

MSA 30

**MAJOR SUPPLEMENTAL AIRPORT
FEASIBILITY STUDY**

Summary Report

March 23, 1995

Sponsored By the Puget Sound Regional Council

TAMS Consultants, Inc.
In association with:
Pacific Rim Resources
Parametrix, Inc.

PSRC/AR 017351

AR 038633

1064

*Entire
Volume*

PSRC/AR 017352

AR 038634

Table of Contents

	<u>Page</u>
Section I. Introduction	I-1
• Study Organization	I-1
• Study Coordination	I-2
• Study Progress and Disposition	I-3
• Study Documentation	I-3
Section II. Plans and Analysis for a Major Supplemental Airport	II-1
• Previous Plans and PSRC Policy Input	II-1
• Preferred Major Supplemental Airport Planning Standard	II-2
• Implications of Sea-Tac Activity Forecasts for the Major Supplemental Airport Feasibility Study	II-5
- Forecast Overview	II-5
- Candidate Activity for a Supplemental Airport	II-6
- Activity and Initial Airport Configuration	II-7
• Major Supplemental Airport Noise Impact Area	II-8
- Criteria for Derivation of Prototypical Noise Contours for the Major Supplemental Airport	II-8
- Implications of the Noise Impact Area	II-10
• Access Analysis	II-11
- Year 2020 Population and Employment	II-12
- Kitsap County	II-13
- Findings	II-13
Section III. Site Analysis	III-1
• Methodology	III-1
- Access Analysis	III-3
- Instrument Approach Capability	III-3
- Local Airspace Evaluation	III-4
- Site Constructability Evaluation	III-5
- Site Expansion Potential	III-8
- Airport Site and 65 Ldn Noise Impacts	III-8
- Urban Growth Boundary and Predominant Land Cover	III-9
- Preliminary Environmental Analysis	III-9
- Impacts to Wetlands	III-9
- Impacts to Fish-Bearing Streams	III-10
- Impacts to Listed Species	III-10
• Individual Site Evaluation Summary	III-11

List of Tables

Table II-1. Preferred Standards for a Major Supplemental Airport	II-4
Table II-2. Total Activity and Estimated Short/Medium Haul, Origin and Destination Activity At Sea-Tac - 1993-2020.	II-7
Table II-3. Forecasted 2020 Population and Employment	II-12
Table III-1. Summary of Initial Site Screening	III-2
Table III-2. Evaluation Criteria Summary	III-12

List of Figures

Figure I-1. Phase I Schedule and Flow Chart	I-4
Figure II-1. Major Supplemental Airport - Preferred Planning Standard.	II-3
Figure II-2. Sea-Tac International Airport - Annual Operations vs Annual Capacity.	II-6
Figure II-3. MSA Prototypical Noise Impact Area	II-10
Figure II-4. Access Time Less Than 45 Minutes.	II-13
Figure II-5. Access Time Less Than Sea-Tac.	II-14
Figure II-6. Access Time 10 Minutes Less Than Sea-Tac.	II-14
Figure II-7. Major Supplemental Airport Site Search Areas	II-17
Figure III-1. Potential Sites for Further Study	III-13

Appendixes

Appendix 1. Resolution A-93-03 Resolution A-93-03: Implementation Steps
Appendix 2. Coordinating Committee and Working Group Roster

Section I INTRODUCTION

Activity at Seattle-Tacoma International Airport (Sea-Tac) is approaching the capacity of its present dual runway and taxiway system. Starting in 1989, the Puget Sound Regional Council (PSRC) began coordination of a multi-phased effort to identify a regional airport system that will provide needed air transportation services to the Puget Sound area through at least the year 2020.

The first two phases of the effort were titled the "Flight Plan Project" and were completed between May, 1989, and the Fall of 1993. Forecasts developed as part of Flight Plan stated that enplanements at Sea-Tac would increase from about 5 million in 1988 to 15 million in 2020, and that Aircraft operations would increase from about 355,000 in 1990 to 563,000 in 2020. The capacity of Sea-Tac was estimated to be about 380,000 operations. Airport capacity is measured in terms of unacceptable delay. Based on these forecasts, Sea-Tac will begin experiencing unacceptable delays around the year 2000.

Flight Plan surveyed three alternatives for addressing this regional air carrier capacity shortage: expand Sea-Tac by adding a third runway, replace Sea-Tac, and develop another air carrier airport to provide supplemental air carrier capacity in the Region. In April 1993, the General Assembly of the PSRC adopted Resolution A-93-03 amending the 1988 Regional Airport System Plan and stating that the region should pursue both a major supplemental airport (MSA) and a third runway at Sea-Tac. The resolution further stated that a third runway was authorized by April 1, 1996 unless:

- "... a supplemental site is feasible and can eliminate the need for the third runway..." and
- "After demand / system management programs are pursued...When noise reduction performance objectives... are achieved..."

Refer to Appendix 1 for a complete text of Resolution A-93-03 and the implementation steps as adopted by the Executive Board.

Study Organization

In January, 1994, this Major Supplemental Airport Feasibility Study was initiated to determine if there are feasible major supplemental airport site(s) and, if so, when it might be feasible to begin operation of a supplemental airport. The study was divided into two phases:

Phase I, March through August, 1994 - Determine if there are candidate sites.

Phase II, September, 1994, through January, 1996 - Determine:

- whether one or more of the sites can be developed;

- what are the site development costs;
- which sites are candidates for development;
- whether an MSA is financially feasible; and
- when can a site(s) be developed.

Tasks identified for Phase I included:

- development of site screening criteria;
- development of an airport layout;
- identification of prototypical land requirements and a noise impact area; and
- analysis and evaluation of sites.

The schedule and flow chart in Figure I-1 provides an outline of the project work program. Based on the findings of Phase I, the PSRC Executive Committee would determine if there are feasible candidate sites for the MSA to be studied further in Phase II. If not, the Executive Board would terminate the study.

Study Coordination

The MSA Feasibility Study involved extensive interaction with citizen, technical, and policy committees and opportunities for public comment. A Working Group representing stakeholders in the MSA provided input and comment on the study. Members of the Working Group were identified through phone interviews with public officials and other stakeholders and included representatives of community citizen groups, the airlines, the four counties represented by PSRC; air transportation interest groups; environmental interests; and the Coordinating Committee. A roster of Working Group and Coordinating Committee members is given in Appendix 2.

The four members of the Coordinating Committee represented PSRC, Washington State Department of Transportation, the Federal Aviation Administration (FAA), and Sea-Tac. The Committee served to coordinate the MSA Study with other transportation planning efforts by the state, FAA, and the Port of Seattle and to assure that the Study addressed the specific interests of each of those organizations. Each element of the Study was reviewed first by the Coordinating Committee and then was provided to the Working Group for their input and comment. The Study work program and site evaluation criteria were reviewed and approved by the PSRC Transportation and Growth Management Policy Boards.

Initially, it was anticipated that the findings of Phase I of the Study would be reviewed by a Major Supplemental Airport Expert Review Panel before being submitted to the PSRC Executive Board. It was decided during Phase I, however, that the MSA Expert Review Panel would not be organized until Phase II of the study.

Study Progress and Disposition

Upon completion of the site analysis, twelve sites were identified as being physically capable of supporting development of an MSA. These sites are identified and analyzed in Section III of this report. The twelve sites and background information were presented to the Working Group for their review and evaluation. After extensive discussion and review, the Working Group recommended and narrowed to six the following sites for further study (listed from south to north): Tanwax Lake, McChord, Redmond, Bothell/Mill Creek, Marysville East, Marysville West and Arlington. Candidate sites recommended by the Working Group were reviewed by the Growth Management and Transportation Policy Boards before submitting them to a 30-day public review. At this point, the Study Work Program called for the PSRC Executive Board to determine whether to proceed with Phase II of the Study and, if so, which sites would be studied as "candidate sites" for the MSA. The Executive Board addressed this question at their September 22, 1994 meeting. The recommended sites had generated significant controversy and much of that meeting was occupied by public testimony. After the testimony, the Executive Board decided to defer the decision until their next scheduled meeting. At its scheduled meeting on October 27, 1994, the Executive Board decided to not proceed with Phase II and to terminate the Major Supplemental Airport Feasibility Study.

Study Documentation

The record of Phase I consists of three working papers; minutes of the Working Committee meetings; a *Public Comment Summary Report*; and this project summary report. The first two working papers contain background information on airport planning, airport site selection, and multiple airport systems; an overview of capacity and activity of Seattle - Tacoma International Airport (Sea-Tac); formulation of the prototypical MSA layout; and identification of the MSA noise impact area. Contents of these working papers are summarized in Section II of this report. The analysis of potential MSA sites within the four county region was the major effort of Phase I. That analysis was documented in Working Paper 3 which has been modified only slightly to become Section III of this report.

The public provided input to the study through testimony at Working Group meetings; phone calls to an MSA Hotline; and through letters to an MSA post office box. The Working Group's recommended set of sites for further study was also subjected to 30-day public comment period between July 18 through August 21, 1995. This public involvement process is documented in the *Public Comment Summary Report* by Pacific Rim Resources.

PSRC/AR 017357

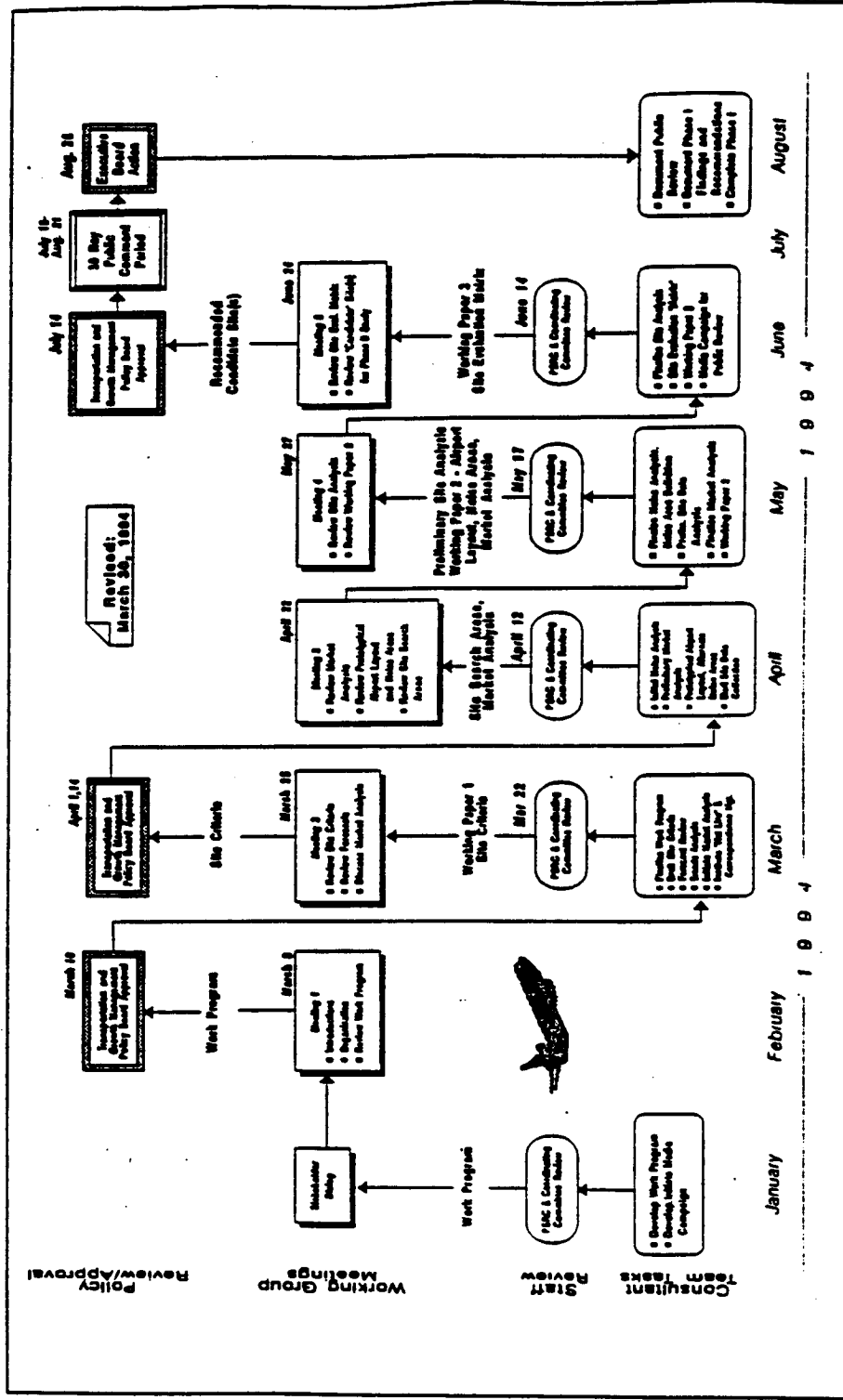


Figure I-1. Phase I Schedule and Flow Chart (as revised March 30, 1994).

PSRC/AR 017358

AR 038640

Section II PLANS AND ANALYSIS FOR A MAJOR SUPPLEMENTAL AIRPORT

Consistent with PSRC's work scope for the Major Supplemental Airport Feasibility Study (MSA Study), a typical airport area and noise impact area were identified. In Phase I of the Study, these areas were used for each site investigated. This section discusses:

- an MSA planning standard;
- potential levels of activity;
- a noise impact area; and
- the preliminary access analysis for site search areas.

The MSA planning standard was used to identify a prototypical airport layout and development area. The discussion of MSA activity levels provides some insight into what MSA development might occur initially and could serve as input to the financial feasibility analysis of Phase 2. All potential MSA activity was derived from the recently completed forecasts for the Sea-Tac Master Plan update. The prototypical MSA layout and noise impact areas were used to evaluate all potential sites. The site evaluation process and results are discussed in Section III of this report.

Previous Plans and PSRC Policy Input

The wording of Resolution A-93-03 suggests that the preferred site for a Major Supplemental Airport should accommodate all growth in air passenger activity in the Puget Sound Region, that Sea-Tac, as it exists in 1994, isn't able to accommodate. Another underlying assumption is that Sea-Tac will remain open and continue to function as the primary hub serving the Puget Sound Region. The PSRC Policy Board did not confine these policies to a specific time period and appeared to be seeking a long term solution.

In Phase III of the Flight Plan Project¹, an extensive series of airport system development and site development alternatives were examined. The site development concepts examined were:

- ♦ A Replacement Airport having three, independent, air carrier runways capable of being expanded to accommodate the largest air carrier aircraft (Boeing 747) and longest stage length anticipated in the region.
- ♦ A Supplemental Airport with two parallel, preferably independent, runways capable of being expanded to accommodate wide-body aircraft (B-767) in short haul and medium haul service.
- ♦ Two, single runway Supplemental Airports capable of being expanded to accommodate wide-body aircraft (B-767) in short haul and medium haul service.

¹Working Paper No. 6 - Airport Site Concepts, P&D Aviation, August 28, 1991.

After considering the Flight Plan recommendations, the PSRC Executive Board, in Resolution A-93-03, decided to pursue a *Major Supplemental Airport* and not the replacement or two new, single-runway airport alternatives discussed in Flight Plan. Consistent with that Resolution, this study examined sites to determine if they are capable of accommodating a supplemental airport with two independent, parallel runways. Such an airport was assumed to be consistent with the Executive Board's concept of a "Major Supplemental Airport".

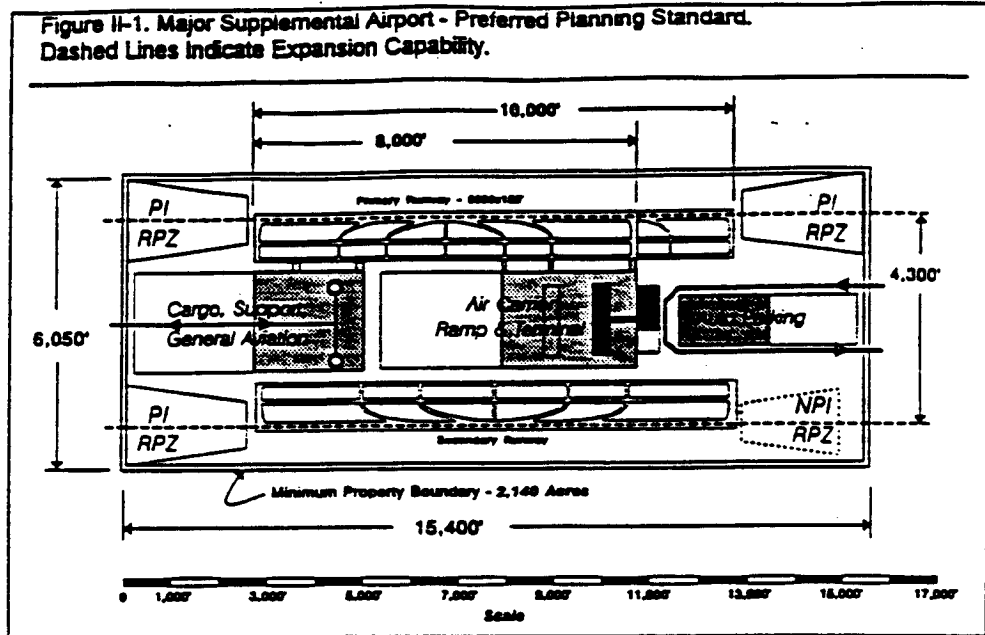
Preferred Major Supplemental Airport Planning Standard

The selection of an airport planning standard for this study is a policy decision. The important policy question is: *should this study try to identify a site that can be expanded to meet all foreseeable air carrier airport capacity needs* or only those through, say, the year 2020. Put another way, one could ask whether there might be viable sites for a third air carrier airport if another site selection study were initiated in the future.

Through discussions with the Working Group and Coordinating Committee, it was decided that the preferred Major Supplemental Airport planning standard for this study be a facility with two parallel runways capable of accommodating simultaneous precision instrument approaches.² FAA strongly supported simultaneous instrument approaches and demonstrated that the current separation standard of 4,300 feet, rather than the 3,400 feet under consideration by FAA, was the minimum separation that will accommodate a viable terminal area. An even better separation for the terminal area would be 5,000 feet. 4,300 feet was chosen as the preferred separation. During the evaluation process, a minimum of 3,400 feet was considered acceptable but less desirable and points were deducted. A 5,000 foot separation was awarded additional points.

The Working Group, which included airline representatives, agreed that the critical aircraft should be a Boeing 767 on a 1,200 mile stage length. This stage length would support flights to popular regional markets, such as Southern California, but not long haul or international flights. The minimum runway length for this stage length is about 7,000 feet. Airline representatives from the Working Group stated that a minimum runway length for an air carrier airport should be at least 8,000 feet. PSRC stated that the Supplemental Airport should be expandable to, or able to, accommodate all commercial activity in the Region which exceeds the capacity of Sea-Tac. In light of this, the preferred planning criteria for the Supplemental Airport site would accommodate two parallel precision instrument runways up to 10,000 feet long. This runway configuration could ultimately provide more capacity than Sea-Tac even with construction of a third air carrier runway. The 10,000 foot runway length would support medium-haul and some long-haul (primarily continental U. S.) markets. In the long term, the Supplemental Airport could support airline hubbing and medium-haul flights. 8,000 feet was chosen as the minimum standard and a capability for expansion to 10,000 feet or beyond was awarded extra points. Figure II-1 contains a schematic representation of these standards with the preferred capability to extend both runways to 10,000 feet.

² There is a discussion of parallel runway separation criteria and independent/dependent runways and the appropriate dimensional standards in Working Paper 1, Appendix 2.



These policy decisions both defined the meaning of "Major" Supplemental Airport and set the standards for design of an airport and evaluation of sites. The preferred minimum standards are listed in Table II-1.

The final rows in Table II-1 identify *minimum acreage* required to meet FAA's dimensional standards and to accommodate standard terminal and support facilities configurations. The final plan for an airport will likely call for several times the minimum acreage identified in this table. A number of policy and final design decisions must be made before this acreage can be determined during the design phase of an airport. Following are some factors that will influence the supplemental airport's total acreage:

Runway Extension(s) - A decision to preserve the capability to extend both runways from 8,000' to an ultimate length of 10,000' would require about 10% more acreage for airfield development (not including a larger terminal area); to 12,000', about 20% more acreage.

Staggering of Parallel Runways - It is advantageous in terms of added airfield capacity and reduced aircraft taxi distance to stagger the thresholds of parallel runways. The greater this stagger, the greater the advantage. It is not unusual for terrain restraints to require staggering of parallel runway thresholds. An extreme staggered threshold design could easily require an additional 50% more acreage than the basic configurations shown in Figure II-1.

ITEM	AC 150/5300-13 REFERENCE(s)	CRITERIA
Airport Classification: Largest Aircraft Served Aircraft Approach Speed Category Airplane Design Group	Section 2 Section 2	Boeing 767 C IV
Runway/Taxiway Dimensions: Number of Runways Runway Length Runway Width Taxiway Width	Section 301 Table 3-3 Table 4-1	2 independent 8,000 ft. min., expandable to 10,000 ft. preferred 150 ft. 75 ft.
Separation Standards (feet): Runway to Parallel Runway Runway to Parallel Taxiway Taxiway to Parallel Taxiway	Table 2-2 Table 2-2 Table 2-3	4,300 ft. preferred 400 ft./600 ft. [b] 215 ft.
Approaches: [c] - all runway ends to have an NPI approach Primary Runway Secondary Runway		PI-Both Ends PI-One End
Runway Protection Zone Dimensions (RPZ) for a PI Approach: Length Inner Width Outer Width	Table 2-5	2,500 ft. 1,000 ft. 1,750 ft.
Airfield Development Areas (Runways, Taxiways, Object Free Areas, Runway Protection Zones beyond OFA, Infield Between Runways): For the Preferred 4,300' Separation For the Acceptable 3,400' Separation	(calculated)	1,800 acres 1,550 acres
Minimum Area Requirements (acres per million annual enplaned and deplaned passengers): Passenger Terminal and Short Term Parking Remote (Long Term) Parking Air Cargo, Maintenance, and Support Services	(calculated)	10 acres 3 acres 5 acres
Approximate Total Minimum Area Requirements: 8,000 foot runways 10,000 foot runways 12,000 foot runways	(calculated)	1,950 acres 2,140 acres 2,330 acres
Notes: [a] Advisory Circular 150/5300-13 is FAA's Airport Design Manual. [b] Minimum is 400 feet, 600 feet required for high speed exit taxiways. [c] PI - Precision Instrument; NPI - Non Precision Instrument Source: FAA Advisory Circular 150/5300-13, Flight Plan Project Phase III - Working Paper 6, TAMS calculations.		

Table II-1. Preferred standards for a Major Supplemental Airport.

General Aviation Requirements - The acreage identified for terminal and support services in Table II-1 would support only a minimum of based general aviation aircraft. The supplemental airport site ultimately selected could require closing of an existing General Aviation (GA) airport and relocation of the GA activity to the supplemental airport. Depending on the level of GA

activity displaced, a GA storage and support area could add several hundred more acres to the airport. Assuming the primary parallel runways are oriented north-south (parallel to most primary runways in the Puget Sound area), a cross-wind, utility runway will probably be required to support the lower performance GA aircraft. Such a runway could add 100 to 300 acres to the required airfield area.

Airport Industrial Development - Industries requiring direct airport access (such as aircraft overhaul operations) and businesses wanting to locate close to an airport can produce needed airport revenue and also serve as a desirable buffer between the airport and surrounding land uses. FAA has supported acquisition of land for such purposes. The viability and size of an "airport industrial park" would be site specific and highly dependent on competitive advantages over other airports in the region.

Noise Mitigation - FAA can participate in acquisition of land within the 65 DNL contour for noise mitigation purposes (noise contours and factors that influence their size are discussed later in this Section). The appropriate amount of land acquired for noise mitigation will depend on airport activity, proximity of flight paths to other noise sources such as highways, existing land uses, community comprehensive plans, terrain, airport expansion plans, etc. While any estimate of acreage needed for noise mitigation purposes is highly speculative at this time, experience of air carrier airports in other parts of the country suggests that the amount of land needed for noise mitigation purposes can exceed that required for the minimum standard airfield area.

Implications of Sea-Tac Activity Forecasts for the Major Supplemental Airport Feasibility Study

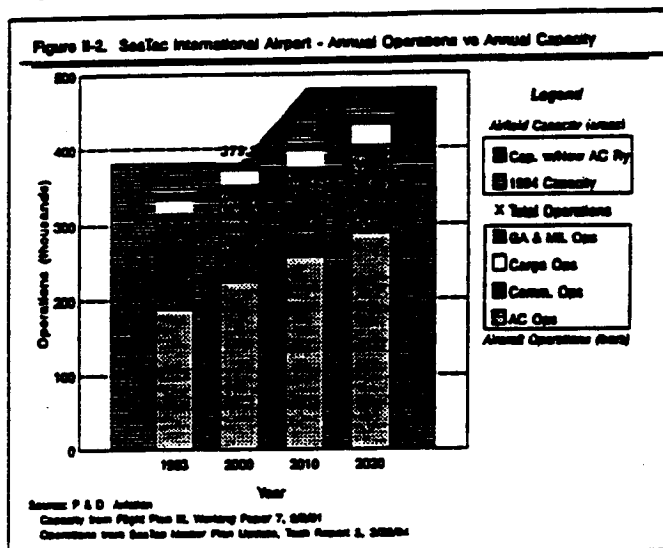
During the MSA Study, *Technical Report Number 5, Forecast Report*, was published by P&D Aviation, the consultant preparing the Master Plan update for Seattle-Tacoma International Airport. Following is a discussion of those forecasts and of the implications they might have for the MSA study.

The *Forecast Report* forecasts total passenger activity for the Puget Sound Region and freight and general aviation activity for Sea-Tac. The *Forecast Report* also contains a wealth of information about historic and existing activity at Sea-Tac. The Major Supplemental Airport Feasibility Study used aviation activity forecasts and information from this *Forecast Report* and from the three phases of the Flight Plan to estimate candidate activity for a Supplemental Airport.

Forecast Overview

The new enplanement forecasts for the year 2020 are about 15% lower than the Flight Plan Phase I forecast (published in 1990) but almost identical to the Phase III forecast update published in 1991. Forecast enplanements are given for Domestic Air Carrier, Domestic Air Taxi/Commuter, Canadian, and International markets. The total enplanements and aircraft operations forecasts from that report are contained in the first two rows of Table II-2.

Total aircraft operations for the year 2020 projected in the *Forecast Report* are about 16% lower than those forecast during Phase II of the Flight Plan (1990) and about equal to those in the Phase III updated forecasts. Operations are classified as Passenger (with sub classifications of Air Carrier and Air Taxi/Commuter), All-Cargo, General Aviation, and Military. Operations are further classified by aircraft size (fleet mix). Passenger and aircraft movements are identified for peak hours, peak days, and night hours.



Of major importance, these new forecasts show that the practical annual capacity of Sea-Tac, as identified in Flight Plan³, will be reached around the year 2000. Flight Plan also states⁴ that addition of a third air carrier runway will increase Sea-Tac's annual capacity from the existing 380,000 operations to about 480,000 operations. The new forecasts anticipate 441,600 operations at Sea-Tac by the year 2020. A comparison of forecast operations with airport capacity is also depicted graphically in Figure II-2.

Candidate Activity for a Supplemental Airport

A Supplemental Airport serving the Puget Sound Region must initially attract passengers that would otherwise use Sea-Tac. Once established, the supplemental facility might actually stimulate additional activity because it is more convenient to, or offers enhanced service for, some passengers and/or freight. In the guidelines for this Study, PSRC states that Sea-Tac will, for the foreseeable future, remain as the international and hub airport for the Region. The Supplemental Airport will provide primarily origin/destination (O&D) service in regional markets and will be expandable to accommodate all passenger and cargo activity in the Region beyond the capacity of Sea-Tac.

For purposes of this study, it was assumed that regional markets include those markets up to 1,200 miles from Seattle. Markets within 1,200 miles include: Anchorage, Denver, Kansas City,

³ Flight Plan III, Working Paper 7, 9/3/91.

⁴ *Ibid.*

all California cities, Minneapolis, and Phoenix⁵. Presently, the two Canadian cities served out of Sea-Tac, Vancouver and Victoria, are both short-haul, regional markets.

It would be useful to calculate the total "regional" passengers and operations at Sea-Tac that would be candidates for being served through the MSA. In terminology used commonly to describe air transportation market lengths, these would be "short- and medium-haul" markets. An estimate of total short- and medium-haul market activity at Sea-Tac is contained in Working Paper 2 and is summarized in Table II-2 along with total Sea-Tac enplanements and operations.

Sea-Tac Activity	Year >	1993	2000	2010	2020
Total Enplanements*		9.2 million	11.9 million	15.3 million	19.1 million
Total Aircraft Operations		339,400	379,200	405,800	441,600
Estimated Short/Medium-Haul, O&D Enplanements		4.1 million	5.1 million	6.6 million	8.2 million
Estimated Short/Medium-Haul, O&D Operations**		165,000	182,900	194,500	209,800

* Enplanement - a passenger boarding **Operation - an aircraft takeoff or landing

Table II-2. Total Activity and Estimated Short/Medium-Haul, Origin and Destination (O&D) Activity at Seattle - Tacoma International Airport (Sea-Tac) - 1993-2020.

The short/medium-haul, O&D activity at Sea-Tac summarized in Table II-2 provides the candidate activity for initial development of a Supplemental Airport. Following are some considerations applicable to planning for the Supplemental Airport.

Activity and Initial Airport Configuration

For purposes of this discussion, assume that a Major Supplemental Airport could capture half of the estimated short/medium-haul, O&D activity for the Puget Sound Region listed in Table II-2. Under this assumption, there would be about 92,000 annual commercial operations at the Supplemental Airport in the year 2000 and 105,000 operations in 2020. This range of operations is in the neighborhood of half the capacity of a single runway. If the Supplemental Airport captures about half the short/medium-haul, O&D passenger activity in the Region, the second runway would not be justified for air carrier capacity purposes until well after the year 2020. Put another way, the new Supplemental Airport would have sufficient capacity with a single runway to accommodate all of the Region's short/medium-haul, O&D activity through the 2010-20 time period. It seems appropriate, then, to assume that a second supplemental air carrier runway would not be needed if the airport were constructed before 2010. It also seems appropriate to assume that the preferred planning standard for the Supplemental Airport as shown in Figure II-1 will provide sufficient capacity to relieve Sea-Tac through the foreseeable future.

It is always desirable, but not always justifiable, to have a second operational runway at an airport to reduce delays in IFR conditions; separate high- and low-performance air traffic; and avoid

⁵ Technical Report No. 5 - Forecast Report, Table 4-3, Sea-Tac Master Plan Update, March 29, 1994.

closure of the airport when a runway must be shut down for repairs or an accident. It is not anticipated that the Supplemental Airport will need to provide additional General Aviation (GA) capacity in the Puget Sound Region. One should assume, however, that there would be significant GA activity at the airport. If the airport is sited to make it competitive with Sea-Tac, it will also be a convenient destination and base for GA activity. GA will provide revenue to support airport operation. If the site ultimately chosen requires closure of an existing GA airport, the Supplemental airport needs to be designed initially to accommodate activity projected for that GA airport.

Major Supplemental Airport Noise Impact Area

The Working Group recommended using the numbers of people, households, and 'sensitive' land uses within prototypical 55 and 65 DNL⁶ noise contours as a criteria for evaluating feasibility of a Major Supplemental Airport in Phase I of this study. Important factors in derivation of noise contours are the numbers and type of aircraft operations. The types of aircraft serving the Supplemental Airport (referred to as "fleet mix") were assumed to be the same as the fleet forecast to provide short/medium-haul service at Sea-Tac. The number of operations, however, is problematical. It would be preferable if the noise analysis identifies approximately the maximum impact that could be expected. The previous section of this report reviews the contents and implications of the *Draft Forecast Report* for the ongoing Sea-Tac Master Plan Update. Based on information developed in that review, it is apparent that all of the Region's short/medium-haul, O&D activity for the year 2020 would be well below the ultimate capacity of the preferred Major Supplemental Airport Planning Standard. After considering this subject, the Working Group recommended using a medium-haul fleet mix operating at full capacity for the Preferred Supplemental Airport Planning Standard as the activity base for derivation of the noise contours.

Theoretically, a new airport site (and noise impact area), once identified, would be protected from encroachment from incompatible land uses through the comprehensive planning process and a land use control program. If this were the case, the population base affected by the siting of a new airport would be the existing one, not the projected 2020 population for the area. On the other hand, the new airport would have a significant effect on the extent and type of growth in its vicinity. Some measure of forecast population affected might be a useful tool in determining the long term impact of the airport. After discussions on this subject, the Working Group recommended identifying noise impacts on both the 1990 population and the forecast year 2020 population.

Criteria for Derivation of Prototypical Noise Contours for the Major Supplemental Airport

The following three criteria were recommended by the Working Group:

⁶ DNL is the abbreviation for the Day-Night Sound Exposure Level and is measured in Decibels on the A scale. Ldn is also used to abbreviate the Day-Night Sound Exposure Level.

- ◆ Assume airport activity at approximately the ultimate or "buildout" capacity of the MSA. This criteria assumes both runways have been constructed and extended to 10,000 feet.
- ◆ Include the 55 and 65 DNL contours in the impact area.
- ◆ Identify Noise Impacts on both the 1990 and forecast year 2020 population.

Prototypical noise contours for the MSA were developed using FAA's Integrated Noise Model (INM), Version 4.11. The following assumptions concerning MSA activity were used as required input to the Model:

- ◆ Fleet mix is approximately that of the short- and medium-haul fleet (up to 1,500 mile stage lengths) projected for Sea-Tac in the Year 2020. The fleet was biased in favor of short-haul flights. Tables in Working Paper 2 identify the fleet mix, arrival/departure times, and stage lengths used as input to the Model.
- ◆ Total annual operations are 350,000 - about 88% of the Practical Annual Capacity of an airport with two, parallel, independent, precision instrument runways. The tables in Working Paper 2 identify the categories of operations by aircraft type.
- ◆ Operations are 80% south flow, 20 % north flow⁷.
- ◆ All approaches/departures are straight-in, straight-out.
- ◆ All runway ends are at sea level. Assumed temperature is 15.6° C (60° F).
- ◆ The two Runway designations are 18L-36R and 18R-36L. Aircraft operations are split equally between each runway.

Based on the above criteria and assumptions, noise contours for the prototypical Major Supplemental Airport were developed. Figure II-3 depicts the noise contours and Noise Impact Area .

Following are characteristics of that area:

The 65 DNL Contour:

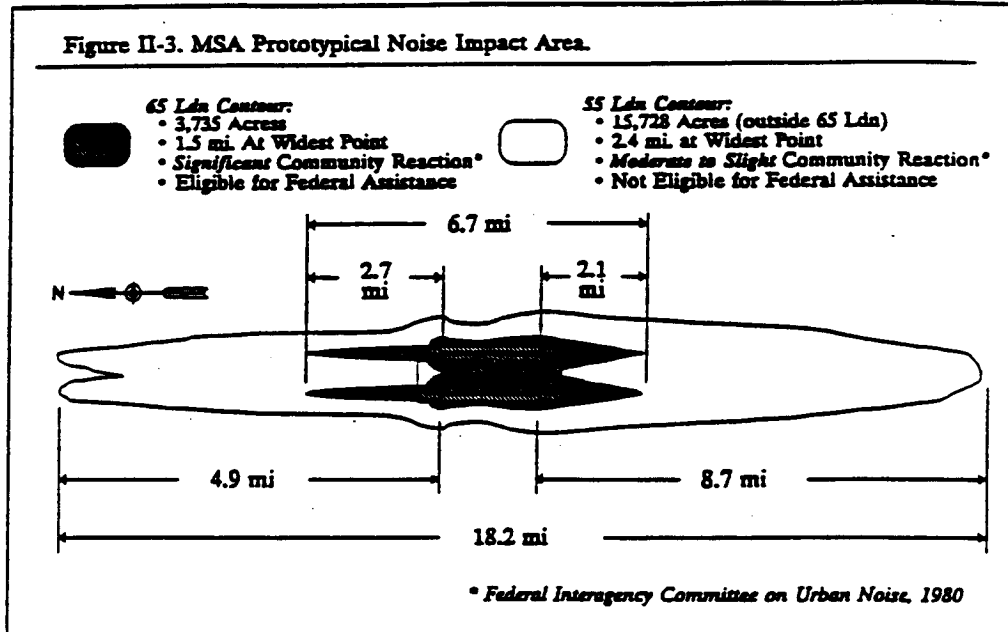
- ◆ Contains 3,735 acres including the airport.
- ◆ Extends a total length of 35,284 feet (6.7 miles).
- ◆ Extends 14,356 feet (2.7 miles) off the north runway ends and 11,110 feet (2.1 miles) off the south runway ends.
- ◆ Is 7,855 feet (1.5 miles) wide at its widest point.

The 55 DNL Contour:

- ◆ Contains 19,463 acres including the airport and the 65 DNL contour (about 15,728 acres outside the 65 DNL contour).
- ◆ Extends a total length of 96,330 feet (18.2 miles).

⁷ Operations at Sea-Tac are approximately 60% south flow, 40% north flow. These figures will be used in the more detailed Phase II noise analysis. Had they been used in this analysis, the area of the contours would remain approximately the same but the contours would be shifted slightly to the south.

- ◆ Extends 26,027 feet (4.9 miles) off the north runway ends and 45,968 feet (8.7 miles) off the south runway ends.
- ◆ Is 12,789 feet (2.4 miles) wide at it's widest point.



Implications of the Noise Impact Area

The Federal Interagency Committee on Urban Noise³ classifies noise impacts within the 65 DNL contour as producing "significant" community reaction. FAA guidelines allow federal financial participation in acquisition of properties within the 65 DNL contour for noise mitigation purposes. The some 3,700 acres within this contour, which includes all of the minimum area within the MSA minimum planning standard, could be considered as the minimum land acquisition required for an MSA. The 65 DNL contour is some 7,900 feet wide. Acquisition of property out to this width would provide additional areas for terminal area development and/or industrial, revenue producing properties.

The Committee classifies noise impacts below 65 DNL as "moderate to slight". Areas outside the 65 DNL contour are not eligible for federal financial participation for noise mitigation purposes except in exceptional circumstances. FAA guidelines (AC 150/5020-1) do not recommend

³ Guidelines for Considering Noise In Land Use Planning and Control, U. S. Department of Transportation, Federal Interagency Committee on Urban Noise, June, 1980.

specific land use control outside the 65 DNL contour (as they do within that contour) but acknowledge that local standards or attitudes could support such controls. As a minimum, the 55 DNL contour does suggest a buffer area in which land use plans should consider airport proximity.

There are seven flat areas in the Region containing potential sites for a Major Supplemental Airport. While searching for potential sites, those seven site search areas were named according to the area of the County in which they were located. The eighth site search area named is McChord Air Force Base. The eight Site Search Areas are identified in Figure II-7 at the end of Section II.

Access Analysis

The Access Analysis for the Major Supplemental Airport Feasibility Study comprised a comparative analysis of access potential for the eight Site Search Areas, based on the proximity of forecasted future population and employment. "Proximity" to the Site Search Areas was defined in terms of midday and peak period ground access travel times, which were compiled both in absolute terms and in comparison to travel time to Sea-Tac. (It should be noted that the Access Analysis was not based on air passenger or air cargo forecasts; neither did it address individual sites.)

The population and employment data used in the Access Analysis were the Year 2020 forecasts for the adopted VISION 2020 Growth/Development Strategy, which comprises a regional development pattern that establishes 22 urban centers throughout the region. The analysis itself focused on the proximity to each Site Search Area of the following population and employment segments/sectors:

- total population
- upper income households
- total employment
- office/service employment (Financial/Institutional/Real Estate/ Services, Government, Education, and University employment categories)
- manufacturing employment

The upper income household data and the office/service employment data were selected to represent population and employment segments/sectors that may have a higher propensity to use air travel services, and the manufacturing employment data were used to represent potential sources of air cargo demand. Proximity and ease of access for each Site Search Area was assessed by compiling and analyzing the proportion of regional population and employment (in the categories listed above) that meet the four following ground access travel time measures:

- Access time less than 45 minutes
- Access time less than 45 minutes *and* Sea-Tac access time more than 45 minutes
- Access time less than Sea-Tac access time
- Access time 10 minutes less than Sea-Tac access time

'Access time less than 45 minutes' provides a measure of the overall potential market of each Site Search Area. 'Access time less than 45 minutes *and* Sea-Tac access time more than 45 minutes' provides a measure of the otherwise under-served potential market of each Site Search Area; i.e., the market that does not have convenient access to Sea-Tac. 'Access time less than Sea-Tac access time' measures the market for which each Site Search Area is more accessible than Sea-Tac, and 'Access time 10 minutes less than Sea-Tac access time,' though similar, accounts for the fact that Sea-Tac will be more attractive to markets for which the Site Search Areas provide only a minor access time advantage.

Year 2020 Population and Employment

Forecasted 2020 population in the four-county Central Puget Sound Region is 3.96 million. The forecasts include 428,000 upper income households. Total employment in the region is forecasted to be 2.25 million jobs. Of these, well over half - 1.28 million - are office/services sector jobs, and 270,000 are manufacturing sector jobs. The relative accessibility of the various site search areas - on which the access analysis is based - is determined by the regional distribution of population and employment. As shown in the Table II-3, forecasted 2020 population and employment is distributed fairly evenly throughout the region.

	Total Population	Upper Income Households	Total Employment	Office/ Service Employment	Manufacture Employment
Regional Total	3,963,000	428,000	2,246,000	1,280,000	270,000
King County	50%	64%	66%	67%	60%
Seattle/Shoreline	17%	18%	32%	38%	15%
South King County	19%	24%	18%	13%	33%
Eastside	14%	22%	16%	16%	12%
Snohomish County	20%	16%	13%	11%	24%
Pierce County	22%	14%	16%	17%	10%

Source: Puget Sound Regional Council, 1994

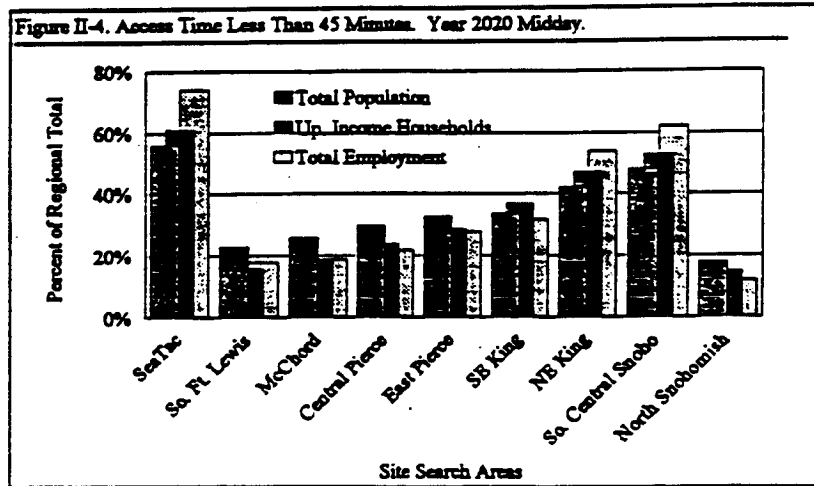
Table II-3: Forecasted 2020 Population and Employment

Kitsap County

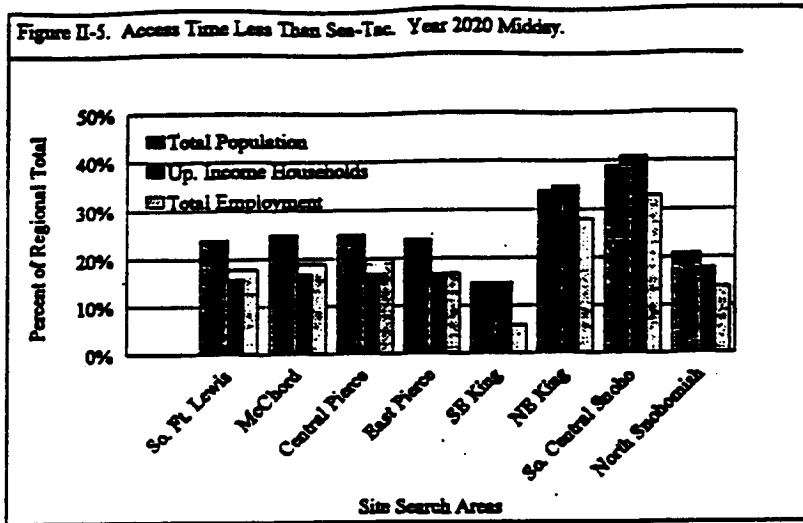
In the analysis of candidate sites for the Major Supplemental Airport, it was determined that potential sites in Kitsap County are one-half hour or more driving time from the Tacoma Narrows bridge and, thus, viable candidates for a Supplemental Airport that must compete with Sea-Tac to attract passengers.

Findings

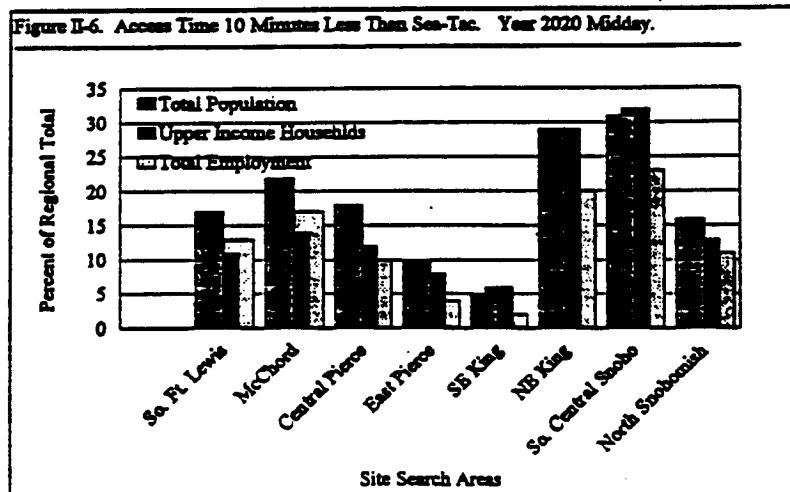
Graphical representations of percentages for Total Population, Upper Income Households, and Total Employment for three of the evaluation criteria are shown in the following charts:



Access Time Less Than 45 Minutes (Figure II-4) demonstrates the overall potential market served by each Site Search Area.



Access Time Under 45 Minutes and Sea-Tac Access Time Over 45 Minutes (Figure II-5) is an indication of undeserved market within each Site Search Area.



Access Time 10 Minutes Less Than Sea-Tac Access Time (Figure II-6) indicates the potential competitive edge that Site Group Areas may have over Sea-Tac.

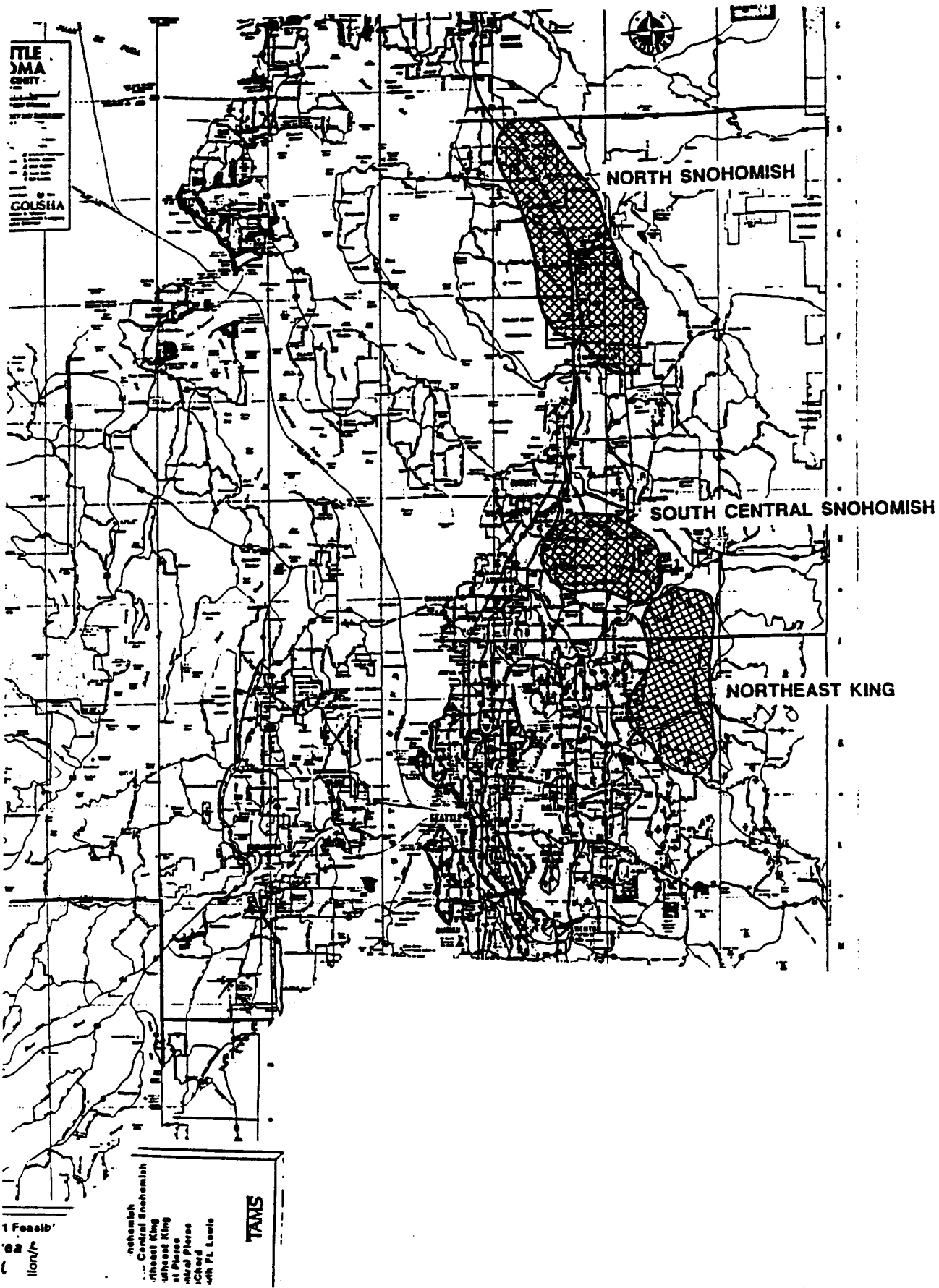
Findings of the Access Analysis are summarized below. (It should be noted that the Access Analysis and its findings did not include potential markets outside the four-county Central Puget Sound region; e.g., Thurston, Skagit, and Whatcom Counties.)

- The even distribution of population and employment throughout the region ensures that each of the site search areas will be conveniently accessible to significant numbers of air travelers and shippers, with the level of accessibility directly related to the centrality of the site search area.
- The population and jobs in Snohomish County and much of the Eastside must travel through the congested center of the region (i.e., Seattle or the I-405 Corridor) to get to/from Sea-Tac. As a result, the NE King, South Central Snohomish, and North Snohomish Site Search Areas have the inherent advantage of providing improved accessibility for the 34% of regional population and 29% of regional jobs in Snohomish County and the Eastside, for which Sea-Tac access is most difficult.
- By all comparative measures, the NE King and South Central Snohomish Site Search Areas have the highest market potential, especially considering the fact that a supplemental airport will be in competition with Sea-Tac.
- Over 35% of the region's population and about 30% of its jobs will be closer (in terms of access time) to the NE King and South Central Snohomish Site Search Areas than to Sea-Tac, and much of this population and employment will be closer by 10 minutes or more (30% and 20+%, respectively).
- The NE King and South Central Snohomish Site Search Areas also are the most conveniently located in relation to the population and jobs that do not have convenient access to Sea-Tac. Over 20% of the population and 14% of the jobs in the region are within 45 minutes of the NE King and South Central Snohomish Sites and more than 45 minutes from Sea-Tac. (This comprises over half of the population and jobs in the region that are more than 45 minutes from Sea-Tac.)
- The Pierce County Site Search Areas - South Ft Lewis, McChord, Central Pierce, and East Pierce - have less market potential than the NE King and South Central Snohomish Areas. The South Ft Lewis, McChord, and Central Pierce Areas have more potential than the East Pierce Area.
- Each of the Pierce County Areas are closer than Sea-Tac for about 25% of the region's population and under 20% of jobs. For the South Ft Lewis, McChord, and Central Pierce Areas (as with the NE King and South Central Snohomish Areas), most of these residents and jobs are at least 10 minutes closer than they are to Sea-Tac. For the East Pierce Area, however, the market potential is largely superficial, as only 10% of population and 4% of jobs are 10+ minutes closer to the East Pierce Area than to Sea-Tac.
- The North Snohomish Site Search Area is on the periphery of the region, and as result, has less market potential than the more centrally-located NE King and South Central Snohomish

Areas. The market potential of the North Snohomish Area - in terms of proximity to population and jobs - is similar to that of the Pierce County Areas.

- The SE King Site Search Area had the least market potential of any of the Site Search Areas, offering little advantage over Sea-Tac in terms of access time. Only 15% of population and 6% of jobs in the region are closer to the SE King Site Search Area than to Sea-Tac, and less than 3% are within 45 minutes of SE King and more than 45 minutes from Sea-Tac.

Working Paper 3 which is included as Section III of this Summary Report contains a more detailed version of the Access Analysis, including tabular data supporting the three charts.



Section III SITE ANALYSIS

This section describes the selection and evaluation process for identifying potential locations for a Major Supplemental Airport (MSA) to serve the central Puget Sound region. The section provides a discussion of the site evaluation methodology and a description of the criteria used to measure each site's potential for accommodating a MSA.

Methodology

An initial list of over 40 potential MSA sites was developed from a number of sources including the Flight Plan Project; existing commercial, general aviation, and military airports within the Puget Sound region; and review of 1:100,000 scale USGS maps for level areas large enough to accommodate an airport. The site search area was generally limited to the four counties in the central Puget Sound region (King, Kitsap, Pierce and Snohomish) specified in PSRC Resolution A-93-03, although some sites near the edges of Skagit and Thurston counties were initially identified. Table III-1 summarizes initial site screening.

As discussed in Working Paper One, a minimum configuration two runway airport was discussed and refined by the MSA Working Group as the generic *footprint* for a major supplemental airport. This configuration includes two parallel, independent runways at a minimum separation of 4,300 feet (including one runway of at least 10,000 feet and a second runway of at least 8,000 feet), runway protection zones, and space for parking, aircraft storage, and ancillary activities. The total amount of space for such a facility is approximately 2,140 acres.

Initially the 2,140 acre *footprint* was overlaid on potential site areas to determine if adequate space would be available for an airport of this size. A maximum slope difference of 2 percent from one side of the site to the other was considered allowable. Sites were immediately classified as unacceptable if significant physical obstructions (major hills, cliffs, bodies of water, etc.) existed within this *footprint* which would prohibit the development of an airport of this size. Approximately 25 sites satisfied this initial screening evaluation. Six sites were then eliminated due to their location outside the four county region.

The remaining 19 sites were evaluated using the following criteria:

- Accessibility Analysis - Eight site search areas encompassing the general areas where potential airport sites could be located were evaluated to determine the percentage of Puget Sound population that would potentially use the site. The analysis focused on the proximity to each Site Search Area of the following population and employment segments/sectors: total population, upper income households, total employment, office/service employment, and manufacturing employment.

PSRC/AR 017376

Summary of Initial Site Screening
(Ordered North to South)

SITE	LOCATION	COMMENTS
1 Samish Bay	Northwest of Mount Vernon	Out of four county area
2 Skagit Regional Bay View Airport	Existing Airport, Northwest of Mount Vernon	Out of four county area
3 & 4 Starwood/Conway	Two sites in area. West of I-5 near Snohomish/Skagit county line	One site carried through
5 Arlington Airport	Existing Airport Site	Site carried through
6 Marysville West	West of Marysville & I-5	Site carried through
7 & 8 Marysville East	Two sites in area. East of Marysville, N. of Lake Stevens	Dropped due to size constraints
9 First Air Airport	Existing Airport, West of Monroe	Dropped due to size constraints
10 Campbell Airfield	Existing Airport, East of Fall City	Dropped due to size constraints
11 Harvey Field	Existing Airport, S. of Snohomish	Dropped due to size constraints
12 Bothell	North of Bothell (Mill Creek Area)	Site carried through
13 Marista Lake Airport	Existing Airport, Northwest of Mill Creek	Dropped due to size constraints
14 Duvall	Northwest of Duvall	Site Carried through
15 Redmond	East of Redmond	Site Carried through
16 Boeing Field	Existing Airport	Dropped due to size constraints
17 Renton (Boeing) Airport	Existing Airport	Dropped due to size constraints
18 Port Orchard Airport	Existing Airport, West of Port Orchard	Dropped due to size constraints
19 Lake Sawyer	West of Lake Sawyer & Black Diamond	Dropped due to size constraints
20 Enumclaw	West of Enumclaw	Site Carried through
21 Auburn Municipal Airport	Existing Airport, North of Auburn	Site Carried through
22 Lake Tapps	East of Lake Tapps	Dropped due to size constraints
23 Buckley	West of Buckley	Dropped due to Instrument approach capability
24 & 25 Thun Field	Existing Airport, two sites in area	Dropped due to Instrument approach capability
26 Shady Acres Airport	Existing Airport, East of Spanaway	Dropped due to Instrument approach capability
27 Spanaway	South of Spanaway	Dropped due to size constraints
28 Bremerton National Airport	Existing Airport, West of Sea-Tac	Dropped due to local airspace evaluation
29 Gig Harbor	Gig Harbor Area	Dropped due to size constraints
30 Tacoma Narrows Airport	Existing Airport	Dropped due to construction costs
31 McChord AFB	Existing Airport	Dropped due to size constraints
32 Fort Lewis Gray Field	Existing Airport	Site Carried through
33 Kapowsin Airport	Existing Airport, North of Kopowain Lake	Dropped due to local airspace evaluation
34 Frederickson	Southeast of Spanaway	Dropped due to size constraints
35 Harle Lake	South of Fort Lewis Military Reserve	Site Carried through
36 Tenaw Lake	South of Fort Lewis Military Reserve & West of Lake Tanwax	Dropped due to local airspace evaluation
37 Vashon Island	Vashon Island Area	Site Carried through
38 Lacey	Northeast of Olympia	Dropped due to size constraints
39 Olympia Airport	Existing Airport	Out of four county area
40 Tenaquet	East of Olympia	Out of four county area
41 Sunnydale	South of Olympia	Out of four county area

TAMS Consultants, Inc.

PSRC/AR 017377

AR 038659

- **Instrument Approach Capability** - This criterion describes the ability of the site to meet FAA precision instrument approach conditions for two conditions, precision instrument approach slope, and the 150-foot horizontal surface.
- **Local Airspace Evaluation** - This criterion reflects potential interference with existing commercial, general aviation, and military airports and/or military operational areas that may be experienced if a MSA is located at the site.
- **Site Constructability Evaluation** - A conceptual estimate of costs to build a MSA at a particular site as compared with the cost for a base, or prototypical, MSA.
- **Expansion Potential** - This criterion represents the ability of the site to be expanded above the minimum site area in order to accommodate a longer runway or increased runway separation.
- **Airport Site and 65 Ldn Noise Impacts** - The number of people / schools and hospitals existing within the estimated site perimeter and 65 Ldn contour.
- **Urban Growth Boundary and Predominate Land Cover** - The location of candidate airport sites vis-à-vis urban growth boundary designations and the predominate land cover present at the site.
- **Natural Environment** - This criteria was split into three categories including impacts to wetlands, fish-bearing streams, and listed species.

The following briefly describe each of the evaluation criteria and the results of the analyses.

Access Analysis

This criterion was used to determine the population (limited to the central Puget Sound region) which might use a potential site if it were located within one of eight site search areas. Refer to Working Paper Two for a complete description of the Access Analysis (formally titled Market Analysis) and its results.

No sites were eliminated from consideration based on the Access Analysis.

Instrument Approach Capability

Federal Aviation Regulation (FAR) Part 77 Criteria were used to determine if physical terrain obstructions exist which conflict with the approach slopes for the potential sites. The FAR Part 77 criteria illustrate the minimum acceptable runway approach slopes for various instrument conditions. Two surfaces illustrated in the Part 77 criteria were utilized for the evaluation of sites. These two surfaces were (A) the precision instrument approach slope and (B) the 150-foot horizontal surface.

PSRC/AR 017378

The precision instrument approach slope begins at the end of the runway and rises at a 50:1 slope for 10,000 feet, then at a 40:1 slope for the next 40,000 feet. The width of this surface is 1,000 feet at the runway and 16,000 feet at a distance of 50,000 feet out from the runway end. Any terrain that intrudes upwards into this surface is an obstruction and prohibits the use of the runway under instrument conditions. The existence of such an obstruction was considered unacceptable and the airport site was eliminated from consideration.

The 150 foot horizontal surface is located at an elevation of 150 feet above the runway elevation and extends to a distance of 10,000 feet in all directions from the edge of the runway. Any object that intrudes upwards into this surface will increase the minimum allowable spacing of aircraft approaching the airport during instrument conditions thus lowering airport capacity. The existence of such an object intruding into the 150 foot horizontal surface resulted in a "poor" rating (as described below), but did not eliminate the site from consideration.

A template illustrating these two surfaces was drawn and overlaid on USGS maps to determine possible obstructions. The precision approach surface was evaluated at each end of both runways even though only one runway will require precision approach capability.

Each potential site evaluated using the FAR Part 77 criteria was described using the following terms:

- Excellent: No obstructions of any kind limit the use of this potential site.
- Good: No obstructions violate the FAR standards. Some obstructions notable.
- Fair: No obstructions violate the FAR standards. Some significant obstructions exist which could be hazardous to airfield use.
- Poor: No violation of FAR approach surface exist. FAR 150 foot horizontal surface is violated.
- Unacceptable: Obstructions exist which violate FAR approach surface.

Based on this evaluation criteria, the Lake Tapps, Buckley, and Thun Field sites were all removed from consideration due to an "Unacceptable" rating.

Local Airspace Evaluation

A preliminary local airspace evaluation was prepared to determine potential problems with existing military operational areas (MOAs) or with final approach patterns of existing major airports. In order to estimate if conflicts might arise, a simplified model of airspace needs was developed and overlaid on potential sites. This model represented airspace requirements of a major supplemental airport as extending 15 miles from each end of each runway and for 5 miles to each side of each runway. This space totals a 32 mile by 11 mile box centered about the potential airport site.

This model was then overlaid on the 1:500,000 Seattle Sectional Aeronautical Chart indicating other significant commercial, general aviation, and military airfields in the Puget Sound area, to determine if interference problems exist. If an existing airfield fell within the 32 mile by 11 mile box centered about the potential site, or if the box intersected an equivalent box centered about another existing major airfield, potential interference were considered likely. The following terms were used to describe potential local airspace interference at each potential site:

PSRC/AR 017379

- **Excellent:** No interference issues of any kind limit the use of this potential site.
- **Good:** No interference issues prohibit the use of this site, however, some coordination with existing facilities will be required.
- **Fair:** Limited interference issues restrict the use of this site and will require coordination with existing facilities.
- **Poor:** Significant interference issues with existing airports and/or military bases exist that severely restrict the use of this potential site.
- **Unacceptable:** Prohibitive interference exists with Sea-Tac, a military airfield(s), or military operational areas.

Based on this evaluation, the Fort Lewis, Harts Lake, and Spanaway sites were eliminated from further consideration.

Site Constructability Evaluation

Each potential site was evaluated for overall constructability based on eight major construction items. A percent increase over an approximate "base" construction cost for each of the eight items was developed based on existing site conditions as illustrated on USGS mapping, aerial photography, and additional map sources. An overall percentage increase over the "base" construction cost was then calculated for each potential site. Each of the eight construction evaluation items is highly site dependent and could have a substantial impact on the overall "base" construction cost at any particular site.

This percentage increase in base construction costs is intended as a means to compare sites. The percentages, and not the construction cost increases (dollars), were used to determine if a site was unreasonably more expensive than the other sites, and therefore not competitive and worthy of continued evaluation.

The minimum "base" construction costs for the prototypical Major Supplemental Airport was evaluated to be approximately \$800,000,000. The total airport cost would increase substantially when land costs for the airport site and access roadways, environmental mitigation costs, and any additional terminal amenities are included.

The minimum "base" cost assumes an airport that would be evaluated as "Fair" in all eight construction categories, except Major Facility Construction in which case the base cost assumes "Excellent."

The terms used to describe each individual construction item include an approximate percentage increase or decrease in construction costs for the individual construction item being described only. The total cost increase for each of the eight construction items was totaled to determine an overall site construction cost percentage increase for the site. Where no description is noted, the percentage is within the range indicated by ratings above and below the description.

The eight construction items, and explanation of ratings within the construction item, used to determine the potential increase over the "base" construction cost include are explained below.

1) *Earthwork* - This construction item indicates the work involved in grading the site to the relatively flat area required for an airport. USGS 7.5 minute quad maps indicating contour range were used to estimate the degree of earthwork required. No actual earthwork volumes were calculated.

Excellent: Totally flat site. Cut volume = Fill volume. Contour range < 15 feet. (-40%)
Good: Contour range < 15 to 40 feet. (-20%)
Fair: Relatively flat/rolling terrain. Relatively small export/import quantity. Contour range <40ft (0%)
Poor: Hilly terrain. Contour range < 40 to 80 feet. (+50%)
Unacceptable: Very hilly terrain. Large export/import quantity. Contour range < 100 feet. (up to +150%)

2) *Rockwork* - This construction item indicates the work involved to remove rock from the site as part of the grading operation. Rock often must be removed by more expensive means than dirt or gravel. As a result the amount of rock on a site is an indicator of additional construction expense required. The maximum depth of cut required, as determined using USGS maps and assumed airport elevation, and the assumption that more significant cuts have a higher likelihood of significant rockwork, was used to estimate the extent of rockwork that may be encountered on a site. Other indicators such as the proximity of a site to major geological formations (exposed rock cliffs, river valleys, etc.) were also used to estimate the extent of rockwork required on a site.

Excellent: NA
Good: NA
Fair: Maximum cut < 20 feet. Little rock work anticipated. (0%)
Poor: Maximum cut is between 20 and 50 feet. Some rock work anticipated. (+50%)
Unacceptable: Maximum cut > 50 feet. Significant rock work anticipated. (up to +200%)

3) *Paving* - The cost of paving involved in developing an airport is significant and as such, the overall cost of an airport can be diminished if the airport can be built utilizing the existing runway(s) of a smaller airport.

Excellent: An existing runway of at least 8,000 feet and taxiway exist and can be utilized. (-30%)
Good: An existing runway of length < 8,000 feet exists and can be utilized. (-10%)
Fair: No runway exists. Both runways will need to be constructed. (0%)
Poor: NA
Unacceptable: NA

4) *Drainage* - This construction item estimates the cost of accommodating existing drainage features as part of the airport design. Additional increases are included where, in some instances, existing ponds or low areas will need to be drained.

Excellent: No significant drainage features exist at the site. (-30%)
Good: Minimum drainage features exist at the site. (-20%)
Fair: Placement of runways results in two lateral drainage crossings. (0%)
Poor: More than two drainage crossings are required, or a significant drainage feature (small lake, creek, wetland) exists along a proposed runway. (+20 to 50%)

Unacceptable: Significant lakes and/or wetlands exist along one or both runways that are prohibitive or can not be mitigated. (+100 to 200%)

5) *Urban Construction* - The location of a construction site within an urban area can place additional constraints on construction activities including restrictive work hours, limitations on truck access, dust mitigation, and additional traffic safety and control measures. These considerations all contribute to drive up the overall cost of the project. This construction item has been dealt with as an add on to the "base" construction cost.

Excellent: NA
Good: NA
Fair: Construction is in rural area not subject to additional construction mitigation concerns. (\$0)
Poor: Construction is in urban area. (+ \$10,000,000)
Unacceptable: NA

6) *Demolition* - This item estimates the amount of demolition required at potential sites using 1992 aerial photos. For this item, existing man made structures and significant areas requiring clearing are assumed to drive up the demolition costs. No costs have been included for the presence of hazardous materials, such as asbestos, which may be present and require removal.

Excellent: NA
Good: Few structures to remove. Very little clearing and grubbing required. (-20%)
Fair: Some structures to remove. Clearing and grubbing is the most significant demolition item. (0%)
Poor: Significant number of homes/structures require removal. (up to +50%)
Unacceptable: NA

7) *Major Facility Reconstruction* - The presence of existing major roadways, interchanges, power lines, and substations that will need to be realigned or relocated will increase significantly the construction costs of an airport. The 1992 aerial photographs and USGS maps were used to locate major facilities that would require removal or relocation. For this construction item, the "base" airport construction cost assumes the "Excellent" condition. This item has been dealt with as an add on to the "base" construction cost.

Excellent: No significant reconstruction required. (\$0)
Good: Less than two arterial roadways affected by the airport construction. (\$0 to \$2,000,000)
Fair: At least two, 2-lane arterials will require realignment. (\$2,500,000 to \$7,500,000)
Poor: Major freeway or power line realignment required. (\$10,000,000 to \$25,000,000)
Unacceptable: Airport site runs parallel and on top of existing freeway or power line requiring significant reconstruction. (> \$50,000,000)

8) *Access* - An additional consideration in development of airports is the construction of access roads to the site. It has been assumed that at a minimum a 4-lane divided highway will be required as access to the airport site. Where this type of facility does not already exist, a new facility would be required to access the site. Costs have been included to construct a new 4-lane facility or to improve existing 2-lane roadways to a point where they meet existing 4-lane facilities.

Excellent:	Site is adjacent to existing major facility. (-20%)
Good:	Existing 2-lane connection to nearby 4-lane access roadway will need to be upgraded to 4 lanes. (-10%)
Fair:	Upgrade existing 2-lane facility for up to five miles, or construct new 4-lane facility for up to 3 miles. (0%)
Poor:	Upgrade existing 2-lane facility for more than five miles, or construct new 4-lane facility for more than 3 miles, up to one new interchange required. (75 to 150%)
Unacceptable:	More than five miles of roadway must be either constructed or reconstructed and new interchange(s) are required. (> 150%)

The Gig Harbor site was dropped from consideration as a result of an estimated 30% increase over base construction costs.

Site Expansion Potential

The potential for expansion at a given site is helpful in estimating the degree to which the airport could be improved to provide additional capacity as the region grows. Each site was looked at to determine if there was room to lengthen the runways from the 10,000 foot design minimum, and if the runways could be separated by more than 4,300 feet. By increasing the runway length, the airport could serve larger or longer haul aircraft. Additional runway separation beyond the 4,300 foot FAA minimum, could provide more room for apron, airport terminal, and vehicle parking facilities.

Each site was evaluated using the USGS maps and aerial photos to determine available expansion potential. Each site was evaluated for runway lengthening to 12,000 feet and 14,000 feet, and for a runway separation of 5,000 feet and 6,000 feet. In order for the airport to be expanded in a direction, no physical terrain obstruction (lake, mountain, etc.) or any man made obstruction (freeway, town, etc.) can prohibit the relocation of the airport perimeter.

Each site was evaluated for expansion potential using the following terms:

- Excellent: Potential exists for site expansion on all sides to provide a 14,000 foot runway and 6,000 foot separation between runways.
- Good: Potential exists for site expansion on three (3) sides.
- Fair: Potential exists for site expansion on two (2) sides.
- Poor: Potential exists for site expansion on one (1) side.
- None: No potential for expansion exists, minimum airport size may already limit ability to use site.

Potential airport sites were not removed from consideration based on this evaluation.

Airport Site and 65 Ldn Noise Impacts

Noise contours were developed using the FAA's Integrated Noise Model as discussed in Working Paper Two. The number of households and people within the 65 Ldn and 55 Ldn contours as well as the 2,140 acre airport boundary were identified. In addition, using the 1995 Thomas Guide for King/Pierce/Snohomish Counties the number of sensitive use facilities within each area were located.

Sensitive use facilities indicated in the Thomas Guide include hospitals, schools, and other sites such as city halls and community centers.

No sites were removed from consideration based on this criteria.

Urban Growth Boundary and Predominant Land Cover

The candidate sites were listed in terms of falling within or outside of Urban Growth Boundary designations.

The noise contours and airport perimeter were again used along with Landsat satellite images of the Puget Sound area to determine major Land Use types within each of the contours and within the airport perimeter. This evaluation procedure is described in detail in Working Paper Two.

No sites were removed from consideration based on this criteria.

Preliminary Environmental Analysis

This preliminary analysis examines impacts on the existing natural environment at each of the twelve major supplemental airport sites. Three types of environmental features are considered: wetlands identified by the National Wetland Inventory (NWI); rivers used by anadromous and priority resident fish; and areas with priority species and habitat including state or federally listed threatened, endangered, sensitive, or candidate animal species. All supplemental airport sites identified in this working paper that meet the basic requirements for air space and constructability are included.

These impacts are identified for the area within the perimeter of the prototype airport layout applied to each site. Indirect impacts (i.e. those that could occur outside the airport site footprint) have not been identified. The facility layout includes two independent parallel runways and space for parking, aircraft storage, and other ancillary activities. The site perimeter encompasses 2,140 acres. Because this analysis focuses on the direct physical affects of a new airport, areas within the 65 or 55 Ldn noise contours outside of the site perimeter are not included.

For each site, the airport facility perimeter area was overlaid onto maps of each environment feature using a Geographic Information System (GIS). The GIS is a computer tool that allows comparison of different types of mapped information. For this analysis, the GIS calculates the area in common, or the number of specific points, of the different map coverages.

Impacts to Wetlands

Development of a new major supplemental airport would be subject to a variety of federal, state, and local regulations and policies affecting wetlands and aquatic environments. Federal laws regulating impacts to wetlands include Section 404 and 401 of the Clean Water Act, National Environmental Policy Act (NEPA), and President's Executive Order 11990. State laws and programs designed to control the loss of wetland area include Hydrologic Code Rules, State Environmental Policy Act (SEPA), the Shoreline Management Act, and Executive Orders 89-10 and 90-40. In addition,

Snohomish, King, and Pierce Counties each have their own regulations and policies regarding wetlands, as do many of the cities within these counties.

Impacts to over five acres of wetlands require an individual permit from the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. The permit must include an analysis of alternatives and demonstrate that there are no feasible alternatives to the proposed fill with less environmental impact. The alternatives would include both different site configurations and different sites. Substantial impacts to wetlands will also trigger review by the Corps of Engineers under NEPA in an Environmental Impact Statement (EIS). Many of the state and local regulations also require similar demonstrations that the least damaging practical alternative is selected.

Information on wetlands used in this analysis is from the National Wetland Inventory (NWI) prepared by the U.S. Fish and Wildlife Service. The inventory is based on the interpretation of aerial photos without field verification, and therefore has limited accuracy. The NWI generally understates the amount of wetlands actually present. Development of any site will require detailed field studies to precisely locate and characterize any wetlands and apply for federal, state, or local approval. For this analysis, the NWI provides a means to compare the general magnitude (in acres) of potential wetland impacts at each of the sites.

Wetlands are described analytically based on their features and characteristics by system, subsystem, class, and further divisions. The main type of wetland system present on the supplemental airport sites is *Palustrine*. Palustrine wetlands include vegetated areas traditionally called names such as marsh, bog, or fen. Wetlands may also include small, shallow water bodies often called ponds. In order of general importance based on function, sensitivity, rarity, and ability to be replaced, classes of palustrine wetlands include: *forested* (mostly tree-covered), *scrub/shrub* (mostly brush-covered), *emergent* (mostly herb-covered). The other classes of palustrine wetlands found on the airport sites are water bodies and their names are self-explanatory.

Impacts to Fish-Bearing Streams

Fishery resources are an important part of the economy and culture of the Pacific Northwest. They are protected by a variety of federal and state laws, and by treaty with Indian tribes. Fish species fall into two general categories; anadromous (fish that travel from fresh to salt water and return) and resident. Data on anadromous and resident fish are available from the Washington State Department of Fish and Wildlife (WDFW) through the Washington Rivers Information System (WARIS). In this system, fish species of concern include anadromous and resident fish listed as priority species or as threatened, endangered, sensitive or candidate by state or federal agencies (see below). For this analysis, the total length of streams and the length used by anadromous and other fish species of concern are tabulated for each site.

Impacts to Listed Species

Animal and plant species in decline or at risk of extinction are subject to protection under the federal Endangered Species Act of 1973 and in Washington under RCW Title 77.12 and WAC 232-12. Generally these laws require that no approval or funding be granted that could jeopardize the continued

existence or adversely affect the habitat of any officially listed species. Actions affecting listed species can be allowed if it is shown that there are no feasible alternatives and all reasonable mitigation measures are provided.

The WDFW has established the Priority Habitat and Species (PHS) program. With this program, the Department has designated priority species as a proactive method of protection. The PHS includes all animal species with state or federally endangered, threatened, sensitive, or candidate status. Priority species also include those that the WDFW believes are vulnerable to future listing and species with recreational importance that are vulnerable because of lost or degraded habitat. Priority habitats are areas that support unique or a wide diversity of wildlife that should be protected to prevent further species losses. However, by themselves they do not have any regulatory status. This analysis includes both the number of sites used by priority species and the number of acres of priority habitat within each supplemental airport site. The priority habitat area is further described by the general type of features it includes. The actual presence of officially listed species would have to be determined by detailed field studies.

Findings from the analyses described above are summarized in Table III-2, Evaluation Criteria. Working Paper 3, Appendix A through H contain evaluation data details.

Individual Site Evaluation Summary

Twelve sites were determined to be suitable for construction of a Major Supplemental Airport based on the above analysis. Illustrated in Figure III-1, Potential Sites for Further Study, these locations are discussed below along with some distinguishing characteristics that may influence the selection of the site. Sites are listed in order from North to South and include approximate centroid coordinates and the name of the USGS 7.5 minute quad map in which the airport centroid is located.

Starwood

The Starwood site is located on the Northern border of Snohomish County adjacent to Interstate 5. This remote location results in several positive aspects to this site including low construction costs, good expansion potential, limited noise impact, and a small number of people living on the site at the present time. The remote location does, however, significantly lower the access potential of the site with only 16 percent of the Puget Sound population more than 10 minutes closer to this site than to Sea-Tac. Mountains to the East and the Whidbey Island Naval Air Station to the Northwest limit the viability of this site by both instrument approach and airspace concerns.

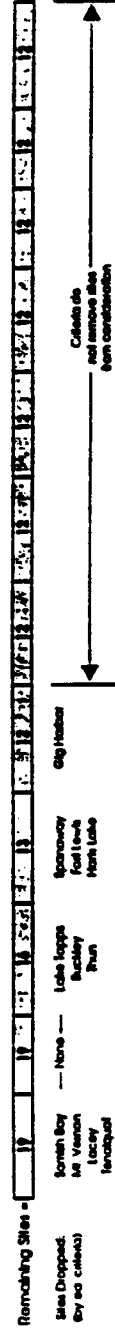
Preliminary environmental analysis of the Starwood site indicate that it has among the highest numbers of wetland acres, miles of fish habitat streams, and potential priority habitats. There is a state and federal "threatened" species reported on the site.

Coordinates & Map: 47° 2' 19" N, 122° 25' 21" W, USGS 7.5 Minute Series - Conway.

PSRC Major Supplemental Airport Feasibility Study
 Airport Site Summary Matrix

Evaluation Criteria

Location	Initial Screening	Access Analysis (by Site Area)	Instrument Approach	Lead Agency Approval	Site Constructability	Expansion Potential	Airport Site Impact	Note Impact (see Law 2)	Urban Growth Boundary	Impacts to Wetlands (acres)	Impacts to Fish Streams (miles)	Linked Species / Priority Habitat (acres)
Smith Bay	Out of 4 Co.	16%	(Inacceptable)	(Poor)	5%	Good	500/0	100/0	Outside	182	4.5	Yes/233
Mt. Vernon	Out of 4 Co.	16%	Poor	Poor	0%	Excellent	1,800/0	700/0	Inside	45	2.3	No/124
Stanwood		16%	Poor	Fair	0%	Excellent	800/0	800/2	Outside	75	4.2	No/232
Mission		16%	Poor	Fair	5%	None	700/0	300/0	Outside	185	0.1	No/310
Marysville Fall		16%	Fair	Fair	8%	Fair	3,400/2	2,800/3	On Boundary	92	0.0	Yes/170
Baldwin Hill		31%	Poor	Poor	10%	Poor	900/0	400/0	Outside	104	0.2	No/121
Duval		29%	Fair	Good	20%	None	1,000/0	500/0	Under Review	187	1.0	No/335
Redmond		29%	Fair	Good	10%	Poor	1,800/1	800/1	On Boundary	39	4.2	No/179
Lake Sawyer		8%	Fair	Good	10%	Fair	900/1	300/0	Outside	83	0.0	No/92
Gig Harbor		10%	Excellent	Fair	10%	Good	5,600/1	4,600/0	Field	168	4.1	Yes/196
Enrico		10%	Inacceptable	(Poor)	0%	Poor						
Lake Lopez		10%	Inacceptable	(Fair)								
Sucury		22%	Excellent	Poor								
McChord		18%	Inacceptable	Poor								
Thun			Inacceptable	(Inacceptable)								
Lacey			Excellent	(Inacceptable)								
Fairview		27%	Excellent	(Inacceptable)								
For Lewis		18%	Excellent	Inacceptable								
Spokane		18%	Excellent	Inacceptable								
Prediction		17%	Poor	Poor	5%	Good	2,300/1	600/2	Outside	29	0.0	No/33
Hillside		17%	Fair	Inacceptable								
Lanier Lake		17%	Fair	Fair	10%	Good	260/0	160/0	Outside	78	0.0	No/17
Chimney	Out of 4 Co.		(Inacceptable)	(Excellent)								
Langston	Out of 4 Co.											
Standyde	Out of 4 Co.											

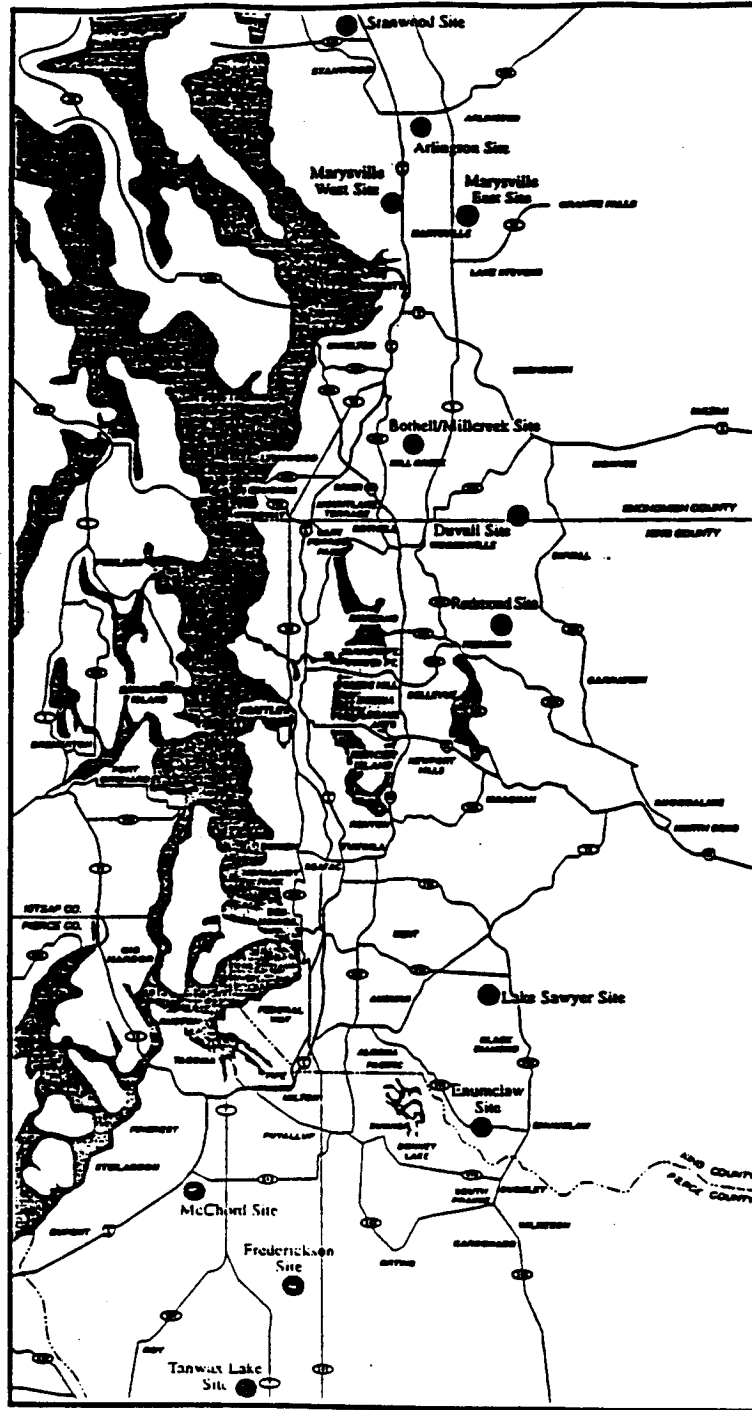


Legend
 # Percent of total population in the central Puget Sound region 10 minutes closer to site than to Sea-Tac.
 V Does not include study of relationship of site to Regional Air Traffic procedures. See FAA letter in Appendix A of Working Paper 3.
 . Number represent: No. of People (1980) / Schools and Hospitals within the Airport Perimeter (1995).
 # Number represent: No. of People (1980) / Schools and Hospitals within the 65 Lch Contour and outside the Airport Perimeter (1995).
 \$ The noise contour of these sites extend beyond the PSRC boundaries where comparable data are unavailable.

PSRC/AR 017387

AR 038669

Potential Sites for further study: Major Supplemental Airport



PSRC/AR 017388

AR 038670

Arlington

The Arlington site is located at the existing Arlington Municipal airport. Use of the existing airport, relatively good access to I-5, and the generally flat nature of the site combine to make this the least expensive airport to construct. Arlington is also located in an area that provides excellent expansion potential, allowing for both a 14,000 foot runway and 6,000 foot separation between runways. Preliminary evaluation of local airspace indicates that the Arlington site has good potential. The Arlington site is in the same site search area as the Stanwood site, and therefore has the same limitations in access potential. The presence of mountains just east of Arlington will lower the instrument approach separation between aircraft. The site is among the sites with the least number of wetland acres.

Coordinates & Map: 48° 9' 26"N, 122° 9' 52"W, USGS 7.5 Minute Series - Arlington West.

Marysville West

The Marysville West site is located just North and to the West of Marysville on the Tulalip Indian Reservation. The preliminary local airspace evaluation indicates potential conflicts with Paine Field and Arlington Municipal. The proximity to Arlington Municipal would require the transfer of Arlington General Aviation operations to this site. The presence of hills immediately West of this site and the town of Marysville immediately East, limit the instrument approach capability and prohibit any expansion potential of this site. The access potential of this site is equivalent to the previous two sites. The site is among the sites with the most miles of fish habitat streams.

Coordinates & Map: 48° 7' 3"N, 122° 11' 45"W, USGS 7.5 Minute Series - Marysville.

Marysville East

The Marysville East site is located East of Marysville and due North of Lake Stevens. The Marysville East site is unique to this study as it has no significantly positive points and no significantly negative points. This location has relatively minor construction cost increases due mostly to the need to construct additional roadway capacity from the site to I-5. Some expansion potential exists to allow increase runway separation, however, little room exists to lengthen runways due to the presence of mountains to the North which also limit the instrument approach capability of this site. Again, this site has limited access potential with the same 16 percent of the Puget Sound population 10 minutes closer to the site than Sea-Tac as the previous three sites. The site has a relatively high number of wetland acres and potential priority habitats.

Coordinates & Map: 48° 5' 46"N, 122° 5' 29"W, USGS 7.5 Minute Series - Lake Stevens.

Bothell/Mill Creek

The Bothell/Mill Creek site is located North of Bothell and immediately West of Mill Creek. This location is within the site search area that produced the highest market potential values of all the site search areas evaluated. This site is 10 minutes closer than Sea-Tac to 31 percent of the Puget Sound

population. This airport site is in the second most populated area studied, with more than 3,400 people currently living on the airport site alone. Other negatives of this site include "Poor" instrument approach, local airspace acceptability, and expansion potential. Preliminary environmental analysis of the Bothell/Mill Creek site indicate the site apparently contains no fish habitat streams but contains a reported state "candidate" wildlife species.

Coordinates & Map: 47° 50' 11"N, 122° 10' 36"W, USGS 7.5 Minute Series - Bothell.

Duvall

The Duvall site is located Northwest of Duvall on a ridge above the Snoqualmie River valley. The Duvall site, like the Bothell/Mill Creek site, is located in a site search area with good access potential indicating 29 percent of the Puget Sound population is 10 minutes closer to this site than to Sea-Tac. The Duvall site does not impact as many people with only approximately 900 people living on the site. Preliminary evaluation of the local airspace indicates the site would have only small potential for interference with existing airports. Location on a ridge prohibits any expansion potential and increases construction costs significantly due to the amount of earthwork, rockwork, and access improvements which would be required. Duvall is potentially the most expensive site to construct indicating an approximately 20 percent increase in base construction costs.

Coordinates & Map: 47° 46' 55"N, 122° 1' 10"W, USGS 7.5 Minute Series - Maltby

Redmond

The Redmond site is located on the plateau East of Redmond. This site is within the same site search area as Duvall and has a good access potential. The Redmond site ranks as "Good" in local airspace acceptability and has approximately 1,000 people on site which is relatively low. As with Duvall, the expansion potential of this site is limited by the Snoqualmie River valley and the surrounding topography. Construction costs of this site would be relatively high due to access, drainage concerns, and earthwork. Mountains to the East and South of this site do not intrude on minimum instrument approach slopes, but are significant enough to be of concern during inclement weather. The site apparently contains the highest number of wetland and potential priority habitat acres of all sites.

Coordinates & Map: 47° 41' 5"N, 122° 1' 24"W, USGS 7.5 Minute x 15 Minute Series - Bellevue North.

Lake Sawyer

The Lake Sawyer site is located immediately West of Lake Sawyer near Black Diamond. This site provides some expansion potential and has good airspace acceptability. Mountains to the North, East, and South do not intrude into the minimum instrument approach slope, but are large enough to be of concern. This site ranks the lowest in access potential with only 5 percent of the Puget Sound population 10 minutes closer to this site than to Sea-Tac. Construction costs of this site are increased by the presence of two power lines that would need to be relocated, poor access, and significant

earthwork requirements. The site contains a relatively low number of wetland acres, but is among the sites with the most miles of fish habitat streams.

Coordinates & Map: 47° 19' 28"N, 122° 3' 48"W, USGS 7.5 Minute x 15 Minute Series - Auburn.

Enumclaw

The Enumclaw site is located just East of Enumclaw and Southeast of Auburn. This site has "Good" expansion potential and relatively small noise impacts. The instrument approach and local airspace concerns are both "Fair." This site would have a 10 percent construction cost increase due almost entirely to the need to upgrade access for almost 17 miles. The site contains no identified fish habitat streams.

Coordinates & Map: 47° 12' 41"N, 122° 3' 37"W, USGS 7.5 Minute Series - Buckley Quadrangle

McChord

This site is located in such a way as to use the existing McChord Air Force Base runway as the western of the two runways required for a Major Supplemental Airport. McChord has "Excellent" instrument approach capability and the second lowest construction cost increase due mostly to the presence of an existing runway that could be utilized. The proximity to Fort Lewis causes local airspace concerns due to both Gray Field and the Fort Lewis Military Operational Area. McChord has good access potential with approximately 22 percent of the Puget Sound population 10 minutes closer to it than to Sea-Tac. The location of McChord relative to the Tacoma population would impact approximately 10,200 people within the 65 Ldn contour, and almost 5,600 people on the airport site itself.

Preliminary environmental analysis of the McChord site is among the three sites with the highest length of fish habitat streams. The site reportedly contains a state "threatened" species.

Coordinates & Map: 47° 8' 26"N, 122° 28' 1"W, USGS 7.5 Minute Series - Tacoma South.

Fredrickson

This site is located Southeast of Spanaway adjacent to State Highway 7. The Fredrickson site has good expansion potential and only a 5 percent increase over base construction costs. The access potential is also relatively good with 18 percent of the Puget Sound population 10 minutes closer to the site than to Sea-Tac. The local airspace acceptability is "Poor" due to significant interference potential with both Sea-Tac and McChord. The site contains no fish habitat streams and is the lowest of all sites for acres of potential priority habitat and wetlands.

Coordinates & Map: 47° 2' 36"N, 122° 20' 59"W, USGS 7.5 Minute Series - Fredrickson.

Tarwax Lake

This site is located South of Spanaway, northwest of the junction of State Route 702 and State Route 7. The access potential is similar to Fredrickson with a value of 17 percent. This site impacts the

**MAJOR SUPPLEMENTAL AIRPORT
FEASIBILITY STUDY**

Puget Sound Regional Council

fewest people with only approximately 300 people within the 65 Ldn contour. The base construction cost would increase by approximately 10 percent due entirely to the remote location and the need to construct new access. Preliminary local airspace evaluation indicates that some potential for interference with McChord and Sea-Tac. The site contains no fish habitat streams

Coordinates & Map: 46° 58' 37" N, 122° 24' 33" W, USGS 7.5 Minute Series - Harts Lake.

SUMMARY REPORT

Page III-17

PSRC/AR 017392

AR 038674

APPENDICES

Appendix 1

Resolution A-93-03

Resolution A-93-03: Implementation Steps

Appendix 2

Coordinating Committee and Working Group Roster

PSRC/AR 017393

AR 038675

Puget Sound Regional Council



RESOLUTION A-93-03

**A RESOLUTION of the General Assembly of the
Puget Sound Regional Council Amending the
1988 Interim Regional Airport System Plan (RASP) for
Long-Term Commercial Air Transportation Capacity Needs of the Region**

WHEREAS, the Puget Sound Regional Council, designated under federal and state laws as the Metropolitan Planning Organization and Regional Transportation Planning Organization for the central Puget Sound region, is responsible for adopting and maintaining regional growth management and transportation strategies for the region; and

WHEREAS, the Regional Council has adopted VISION 2020: Growth and Transportation Strategy for the Central Puget Sound Region, to guide growth management and transportation decisions and actions in King, Kitsap, Pierce and Snohomish counties; and

WHEREAS, VISION 2020 seeks to assure that the people of this region continue to enjoy an outstanding and improving quality of life that includes a vibrant economy, a healthy environment, and livable communities connected by a multimodal, transit-oriented transportation system that emphasizes accessibility and enables the efficient movement of people, goods and freight; and

WHEREAS, with respect to assessments of commercial air transportation needs, the Regional Council acknowledges long term forecasting uncertainties, and the reduction on a day-to-day basis of current airport capacity at Sea-Tac Airport during bad weather conditions; and

WHEREAS, VISION 2020, as the Regional Transportation Plan for the region, includes the 1988 interim Regional Airport System Plan with language that called upon the region to "proceed expeditiously with the detailed evaluation and selection of a preferred regional air carrier system alternative," and which now needs to be amended to reflect the Regional Council's recent planning and deliberations regarding the long-term commercial air transportation capacity needs of the region; and

WHEREAS, jurisdictions in the region agree to site regional transportation facilities in a manner that reduces adverse societal, environmental and economic impacts; seeks equity and balance in siting and improving the region's transportation system; and addresses regional growth planning objectives; and

WHEREAS, the Regional Council, through the Flight Plan Project, has sought to address policy, environmental, and procedural concerns through a variety of products and processes, including the following:

PSRC/AR 017394

- (a) ~~The Regional Council, acting jointly with the Port of Seattle, completed a non-project Final Environmental Impact Statement evaluating various system alternatives for meeting projected demands and their noise and other environmental impacts, and~~
- (b) The Regional Council conducted a series of workshops, decision meetings, open houses, and a public hearing, to listen to the concerns and suggestions of community groups, individuals and interests that could be affected by a regional commercial air transportation capacity decision; and

WHEREAS, as a part of this effort, the Regional Council finds that commercial air transportation is important to the region's economy, and that additional commercial air transportation capacity needs to be identified and preserved, and implemented when needed at some point in the future; and

WHEREAS, the Regional Council finds that there is no perfect air transportation capacity solution, but that whatever solution is adopted must be part of an integrated transportation system that includes air and marine transportation as well as roadways and rail, that demand management and system management should be utilized to make the most efficient use of the existing system, and that any solution must not result in a decrease in safety and must address noise; and

WHEREAS, the Regional Council further finds that the adopted solution should be flexible, must be consistent with the growth management planning that is occurring in the region, and should be financially feasible; and

WHEREAS, the Regional Council Transportation Policy Board and Executive Board have developed and refined this recommendation to the Regional Council General Assembly; and

WHEREAS, this amendment to the interim Regional Airport System Plan is consistent with the VISION 2020 Final Environmental Impact Statement;

NOW, THEREFORE, BE IT RESOLVED that the Regional Council Executive Board recommends that the General Assembly adopt the following elements of a Regional Airport System Plan amendment:

That the region should pursue vigorously, as the preferred alternative, a major supplemental airport and a third runway at Sea-Tac.

1. The major supplemental airport should be located in the four-county area within a reasonable travel time from significant markets in the region.
2. The third runway shall be authorized by April 1, 1996:
 - a. Unless shown through an environmental assessment, which will include financial and market feasibility studies, that a supplemental site is feasible and can eliminate the need for the third runway; and

PSRC/AR 017395


AR 038677

- b. After demand management and system management programs are pursued and achieved, or determined to be infeasible, based on independent evaluation; and
 - c. When noise reduction performance objectives are scheduled, pursued and achieved based on independent evaluation, and based on measurement of real noise impacts.
3. The Regional Council requests consideration by the Federal Aviation Administration of modifying the Four-Post Plan to reduce noise impacts, and the related impacts on regional military air traffic.
 4. Evaluation of the major supplemental airport shall be accomplished in cooperation with the state of Washington.
 5. Proceed immediately to conduct site-specific studies, including an environmental impact statement, on a Sea-Tac third runway;
 6. Eliminate small supplemental airports, including Paine Field, as a preferred alternative.

BE IT FURTHER RESOLVED that the Board is directed to:

1. Take all necessary steps to assure efficient, effective and economical implementation of this resolution.
2. Negotiate with the Port of Seattle, the Washington State Department of Transportation and other responsible agencies, as necessary, to assure the implementation of this resolution.
3. Assure that implementation of this resolution is at all times in compliance with the requirements of all applicable federal, state and local laws and regulations.
4. Report to the General Assembly on the results of its actions at the next regularly scheduled Assembly meeting or at such special meeting of the Assembly as the Board may call.

ADOPTED by the General Assembly this 29th day of April, 1993.



Bill Brubaker, Councilmember
Snohomish County
President, Puget Sound Regional Council

Attest: 

Mary McCumber, Executive Director

PSRC/AR 017396

AR 038678



RESOLUTION A-93-03: IMPLEMENTATION STEPS

**As adopted by the Regional Council Executive Board
August 26, 1993, and September 23, 1993**

COORDINATION: The Puget Sound Regional Council, the Washington State Department of Transportation, the Port of Seattle, and the Federal Aviation Administration will establish a coordinating committee of representatives from each agency to monitor and report back on the following efforts to implement Resolution A-93-03. A memorandum of understanding will be developed by the affected agencies to formalize this implementation process.

I. MAJOR SUPPLEMENTAL AIRPORT FEASIBILITY STUDY

- A. The Puget Sound Regional Council, in cooperation with Washington State Department of Transportation (WSDOT), leads feasibility study. A working group of public and private advisors provides advice on analyses, reviews findings, and comments on feasibility study issues. Public information and involvement provided through a variety of options to be developed in the fall of 1993.
- B. Consultants apply technical screening criteria to sites in 4-county area (King, Snohomish, Pierce and Kitsap). Screening criteria are developed by the consultants subject to review by the coordinating committee and review and action by an appropriate Regional Council policy board.
- C.
 - 1. If no sites exist, advise Executive Board and other interested parties. If Executive Board concurs, process ends. Substantial weight shall be given to the consultants' conclusion. (Mid-1994).
 - 2. If sites exist, consultants continue with environmental, financial, legal, and market feasibility studies.
- D. Feasibility study issues:
 - 1. Is there a major supplemental airport site which is feasible (i.e., environmentally, economically, market, legally)? What is (are) the site(s)? Who would be the airport sponsor?
 - 2. When would a major supplemental airport be operational?

E. The Major Supplemental Airport (MSA) Expert Review Panel (See Appendix A, Expert Panels) independently evaluates the feasibility study's technical conclusions, i.e., the answers to the questions in paragraph D, and additionally considers:

1. What are the existing capacity constraints at Sea-Tac International Airport?
2. What will be the demand and delay at Sea-Tac International Airport until and after a major supplemental airport becomes operational?
3. What will be the consequences (e.g., economic, environmental) of the anticipated delay at Sea-Tac International Airport?

If it can be developed in a timely manner, initial data for these three questions will be developed during the Port of Seattle Master Plan and EIS preparation process.

F. The Major Supplemental Airport (MSA) Expert Review Panel concludes whether a major supplemental airport eliminates the need for a third runway at Sea-Tac International Airport. The Panel's conclusions are transmitted to the Regional Council.

1. If the Major Supplemental Airport (MSA) Expert Review Panel concludes that a major supplemental airport is feasible, the Regional Council Executive Board determines whether to develop an amendment process to incorporate the specific site or sites into the Regional Transportation Plan.
2. As it relates to the third runway, the Major Supplemental Airport (MSA) Expert Review Panel's conclusion shall be reviewed by the Regional Council Executive Board for final determination. Substantial weight shall be given to the conclusion of the Major Supplemental Airport (MSA) Expert Review Panel.

II. DEMAND MANAGEMENT/SYSTEM MANAGEMENT STUDY

- A. The Puget Sound Regional Council, the FAA, the Washington State Department of Transportation, and the Port of Seattle will identify appropriate lead agencies to analyze demand management and system management options: including pricing mechanisms, gate controls, and high speed rail.
- B. The lead agency for each option will analyze that option to determine its feasibility, considering the time frame for implementation and the likely extent of its impact on future operations at Sea-Tac International Airport.
- C. Lead agency conclusions are then subject to independent evaluation by the Expert Arbitration Panel.

- D. Expert Arbitration Panel determines which demand management/system management options are feasible, considering the reasonableness of methods and assumptions employed by the lead agencies, as well as issues such as long term regional goals, existing contractual obligations and legal constraints, safety, operational efficiency, and expense. (1994-1995).
- E. Conclusions of this Expert Arbitration Panel regarding which Demand Management/System Management options are feasible (including timeframe and impact) will be provided to the Major Supplemental Airport (MSA) Expert Review Panel. (See Feasibility Study, Part I.E.2.)
- F. The Expert Arbitration Panel (working on demand and system management issues) determines whether all earlier identified feasible measures are being pursued and achieved. (1996)

III. NOISE REDUCTION PERFORMANCE OBJECTIVES

- A. The PSRC Resolution A-93-03 calls for aircraft noise reduction objectives that are scheduled and are being pursued. The following programs are responsive to this regional request (See Appendix B for descriptions of these programs):
 - 1. The Sea-Tac Noise Budget and Nighttime Limitations Program, which are established in Mediated Noise Abatement Actions for Seattle-Tacoma International Airport, as agreed to by the Mediation Committee on March 30, 1990;
 - 2. Port of Seattle restrictions on the performance of aircraft powerback operations and on aircraft engine run-ups which are established in the Sea-Tac International Airport Schedule of Rules and Regulations and which are intended to address issues related to certain ground source noise; and
 - 3. Acoustical Insulation Program as set forth in the Port of Seattle Resolution 3125, as amended.
- B. Verification that the Port is achieving the objectives of the Acoustical Insulation program and ground source noise restrictions (as specified in III.A.2 and 3) will be accomplished by semi-annual reports by the Port to PSRC.
- C. A method of independent validation needs to be developed that the Noise Budget and Nighttime Limitations Program noise reduction objectives are sufficient to cause a reduction in measurable real ("on-the-ground") noise by 1996. The validation methodology shall utilize the measurement of on-the-ground noise by the existing airport noise monitoring system at Sea-Tac Airport.

- D. The Port of Seattle will lead the development of the validation methodology in close cooperation with the Puget Sound Regional Council, the Washington State Department of Transportation and the Federal Aviation Administration. In the event the Coordinating Committee members are unable to agree on a valid methodology, the specific points of disagreement may be referred to the Expert Arbitration Panel for prompt resolution upon request of two or more Committee members.
- E. In accordance with the recommended validation method, the Port of Seattle would collect and present the required noise data. In the interim, the data will be presented to the Executive Board semi-annually.
- F. In early 1996, the Expert Arbitration Panel will determine whether the noise reduction objectives are being pursued and achieved and resulting in a reduction in measurable on-the-ground noise. If the Panel is unable to so determine, it will notify the Executive Board.

APPENDIX A

EXPERT PANELS

NOTE: Other specifics regarding the Expert Panels will be the subject of an MOU between the Regional Council, the Port of Seattle, the Washington State Department of Transportation, and the Federal Aviation Administration.

1. There would be up to three Expert Panels established to review issues concerning (1) the major supplemental airport; (2) Sea-Tac operational issues related to demand management/system management and noise reduction performance activities.

2. Each panel would be comprised of three people. At least one person would be a member of all panels. The Panels would have additional overlapping membership in areas where there is need for the same or similar experience and expertise, particularly in the areas of noise and demand/system management. (If memberships overlap significantly, the need for three separate panels could be avoided.)

3. The panels would be appointed by the Secretary of WSDOT, considering criteria established in the MOU. The Coordinating Committee would develop a list of candidates to be considered by the Secretary.

4. The panel established to review issues concerning the major supplemental airport will provide a recommendation to the Executive Board and will be known officially as the "Major Supplemental Airport (MSA) Expert Review Panel." The MSA Expert Review Panel will be convened upon completion of the environmental assessment, which will include a financial, legal and market feasibility study. The panel's recommendation shall be given substantial weight by the Executive Board.

5. The panel(s) reviewing demand/system management and noise issues will make final, binding decisions and will be referred to as Expert Arbitration Panel(s).

a. The Expert Arbitration Panel established to review Sea-Tac International Airport demand and system management issues will initially convene in 1994 to determine the feasibility of demand management and system management options. The Panel's conclusions regarding feasible demand and system management options on Sea-Tac operations will be reported to the MSA Expert Review Panel. The demand and system management Expert Arbitration Panel will convene in early 1996 to determine whether feasible demand management and system management options are being pursued and achieved.

b. The Expert Arbitration Panel to review noise issues will convene in 1994 to validate the methodology to determine whether the Noise Budget and Nighttime Limitations programs are sufficient to cause a reduction in on-the-ground noise by 1996. (The Panel may be convened earlier to resolve specific points of disagreement upon request of two or more Coordinating Committee members in the event Coordinating Committee members are unable to agree on a validation method.) The Panel will reconvene in late 1995 or early 1996 to determine

whether the noise reduction performance objectives are being pursued, and achieved as scheduled based upon its independent evaluation of information generated through measurement of on-the-ground noise by the noise monitoring system around Sea-Tac International Airport.

6. Procedures will be established to ensure that the panels conduct their business in an objective and expeditious manner. Time limitations and participation guidelines will be established to ensure a fair opportunity for PSRC members and other stakeholders to participate. Procedures may provide for oral or written presentations, or both.

APPENDIX B

GENERAL DESCRIPTION OF EXISTING NOISE PROGRAMS

1. NOISE BUDGET:

The purpose is to achieve an annual reduction in noise energy produced by aircraft operations. The budget includes annual maximum noise energy for each year between 1991 and 2001.

2. NIGHTTIME LIMITATIONS PROGRAM:

The purpose is to phase out Stage 2 aircraft during nighttime hours. In 1994, the time period will be extended to 10:30 p.m. to 6:45 a.m., and in 1995, the time period will be extended to 10:00 p.m. to 7:00 a.m.

3. ACOUSTICAL INSULATION PROGRAM:

The purpose is to insulate up to 5,000 eligible single-family residences in the existing Noise Remedy Program, provided such residences are included on the waiting list as of December 31, 1993. The rate of insulation for such residences can be assessed in December 1995 in accordance with these objectives, as set forth in the Port of Seattle Resolution 3125, as amended.

row93-03.d

MAJOR SUPPLEMENTAL AIRPORT FEASIBILITY STUDY WORKING GROUP

Coordinating Committee Members

Carolyn Read
Federal Aviation Administration
1601 Lind Avenue S.W.
Renton, WA 98055
Phone: 206/227-2661
Fax: 206/227-1650

Geri Poor
Port of Seattle
P.O. Box 68727
Seattle, WA 98168-0727
Phone: 206/248-6866
Fax: 206/431-4496

Jerry Dimndorf
Puget Sound Regional Council
216 First Avenue South
Seattle, WA 98104
Phone: 206/464-6663
Fax: 206/587-4825

Don Nelson
WSDOT Office of Urban Mobility
401 2nd Ave. South, Suite 307
Seattle, WA 98104
Phone: 206/464-5878
Fax: 206/464-6084

County/Growth Management Members

Glen Gross
Kistap County, DCD
614 Division St.
Port Orchard, WA 98366
Phone: 206/895-4969
Fax: 206/895-4925

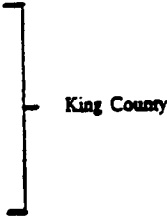
Rob Odle
City of Bellevue
P.O. Box 90012
Bellevue, WA 98009-9012
Phone: 206/455-6880
Fax: 206/637-7115

Craig Larsen
King County
506 2nd Ave., Room 1108
Seattle, WA 98104
Phone: 206/296-8687
Fax: 206/296-8686

Marc Krandal
Snohomish County
3000 Rockefeller Ave.
Everett, WA 98201
Phone: 206/388-3670
Fax: 206/388-3313

Mary Lou Block (Alt. for Marc Krandal)
Snohomish County
3000 Rockefeller Ave.
Everett, WA 98201
Phone: 206/388-3945
Fax: 206/388-3434

Rob Jenkins
2401 S. 35th St., Room 228
Tacoma, WA 98409
Phone: 206/591-3667



Other Stakeholders (Additional to be determined)

Tom Seenger
Washington Transportation Policy Institute
600 University St., Suite 1200
Seattle, WA 98101
Phone: 206/389-7305
Fax: 206/389-7288

Neil Bennet
Air Transport Association
8939 Sepulveda Blvd., Suite 408
Los Angeles, CA 90045
Phone: 310/670-5183
Fax: 310/337-7326

Edward J. Haeseker (Alt. for Neil Bennet)
Alaska Airlines
P.O. Box 68900
Seattle, WA 98168-0900
Phone: 206/433-6874
Fax: 206/433-6838

Peter Hurley
Washington Environmental Council
1100 Second Ave. Suite 102
Seattle, WA 98101
Phone: 206/622-8103
Fax: 206/527-1693

Smart Creighton
Regional Commission-Airport Affairs
801 SW 174th St.
Normandy Park, WA 98166
Phone: 206/248-7603

Frank Osburn
Regional Commission-Airport Affairs (Alt.)
1122 SW Normandy Terrace
Normandy Park, WA 98166
Phone: 206/243-8624

Bob Olander
Airport Communities Coalition
21630 11th Avenue South
Des Moines, WA 98198
Phone: 206/878-4595
Fax: 206/870-6540

Bob Stahl
Save our Communities
13712 65th Place W.
Edmonds, WA 98026
Phone: 206/743-4024

Chris Miske
Air Washington
600 University St., Suite 1200
Seattle, WA 98101-3186
Phone: 206/389-7271
Fax: 206/389-7288

(Additional to be determined)

Airport Managers Association
Airport Users

PSRC/AR 017404

AR 038686

Major Supplemental Airport Feasibility Study (MSA) - Phase I

Final Public Comment Summary Report

September 8, 1994

I. TOTAL NUMBER OF CALLS AND LETTERS

Since the end of July when the Working Group's recommendation of six sites was announced to the public, calls and letters to the MSA Hotline and Post Office Box have increased dramatically. From the beginning of Phase I of this feasibility study, all calls and letters have been summarized in a log of public comments, and all calls have been recorded on tape. A summary of these comments and copies of letters have been provided to TAMS Consultants, the Working Group, and the Regional Council's Policy Boards and Executive Board for consideration during this phase of the study.

This report contains comments from July 21st to August 30th¹, which includes the formal public review period beginning August 1st. From early April to July 20th, all calls and letters were responded to with a letter from the Puget Sound Regional Council (PSRC). After July 20th, each person who commented was sent a public review packet from PSRC; and during the formal public review period from August 1 to August 15, new callers and letter writers were sent public review packets. After August 15, due to the heavy volume of calls and letters during the formal public review process, public review packets were only sent to individuals who specifically requested information in writing. Everyone who has commented during this process has been included on the mailing list for PSRC's monthly newsletter, *Regional VIEW*. The log of public comments, all tape recorded calls, and copies of all letters, are available in the Regional Council Information Center.

In addition to the calls and letters mentioned in this summary, three major petitions have been delivered to the Regional Council: 1,200 signatures opposing the Arlington MSA site; 6,000 signatures opposing the Bothell/Mill Creek MSA site; and 10,000 (estimated) signatures opposing the Redmond/Woodinville/Duvall MSA site. These signatures are not reflected in this summary report.

Table 1: Total number of calls and letters

	<i>As of April 15</i>	<i>April 15 to May 20</i>	<i>May 20 to July 1</i>	<i>July 2 to July 20</i>	<i>July 21 to August 30</i>	TOTAL
Number of calls	48	91	401	407	4405	5352
Number of Letters ²	4	2	58	367	6352	9765

¹ Please note: Table 1 includes all letters and calls received through August 30th. In order to prepare this final report for the September 8th meeting, Tables 2-4 do not include a final batch of letters received by August 30th.

² Includes response forms prepared by community groups. The use of these forms increased substantially after July 21. Airport opinion forms account for approximately 60% of all correspondence received.

Prepared by Pacific Rim Resources
page 1

PSRC/AR 017405

AR 038687

II. PROFILE BY CITY

Calls and letters have been received from diverse geographic locations around the Puget Sound region. To date the majority of calls and letters come from communities where an MSA site is proposed. After the July 29, 1994, Working Group meeting when the six sites were recommended, the majority of comments came from the Redmond/Duvall area.

Table 2: Total calls and letters by city of residence

City	<i>Calls/letters as of April 15, 1994</i>	<i>Calls/letters April 15 to May 20, 1994</i>	<i>Calls/Letters May 20 to July 1, 1994</i>	<i>Calls/Letters* July 2 to July 20, 1994</i>	<i>Calls/Letters* July 21 to August 30, 1994</i>
Alderwood	-	-	-	2	-/1
Arlington	-	1	17/2	9/1	179/158
Auburn	-/1	3/1	1	-	0/3
Bellevue	6	5	6	-	23/65
Bellingham	-	-	1	-	-
Bothell	1	1	18	57/22	159/222
Bremerton	-	1	-	-	-
Burien	-	1	2	-	64/13
Camano Island	-	-	3	-/1	11/2
Carnation	-	-	2	-	54/147
Clyde Hill	-	1	-	-	-
Colbert	-	-	1	-	-
Coupeville	-	2	-	-	-
Des Moines	-	4	7	1/1	88/44
Duvall	1	-	6	4	128/199*
Eatonville	-	-	2	1	9/1
Edmonds	2	-	3	1/1	6/6
Enumclaw	-	1	-	-	1/0
Everett	-	1	23	37/7	125/234
Fall City	-	2	1	-	5/15
Federal Way	1	3	4	1	60/15
Graham	-	-	1	-	-
Granite Falls	-	-	3	2	7/6
Gig Harbor	1	-	-	-	0/1
Issaquah	-	2	3	-	108/108
Kent	-	6	4	-	13/17
Kirkland	-	1	3	-	32/48
Lake Stevens	-	-	49/2	7/2	166/79
Lynnwood	2	-	3	3/3	15/15
Maple Valley	-	-	2	1	0/1
Marysville	-	-	17/1	7/2	260/113
Mercer Island	-	1	1	-	5/4
Mill Creek	-	-	25/48*	182/312*	223/647*

<i>City</i>	<i>Calls/letters as of April 15, 1994</i>	<i>Calls/letters April 15 to May 20, 1994</i>	<i>Calls/Letters May 20 to July 1, 1994</i>	<i>Calls/Letters* July 2 to July 20, 1994</i>	<i>Calls/Letters* July 21 to August 30, 1994</i>
Mukilteo	-	1	-	1	4 / 2
Monroe	-	-	15	12 / 1	140 / 162
Normandy Park	2	-	4	1 / -	13 / 4
Oak Harbor	-	1	1	-	-
Olympia	3 / 1	1	2	1 / 1	0 / 1
Out of state	1	1	1	-	-
Puyallup	1	-	-	1	1 / 2
Redmond	1	4	20 / 1	19 / 2	1068 / 1056*
Renton	-	2	-	-	4 / 7
Roy	-	-	1	-	0 / 1
Royal	-	-	-	1	-
Sea-Tac	1	5	-	- / 1	-
Seattle	18 / 2	21 / 1	23	- / 1	224 / 109
Silverdale	-	1	-	-	-
Snohomish	2	1	61 / 3	32 / 6	186 / 395
Snoqualmie	-	1	1	-	1 / 2
Spanaway	-	-	2	-	2 / 0
Stanwood	-	-	14	1 / 1	43 / 11
Tacoma	-	-	2	4 / 1	15 / 6
Vashon	1	1	-	-	- / 1
Waldron	-	1	-	-	-
Woodinville	-	3	15 / 1	17	519 / 838*
No address	2	10	28	14	444 / 481*

*Includes "airport opinion forms"

The letters included a variety of "airport opinion forms" distributed to citizens by community organizations. An example of each form is included in Appendix A. A majority of the written comments received from July 21 to August 30 used these formats.

III. TYPES OF COMMENTS

From the beginning of Phase I through July 20, 1994, all comments were coded into categories listed in Table 3. When a comment fell into more than one category, it was counted more than once. The first number listed in each box of Table 3 represents comments received on the hotline; and the second represents comments from letters or forms sent to the Regional Council. Where there is only one number, it represents comments from the hotline.

The numbers in the tables reflect general feelings and trends and should be qualified for several reasons. Many people duplicated efforts with numerous calls and letters. Often, members of the same family (or one person) sent identical letters. Others sent the same letter to more than one destination such as a Working Group member and the Regional Council as well as the Regional

Council. In addition, several community organizations created flyers or post cards which were distributed to residents who had only to sign a post card and mail it in. These "form letters" or "airport opinion forms" have the same representation in this summary as a three-page letter from a concerned citizen.

Table 3: Types of Comments on the MSA Study from early April to July 20, 1994

<i>Category</i>	<i>Comments as of April 15, 1994</i>	<i>Comments from April 15 to May 20, 1994</i>	<i>Comments from May 30 to July 1, 1994</i>	<i>Comments from July 2 to July 20, 1994</i>
Request for specific study information	8 / 1	21	97 / 2	111 / 2
Comment on sites and/or criteria	18 / 3	5 / 1	301 / 15	5 / 1
Site specific comments:				
Stanwood				1 / 3
Arlington				9 / 7
Marysville West				2 / 1
Marysville East				12 / 2
Bothell/Mill Creek				271 / 335
Duvall				21 / 18
Redmond				22 / 5
Lake Sawyer				-
Enumclaw				-
McChord				4 / 4
Fredrickson				-
Tanwax Lake				1
Paine Field				27 / 14
All Snohomish County Sites				15 / 3
Comment on third runway	4	23	32 / 1	14 / 4
Comment on study in general	2	5 / 1	25 / 1	3 / 1
Mention source of information	0	14	13	
Media coverage				1
Newsletter/ Flyer/ Advertisement				3
Environmental Impact				39 / 32

To accommodate the volume of calls after July 21, comments in Table 4 were coded by "opposed to" or "in favor of" a site, reasons why they were opposed to or in favor of a site, and general comments regarding the sites or study. Table 4 includes the number of comments by site; it does not differentiate between a telephone comment, form letter or letter.

Table 4: Comments by Site from July 21-August 30 (to be updated for 9/8 meeting)

Site	Support	Opposed
Starwood	5	40
Arlington*	86	584
Marysville West	35	300
Marysville-East*	40	658
Bothell/Mill Creek	4	1443
Duvall*	18	5075
Redmond*	17	4963
Lake Sawyer	1	3
Enumclaw	4	0
McChord*	1500	26
Fredrickson	0	2
Tanwax Lake*	7	13
Paine Field	1970	30
All Snohomish County Sites	15	105
Sea-Tac Airport Expansion	982	655
MSA in general	441	141

*site recommended by Working Group at July 29, 1994, meeting

The reasons people gave for being in favor of or opposed to sites can be summarized as follows:

- All comments opposing a particular site cited the impact to their quality of life - increased noise, decreased property values, infiltration of undesirable businesses, etc.
- People referring to the Arlington site feel they have enough noise to deal with currently, and oppose the change of lifestyle and the impact an MSA would have on the small planes and gliders currently at Arlington Airport; residents feel like they have opposed this expansion before and are frustrated that they need to do it again.
- Until the Mill Creek/Bothell site was not recommended, a great majority of people were calling and writing in opposition to this location. Community organizations were developed and several forms were created to which people could sign their name to oppose the site. Reasons for opposition were many, including:
 - ◊ Impact to schools in area
 - ◊ Impact to rural character of area - impact to quality of life, disregard for GMA, RTA and community plans
 - ◊ Environmental impacts - wildlife (pileated woodpecker), salmon streams
 - ◊ Relocation of major power lines would be costly

- After the 6 sites were recommended, a great majority of people began calling and writing letters in opposition to the Redmond and Duvall sites. The majority of people grouped the two sites together and responded to both as one. Frequent reasons they opposed these sites included:
 - ◊ Impact to rural character of area - impact to quality of life, disregard for GMA and community plans
 - ◊ Impact to environment - wetlands, wildlife, aquifer
 - ◊ Insufficient infrastructure - current traffic congestion
 - ◊ Safety factor - convergent zone
 - ◊ Cost factor - added cost of additional infrastructure, mitigation for expensive homes, loss of large tax base
- Residents of Redmond and Duvall mention the large tax base that area's residential area brings to the state and don't believe the economic gain from the airport would outweigh the loss of the tax base.
- Alternate sites suggested include: Boeing Field/King County Airport, Paine Field, Fort Lewis, Moses Lake, Bellingham, or siting an airport in Eastern Washington. Reasons why people support utilizing an existing airport were generally based on cost effectiveness, less impact to surrounding area, and awareness of surrounding residents. Many people felt Eastern Washington would welcome the economic boost.
- It was common for people to suggest a combination of existing airports including McChord, Paine Field, Ft. Lewis or Sea-Tac as the best options for an MSA.
- In general, opposition to an MSA site included the fact that the proposed MSA sites were not far away from Sea-Tac and as a result many suggested siting the MSA further north to draw traffic away from congested areas and accommodate growing areas in the north.
- Many people questioned the need for a new airport, suggesting that Sea-Tac could be run more efficiently or that the airport did not appear to be overwhelmingly congested. A few people mention that perhaps air travel will not grow as expected, with increased technology providing other alternatives such as high speed rail.
- Opposition to the third runway includes the belief that the third runway is a temporary fix that would involve spending unnecessary money, noise should be spread out among other areas/counties.
- Those supporting the expansion of Sea-Tac or an existing airport are primarily responding to the possibility of an MSA in their area.
- Most people indicated they would not mind driving considerable distance to an airport if it meant sparing rural communities.
- Most people opposing a recommended MSA site indicated they feel an existing site would be much less expensive (a better use of their tax dollars) and the impact to areas surrounding an

existing facility would be far fewer in comparison to creating a whole new site. There was an unwillingness by people to pay the high cost for building infrastructures in more rural areas, buying out expensive homes, etc., in addition to the airport cost. People indicate they have already paid for many airports in the region which are not being used efficiently or to capacity.

- People state they are aware that air carriers are opposed to an MSA, and that the FAA opposes some sites.
- Numerous comments were made regarding local jurisdictions and personal compliance with planning (GMA, etc.) and zoning regulations, while the Regional Council would override this regulation with an MSA. To many, an airport placed in a rural area seemed to be in direct conflict with growth management. Some people even suggested limiting growth by not taking action on a new or expanded airport.
- A common complaint was the impact to property values. Many people felt they paid an exorbitant amount for their home with the understanding the area was zoned rural. Other people, they pointed out, purchased homes for a far cheaper price, knowing an airport already existed.
- Many environmental concerns were cited including noise, impact to endangered species, impact on aquifers and water quality, and air pollution.
- Safety was another concern mentioned by citizens; this includes concern for oil spills, plane crashes, interference with existing flight patterns, concern for poor weather/existing convergence zones, etc.
- Many people mentioned that they moved to these rural areas to avoid the traffic congestion, noise and crime an airport would bring.
- A large number of people object to the market draw of an MSA site being a more important criteria than the impact an MSA would have on people.