR	
B	FUTURE CORPORATE HANGAR	
C	FUTURE COMMERCIAL HANGAR	

REVISIONS

DATE	NO.	REVISION	BY
4/5/2000	1	REVISED THE RUNWAY 16 SAFETY AREA(RSA) TO 400 FEET TO ACCOMMODATE FUTURE AIRCRAFT OPERATIONS.	BARNARD DUNKELBERG & CO.
4/5/2000	2	INSTALL RUNWAY ALIGNMENT INDICATOR (RAI) SYSTEM TO RUNWAY 16/34.	BARNARD DUNKELBERG & CO.
4/5/2000	3	DEVELOP PROPOSED RUNWAY 16 APPROACH LIGHTING SYSTEM (MALSR) TO ACHIEVE FUTURE 1/2-MILE APPROACH VISIBILITY MINIMUMS.	BARNARD DUNKELBERG & CO.
4/5/2000	4	ADJUST THE FUTURE RUNWAY 16 APPROACH TO ACHIEVE 1/2 MILE TO ACCOMMODATE FUTURE NEEDS.	BARNARD DUNKELBERG & CO.
1/5/2000	5	REVISE FUTURE ALIGNMENT OF AIRPORT ROADWAYS TO CORRECT NOTED DEFICIENCIES.	BARNARD DUNKELBERG & CO.

(1) — 12 Knot, 3-Minute Gust Average on High Month, with Maximum Recorded by the City of Arlington, on March 28, 2000.

SPONSOR SIGNATURE

NOTES

1. This drawing, where showing dimensions specific to the airport, is not to be a product of detailed engineering design analysis.
2. All coordinate information is NAD 83.
3.
4.

RUNWAY DATA

	RUNWAY 16/34		RUNWAY 11/29		RUNWAY 16/34	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
APPROACH VISIBILITY MINIMUMS	VISUAL/1-1/4 - SLS	1/2-MILE/1/2-MILE	VISUAL/VISUAL	SAME/SAME	VISUAL/VISUAL	SAME/SAME
RUNWAY WIDTH & LENGTH	150' X 5,333'	150' X 6,000'	75' X 3,500'	SAME	150' X 1,700'	150' X 1,700'
PAVEMENT TYPE	ASPHALT	ASPH	ASPHALT	ASPH	ASPH	ASPH
PAVEMENT STRENGTH (IN 1000 LBS)	115S/100D/70DT	ASPH	30S/70DT	SAME	N/A	N/A
RUNWAY GRADING	MI-S	ASPH	NONE	SAME	NONE	SAME
RUNWAY MARKING	SINGLE/NON-PRECISION	NON-PRECISION/PRECISION	SINGLE/BASIC	SAME	N/A	N/A
RUNWAY CONDITION	GOOD	SAME	GOOD	SAME	NOT SPECIFIED	SAME
THRESHOLD SITING CRITERIA	CRITERIA MET	SAME	CRITERIA MET	SAME	CRITERIA MET	SAME
LAT. OF RUNWAY THRESHOLDS	CRITERIA MET	SAME	CRITERIA MET	SAME	CRITERIA MET	SAME
RUNWAY ALL WEATHER WIND COVERAGE(13KTS/10-KNOTS)	95.71 (SSE/NNW)	SAME	98.71 (SE/NW)	SAME		
VISUAL APPROACH AIDS	VASI/PAPI/REIL	AWOS/PAPI/REIL/MALSR	VASI/REIL	SAME/SAME	NONE/NONE	SAME
RUNWAY APPROACH AIDS	NDB(LOM)/GPS/LOC	SAME	NONE	SAME	NONE	SAME
AIRPORT BEACON/ID CODE	(I-)	(I-A)		SAME	A-(CIVIL, APT) (MILT)	SAME
OBSTACLES	BIGGS SUPER SIGN 400' SSE	SAME	VEGETATION 100'	SAME	NOT SPECIFIED	SAME
RUNWAY SAFETY AREA WIDTH	150'	400'	150'	SAME	NOT SPECIFIED	150'
RUNWAY SAFETY AREA LENGTH BEYOND R/W END	300'	1000'	300'	SAME	NOT SPECIFIED	300'
RUNWAY OBJECT FREE AREA WIDTH	500'	800'	500'	SAME	NOT SPECIFIED	500'
RUNWAY OBJECT FREE AREA LENGTH BEYOND R/W END	300'	1000'	300'	SAME	NOT SPECIFIED	300'
OBSTACLE FREE ZONE WIDTH	400'	SAME	250'	SAME	NOT SPECIFIED	250'
OBSTACLE FREE ZONE LENGTH BEYOND RUNWAY END	200'	SAME	200'	SAME	NOT SPECIFIED	200'
RUNWAY END COORDINATES	LAT 48°06'46.8"N LONG 122°09'34.13"W	LAT 48°06'46.8"N LONG 122°09'34.13"W	LAT 48°06'46.8"N LONG 122°09'34.13"W	SAME SAME	LAT 48°06'46.8"N LONG 122°09'34.13"W	LAT 48°06'46.8"N LONG 122°09'34.13"W
RUNWAY ELEVATIONS END	106.6'/102.7'	SAME/SAME	106.6'/102.7'	SAME/SAME	NOT SPECIFIED	SAME/SAME
RELOCATED THRESHOLDS	NONE	ASPH/ASPH	NONE	SAME	NONE	SAME
THRESHOLD ZONE ELEVATION	106.6'/102.7'	SAME/SAME	106.6'/102.7'	SAME/SAME	NOT SPECIFIED	SAME/SAME
DECLARED DISTANCES						
TAKE-OFF RUN AVAILABLE (TORA)	5,333'/5,333	SAME/SAME	3,500'/3,500'	SAME	1,700'/1,700	SAME
TAKE-OFF DISTANCE AVAILABLE (TODA)	5,333'/5,333	SAME/SAME	3,500'/3,500'	SAME	1,700'/1,700	SAME
ACCELERATE-STOP DISTANCE AVAILABLE (ASDA)	5,333'/5,333	SAME/SAME	3,500'/3,500'	SAME	1,700'/1,700	SAME
LANDING DISTANCE AVAILABLE (LDA)	5,333'/5,333	SAME/SAME	3,500'/3,500'	SAME	1,700'/1,700	SAME

LAYOUT LEGEND

ITEM	EXISTING	FUTURE
BUILDING RESTRICTION LINE	BRL	BRL
AIRPORT PROPERTY LINE		
ROADS		
AVIATION EASEMENT		
RUNWAY PROTECTION ZONE		
RW LENGTH		
PAVED PAVEMENT		
PAVED PAVEMENT (TO BE REMOVED)		
TURF		
FENCE		
FUEL STORAGE		
BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
THRESHOLD APPROACH PATH INDICATOR (PAPI)		
RUNWAY END IDENTIFIER LIGHTS (REIL)		
RUNWAY SAFETY AREA (RSA)		
RUNWAY OBJECT FREE AREA (ROFA)		
ALL WEATHER OBSTRUCTION STATUS		
THRESHOLD LIGHTS	400 500	500 600
RELIEVER & SEAPLANE		

Arlington Municipal Airport
Arlington, Washington

Airport Layout Plan

Barnard Dunkelberg & Company
Tulsa, Oklahoma

July 5, 2001 — Scale 1" = 200' — Sheet 1 of 1

Runway 11/29. The runway's existing ARC A-I (Small Aircraft Only) design standards are to be maintained and the current runway length of 3,500 feet is to be preserved. Due to the annual activity levels occurring at Arlington and the fact that the runway also serves as an alternate/emergency-use runway during closures of Runway 16/34, it is recommended that the width of the runway be maintained at 75 feet, and Medium Intensity Runway Lights (MIRLs) be installed. Both PAPIs and REILs were recently installed at each runway end, and the runway's existing gross weight bearing capacity is to be reduced to 12,500 pounds single wheel at next pavement rehabilitation interval. The existing visual approach standards to each runway end are also to be maintained.

Piston Engine Turf Runways. The airport's existing piston engine-use turf runways located adjacent to Runways 16/34 and 11/29 are to be maintained. The Runway 16/34 turf runway is 75 feet wide and 1,500 feet in length, with the Runway 11/29 turf runway being 75 feet wide and 2,400 feet in length. Each of the runways will maintain their existing ARC A-I (Small Aircraft Only) design standards and visual approaches.

Turf Glider Runway. The airport's existing turf glider runway, located adjacent to Taxiway "A" is to be maintained. This runway width was recently reduced to 75 feet; however, the existing 3,000 foot runway length and visual approaches have been maintained.

Ultralight Runway. The airport's existing turf ultralight runway is to be repositioned northeast of its current location, on the closed portion of the northeast/southwest runway to provide additional clearances over adjacent obstructions when departing Runway 26. The new runway is to be constructed to a 100-foot width (50 feet paved/50 feet turf) and a 1,000-foot length. The new runway is to be designed in accordance with ARC A-I (Small Aircraft Only) design criteria, and the existing visual approaches are to be maintained.

Runway 16/34 Taxiway System. Both Taxiways "A" and "B" are to be extended with run-up apron areas to serve the future approach end of Runway 16. In addition, each of the taxiways is to be designed to Airplane Design Group II standards, with Taxiway "A" and "B" to be equipped with MITLs.

Runway 11/29 Taxiway System. Taxiway "C" is to be maintained and designed to Airplane Design Group II standards, with future MITLs. This taxiway can also be extended as needed to the northwest to serve future general aviation expansion development, and run-up apron areas are to be developed at each runway end. The proposed run-up aprons were also recommended by airport users due to the visual check of the approach and pattern areas that are conducted by pilots prior to takeoff

from Arlington, requiring a spin around on the taxiway. In addition, Taxiway "D" is to be maintained at it's existing location for users of the crosswind runway and for use during the NWEAA Fly-In.

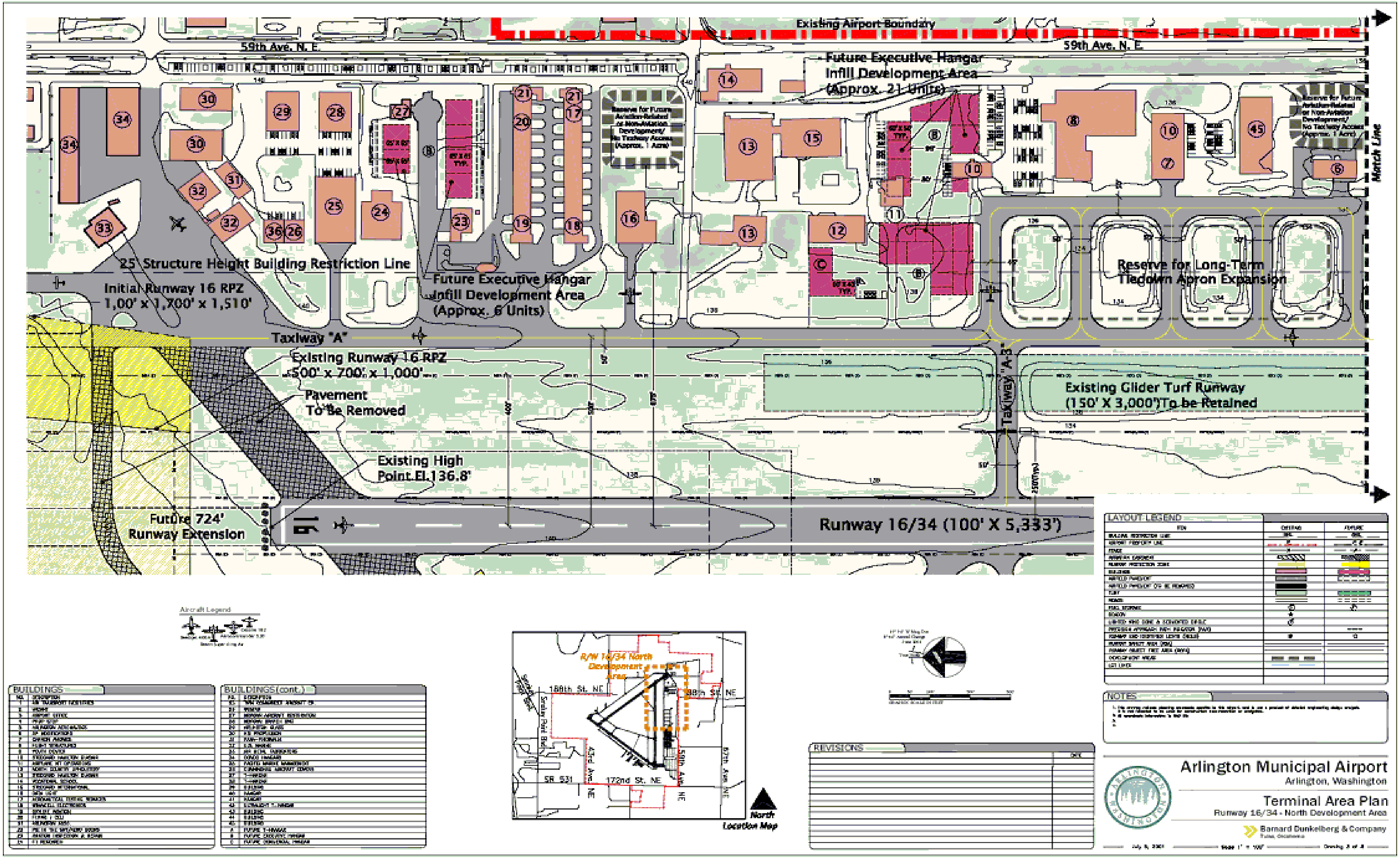
Access Taxiway System. A new connector taxiway (i.e., Taxiway "E") is to be constructed linking the approach end of Runway 11 with Taxiway "B". This future taxiway is to be located along the south side of the new ultralight runway, constructed to a 35-foot pavement width with edge reflectors, and designed in accordance with Design Group II standards.

Landside Development

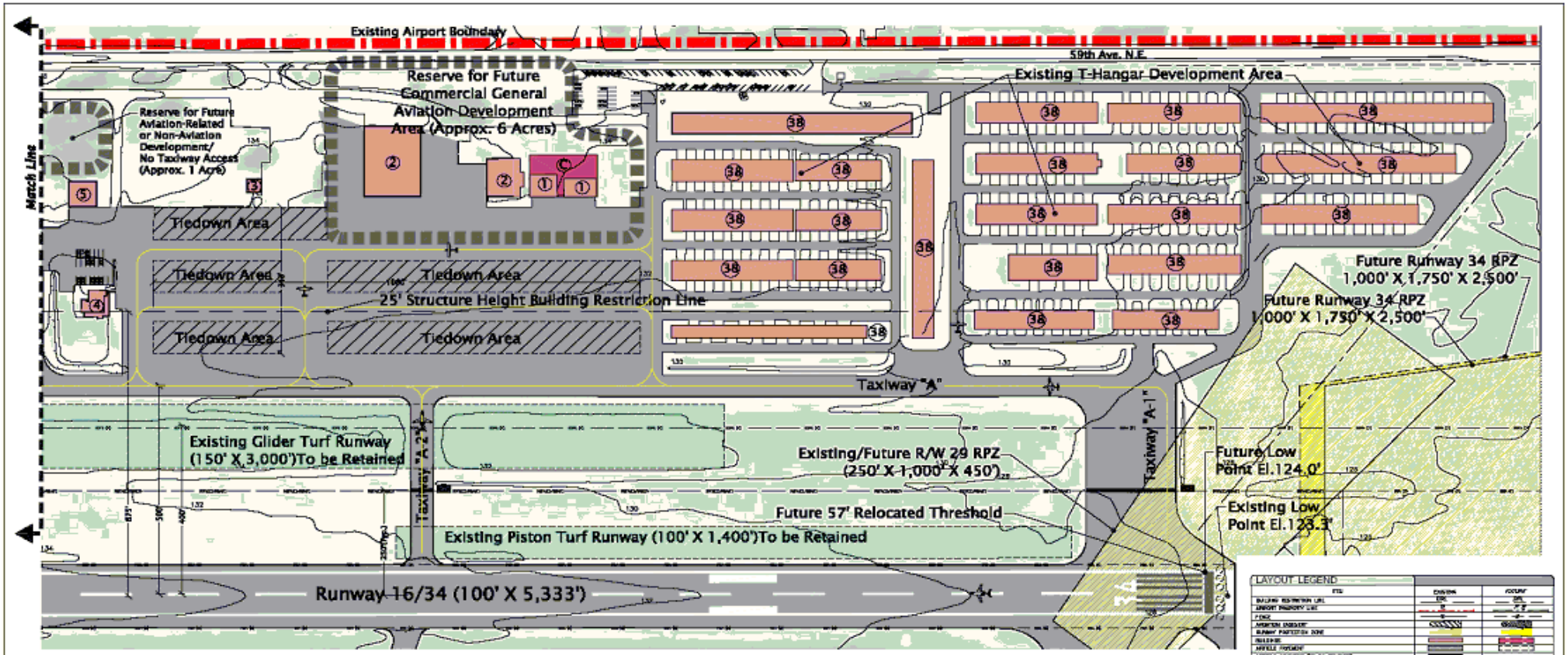
The following five (5) illustrations present a detailed view of the proposed landside development areas throughout the airport. These development areas were also depicted on the previously presented *AIRPORT LAYOUT PLAN*.

General Aviation Facilities. A large area of general aviation development, consisting of approximately 88 acres, is located along the Runway 16/34 flight line. This area is to be redeveloped as needed to maintain executive and corporate aviation-use facilities, and convert existing non-aviation development to future aviation uses when feasible. Future general aviation expansion capabilities, consisting of aviation businesses, executive hangars, and T-hangars, are also to be preserved along the Runway 11/29 flightline, with a total of approximately 42 acres available for development. Additional long-term general aviation development/expansion areas are located within the northwest quadrant of the airport. This area consists of approximately 34 acres located north of the Runway 11 threshold and approximately 20 acres located west of the Runway 16 threshold. The existing ultralight/sport aviation development area is also located is this area and can be expanded as needed in the future. All future general aviation development at the airport is to be contingent upon facility demand, adherence to FAR Part 77 transitional surface guidelines for structure height and the facilities are to be designed to restrict or limit vehicular access onto the aircraft operating areas to authorized vehicles only.

With respect to the issue of long-term preservation of aeronautical property at the airport (i.e., the 50-year aeronautical land protection plan) we offer this additional information for analysis. According to the Phasing Plan contained at the end of this chapter, it is projected that approximately 30 acres of aviation development property will be needed for the twenty-year planning period. The ALP also identifies an additional 69 acres of aeronautical dedicated land for the post-planning period. Based on current projections for aviation development property, approximately 77 acres



Existing Airport Boundary
59th Ave. N. E.
Future Executive Hangar Infill Development Area (Approx. 21 Units)
Reserve for Future Aviation-Related or Non-Aviation Development/ No Taxiway Access (Approx. 1 Acre)
Match Line
25' Structure Height Building Restriction Line
Initial Runway 16 RPZ 1,00' x 1,700' x 1,510'
Future Executive Hangar Infill Development Area (Approx. 6 Units)
Reserve for Long-Term Tiedown Apron Expansion
Taxiway "A"
Taxiway "A-3"
Existing Runway 16 RPZ 500' x 700' x 1,000'
Pavement To Be Removed
Existing Glider Turf Runway (150' X 3,000') To be Retained
Existing High Point El.136.8'
Future 724' Runway Extension
Runway 16/34 (100' X 5,333')
Aircraft Legend
BUILDINGS
BUILDINGS (cont.)
R/W 16/34 North Development Area
188th St. NE
59th Ave. NE
67th Ave. NE
43rd Ave. NE
172nd St. NE
SR 531
Smokey Point Blvd.
North
Location Map
REVISIONS
LAYOUT LEGEND
NOTES
Arlington Municipal Airport
Arlington, Washington
Terminal Area Plan
Runway 16/34 - North Development Area
Barnard Dunkelberg & Company



Arlington Municipal Airport

Arlington, Washington

Terminal Area Plan

Runway 16/34 - South Development Area

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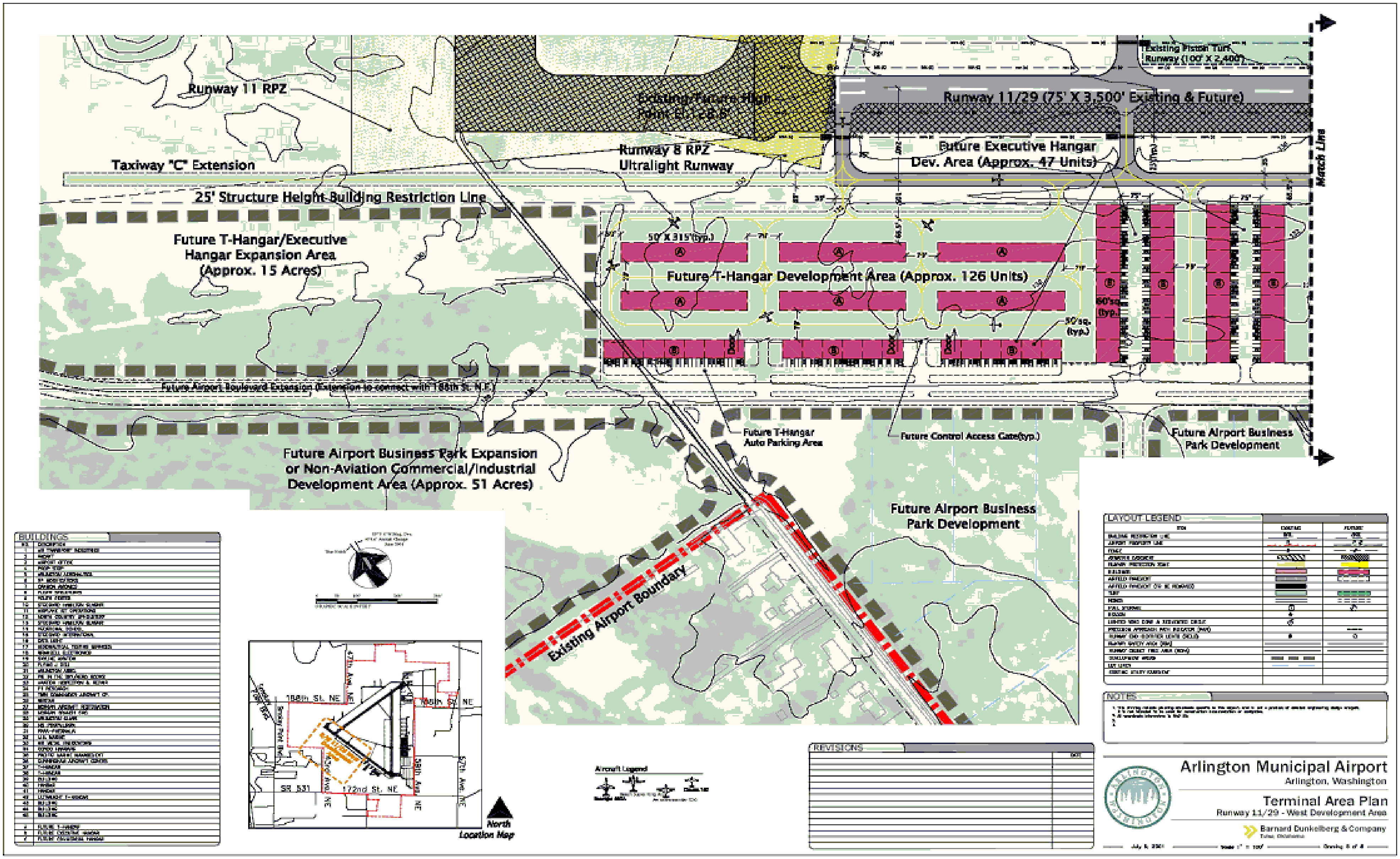
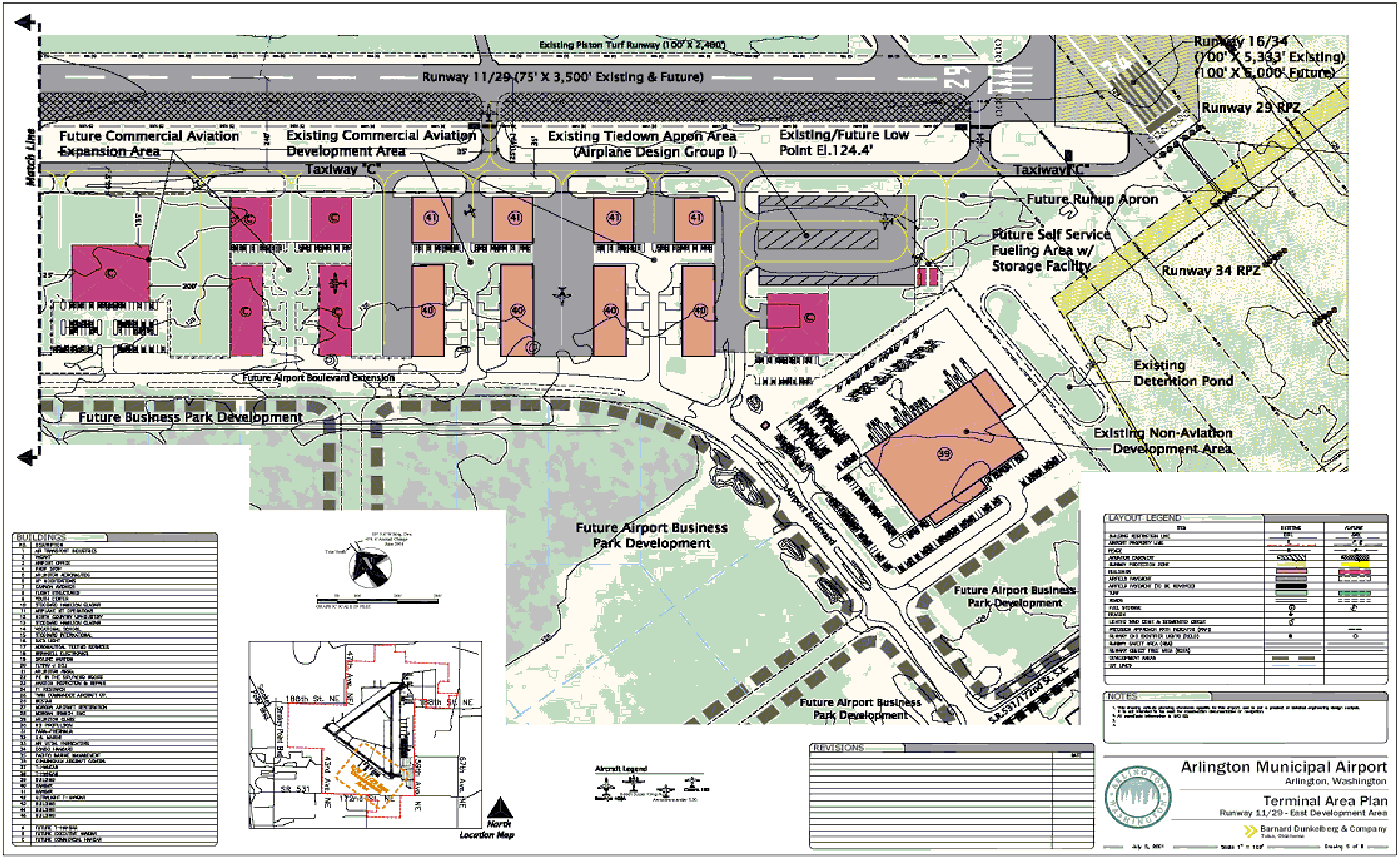
Tulsa, Oklahoma

July 9, 2001 — Scale 1" = 150' — Drawing 4 of 8


Runway 11 RPZ
Taxiway "C" Extension
Runway 8 RPZ
Ultralight Runway
Existing Piston Turf
Runway (100' X 2,400')
Runway 11/29 (75' X 3,500' Existing & Future)
Future Executive Hangar
Dev. Area (Approx. 47 Units)
Match Line
25' Structure Height Building Restriction Line
Future T-Hangar/Executive
Hangar Expansion Area
(Approx. 15 Acres)
50' X 315'(typ.)
Future T-Hangar Development Area (Approx. 126 Units)
60'sq. (typ.)
50'sq. (typ.)
Future Airport Boulevard Extension (Extension to connect with 188th St. N.E.)
Future T-Hangar
Auto Parking Area
Future Control Access Gate(typ.)
Future Airport Business
Park Development
Future Airport Business Park Expansion
or Non-Aviation Commercial/Industrial
Development Area (Approx. 51 Acres)
Future Airport Business
Park Development
Existing Airport Boundary
BUILDINGS
LAYOUT LEGEND
NOTES
REVISIONS
Location Map
North
188th St. NE
47th Ave. NE
59th Ave. NE
67th Ave. NE
172nd St. NE
43rd Ave. NE
SR 531
Smokey Point Blvd.
Aircraft Legend
Arlington Municipal Airport
Arlington, Washington
Terminal Area Plan
Runway 11/29 - West Development Area
Barnard Dunkelberg & Company
July 5, 2001


Existing Piston Turf Runway (100' X 2,480')
Runway 11/29 (75' X 3,500' Existing & Future)
Runway 16/34
(100' X 5,333' Existing)
(100' X 6,000' Future)
Runway 29 RPZ
Runway 34 RPZ
Match Line
Future Commercial Aviation Expansion Area
Existing Commercial Aviation Development Area
Existing Tiedown Apron Area (Airplane Design Group I)
Existing/Future Low Point El.124.4'
Taxiway "C"
Future Runup Apron
Future Self Service Fueling Area w/ Storage Facility
Existing Detention Pond
Existing Non-Aviation Development Area
Future Airport Boulevard Extension
Future Business Park Development
Future Airport Business Park Development
Airport Boulevard
S.R.531/172nd St. S.E.
BUILDINGS
LAYOUT LEGEND
NOTES
REVISIONS
Aircraft Legend
North
Location Map
188th St. NE
47th Ave. NE
43rd Ave. NE
59th Ave. NE
67th Ave. NE
172nd St. NE
SR 531
Smokey Point Blvd
Arlington Municipal Airport
Arlington, Washington
Terminal Area Plan
Runway 11/29 - East Development Area
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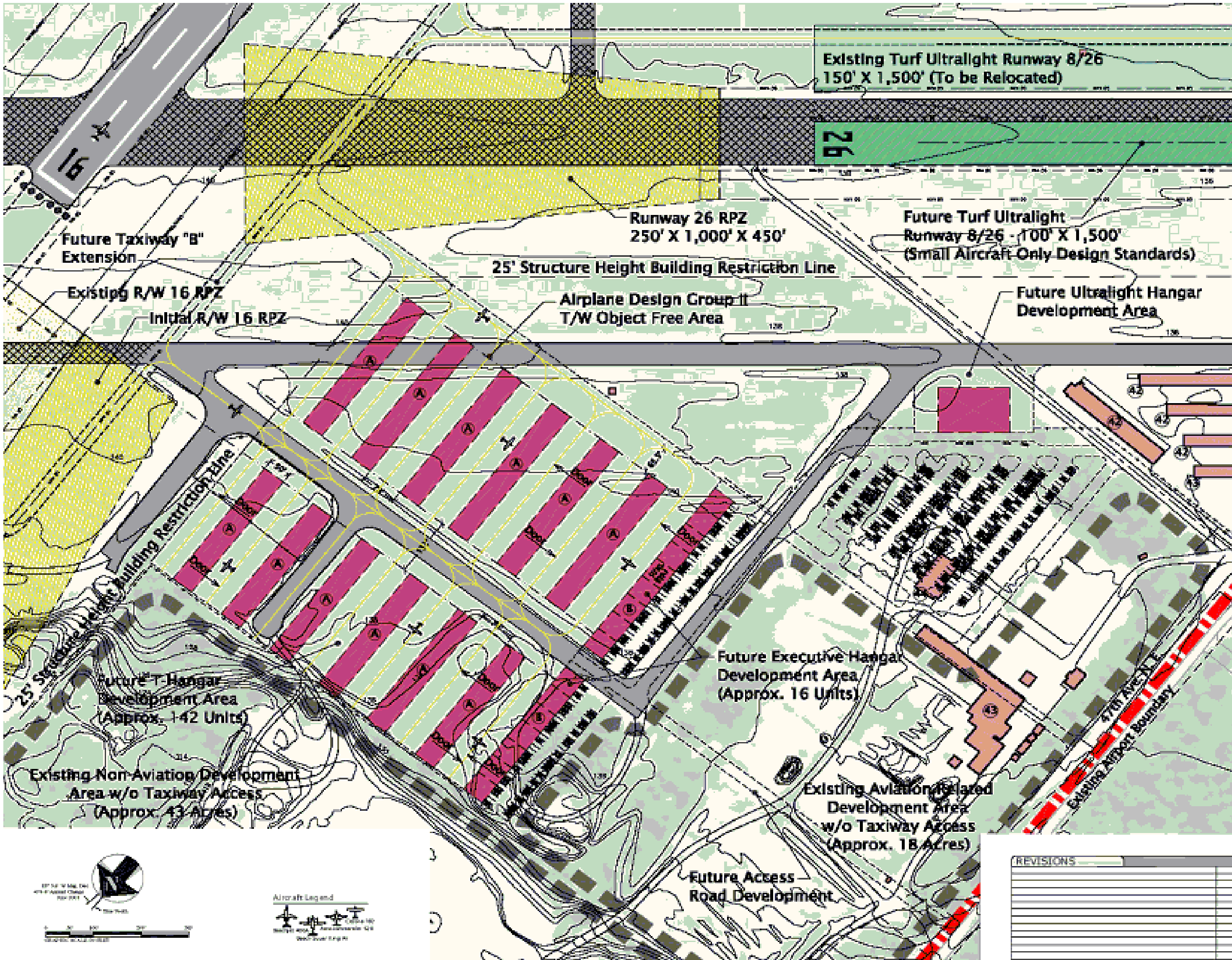
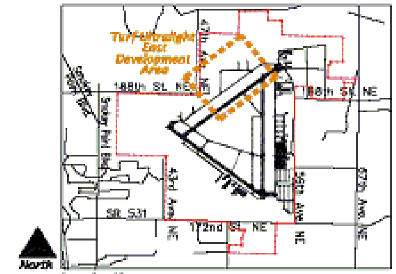




Location Map

BUILDINGS

LAYOUT LEGEND

NOTES

REVISIONS

Arlington Municipal Airport

Arlington, Washington

Terminal Area Plan

Turf Ultralight Runway - East Development Area

Barnard Dunkelberg & Company

would be needed for the 50-year planning period. The current ALP identifies 99 acres for these purposes.

Experimental Aircraft Association (EAA) Fly-in Development. The City of Arlington presently hosts the annual Northwest Experimental Aircraft Association Fly-in and Sport Aviation Convention at Arlington Municipal Airport. Planning representatives for the event have developed future expansion area footprints that utilize the currently undeveloped portions of the airport. These development areas include spatial requirements for aircraft and auto parking, exhibit areas, the aerobatic box, service areas, camping areas, etc. The expansion plans for the event; along with the existing development area boundaries for the fly-in are illustrated in Appendix Five of this document.

Airport Business Park Development. A future Airport Business Park has been identified for development within the southwest quadrant of the airport. At present approximately 90.5 acres would be available for non-aviation development, which is bounded by Airport Boulevard, S.R. 531, and 43rd Avenue N.E. The project is to include business support services, offices, research and development manufacturing, light manufacturing, and aviation uses along the Runway 11/29 flightline. Lots would range in size from less than 2 acres to combinations of 15 acres or more.

Industrial Park Development. The existing Arlington Airport Industrial Park is located east of 59th Avenue NE, within the northeast quadrant of the airport. The park consists of approximately 102 acres, which consists primarily of non-aviation uses. This industrial park development provides an important revenue source to the airport, which should be maintained and revised as needed throughout the 20-year planning period of this document.

Aviation-Related Expansion Areas. There are two areas on the ALP that have been designated for the development of aviation-related facilities at the airport. The first site, consisting of approximately 51 acres, is located on the west side of the airport, positioned west of the Runway 11 threshold and on the south side of the future Airport Boulevard extension. The second site is located within the northwest quadrant of the airport and consists of approximately 61 acres that extends north of the ultralight hangar area, east of 47th Avenue N.E., and west of the Runway 16 RPZ. from the approach end of Runway 28 to Taxiway "A-4". Each site could ultimately be provided with excellent landside access and utility infrastructure to accommodate a variety of aviation-related or non-aviation uses.

Airport Vehicular Access. The updated ALP will illustrate the future widening of 172nd Street/S.R. 531 N.E., from two lanes to four, with the additional roadway width being

constructed along the south side of the road to minimize impacts to the airport. This roadway will also be upgraded to a "Highway" designation in accordance with the City of Arlington 1995 Comprehensive Plan. The ALP will also illustrate the extension of Airport Boulevard around the Runway 11 RPZ, linking 172nd Street/S.R. 531 N.E. to 188th Street N.E. This roadway extension would provide access to future general aviation expansion development along the Runway 11/29 flightline and the Airport Business Park, as well as provide improved access to the north side of the airport. Additional access road development is also recommended within the northwest quadrant of the airport, extending eastward from 47th Avenue N.E. to provide future access to both general aviation and aviation-related/non-aviation development areas.

Support Development

Multi-Use City Fire Station/ARFF Facility. Preliminary site plans for the Airport Business Park reflect the future development of new fire station on the airport. A specific site has not yet been identified; however, it is anticipated that this station would continue to operate as multi-use facility, providing fire protection services for both the airport and the Smokey Point area. It should be noted that there are no plans to construct a dedicated Aircraft Rescue and Fire Fighting (ARFF) Facility at the airport.

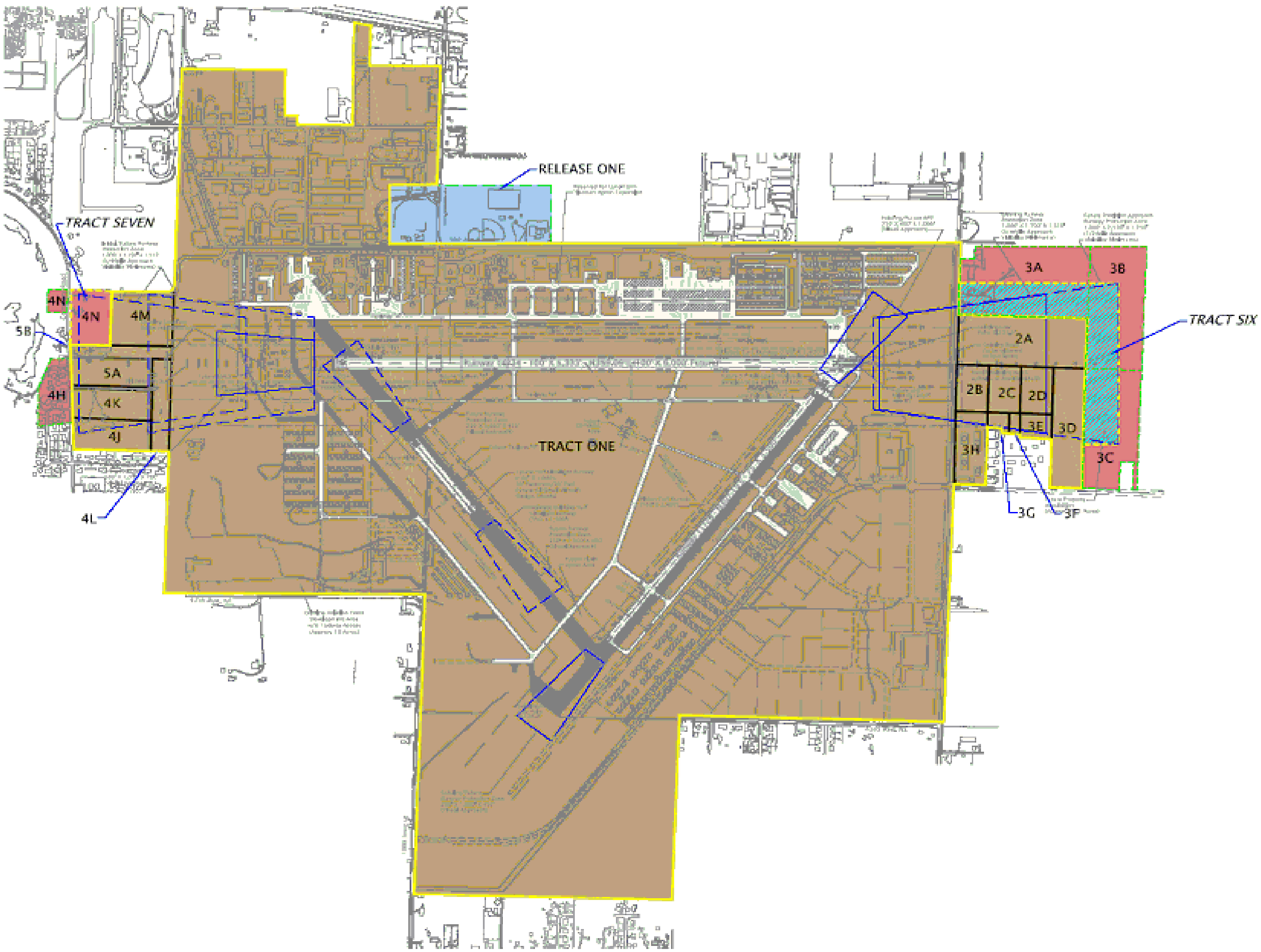
Self-Serve Fueling Facility. A future site for a self-serve commercial fueling facility has been identified along the Runway 11/29 flightline, southwest of the Runway 29 threshold. The site would be provided with easy aircraft access from Taxiway "C" and direct landside access from Airport Boulevard for tanker trucks.

Property Acquisition

Approximately 24.5 acres of property acquisition are recommended to accommodate the future Runway 34 RPZ and MALSR light lane. In addition, approximately 5.5 acres of property acquisition, which includes two residences, is recommended within the future Runway 16 RPZ.

Airport Property Map

The *AIRPORT PROPERTY MAP,* which is presented in the following illustration, indicates how various tracts of land within the airport boundaries were acquired (e.g., Federal funds, surplus property, local funds, etc.). The purpose of the Airport Property Map is to provide information for analyzing the current and future aeronautical use of land acquired with Federal funds.



PROPERTY INFORMATION

REVISIONS

NOTES

Arlington Municipal Airport

Arlington, Washington

Figure F7

Airport Property Map

Barnard Dunkelberg & Company

F.13

Land Use Drawing

Figure F8, entitled *LAND USE DRAWING,* depicts existing and recommended use of all land within the ultimate airport property line. The purpose of the Land Use Drawing is to provide airport management a generalized plan for leasing revenue-producing areas on the airport. It can also provide guidance to local authorities for establishing appropriate land use zoning in the vicinity of the airport.

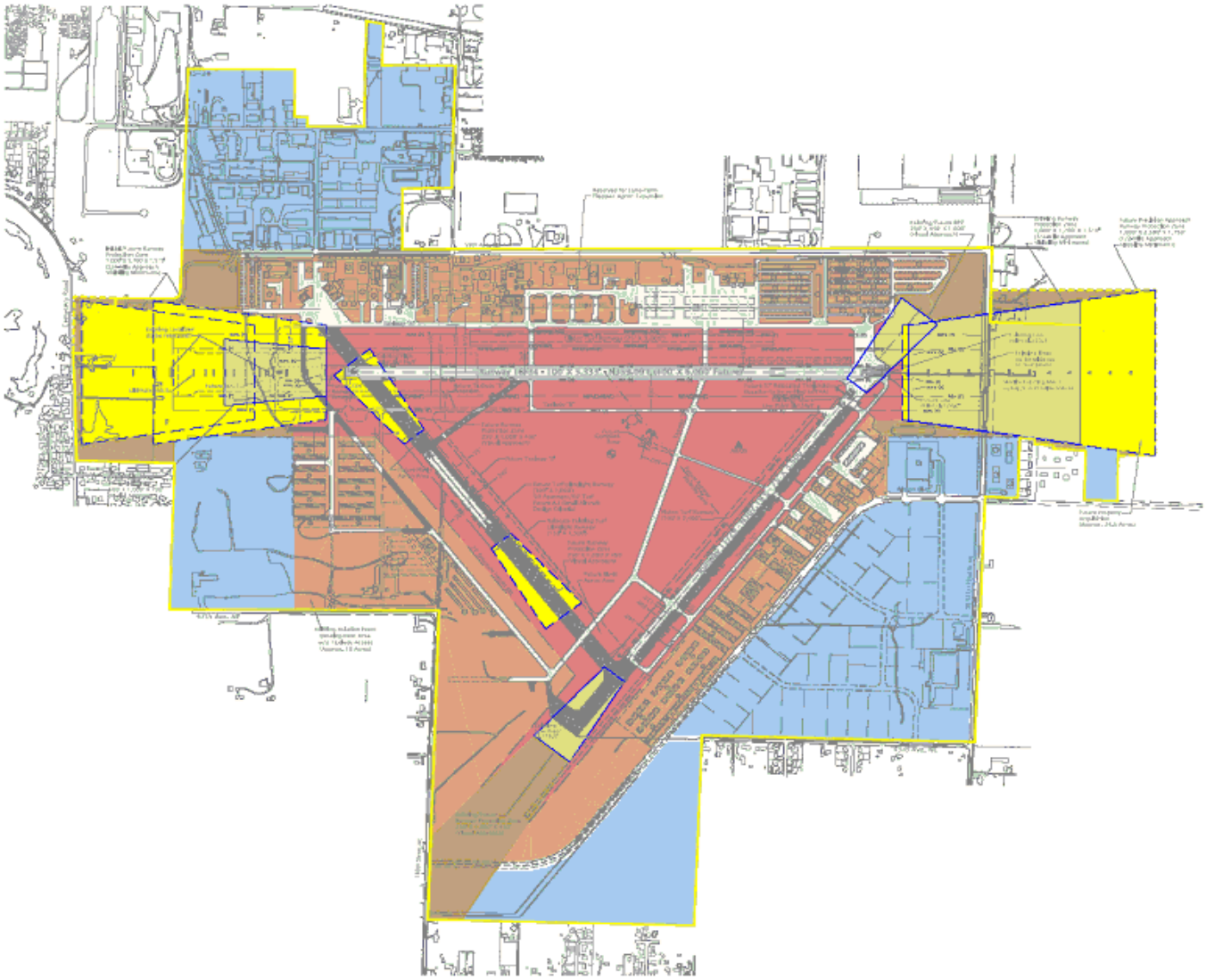
Development Program

The facility requirements necessary to satisfy the forecast aviation demands for Arlington Municipal Airport have been categorized into three phases: phase one (0-6 years), phase two (7-10 years), and phase three (11-20 years). A brief project description, including cost estimates are presented in the following tables and are also illustrated graphically for each phase on Figure F9, entitled *PHASING PLAN*.
Cost estimates have been categorized by the total cost for each project, that portion of the total cost eligible to be paid by the FAA under the Airport Improvement Program (AIP) or similar program; that portion eligible for payment by the airport sponsor or related local entity; and that portion that could be borne by private financing.

The percentage of costs shown as eligible for participation by the State and Federal agencies is subject to change depending upon current funding legislation and policy at the time of implementation. The relationship between local and anticipated Federal funding as shown is based on current FAA participation of ninety percent (90%) of the total cost and local participation of approximately ten percent (10%). All project cost estimates presented are based on 2001 costs.

Summary

As presented in the accompanying tables, the Arlington Municipal Airport Development Plan cost estimates for an approximate twenty-year planning period, not including maintenance and operational expenses, amount to approximately $45,888,616.00. The anticipated FAA share is approximately $12,798,002.70, with the sponsor share being approximately $6,389,946.30, and the trust fund share being approximately $2,700,667.00. In addition, approximately $24,000,000.00 are projected to be spent on projects (e.g., hangars, apron/taxiway development, etc.) that will generate revenue and could be financed through the use of revenue bonds or utilize some form of private financing. Of the *sponsor*



LAND USE LEGEND

- AIRPORT OPERATIONS AREA
- AVIATION DEVELOPMENT AREA
- RUNWAY PROTECTION ZONE (EXISTING/FUTURE)
- AVIATION-RELATED OR NON-AVIATION DEVELOPMENT AREA
- APPROACH PROTECTION ZONE

REVISIONS

DATE	NO.	REVISION	BY

NOTES

1.

Arlington Municipal Airport

Arlington, Washington

Figure F8

Land Use Drawing

Barnard Dunkelberg & Company

Tulsa, Oklahoma

June 2008 — Scale: 1" = 800' — F.15

share, approximately $2,791,150.00 is required during the phase one period (0-6 years), $2,389,529.60 during the phase two period (7-10 years), and $1,209,266.70 during the phase three period (11-20 years). The *federal* share includes programmed expenditures of $7,140,150.00 during the phase one period, $1,074,452.40 during the phase two period, and $4,583,400.30 during the phase three period.

In addition, maintenance and operation expenses will increase as the airport develops and more airport facilities are completed. Revenues generated by these facilities should also increase. It is a worthy and feasible goal that operational expenses and revenues should balance at the airport. This relationship should, however, be monitored closely so those future imbalances can be anticipated and provided for in the budgeting and capital improvement process.

Table F1

PHASE I (0-6 YEARS) DEVELOPMENT PLAN PROJECT COSTS

Arlington Municipal Airport Layout Plan Update

	Project Description	Note	Total Costs	Recommended Financing Method			
				Sponsor (a	Trust Fund (b	Private (c	Federal (d
2001 Projects							
A.1	Reconstruct Hangar Taxilane (192nd)		$87,450.00	$8,745.00	$0.00	$0.00	$78,705.00
A.2	Bayliner Ramp & Bravo TW Constr.		$612,550.00	$61,255.00	$0.00	$0.00	$551,295.00
A.3	Upgrade Airport Electric Vault		$80,000.00	$8,000.00	$0.00	$0.00	$72,000.00
A.4	Upgrade Airport Beacon		$33,808.00	$3,380.80	$0.00	$0.00	$30,427.20
A.5	Replace Runway 16/34 MIRLs		$586,192.00	$58,619.20	$0.00	$0.00	$527,572.80
A.6	City Hangar K Maintenance (Replace Roof)		$50,000.00	$50,000.00	$0.00	$0.00	$0.00
A.7	Conduct Airport Layout Plan Update		$89,000.00	$8,900.00	$0.00	$0.00	$80,100.00
A.8	Install Westside Security Fencing & 1 Electronic Gate (192nd Taxiway)		$27,000.00	$2,700.00	$0.00	$0.00	$24,300.00
A.9	Implement Water/Sewer Projects		$160,000.00	$160,000.00	$0.00	$0.00	$0.00
A.10	Purchase Maintenance Equipment		$28,000.00	$28,000.00	$0.00	$0.00	$0.00
A.11	Construct Wash Area Improvements, Apron Expansion & Pavement Maintenance		$190,000.00	$0.00	$190,000.00	$0.00	$0.00
	Sub-Total/2001 Projects		$1,944,000.00	$389,600.00	$190,000.00	$0.00	$1,364,400.00
2002 Projects							
A.12	Implement Pavement Maintenance Projects		$186,000.00	$186,000.00	$0.00	$0.00	$0.00
A.13	Reconstruct Hangar Taxilane A (South)		$250,000.00	$0.00	$250,000.00	$0.00	$0.00
A.14	Reconstruct Hangar Taxilane G (East)		$87,450.00	$87,450.00	$0.00	$0.00	$0.00
A.15	Reconstruct Taxiway B-2 Connector		$78,500.00	$78,500.00	$0.00	$0.00	$0.00
A.16	City Hangar J Maintenance (Replace Roof)		$50,000.00	$50,000.00	$0.00	$0.00	$0.00
A.17	Construct Executive Hangar Development Area (Approx. 20 Units) along Runway 16/34 Flight Line		$2,500,000.00	$0.00	$0.00	$2,500,000.00	$0.00
A.18	Relocate Existing Auto Parking Area to Serve Runway 29 Tiedown Apron Area		$60,000.00	$60,000.00	$0.00	$0.00	$0.00
A.19	Construct Large Maintenance Hangar with Apron & Auto Parking		$2,000,000.00	$0.00	$0.00	$2,000,000.00	$0.00

Table F1 (Continued)
PHASE I (0-6 YEARS) DEVELOPMENT PLAN PROJECT COSTS
Arlington Municipal Airport Layout Plan Update

	Project Description	Note	Total Costs	Recommended Financing Method Sponsor (a	Trust Fund (b	Private (c	Federal (d
2002 Projects (Continued)							
A.20	Construct Self-Serve Fueling Facility with Apron & Access Roadway		$300,000.00	$0.00	$0.00	$300,000.00	$0.00
A.21	Purchase Equipment		$3,000.00	$3,000.00	$0.00	$0.00	$0.00
	Sub-Total/2002 Projects		$5,514,950.00	$464,950.00	$250,000.00	$4,800,000.00	$0.00
2003 Projects							
A.22	Implement Pavement Maintenance Projects		$100,000.00	$100,000.00	$0.00	$0.00	$0.00
A.23	Reconstruct Taxilane (A.I.R.)		$200,000.00	$0.00	$200,000.00	$0.00	$0.00
A.24	Airport Building Maintenance (Replace Roof for City Hangar J, Paint Prop Stop and Office)		$55,000.00	$55,000.00	$0.00	$0.00	$0.00
A.25	Expand Eastside & Westside Security Fencing		$12,000.00	$12,000.00	$0.00	$0.00	$0.00
A.26	Remove East Ultralight Center Taxi-way, Grade, & Seed		$56,250.00	$56,250.00	$0.00	$0.00	$0.00
A.27	Implement Water/Sewer Projects		$50,000.00	$50,000.00	$0.00	$0.00	$0.00
A.28	Construct Avaition Service Hangar Complex along Runway 11/29 Flight-Line		$5,000,000.00	$0.00	$0.00	$5,000,000.00	$0.00
A.29	Construct Two 14-Unit T-hangars with Taxiway Access Along Runway 11/29 Flight Line		$1,600,000.00	$0.00	$0.00	$1,600,000.00	$0.00
A.30	Extend Airport Boulevard to Connect with 188th Street N.E.		$1,200,000.00	$0.00	$0.00	$1,200,000.00	$0.00
A.31	Construct 6 Executive Hangars with Taxiway Access & Auto Parking Along Runway 11/29 Flight Line		$900,000.00	$0.00	$0.00	$900,000.00	$0.00
A.32	Acquire Property for Future Runway 34 MALSR Light Lane (Approx. 3 Acres)		$1,000,000.00	$100,000.00	$0.00	$0.00	$900,000.00
A.33	Acquire Property for Future Runway 16 RPZ (Approx. 5 Acres)		$400,000.00	$40,000.00	$0.00	$0.00	$360,000.00
	Sub-Total/2003 Projects		$10,573,250.00	$413,250.00	$200,000.00	$8,700,000.00	$1,260,000.00

Table F1 (Continued)

PHASE I (0-6 YEARS) DEVELOPMENT PLAN PROJECT COSTS

Arlington Municipal Airport Layout Plan Update

	Project Description	Note	Total Costs	Recommended Financing Method			
				Sponsor (a	Trust Fund (b	Private (c	Federal (d
2004 Projects							
A.34	Implement Pavement Maintenance Projects		$100,000.00	$100,000.00	$0.00	$0.00	$0.00
A.35	Extend Taxiway "B" to Connect with New NE/SW Connector Taxiway		$1,100,000.00	$110,000.00	$0.00	$0.00	$990,000.00
A.36	Construct Runway 16 Runup Apron @ Taxiway "B"		$180,000.00	$18,000.00	$0.00	$0.00	$162,000.00
A.37	Reconstruct Taxilane K (East)		$87,450.00	$50,350.00	$37,100.00	$0.00	$0.00
A.38	Reconstruct Hangar Taxilane J (East)		$87,450.00	$0.00	$87,450.00	$0.00	$0.00
A.39	Reconstruct Hangar Taxilane J (West)		$87,450.00	$0.00	$87,450.00	$0.00	$0.00
A.40	Expand Eastside & Westside Security Fencing		$12,000.00	$12,000.00	$0.00	$0.00	$0.00
A.41	Airport Building Maintenance (Replace Roof for City Hangar K and Alpha Aviation Hangar)		$65,000.00	$65,000.00	$0.00	$0.00	$0.00
A.42	Construct 14 Executive Hangars with Taxiway Access & Auto Parking Along Runway 11/29 Flight Line		$1,600,000.00	$0.00	$0.00	$1,600,000.00	$0.00
A.43	Implement Water/Sewer Projects		$50,000.00	$50,000.00	$0.00	$0.00	$0.00
A.44	Purchase Maintenance Equipment		$60,000.00	$60,000.00	$0.00	$0.00	$0.00
A.45	Construct New Connector Taxiway (Taxiway "E" Linking the Runway 16 & 11 Ends with Runup Aprons		$1,002,000.00	$100,200.00	$0.00	$0.00	$901,800.00
A.46	Construct Runway 29 Runup Apron @ Taxiway "C"		$180,000.00	$180,000.00	$0.00	$0.00	$0.00
A.47	Construct Runway 11 Runup Apron @ Taxiway "C"		$180,000.00	$180,000.00	$0.00	$0.00	$0.00
	Sub-Total/2004 Projects		$4,791,350.00	$925,550.00	$212,000.00	$1,600,000.00	$2,053,800.00
2005 Projects							
A.48	Implement Pavement Mainteance Projects		$200,000.00	$0.00	$200,000.00	$0.00	$0.00
A.49	Construct East Side General Aviation Apron (Phase I)		$219,000.00	$21,900.00	$0.00	$0.00	$197,100.00
A.50	Update Airport Master Plan		$200,000.00	$20,000.00	$0.00	$0.00	$180,000.00
A.51	Remove, Grade, and Seed Old Firehall South Taxiway & East Portion of Closed Northeast/Southwest Runway & Parallel Taxiway		$192,750.00	$192,750.00	$0.00	$0.00	$0.00
A.52	Expand Eastside & Westside Security Fencing & Install 1 Electronic Gate @ Flying J		$37,000.00	$37,000.00	$0.00	$0.00	$0.00

Table F1 (Continued)

PHASE I (0-6 YEARS) DEVELOPMENT PLAN PROJECT COSTS

Arlington Municipal Airport Layout Plan Update

	Project Description	Note	Total Costs	Recommended Financing Method Sponsor (a	Trust Fund (b	Private (c	Federal (d
2005 Projects (Continued)							
A.53	Remove City Hangars A & B and Construct Replacement Hangar with Auto Parking		$1,000,000.00	$0.00	$0.00	$1,000,000.00	$0.00
A.54	Airport Building Maintenance (Paint A.I.R.)		$4,500.00	$4,500.00	$0.00	$0.00	$0.00
A.55	Purchase Maintenance Equipment		$50,000.00	$50,000.00	$0.00	$0.00	$0.00
A.56	Relocate/Upgrade Runway 34 Localizer Antenna		$1,000,000.00	$100,000.00	$0.00	$0.00	$900,000.00
	Sub-Total/2005 Projects		$2,903,250.00	$426,150.00	$200,000.00	$1,000,000.00	$1,277,100.00
2006 Projects							
A.57	Reconstruct Taxiway "D" & Connectors		$1,000,000.00	$100,000.00	$0.00	$0.00	$900,000.00
A.58	Implement Pavement Maintenance Projects		$100,000.00	$0.00	$100,000.00	$0.00	$0.00
A.59	Construct East Side General Aviation Apron (Phase II)		$225,000.00	$22,500.00	$0.00	$0.00	$202,500.00
A.60	Modify Existing Runway 34 MALs with Addition of RAILS		$91,500.00	$9,150.00	$0.00	$0.00	$82,350.00
A.61	Implement GPS Precision Approach Procedure		FAA Funded	$0.00	$0.00	$0.00	$0.00
A.62	Expand Eastside & Westside Security Fencing & Install 1 Electronic Gate @ North End Aviation Homeport		$37,000.00	$0.00	$37,000.00	$0.00	$0.00
A.63	Airport Building Maintenance (Install New Door on City Hangar D)		$40,000.00	$40,000.00	$0.00	$0.00	$0.00
A.64	Implement Water/Sewer Projects		$29,167.00	$0.00	$29,167.00	$0.00	$0.00
	Sub-Total/2006 Projects		$1,522,667.00	$171,650.00	$166,167.00	$0.00	$1,184,850.00
	Sub-Total/Phase I		$27,249,467.00	$2,791,150.00	$1,218,167.00	$16,100,000.00	$7,140,150.00

Notes

(a Sponsor Funding - current revenues, cash reserves, general fund, bonds, etc.

(b Trust Fund - funded by the City of Arlington from the sale/release of airport property.

(b Private Funding - funded from non-government sources or revenue bonds.

(d Federal Funding - FAA/AIP and other federal funcing programs.

Cost estimates, based upon 2001 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

Table F2

PHASE II (7-10 YEARS) DEVELOPMENT PLAN PROJECT COSTS

Arlington Municipal Airport Layout Plan Update

	Project Description Note	Total Costs	Recommended Financing Method			
			Sponsor (a	Trust Fund (b	Private (c	Federal (d
B.1	Install Signage to Serve Taxiway "C'	$80,000.00	$8,000.00	$0.00	$0.00	$72,000.00
B.2	Install Runway 16 MALs	$270,500.00	$27,050.00	$0.00	$0.00	$243,450.00
B.3	Remove, Grade, and Seed Unused Runway 11/29 Pavement	$250,000.00	$0.00	$250,000.00	$0.00	$0.00
B.4	Install MIRLs & Threshold Lights to Serve Runway 11/29	$340,000.00	$340,000.00	$0.00	$0.00	$0.00
B.5	Install Taxiway "A" MITLs & Signs	$483,336.00	$48,333.60	$0.00	$0.00	$435,002.40
B.6	Install Taxiway "C" MITLs	$160,000.00	$16,000.00	$0.00	$0.00	$144,000.00
B.7	Upgrade Compass Rose	$30,000.00	$0.00	$30,000.00	$0.00	$0.00
B.8	Construct Eastside Security Fencing	$70,000.00	$0.00	$70,000.00	$0.00	$0.00
B.9	Construct Westside Security Improve-Ments	$70,000.00	$0.00	$70,000.00	$0.00	$0.00
B.10	Construct Northwest Security Fencin	$80,000.00	$0.00	$80,000.00	$0.00	$0.00
B.11	Construct Eastside Apron Lighting	$70,000.00	$0.00	$70,000.00	$0.00	$0.00
B.12	Construct Westside Apron Lighting	$80,000.00	$0.00	$80,000.00	$0.00	$0.00
B.13	Purchase/Install Emergency Generat	$80,000.00	$8,000.00	$0.00	$0.00	$72,000.00
B.14	Complete Environmental Assessment & Construct New 1,000-Foot Paved/Turf Ultralight Runway	$120,000.00	$12,000.00	$0.00	$0.00	$108,000.00
B.15	Remove, Grade, and Seed Remaining Portion of Closed Northeast/South-west Runway	$400,000.00	$400,000.00	$0.00	$0.00	$0.00
B.16	Construct New Fly-In Headquarters/ Hangar Facility with Auto Parking	$1,000,000.00	$0.00	$0.00	$1,000,000.00	$0.00
B.17	Implement Pavement Maintenance Projects	$500,000.00	$500,000.00	$0.00	$0.00	$0.00
B.18	Construct Runway 11 Runup Apron @ New Connector Taxiway	$250,000.00	$250,000.00	$0.00	$0.00	$0.00
B.19	Install Westside Security Fencing & Install 1 Electronic Gate @ Stoddard & Hamilton	$33,000.00	$0.00	$33,000.00	$0.00	$0.00
B.20	Airport Building Maintenance (Replace Doors for City Hangars C, E, G, H, and J)	$185,000.00	$185,000.00	$0.00	$0.00	$0.00
B.21	Airport Building Maintenance (Replace Roof for Prop Stop & Rental House #1)	$24,500.00	$24,500.00	$0.00	$0.00	$0.00
B.22	Replace Airfield Sweeper	$75,000.00	$75,000.00	$0.00	$0.00	$0.00
B.23	Airport Building Maintenance (Up-grade Electrical for City Hangars C, E, G, J, and K)	$41,100.00	$41,100.00	$0.00	$0.00	$0.00
B.24	Reconstruct Airport Office Auto Parking Lot	$50,000.00	$50,000.00	$0.00	$0.00	$0.00
B.25	Reconstruct North Trail Access Roac	$81,840.00	$81,840.00	$0.00	$0.00	$0.00
B.26	Remove, Grade, and Seed Various Areas (Dumpster Storage Ramp, North Triangle Road, Sweeper Dump Ramp, West Triangle Road, Fly-In Storage Ramp, Gravel Bark Storage Ramp, & Topsoil Storage Ramp	$211,206.00	$211,206.00	$0.00	$0.00	$0.00

Table F2 (Continued)
PHASE II (7-10 YEARS) DEVELOPMENT PLAN PROJECT COSTS
Arlington Municipal Airport Layout Plan Update

	Project Description	Note	Total Costs	Recommended Financing Method Sponsor (a	Trust Fund (b	Private (c	Federal (d
B.27	Construct Two 14-Unit T-hangars with Taxiway Access Along Runway 11/29 Flight Line		$1,600,000.00	$0.00	$0.00	$1,600,000.00	$0.00
B.28	Construct 6 Executive Hangars with Taxiway Access & Auto Parking Along Runway 11/29 Flight Line		$900,000.00	$0.00	$0.00	$900,000.00	$0.00
B.29	Construct One FBO Hangar with Apron & Auto Parking		$1,900,000.00	$0.00	$0.00	$1,900,000.00	$0.00
B.30	Implement Water/Sewer Projects		$111,500.00	$111,500.00	$0.00	$0.00	$0.00
	Sub-Total/Phase II		$9,546,982.00	$2,389,529.60	$683,000.00	$5,400,000.00	$1,074,452.40

Notes

(a Sponsor Funding - current revenues, cash reserves, general fund, bonds, etc.

(b Trust Fund - funded by the City of Arlington from the sale/release of airport property.

(b Private Funding - funded from non-government sources or revenue bonds.

(d Federal Funding - FAA/AIP and other federal funcing programs.

Cost estimates, based upon 2001 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.

Table F3

PHASE III (11-20 YEARS) DEVELOPMENT PLAN PROJECT COSTS

Arlington Municipal Airport Layout Plan Update

			Recommended Financing Method			
	Project Description Note	**Total Costs**	**Sponsor (a**	**Trust Fund (b**	**Private (c**	**Federal (d**
C.1	Reconstruct Runway 16/34	$1,400,000.00	$140,000.00	$0.00	$0.00	$1,260,000.00
C.2	Reconstruct Taxiway "A" & Conne	$900,000.00	$90,000.00	$0.00	$0.00	$810,000.00
C.3	Reconstruct Runway 11/29	$700,000.00	$700,000.00	$0.00	$0.00	$0.00
C.4	Update Airport Master Plan	$200,000.00	$20,000.00	$0.00	$0.00	$180,000.00
C.5	Reconstruct Center ULC Taxiway	$521,730.00	$52,173.00	$0.00	$0.00	$469,557.00
C.6	Airport Building Maintenance (Replace Doors for City Hangar K)	$40,000.00	$0.00	$40,000.00	$0.00	$0.00
C.7	Reconstruct West ULC Taxiway	$530,937.00	$53,093.70	$0.00	$0.00	$477,843.30
C.8	Repair/Crack Seal N.W. Corner Taxiway	$40,000.00	$4,000.00	$0.00	$0.00	$36,000.00
C.9	Airport Building Maintenance (Replace Roof for Rental House #2	$9,500.00	$0.00	$9,500.00	$0.00	$0.00
C.10	Construct Two 14-Unit T-hangars with Taxiway Access Along Runway 11/29 Flight Line	$1,600,000.00	$0.00	$0.00	$1,600,000.00	$0.00
C.11	Construct 6 Executive Hangars with Taxiway Access & Auto Parking Along Runway 11/29 Flight Line	$900,000.00	$0.00	$0.00	$900,000.00	$0.00
C.12	Complete Environmental Assessment & Construct 724-Foot Extension to Runway 16/34 with MIRLS	$800,000.00	$80,000.00	$0.00	$0.00	$720,000.00
C.13	Extend Taxiway "B" to Serve the Existing Runway 16 Threshold & Construct Runup Apron	$450,000.00	$45,000.00	$0.00	$0.00	$405,000.00
C.14	Extend Taxiway "A" with MITLs to Serve Runway 16 & Construct Runup Apron	$250,000.00	$25,000.00	$0.00	$0.00	$225,000.00
C.15	Implement Airfield Pavement Maintenance Projects	$700,000.00	$0.00	$700,000.00	$0.00	$0.00
C.16	Remove Balance of Closed Northeast/ Southwest Runway, Grade, & Se	$50,000.00	$0.00	$50,000.00	$0.00	$0.00
	Sub-Total/Phase III	$9,092,167.00	$1,209,266.70	$799,500.00	$2,500,000.00	$4,583,400.30
	GRAND TOTALS	$45,888,616.00	$6,389,946.30	$2,700,667.00	$24,000,000.00	$12,798,002.70

Notes

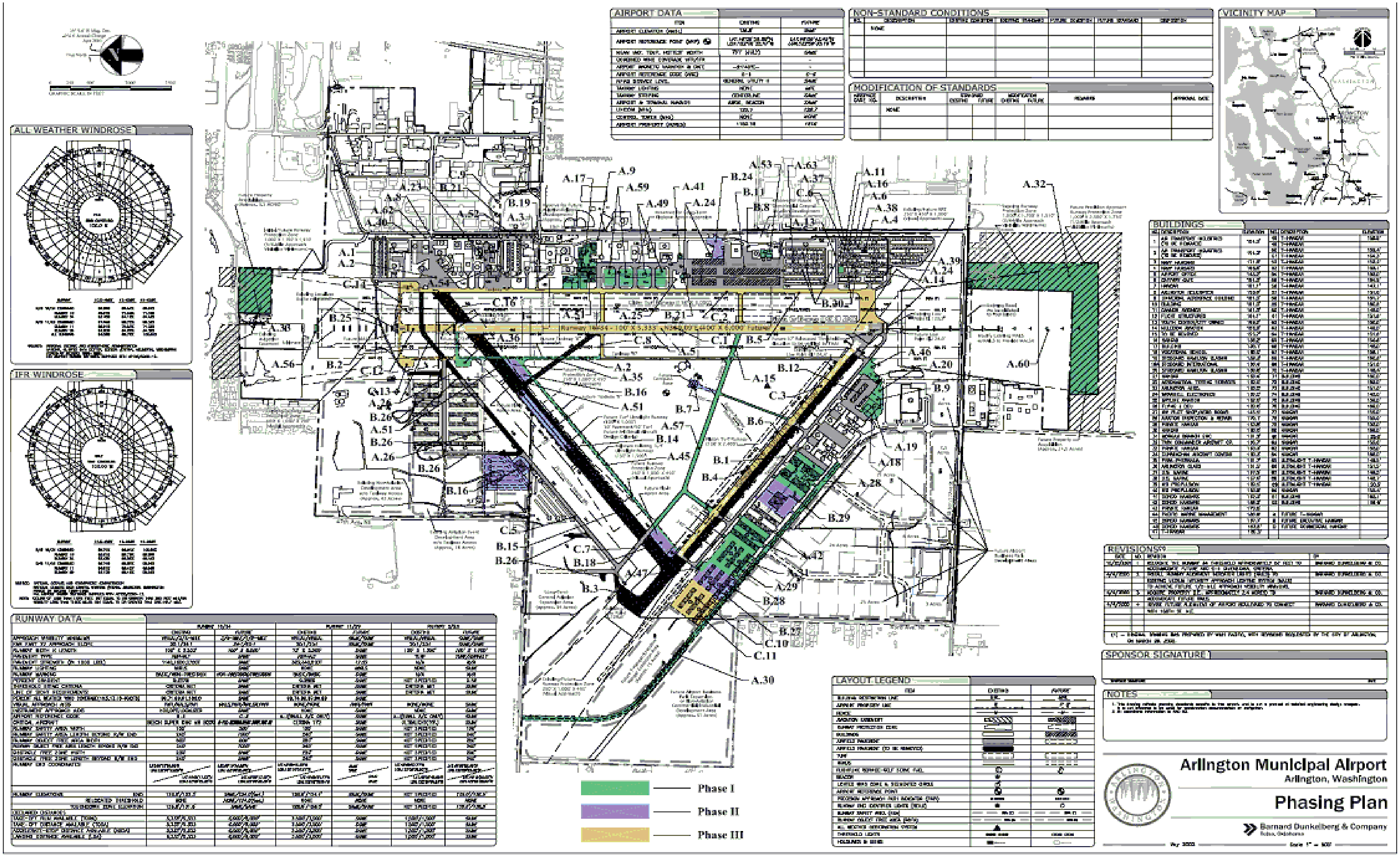
(a Sponsor Funding - current revenues, cash reserves, general fund, bonds, etc.

(b Trust Fund - funded by the City of Arlington from the sale/release of airport property.

(b Private Funding - funded from non-government sources or revenue bonds.

(d Federal Funding - FAA/AIP and other federal funcing programs.

Cost estimates, based upon 2001 data, are intended for preliminary planning purposes and do not reflect a detailed engineering evaluation.


AIRPORT DATA
NON-STANDARD CONDITIONS
MODIFICATION OF STANDARDS
VICINITY MAP
ALL WEATHER WINDROSE
IFR WINDROSE
BUILDINGS
REVISIONS
SPONSOR SIGNATURE
NOTES
LAYOUT LEGEND
RUNWAY DATA
Phase I
Phase II
Phase III
Arlington Municipal Airport
Arlington, Washington
Phasing Plan
Barnard Dunkelberg & Company

Appendix One

Large Propeller, Turboprop & Jet Aircraft

Use RWY 16/34

Approaches
Standard National Business Aircraft Association (NBAA) noise abatement procedures should be used.
Practice IFR approaches during visual meteorological conditions.
Follow published missed approach procedures.

VFR Approaches
Fly final at or above Precision Approach Path Indicator (PAPI).
Follow published approach procedures.

Departures (IFR & VFR)
No intersection takeoffs.
Standard NBAA noise abatement procedures.
Runway 34 - Avoid turning before reaching the ridgeline north of the airport.

Rotary Wing Aircraft

Civilian Helicopters
Approach and depart the Airport at 637' MSL.
Avoid flying over residential areas at low altitude.
Announce position and intention on radio.
Avoid all other aircraft.

Small Propeller Aircraft
(single & twin engine under 12,500 lbs)

AVOID OVERFLIGHT OF RESIDENTIAL AREAS

DEPARTURES, GO AROUNDS & TOUCH AND GOS
Runway 34
Maintain runway heading until north of ridgeline.

Runway 16
Maintain runway heading until at least past the Poplar trees.
Maintain 1200' MSL altitude during departure from airport traffic pattern.
No intersection takeoffs
Caution ultralight operations below 637' MSL west-northwest of Runway 16/34.
Fly airport traffic pattern rectangle as outlined in the AIM and Arlington air traffic pattern maps.
Use runway most nearly aligned with the wind when the wind is 5 knots or more.

APPROACHES (all runways)
Maintain the highest elevation practical while on final approach.
Intercept and fly at or above the PAPI (Runway 16/34).
Practice IFR approaches during visual meteorological conditions.
Follow published missed approach procedures.
Fly airport traffic pattern rectangle as outlined in the AIM and Arlington air traffic pattern maps.

Gliders

Traffic pattern east of airport.
Glider and towplane designated turf runways are located parallel and adjacent to eastern taxiway for Runway 16/34 (taxiway Alpha)
Towplanes and gliders allowed midfield takeoffs on turf glider runway.
After glider release, towplanes enter traffic pattern for small propeller aircraft.
Towplanes land on designated asphalt or turf runways.

Ultralights

Enter and exit traffic pattern as shown on map at or below 500' AGL (637' MSL).
Main Turf Runway is located parallel to and northwest of closed runway.
Crosswind Turf Runway is located South of Taxiway Delta and stretches between connector D2 and D3.
Traffic Pattern is typical rectangular configuration as described in AIM and is located over the closed runway and infield of the airport.
Ultralights land only to the Northwest on crosswind runway.
Ultralights departing to the Northwest maintain 500 AGL until West of I-5.

U.S. Department
of Transportation
Federal Aviation
Administration

Seattle Airports District Office
1601 Lind Avenue, S.W., Suite 250
Renton, Washington 98055-4056

January 5, 2001

Mr. Rob Putnam
Airport Manager
Arlington Municipal Airport
18204 59th Drive NE
Arlington, WA 98223

Dear Mr. Putnam:

Arlington Municipal Airport, Arlington, Washington
Glider/Ultralight Operations and Precision Approach

This is in response to your consultant inquiry to our office regarding concerns with future glider and ultralight operations if a precision approach with less-than-3/4-mile minima is implemented on Runway 34. Currently, Runway 16/34 has an Airport Reference Code of B-I with a non-precision approach (greater-than-3/4-mile minima) to Runway 34, a visual approach to Runway 16, and glider activity occurring outside the Runway Object Free Area (ROFA) but parallel to the runway. Existing ultralight activity is concentrated on the northwest side of the airport near the closed runway. The existing airport airspace classification is Class G uncontrolled below 700 feet, and Class E controlled airspace above 700 feet.

There are two main concerns that have been raised over what a future implementation of a less-than-3/4-mile precision approach on Runway 34 means. The first concern is that the ROFA for Runway 34 would increase from 400 feet wide to 800 feet wide, therefore the turf glider runway would be within the ROFA and may be a violation of Federal Aviation Administration (FAA) safety standards. The other concern is that the Class E controlled airspace would drop to ground level, which means that all ultralights must have prior authorization to operate from the Air Traffic Control facility having jurisdiction over that airspace. Currently ultralights do not require this clearance in the existing Class G uncontrolled airspace.

The following are FAA responses that address the issues mentioned in the December 8, 1999 planning memorandum by your consultant, Cody Fussell of Barnard Dunkelberg & Company.

<u>Glider Operations with a Precision Approach to Runway 34</u>

The initial part of the answer to this concern lies in the FAA definition of a landing area. The Seattle Airports District Office (ADO) and the Flight Standards District Office (FSDO) of the FAA make no distinction between a '*turf operating area*' or a '*turf runway*'. Both of these are considered a landing area, just as a paved runway is a landing area. FAA standards apply to all landing areas, i.e. if simultaneous landing operations are allowed, then two or more runways are used at the same time, and runway separation standards need to be met. If only alternating landing operations are allowed, then only one aircraft at a time is allowed to land and the landing surface is either the turf or paved runway, i.e. adjacent turf and paved surfaces are considered as only one runway, therefore runway separation standards do not have to be met. All other FAA standards need to be met for each runway during an aircraft operation on that runway. For example, during an aircraft operation on Runway 16/34 at Arlington, the ROFA standard for Runway 16/34 must be met. During an alternating aircraft

operation on the turf glider runway, the glider ROFA standard must be met. FAA standards may overlap under alternating operations, as only one of the landing areas can be used at a time.

Having the turf runway adjacent to the paved Runway 16/34 at Arlington means the approach surfaces are the same and traffic patterns do not conflict. This was the reasoning behind the March 27, 1980 letter from the FAA to the City of Arlington suggesting the turf glider runway be placed where it exists today. This letter also states this location is "*another acceptable method for accommodating gliders in addition to the method of operation we had proposed in previous correspondence*". To clarify, the letters from the FAA at that time were suggestions for glider activity locations, and while the FAA felt strongly that there was ample room on the airport for glider operations, we did not dictate it had to be in any one location.

In conclusion, as long as Arlington operates Runway 16/34 and the turf glider area as one runway, i.e. do not allow simultaneous operations, then there would be no change to turf glider operations if a less-than-3/4-mile precision approach is implemented for Runway 34. The ROFA for Runway 16/34 would increase to 800 feet wide and would encompass the turf glider landing area, but under alternating operations, the ROFA standard for Runway 16/34 is met.

Ultralight Operations with a Precision Approach to Runway 34

The concern raised over ultralight operations is due to Federal Aviation Regulation (FAR) Part 103 requirements with airspace classification. Paragraph 103.17 says "*No person may operate an ultralight vehicle within Class A, B, C, or D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport unless that person has prior authorization from the ATC facility having jurisdiction over that airspace*". Implementation of a less-than-3/4-mile-minima precision approach would require airspace surrounding the airport to change to Class E airspace to the ground (currently this doesn't start until 700 feet in elevation), therefore the Air Traffic Control (ATC) authorization becomes a requirement for an ultralight to operate at Arlington. Currently ultralights are not required to have authorization from ATC when they operate in Class G airspace.

The usual conclusion to ATC authorization is that a pilot is required to have a radio and remain in radio contact with ATC. However, in conversations with FSDO, ADO, and Air Traffic personnel, it is believed that an airspace arrangement at Arlington Airport could be worked out to meet the FAR requirements for ultralights. Air Traffic has offered that if a Class E Surface Area is established at Arlington, it could be designed to exclude the ultralight area if a written Letter of Agreement (LOA) between ATC and ultralight pilots for efficient operations at Arlington Airport is established. The LOA would outline the airspace issues at the airport, and each pilot operating an ultralight at Arlington would be required to sign and operate under the LOA. Adherence to the LOA would mean an ultralight pilot is not required to contact ATC. Without this airspace exclusion and LOA, ultralight pilots at Arlington would be required to have radios and ATC contact just like any other type of aircraft.

If you have any further questions, please call me at (425) 227-2661.

Sincerely,

Karen J. Miles, PE
Civil Engineer
cc: Barbara Lawrence-Tolbert, Arlington Fly-In

U.S. Department
of Transportation
Federal Aviation
Administration

Seattle Airports District Office
1601 Lind Avenue, S.W., Suite 250
Renton, Washington 98055-4056

January 19, 2001

Mr. Rob Putnam
Airport Manager
Arlington Municipal Airport
18204 59th Drive NE
Arlington, WA 98223

Dear Mr. Putnam:

Arlington Municipal Airport, Arlington, Washington
Glider/Ultralight Operations and Precision Approach
Correction

This is in response to phone calls the Federal Aviation Administration (FAA) has received from pilots operating at Arlington Municipal Airport regarding the January 5, 2001 FAA letter which addressed glider and ultralight issues at the airport. We have reviewed the last sentence in the last paragraph of the letter and found it to be in error. There is no requirement that pilots have radios under Class E airspace. The sentence should read as follows:

> *"Without this airspace exclusion and LOA, ultralight pilots at Arlington would be required to have ATC authorization just like any other type of aircraft."*

We apologize for the confusion which has occurred due to this error. If you have any further questions, please call me at (425) 227-2661.

Sincerely,

Karen J. Miles, PE
Civil Engineer, Washington Section

cc: Barbara Lawrence-Tolbert, Arlington Fly-In

EXHIBIT 3

March 27, 1980

Honorable John C. Larson
Mayor, City of Arlington
City Hall
Arlington, WA 98223

Dear Mayor Larson:

We have received your letter of March 7, 1980, which states that the Arlington City Council fully supports the airport commission's decision to prohibit glider operations at Arlington Municipal Airport. We are, of course, disappointed that the city has taken such a position without the benefit of a trial period to realistically evaluate the impact of gliders at the airport.

Our position on the matter has been carefully evaluated, and we remain convinced that gliders can be accommodated at Arlington. In fact, our study has indicated another acceptable method for accommodating gliders in addition to the method of operation we had proposed in previous correspondence. This alternative proposal would involve the preparation of a 100' x 1500' grass strip for gliders in the infield area east of Runway 15/33 between the centermost stub taxiways. The enclosed sketches show the location and possible traffic patterns for such an operation and are being provided in the event that this alternative had not received previous consideration by the airport commission. Should the city need additional time to study this proposal, please let us know.

Should the City of Arlington continue to prohibit glider operations at the airport, we would have no alternative but to find the city in non-compliance with its federal obligations. Such a finding would preclude future federal funding for the airport.

Again, we would welcome the opportunity to meet with the city council to discuss the situation. Please call if you desire such a meeting.

Sincerely,

[illegible] signed by
[illegible] O. Brown

ROBERT O. BROWN
Chief, Airports Division, ANW-600

Enclosure

cc: Mr. Tim Simmons
Mr. Dave Crow

Appendix Two

MODEL ORDINANCE

ORDINANCE NO. _____
ZONING ORDINANCE TO LIMIT HEIGHT OF OBJECTS AROUND ARLINGTON MUNICIPAL AIRPORT

AN ORDINANCE REGULATING AND RESTRICTING THE HEIGHT OF STRUCTURES AND OBJECTS OF NATURAL GROWTH, AND OTHERWISE REGULATING THE USE OF PROPERTY, IN THE VICINITY OF THE ARLINGTON MUNICIPAL AIRPORT BY CREATING THE APPROPRIATE ZONES AND ESTABLISHING THE BOUNDARIES THEREOF; PROVIDING FOR CHANGES IN THE RESTRICTIONS AND BOUNDARIES OF SUCH ZONES; DEFINING CERTAIN TERMS USED HEREIN; REFERRING TO THE ARLINGTON MUNICIPAL AIRPORT HEIGHT ZONING MAP WHICH IS INCORPORATED IN AND MADE A PART OF THIS ORDINANCE; PROVIDING FOR ENFORCEMENT; ESTABLISHING A BOARD OF ADJUSTMENT; REPEALING ALL ORDINANCES IN CONFLICT HEREWITH; AND IMPOSING PENALTIES.

This Ordinance is adopted pursuant to the authority conferred by Washington State Statute, RCW 14.12.030. It is hereby found that an obstruction has the potential for endangering the lives and property of users of Arlington Municipal Airport, and property or occupants of land in its vicinity; that an obstruction may affect existing and future instrument approach minimums of Arlington Municipal Airport; and that an obstruction may reduce the size of areas available for the landing, takeoff, and maneuvering of aircraft, thus tending to destroy or impair the utility of Arlington Municipal Airport and the public investment therein. Accordingly, it is declared:

(1) that the creation or establishment of an obstruction has the potential of being a public nuisance and may injure the region served by Arlington Municipal Airport;

(2) that it is necessary in the interest of the public health, public safety, and general welfare that the creation or establishment of obstructions that are a hazard to air navigation be prevented; and,

(3) that the prevention of these obstructions should be accomplished, to the extent legally possible, by the exercise of the police power without compensation.

It is further declared that the prevention of the creation or establishment of hazards to air navigation, the elimination, navigation, or marking and lighting of obstructions are

public purposes for which a political subdivision may raise and expend public funds and acquire land or interest in land.

IT IS HEREBY ORDAINED BY THE JOINT AIRPORT PLANNING BOARD OF ARLINGTON WASHINGTON, MARYSVILLE WASHINGTON, AND SNOHOMISH COUNTY WASHINGTON, AS FOLLOWS:

SECTION I: SHORT TITLE

This ordinance shall be known and may be cited as the Arlington Municipal Airport Zoning Ordinance.

SECTION II: DEFINITIONS

As used in this Ordinance, unless the context otherwise requires:

1. AIRPORT - Arlington Municipal Airport.

2. AIRPORT ELEVATION - 137 feet above mean sea level.

3. APPROACH SURFACE - A surface longitudinally centered on the extended runway centerline, extending outward and upward from the end of the primary surface and at the same slope as the approach zone height limitation slope set forth in Section IV of this ordinance. In plan, the perimeter of the approach surface coincides with the perimeter of the approach zone.

4. APPROACH, TRANSITIONAL, HORIZONTAL, AND CONICAL ZONES - These zones are set forth in Section III of this Ordinance.

5. BOARD OF ADJUSTMENT - The existing Board of Adjustment for the City of Arlington, the City of Marysville, and Snohomish County will serve as the Airport Zoning Board of Adjustment for their respective jurisdictions. **(Structure and makeup of the Board of Adjustment to be verified).**

6. CONICAL SURFACE - A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

7. HAZARD TO AIR NAVIGATION - An obstruction determined to have a substantial adverse effect on the safe and efficient utilization of the navigable airspace.

8. HEIGHT - For the purpose of determining the height limits in all zones set forth in this Ordinance and shown on the zoning map, the datum shall be mean sea level elevation unless otherwise specified.

9. HORIZONTAL SURFACE - A horizontal plane 150 feet above the established airport elevation, the perimeter of which in plan coincides with the perimeter of the horizontal zones.

10. JOINT AIRPORT ZONING BOARD - A Board consisting of two members appointed by the City of Arlington, two members appointed by the City of Marysville, two members appointed by Snohomish County, and in addition, a Chairman elected by a majority of the members so appointed, authorized by Washington Statutes.

11. LARGER THAN UTILITY RUNWAY - A runway that is constructed for and intended to be used by aircraft of greater than 12,500 pounds maximum gross weight, including jet powered aircraft.

12. NONCONFORMING USE - Any pre-existing structure, object of natural growth, or use of land, which is inconsistent with the provisions of this Ordinance or an amendment thereto.

13. NON-PRECISION INSTRUMENT RUNWAY - A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in non-precision instrument approach procedure has been approved or planned.

14. OBSTRUCTION - Any structure, growth, or other object, including a mobile object, which exceeds a limiting height set forth in Section IV of this Ordinance.

15. PERSON - An individual, firm, partnership, corporation, company, association, joint stock association or government entity; includes a trustee, a receiver, an assignee, or a similar representative of any of them.

16. PRECISION INSTRUMENT RUNWAY - A runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS), a Transponder Landing System (TLS), a Global Positioning Satellite (GPS), or Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated on an approved airport layout plan or any other planning document.

17. PRIMARY SURFACE - A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway. The width of the primary surface is set forth in Section III of this ordinance. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.

18. RUNWAY - A defined area on an airport prepared for landing and take-off of aircraft along its length.

19. STRUCTURE - An object, including a mobile object, constructed or installed by man, including but without limitation, buildings, towers, cranes, smokestacks, earth formation, and overhead transmission lines.

20. TRANSITIONAL SURFACES - These surfaces extend outward at ninety degree (90°) angles to the runway centerline and the runway centerline extended at a slope of seven (7') feet horizontally for each one (1) foot vertically from the sides of the primary and approach surfaces to where they intersect the horizontal and conical surfaces. Transitional surfaces for those portions of the precision approach surfaces, which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at 90° degree angles to the extended runway centerline.

21. TREE - Any object of natural growth.

SECTION III: AIRPORT ZONES

In order to carry out the provision of this Ordinance, there are hereby created and established certain zones which include all of the land lying beneath the approach

surfaces, transitional surfaces, horizontal surfaces, and conical surfaces as they apply to Arlington Municipal Airport. Such zones are shown on the Arlington Municipal Airport Height Zoning Map consisting of one sheet, prepared by BARNARD DUNKELBERG & COMPANY, Inc. dated February 2002, which is attached to this Ordinance and made a part hereof. An area located in more than one of the following zones is considered to be only in the zone with the more restrictive height limitation. The various zones are hereby established and defined as follows:

(1) *Precision Instrument Runway Approach Zone.* The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width of 16,000 feet at a horizontal distance of 50,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

(2) *Runway Larger than Utility with a Visibility Minimum Greater than 3/4 Mile Non-precision Instrument Approach Zone.* The inner edge of this approach zone coincides with the width of the primary surface and is either 500 or 1,000 feet wide, depending on the type of approach zone on the opposite end of the runway. The approach zone expands outward uniformly to a width of 3,500 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

(3) *Transition Zones* are hereby established adjacent to each instrument runway and approach zone as indicated on the zoning map.

(4) *Horizontal Zones* are hereby established by swinging arcs of 10,000 feet for all instrument runways from the center of each end of the primary surface of each runway and connecting the adjacent arcs by drawing lines tangent to those arcs. The horizontal zone does not include the approach and transitional zones.

(5) *Conical Zones* are hereby established as the area that commences at the periphery of the horizontal zone and extends outward therefrom a horizontal distance of 4,000 feet. The conical zone does not include the instrument approach zones, transition zones, and horizontal zone.

SECTION IV: AIRPORT ZONE HEIGHT LIMITATIONS

Except as otherwise provided in this Ordinance, no structure shall be erected, altered, or maintained, and no tree shall be allowed to grow in any zone created by this Ordinance to a height in excess of the applicable height herein established for such zone. Such applicable height limitations are hereby established for each of the zones in question as follows:

(1) *Precision Instrument Runway Approach Zone.* Slopes fifty (50) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline; thence slopes upward forty (40) feet horizontally for each foot vertically to an additional horizontal distance of 40,000 feet along the extended runway centerline.

(2) *Runway Larger than Utility with a Visibility Minimum Greater than 3/4 Mile Non-Precision Instrument Approach Zone.* Slopes thirty-four (34) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline.

(3) *Transition Zone*. Slopes seven (7') feet outward for each foot upward beginning at the sides of and at the same elevation as the primary surface, and extending to a height of one hundred fifty (150') feet above the *airport elevation.* In addition to the foregoing, there are established height limits sloping seven (7') feet outward for each foot upward beginning at the sides of and at the same elevation as the approach surface, and extending to where they intersect the conical surface. Further, where the precision instrument runway approach zone projects through and beyond the conical zone, there are established height limits sloping seven (7') feet outward for each foot upward beginning at the sides of and at the same elevation as the approach surface, and extending a horizontal distance of five thousand (5,000') feet from the edge of the instrument approach zone measured at right angles to the extended runway centerline.

(5) *Horizontal Zone.* Established at one hundred fifty (150') feet above the established airport elevation.

(6) *Conical Zone*. Slopes twenty (20') feet outward for each foot upward beginning at the periphery of the horizontal and at one hundred fifty (150') feet above the airport elevation and extending to a height of three hundred fifty (350') feet above the airport elevation.

(7) *Excepted Height Limitation.* Nothing in this Order shall be construed as prohibiting the construction or maintenance of any structure, or growth of any tree to a height up to fifty (50') feet above the surface of the land.

SECTION V: USE RESTRICTION

Notwithstanding any other provisions of this Ordinance, no use may be made of land or water within any zone established by this Ordinance in such a manner as to create electrical interference with navigational signals or radio communications between the airport and aircraft, make it difficult for pilots to distinguish between airport lights and others, result in glare in the eyes of pilots using the airport, impair visibility in the vicinity of the airport, create bird strike hazards, or otherwise in any way endanger or interfere with the landing, takeoff, or maneuvering of aircraft intending to use the airport.

SECTION VI: NONCONFORMING USES

1. *Regulations Not Retroactive.* The regulations prescribed in this Ordinance shall not be construed to require the removal, lowering, or other change or alteration of any structure or tree not conforming to the regulations as of the effective date of this Ordinance, or otherwise interfere with the continuance of a nonconforming use.

   Nothing contained herein shall require any change in the construction, alteration, or intended use of any structure, the construction or alteration of which was begun prior to the effective date of this Ordinance, and is diligently prosecuted.

2. *Marking and Lighting.* Notwithstanding the preceding provision of this Section, the owner of any existing nonconforming structure or tree is hereby required to permit the installation, operation, and maintenance thereon of such markers and lights as shall be deemed necessary by the Joint Airport Zoning Board to indicate to the operators of aircraft in the vicinity of the airport the presence of such airport obstruction. Such markers and lights shall be installed, operated, and maintained at the expense of the City of Arlington or Snohomish County, depending upon jurisdiction.

SECTION VII: PERMITS

1. *Future Uses.* Except as specifically provided in a, b, and c hereunder, no material change shall be made in the use of land, no structure shall be erected or otherwise established and no tree shall be planted in any zone hereby created unless a permit therefore shall have been applied for and granted. Each permit application shall include a site plan and a completed FAA Form 7460-*1 Notice of Proposed Construction or Alteration,* which are to be submitted to the City of Arlington, the City of Marysville, and Snohomish County Planning Departments for review and analysis. Additional copies shall be forwarded to the Federal Aviation Administration (FAA). The documentation shall indicate the purpose for which the permit is desired, with sufficient particularity to permit it to be determined whether the resulting use, structure, or tree would conform to the regulations herein prescribed. If such determination is in the affirmative, the permit shall be granted. No permit for a use inconsistent with the provisions of this ordinance shall be granted unless a variance has been approved in accordance with Section VII, 4.

   a. In the area lying within the limits of the horizontal zone and conical zone, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when, because of terrain, land contour, or topographic features, such tree or structure would extend above the height limits prescribed for such zones.

   b. In areas lying within the limits of the approach zones but at a horizontal distance of not less than 4,200 feet from each end of the runway, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when such tree or structure would extend above the height limit prescribed for such approach zones.

   c. In the areas lying within the limits of the transition zones beyond the perimeter of the horizontal surface, no permit shall be required for any tree or structure

less than seventy-five feet of vertical height above the ground, except when such tree or structure, because of terrain, land contour, or topographic features, would extend above the height limit prescribed for such transition zones.

Nothing contained in any of the foregoing exceptions shall be construed as permitting or intending to permit any construction, or alteration of any structure, or growth of any tree in excess of any of the height limits established by this Ordinance except as set forth in Section IV, 7.

2. *Existing Uses.* No permit shall be granted that would allow the establishment or creation of an obstruction or permit a nonconforming use, structure, or tree to become a greater hazard to air navigation, than it was on the effective date of this Ordinance or any amendments thereto or than it is when the application for a permit is made. Except as indicated, all applications for such a permit shall be granted.

3. *Nonconforming Uses Abandoned or Destroyed.* Whenever the Joint Airport Zoning Board determines that a nonconforming tree or structure has been abandoned or more than eighty (80%) percent torn down, physically deteriorated, or decayed, no permit shall be granted that would allow such structure or tree to exceed the applicable height limit or otherwise deviate from the zoning regulations.

4. *Variances.* Any person desiring to erect or increase the height of any structure, or permit the growth of any tree, or use property, not in accordance with the regulations prescribed in this Ordinance, may apply to the Board of Adjustment for a variance. The application for a variance from such regulations shall be accompanied by a determination from the Federal Aviation Administration as to the effect of the proposal on the operation of air navigation facilities and the safe, efficient use of navigable airspace. Such variances shall be allowed where it is duly found that literal application or enforcement of the regulations will result in unnecessary hardship and relief granted, will not be contrary to the public interest, will not create a hazard to air navigation, will do substantial justice, and will be in accordance with the spirit of this Ordinance.

   Additionally, no application for variance to the requirements of this Ordinance may be considered by the Board of Adjustment unless a copy of the application has been furnished to the Joint Airport Zoning Board for advice as to the aeronautical effects of the variance. If the Joint Airport Zoning Board does not respond to the application within thirty (30) days after receipt, the Board of

Adjustment may act on its own to grant or deny said application.

5. *Obstruction Marking and Lighting.* Any permit or variance granted may, if such action is deemed advisable to effectuate the purpose of this Ordinance and be reasonable in the circumstances, be so conditioned as to require the owner of the structure or tree in question to install, operate, and maintain, at the owner's expense, such markings and lights as may be necessary. If deemed proper by the Board of Adjustment, this condition may be modified to require the owner to permit the City of Arlington or Snohomish County, at its own expense, to install, operate, and maintain the necessary markings and lights.

SECTION VIII: ENFORCEMENT

It shall be the duty of the Joint Airport Zoning Board to administer and enforce the regulations prescribed herein. Applications for permits and variances shall be made to the Board upon a form published for that purpose. Applications required by this Ordinance to be submitted to the Board shall be promptly considered and granted or denied. Application for action by the Board of Adjustment shall be forthwith transmitted by the Board.

SECTION IX: BOARD OF ADJUSTMENT

1. There is hereby created a Board of Adjustment to have and exercise the following powers: (1) to hear and decide appeals from any order, requirement, decision, or determination made by the Joint Airport Zoning Board in the enforcement of this Ordinance; (2) to hear and decide special exceptions to the terms of this Ordinance upon which such Board of Adjustment under such regulations may be required to pass; and (3) to hear and decide specific variances.

2. The existing Board of Adjustment for both the City of Arlington, the City of Marysville and Snohomish County will serve as the Airport Zoning Board of Adjustment for their respective jurisdictions. Members shall be removable by the appointing authority for cause, upon written charges and after a public hearing. **(Structure and makeup of the Board of Adjustment to be verified).**

3. The Board of Adjustment shall adopt rules for its governance and in harmony with the provisions of this ordinance. Meetings of the Board of Adjustment shall be held at the call of the Chairperson and at such other times as the Board of Adjustment may determine. The Chairperson or, in the absence of the Chairperson, the Acting Chairperson may administer oaths and compel the attendance of witnesses. All hearings of the Board of Adjustment shall be public. The Board of Adjustment shall keep minutes of its proceedings showing the vote

of each member upon each question; or if absent or failing to vote, indicating such fact, and shall keep records of its examinations and other official actions, all of which shall immediately be filed in the office of the City and/or County Clerk and on due cause shown.

4. The Board of Adjustment shall make written findings of facts and conclusions of law giving the facts upon which it acted and its legal conclusions from such facts in reversing, affirming, or modifying any order, requirement, decision, or determination which comes before it under the provisions of this Ordinance.

5. The concurring vote of a majority of the members of the Board of Adjustment shall be sufficient to reverse any order, requirement, decision, or determination of the City of Arlington, City of Marysville, or Snohomish County Planners or decide in favor of the applicant on any matter upon which it is required to pass under this Ordinance, or to effect variation to this Ordinance.

SECTION X: APPEALS

1. Any person aggrieved, or any taxpayer affected, by any decision of the Joint Airport Zoning Board made in the administration of the Ordinance, may appeal to the Board of Adjustment.

2. All appeals hereunder must be taken within a reasonable time as provided by the rules of the Board of Adjustment, by filing with the Joint Airport Zoning Board a notice of appeal specifying the grounds thereof. The Joint Airport Zoning Board shall forthwith transmit to the Board of Adjustment all the papers constituting the record upon which the action appealed from was taken.

3. An appeal shall stay all proceedings in furtherance of the action appealed from unless the Joint Airport Zoning Board certifies to the Board of Adjustment, after the notice of appeal has been filed with it, that by reason of the facts stated in the certificate a stay would in the opinion of the Joint Airport Zoning Board cause imminent peril to life or property. In such case, proceedings shall not be stayed except by order of the Board of Adjustment on notice to the Joint Airport Zoning Board and on due cause shown.

4. The Board of Adjustment shall fix a reasonable time for hearing appeals, give public notice and due notice to the parties in interest, and decide the same within a reasonable time. Upon the hearing, any party may appear in person or by agent or by attorney.

5. The Board of Adjustment may, in conforming with the provisions of the

Ordinance, reverse or affirm in whole or in part, or modify the order, requirement, decision, or determination appealed from and may make such order, requirement, decision, or determination as may be appropriate under the circumstances.

SECTION XI: JUDICIAL REVIEW

Any person aggrieved, or any taxpayer affected, by any decision of the Board of Adjustment, may appeal to the District Court as provided in Washington Statutes.

SECTION XII: PENALTIES

Each violation of this Ordinance or of any regulation, order, or ruling promulgated hereunder shall constitute a misdemeanor and be punishable by a fine of not more than 500 dollars or imprisonment for not more than 1 year or both, or other remedies as allowed by law; and each day a violation continues to exist shall constitute a separate offense.

SECTION XIII: CONFLICTING REGULATIONS

Where there exists a conflict between any of the regulations or limitations prescribed in this Ordinance and any other regulations applicable to the same area, whether the conflict be with respect to the height of structures or trees, and the use of land, or any other matter, the more stringent limitation or requirement shall govern and prevail.

SECTION XIV: REPEAL

All prior Airport Zoning Ordinances relating to Arlington Municipal Airport are hereby repealed.

SECTION XV: SEVERABILITY

If any of the provisions of this Ordinance or the application thereof to any person or circumstance are held invalid, such invalidity shall not affect other provisions or applications of the Ordinance which can be given effect without the invalid provision or application, and to this end, the provisions of this Ordinance are declared to be severable.

SECTION XV: EFFECTIVE DATE

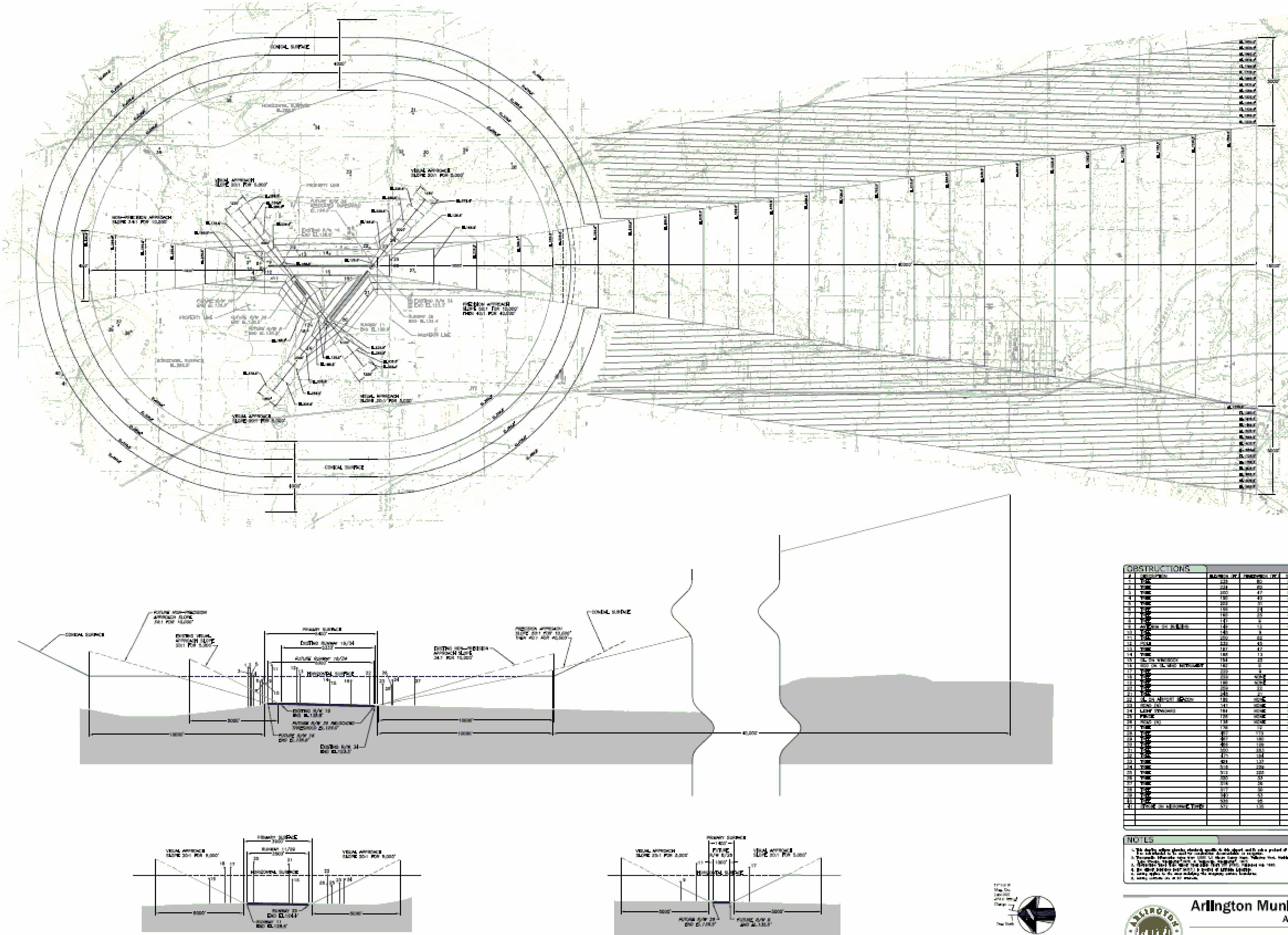
WHEREAS, the immediate operation of the provisions of this Ordinance is necessary for the preservation of the public health, public safety, and the general welfare, an EMERGENCY is hereby declared to exist, and this Ordinance shall be in full force and effect from and after its passage by the Joint Airport Zoning Board and publication and posting as required by law.

Adopted by the Joint Airport Zoning Board this day of , 2002.

ATTEST: For the Joint Airport Zoning Board:

_____ _____

Secretary Chairman



OBSTRUCTIONS

#	DESCRIPTION	ELEVATION (FT.)	PENETRATION (FT.)	SURFACE PENETRATED	DISPOSITION
1	TREE	225	50	R/W 16 APPROACH	REMOVED
2	TREE	224	60	R/W 16 APPROACH	REMOVED
3	TREE	200	47	R/W 16 APPROACH	REMOVED
4	TREE	190	43	R/W 16 APPROACH	REMOVED
5	TREE	203	31	TRANSITIONAL	REMOVED
6	TREE	186	24	R/W 16 APPROACH	REMOVED
7	TREE	190	25	R/W 16 APPROACH	REMOVED
8	TREE	117	9	PRIMARY	REMOVED
9	ANTENNA ON BUILDING	149	13	R/W 16 APPROACH	NONE
10	TREE	145	8	TRANSITIONAL	REMOVED
11	TREE	250	62	TRANSITIONAL	REMOVED
12	POLE	228	43	TRANSITIONAL	REMOVED
13	TREE	187	47	TRANSITIONAL	NONE
14	TREE	188	13	TRANSITIONAL	REMOVED
15	OL ON WINDSOCK	154	23	TRANSITIONAL	NONE
16	ROD ON OL WIND INDICATOR	162	6	TRANSITIONAL	NONE
17	TREE	220	8	TRANSITIONAL	REMOVED
18	TREE	230	NONE	TRANSITIONAL	REMOVED
19	TREE	180	NONE	R/W 11 APPROACH	REMOVED
20	TREE	250	22	TRANSITIONAL	REMOVED
21	TREE	240	21	TRANSITIONAL	REMOVED
22	OL ON AIRPORT BEACON	186	NONE	TRANSITIONAL	NONE
23	ROAD (X)	141	NONE	R/W 29 APPROACH	NONE
24	LIGHT STANDARD	164	NONE	R/W 29 APPROACH	NONE
25	FENCE	138	NONE	R/W 29 APPROACH	NONE
26	ROAD (X)	138	NONE	R/W 34 APPROACH	NONE
27	TREE	156	12	R/W 34 APPROACH	[illegible]
28	TREE	457	113	HORIZONTAL	NONE
29	TREE	467	180	HORIZONTAL	NONE
30	TREE	465	109	HORIZONTAL	NONE
31	TREE	560	253	HORIZONTAL	NONE
32	TREE	471	124	HORIZONTAL	NONE
33	TREE	481	127	HORIZONTAL	NONE
34	TREE	518	229	HORIZONTAL	NONE
35	TREE	512	208	HORIZONTAL	NONE
36	TREE	380	33	HORIZONTAL	NONE
37	TREE	315	26	HORIZONTAL	NONE
38	TREE	317	30	HORIZONTAL	NONE
39	TREE	350	53	HORIZONTAL	NONE
40	TREE	508	95	CONICAL	NONE
41	TREE ON MICROWAVE TOWER	572	135	CONICAL	NONE

NOTES

Arlington Municipal Airport
Arlington, Washington

Figure 1
Height Hazard Zoning Map

Barnard Dunkelberg & Company
Tulsa, Oklahoma

Appendix Three

SAMPLE AVIGATION EASEMENT

WHEREAS, _____, hereinafter called "Grantor", is the owner of that certain parcel of land situated in the City of _____, County of _____, State of _____, to wit:

hereinafter called "Grantor's Property", and outlined on the attached map.

NOW, THEREFORE, for good and valuable consideration to the Grantee the receipt and sufficiency of which is hereby specifically acknowledged, the Grantor, its successors and assigns, subject to the provisions herein contained, hereby grants, bargains, sells and conveys unto the City of Arlington, State of Washington, its successors and assigns, the Grantee, for use and benefit of the public, a perpetual easement and right-of-way over that portion of the Grantor's land described above, in the vicinity of Arlington Municipal Airport, for the purpose of the passage of all aircraft ("aircraft" being defined for the purpose of this instrument as any device now known or hereafter invented, used or designated for navigation of, or flight in the air) by whomsoever owned and operated in the air space to an infinite height above the surface of the Grantor's property, together with the right to cause in said air space noise, vibration and all other effects that may be caused by the operation of aircraft landing at or taking off from, or operated at, or on Arlington Municipal Airport, located in the City of Arlington, State of Washington; Grantor hereby waives, remises and releases any right or cause of action which Grantor has now, or which Grantor may have in the future against the Grantee, its successors and assigns, or Arlington Municipal Airport, due to such noise, vibration, and other effects that may be caused by the operation of aircraft landing and taking off from, or operating at or on Arlington Municipal Airport; the Grantor further grants that upon side property (A) no use shall be permitted that causes a discharge into the air of fumes, smoke or dust which will obstruct visibility and adversely affect the operation of aircraft or cause any interference with navigational facilities necessary to aircraft operation and (B) no development or construction shall be permitted which will interfere in any way with the safe operation of aircraft in the air space over the land described herein or at or on the Arlington Municipal Airport.

To have and to hold said easement and right-of-way and all rights appertaining hereto unto the Grantee, its successors and assigns, until the Arlington Municipal Airport shall be abandoned and shall cease to be used for airport purposes. It is specifically understood and agreed that this easement, its covenants and agreements shall run with the land, which is described herein. The Grantor, on behalf of itself, its successors and assigns, further acknowledges that the easements herein granted contemplate and include all existing and future operations at Arlington Municipal Airport, acknowledging that future aircraft numbers and types will most likely increase and noise patterns may also increase, in that the rights, obligations and covenants herein set forth shall not terminate or vary in the event of changes in the flight volume or noise, traffic patterns, runway lengths or locations or characteristics or type or category of aircraft using the Arlington Municipal Airport, City of Arlington, State of Washington.

_____

Owner

ACKNOWLEDGMENT

STATE OF _____)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me by _____

_____ this _____

day of _____.

Witness My Hand and Official Seal.

_____

Notary Public

My Commission Expires: _____

SAMPLE FAIR DISCLOSURE STATMENT

A disclosure statement, as defined below, shall be provided to and signed by each potential purchaser of property within the specified zones as defined on the Airport Land Use Overlay Districts map. The signed statement will then be affixed by the Seller to the agreement of the sale.

The tract of land situated at _____
in _____ consisting of approximately _____ acres, which is being conveyed from _____ _____ to _____ _____ lies within _____ miles of (airport name) may be subjected to varying noise levels, as the same is shown and depicted on the official zoning maps.

CERTIFICATION

The undersigned purchaser(s) of said tract of land certify (ies) that he (they) has (have) read the above disclosure statement and acknowledge (s) the pre-existence of the airport named above and the noise exposure due to the operation of said airport.

_____

(Signed)

Appendix Four

(NWEAA Arlington Fly-In Long Range Land Use Plan May 2000 to be included in Final Report)

Rob Putnam
Arlington Airport
18204 59th Ave NE
Arlington WA, 98223

Dear Rob,

Since 1969 the Arlington EAA Fly-In has grown from a one-day to a three-day to its present five-day event. With a mission to:

"…promote aviation by sponsoring an annual aviation convention and other activities that will provide aviation education to the people in the Pacific Northwest."

The general aviation community has responded to this offering. In the last 10 years the event has experienced a roughly 12 to 15% per year growth rate. This has moved our organization into an active role of utilizing resources and managing the growth to ensure long-term success.

This past July, the 2001 Arlington EAA Fly-In hosted 54,000 people and recorded over 6,430 aircraft movements. We registered 1317 aircraft at the event and presented over 140 educational forums, on a wide range of topics that include aviation safety, heritage programs, technology and future programs to benefit general and recreational aviation.

The Snohomish County Tourism Bureau has recognized the significant economic impact of the Arlington EAA Fly-In crediting Fly-In attendees with a $2 million direct spending impact. The indirect spending impact is measurably higher.

While the City, County & State benefit from the tax revenue and the businesses benefit from sales of products and services, one of the most important benefits is to community based non-profit organizations who have received over $100,000 in donations in the last six years as a result of this event.

What began as a few pilots getting together before their annual trek to the Abbotsford Air Fair has through evolution and organization become the third largest recreation aviation event in the US. Which for one week every July becomes the center of aviation activity in the Northwest.

The future of the Arlington EAA Fly-In and it's ability to fulfill it's educational based mission is dependant on our relationship with the Arlington Airport and the assurances that the area needed to host this worthwhile activity is available. The current revision to the Arlington Airport Master Plan shows the Fly-In use areas and includes areas for future growth. The Board of the NW EAA Fly-In reviewed the maps at it's annual meeting in October, and feels encouraged the Master Plan Update takes into consideration the future growth and potential of the event and organization.

The Fly-In Board of Directors is focusing energy on managing growth and planning the future potential for the event, based on the growth factors of the past 10 years, the support of the local community and the regional agencies, general aviation in the Northwest will be well served.

Barbara Tolbert
Executive Director

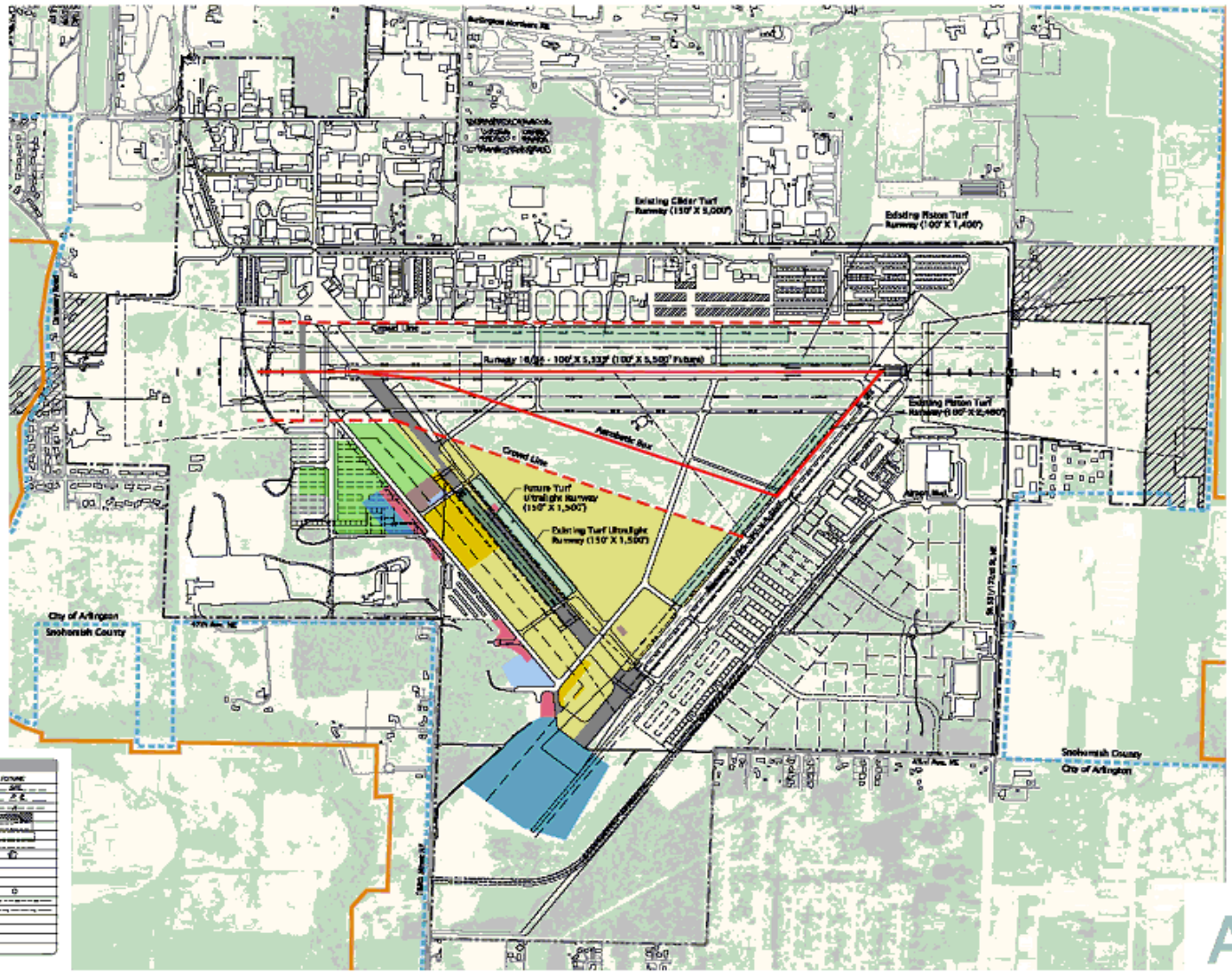


Figure D1 Existing EAA Fly-In Development Area Boundaries

Arlington Municipal Airport
Airport Layout Plan Update

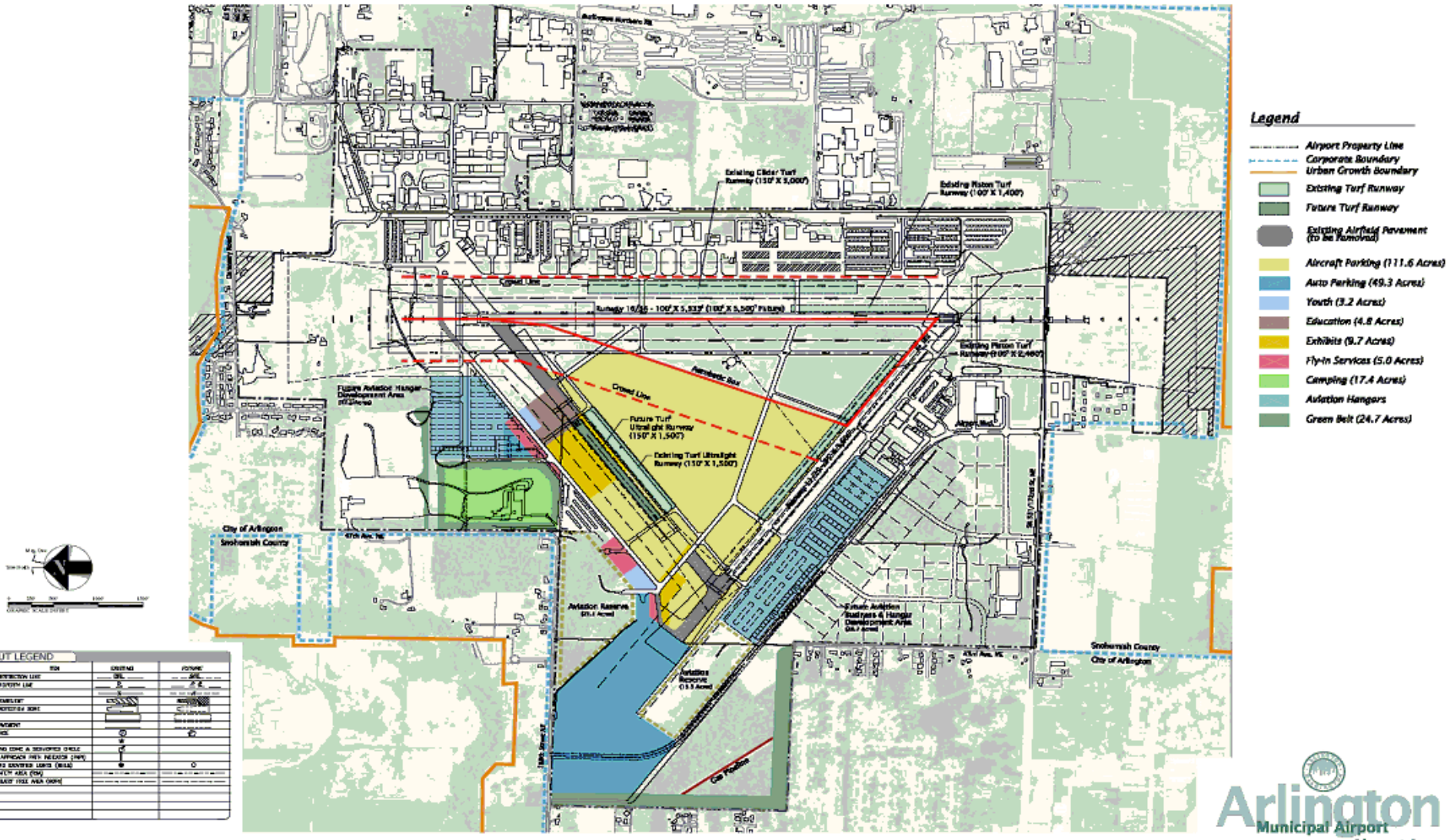


Figure D2 Future EAA Fly-In Development Area Boundaries