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Date: April 20, 2007

Subject: SR 9 Route Development Plan – Base year Model Validation Analysis.

This memorandum summarizes the base year model validation analysis performed for the SR 9 Route Development Plan (RDP) study. The validation analysis was based on the new PSRC model (Version 1.0) released in January 2007.

The new PSRC model base year (2000) databases have been recently updated to reflect 2005 conditions as part of the ongoing travel forecasting analysis for the SR 520 Bridge Replacement & HOV Project. This involved updating the PSRC model databases (from 2000 to 2005) to include refinements related to the highway/arterial and transit networks.

The base year (2005) model databases for the SR 520 Bridge and Replacement Project were used to develop the base year model for the SR 9 study area that extends along SR9 from SR522 in the south to the SR 530 in the north. The process involved adding selected cross streets along SR 9 as well as a detailed interchange at US 2. Figure 1 shows the updated highway network with the study area. In addition, the base year transit network was updated to include Route 271 of the Community Transit network that serves part of the SR 9 study segment.

Upon completion of the network update, a full model run was performed. Model results were examined in terms of daily volume consistency at various screenline locations (shown in Figure 2). Tables 1a and 1b show the screenline comparison of daily vehicle volumes with actual traffic counts for the Northbound and Southbound directions, respectively. The actual daily traffic counts (shown in Tables 1a and 1b) were collected by Traffic Data Gathering (TDG) during the previous phase of the SR 9 Project. The model-estimated screenline volumes are generally within 10% of the actual traffic counts for three screenlines (2, 3 and 4). However, the model appears to underestimates volumes across Screenline 1. This under-estimation is likely attributed the relatively large zone size near the screenline, the underlying land use data, and/or trip distribution results. In addition to maintaining volume consistency on SR-9, the model also performs reasonably well for replicating volumes on other facilities at each screenline location.

Tables 1a and 1b also include estimated screenline volumes from the base year (2006) model used by WSDOT for the ongoing RTID travel forecasting analysis. The estimated volumes for 2006 are similar to those produced from the 2005-based model and compare reasonably well to actual traffic counts for most screenlines.

In summary, the screenline-level comparison/analysis of the base year (2005/2006) model results to actual daily traffic counts indicated that the model has reasonably replicated total vehicle trip activities along SR 9 especially in the urban centers of the study area. Therefore, the model is deemed suitable for travel forecasting analysis in support of the SR 9 Project. Note that the network refinements included in the base year model will be carried over to future-year 2030 networks.

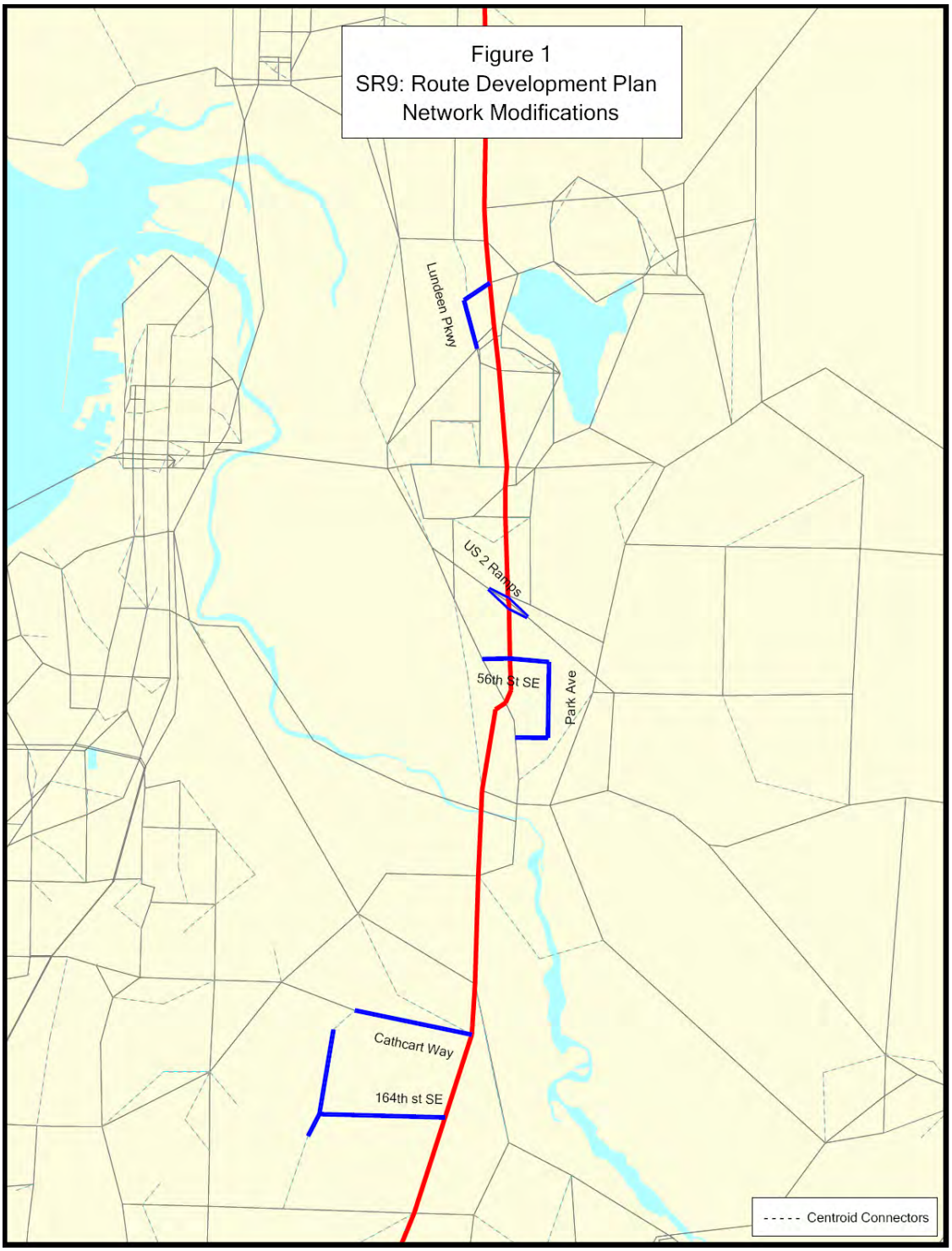
Figure 1
SR9: Route Development Plan
Network Modifications
Lundeen Pkwy
US 2 Ramps
56th St SE
Park Ave
Cathcart Way
164th st SE
----- Centroid Connectors

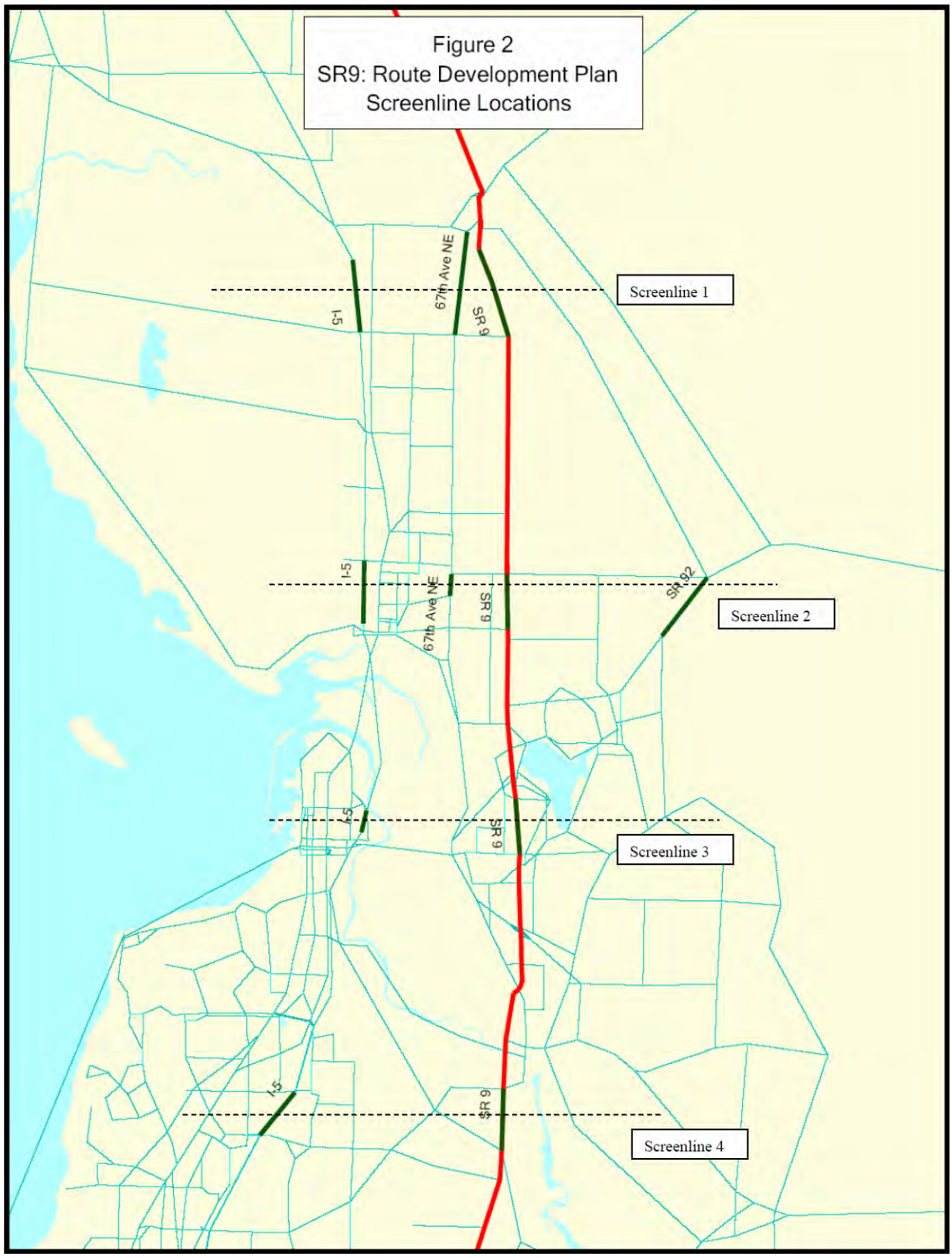
Figure 2
SR9: Route Development Plan
Screenline Locations
Screenline 1
Screenline 2
Screenline 3
Screenline 4
I-5
67th Ave NE
SR 9
SR 92

TABLE 1a

Screenline comparison of Base Year Daily Vehicle Volumes (Northbound Direction)

Screenline Number	Name of Facility	Observed Counts (Daily) 2006	2004	2002	SR9 RDP Baseyear (2005) Model Estimated Daily Volumes	[2005 Est]/ [2006 Obs]	[2005 Est]/ [2006 Obs]	[2005 Est]/ [2006 Obs]	WSDOT's Baseyear (2006) Model Estimated Daily Volumes	[2005 Est]/ [2006 Obs]	[2005 Est]/ [2006 Obs]	[2005 Est]/ [2006 Obs]
	SR9, North of SR 531 (172nd street)											
1	67th Ave NE	---	---	---	1126	N/A	N/A	N/A	1490	N/A	N/A	N/A
1	SR 9	7,100	---	---	4349	0.61	N/A	N/A	5583	0.79	N/A	N/A
1	I-5	41,780	41,080	38,972	32477	0.78	0.79	0.83	35610	0.85	0.87	0.91
1	**TOTAL**				**37,952**				**42,683**			
	SR9, South of 84th street NE											
2	SR 92	---	---	---	7,822	N/A	N/A	N/A	9,081	N/A	N/A	N/A
2	67th Ave NE	---	---	---	4,389	N/A	N/A	N/A	5,385	N/A	N/A	N/A
2	SR 9	8,000	---	---	8,253	1.03	N/A	N/A	9,943	1.24	N/A	N/A
2	I-5	63,620	---	58,388	53,551	0.84	N/A	0.92	60,671	0.95	N/A	1.04
2	**TOTAL**				**74,015**				**85,080**			
	SR9, North of Hewitt Ave											
3	SR 9	9,100	---	---	8,861	0.97	N/A	N/A	11,336	1.25	N/A	N/A
3	I-5	---	---	68,758	61,903	N/A	N/A	0.90	68,783	N/A	N/A	1.00
3	**TOTAL**				**70,764**				**80,119**			
	SR9, North of SR 96											
4	SR 9	14,100	---	---	13,294	0.94	N/A	N/A	14,782	1.05	N/A	N/A
4	I-5	85,450	88,910	83,389	61,438	0.72	0.69	0.74	64,584	0.76	0.73	0.77
4	**TOTAL**				**74,732**				**79,366**			

TABLE 1b

Screenline comparison of Base Year Daily Vehicle Volumes (Southbound Direction)

Screenline Number	Name of Facility	Observed Counts (Daily) 2006	2004	2002	SR9 RDP Baseyear (2005) Model Estimated Daily Volumes	[2005 Est]/ [2006 Obs]	[2005 Est]/ [2006 Obs]	[2005 Est]/ [2006 Obs]	WSDOT's Baseyear (2006) Model Estimated Daily Volumes	[2005 Est]/ [2006 Obs]	[2005 Est]/ [2006 Obs]	[2005 Est]/ [2006 Obs]
	SR9, North of SR 531 (172nd street)											
1	67th Ave NE	---	---	---	1,126	N/A	N/A	N/A	1,488	N/A	N/A	N/A
1	SR 9	7,400	---	---	4,415	0.60	N/A	N/A	5,498	0.74	N/A	N/A
1	I-5	41,560	41010	38552	32,693	0.79	0.80	0.85	35,759	0.86	0.87	0.93
1	**TOTAL**				**38,234**				**42,745**			
	SR9, South of 84th street NE											
2	SR 92	---	---	---	7,738	N/A	N/A	N/A	8,965	N/A	N/A	N/A
2	67th Ave NE	---	---	---	4,294	N/A	N/A	N/A	4,990	N/A	N/A	N/A
2	SR 9	8,200	---	---	8,241	1.01	N/A	N/A	9,475	1.16	N/A	N/A
2	I-5	65,430	***	60160	53,309	0.81	N/A	0.89	62,268	0.95	N/A	1.04
2	**TOTAL**				**73,582**				**85,698**			
	SR9, North of Hewitt Ave											
3	SR 9	10,300	---	---	9,518	0.92	N/A	N/A	11,291	1.10	N/A	N/A
3	I-5	---	---	60,268	63,042	N/A	N/A	1.05	71,504	N/A	N/A	1.19
3	**TOTAL**				**72,560**				**82,795**			
	SR9, North of SR 96											
4	SR 9	13,800	---	---	13,269	0.96	N/A	N/A	14,528	1.05	N/A	N/A
4	I-5	88,270	86480	85662	62,663	0.71	0.72	0.73	67,548	0.77	0.78	0.79
4	**TOTAL**				**75,932**				**82,076**			

Data Sources:

I-5 Counts: http://www.wsdot.wa.gov/Northwest/TrafficVolume/Archive.htm

SR Counts: Traffic counts by TDG Inc.

--- No Counts Available