YAKIMA AIR TERMINAL
McALLISTER FIELD

2003 Airport Layout Plan Update

Including Master Plan Supplements

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Executive Summary

In order to provide for the future development of the Yakima Air Terminal, the Airport Board for the City and County of Yakima directed the preparation of an update to the airport master plan, which was completed in 1996. The study was designed to examine the existing conditions at the airport, forecast aviation related growth and future requirements over a 20 year period, analyze alternative ways of meeting forecast needs, select a recommended plan for implementation, and develop and analyze the cost of a phased capital development program.

In 2000, the Airport Board authorized an update to the 1996 plan to project the Airport's goals, objectives and expectations for an update of the Airport Layout Plan (ALP) including development of a Capital Investment and Implementation Plan (Financial Plan) and supplemental information for inclusion into the Airport Master Plan.

The ALP is a key document which the Airport wishes to be kept current, reflecting changes in physical features on the airport and critical land use changes on and in the vicinity of the airport which may affect the navigable airspace or the ability of the airport to expand.

The ALP serves as a public document which is a record of aeronautical requirements, both present and future, and as a reference for community deliberations on land use proposals, budget and resource planning.

Along with updating the ALP maps, the update process provides supplemental information for inclusion into the current Airport Master Plan document. It is not the intent to replace the Master Plan, only to supplement certain sections of the document to show current trends in the development of the airport.

Master Plan Adoption

It is important to define what adoption of the Master Plan means to Yakima and surrounding communities. Adoption of the Master Plan Update does not mean that all recommended projects will immediately be implemented or expanded without justifiable demand, nor does it mean industrial development will occur without appropriate environmental safeguards and community participation.

Adoption of the Master Plan does mean that the greater Yakima community will have a long term planning process for developing adequate transportation services and facilities. It means that the Yakima Air Terminal will have the necessary authority by law under the FAA to qualify for federal funding. It allows the Air Terminal to proceed with environmental land use planning requirements including the Washington State Growth Management Act, the Washington State Environmental Protection Act (SEPA) and the National Environmental Protection Act (NEPA). Finally, adoption of the Master Plan guarantees tax payers that the Yakima Air Terminal will have an effective operating plan approved under the FAA which provides for a safe, environmentally sound and economically viable air transportation facility and services.

Background

The aviation needs of the Yakima area are primarily being met by the Yakima Air Terminal. The Yakima Air Terminal provides the area's scheduled passenger traffic, limited air cargo services, air taxi charter operations, and much of the general aviation services. The Yakima Air Terminal has also served as the site for the US Customs Port of Entry for Central Washington, the Central Washington Foreign Trade Zone, and the Central Washington Trade Center.

The Yakima Valley is commonly ranked as either the fifth or sixth largest agricultural producing region in the world, and is rich in natural resources including agriculture, water, timber, and recreational areas for tourism.

In the 1990s, the City and County of Yakima worked closely with Kittitas County, Klickitat County, the Yakima Indian Nation, Grandview, Sunnyside and surrounding Central Washington communities to embark on a program to foster trade and investment opportunities in the global market place with the goal of creating new jobs and improving the quality of life in the Valley.

An important part of this program was related to development of the airport into a multiple use complex, with appropriate support facilities, and development of the necessary infrastructure to support expanded freight and passenger service. Developing the Airport's facilities to support this role is considered a high priority by the community.

The primary objectives of the 1996 airport master plan study update were to determine the potential demand for expanded passenger and freight activity, to identify future facilities that would be needed to accommodate these activities, and provide a realistic strategy on how to implement the necessary development program should expanded passenger and freight activity become a reality.

While the airport continues to support the Foreign Trade Zone and User Fee Customs Port of Entry to promote air freight and community development, the FTZ was temporarily deactivated due to the financial burden of maintaining Customs. When sufficient industry is located in the Yakima area to support the costs of the FTZ and Customs, it will be reactivated. Therefore, all projections and recommendations in the 1996 Master Plan document pertaining to the development of air freight and industrial development remain viable. The sequencing of these elements is to be considered demand driven, and for the purposes of the 2003 ALP Update, are projected to occur in the latter portions of the updated 20 year planning horizon.

The 1996 Master Plan Update for the Yakima Air Terminal was organized into four distinct phases. The first phase produced the future airport requirements and is documented in detail in the Introduction, Chapter 1 - Inventory, Chapter 2 - Forecasts of Aviation Demand, Chapter 3 - Capacity Analysis, and Chapter 4 - Facility Requirements. The second phase identified, evaluated, and selected alternative ways to provide the airport requirements identified in the first phase. This identification/evaluation/selection process is contained within Chapter 5 - Alternative Analysis and Chapter 6 - Environmental Overview. The third phase produced a set of planning drawings detailing the existing and future airport facilities based upon the recommendations from the second study phase. These drawings are presented in Chapter 7 - Airport Plans. The fourth and final phase of the study yielded the financial data concerning the cost of the development recommended in the second study phase. This data was presented in Chapter 8 - Financial Analysis.

Since the 1996 Master Plan Update, there have been and will continue to be significant changes in land use and aviation requirements on and near the airport. Several of the more significant changes addressed as part of the 2003 ALP Update include the following:

- Major changes were anticipated to the public roadway system adjacent to the airport. Additionally, the Runway Safety Area beyond Runway 27 is currently less than standard length and would require relocation of 16th Avenue. As a component of the 2003 ALP Update, alternatives were developed for improvements to the safety area and relocation of 16th Avenue. Through this process, the FAA agreed to participate in funding of the Valley Mall Boulevard project, which will allow for the removal of portions of 16th Avenue and construction of a full-length runway safety area. A second roadway project involves the relocation of West Washington Avenue from 40th Avenue to the 48th Avenue corridor. An alignment compatible with the airport's goals and the City's roadway circulation needs was selected.

- Water and sewer has been installed on the south side of the airport, making additional acreage available for development. This infrastructure allows for aviation-related development on the south side, which includes general aviation development, along with the air cargo facilities identified in the 1996 Master Plan Update. To safely facilitate this aviation growth on the south side, a south parallel

taxiway is recommended for Runway 9-27.

- Significant commercial and industrial development has been constructed, and additional development is anticipated adjacent to airport property on the south side along Ahtanum Boulevard. To assure that adequate land is available for the projected general aviation and cargo growth on the south side of the airport, and to assure adequate land for approach protection and to assure that development is compatible with airport operations, land acquisition on the south side is recommended.

- The Washington State Military Department has constructed an Armory and training center on airport property. A military aviation wing, either fixed wing or helicopter, co-locating with the Armory, has been discussed. An aircraft apron area adjacent to the Armory is recommended with ground access to airport facilities via the existing south general aviation area.

- Terminal area parking areas have reached their capacities, and along with additional constraints due to recent security requirements, lead to several recommended revisions in the terminal area. An additional auto parking lot is recommended west of the airport administration building with covered walkway to the terminal building. The terminal building itself will be expanded to the east to provide for baggage screening. This in turn will relocate and allow for expanded rental car parking to the east. Relocation of the ARFF facility west of the terminal will allow for terminal expansion to the west for additional ticketing area and will allow for adequate parking and staging area for regional jets, should a carrier add these aircraft to its Yakima route.

- To eliminate vehicular traffic on Taxiway A and to provide all weather access for ARFF vehicles, the airport has constructed service roads on the north side and west end of the airport. Expansion of this system is recommended to ultimately encircle the airport to minimize air traffic burden and minimize the potential for aircraft incursions.

Aviation Demand Forecasts

For the 1996 Master Plan Update, unconstrained forecasts of aviation demand were prepared for airline activity, potential air cargo activity, general aviation, and military activity. Passenger activity was forecasted to increase from the 1992 level of 66,000 enplanements to 116,000 in year 2000, and then to 212,800 by the end of the 20 year planning period. Air cargo forecasts were not based on historical activity for the airport, but rather on Yakima Air Terminal being able to capture a 65 percent share of the products that originated in the Yakima Valley that are being trucked elsewhere for air shipment. Assumptions that went into the cargo forecast included the ability of the airport to accommodate dedicated cargo aircraft; continued operation, development, and success of the US Customs Port of Entry for Central Washington, the Central Washington Foreign Trade Zone, and the ability of the region to attract, process, and distribute back-haul commodities to balance exports.

These forecasts were further refined for the 2003 ALP Update, and the major forecast elements are summarized in Exhibit 1. In summary, passenger enplanements are projected to grow throughout the course of the planning period, from 59,522 in 2002 to approximately 128,300 by the end of the 20 year planning period. Total Airport operations are projected to increase from 43,737 in the year 2002 to a little more than 73,000 by the end of the planning period. Air cargo projections have been carried over from the air cargo forecasts developed for the previous airport master plan. The expectation is that the timeline of the air cargo activity projected in that document will be shifted to future years. Finally, based aircraft are projected to increase from the 141 aircraft based at the Airport in 2002 to approximately 169 aircraft based at the Airport in the year 2022. This represents an increase in based aircraft of a little more than 19 percent.

EXHIBIT 1
SUMMARY OF FORECASTS

Activity Indicator	2002	2008	2013	2022
ENPLANED PASSENGERS				
• Air Carrier	59,522	101,800	110,600	128,300
PEAK HOUR ENPLANEMENTS				
• Total	39	50	56	70
ANNUAL OPERATIONS				
• Total	43,737	64,637	67,972	73,839
• Air Carrier	5,466	10,722	11,712	13,224
• Air Freight	--	1,290	1,300	1,320
• General Aviation	35,712	49,915	52,260	56,615
• Military	2,559	4,000	4,000	4,000
PEAK HOUR OPERATIONS				
• Total	31	45	48	52
AIR CARGO (tons)				
• Enplaned	--	14,135	16,298	20,773
• Deplaned	--	428	494	611
GENERAL AVIATION				
• Based Aircraft	141	149	156	169

Capacity Analysis

In the 1996 Master Plan Update, the capacity of the existing facilities at the Yakima Air Terminal were examined. From this analysis, the capability of the existing airport to serve forecast levels of demand was determined. Analysis of this relationship frequently leads to the identification of deficiencies in the system that can be alleviated through planning and development activities.

Airfield Capacity

The capacity of the airfield is a measure of the theoretical maximum number of aircraft operations that can be accommodated on the airfield, or its components, over a specified period of time. A variety of techniques have been developed for determining this airfield capacity. Currently, the most widely accepted technique is described in FAA Advisory Circular 150/5060-1.

Utilizing the methodology presented in the FAA document produces statements of airfield capacity in two major terms:

- Hourly Capacity of Runways: The number of aircraft operations that can take place on the runway system in one hour; and
- Annual Service Volume (ASV): A reasonable estimate of the airport's annual capacity. The ASV

accounts for differences in runway use, aircraft mix, weather conditions, and other limiting factors that can occur over a year's time.

The capacity of a runway system is determined by several factors. Among these are meteorology, runway use patterns, aircraft mix, percent of operations that are arrivals, percent of operations that are touch-and-goes, the spacing of exit taxiways, and runway length. Exhibit 2 summarizes the results of this analysis.

EXHIBIT 2
AIRFIELD CAPACITY SUMMARY

Descriptor	2002	2008	2013	2022
Hourly Capacity	110	89	88	88
Peak Hour Demand	31	45	48	52
Annual Service Volume	230,000	200,000	200,000	200,000
Annual Demand	43,737	64,637	67,972	73,839

Facility Requirements

The airfield, terminal area, air cargo, general aviation, and access system improvements that are necessary to accommodate the forecast levels of demand at Yakima Air Terminal were identified. In general, these requirements were determined by comparing forecast demand levels to the existing capacity of the facilities as specified. Problem areas were noted, and the facilities necessary to correct these deficiencies were identified. The facility requirements were developed with two basic assumptions: (1) that existing facilities will continue to be used throughout the planning period and that all of the requirements shown for Phase I will be completed prior to Phase II; should any existing facility require replacement, relocation, or major rehabilitation, this need would be in addition to the requirements noted; and (2) no facilities should be constructed until there is justifiable demand.

A summary of the facilities, by planning phase, for Yakima Air Terminal is presented in Exhibit 3.

EXHIBIT 3
FACILITY REQUIREMENTS SUMMARY

Item	Phase I 2003-2007	Phase II 2008-2012	Phase III 2013-2023
Airfield			
Runways	Obstruction removal; RW 9-27 Safety Improvements; Valley Mall Boulevard Improvements Relocate West Washington to South 48th Corridor	Shift and Extend RW 4-22 585 ft. Acquire Property for Approach Protection	Environmental Study for RW 9-27 Extension; Extend RW 9-27 and Parallel TWs A & D Acquire Property for Approach Protection
Taxiways	Construct airfield access roads; Acquire Property for Approach Protection	Construct Parallel TW D	---
Instrumentation	---	Install RW 9 PAPI	---
Terminal Area			
Terminal Building	---	Construct Fuel Farm Expand Terminal Bldg. to the East for Baggage; Expand Terminal Bldg. to the West for Ticketing	---
Terminal Apron	---	Relocate Fire Station; Construct De-icing Facility	---
Access & Parking	---	Relocate/Expand Auto Parking; Relocate/Expand Rental Car Parking	---
Terminal Support	ARFF Vehicle Index B	---	ARFF Vehicle Index C
Air Cargo			
Cargo Building	---	---	Construct South Side Air Cargo Complex
Cargo Apron	---	---	Construct South Side Cargo Apron

General Aviation			
Hangars	Construct T-hangars (Private); Acquire Property for Development; Construct South GA Access Road & Utilities; Construct South GA TWs; Construct South GA Storage Hangars	Acquire GA Development Land; Construct Armory Apron (Private)	Construct South GA Commercial Facilities (Private)

Development Alternatives

Facility Requirements identifies the airport facilities required to satisfy forecast demand throughout the 20-year planning period. Development Alternatives identifies and evaluates alternative plans for the Yakima Air Terminal. A three-step process was used to accomplish this task:

- Identification of alternative concepts that would meet the requirements for airport facilities imposed by future demand levels;
- Evaluation of each alternative, using a variety of criteria, to determine relative efficiency levels and the costs required for implementation; and
- Selection of a preferred alternative that maximizes the return on investment within the context of community/airport objectives.

Overall, the objective was to produce a balanced airside and landside complex to serve forecast aviation demand. The following five areas were examined:

- Airfield Alternatives
- Terminal Area Alternatives
- General Aviation Area Alternatives
- Cargo Area Alternatives
- Industrial/Commercial Development Alternatives

While the alternatives evaluated described reasonable growth scenarios, other alternatives were examined, but not presented due to a variety of factors that caused them to be deemed unreasonable.

Airfield Alternatives

Prior to developing the alternative analysis in the Master Plan Update, a public meeting was held to inform the community of the study's purpose, progress, and findings, and to provide a forum for open public discussion. Presented and discussed at the meeting was an explanation of the airport master planning process, the concept of accommodating air cargo and increased passenger operations at the airport, and the resulting facility requirements (i.e., increased runway length) needed to support increased cargo and passenger operations.

While many in attendance expressed support for the concept of expanded air service at Yakima Air Terminal, a number of residents who live in the vicinity of the airport expressed concern over any airport expansion

plans. It was suggested by some that along with on-site runway development alternatives, consideration be given to developing a new airport elsewhere in the Valley.

In order to consider a new airport, it must be decided that the existing airport facility cannot be expanded to accommodate current or future demand. To arrive at this decision, a detailed investigation comparing potential new sites to the existing airport operations must be conducted. Prior to initiating a detailed site selection study, there should be sufficient evidence of the need for a new airport and its viability in terms of potential community and user support as well as the legal, organizational, and financial capacity to build and operate it.

Since the purpose of this master plan was to produce a long range plan for the development of the Yakima Air Terminal, the amount of emphasis on the feasibility of developing cargo facilities at an alternative airport, or at a new airport, was limited. Rather, the focus of this analysis was on identifying and evaluating on-site alternatives. The resulting recommended alternative can then be used for comparison in determining the feasibility of developing a new facility.

The identified major improvement to the airfield at Yakima Air Terminal included a 2,557 foot extension of Runway 9-27 and its parallel taxiway from a current 7,603 feet to an ultimate length of 10,160 feet; the strengthening of the existing runway and taxiway pavement; and a 585 foot extension of crosswind Runway 4-22 from 3,835 feet to 4,420 feet. The alternative ways of providing these facilities are as follows:

Do-Nothing Conditions

The existing condition's alternative represents a continuation of the status quo in order to define baseline conditions against which the differences represented by the recommended improvements can be measured.

Alternative 1

In this alternative, the 2,557 foot runway extension to 9-27 is to be constructed on the west end of the existing runway towards South 48th Avenue. Runway 4-22 is extended 585 feet to the southwest for a total length of 4,420 feet.

Alternative 2

In this alternative, the 2,557 foot runway extension to 9-27 is to be constructed on the east end of the existing runway towards South 10th Avenue. Runway 4-22 is extended 585 feet to the southwest for a total length of 4,420 feet.

Alternative 3

In this alternative, the 2,557 foot runway extension to Runway 9-27 is to be constructed by extending the west end of the existing runway 1,279 feet and the east end of the existing runway by 1,278 feet. Runway 4-22 is extended 585 feet to the southwest for a total length of 4,420 feet.

Alternative 4

A fourth alternative action would be not to extend the existing Runway 9-27, but to construct a 10,160 foot parallel runway 2,500 feet south of the existing 7,603 Runway 9-27. Runway 4-22 is extended 585 feet to the southwest for a total length of 4,420 feet.

Selection of a recommended airfield alternative was based upon both the quantitative factors and subjective judgment based on previous experience. Review of the quantification factors indicates that while both Alternative 2 and 3 yielded, in many cases, similar results, Alternative 3 consistently presented more

advantages and flexibility. Maintaining existing conditions, included in the analysis to provide a basis by which the other alternatives could be measured, clearly is not an acceptable plan if the airport is to achieve its goal of attracting charter air cargo operators. It does not allow the airport to maximize its potential as a Port of Entry, Foreign Trade Zone, or regional air service hub.

Alternatives 1 and 4 were not included in the analysis beyond the air space determination. Both were found to violate airspace safety criteria and were consequently eliminated from further consideration.

Alternative 2, a 2,557 foot extension of Runway 9-27 to the east, was determined to be feasible from an airspace perspective, but would require the elimination of an important instrument approach to the airport. This alternative also produced significantly more land use impacts than Alternative 3 in terms of residential relocations and changes in existing aircraft noise patterns. A 2,577 foot runway extension fully to the east would also significantly constrain roadway corridor options for the Valley Mall Boulevard Extension.

For the reasons outlined above, Alternative 3, a 1,279 foot extension to the west and a 1,278 foot extension to the east of Runway 9-27, combined with a 585 foot extension to Runway 4, is the recommended future development plan for the Yakima Air Terminal. Exhibit 4 presents a summary of the airfield alternatives analysis.

EXHIBIT 4
ALTERNATIVES EVALUATION SUMMARY

Evaluation Factor	Do Nothing	Alt 1*	Alt 2*	Alt 3*	Alt 4*
Air Space Compatibility					
TERPS** Conformity	Yes	No	Yes	Yes	No
Approach Flow	Good	Eliminated	Fair	Good	Eliminated
Operational Efficiency					
Accommodation of Critical Aircraft	No	---	Yes	Yes	---
Ground Movement Efficiency	Good	---	Good	Good	---
Impact on Surface Transportation	Good	---	Good	Fair	---
Environmental Compatibility					
Relative Noise Impacts	Good	---	Good	Good	---
Potential Relocations	0	---	28	13	---
Land Use Compatibility	Good	---	Fair	Good	---
Development Costs	$1,600,000***	---	$16,829,100	$15,996,500	---

* Alternative 1: A 2,557 foot Runway Extension to the West
Alternative 2: A 2,557 foot Runway Extension to the East
Alternative 3: A 1,279 foot Runway Extension to the West and a 1,278 foot Extension to the East
Alternative 4: A 10,160 foot Parallel Runway to the South of Runway 9-27
** TERPS = Terminal Instrument Procedures
*** Cost associated with relocation of fish hatchery

Terminal Area Alternatives

The need for an improved terminal building at the Yakima Air Terminal was recommended in the 1996 Master Plan Update. The building's interior organization caused several functional and operational problems

for ticketing, enplaning and deplaning passenger flows, baggage claim, and customer queuing. The building also needed improvements to bring it into compliance with local building codes and the Americans with Disabilities Act (ADA) requirements.

Recognizing the need to improve and expand the facility, the Airport Board commissioned a terminal area study in 1988. This study provided an evaluation of the existing terminal building, its deficiencies, and the impact of retaining it for another 20 years. It also evaluated the future needs of the terminal as expressed in the 1987 Master Plan; developed and evaluated three alternative conceptual site plans; and examined costs. The study concluded that a new terminal south of Runway 4-22 offered the highest possible return in the long term.

The purpose of this section was to review and confirm the recommendation of the Plan for a new terminal location south of Runway 4-22 within the context of the 1996 Master Plan Update. Terminal building area requirements in gross square feet recommended in the 1988 Plan were presented and evaluated in the Facility Requirements chapter.

Based on examination of a variety of factors, it was recommended that the terminal remain at its present location for the time being, since the facility requirements analysis indicated that based on demand, a new or relocated terminal was not needed immediately. Therefore, in the late 1990's, the airport implemented a three-phase project to improve the existing terminal building deficiencies, meet current code requirements, and provide expanded concourse area. Along with additional terminal area improvements recommended as part of the 2003 ALP Update, the existing terminal area facilities are expected to meet the projected demand through the current 20 year planning horizon.

General Aviation Alternatives

The existing general aviation areas north of Runway 9-27 will provide limited space for expansion or redevelopment in the future. To accommodate future general aviation growth and to provide for an orderly progression of this development, an area in the southeasterly portion of the airport has been identified. With new vehicular and aircraft access, and capitalizing on newly installed utilities in the area, additional facilities for aircraft storage and parking can be accommodated. This will also provide adequate space for aviation-dependent commercial/industrial development. This type of user has generated inquiries in the past, but adequate space along with the needed utilities has not been available.

The southeasterly area was previously identified for location of the air cargo complex. This was further reviewed and found to conflict with existing general aviation in the area, and is somewhat remote from the runway which would lead to extended taxiing movements of cargo aircraft. This area has been re-defined for general aviation.

Cargo Development Alternatives

Three primary considerations dictate the selection of a site on the airport for a cargo center. These include logistics, both airside and landside, land use efficiency, and site capacity. The logistical evaluation considers surface vehicle driving distances, arrival and departure taxiing distances, and the interaction of the cargo area with the passenger activity.

Land use efficiency considers how well the land is used from a planning perspective with the highest and best use being the objective. Also considered in this category are potential land use densities and compatibility with existing and planned land uses. The capacity of the site is also related to the land use density; however, each site should contain adequate capacity to meet the projected increase in demand for air cargo facilities as developed earlier in this report.

The 1996 Master Plan Update evaluated these factors and recommended the site at the south end of Taxiway

C. However, considering the availability of additional industrial land for acquisition and re-evaluating the criteria, it is recommended that the future air cargo complex be located south of Runway 9-27 in a central location adjacent to South 36th Avenue. This location provides ample area for development; superior taxiway and runway access; the ability to support additional complementary aviation-related industrial/commercial operations; and does not create conflicts with existing general aviation facilities due to size, jet blast, or taxi routes.

Industrial Development Alternatives

The primary function of the Yakima Air Terminal is to provide the Yakima Valley and both the City and County of Yakima with a safe, efficient link to the nation's air transportation system. In order to accomplish this function, the use of available airport land must be subject to a set of priorities that assure that it is used for its best purpose. This priority list is summarized as follows:

- Airport Operations Area: Includes that land required for runways, taxiways, approaches, and related aviation facilities. The amount of land required herein is largely dependent upon the airport designation, safety areas, and FAA criteria.
- Aviation Support Facilities: Includes passenger terminal services, surface access, and general aviation facilities. Demand levels, required (or desired) auxiliary uses, and airfield layout are some of the factors that influence the amount of land required in this category.
- Aviation Related Development: This category includes land uses that are reliant, in some manner, upon the airport for their businesses. Examples include cargo activities, aircraft manufacturing, remodeling, sales, and repair. Demand levels determine the amount of land specified for this use.
- Industrial/Commercial Development: This includes any businesses and/or industries that can locate on the airport but do not have any requirements to access the airfield. These concerns are compatible with airport operations, and space requirements are determined by demand.
- Vacant or Buffer Areas: Areas that, for any reason, cannot be used for any of the preceding broad uses should be set aside as buffer areas to complement surrounding, possible non-compatible, and community land uses.

Areas of existing land that could be classified as available for industrial development but without access to the airfield are the northwest portion and the south-central portion of existing airport property. Following the proposed relocation of West Washington Avenue from the 40th Avenue to the 48th Avenue corridor, two developable parcels will exist to the north and to the south of the future RPZ. These parcels will not have access to airport operational areas but are well suited to aviation compatible industrial development. Existing property adjacent to the south airport access road is also well suited to industrial development but lacks the access to operational areas.

Land Acquisition

To promote compatible land use in the vicinity of the airport, to provide adequate land for approach protection, and to provide adequate land for aeronautical purposes, acquisition of several land areas is recommended. For approach protection, acquisition is recommended for the future RPZ and approach areas beyond Runways 9, 27, and 4, and the property between the proposed Valley Mall Boulevard and existing airport property. To meet future development needs, land acquisition is recommended adjacent to the South 39th/36th Avenue corridor, between existing airport property and Ahtanum Road, and between existing airport property and South 16th Avenue. Acquisition of these properties would provide definitive control of the land and ensure its compatibility with future airport operations.

Impact of FAA Regulations Upon Use of Land

In formulating future airport land use development alternatives, it will be necessary to consider the impact of FAA regulations on land acquired with FAA grants, the conditions under which the Airport accepts federal grants, and the highest and best use of available property in terms of location, facilities available, functional capabilities, and revenue potential.

Unlike development grants, assurances remain in effect permanently for land acquired with FAAP, ADAP, or AIP (Airport Aid Programs). Such land can be used only for aeronautical purposes unless released by the FAA. Changes made to non-aeronautical uses may be approved by the FAA if, in its judgment, aeronautical functions of the airport are not impaired. The FAA will not approve a change to an airport layout plan (ALP) where a non-aeronautical property usage option would result in the reduction of an airport's ability to meet aeronautical need.

Financial Implementation

By its very nature, the financial plan is the most tentative element of an airport master plan. Changing activity levels, cost inflation, and overall financing conditions can change, thereby greatly altering the plan annually. For this reason, the financial implementation plan must be viewed as just one of the potential approaches to financing the planned development program. In 2003 dollars, the costs of Phase I development at Yakima Air Terminal have been estimated to be $16.2 million. The costs associated with Phase II have been estimated to be $19.7 million, while Phase III costs total $26.6 million. The local share of these development costs have been estimated to be $2.3 million in Phase I, $3.7 million in Phase II, and $2.7 million in Phase III.

Phase I covers items of highest priority as well as items that should be developed as the airport approaches the short-term activity milestones. Priority items include improvements related to safety and major maintenance. Also included are improvements to facilities that are inadequate for present demand. Because of their priority, these items will need to be incorporated into Airport and FAA programming. To assist with this process, short-term projects are prioritized over a five-year period beginning with projects in 2003.

When short-term horizon activity milestones are reached, it will be time to program for Phase II based upon the next milestones. Similarly, when the Phase II milestones are reached, it will be time to program for Phase III.

Due to the conceptual nature of a Master Plan, implementation of capital projects should occur only after further refinement of their design and costs through architectural and engineering analyses. Under normal conditions the cost estimates reflect an allowance for engineering and other contingencies that may be anticipated on the project. Capital costs in this chapter should be viewed only as estimates subject to further refinement during design. Nevertheless, these estimates are considered sufficiently accurate for performing the feasibility analyses in this plan.

Continued Planning

The master plan presented herein was prepared using data that reflected existing conditions at both the airport and the Yakima Valley Area. While the results of this plan are presented within the context of a time period extending to the year 2022, this should not be interpreted as a static document. The dynamic nature of the Yakima Valley and Pacific Rim trade will undoubtedly cause substantial impacts on the Yakima Air Terminal. Therefore, it is recommended that annual planning reviews be made to track the progress of the master plan update, and as a method for justifying construction of new facilities. Also, formal updates to the master plan should be considered in five year increments.

By implementing these continued planning recommendations, the Airport Board can assure that the airport

continues to evolve in a positive manner, allowing it to be a dynamic force in shaping the growth of the Valley, while continuing to play a major role in meeting its aviation needs.

Chapter 1: Inventory

1.1 Introduction

The inventory analysis is a systematic and comprehensive data collection process that is used to provide an understanding of the nature and scale of aviation and airport related factors. The information that is compiled is analyzed and then forms the basis for developing forecasts of aviation demand and in determining existing and future airport facility requirements.

The inventory process for the Yakima Air Terminal involved several elements, including:

- A physical inventory of existing airport facilities and services and an assessment of current historic airport activity levels
- Visits to adjacent area airports to identify airspace requirements, current facilities and activity levels, and their future development objectives
- The collection of background information pertaining to Yakima Valley regional area, including population and socioeconomic characteristics
- A comprehensive review of existing local and regional plans and studies to determine their effect and consistency with future airport development planning
- A review of master planning programs that were conducted in 1978 and 1987, a review of the Terminal Area Plan conducted in 1989, a review of the *Yakima Airport International Port of Entry Action Plan*, and other airport and airport related studies
- A survey of representatives of various firms and industries that currently use or may use the airport facility to determine their transportation needs
- A survey of airline representatives, airport operators, and area pilots to determine their airport requirements and general attitude toward future airport improvements

An accurate and complete inventory is an essential element to the success of the Master Plan because the findings and assumptions made throughout the report are dependent on the information that is assembled concerning conditions on and around the airport.

1.2 Geographic Location

Yakima County is located on the east side of the Cascade Mountains in the south-central portion of Washington State, as depicted in Exhibit 1-1. The City of Yakima, 145 miles southeast of Seattle, is the governmental and business hub of Yakima County, one of the largest agricultural producing regions of the world. As shown in Exhibit 1-2, the Yakima Air Terminal is located in the south-central portion of the City of Yakima.

EXHIBIT 1-1
GEOGRAPHICAL LOCATION

EXHIBIT 1-2
AREA LOCATION

1.3 Historical Development

The Yakima airport site, an unimproved 80 acre field of sagebrush, was purchased by Yakima County at a cost of $7,000 in 1928. The first major improvements were accomplished in 1932 with the installation of a drainage system and a 2,600 foot long gravel landing strip. In 1936 an additional 45 acres were purchased and a WPA project was completed that cleared, graded, and surfaced a primary runway (9-27) of 3,750 feet, and a crosswind runway (4-22) of 3,000 feet. Regular air mail service and commercial airline service was initiated after the completion of these projects.

An additional area of 133 acres was purchased in 1940 under the National Defense Program. The original east-west runway 9-27 was converted into a parallel taxiway and a new 5,000 foot Runway 9-27 was completed in 1941. In addition, the northeast-southwest Runway 4-22 was extended to 4,000 feet and a north-south Runway 16-34 was constructed to a length of 4,000 feet. Runway 4-22 and 16-34 had parallel taxiways included as part of this project.

A control tower was constructed to assist with pilot training in 1942. In 1943, power and telephone lines were relocated, improving the airport to existing standards for military aircraft.

In 1948 the City of Yakima purchased the existing 355 acre airport from Yakima County for $46,000, although the estimated value at the time was $1,400,000. A passenger terminal building and service apron was constructed for $200,000 shortly afterward. In 1953 an instrument landing system was installed on Runway 9-27. During the 1960's landscaping of the terminal building was accomplished and a sanitary landfill was established to fill in low terrain and prepare a site south of Runway 27 for future development. Runway 9-27 was extended an additional 1,100 feet to accommodate jet traffic in 1967. At the same time, the terminal building was expanded and Yakima Fire Station No. 4 was constructed adjacent to the terminal building.

Due to low usage and poor surface condition, as well as the need to facilitate changes to the instrument landing system (ILS) on Runway 27, Runway 16-34 was permanently closed in 1979 and converted to a north-south taxiway.

In July 1982, the City of Yakima and Yakima County entered into a joint venture agreement to share in the operation and maintenance of the airport.

In August of 1988, the displaced threshold of Runway 22 was permanently relocated, resulting in a new Runway 4-22 length of 3,835 feet.

In 1996, Runway 9-27 was rehabilitated. This rehabilitation consisted of a new asphalt concrete overlay and Porous Friction Course.

From 1996 through 1999, the existing terminal building was rehabilitated in a three-phase project which included a Concourse Expansion.

In 2001, the portions of taxiways Bravo and Charlie north of Runway 9-27 were overlaid, a service/ARFF road was constructed from Noland Decoto around the Runway 9 threshold to Spring Creek Road, and REILs installed on Runways 4 and 22, and PAPIs installed on Runways 4, 22, and 27.

In 2002, security fencing was installed around the southern perimeter of the airport.

1.3.1 Previous Airport Planning Efforts

A number of studies and planning documents have been initiated over time relating to the growth and development of the Yakima Air Terminal. Listed below is a summary of those that are related to the master planning process.

Yakima Air Terminal Airport Master Plan Update, November 1987

This study produced the following general conclusions and recommendations:

- Expand the general aviation tie-down area and create additional facilities for air cargo and passenger services within the terminal area
- Acquire additional property for future industrial development
- Control residential development within the airport vicinity
- Provide for future development of a terminal building and terminal area on the south side of the main runway
- Review and revise the airport master plan as necessary

Yakima Air Terminal: Terminal Area Plan, August 1988

The result of this study provided an evaluation of the existing terminal building, its deficiencies, and the impact of retaining it for another 20 years; evaluated the future needs of the terminal as expressed in the 1987 master plan; developed and evaluated three alternative conceptual site plans; and examined costs.

The three concepts that were evaluated included Concept A - expansion of the existing terminal at the existing site; Concept B1 - a new terminal at the existing site; and Concept C - a new terminal south of Runway 4-22. The study concluded that Concept C, by far, offered the highest possible return in the long term, and that Concept B1 offered the best solution for the short term.

Yakima Air Terminal Airport Compatibility Land Use Plan, December 1989

Using the aviation demand forecasts and fleet mix from the 1987 airport master plan, noise contours were developed for the airport for the years 1988, 1991, and 2006. The plan included a recommendation that joint action of the City-County, and Union Gap be used to implement comprehensive land use controls in the vicinity of the airport to minimize incompatible land uses.

Yakima Airport International Port of Entry Action Plan: Fostering Trade and Investment Opportunities for the Yakima Valley, July 1991

The authors concluded that the Yakima Airport has the capacity to serve as an international transshipment hub, fully integrated into the greater Puget Sound's international and domestic transportation network. Five building blocks were identified as essential to establishing an integrated transshipment hub:

1) A user fee customs designation for the airport
2) Provision of air cargo charter services
4) Airport facility improvements that include an air cargo ramp, public warehouse facility, master plan, Runway 9-27 rehabilitation and extension, industrial park development, and terminal rehabilitation and/or relocation
3) A community based trade promotion program

5) A Foreign Trade Zone for the airport

Yakima Air Terminal Master Plan Update, April 1996

This study produced the following general conclusions and recommendations:

- Passenger activity was forecasted to increase from the 1992 level of 66,000 enplanements to 116,000 in 2000, and 212,800 by the end of the 20-year planning period.
- Air Cargo forecasts were based on the airport being able to realize the capture of 65 percent of the products originating in the Yakima Valley that are currently being trucked elsewhere for air shipment.
- Ultimate extension of Runway 9-27 was recommended to be 1,279 feet to the west and 1,278 feet to the east, combined with a 585-foot extension of Runway 4.
- It was recommended that the terminal remain in its present location for the time being.
- A need was shown for addition of 27 T-hangars and approximately 14,000 square feet of FBO/maintenance hangar area, as well as relocation of 18 T-hangars in the mid-term planning period to accommodate a new air cargo complex.

Yakima Air Terminal, 2003 Airport Layout Plan Update

This study provided an update of the 1996 Master Plan to reflect current conditions and projections. The results of the study are presented throughout this document.

1.3.2 Airport Facility Classifications

Aviation facilities can range from small rural unpaved airstrips to short haul commuter airports, such as the Yakima Air Terminal, to large long-haul commercial service airports such as Sea-Tac International Airport. Because of this wide diversity of facilities with broad ranges of operating parameters and design standards, a means of systematizing these facilities is needed. Currently, three classification systems apply to the Yakima Air Terminal. The first two classification systems are functional classification systems that were designed to reflect the type of public service the facility provides to the national and the state airport system, while the third is a FAA design classification system.

National Plan of Integrated Airport Systems (NPIAS)

The National Plan of Integrated Systems (NPIAS) is a national airport system plan developed by the FAA to indicate aviation facilities of national significance. NPIAS airports are eligible for federal grants for airport planning and various capital improvements. The NPIAS uses two categories in defining an airport's status: service level and role. The service level of an airport reflects the type of public service the airport provides to the community. The service level also reflects the funding categories established by Congress to assist in airport development. The role of an airport is closely related to its design. The role classifications for NPIAS airports are based on the class of aircraft the respective runway systems can accommodate based on runway dimensions and pavement strength. There are two general design type categories used to classify NPIAS airports: Utility and Transport.

The Yakima Air Terminal is classified in the NPIAS as a Primary Service Short Haul (less than 500 miles) Transport Airport. Primary Service airports are public use airports receiving scheduled airline passenger service which also enplane 10,000 or more passengers per year. A Transport airport type serves aircraft with wingspans greater than 118 feet and with approach speeds of 121 knots or more. Transport runways usually have the capability for precision approach operations.

Airport Reference Code

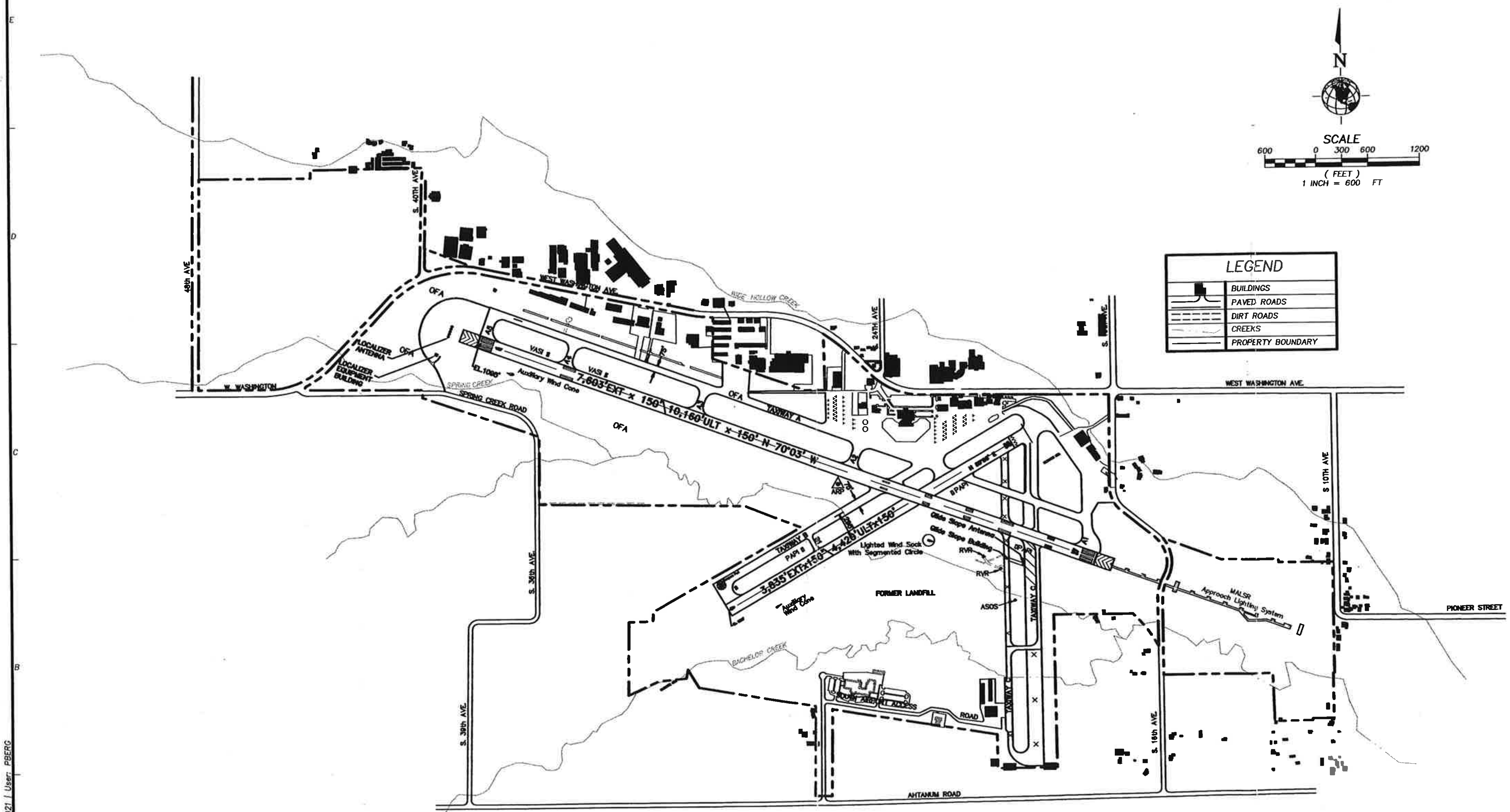
The Airport Reference Code (ARC) is a coding system developed by the FAA used to relate airport design criteria to the operational and physical characteristics of the airplanes intended to operate at an airport. The ARC has two components relating to the airport design aircraft. The first component, depicted by a letter, is the aircraft approach category and relates to aircraft approach speed. The second component, depicted by a Roman numeral, is the airplane design group and relates to airplane wingspan. In the case of Design Group I, an additional designation of "small aircraft only" relates to aircraft with gross weights of 12,500 pounds or less. Generally, aircraft approach speed applies to runways and runway length related features. Airplane wingspan primarily relates to separation criteria and width-related features.

Airports expected to accommodate small, single-engine airplanes normally fall into Airport Reference Code A-I or B-I. Airports serving larger general aviation and commuter-type planes are usually Airport Reference Code B-II or B-III. Small to medium-sized airports serving air carriers are usually Airport Reference Code C-III, while larger air carrier airports are usually Airport Reference Code D-VI or D-V.

The 1996 Master Plan classified the Yakima Air Terminal's primary runway as C-III and the crosswind runway as B-I, small aircraft only.

1.4 Airside Facilities

The airside facilities of the Yakima Air Terminal include the runways, taxiways, navigational aids, runway protection zones, and other facilities required to safely and efficiently accommodate the take off and landing of an aircraft. Descriptions of these facilities are given in the following sections. The existing airport facilities are depicted in Exhibit 1-3.



YAKIMA AIR TERMINAL
MCALLISTER FIELD AIRPORT LAYOUT PLAN

EXISTING AIRPORT FACILITIES
EXHIBIT 1-3

DRAWING FILE NAME: tyakaf01

PROJECT NO. 818377

SCALE: 1"=600'

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LAST EDIT: 12/14/01	PLOT DATE: 11/26/03

DATE	BY	REV#	REVISION	CK'D	APPR

SHEET
1-3

Office: SEATTLE | System: WHP-SEA-303H021 | User: PBERG

1.4.1 Runways and Taxiways

The airport has two runways both served by parallel taxiways. Instrument Runway 9-27 is 7,603 ft. long and 150 ft. wide. It is the primary runway used by both general aviation and airline aircraft. Runway 4-22 is a crosswind runway and is 3,835 ft. long and 150 ft. wide. Exhibit 1-4 provides further details on runway characteristics.

EXHIBIT 1-4
EXISTING RUNWAY DATA TABLE

Item	Runway 09-27	Runway 04-22
Length	7,603 ft.	3,835 ft.
Width	150 ft.	150 ft.
Classification	C-III	B-I (small)
Composition	Asphalt-PFC	Asphalt-PFC
Condition	Good	Good
Strength		
– Single wheel	95,000 lbs.	70,000 lbs.*
– Dual Wheel	160,000 lbs.	80,000 lbs.*
– Dual Tandem	220,000 lbs.	120,000 lbs.*
Marking	Precision	Visual

*Runway 4-22 is defined as B-I (small) based on the current approach surface dimensions; however, the pavement strength is capable of supporting aircraft of gross weights greater than 12,500 pounds.

As shown in Exhibit 1-1, the airport has a number of taxiways for aircraft circulation. Taxiways A-1, A-2, A-3, A-4, and A-5 are exit taxiways to parallel Taxiway A that services Runway 9-27. Taxiway B serves as a parallel taxiway for Runway 4-22. Taxiway C is a portion of deactivated Runway 16-34 and serves the southeast area of the airport.

1.4.2 Runway and Taxiway Lighting

A variety of lighting aids are available at the airport to facilitate identification, approach, landing, and taxiway operations at night or in adverse weather conditions. The lighting facilities are described below.

Airport Beacon

The location and presence of an airport at night is universally indicated by a rotating beacon equipped with an optical system that projects a green and a white beacon of light 180 degrees apart. At Yakima Air Terminal this beacon is located above the Air Traffic Control Tower.

Obstruction Lighting

In the vicinity of an airport, obstructions are marked and or lighted to alert pilots to their presence.

Approach Lighting

Approach lighting systems (ALS) are used in the vicinity of runway thresholds as adjuncts to electronic navaids. These facilities provide visual cues to the pilot of an aircraft landing at night or during periods of reduced visibility. An ALS is a configuration of signal lights symmetrically dispersed about the runway

centerline. It begins at the runway threshold and projects outward in the direction of the approaching aircraft. An ALS augments the electronic aids. A MALSR is a 2,400 foot medium intensity ALS with runway alignment indicator lights (RAILs). It is an economy ALS system approved for Category I precision approaches. Runway end 27 is equipped with a MALSR.

Visual Approach Slope Indicators (VASIs) or Precision Approach Path Indicators (PAPIs) provide pilots with visual guidance to establish a safe path to the runway and are primarily intended for use during day or night Visual Flight Rules (VFR) weather conditions. Runway 9 is equipped with a 4-box VASI on the left side of the runway with an approach slope angle of 3 degrees and a threshold crossing height of 50 ft. Runway 27 has a 4-box PAPI with a 3 degree approach slope angle and a threshold crossing height of 57 ft. Runway 22 is equipped with a 4-box PAPI with an approach slope angle of 3 degrees and a threshold crossing height of 50 ft. Runway 4 has a 4-box PAPI with a 3 degree approach slope angle and a threshold crossing height of 50 ft.

Runway End Identifier Lights (REILs) also provide visual guidance by delineating the ends of the usable runway pavement. Runways 04, 09, and 22 are equipped with REILs.

Runway Lighting

After crossing the threshold, pilots must complete a touchdown and a rollout on the runway. Runway lighting aids for this landing phase are designed to give pilots information on alignment, lateral displacement, roll and distance. Runway 9-27 is equipped with high intensity runway lights (HIRLs) and Runway 4-22 with medium intensity runway lights (MIRLs).

Taxiway Lighting

Since pilots must maneuver aircraft on the taxiway system to and from the hangar and terminal areas, edge lighting is provided to indicate the location and limit of taxiways. At Yakima, blue edge lights are installed on all air carrier taxiways.

1.4.3 Electronic Navigational Aids

A variety of electronic navigational aids are available to assist pilots in landing at an airport. The type of navigational aid can affect the type of approach minimums in effect for landing at a particular airport. The term minimum refers to the lowest altitude and distance to which a pilot can descend without having visual contact with the runway. The more sophisticated the navaid, the lower the minimum for approach (provided, of course, that the aircraft is properly equipped and the pilot is appropriately instrument rated).

Instrument Landing System (ILS)

A precision ILS is the most commonly used navigation system for landings requiring precision instrument guidance. It consists of three component parts: 1) guidance given by the VHF localizer and a separate UHF glide slope signal; 2) range provided by marker beacons along the approach; and 3) visual reference provided by approach lights, touchdown zone and centerline lights, and runway threshold and edge lights. There are three basic categories of ILS approaches based on minimum horizontal visibilities, or runway visual range (RVR): CAT I, CAT II, and CAT IIIa, IIIb, and IIIc. Yakima Air Terminal is currently served by a CAT I ILS on Runway 27.

The glideslope antenna, used for vertical guidance for Runway 27, is located approximately 1,050 feet west of Runway 27 and 350 feet south from the runway centerline. The localizer antenna, used for horizontal guidance, is located approximately 300 feet beyond the threshold of Runway 9.

To further assist the ILS approach, two marker beacons, the outer marker (OM) and middle marker (MM), furnish range information to indicate how far along the approach path the aircraft has progressed. The ILS approach has a 3 degree glide slope that intercepts the outer marker at a distance of about 7 nautical miles

from and 3,378 feet above the threshold of the runway. The middle marker in this approach intercepts the glide slope at 0.6 nautical miles from the threshold of the runway.

Non-Precision Instrument Approach (NPI)

Whereas an ILS provides for both horizontal and vertical electronic guidance, a non-precision instrument approach system provides for horizontal guidance only. A straight in non-precision approach is available to Runway 27 off of the Yakima VORTAC. A non-precision back course approach is available to Runway 9 off of the ILS localizer.

VORTAC

Located approximately 3.6 nautical miles east of the airport is a VORTAC (VHF Omnidirectional Range/Tactical Air Navigation) used for enroute navigation for aircraft transiting the area, and for non-precision instrument approaches to the airport. For approaches, the VORTAC gives course and distance information to the pilot. It is also used for instrument flight rules (IFR) and visual flight rules (VFR) practice instrument approaches.

Compass Locator

To further assist pilots utilizing the airport a compass locator is part of the middle marker range finder for the Runway 27 precision approach.

Other Navigational Aids

In addition to the previously mentioned airport navigational aids, the airport also provides runway visual range (RVR) devices on the primary Runway 9-27, as well as lighted wind socks at the ends of Runways 9 and 4 and at the intersection of the two runways.

1.5 Airspace and Imaginary Surfaces

Related to the physical layout of the airfield are the airspace requirements and imaginary surfaces required by the FAA. Descriptions of these standards as they apply to the Yakima Air Terminal are presented as follows:

- Approach and Runway Protection Zones
- FAR Part 77 Surfaces

These represent the key components of the airspace at the airport and have an influence on the location of airport and off airport buildings and above ground facilities.

1.5.1 Approach and Runway Protection Zones (RPZ)

A *Runway Protection Zone* is a trapezoidal area representing the ground level at the innermost portion of the runway approach. The exact dimensions of this zone are defined by the type of aircraft and operations to be conducted on the runway. Ideally, these areas are controlled by the airport in order to assure that the safety of the approach is protected and congregations of people are avoided. The RPZ begins 200 feet beyond the runway threshold at the end of the area usable for takeoff and landings, and is centered along the extended runway centerline. Exhibit 1-5 presents the dimensions of the individual RPZs associated with the runways at Yakima Air Terminal.

EXHIBIT 1-5
RPZ DATA BASE

Runway	Aircraft Served	Approved Approach	Zone Length	Inner Width	Outer Width	Acres
09	Large	Non Precision	1,700'	1,000'	1,510'	48.978
27	Large	Precision	2,500'	1,000'	1,750'	78.914
04	Small	Visual	1,000'	250'	450'	8.035
22	Small	Visual	1,000'	250'	450'	8.035

As stated above, the runway RPZs represent the inner most segment of the applicable approach surface. The approach surface is defined as a surface longitudinally centered on the extended runway centerline and extending outward and upward from the end of the runway pavement. An approach surface is applied to the end of a runway based on the type of approach available or planned for that runway. Exhibit 1-6 presents the dimensions of the various approaches at the airport.

EXHIBIT 1-6
RUNWAY APPROACH SURFACES

Runway	Aircraft Served	Approach	Slope	Length	Inner Width	Outer Width
09	Large and Small	Non Precision	34:1	10,000'	1,000'	4,000'
27	Large and Small	Precision	50:1	50,000'*	1,000'	4,000'
04	Small	Visual	20:1	5,000'	250'	1,250'
22	Small	Visual	20:1	5,000'	250'	1,250'

* The 50:1 approach slope extends through the initial 10,000' of the approach surface, at which point it changes to a 40:1 slope for the final 40,000'.

1.5.2 FAR Part 77 Imaginary Surfaces

Ideally, airports should be located so that the surrounding airspace is free and clear of obstructions that could be hazardous to aircraft on takeoff or approach paths. It is therefore necessary to maintain the surrounding airspace free from obstacles, preventing the development and growth of obstructions to airspace that could cause the airport to become unusable. The regulations for the protection of airspace in the vicinity of airports are established by the definition of imaginary obstacle limitation surfaces, penetration of which represents an obstruction to air navigation. The geometry of the imaginary surfaces is governed by regulations set forth in Federal Aviation Regulations (FAR) Part 77. The protected airspace around the Yakima Air Terminal is made up of five principal imaginary surfaces:

- **Primary Surface:** A surface that is longitudinally centered on the runway, extending 200 feet beyond the threshold in each direction and measuring 1,000 feet wide for Runway 9-27 and 250 feet wide for Runway 4-22.
- **Approach Surface:** As defined in Exhibit 1-6.
- **Horizontal Surface:** A horizontal plane 150 feet above the established airport elevation, in this case 1,095 feet above mean sea level. The plane dimensions of the horizontal surface are set forth by arcs of specified dimensions from the end of the primary surfaces, connected by tangents.

These arcs measure 10,000 feet for Runway 9-27 and 5,000 feet for Runway 4-22.

- **Transition Surface:** An inclined plane with a slope of 7:1 extending upward and outward from the primary and approach surfaces, terminating at the point where they intersect with the horizontal surface or any other surface where more critical restrictions are intercepted.
- **Conical Surface:** An inclined plane at a slope of 20:1 extending upward and outward from the periphery of the horizontal surface for a horizontal distance of 4,000 feet.

Part 77 approach surfaces will be shown later in the report under Airport Plans.

1.6 Terminal Area Facilities

The main airport terminal area is located immediately north of the intersection of the two runways. The terminal area provides facilities for air carrier aircraft, transient general aviation aircraft, and based general aviation aircraft. It includes four basic components: the terminal building, the terminal apron, ground transportation systems, and support facilities. Each of these components are discussed below.

1.6.1 Passenger Terminal Building

The Yakima Air Terminal passenger terminal building is a two level structure with ground level enplaning and deplaning operations. Typical of a small regional airport, the passenger terminal provides for ticketing, passenger processing, baggage handling, and security inspection. These are supported by food service, car rental, shops, rest rooms, and other ancillary functions. The existing terminal building was completed in 1950, with an airside holdroom addition constructed in 1967. The terminal interior was modified periodically to meet tenant needs and operational requirements. A three-phased rehabilitation and concourse addition was undertaken between 1996 and 1999. A summary tabulation of the existing terminal building areas is shown in Exhibit 1-7.

EXHIBIT 1-7
EXISTING TERMINAL SPACE ALLOCATIONS

AREA	Square Feet (SF)
GROUND FLOOR/LEVEL 1	
Airline Areas	4370 SF
Airline Ticket Counter	50 LF
Travel Agency	480 SF
Public Space/Circulation	4230 SF
Passenger Holdroom	7460 SF
Baggage Claim	960 SF
Security Storage	150 SF
Utilities/Maintenance	1520 SF
Public Restrooms	1130 SF
Office Space	650 SF
Car Rental	270 SF
Concessions	120 SF
Total Area Level 1	**21,340 SF**
SECOND FLOOR/LEVEL 2	
Concessions, Restaurant, Bar, Kitchen	8730 SF
LEVEL 2/TOWER	
Restaurant Office	220 SF
LEVEL 3/TOWER	
Travel Agency Storage	220 SF
LEVEL 4/TOWER	
Office	220 SF
Total: First, Second, and Tower Levels	**30,730 SF**

Source: Yakima Air Terminal– McAllister Field, Airport Security Plan, March 2001

1.6.2 Terminal Area Apron

The terminal apron is composed of Portland Cement Concrete, and is in good condition according to the 2001 Pavement Condition Index Survey.

1.6.3 Terminal Area Access Facilities

The terminal area access facilities can be categorized as follows:

- Terminal Access Roadways
- Terminal Curb Frontage

- Vehicle Parking

Each of these areas is discussed in detail in the subsequent subsections.

Terminal Access Roadways

Passengers and visitors to the airport enter from West Washington Avenue onto a one-way, two lane half-loop. Once on this loop, drivers circle the passenger parking area, the rental car parking area, the terminal building curb, and tenant parking areas, and then exit back onto West Washington Avenue. The roadway is 38 feet wide in front of the terminal building.

Terminal Curb Frontage

The enplaning or deplaning roadway and curb are both at ground level and are located at the front of the terminal building. The combined enplaning and deplaning curb is approximately 396 feet long.

Vehicle Parking

Automobile parking in the terminal area can be separated into three areas: public, rental car, and employee parking.

Public Parking

The public lot for the terminal is located directly in front of the terminal building. There is room for 228 vehicles. Six (6) spaces provide disabled access, and one space provides disabled van-accessible parking.

Rental Car Parking

The rental car parking lot is located adjacent to the east side of the terminal building with room for 50 vehicles. Two (2) additional spaces and nineteen (19) overflow spaces are located west of the terminal building and Fire Department.

Employee Parking/Other

Employee parking is scattered around the terminal area. There are spaces for four vehicles associated with the Fire station; fifty (50) standard and two (2) disabled employee spaces, two (2) for police parking, twelve (12) standard and one (1) disabled for Lind Accounting Vocational Alternatives, twenty-two (22) for air freight and thirty-three (33) overflow and itinerant pilot parking spaces.

1.6.4 Aircraft Rescue and Firefighting

Aircraft Rescue and Firefighting (ARFF), formerly referred to as CFR, services are headquartered just west of the terminal building. The airport is classified as ARFF Index A airport serving regularly scheduled Index A air carrier aircraft as well as unscheduled air carrier aircraft. ARFF equipment appropriate to Index A is provided on a 24 hour basis. ARFF data is shown below in Exhibit 1-8.

EXHIBIT 1-8
ARFF RESCUE VEHICLES

Type Vehicle	Brand	Condition	Response Time*
Rapid Response	Chevy 1 Ton	Good	3 Min.
T-1500	Oshkosh	Good	3 Min.
CT4-1500-BSG	Yankee Walters	Fair	3 Min.

* Required response time to midpoint of farthest runway in minutes and seconds.

1.6.5 U.S. Customs Services

A customs services office was formerly located at building number 6 just east of the Central Building. Effective May 1990, the Yakima Air Terminal received its official designation as a user fee international port of entry. As a User-Fee Port of Entry, the Yakima Air Terminal was required to reimburse the U.S. Customs Service for all costs associated with maintaining an inspector at the airport. Additionally, three paved tie-down spots were reserved for customs use.

While the airport continues to support the Foreign Trade Zone and User Fee Customs Port of Entry to promote air freight and community development, the FTZ was temporarily deactivated due to the financial burden of maintaining Customs. When sufficient industry is located in the Yakima area to support the costs of the FTZ and Customs, the FTZ will be reactivated.

1.6.6 Air Cargo Facilities

The following air freight operators have use agreements or leases with the airport and operate out of Yakima on a daily basis:

- Federal Express (operated by Empire Airlines)
- Airborne Express
- United Parcel Service (operated by Methow Aviation)
- DHL (through a local contractor)
- Airpac Airlines
- Regional Express
- Horizon Express Air Freight

Aircraft utilized by these companies range in size from the Cessna 208 Caravan, the Beechcraft model 18, and the Piper Navajo, down to small single engine Piper and Cessna aircraft. Horizon uses the storage areas of their passenger aircraft.

1.6.7 Other Terminal Area Facilities

In addition to passenger and air cargo related terminal facilities, the terminal area also includes several other types of aviation and non-aviation related facilities. These are discussed below.

Air Traffic Control Tower

The air traffic control tower is a Level 1 VFR Contract Tower with radar provided by the Pasco TRACON. It is located just east of the passenger terminal building. Its hours of operations are from 6:00 a.m. to 10:00 p.m. daily.

Airport Administration Building

The airport administration offices are housed in the former C&C Air Freight building. This facility houses 1,395 square feet of office space and 3,000 feet of clear span warehouse space.

National Weather Service Station

The National Oceanic and Atmospheric Administration/ National Weather Service formerly operated a weather station located immediately west of the fire station. This operation has been moved to Pendleton, Oregon. They currently provide an ASOS facility on the airport.

Airport Maintenance Area

Located approximately 0.6 of a mile west of the terminal building is the airport maintenance area. This area consists of a large 105,000 square foot yard and a 13,440 square foot covered garage that provides for the storage of materials and equipment and includes offices.

1.7 Aviation and Non-Aviation Related Commercial/Industrial Uses

USDA Wildlife Services is located on the North side of the field; Washington State Military Department Armory and a construction company are located on the south side of the field; Yakima Valley Community College Aviation Technology Skill Center on the north side; Several offices on the north side are leased to various tenants including an accounting firm, a vocational rehabilitation/employment-retraining center, a commercial sign manufacturer; computer training center; and, a truck rental center (moving vans-small box vans).

1.8 General Aviation Facilities

The general aviation inventory is organized as follows:

- Tenants and Services
- Aircraft Storage Inventory
- Fuel Facilities

Each of these categories is discussed in detail below.

1.8.1 Tenants and Services

Nolad-Decoto is a full service Fixed Based Operator (FBO) providing services for general aviation pilots and the public. Noland-Decoto is located west of the passenger terminal and off airport property. This operation provides FBO facilities and services including aircraft charter, air taxi service, flight instruction, pilots' lounge, fuel storage and delivery, T-hangar space for general aviation aircraft on private property and through a lease agreement with the airport, manages tie-downs on airport property. McAllister Flying Service is a museum located on the east end of the airport between Runways 22 and 27. McAllister Flying Service provides also provides self-service 100LL from a 12,000-gallon above-ground, self-contained fuel tank.

Cub Crafters operates a facility at the east end of the airport. Cub Crafters is an aircraft manufacturing facility in addition to an aircraft sales, repair and overhaul facility, and also provides aircraft storage. All Seasons leases a 55,910 square-foot hangar to Noland-Decoto for heavy maintenance, which is located west of the airport maintenance building. A new aircraft repair facility is located on the field east of the terminal building, Air Classic Rebuilders, who specialize in all phases of aircraft rebuilding, overhaul and repair. They are also installing three 12,000 gallon above-ground, self-contained fuel storage tanks on the

west end, building 25. They will consist of two Jet-A tanks, one for corporate clients and the other for self-service, and a 100LL self service facility.

1.8.2 Hangar Inventory

Conventional and T-hangar space, as well as tie-downs, are available at the airport. Exhibit 1-9 provides a summary of these facilities.

EXHIBIT 1-9
AIRCRAFT STORAGE DATA

Location	No. of Conventional Hangars	Conventional Hangars Sq. Ft.	T-Hangars	Tie-Downs	Itinerant Tie-Downs
Noland-Decoto	6	18,000	50	15	15
Interwest Aviation	1	10,000	0	16	
Cubcrafters	2	5,000	0	14	0
McAllister	0	0	0	9	3
Civil Air Patrol	0	0	0	2	0
Richardson's Airway	1	5,000	18	9	
Public Facilities	0	0	0	37	15
Total	10	38,000	68	102	33

Source: General Aviation Users Survey, August 1992

1.8.3 Fuel Facilities

Presently, there are three facilities at the airport supplying aviation fuels.

McAllister Museum on the east end of the airport has one 12,000 gallon 100LL tank.

Noland Decoto on the west end of the airport has two tanks, one 12,000 gallon 100LL storage tank and one 15,000 gallon Jet A storage tank. Fuel is supplied to the customers through the use of one 750 gallon and one 2,000 gallon mobile fuel delivery trucks.

McCormick Aviation, (Classic Air Rebuilders), also the west end of the airport, has two 12,000 gallon Jet A storage tanks and one 12,000 gallon 100LL storage tank. They also provide truck service.

1.9 Utilities

The airport and environs are located within a designated Sewer Service area as outlined in the Yakima Wastewater Facilities Planning Study. The sewer system design is intended to accommodate commercial and industrial flows based on projections of development on and around the airport. Potable water is supplied to the airport and surrounding area from two sources. The City of Yakima is the prime supplier within the corporate city limits, and Nob Hill Water covers the service area west of the airport.

Electrical power is supplied by Pacific Power and Light. Pacific Power and Light has two separate sources of power with emergency interconnect capability to provide a dependable and economic electrical power supply. The area around the airport also includes sufficient telephone line capability to allow for projected growth. Natural gas supplies are available from Cascade Natural Gas, with sufficient capacity

available to allow for most types of growth.

1.10 Historical Airport Activity Levels

This section of the inventory presents an overview and summary of historical aviation activity at the Yakima Air Terminal. Data concerning levels of passengers, aircraft operations, based aircraft, and enplaned cargo serve as the basis for forecasting future demand, assessing existing capacity, and identifying additional facility requirements. Data was collected from Airport Management Records and Air Traffic Control Tower records (FAA Form 7230-1).

Aviation activity descriptors are presented in the following sections:

- Air Carrier Passenger Enplanements
- Air Cargo Enplanements
- Operations
- Based Aircraft

1.10.1 Air Carrier Passenger Enplanements

Air carrier activity incorporates all regularly scheduled airline activity performed by airlines certificated in accordance with Federal Aviation Regulations (FAR) Parts 121 or 127. This includes major air carriers as well as commuter air carriers that operate aircraft with a maximum of 60 seats, and provides at least five scheduled round trips per week between two or more points, or that carries mail. Air taxi service is not considered an air carrier, although air taxi data may be used to predict the need for additional air carrier service. Passenger enplanements are defined as the number of revenue passengers boarding an aircraft, including stopover and transfer passengers.

Regularly scheduled air carrier service to Yakima has most recently been provided by Horizon Air, flying 37 seat De Havilland Dash 8s. Historical passenger enplanements are shown in Exhibit 1-10.

EXHIBIT 1-10
YAKIMA AIR TERMINAL HISTORICAL ENPLANEMENTS 1980-2000

Year	Historical Enplanements
1980	58,000
1981	49,300
1982	49,300
1983	51,300
1984	72,200
1985	59,100
1986	70,000
1987	75,200
1988	78,100
1989	71,300
1990	66,000
1991	61,237
1992	64,085
1993	64,534
1994	79,697
1995	83,181
1996	87,379
1997	87,235
1998	86,636
1999	86,581
2000	85,239
2001	74,416
2002	59,522

Source: Yakima Air Terminal Boarding Records

1.10.2 Aircraft Operations

Operations refers to either the taking off or landing of an aircraft. Exhibit 1-11 details the number of annual aircraft operations over the last 23 years. The peak month for aircraft activity is June.

EXHIBIT 1-11
HISTORICAL ANNUAL OPERATIONS

Year	Major Air Carrier	Commuter/Air Taxi	Itinerant General Aviation	Local General Aviation	Military	Total
1980	10,100	7,700	40,100	25,000	4,100	87,000
1981	14,200	2,800	41,300	27,800	6,100	92,100
1982	1,500	15,800	35,100	19,400	6,500	78,400
1983	0	16,500	34,200	20,600	6,500	78,000
1984	0	19,700	36,400	23,000	7,100	86,200
1985	0	21,100	35,500	20,800	8,400	85,800
1986	1,000	15,700	35,200	25,200	9,400	86,500
1987	1,200	17,000	34,500	26,900	11,600	91,200
1988	1,100	23,300	32,700	23,900	9,000	90,000
1989	800	22,700	30,400	26,500	9,900	90,300
1990	300	20,800	28,400	26,400	8,800	87,700
1991	400	18,200	28,800	25,400	7,300	80,200
1992	664	20,312	30,147	20,823	5,875	77,821
1993	392	19,664	25,444	17,137	5,769	68,406
1994	724	18,992	28,124	24,000	6,773	78,613
1995	417	18,035	24,732	24,632	4,861	72,677
1996	350	18,628	24,064	22,533	5,295	70,890
1997	312	18,479	19,833	18,580	4,448	61,652
1998	326	16,983	17,986	16,529	3,268	55,092
1999	439	17,011	19,285	15,886	4,030	56,651
2000	443	15,312	20,741	18,729	3,878	59,103
2001	241	13,631	19,421	17,467	2,513	53,273
2002	341	11,860	19,592	16,120	2,559	50,472

Source: Yakima Air Terminal Airport Operations Count Fiscal Years 1980-2002.

1.10.3 Based Aircraft

A based aircraft is a general aviation aircraft that is permanently stationed at an airport. The number of general aviation aircraft that can be expected to base at an airport is an important factor in the planning of future airfield and landside facilities. Exhibit 1-12 the number and type of aircraft based at Yakima since 1987.

EXHIBIT 1-12
BASED AIRCRAFT

Year	Single Engine	Multi Engine	Jet	Total
1987	148	20	1	169
1990	85	25	1	111
1994	105	18	0	123
1995	91	15	0	106
1996	111	11	0	122
1999	97	16	0	113
2000	108	14	1	123
2001	116	18	2	136
2002	119	18	2	139

Source: Yakima Air Terminal Records.

1.11 Financial Data

Historical revenues and expenditures are presented in Chapter 8 along with revenue and expenditure projections for the 20 year planning horizon.

1.12 Regional Airports and Airspace

This section describes the regional airspace system in order to allow proper consideration to possible airspace impacts of future development plans. Components of this system include:

- Regional Airports
- Airspace
- Enroute Airways
- Air Traffic Control

1.12.1 Area Airports

Other airports in the vicinity of Yakima Air Terminal may exert some influence on the airport in terms of competing services and facilities, and airspace. The general character and services associated with these airports are shown in Exhibit 1-13.

EXHIBIT 1-13: AREAWIDE PUBLIC USE AIRPORTS

Airport	Ownership	Service Level	No. of Runways	Longest Runway (feet)	Instrument Approach	Location Relative to YKM
Yakima Training Center	Military	Military	1	4,500	N/A	9 mi. NE
Hitchcock	Private	Basic Utility	1	N/A	None	20 mi. SW
Sunnyside	Public	Basic Utility	1	3,543	None	38 mi. SE
Bowers Field	Public	General Utility	2	5,552	VOR Non - Precision	38 mi. N
Prosser	Public	Basic Utility	1	3,440	None	52 mi. SE

Source: Seattle Sectional Aeronautical Chart, NOAA 1/9/92

1.12.2 Area Airspace

This section examines airspace patterns and navigational aids in the Yakima Valley region. This information will be used, later in the study, to determine operational capacity constraints.

The airspace structure in the Valley is either *uncontrolled* or *controlled.* Uncontrolled airspace is defined as all airspace that has not been designated as controlled, and within which Air Traffic Control (ATC) has neither the authority nor responsibility for control. Controlled airspace, on the other hand, is supported by ground/air communications, navigational aids, and air traffic services. Controlled airspace consists of those areas designated as *Continental Control Area, Control Area, Control Zones, Terminal Control Areas, Airport Radar Service Areas,* and *Transition Areas*, within which some or all aircraft may be subject to ATC. Virtually all airspace above 14,500 feet mean sea level is considered controlled. Airspace under that altitude can be either controlled or uncontrolled, depending upon the air traffic density, proximity to an airport, and geographic factors.

Another category of controlled airspace is designated *Special Use*. Special use airspace consists of that airspace where limitations are imposed upon aircraft operations usually because of military activity. Special use airspace is classified as Restricted Areas, Military Operation Areas, and Prohibited Areas. Restricted Areas are military related or have tethered radar balloons and related equipment. When active, restricted areas are closed to overflight up to a specified flight levels. Military operating areas (MOA) are also associated with military training, but can tolerate throughflight when in use. Extreme caution is advised when traversing an active MOA.

Yakima Air Terminal airspace borders a Restricted Area called associated with the Yakima Firing Center. Parts of this area are closed to overflights intermittently by notices to airman NOTAM. Permission to enter is not required, but is recommended.

1.12.3 Air Traffic Control

The purpose of this section is to describe the management of airspace in the vicinity of Yakima Air terminal. Much of this discussion is based on information obtained in FAA documents and discussions with FAA personnel.

Within the Central Washington area there are two major jurisdictional categories of airspace -- Air Route Traffic Control Center Airspace (ARTCCA) and Air Traffic Control Tower (ATC) Airspace. These categories define a specific volume of airspace and are discussed below.

Air Route Traffic Control Centers

All aircraft flying under instrument Flight Rules (IFR) and not under control of military or terminal facilities are monitored by air route traffic control centers (ARTCC). These centers control an aircraft's route of flight between airports and provide separation of services, traffic advisories, and weather advisories. Aircraft flying under visual flight rules (VFR) may also be monitored by these centers if they have filed a flight plan with a Flight Service Station (FSS) prior to takeoff.

The United States is divided into approximately 20 different ARTCCS; the Yakima Area fall within the Seattle ARTCC area of responsibility.

Airport Traffic Control Tower Airspace

An Airport Traffic Area, or air traffic control tower airspace, is the airspace under jurisdiction of an air traffic control tower (ATCT). For Yakima Air Terminal this area is defined as a Control Zone. This is a circular area with a radius of five square miles with extensions to include instrument approach and departure paths.

1.13 Study Area Characteristics

The historic and present character of an airport's environs have a direct relationship to the historic and existing character of the airport itself. Future changes in these area characteristics will likely cause changes in the airport or, conversely, be caused by developments at the airport. For these reasons, defining the historical, present, and future characteristics of the airport's study area is an important step in master planning. Past and present conditions are readily determined while selecting a future growth scenario is much less precise. This section describes the study area and defines its historic and existing characteristics while reviewing the various growth trends and projections developed for the area. Selection of a future community growth scenario will be accomplished in the context of established community plans and policies, and with personal interviews with civic, governmental, and industry leaders.

1.13.1 Study Area

The Yakima Air Terminal is located in the south-central portion of the City of Yakima. The City of Yakima is the population, business, commercial, and cultural center of the Kittitas - Yakima Region of Central Washington State. It is a diverse region with a population of over 200,000 people. It is commonly ranked either the fifth or sixth largest agricultural producing region of the world.

1.13.2 Socioeconomic Characteristics

An area's socioeconomic profile can have a direct relationship to its demand for aviation related activities. Experience has shown that the most significant factors typically in this profile are population, income, and employment. Each of these are assessed in the following pages.

Population

Yakima County's population grew significantly from 1970 to 2000, a change of over 53 percent. Population forecasts by the Washington State Office of Financial Management to year 2025 shows additional growth of over 27 percent. Historical and forecast population is shown in Exhibit 1-15.

EXHIBIT 1-15
YAKIMA COUNTY HISTORICAL AND FORECAST POPULATION

Year	Yakima County
1970	145,212
1980	172,508
1990	188,823
1995	219,480
2000	222,581
Forecast	
2005	225,622
2010	237,435
2015	254,257
2020	269,401
2025	283,884

Source: Washington State Office of Financial Management, County Population Projections, January 2002.

Income

The discretionary purchasing power available to residents over any period of time is a good indicator of consumers' financial ability to travel. High levels of discretionary income in an area served by an airport provide a strong basis for higher than average levels of consumer spending on air travel. Exhibit 1-16 lists historical per capita income for the Yakima Metropolitan Area.

Employment

Nonagricultural employment has remained steady over the past eight years. Nonmanufacturing jobs such as retail trade, service jobs, and government employment have traditionally employed more people than manufacturing jobs by over five to one. Total nonmanufacturing jobs have increased over 12 percent since 1990. By 2010, total nonagricultural employment is expected to increase by over 15 percent. Employment data is shown in Exhibit 1-17.

EXHIBIT 1-16
PER CAPITA INCOME FOR YAKIMA COUNTY

Year	Per Capita Income
1980	$ 8,993
1985	$ 11,393
1990	$ 15,655
1995	$ 18,299
2000	$ 22,022

Source: Washington State Employment Security Dept.

EXHIBIT 1-17
EMPLOYMENT DATA YAKIMA COUNTY 1990-2002

Year	Manufacturing Jobs	Nonmanufacturing Jobs	Total Nonagricultural	Total Employment	Percent Unemployed
1990	9,600	55,200	64,800	91,373	10.7
1991	10,000	55,800	65,800	88,821	12.6
1992	10,000	58,100	68,100	94,465	13.5
1993	10,200	59,500	69,700	96,430	14.4
1994	10,700	61,200	71,900	97,974	11.7
1995	10,600	62,400	73,000	99,118	12.6
1996	10,700	62,800	73,500	99,715	13.4
1997	11,000	64,100	75,100	103,340	9.9
1998	10,900	64,300	75,200	103,081	10.4
1999	11,300	63,400	74,700	100,396	10.0
2000	12,000	63,900	75,900	98,459	10.4
2001	11,500	63,100	74,600	95,008	11.4
2002	10,900	62,200	73,100	97,613	10.3
Projected					
2005	12,000	66,000	78,000	N/A	N/A
2010	12,300	72,000	84,300	N/A	N/A

Source: State of Washington Employment Security Dept., Labor Market and Economic Analysis; Yakima County Development Association; & U.S. Bureau of Labor Statistics

1.13.3 Community/Physical Environment

The Yakima Air Terminal is located within the political boundaries of the City of Yakima, and within the existing 1976 Urban Area Boundary. Its east, west, and south boundaries define, in part, the boundary between the City and County. Less than one mile to the southeast is the town of Union Gap. The airport is under joint control and jurisdiction of the City of Yakima and the County of Yakima, and is administered by the Yakima Air Terminal Board of Commissioners.

Existing Land Use

Examination of community-wide land use and growth patterns is useful in determining where future concentrations of residential, commercial, and industrial uses are likely to occur. Land use analysis in the vicinity of the airport is of particular importance since any local zoning ordinances or known land use conflicts must be carefully considered when evaluating alternatives for airport development. As illustrated in Exhibit 1-18, the land uses surrounding the airport are a mix of manufacturing/industrial, agricultural, public use, and residential, with a significant portion north of the airport single family residential. New residential land is currently being developed to the southwest.

Zoning

Within the 1976 Urban Growth Boundary, the City of Yakima, County, and Union Gap jointly administer comprehensive zoning regulations that divide the land within each jurisdiction into specific zoning districts. The zoning in the immediate airport area is predominantly light industrial, transitioning immediately to residential. In addition to these standard zoning districts, an Airport Safety Overlay District has been designated for the airport area.

In 2003, a new Airport Safety Overlay (ASO) District was implemented. The intent of the ASO is to protect the airspace around the airport from airspace obstructions or hazards and incompatible land uses in proximity to the airport. All zoning districts lying within the airport safety overlay are subject to the requirements of the overlay.

The ASO contains those areas defined by Federal Aviation Regulations (FAR) Part 77 as imaginary surfaces and the Runway Protection Zones (RPZ) as shown on the ALP. The primary airport safety area addresses land use compatibility with airport operations and structure height within the area bounded by the conical surface area. The secondary airport safety area primarily addresses structure height within the approach and transitional surfaces which extend beyond the conical surface.

The ASO defines permitted uses within the underlying zoning district and application and review procedures. Permitted uses are limited to those that do not constitute an incompatible land use, or that the use can be appropriately conditioned to mitigate noise impacts and other airport safety concerns, that the use meets height limitations, is not within a designated RPZ or 65 DNL noise impacted area, and is subject to the recording of an avigation easement.

DWG INDEX:
AKDE01
LT_D
LT_D-HATCH

SCALE
600 0 300 600 1200
(FEET)
1 INCH = 600 FT

N

LEGEND

- SINGLE FAMILY RESIDENTIAL
- DUPLEX-FOURPLEX RESIDENTIAL
- FIVE OR MORE RESIDENTIAL
- MOBILE HOME PARKS
- COMMERCIAL(RETAIL & SERVICES)
- WHOLESALE TRADE & INDUSTRY
- EDUCATION & GOVERNMENT
- PARKS & OTHER OPEN SPACES
- AGRICULTURE
- FORESTRY
- VACANT
- STATE LANDS
- FED & YAK. NAT. TRUST LANDS

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YAKIMA AIR TERMINAL
MCALLISTER FIELD AIRPORT LAYOUT PLAN

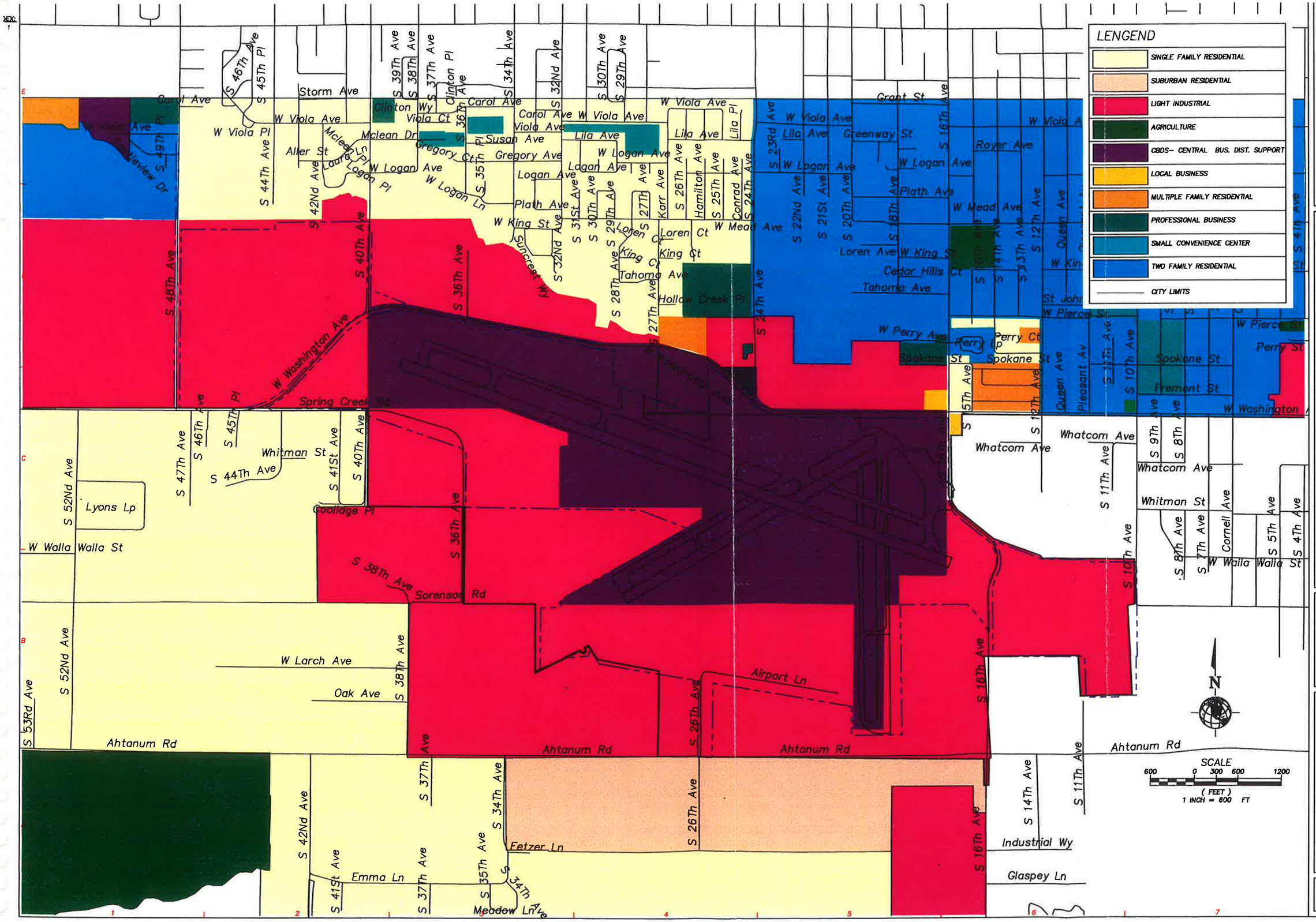
EXISTING LAND USE
EXHIBIT 1-18

PROJECT NO. 03.2502.0001
DRAWING FILE NAME: TYAKLU02.DWG
SCALE: 1"=600'

DESIGNED BY:	WLM	CHECKED BY:	DSW
DRAWN BY:	CMB	APPROVED BY:	MIN
LAST EDIT:	05/20/02	PLOT DATE:	07/09/03

DATE	BY	REVN	REVISION	CK'D/APPR.

SHEET
1-18



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YAKIMA AIR TERMINAL
MCALLISTER FIELD AIRPORT LAYOUT PLAN

EXISTING ZONING
EXHIBIT 1-19

PROJECT NO.	03.2502.0001
DRAWING FILE NAME:	TYAKZP01.DWG
SCALE:	1"=600'

DESIGNED BY: WLM
DRAWN BY: CMB
LAST EDIT: 05/20/02

CHECKED BY: DSW
APPROVED BY: MIN
PLOT DATE: 07/08/03

DATE	BY	REV#	REVISION	CK'D/APPR

SHEET
1-19

Community and Regional Planning

A number of local and regional agencies and organizations administer plans and policies that affect airport development. A brief description of their efforts relative to the airport master planning process are summarized below.

Yakima Metropolitan Area Comprehensive Plan

The Yakima Valley Conference of Government sponsored this Plan in 1987. As part of the Goals and Policy Statement it stated that the impact surrounding development has on airport operations should be minimized and land use decisions should be consistent with airport operations. Two objectives stated in the plan that street/arterial routes to the airport should be maintained at a standard sufficient for supporting airport induced traffic; and that airport development should be encouraged as air services are demanded.

Yakima Urban Area Comprehensive Plan

The Yakima Urban Area Plan adopted by Yakima, Yakima County, and Union Gap in 1981 to guide the growth and development of the Yakima Urban Area list as a policy statement to minimize the impact on surrounding development by:

1) To take into consideration noise impact on land use decisions in the airport vicinity
2) Institute clear zone and land use guidance zone programs
3) Encourage appropriate commercial and industrial activity to locate on or near the airport
4) Adopt and implement an airport master plan

Vision 2010

Prepared by the Citizens of the Greater Yakima Area in 1992 with the assistance of the City of Yakima calls for the development of a multi use complex with the necessary infrastructure to support expanded freight and passenger service.

Yakima County Economic Development Long Range Plan

This document was produced by the Yakima County Economic Development Resource Team and calls for expansion of the Yakima Air Terminal to service business and public transportation needs.

1.13.4 Surface Transportation Network

Transportation access to the airport is an important factor to be considered in the preparation of the master plan update. Existing transportation networks potentially impact aviation demand throughout the planning period. This section will examine existing and planned surface transportation facilities within the airport service area.

The primary responsibility for preparing, adopting, and maintaining regional transportation plans in the Yakima Metropolitan Area is the Yakima Valley Conference of Governments. The City and County of Yakima has primary responsibility for developing the transportation access plan for the airport.

Roadways

The primary transportation corridor in the Yakima Valley is U.S. Interstate 82. This is a four lane limited access highway running north and south parallel to the Yakima River. It connects with Interstate 90 at Ellensburg to the north and Interstate 84 south of Pasco. Other important highways in the area include

U.S. Highway 12, an east-west corridor stretching across the state and over White Pass to Interstate 5 in Western Washington, and U.S. Highway 97, a two lane corridor running through Yakima from the Canadian border to Oregon and points south.

Direct access from I-82 to the Yakima Air Terminal is not presently available. The Valley Mall Boulevard project is currently underway and will provide a much improved corridor from the airport to I-82.

The major arterial streets providing access to the airport include West Washington Avenue and Lower Ahtanum Road (east/west) and South 16th Avenue and South 40th Avenue (north/south). Direct access to the terminal area is from West Washington Avenue, a four lane urban arterial. Collector streets serving the airport include South 24th Avenue and Sorenson Road. Designated truck routes in the airport area include Washington Avenue, Lower Ahtanum Road and the linking portion of South 16th Avenue.

Rail

Rail service to the area is provided by Union Pacific Railroad, Washington Central Railroad Company, and Burlington Northern Santa Fe Railroad. Union Pacific provides nationwide service, while the Washington Central is a shortline railroad providing service up and down the Valley. Burlington Northern Santa Fe now provides several trains daily through the Valley connecting with the Puget Sound area and all points east.

Transit

The City and Airport are served by Yakima Transit. Yakima Transit provides regularly scheduled service to and from the Airport from 6:15 a.m. to 6:15 p.m. six days a week.

1.13.5 Natural Environment

The Yakima Air Terminal on an alluvial plain, bounded on the north by Cowliche Mountain, and on the south by Yakima Ridge, Rattlesnake Ridge, and Ahtanum Ridge ranging in elevation to 3,000 feet. The airport elevation is 1,095 feet above mean sea level.

Soil

The airport is composed primarily of Umapine silt loam. This very deep, artificially drained, salt and alkali affected soil is commonly found on flood plains and low terraces. It formed in alluvium. Typically, the surface layer is a light brownish gray, very strongly alkaline silt loam about 7 inches thick. The underlying material to a depth of 60 inches or more is light brownish gray and light gray, very strongly alkaline and strongly alkaline silt loam. Depth to bedrock is generally greater than 60 inches.

Permeability of this soil is moderate and available water capacity is high. A seasonal high water table is at a depth of 24 to 48 inches from November to June. Runoff is very slow, and the hazard of water erosion is slight. The soil is subject to rare periods of flooding.

Hydrology

All of the airport area drains into the Yakima River. A considerable portion of the airport vicinity consists of small steams and intermittent drainage courses. Wide Hollow Creek, located north of the terminal area, Spring Creek, south of the primary runway, and Bachelor Creek, adjacent to the southern airport property line, all cross the airport flowing from west to east. Certain areas of the airport are included within the National Flood Insurance Program 100 and 500 year floodways.

Climate

The Rocky Mountains partly shield the Yakima County area from strong arctic winds, so winters, though

cold, generally are not severe. In summer Pacific Ocean winds are partially blocked by the Cascade Mountains; the days are hot, but the nights are fairly cool. Precipitation, except in the mountains, is scant in the summer. The snowpack accumulation at high elevations supplies water to the lowland areas.

In winter the average temperature is 32 degrees F. The average daily minimum temperature is 23 degrees. In summer the average temperature is 68 degrees. The average daily maximum temperature is about 82 degrees F.

The total annual precipitation is 7 to 8 inches. Of this, 30 percent usually falls in April through September. The average seasonal snow fall is 25 inches. The average relative humidity in midafternoon is about 40 percent. Humidity is higher at night, and the average at dawn is about 80 percent.

Winds are primarily west to east.

Wildlife

The native vegetation is mainly salt and alkali tolerant grasses, forbs, and shrubs. Based on the airport's soil composition, its potential for wildlife habitat ranges from good for open land wildlife to fair for wetland wildlife.