

# PointWells

## EXPANDED TRAFFIC IMPACT ANALYSIS

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# Acronyms

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BMPs	Best Management Practice
BNSF	Burlington Northern Santa Fe
BRT	Bus Rapid Transit
BSRE	Blue Square Real Estate Point Wells, LP
CIPs	Capital Improvement Projects
County	Snohomish County
CT	Community Transit
DPW	Department of Public Works
DU	Dwelling Unit
EDDS	Snohomish County Engineering Design and Development Standards
Edmonds	City of Edmonds
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
HCM	Highway Capacity Manual
I-5	Interstate 5
ITE	Institute of Transportation Engineers
KSF	1,000 Square Feet
LEED	Leadership in Energy and Environmental Design
LOS	Level of Service
LUC	Land Use Code
Metro	King County Metro Transit
mph	Miles Per Hour
MUGA	Municipal Urban Growth Area
NFA	No Further Action
ODU	Occupied Dwelling Unit
Paramount	Paramount of Washington LLC
Project	Point Wells Development
PSRC	Puget Sound Regional Council
SCC	Snohomish County Code
Shoreline	City of Shoreline
SOV	Single Occupancy Vehicle
SR	State Route
ST	Sound Transit
TAZ	Traffic Analysis Zone
TIA	Traffic Impact Analysis
TIP	Transportation Improvement Program
TMP	Transportation Master Plan
TOD	Transit-Oriented Development
TSA	Transportation Service Area
TWLT	Two-way, left-turn
UC	Urban Center
UGA	Urban Growth Area
USGBC	U.S. Green Building Council
Woodway	Town of Woodway
WSDOT	Washington State Department of Transportation

# 1. Project Overview

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## 1.1. Overview of Tasks

David Evans and Associates, Inc. (DEA) has been contracted by Blue Square Real Estate Point Wells, LP (BSRE) to provide an expanded traffic impact analysis (TIA) for the proposed Point Wells Development. This TIA is intended to provide the necessary traffic analysis and proposed possible mitigation alternatives for the impacts to the local roadway system. Affected agencies included in this analysis consist of Snohomish County, the City of Shoreline, the Town of Woodway, the City of Edmonds, and the Washington Department of Transportation (WSDOT). Below is a summary of the pertinent project information and team.

Name of Project:	Point Wells Development Expanded Traffic Impact Analysis
Developer Name:	BSRE Point Wells, LP
Analysis Consultant:	David Evans and Associates, Inc. 415 - 118 <sup>th</sup> Avenue SE Bellevue, WA 98005 Telephone: (425) 519-6500 Fax: (425) 519-5361
Analysis Team:	Victor Salemann, P.E., Member of ITE Ryan LeProwse, P.E., Member of ITE Min Luo, P.E., P.T.O.E., Member of ITE Anthony Wilen, E.I.T., Member of ITE

## 1.2. Project Site

### 1.2.1. Project Location

The Point Wells site is located in the southwest corner of Snohomish County, Washington and is bordered by Puget Sound to the west. The site’s section, township, and range are S35, T27N, R3. The proposed Point Wells Development is located within Snohomish County’s Transportation Service Area (TSA) F, inside the Southwest County Urban Growth Area (UGA) and the Woodway Municipal UGA.

The Point Wells Development site address information is as follows:

20555 Richmond Beach Drive NW  
Seattle, WA 98177

The project site is divided near the eastern edge by two parallel Burlington Northern Santa Fe (BNSF) Railroad tracks (plus additional sidings). In addition to cargo rail, Amtrak provides passenger services on the “Amtrak Cascades” route, and the Sound Transit “Sounder” commuter rail service runs four AM southbound trains and four PM northbound trains along the lines through the Point Wells site.

The existing access to the site is via Richmond Beach Drive NW, which is a two-lane roadway with a speed limit of 25 miles per hour.

### **1.2.2. Historical and Existing Site Usage**

The Point Wells facility history dates back to the early 1900's. The site was originally developed between 1909 and 1911. In 1912, Standard Oil (now Chevron), Shell, and other smaller oil companies purchased the site to be used as a refueling station. In 1950, the site was purchased outright by Chevron, and the facility was used as an asphalt refinery and light products/lube oil distribution depot. The various types of petroleum products stored and processed at Point Wells included crude oil, asphalt products, lubrication oil, fuel oil, aviation fuel, motor vehicle and marine vessel fuels, and thinners. The light products/lubrication oil distribution terminal is no longer in operation. The asphalt refinery ceased operations in 2000. In 2006, the Alon group purchased the site which was then transferred to BSRE Point Wells, LP in 2010.

Currently, Paramount Petroleum Corporation uses the site as a petroleum storage and distribution facility. The existing site trip generation equals a total of 116 PM peak hour trips and 546 daily trips.

## **1.3. Purpose**

The Point Wells mixed-use redevelopment is meant to create a thriving, sustainable, and dynamic urban center, providing resources and amenities to all its residents. To create such a community, innovative methodologies to the layout and design, environmental issues, sustainable practices, and transportation must all be addressed.

The Point Wells project is unique in that access to the Snohomish County project is almost exclusively through the city of Shoreline. Previous analyses have relied upon the County traffic model and manual methods to determine trip distribution and impacts, and focused on intersection impacts and vehicle-based mitigation.

This study was completed using a project-specific traffic model based upon PSRC land use and trip table data to provide a consistent repeatable basis for analysis. The analysis was completed independent of jurisdictional boundaries. Transportation impacts were identified based upon the distribution of site-generated traffic to the regional transportation network.

This document will address issues regarding the traffic and transportation impacts within the project vicinity. Local municipal agencies that this report will address include Snohomish County, Shoreline, Woodway, Edmonds, and WSDOT, in addition to those residential neighbors directly adjacent to the site. Transportation impacts will occur throughout the project vicinity, and this report will guide developer-related transportation mitigation. Mitigation proposed as an outcome of the additional trips within this report shall be mitigated by the developer.

This study is intended to provide additional information beyond what is strictly required under Snohomish County Title 30.66B for traffic studies.

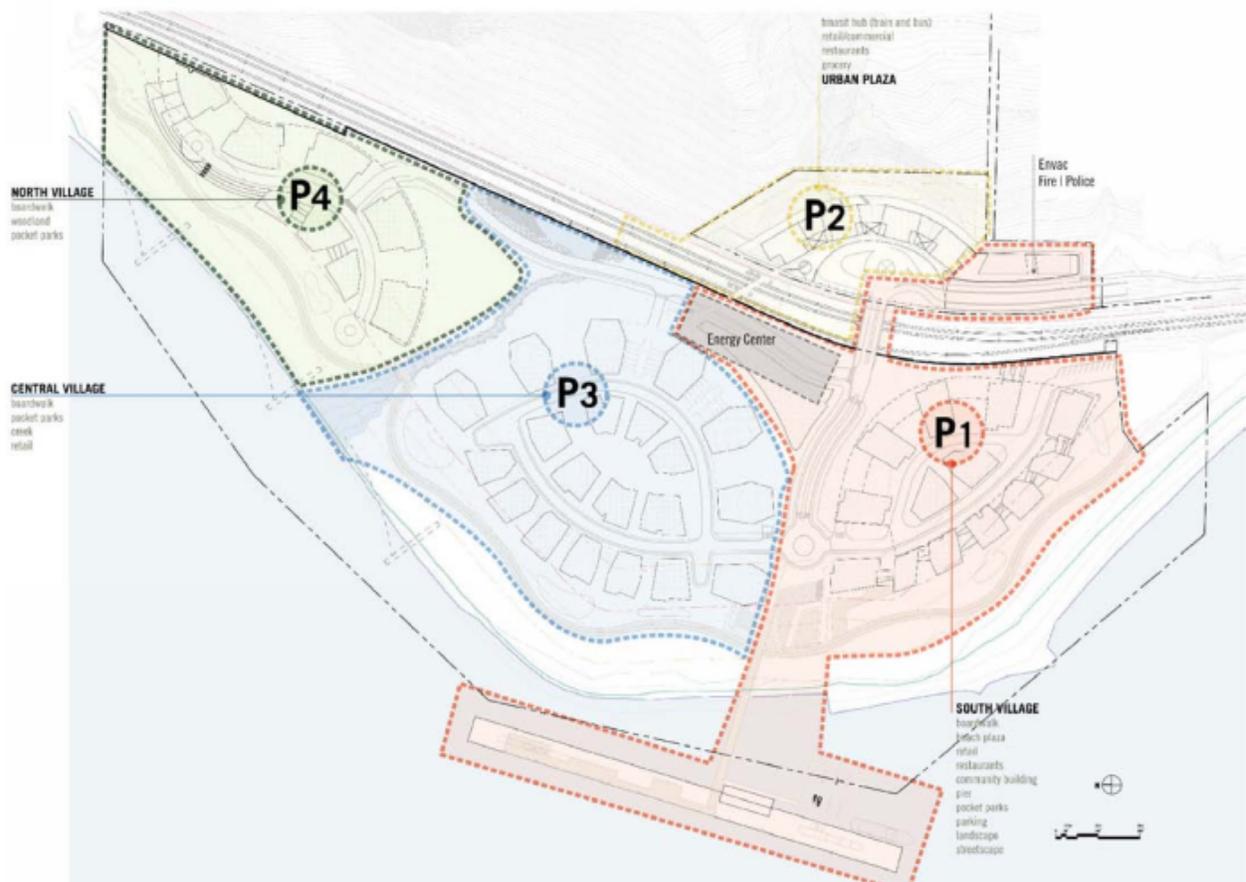
### **1.3.1. Sustainability**

The Point Wells redevelopment is focusing on major sustainability goals to reduce the impacts to the environment. Major milestone sustainable goals include: reduced energy consumption, reduced water consumption, restoring natural habitat, creating an ultra low carbon footprint, meeting U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Platinum criteria, mixed-use design to reduce the overall need for passenger vehicles, transit opportunities, and other transportation demand management methods to reduce trips.

## 1.4. Proposed Project Development

The Point Wells site development will occur in four phases over the course of several years. The environmental cleanup action plan and the development marketing strategy are the primary drivers for this phasing. The scheduled cleanup process breaks the site into cleanup areas that correspond to the proposed phasing boundaries. Decommissioning and cleanup of the site will be conducted for each phase during the design and permitting of the site improvements of that corresponding phase.

The building and site development will follow the cleanup starting with the primary site infrastructure and public amenities that will make the development attractive to both potential residents and the community at large. The infrastructure necessary to support a development the size of Point Wells is significant. The development design and construction is phased in an effort to build up the infrastructure gradually providing what is necessary to support the scale of the corresponding phase. Refer to **Figure 1: Project Phasing Concept** for the Point Wells project.



**Figure 1: Project Phasing Concept**

### 1.4.1. Phase I – South Village

Phase I includes public amenities, retail, a mix of residential unit types, parking, utilities, the police/fire station, and off-site traffic and utility improvements. Public amenities will attract residents to the development and will play a large part in its overall success. Views of Puget Sound and the Olympic Mountains, provisions for waterfront outdoor activities, and access to the southwest-facing sandy beaches and 1000 feet of dock are the types of attractions that are the focus of Phase I. Site circulation to these amenities is also built out during this phase. The vehicle and pedestrian bridge across the train

tracks is the start of the tree-lined boulevard to the Beach Plaza. The boulevard transitions to a bridge and terminates at the pier. These elements are built first, followed by the below grade parking for residents and shoppers, then the “street” and “lane” system of circulation that provides emergency vehicle access to new construction. Each set of buildings will likely consist of three to four buildings containing a mix of uses and residential unit types.

The fire station and police station are included in this initial phase to provide emergency response for the first residents. The station needs are determined by the future overall site population.

### 1.4.2. Phase II – Urban Plaza

This phase encompasses the Urban Plaza; retail, commercial, and residential construction; parking; and the public transit hub. The Urban Plaza is the gateway to the project site. It will provide shopping, entertainment, and office facilities to the residential community in and around Point Wells. The plaza itself serves many functions including vehicle and pedestrian circulation and drop-off. As the site population continues to grow, the need for access to public transportation increases. Included in Phase II is the sub-plaza, one level below the Urban Plaza. It is the transit hub providing the community with access to local bus routes and access to a potential Sound Transit station on the Point Wells site. This station consists of two grade-level platforms served by a pedestrian bridge. The bridge connects the Upper Plaza to the Central Village. Once this connection is made, construction of Phase III can begin.

### 1.4.3. Phase III – Central Village

The Central Village is the largest of the development areas on the site. It comprises approximately 1,271 residential units, retail, and parking. The Energy Center expands in this phase to incorporate the utilities to serve this additional population. Retail at the base of the towers fuels street activity and a pocket park at the center of the village provides family recreation space for the community. The southwest residential tower will be built first, working with the northwest tower of the South Village to bracket the Beach Plaza. These towers both include retail and restaurants overlooking a public amphitheater providing access to the boardwalk. The boardwalk and the beach development here is a continuation of the restoration work started in Phase I that leads to a proposed wetland area where the open channel meets the Sound. The stream that enters the site on the northeast side of the Urban Plaza will be removed from underground and brought to the surface of the Upper Plaza. From there it crosses the pedestrian bridge and cascades down to the waterfront in a boulder-strewn open channel bed.

### 1.4.4. Phase IV – North Village

The final phase of development completes the third crescent that is the North Village. The woodlands and the open channel separate this village from the others. This village of residential towers and low-rise buildings is tucked away in the northern end of the site served by the woodland road. The road will wind its way through the woodlands and connect to sub-grade parking and another system of streets and lanes. It will provide vehicular and pedestrian access to the site amenities. Utilities are completed to accommodate the additional density of this new village. The boardwalk and beach restoration work is completed in this phase, providing views and beach access to the west.

### 1.4.5. Development Totals by Phase

The basis of the Point Wells expanded TIA was conducted on an assumed set of general land use characteristics, per development phase. **Table 1: Development by Phase** is broken down by each individual phase (as identified in Section 1.4), including the total amount of commercial and retail areas listed by square feet and the total number of residential units.

**Table 1: Development by Phase**

	<b>Project Phase</b>	<b>Commercial (Sq. Ft.)</b>	<b>Retail (Sq. Ft.)</b>	<b>Residential (No. of Units)</b>
South Village	I	0	24,000	653
Urban Center	II	32,262	26,300	254
Central Village	III	0	44,000	1,271
North Village	IV	0	0	903
<b>TOTAL</b>	I-IV	32,262	94,300	3,081

The retail and commercial components of the development will aim to provide on-site services and amenities for all residents. Commercial areas will include medical-dental offices and other “General Offices” to be leased for uses such as: professional services, insurance companies, banks, tenant services, and investment services. Retail services provided by the site development include a small grocery store, numerous restaurants of various cuisines, and specialty retail which may include tenants such as apparel, dance studios, florists, and other small restaurants or bistros. The intent of these commercial areas is to capture and internalize as much off-site traffic as possible.

## 2. Analysis

### 2.1. Methodology

The methodology of this analysis is outlined in the publication *Manual of Transportation Engineering Studies*, 2<sup>nd</sup> Edition (Institute of Transportation Engineers, 2010). This provides a standardized procedure on concepts, structures, data requirements, and processes to complete the study. The Point Wells expanded TIA is defined as the examination and analysis of all of the parts of the transportation system supported by empirical data and analysis methods. The study identifies and defines the development, current issues, and future impacts, followed by the execution of implementing the project. The following sections will serve to quantify the extent of traffic and transportation issues, as a result of the Point Wells Development.

### 2.2. Trip Generation

#### 2.2.1. Assumed Site Land Uses by Phase

The Point Wells site will offer potential residents a vast amount of sustainable residential living options, and retail and commercial spaces. Nine Institute of Transportation Engineers (ITE) acknowledged Land Use Codes (LUC) were chosen as they best represent what may be constructed at the site. The following 9 LUCs can be found in the ITE Trip Generation, 8<sup>th</sup> Ed. (Institute of Transportation Engineers, 2008).

**Table 2: Land Use by Project Phase** indicates the assumed land use type, ITE land use code, and unit type (i.e. DU=Dwelling unit, ODU= Occupied Dwelling Unit, and SF= square feet) for each of the project's four phases.

**Table 2: Land Use by Project Phase**

Land Use Type	Land Use Code (LUC)	Units	Phase				Total
			I	II	III	IV	
High-Rise Apartment	222	DU	53	254	96	0	403
High-Rise Residential Condominium/Townhouse	232	DU	433	0	763	665	1,861
Luxury Condo/Townhouse	233	ODU	114	0	316	70	500
Senior Adult Housing – Attached (Condo)	252	ODU	53	147	96	0	317
Health/Fitness Club	492	SF	0	20,000	0	0	20,000
General Office	710	SF	0	24,762	0	0	24,762
Medical-Dental Office Building	720	SF	0	7,500	0	0	7,500
Specialty Retail Center	814	SF	16,000	0	14,000	0	30,000
Supermarket	850	SF	0	26,300	0	0	26,300
Quality Restaurant(s)	931	SF	8,000	0	10,000	0	18,000

The total cumulative project land uses (for all four phases) are:

- 3,081 residential units
  - 1,861 High-Rise Condominiums
  - 500 Luxury Townhouses
  - 403 High-Rise Apartments
  - 317 Senior Condominiums
- 94,300 square feet of retail area
  - 30,000 square feet of Specialty Retail
  - 26,300 square feet of Grocery Store
  - 20,000 square feet of Fitness Center
  - 18,000 square feet of Quality Restaurants
- 32,262 square feet of office areas
  - 24,762 square feet of General Office
  - 7,500 square feet of Medical-Dental Office

### 2.2.2. Gross Cumulative Trip Generation Totals

Using the appropriate ITE trip generation LUC rates (as identified in **Table 2: Land Use by Project Phase**), the Point Wells gross cumulative trip generation was conducted. The trip generation methodology was completed in accordance with the ITE Trip Generation Handbook (Institute of Transportation Engineers, 2004). **Table 3** shows the cumulative total of daily and PM peak trips for the site, per phase.

**Table 3: Gross Cumulative Trip Generation**

Phase	Cumulative New Trips	
	Daily	PM Peak Hour
I	4,346	358
II	8,645	785
III	16,032	1,411
IV	19,826	1,729

It is to be noted that the Fitness Center was removed from the trip generation calculation because it has been identified for use only to site residents. No existing trips are removed from the gross cumulative trip generation total. All gross trip generation calculations can be found in **Appendix B**.

### 2.2.3. Existing and Historic Site Use Reductions

Any future work done on the Point Wells site shall receive credit for traffic volumes that already exist from the historical and currently permitted use of the site as an asphalt refinery and petroleum distribution facility. Data was gathered from the Point Wells Development about the existing and historic usage. This same data was used in the Paramount Docket XIII SEIS (ICF Jones & Stokes, 2009). A total of 116 (35 inbound and 81 outbound) PM peak hour trips are generated, while a total of 546 daily trips are generated. These trips are removed from the gross total as a trip credit. The net new trips will reflect the reduction of trips from the existing and historic usage of the Point Wells site.

### 2.2.4. Internalization Reductions

A key characteristic of a multi-use development, such as the Point Wells Development, is that trips between many of the various land uses can be made on-site. These internal trips do not impact the surrounding city or county roadway system. These internal trips are often made by alternate means such as walking, biking, or vehicles entirely on internal pathways or internal roadways without using external streets.

The development of the Point Wells site was planned as an Urban Center, providing many of the needed amenities and services to allow residents to remain on site instead of traveling off site for their desired goods and services. The Point Wells site is planning on a small grocery, a number of restaurants, office space, medical and dental facilities, and a mix of shops supplying goods and services, in addition to the recreational amphitheater, beachfront, boardwalk, and pier areas.

The internalization reductions were calculated following the ITE Internal Trip Balancing for a Multi-use Development (Institute of Transportation Engineers, 2004) and the *Internal Trip Capture Estimator for Mixed-Use Developments* (Bochner & Sperry, 2010). The Bochner & Sperry report studied three similar mixed-use developments in Texas. Results of the study indicate that mixed-use developments, such as the Point Wells Development, can have PM peak internalization rates within the range of 30-43%. A combination of the ITE internalization rates, project-specific assumptions, and assumptions from the Bochner & Sperry report were used for the Point Wells site.

Internalization reductions were taken for both the daily and PM peak hours. The internalization focused on the residential, office, and retail areas of the development.

Internalization at the Point Wells site was addressed at a “per phase” approach. As the site development becomes larger (after Phase I), additional internalization would occur. The following approach was taken for the Pont Wells Development internalization:

- **Phase I: Project Internalization = 0%**  
No internalization was assumed. Although Phase I includes residential, restaurants, and retail, the site doesn’t offer enough residential to allow for significant internalization.
- **Phase II: Project Internalization = 39.5%**  
Phase II provides additional residential apartments, office space, and a small grocery store. The increased services and amenities allow for internalization.
- **Phase III: Project Internalization = 32.2%**  
An additional 1,271 residential units are constructed during Phase III in addition to new retail and restaurant spaces. Internalization drops slightly as the residential to commercial balance shifts.
- **Phase IV: Project Internalization = 38.8%**  
An additional 903 units are constructed during Phase IV. The resulting internalization increases as the residential to commercial balance improves.

Refer to **Appendix B** for trip internalization calculations.

The internalization rates outlined in this section do not constantly increase as the development increases in size. Phases I and III do not offer a balanced combination of residential, retail, and commercial to provide an optimal balance for people to not leave the site for additional services. In contrast, Phases II and IV offer higher internalization rates because the total amenities and services provided by the site allow for proportionately fewer trips to leave the site. These internalization rates are consistent with upper levels of ITE and the findings of the Bochner & Sperry report.

### **2.2.5. Pass-By and Diverted Link Trip Reductions**

The Point Wells Development is considered a “destination site,” in that existing roadway trips cannot easily enter the site and exit by continuing on the original path (such as at shopping centers, strip malls,

gas stations, etc.) on a heavily-traveled arterial. Due to the destination type development, no pass-by or diverted-link trip reductions were taken.

### 2.2.6. Transit Opportunities and Reductions

Although a number of transit resources are available, no transit reduction was taken during the trip generation portion of the analysis. The proposed residential land uses are presumed to be near bus or rail lines, while other transit options (LINK Light Rail, etc.) are not fully operational in the project vicinity (at the current time). As these additional resources are implemented in the project vicinity, it is expected that the site trip generation will be reduced.

Refer to the Transit Opportunities section below (Section 2.4) for additional details on existing and planned transit opportunities in the project vicinity.

### 2.2.7. Net New Trip Generation Based on ITE Average Rates

Upon the completion of the project trip generation and incorporating any trip reductions available for internalization and the existing site, a total (net new) trip generation was determined to be used in all further analysis. The trip generation in **Table 4** was based upon the ITE “average” rates.

**Table 4: Net New Trip Generation**

Phase	Daily	PM Peak Hour
I	3,800	242
II	4,684	359
III	10,324	841
IV	11,587	942

All gross and net new project trip generation calculations can be found in **Appendix B**.

### 2.2.8. Net New Trip Generation Based on ITE Minimum Rates

To better understand the potential range of trip generation from an urban center development such as Point Wells, the minimum trip generation rates were calculated to see the scale of trips produced by the site trip generation. All minimum rates were gathered from the ITE Trip Generation, 8<sup>th</sup> Edition (Institute of Transportation Engineers, 2008). The identified minimum trip generation per phase, assuming the same internalization rate as the standard trip generation, produces the trip generation in **Table 5**.

**Table 5: Minimum Net New Trip Generation**

Phase	Daily	PM Peak Hour
I	2,406	151
II	2,952	175
III	6,928	541
IV	8,020	639

Comparing the minimum trip generation rates to those of the ITE Average rates for the Point Wells Development Phase IV, the overall trip generation could be up to 30% lower based on the ADT and PM peak hour generated trips.

The Point Wells project includes many of the features and amenities that would typically result in below-average trip generation.

## 2.3. Travel Demand Forecast Model

### 2.3.1. Model Development

A Point Wells Development specific computer-based travel demand model using VISUM (version 11.52) was developed for this TIA. The VISUM program, a Windows-based multimodal transportation modeling software, was used to help understand the existing traffic flow patterns, distribute the Point Wells project site trips throughout the project study area and Snohomish and King counties, and evaluate intersection Level of Service (LOS) and delay. The built-in intersection capacity analysis methodology in VISUM is consistent with the methodology described in the Highway Capacity Manual (HCM) (Transportation Research Board (TRB), 2000).

The Point Wells travel demand model development process includes physical network-building, four-step modeling, base model validation, and future traffic forecasting.

The network building involves the laying out of roadways, intersections, and zone structure and zone connectors. The roadway network, including city and county boundaries, was built by incorporation of NAVTEQ data, which provided all freeways, principal arterials, minor arterials, collectors, and local streets in Snohomish and King counties. Link capacity, speed, and number of lanes are most relevant for roadway coding; intersection control type, configuration, and capacity are most critical for intersection coding. The zone structure was based on the adopted Puget Sound Regional Council (PSRC) Traffic Analysis Zones (TAZ), to cover all of Snohomish and King counties, and the zone connectors were manually added into the Point Wells model.

Four-step modeling typically includes trip generation, trip distribution, mode choice, and traffic assignment. The Point Wells model focuses on trip generation, trip distribution, and traffic assignment. Trip generation was only applied for the project development but was not applied for the background traffic modeling. Instead, to be consistent with the PSRC traffic growth forecasting on the roadway network, the background traffic was modeled and interpolated using the PSRC vehicle trip tables for periods between 2006 and 2040 for the existing 2010 conditions, and the No Build and Build scenarios in each phase. The final trip distribution and traffic assignment procedures combine the project-generated trip table and the background growth trip table to distribute trips to each TAZ and assign trips on the roadway network for the Build scenarios. The total regional trips are held constant.

The base model validation is a process of comparing the calibrated model's raw volumes against the base-year traffic counts to show the degree of correlation and to determine an acceptable accuracy and degree of confidence to use the base model to forecast future traffic volumes. The most common statistical measure of "goodness of fit" is the R-Squared statistic. This measures how well the model's raw volumes represent the observed count data. The base model validation for the Point Wells model (the R<sup>2</sup> value) is 0.75. Refer to **Appendix F** for additional model validation results.

Future traffic forecasting was conducted using the acceptable base model for the No Build and Build scenarios for each phase. The future traffic volumes are equal to the actual traffic counts plus the background traffic growth in all No Build scenarios and are equal to the actual traffic counts plus the background traffic growth plus the project-generated trips in all Build scenarios. The background traffic growth was interpolated using PSRC trip tables between 2006 and 2040, and the project-generated trips were consistent with the trips estimated using ITE trip generation methodology (Institute of Transportation Engineers, 2008), including project trips internalization (Institute of Transportation Engineers, 2004).

### 2.3.2. Project Trip Distribution

The project-generated trips were distributed to the study area by utilizing the Point Wells Development travel demand VISUM model. The distribution flow pattern in each phase shows that most project trips (approximately 75%) were attracted south to the Shoreline and Seattle areas - the employment and commercial generators - via Richmond Beach Drive NW, NW 196<sup>th</sup> Street, NW Richmond Beach Road, and I-5 or SR 99, while roughly 25% of the project trips were attracted north, to areas such as the town of Woodway and the cities of Lynnwood and Everett via the north-south arterials such as SR 99 and I-5. Refer to **Figures 2 through 5** for the cumulative, per phase trip distribution.

Figure 2: Phase I Cumulative Trip Distribution

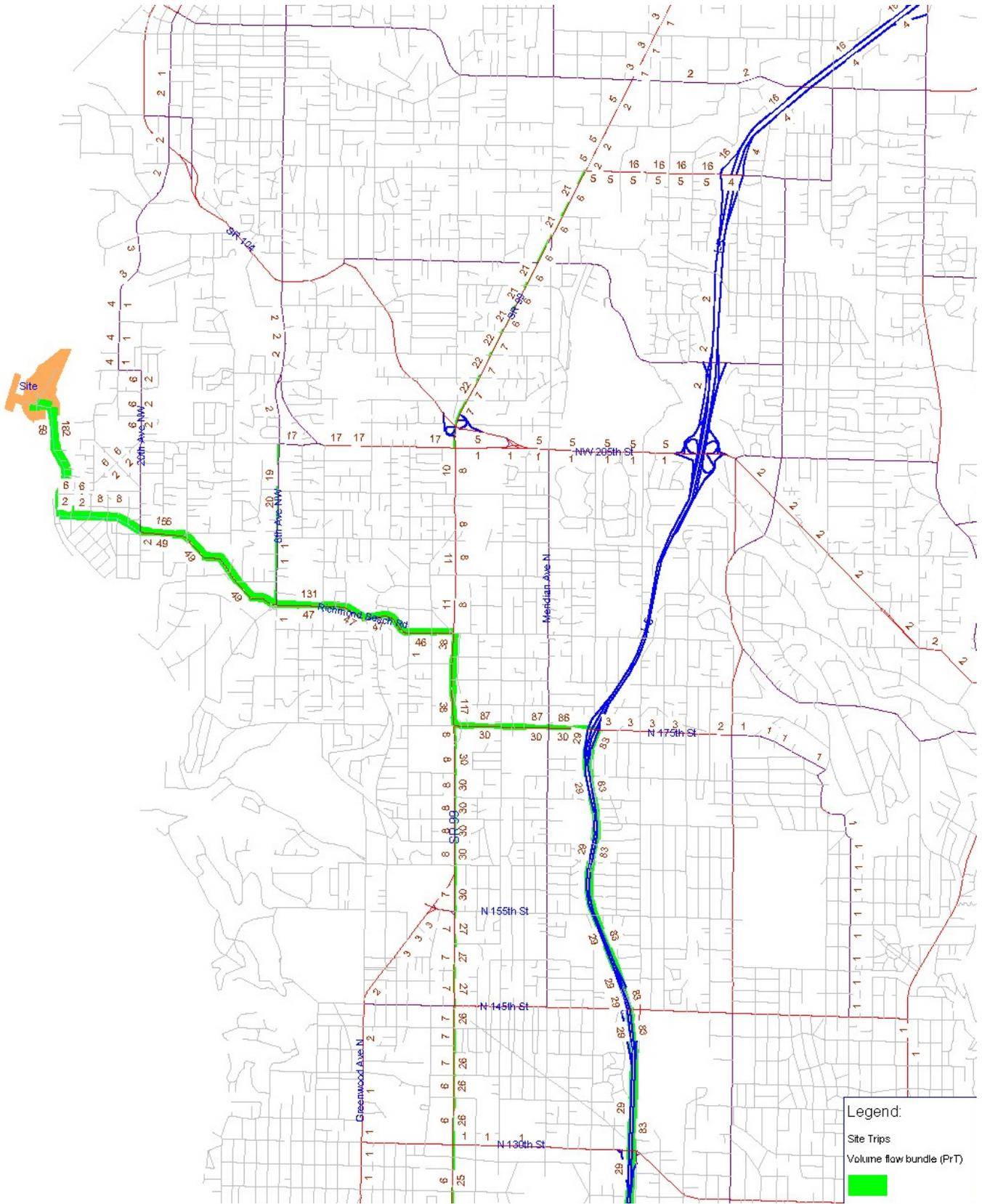


Figure 3: Phase II Cumulative Trip Distribution

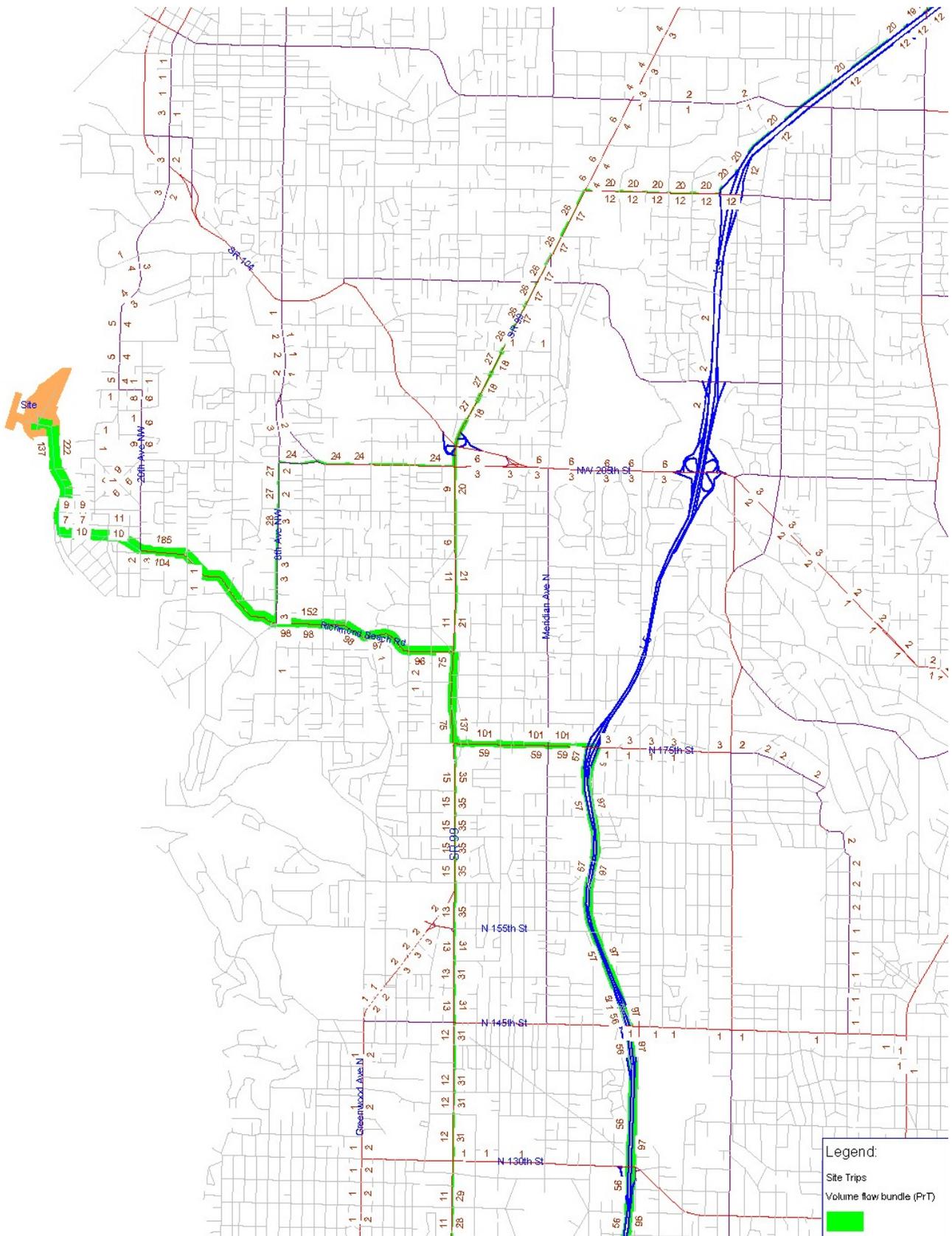


Figure 4: Phase III Cumulative Trip Distribution

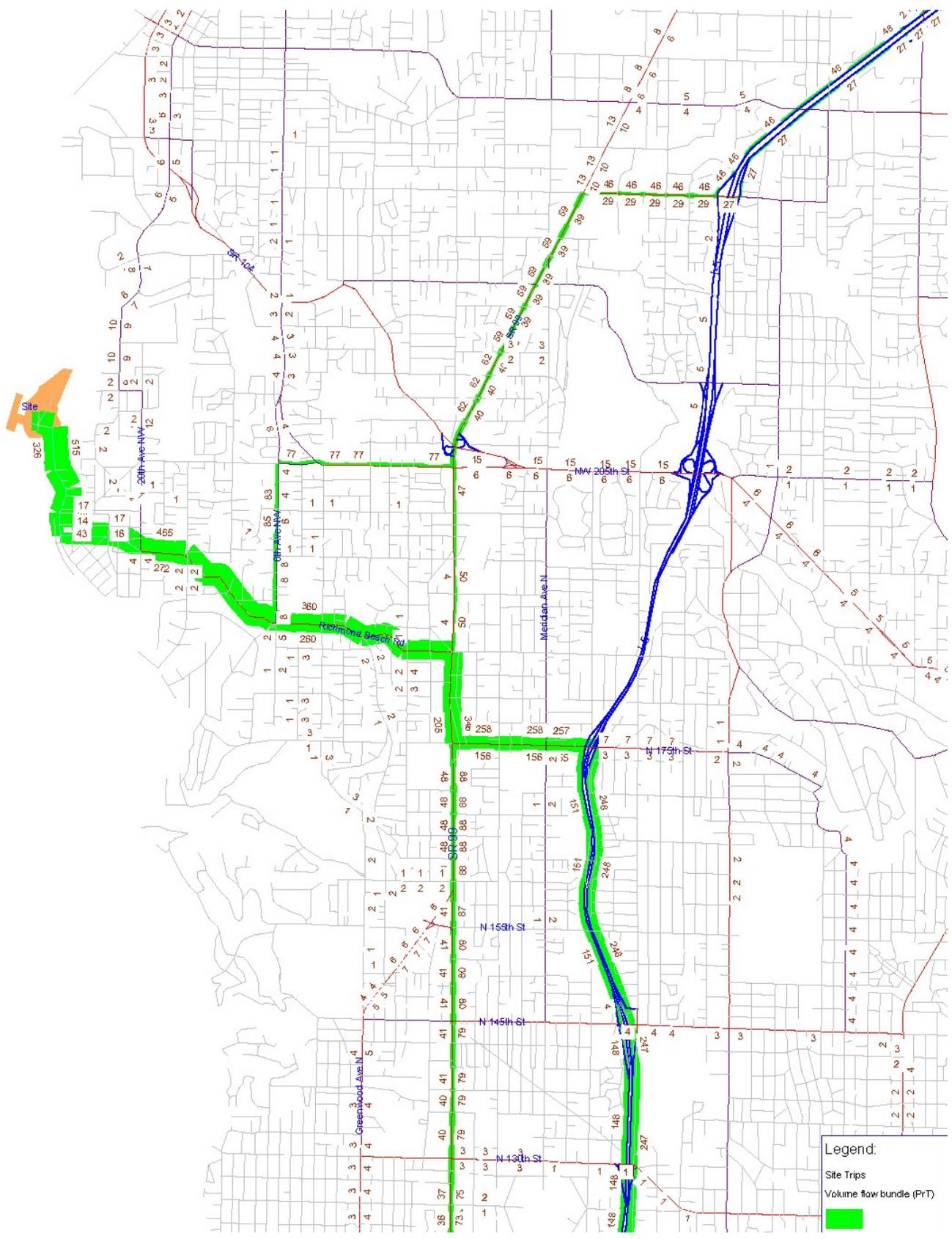
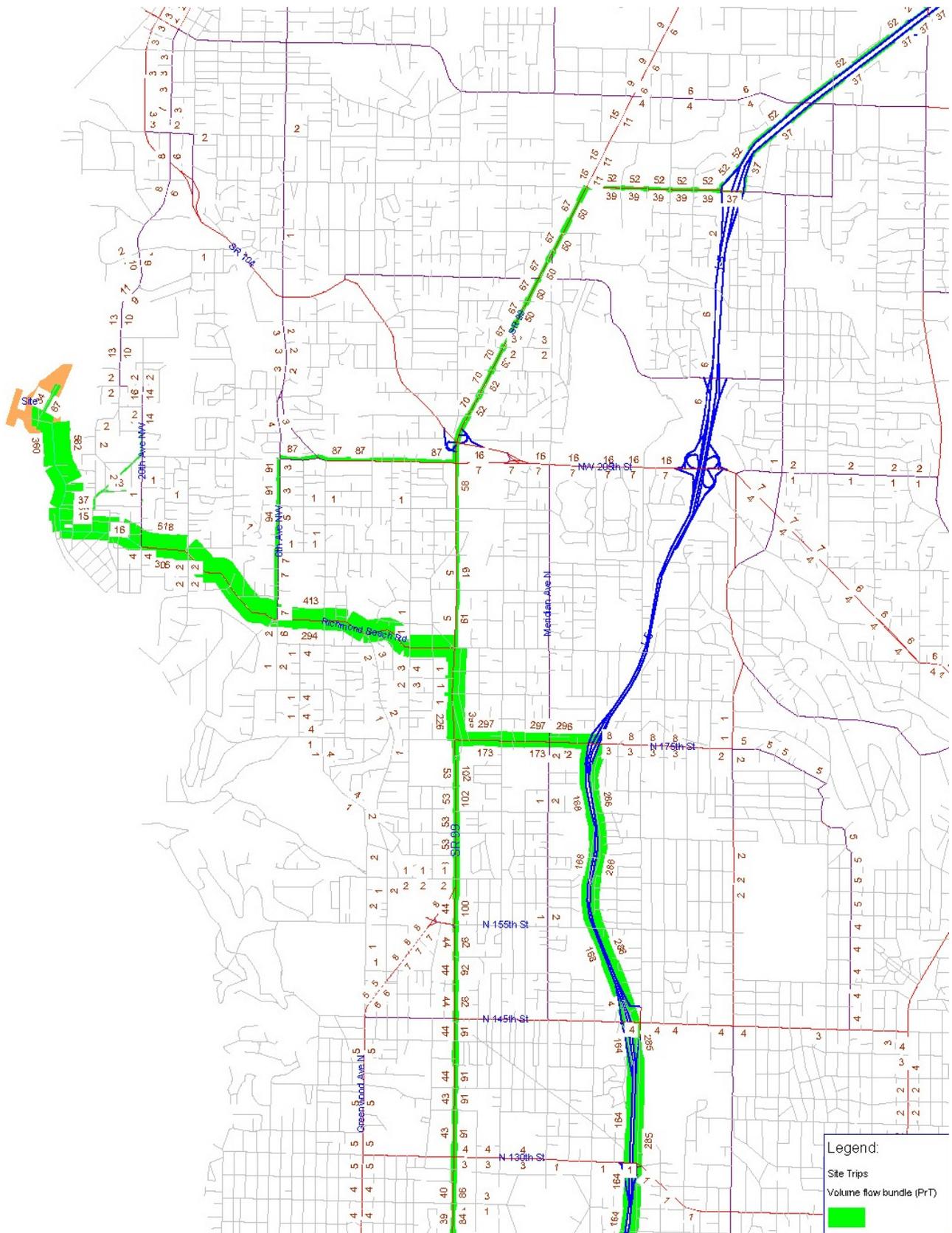


Figure 5: Phase IV Cumulative Trip Distribution



### 2.3.3. Historic Shoreline Traffic Volumes in the Study Area

To better understand the Richmond Beach corridors and other travel routes within Shoreline, 2005-2009 Travel Flow Maps were gathered from the City of Shoreline. Refer to **Appendix D** for the Traffic Flow Maps. These maps provide the 24-hour average weekday traffic (combined two-directional totals) for the entire city. Reviewing the traffic volumes for the five-year period at a number of key corridors indicates that the background growth within Shoreline is very small or near zero in most places, outside of state or regional transportation facilities. Many of the areas where little to no growth was indicated are found west of SR 99 in developed residential areas, including that of the Point Wells site. This indicates that roadways close to the Point Wells facility have been holding at a growth rate of near zero for the past five years.

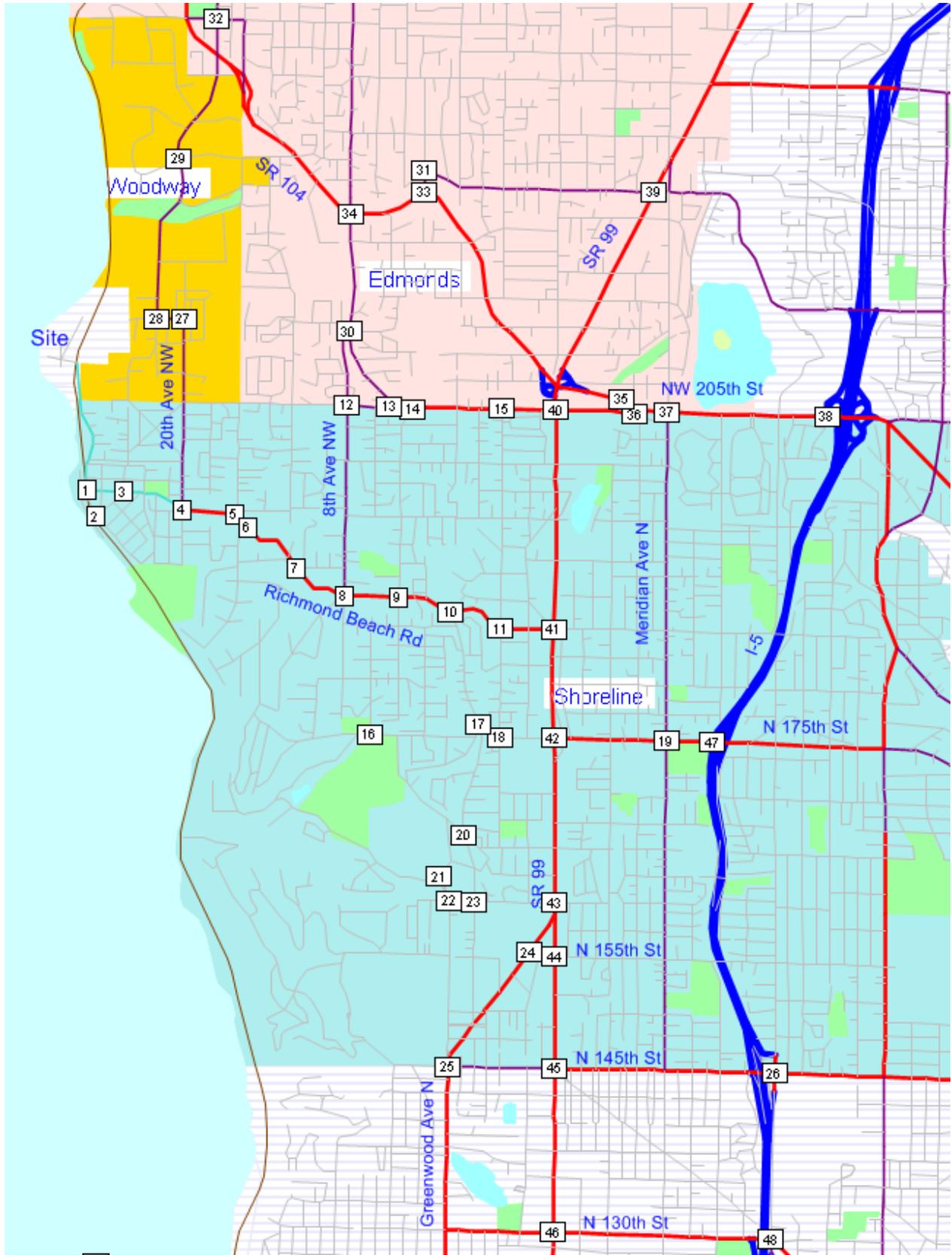
### 2.3.4. Establishing the Study Area

The study area/boundary, or area of influence, is the area in and around the project site for which traffic analysis is required. The practical cordon line follows physical boundaries such as freeways, roadways, or geographical features. For the Point Wells Development, the study area was created by identifying the most used routes for travel to and from the site. The study area for the Point Wells site extends north to Edmonds and 228<sup>th</sup> Street SW, east to I-5, and south to N 130<sup>th</sup> Street.

### 2.3.5. Study Intersections and Corridors in the Area of Influence

Upon determining the Point Wells area of influence, intersections along corridors were identified for further analysis. The following intersections and their control types within the cities of Shoreline, Edmonds, and Seattle, and the town of Woodway are shown in **Figure 6** and **Table 6**.

Figure 6: Identified Study Intersections and Corridors



Legend: # = Intersection Number

**Table 6: Study Intersections and Control Type**

<b>No.</b>	<b>Intersection</b>	<b>Control Type</b>	<b>Jurisdiction</b>
1	Richmond Beach Drive NW & NE 196 <sup>th</sup> Street	Two-way stop	Shoreline
2	Richmond Beach Drive NW & NW 195 <sup>th</sup> Place	Two-way stop	Shoreline
3	24 <sup>th</sup> Avenue NW & NW 196 <sup>th</sup> Street	Two-way stop	Shoreline
4	20 <sup>th</sup> Avenue NW & NW 195 <sup>th</sup> Street	All-way stop	Shoreline
5	NW 195 <sup>th</sup> Street & 15 <sup>th</sup> Avenue NW	Two-way stop	Shoreline
6	15 <sup>th</sup> Avenue NW & NW Richmond Beach Road	All-way stop	Shoreline
7	NW Richmond Beach Road & NW 190 <sup>th</sup> Street	Two-way stop	Shoreline
8	8 <sup>th</sup> Avenue NW & NW Richmond Beach Road	Signalized	Shoreline
9	3 <sup>rd</sup> Avenue NW & NW Richmond Beach Road	Signalized	Shoreline
10	Dayton Avenue N & NW Richmond Beach Road	Signalized	Shoreline
11	Fremont Avenue N & N 185 <sup>th</sup> Street	Signalized	Shoreline
12	100 <sup>th</sup> Avenue W & 244 <sup>th</sup> Street SW	Two-way stop	Shoreline
13	Firdale Avenue & 244 <sup>th</sup> Street SW	Two-way stop	Shoreline
14	3 <sup>rd</sup> Avenue NW & 244 <sup>th</sup> Street SW	Two-way stop	Shoreline
15	Fremont Avenue N & 244 <sup>th</sup> Street SW	Two-way stop	Shoreline
16	6 <sup>th</sup> Avenue NW & NW 175 <sup>th</sup> Street	Two-way stop	Shoreline
17	Dayton Avenue N & St Luke Place N	Two-way stop	Shoreline
18	Fremont Avenue N & N 175 <sup>th</sup> Street	Signalized	Shoreline
19	Meridian Avenue N & N 175 <sup>th</sup> Street	Signalized	Shoreline
20	Dayton Avenue N & Carlyle Hall Road N	Two-way stop	Shoreline
21	Greenwood Avenue N & N Innis Arden Way	Two-way stop	Shoreline
22	Greenwood Avenue N & N 160 <sup>th</sup> Street	All-way stop	Shoreline
23	Dayton Avenue N & N 160 <sup>th</sup> Street	Signalized	Shoreline
24	Westminster Way N & N 155 <sup>th</sup> Street	Signalized	Shoreline
25	Greenwood Avenue N & SR 523 (N 145 <sup>th</sup> Street)	Signalized	Shoreline
26	5 <sup>th</sup> Avenue NE & SR 523 (N 145 <sup>th</sup> Street)	Signalized	Shoreline
27	Timber Lane & 238 <sup>th</sup> Street SW	All-way stop	Woodway
28	114 <sup>th</sup> Avenue W & 238 <sup>th</sup> Street SW	All-way stop	Woodway
29	Woodway Park Road & Algonquin Road	Two-way stop	Woodway
30	Firdale Avenue & 238 <sup>th</sup> Street SW	Signalized	Edmonds
31	95 <sup>th</sup> Place W & 228 <sup>th</sup> Street SW	Two-way stop	Edmonds
32	3 <sup>rd</sup> Avenue S & Pine Street	Two-way stop	Edmonds
33	95 <sup>th</sup> Place W & SR 104 (Edmonds Way)	Signalized	WSDOT
34	100 <sup>th</sup> Avenue W & SR 104 (Edmonds Way)	Signalized	WSDOT
35	SB SR 104 (Edmonds Way) & WB 244 <sup>th</sup> Street SW	Signalized	WSDOT
36	SB SR 104 (Edmonds Way) & EB 244 <sup>th</sup> Street SW	Signalized	WSDOT
37	76 <sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way)	Signalized	WSDOT
38	SB I-5 Ramps & SR 104 (Lake Ballinger Way)	Signalized	WSDOT
39	SR 99 & 228 <sup>th</sup> Street SW	Two-way stop	WSDOT
40	SR 99 & 244 <sup>th</sup> Street SW	Signalized	WSDOT
41	SR 99 & N 185 <sup>th</sup> Street	Signalized	WSDOT
42	SR 99 & N 175 <sup>th</sup> Street	Signalized	WSDOT
43	SR 99 & N 160 <sup>th</sup> Street	Signalized	WSDOT
44	SR 99 & N 155 <sup>th</sup> Street	Signalized	WSDOT
45	SR 99 & SR 523 (N 145 <sup>th</sup> Street)	Signalized	WSDOT
46	SR 99 & N 130 <sup>th</sup> Street	Signalized	WSDOT
47	SB I-5 Ramps & N 175 <sup>th</sup> Street	Signalized	WSDOT
48	5 <sup>th</sup> Avenue NE & NE 130 <sup>th</sup> Street	Signalized	Others

The trip distribution shows the key corridors within the Point Wells Development project vicinity that are impacted by project-generated trips. As trips enter and exit the site, the greatest impacts are closest to the site, while impacts are reduced further from the site. Primary impacted corridors, in order of impact are:

- Richmond Beach Drive NW
- NW Richmond Beach Road
- SR 99 South
- SR 99 North

The two most impacted roadway corridors in the project vicinity are Richmond Beach Drive NW and NW Richmond Beach Road. These two corridors will be analyzed in further detail when additional studies are completed. Refer to Section 4.2 Richmond Beach Vicinity Corridor Mitigation for additional information on the future Richmond Beach vicinity corridor studies.

### 2.3.6. Data Collection

Various forms of data were required to create, calibrate, and validate the Point Wells Traffic model. The data was used as components to create the most reasonable traffic model, which would consistently show the impact to the local roadway system within the project influence area.

- PM peak turning movement traffic counts were collected or gathered from the local agencies. These counts indicate the total volume, direction, and peak hour of the trips through any particular area intersection during the hours of 4:00 to 6:00 PM. Nearly half of the counts were available through the Paramount Docket XIII SEIS (ICF Jones & Stokes, 2009). Other previously conducted counts were obtained through WSDOT and the City of Seattle. All previous counts used were required to be 2007 or newer; most are 2009 or newer. The Point Wells project team had counts collected for any additional locations where counts were not present. Twenty other intersections were counted by Traffic Count Consultants (TC<sup>2</sup>, Inc.).
- Geometric Conditions (i.e., number of lanes, turn pockets, one-way streets, intersection configurations, etc.) were recorded by staff observation and aerial photography.
- Signal phasing was gathered by staff observation at each signalized location.
- Posted speeds for the local roadway systems were gathered either by staff observation or agency website and roadway classification maps.
- Transit stops were determined through the King County Metro website and trip planner resources, the Sound Transit website, the Community Transit website, and the PSRC network model.

All of the traffic counts used in this analysis can be found in **Appendix A**, while general intersection aerials can be found in **Appendix C**.

## 2.4. Transit Opportunities

Transit opportunities will be a major consideration at the Point Wells facility to help reduce transportation impacts to the surrounding communities and to reduce single occupancy vehicle (SOV) commute trips to and from the site. Transit options are being proposed both for the road and railway systems in the project vicinity. The Point Wells Development is working with Sound Transit and King County Metro to provide additional transit services via bus and rail. Refer to **Appendix E** for all current transit route mapping.

### **2.4.1. Sound Transit**

As a proposed concept to the Point Wells facility, a Sound Transit Sounder Station would be constructed on site, allowing residents to travel along the existing rail route north to Edmonds, Mukilteo, and Everett and/or south to the King Street Station in Seattle. Currently, four AM peak hour (5:45, 6:15, 6:45, and 7:15 am) trains run south and four PM peak hour (4:05, 4:33, 5:05, and 5:35 pm) trains run north on the tracks adjacent to the Point Wells Development. When a station is constructed on the Point Wells site, the stop would be in line with others along the corridor to help transport site residents to and from employment opportunities in Seattle.

Another major Sound Transit facility in the project vicinity includes the future “North Corridor Transit Project” for the LINK Light Rail system. The North Corridor Transit Project, slated to be completed and in operation in 2023, would connect the LINK Light Rail system from Northgate to the Lynnwood Transit Center. Proposed stops along the I-5 route would include stations in the vicinity of NE 145<sup>th</sup> Street, NE 185<sup>th</sup> Street, and Mountlake Terrace, in addition to its terminus locations. Another possible route for the proposed North Corridor LINK would be along the SR 99 corridor (with unidentified stops). Although the North Corridor LINK continues through preliminary planning, it is known that LINK Light Rail will come near the Point Wells project. LINK Light Rail will provide access to Lynnwood to the north and SeaTac Airport or the Redondo area to the south (Sound Transit, 2011). Easy access from the Point Wells Development to the LINK Light Rail system, either along SR 99 or I-5, will be provided by the King County Metro bus system.

### **2.4.2. King County Metro**

Currently, Metro bus travel links the local Richmond Beach community to services and amenities along the SR 99 corridor, the I-5 corridor, and major regional hubs throughout the Puget Sound. Upon completion of the Point Wells Development Phase II (Urban Center), a Transit Hub will be constructed for both Metro busses and the Sounder commuter platform. Point Wells will work with Metro to bring busses into the Point Wells site, providing a location to turn around, pick up passengers, and continue on the transit route. The bus routes leaving the Point Wells Development will not only link to local and regional destinations, the bus service will also provide connections to the existing Community Transit SWIFT bus system, the future Sound Transit LINK Light Rail system, and Metro RapidRide.

A future Metro project in the Point Wells project vicinity is the new RapidRide bus system. RapidRide is based on a bus rapid transit (BRT) model in which bus service provides frequent, reliable transit offerings along high use and heavily-congested corridors. The RapidRide segment E is planned to open in 2013 and will run along SR 99 (Aurora Avenue N) between Shoreline (Aurora Village Transit Center) and downtown Seattle. Access to and from the Point Wells Development to the RapidRide system will be via Metro bus transit along the local Richmond Beach corridors and SR 99 (King County Metro, 2011).

### **2.4.3. Community Transit**

Community Transit currently offers the SWIFT bus rapid transit (BRT) along SR 99, between Everett and Shoreline. This fast, frequent, and convenient service provides reliable transit options along the SR 99 corridor. The purpose is to create efficient bus transportation along the heavily-congested corridor. The Point Wells Development residents or visitors can reach the project vicinity via the SWIFT BRT system, and then utilize the local Metro buses, connecting directly to the site (Community Transit, 2011).

## **2.5. LOS Analysis**

When the traffic model was completed, existing and future models (for each project phase) were conducted to determine the traffic impacts caused by the Point Wells Development. LOS analysis results can be provided upon request.

### 2.5.1. Intersection Level of Service Criteria

The HCM methodology was used to calculate the level of service (LOS) at the intersections within the project limits (Transportation Research Board (TRB), 2000). LOS is a qualitative measure describing operational conditions within a traffic stream and the perception thereof by road users. For un-signalized and signalized intersections, LOS is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. There are six LOS levels ranging from LOS A to LOS F, with LOS A representing the best operating conditions and LOS F the worst. Specifically, LOS criteria are stated in terms of the average vehicle control delay for a peak 15-minute analysis period, factored to a full hour, for the intersection as a whole.

For signalized intersections and all-way stop-controlled intersections, LOS is determined by the average intersection delay. For two-way stop-controlled intersections, LOS is determined by the worst delay experienced by the stop approaches.

**Table 7** provides LOS definitions for signalized and un-signalized intersections.

**Table 7: Level of Service Definitions**

LOS	Control Delay (Seconds / Vehicle)		Expected Delays
	Signalized Intersection	Un-signalized Intersection	
A	Less than 10	Less than 10	Little or no delay
B	Between 10 and 20	Between 10 and 15	Short traffic delays
C	Between 20 and 35	Between 15 and 25	Average traffic delays
D	Between 35 and 55	Between 25 and 35	Long traffic delays
E	Between 55 and 80	Between 35 and 50	Very long traffic delays
F	Greater than 80	Greater than 50	(1)

(1) When demand volume exceeds the capacity of the movement, extreme delays will be encountered with queuing, which may cause severe congestion affecting other traffic movements in the intersection.  
SOURCE: (Transportation Research Board (TRB), 2000)

### 2.5.2. Intersection Level of Service Standards

LOS standards are used to evaluate the project impacts and concurrency. Jurisdictions adopt the minimum acceptable LOS for intersection operating conditions. Deficiencies are identified if operations fall below the minimum acceptable LOS standards. The following standards apply to agencies in the study area:

- City of Shoreline: LOS E at signalized intersections on arterials within the city.
- City of Edmonds: LOS D on arterials, LOS C on collectors, and LOS B on local streets
- City of Woodway: LOS A for major intersections within the town, which include the following:
  - Timber Lane and SW 238<sup>th</sup> Street
  - 114<sup>th</sup> Avenue W and SW 238<sup>th</sup> Street
  - Woodway Park Road and Algonquin Road
- Washington State Department of Transportation (WSDOT): LOS D for Highways of Statewide Significance in urban areas, such as SR 99 and SR 104 in the project areas. A goal of LOS E was applied to SR 99 as part of Aurora Corridor Improvement Project within Shoreline. (City of Shoreline, 2009)

The LOS and delay analysis was conducted for the PM peak hour for existing conditions, No Build scenarios, and Build scenarios in Phases I-IV using the VISUM built-in Intersection Capacity Analysis methodology that is consistent with the methodology described in the HCM (Transportation Research Board (TRB), 2000).

For existing conditions, the intersection volumes were obtained from the PM peak hour intersection turning counts between 2008 and 2010. Due to minimum traffic growth between 2008 and 2011, no adjustments were made to the older counts before 2011. The signal timing and phasing were optimized at signalized intersections using the Intersection Capacity Analysis methodology in VIUSM.

For No Build scenarios in Phases I-IV, the intersection volumes were obtained from the existing counts plus modeled background traffic growth. The signal timing and phasing were optimized at signalized intersections using the Intersection Capacity Analysis methodology in VIUSM. The improvements planned and underway by Shoreline on SR 99 were assumed to be completed for all No Build scenarios.

For Build scenarios in Phases I-IV, the intersection volumes were obtained from the existing counts plus modeled background traffic growth plus the project-generated trips. The signal timing and phasing were optimized at signalized intersections using the Intersection Capacity Analysis methodology in VISUM. The improvements by Shoreline on SR 99 were assumed to be completed for all future No Build and Build scenarios.

For two-way stop intersections, delay and LOS is documented on the worst approach. For signalized and all-way stop intersections, intersection-wide average delay and LOS is documented. The PM peak hour intersection LOS and delay within the jurisdictions of Shoreline, Woodway, Edmonds, and WSDOT are summarized in **Tables 8 through 11**, respectively.

Based on the LOS standards defined for each jurisdiction, the intersections with deficient LOS for each phase of the project are shown in **Table 12** and are listed as follows:

- Deficient intersections for existing conditions through the Phase IV Build scenario in the City of Shoreline:
  - Fremont Avenue N & 244<sup>th</sup> Street SW
  - 5<sup>th</sup> Avenue NE & SR 523 (N 145<sup>th</sup> Street)
- Deficient intersections for existing conditions through the Phase IV Build scenarios for WSDOT:
  - 76<sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way)
  - SR 99 & 228<sup>th</sup> Street SW
- Deficient intersections for Phases III and IV for WSDOT:
  - SR 99 and N 185<sup>th</sup> Street
  - SR 99 and N 160<sup>th</sup> Street
  - SR 99 and N 130<sup>th</sup> Street

There are no deficient intersections projected for the town of Woodway or in the city of Edmonds. Although most project trips enter and exit the project site via Richmond Beach Drive NW, NW 196<sup>th</sup> Street, and NW Richmond Beach Road between the project site and SR 99, all intersections on these roads operate at LOS D or better except SR 99 and N 185<sup>th</sup> Street, which operates at LOS F in the Phase III and IV Build scenarios.

**Table 8: PM Peak Hour Intersection LOS (Delay) in Shoreline**

No.	Name	Control Type	LOS Standard	Existing	Phase I		Phase II		Phase III		Phase IV	
					No Build	Build	No Build	Build	No Build	Build	No Build	Build
					LOS (Delay)	LOS (Delay)						
1	Richmond Beach Drive NW & NE 196 <sup>th</sup> Street	Two-way stop	LOS D	A (8.7)	A (8.7)	A (9.1)	A (8.7)	A (9.1)	A (8.8)	A (8.4)	A (8.8)	A (8.7)
2	Richmond Beach Drive NW & NW 195 <sup>th</sup> Place	Two-way stop	LOS D	A (8.7)	A (8.7)							
3	24 <sup>th</sup> Avenue NW & NW 196 <sup>th</sup> Street	Two-way stop	LOS D	A (9.7)	A (9.7)	B (11.1)	A (9.7)	B (11.8)	A (9.8)	C (17.2)	A (9.8)	C (16.9)
4	20 <sup>th</sup> Avenue NW & NW 195 <sup>th</sup> Street	All-way stop	LOS D	A (9.0)	A (9.0)	B (10)	A (9)	B (11)	A (10)	C (15)	A (10)	C (17)
5	NW 195 <sup>th</sup> Street & 15 <sup>th</sup> Avenue NW	Two-way stop	LOS D	B (13.0)	B (13.2)	C (15.5)	B (11.9)	C (16.2)	B (12.1)	D (25.3)	B (12.2)	D (28.7)
6	15 <sup>th</sup> Avenue NW & NW Richmond Beach Road	All-way stop	LOS D	B (10.0)	B (11.0)	B (12)	A (10)	B (13)	A (10)	C (21)	A (10)	D (26)
7	NW Richmond Beach Road & NW 190 <sup>th</sup> Street	Two-way stop	LOS D	B (10.3)	B (10.3)	B (11.1)	A (9.8)	B (11.2)	A (9.9)	B (13)	A (10)	B (13.7)
8	8 <sup>th</sup> Avenue NW & NW Richmond Beach Road	Signalized	LOS D	D (37.0)	D (38.0)	D (39)	D (38)	D (39)	D (38)	D (41)	D (38)	D (42)
9	3 <sup>rd</sup> Avenue NW & NW Richmond Beach Road	Signalized	LOS D	A (8.0)	A (8.0)	A (8)	A (8)					
10	Dayton Avenue N & NW Richmond Beach Road	Signalized	LOS D	B (14.0)	B (17.0)	B (16)	B (17)	B (16)	B (17)	B (16)	B (17)	B (16)
11	Fremont Avenue N & N 185 <sup>th</sup> Street	Signalized	LOS D	C (30.0)	C (31.0)	C (32)	C (31)	C (32)	C (31)	C (34)	C (31)	D (35)
12	100 <sup>th</sup> Avenue W & 244 <sup>th</sup> Street SW	Two-way stop	LOS D	B (13.5)	B (14.3)	B (14.7)	B (14.6)	C (15.5)	B (14.6)	C (18.8)	C (15.4)	C (19.8)
13	Firdale Avenue & 244 <sup>th</sup> Street SW	Two-way stop	LOS D	B (11.5)	B (11.7)	B (11.8)	B (11.8)	B (12.1)	B (11.9)	B (13)	B (12.2)	B (13.6)
14	3 <sup>rd</sup> Avenue NW & 244 <sup>th</sup> Street SW	Two-way stop	LOS D	C (24.4)	D (26.7)	D (27)	D (27)	D (28.4)	D (28.2)	D (27.5)	D (27.9)	D (31.7)
15	Fremont Avenue N & 244 <sup>th</sup> Street SW	Two-way stop	LOS D	<b>E (39.6)</b>	<b>E (44.5)</b>	<b>E (45.1)</b>	<b>E (45.2)</b>	<b>E (48.9)</b>	<b>E (47.6)</b>	<b>F (65.5)</b>	<b>F (53.8)</b>	<b>F (74)</b>
16	6 <sup>th</sup> Avenue NW & NW 175 <sup>th</sup> Street	Two-way stop	LOS D	B (10.4)	B (10.5)	B (10.6)	B (10.5)	B (10.6)				
17	Dayton Avenue N & St Luke Place N	Two-way stop	LOS D	B (12.6)	B (12.8)	B (12.8)	B (12.8)	B (12.9)	B (12.9)	B (12.9)	B (12.9)	B (13)
18	Fremont Avenue N & N 175 <sup>th</sup> Street	Signalized	LOS D	B (15)	B (15)							
19	Meridian Avenue N & N 175 <sup>th</sup> Street	Signalized	LOS E	D (44)	D (48)	D (50)	D (49)	D (50)	D (50)	D (54)	D (51)	E (56)

No.	Name	Control Type	LOS Standard	Existing	Phase I		Phase II		Phase III		Phase IV	
					No Build	Build						
					LOS (Delay)							
20	Dayton Avenue N & Carlyle Hall Road N	Two-way stop	LOS D	C (20.5)	C (21.1)	C (21.1)	C (21.2)	C (21.3)	C (21.8)	C (22.3)	C (22.5)	C (23.1)
21	Greenwood Avenue N & N Innis Arden Way	Two-way stop	LOS D	B (12.3)	B (12.1)							
22	Greenwood Avenue N & N 160 <sup>th</sup> Street	All-way stop	LOS D	B (12)	B (12)	B (12)	B (13)					
23	Dayton Avenue N & N 160 <sup>th</sup> Street	Signalized	LOS D	B (12)	B (13)	B (12)	B (13)	B (13)				
24	Westminster Way N & N 155 <sup>th</sup> Street	Signalized	LOS D	C (24)	C (25)	C (24)	C (25)	C (25)				
25	Greenwood Avenue N & SR 523 (N 145 <sup>th</sup> Street)	Signalized	LOS E	D (44)	D (48)	D (48)	D (49)	D (49)	D (51)	D (53)	D (54)	E (62)
26	5 <sup>th</sup> Avenue NE & SR 523 (N 145 <sup>th</sup> Street)	Signalized	LOS E	<b>F (143)</b>	<b>F (186)</b>	<b>F (181)</b>	<b>F (181)</b>	<b>F (191)</b>	<b>F (183)</b>	<b>F (208)</b>	<b>F (223)</b>	<b>F (234)</b>

**Table 9: PM Peak Hour Intersection LOS (Delay) in Woodway**

No.	Name	Control Type	LOS Standard	Existing	Phase I		Phase II		Phase III		Phase IV	
					No Build	Build						
					LOS (Delay)							
27	Timber Lane & 238 <sup>th</sup> Street SW	All-way stop	LOS A	A (7)	A (7)	A (7)	A (7)	A (7)	A (7)	A (8)	A (7)	A (8)
28	114 <sup>th</sup> Avenue W & 238 <sup>th</sup> Street SW	All-way stop	LOS A	A (7)	A (7)	A (7)	A (7)	A (7)	A (7)	A (7)	A (7)	A (7)
29	Woodway Park Road & Algonquin Road	Two-way stop	LOS A	A (9.2)	A (9.3)	A (9.3)	A (9.3)	A (9.3)	A (8.6)	A (9.3)	A (9.4)	A (9.4)

**Table 10: PM Peak Hour Intersection LOS (Delay) in Edmonds**

No.	Name	Control Type	LOS Standard	Existing	Phase I		Phase II		Phase III		Phase IV	
					No Build	Build						
				LOS (Delay)								
30	Firdale Avenue & 238 <sup>th</sup> Street SW	Signalized	LOS C	B (14)	B (15)	B (15)	B (15)					
31	95 <sup>th</sup> Place W & 228 <sup>th</sup> Street SW	Two-way stop	LOS C	B (11.5)	B (11.6)	B (11.7)	B (11.6)	B (11.7)				
32	3 <sup>rd</sup> Avenue S & Pine Street	Two-way stop	LOS C	B (11.4)	B (11.8)	B (11.7)	B (11.8)	B (11.8)	B (12)	B (12.1)	B (13.2)	B (12.9)

**Table 11: PM Peak Hour Intersection LOS (Delay) under WSDOT**

No.	Name	Control Type	LOS Standard	Existing	Phase I		Phase II		Phase III		Phase IV	
					No Build	Build	No Build	Build	No Build	Build	No Build	Build
				LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)
33	95 <sup>th</sup> Place W & SR 104 (Edmonds Way)	Signalized	LOS D	A (5)	A (6)	A (6)	A (6)	A (6)	A (6)	A (6)	A (6)	A (6)
34	100 <sup>th</sup> Avenue W & SR 104 (Edmonds Way)	Signalized	LOS D	D (38)	D (42)	D (42)	D (42)	D (43)	D (44)	D (45)	D (45)	D (46)
35	SB SR 104 (Edmonds Way) & WB 244 <sup>th</sup> Street SW	Signalized	LOS D	B (14)	B (14)	B (14)	B (14)	B (14)	B (14)	B (14)	B (14)	B (14)
36	SB SR 104 (Edmonds Way) & EB 244 <sup>th</sup> Street SW	Signalized	LOS D	B (14)	B (15)	B (14)	B (15)	B (14)	B (15)	B (15)	B (15)	B (15)
37	76 <sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way)	Signalized	LOS D	<b>E (57)</b>	<b>E (63)</b>	<b>E (69)</b>	<b>E (64)</b>	<b>E (73)</b>	<b>E (70)</b>	<b>F (84)</b>	<b>E (79)</b>	<b>F (98)</b>
38	SB I-5 Ramps & SR 104 (Lake Ballinger Way)	Signalized	LOS D	B (11)	B (11)	B (11)	B (11)	B (11)	B (10)	B (10)	B (10)	B (10)
39	SR 99 & 228 <sup>th</sup> Street SW	Two-way stop	LOS E	<b>F (81.6)</b>	<b>F (84.5)</b>	<b>F (184.9)</b>	<b>F (97)</b>	<b>F (367.9)</b>	<b>F (166.6)</b>	<b>F (455.5)</b>	<b>F (427.4)</b>	<b>F (1107.3)</b>
40	SR 99 & 244 <sup>th</sup> Street SW	Signalized	LOS E	D (48)	D (51)	D (51)	D (51)	D (51)	D (54)	D (54)	E (58)	E (74)
41	SR 99 & N 185 <sup>th</sup> Street	Signalized	LOS E	D (53.0)	D (39.0)	D (50)	D (39)	D (53)	D (41)	<b>F (175)</b>	D (43)	<b>F (230)</b>
42	SR 99 & N 175 <sup>th</sup> Street	Signalized	LOS E	D (45)	D (42)	D (51)	D (42)	D (51)	D (44)	E (60)	D (45)	E (69)
43	SR 99 & N 160 <sup>th</sup> Street	Signalized	LOS E	D (49)	D (54)	E (57)	E (56)	E (60)	E (63)	E (69)	E (73)	<b>F (82)</b>
44	SR 99 & N 155 <sup>th</sup> Street	Signalized	LOS E	D (42)	D (46)	D (47)	D (47)	D (48)	D (49)	D (49)	D (50)	D (51)

No.	Name	Control Type	LOS Standard	Existing	Phase I		Phase II		Phase III		Phase IV	
					No Build	Build	No Build	Build	No Build	Build	No Build	Build
					LOS (Delay)	LOS (Delay)						
45	SR 99 & SR 523 (N 145 <sup>th</sup> Street)	Signalized	LOS E	D (51)	E (58)	E (60)	E (59)	E (66)	E (60)	E (67)	E (63)	E (67)
46	SR 99 & N 130 <sup>th</sup> Street	Signalized	LOS E	D (49)	E (60)	E (61)	E (61)	E (61)	E (72)	E (77)	<b>F (81)</b>	<b>F (95)</b>
47	SB I-5 Ramps & N 175 <sup>th</sup> Street	Signalized	LOS D	B (19)	B (20)	C (20)	B (20)	C (21)	C (20)	B (19)	C (20)	B (19)
48	5 <sup>th</sup> Avenue NE & NE 130 <sup>th</sup> Street	Signalized	LOS D	B (18)	B (18)	B (19)	B (20)	B (20)				

**Table 12: PM Peak Hour Intersections with LOS Deficiencies**

No.	Name	Jurisdiction	LOS Standard	Existing	Phase I		Phase II		Phase III		Phase IV	
					No Build	Build	No Build	Build	No Build	Build	No Build	Build
					LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)	LOS (Delay)
15	Fremont Avenue N & 244 <sup>th</sup> Street SW	Shoreline	LOS D	<b>E (39.6)</b>	<b>E (44.5)</b>	<b>E (45.1)</b>	<b>E (45.2)</b>	<b>E (48.9)</b>	<b>E (47.6)</b>	<b>F (65.5)</b>	<b>F (53.8)</b>	<b>F (74)</b>
26	5 <sup>th</sup> Avenue NE & SR 523 (N 145 <sup>th</sup> Street)	Shoreline	LOS E	<b>F (143)</b>	<b>F (186)</b>	<b>F (181)</b>	<b>F (181)</b>	<b>F (191)</b>	<b>F (183)</b>	<b>F (208)</b>	<b>F (223)</b>	<b>F (234)</b>
37	76 <sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	<b>E (57)</b>	<b>E (63)</b>	<b>E (69)</b>	<b>E (64)</b>	<b>E (73)</b>	<b>E (70)</b>	<b>F (84)</b>	<b>E (79)</b>	<b>F (98)</b>
39	SR 99 & 228 <sup>th</sup> Street SW	WSDOT	LOS E	<b>F (81.6)</b>	<b>F (84.5)</b>	<b>F (184.9)</b>	<b>F (97)</b>	<b>F (367.9)</b>	<b>F (166.6)</b>	<b>F (455.5)</b>	<b>F (427.4)</b>	<b>F (1107.3)</b>
41	SR 99 & N 185 <sup>th</sup> Street	WSDOT	LOS E	D (53.0)	D (39.0)	D (50)	D (39)	D (53)	D (41)	<b>F (175)</b>	D (43)	<b>F (230)</b>
43	SR 99 & N 160 <sup>th</sup> Street	WSDOT	LOS E	D (49)	D (54)	E (57)	E (56)	E (60)	E (63)	E (69)	E (73)	<b>F (82)</b>
46	SR 99 & N 130 <sup>th</sup> Street	WSDOT	LOS E	D (49)	E (60)	E (61)	E (61)	E (61)	E (72)	E (77)	<b>F (81)</b>	<b>F (95)</b>

# 3. Project Impacts

## 3.1. Analysis Results & Impacts to Roadway System

### 3.1.1. Intersection Impacts

Intersection performance was affected by project phasing. Comparing the No Build condition to the Build condition in Phase I, the intersections with LOS falling below LOS standards are summarized in **Table 13**. There are four intersections operating below LOS standards; however, these four intersections also operate below LOS standards in both existing and Phase I No Build conditions as well. The Phase I Build scenario adds more delay into the intersections but does not downgrade the LOS.

**Table 13: Intersections with LOS Deficiencies in Phase I**

No.	Name	Jurisdiction	LOS Standard	Phase I	
				No Build	Build
				LOS (Delay)	LOS (Delay)
15	Fremont Avenue N & 244 <sup>th</sup> Street SW	Shoreline	LOS D	E (44.5)	E (45.1)
26	5 <sup>th</sup> Avenue NE & SR 523 (N 145 <sup>th</sup> Street)	Shoreline	LOS E	F (186)	F (181)
37	76 <sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	E (63)	E (69)
39	SR 99 & 228 <sup>th</sup> Street SW	WSDOT	LOS E	F (84.5)	F (184.9)

**Table 14** summarizes the intersections with LOS falling below LOS standards for Phase II. The same four intersections operate below LOS standards as in Phase I. However, all four intersections operate below LOS standards for existing conditions, the Phase I No Build and Build conditions, and the Phase II No Build conditions. The Phase II Build scenario adds more delay at intersections but does not downgrade the LOS.

**Table 14: Intersections with LOS Deficiencies in Phase II**

No.	Name	Jurisdiction	LOS Standard	Phase II	
				No Build	Build
				LOS (Delay)	LOS (Delay)
15	Fremont Avenue N & 244 <sup>th</sup> Street SW	Shoreline	LOS D	E (45.2)	E (48.9)
26	5 <sup>th</sup> Avenue NE & SR 523 (N 145 <sup>th</sup> Street)	Shoreline	LOS E	F (181)	F (191)
37	76 <sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	E (64)	E (73)
39	SR 99 & 228 <sup>th</sup> Street SW	WSDOT	LOS E	F (97)	F (367.9)

**Table 15** summarizes the intersections with LOS falling below LOS standards for Phase III. The first four intersections that operate below LOS standards are the same as in Phase II. However, all four intersections operate below the LOS standards for existing conditions, the Phase I and II No Build and Build conditions, and the Phase III No Build condition. The Phase III Build scenario adds more delay at the intersections and downgrades one LOS level from LOS E to LOS F at the intersection of 76<sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way). In addition, the Phase III Build scenario adds one LOS deficiency at the intersection of SR 99 and N 185<sup>th</sup> Street.

**Table 15: Intersections with LOS Deficiencies in Phase III**

No.	Name	Jurisdiction	LOS Standard	Phase III	
				No Build	Build
				LOS (Delay)	LOS (Delay)
15	Fremont Avenue N & 244 <sup>th</sup> Street SW	Shoreline	LOS D	E (47.6)	F (65.5)
26	5 <sup>th</sup> Avenue NE & SR 523 (N 145 <sup>th</sup> Street)	Shoreline	LOS E	F (183)	F (208)
37	76 <sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	E (70)	F (84)
39	SR 99 & 228 <sup>th</sup> Street SW	WSDOT	LOS E	F (166.6)	F (455.5)
41	SR 99 & N 185 <sup>th</sup> Street	WSDOT	LOS E	D (41)	F (175)

**Table 16** summarizes the intersections with LOS falling below LOS standards for Phase IV. The first five intersections that operate below LOS standards are the same as in Phase III. The Phase IV Build scenario adds two additional LOS deficiencies at the intersections of SR 99 & N 160<sup>th</sup> Street and SR 99 & N 130<sup>th</sup> Street.

**Table 16: Intersections with LOS Deficiencies in Phase IV**

No.	Name	Jurisdiction	LOS Standard	Phase IV	
				No Build	Build
				LOS (Delay)	LOS (Delay)
15	Fremont Avenue N & 244 <sup>th</sup> Street SW	Shoreline	LOS D	F (53.8)	F (74)
26	5 <sup>th</sup> Avenue NE & SR 523 (N 145 <sup>th</sup> Street)	Shoreline	LOS E	F (223)	F (234)
37	76 <sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	E (79)	F (98)
39	SR 99 & 228 <sup>th</sup> Street SW	WSDOT	LOS E	F (427.4)	F (1107.3)
41	SR 99 & N 185 <sup>th</sup> Street	WSDOT	LOS E	D (43)	F (230)
43	SR 99 & N 160 <sup>th</sup> Street	WSDOT	LOS E	E (73)	F (82)
46	SR 99 & N 130 <sup>th</sup> Street	WSDOT	LOS E	F (81)	F (95)

### 3.1.2. Roadway/Corridor Impacts

The site trip distribution for Phases I-IV in **Figures 3 through 6** indicate that the majority of project trips will be traveling on Richmond Beach Drive NW, NW 196<sup>th</sup> Street, NW Richmond Beach Road, SR 99 south of N 175<sup>th</sup> Street, and I-5 south of N 175<sup>th</sup> Street.

The corridor of Richmond Beach Drive NW, NW 196<sup>th</sup> Street, and NW Richmond Beach Road between the project site and SR 99 are expected to operate at an acceptable LOS even after the Phase IV build-out based on the projected intersection LOS on this corridor. The roadway capacity of this corridor is constrained by intersection operations; however, only one deficient intersection occurs at SR 99 and NW Richmond Beach Road (N 185<sup>th</sup> Street) with the Phase IV Build scenario. The total Phase IV full build-out PM peak hour volumes are still within the roadway capacity, as shown in **Table 17: Corridor Impacts in Full Build-Out Phase IV**.

**Table 17: Corridor Impacts in Full Build-Out Phase IV**

Intersection	Two-Way Total			
	Number of lanes	Functional Classification	Capacity <sup>1</sup>	Total PM Peak Hour Volumes
Richmond Beach Drive NW: North of NE 196 <sup>th</sup> Street	2	Collector	1,300	969
NW 196 <sup>th</sup> Street: East of Richmond Beach Drive NW	2	Collector	1,300	698
NW 196 <sup>th</sup> Street: East of 24 <sup>th</sup> Avenue NW	3	Collector	1,500	841
NW 195 <sup>th</sup> Street: East of 20 <sup>th</sup> Avenue NW	4	Minor Arterial	3,400	1,490
NW Richmond Beach Road: East of 15 <sup>th</sup> Avenue NW	4	Minor Arterial	3,400	1,698
NW Richmond Beach Road: East of NW 190 <sup>th</sup> Street	4	Minor Arterial	3,400	1,561
NW Richmond Beach Road: East of 8 <sup>th</sup> Avenue NW	4	Minor Arterial	3,400	1,929
NW Richmond Beach Road: East of 3rd Avenue NW	4	Minor Arterial	3,400	2,123
NW Richmond Beach Road: East of Dayton Avenue N	4	Minor Arterial	3,400	1,747
N 185 <sup>th</sup> Street: East of Fremont Avenue N	4	Minor Arterial	3,400	1,568

<sup>1</sup>Capacity was obtained from the Draft Supplemental Environmental Impact Statement, Snohomish County, February 2009.

Most intersections along SR 99 will operate at LOS E or LOS F in the Phase IV full build-out condition; however, the Business Access and Transit (BAT) lane – the exclusive right-turn lane used by SWIFT - will operate at LOS D or better in all Build scenarios. The project is designed to be transit-oriented and to encourage people to travel using available transit service.

The full build-out Phase IV site trip distribution indicates that there are some site-generated trips that may cut through neighborhood streets, such as NW 197<sup>th</sup> Street, NW 199<sup>th</sup> Street, and 21<sup>st</sup> Place NW. The magnitude of these trips as predicted by the model is generally less than 20 vehicles per hour.

### 3.2. Transit Impacts

High-density urban residential projects like the Point Wells project create significant transit demand by virtue of the lower car ownership rates and travel choices of the owners and tenants of high rise residential developments.

### **3.2.1. Impacts to Existing Bus Transit Service**

The demand for transit service created by the development will exceed the capacity of the current Metro bus service on NW Richmond Beach Road, resulting in overcrowded busses and unserved demand. The BRT service on SR 99 does have additional capacity, but access to it from the project is constrained by the existing service on NW Richmond Beach Road.

### **3.2.2. Impacts to Future Bus Transit Service**

Transit service is scaled to match demand as determined by the local transit agency. The project is proposing a transit hub within the Urban Village to integrate bus and commuter rail service on site for both residents and the Richmond Beach community.

### **3.2.3. Impacts to Existing Commuter Rail Service**

Sounder commuter rail services from the north to Seattle currently have excess capacity, however there is no stop on the site, with the nearest stop located in Edmonds.

### **3.2.4. Impacts to Future Commuter Rail Service**

The project is proposing a transit hub at the Urban Village to integrate bus and commuter rail service on site for both residents and the Richmond Beach community. The Sounder commuter rail system could accommodate significant demand from the Point Wells Development without service expansion. Additional demand could be accommodated with the expansion of the commuter rail service as already planned by Sound Transit. The provision of increased bus transit service on Richmond Beach Drive NW could also increase commuter rail demand by providing access to the station via bus for residents along NW Richmond Beach Road.

## 4. Potential Mitigation of Traffic Impacts

Point Wells project trips utilize a number of local roadways and state facilities, traveling to both Snohomish County and King County, including other local cities and towns within each county (Snohomish: Edmonds, Woodway, Everett, Lynnwood, etc; King: Shoreline, Seattle, etc.).

### 4.1. Potential Intersection Mitigation

Impacts to the intersections have been identified for each phase of the project. The proportion of site-generated traffic to total intersection traffic has been computed to provide the reader with a sense of the relative contribution of site traffic to each intersection. Intersections have been identified as to primary jurisdiction as well. In many cases, the proportion of site-generated traffic to total intersection traffic is very low. In some cases, particularly near the site access on Richmond Beach Drive, the proportion of site-generated traffic is extremely high. Some intersections have been shown to fail as a result of background growth even without the Point Wells project. The LOS at these intersections will worsen with the addition of Point Wells traffic. Costs to mitigate impacts should be proportional based upon the relative benefits to background traffic growth and project-generated traffic.

Potential mitigation includes signalization or installation of roundabouts at failing stop sign controlled intersections where warranted, and turn lanes or additional through lanes at failing signalized intersections.

As proportional mitigation of impacts are based on volume, the developer could provide direct construction of its proportional share of each of the affected projects, or it could pay the proportional mitigation shares in lieu of direct improvements. **Tables 18 through 21** estimate the proportional mitigation share for Phases I-IV, respectively. The proportional mitigation share would constitute mitigation of all ordinary capacity-related traffic impacts at locations away from the site.

**Table 18: Intersection Proportional Mitigation Share - Phase I**

No.	Intersection	Jurisdiction	Site Trips	Total Volumes	Site Trips Proportional Share	Proposed Proportional Mitigation Share
15	Fremont Avenue N & 244 <sup>th</sup> Street SW	Shoreline	17	1,596	1.1%	1.1%
26	5 <sup>th</sup> Avenue NE & SR 523 (N 145 <sup>th</sup> Street)	Shoreline	1	3,792	0.0%	0.0%
37	76 <sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way)	WSDOT	6	4,423	0.1%	0.1%
39	SR 99 & 228 <sup>th</sup> Street SW	WSDOT	27	3,700	0.7%	0.7%

**Table 19: Intersection Proportional Mitigation Share - Phase II**

No.	Intersection	Jurisdiction	Site Trips	Total Volumes	Site Trips Proportional Share	Proposed Proportional Mitigation Share
15	Fremont Avenue N & 244 <sup>th</sup> Street SW	Shoreline	24	1,622	1.5%	1.5%
26	5 <sup>th</sup> Avenue NE & SR 523 (N 145 <sup>th</sup> Street)	Shoreline	1	3,819	0.0%	0.0%
37	76 <sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way)	WSDOT	9	4,434	0.2%	0.2%
39	SR 99 & 228 <sup>th</sup> Street SW	WSDOT	43	3,718	1.2%	1.2%

**Table 20: Intersection Proportional Mitigation Share - Phase III**

No.	Intersection	Jurisdiction	Site Trips	Total Volumes	Site Trips Proportional Share	Proposed Proportional Mitigation Share
15	Fremont Avenue N & 244 <sup>th</sup> Street SW	Shoreline	77	1,681	4.6%	4.6%
26	5 <sup>th</sup> Avenue NE & SR 523 (N 145 <sup>th</sup> Street)	Shoreline	5	3,902	0.1%	0.1%
37	76 <sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way)	WSDOT	21	4,516	0.5%	0.5%
39	SR 99 & 228 <sup>th</sup> Street SW	WSDOT	98	3,761	2.6%	2.6%
41	SR 99 & N 185 <sup>th</sup> Street	WSDOT	604	3,747	16.1%	16.1%

**Table 21: Intersection Proportional Mitigation Share - Phase IV**

No.	Intersection	Jurisdiction	Site Trips	Total Volumes	Site Trips Proportional Share	Proposed Proportional Mitigation Share
15	Fremont Avenue N & 244 <sup>th</sup> Street SW	Shoreline	87	1,708	5.1%	5.1%
26	5 <sup>th</sup> Avenue NE & SR 523 (N 145 <sup>th</sup> Street)	Shoreline	5	3,988	0.1%	0.1%
37	76 <sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way)	WSDOT	23	4,554	0.5%	0.5%
39	SR 99 & 228 <sup>th</sup> Street SW	WSDOT	117	3,831	3.1%	3.1%
41	SR 99 & N 185 <sup>th</sup> Street	WSDOT	691	4,342	15.9%	15.9%
43	SR 99 & N 160 <sup>th</sup> Street	WSDOT	155	3,799	4.1%	4.1%
46	SR 99 & N 130 <sup>th</sup> Street	WSDOT	133	4,578	2.9%	2.9%

## 4.2. Richmond Beach Vicinity Corridor Mitigation

As a result of the Point Wells urban center development, the study has identified two corridors that will require additional study to identify, prepare, and recommend improvements. The two corridors are Richmond Beach Drive NW and NW Richmond Beach Road. These corridor studies will identify where roadway capacity improvements, non-motorized enhancements, traffic calming techniques, safety upgrades, and functionality changes will be required to maintain the roadway for current residents and those of the Point Wells Development. The overall goal is to keep the neighborhood character and mitigate impacts, while focusing on safety and functionality.

Overall impacts to the Richmond Beach Drive NW and NW Richmond Beach Road corridors vary depending on the total amount of site traffic at specific intersections along each corridor. **Table 22** shows the Point Wells full build-out development-generated PM peak hour project trips, the total existing PM peak hour trips, and the percent share impact to the corridor.

**Table 22: Corridor Impacts in Full Build-Out Phase IV**

Intersection	Two-Way Total		Percent of Corridor Volumes
	Site Trips	Total Volumes	
Richmond Beach Drive NW: North of NE 196 <sup>th</sup> Street	942	969	97%
NW 196 <sup>th</sup> Street: East of Richmond Beach Drive NW	660	698	95%
NW 196 <sup>th</sup> Street: East of 24 <sup>th</sup> Avenue NW	744	841	88%
NW 195 <sup>th</sup> Street: East of 20 <sup>th</sup> Avenue NW	823	1,490	55%
NW Richmond Beach Road: East of 15 <sup>th</sup> Avenue NW	823	1,698	48%
NW Richmond Beach Road: East of NW 190 <sup>th</sup> Street	819	1,561	52%
NW Richmond Beach Road: East of 8 <sup>th</sup> Avenue NW	707	1,929	37%
NW Richmond Beach Road: East of 3rd Avenue NW	706	2,123	33%
NW Richmond Beach Road: East of Dayton Avenue N	701	1,747	40%
N 185 <sup>th</sup> Street: East of Fremont Avenue N	693	1,568	44%

#### 4.2.1. Richmond Beach Drive NW/NW 196<sup>th</sup> Street Corridor Study

The Richmond Beach Drive NW corridor is directly adjacent to the Point Wells facility. The desired outcome is to keep this segment of the roadway suited for slow-moving traffic while maintaining safety and access to those currently living along the corridor. The developer has committed that the Point Wells Development will not acquire any property along the corridor. Preferred Richmond Beach Drive NW options include creating an extension of the Point Wells site along this corridor.

The limited public right-of-way and existing development along the corridor limit street widening options. The traffic volumes indicate that a two-lane road section, including pedestrian facilities on at least one side of the road, and on- and off-street parking, could accommodate the project-generated trips. Additional considerations include maintaining the safe operation of existing driveways and providing sufficient width for emergency vehicles. A variable street section to address the right-of-way and physical constraints could include:

- Two 14-foot lanes (at intersections and in segments with no parking)
- Two 11-foot lanes (when parking is present)
- Street parking on one or both sides

A corridor study is proposed for Richmond Beach Drive NW. The study would include direct feedback from the neighborhood directly adjacent and from those who are serviced by the corridor. Planned action items of the corridor study include preliminary conceptual designs and possible roadway layouts; neighborhood meetings/workshops, presentations, and charrette sessions to obtain public input; updates to conceptual plans; and final recommendations for the Richmond Beach Drive NW corridor.

#### 4.2.2. NW Richmond Beach Road Corridor Study

The NW Richmond Beach Road corridor connects the Richmond Beach Drive NW corridor to the SR 99 corridor. Additionally, this study is currently planned in the Shoreline 2005 Transportation Master Plan (City of Shoreline, 2005) as the “NW Richmond Beach Road Planning Study.”

The Point Wells Development team would work with the City of Shoreline on the NW Richmond Beach Road corridor study. All work on the NW Richmond Beach Road corridor study would be done to supplement projects, plans, and recommendations already in place on the corridor.

Projects identified in the Shoreline 2005 Transportation Master Plan that would be incorporated in the Point Wells NW Richmond Beach Road corridor study include:

- Potential restriping of NW Richmond Beach Road to a three-lane section with bike lanes.
  - Bike lanes along NW Richmond Beach Road would aid in a more continuous and safer Lake Washington to Sound Trail.
- Possible intersection improvements at 8<sup>th</sup> Avenue NW & NW Richmond Beach Road – a potential roundabout location.

The analysis would include preliminary conceptual designs and possible roadway layouts, and final recommendations for the NW Richmond Beach Road corridor.

#### **4.2.3. Potential Road Diet on NW 196<sup>th</sup> Street/NW Richmond Beach Road**

A “Road Diet” is not a new concept nationwide. A Road Diet converts the existing multi-lane roadway to fewer lanes to provide multi-modal transportation facilities which create safer and more efficient access for street-crossing pedestrians, bicycle riders, transit riders, and motorists. Research documentation such as Road Diets: Fixing the Big Roads (Burden & Lagerwey, 1999) and conference presentations such as the Road Diet Handbook presented at the Northwest Transportation Conference in 2008 (Rosales, 2008) state that the Road Diet concept and the road conversion could provide the following benefits:

- Improve vehicle mobility and access
- Improve livability and quality of life
- Promote economic and community goals
- Provide lower speed and improved safety
- Safer pedestrian street crossing
- Perceived pedestrian, bicyclist, and transit user increase

Several Road Diets in the Seattle area were studied to determine the impacts of lane reductions on traffic volumes. **Table 23** shows the surveyed Annual Daily Traffic (ADT) before and after street conversions.

**Table 23: Annual Daily Traffic Before and After Road Conversion**

ROADWAY SECTION	DATE CHANGE	ADT (BEFORE)	ADT (AFTER)	CHANGE
Greenwood Ave. N, from N 80th St. to N 50th St.	April 1995	11872	12427	4 lanes to 2 lanes plus TWLTL plus bike lanes
N 45th Street in Wallingford Area	December 1972	19421	20274	4 lanes to 2 lanes plus TWLTL
8th Ave. NW in Ballard Area	January 1994	10549	11858	4 lanes to 2 lanes plus planted median with turn pockets as needed
Martin Luther King Jr. Way, north of I-90	January 1994	12336	13161	4 lanes to 2 lanes plus TWLTL plus bike lanes
Dexter Ave. N, East side of Queen Anne Area	June 1991	13606	14949	4 lanes to 2 lanes plus TWLTL plus bike lanes
24th Ave. NW, from NW 85th St. to NW 65th St.	October 1995	9727	9754	4 lanes to 2 lanes plus TWLTL
Madison St., from 7th Ave. to Broadway	July 1994	16969	18075	4 lanes to 2 lanes plus TWLTL
W Government Way/Gilman Ave. W, from W Ruffier St. to 31st Ave. W	June 1991	12916	14286	4 lanes to 2 lanes plus TWLTL plus bike lanes
12th Ave., from Yesler Way to John St.	March 1995	11751	12557	4 lanes to 2 lanes plus TWLTL plus bike lanes

Sources: Road Diets: Fixing the Big Roads (Burden & Lagerwey, 1999).

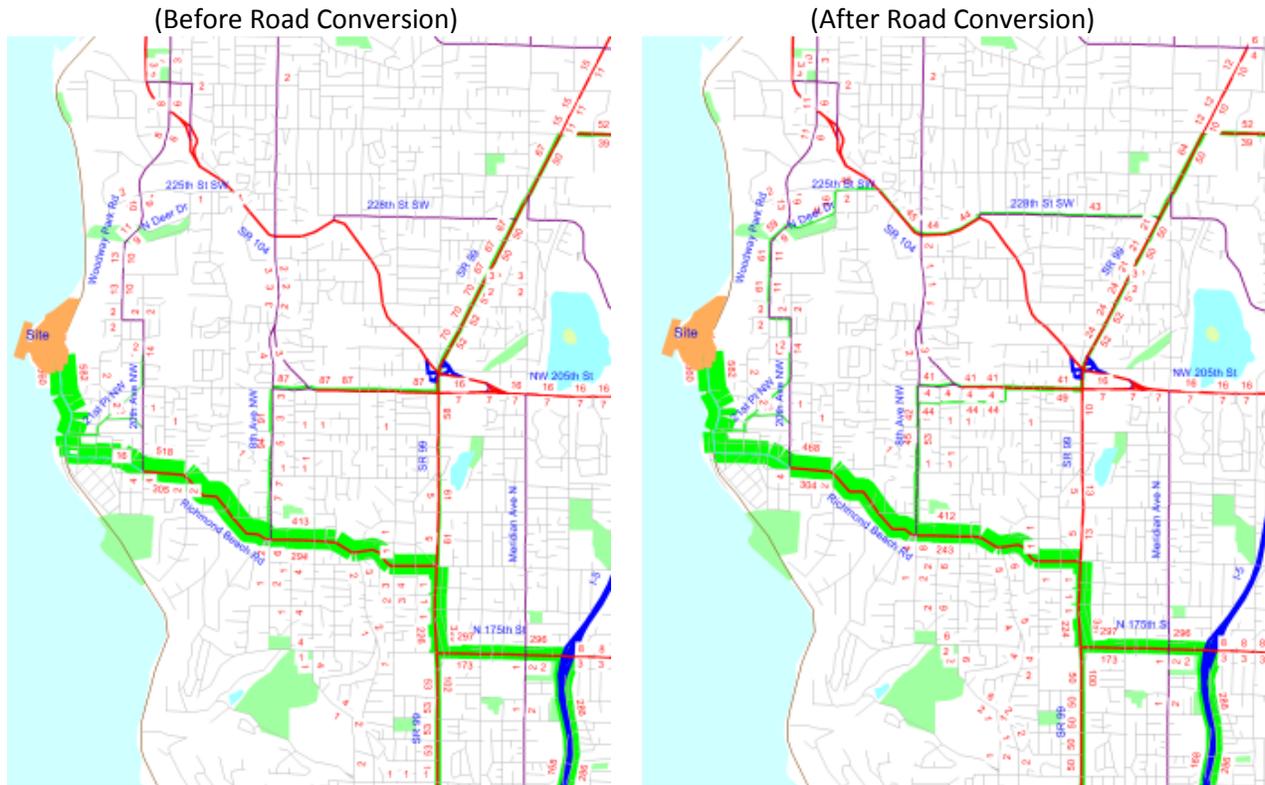
The study concluded that converting four-lane roads to three-lane roads often increases traffic volumes slightly due to improved efficiency of the three-lane section.

The Road Diet concept on NW 196<sup>th</sup> Street/NW Richmond Beach Road is to convert the existing four-lane and five-lane roadway to a three-lane roadway with a TWLT lane in the center and bike lanes on both sides. The road conversion is expected to provide easy access to the community along the roadside, improve the safety, and provide more user-friendly transportation facilities for pedestrians, bicyclists, and transit users; however, the road conversion may also result in traffic diversion from the corridor and possible intersection LOS deficiencies in the corridor. To test the concept, an initial analysis of a Road Diet from Richmond Beach Drive NW to SR 99 was completed.

**Figure 7** shows the Phase IV full build-out modeled site trip distribution before and after the road conversion from four-lane to three-lane roadway with a TWLT lane in the center and bike lanes on both sides on NW 196<sup>th</sup> Street/NW Richmond Beach Road. After the road conversion, approximately half of the site trips that used NW 205<sup>th</sup> Street or 8<sup>th</sup> Avenue NW to NW Richmond Beach Road/NW 196<sup>th</sup> Street to enter the site before the road conversion now shift to use 228<sup>th</sup> Street SW, SR 104, or the cut-through neighborhood streets such as 225<sup>th</sup> Street SW, N Deer Drive, and Woodway Park Road to NW 196<sup>th</sup> Street to enter the site. The site trips that used SR 99 to travel north now shift to use 8<sup>th</sup> Avenue NW, then NW 205<sup>th</sup>

Street to travel north. In addition, a few more trips shift from SR 99 to use the neighborhood streets south of NW Richmond Beach Road to travel south. The road conversion results in 40 to 50 site trip diversions.

**Figure 7: Site Trip Distribution Before and After Road Conversion in Phase IV**



The study area intersection analysis indicates that intersection LOS deficiencies will be present at an additional three intersections after road conversion. These three intersections are at 20<sup>th</sup> Avenue NW & NW 195<sup>th</sup> Street, 15<sup>th</sup> Avenue NW & NW Richmond Beach Road, and 8<sup>th</sup> Avenue NW & NW Richmond Beach Road. In addition, the LOS deficiency shifts between the intersection of SR 99 and 244<sup>th</sup> Street SW and the intersection of SR 99 and N 185<sup>th</sup> Street due to traffic volume shifts after the road conversion.

**Table 24: Phase IV Build Scenario PM Peak Hour Intersection LOS Deficiencies**

No.	Name	Control Type	Jurisdiction	LOS Standard	Road Conversion	
					Before LOS (Delay)	After LOS (Delay)
4	20 <sup>th</sup> Avenue NW & NW 195 <sup>th</sup> Street	All-way stop	Shoreline	LOS D	C (17)	<b>F (151)</b>
6	15 <sup>th</sup> Avenue NW and NW Richmond Beach Road	All-way stop	Shoreline	LOS D	D (26)	<b>F (457)</b>
8	8 <sup>th</sup> Avenue NW & NW Richmond Beach Road	Signalized	Shoreline	LOS D	D (42)	<b>E (64)</b>
15	Fremont Avenue N & 244 <sup>th</sup> Street SW	Two-way stop	Shoreline	LOS D	<b>F (74)</b>	<b>F (225.8)</b>
26	5 <sup>th</sup> Avenue NE & SR 523 (N 145 <sup>th</sup> Street)	Signalized	Shoreline	LOS E	<b>F (234)</b>	<b>F (236)</b>
37	76 <sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way)	Signalized	WSDOT	LOS D	<b>F (98)</b>	<b>F (108)</b>
39	SR 99 & 228 <sup>th</sup> Street SW	Two-way stop	WSDOT	LOS E	<b>F (1107.3)</b>	<b>F (1397.3)</b>
40	SR 99 & 244 <sup>th</sup> Street SW	Signalized	WSDOT	LOS E	E (74)	<b>F (99)</b>
41	SR 99 & N 185 <sup>th</sup> Street	Signalized	WSDOT	LOS E	<b>F (230)</b>	E (62)
43	SR 99 & N 160 <sup>th</sup> Street	Signalized	WSDOT	LOS E	<b>F (82)</b>	E (77)
46	SR 99 & N 130 <sup>th</sup> Street	Signalized	WSDOT	LOS E	<b>F (95)</b>	<b>F (95)</b>

A preliminary analysis of a three-lane conversion indicates that it is generally feasible from the western end of NW Richmond Beach Road to Dayton Avenue N. Stop controlled intersection failures could be mitigated with signals or roundabouts, however volumes east of Dayton Avenue N suggest that a five-lane section is needed in this segment to maintain adequate intersection LOS and reduce diversions from the corridor.

#### **4.2.4. Potential Transit Enhancements**

The site requires transit service beyond that currently available on Richmond Beach Drive NW. This project proposes to provide transit facilities within the Urban Center at the site access on Richmond Beach Drive NW to support both bus and commuter rail service. The ability to provide over 3,000 high-density residential units within an easy walk to a commuter rail station and bus transit center (provided by the project) is a unique opportunity in the region.

An increase in bus service between Richmond Beach Drive NW and SR 99 will be required to serve the project. Significant bus transit service including BRT is already present on SR 99, so the increased bus service requirements are only necessary to connect the site to SR 99. This increase in bus service will provide additional transit access for existing Shoreline residents along the Richmond Beach corridor as well.

#### **4.2.5. Potential Non-Motorized Enhancements**

The increase in traffic on Richmond Beach Drive NW and NW Richmond Beach Road resulting from the Point Wells project warrants consideration of non-motorized enhancements from the site entrance to SR 99. These enhancements are already identified in the City of Shoreline Transportation Master Plan (City of Shoreline, 2005).

Existing development patterns create challenges for much of the length of Richmond Beach Drive NW, suggesting that a shared bicycle/auto roadway with a single pedestrian facility on one side of the roadway may be the only feasible option near the site. This will require street design that maintains low vehicle speeds. A corridor study to integrate the vehicle and non-motorized elements of the corridor is recommended.

Opportunities to enhance non-motorized facilities on NW Richmond Beach Road are less constrained. A Road Diet, or four-lane to three-lane conversion, appears feasible west of Dayton Avenue. The Road Diet would allow for the provision of on-street bicycle lanes within the existing paved roadway. Additional non-motorized benefits include shorter crosswalks and the separation of vehicles from pedestrians by the bike lane. Again, a corridor study is recommended to integrate the vehicle and non-motorized elements of the corridor.

Non-motorized enhancements also improve access to transit in the Richmond Beach corridor.

### **4.3. Consistency with City of Shoreline Transportation Master Plan**

This expanded TIA sets forth to address impacts on all of the affected local agencies, with a primary emphasis on the City of Shoreline and Snohomish County. The primary document guiding Shoreline's transportation planning is the City of Shoreline Transportation Master Plan (TMP), adopted by Resolution No. 234 on July 11, 2005 (City of Shoreline, 2005).

The following is an excerpt from the Shoreline TMP describing the vision for Shoreline's transportation future:

*“The TMP is the long-range blueprint for travel and mobility, describing a vision for transportation that supports the City’s adopted land use plan. The TMP will provide guidance for public and private sector decisions on local and regional transportation investments, including short, mid-, and long-range transportation and related land-use activities.” (City of Shoreline, 2005)*

Areas where the 2005 Shoreline TMP recommends projects, plans, studies, or addresses operational issues within the Point Wells project vicinity include the following:

- Intersection Accident Locations
  - NW Richmond Beach Road & 3<sup>rd</sup> Avenue NW has an intersection accident rate of 1.06.
- Mid-Block Accident Locations
  - NW Richmond Beach Road between 8<sup>th</sup> Avenue NW and 3<sup>rd</sup> Avenue NW: Accident rate of 1.17.
  - NW Richmond Beach Road between 15<sup>th</sup> Avenue NW and 12<sup>th</sup> Avenue NW: Accident rate of 0.83.
- Roadway Projects Recommended for Funding
  - Richmond Beach Drive NW & NW 196<sup>th</sup> Street Overcrossing – Currently in Construction.
  - NW Richmond Beach Road Planning Study.
- Increased Transit Coverage
  - Goal T-III: T25 – To work with Sound Transit to study the development of a low impact commuter rail stop in the Richmond Beach/Point Wells area.
- Pedestrian Projects Recommended for Funding
  - Sidewalk: Both sides of Dayton Avenue N from NW Richmond Beach Road to Carlyle Hall Road N.
  - Sidewalk: One Side (TBD) on 3<sup>rd</sup> Avenue NW from NW Richmond Beach Road to NW 195<sup>th</sup> Street.
- Bicycle Improvements Recommended for Funding
  - Upgrades to the Lake Washington to Sound Trail (the portion along NW Richmond Beach Road). Project would consider the potential restriping of NW Richmond Beach Road to a three-lane section with bike lanes.
- Intersection Improvements Recommended for Funding
  - 8<sup>th</sup> Avenue NW & NW Richmond Beach Road – Potential roundabout location.
  - NW Innis Arden Way & N 160<sup>th</sup> Street – Potential roundabout location.

In general, the Point Wells site-generated traffic increases the need for all of the projects listed above. The mitigation required for Point Wells-generated traffic would also cure the existing problems identified in the TMP.

# 5. Summary of Impacts and Mitigation

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## 5.1.1. Impacts to Richmond Beach Drive NW

The study demonstrates that impacts to Richmond Beach Drive NW, while significant, can be mitigated. Intersection LOS can generally be maintained with upgrades from stop signs to traffic signal control or roundabouts. The key impact to the Richmond Beach Drive NW segment is the change in character from a lightly-traveled residential/industrial road to a heavily-traveled urban street. The improvements should focus on safety and speed management. An urban section with parking on one or both sides is recommended as mitigation. A median/turn lane is not recommended due to the constrained right-of-way and existing development along the road. Additional planning and study is required to determine a final mitigation plan. The study shows that over 90% of the traffic on this section of NW Richmond Beach Road will be site-generated at build out of Phase IV.

## 5.1.2. Impacts to NW Richmond Beach Road

The study demonstrates that impacts to NW Richmond Beach Road can be mitigated. A Road Diet, as mentioned in the City's Transportation Master Plan (City of Shoreline, 2005), appears feasible from NW Richmond Beach Road to Dayton Avenue N. A five-lane section would be required east of Dayton Avenue N. The Road Diet would provide safety benefits for vehicles, pedestrians, and bicycles compared to the existing four-lane section. The existing crash problem at NW Richmond Beach Road and 3<sup>rd</sup> Avenue would be corrected as well. Additional non-motorized improvements would be beneficial east of Dayton Avenue N to provide continuity of the bicycle lanes from NW Richmond Beach Road to SR 99. Additional planning and study is required to determine a final mitigation plan. The study shows that about 50% of the traffic on this section of NW Richmond Beach Road will be site generated at the build out of Phase IV.

## 5.1.3. Impacts to SR 99 (Aurora Avenue)

The study demonstrates that impacts to SR 99 can be mitigated and do not significantly affect the performance of the BRT lanes. The most significant impact occurs at the intersection of SR 99 and 228<sup>th</sup> Street SW. While overall intersection LOS decreases at most intersections on SR 99 in the future with and without the project, the BRT lanes continue to operate at LOS D or better. The study shows that about 3% to 16% of the traffic at the impacted SR 99 intersections will be site generated at the build out of Phase IV.

## 5.1.4. Potential for Neighborhood Cut-Through Traffic

The study confirms the potential for neighborhood cut-through traffic in both Woodway northeast of the site and Shoreline southeast of the site. The potential volumes would not affect LOS on these neighborhood streets; however cut-through traffic can cause speeding problems. Cut-through traffic, if it occurs, can be mitigated with traffic calming to manage speeds or turn restrictions to minimize the perceived benefits of the cut-through route.

## 5.1.5. Additional Transit Demand

The site requires transit service beyond that currently available on Richmond Beach Drive NW. The project proposes to provide transit facilities at the site access on Richmond Beach Drive NW to support both bus and commuter rail service. An increase in bus transit service between Richmond Beach Drive NW and SR 99 will be required to serve the project. Significant bus transit service including BRT is already present on SR 99, so the increased bus service requirements are only necessary to connect the site to SR 99. This increase in bus service will provide additional transit access for existing Shoreline residents along the Richmond Beach corridor as well.

The provision of a commuter rail station as proposed would provide additional transit capacity (the current commuter rail is underutilized).

Continued coordination with Sound Transit and Metro is necessary to determine a final transit service plan.

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# Appendix A – Traffic Counts

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Prepared for: **David Evans & Associates, Inc.**  
**Traffic Count Consultants, Inc.**

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WBE/DBE

Intersection: 3rd Ave S @ Pine St  
 Location: Edmonds

Date of Count: Thurs 02/17/2011  
 Checked By: LBP

Time Interval Ending at	From North on (SB) 3rd Ave S				From South on (NB) 3rd Ave S				From East on (WB) Pine St				From West on (EB) Pine St				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	1	3	17	18	0	3	15	4	0	2	1	6	0	11	1	1	82
4:30 P	0	8	20	15	0	4	32	5	0	9	2	9	0	4	0	1	109
4:45 P	0	8	21	8	0	6	15	2	1	4	4	3	0	1	2	4	78
5:00 P	0	2	18	13	0	1	21	2	0	3	4	1	0	4	1	0	70
5:15 P	0	9	26	11	0	2	18	3	0	4	7	4	0	5	0	2	91
5:30 P	0	5	15	11	0	1	17	3	0	1	4	4	0	5	0	0	66
5:45 P	0	3	25	8	0	4	19	6	0	2	5	7	0	3	0	2	84
6:00 P	0	2	20	8	0	3	16	1	0	4	3	5	0	5	1	1	69
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	1	40	162	92	0	24	153	26	1	29	30	39	0	38	5	11	649
Peak Hour: 4:15 PM to 5:15 PM																	

Total	0	27	85	47	0	13	86	12	1	20	17	17	0	14	3	7	348
Approach	159				111				54				24				348
%HV	n/a				n/a				1.9%				n/a				0.3%
PHF	0.86				0.68				0.68				0.86				0.80

**3rd Ave S**  
 276 (Northbound Total)  
 159 (Southbound Total)  
 117 (Eastbound Total)  
 47 (Westbound Total)

**Pine St**  
 17 (Northbound Total)  
 17 (Southbound Total)  
 20 (Eastbound Total)  
 0 (Westbound Total)

**4:15 PM to 5:15 PM**

**3rd Ave S**  
 112 (Northbound Total)  
 111 (Southbound Total)  
 223 (Eastbound Total)  
 13 (Westbound Total)

**Pedestrians:**  
 Ped: 4, 14, 3, 7, 1, 13, 86, 12, 1, 11, 42, 16  
 Bike: 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0

**Bicycles From:**  
 N: 0, S: 0, E: 0, W: 0

**PHF %HV Summary:**  
 Check In: 348, Out: 348  
 PHF: 0.86, %HV: 0.3%

**Special Notes:**  
 0 Stop Signs on EB & WB approaches

WASHINGTON STATE DEPT OF TRANSPORTATION

Site Code : 10426803  
 LOCATION : SR 104  
 JCT : 95TH PL W  
 MILEPOST : 26.80

PAGE: 1  
 FILE: 10426803  
 DATE: 1/30/08

Movements by: Primary

Time Begin	From North			From East			From South			From West			Vehicle Total
	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
3:30	23	0	4	31	192	0	1	0	0	0	132	25	408
3:45	26	0	4	37	203	0	0	1	1	0	146	32	450
HR TOTAL	49	0	8	68	395	0	1	1	1	0	278	57	858
4:00 PM	24	0	8	24	213	1	0	1	0	0	137	23	431
4:15	22	0	9	23	224	1	1	0	1	1	172	21	475
4:30	15	0	14	19	210	0	0	0	0	1	141	23	423
4:45	19	0	7	23	236	1	0	1	1	1	129	18	436
HR TOTAL	80	0	38	89	883	3	1	2	2	3	579	85	1765
5:00 PM	14	0	5	29	185	0	0	0	0	0	251	38	522
5:15	32	0	21	26	215	0	0	1	0	0	147	35	477
5:30	13	1	10	24	180	1	0	0	0	0	192	27	448
5:45	15	0	12	21	187	0	1	0	0	1	176	25	438
HR TOTAL	74	1	48	100	767	1	1	1	0	1	766	125	1885
6:00 PM	12	0	9	17	188	0	0	0	1	0	163	19	409
6:15	15	0	7	19	193	0	0	0	0	1	155	21	411
DAY TOTAL	230	1	110	293	2426	4	3	4	4	5	1941	307	5328

PEAK PERIOD ANALYSIS FOR THE PERIOD: 3:30 PM - 6:30 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	..... VOLUMES .....				.... PERCENTS ...		
			Right	Thru	Left	Total	Right	Thru	Left
North	4:30 PM	0.60	80	0	47	127	63	0	37
East	4:00 PM	0.94	89	883	3	975	9	91	0
South	3:30 PM	0.75	2	2	2	6	33	33	33
West	5:00 PM	0.77	1	766	125	892	0	86	14

Entire Intersection

North	5:00 PM	0.58	74	1	48	123	60	1	39
East		0.90	100	767	1	868	12	88	0
South		0.50	1	1	0	2	50	50	0
West		0.77	1	766	125	892	0	86	14



Prepared for: **David Evans & Associates, Inc.**  
**Traffic Count Consultants, Inc.**

Phone: (425) 861-8866 FAX: (425) 861-8877 E-Mail: TC2inc@aol.com

WBE/DBE

Intersection: 95th Place W @ 228th St SW  
 Location: Edmonds

Date of Count: Thurs 02/17/2011  
 Checked By: LBP

Time Interval Ending at	From North on (SB) 95th Place W				From South on (NB) 95th Place W				From East on (WB) 228th St SW				From West on (EB) 228th St SW				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	0	12	0	0	0	23	33	0	7	1	0	0	0	0	3	79
4:30 P	0	2	16	0	2	0	16	13	1	22	1	3	0	0	1	3	77
4:45 P	0	1	19	0	1	3	22	19	0	14	1	0	0	1	1	2	83
5:00 P	0	1	14	0	0	3	23	16	0	23	1	1	0	0	0	2	84
5:15 P	0	0	11	0	0	2	38	15	0	32	2	0	0	0	0	2	102
5:30 P	0	0	14	0	1	4	25	21	0	22	1	1	0	0	1	1	90
5:45 P	0	3	15	0	0	1	20	15	1	24	1	2	0	0	2	2	85
6:00 P	0	5	8	0	0	2	30	19	0	21	1	4	0	0	0	0	90
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	0	12	109	0	4	15	197	151	2	165	9	11	0	1	5	15	690
Peak Hour: 5:00 PM to 6:00 PM																	

Total	0	8	48	0	1	9	113	70	1	99	5	7	0	0	3	5	367
Approach	56				192				111				8				367
%HV	n/a				0.5%				0.9%				n/a				0.5%
PHF	0.78				0.87				0.82				0.50				0.90

**Site Map Data:**

- 95th Place W (Northbound): 176
- 95th Place W (Southbound): 344
- 228th St SW (Eastbound): 111
- 228th St SW (Westbound): 192
- Approach from North: 56
- Approach from South: 192
- Approach from East: 111
- Approach from West: 192
- Intersection Total: 408
- PHF: 1.0

**PEDS across:**

	N	S	E	W	Total
INT 01					0
INT 02	1	1		1	3
INT 03		1			1
INT 04				1	1
INT 05					0
INT 06					0
INT 07		2			2
INT 08	2				2
INT 09					0
INT 10					0
INT 11					0
INT 12					0
<b>Total</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>9</b>

**Bicycles From:**

	N	S	E	W
INT 01				
INT 02				
INT 03	No Bikes			
INT 04				
INT 05				
INT 06				
INT 07				
INT 08				
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**PHF %HV Summary:**

Check	PHF	%HV
EB	0.50	n/a
WB	0.82	0.9%
NB	0.87	0.5%
SB	0.78	n/a
Intersection	0.90	0.5%

**Special Notes:**

0



Prepared for: **David Evans & Associates, Inc.**  
**Traffic Count Consultants, Inc.**

Phone: (425) 861-8866 FAX: (425) 861-8877 E-Mail: TC2inc@aol.com

WBE/DBE

Intersection: SR 99 / Aurora Ave @ 228th St SW  
 Location: Edmonds

Date of Count: Thurs 02/17/2011  
 Checked By: LBP

Time Interval Ending at	From North on (SB) SR 99 / Aurora Ave				From South on (NB) SR 99 / Aurora Ave				From East on (WB) 228th St SW				From West on (EB) 228th St SW				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	5	0	251	7	10	14	329	0	0	0	0	0	0	6	0	6	613
4:30 P	3	0	276	15	2	6	372	0	0	0	0	0	0	10	0	5	684
4:45 P	9	0	302	11	5	20	341	0	0	0	0	0	1	7	0	10	691
5:00 P	5	0	278	13	7	11	379	0	0	0	0	0	0	8	0	12	701
5:15 P	5	0	300	18	7	21	342	0	0	0	0	0	0	10	0	10	701
5:30 P	5	0	298	14	4	17	331	0	0	0	0	0	1	9	0	6	675
5:45 P	2	0	276	15	3	10	328	0	0	0	0	0	0	9	0	10	648
6:00 P	6	0	285	13	1	13	290	0	0	0	0	0	0	15	0	13	629
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	40	0	2266	106	39	112	2712	0	0	0	0	0	0	2	74	0	72	5342
Peak Hour:		4:15 PM		to		5:15 PM												

Total	22	0	1156	57	21	58	1434	0	0	0	0	0	0	1	35	0	37	2777
Approach	1213				1492				0				72				2777	
%HV	1.8%				1.4%				n/a				1.4%				1.6%	
PHF	0.95				0.96				n/a				0.90				0.99	

SR 99 / Aurora Ave  
2682

1213      1469

57      1156

115 Ped 2  
187 Bike 0

72      35

37

Ped 0      58      1434

1193      1492

2685

SR 99 / Aurora Ave

4:15 PM to 5:15 PM

2804 1.0 PHF Peak Hour Volume

Check	PHF %HV	
	EB	WB
In: 2777	0.90	1.4%
Out: 2777	n/a	n/a
Intersection	0.95	1.8%
	0.99	1.6%

PEDES across:

	N	S	E	W
INT 01				3
INT 02			2	
INT 03			1	
INT 04			2	1
INT 05			3	1
INT 06				1
INT 07			4	
INT 08				
INT 09				
INT 10				
INT 11				
INT 12				
	0	0	12	6

18

Bicycles From:

	N	S	E	W
INT 01		1		
INT 02		1		
INT 03				
INT 04	1			
INT 05				
INT 06				
INT 07				
INT 08				
	1	2	0	0

3

Special Notes:

TM03p11017



Prepared for: **David Evans & Associates, Inc.**  
**Traffic Count Consultants, Inc.**

Phone: (425) 861-8866 FAX: (425) 861-8877 E-Mail: TC2inc@aol.com

WBE/DBE

Intersection: Timber Lane @ 238th St SW  
 Location: Woodway

Date of Count: Thurs 02/17/2011  
 Checked By: LBP

Time Interval Ending at	From North on (SB) Timber Lane				From South on (NB) Timber Lane				From East on (WB) 238th St SW				From West on (EB) 238th St SW				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	0	4	0	0	19	5	0	0	0	0	0	0	0	0	6	34
4:30 P	0	0	6	0	0	2	4	0	0	0	0	0	0	0	0	8	20
4:45 P	0	0	7	0	1	15	11	0	0	0	0	0	1	2	0	8	43
5:00 P	0	0	6	1	0	13	12	0	0	0	0	0	0	0	0	14	46
5:15 P	0	0	7	0	0	16	6	0	0	0	0	0	0	1	0	8	38
5:30 P	0	0	9	0	0	10	12	0	0	0	0	0	0	0	0	8	39
5:45 P	0	0	9	2	1	11	7	0	0	0	0	0	0	0	0	9	38
6:00 P	0	0	9	0	0	11	9	0	0	0	0	0	0	0	0	9	38
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	0	0	57	3	2	97	66	0	0	0	0	0	1	3	0	70	296
Peak Hour:		4:30 PM		to		5:30 PM											

Total	0	0	29	1	1	54	41	0	0	0	0	0	1	3	0	38	166
Approach	30				95				0				41				166
%HV	n/a				1.1%				n/a				2.4%				1.2%
PHF	0.83				0.91				n/a				0.73				0.90

238th St SW

INT 01	2				2
INT 02	4				4
INT 03	4				4
INT 04	1				1
INT 05	3				3
INT 06					0
INT 07					0
INT 08					0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	14	0	0	0	14

**Timber Lane**

74

30

44

1

29

0 Ped

0 Bike

8 Ped

55 Ped

0 Ped

0 Bike

96

41

3

38

0 Ped

0 Bike

54

41

67

95

162

**Timber Lane**

Bicycles From:	N	S	E	W
INT 01	2			
INT 02				
INT 03				
INT 04				
INT 05				
INT 06				
INT 07				
INT 08				
	2	0	0	0

4:30 PM to 5:30 PM

184 1.0 PHF Peak Hour Volume

PHF %HV	
EB	0.73 2.4%
WB	n/a n/a
In: 166	NB 0.91 1.1%
Out: 166	SB 0.83 n/a
Intersection	0.90 1.2%

2 Special Notes:



Prepared for: **David Evans & Associates, Inc.**  
**Traffic Count Consultants, Inc.**

Phone: (425) 861-8866 FAX: (425) 861-8877 E-Mail: TC2inc@aol.com

WBE/DBE

**Intersection:** W Firdale Ave @ 238th St SW / 100th Ave W (S)  
**Location:** Edmonds

**Date of Count:** Thurs 02/17/2011  
**Checked By:** LBP

Time Interval Ending at	From North on (SB) W Firdale Ave				From South on (NB) W Firdale Ave				From East on (WB) 238th St SW				From West on (EB) Spur to 100th Ave SB				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	2	4	71	30	4	5	92	2	0	4	1	2	1	71	5	1	288
4:30 P	3	2	69	36	0	8	90	7	0	2	1	4	0	78	6	2	305
4:45 P	2	5	74	37	5	16	101	6	0	3	1	1	1	65	3	1	313
5:00 P	1	4	69	40	2	18	103	1	0	5	2	3	2	71	3	3	322
5:15 P	1	2	72	39	3	13	114	2	0	8	0	5	0	96	2	1	354
5:30 P	2	3	67	29	1	11	99	3	0	2	1	3	0	57	1	2	278
5:45 P	1	2	87	31	2	8	99	3	0	1	1	3	1	71	1	1	308
6:00 P	1	3	89	43	1	6	92	2	0	4	2	2	0	64	3	3	313
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	13	25	598	285	18	85	790	26	0	29	9	23	5	573	24	14	2481
Peak Hour:		4:15 PM				to				5:15 PM							

Total	7	13	284	152	10	55	408	16	0	18	4	13	3	310	14	7	1294
Approach	449				479				35				331				1294
%HV	1.6%				2.1%				n/a				0.9%				1.5%
PHF	0.97				0.93				0.67				0.84				0.91

**W Firdale Ave**  
 1180 (Total)  
 449 (Northbound)  
 731 (Southbound)

**Spur to 100th Ave SB**  
 211 (Westbound)  
 542 (Eastbound)  
 331 (Total)

**238th St SW**  
 13 (Northbound)  
 4 (Southbound)  
 18 (Total)

**W Firdale Ave**  
 309 (Northbound)  
 479 (Southbound)  
 788 (Total)

**PHF Peak Hour Volume**  
 1416

Check	PHF	%HV	
EB	0.84	0.9%	
WB	0.67	n/a	
In: 1294	NB	0.93	2.1%
Out: 1294	SB	0.97	1.6%
Intersection	0.91	1.5%	

**PEDS across:**

	N	S	E	W	Total
INT 01			1		1
INT 02				2	2
INT 03	1	1	2		4
INT 04		2		1	3
INT 05					0
INT 06	2	1	2	2	7
INT 07			2		2
INT 08			1		1
INT 09					0
INT 10					0
INT 11					0
INT 12					0
<b>Total</b>	<b>3</b>	<b>4</b>	<b>8</b>	<b>5</b>	<b>20</b>

**Bicycles From:**

	N	S	E	W	
INT 01					0
INT 02	1				1
INT 03					0
INT 04					0
INT 05					0
INT 06					0
INT 07					0
INT 08					0
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>

**Special Notes:**  
 1 This is the lower junction of Firdale and 100th.

TM05.2p11017

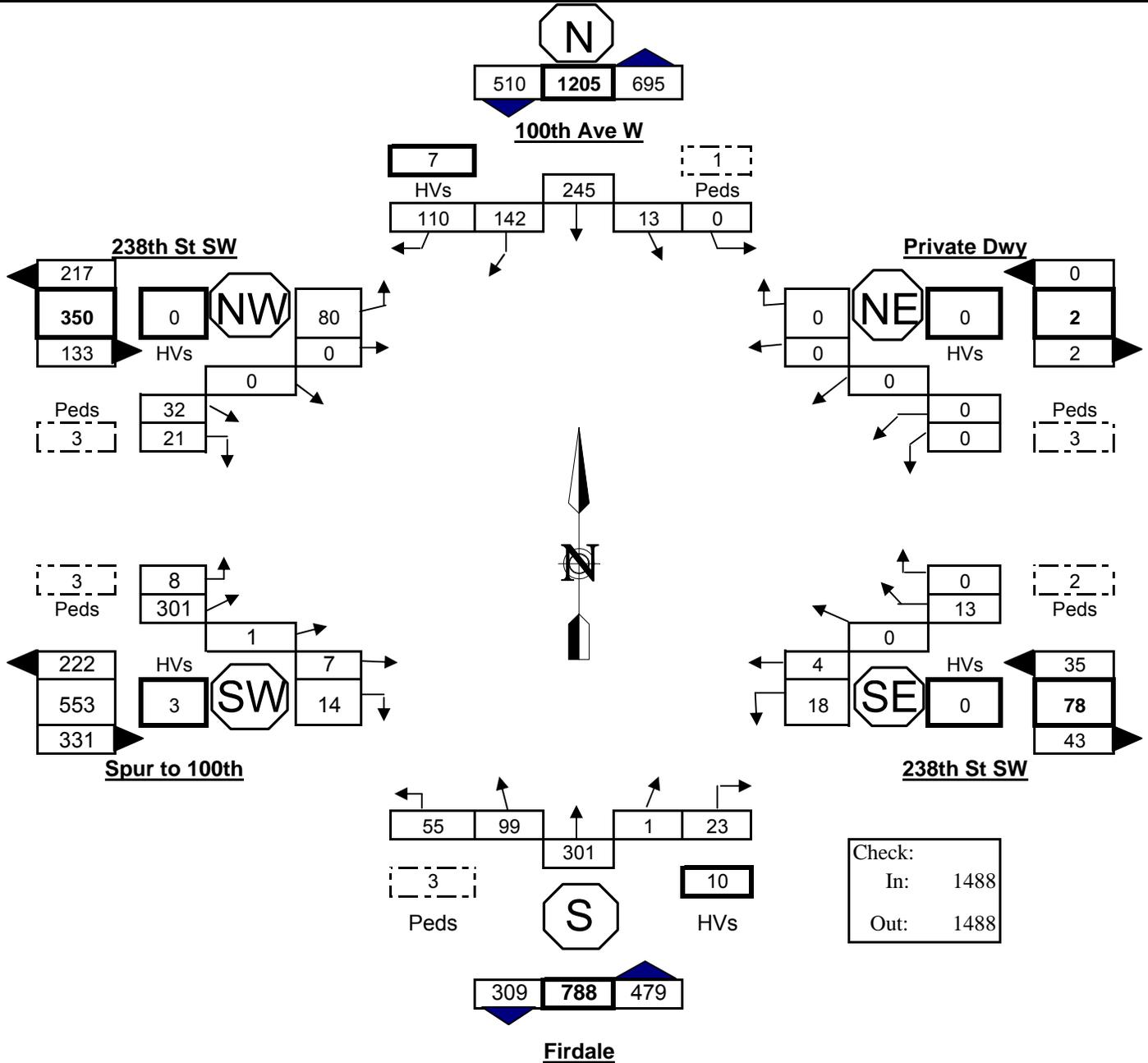


Traffic Count Consultants, Inc.

13623 184th Ave NE, Woodinville, WA 98072

DBE/WBE

Phone: (425) 861-8866 FAX: (425) 861-8877



**Intersection:** 238th ST SW @ 100th Ave W / Firdale Ave  
**Location:** Edmonds  
**Date of Count:** Thurs 02/17/2011  
**Peak Period:** 4:15 P - 5:15 P  
**Checked By:** LBP  
**Prepared For:** David Evans & Associates, Inc.

	%HV	PHF
SB	1.4%	0.88
SWB	n/a	n/a
NWB	n/a	0.67
NB	2.1%	0.93
NEB	0.9%	0.84
SEB	n/a	0.79
<b>Intersection</b>	<b>1.3%</b>	<b>0.94</b>





Prepared for: **David Evans & Associates, Inc.**  
**Traffic Count Consultants, Inc.**

Phone: (425) 861-8866 FAX: (425) 861-8877 E-Mail: TC2inc@aol.com

WBE/DBE

**Intersection:** W Firdale Ave @ 238th St SW / 100th Ave W (N)  
**Location:** Edmonds

**Date of Count:** Thurs 02/17/2011  
**Checked By:** LBP

Time Interval Ending at	From North on (SB) 100th Ave W				From South on (NB) W Firdale Ave				From East on (WB) Private Dwy				From West on (EB) 238th St SW				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	2	0	91	25	3	17	151	0	0	0	0	0	0	21	0	9	314
4:30 P	3	0	83	28	1	22	145	0	0	0	0	0	0	25	0	17	320
4:45 P	1	0	96	29	5	25	157	0	0	0	0	0	0	15	0	12	334
5:00 P	2	0	109	31	2	31	141	1	0	0	0	0	0	22	0	16	351
5:15 P	1	0	112	22	4	29	174	0	0	0	0	0	0	18	0	8	363
5:30 P	2	0	80	13	1	30	139	1	0	0	0	0	0	22	0	12	297
5:45 P	1	0	85	30	2	24	161	0	0	0	0	0	0	22	0	25	347
6:00 P	1	0	94	19	1	27	155	0	0	0	0	0	0	28	0	22	345
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	13	0	750	197	19	205	1223	2	0	0	0	0	0	0	173	0	121	2671
Peak Hour:		4:15 PM		to		5:15 PM												

Total	7	0	400	110	12	107	617	1	0	0	0	0	0	80	0	53	1368
Approach	510				725				0				133				1368
%HV	1.4%				1.7%				n/a				n/a				1.4%
PHF	0.91				0.89				n/a				0.79				0.94

**100th Ave W**  
1207

**238th St SW**  
110, 400, 0

**Private Dwy**  
0, 0, 0, 1

**W Firdale Ave**  
1178

**4:15 PM to 5:15 PM**

**1452** 1.0 PHF Peak Hour Volume

Check	In: 1368	Out: 1368	PHF %HV	
			EB	WB
			0.79	n/a
			n/a	n/a
			0.89	1.7%
			0.91	1.4%
<b>Intersection</b>			<b>0.94</b>	<b>1.4%</b>

**PEDS across:**

	N	S	E	W	Total
INT 01					0
INT 02					0
INT 03					0
INT 04					0
INT 05			3		3
INT 06			1		1
INT 07				1	1
INT 08			2	1	3
INT 09				2	2
INT 10					0
INT 11					0
INT 12					0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>4</b>	<b>10</b>

**Bicycles From:**

	N	S	E	W
INT 01				
INT 02	1			
INT 03				
INT 04				
INT 05				
INT 06				
INT 07				
INT 08				
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Special Notes:**  
 1 This is the upper junction of Firdale and 100th



Prepared for: **David Evans & Associates, Inc.**  
**Traffic Count Consultants, Inc.**

Phone: (425) 861-8866 FAX: (425) 861-8877 E-Mail: TC2inc@aol.com

WBE/DBE

Intersection: 3rd Ave NW @ 244th St SW / 205th St  
 Location: Shoreline

Date of Count: Thurs 02/17/2011  
 Checked By: LBP

Time Interval Ending at	From North on (SB) Firdale Village Dwy				From South on (NB) 3rd Ave NW				From East on (WB) 205th / 244th St SW				From West on (EB) 205th / 244th St SW				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	0	0	0	0	29	3	6	1	9	83	5	0	2	95	11	243
4:30 P	0	1	1	2	0	30	1	17	2	11	75	5	1	0	78	9	230
4:45 P	0	2	2	3	0	24	0	11	1	11	81	4	1	3	78	13	232
5:00 P	0	4	1	3	0	36	4	13	1	14	102	6	1	1	63	18	265
5:15 P	0	2	0	1	0	32	2	12	0	9	90	4	0	1	64	15	232
5:30 P	0	1	0	0	0	31	2	20	1	10	94	1	0	3	73	12	247
5:45 P	0	3	0	1	0	36	1	11	1	12	99	7	1	0	67	8	245
6:00 P	0	4	2	1	0	25	2	11	1	13	95	4	0	2	54	10	223
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	0	17	6	11	0	243	15	101	8	89	719	36	4	12	572	96	1917
Peak Hour:		4:45 PM				to				5:45 PM							

Total	0	10	1	5	0	135	9	56	3	45	385	18	2	5	267	53	989
Approach	16				200				448				325				989
%HV	n/a				n/a				0.7%				0.6%				0.5%
PHF	0.50				0.94				0.92				0.92				0.93

**4:45 PM to 5:45 PM**

**1060 1.0 PHF Peak Hour Volume**

Check	EB	PHF	%HV
989	0.92	0.92	0.6%
989	0.92	0.92	0.7%
989	0.94	0.94	n/a
989	0.50	0.50	n/a
<b>Intersection</b>	<b>0.93</b>	<b>0.93</b>	<b>0.5%</b>

**PEDS across:**

	N	S	E	W
INT 01	1			1
INT 02	1	3	1	5
INT 03	1			1
INT 04		1		1
INT 05				0
INT 06				0
INT 07	1	1		3
INT 08	3			3
INT 09				0
INT 10				0
INT 11				0
INT 12				0
<b>Total</b>	<b>7</b>	<b>5</b>	<b>1</b>	<b>14</b>

**Bicycles From:**

	N	S	E	W
INT 01				
INT 02				1
INT 03			1	
INT 04				
INT 05				
INT 06				
INT 07				
INT 08		1	1	
<b>Total</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>1</b>

**Special Notes:**

- Stop signs on NB & SB approaches
- Marked crosswalk on West leg
- Two way left turn lane in center of road

WASHINGTON STATE DEPT OF TRANSPORTATION

Site Code : 10428233  
 LOCATION : SR 104  
 JCT : 244TH ST SW  
 MILEPOST : 28.23

PAGE: 1  
 FILE: 10428233  
 DATE: 4/13/10

Movements by: Primary

Time Begin	From West			From North			From East			From South			Vehicle Total
	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	
4:00 PM	0	113	0	22	161	0	277	208	0	0	0	0	781
4:15	0	223	0	18	182	0	239	209	0	0	0	0	871
4:30	0	219	0	25	122	0	271	170	0	0	0	0	807
4:45	0	167	0	10	141	0	311	213	0	0	0	0	842
HR TOTAL	0	722	0	75	606	0	1098	800	0	0	0	0	3301
5:00 PM	0	233	0	21	233	0	314	178	0	0	0	0	979
5:15	0	207	0	18	187	0	311	180	0	0	0	0	903
5:30	0	223	0	16	134	0	320	173	0	0	0	0	866
5:45	0	168	0	13	178	0	315	196	0	0	0	0	870
HR TOTAL	0	831	0	68	732	0	1260	727	0	0	0	0	3618
DAY TOTAL	0	1553	0	143	1338	0	2358	1527	0	0	0	0	6919

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	..... VOLUMES .....				.... PERCENTS ...		
			Right	Thru	Left	Total	Right	Thru	Left
West	4:15 PM	0.90	0	842	0	842	0	100	0
North	5:00 PM	0.79	68	732	0	800	8	92	0
East	4:45 PM	0.95	1256	744	0	2000	63	37	0
South	4:45 PM	0.00	0	0	0	0	0	0	0

Entire Intersection

West	5:00 PM	0.89	0	831	0	831	0	100	0
North		0.79	68	732	0	800	8	92	0
East		0.97	1260	727	0	1987	63	37	0
South		0.00	0	0	0	0	0	0	0



Prepared for: **David Evans & Associates, Inc.**  
**Traffic Count Consultants, Inc.**

Phone: (425) 861-8866 FAX: (425) 861-8877 E-Mail: TC2inc@aol.com

WBE/DBE

**Intersection:** 76th Ave W @ SR 104 Lake Ballinger Way / 205th / 244th  
**Location:** Shoreline

**Date of Count:** Thurs 02/17/2011  
**Checked By:** LBP

Time Interval Ending at	From North on (SB) 76th Ave W				From South on (NB) 76th Ave W				From East on (WB) SR 104 Lake Ballinger Way				From West on (EB) SR 104 Lake Ballinger Way / 205th				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	3	27	21	13	5	19	38	52	12	30	406	35	10	12	304	10	967
4:30 P	1	20	23	11	2	34	40	48	7	30	429	34	7	21	298	14	1002
4:45 P	1	23	16	11	2	32	47	53	4	37	441	39	10	18	349	13	1079
5:00 P	0	32	23	7	1	23	37	47	9	42	421	32	5	15	339	17	1035
5:15 P	1	30	29	13	2	29	45	45	6	31	471	42	8	12	335	21	1103
5:30 P	1	31	22	13	1	29	47	37	3	39	398	30	4	12	392	17	1067
5:45 P	3	28	24	20	1	32	45	54	4	36	442	23	4	20	312	11	1047
6:00 P	1	17	25	13	1	30	45	41	5	28	425	32	2	18	265	10	949
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	11	208	183	101	15	228	344	377	50	273	3433	267	50	128	2594	113	8249
Peak Hour:		4:30 PM				to				5:30 PM							

Total	3	116	90	44	6	113	176	182	22	149	1731	143	27	57	1415	68	4284
Approach	250				471				2023				1540				4284
%HV	1.2%				1.3%				1.1%				1.8%				1.4%
PHF	0.87				0.89				0.93				0.91				0.97

**4:30 PM to 5:30 PM**

**PHF %HV**

Check	EB	0.91	1.8%
	WB	0.93	1.1%
<b>In:</b> 4284	NB	0.89	1.3%
<b>Out:</b> 4284	SB	0.87	1.2%
<b>Intersection</b>		<b>0.97</b>	<b>1.4%</b>

**Bicycles From:**

	N	S	E	W
INT 01				
INT 02		1	1	1
INT 03			1	
INT 04				
INT 05	1	1	6	
INT 06		2		
INT 07				
INT 08		2	1	
<b>Total</b>	<b>1</b>	<b>6</b>	<b>9</b>	<b>1</b>

**PEDS across:**

	N	S	E	W
INT 01				0
INT 02	4		2	2
INT 03				0
INT 04				1
INT 05			1	1
INT 06			2	1
INT 07			3	1
INT 08				2
INT 09				0
INT 10				0
INT 11				0
INT 12				0
<b>Total</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>7</b>

**Special Notes:**

0  
3  
0  
1  
8  
2  
0  
3

4412 1.0 PHF Peak Hour Volume



Prepared for: **David Evans & Associates, Inc.**

**Traffic Count Consultants, Inc.**

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WBE/DBE

**Intersection:** I-5 SB Ramps @ SR 104 / Lake Ballinger Way / NE 205th St / 244th St  
**Location:** Shoreline

**Date of Count:** Thurs 02/17/2011  
**Checked By:** LBP

Time Interval Ending at	From North on (SB) I-5 SB Ramps				From South on (NB) I-5 SB Ramps				From East on (WB) SR 104 / Lake Ballinger Way / NE 205th St				From West on (EB) Lake Ballinger Way / NE 205th St				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	4	89	0	218	0	0	0	0	11	0	316	24	13	0	344	107	1098
4:30 P	5	99	0	201	0	0	0	0	4	0	332	39	10	0	298	92	1061
4:45 P	4	131	0	223	0	0	0	0	5	0	333	43	13	0	372	119	1221
5:00 P	4	112	0	255	0	0	0	0	5	0	334	52	5	0	338	110	1201
5:15 P	3	111	0	230	0	0	0	0	7	0	300	39	10	0	354	88	1122
5:30 P	4	113	0	216	0	0	0	0	3	0	365	52	5	0	357	134	1237
5:45 P	4	129	0	204	0	0	0	0	6	0	338	55	5	0	338	110	1174
6:00 P	1	104	0	217	0	0	0	0	5	0	359	55	3	0	247	90	1072
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	29	888	0	1764	0	0	0	0	46	0	2677	359	64	0	2648	850	9186
Peak Hour: 4:30 PM to 5:30 PM																	

Total	15	467	0	924	0	0	0	0	20	0	1332	186	33	0	1421	451	4781
Approach	1391				0				1518				1872				4781
%HV	1.1%				n/a				1.3%				1.8%				1.4%
PHF	0.95				n/a				0.91				0.95				0.97

**I-5 SB Ramps**  
 1577  
 1391  
 924  
 467  
 0 Bike  
 0 Ped

**SR 104 / Lake Ballinger Way / NE 205th St / 244th S**

**Offset SB Lane**  
 2256 Ped 0  
 0 Bike  
 4128  
 1872  
 1421  
 451

**SR 104 / Lake Ballinger Way / NE 205th St / 244th S**  
 1332  
 1518  
 3406  
 0 Bike  
 0 Ped  
 1888

**4:30 PM to 5:30 PM**

**I-5 SB Ramps**  
 451

**PHF Peak Hour Volume**  
 4948

Check	PHF	%HV
EB	0.95	1.8%
WB	0.91	1.3%
NB	n/a	n/a
SB	0.95	1.1%
Intersection	0.97	1.4%

**PEDS across:**

	N	S	E	W
INT 01				0
INT 02				0
INT 03				0
INT 04				0
INT 05	No Peds			0
INT 06				0
INT 07				0
INT 08				0
INT 09				0
INT 10				0
INT 11				0
INT 12				0
	0	0	0	0

**Bicycles From:**

	N	S	E	W
INT 01				
INT 02	1			
INT 03				
INT 04				
INT 05				
INT 06				
INT 07				
INT 08				
	1	0	0	0

**Special Notes:**  
 1 SB ON Ramp is offset, not available to thrus from the North



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WBE/DBE

**Intersection:** RICHMOND BEACH DR NW & NW 195TH PL  
**Location:** SHORELINE, WASHINGTON

**Date of Count:** Thurs 2/17/2011  
**Checked By:** J.H & L.B.P

Time Interval Ending at	From North on (SB)				From South on (NB)				From East on (WB)				From West on (EB)				Interval Total
	RICHMOND BEACH DR NW				RICHMOND BEACH DR NW				NW 195TH PL				0				
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	0	0	0	0	0	0	2	0	2	0	2	0	0	0	0	6
4:30 P	0	2	0	0	0	0	0	2	0	6	0	1	0	0	0	0	11
4:45 P	0	0	0	0	0	0	0	5	0	1	0	0	0	0	0	0	6
5:00 P	0	1	0	0	0	0	0	1	0	9	0	0	0	0	0	0	11
5:15 P	0	0	0	0	0	0	0	2	0	5	0	0	0	0	0	0	7
5:30 P	0	0	0	0	0	0	0	4	0	2	0	1	0	0	0	0	7
5:45 P	0	1	0	0	0	0	0	2	0	3	0	0	0	0	0	0	6
6:00 P	0	0	0	0	0	0	0	6	0	1	0	0	0	0	0	0	7
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	0	4	0	0	0	0	0	24	0	29	0	4	0	0	0	0	61
Peak Hour: 4:15 PM to 5:15 PM																	

Total	0	3	0	0	0	0	0	10	0	21	0	1	0	0	0	0	35
Approach	3				10				22				0				35
%HV	n/a				n/a				n/a				n/a				0.0%
PHF	0.38				0.50				0.61				n/a				0.80

**RICHMOND BEACH DR NW**

**NW 195TH PL**

4:15 PM to 5:15 PM

**RICHMOND BEACH DR NW**

1.0 PHF Peak Hour Volume

Check	EB	WB	NB	SB	Intersection	PHF	%HV
	n/a	n/a	n/a	n/a			
In:	35	0.61	0.50	n/a			
Out:	35	0.38	0.38	n/a			
		0.80	0.80	0.0%			

**PEDS across:**

	N	S	E	W	
INT 01		1	1		2
INT 02		1	1		2
INT 03			1		1
INT 04					0
INT 05					0
INT 06			1		1
INT 07					0
INT 08					0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	0	2	4	0	6

**Bicycles From:**

	N	S	E	W	
INT 01					
INT 02					
INT 03			No Bikes		
INT 04					
INT 05					
INT 06					
INT 07					
INT 08					
	0	0	0	0	0

**Special Notes:**

0 North leg closed just to the North of the intersection. The only traffic on/off

0 North leg of intersection were to the 5

0 houses that are there.

TM09p11017



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WBE/DBE

**Intersection:** 24TH AVE NW (NW 195TH PL) & NW 196TH ST  
**Location:** SHORELINE, WASHINGTON

**Date of Count:** Thurs 2/17/2011  
**Checked By:** J.H & L.B.P

Time Interval Ending at	From North on (SB) 24TH AVE NW				From South on (NB) NW 195TH PL				From East on (WB) NW 196TH ST				From West on (EB) NW 196TH ST				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	0	1	1	1	0	2	4	0	4	15	6	0	0	8	0	41
4:30 P	0	2	0	0	0	0	1	2	1	6	12	6	1	0	8	0	37
4:45 P	0	3	0	1	1	0	2	3	0	2	10	4	0	1	15	0	41
5:00 P	1	3	0	0	0	0	0	4	1	11	7	5	0	0	10	0	40
5:15 P	0	1	1	0	1	0	1	4	0	5	13	4	1	1	10	0	40
5:30 P	0	2	2	0	0	0	1	4	0	2	13	0	0	1	17	0	42
5:45 P	1	5	0	0	0	1	2	2	1	7	6	3	1	1	8	0	35
6:00 P	0	6	0	0	0	0	1	5	1	0	12	4	0	0	8	0	36
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	2	22	4	2	3	1	10	28	4	37	88	32	3	4	84	0	312
Peak Hour: 4:30 PM to 5:30 PM																	

Total	1	9	3	1	2	0	4	15	1	20	43	13	1	3	52	0	163
Approach	13				19				76				55				163
%HV	7.7%				10.5%				1.3%				1.8%				3.1%
PHF	0.81				0.95				0.83				0.76				0.97

**Map Data:**

- 24TH AVE NW:** 33 (Northbound), 13 (Southbound)
- NW 196TH ST:** 20 (Eastbound), 13 (Westbound)
- NW 195TH PL:** 42 (Northbound), 19 (Southbound)
- Counts at Intersections:**
  - 24th Ave NW & NW 196th St: 13, 20, 0 (Bike), 2 (Ped)
  - NW 196th St & NW 195th Pl: 13, 43, 20, 152
  - NW 195th Pl & NW 196th St: 0 (Bike), 1 (Ped), 76

**PHF Peak Hour Volume:** 168

Check	PHF	%HV	
EB	0.76	1.8%	
WB	0.83	1.3%	
In: 163	NB	0.95	10.5%
Out: 163	SB	0.81	7.7%
Intersection		0.97	3.1%

**PEDS across:**

	N	S	E	W	
INT 01					0
INT 02					0
INT 03				1	1
INT 04	2		1		3
INT 05					0
INT 06					0
INT 07		2			2
INT 08					0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
<b>Total</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>6</b>

**Bicycles From:**

	N	S	E	W	
INT 01					0
INT 02					0
INT 03					0
INT 04					0
INT 05					0
INT 06					0
INT 07					0
INT 08					0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Special Notes:**

0



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WBE/DBE

**Intersection:** NW RICHMOND BEACH RD & NW 190TH ST  
**Location:** SHORELINE, WASHINGTON

**Date of Count:** Thurs 2/17/2011  
**Checked By:** J.H & L.B.P

Time Interval Ending at	From North on (SB) NW RICHMOND BEACH RD				From South on (NB) NW RICHMOND BEACH RD				From East on (WB) NW 190TH ST				From West on (EB) DRIVEWAY				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	1	13	77	0	1	0	109	1	0	0	0	13	0	0	0	0	213
4:30 P	3	12	65	0	2	0	109	1	0	1	0	15	0	0	0	0	203
4:45 P	4	15	54	0	1	0	106	1	0	0	0	10	0	0	0	0	186
5:00 P	1	10	69	0	3	0	114	0	0	0	0	14	0	0	0	0	207
5:15 P	3	15	81	0	1	0	103	2	0	1	0	14	0	0	0	0	216
5:30 P	1	15	86	0	1	0	116	0	0	0	0	13	0	0	0	0	230
5:45 P	2	10	77	0	1	0	103	1	0	0	0	8	0	0	0	0	199
6:00 P	0	5	62	0	2	0	110	1	0	0	0	15	0	0	0	0	193
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	15	95	571	0	12	0	870	7	0	2	0	102	0	0	0	0	1647
Peak Hour:		4:45 PM				to		5:45 PM									

Total	7	50	313	0	6	0	436	3	0	1	0	49	0	0	0	0	852
Approach	363				439				50				0				852
%HV	1.9%				1.4%				n/a				n/a				1.5%
PHF	0.90				0.95				0.83				n/a				0.93

**Site Map Data:**

- NW RICHMOND BEACH RD (Northbound):** 848 total volume.
- NW RICHMOND BEACH RD (Southbound):** 753 total volume.
- NW 190TH ST (Eastbound):** 439 total volume.
- NW 190TH ST (Westbound):** 49 total volume.
- DRIVEWAY (Northbound):** 363 total volume.
- DRIVEWAY (Southbound):** 0 total volume.

**PEDS across:**

	N	S	E	W	Total
INT 01					0
INT 02			2		2
INT 03			5	1	6
INT 04			1		1
INT 05			2	1	3
INT 06				1	1
INT 07			1		1
INT 08					0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>3</b>	<b>14</b>

**Bicycles From:**

	N	S	E	W	Total
INT 01		1			1
INT 02		1	1		2
INT 03					0
INT 04					0
INT 05	1	1			2
INT 06					0
INT 07					0
INT 08					0
<b>Total</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>5</b>

**Summary Statistics:**

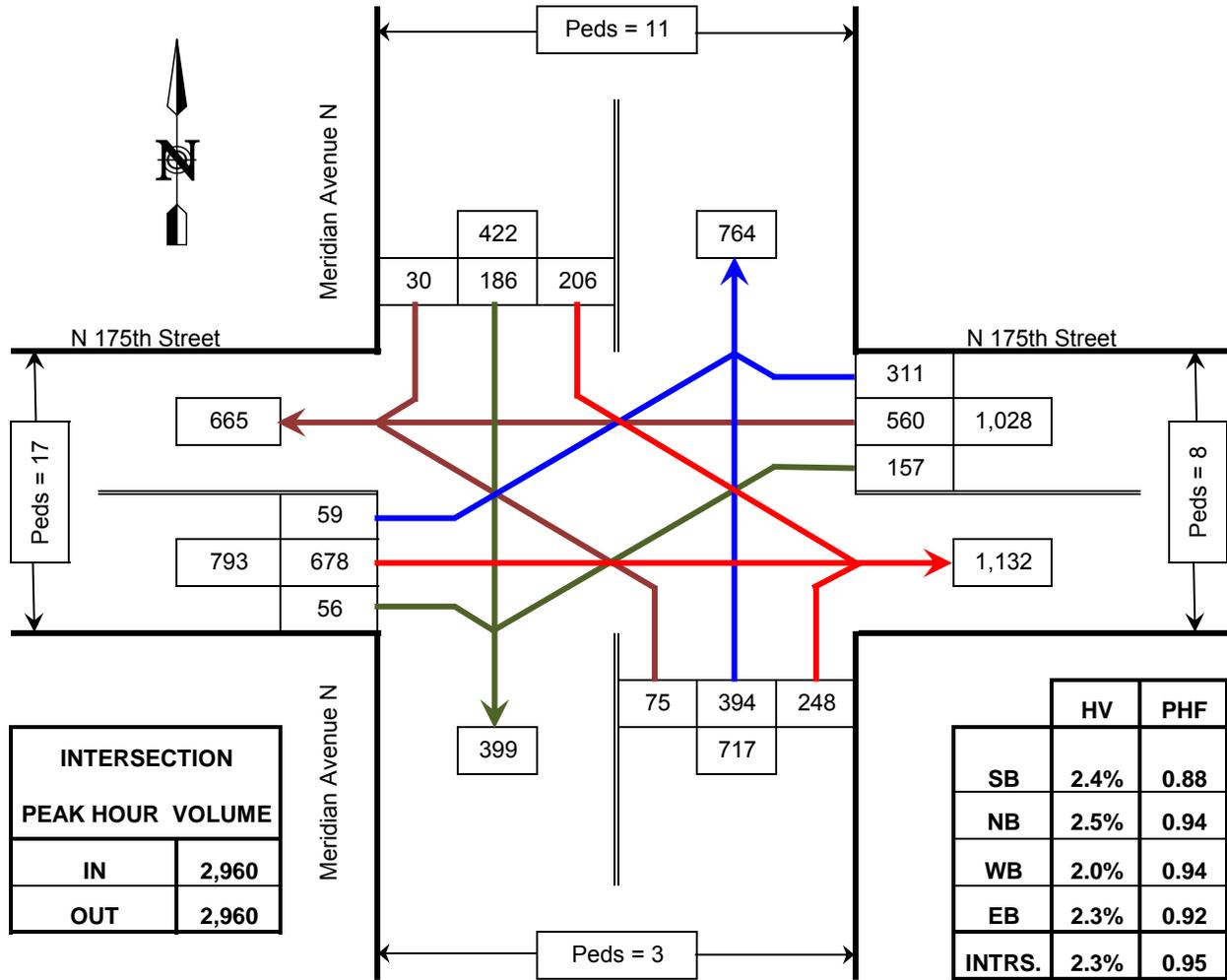
- Total Volume:** 920
- PHF Peak Hour Volume:** 1.0
- PHF %HV:** EB n/a, WB 0.83, NB 0.95, SB 0.90, Intersection 0.93
- %HV:** EB n/a, WB n/a, NB 1.4%, SB 1.9%, Intersection 1.5%

**Check In:** 852  
**Check Out:** 852

**Special Notes:**

**TURNING MOVEMENTS DIAGRAM**

**4 - 6 PM PEAK HOUR: 4:15 PM TO 5:15 PM**



PHF = Peak Hour Factor  
HV = Heavy Vehicles

**N 175th Street @ Meridian Avenue N**

**Shoreline, WA**

COUNTED BY: CN

DATE OF COUNT: Wed. 12/15/10

REDUCED BY: CN

TIME OF COUNT: 4 - 6 PM

REDUCTION DATE: Thu. 12/16/10

WEATHER: Rainy



**INTERSECTION TURNING MOVEMENTS REDUCTION SHEET**

LOCATION: N 175th Street @ Meridian Avenue N DATE OF COUNT: Wed. 12/15/10 COUNTED BY: CN  
Shoreline, WA TIME OF COUNT: 4 - 6 PM WEATHER: Rainy

TIME INTERVAL ENDING AT	FROM NORTH ON Meridian Avenue N					FROM SOUTH ON Meridian Avenue N					FROM EAST ON N 175th Street					FROM WEST ON N 175th Street					INTERVAL TOTALS
	Peds	HV	Left	Thru	Right	Peds	HV	Left	Thru	Right	Peds	HV	Left	Thru	Right	Peds	HV	Left	Thru	Right	
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	60	55	0	0	0	15	100	60	0	5	20	135	45	0	0	10	175	10	685
04:30 PM	0	5	54	52	2	0	5	21	107	63	2	3	46	144	72	1	1	24	177	15	777
04:45 PM	7	2	63	48	9	0	5	18	97	61	0	8	52	147	73	9	7	9	170	15	762
05:00 PM	3	2	41	41	11	3	3	19	88	63	4	6	32	152	90	6	5	13	175	8	733
05:15 PM	1	1	48	45	8	0	5	17	102	61	2	4	27	117	76	1	5	13	156	18	688
05:30 PM	5	8	47	45	10	0	4	23	91	58	0	6	39	148	64	1	4	25	121	17	688
05:45 PM	2	5	48	35	9	0	1	16	95	42	0	5	37	145	75	1	2	13	152	8	675
06:00 PM	6	5	39	36	4	5	3	14	85	42	2	6	35	149	66	2	8	19	145	13	647
PEAK HOUR TOTALS	11	10	206	186	30	3	18	75	394	248	8	21	157	560	311	17	18	59	678	56	INTERSECTION
ALL MOVEMENTS	422					717					1028					793					2960
% HV	2%					3%					2%					2%					2%
PEAK HOUR FACTOR	0.88					0.94					0.94					0.92					0.95

PHF = Peak Hour Factor

4 - 6 PM PEAK HOUR: 4:15 PM TO 5:15 PM

REDUCED BY: CN

DATE OF REDUCTION: 12/16/2010



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WBE/DBE

Intersection: I-5 SB Ramps @ 175th St  
 Location: Shoreline

Date of Count: Thurs 02/17/2011  
 Checked By: LBP

Time Interval Ending at	From North on (SB) I-5 SB Ramp				From South on (NB) I-5 SB Ramp				From East on (WB) N 175th St				From West on (EB) N 175th St				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	1	51	0	42	0	0	0	0	3	19	198	0	5	0	201	88	599
4:30 P	2	62	0	58	0	0	0	0	2	29	215	0	8	0	207	97	668
4:45 P	1	50	0	69	0	0	0	0	6	28	235	0	9	0	192	83	657
5:00 P	2	57	0	75	0	0	0	0	11	33	217	0	5	0	216	85	683
5:15 P	0	49	0	63	0	0	0	0	5	29	226	0	4	0	187	72	626
5:30 P	1	44	0	69	0	0	0	0	4	34	211	0	3	0	179	79	616
5:45 P	0	33	0	52	0	0	0	0	6	22	218	0	5	0	163	64	552
6:00 P	0	41	0	41	0	0	0	0	3	17	194	0	6	0	171	59	523
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	7	387	0	469	0	0	0	0	40	211	1714	0	45	0	1516	627	4924
Peak Hour: 4:15 PM to 5:15 PM																	

Total	5	218	0	265	0	0	0	0	24	119	893	0	26	0	802	337	2634
Approach	483				0				1012				1139				2634
%HV	1.0%				n/a				2.4%				2.3%				2.1%
PHF	0.91				n/a				0.96				0.94				0.96

**4:15 PM to 5:15 PM**

**PHF %HV**

Check In: 2634	EB	0.94	2.3%
Out: 2634	WB	0.96	2.4%
	NB	n/a	n/a
	SB	0.91	1.0%
Intersection		0.96	2.1%

**Special Notes:**  
 0 Nice Day, no anomalies

**Bicycles From:**

	N	S	E	W
INT 01				
INT 02				
INT 03				
INT 04			1	
INT 05				
INT 06				
INT 07				
INT 08				
<b>Total</b>	0	0	1	0

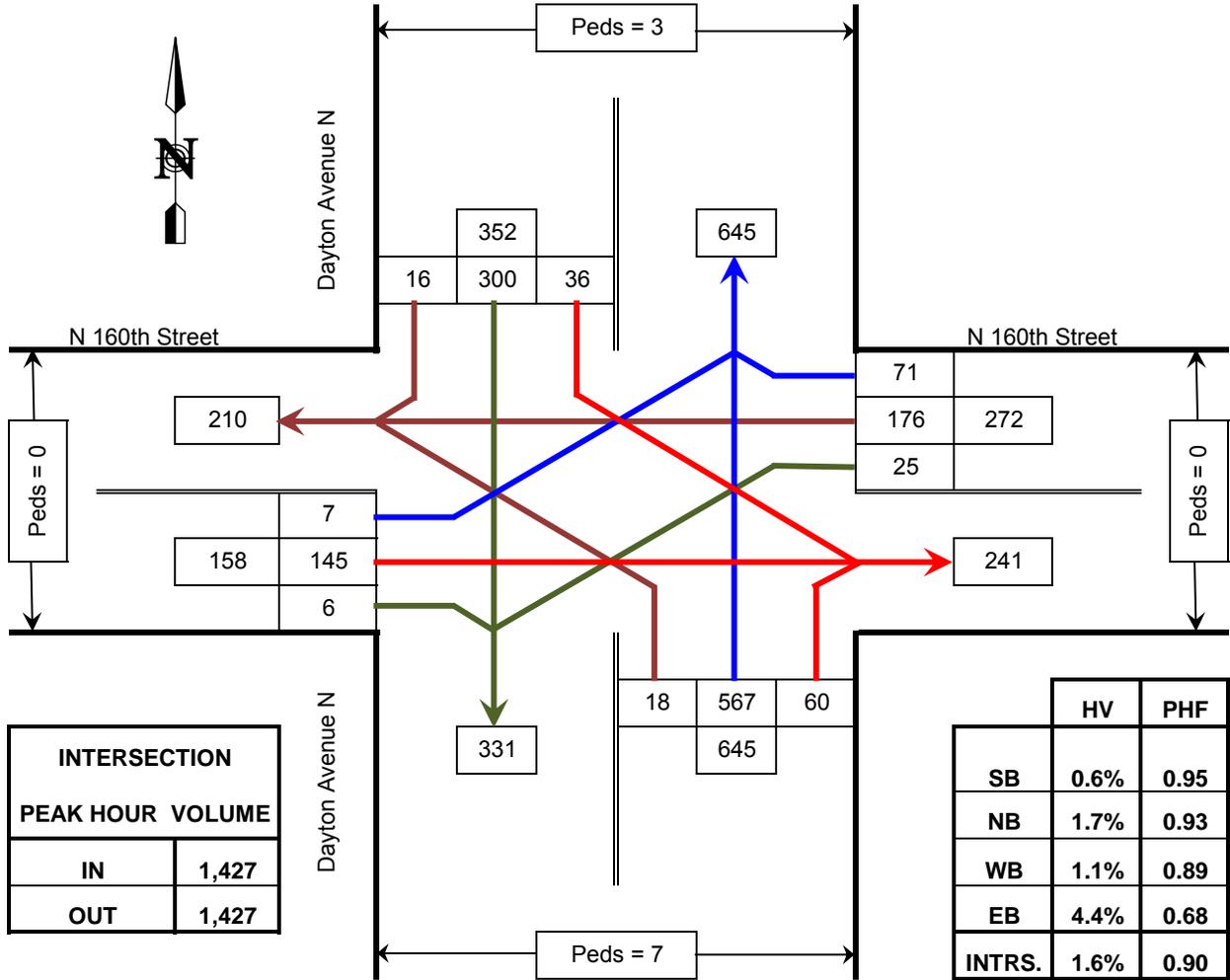
**PEDS across:**

	N	S	E	W
INT 01		2		2
INT 02				0
INT 03		1		1
INT 04				0
INT 05		2		2
INT 06				0
INT 07				0
INT 08				0
INT 09				0
INT 10				0
INT 11				0
INT 12				0
<b>Total</b>	0	5	0	0

**2732 1.0 PHF Peak Hour Volume**

**TURNING MOVEMENTS DIAGRAM**

**4 - 6 PM PEAK HOUR: 4:45 PM TO 5:45 PM**



**Dayton Avenue N @ N 160th Street**

**Shoreline, WA**

COUNTED BY: JH

DATE OF COUNT: Tue. 12/7/10

REDUCED BY: CN

TIME OF COUNT: 4 - 6 PM

REDUCTION DATE: Mon. 12/13/10

WEATHER: Rainy



**INTERSECTION TURNING MOVEMENTS REDUCTION SHEET**

LOCATION: Dayton Avenue N @ N 160th Street DATE OF COUNT: Tue. 12/7/10 COUNTED BY: JH  
Shoreline, WA TIME OF COUNT: 4 - 6 PM WEATHER: Rainy

TIME INTERVAL ENDING AT	FROM NORTH ON Dayton Avenue N					FROM SOUTH ON Dayton Avenue N					FROM EAST ON N 160th Street					FROM WEST ON N 160th Street					INTERVAL TOTALS
	Peds	HV	Left	Thru	Right	Peds	HV	Left	Thru	Right	Peds	HV	Left	Thru	Right	Peds	HV	Left	Thru	Right	
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	1	1	16	64	6	3	3	3	117	14	0	0	13	40	17	0	1	9	51	2	352
04:30 PM	1	1	13	62	5	0	4	6	113	15	0	1	9	43	20	0	4	4	46	2	338
04:45 PM	0	1	10	66	3	0	1	2	146	26	0	1	2	36	20	0	1	2	35	5	353
05:00 PM	0	1	5	74	3	3	4	5	135	15	0	2	5	39	18	0	2	1	27	4	331
05:15 PM	2	0	16	71	5	1	3	4	149	20	0	1	4	49	19	0	2	1	55	2	395
05:30 PM	1	0	9	81	3	3	3	6	125	15	0	0	4	42	16	0	2	4	25	0	330
05:45 PM	0	1	6	74	5	0	1	3	158	10	0	0	12	46	18	0	1	1	38	0	371
06:00 PM	0	0	7	76	5	1	2	3	117	7	0	1	10	45	20	0	3	2	32	2	326
PEAK HOUR TOTALS	3	2	36	300	16	7	11	18	567	60	0	3	25	176	71	0	7	7	145	6	INTERSECTION
ALL MOVEMENTS	352					645					272					158					1427
% HV	1%					2%					1%					4%					2%
PEAK HOUR FACTOR	0.95					0.93					0.89					0.68					0.90

PHF = Peak Hour Factor

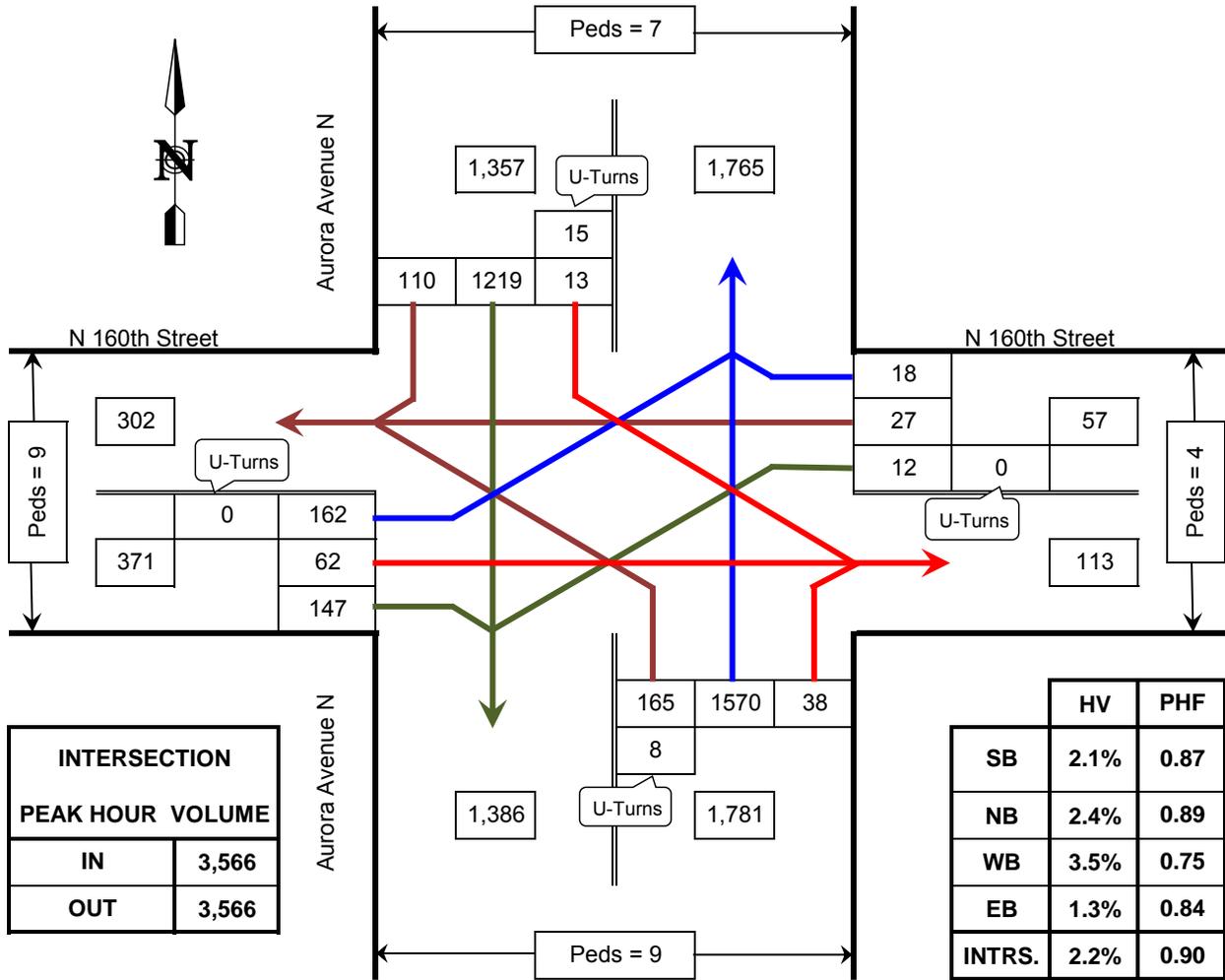
4 - 6 PM PEAK HOUR: 4:45 PM TO 5:45 PM

REDUCED BY: CN

DATE OF REDUCTION: 12/13/2010

**TURNING MOVEMENTS DIAGRAM**

**4:00 - 6:00 PM PEAK HOUR: 4:00 PM TO 5:00 PM**



PHF = Peak Hour Factor  
HV = Heavy Vehicles

**Aurora Avenue N @ N 160th Street**

**Shoreline, WA**

COUNTED BY: JH

DATE OF COUNT: Thu. 11/18/10

REDUCED BY: CN

TIME OF COUNT: 4:00 - 6:00 PM

REDUCTION DATE: Wed. 11/24/10

WEATHER: Overcast

# **TRAFFIC DATA GATHERING**

## INTERSECTION TURNING MOVEMENTS REDUCTION SHEET

LOCATION: Aurora Avenue N @ N 160th Street  
Shoreline, WA

DATE OF COUNT: Thu. 11/18/10  
 TIME OF COUNT: 4:00 - 6:00 PM

COUNTED BY: JH  
 WEATHER: Overcast

TIME INTERVAL ENDING AT	FROM NORTH ON Aurora Avenue N						FROM SOUTH ON Aurora Avenue N						FROM EAST ON N 160th Street						FROM WEST ON N 160th Street						INTERVAL TOTALS
	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	Peds	HV	UTurn	Left	Thru	Right	
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
04:15 PM	6	10	5	2	265	32	0	13	1	53	381	5	0	2	0	5	7	5	1	1	0	48	15	37	
04:30 PM	0	9	3	2	354	31	6	9	3	27	457	12	0	0	0	6	8	5	2	2	0	36	9	40	
04:45 PM	0	7	5	6	301	25	1	7	1	39	382	8	3	0	0	1	5	5	1	1	0	47	24	40	
05:00 PM	1	3	2	3	299	22	2	14	3	46	350	13	1	0	0	0	7	3	5	1	0	31	14	30	
05:15 PM	3	6	3	2	267	25	0	13	2	50	325	12	1	0	0	5	5	2	1	1	0	23	14	38	
05:30 PM	1	3	2	2	363	32	0	8	2	61	395	17	1	0	0	3	14	1	2	2	0	35	10	35	
05:45 PM	2	6	2	2	318	36	0	9	0	56	335	11	0	0	0	3	9	4	2	1	0	32	16	42	
06:00 PM	8	7	1	7	263	38	3	7	1	46	312	5	0	0	0	5	6	5	0	4	0	24	12	38	
PEAK HOUR TOTALS	7	29	15	13	1219	110	9	43	8	165	1570	38	4	2	0	12	27	18	9	5	0	162	62	147	
ALL MOVEMENTS	1357						1781						57						371						3566
% HV	2.1%						2.4%						3.5%						1.3%						2.2%
PEAK HOUR FACTOR	0.87						0.89						0.75						0.84						0.90

PHF = Peak Hour Factor

4:00 - 6:00 PM PEAK HOUR: 4:00 PM TO 5:00 PM

REDUCED BY: CN

DATE OF REDUCTION: 11/24/2010



Prepared for: **David Evans & Associates**  
**Traffic Count Consultants, Inc.**

Phone: (425) 861-8866 FAX: (425) 861-8877 E-Mail: Team@tc2inc.com

WBE/DBE

**Intersection:** WESTMINISTER WAY N & N 155TH ST  
**Location:** SHORELINE, WASHINGTON

**Date of Count:** Thurs 2/17/2011  
**Checked By:** J.H & L.B.P

Time Interval Ending at	From North on (SB) WESTMINISTER WAY				From South on (NB) WESTMINISTER WAY				From East on (WB) N 155TH ST				From West on (EB) N 155TH ST				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	3	12	44	20	0	45	48	8	0	13	4	113	1	4	28	10	349
4:30 P	1	6	59	18	0	25	49	4	0	15	6	112	0	0	53	10	357
4:45 P	3	5	40	14	1	23	42	5	0	10	3	128	1	0	59	11	340
5:00 P	1	5	45	17	0	25	49	4	1	12	5	150	0	1	49	12	374
5:15 P	2	10	45	9	0	39	45	11	0	9	6	104	1	0	64	10	352
5:30 P	1	6	56	17	0	28	47	6	0	12	7	132	0	1	56	7	375
5:45 P	1	7	60	16	0	30	44	7	0	18	5	125	0	1	55	17	385
6:00 P	1	6	53	16	0	41	57	8	0	6	6	114	0	2	54	16	379
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	13	57	402	127	1	256	381	53	1	95	42	978	3	9	418	93	2911
Peak Hour:		5:00 PM				to		6:00 PM									

Total	5	29	214	58	0	138	193	32	0	45	24	475	1	4	229	50	1491
Approach	301				363				544				283				1491
%HV	1.7%				n/a				n/a				0.4%				0.4%
PHF	0.91				0.86				0.90				0.96				0.97

**WESTMINISTER WAY**  
 973 (Total)  
 301 (Approach)  
 672 (Approach)

**N 155TH ST**  
 475 (Approach)  
 24 (Approach)  
 45 (Approach)  
 544 (Approach)  
 834 (Approach)

**5:00 PM to 6:00 PM**

**WESTMINISTER WAY**  
 309 (Approach)  
 363 (Approach)  
 672 (Approach)

**PHF %HV**

Check	EB	0.96	0.4%
	WB	0.90	n/a
In: 1491	NB	0.86	n/a
Out: 1491	SB	0.91	1.7%
Intersection		0.97	0.4%

**PEDS across:**

	N	S	E	W	
INT 01	1	5	1		7
INT 02		2			2
INT 03		3			3
INT 04	2	5		5	12
INT 05	1			1	2
INT 06	1	2			3
INT 07		6	1	3	10
INT 08					0
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	5	23	2	9	39

**Bicycles From:**

	N	S	E	W	
INT 01				2	2
INT 02				1	1
INT 03	1	1		2	4
INT 04	1	2		1	4
INT 05					0
INT 06					0
INT 07	1				1
INT 08		2			2
	3	5	0	6	14

**Special Notes:**

1540 1.0 PHF Peak Hour Volume



Prepared for: **David Evans & Associates, Inc.**  
**Traffic Count Consultants, Inc.**

Phone: (425) 861-8866 FAX: (425) 861-8877 E-Mail: TC2inc@aol.com

WBE/DBE

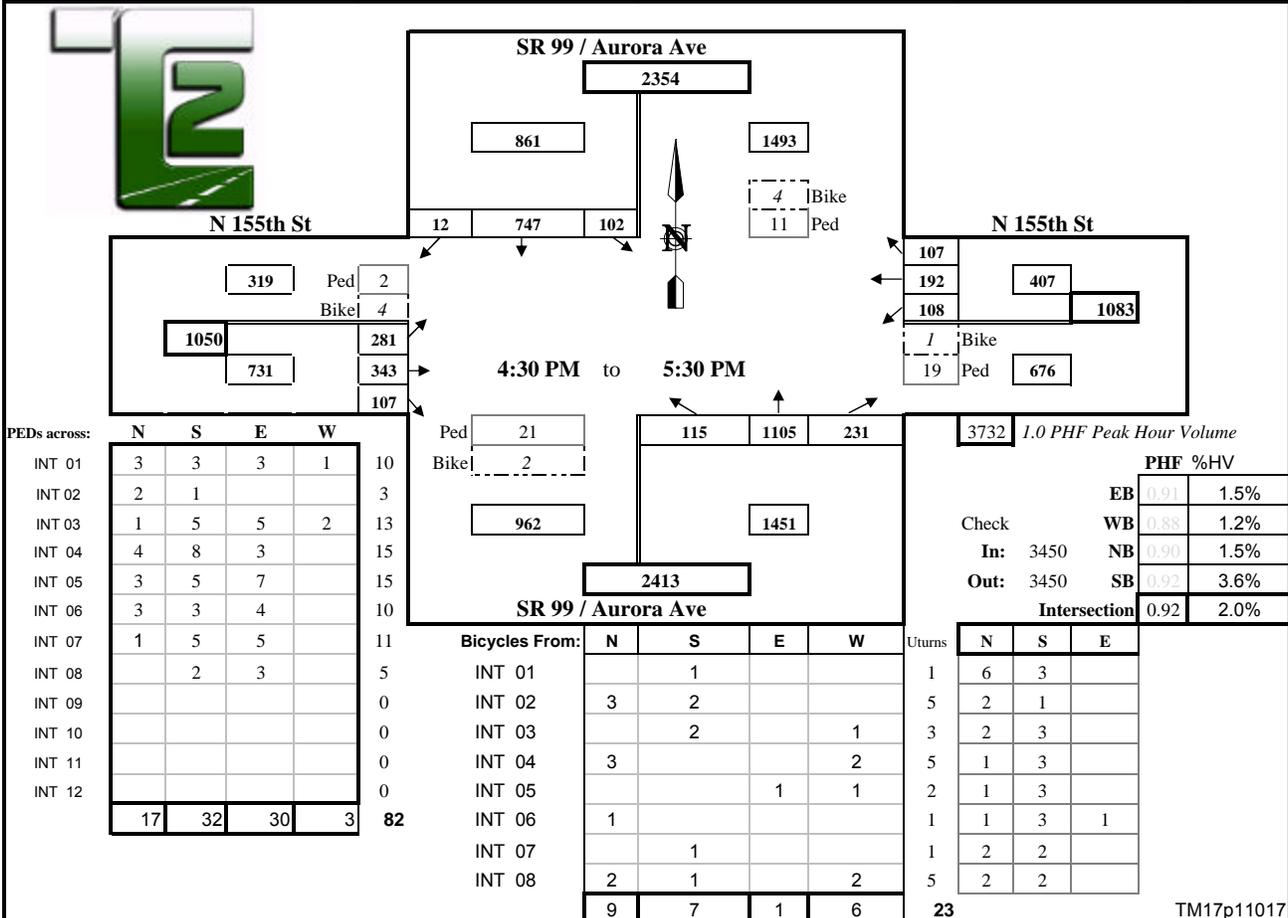
**Intersection:** SR 99 / Aurora Ave @ N 155th Street  
**Location:** Shoreline

**Date of Count:** Thurs 02/17/2011  
**Checked By:** LBP

Time Interval Ending at	From North on (SB) SR 99 / Aurora Ave				From South on (NB) SR 99 / Aurora Ave				From East on (WB) N 155th St				From West on (EB) N 155th St				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	5	17	172	2	15	40	250	45	0	33	70	22	2	67	53	16	787
4:30 P	9	18	162	2	3	33	257	51	1	31	38	27	2	81	61	23	784
4:45 P	10	27	207	0	7	30	278	59	1	28	37	33	1	78	81	24	882
5:00 P	11	23	195	2	6	29	268	53	1	33	32	15	2	74	73	26	823
5:15 P	5	31	155	5	5	33	256	44	2	24	60	29	5	48	95	32	812
5:30 P	5	21	190	5	4	23	303	75	1	23	63	30	3	81	94	25	933
5:45 P	3	17	170	5	10	40	270	45	1	25	51	23	2	75	89	22	832
6:00 P	5	20	150	3	5	29	265	43	2	21	66	31	1	80	75	24	807
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	53	174	1401	24	55	257	2147	415	9	218	417	210	18	584	621	192	6660
Peak Hour:		4:30 PM				to		5:30 PM									

Total	31	102	747	12	22	115	1105	231	5	108	192	107	11	281	343	107	3450
Approach	861				1451				407				731				3450
%HV	3.6%				1.5%				1.2%				1.5%				2.0%
PHF	0.92				0.90				0.88				0.91				0.92





Prepared for: **David Evans & Associates, Inc.**  
**Traffic Count Consultants, Inc.**

Phone: (425) 861-8866 FAX: (425) 861-8877 E-Mail: TC2inc@aol.com

WBE/DBE

**Intersection:** Greenwood Ave N @ SR 523 / N 145th St  
**Location:** Shoreline / Seattle

**Date of Count:** Thurs 02/17/2011  
**Checked By:** LBP

Time Interval Ending at	From North on (SB) Greenwood Ave N				From South on (NB) Greenwood Ave N				From East on (WB) SR 523 / N 145th St				From West on (EB) SR 523 / N 145th St				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	7	27	118	47	5	3	180	48	3	46	26	18	3	74	37	1	625
4:30 P	3	17	124	57	6	0	226	44	3	56	34	13	3	81	32	4	688
4:45 P	3	35	132	47	1	0	224	40	1	52	31	10	1	82	30	4	687
5:00 P	3	19	119	64	5	0	266	44	2	43	21	10	2	94	28	4	712
5:15 P	6	32	145	48	8	1	213	35	0	54	28	23	2	77	26	1	683
5:30 P	1	26	153	53	5	1	275	46	4	47	23	26	2	88	39	2	779
5:45 P	3	32	155	53	3	2	234	61	0	66	21	14	0	91	25	0	754
6:00 P	1	37	143	42	3	2	225	53	5	58	24	25	1	91	34	2	736
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	27	225	1089	411	36	9	1843	371	18	422	208	139	14	678	251	18	5664
Peak Hour:		5:00 PM				to		6:00 PM									

Total	11	127	596	196	19	6	947	195	9	225	96	88	5	347	124	5	2952
Approach	919				1148				409				476				2952
%HV	1.2%				1.7%				2.2%				1.1%				1.5%
PHF	0.96				0.89				0.96				0.92				0.95

**Greenwood Ave N**  
**SR 523 / N 145th St**

**5:00 PM to 6:00 PM**

**PHF %HV**

Check	EB	0.92	1.1%
	WB	0.96	2.2%
In: 2952	NB	0.89	1.7%
Out: 2952	SB	0.96	1.2%
Intersection		0.95	1.5%

**Special Notes:**  
 0 Gas Station on SE corner, and Strip Mall on SW corner both had busy dwys.

**Bicycles From:**

	N	S	E	W
INT 01		1		
INT 02				
INT 03	1			
INT 04				
INT 05				
INT 06		1	1	1
INT 07				1
INT 08				
<b>Total</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>

**PEDS across:**

	N	S	E	W	
INT 01		3	4		7
INT 02	1	2		2	5
INT 03		2	2		4
INT 04		1	2	3	6
INT 05	1	6	4		11
INT 06		2	4	1	7
INT 07		1		1	2
INT 08		2	4		6
INT 09					0
INT 10					0
INT 11					0
INT 12					0
<b>Total</b>	<b>2</b>	<b>19</b>	<b>20</b>	<b>7</b>	<b>48</b>

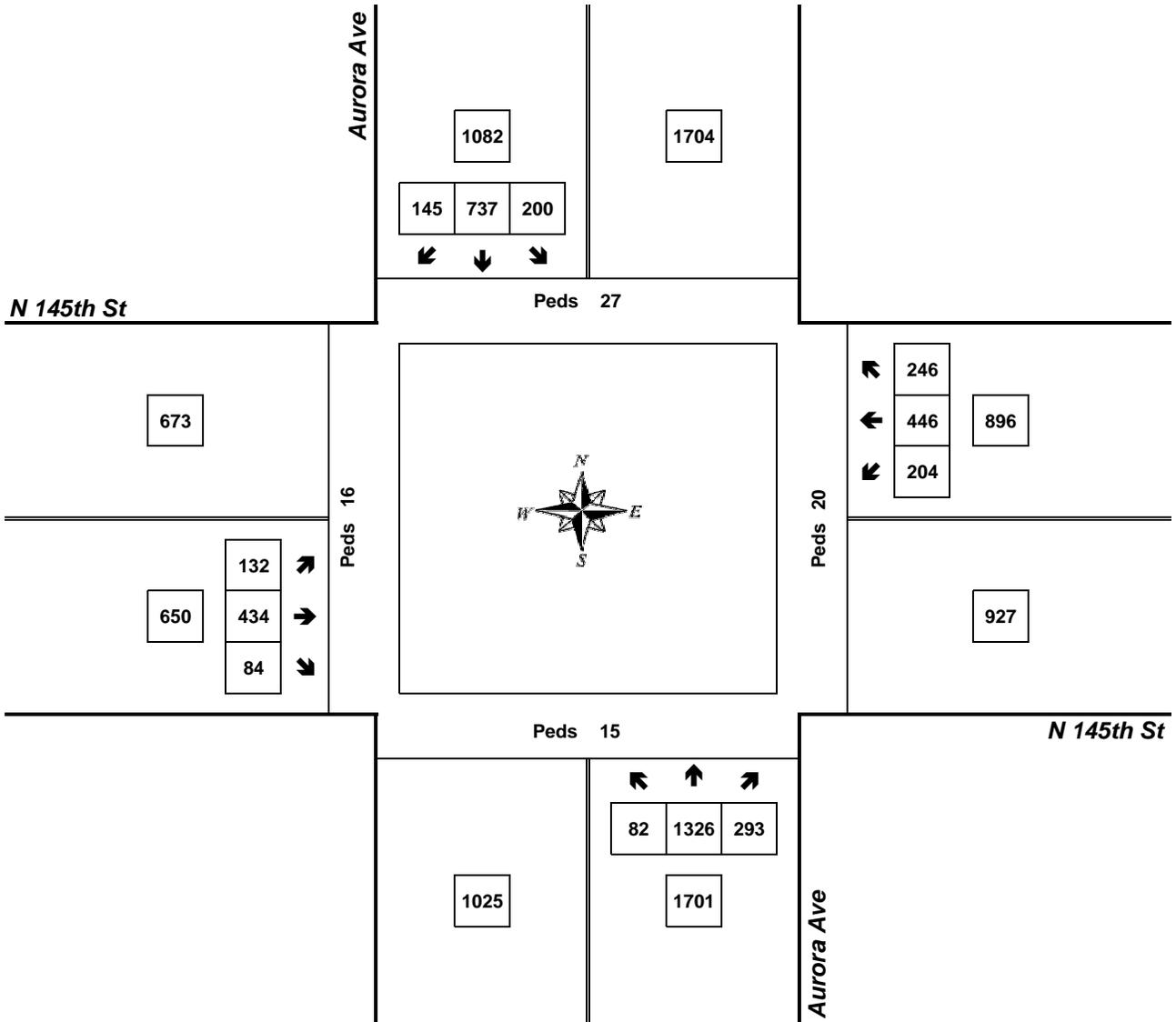
# Peak Hour Summary



Mark Skaggs  
(206) 251-0300

## Aurora Ave & N 145th St

4:30 PM to 5:30 PM  
Thursday, March 05, 2009



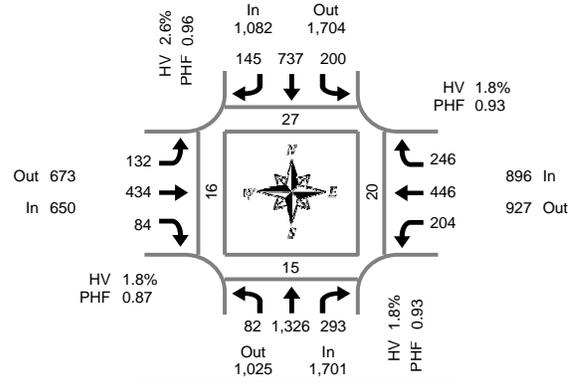
Approach	PHF	HV%	Volume
EB	0.87	1.8%	650
WB	0.93	1.8%	896
NB	0.93	1.8%	1,701
SB	0.96	2.6%	1,082
<b>Intersection</b>	<b>0.97</b>	<b>2.0%</b>	<b>4,329</b>

Count Period: 4:00 PM to 6:00 PM

# Total Vehicle Summary



Mark Skaggs  
(206) 251-0300



## Aurora Ave & N 145th St

Thursday, March 05, 2009  
4:00 PM to 6:00 PM

### 15-Minute Interval Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Aurora Ave				Southbound Aurora Ave				Eastbound N 145th St				Westbound N 145th St				Interval Total	Pedestrians Crosswalk			
	L	T	R	HV	L	T	R	HV	L	T	R	HV	L	T	R	HV		North	South	East	West
4:00 PM	18	306	84	6	54	195	18	5	38	92	29	4	52	109	54	3	1,049	6	0	12	0
4:15 PM	19	315	89	12	53	195	25	4	38	91	23	4	46	92	64	3	1,050	8	2	11	4
4:30 PM	22	307	80	8	55	169	57	5	39	124	24	7	57	122	63	6	1,119	6	3	0	3
4:45 PM	13	374	70	12	49	178	39	11	28	90	19	1	43	109	54	2	1,066	10	7	3	9
5:00 PM	22	322	71	4	49	190	27	6	32	126	23	2	50	103	67	2	1,082	7	2	7	2
5:15 PM	25	323	72	7	47	200	22	6	33	94	18	2	54	112	62	6	1,062	4	3	10	2
5:30 PM	22	315	52	8	60	184	27	6	43	99	19	1	55	105	54	4	1,035	4	3	1	7
5:45 PM	37	318	54	5	47	174	20	9	33	83	22	2	53	121	39	3	1,001	6	2	6	7
Total Survey	178	2,580	572	62	414	1,485	235	52	284	799	177	23	410	873	457	29	8,464	51	22	50	34

### Peak Hour Summary

4:30 PM to 5:30 PM

By Approach	Northbound Aurora Ave				Southbound Aurora Ave				Eastbound N 145th St				Westbound N 145th St				Total	Pedestrians Crosswalk			
	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV	In	Out	Total	HV		North	South	East	West
Volume	1,701	1,025	2,726	31	1,082	1,704	2,786	28	650	673	1,323	12	896	927	1,823	16	4,329	27	15	20	16
%HV	1.8%				2.6%				1.8%				1.8%				2.0%				
PHF	0.93				0.96				0.87				0.93				0.97				

By Movement	Northbound Aurora Ave				Southbound Aurora Ave				Eastbound N 145th St				Westbound N 145th St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	82	1,326	293	1,701	200	737	145	1,082	132	434	84	650	204	446	246	896	4,329
PHF	0.82	0.89	0.92	0.93	0.91	0.92	0.64	0.96	0.85	0.86	0.88	0.87	0.89	0.91	0.92	0.93	0.97

### Rolling Hour Summary

4:00 PM to 6:00 PM

Interval Start Time	Northbound Aurora Ave				Southbound Aurora Ave				Eastbound N 145th St				Westbound N 145th St				Interval Total	Pedestrians Crosswalk			
	L	T	R	HV	L	T	R	HV	L	T	R	HV	L	T	R	HV		North	South	East	West
4:00 PM	72	1,302	323	38	211	737	139	25	143	397	95	16	198	432	235	14	4,284	30	12	26	16
4:15 PM	76	1,318	310	36	206	732	148	26	137	431	89	14	196	426	248	13	4,317	31	14	21	18
4:30 PM	82	1,326	293	31	200	737	145	28	132	434	84	12	204	446	246	16	4,329	27	15	20	16
4:45 PM	82	1,334	265	31	205	752	115	29	136	409	79	6	202	429	237	14	4,245	25	15	21	20
5:00 PM	106	1,278	249	24	203	748	96	27	141	402	82	7	212	441	222	15	4,180	21	10	24	18



Prepared for: **David Evans & Associates, Inc.**  
**Traffic Count Consultants, Inc.**

Phone: (425) 861-8866 FAX: (425) 861-8877 E-Mail: TC2inc@aol.com

WBE/DBE

Intersection: 5th Ave NE @ SR 523 / N 145th St  
 Location: Shoreline / Seattle

Date of Count: Thurs 02/17/2011  
 Checked By: LBP

Time Interval Ending at	From North on (SB) 5th Ave NE				From South on (NB) 5th Ave NE				From East on (WB) SR 523				From West on (EB) SR 523				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	2	8	10	20	0	73	99	110	3	2	157	70	2	73	173	32	827
4:30 P	0	3	7	16	2	77	112	98	2	1	183	96	0	92	226	28	939
4:45 P	3	11	9	20	1	86	104	115	5	2	167	70	0	65	183	21	853
5:00 P	0	3	11	21	3	60	110	109	1	2	165	59	0	87	187	25	839
5:15 P	1	3	8	24	2	77	123	111	5	1	206	77	1	74	183	30	917
5:30 P	2	6	12	18	4	77	124	122	1	2	164	70	0	105	213	18	931
5:45 P	2	7	13	27	1	89	121	135	3	2	176	64	1	83	198	28	943
6:00 P	1	9	5	18	3	79	109	110	7	0	194	78	0	85	191	31	909
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	11	50	75	164	16	618	902	910	27	12	1412	584	4	664	1554	213	7158
Peak Hour:		5:00 PM				to				6:00 PM							

Total	6	25	38	87	10	322	477	478	16	5	740	289	2	347	785	107	3700
Approach	150				1277				1034				1239				3700
%HV	4.0%				0.8%				1.5%				0.2%				0.9%
PHF	0.80				0.93				0.91				0.92				0.98

**5th Ave NE**  
1263

**SR 523**  
87, 38, 25

**SR 523**  
289, 740, 5, 1034, 2322

**SR 523**  
1149, 2388, 1239, 347, 785, 107

**5:00 PM to 6:00 PM**  
322, 477, 478

**5th Ave NE**  
1427

**PHF %HV**

Check	EB	0.92	0.2%
	WB	0.91	1.5%
In: 3700	NB	0.93	0.8%
Out: 3700	SB	0.80	4.0%
Intersection		0.98	0.9%

**PEDS across:**

	N	S	E	W	
INT 01	1				1
INT 02		2			2
INT 03	1				1
INT 04	1	2			3
INT 05	1	2			3
INT 06	3	2			5
INT 07	1	2			3
INT 08	1	2			3
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	9	12	0	0	21

**Bicycles From:**

	N	S	E	W	
INT 01					0
INT 02					0
INT 03					0
INT 04		1			1
INT 05			1		1
INT 06					0
INT 07					0
INT 08					0
	0	1	1	0	2

Special Notes:

0 Special Notes:

0

0

0

1

1

0

0

0

2

TM19p11017

**CITY OF SEATTLE**  
**DEPARTMENT OF TRANSPORTATION**

Counted by : JR  
Counter No : 1023  
Weather : CLEAR  
Comments :

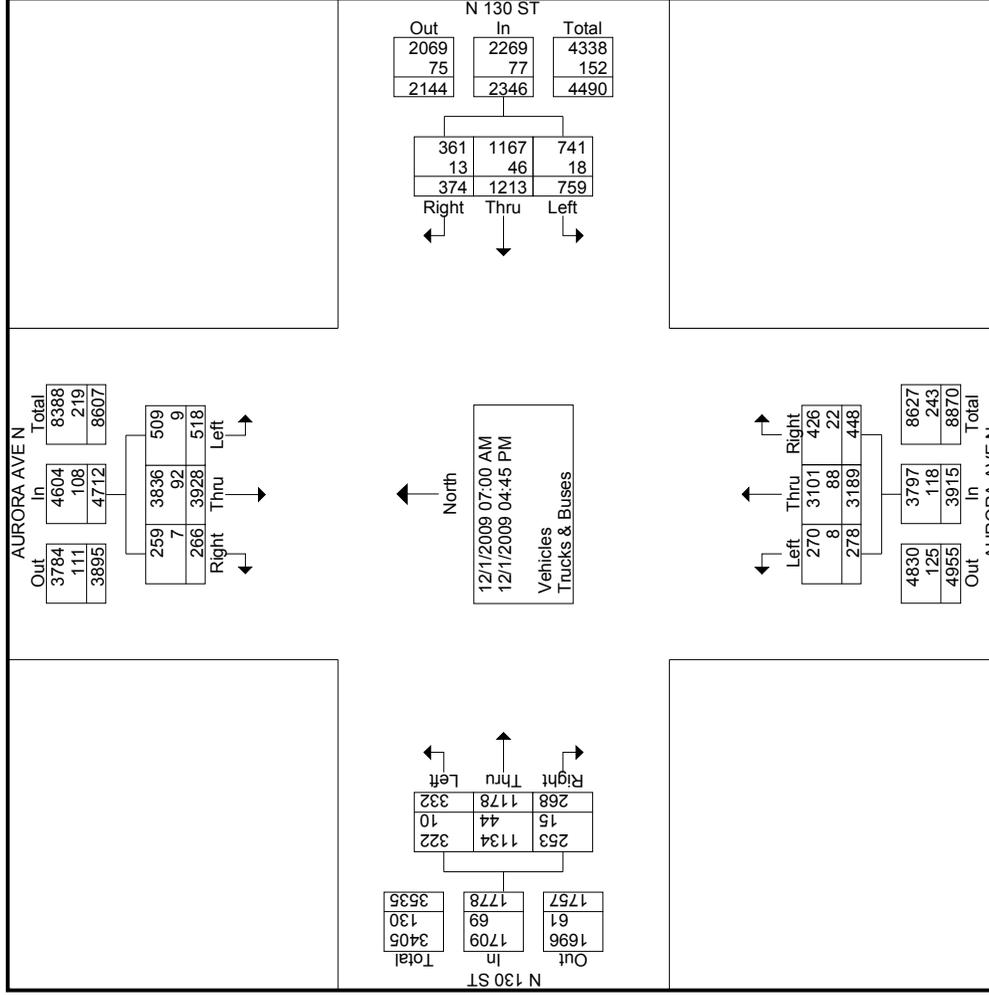
File Name : N\_084ap09  
Site Code : 00120102  
Start Date : 12/1/2009  
Page No : 1

Start Time	Groups Printed- Vehicles - Trucks & Buses																
	AURORA AVEN From North				N 130 ST From East				AURORA AVEN From South				N 130 ST From West				
	Left	Right	App. Total		Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	20	246	10	276	36	41	12	89	3	57	15	75	8	69	11	88	528
07:15 AM	18	245	8	271	45	25	19	89	7	66	18	91	11	86	13	110	561
07:30 AM	41	314	24	379	64	59	25	148	7	109	28	144	17	71	16	104	775
07:45 AM	27	320	19	366	56	75	19	150	11	126	40	177	26	109	18	153	846
Total	106	1125	61	1292	201	200	75	476	28	358	101	487	62	335	58	455	2710
08:00 AM	29	295	12	336	60	98	16	174	23	112	27	162	14	95	11	120	792
08:15 AM	33	309	13	355	27	88	15	130	8	159	25	192	13	81	16	110	787
08:30 AM	33	278	6	317	45	59	28	132	10	104	22	136	20	90	11	121	706
08:45 AM	30	267	17	314	49	44	18	111	17	121	37	175	8	61	24	93	693
Total	125	1149	48	1322	181	289	77	547	58	496	111	665	55	327	62	444	2978
03:15 PM	36	230	19	285	50	98	33	181	24	317	35	376	27	62	22	111	953
03:30 PM	39	238	12	289	60	121	42	223	23	288	44	355	34	98	20	152	1019
03:45 PM	43	256	25	324	52	96	45	193	47	359	37	443	16	61	16	93	1053
Total	118	724	56	898	162	315	120	597	94	964	116	1174	77	221	58	356	3025
04:00 PM	52	190	27	269	36	110	24	170	21	312	30	363	26	77	23	126	928
04:15 PM	59	258	28	345	80	92	25	197	23	379	39	441	46	71	27	144	1127
04:30 PM	25	232	19	276	48	92	22	162	30	321	22	373	36	78	20	134	945
04:45 PM	33	250	27	310	51	115	31	197	24	359	29	412	30	69	20	119	1038
Total	169	930	101	1200	215	409	102	726	98	1371	120	1589	138	295	90	523	4038
Grand Total	518	3928	266	4712	759	1213	374	2346	278	3189	448	3915	332	1178	268	1778	12751
Approach %	11	83.4	5.6		32.4	51.7	15.9		7.1	81.5	11.4		18.7	66.3	15.1		
Total %	4.1	30.8	2.1	37	6	9.5	2.9	18.4	2.2	25	3.5	30.7	2.6	9.2	2.1	13.9	
Vehicles	509	3836	259	4604	741	1167	361	2269	270	3101	426	3797	322	1134	253	1709	12379
% Vehicles	98.3	97.7	97.4	90.7	97.6	96.2	96.5	96.7	97.1	97.2	95.1	97	97	96.3	94.4	96.1	97.1
Trucks & Buses	9	92	7	108	18	46	13	77	8	88	22	118	10	44	15	69	372
% Trucks & Buses	1.7	2.3	2.6	2.3	2.4	3.8	3.5	3.3	2.9	2.8	4.9	3	3	3.7	5.6	3.9	2.9

**CITY OF SEATTLE**  
**DEPARTMENT OF TRANSPORTATION**

Counted by : JR  
 Counter No : 1023  
 Weather : CLEAR  
 Comments :

File Name : N\_084ap09  
 Site Code : 00120102  
 Start Date : 12/1/2009  
 Page No : 2



**CITY OF SEATTLE  
DEPARTMENT OF TRANSPORTATION**

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 Weather : CLEAR  
 Comments :

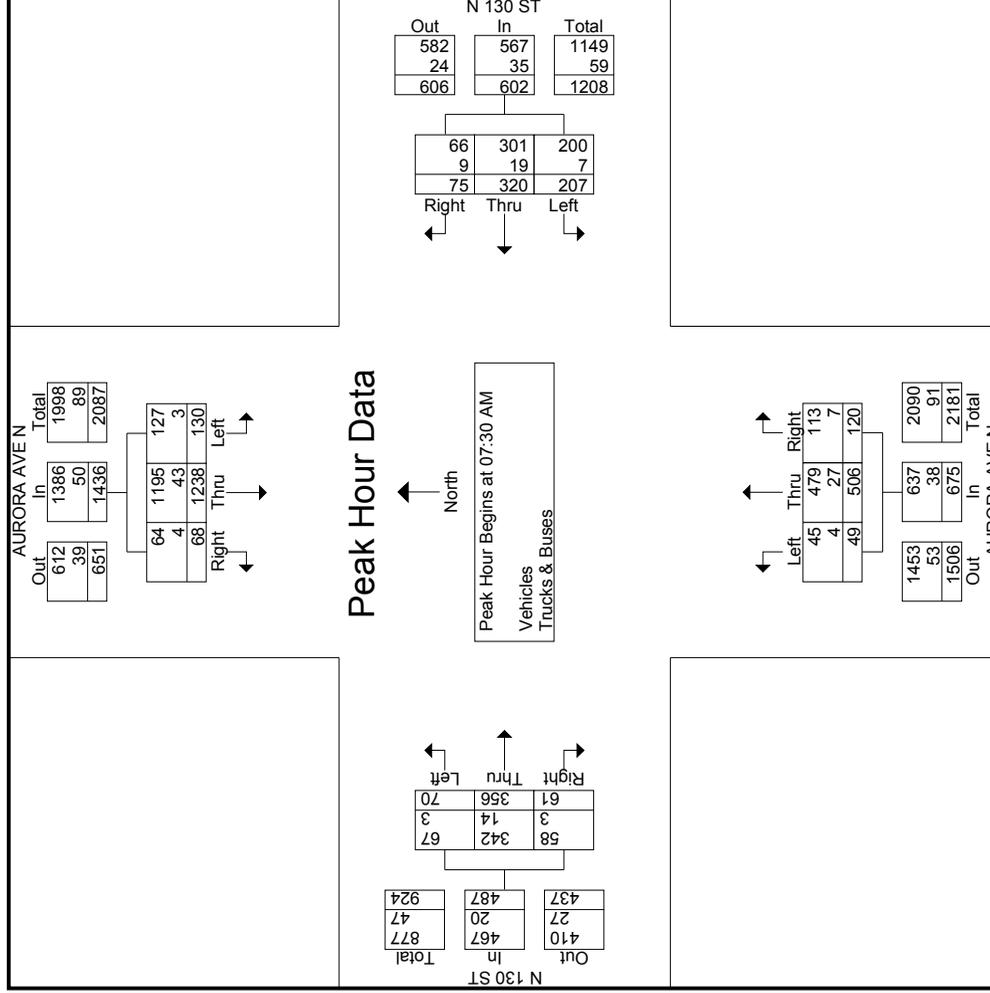
File Name : N\_084ap09  
 Site Code : 00120102  
 Start Date : 12/1/2009  
 Page No : 3

Start Time	AURORA AVEN N				N 130 ST				AURORA AVEN N				N 130 ST				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	41	314	24	379	64	59	25	148	7	109	28	144	17	71	16	104	775
07:45 AM	27	320	19	366	56	75	19	150	11	126	40	177	26	109	18	153	846
08:00 AM	29	295	12	336	60	98	16	174	23	112	27	162	14	95	11	120	792
08:15 AM	33	309	13	355	27	88	15	130	8	159	25	192	13	81	16	110	787
Total Volume	130	1238	68	1436	207	320	75	602	49	506	120	675	70	356	61	487	3200
% App. Total	9.1	86.2	4.7	94.7	34.4	53.2	12.5	86.5	7.3	7.5	17.8	8.79	14.4	73.1	12.5	84.7	94.6
PHF	.793	.967	.708	.947	.809	.816	.750	.865	.533	.796	.750	.879	.673	.817	.847	.796	.946
Vehicles	127	1195	64	1386	200	301	66	567	45	479	113	637	67	342	58	467	3057
% Vehicles	97.7	96.5	94.1	96.5	96.6	94.1	88.0	94.2	91.8	94.7	94.2	94.4	95.7	96.1	95.1	95.9	95.5
Trucks & Buses	3	43	4	50	7	19	9	35	4	27	7	38	3	14	3	20	143
% Trucks & Buses	2.3	3.5	5.9	3.5	3.4	5.9	12.0	5.8	8.2	5.3	5.8	5.6	4.3	3.9	4.9	4.1	4.5

**CITY OF SEATTLE  
DEPARTMENT OF TRANSPORTATION**

Counted by : JR  
 Counter No : 1023  
 Weather : CLEAR  
 Comments :

File Name : N\_084ap09  
 Site Code : 00120102  
 Start Date : 12/1/2009  
 Page No : 4



**CITY OF SEATTLE**  
**DEPARTMENT OF TRANSPORTATION**

Counted by : JR  
Counter No : 1023  
Weather : CLEAR  
Comments :

File Name : N\_084ap09  
Site Code : 00120102  
Start Date : 12/1/2009  
Page No : 5

Start Time	AURORA AVEN N				N 130 ST				AURORA AVEN N				N 130 ST				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:30 PM	39	238	12	289	60	121	42	223	23	288	44	355	34	98	20	152	1019
03:45 PM	43	256	25	324	52	96	45	193	47	359	37	443	16	61	16	93	1053
04:00 PM	52	190	27	269	36	110	24	170	21	312	30	363	26	77	23	126	928
04:15 PM	59	258	28	345	80	92	25	197	23	379	39	441	46	71	27	144	1127
Total Volume	193	942	92	1227	228	419	136	783	114	1338	150	1602	122	307	86	515	4127
% App. Total	15.7	76.8	7.5		29.1	53.5	17.4		7.1	83.5	9.4		23.7	59.6	16.7		
PHF	.818	.913	.821	.889	.713	.866	.756	.878	.606	.883	.852	.904	.663	.783	.796	.847	.915
% Vehicles	190	928	91	1209	226	411	135	772	112	1310	144	1566	120	292	79	491	4038
% Trucks & Buses	98.4	98.5	98.9	98.5	99.1	98.1	99.3	98.6	98.2	97.9	96.0	97.8	98.4	95.1	91.9	95.3	97.8
	3	14	1	18	2	8	1	11	2	28	6	36	2	15	7	24	89
% Trucks & Buses	1.6	1.5	1.1	1.5	0.9	1.9	0.7	1.4	1.8	2.1	4.0	2.2	1.6	4.9	8.1	4.7	2.2

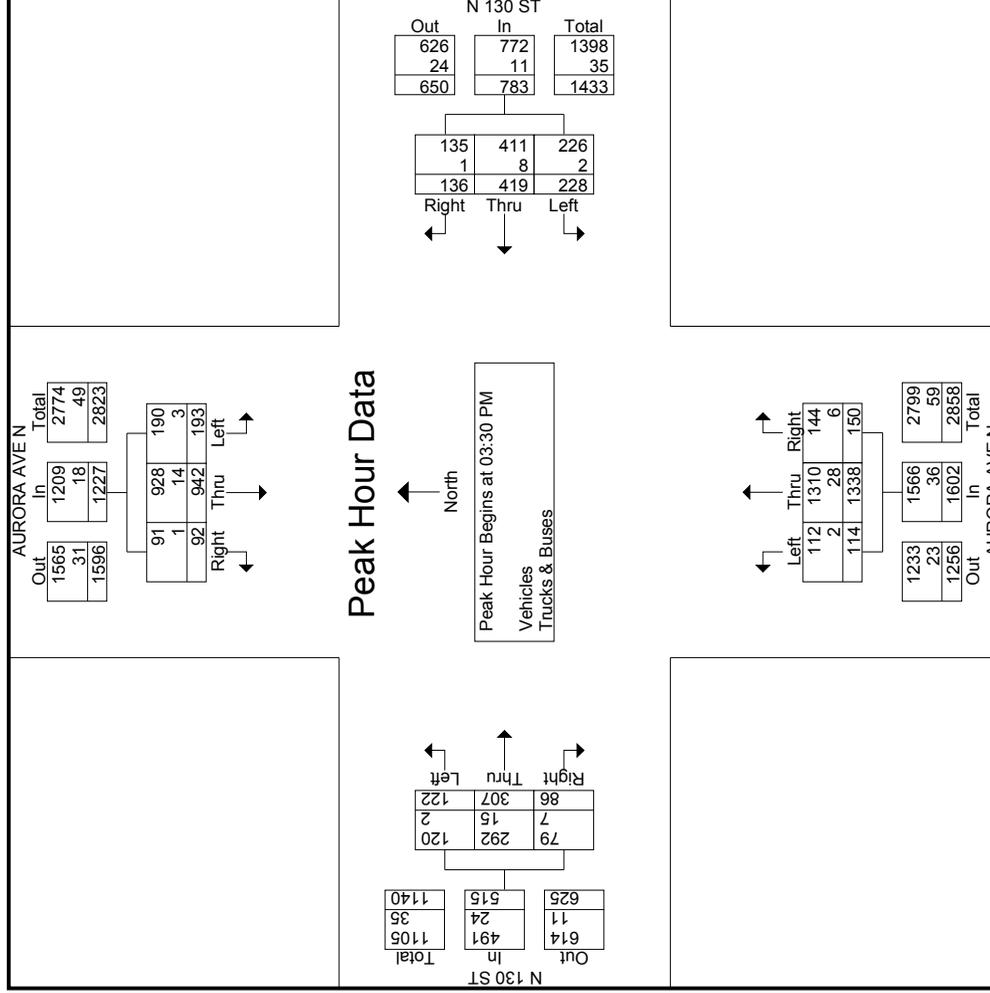
Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 03:30 PM

**CITY OF SEATTLE**  
**DEPARTMENT OF TRANSPORTATION**

Counted by : JR  
 Counter No : 1023  
 Weather : CLEAR  
 Comments :

File Name : N\_084ap09  
 Site Code : 00120102  
 Start Date : 12/1/2009  
 Page No : 6



**CITY OF SEATTLE**  
**DEPARTMENT OF TRANSPORTATION**

Counted by : JR  
Counter No : 1023  
Weather : CLEAR  
Comments :

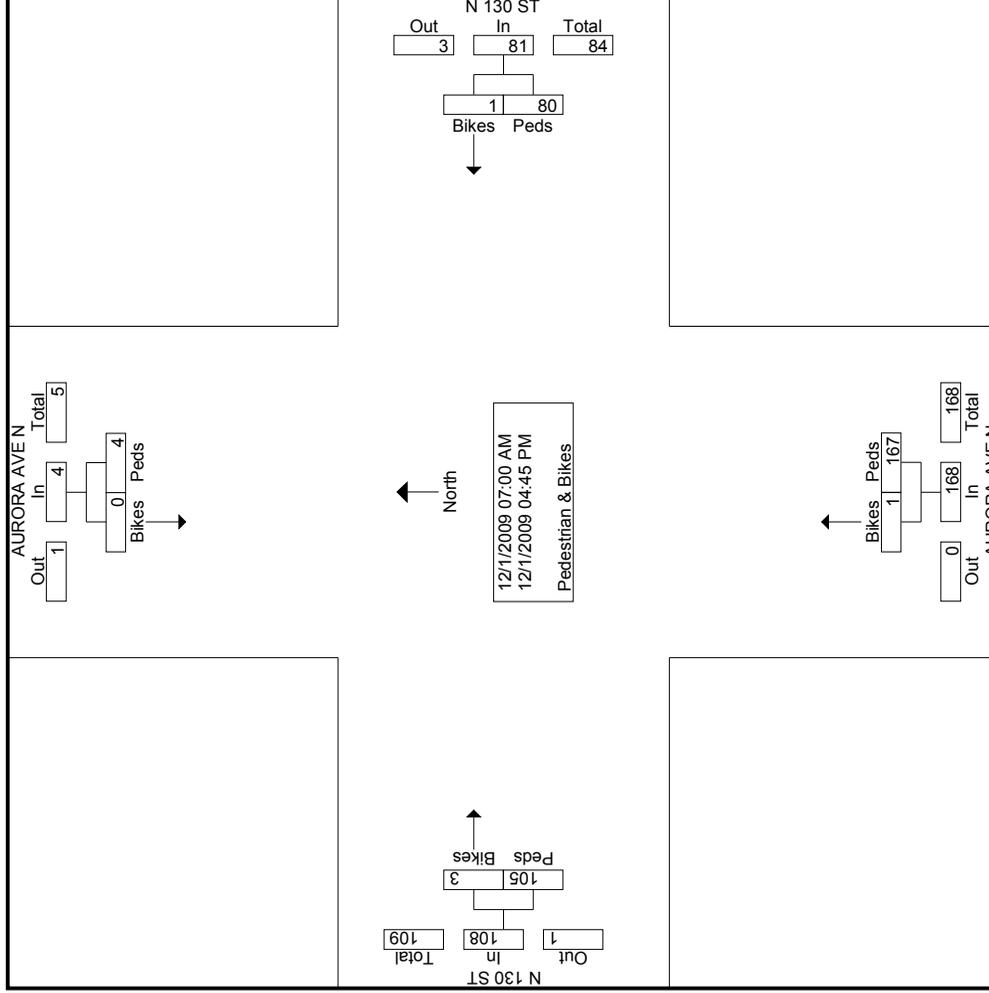
File Name : N\_084ap09  
Site Code : 00120102  
Start Date : 12/1/2009  
Page No : 1

Start Time	Groups Printed- Pedestrian & Bikes																				
	AURORA AVEN From North				N 130 ST From East				AURORA AVEN From South				N 130 ST From West								
	Bikes	Peds	App. Total		Bikes	Peds	App. Total		Bikes	Peds	App. Total		Bikes	Peds	App. Total		Bikes	Peds	App. Total		Int. Total
07:00 AM	0	0	0	0	0	3	3	0	0	3	3	0	0	0	2	2	0	0	2	2	8
07:15 AM	0	1	1	0	3	3	3	0	4	4	4	0	1	1	1	1	0	1	1	9	
07:30 AM	0	0	0	0	2	2	2	0	5	5	5	1	2	3	3	3	0	2	5	10	
07:45 AM	0	0	0	0	1	1	1	0	4	4	4	0	0	0	0	0	0	0	0	5	
Total	0	1	1	0	9	9	9	0	16	16	16	1	5	6	6	6	1	5	6	32	
08:00 AM	0	0	0	0	2	2	2	0	11	11	11	0	4	4	4	4	0	4	4	17	
08:15 AM	0	0	0	0	3	3	3	0	4	4	4	1	6	7	7	7	1	6	7	14	
08:30 AM	0	0	0	0	1	1	1	0	4	4	4	0	2	2	2	2	0	2	2	7	
08:45 AM	0	3	3	0	2	2	2	0	8	8	8	0	2	2	2	2	0	2	2	15	
Total	0	3	3	0	8	8	8	0	27	27	27	1	14	15	15	15	1	14	15	53	
03:15 PM	0	0	0	0	2	2	2	0	17	17	17	0	16	16	16	16	0	16	16	35	
03:30 PM	0	0	0	0	18	18	18	0	33	33	33	0	11	11	11	11	0	11	11	62	
03:45 PM	0	0	0	1	7	8	8	0	13	13	13	0	10	10	10	10	0	10	10	31	
Total	0	0	0	1	27	28	28	0	63	63	63	0	37	37	37	37	0	37	37	128	
04:00 PM	0	0	0	0	20	20	20	1	22	23	23	1	10	11	11	11	1	10	11	54	
04:15 PM	0	0	0	0	5	5	5	0	18	18	18	0	16	16	16	16	0	16	16	39	
04:30 PM	0	0	0	0	3	3	3	0	10	10	10	0	15	15	15	15	0	15	15	28	
04:45 PM	0	0	0	0	8	8	8	0	11	11	11	0	8	8	8	8	0	8	8	27	
Total	0	0	0	0	36	36	36	1	61	62	62	1	49	50	50	50	1	49	50	148	
Grand Total	0	4	4	1	80	81	81	1	167	168	168	3	105	108	108	108	3	105	108	361	
Approch %	0	100		1.2	98.8			0.6	99.4			2.8	97.2				2.8	97.2			
Total %	0	1.1	1.1	0.3	22.2	22.4	22.4	0.3	46.3	46.5	46.5	0.8	29.1	29.9	29.9	29.9	0.8	29.1	29.9		

**CITY OF SEATTLE  
DEPARTMENT OF TRANSPORTATION**

Counted by : JR  
 Counter No : 1023  
 Weather : CLEAR  
 Comments :

File Name : N\_084ap09  
 Site Code : 00120102  
 Start Date : 12/1/2009  
 Page No : 2



**CITY OF SEATTLE**  
**DEPARTMENT OF TRANSPORTATION**

Counted by : JR  
Counter No : 1023  
Weather : CLEAR  
Comments :

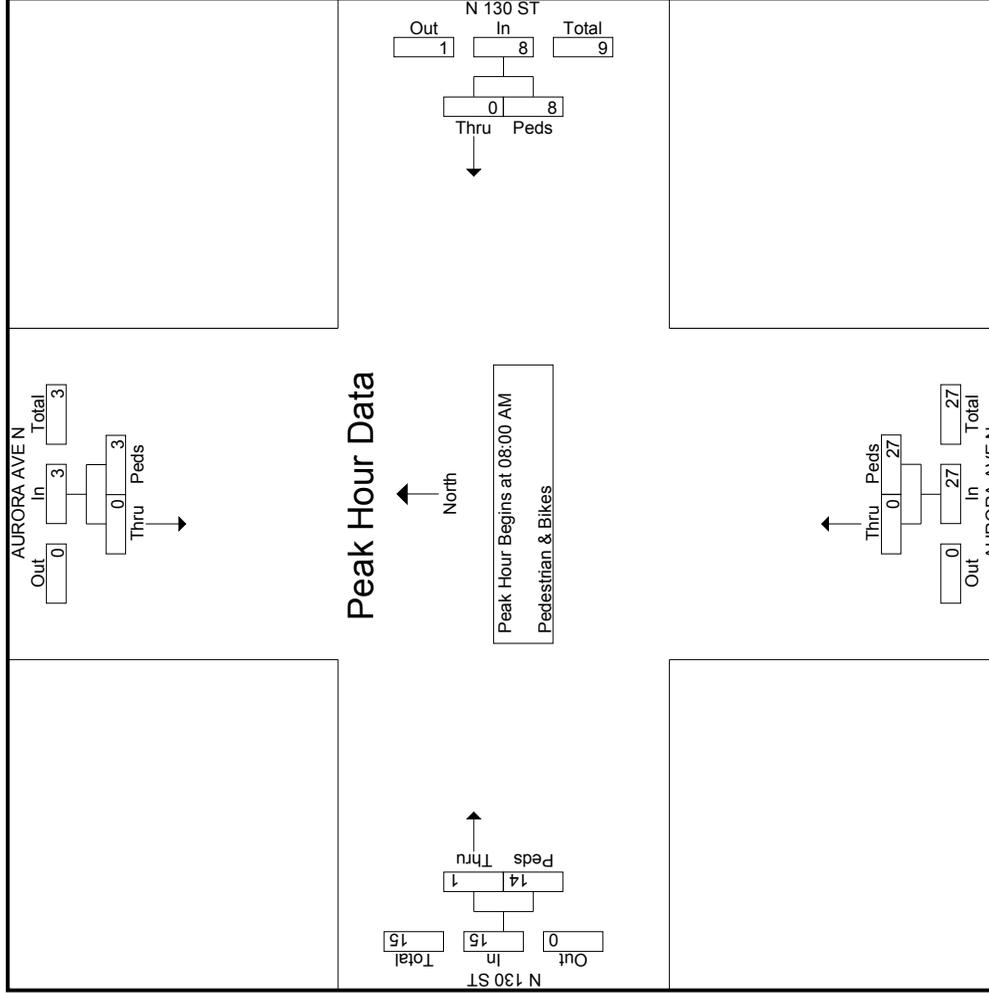
File Name : N\_084ap09  
Site Code : 00120102  
Start Date : 12/1/2009  
Page No : 3

Start Time	AURORA AVEN N			N 130 ST			AURORA AVEN N			N 130 ST		
	Bikes	Peds	App. Total	Bikes	Peds	App. Total	Bikes	Peds	App. Total	Bikes	Peds	App. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1												
Peak Hour for Entire Intersection Begins at 08:00 AM												
08:00 AM	0	0	0	0	2	2	0	11	11	0	4	4
08:15 AM	0	0	0	0	3	3	0	4	4	1	6	7
08:30 AM	0	0	0	0	1	1	0	4	4	0	2	2
08:45 AM	0	3	3	0	2	2	0	8	8	0	2	2
Total Volume	0	3	3	0	8	8	0	27	27	1	14	15
% App. Total	0	100	.250	0	100	.667	0	100	.614	6.7	93.3	.536
PHF	.000	.250	.250	.000	.667	.667	.000	.614	.614	.250	.583	.779

**CITY OF SEATTLE  
DEPARTMENT OF TRANSPORTATION**

Counted by : JR  
 Counter No : 1023  
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File Name : N\_084ap09  
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 Page No : 4

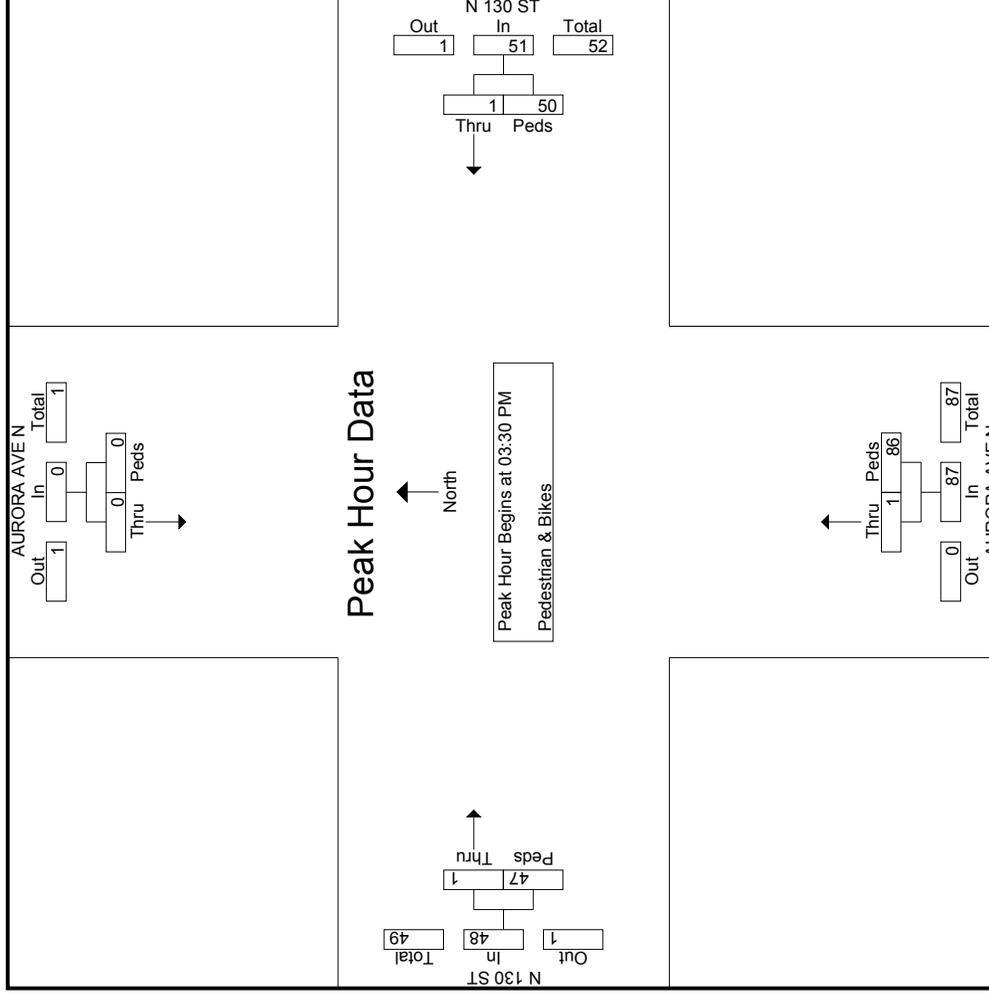




**CITY OF SEATTLE  
DEPARTMENT OF TRANSPORTATION**

Counted by : JR  
 Counter No : 1023  
 Weather : CLEAR  
 Comments :

File Name : N\_084ap09  
 Site Code : 00120102  
 Start Date : 12/1/2009  
 Page No : 6





Prepared for: **David Evans & Associates, Inc.**  
**Traffic Count Consultants, Inc.**

Phone: (425) 861-8866 FAX: (425) 861-8877 E-Mail: TC2inc@aol.com

WBE/DBE

Intersection: 5th Ave NE @ NE 130th Street  
 Location: Seattle

Date of Count: Thurs 02/17/2011  
 Checked By: LBP

Time Interval Ending at	From North on (SB) 5th Ave NE				From South on (NB) 5th Ave NE				From East on (WB) NE 130th St				From West on (EB) NE 130th St				Interval Total
	T	L	S	R	T	L	S	R	T	L	S	R	T	L	S	R	
4:15 P	0	19	13	5	7	119	37	71	11	0	111	24	9	10	126	15	550
4:30 P	1	28	14	3	5	129	39	72	7	0	142	25	7	9	117	26	604
4:45 P	0	13	19	1	8	124	37	60	10	0	142	29	6	7	144	17	593
5:00 P	0	18	21	1	5	99	51	91	3	0	174	21	5	4	124	28	632
5:15 P	1	25	16	3	6	146	58	84	2	0	175	26	6	3	108	24	668
5:30 P	0	24	12	1	9	154	58	100	3	0	152	19	2	8	129	21	678
5:45 P	2	19	11	5	9	117	45	73	4	0	159	34	3	5	116	29	613
6:00 P	0	19	26	1	2	157	55	91	2	0	149	18	2	4	115	17	652
6:15 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Total Survey	4	165	132	20	51	1045	380	642	42	0	1204	196	40	50	979	177	4990
Peak Hour:		5:00 PM				to				6:00 PM							

Total	3	87	65	10	26	574	216	348	11	0	635	97	13	20	468	91	2611
Approach	162				1138				732				579				2611
%HV	1.9%				2.3%				1.5%				2.2%				2.0%
PHF	0.88				0.91				0.91				0.92				0.96

**5th Ave NE**  
 495

**NE 130th St**  
 162, 10, 65, 87

**NE 130th St**  
 97, 635, 0, 732, 1635, 1, 903

**5:00 PM to 6:00 PM**

**5th Ave NE**  
 156, 1138, 1294

**PHF %HV**

Check	EB	0.92	2.2%
	WB	0.91	1.5%
In: 2611	NB	0.91	2.3%
Out: 2611	SB	0.88	1.9%
Intersection		0.96	2.0%

**PEDES across:**

	N	S	E	W	
INT 01	1		1		2
INT 02		1			1
INT 03	4	7	2	6	19
INT 04		1			1
INT 05			1		1
INT 06	1				1
INT 07	1				1
INT 08		2		2	4
INT 09					0
INT 10					0
INT 11					0
INT 12					0
	7	11	4	8	30

**Bicycles From:**

	N	S	E	W
INT 01	1	1		
INT 02				
INT 03				
INT 04		1	1	
INT 05			1	
INT 06				
INT 07				
INT 08				
	1	2	2	0

2712 1.0 PHF Peak Hour Volume

2 Special Notes:

5

TM20p11017

**Table B-3. Existing PM Peak Hour Intersection Traffic Volumes**

Intersection	Northbound			Southeast -bound RT	Southbound			Eastbound			Northeast-bound			Westbound			
	LT2	LT	TH		TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	
	RT	RT	RT		RT	RT	RT	RT	RT	RT	RT	RT	RT	RT	RT	RT	
1 244th Street SW and SR 99	63	1161	146		192	857	150	238	253	59				211	299	352	
2 244th Street SW and Fremont Avenue N	116		251					314	41					101	402		
3 Firdale Avenue N and 244th Street SW	9		54					275	7					70	458		
4 244th Street SW and 100th Avenue W	2	320	63		9	122	1	1	2	3				59	3	13	
5 SR 104 and 100th Avenue W	190	586	117		180	327	37	46	709	149				103	737	219	
6 Algonquin Road and Woodway Park Road		92	6		30	84	1							9		34	
7 238th Street SW and Woodway Park Road		27	1		47	37	8	2	5					1	4	52	
8 NW 196th Street and Richmond Beach Drive		3	4		34	7								9		22	
9 NW 196th Street and 20th Avenue NW	3	18	41		132	11	6	4	155	3				74	127	168	
10 NW 195th Street and 15th Avenue NW (w)	2		4		55		33	9	303	3				69	402	103	
11 Richmond Beach Road and 15th Avenue NW (e)	31		48		2	337	23							51	542	1	
12 Richmond Beach Road and 8th Avenue NW	8	109	200		88	61	20	24	341	30	12			46	41	489	179
13 Richmond Beach Road	22	38	28		83	35	49	41	460	28				37	692	185	

Intersection	Northbound			Southeast -bound			Southbound			Eastbound			Northeast-bound			Westbound						
	LT2	LT	TH RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT2	LT	RT	RT2	LT2	LT	TH	RT	RT2	
14 Richmond Beach Road and Dayton Avenue N	291		80															78	554			
15 N 185th Street and Fremont Avenue N	215	280	53	102	177	120	77	384	15									15	303	95		
16 N 185th Street/Firlands Way and SR 99	114	40	1264	77	909	64	7	166	287	83								149	242	47	59	
17 N 175th Street and 6th Avenue NW				82		12		7	27										54	283		
18 St Luke Place N and Dayton Avenue N	67	378		170	39			34	44													
19 N 175th Street and Fremont Avenue N	1	389	244	59	132	3		2	2									171	3	167		
20 N 175th Street and SR 99	37	1306	30	212	947	33		85	207	34								256	313	154		
21 Carlyle Hall Road and Dayton Avenue N	39	455	9	11	252	14		58	29	27								18	23	8		
22 N Innis Arden Way and Greenwood Avenue N	203	291			130	14		22	181													
23 N 160th Street and Greenwood Avenue N	13	357	26	143	158	6		11	37	9								14	29	130		

LT = Left turn movement; TH = Through movement; RT = Right turn movement

# Appendix B – Trip Generation

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DAVID EVANS  
AND ASSOCIATES INC.

## Project: Point Wells Development

Project Number: PARA0000-0003

Phase: Phase 1 - South Village

Description	ITE Land Use Code (LUC)	Units	Planned Units	ITE Vehicle Trip Generation Rates		Total Generated Trips			Total Distribution of Generated Trips				
				Weekday	AM	PM	Daily	AM Peak	PM Peak	AM In	AM Out	PM In	PM Out
High-Rise Apartment	222	DU	0.0	4.20	0.30	0.35	0	0	0	0	0	0	0
Affordable High-Rise Apartment	222	DU	53.0	4.20	0.30	0.35	223	16	19	4	12	11	7
High-Rise Residential Condominium/Townhouse	232	DU	433.0	4.18	0.34	0.38	1,810	147	165	28	119	102	63
Luxury Condo/Townhouse	233	ODU	114.0	6.14	0.56	0.55	700	64	63	15	49	40	23
Senior Adult Housing - Attached (Condo)	252	ODU	53.0	3.48	0.13	0.16	184	7	8	2	4	5	3
General Office	710	KSF <sup>2</sup>	0.0	11.01	1.55	1.49	0	0	0	0	0	0	0
Medical-Dental Office Building	720	KSF <sup>2</sup>	0.0	36.13	2.30	3.46	0	0	0	0	0	0	0
Specialty Retail Center	814	KSF <sup>2</sup>	16.0	44.32	0.91	2.71	709	15	43	7	8	19	24
Supermarket	850	KSF <sup>2</sup>	0.0	102.24	3.59	10.50	0	0	0	0	0	0	0
Quality Restaurant	931	KSF <sup>2</sup>	8.0	89.95	0.81	7.49	720	6	60	3	3	40	20
							<b>4,346</b>	<b>255</b>	<b>358</b>	<b>59</b>	<b>195</b>	<b>217</b>	<b>140</b>

Total 59 195 217 140

Existing Trip Reduction 81 35 35 81

Total (22) 160 182 59



DAVID EVANS  
AND ASSOCIATES INC.

**Project:** Point Wells Development

**Project Number:** PARA0000-0003

**Phase:** Phase 2 - Urban Center

Description	ITE Land Use Code (LUC)	Units	Planned Units	ITE Vehicle Trip Generation Rates			Total Generated Trips			Total Distributed of Generated Trips						Total Distributed of Reduced (Internal) Trips					
				Weekday		PM Peak	Daily	AM Peak	PM Peak	AM In	AM Out	PM In	PM Out	Daily In	Daily Out	AM In	AM Out	PM In	PM Out		
				AM	PM																
High-Rise Apartment	222	DU	107.0	4.20	0.30	37	449	32	37	8	24	23	15	5	15	14	9				
Affordable High-Rise Apartment	222	DU	200.0	4.20	0.30	70	840	60	70	15	45	43	27	9	27	26	17				
High-Rise Residential Condominium/Townhouse	232	DU	433.0	4.18	0.34	165	1,810	147	165	28	119	102	63	17	72	62	38				
Luxury Condo/Townhouse	233	ODU	114.0	6.14	0.56	63	700	64	63	15	49	40	23	9	30	24	14				
Senior Adult Housing - Attached (Condo)	252	ODU	53.0	3.48	0.13	8	184	7	8	2	4	5	3	2	3	3	2				
General Office	710	KSF <sup>2</sup>	24.8	11.01	1.55	37	273	38	37	34	5	6	31	20	3	4	19				
Medical-Dental Office Building	720	KSF <sup>2</sup>	7.5	36.13	2.30	26	271	17	26	14	4	7	19	8	2	4	11				
Specialty Retail Center	814	KSF <sup>2</sup>	16.0	44.32	0.91	43	709	15	43	7	8	19	24	4	5	12	15				
Supermarket	850	KSF <sup>2</sup>	26.3	102.24	3.59	276	2,689	94	276	58	37	141	135	35	22	85	82				
Quality Restaurant	931	KSF <sup>2</sup>	8.0	89.95	0.81	60	720	6	60	3	3	40	20	2	2	24	12				
				<b>8,645</b>			<b>481</b>	<b>785</b>	<b>184</b>	<b>298</b>	<b>425</b>	<b>360</b>	<b>2,615</b>	<b>111</b>	<b>180</b>	<b>257</b>	<b>218</b>				
							Total after Internalization			5,230			180			218					
							Existing Trip Reduction			546			35			81					
							Total			4,684			145			137					



DAVID EVANS  
AND ASSOCIATES INC.

**Project:** Point Wells Development

**Project Number:** PARA0000-0003

**Phase:** Phase 3 - Central Village

Description	ITE Land Use Code (LUC)	Units	Planned Units	ITE Vehicle Trip Generation Rates		Total Generated Trips			Total Distributed of Generated Trips			Total Distributed of Reduced (Internal) Trips												
				Weekday	AM	PM	Daily	AM Peak	PM Peak	AM In	AM Out	PM In	PM Out	Daily In	Daily Out	AM In	AM Out	PM In	PM Out					
High-Rise Apartment	222	DU	107.0	4.20	0.30	0.35	449	32	37	8	24	23	15	5	16	15	10							
Affordable High-Rise Apartment	222	DU	296.0	4.20	0.30	0.35	1,243	89	104	22	67	63	40	15	45	43	27							
High-Rise Residential Condominium/Townhouse	232	DU	1196.0	4.18	0.34	0.38	4,999	407	454	77	329	282	173	52	223	191	117							
Luxury Condo/Townhouse	233	ODU	430.0	6.14	0.56	0.55	2,640	241	237	55	185	149	88	38	126	101	59							
Senior Adult Housing - Attached (Condo)	252	ODU	149.0	3.48	0.13	0.16	519	19	24	7	12	14	10	5	8	10	6							
General Office	710	KSF <sup>2</sup>	24.8	11.01	1.55	1.49	273	38	37	34	5	6	31	23	3	4	21							
Medical-Dental Office Building	720	KSF <sup>2</sup>	7.5	36.13	2.30	3.46	271	17	26	14	4	7	19	9	2	5	13							
Specialty Retail Center	814	KSF <sup>2</sup>	30.0	44.32	0.91	2.71	1,330	27	81	13	14	36	46	9	10	24	31							
Supermarket	850	KSF <sup>2</sup>	26.3	102.24	3.59	10.50	2,689	94	276	58	37	141	135	39	25	95	92							
Quality Restaurant	931	KSF <sup>2</sup>	18.0	89.95	0.81	7.49	1,619	15	135	8	7	90	44	5	5	61	30							
<b>16,032</b>							<b>980</b>	<b>1,411</b>	<b>296</b>	<b>684</b>	<b>811</b>	<b>600</b>												
							Total after Internalization			10,870			200			464			550			407		
							Existing Trip Reduction			546			81			35			81					
							Total			10,324			119			429			515			326		



DAVID EVANS  
AND ASSOCIATES INC.

**Project:** Point Wells Development

**Project Number:** PARA0000-0003

**Phase:** Phase 4 - North Village

Description	ITE Land Use Code (LUC)	Units	Planned Units	ITE Vehicle Trip Generation Rates			Total Generated Trips			Total Distribution of Generated Trips						Total Distribution of Reduced (Internal) Trips					
				Weekday	AM	PM	Daily	AM Peak	PM Peak	AM In	AM Out	PM In	PM Out	Daily In	Daily Out	AM In	AM Out	PM In	PM Out		
High-Rise Apartment	222	DU	107.0	4.20	0.30	0.35	449	32	37	8	24	23	15	5	15	14	9				
Affordable High-Rise Apartment	222	DU	296.0	4.20	0.30	0.35	1,243	89	104	22	67	63	40	14	41	39	25				
High-Rise Residential Condominium/Townhouse	232	DU	1861.0	4.18	0.34	0.38	7,779	633	707	120	513	438	269	74	314	268	164				
Luxury Condo/Townhouse	233	ODU	500.0	6.14	0.56	0.55	3,070	280	275	64	216	173	102	39	132	106	62				
Senior Adult Housing - Attached (Condo)	252	ODU	317.0	3.48	0.13	0.16	1,103	41	51	15	26	30	20	9	16	19	12				
General Office	710	KSF <sup>2</sup>	24.8	11.01	1.55	1.49	273	38	37	34	5	6	31	21	3	4	19				
Medical-Dental Office Building	720	KSF <sup>2</sup>	7.5	36.13	2.30	3.46	271	17	26	14	4	7	19	8	2	4	12				
Specialty Retail Center	814	KSF <sup>2</sup>	30.0	44.32	0.91	2.71	1,330	27	81	13	14	36	46	8	9	22	28				
Supermarket	850	KSF <sup>2</sup>	26.3	102.24	3.59	10.50	2,689	94	276	58	37	141	135	35	23	86	83				
Quality Restaurant	931	KSF <sup>2</sup>	18.0	89.95	0.81	7.49	1,619	15	135	8	7	90	44	5	4	55	27				
<b>Totals</b>							<b>19,826</b>	<b>1,267</b>	<b>1,729</b>	<b>355</b>	<b>911</b>	<b>1,008</b>	<b>721</b>	<b>217</b>	<b>558</b>	<b>617</b>	<b>441</b>				
Total after Internalization							12,133			217	558	617	441								
Existing Trip Reduction							546			81	35	35	81								
Total							11,587			136	523	582	360								

**Table 7.1 Unconstrained Internal Capture Rates for Trip Origins within a Multi-Use Development**

		WEEKDAY		
		MIDDAY PEAK HOUR	p.m. PEAK HOUR OF ADJACENT STREET TRAFFIC	DAILY
from OFFICE	to Office	2%	1%	2%
	to Retail	20%	<del>23%</del> 46%	22%
	to Residential	0%	<del>2%</del> 40%/60%*	2%
from RETAIL	to Office	3%	<del>3%</del> 10%	3%
	to Retail	29%	<del>20%</del> 40%	30%
	to Residential	7%	<del>12%</del> 40%/60%*	11%
from RESIDENTIAL	to Office	N/A	<del>N/A</del> 10%	N/A
	to Retail	34%	53%	38%
	to Residential	N/A	N/A	N/A

Caution: The estimated typical internal capture rates presented in this table rely directly on data collected at a limited number of multi-use sites in Florida. While ITE recognizes the limitations of these data, they represent the only known credible data on multi-use internal capture rates and are provided as illustrative of typical rates. ***If local data on internal capture rates by paired land uses can be obtained, the local data may be given preference.***

N/A—Not Available; logic indicates there is some interaction between these two land uses; however, the limited data sample on which this table is based did not record any interaction.

\*: 40% was used on Phase 2 and 3, 60% on Phase 4

**Table 7.2 Unconstrained Internal Capture Rates for Trip Destinations Within a Multi-Use Development**

		WEEKDAY		
		MIDDAY PEAK HOUR	p.m. PEAK HOUR OF ADJACENT STREET TRAFFIC	DAILY
to OFFICE	from Office	6%	6%	2%
	from Retail	38%	31%	15%
	from Residential	0%	<del>0%</del> 10%	N/A
to RETAIL	from Office	4%	2%	4%
	from Retail	31%	20%	28%
	from Residential	5%	<del>9%</del> 40%/60%	9%
to RESIDENTIAL	from Office	0%	<del>2%</del> 10%	3%
	from Retail	37%	31%	33%
	from Residential	N/A	N/A	N/A

Caution: The estimated typical internal capture rates presented in this table rely directly on data collected at a limited number of multi-use sites in Florida. While ITE recognizes the limitations of these data, they represent the only known credible data on multi-use internal capture rates and are provided as illustrative of typical rates. ***If local data on internal capture rates by paired land uses can be obtained, the local data may be given preference.***

N/A—Not Available; logic indicates there is some interaction between these two land uses; however, the limited data sample on which this table is based did not record any interaction.

\*: 40% was used on Phase 2 and 3, 60% on Phase 4

Analyst RPW  
Date 2-22-11

Figure 1.2 Steps 1-3 for Multi-Use Trip Generation Calculation Sample Problem

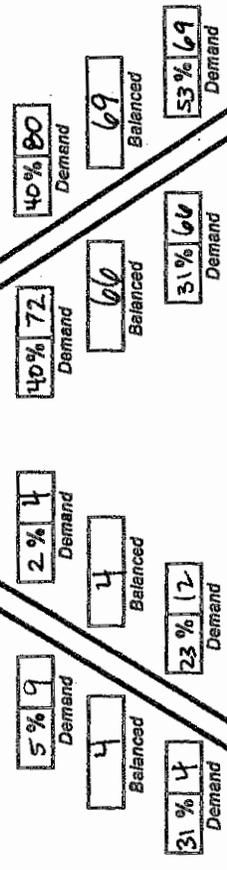
Name of Dvpt Point Wells  
Time Period PM/DAILY

PHASE 2

LAND USE A Retail

ITE LU Code	Size	Total	Internal	External
Enter		200	73	127
Exit		129	70	109
Total		329	143	234
%		100%	39.7	62.3

Exit to External   
Enter from External



LAND USE B Office

ITE LU Code	Size	Total	Internal	External
Enter		13	5	8
Exit		50	15	35
Total		63	20	43
%		100%	31.7	68.3

Exit to External   
Enter from External

LAND USE C Residential

ITE LU Code	Size	Total	Internal	External
Enter		212	77	135
Exit		131	70	61
Total		343	147	196
%		100%	42.9	57.1

Enter from External   
Exit to External

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	TOTAL
Enter	127	8	135	270
Exit	109	35	61	205
Total	236	43	196	475
Single-Use Trip Gen. Est.	379	63	343	785
INTERNAL CAPTURE				39.5%

Source: Kaku Associates, Inc.

Analyst APW  
Date 2-22-11

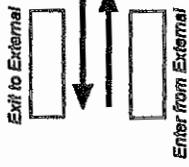
Figure 1.2 Steps 1-3 for Multi-Use Trip Generation Calculation Sample Problem

Name of Divpt POINT WALK  
Time Period PM / DAILY

**PHASE 3**

**LAND USE A Retail**

ITE LU Code		Size	
Enter	Exit	Internal	External
267	155	112	155
225	131	94	131
492	286	206	286
%		41.9	58.1



5% Demand 11

4 Balanced

31% Demand 4

2% Demand 5

5 Balanced

23% Demand 12

40% Demand 90

90 Balanced

31% Demand 145

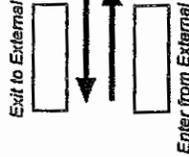
40% Demand 107

107 Balanced

53% Demand 172

**LAND USE B Office**

ITE LU Code		Size	
Enter	Exit	Internal	External
13	8	5	8
50	25	25	25
63	33	30	33
%		47.6	52.4



5% Demand 1

1 Balanced

40% Demand 20

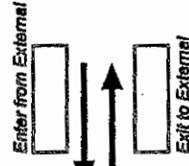
5% Demand 14

20 Balanced

5% Demand 27

**LAND USE C Residential**

ITE LU Code		Size	
Enter	Exit	Internal	External
531	421	110	421
325	217	108	217
856	638	218	638
%		25.5	74.5



5% Demand 14

5% Demand 27

**Net External Trips for Multi-Use Development**

	LAND USE A	LAND USE B	LAND USE C	TOTAL
Enter	155	0	421	584
Exit	131	25	217	373
Total	286	33	638	957
Single-Use Trip Gen. Est.	492	63	856	1411
INTERNAL CAPTURE				32.2%

Source: Kaku Associates, Inc.

Analyst ADW  
Date 2-22-11

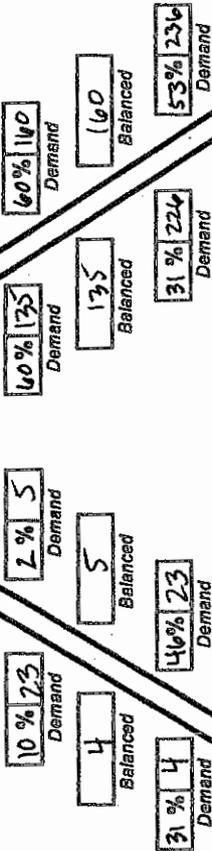
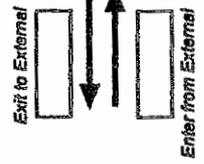
Figure 7.2 Steps 1-3 for Multi-Use Trip Generation Calculation Sample Problem

Name of Divpt POINT WELLS  
Time Period PM DAILY

**PHASE 4**

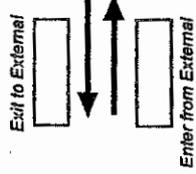
**LAND USE A Retail**

ITE LU Code		Size	
Enter	Exit	Internal	External
267	102	165	102
225	86	139	86
492	188	304	188
100%	38.2	61.8	38.2



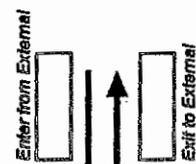
**LAND USE B Office**

ITE LU Code		Size	
Enter	Exit	Internal	External
13	8	5	8
50	15	35	15
63	23	40	23
100%	24.5	63.5	24.5



**LAND USE C Residential**

ITE LU Code		Size	
Enter	Exit	Internal	External
728	563	165	285
446	848	161	848
1174	1411	326	1411
100%	72.2	27.8	72.2



**Net External Trips for Multi-Use Development**

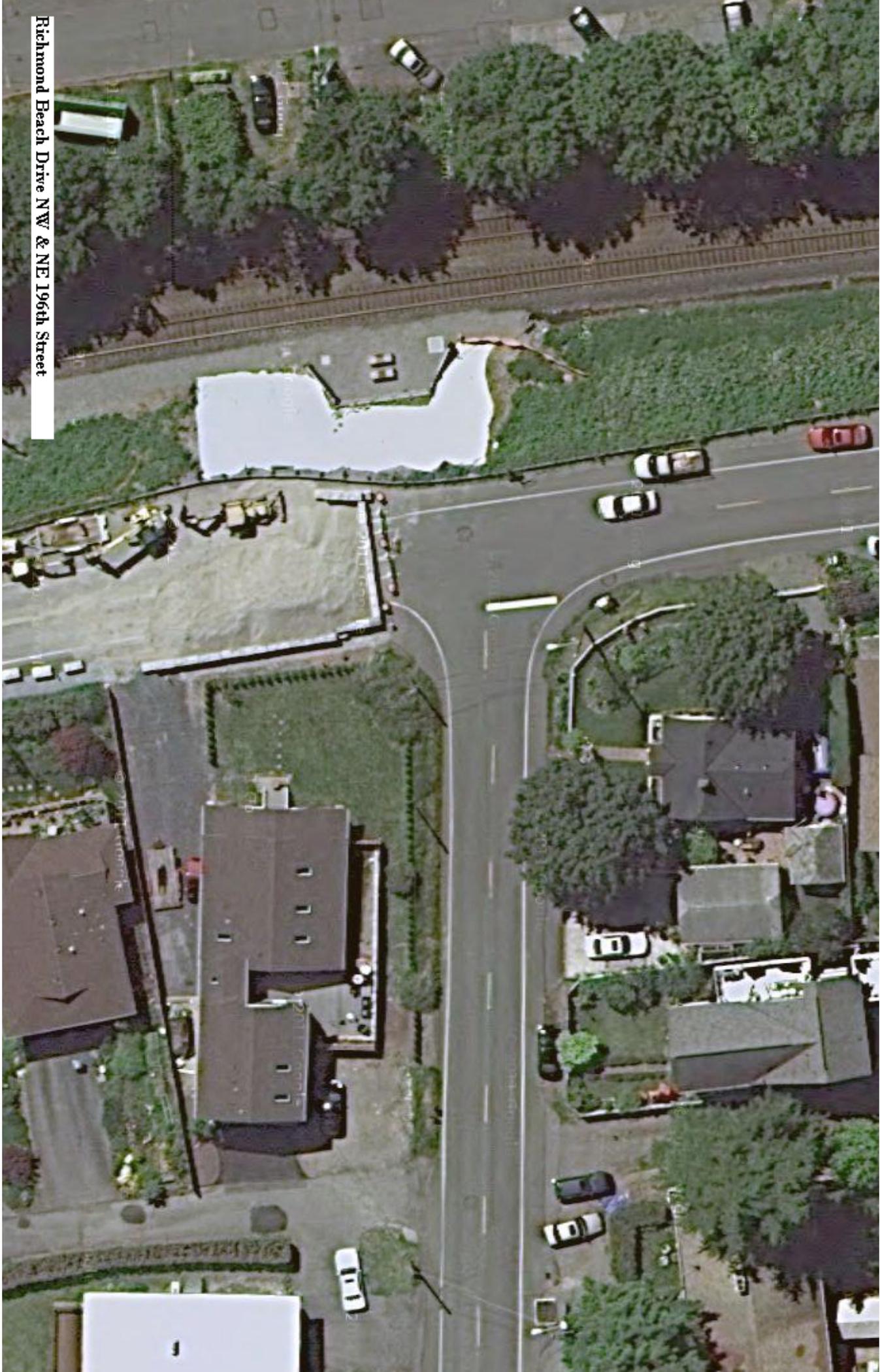
	LAND USE A	LAND USE B	LAND USE C	TOTAL
Enter	102	8	563	673
Exit	86	15	285	386
Total	188	23	848	1059
Single-Use Trip Gen. Est.	492	63	1,174	1,729
INTERNAL CAPTURE				38.8%

Source: Kaku Associates, Inc.

# Appendix C – Intersection Photographs

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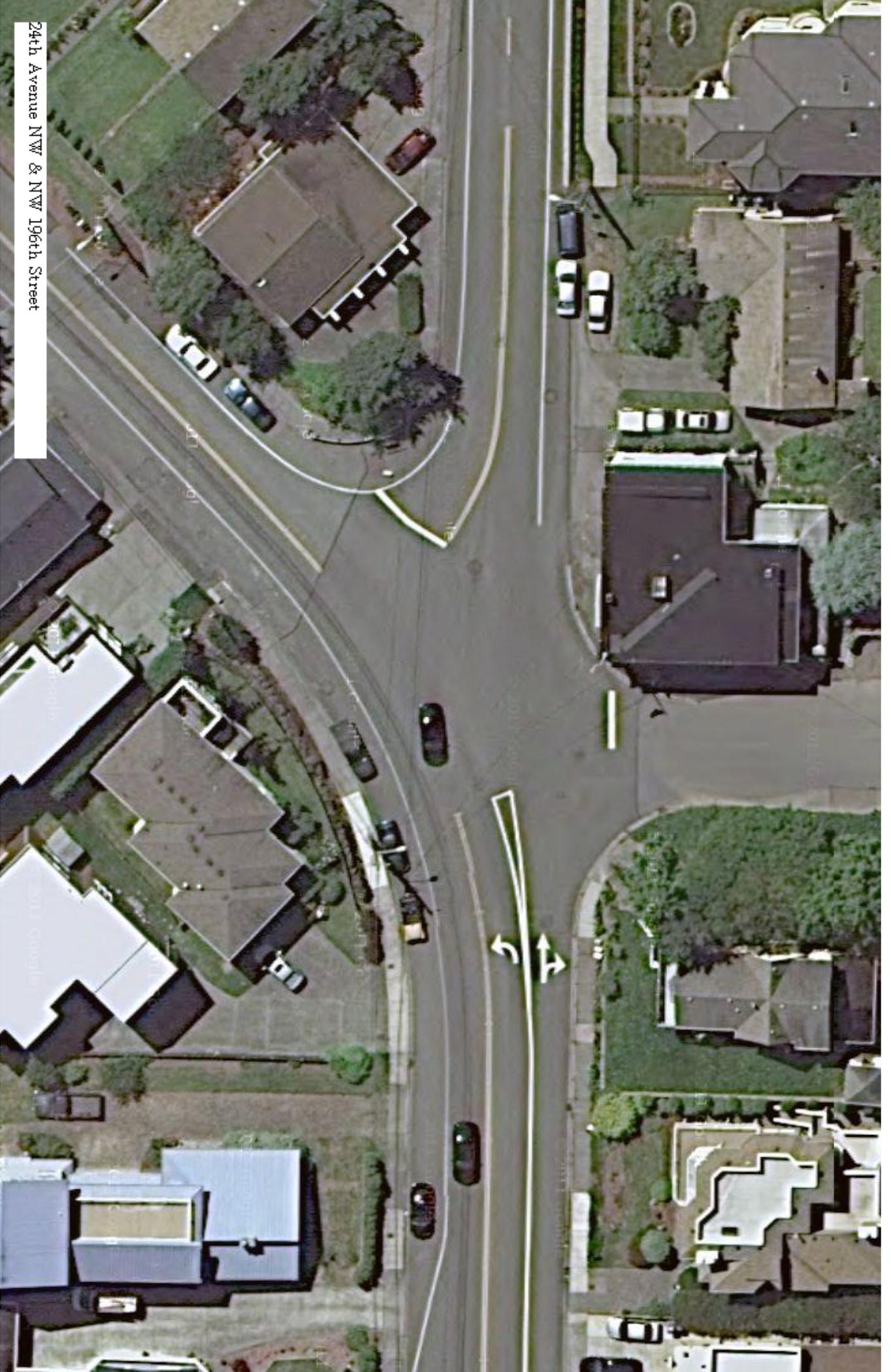
<b>Intersection</b>	<b>Number</b>
Richmond Beach Drive NW & NE 196 <sup>th</sup> Street	1
Richmond Beach Drive NW & NW 195 <sup>th</sup> Place	2
24 <sup>th</sup> Avenue NW & NW 196 <sup>th</sup> Street	3
20 <sup>th</sup> Avenue NW & NW 195 <sup>th</sup> Street	4
NW 195 <sup>th</sup> Street & 15 <sup>th</sup> Avenue NW	5
15 <sup>th</sup> Avenue NW & NW Richmond Beach Road	6
NW Richmond Beach Road & NW 190 <sup>th</sup> Street	7
8 <sup>th</sup> Avenue NW & NW Richmond Beach Road	8
3 <sup>rd</sup> Avenue NW & NW Richmond Beach Road	9
Dayton Avenue N & NW Richmond Beach Road	10
Fremont Avenue N & N 185 <sup>th</sup> Street	11
100 <sup>th</sup> Avenue W & 244 <sup>th</sup> Street SW	12
Firdale Avenue & 244 <sup>th</sup> Street SW	13
3 <sup>rd</sup> Avenue NW & 244 <sup>th</sup> Street SW	14
Fremont Avenue N & 244 <sup>th</sup> Street SW	15
6 <sup>th</sup> Avenue NW & NW 175 <sup>th</sup> Street	16
Dayton Avenue N & St Luke Place N	17
Fremont Avenue N & N 175 <sup>th</sup> Street	18
Meridian Avenue N & N 175 <sup>th</sup> Street	19
Dayton Avenue N & Carlyle Hall Road N	20
Greenwood Avenue N & N Innis Arden Way	21
Greenwood Avenue N & N 160 <sup>th</sup> Street	22
Dayton Avenue N & N 160 <sup>th</sup> Street	23
Westminster Way N & N 155 <sup>th</sup> Street	24
Greenwood Avenue N & SR 523 (N 145 <sup>th</sup> Street)	25
5 <sup>th</sup> Avenue NE & SR 523 (N 145 <sup>th</sup> Street)	26
Timber Lane & 238 <sup>th</sup> Street SW	27
114 <sup>th</sup> Avenue W & 238 <sup>th</sup> Street SW	28
Woodway Park Road & Algonquin Road	29
Firdale Avenue & 238 <sup>th</sup> Street SW	30
95 <sup>th</sup> Place W & 228 <sup>th</sup> Street SW	31
3 <sup>rd</sup> Avenue S & Pine Street	32
95 <sup>th</sup> Place W & SR 104 (Edmonds Way)	33
100 <sup>th</sup> Avenue W & SR 104 (Edmonds Way)	34
SB SR 104 (Edmonds Way) & WB 244 <sup>th</sup> Street SW	35
SB SR 104 (Edmonds Way) & EB 244 <sup>th</sup> Street SW	36
76 <sup>th</sup> Avenue W & SR 104 (Lake Ballinger Way)	37
SB I-5 Ramps & SR 104 (Lake Ballinger Way)	38
SR 99 & 228 <sup>th</sup> Street SW	39
SR 99 & 244 <sup>th</sup> Street SW	40
SR 99 & N 185 <sup>th</sup> Street	41
SR 99 & N 175 <sup>th</sup> Street	42
SR 99 & N 160 <sup>th</sup> Street	43
SR 99 & N 155 <sup>th</sup> Street	44
SR 99 & SR 523 (N 145 <sup>th</sup> Street)	45
SR 99 & N 130 <sup>th</sup> Street	46
SB I-5 Ramps & N 175 <sup>th</sup> Street	47
5 <sup>th</sup> Avenue NE & NE 130 <sup>th</sup> Street	48



Richmond Beach Drive NW & NE 196th Street



Richmond Beach Drive NW & NW 195th Place



24th Avenue NW & NW 196th Street

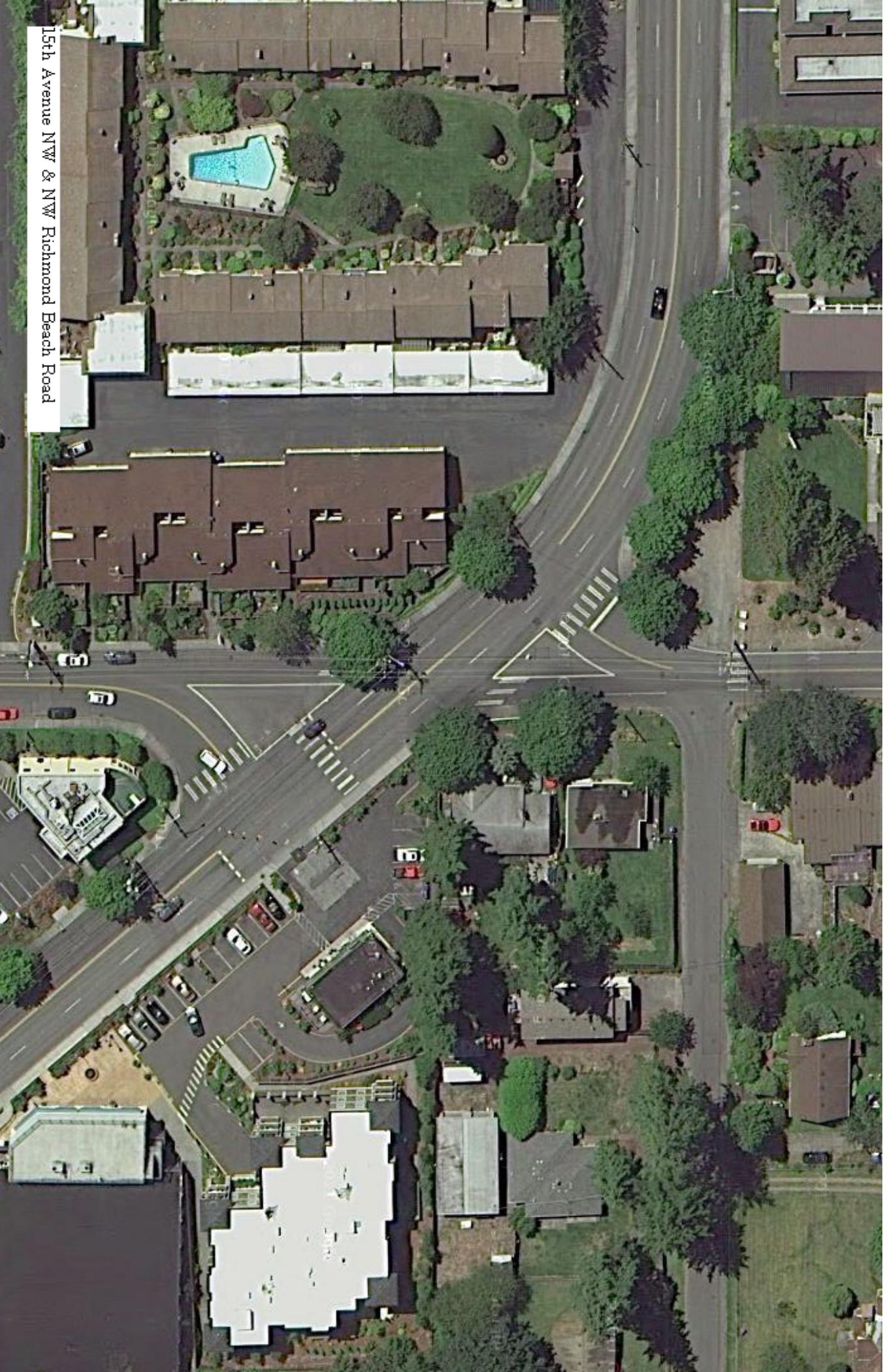


20th Avenue NW & NW 195th Street

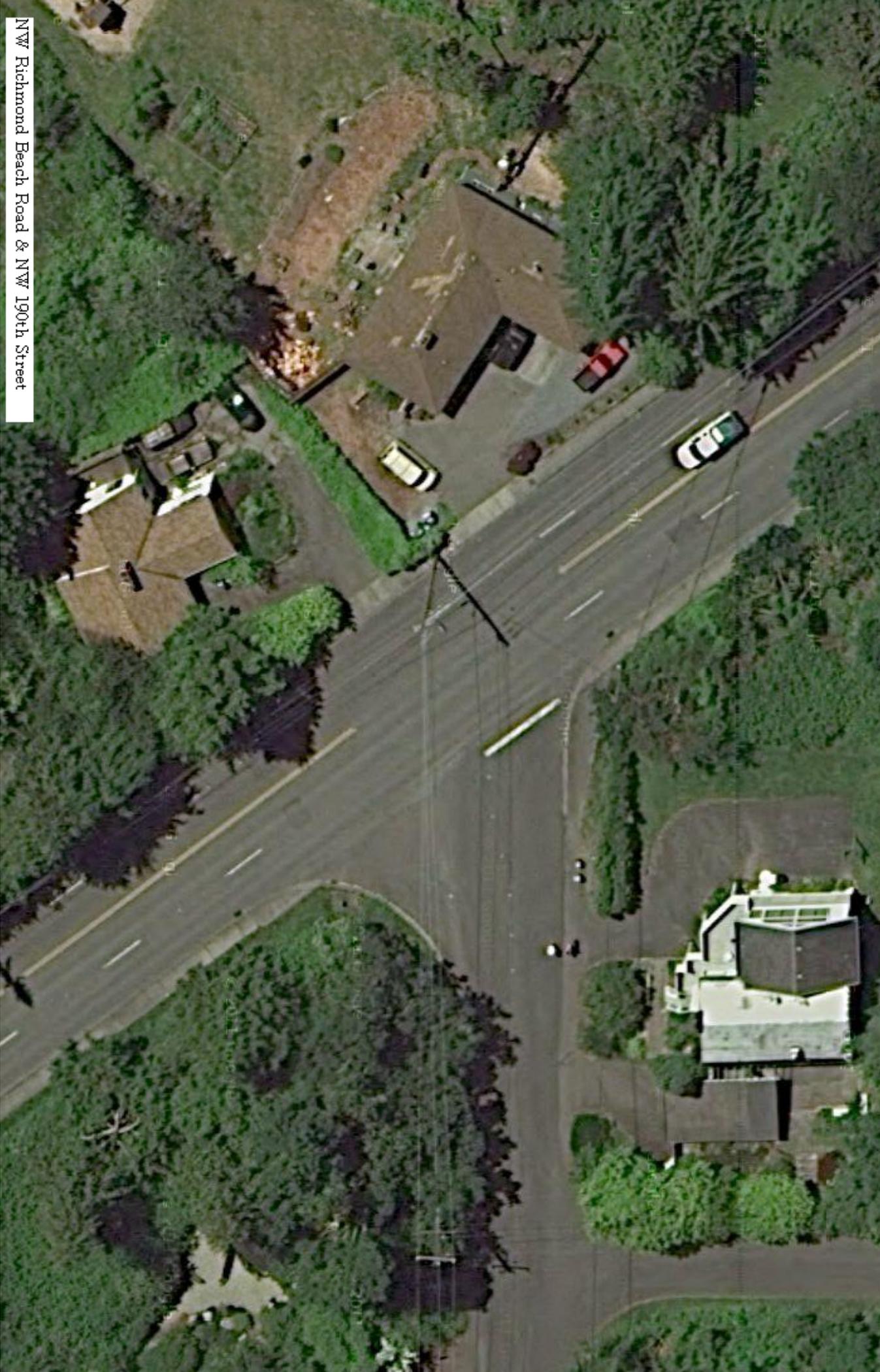
NW 195th Street & 15th Avenue NW



15th Avenue NW & NW Richmond Beach Road



NW Richmond Beach Road & NW 190th Street





8th Avenue NW & NW Richmond Beach Road



3rd Avenue NW & NW Richmond Beach Road



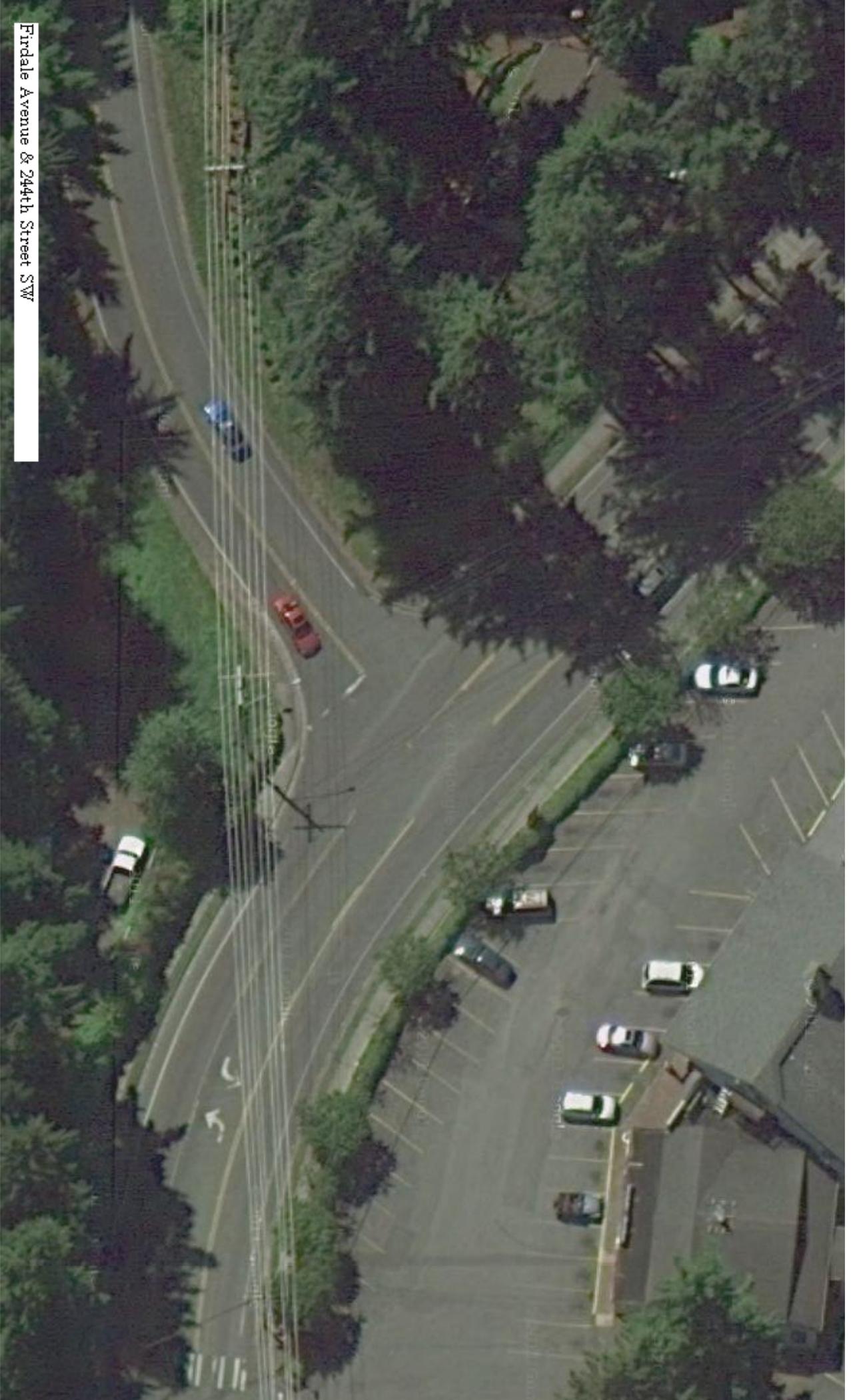
Dayton Avenue N & NW Richmond Beach Road



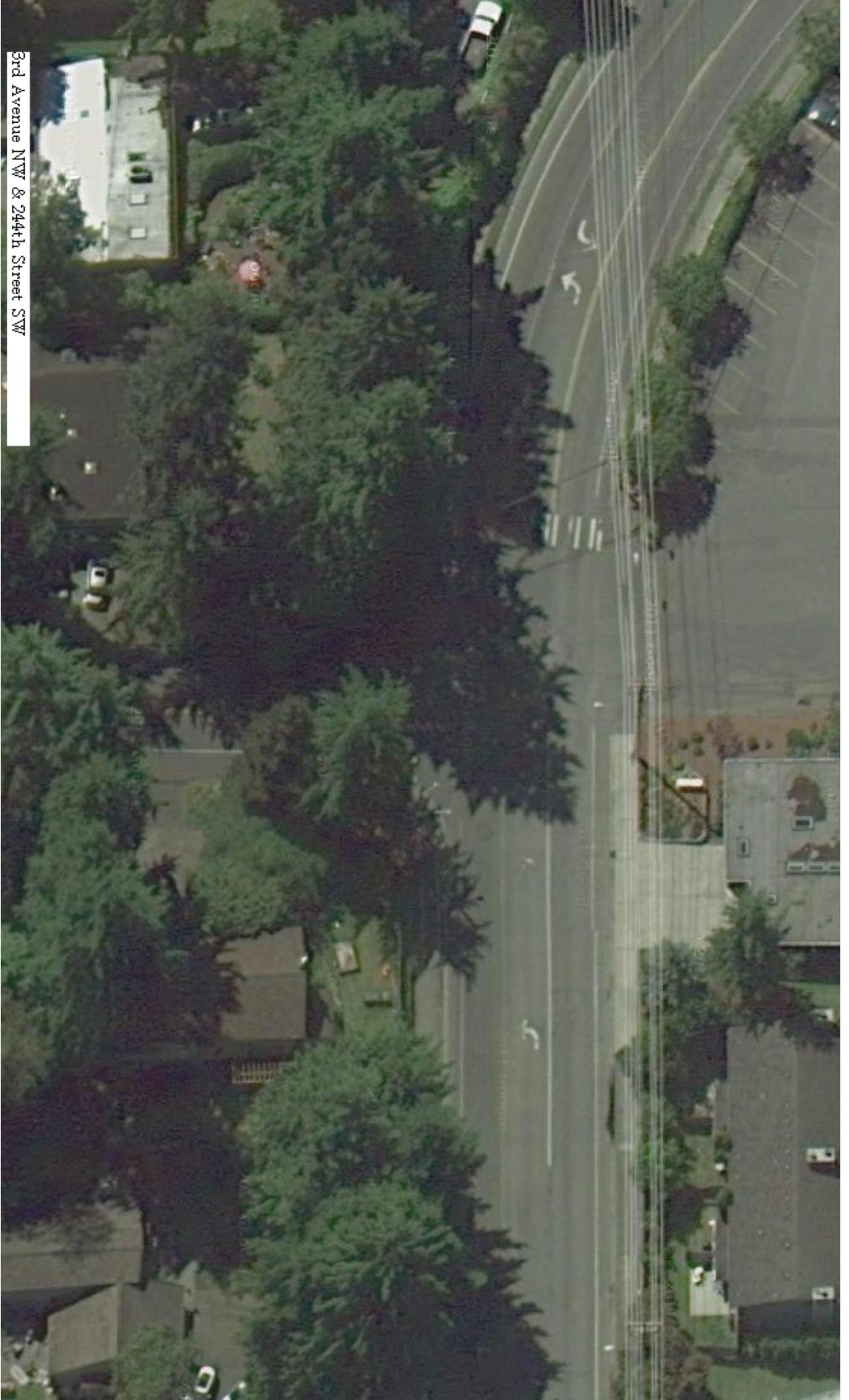
Fremont Avenue N & N 185th Street



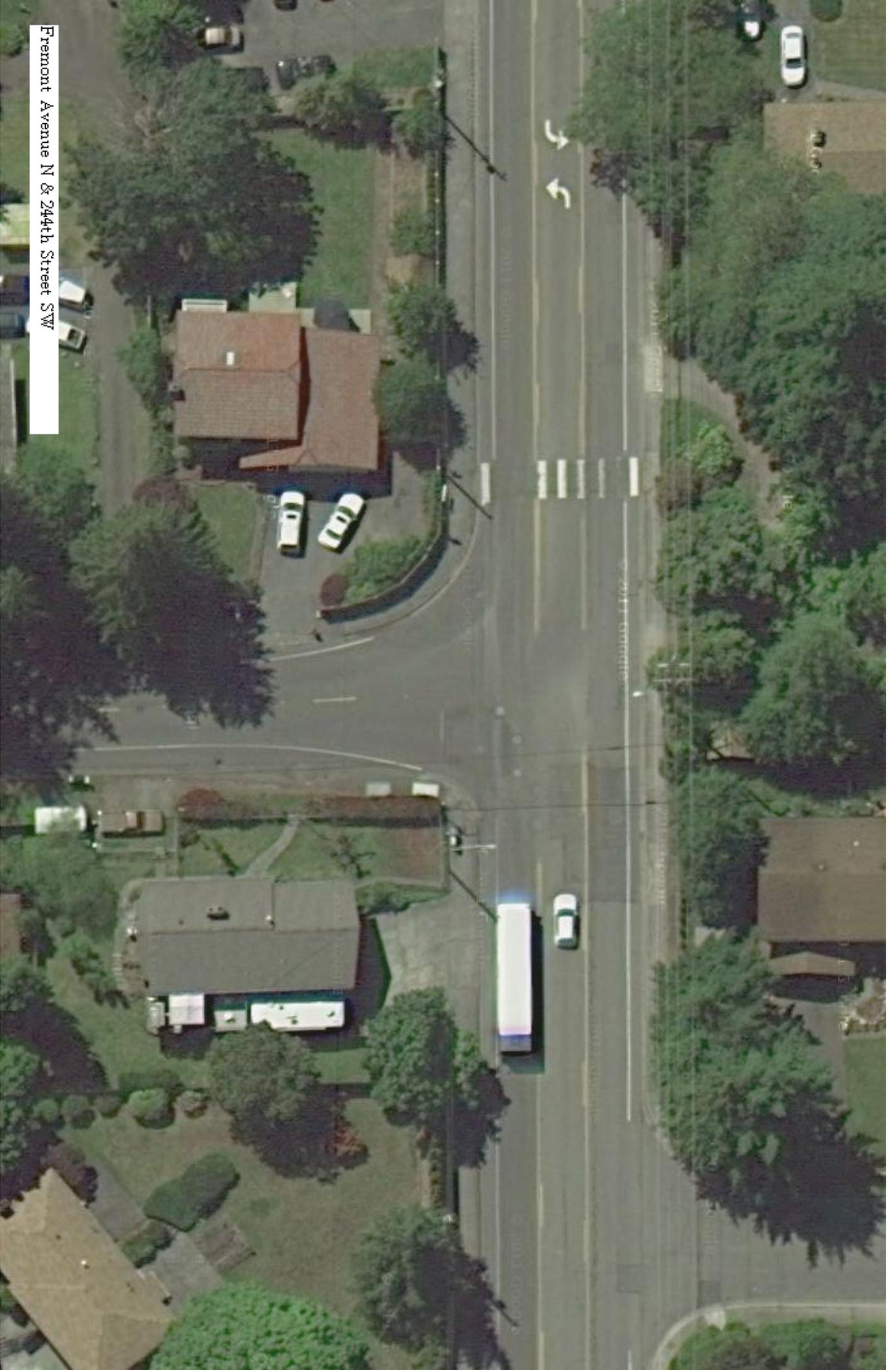
100th Avenue W & 244th Street SW



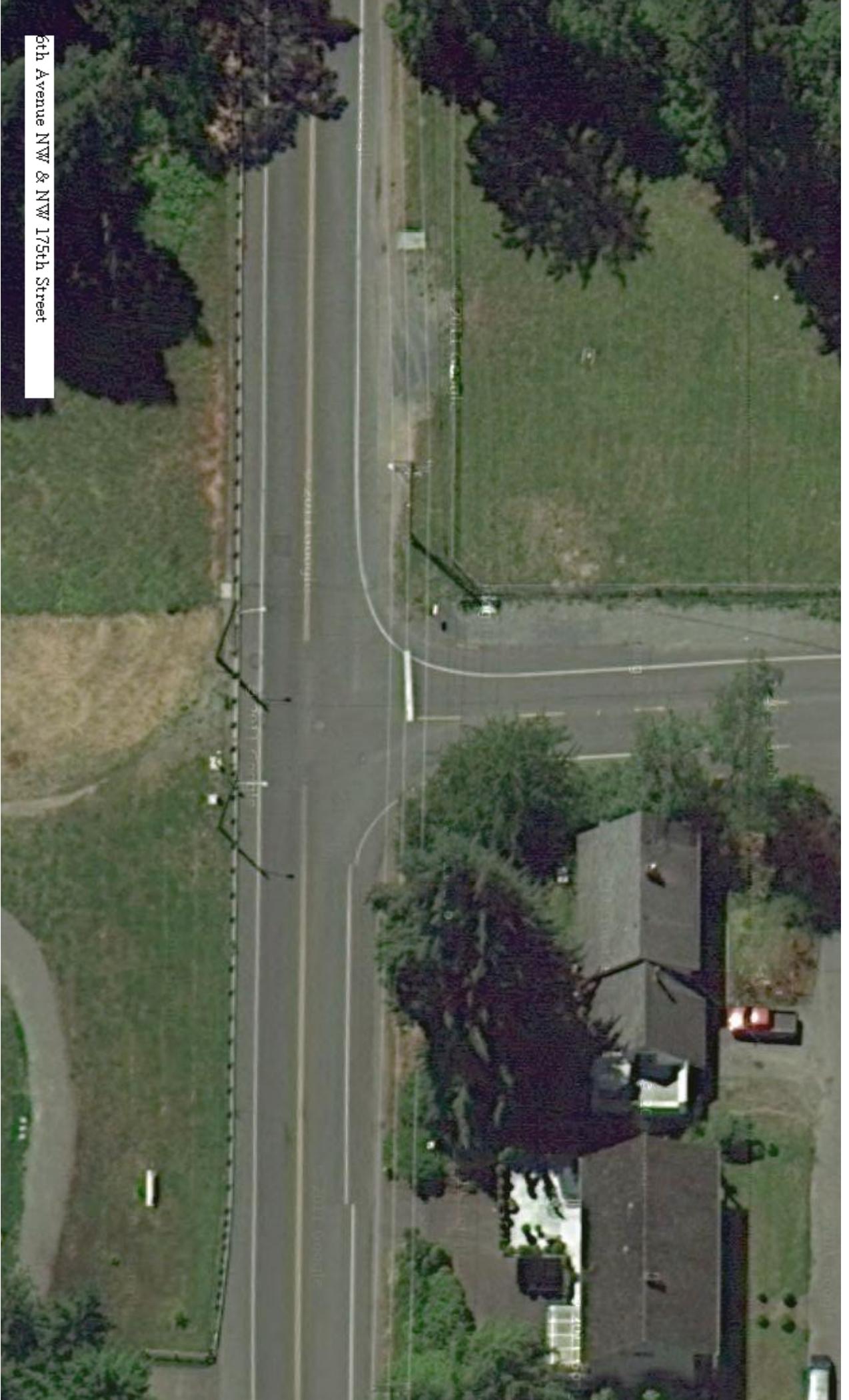
Firdale Avenue & 244th Street SW



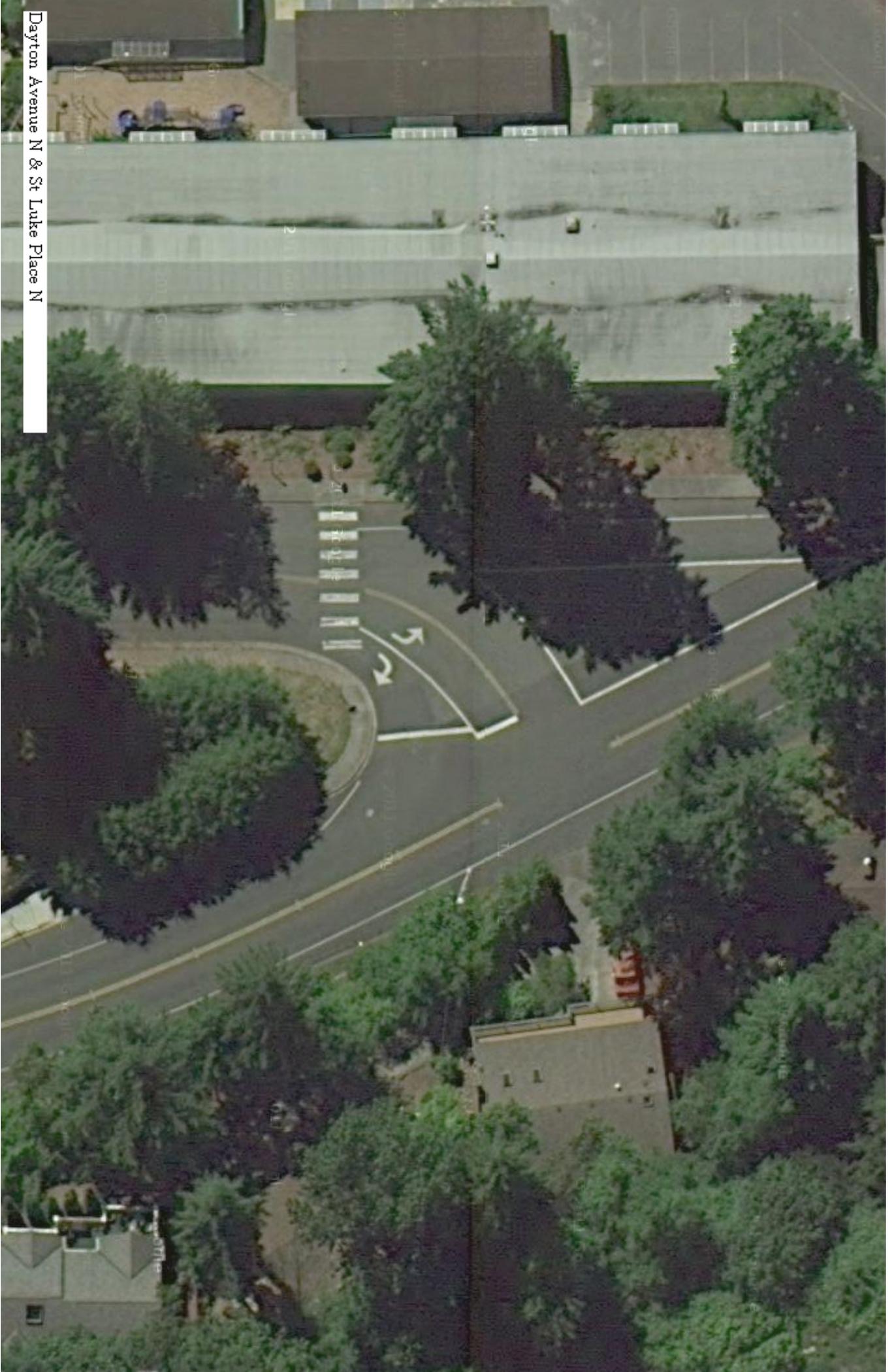
3rd Avenue NW & 244th Street SW



Fremont Avenue N & 244th Street SW



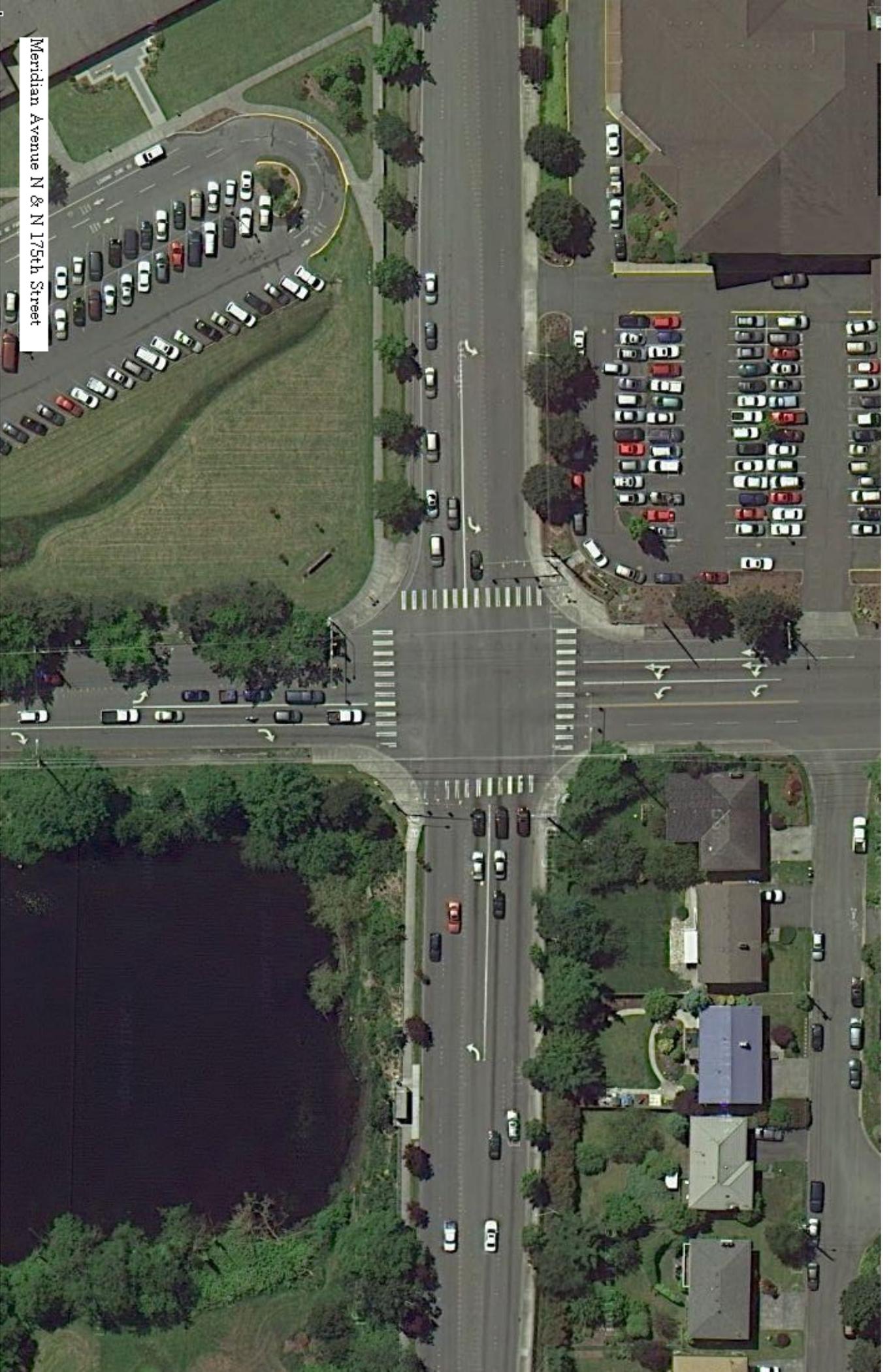
5th Avenue NW & NW 175th Street



Dayton Avenue N & St Luke Place N



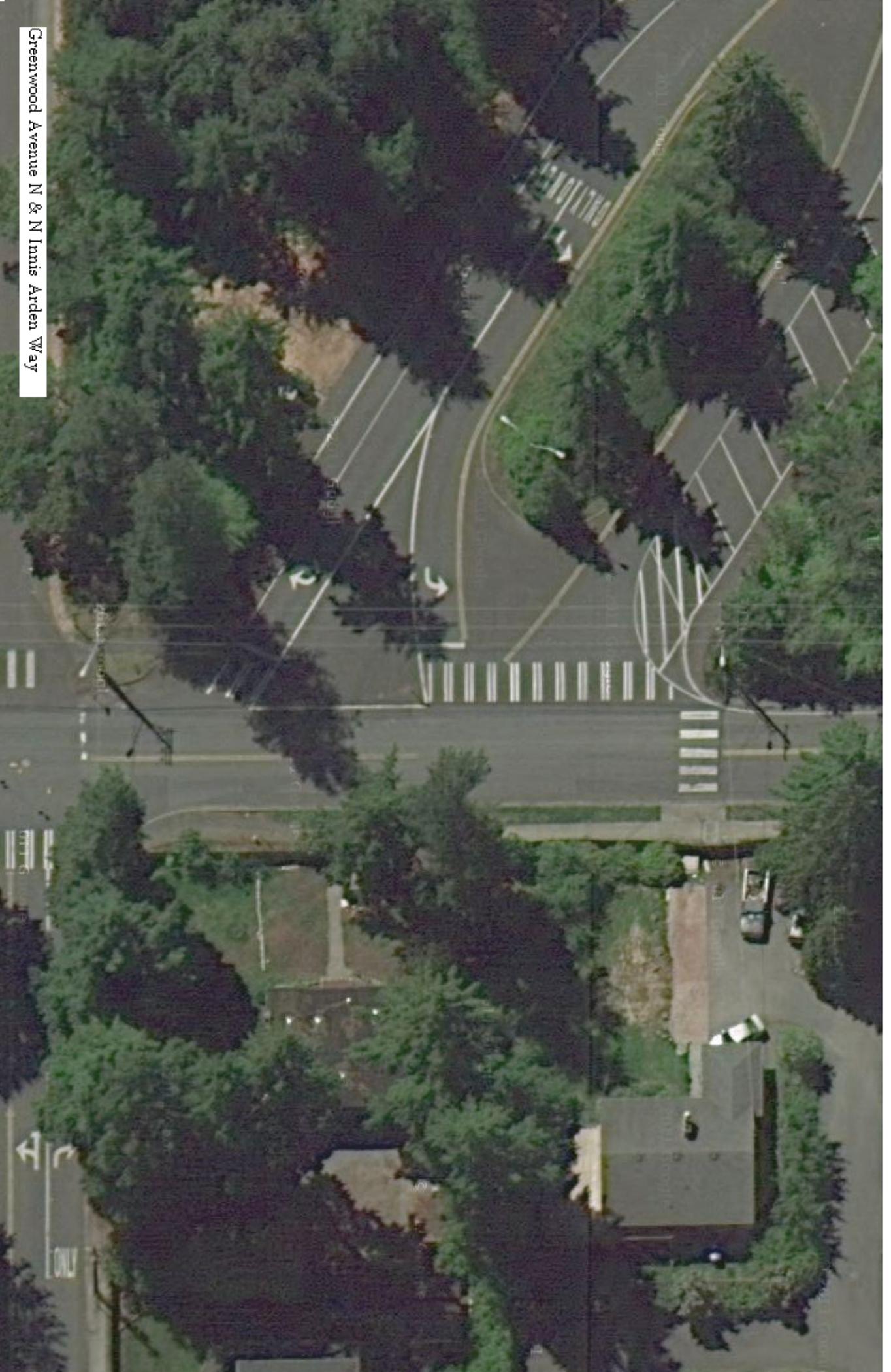
Fremont Avenue N & N 175th Street



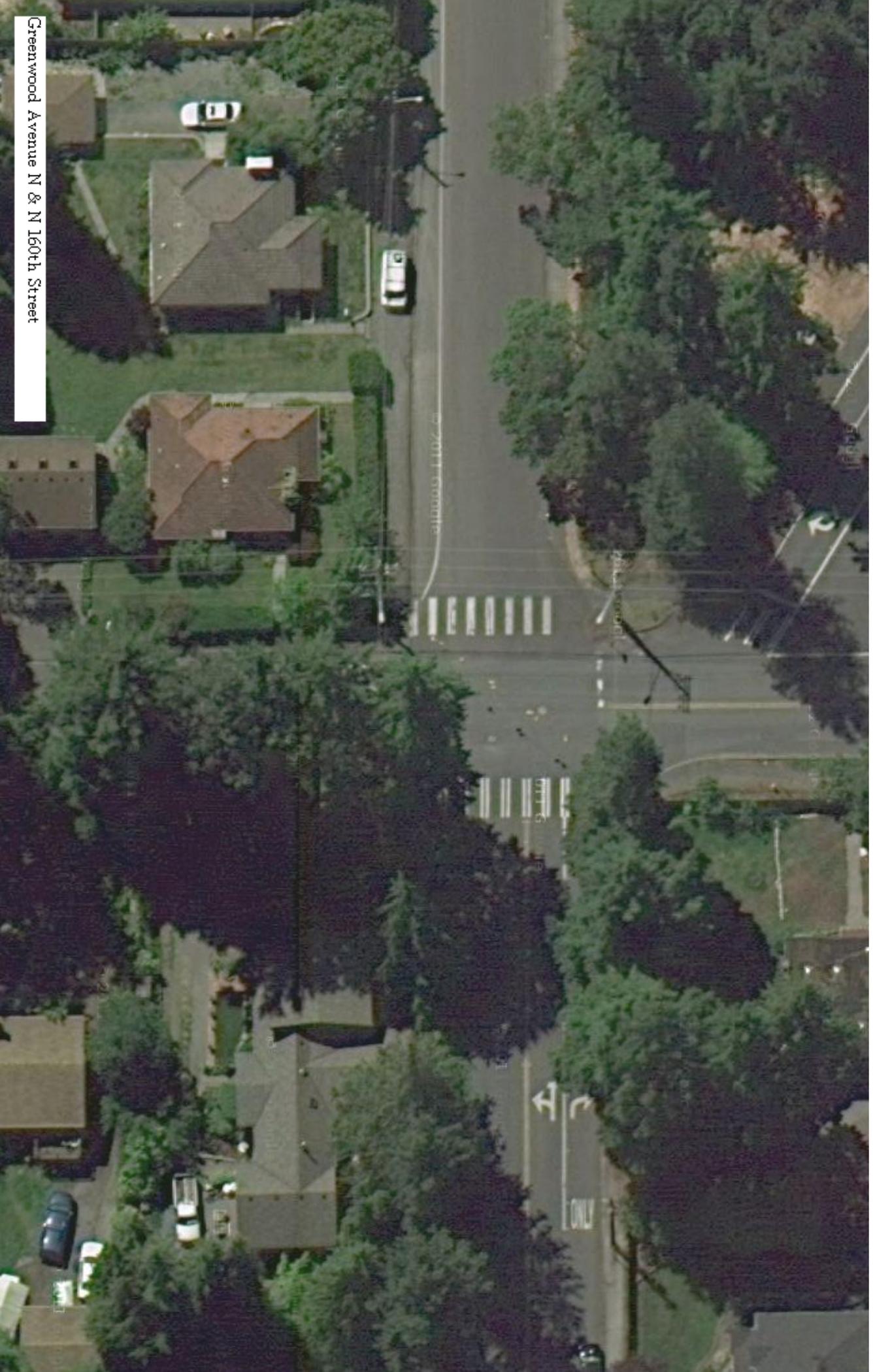
Meridian Avenue N & N 175th Street



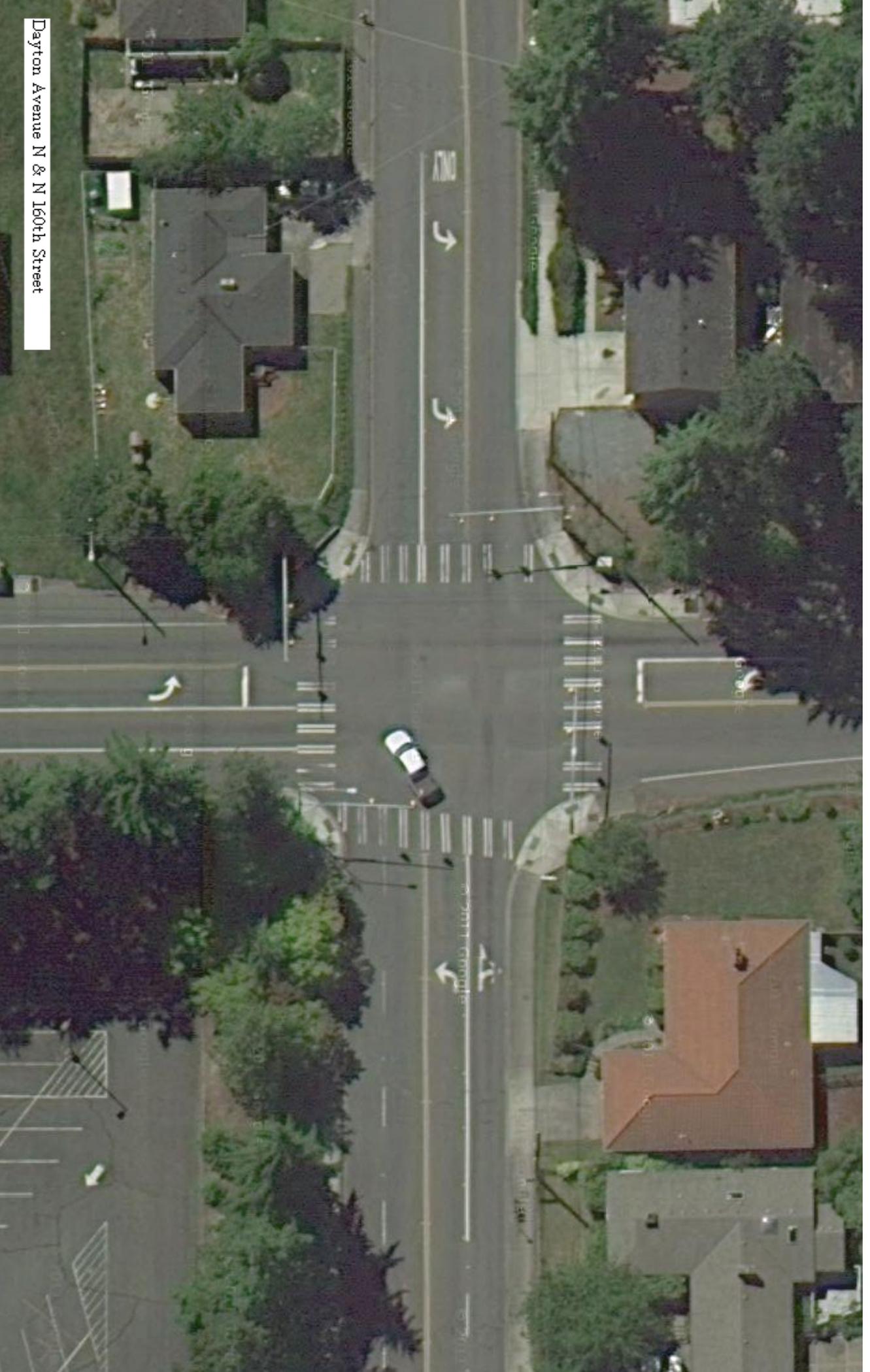
Dayton Avenue N & Carlyle Hall Road N



Greenwood Avenue N & N Innis Arden Way



Greenwood Avenue N & N 160th Street



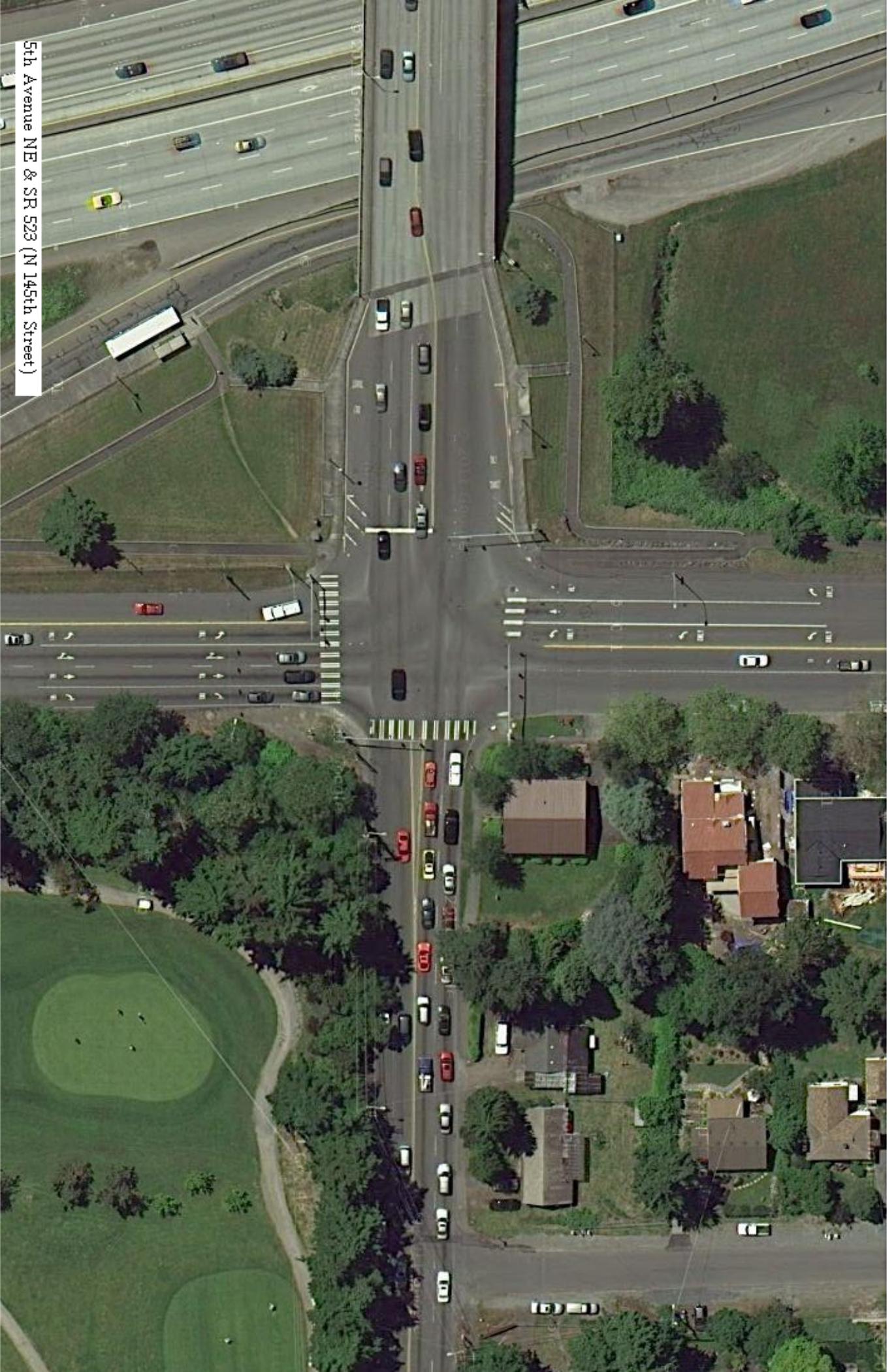
Dayton Avenue N & N 160th Street



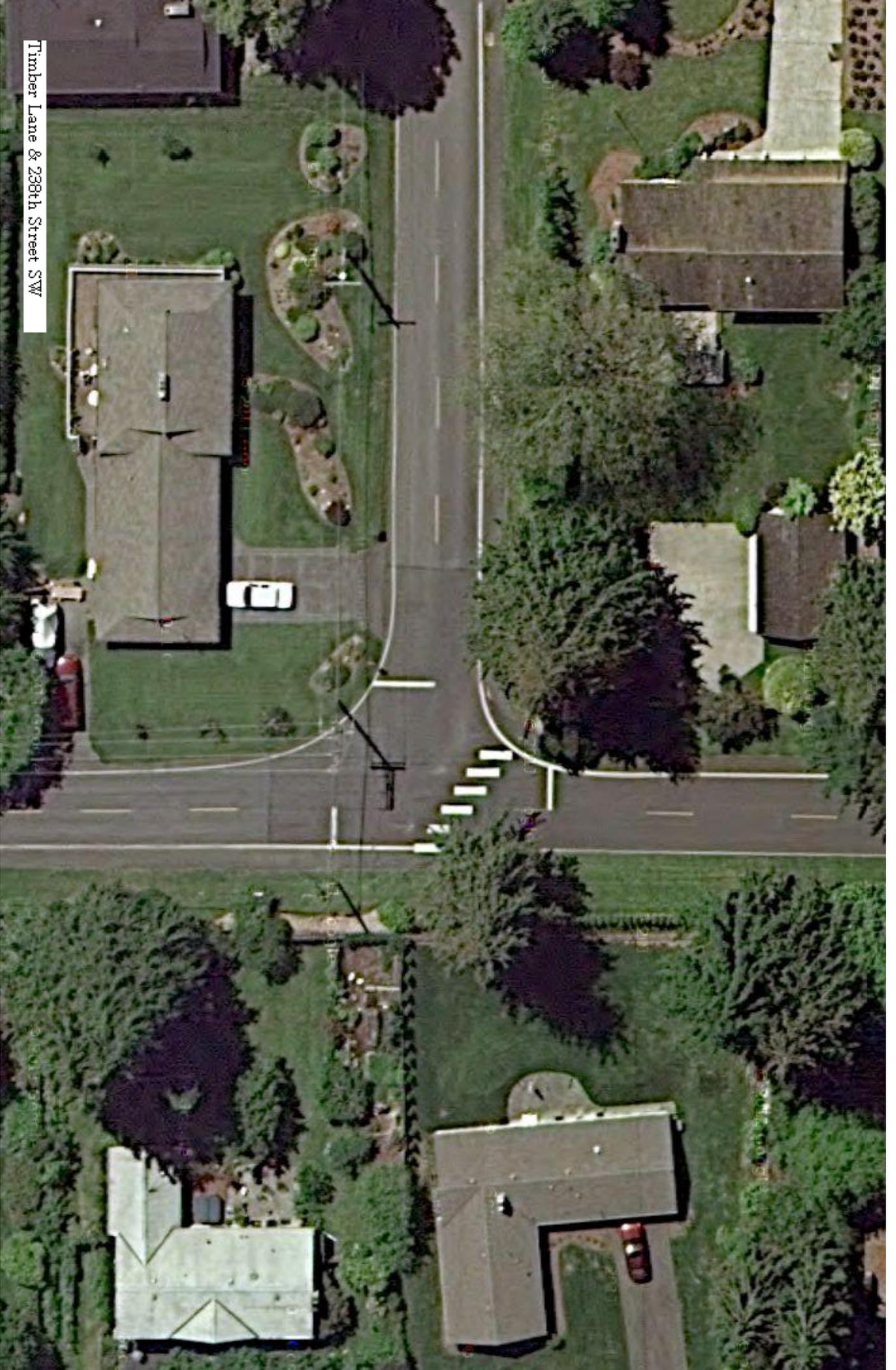
Westminster Way N & N 155th Street



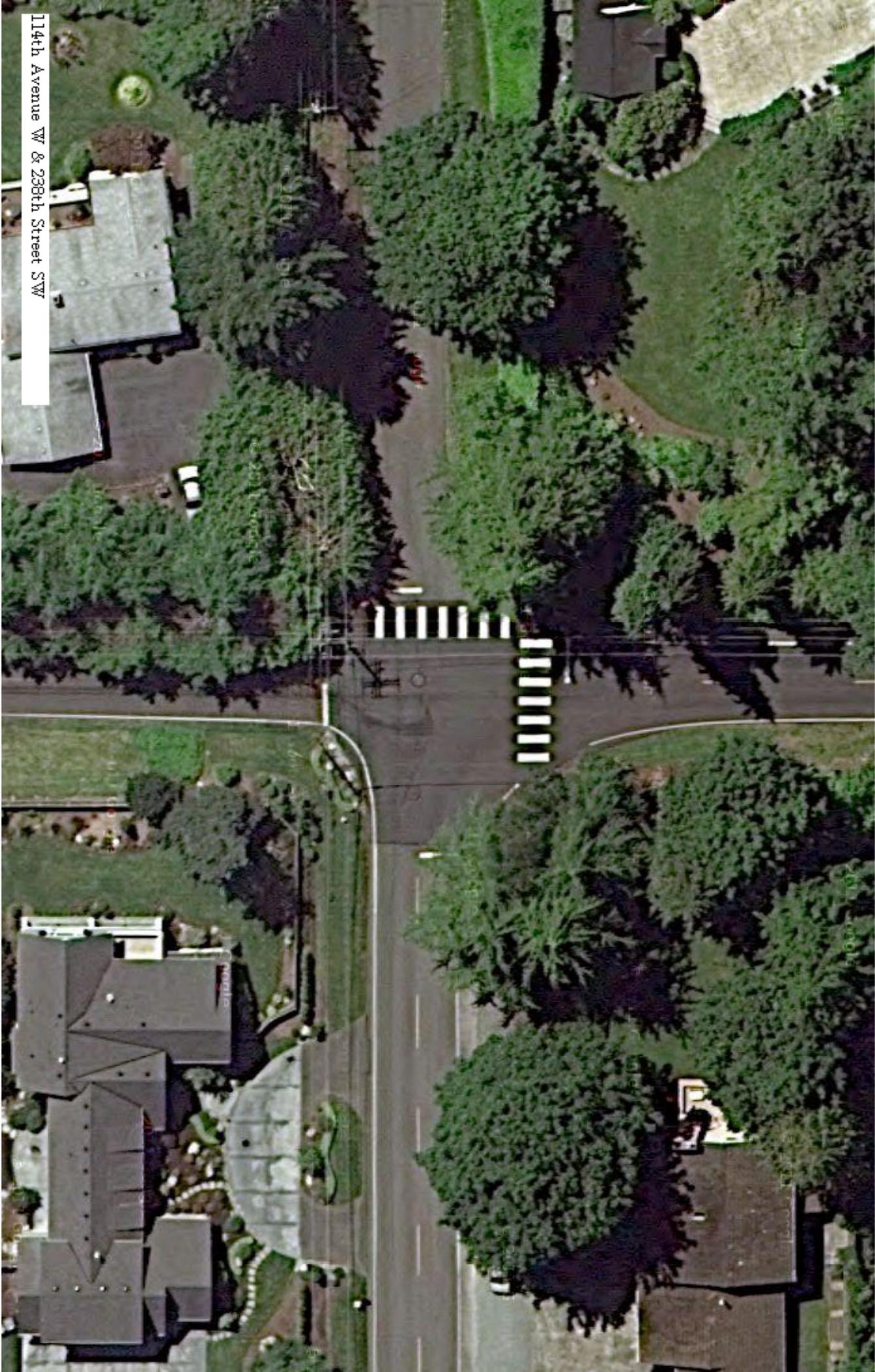
Greenwood Avenue N & SR 523 (N 145th Street)



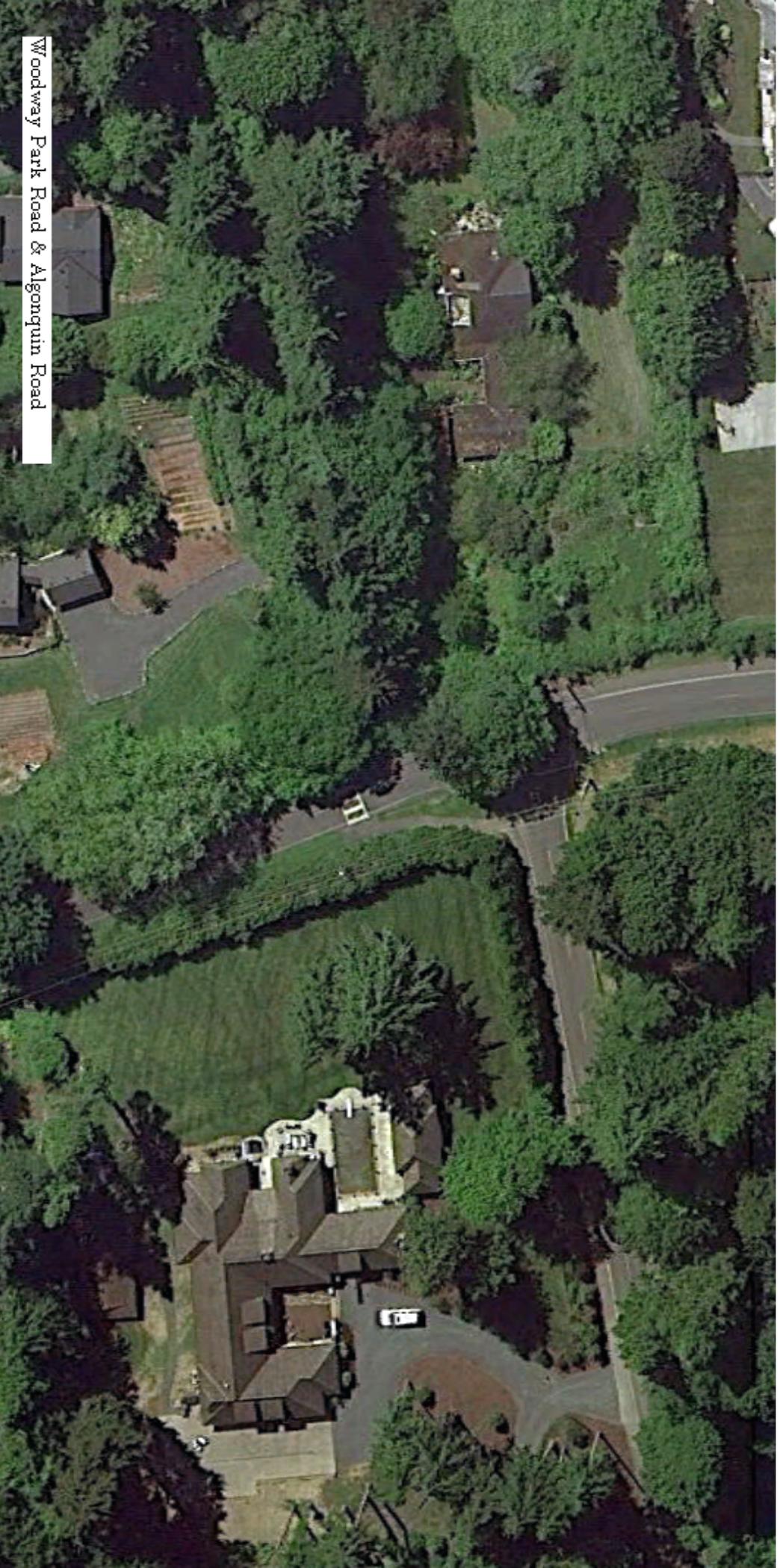
5th Avenue NE & SR 523 (N 145th Street)



Timber Lane & 238th Street SW



114th Avenue W & 238th Street SW



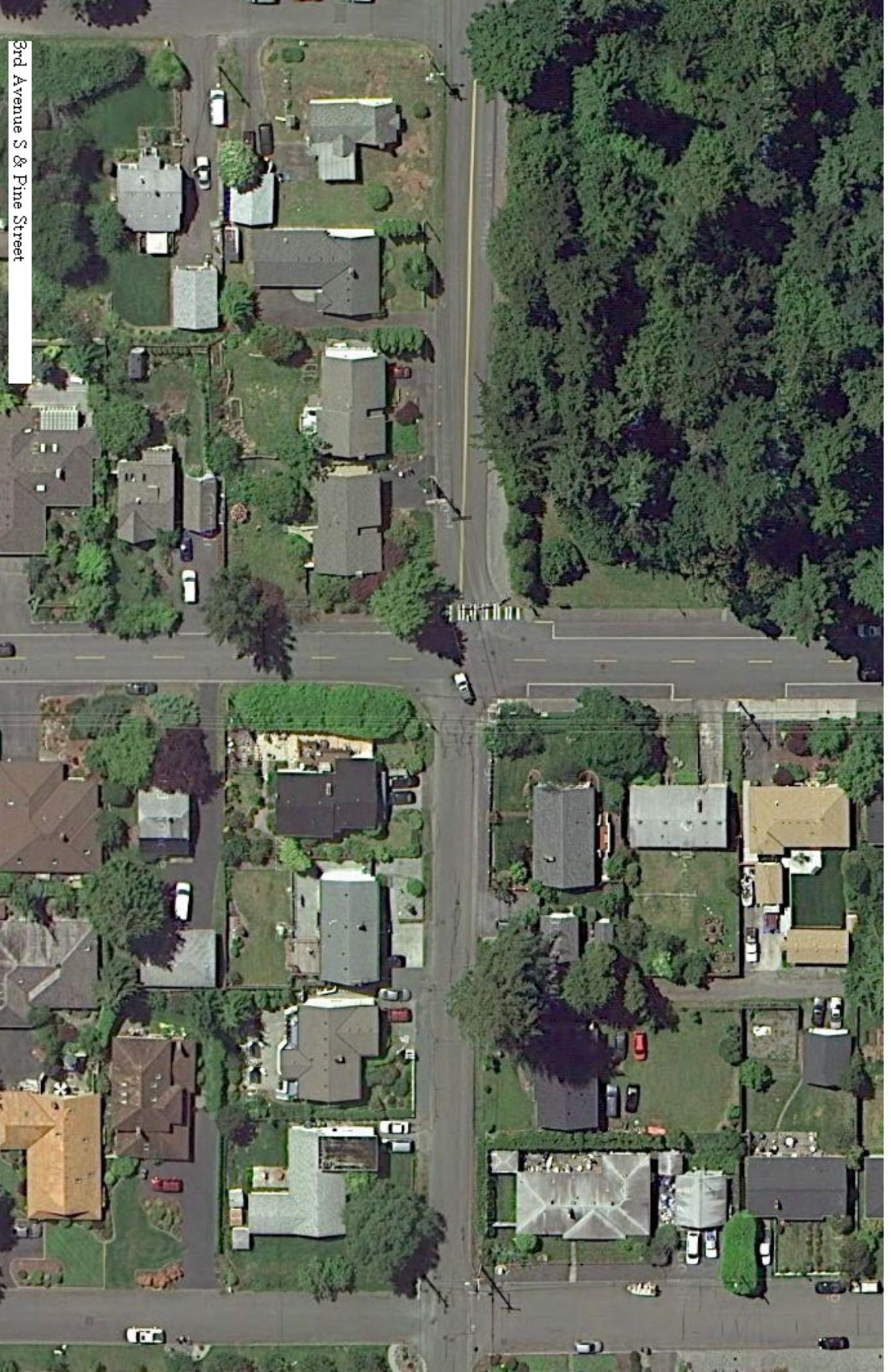
Woodway Park Road & Algonquin Road



Firdale Avenue & 238th Street SW



95th Place W & 228th Street SW

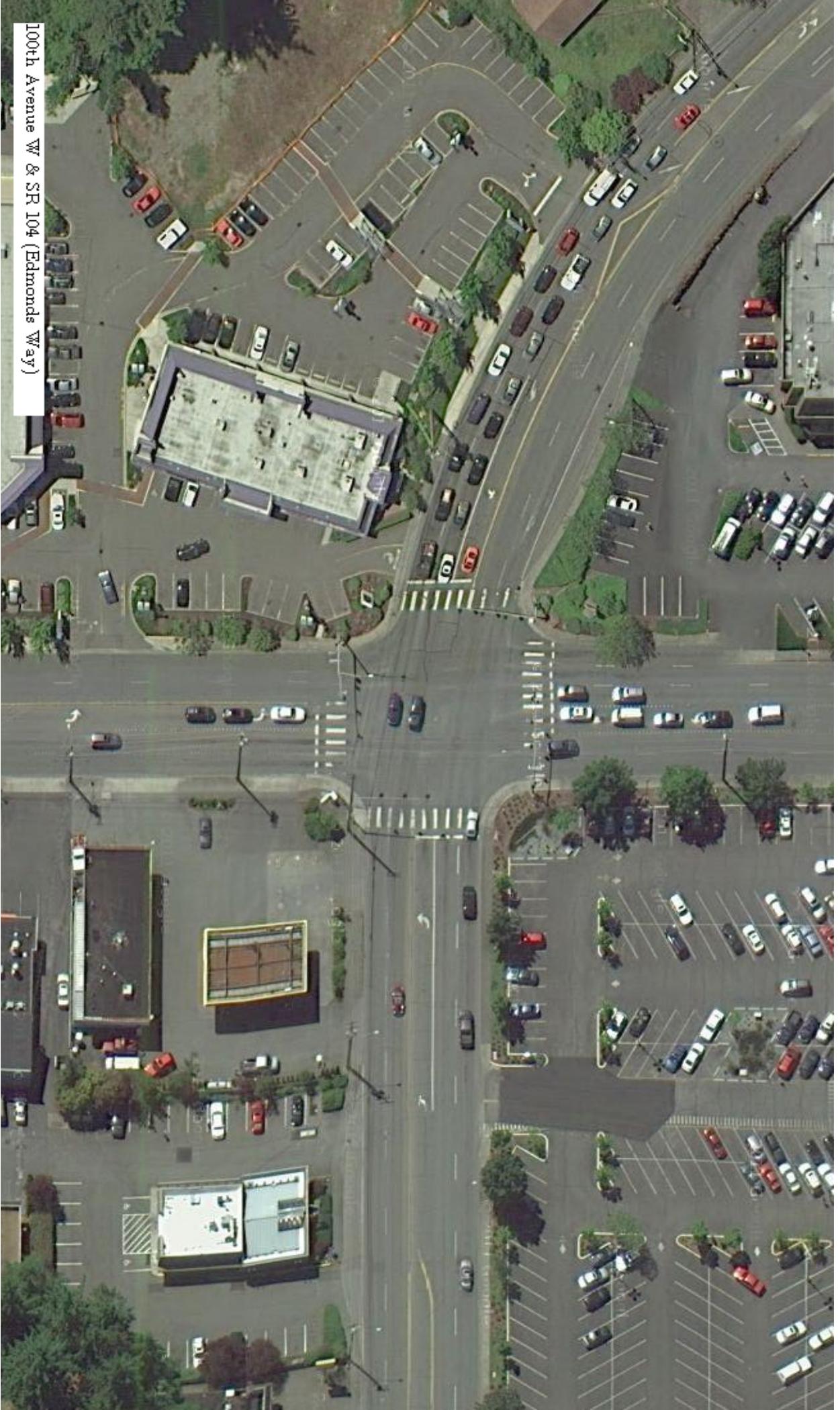


3rd Avenue S & Pine Street

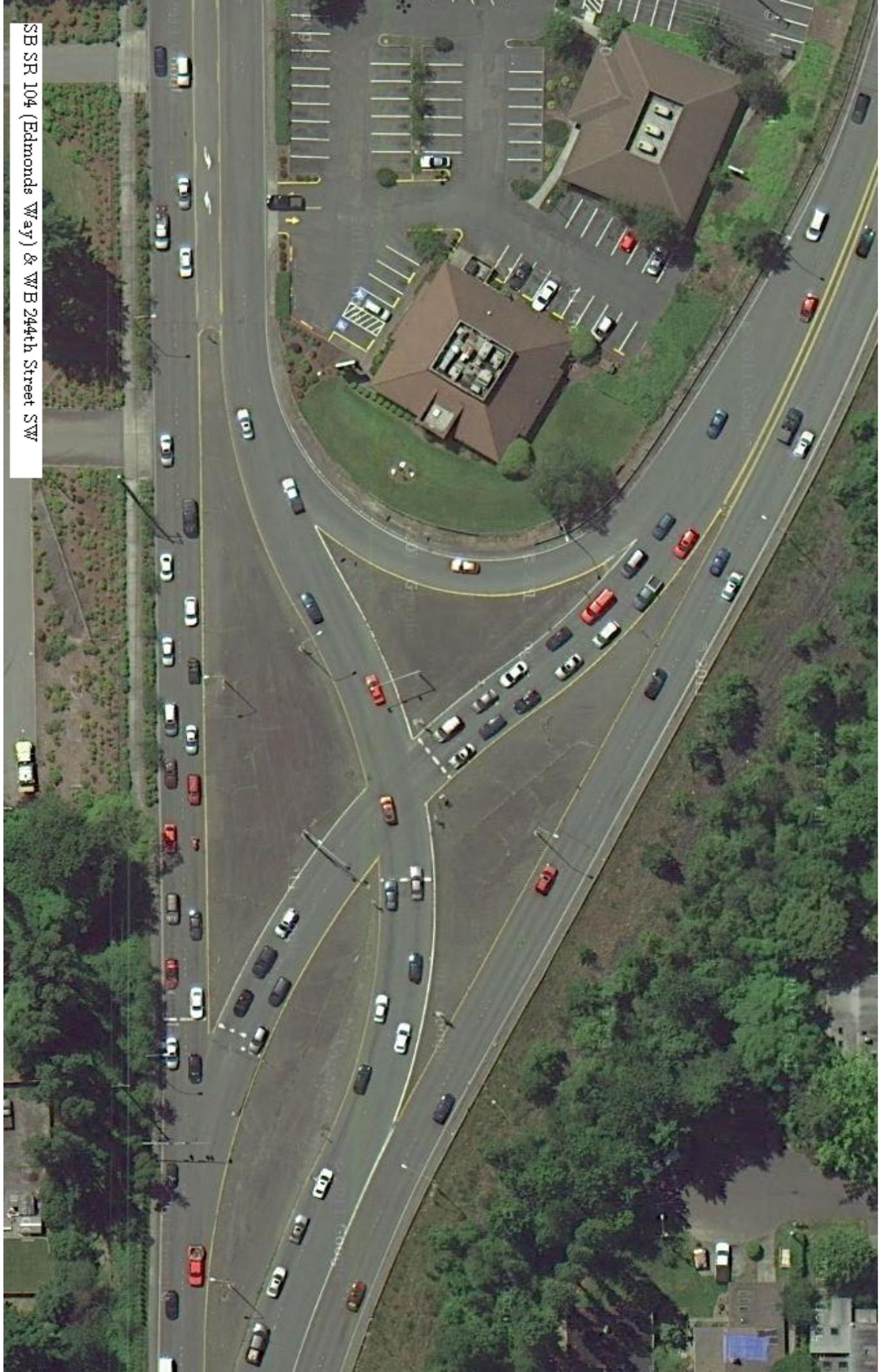


95th Place W & SR 104 (Edmonds Way)

100th Avenue W & SR 104 (Edmonds Way)

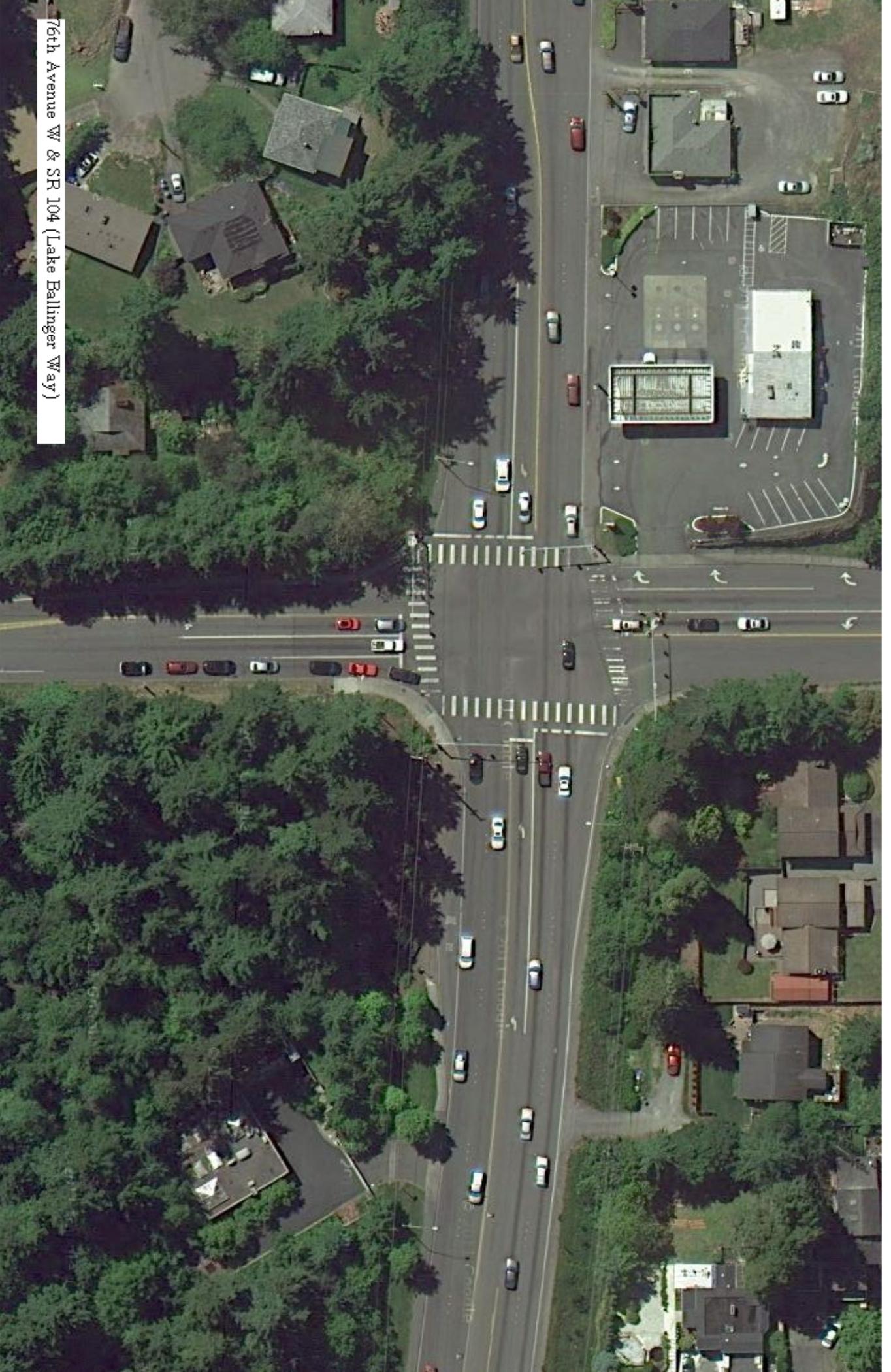


SB SR 104 (Edmonds Way) & WB 244th Street SW

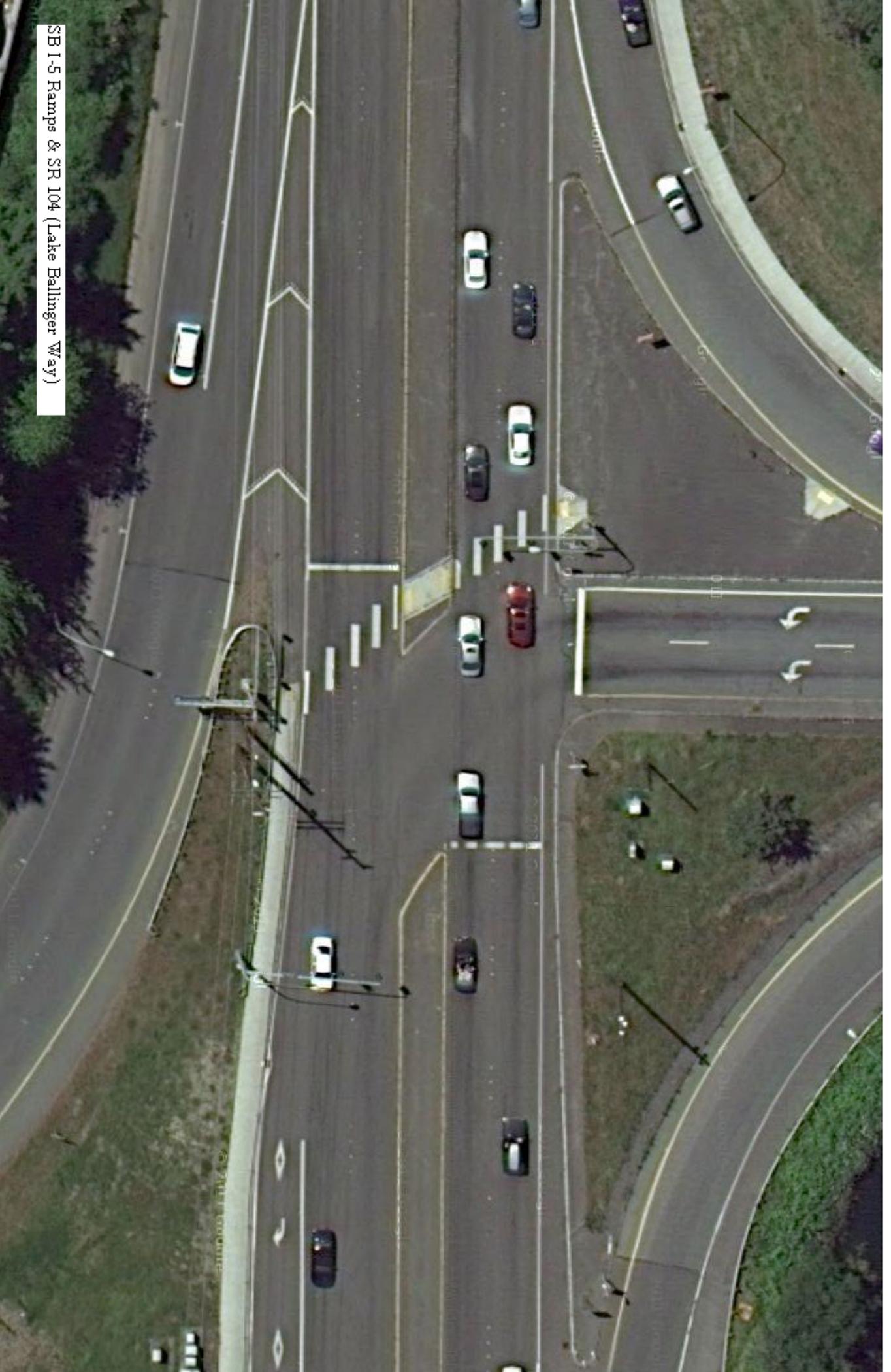


SB SR 104 (Edmonds Way) & EB 244th Street SW

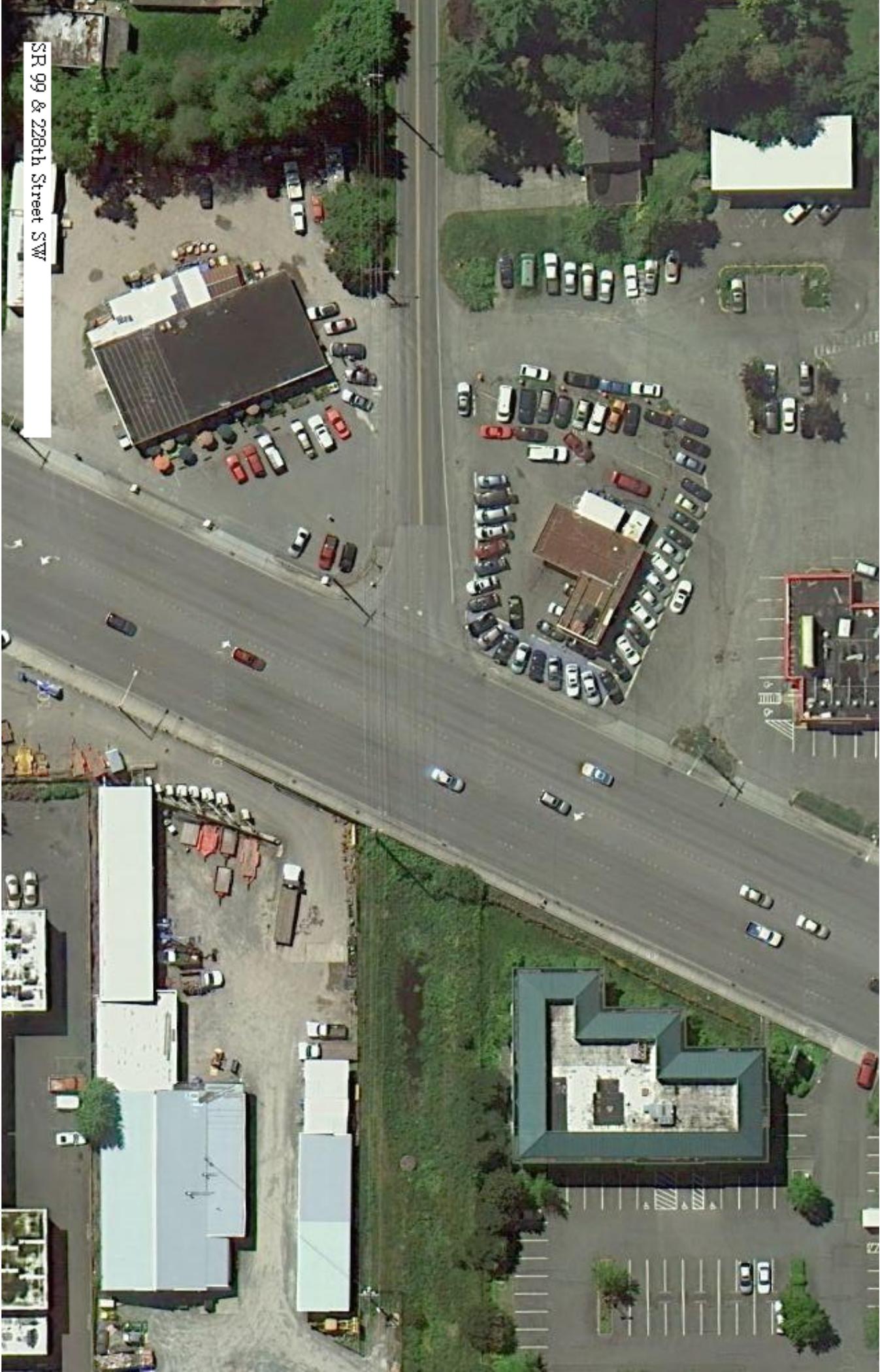




76th Avenue W & SR 104 (Lake Ballinger Way)

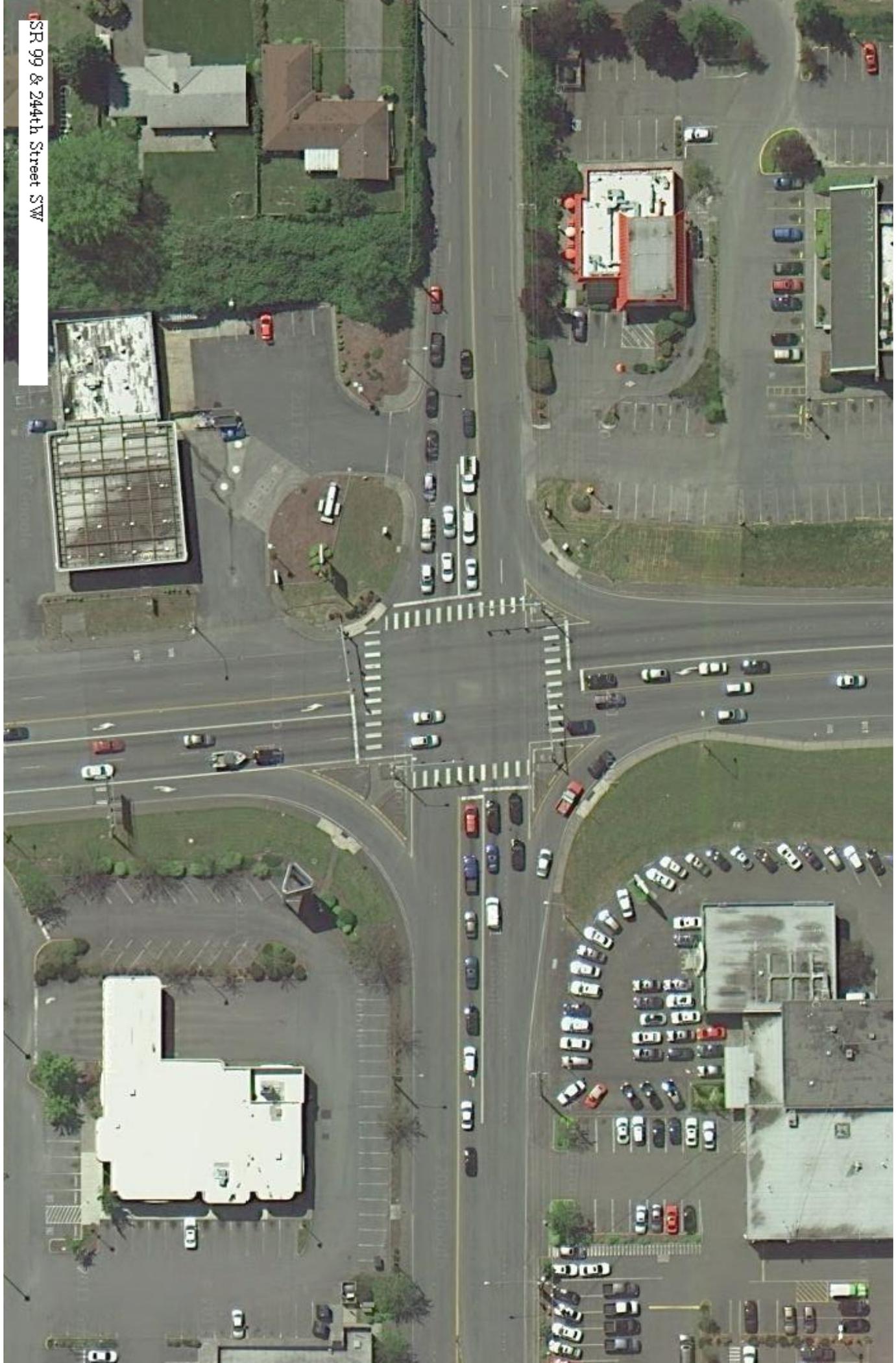


SB I-5 Ramps & SR 104 (Lake Ballinger Way)



SR 99 & 228th Street SW

SR 99 & 244th Street SW



SR 99 & N 185th Street

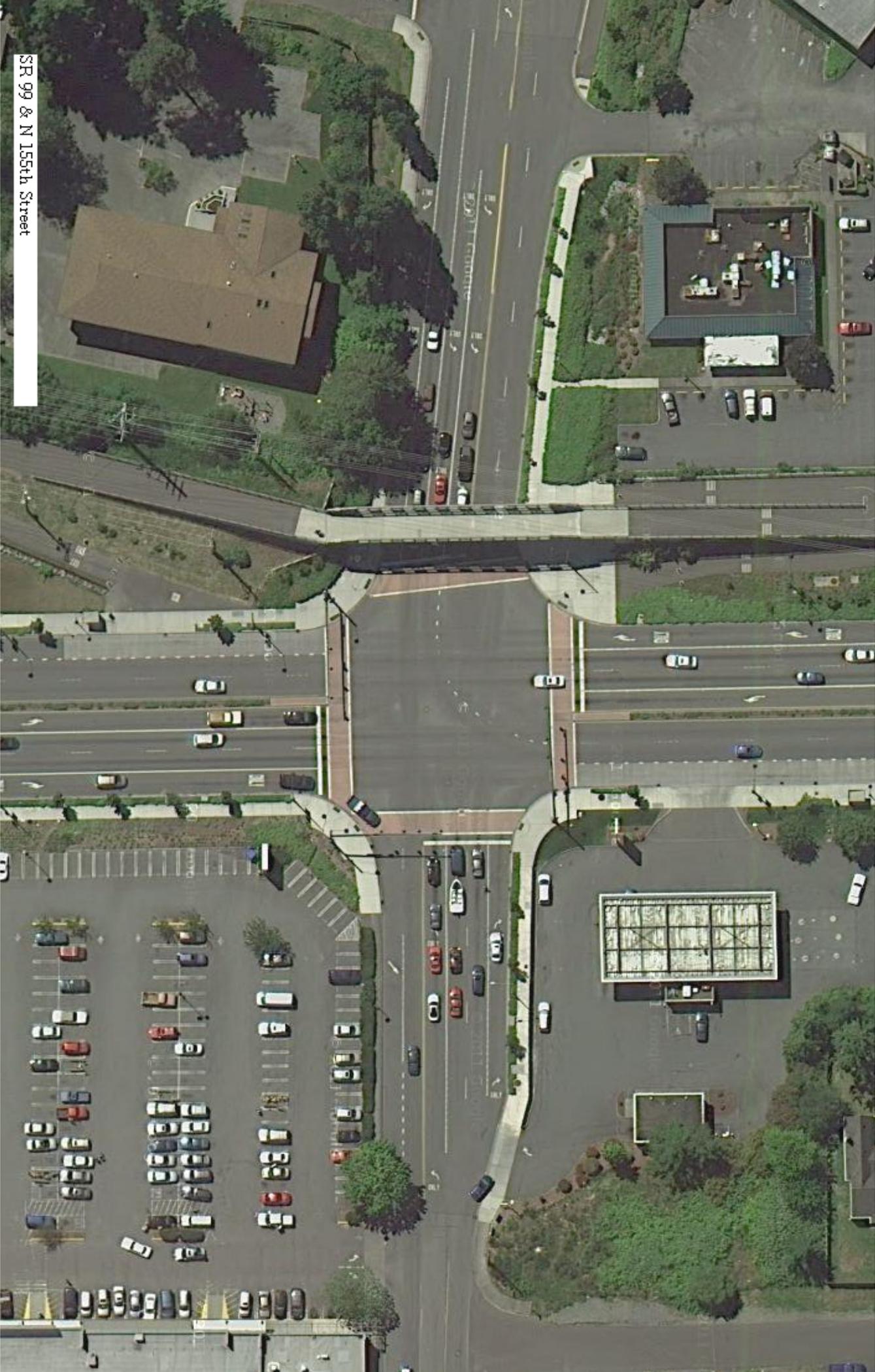




SR 99 & N 175th Street



SR 99 & N 160th Street



SR 99 & N 155th Street



SR 99 & SR 523 (N 145th Street)



SR 99 & N 130th Street



SBI-5 Ramps & N 175th Street



5th Avenue NE & NE 130th Street

# Appendix D – Shoreline Traffic Flow Maps

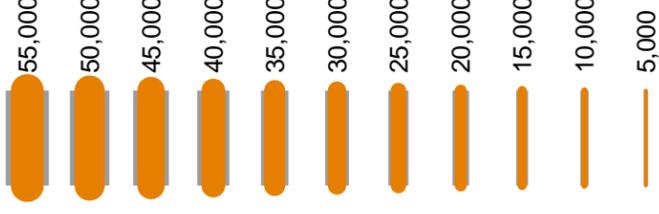
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## City of Shoreline Traffic Flow Map 2005

24-Hour Average Weekday Traffic  
(Combined Two-Directional Totals)

### Legend

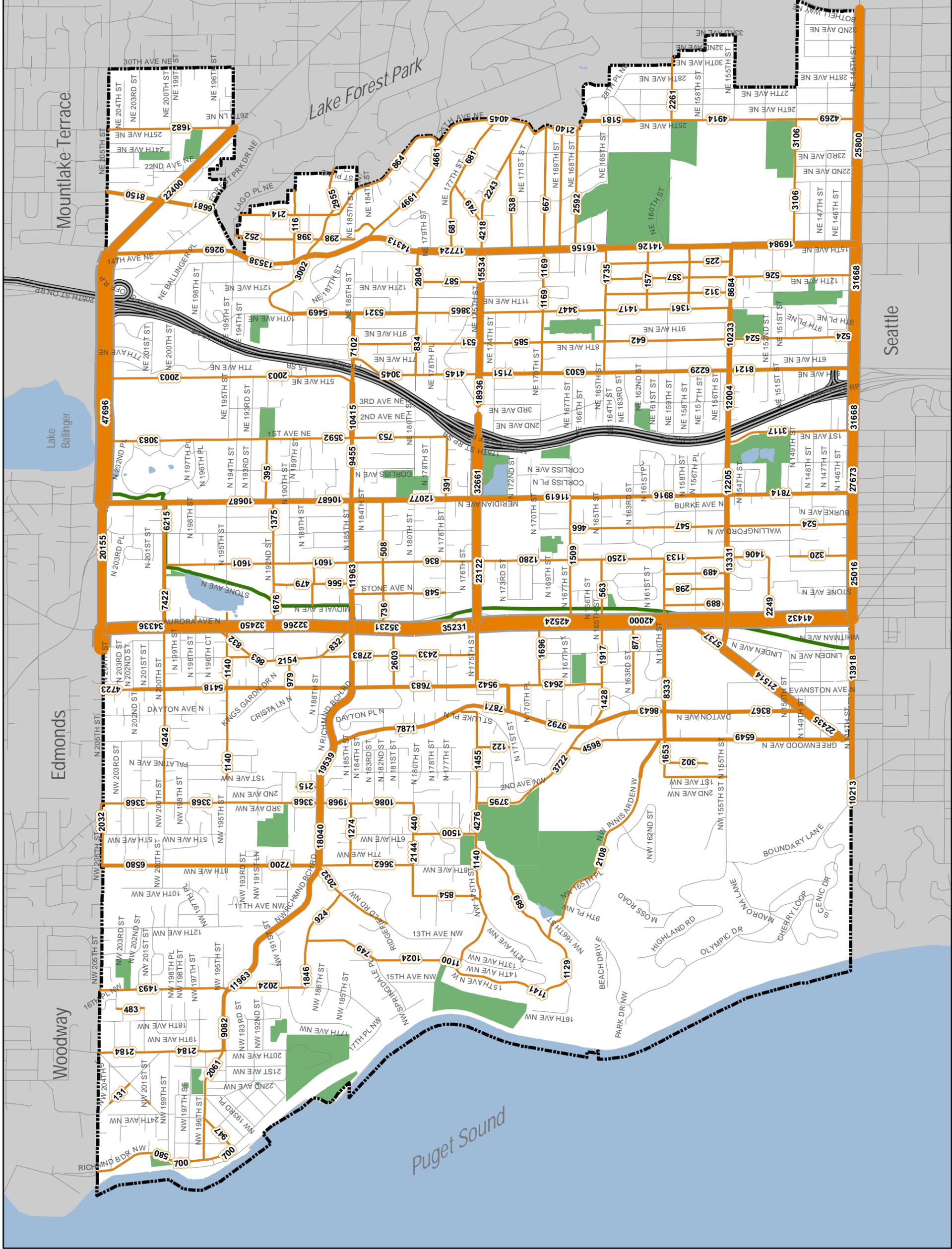
Avg Weekday Traffic Vol:



City of Shoreline  
Mark J. Reiph, Public Works Director  
Rich Meredith, City Traffic Engineer  
17500 Midvale Ave N  
Shoreline, WA 98133  
(206) 801-2700  
www.shorelinewa.gov

Map Date: December 2005

No warranties of any sort, including accuracy, fitness, or merchantability, accompany this product.

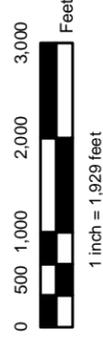
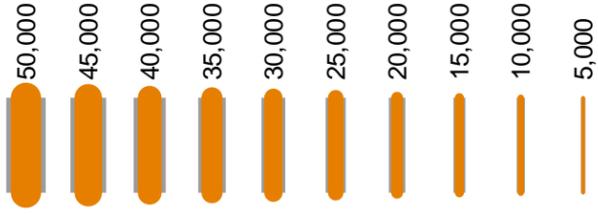


# City of Shoreline Traffic Flow Map 2006

24-Hour Average Weekday Traffic  
(Combined Two-Directional Totals)

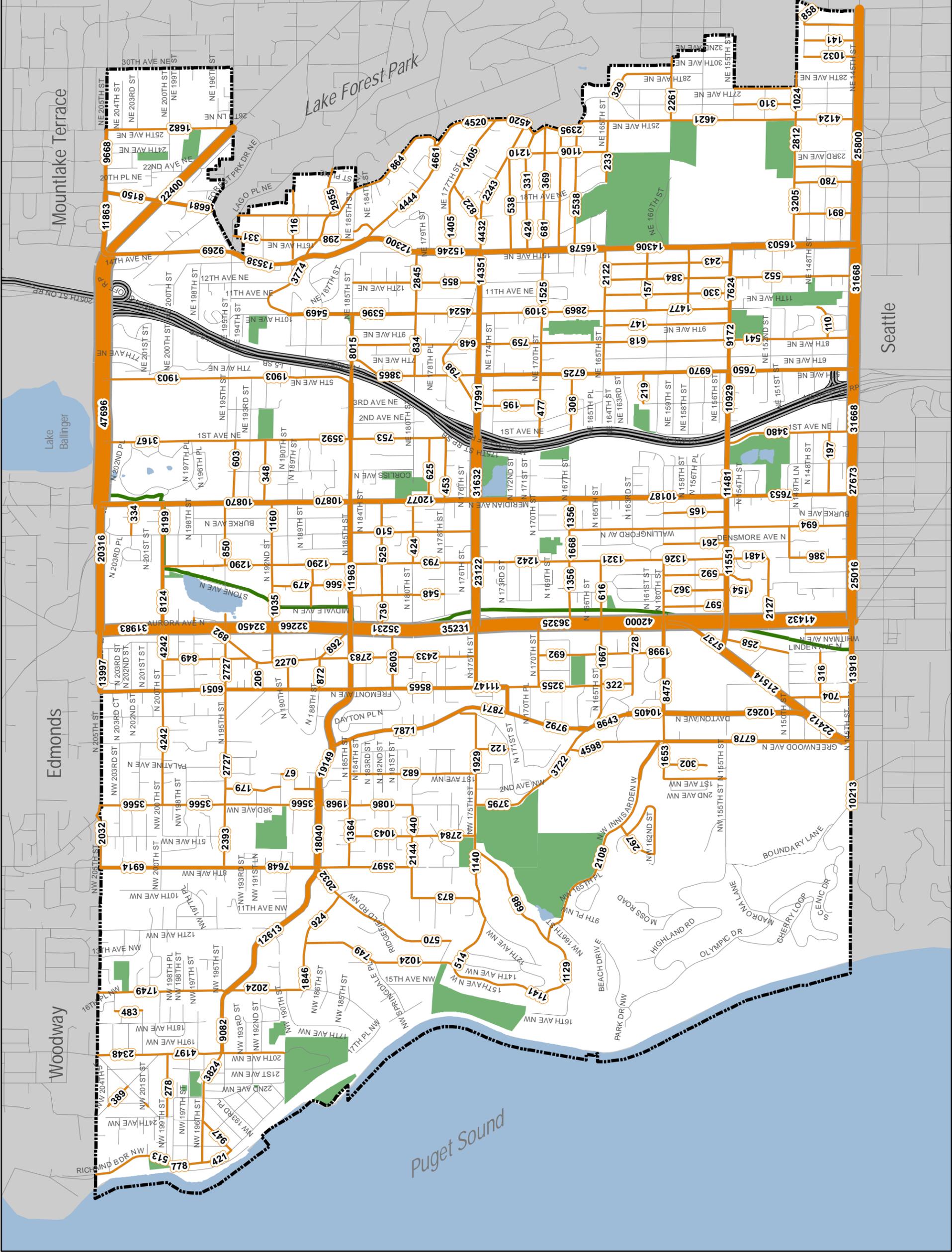
## Legend

### Avg Weekday Traffic Vol.:



City of Shoreline  
 Mark J. Relp, Public Works Director  
 Rich Meredith, City Traffic Engineer  
 17500 Midvale Ave N  
 Shoreline, WA 98133  
 (206) 801-2700  
 www.shorelinewa.gov

Map data through December 2006  
 No warranties of any sort, including accuracy, fitness, or merchantability, accompany this product.

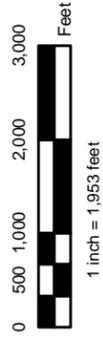
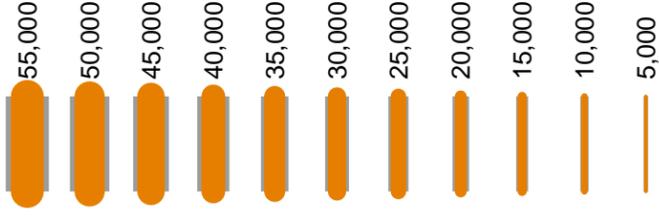


## City of Shoreline Traffic Flow Map 2007

24-Hour Average Weekday Traffic  
(Combined Two-Directional Totals)

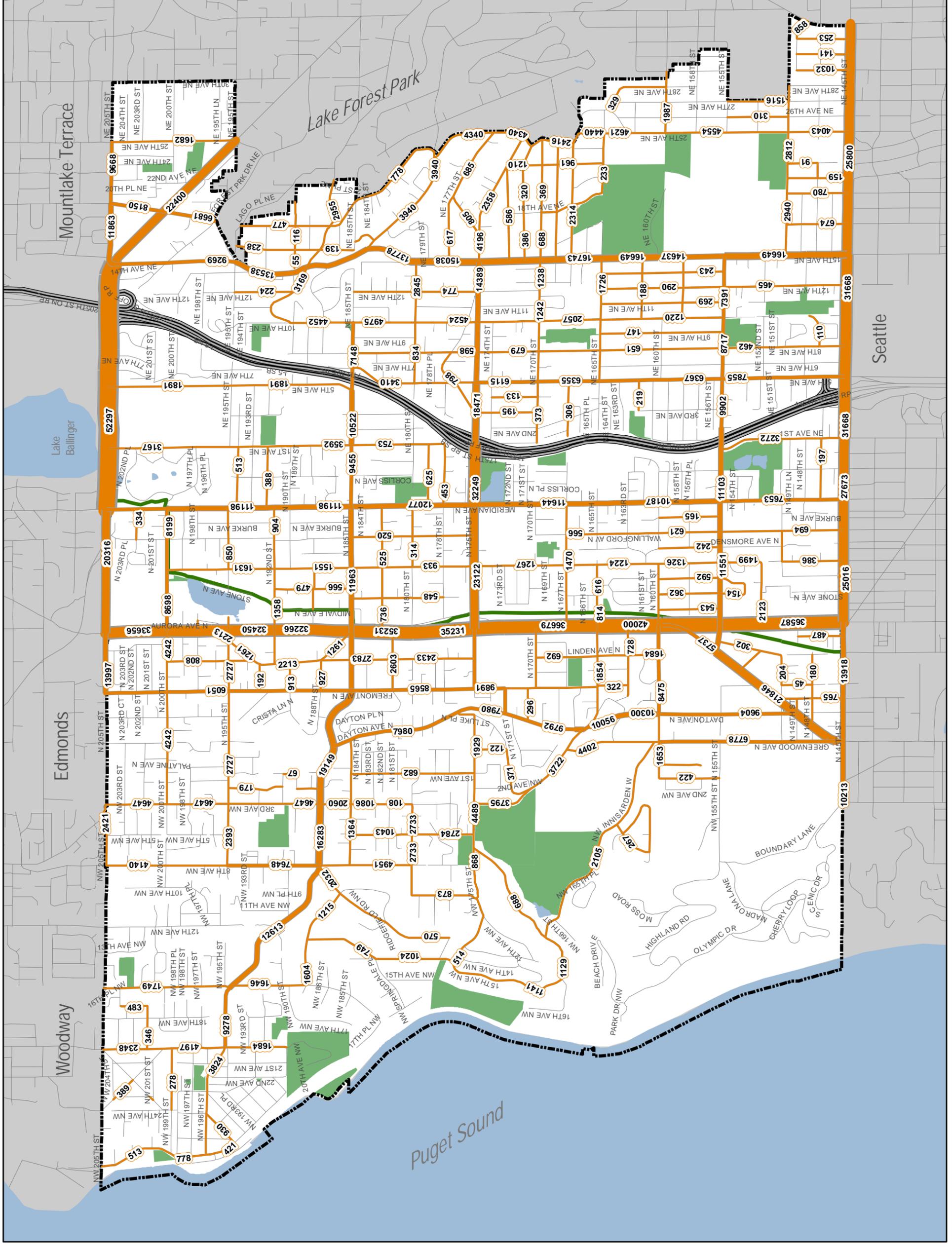
### Legend

Avg Weekday Traffic Vol:



City of Shoreline  
Mark J. Relph, Public Works Director  
Rich Meredith, Traffic Engineer  
17500 Midvale Ave N  
Shoreline, WA 98133  
(206) 801-2700  
www.shorelinewa.gov

Map Data: Through December 2007  
No warranties of any sort, including accuracy, fitness, or merchantability, accompany this product.







# Appendix E – Transit Route Mapping

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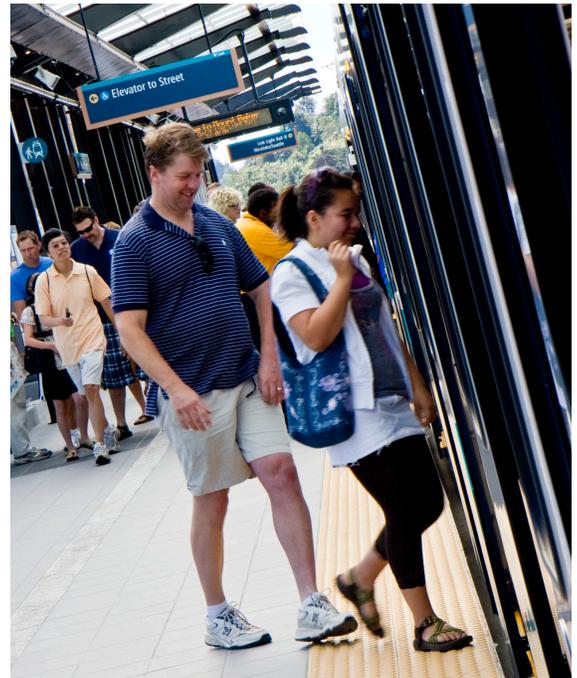
## North Corridor Transit Project

# Extending mass transit from Northgate to Lynnwood

Sound Transit is preparing to extend mass transit from Northgate to Lynnwood, which voters approved as part of the Sound Transit 2 Plan in 2008, along with funding to continue planning future service all the way to Everett. The North Corridor Transit Project will connect to and build on the Link light rail line that opened for service between downtown Seattle and Sea-Tac Airport in 2009. Construction is currently underway on a light rail extension to the University of Washington scheduled to open in 2016, followed by service to Northgate targeted for opening in 2021. Voter-approved additions over the next few years will bring 36 new miles of service to the north, south and east, creating a 55-mile light rail system serving the region.

The North Corridor Transit Project relies on receiving federal assistance to complete the project. In order to qualify for federal grants, Sound Transit must complete an alternatives analysis (AA). This requires examination of reasonable alternatives to meet the needs of the corridor and will help Sound Transit identify a preferred transit mode and route. The Sound Transit 2 Plan assumed a fully elevated light rail line from Northgate Station to the Lynnwood Transit Center with four new stations north of Northgate as shown on the map, but Sound Transit is now performing detailed work with the public to define which alternatives to examine in the AA.

Federal funding is key to keeping this project affordable, and is especially important as Sound Transit responds to impacts of the current economic recession that have reduced projected revenues by about 25 percent through 2023 and have created schedule risks for this project.



### PROJECT BENEFITS

- 8-9 miles of new mass transit service
- Northgate to Lynnwood with several new transit stations
- Frequent, reliable service between south Snohomish County and the University of Washington, downtown Seattle and other regional destinations
- Increased mobility, access and transportation capacity for residents and workers
- Target opening for service in 2023

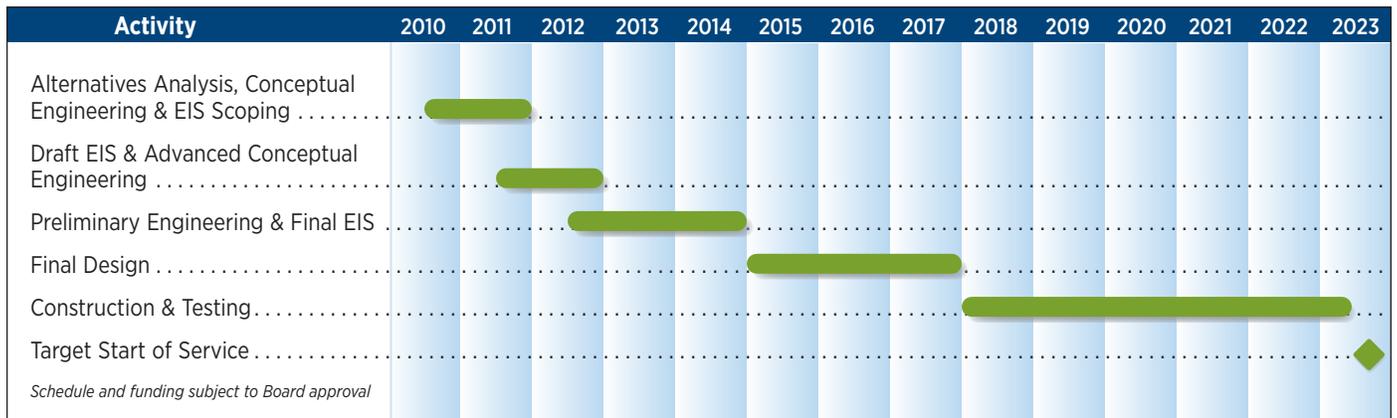
### FOR MORE INFORMATION

Contact Roger Iwata, Community Outreach Corridor Lead, at [roger.iwata@soundtransit.org](mailto:roger.iwata@soundtransit.org) or 206-689-4904. Visit our project page on the web at [www.soundtransit.org/NCTP](http://www.soundtransit.org/NCTP).

# NORTH CORRIDOR TRANSIT PROJECT AREA

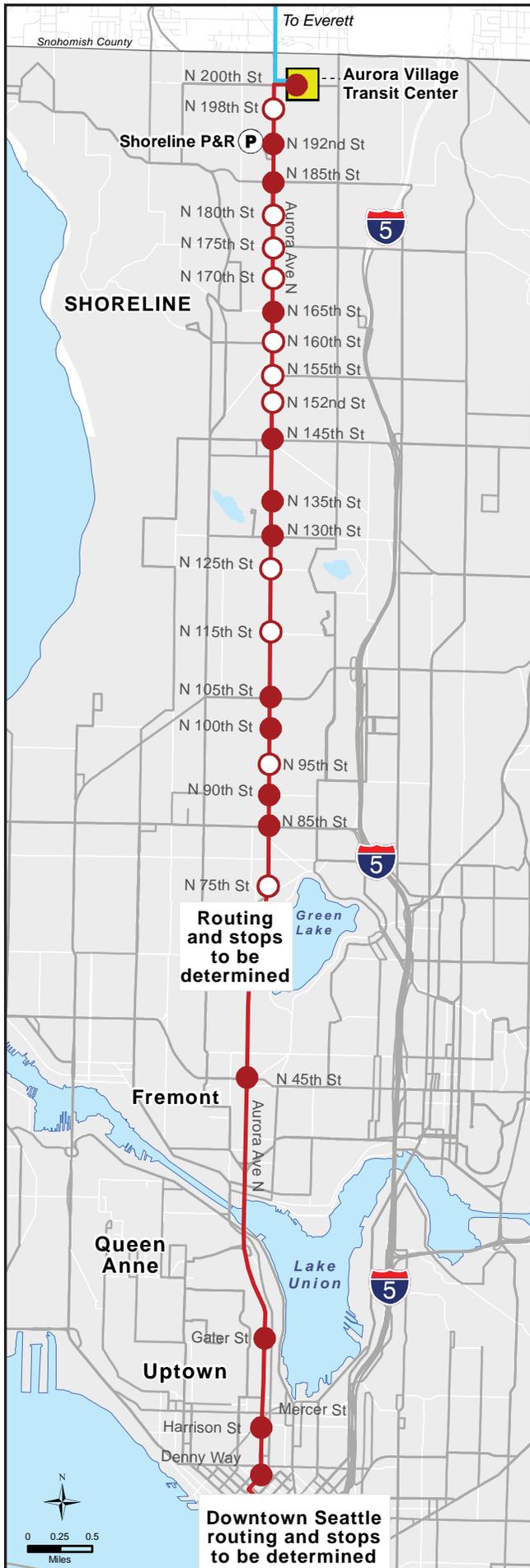


## PRELIMINARY SCHEDULE



Sound Transit plans, builds and operates regional transit systems and services to improve mobility for Central Puget Sound. For information about Sound Transit projects or services, visit us online at [www.soundtransit.org](http://www.soundtransit.org) or call 1-800-201-4900 / TTY Relay: 711.

# RAPID RIDE



## LEGEND

- RapidRide - E Line
- Other Metro transit service
- Swift Rapid Transit
- Proposed Station
- Proposed Stop

The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.

# Southwest Snohomish County SYSTEM MAP



- Local Routes**
- Community Transit Routes Serving Snohomish County
- Commuter Routes**
- Community Transit Routes Serving Seattle
  - Community Transit Routes Serving University District
- Sound Transit**
- Park & Rides (P&R), Transit Centers and Transfer Points
  - Commuter Parking
  - Commuter Train Service
  - High School
  - Hospital
  - City Hall
  - King County Metro
  - Train Station
  - Ferry Terminal



# Appendix F – VISUM Model Validation

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The base model validation is a process of comparing the calibrated model raw volumes against the base-year traffic counts to show the degree of correlation and determine an acceptable accuracy and degree of confidence to use the base model to forecast future traffic volumes. The most common statistical measure of “goodness of fit” is the R-Squared statistic. This measures how well the model raw volumes represent the observed count data. There are no national standards for R-Square; however, an R-Square of 0.88 was recommended according to the Federal Highway Administration’s guidebook (Barton-Aschman Associates, Inc; Cambridge Systematics, Inc., 1997).

In the case of the Point Wells model, the R-Square ( $R^2$ ) value is 0.75. Two reasons may contribute to the lower  $R^2$  value. Firstly, the project’s limited budget and time constrains for further model calibration to achieve higher  $R^2$  value. The second may be due to the current economic downturn, which results in little to no growth in 2010 compared to 2006 based on the historical counts. In other words, the existing 2010 counts in the project area may be lower than the predicted traffic using the trip tables interpolated from 2006 to 2010.

Although the  $R^2$  is lower than the recommended value of 0.88, the model is acceptable to be used as a tool for site trip distribution, traffic assignment, and intersection evaluation because the model raw volumes were not intended to be used for intersection LOS and delay analysis. Instead, the intersection analysis was specially based on the actual traffic counts plus the background traffic growth plus the project-generated trips. The background traffic growth was interpolated by PSRC trip tables, which would offset out the model raw volumes misrepresentation; therefore the  $R^2$  value is not as critical in Point Wells model as in other typical models. Refer to the VISUM graphical plot for the  $R^2$  analysis results below.

