CITY COUNCIL AGENDA ITEM

CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	Speed Limit Findings
DEPARTMENT:	Public Works
PRESENTED BY:	Jesus Sanchez, Director of Public Works Rich Meredith, City Engineer

PROBLEM/ISSUE STATEMENT

The purpose of this follow-up report is to summarize the detailed review of the operation of selected Shoreline arterial streets, as listed in the staff report of May 7, 2007. This study began in response to the new street classifications adopted by the City Council June 6, 2005, with the Transportation Master Plan, and the Arterial Speed Limit Findings staff report of July 17, 2006.

This study found that, of all the roadways reviewed in this phase, almost all appear to be posted at a reasonable speed limit at this time. Three roadway segments were identified as streets that should be reviewed for a posting a lower speed limit. In addition, two roadway segments were identified as candidates for reclassification. Three other roadways were found to be posted at a speed limit different than that specified by ordinance.

RECOMMENDATION

Staff recommends the Council consider a future ordinance to:

1. **Lower the posted speed limits in the following sections:**
   a. **Dayton Ave N between Carlyle Hall Rd N and N Richmond Beach Rd**
   b. **15th Ave NE between NE 196th St and Ballinger Way NE**
   c. **N/NE 155th St between Aurora Ave N and 15th Ave NE**

2. **Reclassify the following streets to match their traffic functionality and volumes:**
   a. **NE Perkins Way between 15th Ave NE and 21st Pl NE – currently classified as a local street, yet looks and functions as a collector arterial.**
   b. **NE 168th St between 15th Ave NE and 25th Ave NE - currently classified as a local street, yet looks and functions as a neighborhood collector.**
   c. **1st Ave NE between NE 145th St and NE 155th St - currently classified as a local street, yet looks and functions as a collector arterial.**

3. **Include a 30 mph posted speed limit for three segments currently not within the Speed Limit Ordinance:**
    a. **25th Ave NE between Ballinger Way NE and NE 205th St**
    b. **19th Ave NE between 15th Ave NE and Ballinger Way NE**
    c. **19th Ave NE between Ballinger Way NE and NE 205th St**

Approved By: City Manager RBO City Attorney_____

INTRODUCTION

This report is in response to the new street classifications adopted by the City Council June 6, 2005, with the Transportation Master Plan.

The purpose of this report is to summarize the findings of a more detailed review of the operation of a sub-group of Shoreline arterial streets. This report also contains the comments received from a series of public meetings discussing the arterial speed limit study.

Appendix A is a list of the arterial roadway segments reviewed in this study. This chart contains data derived from the study, including the current classification, operating speed, and volume. It also shows the suggested speed limit as determined by the more detailed analysis.

BACKGROUND INFORMATION

In June, 2003, the City of Shoreline began the process of updating its Transportation Master Plan (TMP). The TMP looked at the existing arterial street network, and came back with two recommendations. The first recommendation was modifications to the types of roadway classifications. Second was a reclassification of a number of roadways. These recommendations were adopted by the City Council on June 6, 2005.

Table 1 is a comparison of the previous street classifications to the new ones

Table 1

Abbreviation	Description	Previous Classification	Updated Classification
SR	State Route	Same as Principal Arterial	deleted - included with PA
PA	Principal Arterial		same
MA	Minor Arterial		same
CA	Collector Arterial		same
RS	Residential Street		deleted - included with NC and LS
NC	Neighborhood Collector	N/A	new - non-arterial streets that handle higher volumes, such as for commercial access
LS	Local Street	N/A	new - all non-arterials except NC

With the new roadway classifications having been adopted, the next step was a preliminary review of the operation of the arterial streets. That review looked at the posted speed limit, operating speeds, volumes, and identified roadways where changes in the posted speed limit might be appropriate. The review was presented to the City Council on July 17, 2006. On January 7, 2007, a follow up report was presented. It included of the first group of roadways studied for possible speed limit changes.

In evaluating the operating speeds, the commonly used measure is the 85% (85 percentile) speed. The 85th percentile speed is the speed at which 85% of the vehicles are traveling at or below. One reason for using this measure is that studies have found that most drivers will travel at a speed that feels comfortable for them. Based on those findings, the normal method of setting a speed limit on a roadway is to use the 85%

speed as a starting point, then consider additional factors such as land use (neighborhoods, schools, etc), roadway geometrics (hills and curves), collision records, and street classification in applying engineering judgment to determine an appropriate speed limit.

With the exception of Aurora Ave N and Ballinger Way NE, the speed limits on city streets are specified by ordinance, which is passed by the City Council. Because Aurora Ave N and Ballinger Way NE are state highways, and that Aurora Ave N is also a highway of statewide significance, changes to the speed limit on these two roadways must also be approved by the Secretary of Transportation for the State of Washington.

The issue of changing speed limits can be difficult. A common perception is that raising a speed limit will increase speeding and decrease safety. Studies have typically shown that simply changing the speed limit signs alone have little effect on the operating speed of a roadway. Physical changes, such as narrower lanes, curbs and sidewalks, and parallel parking can help to reduce driver comfort at higher speeds, so drivers tend to slow down.

Speed limits, when set too low, require more hours of enforcement, increase driver delay, and can cause drivers to seek faster routes through neighborhoods. Support for setting appropriate speed limits can be found in a number of engineering publications. Some of them are referenced below.

> *When a speed limit is to be posted, it should be within 10 km/h or 5 mph of the 85th-percentile speed of free-flowing traffic.*
>
> *Source: Manual on Uniform Traffic Control Devices (MUTCD), 2003 ed, FHWA*

When considering a change to the speed limit of a roadway, physical improvements may be needed to help adjust driving behavior. Such improvements can include centerline removal, edge line installation, intersection reconfiguration, sidewalks, and modifying signal operation.

> *A prerequisite to development of any effective speed management program is establishment of realistic speed limits to match roadway design and area characteristics. The goal is to design streets that communicate the appropriate speed for the facility. The selected speed limits should be consistent with driver expectations and commensurate with the functions of the roadway. A complementary relationship must exist among desired speed, actual operating speed, and posted speed limits. If the majority of road users view speed limits as unrealistic for prevailing conditions, the posted speed will be violated unless strictly enforced.*
>
> *Source: Traffic Engineering Handbook, 5th Edition, Institute of Traffic Engineers (ITE)*

Benefits of appropriately assigned speed limits

- Greater consistency in setting appropriate speed limits may help reduce driver confusion, and increase driver compliance.
- Statutory speed limits on roadways would be consistent with current roadway classification.
- Clearly defining arterial routes helps preserve neighborhood integrity.

- Appropriately set speed limits can free up police resources to focus their attention on problem areas.
- Drivers tend to respect and comply with speed limits when appropriately set.
- Brings more drivers into compliance with the law.

Disadvantages of raising the posted speed limits
- Negative public perception
- Perception is that raising speed limit makes cars go faster and decreases safety.
- Increased resources to help defend speeding citations, and greater chance of dismissal.
- Capital improvement projects may be needed to maintain or improve driver compliance and the level of safety on each roadway

DISCUSSION

For the first phase of the review, data was collected on all the arterial roadways. Staff analyzed the data comparing current speeds and volumes to the street classification. Roadways that were operating outside the range of suggested parameters were chosen for a more detailed review in the second phase.

The second phase review evaluated the list of roadways identified in the first phase, and also included roadways specifically asked for by residents. This evaluation looked at operating speeds and volumes, and also considered other factors, including the collision history, roadway geometry, land use, pedestrian activity, parking activities, etc. A sample of one of the evaluation forms is in Appendix B.

Another part of the second phase review was the collection of public input. Staff hosted five public meetings to discuss details of the study, and to gather feedback and comment from residents about the operation of arterial roadways. 95 people attended the meetings, while others chose to call staff directly and send comments through e-mail and the website. The comment cards distributed included a question as to whether they supported lower speed limit, higher speed limit, or no change on their street. The tabulated results are as follows:

	Raise speed limit no more than 5 MPH	Lower speed limit no more than 5 MPH	Maintain existing speed limit	No Opinion
TOTAL	19	33	60	6

Lastly, staff worked with Shoreline police to develop a final list of roadways for consideration of adjusting the posted speed limit.

FINDINGS

Overall, the evaluations determined that the existing posted speed limits are appropriate for most of the roadways reviewed. However, the study also identified three roadways for consideration of changing the posted speed limit. These roadways are shown in Appendix C.

- Dayton Ave N between Carlyle Hall Rd N and N Richmond Beach Rd
- 15th Ave NE between NE 196th St and Ballinger Way NE

- N/NE 155th St between Aurora Ave N and 15th Ave NE

These roadways are currently posted at 35 MPH. The evaluation analysis suggests that a 30 MPH speed limit may a better speed limit overall on these streets. It should be noted that public comments received for these three roadways all supported lowering the speed limit 5 MPH.

The study also identified some roadways that, while the posted speed limits are reasonable, these streets should be considered for reclassification due to connectivity and existing speed and volumes. These roadways are shown in Appendix D.

- NE Perkins Way between 15th Ave NE and 21st Pl NE – currently classified as a local street, yet looks and functions as a collector arterial.
- NE 168th St between 15th Ave NE and 25th Ave NE - currently classified as a local street, yet looks and functions as a collector arterial or a neighborhood collector.
- 1st Ave NE between NE 145th St and NE 155th St - currently classified as a local street, yet looks and functions as a collector arterial.

Lastly, staff discovered three roadway segments with a different posted speed than designated by ordinance.

- 25th Ave NE between Ballinger Way NE and NE 205th St
- 19th Ave NE between 15th Ave NE and Ballinger Way NE
- 19th Ave NE between Ballinger Way NE and NE 205th St

They are currently posted at 30 MPH, yet are not listed in the ordinance. The evaluation shows that 30 MPH would be an appropriate speed limit at this time, so these three segments should be considered for inclusion in the speed limit ordinance.

FUNDING CONSIDERATIONS

When considering a change to the speed limit of a roadway, police resources will be needed to help support any changes. However, enforcement alone is normally not enough to change driver behavior. Engineering solutions, which can consist of physical improvements or traffic control devices, may be needed to help adjust driving behavior. Projects can include edge line installation, intersection reconfiguration, curb extensions, sidewalks, curb and gutter, drainage facilities, and modifying signal operations. Funding for such improvements could come from a combination of sources, including CIP projects, annual programs, and grants.

Capital projects that are building curb and sidewalk are already underway on Dayton Ave N that can help support a lower of the speed limit. There are no projects currently scheduled for the sections of N/NE 155th St or 15th Ave NE at this time.

CONCLUSIONS

Many of Shoreline's roadways are functioning as intended. However, there are some that can and should be changed to meet the needs of users of the transportation system, be in compliance with our roadway classification system, and still maintain the

necessary level of safety. Adjusting some of the speed limits on Shoreline's arterials to make them consistent with the roadway classification can have several benefits. These include helping improve driver compliance with the posted speed, and reduce delay and cut-through traffic in some neighborhoods.

Such changes could also require some capital improvements to maintain or improve the safety for all users of the roadways. Such improvements can reduce the need for extra police enforcement, freeing up those resources to be used at other problem areas.

Through the development of Appendix A, we can see some of the areas with the worst speeding problems. The police department is using this table to target speed enforcement. However, enforcement is not likely to completely achieve a change in driver behavior in the long term.

Staff will continue to work with neighborhoods to ensure understanding of the process and the effects from any speed limit change recommendations. In addition, staff will monitor the proposed changes to see if physical improvements may be necessary beyond enforcement to achieve a reasonable level of compliance (i.e. the 85th percentile within 5 mph of the posted speed limit).

RECOMMENDATION

Staff recommends the Council consider a future ordinance to:

1. **Lower the posted speed limits in the following sections:**
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   b. **15th Ave NE between NE 196th St and Ballinger Way NE**
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ATTACHMENTS

Appendix A: Evaluation Summary Matrix
Appendix B: Evaluation sheet
Appendix C: Map of Suggested Speed Limit Changes
Appendix D: Map of Suggested Classification Changes

Appendix A - Evaluation Matrix *July, 2007*

	Street Segment	Roadway Class	Current Posted Speed Limit	85% speed	Volume	Speed Diff	Typical Posted Speed based on 85% speed	or Volume (AWDT)	Refined Study Adjusted Speed Limit	Refined Study Final Suggested Limit
	Richmond Bch Dr NW - NW 196th St to NW 205th St	CA	25	31.3	770	6.3	30-35	25-30	26.1	25
	NW 196th St - 24th Ave NW to NW Richmond Bch Rd	CA	25	30.5	760	5.5	30-35	25-30	26.4	25
	NW 195th Pl - 24th Ave NW to NW Richmond Bch Rd	NC	25	32.6	950	7.6	30-35	25-30	26.5	25
	20th Ave NW - NW 195th St to NW 205th St	CA	25	30.9	2,822	5.9	30-35	25-30	27.3	25
	NW 167th St - 10th Ave NW to 15th Ave NW	CA	25	29.2	1,175	4.2	30-35	25-30	25.5	25
	15th Ave NW/Springdale Ct - NW 167th St to NW 188th St	CA	25	34.6	1,130	9.6	30-40	25-30	25.2	25
	NW 188th St - Springdale Ct NW to 15th Ave NW	CA	25	31.8	1,685	6.8	30-35	25-30	27.0	25
	15th Ave NW - NW 188th St to NW Richmond Bch Rd	CA	25	33.1	1,424	8.1	30-35	25-30	27.3	25
	15th Ave NW - NW Richmond Bch Rd to NW 205th St	CA	25	31.7	1,750	6.7	30-35	25-30	27.3	25
	NW 195th St - Fremont Ave N to 8th Ave NW	NC	25	34.7	2,550	9.7	30-40	25-30	27.3	25
	NW 205th St - 3rd Ave NW to 8th Ave NW	CA	25	25.1	2,000	0.1	25-30	25-30	25.3	25
	NW Richmond Bch Rd - Fremont Ave N to 8th Ave NW	MA	35	38.2	19,000	3.2	30-40	30-35	35.6	35
	NW Richmond Bch Rd - 8th Ave NW to 20th Ave NW	MA	35	38.7	12,700	3.7	30-40	30-35	32.6	35
	10th Ave NW - NW Innis Arden W to NW 175th St	CA	25	33.8	650	8.8	30-35	25-30	26.1	25
	NW 175th St - Greenwood Pl N to 10th Ave NW	CA	25	32.4	4,200	7.4	30-35	30-40	26.4	25
	6th Ave NW - NW 175th St to NW 180th St	CA	25	34.8	2,700	9.8	30-40	25-30	27.0	25
	3 Ave NW/Carlyle Hall/N 165 St- NW 175 St to Aurora	CA	25	38.2	4,200	13.2	30-40	30-40	26.7	25
	Dayton Ave N - Westminster Way N to Carlyle Hall Rd N	MA	35	38.2	10,500	3.2	30-40	30-35	36.4	35
*	Dayton Ave N - Carlyle Hall Rd N to N 185th St	MA	35	38.5	8,600	3.5	30-40	30-35	29.8	30
	Westminster Way N - Greenwood Ave N to N 155th St	PA	35	43.2	23,200	8.2	30-45	30-35	36.8	35
	N 155th St - Westminster Way N to Aurora Ave N	MA	35	34.4	22,000	-0.6	30-40	30-35	35.7	35
	N 160th St - Dayton Ave N to Aurora Ave N	MA	35	34.3	8,700	-0.7	30-40	30-35	32.6	35
	Aurora Ave N - N 145th St to N 205th St	PA	40	42.6	45,000	2.6	30-45	30-35	41.0	40
	Wallingford Ave N - N 145th St to N 167th St	L	25	33.4	630	8.4	30-35	25-30	26.1	25
	Meridian Ave N - N 145th St to N 205th St	MA	35	37.6	10,200	2.6	30-40	30-35	33.6	35
	N 175th St - Fremont Ave N to Aurora Ave N	CA	30	34.9	10,700	4.9	30-40	30-35	31.2	30
	N 195th St - Fremont Ave N to Aurora Ave N	CA	25	18.8	1,140	-6.2	25-30	25-30	23.5	25
	N 200th St - 3rd Ave NW to Aurora Ave N	CA	25	32.2	4,000	7.2	30-35	30-40	27.0	25
	N 200th St - Aurora Ave N to Meridian Ave N	CA	25	31.6	8,400	6.6	30-35	30-35	26.7	25
*	N 155th St - Aurora Ave N to 5th Ave NE	MA	35	37.0	11,500	2	30-40	30-35	32.2	30
*	NE 155th St - 5th Ave NE to 15th Ave NE	MA	35	35.3	8,000	0.3	30-40	30-35	29.8	30

Appendix A - Evaluation Matrix *July, 2007*

	Street Segment	Roadway Class	Current Posted Speed Limit	85% speed	Volume	Speed Diff	Typical Posted Speed based on 85% speed	or Volume (AWDT)	Refined Study Adjusted Speed Limit	Final Suggested Limit
	1st Ave NE - NE 185th St to NE 194th St	CA	25	34.2	3,600	9.2	30-40	30-40	27.3	25
	1st Ave NE - NE 194th St to NE 205th St	CA	35	41.2	3,200	6.2	30-45	30-40	36.4	35
	5th Ave NE - NE 145th St to NE 185th St	MA	30	35.4	5,500	5.4	30-40	30-40	29.4	30
	5th Ave NE - NE 185th St to NE 205th St	NC	30	37.6	1,900	7.6	30-40	25-30	29.4	30
	NE 165th St - 5th Ave NE to 15th Ave NE	CA	25	31.2	1,700	6.2	30-35	25-30	25.2	25
	NE 180th St - 10th Ave NE to 15th Ave NE	NC	25	34.0	2,800	9	30-35	25-30	25.5	25
	10th Ave NE - NE 175th St to NE 185th St	NC	30	33.7	5,000	3.7	30-35	30-40	29.8	30
	15th Ave NE - NE 145th St to NE 175th St	PA	35	38.4	16,000	3.4	30-40	30-35	34.3	35
	15th Ave NE - NE 175th St to 15th Pl NE	PA	25	31.7	15,000	6.7	30-35	30-35	27.3	25
	15th Ave NE - 15th Pl NE to NE 196th St	PA	35	37.0	13,800	2	30-40	30-35	33.6	35
*	15th Ave NE - NE 196th St to NE 205th St	PA	35	39.4	8,850	4.4	30-45	30-35	32.2	30
	NE Perkins Way - 10th Ave NE to 15th Ave NE	CA	25	32.2	3,200	7.2	30-35	30-40	26.4	25
#	NE Perkins Way - 15th Ave NE to 25th Ave NE	CA	25	33.3	3,100	8.3	30-35	30-40	25.5	25
@	19th Ave NE - 15th Ave NE to Ballinger Way NE	MA	30	33.3	6,700	3.3	30-35	30-40	29.8	30
@	19th Ave NE - Ballinger Way NE to NE 205th St	MA	30	33.5	8,000	3.5	30-35	30-35	27.6	30
@	25th Ave NE - Ballinger Way NE to NE 205th St	NC	30	34.1	1,700	4.1	30-40	25-30	29.1	30
	22nd Ave NE - NE 171st St to NE 175th St	CA	25	30.1	1,200	5.1	30-35	25-30	23.5	25
	NE 171st St - 22nd Ave NE to 25th Ave NE	CA	25	29.9	325	4.9	30-35	25-30	25.5	25
	25th Ave NE - NE 145th St to NE 168th St	CA	30	32.2	4,400	2.2	30-35	30-40	29.1	30
	Ballinger Way NE - NE 195th St to NE 205th St	PA	40	39.7	22,400	-0.3	30-45	30-35	37.6	40
#	1st Ave NE - NE 145th St to NE 155th St	LS	30	37.0	3,200	7	30-40	30-40	28.2	30
#	NE 168th St - 15th Ave NE to 25th Ave NE	LS	30	33.4	2,050	3.4	30-35	25-30	27.6	30

* - Suggested Speed Limit Change
\# - Suggested Classification Change
@ - Suggested Edit to Speed Limit Ordinance

Location: 15th Ave NE - NE 196th St to NE 205th St

Minimum Study

Table 1

85th (mph):	39.42	→	40	×	3	=	120
Pace (mph):	40	→	40	×	3	=	120
Test Run (mph):	35	→	35	×	4	=	140
					Average	=	38
					Nearest 5 MPH	=	40

Table 2

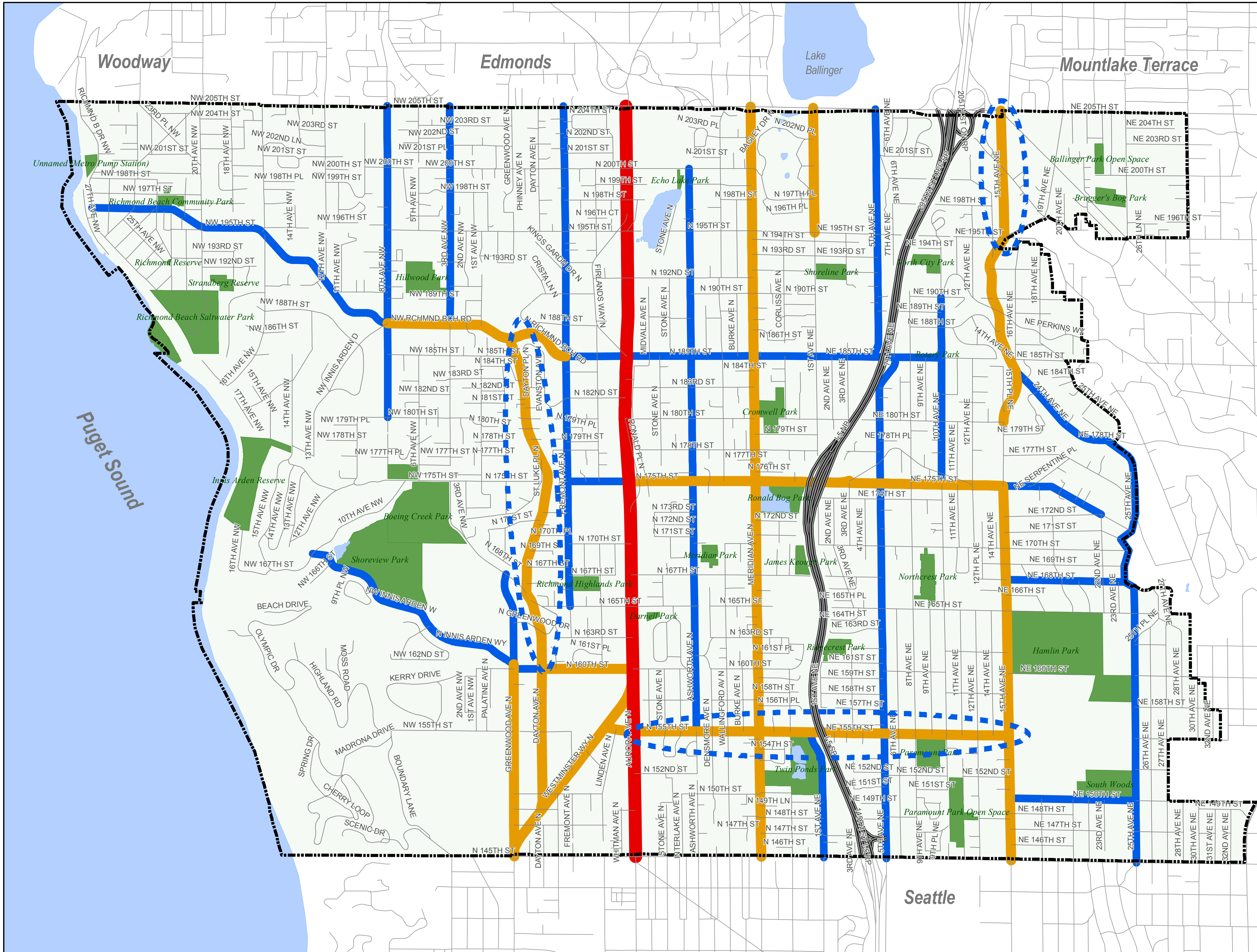
Apparent Design Speed (mph):	35	→	35
Number of Intersections:	4	→	50
Proposed Zone Length (ft):	2,700	→	47.5
Daily Vehicle Volume	8,850		

Speed Limit determined by Minimum Study = 35 mph
Speed Limit recommended by Minimum Study = 35 mph

Refined Study

				Adjustment, %
Table 3	Street Classification: (Non-Arterial=**0**, Collector=**1**, Minor=**2**, Principal=**3**)	3	→	+2
Table 4	Number of non-Commercial Driveways:	11		
	Number of Commercial Driveways:	15		
	Driveways per Mile:	226.84	→	-4
Table 5	Lane width (ft):	11	→	+1
Table 6	Shoulder Type & Average Width (ft): (Enter **-1** for Unpaved or No shoulder; "curb" for curb & gutter)	8	→	+0
Table 7	Pedestrian Activity (None=**0**, Light=**1**, Medium=**2**, Heavy=**3**):	1		
	Walkway Setback (ft): (Enter **-1** for No walkway)	-1	→	-4
Table 8	Vertical Alignment (Level=**0**, Rolling=**1**, Hilly=**2**, Mountainous=**3**):	1		
	Number of Horizontal Curves:	0		
	Number of Horizontal Curves per mile:	0.00	→	+2
Table 9	Parking Activity (No parking=**0**, Low=**1**, Medium=**2**, High=**3**):	1	→	+0
Table 10	Accident Rate (per MVM):	3.43	→	-4
Table 11	Number of uncontrolled, marked school crosswalks	0	→	+0
Table 12	Number of Lanes	2	→	-1

Speed Limit determined by Refined Study = 32.2 mph
Speed Limit recommended by Refined Study = 30 mph



SHORELINE

Geographic Information System

DRAFT

Street Segments for Speed Limit Review

(Shoreline Municipal Code 10.20.010 Speed Limits; Updated April 23, 2007; WAC 308-330-423)

Legend

- SPEED LIMIT 25
- SPEED LIMIT 30
- SPEED LIMIT 35
- SPEED LIMIT 40
- Suggested Speed Limit Change - Lower to 30mph

0 700 1,400 2,800 4,200 Feet

1 inch equals 1,950 feet

N W E S

CITY OF SHORELINE

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SHORELINE

Geographic Information System

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Street Segments for Street Classification Review

(City of Shoreline Transportation Master Plan; with Amendments. Updated April 23, 2007)

Legend

- Outside Shoreline
- Interstate
- Principal Arterial
- Minor Arterial
- Collector Arterial
- Neighborhood Collector
- Local Street
- Suggested Street Classification Change

0 625 1,250 2,500 3,750 Feet

1 inch equals 1,929 feet

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