



Memorandum

DATE: June 10, 2015

TO: City Council

FROM: Debbie Tarry, City Manager

RE: Supplemental Level of Service Standard for Collector Arterial Streets

CC: John Norris, Assistant City Manager
Rachael Markle, Planning & Community Development Director
Peter Hahn, Interim Public Works Director
Kendra Dedinsky, Traffic Engineer
Nytasha Sowers, Transportation Services Manager

Issue

As Council is aware Tom McCormick submitted a 2015 Comprehensive Plan Amendment Proposal to establish a maximum average daily trip level of service for collector arterial and local streets. Staff recommends that this amendment not be included on the 2015 Comprehensive Plan Docket.

In the last few weeks Mr. McCormick has requested a compromise proposal to establish a Volume/Capacity (V/C) supplemental level of service (LOS) for collector arterials. Mr. McCormick originally requested a 0.4 V/C LOS and most recently a 0.6 V/C LOS. Both of these are in conflict with the City's adopted intersection delay level of service, LOS D and would result in substantial impacts to the City's ability to accommodate projected population and economic growth. As such, I did not submit a staff recommended amendment for Council's consideration to add a 0.4 or 0.6 V/C LOS to collector arterials.

Under the City's adopted policies for Comprehensive Plan Amendments external proposals must be submitted by the last business day in December of the preceding year to be considered for the current year docket. Therefore, Mr. McCormick cannot modify his original proposal; neither can he submit a new proposal for Council's consideration for the 2015 Docket. The City Council, however, can add a docket item to be included on the 2015 Comprehensive Plan Amendment Docket, and Mr. McCormick has requested that the City Council do so.

Purpose of Docket

The “Docket” establishes the amendments that will be reviewed and studied during the year by staff and the Planning Commission prior to a recommendation to the City Council on amending the City’s Comprehensive Plan. Placing an item on the docket is for the purpose of “studying” the item, and does not automatically imply that the item will be adopted. Although this is the case, it does indicate that there is sufficient interest in considering this for adoption and it does give Council direction to allocate staff and financial resources towards this effort.

Road Classifications

Federal and State guidelines require that streets be classified based on function. Generally, streets are classified as either arterial streets or non-arterial streets. Local jurisdictions can also use the designations to guide the nature of improvements allowed and/or desired on certain roadways, such as sidewalks or street calming devices. Road classifications are considered guidelines for how the road is intended to function as opposed to being a standard or policy used as an enforcement mechanism. Unlike “Level of Service,” road classifications, and their related characteristics, are not included in the City’s development regulations or the City’s Comprehensive Plan as a standard that must be met by development. The street classification map is adopted as part of the Transportation Master Plan via Shoreline Municipal Code (SMC) Section 20.70.220. Attachment A is the City’s street classifications map.

The primary function of arterial streets is to provide a high degree of vehicular mobility through effective street design and by limiting property access. Arterials in Shoreline are further divided into three classes: Principal, Minor and Collector Arterials. Generally, the higher the classification of a street (Principal Arterial being the highest), the greater the volumes, through movements and length of trips, and the fewer the access points to property.

- **Principal Arterials** have regional significance as major vehicular travel routes that connect between cities within a metropolitan area. The abutting property and land uses on that property generally have a minimum of direct service to the Principal Arterial, such as limited driveway access. (*Examples: Aurora Avenue, NE 175th Street and 15th Avenue NE*)
- **Minor Arterials** are generally designed to provide a high degree of intra-community connections and are less significant from a perspective of regional mobility. (*Examples: Meridian Avenue N, N/NE 185th Street and NW Richmond Beach Road*)
- **Collector Arterials** assemble traffic from the interior of an area/community and deliver it to the closest Minor or Principal Arterial. Collector Arterials provide for both mobility and access to property and are designed to fulfill both functions. (*Examples: Greenwood Avenue N, Ashworth Ave N and 10th Ave NE north of NE 175th Street*) Attachment B is a map of the City’s currently designated collector arterials.

The classification of a roadway often determines eligibility for grant funding. Typically, granting agencies prioritize funding projects on arterials and are less likely to fund projects on non-arterial streets. Similarly, roadway classification influences the types of traffic improvements the City will construct on a street. For example, arterials are not typically eligible for traffic calming

features and generally are not considered for improvement through the City’s Neighborhood Traffic Safety Program. Shoreline typically does not stripe centerlines on non-arterial streets.

The table below, titled Typical Shoreline Street Characteristics, describes the different characteristics of classified streets in Shoreline. The characteristics identified are meant as descriptors, not as standards or policies.

Typical Shoreline Street Characteristics

	Arterial Streets			Non-Arterial Streets	
	Principal Arterial	Minor Arterial	Collector Arterial	Local Primary Street	Local Secondary Street
Function	<ul style="list-style-type: none"> - Connect cities and urban centers with minimum delay - Connect traffic to Interstate system - Accommodate long and through trips 	<ul style="list-style-type: none"> - Connect activity centers within the City - Connect traffic to Principal Arterials and Interstate - Accommodate some long trips 	<ul style="list-style-type: none"> - Provide access to community services and businesses - Connect traffic from Non Arterial Streets to Minor or Principal Arterials - Accommodate medium length trips 	<ul style="list-style-type: none"> - Connect traffic from local secondary streets to Arterials - Accommodate short trips to neighborhood destinations - Provide local accesses 	<ul style="list-style-type: none"> - Provide local accesses
Speed Limits	30-40 mph	30-35 mph	25-30 mph	25 mph	25 mph
Daily Volume (vehicles per day)	More than 15,000	7,000 – 20,000	2,000 – 8,000	less than 3,000	less than 3,000
Number of Lanes	Three or more lanes	Two or more lanes	Two or more lanes	One or two lanes	One or two lanes
Lane Striping	Pavement markings used to delineate travel lanes.	Pavement markings used to delineate travel lanes.	Pavement markings used to delineate travel lanes.	No centerline striping	No centerline striping
Transit	Buses/transit stops allowed	Buses/transit stops allowed	Buses/transit stops allowed	Buses/transit stops not generally allowed except for short segments	Buses/transit stops not allowed
Bicycle Facilities	May contain bicycle lanes, shared lanes or signage	May contain bicycle lanes, shared lanes or signage	May contain bicycle lanes, shared lanes or signage	<ul style="list-style-type: none"> - Shared lanes can be provided - Signs may be included 	Bike facilities not specifically provided; may include signed bike routes
Pedestrian Facilities	<ul style="list-style-type: none"> - Sidewalks on both sides - Amenity zones 	<ul style="list-style-type: none"> - Sidewalks on both sides - Amenity zones 	<ul style="list-style-type: none"> - Sidewalks on both sides - Amenity zones 	Pedestrian access through the use of sidewalks, trails, or other means	Safe pedestrian access through the use of sidewalks, trails, or other means.

Level of Service

Components of Level of Service

State law, through the Growth Management Act (GMA), requires that the transportation element of a City's comprehensive plan include level of service (LOS) standards for all locally owned arterials. LOS is the benchmark for determining whether a transportation system is adequate or not. The GMA does not dictate LOS standards for local jurisdictions or the methodology used to monitor, maintain, and enforce LOS. Although this is the case, the Washington Administrative Code (WAC) provides guidance on the intent of setting a LOS.

Basically LOS is the benchmark which is used to determine if growth can occur within the existing capacity of the road system or if improvements (mitigation) are required in order to meet the adopted LOS. This is called "concurrency," making sure that at the time new traffic is added to the City's road system as a result of new development any improvements required are in place so that the new traffic impacts (delay at intersections/flow of traffic) will not be beyond what the City has established as an acceptable level of service. When discussing LOS we often refer to the following:

- *Volume to Capacity (V/C Ratio):* In its most basic terms this is how much of the intended road capacity is being used. For example, if we would expect a road to be able to handle 8,000 vehicles a day (capacity), but in reality only 4,000 vehicles are using that road (volume), we would say that the volume (4,000) compared to capacity (8,000) is 50% ($4,000/8,000$) or a 0.5 V/C. As way of illustration, if you think of a glass of water that is only $\frac{1}{2}$ full (50%), it is also $\frac{1}{2}$ empty with room for more as long as the water does not spill over the top and cause problems. The ratio (V/C) identifies whether the volume is exceeding the capacity, i.e. if the water is "over the top of the cup" or not.
- *Intersection Delay:* Another measurement of LOS is how long a vehicle has to wait at an intersection before it can proceed. Usually drivers are patient if they are at a signalized intersection and they wait through one light cycle. In other words if a driver stops at the intersection when the light turns red, but when the light is green they are able to proceed through the intersection before the light turns red again, they probably find this acceptable. Drivers become much more frustrated and impatient when they have to sit through multiple light cycles to get through the intersection.
- *Peak Period:* LOS is usually measured based on when the most traffic is using the roadway. This is usually either in the morning when people are going to work or school, referred to as "AM Peak", or in the late afternoon/evening when people are coming home from work "PM Peak."

Shoreline uses PM Peak in its measurement period for LOS, typically one hour between 4:00-6:00pm. This is when the road is most congested, even though throughout other times of the day traffic may move more freely and has plenty of capacity for more traffic. Drivers can expect that more of the road capacity is used during the PM peak and as a result may experience lower speeds as more capacity is used, and longer delays in getting through

intersections. Attachment C is a graphic representation of this concept using traffic data for Greenwood Ave N southbound near 150th. In this area Greenwood Ave N is classified as a collector arterial.

The table below describes the characteristics of LOS that includes a capacity ratio (V/C) and delay at signalized intersections:

Level-of-Service (LOS) Standards and Characteristics

Level of Service	Roadway Segments V/C Ratio	Signalized Intersections Avg. Delay (sec/veh)	General Description
A	≤ 0.60	≤ 10	Free Flow
B	> 0.60 – 0.70	> 10 – 20	Stable Flow (slight delay)
C	> 0.70 – 0.80	> 20 – 35	Stable Flow (acceptable delay)
D	> 0.80 – 0.90	> 35 – 55	Approaching unstable flow (speeds somewhat reduced, more vehicles stop and may wait through more than one signal cycle before proceeding)
E	> 0.90 – 1.0	> 55 – 80	Unstable Flow (speeds reduced and highly variable, queues occur, many vehicles have to wait through more than one signal cycle before proceeding)
F	> 1.0	> 80	Forced Flow (jammed conditions, long queues occur that do not clear, most vehicles wait through more than one signal cycle before proceeding)

Based on the table above you can see that there is an alignment of the signalized intersection delay standard and the V/C ratio. For example, a LOS D for intersection delay aligns with a capacity ratio (V/C) of 0.81 to 0.90. On the other hand, if the City were to adopt a capacity ratio of 0.6 V/C and at the same time have an intersection delay standard of LOS D they would not align. In fact the capacity ratio would be forcing an intersection delay standard of LOS A or LOS B.

City’s Adopted Level of Service for Concurrency

Prior to December 2011, the City had a LOS E for signalized intersections on arterials. In December 2011, with the adoption of the City’s Transportation Master Plan, the City revised its LOS for arterials, and adopted the following:

- LOS D at signalized intersections on arterial streets and at unsignalized intersecting arterials; or
- A volume to capacity (V/C) ratio of 0.90 or lower for principal and minor arterials. The V/C ratio on one leg of an intersection may exceed 0.90 when the intersection operates at LOS D or better.

Moving from LOS E to LOS D resulted in a more stringent threshold for development with less delay at intersections being the new standard (and for the first time including unsignalized intersections). Also for the first time, the City established a capacity LOS for principal and minor arterials. It is important to note that the intersection delay standard of D (LOS D) is in alignment with the adopted capacity LOS (V/C of 0.90). Again, both standards are measured against the PM peak traffic flow.

A primary reason why I did not include a staff proposed docket item to place a capacity LOS (V/C) for collector arterials is that the current adopted intersection delay standard (LOS D) would imply a V/C of approximately 0.90. A request to consider a 0.40 or 0.60 V/C on collector arterials, is in essence a conflict with the City's adopted LOS D for arterials. As a result I view this suggestion to be in conflict with the City's Comprehensive Plan and the policy direction that Council has previously established in the adoption of the Transportation Master Plan, the City's Land Use Map, and Traffic Impact Fee Concurrency Model.

In cases where the adopted LOS is projected to be exceeded by development, a developer must either agree to provide mitigation so that traffic flows meets the City's adopted LOS or amend the development proposal so that traffic flows are within the adopted LOS. If neither of these options can be addressed by a developer, then the City would deny the proposed development.

Level of Service, Comprehensive Plan and Land Use

Shoreline's adopted Comprehensive Plan anticipates growth in the City, given that our adopted land uses will allow significantly more housing and commercial development than what currently exists in the City. Setting a transportation LOS too high, which is limiting traffic to levels significantly below the limits of the road system, could result in no growth, which is contrary to the Growth Management Act and the City's Comprehensive Plan. It could also result in significant expense for the City, as the City is required to plan for projects to address the desired LOS and any existing deficiencies related to those deficiencies. In other words, transportation concurrency is not a regulation to stop growth, but a performance measure to ensure that adequate transportation facilities are available to serve the amount of growth planned for in the City's Comprehensive Plan.

Setting a LOS that significantly underutilizes the capacity of the road would require the City to plan infrastructure improvements necessary to meet that LOS as well as require any development that is projected to exceed one of these higher service levels to make improvements. If the City were to adopt a V/C of 0.6 for collector arterials, any development projected to cause the volume of the traffic to exceed 60% of its capacity at the PM peak, would be required to do improvements to ensure that this measure is not exceeded. The only way to accomplish this is by adding more lanes for increased capacity or providing options that would reduce the volume of traffic, such as shuttles or transit options. Making such improvements for an artificially constrained LOS makes little sense. It would be like wanting to pour a pint of fluid into a quart container but requiring that the container be a gallon size. It is likely that developers would see this as onerous and decide not to develop. If however, developers continue forward with mitigation, the end result would simply be larger roads – which would also result in additional impervious surface area and property impacts.

The goal should instead be to make existing roads safer and more usable for all modes of transportation. Although it is up to a local jurisdiction to decide the appropriate LOS for that jurisdiction, it must do so within the context of meeting its requirements under the Growth Management Act.

It is also likely that the City's arterials, or specific classification of arterial, would not compete well for grants for public improvements at LOS A, B, or C, given that the funders would also see plenty of capacity on the existing road system as a result of local decision to limit traffic significantly below its capacity.

The City's currently adopted LOS is in alignment with the City's Comprehensive Plan including the adopted land use map. The City has also used the adopted LOS in its traffic impact fee modeling to determine necessary growth projects and to determine the traffic impact fee assessed to development projects. Any consideration for changing the City's adopted LOS will require a reexamination of the City's Comprehensive Plan policies, its land use map, and the traffic impact fee model. This is a significant work effort and would require both internal staff resources and external consultant support. The staff report states that a minimum estimate for consultant analysis of the City's traffic impact fee would be \$20,000 for an average daily trip LOS, as was originally proposed, and staff would anticipate at least this level of investment for a modified V/C LOS that is significantly different than the adopted intersection delay standard of LOS D for collector arterials. This \$20,000 does not include the research and analysis that would be required to determine which of the City's adopted visions, goals and policies would also need to be amended to implement the proposed policy.

Staff resources for this project would include the City's Traffic Engineer, Transportation Services Manager, Director of Planning and Community Development, Senior Planner, and City Attorney. All of these positions already have the following projects on their work plans, which do not include other day-to-day responsibilities::

- Active advocacy for Sound Transit 3 funding.
- Participation in Metro's Long Range Plan process.
- Development of the City's Transit System Integration Plan.
- Negotiation of a Transit Way and Development agreement for the Lynnwood Link Extension Project. Sound Transit would like to have these agreements completed and executed in the next 12 months.
- Sound Transit's Lynnwood Link Extension Project consultant selection and final design review of rail alignment and 145th and 185th Stations. This work will begin this fall and continue through 2017
- Development Code Amendments related to the Light Rail Stations such as setting pedestrian and bicycle transportation levels of service.
- Point Wells Traffic Corridor Study, negotiation of potential development agreement, monitoring of Woodway and Snohomish County processes related to the Point Wells development, discussions with Woodway and Snohomish County on any potential interagency agreements and review of the Point Wells DEIS when released.

- Implementation the 185th Station Sub-Area Plan including further development of the affordable housing program, parking regulation program, park space and park impact fee study, etc.
- 145th Corridor Study.
- Update the Critical Areas regulations

Adding a study of potential change in transportation LOS will require delay in some of these other projects, additional staff resource, and/or delay in the LOS study to a future year.

Point Wells Area

As Council is aware, at the time that Snohomish County determined that BSRE had submitted complete permit applications (February 2011), the City's adopted transportation was LOS E at signalized arterials. It was not until December 2011 that the City adopted more stringent transportation LOS standards. Regardless, in 2013, through the Memorandum of Understanding for the Traffic Corridor Study, BSRE agreed to use a LOS D for intersections and capacity (V/C) ratio of no greater than 0.90. In essence a significant improvement to what was in place when BSRE submitted their complete permit applications to Snohomish County that resulted in vesting to the then existing Snohomish County regulations.

In 2010, when the City initially adopted the Point Wells subarea plan, the plan included a maximum daily traffic requirement of 8,250 vehicles emanating from or entering into Point Wells as well as a requirement that the traffic impact could not reduce the City's adopted level of service standard for the Corridor at the time of application for development permits at Point Wells. On the evening of February 14, 2011, the same day that BSRE filed their complete permit application, the City amended the sub-area plan to change the street classification of Richmond Beach Drive from NW 199th St to NW 205th St from a collector arterial to a local street with a maximum capacity of 4,000 vehicles per day and that the City would not consider reclassification of this road segment until a Transportation Corridor Study and Mitigation Plan was provided and sources for financing the mitigations was committed.

If, at some point in the future, BSRE were to pull their currently vested permit applications under the Snohomish County Urban Center designation, and reapply under the existing Urban Village designation, BSRE would be required, under current Snohomish County Code, to successfully negotiate binding agreements for public services, utilities or infrastructure that are to be provided by entities other than the county prior to the county approving a development permit that necessitates the provision of public services, utilities or infrastructure. In addition the intensity of development shall be consistent with the level of service standards adopted by the entity identified as providing the public service, utility or infrastructure. (SC Code Chapter 30.31A.115(9)(a) and (c)).

Staff Recommended Docket Item (Amendment #9)

The City's current transportation LOS standards are very auto-centric as it focuses on traffic flow and traffic delay for vehicles. Auto-centric LOS standards require auto-centric mitigation (increasing lanes, widening roads, traffic control devices, etc.) and do not necessarily fully

contribute to the development goals for compact urban areas, do not encourage alternative transportation use or capacity, and do not help complete the City's multimodal transportation network. The City's Transportation Comprehensive Plan Goals include the following:

Goal T II. Develop a bicycle system that is connective, safe, and encourages bicycling as a viable alternative to driving.

Goal T III. Provide a pedestrian system that is safe, connects to destinations, accesses transit, and is accessible by all.

Goal T VI: Encourage alternative modes of transportation to reduce the number of automobiles on the road, promote a healthy city, and reduce carbon emissions.

Goal T IX: Support and encourage increased transit coverage and service to connect local and regional destinations to improve mobility options for all Shoreline residents.

To support these goals, staff is recommending an amendment to Policy T44 to add:

Adopt level of service standards for transit, walking and bicycling. Maintain the adopted level of service standards until a plan-based multi-modal concurrency approach is adopted that includes motor vehicles, transit, walking and bicycling transportation measures.

Staff anticipates, if Council concurs, that during the update to the City's Transportation Master Plan (2016/2017), a multi-modal concurrency approach to establishing the transportation level of service will be explored. The cities of Bellingham and Redmond have recently adopted and incorporated multi-modal concurrency levels of service.

Options

Council can consider any of the following options for Monday evening. Additionally if Council is not ready to adopt the 2015 Comprehensive Plan Docket on Monday evening, this can be done at a later time, but it will delay any analysis related to all docket items.

1. **Council Sponsored 2015 Comprehensive Plan Docket Amendment to add V/C ratio as a supplemental level of service for collector arterials:** A majority of the Council could vote to add a comprehensive plan amendment to the docket to study this. The citizen request is for a 0.40 or 0.60 V/C. As stated earlier in this memo, a lower V/C ratio than 0.90 is incompatible with the LOS D for intersection delay that is already established for all arterials. If Council decides to put this on the docket, staff will study this item, but as discussed previously in this memorandum there will be a need to adjust this year's workplans to accommodate this new project and consultant support will be required.
2. **Adopt the 2015 Comprehensive Plan Docket with the original proposed citizen sponsored amendment:** A majority of the Council could decide to include the original citizen proposed amendment which is to establish an average daily trip maximum for collector arterials and local streets. This is amendment No. 1 in the staff report for Monday evening. If Council decides to put this on the docket, staff will study this item, but there will be a need to adjust this year's workplans to accommodate this new project and consultant support will be required.

3. **Adopt Comprehensive Plan Docket Amendment as Proposed and Recommended in the Staff Report:** This is the staff recommendation. It includes the staff proposed docket amendment to Transportation Policy No. 44 to adopt level of service standards for transit, walking, and bicycling and in the future consider a multi-modal concurrency approach to the City's transportation level of service that includes motor vehicles, transit, walking and bicycling transportation measures.

Summary

The City's current adopted transportation concurrency LOS includes an intersection delay LOS (LOS D) for all arterials and for principal and minor arterials a supplemental capacity to volume LOS (V/C 0.90). A lower V/C LOS (i.e., 0.40 or 0.60) applied to any classification of arterial is in conflict with an intersection delay LOS such as LOS D. An artificially constrained V/C LOS for collector arterials also raises the following concerns:

- Results in inefficient/under use of the City's existing road system and will result in increased public cost to add road capacity.
- Increased time allocation for staff traffic analysis
- Mitigation requirements that will discourage development and could result in improvements that are contrary to the City's goals (i.e, creating wider roads or more vehicle traffic lanes, more impervious surface, etc.)
- Review and modification of the City's Transportation Impact Fee model that was just adopted in 2014.

For these reasons staff recommends that Council not sponsor a 2015 Comprehensive Plan Amendment that would establish a capacity level of service (V/C) for collector arterials.

Attachments

- Attachment A: Road Classification Map
Attachment B: Road Classification Map – Collector Arterials
Attachment C: Example Collector Arterial Traffic Measurement – Greenwood Ave N



City of Edmonds

City of Mountlake Terrace

Town of Woodway

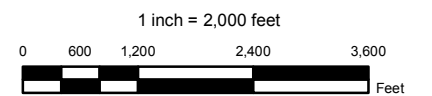
Street Classification

City of Shoreline Transportation Master Plan with Amendments

- Interstate
- Arterial Streets:**
 - Principal Arterial
 - Minor Arterial
 - Collector Arterial
- Non-Arterial Streets:**
 - Local Primary Street
 - Local Secondary Street
- City Limits

City of Lake Forest Park

City of Seattle



Date: 12/9/2013

WOODWAY

EDMONDS

MOUNTLAKE TERRACE

Lake Ballinger

Puget Sound

LAKE FOREST PARK

SEATTLE

Path: J:\GIS\Projects\Traffic\StreetClassifications\CollectorArterials_11x17.mxd
Date: 6/11/2015 Author: lbriddison

Collector Arterials

Legend

Street Classification

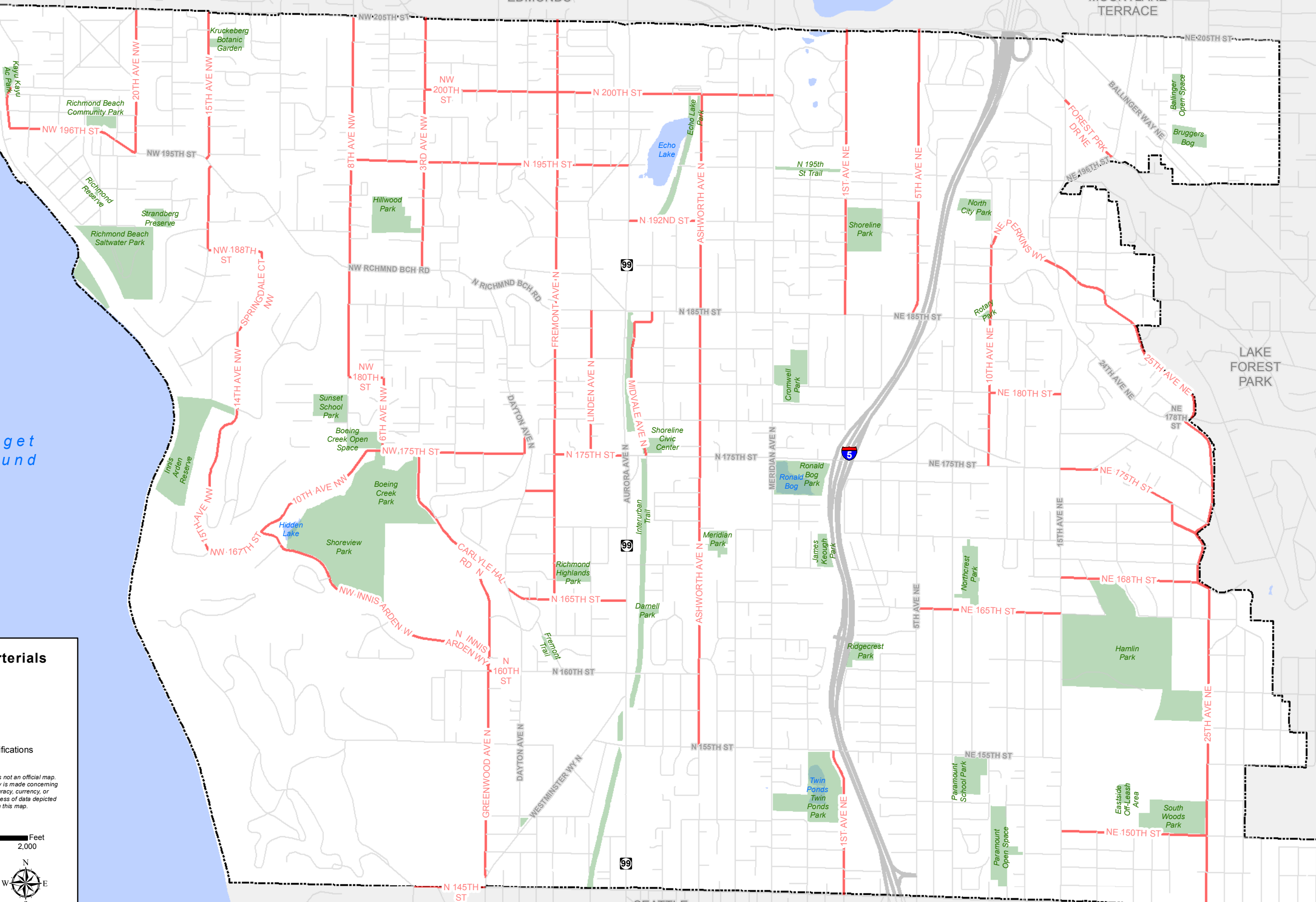
- Interstate
- Collector Arterials
- Other Street Classifications

Park

City Limit

This map is not an official map. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.

0 500 1,000 2,000 Feet



Example Collector Arterial - Greenwood Ave N Southbound near 150th

Average Volume by Hour (Tue-Thur)

