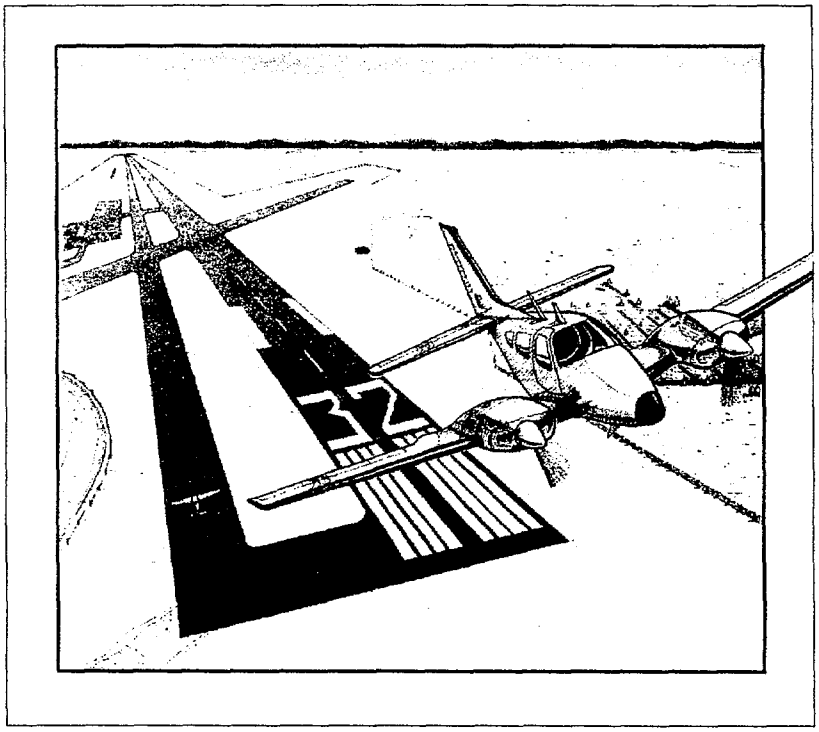
Chapter Four
FACILITY REQUIREMENTS



Chapter Four
FACILITY REQUIREMENTS

In order to properly plan for the future needs of St. Johns Industrial Air Park, it is necessary to translate the projected aviation demands into specific types and quantities of facilities that will be required to serve these needs.

This chapter uses the results of the aviation demand forecasts developed in the previous chapter to determine the future airport facility requirements. Established planning criteria have been applied to the various demand parameters to determine the specific facility requirements for the airfield, as well as the general aviation terminal areas of the airport.

The Facility Requirements Chapter is intended to identify in general terms the deficiencies in existing facilities and outline what new facilities will be needed to accommodate forecast demands. Once these facility requirements are clearly established, alternatives for providing these facilities can be evaluated in the next chapter to determine the most efficient and cost-effective means of achieving the Master Plan objectives.

AIRSIDE FACILITY REQUIREMENTS

Airside facility requirements include those facilities directly related to the arrival and departure of aircraft:

- Runways
- Taxiways
- Airfield Instrumentation and Lighting

The selection of the appropriate FAA design standard for the development of airfield facilities is based primarily upon

the characteristics of the most demanding aircraft expected to use the airport. The most critical characteristics are the approach speed and the wingspan of the critical aircraft anticipated to use the airport both today and in the future. The planning for future aircraft use is particularly important because design standards are used to plan separation distances between facilities that could be extremely costly to relocate at a later date.

According to 'Airport Design,' FAA Advisory Circular 150/5300-13, aircraft are grouped into five categories based upon their certificated approach speed. These categories range from Category A for slower single engine piston aircraft, to Category E for supersonic jet aircraft. The predominant aircraft using St. Johns Industrial Air Park today, fall into Categories A and B (approach speeds less than 121 knots).

The same advisory circular also defines six Airplane Design Groups (ADG's) according to the physical size of the aircraft. The airplane's wingspan is the principal characteristic affecting design standards. Airplane Design Groups range from Group I for small aircraft with wingspans less than 49 feet to Group VI for the largest cargo aircraft. The majority of aircraft using St. Johns Industrial Air Park fit into Groups I and II (wingspans less than 79 feet).

St. Johns Industrial Air Park is classified by the FAA in its *National Plan of Integrated Airport Systems (NPIAS)* as a General Aviation Airport. The design classification, the forecast activity at the airport, and the growth of the region clearly indicates the need to develop airport facilities beyond their current capabilities.

The forecasts of future aviation activity at St. Johns Industrial Air Park indicate that the airport should continue to be planned as a *General Aviation* airport, however, additional facilities will be necessary to accommodate more and possibly larger aircraft in the future.

In planning the future of St. Johns Industrial Air Park, the widest possible range of operating requirements and capabilities have been retained. This will provide maximum flexibility to develop the airport beyond the projected needs and the ability to respond to unforeseen events. This "built-in" flexibility can be achieved without sacrificing utility or economy, or over designing airfield facilities. However, it should be noted that external factors yet to be considered may impose physical, technical, or economic constraints on the recommended airport development.

In accordance with the FAA design criteria established in 'Airport Design,' St. Johns Industrial Air Park will be designed to accommodate aircraft in Airplane Design Group II (ADG II) which includes aircraft with wingspans up to 79 feet and Approach Category B which includes aircraft with landing approach speeds of less than 121 knots.

Airport design specifications are more specifically determined by analyzing the aircraft mix and determining the most demanding airplane(s) to be accommodated. Although one aircraft may determine runway length, another may define runway pavement strength or other appropriate design parameter. The following paragraphs detail the criteria used to establish airfield dimensions, capabilities, and requirements.

RUNWAYS

The adequacy of the existing runway system was analyzed from a number of perspectives including runway orientation, runway length, and pavement strength. From the prevailing local conditions and the forecast of aviation activity, the requirements for runway improvements were determined for St. Johns Industrial Air Park.

Runway Orientation

The existing runway system at St. Johns Industrial Air Park consists of a paved runway aligned generally northeast/ southwest (Runway 3-21) and a paved runway aligned northwest/southeast (Runway 14-32). As a general rule, the primary runway is oriented, as closely as practical, in the direction of the prevailing winds. It is most desirable for aircraft to land directly into the wind whenever possible. This reduces the amount of runway required to stop the airplane and eliminates undesirable crosswinds. Aircraft are able to operate within a reasonable margin of safety as long as the crosswinds do not become excessive.

Crosswinds can be broken down into two components; a component parallel to the runway, and a component perpendicular to the runway. For planning and design purposes, crosswinds are considered excessive when the component of the winds perpendicular to the runway (crosswind) exceeds 15 miles per hour (13 knots) for aircraft over 12,500 pounds gross takeoff weight and at 12 miles per hour (10.5 knots) for smaller aircraft.

Federal Aviation Administration planning standards indicate that an airport should be planned with the capability to operate under year round wind conditions at least 95 percent of the time. This can often require more than a single runway depending on the wind patterns in the local area.

An analysis of historical wind data for 1989 at St. Johns Industrial Air Park indicates that Runway 14-32 provides 81.4% and 89.8% coverage for 12 and 15 mph crosswind components, respectively. Runway 3-21 provides coverage of 91.1 percent for 12 mph and 96.7 percent for 15 mph winds. Neither of the existing runways individually can provide satisfactory crosswind coverage, however, these two runways combined provide 96.4 and 98.9 percent crosswind coverage for 12 and 15 mph crosswinds, respectively. The stronger winds are predominantly out of the south and would favor the use of Runway 14 or Runway 21. *Table 4.1* presents the data that these crosswind coverages are based upon.

Runway Length

The ultimate runway length will determine the types of aircraft that will be able to operate at St. Johns Industrial Air Park. Runway length requirements are based upon four primary factors:

- The types of aircraft expected to use the runway.
- The mean maximum daily temperature of the hottest month.
- The airport elevation.
- The effective runway gradient.

Table 4.1
Wind Data
St. Johns Industrial Air Park (1989)

Direction Speed	Calm	1-3	4-6	7-10	11-16	17-21	22-27	28-33	34-40	41	Tota
10			.07	.17	.07	.05					.37
20			.22	.22	.17	.07	.02				.72
30		.07	.25	.27	.07						.67
40		.02	.20	.22	.05	.05					.55
50			.12	.12	.02		.02				.30
60			.10	.15	.05	.02	.05		.02		.40
70			.05	.07	.05						.17
80			.10	.12	.02						.25
90			.12	.02	.02	.02					.20
100			.07	.07	.07		.02				.25
110			.02	.07							.10
120			.12	.07	.05			.02			.27
130		.02	.12	.05		.02	.02	.02			.27
140			.10	.12	.12	.05					.40
150			.15	.27	.10	.12					.65
160		.02	.10	.87	.40	.25	.02	.05			1.72
170		.02	.20	1.52	.65	.55	.22	.17	.10	.0	3.49
180			.42	1.97	1.84	1.32	.55	.35	.35	.0	6.85
190			.17	1.17	1.00	.55	.30	.20	.20	.0	3.66
200		.02	.32	.97	.87	.55	.20	.10	.05	.0	3.11
210			.20	.70	.52	.32	.12	.05	.05		1.97
220			.17	.32	.30	.12	.05		.02		1.00
230			.17	.52	.07	.02	.02	.05			.87
240		.02	.42	.42	.15	.05	.02				1.10
250		.02	.15	.20	.12		.02				.52
260		.02	.20	.30				.02			.55
270		.02		.10	.02						.15
280		.05	.12	.20	.02						.40
290			.20	.20	.07	.02					.50
300			.32	.40	.25	.07		.07			1.12
310			.15	.35	.07						.57
320		.05	.37	.32	.07	.02	.02				.87
330			.55	.60	.07	.02	.02				1.27
340		.05	.35	.75	.25	.05					1.44
350		.10	.52	.87	.12	.07					1.69
360	58.37	.10	.77	1.64	.45	.25					3.21
TOTAL	**58.37**	**.65**	**7.74**	**16.46**	**8.24**	**4.68**	**1.74**	**1.12**	**.80**	**.2**	**100.**

Note: Data adjusted to construct a 24 hour wind rose from daily (8:00 am to 5:00 pm) wind observation records. Totals may not add due to rounding.

At St. Johns Industrial Air Park, the mean maximum daily temperature of the hottest month (July) is 91 degrees Fahrenheit and the airport elevation is 5,733 feet above mean sea level (MSL). Runway 14-32 has an effective runway gradient of 0.038 percent sloping downward to the northwest and Runway 3-21 has an effective runway gradient of 0.235 percent sloping downward to the northeast.

Given the above conditions of climate and topography, runway lengths can be calculated for various types and groupings of aircraft. According to FAA standards, the existing runway length of 5,323 feet for Runway 14-32 serves over 75% of the small aircraft fleet and the runway length of Runway 3-21 of 3,400 feet serves less than 75% of the small aircraft fleet.

The standard runway lengths for the various categories of runways are shown in *Table 4.2.* Runway lengths for crosswind runways should be at least 80 percent of the primary runway length.

Runway length requirements for runways intended to serve large airplanes are not only determined by the previously mentioned climatological factors, but are also based on the percentage of the fleet the runway is expected to accommodate. The fleet percentage values are based on groupings of aircraft weighing less than 60,000 pounds.

Additionally, the loading conditions (the percentage of useful load) under which these aircraft are expected to operate greatly influences the amount of runway required to operate safely from the airport. *Table 4.2* also illustrates the standard runway length requirements for St. Johns Industrial Air Park in order to accommodate various segments of the business jet or turboprop fleet under standard loading conditions.

Comparing the standard runway length requirements for the general aviation fleet, it is apparent that 7,200 feet of runway length should be provided to fully accommodate the widest possible range of general aviation demands. A 7,200-foot runway could accommodate 100 percent of the small general aviation fleet and 75 percent of the large aircraft fleet operating up to approximately 50 percent useful load.

While the entire 7,200 feet of runway length may not be required immediately, the existing 5,323 feet is inadequate to accommodate certain small aircraft currently operating at St. John's Industrial Park under high temperature conditions. When aircraft are operating at less than maximum gross weight and/or during lower temperatures, less runway length is required. *Table 4.2* presents runway length requirements which are based on aircraft operating at maximum gross takeoff weights at the mean maximum temperature of the hottest month.

Based on the data contained in *Table 4.2* a minimum of 5,050 feet of runway should be provided at St. Johns Industrial Air Park. The optimum runway length of 7,200 feet should ultimately be provided, when business jet activity reaches approximately ten percent of annual operations.

Table 4.2
Runway Length Requirements
St. Johns Industrial Air Park

Small Aircraft Runways	Runway Length
75 Percent of Small Airplanes	5,050 ft.
95 Percent of Small Airplanes	7,160 ft.
100 Percent of Small Airplanes	7,160 ft.
100 Percent of Small Airplanes - 10 or more Passengers	7,160 ft.

Large Aircraft Runways		
Percent of Jet Fleet	Percent of Useful Load	Runway Length
75	60	7,550 ft.
75	90	9,100 ft.
100	60	11,500 ft.
100	90	11,500 ft.

Runway Width
Runway width requirements are determined based on a combination of aircraft wingspan and approach speed, and runway visibility minimums. Runways intended to serve aircraft in ADG I, and approach categories A & B with visual or nonprecesion instrument approaches with visibility minimums not lower than 3/4-statute mile should be a minimum of 60 feet wide.

Runways intended to serve ADG II aircraft, Approach Category C or D, or have instrument approach minimums lower than 3/4-statue mile should be at least 75 feet wide. Both runways at St. John's Industrial Air Park should be planned to be 75 feet wide to accommodate ADG II and Approach Category B aircraft.

Runway Pavement Strength
Although a recent pavement report indicates that both runways at St. Johns Industrial Air Park have a weight bearing capacity for aircraft greater than 12,500 pounds, the runways have an actual rated pavement strength of 12,500 pounds Single Wheel (SWL). A 12,500 pound pavement strength permits unlimited use by small aircraft and occasional use by large aircraft. The ultimate recommended pavement strength for the runways at St. Johns Industrial Air Park s is 12,500 pounds (SWL).

TAXIWAYS

Taxiways are constructed primarily to facilitate aircraft movement between the runway system and the terminal area. Some taxiways are necessary simply to provide access between the parking apron and runways, whereas others become necessary as activity increases to relieve traffic congestion and provide more efficient circulation around the airfield.

Each runway should have a full length parallel taxiway situated so as to minimize taxiway distances and runway crossings. Taxiways should also provide the most direct route from the terminal area to the runway in use.

In addition, there should also be a sufficient number of exit taxiways to minimize runway occupancy times. These exit taxiways should be strategically located along the runway for the types of aircraft expected to use the runway. Taxiways that will serve ADG II aircraft should be a minimum of 35 feet wide. Taxiways should be designed to have the same pavement strengths of the runway they serve.

Taxiways designed to serve only small general aviation aircraft in ADG I can be reduced to 25 feet in width. Taxiways used exclusively by small aircraft should have a minimum pavement strength of 12,500 pounds (SWL).

Taxiways A and B (parallel to runways), as well as associated connecting taxiways, should be maintained at 35 feet in width at St. Johns Industrial Air Park.

AIRFIELD INSTRUMENTATION AND LIGHTING

Navigation aids provide two primary services to airport operations; precision guidance to a specific runway; or nonprecision guidance to a runway or the airport itself.

The basic difference between a precision and nonprecision navigational aid is that the former provides electronic descent, alignment (course), and position guidance while the nonprecision navigational aid provides only alignment and position information. The necessity of such equipment is usually determined by design standards predicated on safety considerations and operational needs. The type, purpose and volume of aviation activity expected at the airport are factors in the determination of the eligibility of the airport for navigational aids.

Airport and runway navigational aid requirements are based upon FAA recommendations as described in Airway Planning Standards Number One, DOT/FAA Handbook 7031.2B, and 'Airport Design.'

The existing navigational aid (NAVAID) for St. Johns Industrial Air Park is a Very High Frequency Omni-Directional Range (VOR) located southeast of the airport. The VOR is used for both en route and terminal navigation.

An instrument approach procedure has been established that uses this NAVAID as the basis for navigation. The VOR-A approach is a nonprecision circling approach to the airport from the southeast. This approach procedure provides visibility as low as 1 statute mile.

As aviation activity increases and Global Positioning System (GPS) technology continues to be implemented in general aviation, instrument approaches to runways may be improved to provide additional capabilities and safety during IFR conditions. In the future, a nonprecision instrument approach aid capable of providing a straight-in approach procedure should be provided.

Visual approach glide path indicator lights are a system of lights which provide visual

descent guidance information during an approach to the runway. Currently only Runway 14-32 is equipped with Precision Approach Path Indicators (PAPI). PAPI's, or other approved visual approach aids, should be planned for the approach end of all runways.

Runway End Identifier Lights (REIL) are installed to provide rapid and positive identification of the approach end (threshold) of a runway. REIL's are typically installed on instrument runways or runways that need a highly conspicuous means of identification due to a complex environment. Currently, only Runway 32 at St. Johns Industrial Air Park is equipped with REIL. REIL's should also be installed on Runway 14.

The existing runway and taxiway lighting systems at St. Johns Industrial Air Park are limited to Medium Intensity Runway Edge Lighting (MIRL) on Runway 14-32. This lighting system is recommended for all visual and nonprecision instrument runways intended to be used at night or during low light or visibility conditions. Ultimately, Runways 3-21 should also be equipped with MIRL.

Medium Intensity Taxiway Edge Lights (MITL) should ultimately be installed on all taxiways. Installation of reflective edge markers along all sections of unlighted pavement is recommended as a low cost interim measure prior to installation of edge lights. These reflective markers will improve the safety of nighttime aircraft movements on the airport and help eliminate inadvertent taxiing off of paved surfaces.

LANDSIDE FACILITY REQUIREMENTS

Components of the general aviation landside complex include the following types of facilities:

- Hangars
- Parking Apron
- Terminal Building
- Automobile Parking
- Fuel Storage
- Utilities

The capacities and capabilities of the various components of the existing terminal area are examined in relation to projected demand to identify future landside facility needs.

HANGARS

The demand for hangar facilities is dependent upon the number and types of aircraft expected to be based at the airport. Actual percentages of based aircraft desiring hangar facilities will vary across the country as a function of local climatic conditions, airport security, and owner preferences. This percentage will also vary with value and sophistication of the aircraft, and will typically range anywhere from 30 to 80 percent of based aircraft.

Hangar facilities are generally classified as conventional hangars, T-hangars, or shades. These different types of hangar facilities offer varying degrees of privacy, security, and protection from the elements. The existing hangar facilities at St. Johns Industrial Air Park are of the T-hangar type (4 spaces) and small Box hangars (2 structures) and are currently occupied. St.

Johns Industrial Air Park currently has 10 based aircraft and 6 aircraft are currently stored in hangars. The existing hangars are old, in poor condition and located in a remote area of the airport. Due to the wide range of climatic conditions that occur in the St. Johns area, which are frequently severe, a majority of aircraft owners are expected to desire hangar space.

For planning purposes, it was assumed that 50 percent of the single engine, and 100 percent of the twin-engine, helicopters, and turbine-powered aircraft would desire hangar storage. Further, it was assumed that all individual aircraft storage would occur in T-hangars or small private hangars. Space for several of the based aircraft will also be provided for in conventional maintenance hangar capacity. This maintenance hangar area will be in addition to the individual hangar facilities, and can often be provided by an FBO.

Table 4.3 outlines the projected hangar requirements throughout the planning period. A planning standard of 1,250 square feet per aircraft was used for individual hangar storage. Space requirements for conventional hangar storage are based upon 1,000 square feet for piston and rotor aircraft and 2,000 square feet for turbine powered aircraft. In addition, hangar service area is estimated at 15 percent of the total hangar storage area available. Additional conventional and T-hangar facilities will be required throughout the planning period.

Table 4.3
Hangar Facilities
St. Johns Industrial Air Park

	Existing	2000	2005	2010	2015
Based Aircraft:	**10**	**14**	**18**	**22**	**25**
Single Engine	10	14	16	19	21
Multi-Engine	0	0	1	2	2
Helos & Turbine	0	0	1	1	2
Aircraft to be Hangared:	**6**	**7**	**10**	**13**	**15**
Single Engine	6	7	8	10	11
Multi-Engine	0	0	1	2	2
Helos & Turbine	0	0	1	1	2

AIRCRAFT PARKING APRON

Adequate aircraft parking apron should be provided to accommodate those local aircraft not stored in hangars as well as all transient aircraft under most conditions. At St. Johns Industrial Air Park, apron and tiedowns for both local and transient aircraft are colocated on the existing apron.

Transient aircraft parking should be located nearest the terminal building and fuel facilities for convenience and service, while local parking may be located further away. Local and transient parking areas may be contiguous but should not be mixed, particularly when activity increases.

Transient parking requirements can be determined from a knowledge of busy-day operations. The number of transient spaces required at St. Johns Industrial Air Park was determined to be about 25 percent of the busy-day itinerant operations. A planning criterion of 300 square yards per based aircraft and 360 square yards per transient aircraft was used for the apron space requirements presented in *Table 4.4.* The analysis indicates a need for additional transient parking apron throughout the planning period.

Of the 40 aircrafts currently available at St. Johns Industrial Air Park, ten (10) are considered local aircraft parking and the remaining thirty (30) are for transient aircraft parking. Currently, only four (4) of the ten (10) based aircraft require apron parking. In 2015, a total of ten (10) of the twenty-five (25) forecast based aircraft will require apron parking. Therefore, based aircraft parking should be adequate through the planning period. Since there are currently thirty (30) tiedowns allocated for transient parking, the 2015 forecast of twenty-six (26) transient aircraft tiedowns needed will also be accommodated.

TERMINAL BUILDING

General aviation terminal buildings serve several functions. Space is required for administrative and management offices, pilot's lounge and flight planning area, meeting facilities, food services, storage rooms, restrooms and various other needs. This space is not necessarily limited to a single building. In the case of St. Johns Industrial Air Park, all of these facilities and services are currently being provided in the existing terminal building.

The methodology utilized to examine terminal building capacity generally relates square footage requirements for terminal facilities based on the number of design hour general aviation pilots and passengers. Space requirements were determined using 100 square feet per design hour pilot and passenger. *Table 4.5* outlines the terminal space requirements for terminal facilities at St. Johns Industrial Air Park during the planning period. Terminal facilities and services may be provided in more than one location, and by more than one provider.

Table 4.4
Aircraft Parking Apron Requirements
St. Johns Industrial Air Park

		Demand				
	Capacity	Existing	2000	2005	2010	2015
Local Apron:						
Local Parking Positions/ Non-hangared Aircraft	*10*	4	7	8	9	10
Tiedown/Apron Area (s.y.)	*3,730*	1,200	2,100	2,400	2,700	3,000
Transient Ramp:						
Busy-Day Itinerant Operations	*120*	48	64	78	90	104
Transient Parking Positions	*30*	12	16	19	22	26
Tiedown/Apron Area (s.y.)	*13,210*	10,800	5,760	6,840	7,920	9,360

Table 4.5
General Aviation Terminal Building
St. Johns Industrial Air Park

		Demand				
	Capacity	Existing	2000	2005	2010	2015
Design Hour Passengers	*15*	5	7	8	10	11
Calculated Terminal Area by Design Hour Passengers (s.f.)	*1,500*	500	700	800	1,000	1,100
Total Minimum Terminal Area (s.f.)	*1,500*	1,500	1,500	1,500	1,500	1,500

Although terminal space requirements are usually based on a square footage per passenger basis, certain minimum facilities must be provided regardless of passenger volume. Due to the relatively small passenger volume at St. Johns Industrial Air Park, the per passenger demand figures in *Table 4.5* do not reflect reasonable space requirements until late in the planning period. A minimum general aviation terminal building capable of accommodating all necessary facilities and services, regardless of how small the passenger volumes, should consist of at least 1,500 square feet.

Various services and facilities can be provided in multiple structures by private and public sources, however, duplication of required facilities may make this undesirable. Therefore, public and private development must be closely coordinated to

provide the necessary facilities without over building.

AUTOMOBILE PARKING

The requirements for short term (daily) public vehicle parking may also be determined as a function of the design hour pilots and passengers. The total number of parking positions are usually projected on the basis of 1.3 spaces per design hour passenger and 350 square feet per parking space.

Table 4.6 reflects parking facilities that are currently available and those that will be required in the future. Presently, there is approximately 5,000 square feet of unpaved parking area available which is capable of parking up to fourteen (14) vehicles. In the future, all subsequent landside development should provide adequate parking for its operations. These parking areas may be provided individually or in common with the other development depending on there proximity.

Table 4.6
General Aviation Auto Parking Requirements
St. Johns Industrial Air Park

		Demand				
	Capacity	Existing	2000	2005	2010	2015
Design Hour Passengers	*11*	5	7	8	10	11
Total Auto Parking	*14*	7	9	10	13	14
Auto Parking Area (s.f.)	*5,000*	2,450	3,150	3,500	4,550	4,900

FUEL STORAGE

The aircraft fuel storage facilities on the airport currently consist of two 10,000 gallon and one 5,000 gallon above ground tanks. These tanks are used for three grades of fuel. One tank is used to store Jet A fuel for turbine powered aircraft, one is used to store 100 Low Lead aviation grade fuel for piston powered aircraft and the third is used to store automotive grade fuel for airport vehicles.

Fuel consumption is directly related to the operational activity at an airport. General aviation fuel storage requirements typically average approximately 5.0 gallons per operation. Fuel storage capacity was calculated based on provision of a two-week supply of fuel during the peak month of activity. These requirements are shown in *Table 4.7*. The table shows fuel storage should be adequate during the planning period. At the current rate of consumption, there is capacity to store more than a 30 day supply of fuel. This level of storage capacity will lessen the effect of spot

shortages or allow the airport to take advantage of price fluctuations. At a minimum, at least a 10,000 gallon storage capacity of each grade of fuel should be provided to eliminate partial fuel deliveries and excess freight costs.

Table 4.7
General Aviation Fuel Storage Requirements
St. Johns Industrial Air Park

		Demand				
	Capacity	Existing	2000	2005	2010	2015
One-half (2 weeks) of						
Peak Month Operations	*5,000*	900	1,260	1,620	1,980	2,250
Gallons/Operation	*5.0*	5.0	5.0	5.0	5.0	5.0
Fuel Storage (gals)	*25,000*	4,500	6,300	8,100	9,900	11,250

UTILITIES

The existing water and waste waster systems were examined for their capacity to meet the long term demands of the airport. Domestic water is supplied by the City of St. Johns Water Department and sewage collection and treatment is accomplished through a combination of sanitary sewer and septic tank. The terminal building is connected to a City of St. Johns sewer line while other buildings on the airport are served by septic systems.

The existing sewer system is adequate to serve the existing and future needs of the terminal area. There is an eight inch sewer line that extends from the terminal building along the entrance road and connects with the main sewer line along 13th West Street.

The existing water system is a six inch water main that supplies water to the terminal building. The City water system and this service line has adequate capacity to meet current demands and future development requirements. However, the existing water system dead ends at the terminal building and should ultimately be looped to provide consistent pressure and continuous service as development occurs on the airport.

Electrical service is provided by Navapache Electric Cooperative. Information on specific power service capacities and facilities were not available, but given the relatively small power requirements of the airport, current capacity appears to be adequate. Future power requirements for the airport will not significantly increase power demands and no electrical system improvements will be necessary for airport

purposes. However, other development in the industrial park could significantly increase power demands or change the types of power service. The potential industrial developments and their possible power requirements are not possible to predict.

Telephone service is provided by GTE Communications. Discussions with GTE representatives revealed that existing telephone facilities are more than adequate to meet all existing and anticipated future service requirements.

SUMMARY

As aviation activity increases in the St. Johns and White Mountain Area certain airport facilities will need to be improved or expanded. Several deficiencies have been identified in some of the facilities currently available at the airport. Principal among these is the need for additional runway length, aircraft storage hangars, and FBO facilities. The existing deficiencies will become more prominent in the future as activity at the airport increases. Therefore, measures must be taken to alleviate these deficiencies and accommodate future aviation activity.

The recommended development will not only improve or correct existing deficiencies, but also provide the modern and efficient facilities necessary to attract and encourage additional development and services. The next step in the master planning process is to analyze various alternatives capable of providing the necessary facilities.

Chapter Five will examine several alternatives, assess their relative strengths and weaknesses, and recommend a development plan for the future of St. Johns Industrial Air Park.

Summary Table of Facility Requirements
St. Johns Industrial Air Park

		Percent to Serve Small Airplanes			
		Existing	75%	95%	100%
Runway Length	*Feet*	5,323	7,160	7,160	7,160

		Existing	Future
Runway Instrumentation			
PAPIs	*Runway*	14-32	all approach ends
VOR		yes	VOR-A
REILs	*Runway*	32	add to Runway 14
MIRL	*Runway*	14-32	3-21
MITL			Should be installed on all taxiways and reflective edge markers along all unlighted pavement

		Existing	2000	2005	2010	2015
Hangars						
T-Hangars	*Spaces*	4	7	11	16	21
Box Hangars	*Structures*	2	5	11	19	28
Aircraft Parking/Apron						
Local Apron	*Positions*	4	7	8	9	10
Transient Ramp	*Positions*	12	16	19	22	26
Total Parking Positions		16	23	27	31	36
Terminal Building Area	*Sq. Feet*	1,500	1,500	1,500	1,500	1,500
Auto Parking	*Positions*	7	9	10	13	14
Fuel Storage	*Gallons*	4,500	6,300	8,100	9,900	11,250