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AURORA STATE AIRPORT

MASTER PLAN

COPY

1976-1995

FINAL DRAFT

OREGON STATE DIVISION OF AERONAUTICS

FEBRUARY 1976

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PREFACE

The preparation of this airport master planning project was financed in part through a planning grant from the Federal Aviation Administration, Department of Transportation, under the provisions of the Airport and Airway Development Act of 1970, (Public Law 91-258), as amended.

ACKNOWLEDGEMENTS

Names, titles, agencies to be checked and added later.

FORMAT

THE FINAL REPORT FORMAT

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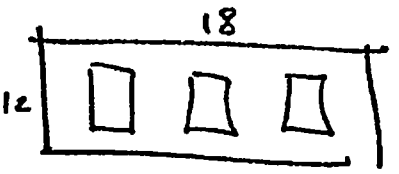

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FIGURES

changes in Final

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GLOSSARY OF ABBREVIATIONS USED IN MASTER PLAN

BT	Basic Transport, a category of airport serving BT aircraft, which are all airplanes of 12500 to 60000 pounds maximum gross take off weight; also includes turbojets under 12500 pounds.
DG	Dual Gear Aircraft
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FBO	Fixed Base Operator; FBO's provide aviation services at airports.
GA	General Aviation, including all types of aviation except Air carriers and Milltary.
GU	General Utility, a category of airport serving GU Aircraft, which are all airplanes under 12500 pounds maximum gross take off weight.
IFR	Instrument Flight Rules; Required in controlled airspace with a visibility less than 3 miles and/or celings lower than 1000 feet.
MALSF	Medium Intensity Approach Lighting System with sequence flashers; for use during instrument weather (IFR).
MLS	Microwave Landing System. It is used to provide horizontal and vertical guidance to landing aircraft during low visibility weather.
NDB	Non-directional Beacon. It is an electronic beacon providing direction guidance to aircraft.

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NEF	Noise Exposure Forecast. It is used as guidance for predicting human response to aircraft noise.
OSDA	Oregon State Aeronautics Division, Oregon State Department of Transportation.
SG	Single Gear Aircraft
SMSA	Standard Metropolitan Statistical Area. It is a standard area used to measure, compare, and predict socio-economic trends in metropolitan areas.
VASI	Visual Approach Slope Indicator
VFR	Visual Flight Rules. They can be used when the visibility is greater than 3 miles and the ceiling is higher than 1000 feet.
VOR/DME	Very high frequency Omni-directional Radio range/Distance Measuring Equipment. It is an instrument approach procedure using VORTAC.
VORTAC	Very high frequency Omni-directional Radio range with TACAN (an aid used by the Military).

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INTRODUCTION

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INTRODUCTION

Throughout recent years changing patterns of aviation activities at the Aurora State Airport have made it difficult for the Oregon Division of Aeronautics to maintain a responsive program for improvement. Short term needs have been met, but there has been no long range development plan for the airport.

There have been a long series of changes in the fixed base operations at the airport. These changes and replacements have affected the services to the airport user and sometimes even the nature of the airport's growing traffic.

Even while airport traffic was on a steady increase there have been periodic occurrences of crisis situtations for which there was little time for advance planning. Revenues to the owner, the Oregon Division of Aeronautics, have fluctuated, and financial planning has been difficult for the State.

Now the airport is one of the busiest general aviation airports in Oregon. Traffic includes a full range of general aviation equipment. Aurora State Airport serves portions of several counties, both rural and urban, and a wide variety of business and private users. Figure 1 shows the airport.

Many of the airport's facilities require improvements appropriate to the present and predicted air traffic. Also today's unprecedented emphasis on environmental compatibility and land use planning demands response from the airport community.

In May 1975 the Oregon Division of Aeronautics, Department of Transportation, retained CH2M HILL as airport consultants to prepare a master plan for the Aurora State Airport. This Master Plan provides the community at large and public agencies with a means to understand the airport's significance and to implement plans and programs related to the airport.

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OBLIQUE PHOTOGRAPH

AURORA STATE AIRPORT - 1976

FIGURE 1

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The Master Plan describes the kind and magnitude of development needed for aviation services and facilities and provides an orderly schedule for development through 1995. The plan also endeavors to preserve and improve the airport through economical solutions that remain compatible with regional development and responsive to community wishes.

Objectives accomplished and included in the Master Plan are:

- Preparation of an inventory of facilities and conditions and a collection of data essential to understanding the airport.
- Development of aviation forecasts and a determination of the airport's role in the airport system.
- An analysis of airport space and facilities requirements.
- Presentation of graphic depictions of recommended future development of all areas within and adjacent to the airport.
- Evaluation of the impact of future development upon the environment and the surrounding community.
- Establishment of a schedule for development by priorities and a staged improvement program with cost estimates.
- Specific recommendations for implementing the development program including a financial plan.

The Aurora State Airport Master Plan was developed through the combined efforts of many. Participants included representatives from local and state governments, the Federal Aviation Administration and many private citizens representing surrounding communities and users of the airport.

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Much of the Master Plan deals with a program for the future of the airport and with guidelines for use of the surrounding land. Because future trends and goals may not exactly match present forecasts and current community policies, the Master Plan scheme has the built-in flexibility to respond to changes without losing its integrity.

The main goal now after adopting the Master Plan is to follow through with a continuous implementation program, updated as required. This will be the best way to maximize the airports' benefits while minimizing costs and adverse impacts.

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SUMMARY

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SUMMARY

FINDINGS

- No long-range formal Plan exists for the Aurora State Airport.
- The lack of a Master Plan makes long range financial planning difficult or nearly impossible because there can be no budget targets for improvements.
- The Aurora State Airport serves a large service area, including several counties. The airport's sphere of influence is regional and the airport is part of a greater Portland regional system of airports.
- Surface access to the airport is poor from Marion County, but it is reasonably adequate from other counties to the north of the airport.
- The airport needs maintenance of both private and public facilities. Pavement and drainage are key items.
- The airport is built to standards exceeding minimum FAA requirements and often excelling maximum FAA criteria.
- The lack of a parallel taxiway is a serious problem both for safety and for airfield capacity.
- Improvements to airport facilities are not keeping pace with increases in air traffic levels.
- There is no on-site airport management to enforce airport operational safety regulations uniformly.
- Aircraft parking areas are in very poor condition and their use is limited by weather and soil conditions.
- The airport has no central focal point, no main entrance. This is confusing to transient pilots and visitors who are seeking a main terminal area.

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- The airport is owned in two parts. The runway area is owned by the Oregon Division Aeronautics and is basically a paved flight strip. All revenue producing areas of the airport are owned by private interests who are under no requirement to guarantee minimum levels of service to the public.

- Multiple ownership of separate parts of the airport make master planning and policy development impossible to implement through any comprehensive program or Master Plan.

- The Aurora State Airport needs more recognition by public comprehensive plans and by zoning ordinances. Although the airport use is now compatible with adjacent land use the surrounding area has potential for growth. Therefore the airport needs guaranteed protection throughout the long-range future.

- The current zoning of the airport, public amusement (PA) is inappropriate. Zoning adjacent to the airport Residential-Agricultural (RA) is potentially incompatible with the airport.

- The Master Plan forecasts significant increases in general aviation traffic. Master Plan forecasts for 1995 show 248 based aircraft, 209,000 annual operations, 115 operations during the busy hour.

  In 1995 eight percent of the aircraft will be propeller engine multi-engine aircraft and three percent will be turbojet aircraft. The airport will be serving a population of over one million people. The forecasts show a need for an air traffic control tower, a crash/fire/rescue station, a terminal building, and the full time direction of an airport manager. No airline traffic is predicted for the future.

- The airport's current role is General Utility, but this will change to Basic Transport as more corporate types and turbojet aircraft use the airport by the late 1980's. The date when the activity will determine the airport to be Basic Transport may depend upon the airport program of the Port of Portland and upon urban growth from Portland southward toward Aurora.

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- The existing airport site is adequate to accommodate the 20-year forecast needs of the Aurora State Airport.

- A proposed new airport in the southeast Portland area would affect Aurora State Airport slightly by absorbing some of the aviation demand and slowing the growth of the airport, but effects would not be significant.

- Two serious capacity problems limit the airport at this time. There is a runway capacity problem because of the lack of a parallel taxiway, and there is a parking problem, particularly during wet weather, because of the lack of paved public apron space.

- The airport does not presently provide sufficient public service facilities.

- Employment on the airport is increasing, and from 100 to 125 persons are directly employed on the airport. The direct plus indirect salary impact is estimated to approach $1,000,000 annually. The economic impact of the airport is on the increase.

- Eventually the airport will require a longer runway to accommodate more complex aircraft in the future, but a second runway will not be required.

- IFR approach procedures for the airport are unsatisfactory. Minima are poor and the requirement for DME equipment is limiting.

- The airport has no on-site navaids. Additional electronic and visual navaids are required.

- The Master Plan has developed a schedule of projects by priority necessary to develop the airport. They are contained in the Plan.

- For extensive terminal area development soil and drainage conditions may dictate installing central waste treatment facilities.

- The impacts caused by the operation of the airport upon the surrounding environment are light. These are described in the Master Plan.

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- The Master Plan presents a three-stage 20-year capital development program. Total estimated costs including private and Federal investments are about $3.3 million.

- The capital development program can be carried out with a State of Oregon share of $764,000 for the 20-year period.

- Currently the revenue produced by the airport is inadequate to support the forecast aviation demand levels. Under this Airport Master Plan the State's revenue could be developed to support the program recommended by the Master Plan.

- Successful airport operational management under a two part ownership, i.e., State and private, will become more difficult as air traffic levels and FBO levels of competition increase. — language?

- As traffic levels increase and activities become more complex the present airport staff available to the State Aeronautics Division is not adequate to manage the operation and development of the airport.

- Although the Oregon Aviation System Plan has recommended transfer of the airport to a local agency, no such agency appears to be available. State ownership of all airport property and management by the State appears to be the only viable alternative for successful operation and development of the Aurora State Airport.

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RECOMMENDATIONS

- This airport Master Plan should be adopted and implementation commenced immediately.
- Application should be made to the FAA for funds to support the Implementation Plan.
- The Aurora State Airport should be retained at its existing site.
- In order for the State to implement the Master Plan the State needs to control the land. Therefore acquisition of the land for the terminal area should be accomplished without delay.
- The existing airport criteria should be preserved even though they partially excell customary FAA airport standards.
- The parallel taxiway and exit taxiway system must be constructed immediately. This is necessary to protect public safety and to provide adequate runway capacity.
- Obstruction removal should be accomplished as described in the Master Plan.
- Paved aircraft parking aprons should be provided in the near future.
- More and better airfield lighting should be installed in the near future.
- The airport maintenance program should be accelerated, particularly as regards runway pavement rehabilitation and airfield surface drainage improvements.
- The State should continue to work closely with Marion and Clackamas Counties to develop compatible land use planning.
- The State should work closely with Marion and Clackamas Counties to develop zoning changes on and near the airport as recommended by the Master Plan.

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- The State Aeronautics Divison should make recommendations to the State Highway Division for improving access routes and facilities.

- The establishment of bus and/or limousine service to the airport should be encouraged.

- At this time no appropriate alternatives for airport ownership seem to exist. The State should retain ownership of the airport because its closure would have a critical adverse impact on the Oregon Aviation System.

- The State should take a more active part in the management of the entire airport and particularly give more attention to user service and problems.

- The State should develop an airport management program and increase its airport staff as necessary to administer the airport operation and development program.

- The State's financial policy should be to make the airport more self-supporting. This should be accomplished by obtaining more direct control of the sources of airport revenues. Revenues should be increased in accordance with area competition and inflation rates. Lease rates should be reviewed frequently and kept up-to-date.

- Airport traffic surveys should be made periodically and incorporated into the Master Plan and the Oregon Aviation System Plan.

- A program to collect weather data should be initiated and used for facility planning.

- The State should schedule periodic reviews of the Master Plan. It should be revised whenever necessary to keep it current.

- In updating the Master Plan the State should work closely with the airport users, local governments, and citizens. A flexible attitude and approach to the planning process should be maintained.

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AIRPORT REQUIREMENTS

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AIRPORT REQUIREMENTS

INVENTORY

History

The Aurora State Airport is a public airport, owned and operated by the Oregon Division of Aeronautics. The airport was constructed in 1943 by the State Highway Department to provide an emergency alternate field for air carrier aircraft. Thus, the airport has been in operation as an airport for approximately 32 years, although it has not and does not serve air carrier aircraft.

The airport has had a varied history. It has served military aircraft, crop dusters, gliders, as well as the full range of general aviation aircraft. Aurora State Airport began as a Federal Flight Strip Project. In the early years until 1953 the Bureau of Public Roads (BPR) administered the airport. In 1946 the Civil Aeronautics Administration included the Aurora Flight Strip in the National Airport Plan (now National Airport System Plan) where it has remained.

Legislation was passed in 1947 to permit the Board of Aeronautics (now Division of Aeronautics) to own and operate state airports, and in 1953 the Board signed a lease agreement with BPR to maintain and operate the airport. In 1973 the State Highway Commission transferred title to the Board of Aeronautics.

Location

The Aurora State Airport is located in the North Willamette Valley between Portland and Salem as shown on Figure 2, Location Map. The airport lies in Marion County, with the north property line bordering on the Marion-Clackamas County line. The Portland city center is about 20 miles north along Interstate Highway 5, and Salem lies 26 miles to the south.

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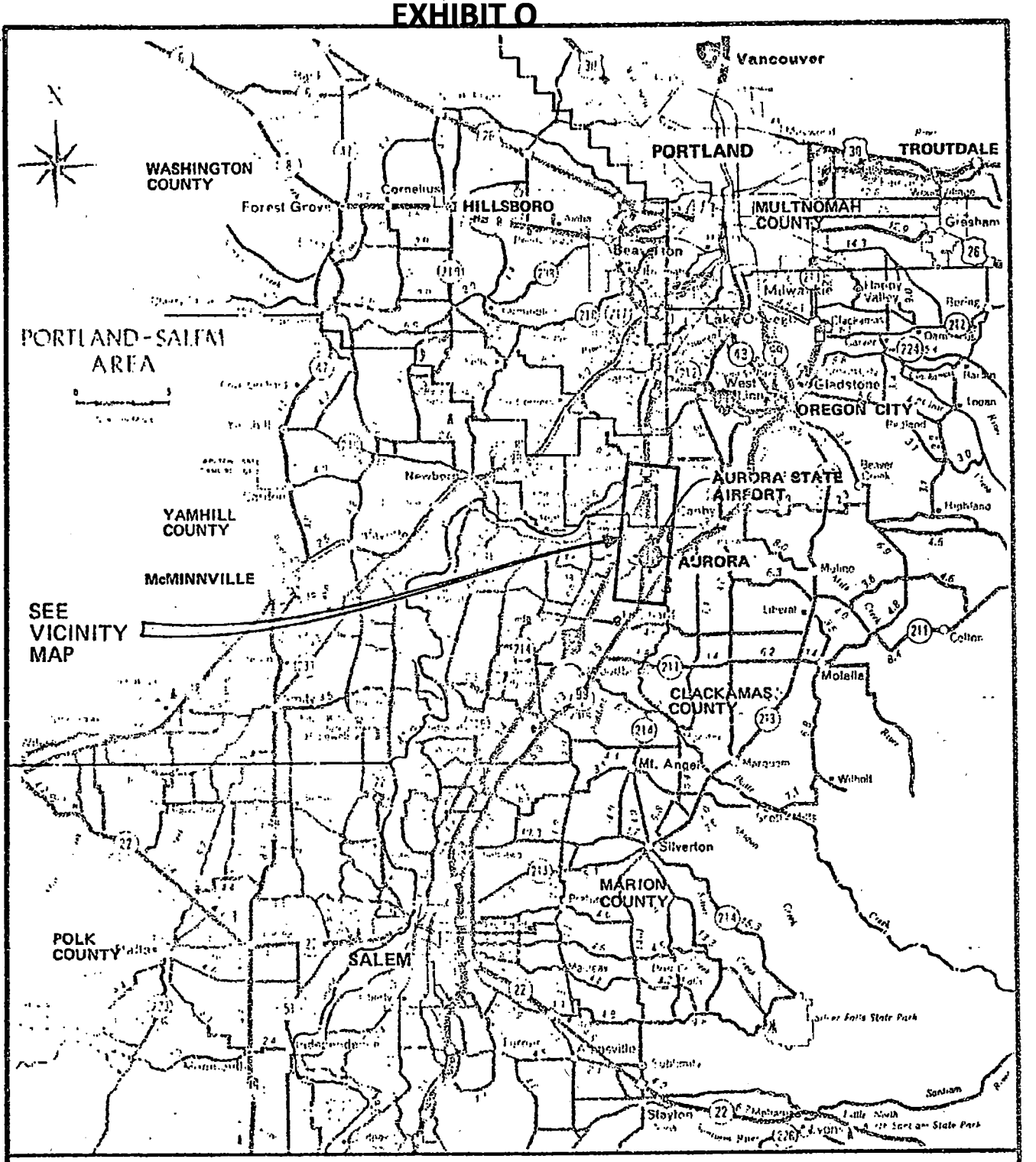

AURORA STATE AIRPORT
LOCATION MAP
FIGURE 2

CH2M HILL

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FIGURE NO. 2

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Airport access convenience plays a key role in determining the size of the area which the airport serves. Figure 3 shows travel times by car. The Aurora State Airport is reached by the local highway system. This system provides relatively good access to most of the airport service areas. However several major drawbacks exist as follows:

1) Several roads serving the airport are constructed to low standards and/or are in poor condition.

2) Indirect routes are required for access, particularly in the immediate vicinity of the airport.

3) The indirect routes are further complicated by a deficiency in airport related signing.

4) The surface facilities currently serving the airport are exclusively automobile oriented.

The Freeway (I-5) is about a mile west of the airport. It has and is undergoing improvement for most of its length between Portland and Salem. For this distance the Freeway will soon be an excellent six lane divided highway. It provides convenient access to downtown Portland and southern and western suburbs. The interchange with State Highway 51 just south of Wilsonville affords superior access to the airport.

Travel from the Salem area, although utilizing I-5 for much of its distance, is hampered by the required use of the Fargo Road interchange. This interchange is the only one in the area allowing southern traffic to enter or leave the Freeway between Woodburn and Wilsonville. The result is that traffic is forced to use a narrow, winding road to get from I-5 to Highway 51 in the vicinity of the airport.

Airport users from the southeastern portion of the service area have somewhat more convenient access. Both of the major facilities used, Highways 51 and 99E, have good quality two lane roadways. The access they provide to the impacted airport users is efficient and generally satisfactory.

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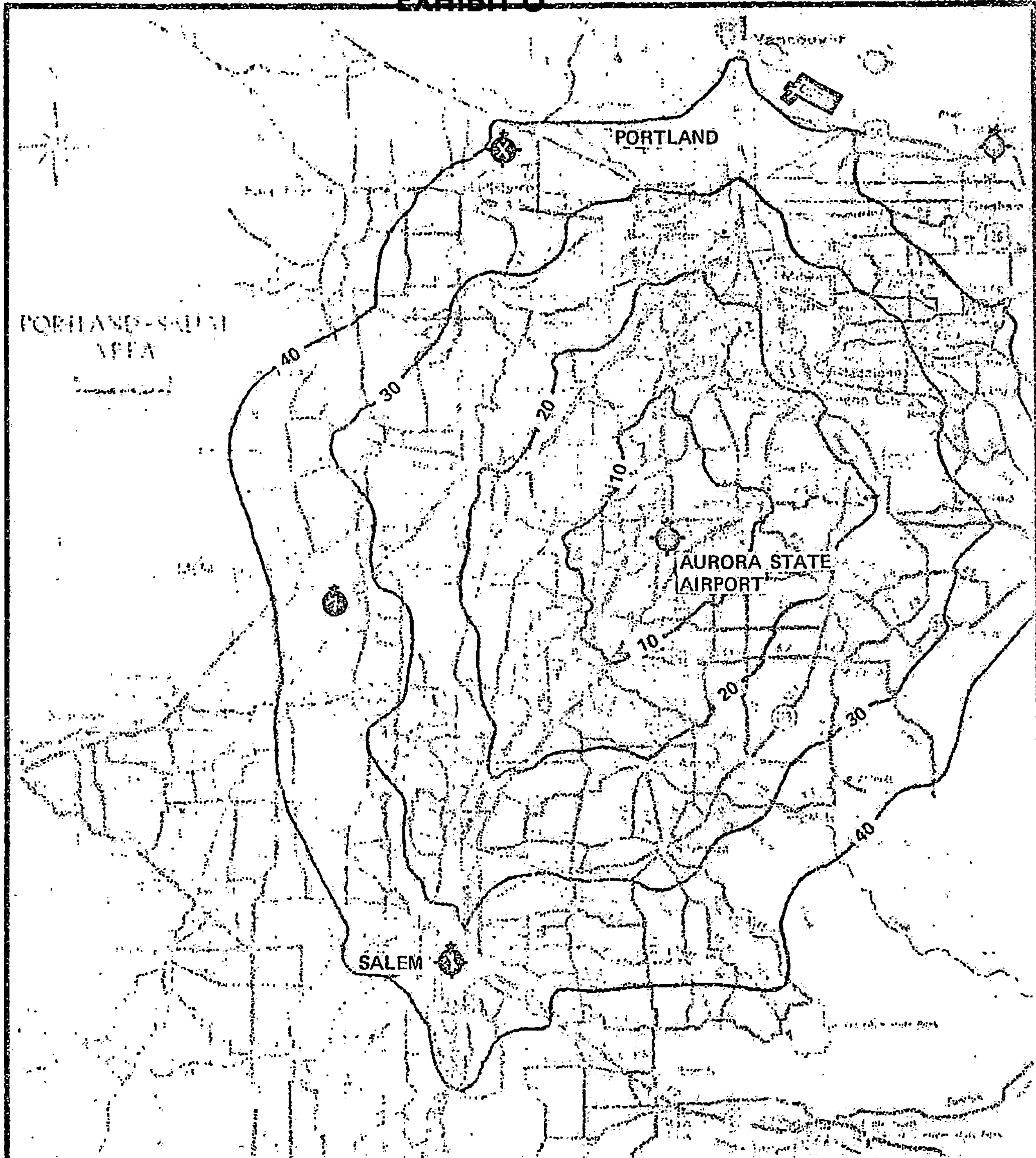

40 TRAVEL TIME IN MINUTES VIA NORMAL SURFACE ROUTES AT AVERAGE SPEEDS

AURORA STATE AIRPORT
GROUND TRAVEL TIMES
FIGURE 3

CH2M HILL

EXHIBIT O

Highway 99E between Aurora and the Southeastern Portland Communities is a recently improved, undivided four lane facility. It allows adequate mobility but is contrained at times by lower travel times because it passes through several communities on the surface street level as opposed to being grade separated. The sufficiency of 99E will be improved in the future with the completion of I-205. The combination of 99E and I-205 will provide a higher level of service to the central and eastern Portland areas. Portland International Airport and southern Washington will also be more accessible by this route.

← language?

The major drawback of the northern 99E route is that the highway becomes a two lane facility outside of Aurora and enters town essentially as a surface street. The route then travels a circuitous path over city streets and county roads to reach the airport.

Geography

The airport site lies 3 miles south of the Willamette River about 195 feet above sea level. See Figure 4, Vicinity Map. Topography around the airport is generally level. This precludes a need for extensive grading for airport construction work. However, the flat gradients of the site do not permit good surface drainage, particularly during long rainy periods. Less than a mile to the east is a large flood plain created by the Pudding River, but the airport site does not flood.

The soil at the site is classified by the Soil Conservation Service (SCS) as Amity silt loam. The soil and its components tend to fall into the clayey-silt or silty-clay category. While such soil is not an ideal construction material, it can be utilized under proper construction procedures as a foundation for pavements and structures required at the airport. The soil has poor internal drainage characteristics and is often limited by a perched water table. Its suitability for septic disposal drain fields is marginal.

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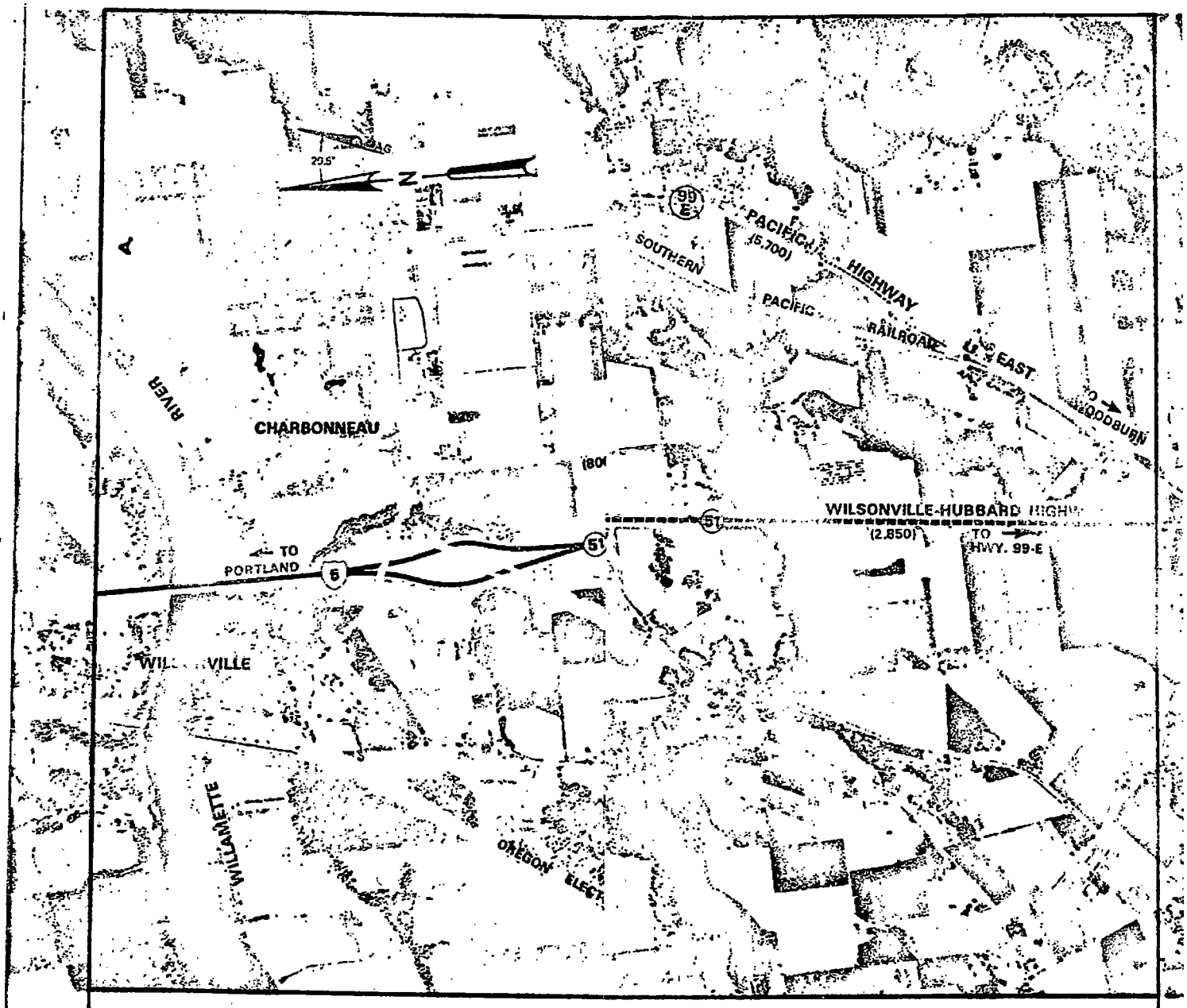

EXISTIN

PRINCIPAL CITIES

PORTLAND (DOWNTOWN)
BEAVERTON
LAKE OSWEGO
WILSONVILLE
PORTLAND HILLSBORO AIRPORT
AURORA
SALEM
OREGON CITY
MILWAUKIE
PORTLAND INTERNATIONAL AIRP
PORTLAND- TROUTDALE AIRPORT
SALEM
EUGENE
WOODBURN
LEVERTON
AURORA STATE AIRPORT PERIMET
AIRPORT ACCESS ROADS

NOTE:
NUMBER SHOWN AS (000) REPRESENT ANNUAL DAILY TRAFFIC.

AURORA STATE AIRPORT
VICINITY MAP
FIGURE 4

CH2M HILL

PRELIMINARY

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The climate is a modified marine climate influenced by the Coast Range to the west. Total annual precipitation, usually in the form of rain, has averaged 42 inches (107 cm) at the Agricultural Experiment Station just north of the airport. Most of the rainfall occurs from November to March and summers are dry. Winds are rarely of more than moderate force.

Weather data has been gathered both at the airport and at stations nearby. The normal maximum temperature, 28.7° Celsius (83.6° F) occurs in July. Minimum temperatures below 0° Celsius occur an average of 15 days out of the month during the month of January. Wind analysis is discussed later.

Ceiling and visibility data are not available for any location in the immediate vicinity of the Aurora State Airport. However, local pilots indicate that Aurora weather is better than average regarding visibility conditions when compared with those airports nearer the Columbia River.

The area from which the airport draws most users is shown on Figure 5. This service area shows the location of owners of aircraft which are based at the Aurora State Airport. The principal population concentration within the service area is generally north of the airport. In 1970, the approximate population within that area was 710,100 people.

Outside of the Portland metropolitan area, including suburbs, the remainder of the service area, which contains several outlying communities in Marion and Clackamas Counties, is largely rural in character. Non-agricultural industries are located mostly to the north around Portland and its suburbs.

The greater Portland metropolitan area tends to generate considerable demand for air transportation Airport activity there is well above state and national averages. Figure 6, Existing Airport System, shows other airports serving the region and making up a regional system of airports. This figure illustrates paved airports, airports with improved facilities, and airports open to the public. A few private airports are also indicated. There are also many small unimproved private fields in the region which are not shown on the figure.

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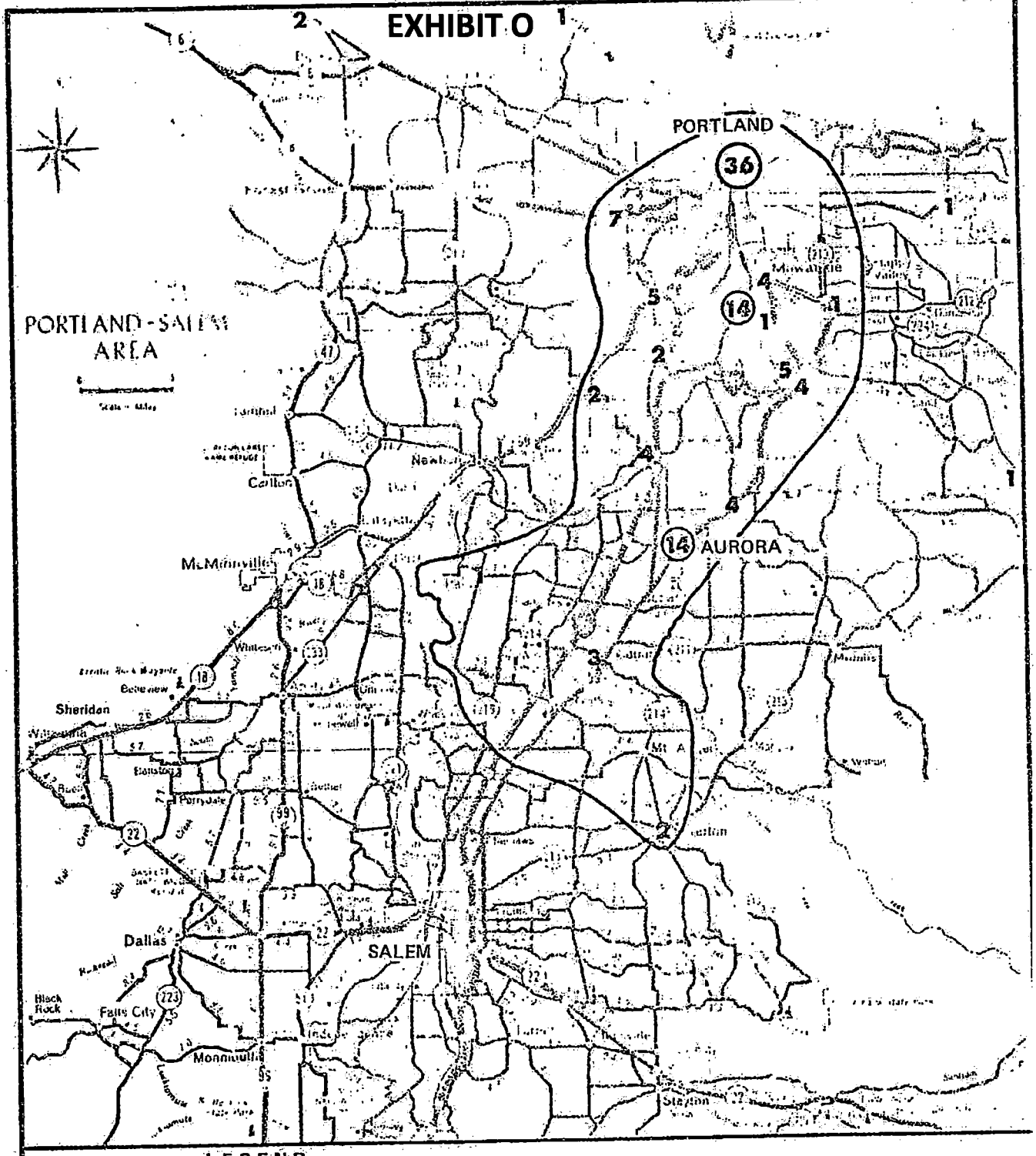


LEGEND

BOUNDARY OF AREA IN WHICH ARE LOCATED 90% OF THE OWNERS OF AURORA STATE AIRPORT BASED AIRCRAFT

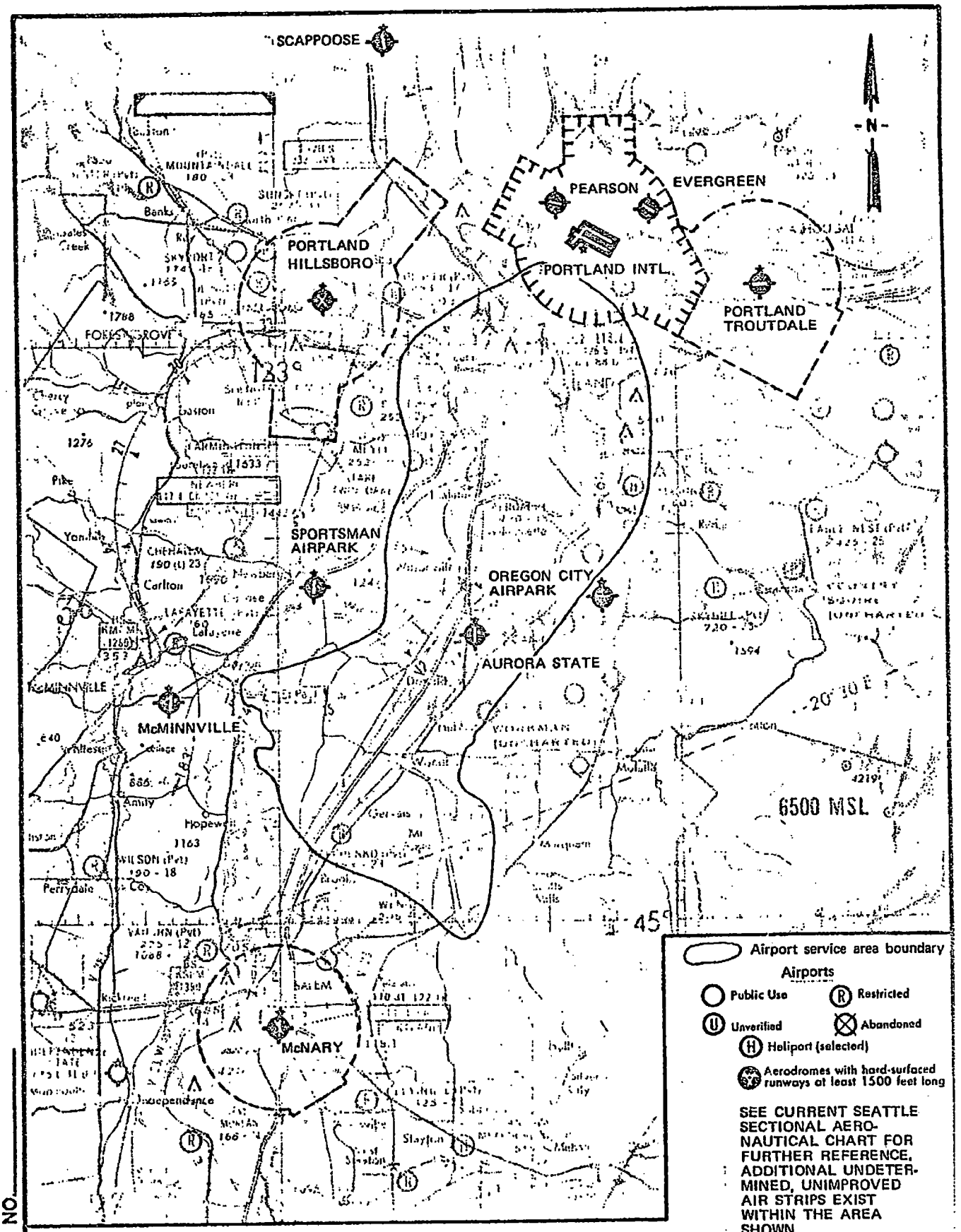
(14) NUMBER AND LOCATION OF AIRCRAFT OWNERS (1 PER AIRCRAFT) BASED AT AURORA STATE AIRPORT. THE NUMBERS REPRESENT 114 AIRCRAFT. THE ADDRESSES OF 13 OWNERS WERE UNAVAILABLE

AURORA STATE AIRPORT

SERVICE AREA

FIGURE 5

CH2M HILL



AURORA STATE AIRPORT
EXISTING AIRPORT SYSTEM
FIGURE 6

CH2M HILL

EXHIBIT O

Area Planning - Land Use

The pattern of existing land use and the prospects for future development in the vicinity of the airport are prime considerations in assuring compatible land use as use as the airport grows.

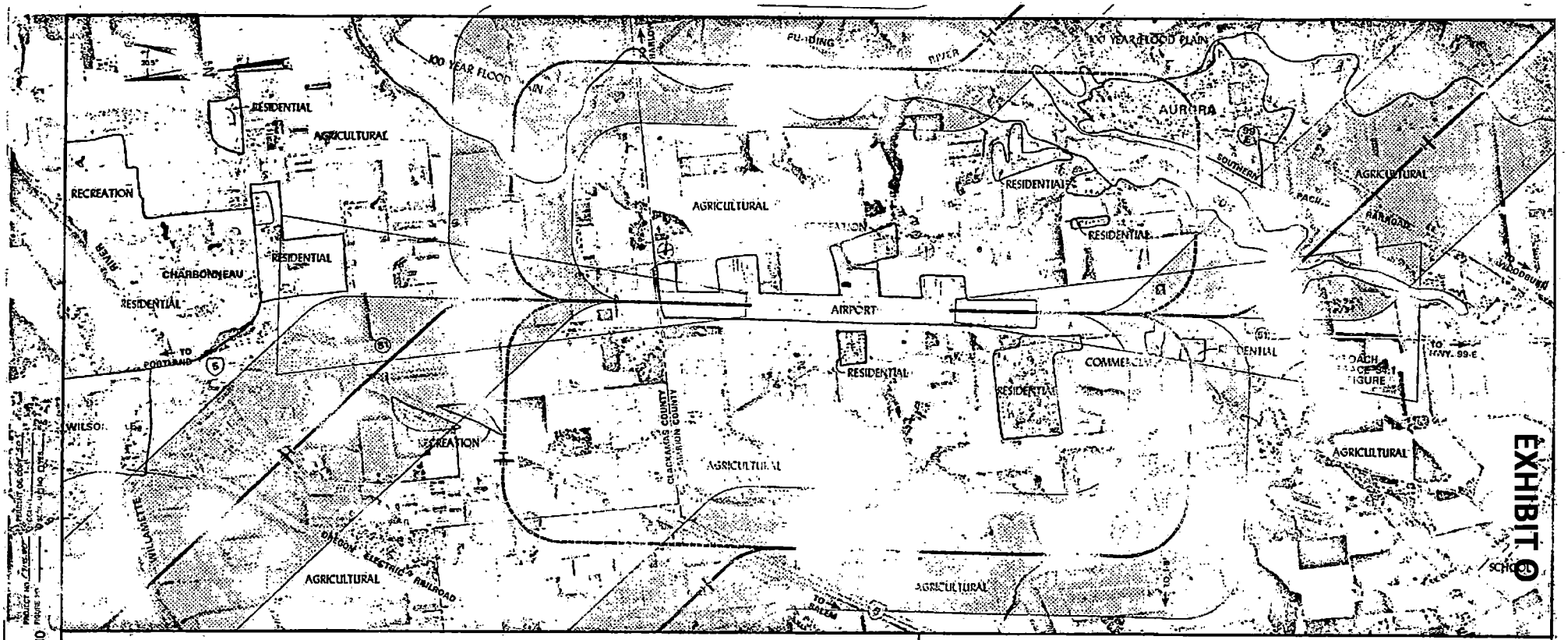
The existing land use pattern, as shown in Figure 7, is predominantly agriculture. The land capability class of the soils is Class II, which is very good farm land. The average 1970 product value for land of this class in Marion County was in the range of $200 to $300 per acre. Typical local products include nursery stock, grass for grazing and for hay, grass seed, orchards, and turkeys.

Three small concentrations of more intensive use exist along the airport perimeter. The largest is a 60-acre residential area west of the Wilsonville-Hubbard Highway, Highway 51. Another is a 35-unit and a mobile home park to the west along the Highway 51. The third is a church retreat center/group camp located to the east between the runway and the road to Aurora. Figure 8, Existing Noise Exposure, shows the extent of aircraft noise on these areas.

The closest urban development, Aurora, population about 550, is about a mile to the southeast. The City is known locally for its historic founding in 1856 by Dr. William Keil as a religious colony based on communal living. A number of historic buildings are being preserved and antique shops are prevelant.

Wilsonville is located about 3 miles to the north of the airport in Clackamas County. The City originally developed as a farm community and later as a freeway service center. More recently, the City has started to grow as a suburb to Portland. One major addition stimulating growth is a new plant built by Tektronix employing 900 to 1100 employees.

The Clackamas County Comprehensive Plan designates the land adjoining the airport on the north as agricultural and to the east as a flood plain. The Plan provides for growth in Wilsonville. It currently includes a growth area south of the Willamette River, but that is being deleted from the Plan. Charbonneau is a 770-acre planned community for 5,000 people located just south of the Willamette River, and is shown on Figure 7.



EXISTING LAND USES

AGRICULTURAL

RESIDENTIAL

RECREATION:

COMMERCIAL:

MOSTLY RESTRICTED TO CITIES WITH ONLY A FEW SCATTERED POCKETS OF DEVELOPMENT, THE LARGEST OF WHICH IS JUST OFF THE SOUTH END OF THE AIRPORT

SCHOOL:

GENERALLY LIMITED TO CITIES, AND NORTH MARION UNION HIGH SCHOOL AS AN EXCEPTION

FLOOD PLAIN:

DEFINED BY LIMITS OF 100 YEAR FLOOD. AGRICULTURAL, CONSERVATION AND RECREATIONAL USES.

AIRPORT:

INCLUDES RUNWAY, TAXIWAY, CLEAR ZONES AND AIRPORT RELATED, FIXED BASE OPERATIONS ACTIVITIES INCLUDED ARE FUELING, AIRCRAFT SALES, STORAGE AND REPAIR, AIRCRAFT CHARTER AND RENTAL, AND FLIGHT INSTRUCTION

AURORA STATE AIRPORT
EXISTING LAND-USE
FIGURE 7

PRELIMINARY

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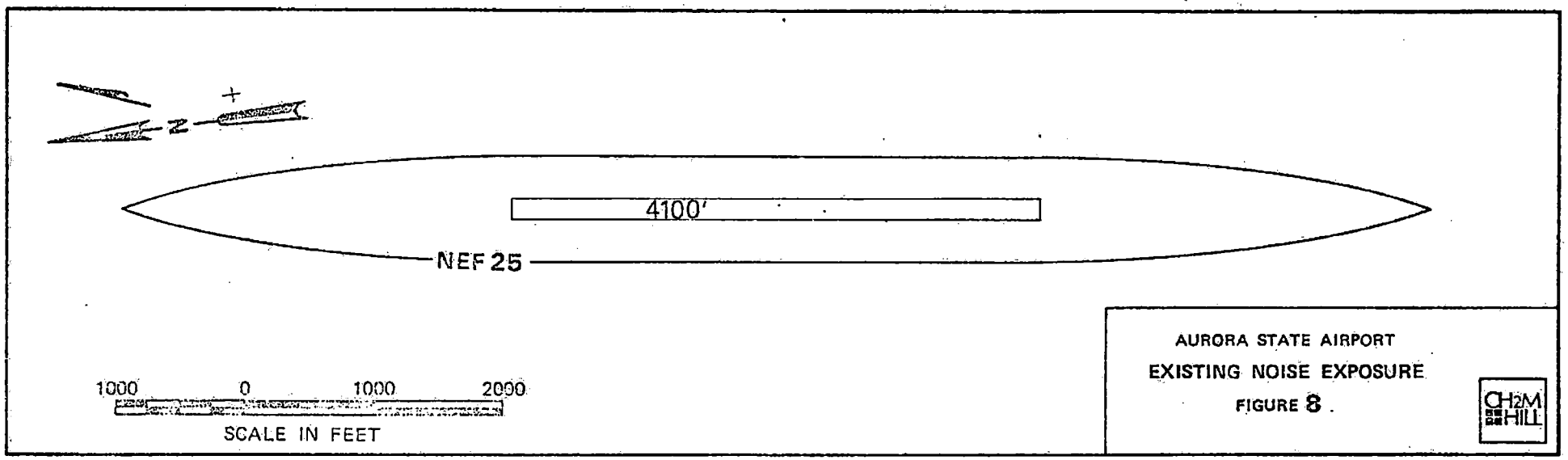

COMMENTS Photograph

12 PROJECT NO. C9198.00
FIGURE NO.

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Although Marion and Clackamas Counties have adopted Comprehensive Land Use Plans, both are general in nature, and are currently undergoing a revision and updating process. The City of Aurora has recently prepared a comprehensive plan indicating urban expansion outside of current city boundaries but not up to the airport.

With the exception of the three small residential developments west of the airport the existing land use conforms closely to the adopted Comprehensive Plans. All plans adopt the intent to preserve productive farm land, which includes most of the land around the Aurora State Airport.

Zoning

The Marion County Zoning Ordinance designates a specific zoning district for the Aurora State Airport called "Public Amusement and Recreation" (PA). The provisions of this district are primarily confined to other permitted uses which are incompatible with an airport. This is because nearly all of the other uses permitted outright in the district (amusement park, auditorium, exposition, stadium, and zoo) are incompatible with airport operations due to their typical concentrations of people and noise sensitive activities. In addition, the current district, PA, lacks specific provisions for airport related commercial uses and height obstructions in the surrounding airspace.

Nearly all the land in Marion County surrounding the airport is currently zoned "Residential Agricultural," (RA). The provisions of this district enable the development of country estate, or acreage residential, development in addition to farming. The primary permitted uses include single-family dwellings and farming. Minimum lot area requirements for residential development depend on the nature of sewerage service. In areas served by subsurface sewage disposal, minimum lot area is set by the County Health Department, with no minimum area specified.

Marion County is initiating a program to rezone the Woodburn-Hubbard Area with the purpose of which is to assure preservation of prime farm land in conformity with the Marion County Comprehensive Plan and Oregon State Land Conservation and Development Commission (LCDC) Guidelines. The County's intent is to rezone as much land as practical to the "Exclusive Farm Use" (EFU) or "Farm-20" (F-20) classifications. These districts would assure lower density development than currently permitted in the RA zone.

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The Marion County Zoning Ordinance does not currently contain provisions to limit building heights as they relate to airspace obstruction surfaces. Buildings in the RA zone are limited in height to 35 feet, except for public and semi-public buildings which may be as high as 70 feet. The EFU and F-20 zones have no height limitations.

The Clackamas County Zoning Ordinance applies to the area north of the airport. This area is currently zoned "Residential Agricultural" (RA-1). Under this classification, residential densities up to two dwelling units per acre are permitted where either public water or sewerage service are provided. For the area in the vicinity of the airport densities lower than two dwellings per acre will be required in the future in order to conform with comprehensive plan policies. Consequently, small acreage residential areas like the one currently under development just south of Charbonneau should not be permitted in the future. Zoning in Clackamas County does not include height limitations.

In the future, Clackamas County intends to rezone the RA-1 area to either "Exclusive Farm Use" (EFU) or "Residential Farm-Forest" (RF-F) in keeping with comprehensive plan and LCDC Guidelines. The EFU and RF-F designations would more adequately assure compatible land use in the airport vicinity; requiring 20 and 10 acre minimum lot areas respectively.

Figure 9 shows existing zoning districts on and around the Aurora State Airport.

Existing Airport - 1975

The present Aurora State Airport is the original Aurora Flight Strip. This consists of a single runway oriented north and south on a 113 acre parcel. Except for three privately constructed taxiway exits there are no other facilities provided To the airport.

The runway is 4100 feet by 150 feet, designated 17/35, and is paved and lighted. It occupies State owned property 600 feet wide and about 8100 feet long beside Highway 51. An instrument approach procedure allows limited IFR operations during instrument weather. The airport is shown on Figure 9.

EXHIBIT O

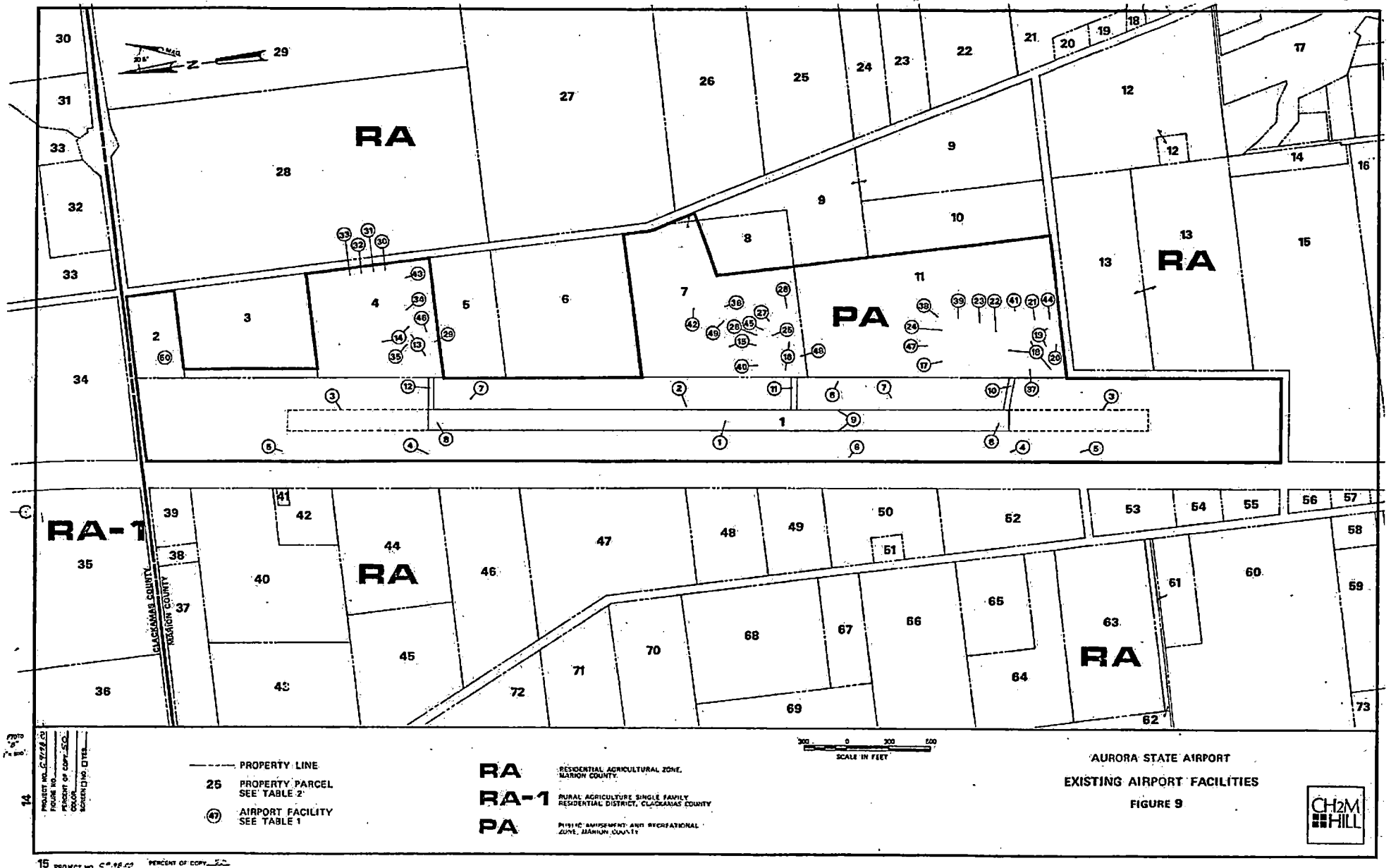
RA
PA
RA
RA-1
RA
RA
CLACKAMAS COUNTY
MARION COUNTY
PROPERTY LINE
25 PROPERTY PARCEL SEE TABLE 2
47 AIRPORT FACILITY SEE TABLE 1
RA RESIDENTIAL AGRICULTURAL ZONE, MARION COUNTY
RA-1 RURAL AGRICULTURE SINGLE FAMILY RESIDENTIAL DISTRICT, CLACKAMAS COUNTY
PA PUBLIC AMUSEMENT AND RECREATIONAL ZONE, MARION COUNTY
SCALE IN FEET
AURORA STATE AIRPORT
EXISTING AIRPORT FACILITIES
FIGURE 9
CH2M HILL
PRELIMINARY

EXHIBIT O

Various private facilities open to the public and located on private lands east of the airport complement the Aurora State Airport facilities. There are considerable deficiencies. The airport has no main entrance or terminal area. There is no public aircraft parking apron, and there are no FAA facilities on the airport. Table 1 describes the existing facilities, Table 2 provides property information, and Figure 10 shows some of the facilities and conditions existing. General data is provided by Table 3.

The lack of a parallel taxiway system combined with the lack of an FAA traffic controller poses a serious problem as to safety and runway capacity. Taxiing must be conducted along the runway. Since only the runway is State owned and there are three different FBO areas, traffic procedures are difficult to establish that insure safe separations.

Many transient pilots are confused as to which FBO area is their destination and taxi twice. Often taxiing aircraft are forced to give way to landing aircraft and must leave the runway pavement. This spreads loose aggregate on the runway increasing the potential for propeller damage.

Key points concerning airport layout are:

- The runway length accommodates all aircraft using the airport, which are light twin aircraft and smaller. Occasionally turbojets use this runway. There are all weather 1000- x 150-feet gravel overruns on both ends.
- The airport has no parallel taxiway system or turnarounds. However, the runway width, 150 feet, allows adequate space for turning most aircraft.
- The taxiway system is limited to three stub-entrance taxiways not connected to each other. They serve three apron areas, which are mostly turf.

EXHIBIT O

TABLE 1

EXISTING FACILITIES 1975

	ITEM	DESCRIPTION	CONDITION	COMMENTS
1	RUNWAY 17-35	150' x 4100' ASPHALT CONCRETE PAVEMENT	FAIR	NUMEROUS CRACKS
2	PARALLEL TAXIWAY	50' x 4100' GRAVEL SURFACE	POOR	TOO CLOSE TO RUNWAY
3	OVERRUN AREAS	150' x 1000' GRAVEL STABILIZED	GOOD	OVERGROWN WITH GRASS
4	WIND CONES	YELLOW FABRIC CONES ON METAL POLE	GOOD	SOUTH WIND CONE IS LIGHTED
5	CLEAR ZONE ACCESS ROADS	UNIMPROVED ROADS	FAIR	MAINTENANCE AND FARM ACCESS ONLY
6	DRAINAGE DITCHES	40' WIDE x 4' DEEP, 275'± FROM RUNWAY CENTERLINE	FAIR	EVIDENCE OF STANDING WATER
7	SERVICE ROAD	UNIMPROVED ROAD	POOR	USED FOR FUEL AND SERVICE TRUCKS
8	RUNWAY MARKINGS	BASIC STANDARD-WHITE	POOR	MARKINGS ARE STANDARD FOR BASIC RUNWAY
9	RUNWAY LIGHTING	STAKE MOUNTED, LOW INTENSITY LIGHTS	GOOD	TAXIWAYS ARE NOT ADEQUATELY LIGHTED. THRESHOLD LIGHTS ARE OFFSET TO THE WEST
10	STUB TAXIWAY	30' WIDE ASPHALT CONCRETE PAVEMENT	GOOD	NON STANDARD MARKINGS
11	STUB TAXIWAY	30' WIDE ASPHALT CONCRETE PAVEMENT	GOOD	DOES NOT EXTEND ACROSS GRAVEL PARALLEL TAXIWAY. NO MARKINGS
12	STUB TAXIWAY	30' WIDE ASPHALT CONCRETE PAVEMENT	GOOD	NO MARKINGS
13	AIRCRAFT PARKING APRON	100' x 200' ASPHALT CONCRETE PAVEMENT	GOOD	PARKING AND MANEUVERING AREA. PRIVATELY OWNED.
14	AIRCRAFT PARKING AND TIE DOWN AREA	150' x 300' ROCK STABILIZED TURF. 20 TIE DOWN SPACES. 10 TO 12 ADDITIONAL PARKING SPACES.	FAIR	USED FOR TRANSIENT AND PRIVATE AIRCRAFT. PRIVATELY OWNED.
15	AIRCRAFT PARKING AND TIE DOWN AREA	100' x 400' ROCK STABILIZED TURF. 14 TIE DOWNS	FAIR	USED FOR TRANSIENT AND NON-FBO AIRCRAFT. PRIVATELY OWNED
16	AIRCRAFT PARKING APRON AND TIE DOWN AREA	100' x 130' AND 20' x 300' ASPHALT CONCRETE PAVEMENT AND 80' x 300' GRAVEL SURFACE. 15 TIE DOWNS, 4 TO 6 PARKING POSITIONS.	FAIR	SERVICING AND PARKING AREA FOR FBO OWNED AIRCRAFT PRIVATELY OWNED.
17	AIRCRAFT PARKING APRON.	100' x 150' ASPHALT CONCRETE PAVEMENT	GOOD	NO MARKED PARKING SPACES. PRIVATELY OWNED.
18	AIRCRAFT PARKING AND TIE DOWN AREA	SEVERAL TURF AREAS, 18 TIE DOWNS, 6 TO 8 ADDITIONAL PARKING POSITIONS	FAIR	USED FOR FBO, PRIVATE AND TRANSIENT AIRCRAFT. PRIVATELY OWNED.
19	AIRCRAFT PARKING APRON	75' x 300' ASPHALT CONCRETE PAVEMENT, NO TIE DOWNS SEVEN PARKING POSITIONS	GOOD	PARKING AND MANEUVERING AREA FOR TIE DOWN AREA AND SHOPS. PRIVATELY OWNED.
20	MAINTENANCE HANGER AND GROUND SCHOOL OFFICES	70' x 135' x 25' HIGH METAL COVERED WOOD STRUCTURE	GOOD	TRAILER ATTACHED TO WEST SIDE, OSAD BEACON MOUNTED ON ROOF, PRIVATELY OWNED.
21	FBO ADMINISTRATION BUILDING	40 x 40' x 20' HIGH WOOD FRAME STRUCTURE	GOOD	APARTMENT ABOVE OFFICES. PRIVATELY OWNED.
22	T-HANGAR	30' x 290' x 16' HIGH METAL COVERED WOOD STRUCTURE. 10 PLANE CAPACITY	FAIR	NONCOMPARTMENTALIZED, NO ELECTRICITY. PRIVATELY OWNED.
23	T-HANGAR	34' x 190' x 16' HIGH METAL COVERED WOOD STRUCTURE. 6 PLANE CAPACITY	GOOD	NONCOMPARTMENTALIZED, NO ELECTRICITY. PRIVATELY OWNED.
24	MAINTENANCE HANGAR	80' x 180' x 30' HIGH METAL STRUCTURE	EXCELLENT	PRIVATELY OWNED, TEMPORARILY LEASED FOR HELICOPTER MAINTENANCE
25	FBO ADMINISTRATION BUILDING	30' x 40' x 14' HIGH WOOD STRUCTURE	GOOD	PRIVATELY OWNED
26	FBO OFFICE ANNEX	12' x 65' OFFICE TRAILER	GOOD	PILOT AND FLIGHT INSTRUCTOR OFFICES. PRIVATELY OWNED.
27	FBO OFFICE ANNEX	10' x 50' OFFICE TRAILER	FAIR	GROUND SCHOOL OFFICES. PRIVATELY OWNED.
28	MAINTENANCE HANGAR	50' x 60' x 20' HIGH METAL COVERED WOOD STRUCTURE, 20' x 20' LEAN-TO ATTACHED	EXCELLENT	MAINTENANCE SHOP AND PARTS STORAGE. PRIVATELY OWNED.
29	AVIONICS SHOP	40' x 100' x 16' HIGH METAL COVERED WOOD STRUCTURE	EXCELLENT	PRIVATELY OWNED
30	T-HANGAR	40' x 310' x 13' HIGH METAL COVERED, METAL FRAME STRUCTURE, 10 PLANE CAPACITY	EXCELLENT	COMPARTMENTALIZED, ELECTRICITY. PRIVATELY OWNED.
31	T-HANGAR	40' x 310' x 13' HIGH METAL COVERED, METAL FRAME STRUCTURE, 10 PLANE CAPACITY	EXCELLENT	COMPARTMENTALIZED, ELECTRICITY. PRIVATELY OWNED.
32	T-HANGAR	40' x 310' x 13' HIGH METAL COVERED, METAL FRAME STRUCTURE, 10 PLANE CAPACITY	EXCELLENT	COMPARTMENTALIZED, ELECTRICITY. PRIVATELY OWNED.
33	T-HANGAR	40' x 310' x 13' HIGH METAL COVERED, METAL FRAME STRUCTURE, 10 PLANE CAPACITY	EXCELLENT	COMPARTMENTALIZED, ELECTRICITY. PRIVATELY OWNED.
34	OFFICE BUILDING	35' x 50' x 12' HIGH WOOD FRAME STRUCTURE	GOOD	PRIVATELY OWNED. UNOCCUPIED.
35	FUEL TANKS	UNDERGROUND TANKS FOR 80/87 AND 100/130 FUEL. 10,000 GALLON CAPACITY EACH TANK	GOOD	STORAGE FOR FBO AT SOUTH END OF FIELD. PRIVATELY OWNED.
36	FUEL TANKS	ABOVE GROUND TANKS FOR 80/87 AND 100/130 FUEL	GOOD	PORTABLE TANKS. PRIVATELY OWNED.
37	FUEL TANKS	TWO 10,000 GALLON UNDERGROUND TANKS	GOOD	CURRENTLY NOT USED PRIVATELY OWNED.
38	FBO OFFICE	12' x 55' OFFICE TRAILER	GOOD	TEMPORARY OFFICE PRIVATELY OWNED.
39	TRAILERS	THREE SMALL TRAILERS	UNKNOWN	PRIVATELY OWNED. UNOCCUPIED
40	WIND TEE	20' LONG WIND TEE. PAINTED YELLOW AND LIGHTED	GOOD	NO SEGMENTED CIRCLE. PRIVATELY OWNED.
41	ACCESS ROAD	12' WIDE ASPHALT CONCRETE	POOR	PRIVATELY OWNED
42	ACCESS ROAD	16' WIDE ASPHALT CONCRETE	FAIR	PRIVATELY OWNED.
43	ACCESS ROAD	20' WIDE GRAVEL SURFACED	POOR	PRIVATELY OWNED.
44	AUTOMOBILE PARKING	60' x 100' ASPHALT CONCRETE, 20 CAR CAPACITY	FAIR	PRIVATELY OWNED.
45	AUTOMOBILE PARKING	75' x 250' ASPHALT CONCRETE, 50 CAR CAPACITY	FAIR	PRIVATELY OWNED.
46	AUTOMOBILE PARKING	75' x 100' GRAVEL SURFACED, 25 CAR CAPACITY	POOR	PRIVATELY OWNED.
47	STRUCTURAL STEEL	MISCELLANEOUS STRUCTURAL STEEL MEMBERS PILED FOR STORAGE	NA	OWNERSHIP AND USE UNKNOWN.
48	MAINTENANCE SHED	40' x 50' x 12' HIGH WOOD FRAME STRUCTURE	POOR	PRIVATELY OWNED.
49	STORAGE SHED	12' x 30' x 10' HIGH WOOD FRAME STRUCTURE	POOR	PRIVATELY OWNED.
50	FBO AREA	HELICOPTER MAINTENANCE FACILITY UNDER CONSTRUCTION	NA	PRIVATELY OWNED.

PROJECT NO. C9198.00

FIGURE NO.

EXHIBIT O

TABLE 2

PROPERTY INFORMATION - 1975*

STUDY NO.	OWNER	ACRES	STUDY NO.	OWNER	ACRES
1	OREGON STATE AERONAUTICS DIVISION	112.79	37	D.C. HEWITT	13.59
2	COLUMBIA HELICOPTERS INC.	5.70	38	D.C. HEWITT	0.89
3	W.G. & N.C. LEMATTA	14.35	39	D.C. HEWITT	3.06
4	W.O. REEL	16.77	40	CASCADE XMAS TREE FARM CO.	22.20
5	W. & C. JESKEY	9.28	41	CASCADE XMAS TREE FARM CO.	0.23
6	C.W. SNYDER	21.07	42	CASCADE XMAS TREE FARM CO.	3.77
7	W.M. & V.L. BENNETT	25.10	43	HOEHNKE NURSERY CO.	19.52
8	SAN GABRIEL GOSPEL TEMPLE	5.12	44	FREEMAN, JR. ETAL	15.00
9	SAN GABRIEL GOSPEL TEMPLE	28.18	45	ELMER O. & MARGARET JESKEY	13.92
10	G.W. & K.L. JESKEY	12.62	46	ELMER JESKEY	16.55
11	NORTHWEST AIRMOTIVE	38.56	47	F.R. & E. KAHLE	16.73
12	M.W. & R.L. NAGL	27.74	48	SUNSET HAVEN SUBDIVISION	7.0
13	D.L. DONNELLY	44.32	49	F.R. & E. KAHLE	6.20
14	W. & L. TRAGLIO	2.97	50	R.H. KEIL	9.50
15	R.P. & J.B. JENKS	40.13	51	S.D. & C.J. KENNEY	1.00
16	G. & H. PARDY	57.98	52	W. & H. KEIL	10.02
17	MISCELLANEOUS RESIDENTIAL PARCELS	–	53	W.R. & D. SEELY	4.59
18	D.& M. CATTON	32.14	54	W.R. & D. SEELY	2.00
19	J.P. & M.V. MYERS	1.21	55	H.W. & G.J. McCUNE	2.33
20	R.L. KOCH	1.20	56	W. & H. KEIL	1.05
21	R. & E. REUBEN DALL	70.63	57	A. WATTS	1.00
22	L.H. & M.B. THOMPSON	28.60	58	R.L. & D. BLAND	2.00
23	F.B. SNYDER	13.86	59	R.L. & D. BRAND	13.87
24	C.W. SNYDER	12.77	60	DEER CREEK ESTATES	52.46
25	F.B. SNYDER	34.88	61	J.D. & L.M. PHILLIPS	5.00
26	C.W. SNYDER	37.94	62	L.W. & B.H. PETERS & C.L. PETERS	21.91
27	A.M. & E.M. HESS	80.99	63	W. & N. RUSSELL	20.19
28	M. & E. STAEHLY	76.16	64	W.S. & E.L. MOELLER	13.56
29	H. STAEHELY	79.40	65	L. & V. KLEVE	8.00
30	NOT OBTAINED	68.19	66	R.H. & B. KEIL	42.57
31	ROBERT I. COLVIN	4.50	67	E.B. & D. KNORR	5.14
32	HENRY W.B. & DORTHY L. COLVIN	6.15	68	E.B. & D. KNORR	17.75
33	HENRY W.B. & DORTHY L. COLVIN	70.48	69	F. ANDERSON & D. KNORR	52.02
34	CROWN ZELLERBACH CORP	23.96	70	E.L. DERR	51.76
35	EARL H. & MARILYN R. STOLLER	43.40	71	G.H. & S.L. EROFF	10.00
36	EARL H. & MARILYN R. STOLLER	79.52	72	N.J. McDONALD	60.98
			73	CEDAR FIELD ESTATES	7.00

* COUNTY RECORDS AUGUST 1975

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111 PROJECT NO. C9198.00

EXHIBIT O

AURORA STATE AIRPORT

PHOTOGRAPHS OF FACILITIES/CONDITIONS

FIGURE 10

EXHIBIT O

TABLE 3 EXISTING AIRPORT DATA	
ELEVATION	195 FEET MSL
LATITUDE	45°14' 43"
LONGITUDE	122°46' 07"
ACREAGE	113 ACRES
MEAN MAXIMUM TEMPERATE (HOTTEST MONTH)	84° F (29° C)
NAVAIDS	NONE
INSTRUMENT APPROACH PROCEDURE	VOR/DME
RUNWAY 17-35	N 07° 08'E TRUE BEARING
LENGTH	4,100 FEET (1250 M)
WIDTH	150 FEET (46 M)
GRADIENT	0.07%
APPROACH SLOPE	34:1
OBSTRUCTION	TREES AT 2,100' FROM RW 17-THRESHOLD
PAVEMENT	ASPHALT CONCRETE
STRENGTH	30,000 LBS, SINGLE GEAR (13,600 KG)
LIGHTING	LOW INTENSITY
MARKING	BASIC

112 PROJECT NO. C 9198.00
FIGURE NO.

EXHIBIT O

- The full width of runway pavement is asphalt-concrete of 3-inch thickness over a gravel base, total thickness 18 inches. Pavement strength has been designed for 30,000 lbs. single wheel loading. The surface condition is poor to fair because of oxidation, extensive cracking, and ravelling. There is considerable loose aggregate on the runway surface most of the time.

- Airport lighting consists of low-intensity runway edge lighting, a rotating beacon of marginal visibility and a lighted wind cone. There are no other visual aids to assist during darkness or low visibility conditions.

- The private facilities which connect to and serve Division of Aeronautics property are not constructed to uniform specifications. Pavement strength and quality varies and geometrical standards are non-uniform. Entrance roads have been constructed to suit individual requirements, and are not interconnected. Utilities consist of electric power, telephone, water from wells and individual septic disposal systems.

- There are three conventional hangars, 56 tee-hangar bays, and various other buildings, some mobile. The fixed base operators provide both 80 and 100 octane gasoline, but no jet fuel is available.

- Space for expansion at this time is mainly dependent upon private lease arrangements by the fixed base operators. Between the highway which lies east of the airport and the east property line of the Division of Aeronautics, there is about 177 acres of land held in private ownership. The 113 acres owned by the Division of Aeronautics provides room for runway lengthening, but not for other types of expansion.

EXHIBIT O

Economic Impact

Employees on the airport average between 100 and 125, with the majority working on maintenance for a helicopters operator. Total salaries directly generated on the airport are estimated to be about $750,000 annually.

Facilities provided the general public include: waiting rooms, restrooms, telephone, car rental and automobile parking. Commercial aviation services to the public include: aircraft rental, flight instruction, charter flying, aircraft maintenance, aviation fuel service, aircraft sales, and aircraft avionics sales and maintenance. However there has been considerable fluctuation in the services offered to the public.

All revenue-producing activities are located on private land, except that a fuel flowage fee of $0.03 per gallon is paid to the State. The Division of Aeronautics is currently revising their rates for flowage and ingress-egress. The operators have ingress-egress permits from the Division of Aeronautics.

One fixed base operation is located at the south end of the airport, and another operator is located in the center of the field. The third operator, a helicopter maintenance facility, is currently in the process of moving from temporary quarters at the south end of the field to permanent facilities at the extreme northeast corner of the airport.

Off the north end of the airport is a parcel of land containing 40 tee-hangars for rent, turf aircraft parking and an aircraft avionics shop.

Wind Analysis

Two years of wind data was collected between May 1968 and April 1970 at the south end of the airport. This was accomplished under the supervision of the Port of Portland. The data summary appears in the appendix and the wind rose appears on the Airport Layout Plan.

Calms (less than 4 mph) occur 66.5 percent of the time. When the wind exceeds 4 mph, it seldom surpasses 13 mph and generally is either northerly or southerly. Winds in excess of 13 mph normally come from the south. This occurs only about 1.5 percent of the time, and it is rare for the wind velocity to exceed 25 mph. It is not possible with available data to correlate wind conditions with ceiling and visibility to develop a reliable IFR wind rose.

Freak storms, such as the Columbus Day Storm in 1962 are a rare phenomenon with only eight other such occurrances recorded in the last 100 years. During these storms sustained winds have exceeded 50 mph with 110+ mph gusts.

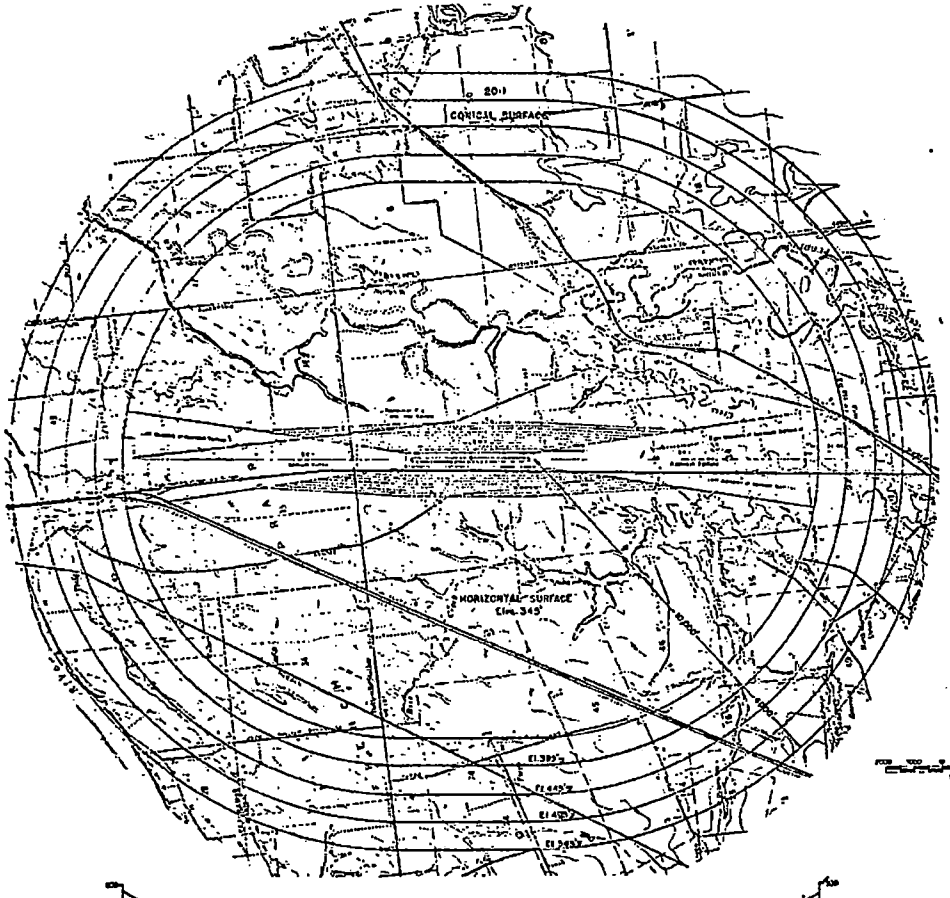
The wind data and analysis used for this study was compared with wind measurements made at the OSU Agricultural Experiment Station 2 miles northeast of the airport. Both were found to be in agreement. The Aurora State Airport wind analysis indicates that the present runway orientation, north 7°8' east, is excellent and provides 99.5 percent crosswind coverage for crosswind components 15 mph and under.

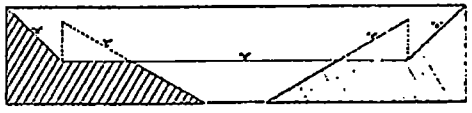
Airspace

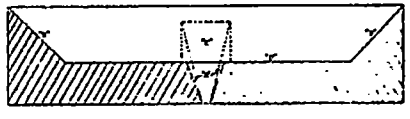
Figure 11 shows existing airport imaginary surfaces as developed by the Division of Aeronautics in 1972. Any object which penetrates through these geometrical planes needs evaluation as to its effect on air navigation in the vicinity of the airport. The figure also indicates obstructions that should be removed. The State owns air easements, as indicated, which permit the State to remove most of the obstructions shown.

Figure 12 shows the existing airways in the vicinity of the airport. There are no electronic navigational aids located on the airport and there is no certified weather observer on site.

EXHIBIT O





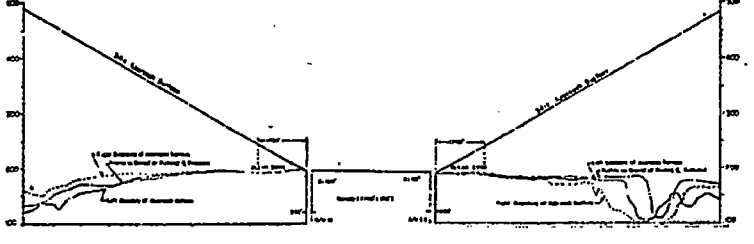


DEFINITIONS

AURORA STATE AIRPORT

EXISTING AIRPORT IMAGINARY SURFACES AND OBSTRUCTIONS

FIGURE 11



AURORA STATE AIRPORT
AURORA, OREGON

APPROACH & CLEAR ZONE PLAN and ZONING PLAN

OREGON STATE BOARD OF AERONAUTICS
SALEM, OREGON

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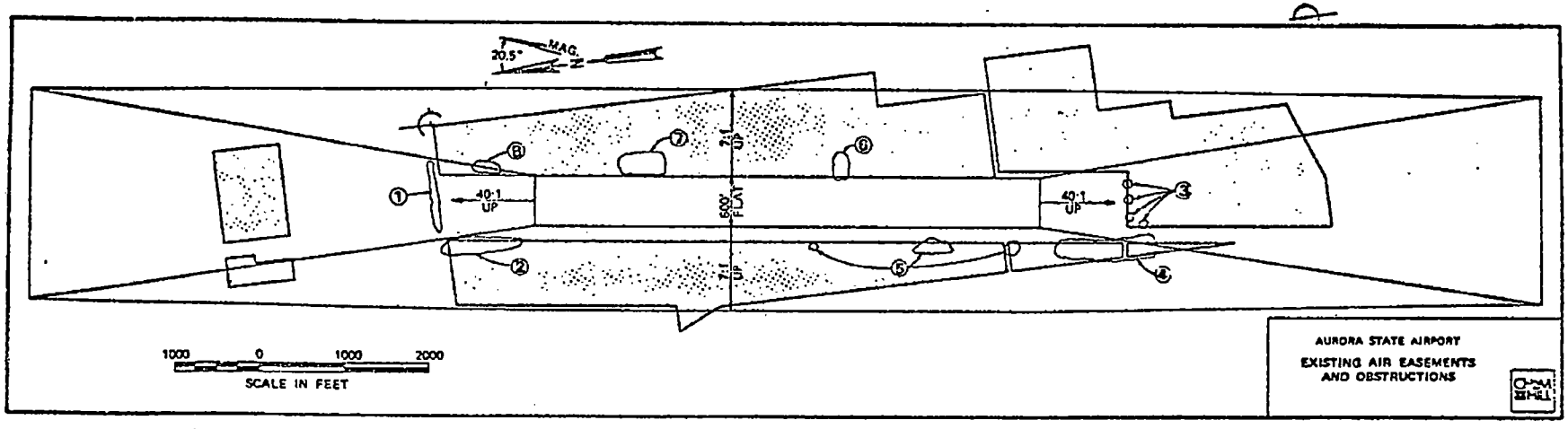
EXHIBIT O



PERCENT OF COPY 74.2

OBSTRUCTION REMOVAL PRIORITIES
MEETING FAR PART 77 CRITERIA

① TREES – EXISTING AND ULTIMATE APPROACH SURFACE OBSTRUCTIONS. TO BE REMOVED.

② TREES – EXISTING AND ULTIMATE TRANSITION SURFACE OBSTRUCTIONS. TO BE REMOVED OR TRIMMED.

③ TREES – ULTIMATE APPROACH SURFACE OBSTRUCTIONS. TO BE REMOVED.

④ TREES – EXISTING APPROACH SURFACE AND EXISTING AND ULTIMATE TRANSITION SURFACE OBSTRUCTIONS. TO BE TRIMMED.

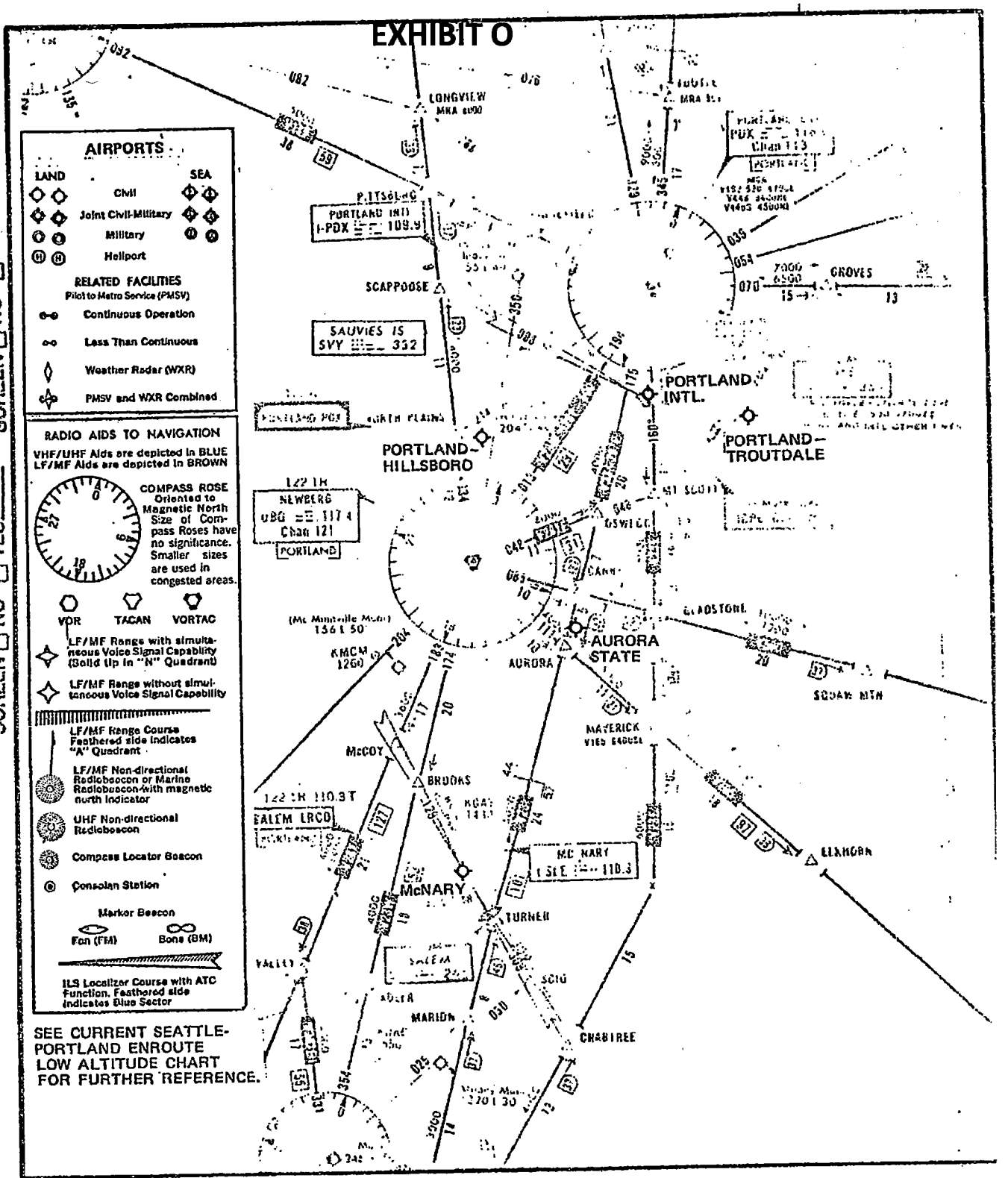
⑤ TREES – EXISTING AND ULTIMATE TRANSITION SURFACE OBSTRUCTIONS. TO BE TRIMMED OR REMOVED

⑥ TREES – EXISTING AND ULTIMATE TRANSITION SURFACE OBSTRUCTIONS. TO BE REMOVED.

⑦ TREES – EXISTING AND ULTIMATE TRANSITION SURFACE OBSTRUCTIONS. TO BE REMOVED.

⑧ TREES – ULTIMATE TRANSITION SURFACE OBSTRUCTIONS. TO BE REMOVED.

EXHIBIT O



AURORA STATE AIRPORT
EXISTING AIRWAYS
FIGURE 12

CH2M HILL

17 PROJECT NO C7178.00
FIGURE NO
PERCENT OF COPY 100
COLOR
SCREEN ☐ NO ☐ YES
AURORA..JAN 16 19
AURORA..JAN 19 1976

EXHIBIT O

Use of the Aurora State Airport during instrument weather conditions (IFR) is possible with certain restrictions. The airport is served by a non-precision VOR/DME approach using the Newberg VORTAC. The approach is somewhat restricted because this VORTAC is also used for approaches to McMinnville and is a key facility used by the Portland TRACON (Terminal Radar Control Facility). Minimums are 1000 feet ceiling and 1-1/4 miles visibility, which is not very adequate to insure a high rate of useage during IFR weather.

Because Aurora State Airport lies in the Portland Terminal Airspace, some assistance in reaching the airport during conditions of low ceiling with good visibility below the ceiling is possible through the radar coverage of the Portland radar (ASR). However, just over the airport, Portland Approach Control is not able to vector aircraft lower than 3400 feet MSL. North of the airport, minimum vectoring altitude is 2500 feet. In this area, neither terrain nor tall structures pose obstruction problems. Limitations occur only due to incomplete radar coverage.

Air Traffic Activity

For this study, air traffic activity has been compiled from FAA, State, and Port of Portland sources. Insofar as possible, data for this section was obtained from the original source. Also, data collected was correlated with this study's field surveys and was compared with information presented in other recent publications.

Air traffic activity for the Aurora State Airport has been measured in terms of numbers of aircraft based at the airport, and in terms of operations performed by these based aircraft and by itinerant aircraft at the airport. (An operation is either a landing or a takeoff.) Table 4 shows the number and types of aircraft based at the airport.

EXHIBIT O

TABLE 4 DISTRIBUTION OF AIRCRAFT TYPES BASED AT AURORA STATE AIRPORT (1975)	
TOTAL	127
MULTI-ENGINE	8
SINGLE ENGINE, RETRACTABLE	35
SINGLE ENGINE, FIXED GEAR 4 PLACE AND LARGER	45
SINGLE ENGINE, FIXED GEAR UNDER 4 PLACE	35
HELICOPTER	4
TURBOJET	0

113 PROJECT NO. C9198.00
FIGURE NO.

EXHIBIT O

The number of aircraft based at the Aurora Airport fluctuates greatly throughout the year, as it does at other Portland area airports. This is because of fluctuations in the inventory of aircraft for sale and due to the seasonal nature of the flying weather. Although the number of based aircraft may fluctuate to as high as 150, the 1974 count from the Port of Portland field survey indicated 126 based aircraft.

At this time, no turbine powered aircraft or gliders are based at Aurora. In recent months, it is estimated that there have been about ten to twelve transient aircraft parked on the airport at any given time. Turbojet aircraft now use the airport intermittently.

Little information is available concerning the purpose for which the aircraft are flown. Approximately 35 to 40 percent of the aircraft surveyed are owned by businesses. These range from the fixed base operator's charter service to a Portland radio station's traffic watch. It has not been possible to determine the actual hours or percentage of business flying.

In the airport's service area, shown earlier, lives a population of about 710,000. Incomes there are above average, which factor influences air traffic levels to exceed normal national averages. Figure 13 shows the distribution of general aviation aircraft in the greater Portland area and Aurora State Airport's share.

The number of operations flown at the airport determines the level of traffic activity at the airport. Since there is no air traffic control tower on the Aurora State Airport, it was necessary to gather operations information from other sources. Four sources are: The Oregon Aviation System Plan, the FAA Master Record (Form 5010), the Portland-Clackamas Airport Study, and air traffic surveys made by the FAA. Apparently, the first three mentioned sources have utilized some of the same basic data, which conflicts with actual counts.

This study's evaluations determined the actual activity levels to be somewhat lower than some of the above source data indicated. This study's base data was determined by adjusting actual traffic counts to correlate with known counts at other local airports with air traffic control towers. Statistics were developed as shown in Table 5. Figure 14 compares activity at Aurora State Airport with other principal regional Oregon airports.

EXHIBIT O

19

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FIGURE NO.
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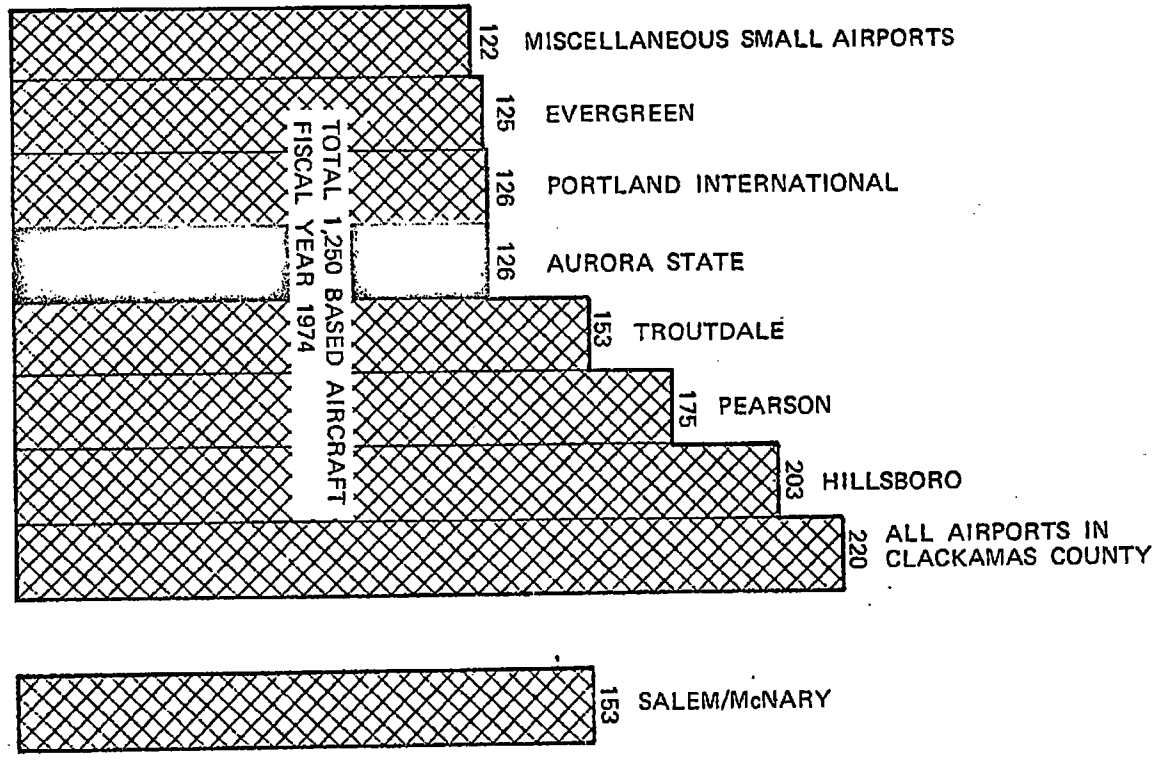


DISTRIBUTION OF GENERAL AVIATION BASED AIRCRAFT IN PORTLAND SMSA

FIGURE 13

SOURCE: PORTLAND – CLACKAMAS AIRPORT STUDY

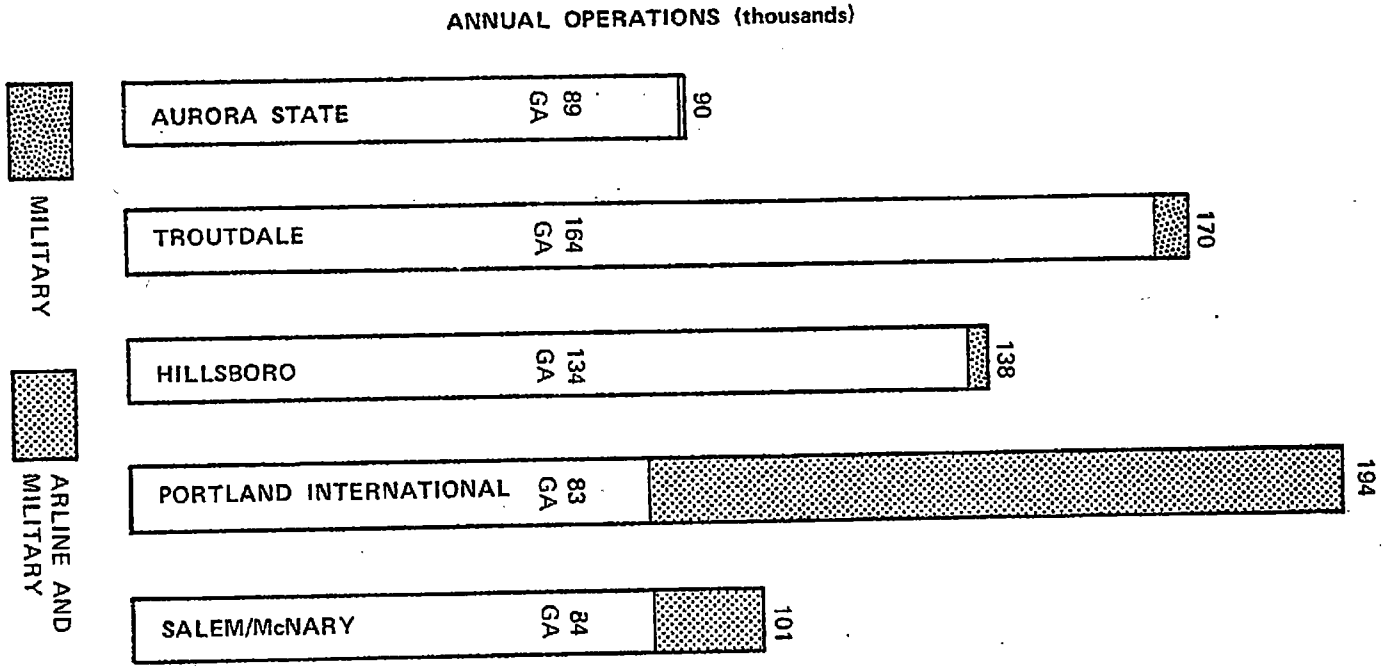
EXHIBIT O

TABLE 5 1975 AIR TRAFFIC DATA FOR AURORA STATE AIRPORT	
OPERATIONS	
TOTAL ANNUAL	90,000
LOCAL ANNUAL	52,000
ITINERANT ANNUAL	38,000
IFR ANNUAL	500*
PEAK MONTH	11,000
BUSY DAY	400
BASED AIRCRAFT	127
OPERATIONS PER BASED AIRCRAFT	709
MILES FLOWN	2.8 million *
PASSENGER MILES INCLUDING PILOT	6.5 million *
*Approximate	

114 PROJECT NO. C9198.00
FIGURE NO.

EXHIBIT O

20 PROJECT NO. C9198.00
FIGURE NO.



AIR TRAFFIC ACTIVITY AT AREA MAIN AIRPORTS 1975
FIGURE 14

SOURCE: FAA

44

EXHIBIT O

AVIATION FORECASTS

Aviation demand forecasts for the years 1980, 1985, and 1995 have been developed to identify the role of the airport in those years. Factors analyzed were population and economic growth, aviation technology and trends, air traffic activity, and the effect upon the airport of other airport development. The effects of new technology seem to have the least impact because of the type and numbers of aircraft now in the system and the relatively long life of present types.

The limits of the service area, Figure 5, page 2c indicates that there is little correlation between the location of aircraft owners and the airports they use. No study, or survey, has yet determined the reasons why aircraft owners in the Portland area often choose to use airports that are not the nearest airport to their home or business.

The Portland-Clackamas Airport Study (PCAS), recently completed by the Port of Portland, recognizes the Aurora State Airport to be part of a regional airport system in the Greater Portland metropolitan area. The Aurora State Airport, along with other airports draws from the entire region to generate traffic activity. Therefore requirements and the timing of requirements for Aurora State Airport will be influenced by developments at the other airports or at new airports in the Portland region. A proposed new public airport in Clackamas County would also be part of the regional system.

The forecasting methodology has been limited by the base data which was available as regards historical aviation statistics and socio-economic data and forecasts. The method used was first, to identify the airport service area and its history, and second, to correlate the airport service area with the area's socio-economic characteristics. Mixed socio-economic projections, mostly population and growth trends, were assembled together with historical air traffic data.

EXHIBIT O

Then, because this airport is inseparable from the "Portland Regional Airport System," it was necessary to examine forecasts on the national, state, and local level. The most up-to-date and thorough of the other forecasts is that of the Portland-Clackamas Airport Study. Other source material included miscellaneous FAA material, but primarily FAA's The Northwest Region Aviation System, Ten-Year Plan 1975-1985, and The Oregon Aviation System Plan (OASP) from the Oregon Department of Transportation.

The possible range of forecasting methods was limited for the Aurora State Airport because the service area lies only partially in the Portland SMSA. Much of the base data available for SMSA's is not available for other parts of the Aurora State Airport's service area. Insofar as possible, the Aurora forecasts have correlated based aircraft to population and socio-economic trends.

The aircraft operations forecasts have been correlated to known general aviation activity trends at Control Tower airports with specific on-airport traffic counts. The results were then adjusted to reflect the trends of other recent forecasts just mentioned. Because historical information did not check closely with actual surveys, the comparison of the Aurora State Airport forecast to other studies necessitated considerable adjustments. Comparisons are shown in the appendix.

Figure 15, Population Trends, indicates the predicted 4-county region growth rate from Marion County Comprehensive Plan and data from the Comprehensive Health Planning Association's projections. The service area, as defined earlier predicts a slower growth rate than the SMSA. On this basis, the growth rate at the Aurora State Airport may be expected to be somewhat slower than the growth rate at some of the other airports in the Portland metropolitan area.

Population forecasts from the above projections for the year 1995, indicate an anticipated population of 1,011,000 in the service area, up from 710,000 in 1970. This represents a 42 percent increase, whereas the four-county increase is project at 82 percent.

EXHIBIT O

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FIGURE NO. 21

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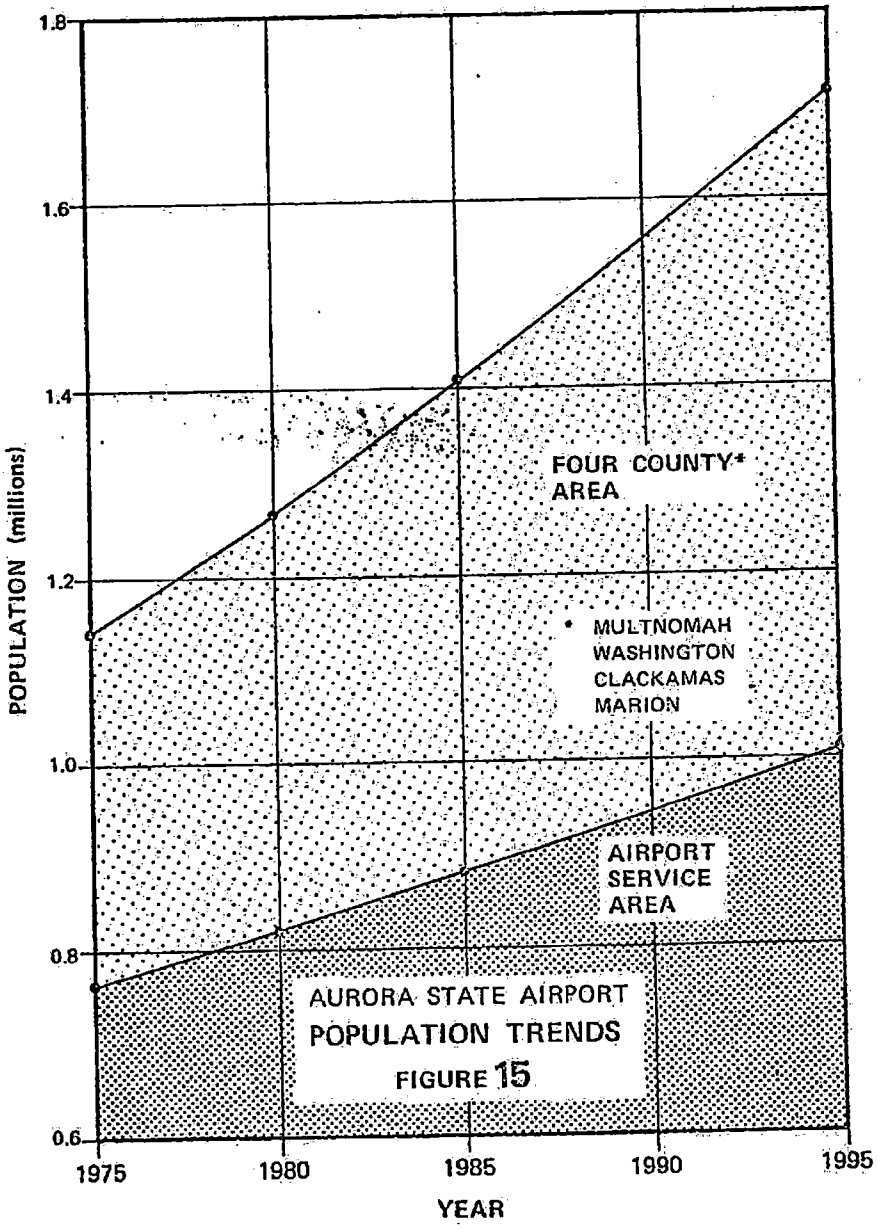

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EXHIBIT O

Figure 16 shows the forecast based aircraft at the Aurora State Airport. Other studys' projections are compared in the appendix. The projections used for this study have assumed no new airport in the southeast Portland area. The appendix contains graphs that indicate either possibility, but the effects were determined not to be critical to this master plan.

The forecast for Aurora State Airport developed in this study shows fewer based aircraft than projections made by other studies. This is because recent surveys seem to indicate inaccuracies in earlier counts of based aircraft. Perhaps the previous counts were taken at periods of peak fluctuations.

The forecast annual aircraft operations for the Aurora State Airport are shown on Figure 17. These have been projected using the best historical data available, that taken from actual surveys and projected in correlation with FAA counts and projections at Portland-Hillsboro and Portland-Troutdale airports. A verification check was made by using the methods of Report No. FAA-RD-74-178, Estimating Operations at Non-Towered Airports Using the Non-Survey Method.

The operations per based aircraft are predicted to increase from 709 in FY 1975 to 843 in 1995. This is a projected increase of 18.9 percent, which is consistent with other state and national trends.

Consistent with the other mentioned studies and national trends, projections were made for the mix of aircraft types. Figure 18 shows forecast aircraft population for the 5, 10, and 20 year periods.

The present and forecast roles of the Aurora State Airport were carefully examined. At the present time, the airport is a General Utility airport (GU), which by definition is an airport whose operational role is to serve all types of piston-powered aircraft of maximum gross weights of 12,500 lbs. or less.

According to the forecasts developed the airport will sustain sufficient numbers of basic transport type general aviation aircraft to change the operational role to Basic Transport (BT). This would occur between 1985 and 1990. A basic transport type is: either any turbojet aircraft, or a propeller aircraft with a maximum gross weight of from 12,500 pounds to 60,000 pounds.

EXHIBIT O

PROJECT NO. C9198.00
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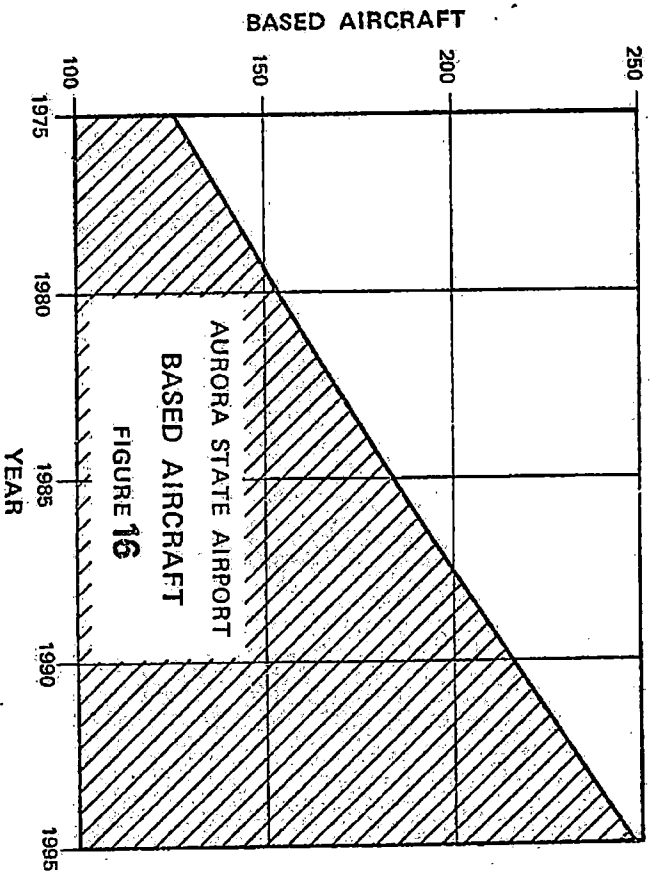

FIGURE 16

23 PROJECT NO. C9198.00
FIGURE NO.
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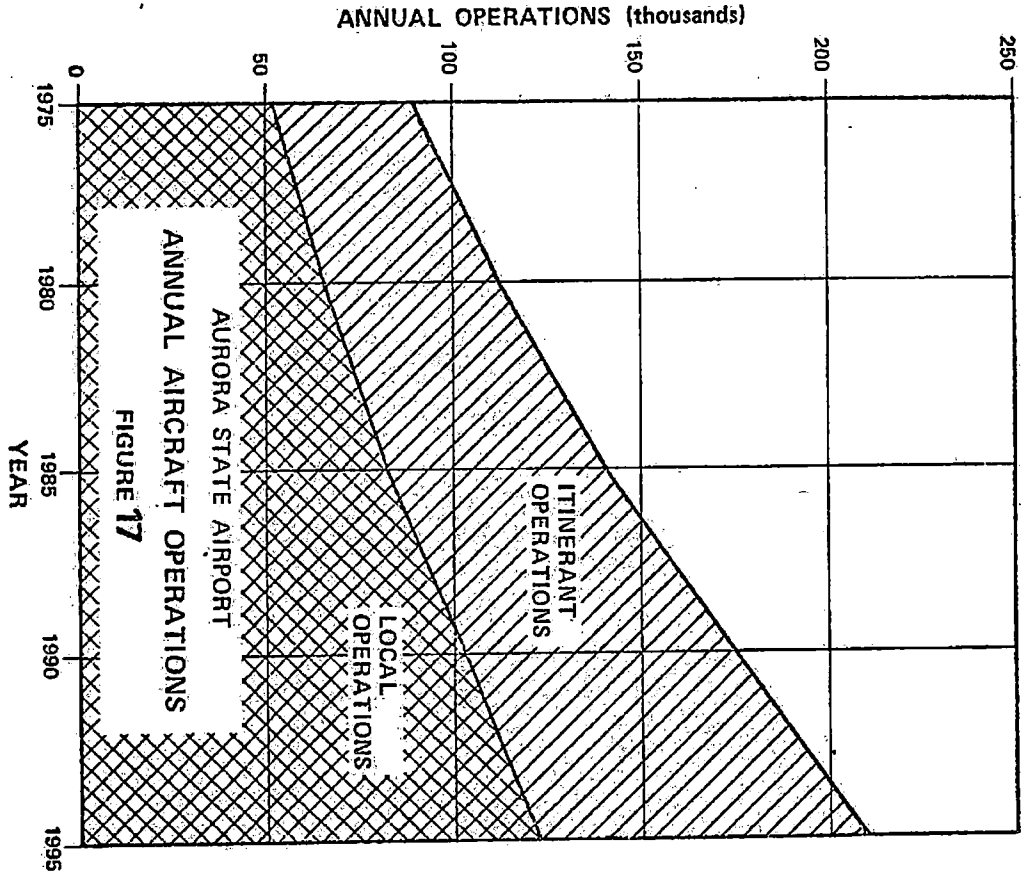
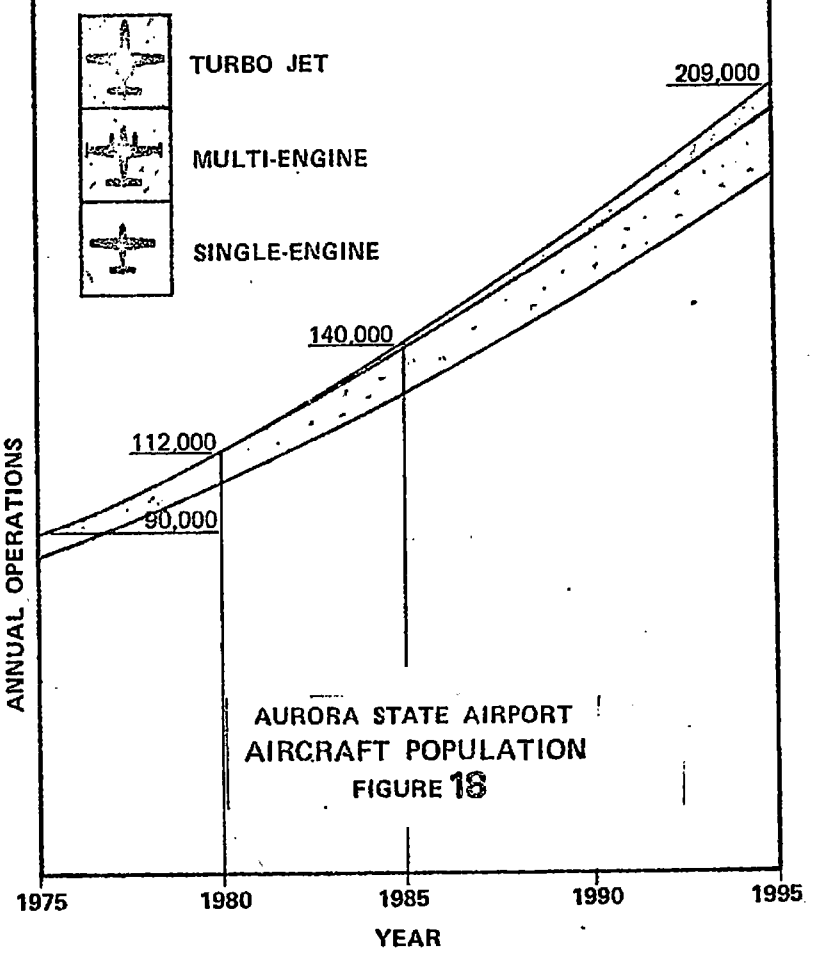


FIGURE 17

EXHIBIT O

AIRCRAFT MIXES (%)			
1975	1980	1985	1995
0	0	1.0	3.0
6.5	7.5	8.1	8.2
93.5	92.5	90.9	88.8



AURORA STATE AIRPORT
AIRCRAFT POPULATION
FIGURE 18

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24 FIGURE NO.
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PROJECT
10 FIGURE NO.
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EXHIBIT O

The functional role of the airport, defined by service level, is a high density feeder system airport, designated F-1. This is based upon a level of annual operations exceeding 100,000.

The forecast demands for the Aurora State Airport as used in this Master Plan are shown in Table 6. New developments or management policies may change these forecasts. Also since Aurora is part of the Portland regional system, its competitive position in the system strongly influences the distribution of regional aviation demands.

If the facilities at the Aurora State Airport should in the future be considerably upgraded without significant changes at other regional airports, then the competitive position of this airport may significantly increase the aviation demand at Aurora State. For this reason, projections should be periodically checked and revised.

DEMAND VERSUS CAPACITY ANALYSIS

This analysis determines during which years forecast aviation demands upon the airport will exceed facility capacities. Determinations are included for the short, intermediate, and long range periods (1980, 1985, 1995).

Both the airside and the groundside have been analyzed. The airside includes the runway and taxiway system, as well as the airspace. The groundside includes the terminal area, with aprons, hangars, buildings, utilities, development area, and entrance and access roads.

Forecast aviation demands in Table 6 page 52 are the basis for this section. Capacity determinations were made using FAA Advisory Circular 150/5060-3A, Airport Capacity Criteria Used In Long Range Planning. Capacities for the groundside activities were determined from FAA and other airport engineering standards. It was assumed that instrument operations will be conducted with traffic procedures that will not restrict airspace. Also, it was assumed in studying runway capacity, that a taxiway system would be developed to minimize runway congestion.

EXHIBIT O

TABLE 6 MASTER PLAN FORECASTS FOR AURORA STATE AIRPORT				
	1975	1980	1985	1995
BASED AIRCRAFT	127	154	184	248
ANNUAL OPERATIONS	90,000	112,000	140,000	209,000
BUSY HOUR OPERATIONS	50	60	78	115
OPERATIONS PER BASED AIRCARFT	709	727	761	843

115 PROJECT NO. C9198.00

FIGURE NO._____

EXHIBIT O

Another factor affecting capacity is the aircraft mix. For this study, it was assumed that the percentage of small general utility type aircraft will exceed 90 percent through the 20-year long range period as indicated on Figure 18, page 50.

Direction of runway operation does not restrict capacity at Aurora where the direction of operation is slightly over 50 percent for the north operation and slightly under 50 percent for the south operation, and where there are no airspace constraints. In the absence of data on IFR conditions at the Aurora Airport, conditions for the Portland-Hillsboro airport were used, where records show 92.8 percent VFR and 7.2 percent IFR. The FAA long range method assumes an annual condition of 9 percent VFR and 10 percent IFR.

In the airside analysis, no restriction on capacity was determined to exist in the airspace around the Aurora State Airport. However, as traffic increases, it must be assumed that increased demands for IFR operations can and will be met by improvements to FAA's traffic control system and airway facilities. No procedural problems are anticipated in the vicinity of the airport, such as for noise abatement.

A parallel taxiway is required before runway capacity will be adequate. See Figure 19. Runway capacity would be then acceptable throughout the long range period, provided an adequate taxiway system is maintained. Runway demands in 1995 are for 209,000 annual operations, without a new southeast Portland airport. In this case, the single runway with adequate taxiways has a practical annual capacity of 215,000 operations.

EXHIBIT O

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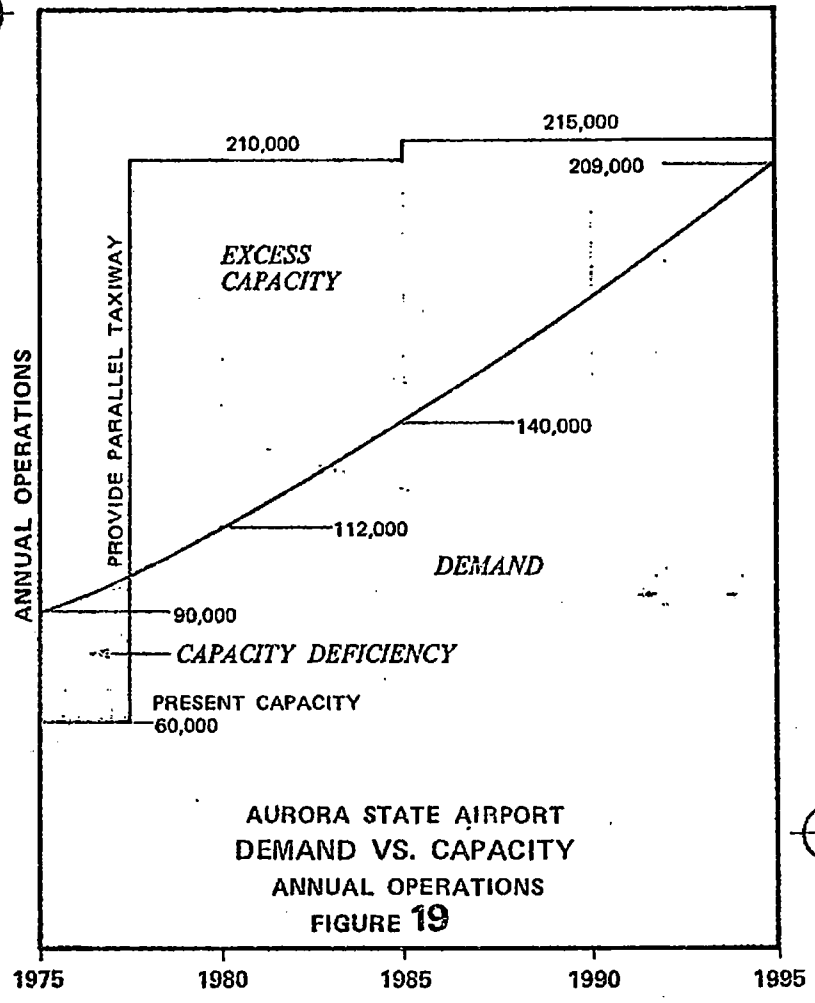

AURORA STATE AIRPORT
DEMAND VS. CAPACITY
ANNUAL OPERATIONS
FIGURE 19

28 PROJECT NO. C7198.00
FIGURE NO.
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EXHIBIT O

Practical hourly runway capacity based on the FAA method is 53 for IFR and 120 for VFR. No peak hour activity data is available for the Aurora State Airport, but it is estimated that 115 operations may occur during the peak hour during VFR at the end of the 20-year long range period. Figure 20 shows demand versus capacity through the 20-year period. Peak hour activity could be somewhat variable, depending upon the daily peaking factor (the amount of daily activity occurring during the consecutive two busy hours). Capacity would not be exceeded if departure delays during the peak hour of the week do not exceed 2 minutes, which is the delay normally accepted.

The most critical capacity deficiency facing the airport is the complete lack of controlled space outside of the runway area, which already is owned by the airport. All of the groundside analyses assume that the airport owner will be able to develop capacities to meet demands through adequate control of airport development land. Whenever peak hours become saturated, pilots usually reschedule their arrival and departures to less busy hours of the day.

If a single runway at Aurora State Airport is to be satisfactory for the 20-year forecast period, plans must be made to insure that the runway system functions properly. This requires developing a parallel taxiway system including adequate exit taxiways so that runway occupancy time can be reduced to a minimum. This is required for safety as well as for capacity.

Parking apron space is the major groundside deficiency and demands will continue to be significant. The requirements for aircraft parking capacities to meet demands are shown on Figure 21. Although many airports provide all parking on pavement, it has been assumed that it will be adequate to park 90 percent of the based aircraft on paved aprons or in hangars. Hangar capacity is presently 56 aircraft. It is assumed that by the end of the long range period, there will be requirements for 120 tee-hangar bays.

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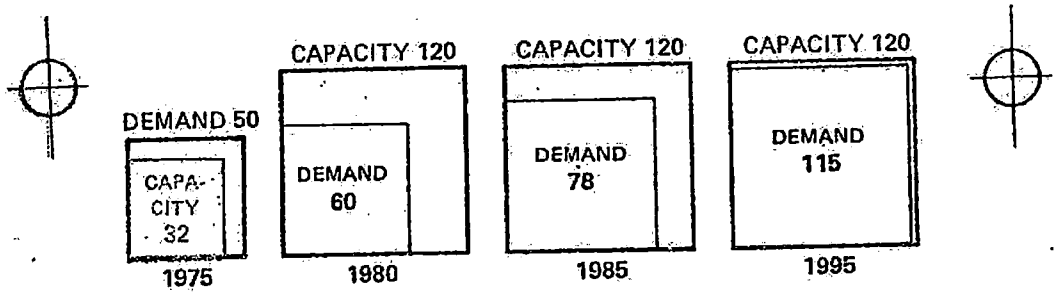

AURORA STATE AIRPORT
DEMAND VS. CAPACITY
PEAK HOUR OPERATIONS
FIGURE 20

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FIGURE NO. [illegible]
[illegible]

29 PROJECT NO. C9198.00
FIGURE NO.
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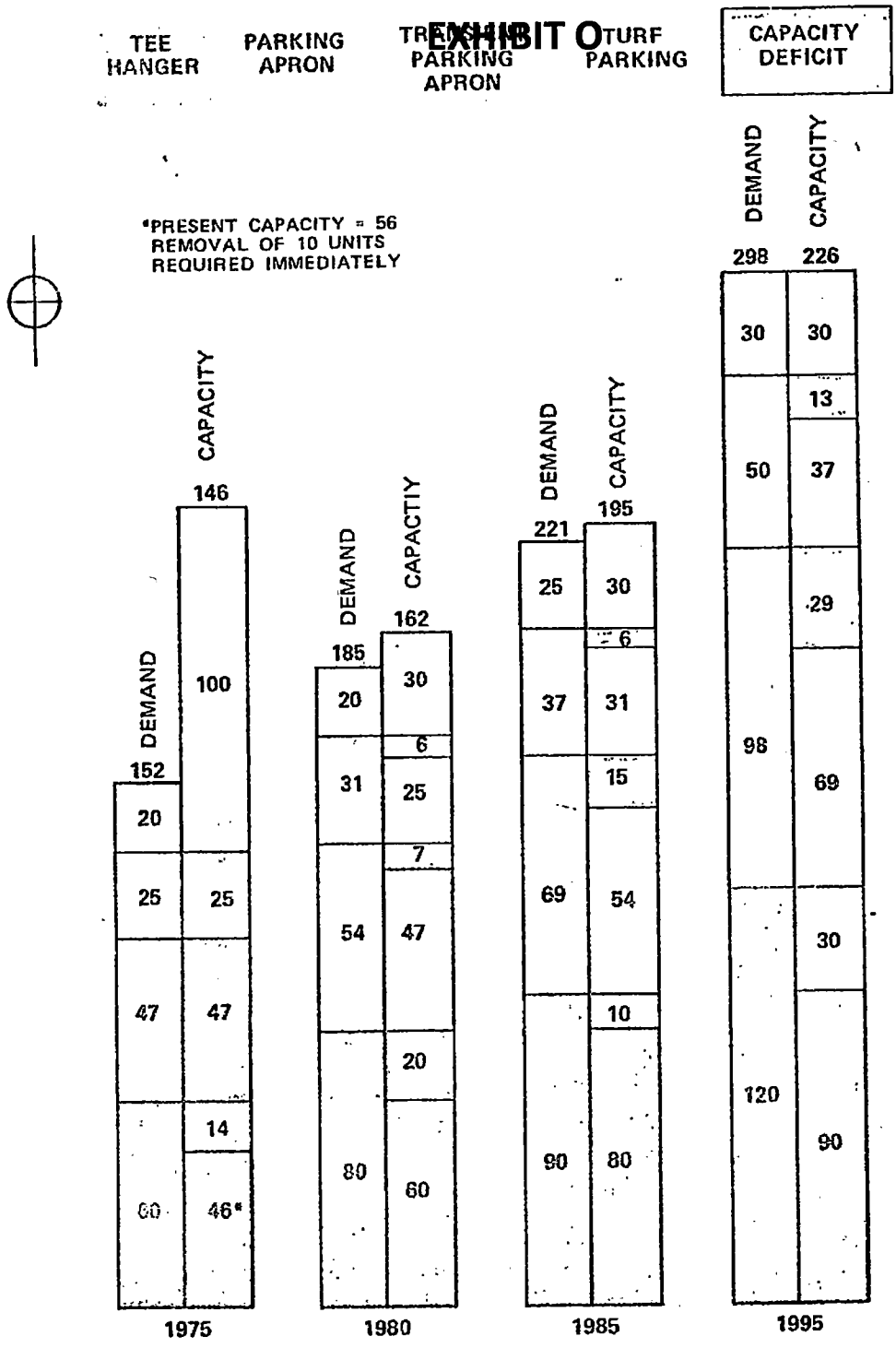
EXHIBIT O



DEMAND VS. CAPACITY

AIRCRAFT PARKING
IN NUMBERS OF AIRCRAFT

FIGURE 21

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PROJECT NO C91/8800
33 FIGURE NO

CH2M HILL

Also, there is a requirement for one central entrance road connecting the other roads used by the individual operators on the airport. Additional automobile parking will be required, along with more public terminal building space as traffic demands increase. Specific requirements are discussed in the next section.

FACILITIES REQUIREMENTS

The requirements in this section for airport facilities are based upon FAA criteria for Utility and Transport airports. Existing deficiencies and undesirable conditions are identified in the Inventory. The Demand/Capacity analysis shows capacity deficiencies and when expansion is required.

In the long range period soon after 1985 the airport category will change from General Utility to Basic Transport. This will require a runway lengthening of about 1900 feet in two stages. Other than additional costs, this requirement poses no serious space problem because airfield size is presently adequate to accommodate a Basic Transport runway.

However the absolute lack of land to either side of the runway area makes land acquisition a prerequisite to any other airport development. Table 7 shows ultimate facilities requirements and indicates many needed improvements that cannot be placed on present airport property. The table also recommends 1140 acres to be zoned as a buffer zone overlay for land use protection against airport encroachment.

A single runway system is adequate for future needs. Neither capacity constraints, nor constraints posed by crosswind coverage require a second runway, and the effect of constructing or not constructing a new southeast Portland airport will not change this adequacy.

Current runway length, 4100 feet, is slightly more than the General Utility requirement, which is 3600 feet. A Basic Transport length accommodating about 60 percent of the fleet with a 60 percent load would be 4700 feet. One hundred percent of the BT fleet at 60 percent load requires 5300 feet. This Master Plan recommends lengthening to 5000 feet just before 1985 to 30,000 pounds single gear strength in the 1985 to 1995 period. Sixty percent of the BT fleet at 90 percent load requires 6300 feet.

EXHIBIT O

TABLE 7

ULTIMATE FACILITIES REQUIREMENTS

DESCRIPTION	1995 REQUIREMENT	EXISTING (1975) FACILITIES	RECOMMENDED DEVELOPMENT
LAND FOR AIRPORT DEVELOPMENT	226 acres	113 acres	113 acres
LAND FOR AIR EASEMENTS	241 acres	223 acres	18 acres
LAND TO BE ZONED AIRPORT BUFFER	1,140 acres	None	1,140 acres
OBSTRUCTION REMOVAL	1.5 acres	Trees	1.5 acres
RUNWAY, NON-PRECISION INSTRUMENT	6,000' x 150'	4,100' x 150'	1,900' x 150'
STRENGTH	60,000#	30,000#	30,000#
TAXIWAYS: PARALLEL	6,000' x 40'	None	6,000' x 40'
EXITS	6	3(1)	6 (40' wide)
STUBS	4	3(1)	4 (40' wide)
HOLDING APRONS	4	1(1)	4 (50' x 100') (50,000 SY)
PAVED PARKING APRON:			
BASED AIRCRAFT	98 Aircraft	None	98 Aircraft
TRANSIENT AIRCRAFT	50 Aircraft	Negligible	50 Aircraft
TURF PARKING AREA	30 Aircraft	100(2)	20 Aircraft
LIGHTING			
MEDIUM INTENSITY, RUNWAY	6,000 LF	4,100 LF (Low Intensity)	6,000 LF
MEDIUM INTENSITY, TAXIWAY	7,200 LF	None	7,200 LF
TAXIWAY REFLECTORS	6,000 LF	None	6,000 LF
AIRPORT BEACON	1	Substandard	1
LIGHTED WIND INDICATORS	3	1(1)	3
VASI	2 ends	None	2
MALSF	1	None	1
APRON LIGHTING	1,800 LF	None	1,800 LF
SEGMENTED CIRCLE	1	None	1
NAVIGATIONAL APPROACH AIDS	MLS or Equivalent	Newberg VOR TAC	NDB and MLS
FENCING: SECURITY	7,000 LF	None	7,000 LF
PERIMETER	13,500 LF	11,000 LF(1)	13,500 LF
AUTOMOBILE PARKING	280 cars	80 cars	200 cars
AIRPORT ROADS	7,300 LF	Substandard(1)	7,300 LF
TERMINAL/ADMINISTRATION BUILDING	5,000 SF	None	5,000 SF
AIR TRAFFIC CONTROL TOWER	1	None	1(3)
CRASH, FIRE, RESCUE STATION	1	None	1
TEE-HANGARS	120	56(4)	74(5)
CONVENTIONAL HANGARS	6 to 8	3	3(5)
HELIPORT	1	None	1 (120' x 160')

(1) Replace Existing
(2) Abandon 80 Existing
(3) By FAA
(4) Remove 10 Existing
(5) By Private Development

116 PROJECT NO. C9198-0
FIGURE NO.

EXHIBIT O

The present width, 150 feet, should be retained to provide a somewhat better level of safety, particularly during periods of strong winds. When a MLS or equivalent system is installed, a wide runway will be desirable particularly for turbojet aircraft operating at relatively high approach speeds. Retaining the present width of pavement would also minimize construction problems associated with future runway edge lighting.

The taxiway system is very critical to airport safety and capacity. A parallel taxiway, the entire length of the runway, is required immediately with adequate exits from the runway. New stub taxiways from the parallel taxiway to all apron areas are also required. The stub and exit taxiways should be lighted with medium intensity lights and should be marked. Taxiway reflectors are suitable for the parallel taxiway.

Paved aircraft parking aprons are required immediately. Virtually all aircraft are currently parked on turf, which causes instability problems during wet weather. No apron facilities are provided for transient parking. A centrally located public parking apron will cancel this major deficiency.

The frequency of instrument weather conditions and long winter hours of darkness dictate an upgrading of the lighting and navigational systems. Medium intensity runway edge lighting should be installed, including visual approach slope indicators (VASI) on both ends. An on-airport or near-airport nonprecision approach aid should be added to provide better minimums and higher IFR capacity. This should be supplemented by an approach light system such as MALSF.

As the trend for ownership of more expensive airplanes and more multi-engine airplanes increases, the shortage of tee-hangars will become more noticable. As airport services increase additional conventional hangars will be required. Aircraft security needs will increase as more aircraft are based at the airport and as ground traffic increases. Better fencing and more lighting around aircraft parking areas will be required.

Eventually, greater activity on the groundside of the airport will necessitate more terminal and operations building space together with a centrally located administration building. There should be one prominent entrance road to the airport and an internal road system that connects the entrance road to the various services and operators and apron areas. As more people use the airport, it will be necessary to upgrade the sanitary waste systems, and possibly centralize waste treatment facilities.

The needs for development will create a need for capital for investment. Therefore it will be necessary to stimulate revenue producing activities by generally encouraging airport related commercial activities that will lend financial support to the airport.

ENVIRONMENTAL REQUIREMENTS

The principal environmental effects of airport development include: noise, air and water pollution, ecological impacts, social impacts, and effects of construction and operation. The development of many of the improvement projects needed for the airport will affect the environment, sometimes noticeably and sometimes imperceptably.

The primary environmental consideration at the Aurora State Airpot is to have compatible land use in the airport vicinity. The main effect of airport operations on land use compatibility is aircraft noise exposure. Other compatibility considerations include aircraft accident potential, and to a lesser extent air pollution, and vehicular traffic patterns.

Aircraft noise exposure is known to have adverse behavioral and subjective effects on people rather than to effect physical damage. Behavior effects involve interference with on-going activities such as speech, learning, and sleeping. Subjective effects are described by terms like "annoyance" and "nuisance." The magnitude of the problem depends on the volume, frequency, and time of day of aircraft operations; the number of turbojet aircraft operations; and the character of land use exposed. Table 8 describes typical noise impacts on land use.

EXHIBIT O

PROJECT NO. C9198.00
FIGURE NO. 117

TABLE 8
NOISE IMPACTS ON LAND USE

LAND USE	NOISE EXPOSURE FORECAST (NEF)		
	< 30 LOW NOISE IMPACT	30-40 MODERATE NOISE IMPACT	> 40 HIGH NOISE IMPACT
RESIDENTIAL, LOW DENSITY			
RESIDENTIAL MEDIUM DENSITY			
RESIDENTIAL, HIGH DENSITY			
SCHOOLS, HOSPITALS			
OFFICE			
COMMERCIAL			
INDUSTRIAL			
AGRICULTURAL			
RECREATION			

LEGEND

NO CONFLICT | LOW CONFLICT | MODERATE CONFLICT | SERIOUS CONFLICT

EXHIBIT O

The aircraft noise generated at a general aviation airport like Aurora State is ordinarily minimal because there is no appreciable number of turbo-jet or night operations and because the surrounding development has a very low population density. Critical noise contours for existing conditions do not fall outside the airport. See Figure 8, Existing Noise Exposure, page 24.

The FAA, with assistance from EPA, is responsible for regulating aircraft noise. To date no specific regulations or standards for acceptable aircraft noise exposure limits on land use have been established. Instead, general guidelines regarding land use compatibility and noise exposure are used. The application of these guidelines requires a technical forecast of noise exposure levels, which is included in AIRPORT PLANS of this master plan.

Land use compatibility guidelines are based on the relative noise sensitivity of different activities. The most sensitive uses are those involving conversation and sleeping. Typically, auditoriums, arenas, schools, hospitals, and housing are the least compatible and open space uses like farming are the most compatible. Consequently, preservation of the existing agricultural land use pattern around the Aurora State Airport is the key to compatible land use regardless of the noise exposure levels.

The hazard of aircraft accidents is partially related to obstructions in the airspace and their proximity to the runway. Preventing airspace obstructions requires regulating the height of objects under established flight paths and prohibiting light and smoke emissions that adversely effect the pilot's vision. The greatest probability of aircraft accidents is either on or immediately adjacent to the runway. The greatest concern, therefore, is to assure that the airport itself meets adequate design standards. A secondary concern is to prevent development involving large concentrations of people or hazardous materials within the approach and departure paths.

EXHIBIT O

The air quality aspects of airport development are regulated by the Oregon Department of Environmental Quality (DEQ). DEQ is responsible for assuring compliance with State and Federal air quality standards. The Aurora State Airport is subject to the indirect source rules as set out in OAR 340. Under these rules, the potential impacts of airport operations on air quality need to be evaluated only when a modification to the airport is proposed that will increase annual operations by 25,000 or more within 10 years after completion of the improvement. This impact evaluation is called for just prior to the time of making the improvement.

The vehicular circulation aspects of airport development need to be considered in the context of congestion on existing highways. Based operations at the airport currently have individual access points. Consideration must be given to linking all ground operations with a continuous system on the site in order to minimize confusion, congestion and accident hazards on the bordering highways.

At this time, it appears that there are no significant ecological or social impacts upon the airport environs, but future development programs must attempt to minimize the possibility for dislocating persons or businesses.

In general, any major capital improvement at the airport will involve federal funding. Consequently, a full disclosure of environmental effects expected to result will be disclosed in an Environmental Impact Statement under the National Environmental Policy Act of 1969.

SITE SUFFICIENCY

The existing site of the Aurora State Airport was evaluated as to its adequacy to meet forecast requirements and according to possible environment conflicts. Alternative airport sites were identified, examined and compared to the existing airport. The entire study is included in the appendix. The conclusion of that study was that the existing Aurora State Airport site is adequate and the airport should not be relocated.

EXHIBIT O

Figure 22 shows the alternative sites that were evaluated and shows a comparison of key factors affecting the decision. All alternatives had advantages and all had disadvantages. The choice to retain the existing site was made simply because it is the choice where the most benefits seem to be obtained for the least costs. Costs in this case are both financial costs and unfavorable social, environmental and economic impacts as explained in the full study.

PRELIMINARY

38 PROJECT NO. C-9128.90 PERCENT OF COPY 67
FIGURE NO. COLOR
SCREEN ☐NO ☐YES

39 PROJECT NO. C-9128.90 PERCENT OF COPY 52
FIGURE NO. COLOR COMMENTS DELETE Base
SCREEN ☐NO ☐YES Update Title & Table

PRELIMINARY

EXHIBIT O

AIRPORT PLANS

EXHIBIT O

AIRPORT PLANS

CONCEPT

Conceptual considerations were based on Master Plan Forecasts, Table 6, page 52, and Ultimate Facilities Requirements, Table 7 page 59. Requirements are for a single runway general aviation airport of high standard with a large terminal area and ample off-airport protection from encroachment.

The effective use of space is the critical ingredient to developing or improving the airport system. Space for airport expansion is impacted on three sides by highways, relatively difficult to relocate, and on the fourth side by privately owned and controlled property.

Previous study determined that the best course of action is to develop the present airport. Because the airport is a land use generally compatible with existing uses in the area, the present runway position has been retained. Expansion will be into the space east of present airport property. This is shown on Figure 23, Airport Layout Plan.

AIRPORT LAYOUT PLAN

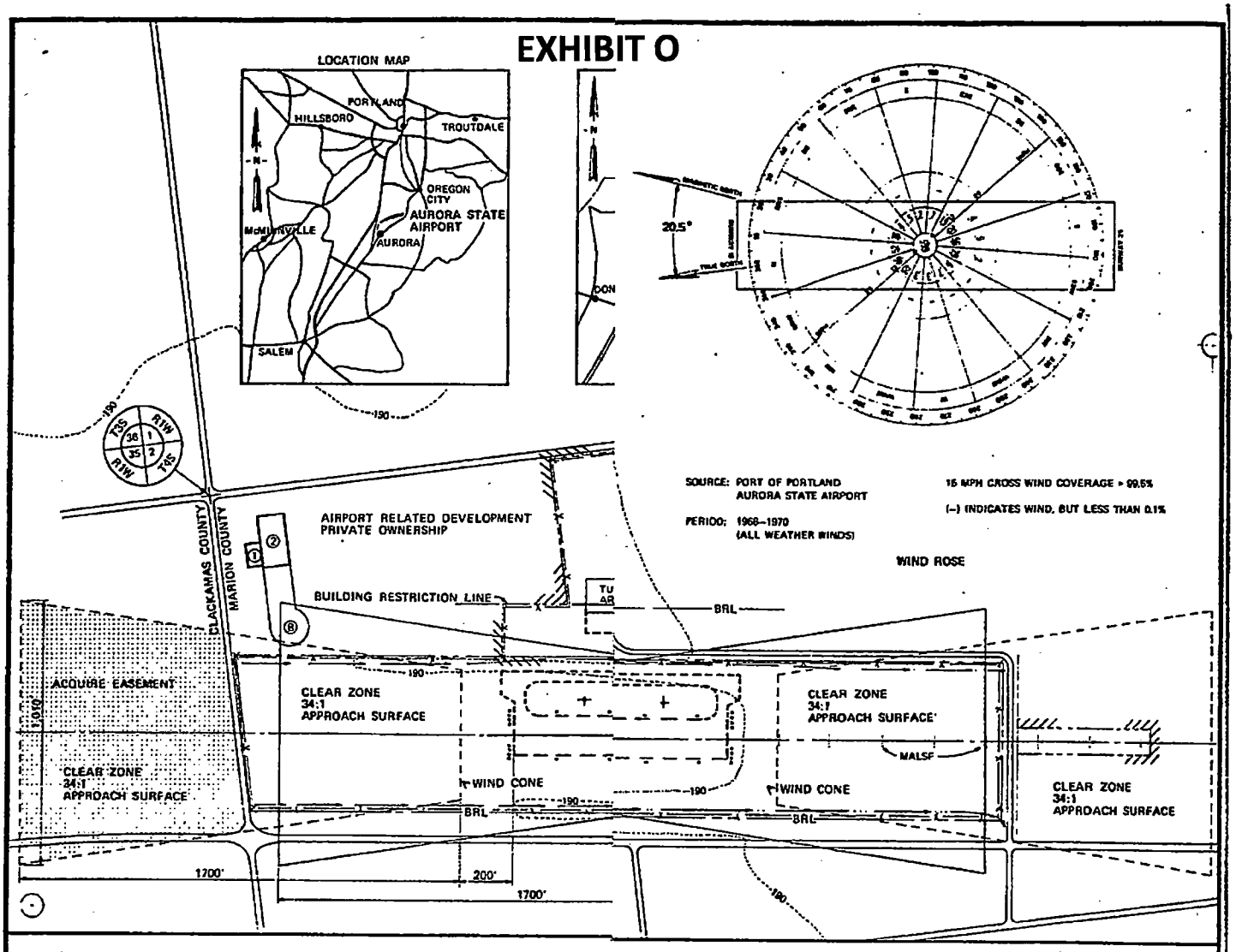
The Airport Layout Plan graphically illustrates the proposed development for the existing airport through the 20-year forecast. The plan provides dimensions of proposed facilities and several tables of data explaining the plan. Details of the development staging are covered later in the Master Plan.

Key points include:

- In order that there can be an implementable Master Plan the Airport Layout Plan prescribes acquiring 113 acres of land in fee on the east side of the airport. Without this space for airport development it will be impossible to implement a complete and productive airport development program.

  Also 18 acres of land is to be acquired in easement for obstruction removal and for airspace protection north of the airport.

EXHIBIT O



NOTES:

1. FOR ADDITIONAL INFORMATION CONCERNING THE TERMINAL AREA SEE TERMINAL AREA PLAN FIGURE 25.
2. FOR ADDITIONAL INFORMATION CONCERNING APPROACH SLOPES, CLEAR ZONES AND OBSTRUCTION SURFACES SEE ULTIMATE AIRPORT IMAGINARY SURFACES, FIGURE 24.

BASIC DATA TABLE

RUNWAY DATA	EXISTING (1975)	STAGE I (1975-1980)	STAGE II (1980-1985)	ST.
RUNWAY LENGTH	4,100' 1,250m	4,100' 1,250m	5,000' 1,524m	6, 1,
RUNWAY WIDTH	150' 46m	150' 46m	150' 46m	
EFFECTIVE GRADIENT (%)	0.07	0.07	0.07	
PERCENT WIND COVERAGE	99.5	99.5	99.5	
INSTRUMENT RUNWAY	None	None	None	N
PAVEMENT STRENGTH*	30S	30S	30S	
APPROACH SLOPES AND CLEAR ZONES	34:1	34:1	34:1	
LIGHTING	L. Intensity	M. Intensity	M. Intensity	M.
MARKING	Basic	Non-Precision	Non-Precision	Non
NAVIGATIONAL AIDS	None	VASI	MALSF	

*Values given are the gross weight on 1,000 lbs. for single (S) and dual (D) gear aircraft.

AURORA STATE AIRPORT

AIRPORT LAYOUT PLAN

FIGURE 23

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PROJECT NO. C 3178.00
FIGURE NO.
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COLOR
SCREEN ☐ NO ☐ YES

PRELIMINARY

EXHIBIT O

- The existing airport is to be retained with a few criteria excelling usual maximums. The existing runway remains at its current length, slightly longer than GU requirements, (4100 versus 3600 feet), and will remain 150 feet wide instead of 100 feet.

  The parallel taxiway will be placed at 225 feet instead of 200 feet because of existing drainage conditions, and the building restriction line will remain at 500 feet as established years ago.

  Pavement strength will remain at 30,000 pounds S.G. except where lighter strength aprons are permanent.

- The runway will be improved from 4100 feet and 30,000 pounds S.G. strength ultimately to 6000 feet and to 60,000 pounds D.G. strength.

- A parallel taxiway will be constructed with several 90 degree exits and stub taxiways to provide direct access to the parking aprons.

- Paved aircraft parking aprons for 98 based aircraft and 50 transient aircraft will be developed, and turf parking for 30 aircraft will be improved.

- Lighting improvements will be an extensive program. Medium intensity runway and taxiway lights will be added together with taxiway reflectors on the parallel taxiway, a new beacon, VASI's for both runway ends, MALSF and apron lighting.

- New navigational aids (NDB and MLS or equivalent) are specified in addition to an air traffic control tower.

- Airport entrance and internal road systems will be considerably modified on the land which is to be acquired and new automobile parking areas will be provided.

- The airport will be divided into areas of different uses which will be separated. The aircraft areas will be separated from public and commercial areas by security fences. Perimeter fences will enclose the entire airport.

- Ultimately a terminal/administration building and a crash/fire/rescue station will be constructed. More hangars are prescribed.

- A heliport is specified for the ultimate airport.

APPROACHES, OBSTRUCTIONS, EASEMENTS

Figure 24 shows the ultimate airport imaginary surfaces and is a part of the Airport Layout Plan. These are according to Federal Aviation Regulations Part 77 and are much like the existing surfaces. After existing obstructions are removed few future problems are anticipated. Existing air easements are to be retained and one new area north of the airport is to be acquired. The figure depicts Part 77 standards for a nonprecision instrument runway.

TERMINAL AREA PLAN

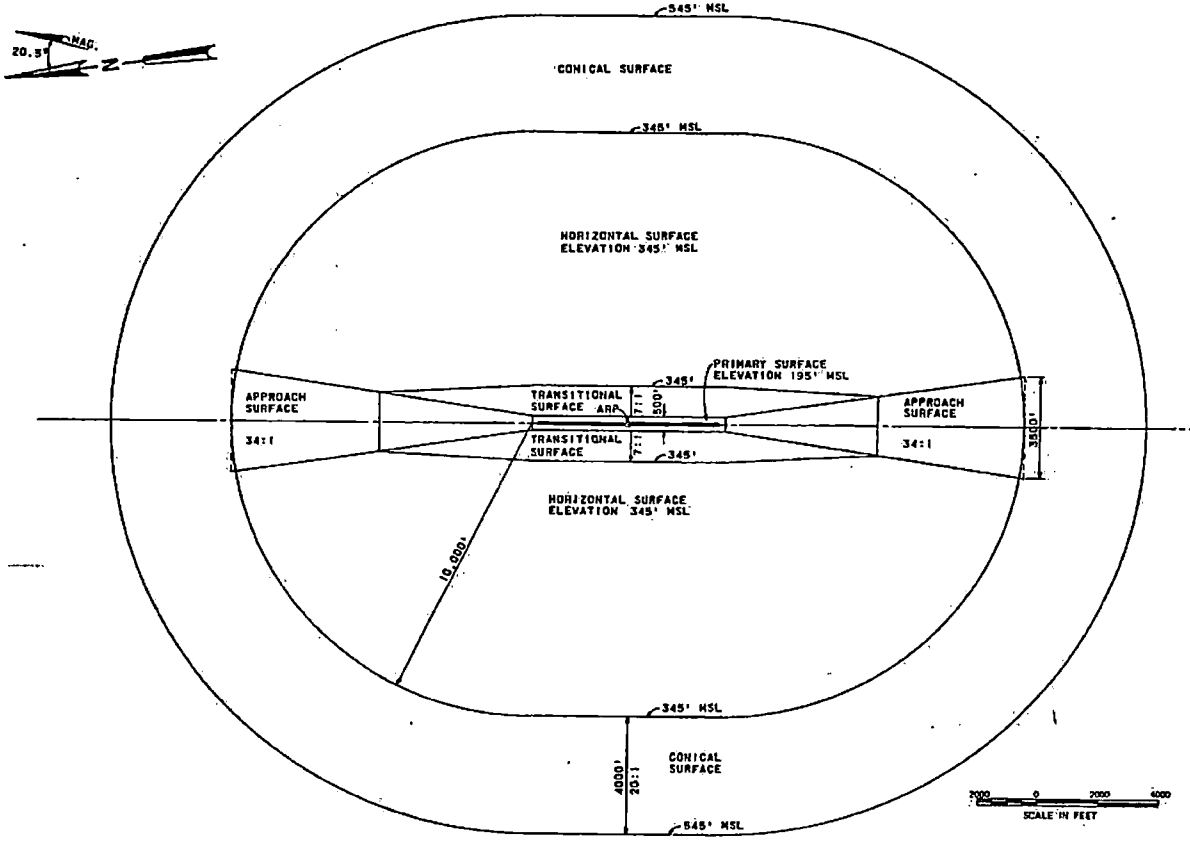
This plan is a part of the Airport Layout Plan, and is the area which contains significant developments. In order to provide assurance that runway and terminal areas can be developed in harmony together, it will be necessary to acquire the land for the terminal area. This will enable the existing flight strip type of airport to become a complete airport, particularly as regards adequate public service areas.

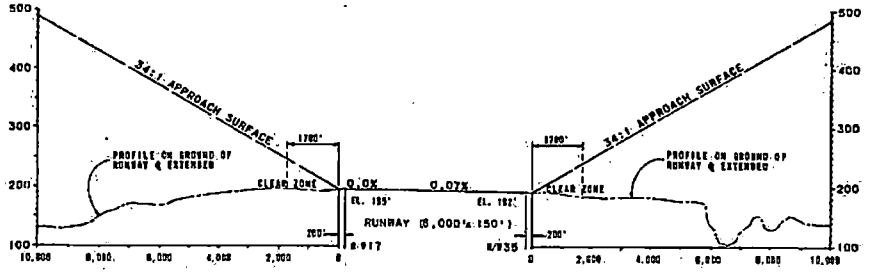
By providing a parallel taxiway with stubs to various apron areas the airport users will have all weather parking and have easy access to tee-hangar parking. Figure 25 shows the Terminal Area Plan.

The terminal area contains three general areas. The first is the south portion of the terminal area where 2 fixed base operations with several tee-hangars will be located. There will be ample room for individuals and businesses to lease space and provide their own hangars and individual service facilities.

In the center of the airport will be space for two kinds of activity. Next to the runway will be a central public apron with terminal building and space for airport maintenance and management personnel. This area will contain in the center of the airport the FAA air traffic control tower, the crash/fire/rescue station and a heliport.

EXHIBIT O





DEFINITIONS

1. PRIMARY SURFACE - THE SURFACE LONGITUDINALLY CENTERED ON THE RUNWAY CENTERLINE AND EXTENDING 200 FEET BEYOND EACH END OF A SPECIALLY PREPARED HARD SURFACED RUNWAY. THE WIDTH OF THE PRIMARY SURFACE IS EQUAL TO THE WIDTH OF THE BEGINNING OF THE RUNWAY'S MOST PRECISE APPROACH SURFACE.
2. TRANSITIONAL SURFACE - THE SURFACE THAT EXTENDS UPWARD AND OUTWARD AT RIGHT ANGLES TO THE RUNWAY CENTERLINE EXTENDED AT A SLOPE OF 7:1 FROM THE SIDES OF THE PRIMARY SURFACE AND FROM THE SIDES OF THE APPROACH SURFACES TO THE HORIZONTAL AND CONICAL SURFACES.
3. HORIZONTAL SURFACE - THE HORIZONTAL PLANE 150 FEET ABOVE THE ESTABLISHED AIRPORT ELEVATION BEGINNING AT ITS INTERSECTION WITH THE TRANSITIONAL SURFACE AND EXTENDING TO THE BEGINNING OF THE CONICAL SURFACE.
4. CONICAL SURFACE - THE SURFACE EXTENDING UPWARD AND OUTWARD FROM THE PERIPHERY OF THE HORIZONTAL SURFACE AT A SLOPE OF 20:1 FOR A HORIZONTAL DISTANCE OF 4000 FEET.
5. APPROACH SURFACES - THE SURFACE LONGITUDINALLY CENTERED ON THE EXTENDED RUNWAY CENTERLINE AND EXTENDING UPWARD AND OUTWARD FROM EACH END OF THE PRIMARY SURFACE.
6. AIRPORT REFERENCE POINT (ARP) - THE POINT ESTABLISHED AS APPROXIMATE GEOGRAPHICAL CENTER OF THE AIRPORT LANDING AREA.
7. AIRPORT ELEVATION - THE HIGHEST POINT ON THE USEABLE LANDING AREA, WHICH ELEVATION IS DATUM TO ESTABLISH THE ELEVATION OF THE HORIZONTAL SURFACE.

AURORA STATE AIRPORT

ULTIMATE AIRPORT IMAGINARY SURFACES

FIGURE 24

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FIGURE NO. _____ COLOR _____
SCREEN ☐NO ☐YES _____

PRELIMINARY

EXHIBIT O

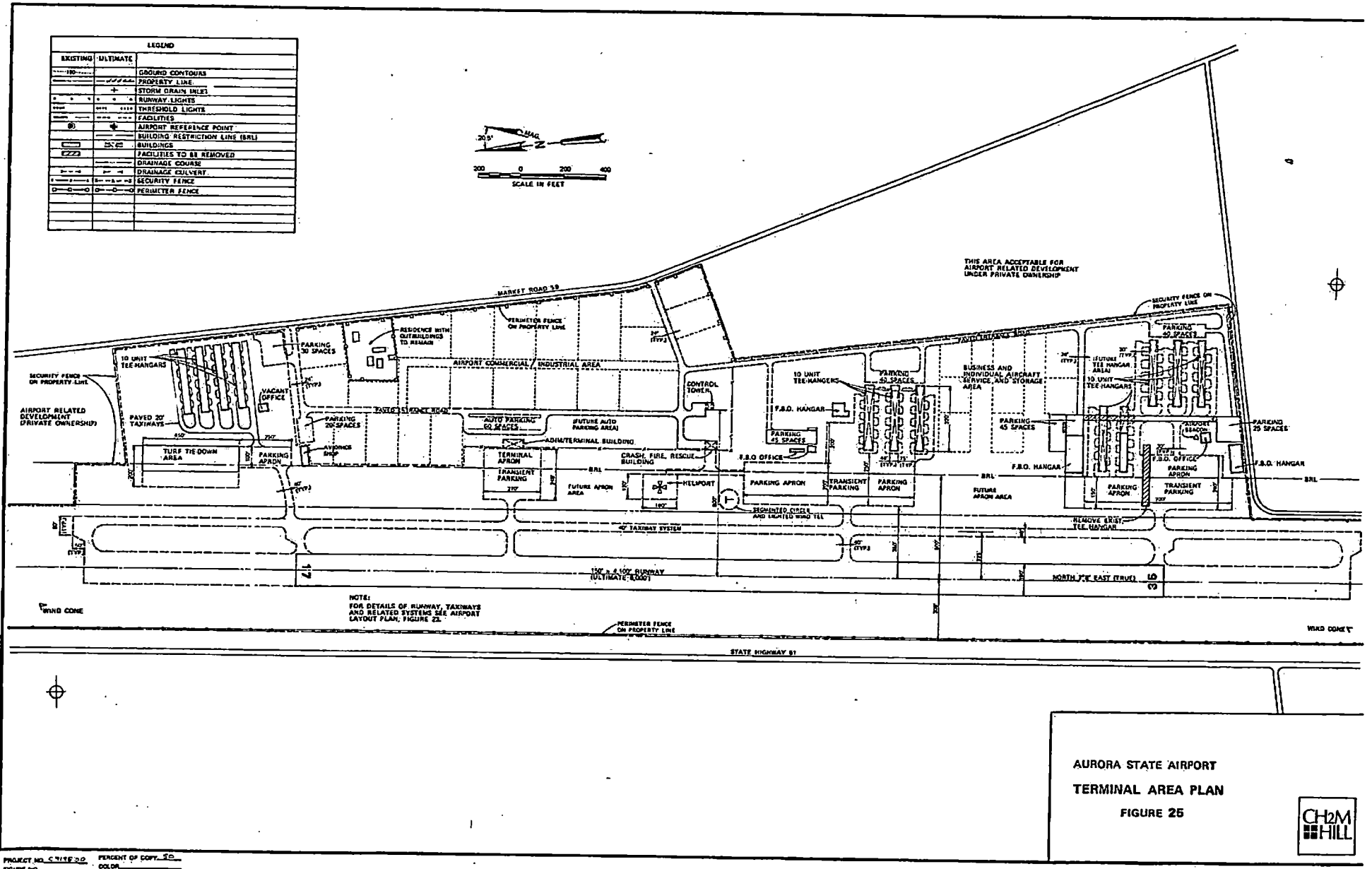

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FIGURE NO. COLOR

PRELIMINARY

EXHIBIT O

Just east of the central terminal area is a large area designated to be used for an aviation related commercial/industrial park. This is intended to be a focal point for such services. By being on the airport it can provide more and better services to the airport users as well as providing revenue to broaden the financial base of the airport.

language ?

Another smaller area suitable for further expansion as a third FBO operation lies at the north end of the terminal area property.

The internal road system is designed to provide convenient access to all parts of the airport. It will separate different kinds of airport users. Aircraft areas are to be separated from the general public and from commercial/industrial areas. Apron lighting is prescribed for the aircraft parking area.

SURFACE ACCESS

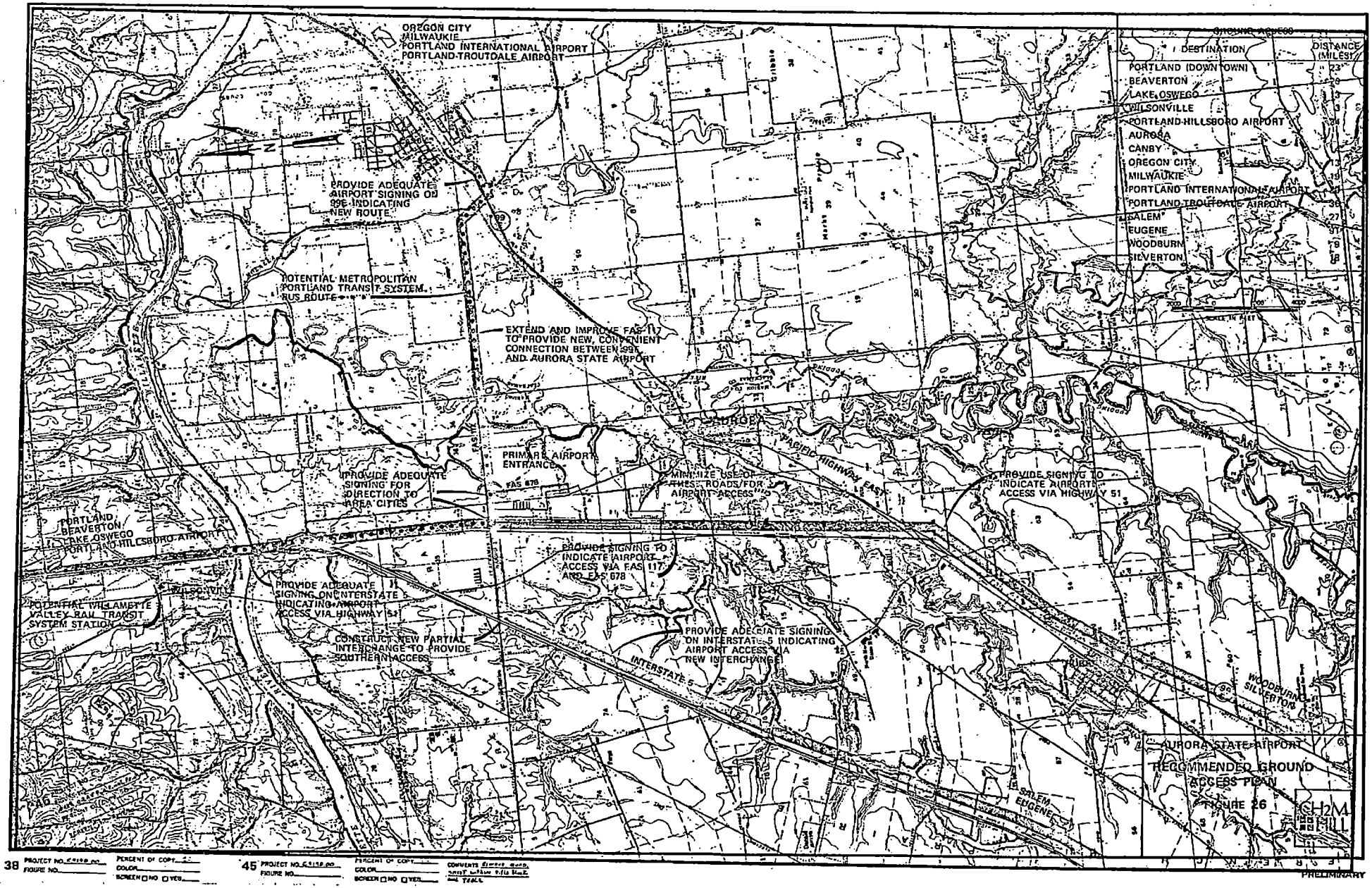
Although surface access to the airport has been carefully studied, it is beyond the scope of an implementation program to develop improvements to the access system. Therefore recommended solutions have been prepared and are shown on Figure 26, Recommended Airport Access Plan. These recommendations are advisory for other agencies having jurisdiction.

The Recommended Airport Access Plan relys on the strong points of the existing surface transportation systems and reinforces its deficiencies. The basic concept is to provide convenient access from the service area to the main airport entrance.

The Recommended Airport Access Plan makes maximum use of existing facilities with minimum capital expenditures to obtain an efficient airport access system, one that is well suited to the future expansion of the airport. The system may not significantly reduce the travel time of the airport users, but it will substantially improve convenience.

It will retain the present access that Aurora residents have to the airport. However, the major flow of traffic to the airport will be diverted around Aurora allowing the city to remain unaffected by future airport generated traffic, which will aid in attempts to maintain the historical significance of Aurora.

EXHIBIT O


OREGON CITY
MILWAUKIE
PORTLAND INTERNATIONAL AIRPORT
PORTLAND-TROUTDALE AIRPORT
PROVIDE ADEQUATE AIRPORT SIGNING ON 99E INDICATING NEW ROUTE
POTENTIAL METROPOLITAN PORTLAND TRANSIT SYSTEM BUS ROUTE
EXTEND AND IMPROVE FAS 117 TO PROVIDE NEW, CONVENIENT CONNECTION BETWEEN 99E AND AURORA STATE AIRPORT
PRIMARY AIRPORT ENTRANCE
PROVIDE ADEQUATE SIGNING FOR DIRECTION TO AREA CITIES
MINIMIZE USE OF LOCAL ROADS FOR AIRPORT ACCESS
PROVIDE SIGNING TO INDICATE AIRPORT ACCESS VIA HIGHWAY 51
PORTLAND
BEAVERTON
LAKE OSWEGO
PORTLAND-HILLSBORO AIRPORT
PROVIDE SIGNING TO INDICATE AIRPORT ACCESS VIA FAS 117 AND FAS 678
PROVIDE ADEQUATE SIGNING ON INTERSTATE 5 INDICATING AIRPORT ACCESS VIA HIGHWAY 51
POTENTIAL WILLAMETTE VALLEY RAIL TRANSIT SYSTEM STATION
CONSTRUCT NEW PARTIAL INTERCHANGE TO PROVIDE SOUTHERN ACCESS
PROVIDE ADEQUATE SIGNING ON INTERSTATE 5 INDICATING AIRPORT ACCESS VIA NEW INTERCHANGE
INTERSTATE 5
PACIFIC HIGHWAY EAST
WOODBURN
SILVERTON
SALEM
EUGENE
DESTINATION
DISTANCE (MILES)
PORTLAND (DOWNTOWN)
BEAVERTON
LAKE OSWEGO
WILSONVILLE
PORTLAND-HILLSBORO AIRPORT
AURORA
CANBY
OREGON CITY
MILWAUKIE
PORTLAND INTERNATIONAL AIRPORT
PORTLAND-TROUTDALE AIRPORT
SALEM
EUGENE
WOODBURN
SILVERTON
AURORA STATE AIRPORT
RECOMMENDED GROUND ACCESS PLAN
FIGURE 26
CH2M HILL
PRELIMINARY

Travel on lower type facilities will be discouraged. By utilizing predominantly higher type roadways actual modification and maintenance in the field will be minimized. It is estimated that airport related activities will generate approximately 200 automobile trips at the peak hour in 1995. This amount is not significant in its impact on the area transportation system or on the major facilities.

The use of major facilities will eliminate most of the problems associated with the circuitous routes now serving the airport. In addition, the costs of operating and maintaining these facilities will be spread over a larger population. This is appropriate due to the regional nature of the Aurora State Airport. Complementing any ultimate routing to the airport will be an extensive signing program. This will alert the public, particularly the airport users, to the most expeditious route to the airport. Without this, much of the benefit of the other steps may be lost.

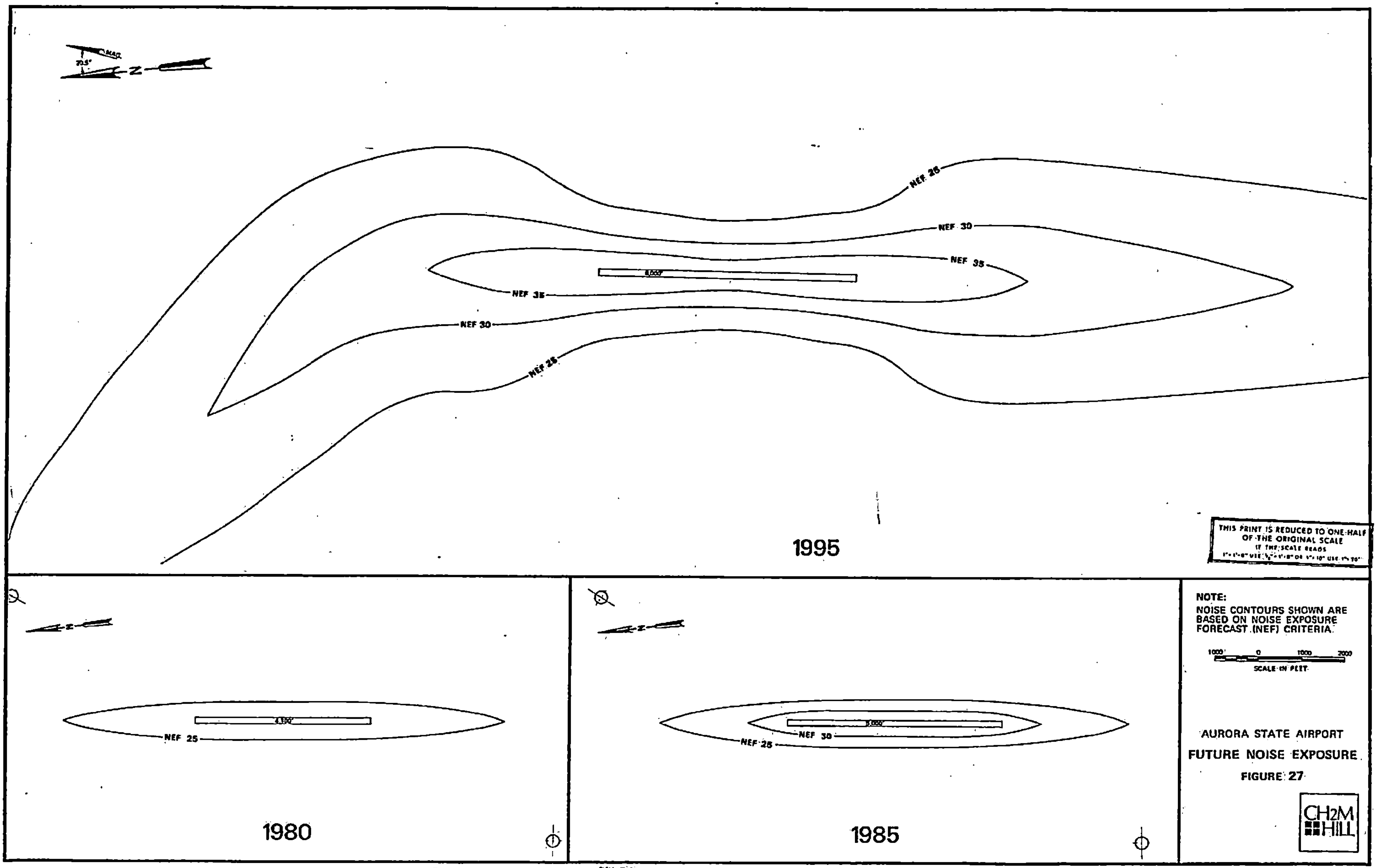
Finally, the potential exists for the extension of the Portland Metropolitan area transit system (Tri-Met) to include a route that would pass immediately north of the airport on Arndt Road. Routes are now established in Canby and Wilsonville. A tie-in with these would provide a transit link that would allow travel from the airport to virtually anywhere in the metropolitan area.

ENVIRONMENTAL CONSIDERATIONS

Environmental assessments have been made based upon the Airport Layout Plan drawings. None of the developments proposed require an Environmental Impact Assessment Report at this time. However the runway lengthening proposed sometime after the next five year period will require a formal environmental process prior to construction.

Adverse environmental impacts include noise effects, air and water pollution and some traffic congestion due to build-up in the area. Figure 27 shows noise exposures for 1980, 1985 and 1995. The noise contours were developed using the forecast given earlier in Table 6, page 52, and information on aircraft population, Figure 18, page 50. Table 8, page 62 shows noise impacts on land use. Additional noise data is found in the APPENDIX.

EXHIBIT O



47 PROJECT NO. FIGURE NO. PERCENT OF COPY COLOR SCREEN NO YES COMMENTS

PRELIMINARY

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Generally when NEF contours are below 30 the noise impact is slight and requires no special noise insulation for new construction. When the NEF is between 30 to 35 new construction should be undertaken after analysis of noise reduction requirements has been made and needed noise insulation features included in the design of buildings in that area. Because of the agricultural nature of the land around the Aurora Airport the noise exposure, even in 1995, should not effect a large number of people.

Although aircraft emit air pollutants, they are small in numbers compared with the automobile. Table 9 shows air quality impacts produced by the forecast aircraft traffic at the airport. Automobile traffic was not analyzed.

In considering how to diminish the environmental impacts produced by the Aurora State Airport alternatives were examined. The main alternatives are:

- to make no improvements
- to make the improvements according to a Master Plan
- to close the airport

If nothing is done to the airport the tendency for airport encroachment will become stronger and environmental incompatibility could become a serious problem in a few years. The existing runway length accommodates some turbojet aircraft now and it is doubtful that a do-nothing alternative would reduce their environmental impact significantly. If no improvements are made to the airport the airport will probably continue to support growing numbers of traffic with reduced safety standards.

Therefore it has been deemed best for the environment to develop the airport in a positive manner providing for minimizing environmental impacts as development is accomplished.

EXHIBIT O

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FIGURE NO.

118

TABLE 9

AIR QUALITY IMPACTS
(peak hour)

	EMISSIONS (micrograms per cubic meter)				
	PARTI-CULATES	SULFUR OXIDES	CARBON MONOXIDE	HYDRO-CARBONS	NITROGEN OXIDES
1975					
SINGLE ENGINE	0.0040	0.0020	0.0020	0.0800	0.0100
TWIN ENGINE	0.0006	0.0003	0.0003	0.0105	0.0014
TURBO JET	0	0	0	0	0
TOTALS	0.0046	0.0023	0.0023	0.0905	0.0114
1995					
SINGLE ENGINE	0.0090	0.0045	0.0045	0.1800	0.0225
TWIN ENGINE	0.0018	0.0009	0.0009	0.0315	0.0041
TURBO JET	0.0120	0.0375	0.0015	0.3465	0.1590
TOTALS	0.0228	0.0429	0.0069	0.5580	0.1856

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Serious consideration to closing the airport does not appear warranted because the impacts are not severe. Closure itself would be a serious impact because there would be a need to relocate several persons and businesses. Then secondary social and economic problems would occur.

LAND USE PLAN AND RECOMMENDED ZONING

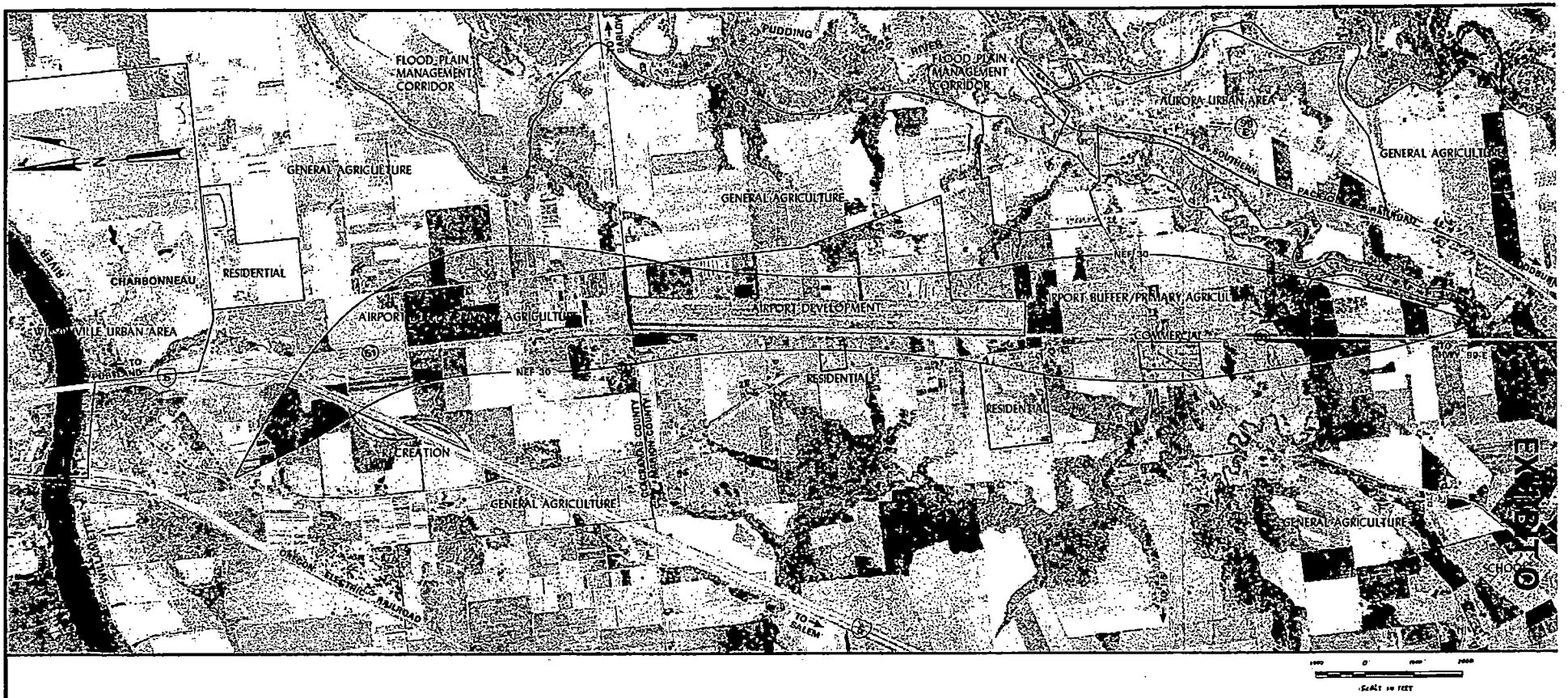
Although the airport has been found to be providing a service to large numbers of users, it can remain in public acceptance only as long as its compatibility with the surrounding land use is preserved. This Master Plan has developed a Land Use Plan, shown in Figure 28, compatible with development proposed by the Airport Layout Plan.

The land use plan shows land uses recommended in the vicinity of the airport which are generally in conformance with the comprehensive plans of Marion County and Clackamas County. Unique to these comprehensive/plans is the indicated airport buffer overlay which this Master Plan is recommending for adoption by both counties. This overlay, following the NEF 30 contour, will protect both the airport and the citizens who might otherwise move into the noise impacted areas.

The airport Master Plan will be submitted to Marion County and Clackamas County for adoption of new zoning suitable for the airport. Figure 29, recommends a zoning plan and three new zones. The first zone is an Airport Development Zone, described on Figure 29.

The second zone is an Airport Buffer Overlay Zone, also shown on Figure 29. Restrictions imposed by this overlay should take precedence over any conflicting permitted uses in the zones under the overlay.

The third zone is an Airport Obstruction Surfaces Overlay Zone. It is an additional overlay superimposed over and surrounding the proposed airport. It is the same as all FAR Part 77 surfaces except the Conical Surface, which is omitted. These surfaces are shown on Figure 24, Ultimate Airport Imaginary Surfaces page 71. All surfaces are dimensioned according to FEDERAL AVIATION REGULATIONS, Part 77, Objects Affecting Navigable Airspace.



AURORA STATE AIRPORT

LAND USE PLAN

FIGURE 23

EXHIBIT O

To- Fig-28

SUGGESTED LAND USE DESIGNATIONS

COMMERCIAL:

INCLUDES LIGHT INDUSTRIAL, DISTRIBUTION AND FARM AND BUSINESS SERVICE

RESIDENTIAL:

ENCOMPASSES MEDIUM TO HIGH DENSITY RESIDENTIAL AREAS, INCLUDING PROPER OPEN SPACE, RECREATION, UTILITY AND TRANSPORTATION FACILITIES.

URBAN AREAS:

INCLUDES THOSE USES NORMALLY ASSOCIATED WITH URBAN AREA DEVELOPMENT, SUCH AS RESIDENTIAL, COMMERCIAL, INDUSTRIAL AND PUBLIC USES. USUALLY LIMITED TO AREAS WHERE ADEQUATE MUNICIPAL FACILITIES ARE AVAILABLE.

RECREATION:

CONSISTS OF AREAS WITHIN THE FLOOD PLAIN MANAGEMENT CORRIDOR THAT PROVIDE SPORT AND LEISURE OPPORTUNITIES. THE REST AREA ALONG INTERSTATE FIVE IS ALSO INCLUDED.

FLOOD PLAN MANAGEMENT CORRIDOR:

INCLUDES AREA WITHIN 100 YEAR FLOOD PLAIN LIMITS. USES ARE PRIMARILY AGRICULTURAL, FORESTRY, PARK, RECREATION, OPEN SPACES, AND EXTRACTION OF SAND AND GRAVEL.

AIRPORT DEVELOPMENT:

INCLUDES THE ACTUAL FACILITIES OF THE AIRPORT SUCH AS, THE RUNWAY, TAXIWAY, PARKING APRONS, HANGARS, ADMINISTRATION AND OPERATION BUILDINGS, CLEAR ZONES, ETC. AVIATION RELATED INDUSTRIAL AND COMMERCIAL BUSINESSES ALSO ALLOWED IN APPROPRIATE AREAS.

AIRPORT BUFFER OVERLAY:

ENCOMPASSES AN AREA AROUND THE AIRPORT, BOUNDED BY THE NEF 30 CONTOUR, WITHIN WHICH LAND USES ARE DESIGNATED THAT WILL BE MINIMALLY AFFECTED BY AIRCRAFT OPERATIONS AT THE AIRPORT. PREFERRED LAND USES WOULD BE PRIMARY AGRICULTURE AND COMMERCIAL LIMITED TO LOW DENSITY CONCENTRATION OF PEOPLE.

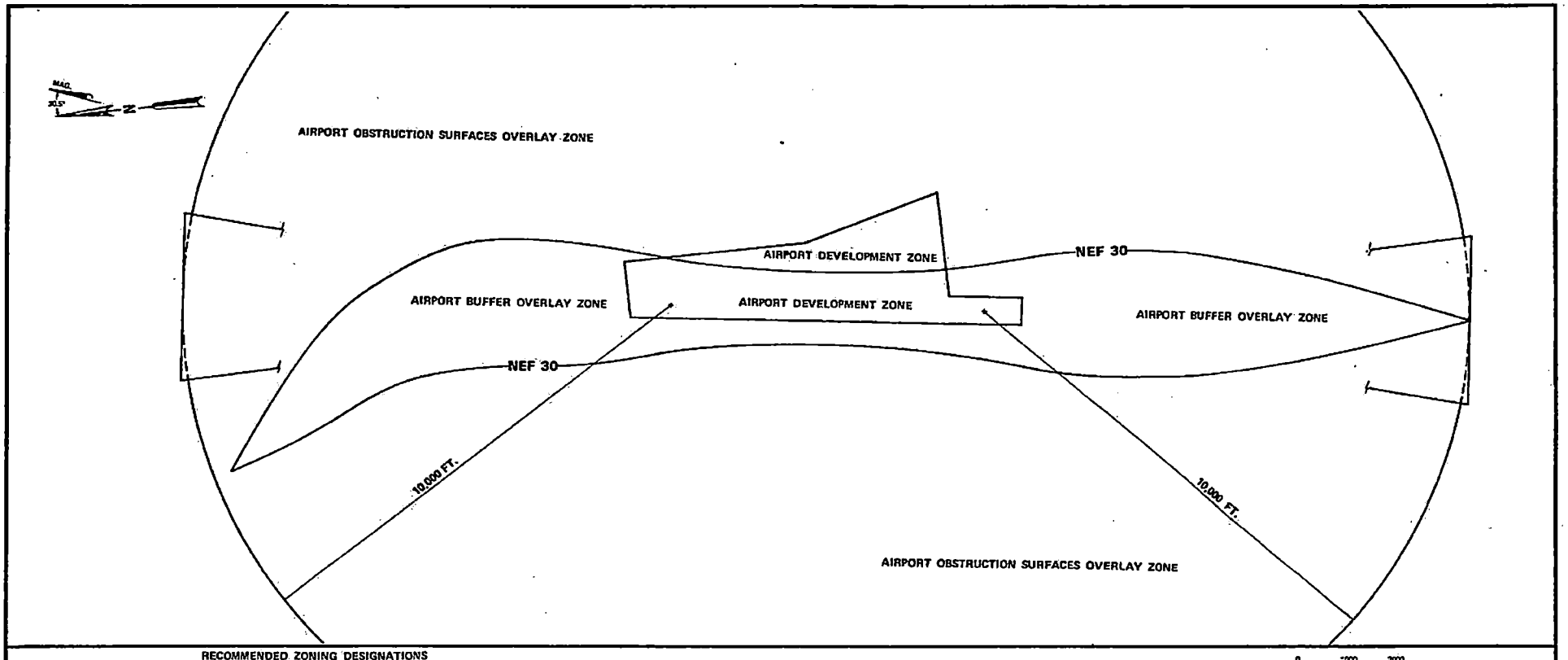
PRIMARY AGRICULTURE:

PRIMARILY FOR AGRICULTURAL USES, INCLUDING FARMSTEADS. ADDITIONAL USES PERMITTED ARE RURAL COMMUNITY FACILITIES SUCH AS SCHOOLS, CHURCHES, PARKS, ETC. THESE SHOULD NOT BE ALLOWED UNDER THE AIRPORT BUFFER OVERLAY. EXISTING NONCONFORMING RESIDENTIAL AND COMMERCIAL USES MAY BE CONTINUED BUT SHOULD NOT BE ALLOWED TO EXPAND BEYOND PRESENT LIMITS SHOWN.

GENERAL AGRICULTURE:

GENERALLY FOR AGRICULTURAL USES INCLUDING LARGE FARMS, LOW DENSITY ACREAGE RESIDENTIAL AREAS AND SMALL HOBBY FARMS. ADDITIONAL USES PERMITTED INCLUDE RESIDENTIAL SUBDIVISIONS, PRIVATE COMMERCIAL RECREATION FACILITIES, FARM PRODUCTS PROCESSING OPERATIONS AND SAND AND GRAVEL EXTRACTION.

EXHIBIT O



RECOMMENDED ZONING DESIGNATIONS

AIRPORT DEVELOPMENT ZONE:

PERMITTED USES TO INCLUDE OPERATION OF AN AIRPORT. CONDITIONAL USES TO BE LIMITED TO AVIATION RELATED COMMERCIAL AND/OR INDUSTRIAL BUSINESSES IN APPROPRIATE AREAS WITH RESPECT TO AERONAUTICAL FACILITIES.

AIRPORT BUFFER OVERLAY ZONE:

AN OVERLAY SURROUNDING AN EXISTING OR POTENTIAL AIRPORT IMPACT AREA. TO BE SUPERIMPOSED OVER AND USED IN CONJUCTION WITH EXISTING ZONING. IT IS DEFINED BY THE EXISTING OR FORECAST NEF 30 NOISE CONTOUR, WHICHEVER ENCOMPASSES THE LARGEST AREA. THE PURPOSE IS TO PROVIDE FOR USES THAT PRECLUDE CONCENTRATIONS OF PEOPLE. FOR THE AURORA STATE AIRPORT BUFFER ZONE EXCLUSIVE FARM USE (EFU), WITH LIMITED COMMERCIAL AREA, IS RECOMMENDED. THE PERMITTED USES IN THE OVERLAY ZONE OVERRIDE CONFLICTING USES IN THE ZONES BENEATH THE OVERLAY.

AIRPORT OBSTRUCTION SURFACES OVERLAY ZONE

AN ADDITIONAL OVERLAY SUPERIMPOSED OVER AND SURROUNDING THE PLANNED AIRPORT DEVELOPMENT AND DIMENSIONED ACCORDING TO FEDERAL AVIATION REGULATION PART 77, OBJECTS AFFECTING NAVIGABLE AIRSPACE. THE OBSTRUCTION SURFACES ARE SHOWN ON FIGURE 24, ULTIMATE AIRPORT IMAGINARY SURFACES. THE CONICAL SURFACE HAS BEEN EXCLUDED FROM THE OVERLAY SO THAT NO AREA FARTHER THAN 10,000 FEET FROM THE PRIMARY AIRPORT SURFACE IS AFFECTED.

THIS PRINT IS REDUCED TO ONE-HALF OF THE ORIGINAL SCALE IF THE SCALE READS

AURORA STATE AIRPORT

RECOMMENDED ZONING PLAN

FIGURE 29

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PRELIMINARY

EXHIBIT O

As regards the land adjacent to the airport but not directly in either overlay zone the Master Plan encourages both counties to rezone the land in the airport vicinity to preferably EFU (Exclusive Farm Use Zone) or possibly F-20 (Farm-20 acre Zone); or in Clackamas County, EFU or possibly RF-F (Residential Farm-Forest Zone). in Marion County

EXHIBIT O

IMPLEMENTATION PLAN

EXHIBIT O

IMPLEMENTATION PLAN

DEVELOPMENT SCHEDULE AND STAGING

Table 10, Development Schedule, shows the stage development proposed through the short-range (1975-1980), the mid-range (1980-1985), and the long-range (1985-1995), periods.

This follows the requirements developed in AIRPORT REQUIREMENTS and shown on Table 7, page 59. The developments are according to the Airport Layout Plan and are illustrated on Figure 30. It has been assumed that all new pavements will last the duration of this Master Plan period (20 years).

The quantity of work required to match capacity improvements to demand requirements is shown for each item. The quantities are slightly more than demands require at the end. Otherwise the State could construct smaller facilities earlier or more frequently, particularly as regards apron space.

The major development items in Stage I are land acquisition and a parallel taxiway. All land must be acquired initially to insure that the airport remains a complete unit and that the State has control to carry out the Master Plan program.

Other major developments are: parking aprons for more than 100 aircraft, based and transient, runway rehabilitation, major airfield lighting, and site development of the terminal area.

During the Stage II development period the runway will be extended 900 feet with MALSF lighting and NDB. This anticipates a demand for more complex aircraft and longer trip distances with resultant greater takeoff requirements. Most of the other improvements are for developing the terminal area.

The timing for Stage III long-range development needs is less definite. The Master Plan calls for a 6000 feet runway at 60,000 pounds S.G. strength and other pavement strengthening. A MLS or equivalent landing system should be added.

EXHIBIT O

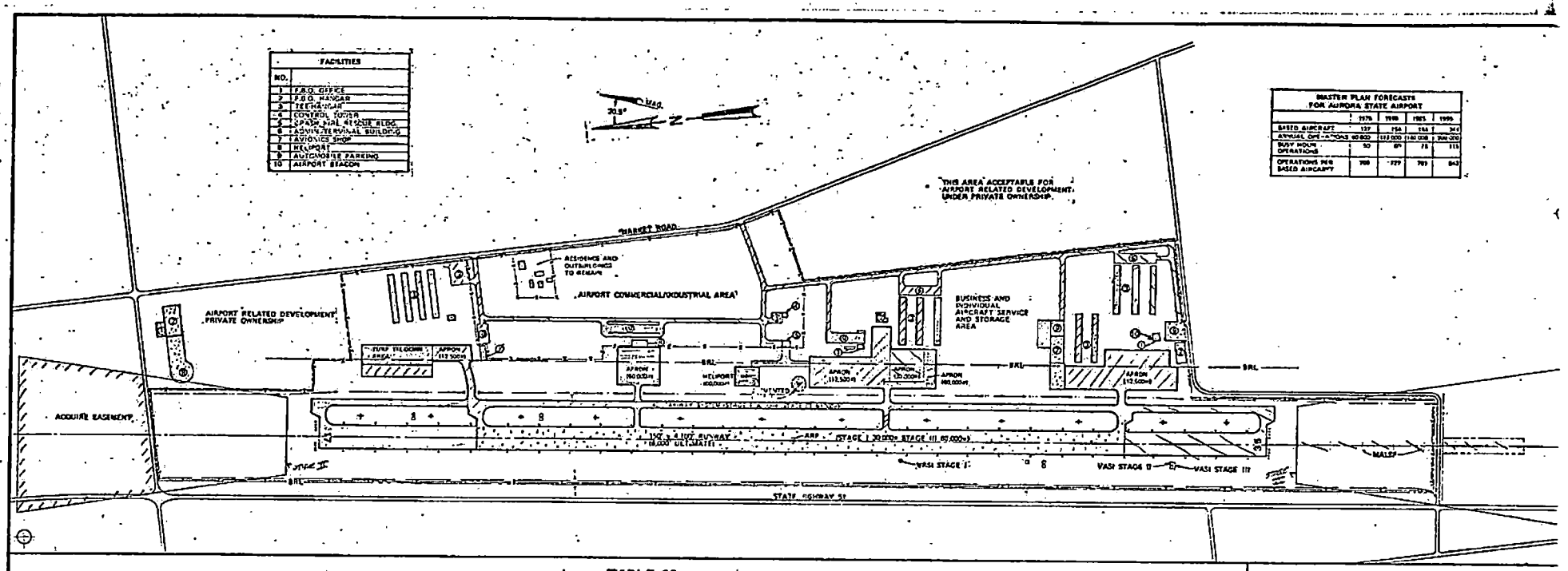


TABLE 10
DEVELOPMENT SCHEDULE

STAGE I - 1975-1988

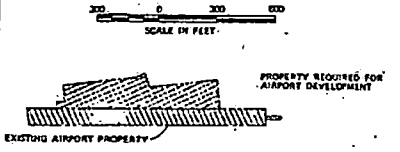
PROJECT DESCRIPTION	QUANTITY
ACQUIRE LAND FOR AIRPORT DEVELOPMENT	112 ACRES
ACQUIRE AIR EASEMENTS	38 ACRES
REMOVE OBSTRUCTIONS	1.5 ACRES
PAVE AND MARK PARALLEL TAXIWAY SYSTEM (30,000+)	5,700 L.F.
PAVE AND MARK HOLDING APRONS (30,000+)	10,000 S.F.
PAVE AND MARK PARKING APRONS (112,500+)	300,000 S.F.
CONSTRUCT TURF PARKING AREA	10 AIRCRAFT
INSTALL ROTATING BEACON AND TOWER	1 EACH
INSTALL LIGHTED WIND TEE AND SEGMENTED CIRCLE	1 EACH
STRENGTHEN RUNWAY (TO 30,000+)	4,100 L.F.
INSTALL NON-PRECISION RUNWAY MARKING	4,100 L.F.
INSTALL MEDIUM INTENSITY RUNWAY LIGHTS	4,100 L.F.
INSTALL VASI SYSTEM	2 ENDS
INSTALL NON-DIRECTIONAL BEACON	1 EACH
INSTALL TAXIWAY REFLECTORS	5,100 L.F.
PAVE AND MARK AIRPORT ROADWAYS	3,000 L.F.
PAVE AND MARK AUTOMOBILE PARKING FACILITIES	80 AUTOS
CONSTRUCT FENCING	6,000 L.F.
CONSTRUCT TEE HANGARS (PRIVATE DEVELOPMENT)	34 AIRCRAFT

STAGE II - 1988-1995

PROJECT DESCRIPTION	QUANTITY
EXTEND, PAVE AND MARK RUNWAY (30,000+)	900 L.F.
EXTEND MEDIUM INTENSITY RUNWAY LIGHTS	900 L.F.
EXTEND, PAVE AND MARK TAXIWAY SYSTEM (30,000+)	1,000 L.F.
PAVE AND MARK HOLDING APRON (30,000+)	5,000 S.F.
REPOSITION VASI SYSTEM	1 END
INSTALL MEDIUM INTENSITY EXIT TAXIWAY LIGHTS	700 L.F.
INSTALL LIGHTED WIND CONES	2 EACH
PAVE AND MARK PARKING APRON (30,000+)	96,000 S.F.
INSTALL MALSF APPROACH LIGHT SYSTEM	1 END
INSTALL PARKING APRON LIGHTING	600 L.F.
PAVE AND MARK AIRPORT ROADWAYS	3,200 L.F.
PAVE AND MARK AUTOMOBILE PARKING FACILITIES	30 AUTOS
EXTEND FENCING	3,400 L.F.
CONSTRUCT TEE HANGARS (PRIVATE DEVELOPMENT)	16 AIRCRAFT

STAGE III - 1995-1998

PROJECT DESCRIPTION	QUANTITY
EXTEND, PAVE AND MARK RUNWAY (60,000+)	1,000 L.F.
STRENGTHEN AND MARK RUNWAY (TO 60,000+)	5,000 L.F.
EXTEND MEDIUM INTENSITY RUNWAY LIGHTS	1,000 L.F.
EXTEND, PAVE AND MARK TAXIWAY SYSTEM (60,000+)	1,200 L.F.
STRENGTHEN AND MARK TAXIWAY SYSTEM (TO 60,000+)	6,100 L.F.
PAVE AND MARK HOLDING APRON (60,000+)	9,000 S.F.
INSTALL MEDIUM INTENSITY TAXIWAY LIGHTS	8,500 L.F.
PAVE AND MARK PARKING APRONS (60,000+)	80,000 S.F.
EXPAND VASI SYSTEM	2 ENDS
INSTALL MICROWAVE LANDING SYSTEM (OR EQUIVALENT)	1 END
INSTALL PARKING APRON LIGHTING	1,200 L.F.
CONSTRUCT CRASH, FIRE, RESCUE STATION	2,500 S.F.
CONSTRUCT CONTROL TOWER (BY FAA)	1 EACH
PAVE AND MARK HELIPORT	19,000 S.F.
PAVE AND MARK AIRPORT ROADWAYS	500 L.F.
PAVE AND MARK AUTOMOBILE PARKING FACILITIES	80 AUTOS
CONSTRUCT TERMINAL/ADMINISTRATION BUILDING	5,000 S.F.
EXTEND FENCING	2,500 L.F.
CONSTRUCT TEE HANGARS (PRIVATE DEVELOPMENT)	90 AIRCRAFT



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AURORA STATE AIRPORT
DEVELOPMENT STAGING
FIGURE 30

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Significant additions to the terminal area will include more parking, a control tower, a terminal/ administration building, a heliport and a crash/ fire/rescue station.

ECONOMIC FEASIBILITY

The basis for capital improvements needs has been carefully developed in previous tasks of this study. The safety, capacity, and service benefits to the users have been established. The economic feasibility of including these projects in the Master Plan depends much upon the availability of funds.

Total funds for capital investments over the 20-year forecast period are $3.3 million. A breakdown of these costs is shown in Table 11 in 1975 dollars. Costs are planning capital cost estimates based on industry data. Site characteristics adjustments have been made but without specific engineering design analyses.

Of the total, much of the capital development would be done entirely with federal or with private funds. Most of the remaining work is eligible for FAA cost sharing. The FAA share has been 83.54 percent and may be increased. Oregon State funds required at 83.54 percent funding would be $764,000 or an average of $38,200 for the 20-year period.

The Master Plan accepts this investment level to be reasonable.

FINANCING PLAN

The ability to implement the Master Plan depends on a large measure upon the soundness of the airport's financial plan. Even though the Aurora State Airport has a regional impact, which makes it difficult to determine the distribution of benefits, the Master Plan attempts to make the Airport financially self-supporting.

EXHIBIT O

TABLE 11

CAPITAL DEVELOPMENT PROGRAM

PROJECT DESCRIPTION	ESTIMATED COST* (including contingency) ($000)	ELIGIBLE FAA SHARE ($000)	OSDA SHARE ($000)
STAGE I – 1975-1980			
ACQUIRE LAND FOR AIRPORT DEVELOPMENT	565	472	93
ACQUIRE AIR EASEMENTS	36	30	6
REMOVE OBSTRUCTIONS	3	2	1
PAVE AND MARK PARALLEL TAXIWAY SYSTEM (30,000#)	166	139	27
PAVE AND MARK HOLDING APRONS (30,000=)	7	6	1
PAVE AND MARK PARKING APRONS (12,500=)	206	172	34
CONSTRUCT TURF PARKING AREA	3	2	1
INSTALL ROTATING BEACON AND TOWER	9	7	2
INSTALL LIGHTED WIND TEE AND SEGMENTED CIRCLE	4	3	1
STRENGTHEN RUNWAY (TO 30,000=)	185	156	29
INSTALL NON-PRECISION RUNWAY MARKING	5	4	1
INSTALL MEDIUM INTENSITY RUNWAY LIGHTS	39	33	6
INSTALL VASI SYSTEM	15	13	2
INSTALL NON-DIRECTIONAL BEACON	10	–	10
INSTALL TAXIWAY REFLECTORS	4	3	1
PAVE AND MARK AIRPORT ROAWAYS	61	51	10
PAVE AND MARK AUTOMOBILE PARKING FACILITIES	19	–	16
CONSTRUCT FENCING	29	24	5
CONSTRUCT TEE-HANGARS (PRIVATE DEVELOPMENT)	212	–	–
TOTALS	1,366*	1,117*	249*
STAGE II – 1980-1985			
EXTEND, PAVE AND MARK RUNWAY (30,000=)	98	82	16
EXTEND MEDIUM INTENSITY RUNWAY LIGHTS	9	7	2
EXTEND, PAVE AND MARK TAXIWAY SYSTEM (30,000=)	35	29	6
PAVE AND MARK HOLDING APRON (30,000=)	4	3	1
REPOSITION VASI SYSTEM	3	2	1
INSTALL MEDIUM INTENSITY EXIT TAXIWAY LIGHTS	5	4	1
INSTALL LIGHTED WIND CONES	3	2	1
PAVE AND MARK PARKING APRONS (30,000=)	39	33	6
INSTALL MALSF APPROACH LIGHT SYSTEM	30	25	5
INSTALL PARKING APRON LIGHTING	9	7	2
PAVE AND MARK AIRPORT ROADWAYS	53	44	9
PAVE AND MARK AUTOMOBILE PARKING FACILITIES	8	–	8
EXTEND FENCING	21	17	4
CONSTRUCT TEE-HANGARS (PRIVATE DEVELOPMENT)	63	–	–
TOTALS	317*	255*	62*
STAGE III – 1985-1995			
EXTEND, PAVE AND MARK RUNWAY (60,000=)	113	94	19
STRENGTHEN AND MARK RUNWAY (TO 60,000=)	343	287	56
EXTEND MEDIUM INTENSITY RUNWAY LIGHTS	10	8	2
EXTEND, PAVE AND MARK TAXIWAY SYSTEM (60,000=)	43	36	7
STRENGTHEN AND MARK TAXIWAY SYSTEM (TO 60,000=)	93	78	15
PAVE AND MARK HOLDING APRON (60,000=)	10	8	2
INSTALL MEDIUM INTENSITY TAXIWAY LIGHTS	49	41	8
PAVE AND MARK PARKING APRONS (60,000=)	73	61	12
EXPAND VASI SYSTEM	10	8	2
INSTALL MICROWAVE LANDING SYSTEM (OR EQUIVALENT)	94	94	–
INSTALL PARKING APRON LIGHTING	18	15	3
CONSTRUCT CRASH, FIRE, RESCUE STATION	106	–	106
CONSTRUCT CONTROL TOWER (BY FAA)	400	400	–
PAVE AND MARK HELIPORT	14	12	2
PAVE AND MARK AIRPORT ROADWAYS	9	7	2
PAVE AND MARK AUTOMOBILE PARKING FACILITIES	21	–	21
CONSTRUCT TERMINAL/ADMINISTRATION BUILDING	188	–	188
EXTEND FENCING	50	42	8
CONSTRUCT TEE-HANGARS (PRIVATE DEVELOPMENT)	188	–	–
TOTALS	1,644*	1,191*	453*
GRAND TOTALS	3,327*	2,563*	764*

*Costs are shown in 1975 dollars. Appropriate escalation factors must be applied for extrapolation to future years.

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FIGURE NO.

EXHIBIT O

Table 12 shows the level of revenues required to meet projected expenses in terms of 1975 dollars. In developing a management program for the airport revenue goals should be established and a program carried out to develop income from the airport users.

MANAGING A CONTINUING PROGRAM

These actions are required by the Division of Aeronautics:

- This airport Master Plan should be adopted and implementation commenced immediately.
- Application should be made to the FAA for funds to support the Implementation Plan.
- In order for the State to implement the Master Plan the State needs to control the land. Therefore acquisition of the land for the terminal area should be accomplished without delay.
- The parallel taxiway and exit taxiway system must be constructed immediately. This is necessary to protect public safety and to provide adequate runway capacity.
- Other needed developments should be started as indicated by the Master Plan.
- The airport maintenance program should be accelerated, particularly as regards runway pavement rehabilitation and airfield surface drainage improvements.
- The State should continue to work closely with Marion and Clackamas Counties to develop compatible land use planning.
- The State should work closely with Marion and Clackamas Counties to develop zoning changes on and near the airport as recommended by the Master Plan.
- At this time no appropriate alternatives for airport ownership seem to exist. The State should retain ownership of the airport because its closure would have a critical adverse impact on the Oregon Aviation System.

EXHIBIT O

TABLE 12
AIRPORT REVENUE GOALS
($000-1975 Dollars)

	SHORT RANGE 1975-1980		MID-RANGE 1980-1985		LONG RANGE 1985-1995		20 YEAR PERIOD 1975-1995	
	ANNUAL AVERAGE	TOTAL	ANNUAL AVERAGE	TOTAL	ANNUAL AVERAGE	TOTAL	ANNUAL AVERAGE	TOTAL
EXPENDITURES TO MEET MASTER PLAN GOALS								
OPERATION AND MAINTENANCE								
MAINTENANCE AND REPAIR	8	40	9	45	11	110	9.8	195
MATERIALS AND EQUIPMENT	3	15	3	15	4	40	3.5	70
SALARIES	0	0	6	30	20	200	11.5	230
ADMINISTRATION	2	10	2	10	3	30	2.5	50
TOTAL	13	65*	20	100*	38	380*	27.3	545*
CAPITAL IMPROVEMENTS								
STATE'S SHARE	49.8	249*	12.4	62*	45.3	453*	38.2	764*
TOTAL REVENUES REQUIRED TO MAKE AURORA STATE AIRPORT FINANCIALLY INDEPENDENT	62.8	314*	32.4	162*	83.3	833*	65.5	1309*

*Cost are shown in 1975 dollars. Appropriate escalation factors must be applied for extrapolation to future years.

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PROJECT NO. C9178.00

FIGURE NO.

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- The State should take a more active part in the management of the entire airport and particularly give more attention to user service and problems.

- The State should develop an airport management program and increase its airport staff as necessary to administer the airport operation and development program.

- The State's financial policy should be to make the airport more self-supporting. This should be accomplished by obtaining more direct control of the sources of airport revenues. Revenues should be increased in accordance with area competition and inflation rates. Lease rates should be reviewed frequently and kept up-to-date.

- Airport traffic surveys should be made periodically and incorporated into the Master Plan and the Oregon Aviation System Plan.

- A program to collect weather data should be initiated and used for facility planning.

- The State should schedule periodic reviews of the Master Plan. It should be revised whenever necessary to keep it current.

- In updating the Master Plan the State should work closely with the airport users, local governments, and citizens. A flexible attitude and approach to the planning process should be maintained.

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APPENDIX

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SUBJECT EXHIBIT O

BY DATE

SHEET NO. OF

PROJECT NO.

APPENDIX

BIBLIOGRAPHY

CORRESPONDENCE

SUMMARY OF MEETINGS

TECHNICAL DATA

Not complete in final Draft

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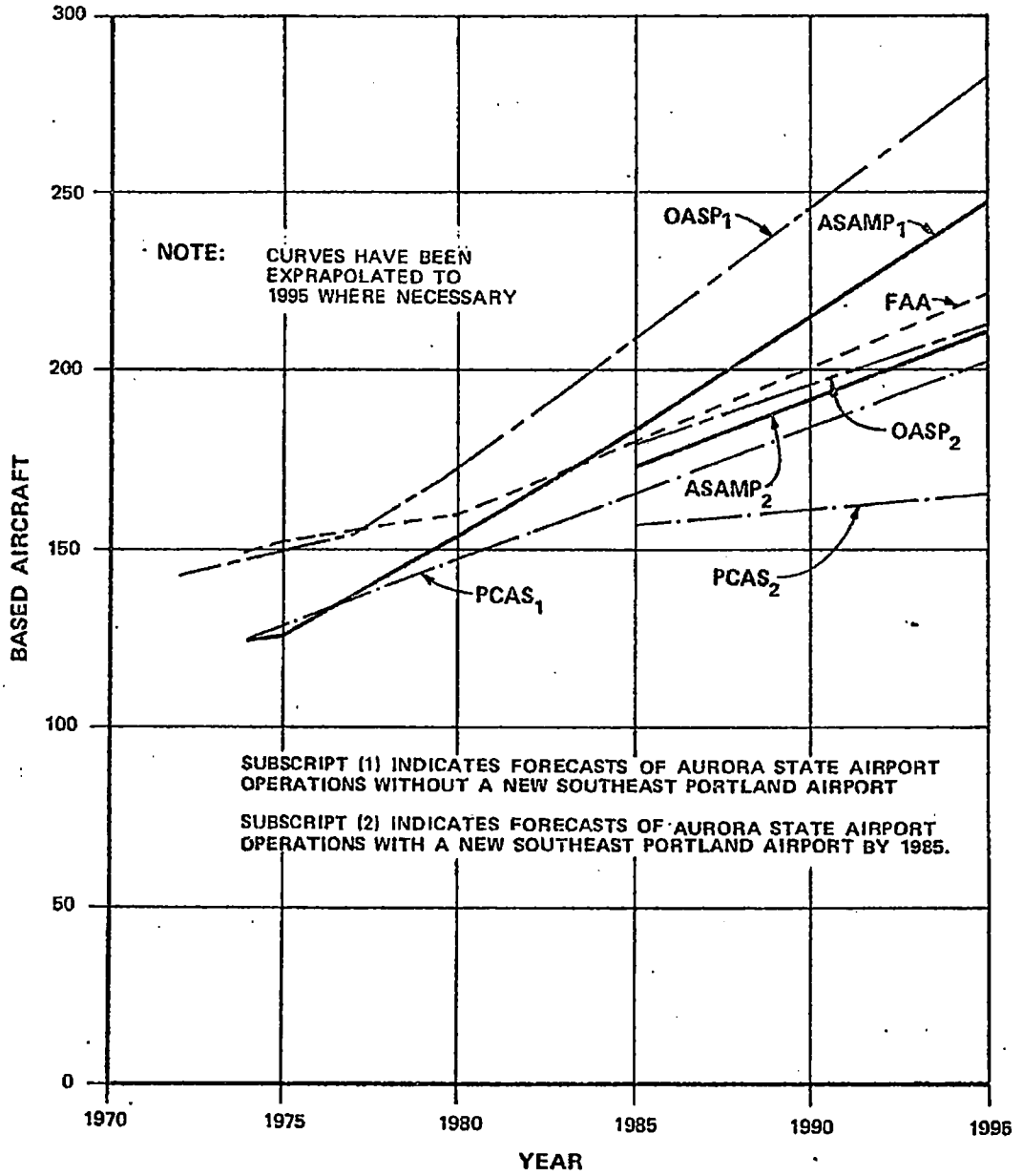

LEGEND

ASAMP – AURORA STATE AIRPORT MASTER PLAN
OASP – OREGON AVIATION SYSTEM PLAN
PCAS – PORTLAND CLACKAMAS AIRPORT STUDY
FAA – FEDERAL AVIATION ADMINISTRATION

AURORA STATE AIRPORT

BASED AIRCRAFT FORECASTS

FIGURE

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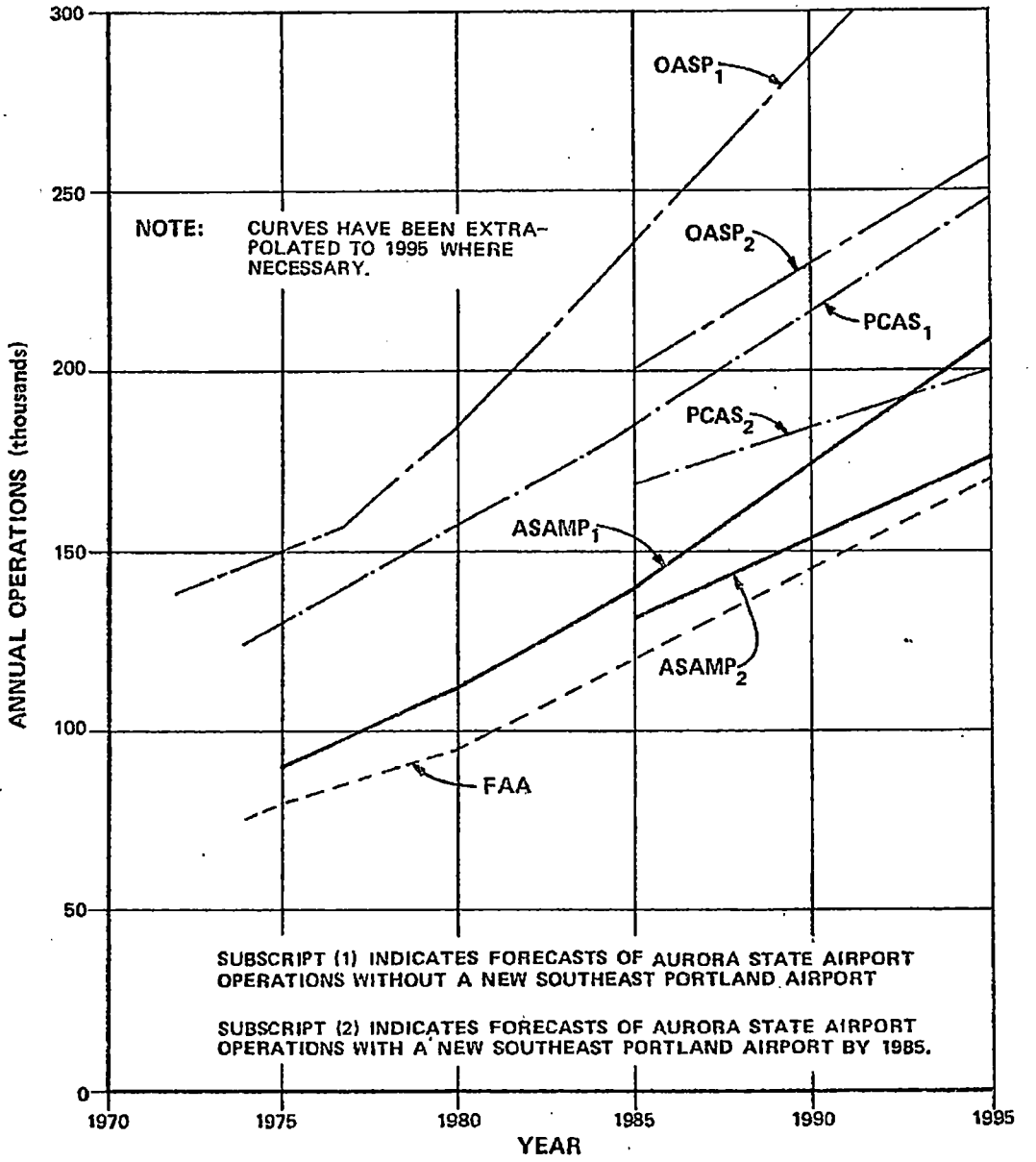

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AURORA STATE AIRPORT

ANNUAL OPERATIONS FORECASTS

FIGURE

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AURORA JAN 16 197

AURORA STATE AIRPORT

MAY '68 THRU APR '70

C9198.00.00

	CALM (MPH) OBS	%	(5.5) 4-7 OBS	%	(10) 8-12 OBS	%	(15.5) 13-18 OBS	%	(21.5) 19-24 OBS	%	(28) 25-31 OBS	%	(35) 32-38 OBS	%	39+ OBS	%	TOTAL OBS	%	AVE. VEL. (MPH)	
N			568	4.32	117	0.89	4	0.03	0	0							689	5.23		N
NNE			402	3.05	72	0.55	0	0	1	0.01	0	0					475	3.61		NNE
NE			58	0.44	0	0											58	0.44		NE
ENE			61	0.46	2	0.02	4	0.03	0	0							67	0.51		ENE
E			30	0.23	0	0											30	0.23		E
ESE			85	0.65	10	0.08	1	0.01	0	0							96	0.73		ESE
SE			188	1.43	56	0.43	16	0.12	6	0.05	0	0					266	2.02		SE
SSE			186	1.41	75	0.57	37	0.28	17	0.13	0	0					315	2.39		SSE
S			484	3.68	258	1.96	104	0.79	17	0.13	1	0.01	0	0			864	6.56		S
SSW			313	2.38	66	0.50	23	0.17	1	0.01	0	0					403	3.06		SSW
SW			66	0.50	11	0.08	4	0.03	1	0.01	0	0					82	0.62		SW
WSW			78	0.59	18	0.14	6	0.05	0	0							102	0.77		WSW
W			26	0.20	10	0.08	3	0.02	0	0							39	0.30		W
WNW			30	0.23	3	0.02	1	0.01	0	0							34	0.26		WNW
NW			256	1.94	12	0.09	1	0.01	0	0							269	2.04		NW
NNW			549	4.17	62	0.47	4	0.03	0	0							615	4.67		NNW
CALM	8758	66.54															8758	66.54		CALM
TOTAL	8758	66.54	3380	25.68	772	5.87	208	1.58	43	0.33	1	0.01	0	0	0	0	13162	99.79 100.0		TOTAL

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EXHIBIT O

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AURORA STATE AIRPORT MASTER PLAN

REPORT OF SITE SUFFICIENCY STUDY

November 1975
By CH2M HILL

INTRODUCTION

The Airport Master Plan work program includes Task G, Site Sufficiency Study. It is a logical conclusion to Phase I work, Airport Requirements, and is required to be submitted to FAA prior to proceeding to Phase III work, Airport Plans.

REDOMMENDATION

The conclusions of this study are that the existing Aurora State Airport site is adequate and that the airport should not be relocated.

PURPOSE

The purpose of this study was first to review the adequacy of the present airport site in light of the needs and impacts developed in previous tasks of the Master Plan.

Second, it includes locating alternative airport sites and comparing them to the present site. The object of this study is either to recommend to continue using the present airport or to advise investigating alternative sites for a replacement airport.

METHOD

This analysis has been conducted primarily in the office using base data gathered for other tasks and using analyses developed in previous tasks. Limited aerial and ground inspection was made of alternative sites.

The first step of the study was to establish the factors or items upon which to evaluate the airport's adequacy. The procedure for site investigation followed FAA Order NW 5030.1, Airport Site Investigation and Approval; FAA advisory Circular 150/5060-2, Airport Site Selection, and FAA advisory circulars specifying airport planning and design criteria.

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Next the existing airport and existing airport site were rated. For this purpose the data from and the findings of Phase I, Airport Requirements, were used.

The final step of the analysis was to identify and compare alternative sites to the present airport. Basic to the identification of alternative sites is identifying the size and boundaries of the area within which alternative airport sites could be considered.

ALTERNATIVE SITE ANALYSIS

Three main factors influenced this determination. First, an alternative airport site must be able to conveniently serve the same service area that Aurora State Airport serves. Second, within that service area, physical factors must suit airport development and operation. And third, the location of an alternative airport site should be generally convenient to the same access routes as the Aurora State Airport, and should not be considerably closer to another airport. Impacts were examined after sites were chosen.

Consideration was given to operational factors, airspace, navigational aids, physical and engineering factors, area for development, land values, economic factors, and environmental and land use planning aspects. In establishing and identifying alternative airport sites, the Basic Transport airport category was used. Although prior tasks indicate that one runway will suffice for the 20-year period, it was thought that the site should provide adequate space for a short parallel runway, if practical. All sites including the existing airport site would permit this.

FINDINGS

Basically, analysis of the adequacy of the Aurora Site and the evaluation of the alternative sites resulted in a determination that the present Aurora State Airport should continue to fulfill the present airport function. First, the Aurora State Airport has no serious or insurmountable problems. It is well engineered and meets operational criteria. Expansion to meet forecast needs appears feasible.

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Airport use is in accordance with compatible land use and the existing airport has minimum environmental impacts. Also, the site has been an airport continuously for 32 years. It has been accepted by the City of Aurora in their Draft Land Use Plan as well as by the Marion County Comprehensive Plan. In a public meeting 18 November 1975, a discussion of this matter indicated unanimous concurrence of those attending to retain the present airport rather than to relocate.

Adequate services are presently being provided by fixed base operators and a considerable hardship on operators and on users could be expected if the airport were to be closed or relocated. As regards land available for development area, there is adequate area just east of the existing runway. Acquisition problems appear to be less for a new airport than elsewhere because of the lack of zoning conflicts at the existing airport as opposed to the need to rezone for a new airport.

As regards economic factors, the cost in developing a new airport could be expected to be significantly higher than that of improving an existing airport. an exact dollar amount, however, cannot be determined because of lack of detailed engineering data and because of uncertainties regarding the cost of land. However, it can be assumed that land values would be approximately the same for all areas. In the case of Aurora State Airport, considerably less acreage (approximately 52 acres) is required, so that even if cost per acre were to be higher, total land cost would be less. A sample comparison is shown below using about $5,000 per acre for land acquisition.

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COMPARISON OF APPROXIMATE COSTS*
ESTIMATED FOR 1995 AIRPORT NEEDS

Item	Existing Airport	New Site
Land Acquisition	$ 260,000	$ 830,000
Site Preparation	160,000	250,000
Pavement	540,000	800,000
Lighting	90,000	90,000
Miscellaneous	90,000	120,000
Non-ADAP Items	310,000	600,000
Total Cost Estimate	$1,450,000	$2,690,000

*Using cost estimating methods similar to Oregon Aviation System Plan -- to be refined in Phase III.

Three alternative airport sites were evaluated.

The first alternative site considered is located close to the existing Aurora Airport in northern Marion County. This site is designated as the Freeway Site, as it is located beside the freeway. Possibilities for development here include: to the east of the freeway, a single runway, or to the west of the freeway, two runways.

The second alternative site is located in Clackamas County and is designated as the Clackamas Site. It is that site slightly southeast of the City of Aurora, and lies about 2 miles north of the Lenhardt Airprt. This site includes an area large enough to permit considerable shifting of the runway location and would easily permit development of a parallel runway.

The third alternative site is that shown to the south of the first site. It is located near the City of Hubbard and is designated as the Hubbard Site. It also occupies a sufficient space to permit development of a parallel runway.

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All three alternative sites near the Aurora State Airport are generally in the same kind of geographical region. Rural population densities are generally similar and the primary business is agriculture. The same general surface transportation networks serve all three airports. However, the Clackamas Site is somewhat less convenient to major highways. All sites are located in areas designated as Agricultural Use in County Comprehensive Plans.

Topographic features of all sites are generally similar. The area lacks terrain obstructions, is generally level with slow surface runoff, has generally similar good agricultural soil types, and experiences the same general metereological and climatological conditions as for the Aurora State Airport. Engineering problems appear to be about equal for all airport sites and utilities appear to be more or less equally convenient as regards electricity and water. However, approval for waste treatment facilities at new sites will give some problems because of the difficulty of soils meeting the requirements of the DEQ for septic disposal.

In all cases, runway orientation is generally north-south, with a slight shift to the southwest to allow for southwest winds during wintertime cold front passage. Experience at the Aurora State Airport indicates that this orientation would be favorable.

A part of the evaluation of alternative sites included evaluating the effort necessary to develop the alternative site to the condition that exists at the present airport. This would be mainly acquisition of land, grading and paving a General Utility category runway. A second part of the evaluation considered development needed through 1995.

EXHIBIT O

AURORA STATE AIRPORT SITE COMPARISON MATRIX

	EXISTING AIRPORT SITE	ALTERNATIVE AIRPORT SITES		
		FREEWAY	CLACKAMAS	HUBBARD
ACCESS/CONVENIENCE TO USERS	EXCELLENT	SUPERIOR	FAIR	EXCELLENT
SAFE AND ROUTINE FLIGHT OPERATIONS	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
LACK OF OBSTRUCTIONS	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
LAND AVAILABILITY	GOOD	POOR	POOR	POOR
EXPANSION CAPABILITY	EXCELLENT	SUPERIOR	SUPERIOR	SUPERIOR
EASE OF CONSTRUCTION	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
LAND USE COMPATIBILITY	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
ENVIRONMENTAL COMPATIBILITY	EXCELLENT	EXCELLENT	SUPERIOR	EXCELLENT
CITIZEN ACCEPTANCE	EXCELLENT	POOR	POOR	POOR
DEVELOPMENT COST–APPROXIMATE	$1,450,000	$2,690,000	$2,690,000	$2,690,000
OVERALL SUITABILITY	EXCELLENT	FAIR	POOR	FAIR

2000 0 2000 4000

SCALE IN FEET

from Figure 22

EXHIBIT O

By far the most significant problem at alternative sites would be that of obtaining permission to use the land as an airport. This would necessitate changes in either County Comprehensive Plan. Comprehensive Plans require considerable justification before they can be changed, and public sentiment demonstrated at recent meetings does not indicate support for a new airport (examples are several meetings held in 1975 by the Port of Portland regarding the Portland-Clackamas Airport Study and a meeting held 18 November 1975 to present and discuss the work accomplished by Phase I of the Aurora State Airport Master Plan). Another problem is in actually acquiring the land. This would probably necessitate condemnation and costs could run very high (in the range of $500,000 to $1 million). As shown earlier, development costs would be about double for a new airport.

All of the alternative sites have certain advantages, but they also have disadvantages. One principal disadvantage is the time required to acquire and develop an airport. Another is the high costs anticipated. Another problem is that in moving away from the Aurora State Airport it would probably be necessary to sell the present property and discontinue its use as an airport. This would undoubtedly cause a hardship on the operators presently based at the airport and might create the need to provide relief to them. As regards the Clackamas Site, the people in Clackamas County have already rejected a proposed new airport in that county. Furthermore, the Clackamas site development might necessitate closing the Lenhardt Airport.

On the other hand, the advantage common to all alternative sites is that a fresh new airport could be developed starting with present-day knowledge of needs and present-day criteria. This would permit more flexibility in the development program for the future.

The following Site Comparison Matrix summarizes why it was concluded advisable to retain the airport at the present site. Mainly the benefits do not appear to warrant the costs.