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APPENDIX C-4

CONSTRUCTION IMPACTS REPORT

I. EXECUTIVE SUMMARY

This Technical Report documents the additional analysis performed to supplement the Final EIS review of potential construction activities associated with the Master Plan Update improvements. These include the construction of a Third Runway and associated projects, improvements to the Runway Safety Areas (RSA), and transport of the fill requirements for the South Aviation Support Area (SASA).

Since publication of the Final EIS, new information has arisen concerning the following construction activities:

- Third parallel runway haul duration- the Final EIS analyzed a three (3) year haul, with the runway being available for use in the year 2000. This Supplemental EIS analyzes a five (5) year haul, with the runway available for use late in the year 2004. The peak hauling period would occur in the year 2000, with the haul completed in the year 2002. The lengthening of the haul duration could reduce the number of average daily truck trips.

- Additional haul routes have been identified- the Final EIS examined the primary haul routes that are anticipated to be used. Based on further examination, several additional routes were identified.

- Examination of two temporary interchanges- in addition to the identification of additional haul routes, two temporary, construction only, interchanges were identified: State Route 518 near 20th Avenue South, and State Route 509 near South 176th Street.

Based on preliminary engineering work, the 8,500 Foot Third Runway option is estimated to require a total fill requirement of 17.25 million cubic yards (MCY) of material[1]. Fill requirements for the other Master Plan Update activities occurring between 1997 and the year 2005 in combination with the Third Runway requirements would total 20.56 MCY.

Out of date
Too low
Ref 1994 in = instead of 1997 numbers

The fill requirements needed to construct the proposed Master Plan Update facilities would be met from either material excavated near the Third Runway site (common excavation), development of material sources located on adjacent Port of Seattle property (on-site sources), or material sources located within the Puget Sound region (off-site sources).

Truck volumes analyzed in this supplemental analysis have been reduced from the levels analyzed in the Final EIS, as a result of new information and as a result of the longer construction haul. This reduction is particularly significant for off-site truck traffic and is due to changes in several major conditions of the construction activities contained in the first phase of

[1] P&D Aviation, Technical Report # 6, Airside Options Evaluation, September, 19, 1994, p. 5-18

the Master Plan Update. Those changed conditions are summarized in **Table C-4-1** and are discussed further in Section II of this report.

Between 2.9 and 3.1 million MCY of common excavation material is available from earthwork within the Airfield Operations Area. Potential material sources considered in this report include six (6) on-site sources and 18 off-site sources. On-site material location and availability is outlined in **Table C-4-2**. Truck traffic necessary to haul the required fill material from off-site sources is estimated to add between 544 and 1,408 truck trips a day to the area roadway system, depending on the volume of material available from the on-site material sources. **Table C-4-3** outlines the derivation and haul assumptions that calculate off-site truck traffic. Off-site material sources are displayed in **Exhibit C-4-1**. On-site truck trips are calculated to average between 0 and 1,056 trips per day, but are anticipated to use haul routes on Port of Seattle property to the greatest extent possible. **Table C-4-4** outlines the derivation and haul assumptions that calculate the on-site truck traffic.

Off-site truck trips would average between 26 and 66 trucks per hour, per direction, with peaking adjustments. These additional truck trips could result in some deterioration in level of service and traffic flow on certain routes where background levels of congestion are near or exceed roadway capacity, and where extended grades exist. However, a reduced level of airport-related construction truck traffic would result in less roadway congestion than the maximum volumes examined in the Final EIS.

II. CHANGED CONDITIONS FROM FINAL EIS

Several conditions and assumptions have changed from those analyzed in the Final EIS. These changes are described in the following section.

A. On-Site Material Availability

Potential on-site material sources were identified in the Third Runway Preliminary Engineering Report[2] as sources of embankment fill material. In the Draft EIS and the Final EIS, two alternative scenarios were analyzed:

- Option 1, Minimum use of on-site sources- As noted in the Final EIS, use of some on-site fill would require impacts to wetlands. If such impacts are not permitted, the use of off-site material must be maximized.

- Option 2, Maximum use of on-site sources- Port of Seattle owned land in the immediate airport vicinity could provide over 50 percent of needed material. If permitted, the maximum on-site usage would result in the least amount of off-site material, and as a result in the least amount of off-site truck traffic.

[2] HNTB, Preliminary Engineering Report, Volume 2, March 31, 1994, Appendix 1, p. 6-13, Table 3

TABLE C-4-1

SUMMARY COMPARISON OF CHANGED ASSUMPTIONS FROM MASTER PLAN UPDATE FINAL EIS

Description	Master Plan Update Final EIS		Supplemental EIS	
	Option 1	Options 2	Option 1	Option 2
Construction Assumptions				
Haul Duration	3.0 Years	3.0 Years	5.0 Years	5.0 Years
Total Material Required	23.64 MCY	23.64 MCY	23.64 MCY	23.64 MCY
Common Excavation	2.9 MCY	3.1 MCY	2.9 MCY	3.1 MCY
On-Site Material	0.0 MCY	8.0 MCY	0.0 MCY	12.35 MCY
Off-Site Material	20.74 MCY	12.54 MCY	20.74 MCY	8.19 MCY
On-Site Truck Traffic, One Direction				
Hourly Average	0 vph	36 vph	0 vph	33 vph
Hourly with Peaking	0 vph	54 vph	0 vph	50 vph
Two-Way Daily	0 vph	1,152 vpd *	0 vph	1,056 vpd
Off-Site Truck Traffic, One Direction				
Hourly Average	44 vph	73 vph	17 vph	44 vph
Hourly with Peaking	66 vph	109 vph	26 vph	66 vph
Two-Way Daily	1,408 vph	2,336 vpd	544 vph	1,408 vpd
On-Site Construction Employees				
Employees per shift	35	107	35	107

* Incorrectly calculated as 1,732 in Final EIS.

vph - vehicles per hour
vpd - vehicles per day

Source: INCA Engineers, January 1997.

Compacted construction amounts are 2. NOT Haul Volumes so grossly underestimate no of trucks

TABLE C-4-2

FILL MATERIAL AVAILABILITY AND REQUIREMENTS

Fill Available

On-Site Borrow Source	Available On-Site Fill (Million Cubic Yards) Minimum	Maximum
Area 1	0.00	6.60
Area 2	0.00	0.65
Area 3	0.00	2.90
Area 4	0.00	2.20
Area 5	0.00	0.00
Area 8	0.00	0.00
Subtotal	0.00	12.35
Common Excavation	2.90	3.10
Total Fill Available	2.90	15.45

Fill Requirements

Master Plan Update Construction Activity	Total Fill Requirements (Million Cubic Yards) In-Place	adjusted
8,500 Foot Runway	17.25	19.84
RSA Improvements	0.98	1.13
Relocation of S 154th Street	0.13	0.14
SASA Facilities	2.20	2.53
Runway 34R Extension	2.40	2.76
Total Fill Required	22.96	26.40

* Volumes increased 1.15 for construction placement shrink/swell

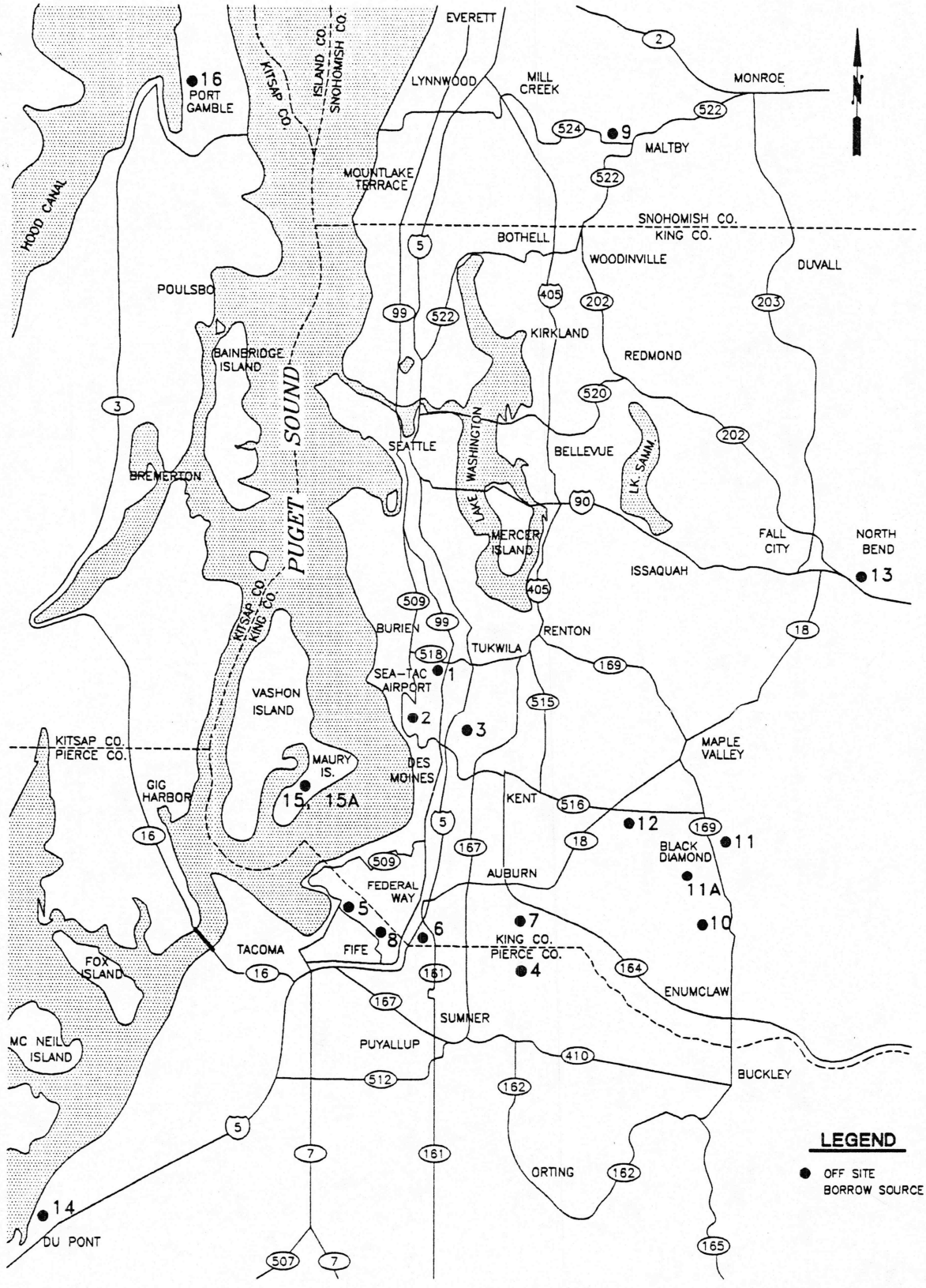
Source: Port of Seattle and HNTB.

TABLE C-4-3

OFF-SITE CONSTRUCTION HAUL TRUCK VOLUMES

		OPTION 1 Minimum On-Site Use	**OPTION 2** Maximum On-Site Use
A.	Total Fill Required (MCY)	20.56	20.56
B.	Adjustment for Shrink/Swell (*A* x 1.15)	23.64	23.64
C.	On-Site Sources and Common Excavation	2.90	15.45
D.	Required Import (*B* - *C*)	20.74	8.19
E.	Number of Years	5.0	5.0
F.	Days per Year	270	270
G.	Hours per Day	16.0	16.0
H.	Total Haul Hours (*E* x *F* x *G*)	21,600	21,600
I.	Truck Capacity	22.0	22.0
J.	Average Trucks per hour/per direction ([*D*/(*H* x *I*)])	44	17
K.	Adjustment for Peaking Conditions (*J* x 1.5)	66	26
L.	Average Trucks per Day (*J* x 2 x 16)	1,408	544

Source: INCA Engineers, January 1997.



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MASTER PLAN UPDATE
ENVIRONMENTAL IMPACT STATEMENT

REGIONAL VICINITY MAP & OFF-SITE MATERIAL SOURCES
EXHIBIT C-4-1

TABLE C-4-4

ON-SITE CONSTRUCTION HAUL TRUCK VOLUMES

		OPTION 1 Minimum On-Site Use	OPTION 2 Maximum On-Site Use
A.	Total Fill Available (MCY)	0	12.35
B.	Number of Years	0	5.0
C.	Days per Year	0	210
D.	Hours per Day	0	16
E.	Total Haul Hours (*B* x *C* x *D*)	0	16,800
F.	Truck Capacity	0	22.0
G.	Average Trucks per hour/per direction ([*A*/(*E* x *F*)])	0	33
H.	Adjustment for Peaking Conditions (*G* x 1.5)	0	50
I.	Average Trucks per Day (*G* x 2 x 16)	0	1,056

Source: INCA Engineers, January, 1997.

These alternatives were developed to establish a range of conditions and impacts for analysis. Since the Final EIS was completed, the Port of Seattle has revised its assumptions regarding on-site sources. The revised volumes of fill material are listed in **Table C-4-2.** The potential use of on-site material analyzed in this supplemental analysis represents a 4.35 MCY increase over the maximum amount considered in the Final EIS. The significant changes from the Final EIS are that the maximum expected fill from on-site Source 1 has been increased from 0.5 MCY to 6.6 MCY, and that on-site Source 5 has been reduced from 1.75 MCY to 0 MCY. On-site material sources are displayed in **Exhibit C-4-2.**

B. Timeframe and Haul Duration

The Final EIS analyzed the construction impacts associated with Master Plan Update improvements to be constructed in the first phase, as occurring between 1996 and the year 2000. Construction activities associated with the Third Parallel Runway are now planned to occur between 1997 and the year 2005. The embankment haul process is now expected to begin in 1997 and last until the year 2002, a five year duration. The change in haul duration from three years to five years could result in a 40 percent reduction in the hourly truck volumes over those considered in the Final EIS.

C. Additional Routes

The Final EIS identified haul routes thought most likely to be used by haul trucks from the 18 identified off-site material sources, considering several factors including background congestion, roadway classification, and adjacent land use.[3] The off-site sources and highway/arterial network are displayed in **Exhibit C-4-1**. Since the completion of the Final EIS, the Port of Seattle has conducted an additional study of alternative conveyance methods and routes that might be used to transport the required fill material. This study further analyzed methods and corridors identified in the Final EIS for transport.[4] This additional study verified that the most feasible method of transporting off-site material to the construction sites was by trucks from regional material sources, or by a barge-truck combination using the Duwamish-State Route 509 corridor.[5] This study also identified additional airport vicinity haul routes.[6]

Potential access points to the Third Runway construction area and South Aviation Support Area (SASA) construction area are displayed in **Exhibit C-4-2**. Airport vicinity haul routes previously considered and new routes identified by the Alternative Delivery Study are also displayed in **Exhibit C-4-2** and are further described as follows:

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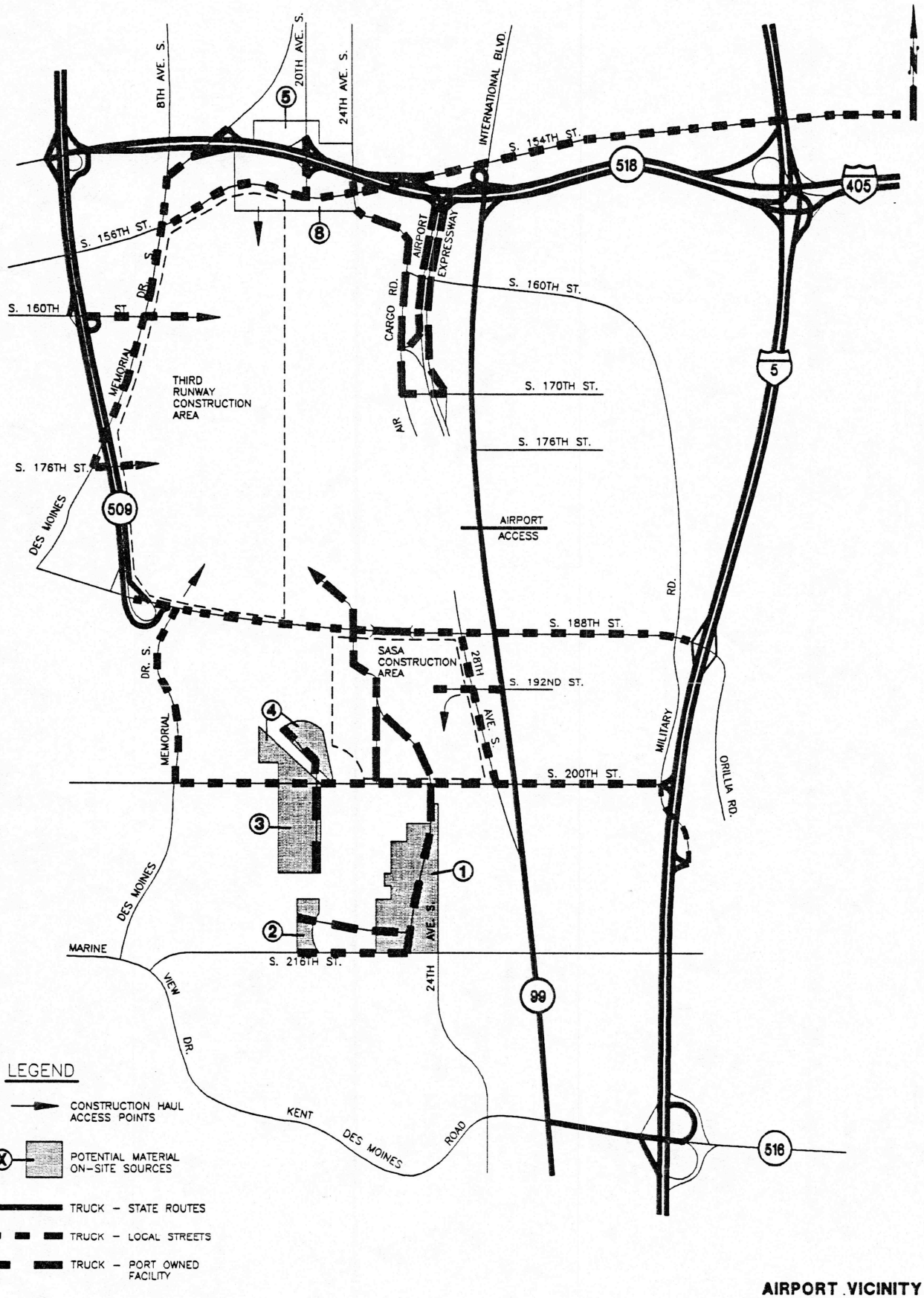
3 Seattle-Tacoma International Airport Master Plan Update EIS, February 1, 1996, Section 23, Tables IV 23-2 and IV 23-3.

4 Seattle-Tacoma International Airport Master Plan Update EIS, February 1, 1996, Section 23, B-2, p. IV 23-4

5 HNTB, Fill Material Alternative Delivery Method Study for Third Runway, Phase 1, November, 1996, p. ES 5, ES-6

6 HNTB, Fill Material Alternative Delivery Method Study for Third Runway, Phase 1, November, 1996, p. 37 and 38, Figures 4 and 7



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MASTER PLAN UPDATE
ENVIRONMENTAL IMPACT STATEMENT

AIRPORT VICINITY HAUL ROUTES

EXHIBIT C-4-2

Off-Site Haul Routes - Third Runway Embankment

Route 1 State Route 518, Airport Expressway, Air Cargo Road, South 156th Street

Route 1A State Route 518, to 20th Avenue South, Temporary Construction Access**

Route 2 State Route 518, Des Moines Memorial Drive South, South 156th Street

Route 3 State Route 518, Des Moines Memorial Drive South, South 160th Street

Route 4 State Route 518, State Route 509, South 160th Street

Route 4A State Route 518, State Route 509, South 176th Street, Temporary Construction Access**

Route 5 State Route 518, International Boulevard / State Route 99, South 188th Street, Starling Drive

Route 6 State Route 509, State Route 518, Airport Expressway, Air Cargo Road, South 156th Street

Route 7 State Route 509, South 160th Street

Route 7A State Route 509, to South 176th Street, Temporary Construction Access**

Route 8 State Route 509, South 188th Street, Starling Drive

Route 9 Interstate 5 (from North), South 188th Street, Starling Drive**

Route 10 Interstate 5 (from South), South 188th Street, Starling Drive**

Route 11 Interstate 5 (from South), South 200th Street, International Boulevard / State Route 99, South 188th Street, Starling Drive**

Route 12 Interstate 5 (from South), Kent-Des Moines Road / State Route 516, International Boulevard / State Route 99, South 188th Street, Starling Drive**

Route 13 South 154th/156th Street, Southcenter Boulevard, Southwest Grady Way**

Off-Site Haul Routes - SASA Development

Route 14 State Route 518, International Boulevard / State Route 99, South 192nd Street**

Route 15 State Route 509, South 188th Street, 28th Avenue South, South 192nd Street

Route 16 Interstate 5 (from North), South 188th Street, 28th Avenue South, South 192nd Street**

Route 17 Interstate 5 (from South), South 188th Street, 28th Avenue South, South 192nd Street**

Route 18 Interstate 5 (from North), South 200th Street, 28th Avenue South, South 192nd Street**

Route 19 Interstate 5 (from South), South 200th Street, 28th Avenue South, South 192nd Street**

Route 20 Interstate 5 (from South), Kent-Des Moines Road / State Route 516, International Boulevard / State Route 99, South 192nd Street**

On-Site Haul Routes

A South 200th Street, Des Moines Memorial Drive South, Starling Drive

B South 200th Street, Golf Course Access

** Route not considered in the Final EIS.

Public Roads for on-site haul

D. Material Transfer Sites for Barge/Rail-Truck Conveyance

The Alternative Delivery Method Study considered potential locations for material transfer sites along the Duwamish Waterway. The potential sites considered are displayed in **Exhibit C-4-3**. No specific barge material site has been selected. However, the sites described as most likely for use are several private operations, as well as Port facilities at T 105, T 115 and T 106 W-CFS.[7] Sites T 2 and T 18 are also considered potential sites but would require crossing congested intersections with Southwest Spokane Street. Sites T 106 W-CFS and T 18 would most likely use East Marginal Way to access State Route 509. East Marginal Way has existing congestion at the intersections with 1st Avenue South and at South Michigan Street.[8]

Sites T 105 and T 115 are considered better sites due to their location south of Southwest Spokane Street and along West Marginal Way, a multi-lane arterial in very good condition with light to moderate traffic volumes. Access to and from State Route 509 is direct, by ramp or by way of the Cloverdale interchange. The section of State Route 509 south of West Marginal Way currently operates at LOS E and is predicted to be LOS E in the year 2015.[9] The steepest grade along State Route 509 occurs north of the Glendale interchange, where there are three southbound lanes, providing a climbing lane for southbound trucks.

A potential rail-truck route has been identified which would use Southwest Grady Way to Southcenter Boulevard to South 154th/156th Street to access the construction site (Route 13). The potential transfer site is not located at this time, but truck traffic would access Southwest Grady Way between State Routes 167 and 181. Do-Nothing peak hour level of service at major intersections are E and F, but are not significantly impacted by haul traffic. Due to the background conditions, haul traffic would need to either avoid this corridor during peak periods, both AM and PM, or be reduced in volume. Street use or truck route permits may be required for the use of these locations as material transfer sites from the cities of Seattle, Renton, Tukwila, and SeaTac.

how can traffic NOT be significa impacte

E. Other Area Major Construction Projects

Several roadway projects are under active construction, or are planned for construction by the year 2005, which may affect haul routes or traffic control. These future projects include:

- Interstate 5 (WSDOT, 1996-1998) - Construct HOV and truck climbing lanes from Pierce County line to Tukwila. The reconstruction of the Interstate 5 and State Route 518/Interstate 405 interchange is currently under construction.

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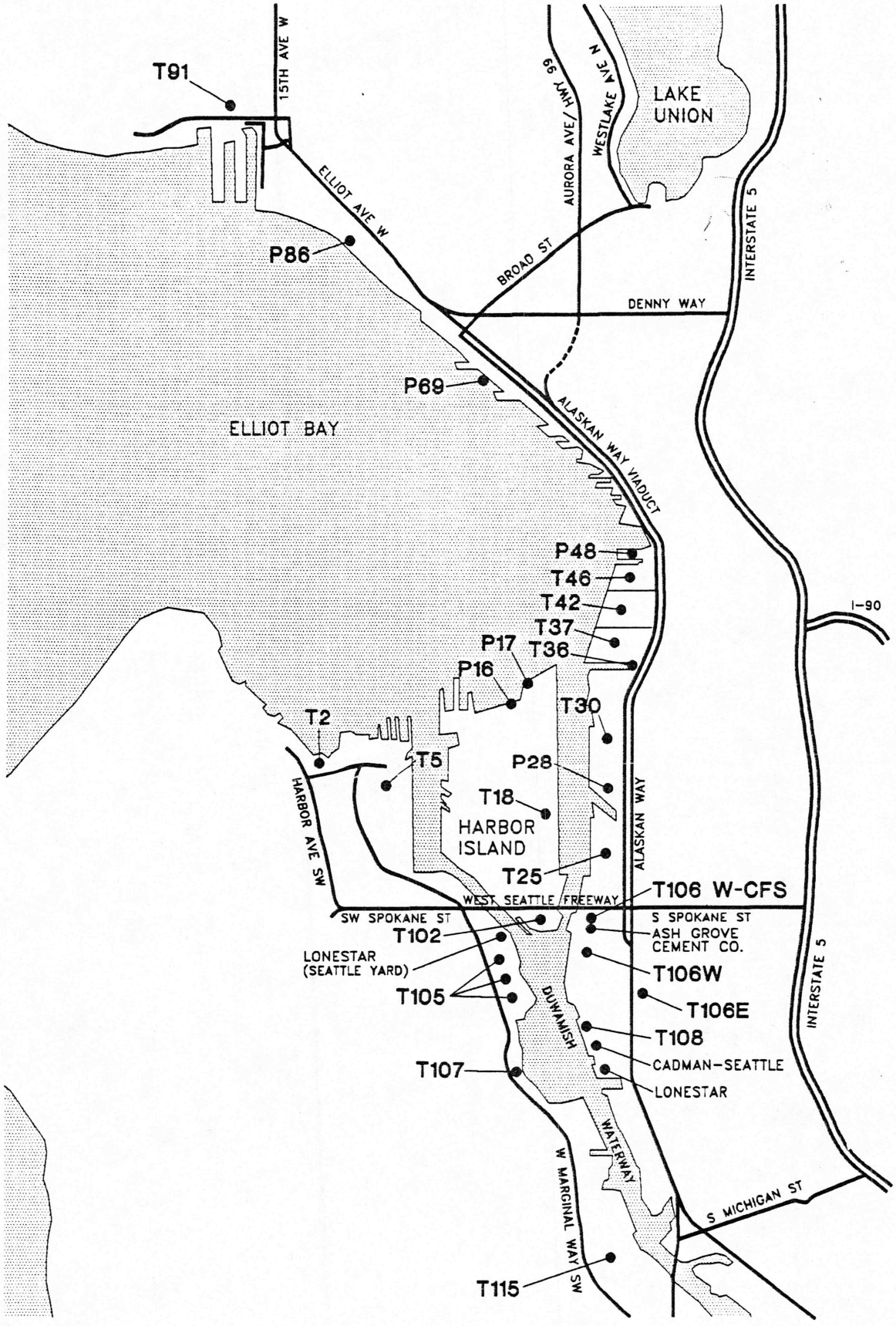
7 HNTB, Fill Material Alternative Delivery Method Study for Third Runway, Phase 1, November, 1996, p. 18-20

8 Final Environmental Impact Statement, First Avenue South Bridge: SR 99 Crossing the Duwamish River, April, 1993, Table 3.2-4

9 Final Environmental Impact Statement, First Avenue South Bridge: SR 99 Crossing the Duwamish River, April, 1993, Table 3.2-4 and Table 3.2-9



SOURCE: HNTB ALTERNATIVE DELIVERY STUDY, NOVEMBER 1996.

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ENVIRONMENTAL IMPACT STATEMENT

POTENTIAL BARGE TRANSFER LOCATIONS
EXHIBIT C-4-3

- South 200th Street (City of SeaTac, 1995-1997) - Widen roadway to 3 or 5 lanes with an urban cross-section: International Boulevard / State Route 99 to Des Moines Memorial Drive South.
- International Boulevard / State Route 99 Phase II (City of SeaTac, 1995-1997) - Widen roadway to 6 lanes (4 general purpose lanes, one southbound HOV lane, and one two-way left-turn lane): South 188th Street to South 200th Street.
- South 188th Street (City of SeaTac, 1995-1997) - Widen roadway to extend the eastbound right-turn lane from International Boulevard / State Route 99 to west of 28th Avenue South.
- South 154th Street and 24th Avenue South (City of SeaTac, 1996-1998) - Reconstruct and widen intersection.
- Military Road South and South 200th Street / Southbound Interstate 5 Ramps (City of SeaTac, 1996-1998) - Reconstruct and widen intersection to provide a left-turn lane on the westbound approach, and a three lane (left, through, right) eastbound approach.
- Military Road South and Northbound Interstate 5 Ramps (City of SeaTac, 1996-1998) - Install traffic signal at intersection.
- Des Moines Memorial Drive South, South 188th Street to South 192nd Street, (City of SeaTac, 1997-1999) - Reconstruct and Widen roadway to 36 feet.
- Des Moines Memorial Drive South, State Route 518 to South 156th Street, (City of SeaTac, 2000-2002) - Reconstruct and widen roadway to 36 feet.
- Des Moines Memorial Drive South and South 188th Street, (City of SeaTac, 2000-2002) - Reconstruct intersection to provide an eastbound right-turn lane and dual northbound left-turn lanes.
- Des Moines Memorial Drive South and South 200th Street, (City of SeaTac, 2000-2002) - Reconstruct and widen intersection to provide left-turn channelization on all approaches and a right turn lane on the westbound approach.
- South 154th Street, State Route 518 Off-Ramp to 24th Avenue South.(City of SeaTac, 2000-2002) - Reconstruct and widen roadway to 36 feet..
- Air Cargo Road and South 160th Street (City of SeaTac, 2003-2005) - Install traffic signal at intersection.
- Des Moines Memorial Drive South, South 194th Street to South 208th Street, (City of SeaTac, 2003 - 2005) - Reconstruct and Widen roadway to 36 feet.
- Des Moines Memorial Drive South, South 156th Street to City Limits, (City of SeaTac, 2003-2005) - Reconstruct and Widen roadway to 36 feet.
- South 170th Street and Northbound Airport Expressway Ramps (City of SeaTac, 2000-2002) - Install traffic signal at intersection.
- Air Cargo Road and Southbound Airport Expressway Ramps (City of SeaTac, 2000-2002) - Install traffic signal at intersection.
- Air Cargo Road and South 160th Street (City of SeaTac, 2003-2005) - Install traffic signal at intersection.

Haul traffic for the Third Runway may affect the construction on these, depending on the haul route chosen.

III. HAUL ROUTE ANALYSIS

A. Regional System Level of Service Analysis

Analysis conducted by the Final EIS for both minimum and maximum off-site truck traffic found that varying impacts to the regional transportation network were predicted where background levels of congestion are near or exceed roadway capacity and where extended grades exist[10]. The minimum off-site truck traffic examined in the Final EIS corresponds to the maximum truck traffic now expected as a result of the changes to the Master Plan Update Improvement schedule discussed previously in this supplemental analysis. The year 2000 was used as the forecast year in the Final EIS analysis of the regional system, and is representative of conditions over a five year haul process occurring between the year 1997 and the year 2002. Year 2000 also is expected to be the peak year of construction activity associated with the Third Runway. The level of service results from that analysis are displayed in **Table C-4-5**. Significant impacts to regional system operating conditions are considered to occur where "Do-Nothing" conditions of LOS E or higher are degraded to LOS F, or further into LOS F as a result of construction haul traffic.

In the Final EIS there were six locations and 11 periods where LOS F was caused or increased by construction haul traffic. At the reduced volumes now expected, deterioration to LOS F or increased LOS F is predicted at 5 locations and 9 periods. These are:

- Interstate-5, Southbound between State Route 518 and South 188th Street, during the PM peak.
- State Route 18, Westbound between Interstate 5 and State Route 167 during all hours except the evening and night.
- State Route 167, Southbound between Interstate I-405 and Southwest 34th Street during the PM peak.
- Interstate 405, Northbound between State Route 167 and Interstate 5, during the AM and PM peak.
- Interstate 405, Southbound, between State Route 167 and Interstate 5, during the Midday and PM peak.

The analysis considered that at certain times, the construction truck traffic might peak, and exceed the average conditions, due to delays and random events which concentrate truck traffic. Therefore, a peaking factor of 1.5 was used (the average hour truck traffic levels were increased by 50% to account for peaking). Where LOS F or long delays are encountered or caused, it is anticipated that construction traffic will either avoid, be reduced in trip frequency, or be restricted entirely from peak congestion periods on certain routes.

[10] Seattle-Tacoma International Airport Master Plan Update Final EIS, February 1, 1996, Section 23, B-2, p. IV 23-4

TABLE C-4-5

REGIONAL SYSTEM LEVEL OF SERVICE SUMMARY SHEET

		1994					Haul Process 1997-2002														
		Existing Condition					"Do-Nothing" Without Const. Trucks					Final EIS Maximum Off-Site Haul*					Supplemental Max. Off-Site Haul**				
Facility Section		AM	MID.	PM	EVE	NIGHT	AM	MID.	PM	EVE	NIGHT	AM	MID.	PM	EVE	NIGHT	AM	MID.	PM	EVE	NIGHT
I-5	NB	E	D	D	B	A	E	D	E	B	A	E	D	E	C	B	E	D	E	C	B
(SR 518 to S 188th St.)	SB	D	E	F	D	A	D	E	F	D	A	D	F	F	E	B	D	E	F	D	B
SR 518	EB	C	C	D	B	A	C	C	E	C	A	D	D	E	C	A	C	D	E	C	A
(I-5 to SR 99)	WB	C	C	D	B	A	C	C	D	B	A	D	D	F	C	B	D	D	E	C	A
SR 518	EB	A	B	B	A	A	A	B	C	A	A	B	C	C	B	A	B	C	C	B	A
(SR 99 to SR 509)	WB	B	B	C	A	A	B	B	C	A	A	D	B	C	A	A	B	B	C	A	A
SR 18	EB	D	C	D	B	A	D	D	D	B	A	E	D	E	C	B	E	D	E	B	B
(I-5 to SR 167)	WB	F	E	F	B	B	F	F	F	C	B	F	F	F	E	E	F	F	F	D	D
SR 509	NB	D	B	C	B	A	E	C	C	B	A	E	C	D	C	B	E	C	C	C	A
(North of SR 518)	SB	B	B	C	A	A	B	B	C	A	A	C	C	E	C	B	C	C	D	C	A
SR 509	NB	B	A	B	A	A	C	A	B	A	A	C	B	C	A	B	C	A	C	A	A
(SR 518 to S. 160th St.)	SB	C	C	D	B	C	D	D	D	B	C	D	D	D	C	C	D	D	D	C	C
SR 167	NB	D	D	C	B	A	E	D	D	B	B	E	E	D	C	B	E	D	D	C	B
(I-405 to SW 34th St., Carr St.)	SB	C	D	E	C	A	D	E	E	C	B	E	E	F	D	B	D	E	F	D	B
I-405	NB	F	E	E	C	B	F	E	E	C	B	F	E	F	D	C	F	E	F	C	B
(SR 167 to I-5)	SB	D	E	F	C	A	D	E	F	D	A	E	F	F	E	B	E	F	F	E	B

* 109 Trucks per Hour, Adjusted for Peaking.

** 66 Trucks per Hour, Adjusted for Peaking.

Overly optimistic Traffic 0-35 mph in 55 mph NOW w/o trucks

TABLE C-4-6

1997-2002 HAUL PROCESS INTERSECTION LEVEL OF SERVICE SUMMARY (CONTINUED)

Evaluated Intersection	Do-Nothing Alternative	Preferred Alternative with Trucks					
		Route 19			Route 20		
		1	2A	2B	1	2A	2B
Southbound SR 509 Ramps & SR 518	B	B	n/a	B	B	n/a	B
Northbound SR 509 Ramps & SR 518	A	A	n/a	A	A	n/a	A
Des Moines & EB SR 518 On-Ramp	A	A	n/a	A	A	n/a	A
Des Moines & WB SR 518 Off-Ramp	F	F	n/a	F	F	n/a	F
Des Moines & 8th Ave South	B	B	n/a	B	B	n/a	B
International/SR 99 & S 154th St.	E	E	n/a	E	E	n/a	E
24th Ave S & S 154th St.	C	D	n/a	D	D	n/a	D
Des Moines & S 156th St.	C	C	n/a	C	C	n/a	C
Southbound SR 509 & S 160th St.	D	D	n/a	D	D	n/a	D
Northbound SR 509 & S 160th St.	A	A	n/a	A	A	n/a	A
Des Moines & S 160th St.	B	B	n/a	B	B	n/a	B
Air Cargo Rd & S 160th St.	B	B	n/a	B	B	n/a	B
International/SR 99 & S 160th St.	D	D	n/a	D	D	n/a	D
Air Cargo Rd & Airport Expressway	B	B	n/a	B	B	n/a	B
Air Cargo Rd & S 170th St.	E	E	n/a	E	E	n/a	E
Airport Expressway & S 170th St.	B	B	n/a	B	B	n/a	B
International/SR 99 & S 170th St.	F	F	n/a	F	F	n/a	F
International/SR 99 & S 176th St.	C	C	n/a	C	C	n/a	C
International/SR 99 & S 180th St.	D	D	n/a	D	D	n/a	D
Southbound SR 509 & S 188th St.	A	A	n/a	A	A	n/a	A
Des Moines & S 188th St.	C	C	n/a	C	C	n/a	C
28th Ave S & S 188th St.	C	B	n/a	B	B	n/a	B
International/SR 99 & S 188th St.	F	F	n/a	F	F	n/a	F
Military Rd & S 188th St.	E	E	n/a	E	E	n/a	E
Southbound I-5 Ramps & S 188th St.	D	D	n/a	D	D	n/a	D
Northbound I-5 Ramps & S 188th St.	F	E	n/a	E	E	n/a	E
28th Ave S & S 192nd St.	B	B	n/a	B	B	n/a	B
International/SR 99 & S 192nd St.	D	C	n/a	C	D	n/a	D
Des Moines & S 200th St.	B	B	n/a	B	B	n/a	B
28th Ave S & S 200th St.	C	B	n/a	B	B	n/a	B
International/SR 99 & S 200th St.	F	F	n/a	F	F	n/a	F
Military Rd & S 200th St. / SB I-5 Ramps	F	F	n/a	F	E	n/a	E
Military Rd & Northbound I-5 Ramps	C	C	n/a	C	C	n/a	C
Des Moines & Marine View Drive	B	B	n/a	B	B	n/a	B
Pacific Highway/SR 99 & S 216th St.	E	E	n/a	E	E	n/a	E
Pacific Hwy./SR 99 & SR 516	E	E	n/a	E	F	n/a	E
SB I-5 Ramps & SR 516	F	F	n/a	F	F	n/a	F

Option 1 – Maximum Off-Site (66 trips), Option 2A – Maximum On-Site using Roadways (26 off-site trips), Option 2B – Maximum On-Site using On-Site Routes (26 off-site trips)

Route 19 Interstate 5 (from South), South 200th Street, 28th Avenue South, South 192nd Street
Route 20 Interstate 5 (from South), Kent-Des Moines Road / State Route 516, International Boulevard/State Route 99, South 192nd Street

C. Off-Site Borrow Source Haul Route Analysis

The potential airport vicinity haul routes listed in Section II- C were reviewed to supplement off-site borrow source haul route analysis performed under the Final EIS. A summary of that review is included as **Table C-4-7**. The evaluation of the off-site borrow source haul routes considered the following factors:

- Roadway Jurisdiction
- Roadway Classification
- Number of Lanes
- Current Pavement Condition
- Speed Limits
- Existing average daily traffic volumes

All of the additional haul routes identified through the Alternative Materials Delivery Study are minor arterial or above in classification, and in fair or better pavement condition. Evaluated routes within the City of SeaTac are designated truck routes, although South 188th Street, South 200th Street, and Des Moines Memorial Drive south of South 188th Street has abutting residential land use.[11] All the additional routes considered serve commercial or industrial areas and have existing truck movements. The additional routes are classified appropriately for use by truck traffic, subject to any truck ordinance restrictions or street use permits.

IV. CONCLUSIONS

The changes in conditions for construction of the Third Parallel runway and other associated improvements could results in a significant reduction in expected maximum off-site truck traffic. The regional system, particularly Interstate 5 and Interstate 405 during the AM and PM peak periods, is expected to see increased background congestion with or without Airport improvements. Airport improvement construction haul traffic during peak periods, even at the reduced volumes predicted will cause impacts to the levels of congestion where the regional system is at or exceeds capacity, and where extended grades exist. The impacts are less than those examined in the Final EIS.

The regional highway system has the ability to accommodate the haul traffic associated with the Third Parallel Runway without significant impacts. Preferred access to the construction site is as identified in the Final EIS, by way of State Route 509 and State Route 518. At the reduced truck volumes now forecast, both State Route 509 and State Route 518 operate at LOS D or better throughout the day. Interstate 5, south of Interstate 405 has the ability during most periods of the day to carry additional truck traffic. Truck traffic on Interstate 5, should avoid or be minimized during the PM peak period. Interstate 405, between Interstate 5 and Interstate 90 has congestion during the AM, Midday, and PM peak periods. Truck traffic on Interstate 405 should avoid or be minimized during these peak periods.

[11] City of SeaTac, *Comprehensive Transportation Plan*, February, 1994, Figure 3, Truck Route Plan

TABLE C-4-7

EXPECTED LOCAL ROADWAY HAUL ROUTE SUMMARY

SOURCE #1 - SeaTac, King County (See Note 1)

Expected Source Access Route	Jurisdiction/ Agency	Route Classification	Number of Lanes	Pavement Condition	Speed Limit	Existing ADT	Additional Comments
International Boulevard/SR99	WSDOT	Principal Arterial	5 lanes	Very Good	45 mph	33,000	
South 160th Street	City of SeaTac	Minor Arterial	4 lanes	Good	35 mph	9,000	

SOURCE #2 - SeaTac, King County (See Note 1)

Expected Source Access Route	Jurisdiction/ Agency	Route Classification	Number of Lanes	Pavement Condition	Speed Limit	Existing ADT	Additional Comments
Des Moines Memorial Drive South	City of SeaTac	Minor Arterial	2 lanes	Good	35 mph	13,000	

SOURCE #3 - SeaTac/Kent/Tukwila, King County (See Note 1)

Expected Source Access Route	Jurisdiction/ Agency	Route Classification	Number of Lanes	Pavement Condition	Speed Limit	Existing ADT	Additional Comments
Orillia Road	King County	Principal Arterial	2 lanes	Good	35 mph	27,000	
South 188th Street	City of SeaTac	Principal Arterial	4 lanes	Very Good	40 mph	27,000	

SOURCE #4 - Dieringer, Pierce County

Expected Source Access Route	Jurisdiction/ Agency	Route Classification	Number of Lanes	Pavement Condition	Speed Limit	Existing ADT	Additional Comments
East Valley Highway	Pierce County	Principal Arterial	2 lanes	Good Poor	35 mph	11,000	North of Forest Canyon Road South of Forest Canyon Road
8th Street East	Pierce County	Principal Arterial	2 lanes	Fair	35 mph	12,000	
State Route 167	WSDOT	Principal Arterial Fwy	4 lanes	Very Good	55 mph	56,500	
West Valley Highway	City of Auburn	Principal Arterial	4 lanes	Good	40 mph		
State Route 18	WSDOT	Principal Arterial Fwy	4 lanes	Good	55 mph	68,000	Steep Grades
Interstate 5	WSDOT	Principal Arterial Fwy	8 lanes	Fair	55 mph	154,500	

Notes: 1. Limited quality or quantity . Use of Material not anticipated.
2. Local access route congested. Use of Material not anticipated.

TABLE C-4-7

EXPECTED LOCAL ROADWAY HAUL ROUTE SUMMARY (CONTINUED)

SOURCE #5, #8 - Tacoma, Pierce County (See Note 1)

Expected Source Access Route	Jurisdiction/ Agency	Route Classification	Number of Lanes	Pavement Condition	Speed Limit	Existing ADT	Additional Comments
Marine View Drive/East-West Road	City of Tacoma	Minor Arterial	2 lanes	Fair/Poor	35 mph	8,300	
Taylor Way/54th Avenue East/ Valley Avenue	City of Tacoma	Minor Arterial	5 lanes	Good	35 mph	13,500	
Interstate 5	WSDOT	Principal Arterial Fwy	8 lanes	Fair	55 mph	154,500	

SOURCE #6 - Federal Way, King County (See Note 2)

Expected Source Access Route	Jurisdiction/ Agency	Route Classification	Number of Lanes	Pavement Condition	Speed Limit	Existing ADT	Additional Comments
Milton Road/16th Avenue South	King County	Collector Arterial	2 lanes	Fair/Poor Excellent	35 mph	5,000	South of 375th Street North of South 375th Street
Enchanted Parkway/ State Route 161	WSDOT	Minor Arterial Minor Arterial	2 lanes 5 lanes	Good	35 mph	23,000	South of 351st Street North of South 351st Street
South 348th Street/State Route 18	WSDOT	Principal Arterial	5 lanes	Good	35 mph	51,000	
Interstate 5	WSDOT	Principal Arterial Fwy	8 lanes	Fair	55 mph	154,500	

SOURCE #7 - Auburn, King County

Expected Source Access Route	Jurisdiction/ Agency	Route Classification	Number of Lanes	Pavement Condition	Speed Limit	Existing ADT	Additional Comments
Kersey Way/"R" Street SE	Auburn	Principal Arterial	2 lanes	Good	35 mph	12,200	
Private Truck Route	Private						
Ellingson Road/41st Street SE	Algona/Auburn/ Pacific	Principal Arterial	4 lanes	Good	35 mph	10,800	
State Route 167	WSDOT	Principal Arterial Fwy	4 lanes	Very Good	55 mph	56,500	
West Valley Highway	City of Auburn	Principal Arterial	4 lanes	Good	40 mph		
State Route 18	WSDOT	Principal Arterial Fwy	4 lanes	Good	55 mph	68,000	Steep 6% Grade between I-5 and SR 167 (Westbound Uphill)
Interstate 5	WSDOT	Principal Arterial Fwy	8 lanes	Fair	55 mph	154,500	

TABLE C-4-7

EXPECTED LOCAL ROADWAY HAUL ROUTE SUMMARY (CONTINUED)

SOURCE #9 - Maltby, Snohomish County

Expected Source Access Route	Jurisdiction/ Agency	Route Classification	Number of Lanes	Pavement Condition	Speed Limit	Existing ADT	Additional Comments
Maltby Road/Yew Road/ Paradise Lake Road/State Route 524	WSDOT	Collector Arterial	2 lanes	Good	35 mph	9,300	
State Route 522	WSDOT	Principal Arterial Fwy	2 lanes 4 lanes	Very Good	55 mph	45,500	North of the SR9 Interchange South of the SR9 Interchange
Interstate 405	WSDOT	Principal Arterial Fwy	6 lanes	Good	55 mph	129,000	

SOURCE #10, #11, #11A - Black Diamond, King County (Source 10, See Note 1)

Expected Source Access Route	Jurisdiction/ Agency	Route Classification	Number of Lanes	Pavement Condition	Speed Limit	Existing ADT	Additional Comments
Black Diamond-Enumclaw Road/ State Route 169	WSDOT	Minor Arterial	2 lanes	Good	50 mph 35 mph	9,000	South of Black Diamond Within Black Diamond
Maple Valley-Black Diamond Road/ State Route 169	WSDOT	Minor Arterial	2 lanes 4 lanes	Fair	50 mph 35 mph	11,000	North of Black Diamond Within Black Diamond
Auburn - Black Diamond Road	King County	Principal Arterial	2 lanes	Good	50 mph 40 mph	7,600	East of Kent-Black Diamond Road West of Kent-Black Diamond Road
State Route 18	WSDOT	Principal Arterial Fwy	4 lanes	Good	55 mph	68,000	Steep 6% Grade between I-5 and SR167 (Westbound Uphill)
Interstate 5	WSDOT	Principal Arterial Fwy	8 lanes	Fair	55 mph	154,500	

TABLE C-4-7

EXPECTED LOCAL ROADWAY HAUL ROUTE SUMMARY (CONTINUED)

SOURCE #12 - Covington/Kent, King County

Expected Source Access Route	Jurisdiction/ Agency	Route Classification	Number of Lanes	Pavement Condition	Speed Limit	Existing ADT	Additional Comments
Covington - Sawyer Rd	King County	Minor Arterial	2 lanes	Good/Fair	35 mph	11,000	
Kent - Kangley Rd/South 272nd Street/ State Route 516	WSDOT	Principal Arterial	5 lanes	Excellent/ Very Good	35 mph	25,000	
State Route 18	WSDOT	Principal Arterial Fwy	4 lanes 2 lanes	Good	55 mph	49,000	South of Auburn-Black Diamond I/C North of Auburn-Black Diamond I/C Steep 6% Grade between I-5 and SR167 (Westbound Uphill)
Interstate 5	WSDOT	Principal Arterial Fwy	8 lanes	Fair	55 mph	154,500	

SOURCE #13 - North Bend, King County

Expected Source Access Route	Jurisdiction/ Agency	Route Classification	Number of Lanes	Pavement Condition	Speed Limit	Existing ADT	Additional Comments
468th Avenue SE	King County	Collector Arterial	2 lanes	Good/Fair	35 mph	11,000	
Interstate 90	WSDOT	Principal Arterial Fwy	6 lanes	Good	55 mph	70,500	West of North Bend
Interstate 405	WSDOT	Principal Arterial Fwy	6 lanes	Good	55 mph	129,000	

SOURCE #14 - Dupont, Pierce County
SOURCE #15 - Maury Island, King County
SOURCE #15A - Maury Island, Future King County Park
SOURCE #16 - Port Gamble, Kitsap County (Source 16, See Note 1)

Expected Source Access Route	Jurisdiction/ Agency	Route Classification	Number of Lanes	Pavement Condition	Speed Limit	Existing ADT	Additional Comments
East Marginal Way South/SR99	WSDOT	Principal Arterial	7 lanes	Good/Fair	45 mph	43,500	The Borrow Source material would be barged into Duwamish Waterway.
West Marginal Way South (Spokane Street to 2nd Ave SW)	City of Seattle	Principal Arterial	5 lanes	Good/Fair	40 mph	13,300	
West Marginal Way South (S Holden Street to Highland Parkway SW)	City of Seattle	Principal Arterial	6 lanes	Excellent	35 mph	18,500	
State Route 509	WSDOT	Principal Arterial Fwy	4 lanes	Good	55 mph	40,500	

TABLE C-4-7

EXPECTED LOCAL ROADWAY HAUL ROUTE SUMMARY (CONTINUED)

SOURCES EAST OF INTERSTATE 5

Expected Source Access Route	Jurisdiction/ Agency	Route Classification	Number of Lanes	Pavement Condition	Speed Limit	Existing ADT	Additional Comments
SW Grady Way (from 167 to Interurban Ave)	City of Renton	Principal Arterial	5 lanes	Good	35 mph	41,000	
Southcenter Blvd./ S 154th Street (from Interurban Ave to SR 99)	City of Tukwila	Principal Arterial	4 lanes	Good	35 mph	10,750	
S 188th Street (from I-5 to Des Moines Mem Dr.)	City of SeaTac	Principal Arterial	5 lanes	Good	35 mph	25,000	
S 200th Street (from I-5 to SR 99)	City of SeaTac	Principal Arterial	4 lanes	Good	25 mph	17,000	Accident Concerns @ I-5 and Military Road / 200th St. Intersection
SR 516 (from I-5 to SR 99)	WSDOT	Principal Arterial	5 lanes	Good	35 mph	29,800	
International Blvd. (SR 99) (from SR 518 to SR 516)	City of SeaTac City of Des Moines	Principal Arterial	5 lanes	Good	35 mph	33,000	

Source: INCA Engineers, January 1997.

Regarding peak period impacts to arterial roadways in the vicinity of the Airport, out of the 40 intersections evaluated, 14 degraded to LOS E, or further into LOS F, as a result of the construction traffic. Major intersections along State Route 99, South 188th Street, and South 200th Street are expected to operate at poor level of service with or without Airport construction traffic. Construction truck traffic attempting to use those routes will experience extreme levels of congestion. The PM peak traffic is the heaviest condition of the day for these routes, and represents about 6 to7 percent of the daily traffic.[12] This flow is fairly consistent from about 2:00 PM to 7:00 PM. Haul traffic should avoid or minimize the use of State Route 99, South 188th Street, South 200th Street, and State Route 516 during these periods.

V. MITIGATION

This supplemental analysis and the Final EIS considered a number of material sites, alternative routes and methodologies to convey material to the construction site. This analysis was performed to document the range of alternatives and representative conditions. Both general and specific impacts associated with the haul process and construction activities have been identified.

A Construction and Earthwork Management Plan could be developed during the design phase to support haul route permit requests and regulatory agency review. The Management Plan and permits should designate preferred haul routes and specific conditions such as hours of operations, traffic control changes, and route mitigation which should be included in the bid documents as contract requirements.

A. Regional System

WSDOT, upon review of the information developed for Final EIS, requested the following conditions as mitigation for use of the State Highway System:

- Legal load limit and other hauling requirements must be enforced on State Highways. In addition to weight requirements, this requires top of loads to be 6 inches or more below top of truck bins or use of covered loads.
- The Construction Traffic Office must be coordinated with for all haul routes and must provide approval for all traffic control plans to be implemented on State Routes.
- Coordination must be maintained through the Construction Traffic Office in order to minimize conflicts between Port construction activities and any WSDOT projects along the haul routes.
- The Port should consider restricting hauling activities during peak hours through congested areas of the State Highway System.
- Increased sweeping and/or flushing must be provided within a 3 to 5 mile radius of both ends of the haul routes in order to provide a clean, safe highway. This will also be necessary to reduce air pollution from dust and to reduce rock damage to cars.
- Routine cleaning of the drainage facilities (pipes, culverts, outfalls, etc.) within the increased

[12] City of SeaTac Historical Counts, June, 1994

sweeping and/or flushing area should be provided for within the contract provisions.

- Sedimentation facilities must be provided for near any drainage outfalls to insure that drainage courses along the haul route do not silt up and that water quality at the outfalls is not compromised.

- Identifiable damage to pavement near the access points for haul must be repaired by the Port or contractor.

- Provisions should be made to handle complaints of broken windows and other damage to vehicles caused by flying debris off the trucks. The contractor should be required to use some system to dislodge and wash away material on the body and undercarriage of the trucks.

In order to reduce overall impacts to the State Highway System, WSDOT recommends that the Port of Seattle provide property on the Duwamish as a barging facility to any contractor who wants to use it.

B. Airport Vicinity and Local Roadway Routes

Possible mitigation to address LOS reductions along various airport vicinity haul routes are summarized in **Table C-4-8**. In addition to those, the following general mitigation are identified:

- Haul truck traffic should avoid or minimize use of arterial routes with afternoon peak hour congestion of LOS E or LOS F. This would include State Route 99 between State Route 518 and State Route 516, South 188th Street, and South 200th Street.

- Haul truck traffic should avoid or minimize use of arterial routes during evening and night conditions with abutting residential land use. This would include South 188th Street, South 200th Street, South 154th Street/Southcenter Boulevard/Grady Way, and Des Moines Memorial Drive.

- Many of the potential haul routes are scheduled for reconstruction or improvements between 1997 and the year 2005. Haul truck traffic should avoid or minimize use of those routes while under construction. The contractor should required to coordinate activities with contractors working on roadway projects.

- The Port of Seattle should coordinate with WSDOT and the Cities of SeaTac, Des Moines, and Burien on the proposed schedule of area roadway improvements. The roadway improvements should be accelerated or delayed as potential mitigation of Third Runway construction activities or efforts to improve existing congestion.