



EXPANDED TRAFFIC IMPACT ANALYSIS

DRAFT for Peer Review

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MAY 2016

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Acronyms

ADT	Average Daily Traffic
BAT	Business Access and Transit
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
MOU	Memorandum of Understanding
mph	Miles Per Hour
ODU	Occupied Dwelling Unit
Paramount	Paramount of Washington LLC
PCB	Planned Community Business
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
TCS	Transportation Corridor Study
TIA	Traffic Impact Analysis
TIP	Transportation Improvement Program
TMP	Transportation Master Plan
TSA	Transportation Service Area
TWLTL	Two-way, left-turn lane
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

1.1. Overview of Tasks

David Evans and Associates, Inc. (DEA) has been contracted by Blue Square Real Estate (BSRE) Point Wells, LP to provide an expanded traffic impact analysis (TIA) for the proposed Point Wells Development (Project). 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
Developer Name:	BSRE Point Wells, LP
Analysis Consultant:	David Evans and Associates, Inc. (DEA) 415 - 118 th Avenue SE Bellevue, WA 98005 Telephone: (425) 519-6500 Fax: (425) 519-5361
Analysis Subconsultant:	Transportation Solutions, Inc. (TSI) 8250 165 th Avenue NE, Suite 100 Redmond, WA 98052 Telephone: (425) 883-4134 Fax: (425) 867-0898
Analysis Team:	Kirk Harris, P.E., Member of ITE (DEA) Josh Anderson, P.E., P.T.O.E., Member of ITE (DEA) Anthony Wilen, P.E., Member of ITE (DEA) Victor Salemann, P.E., Member of ITE (TSI)

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 service 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.

Aerial exhibits of the Project location are included in **Appendix A**. One exhibit illustrates the existing conditions at the site, and a second illustrates the proposed layout of the development with the existing conditions in the background.

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 Project, located within Snohomish County, 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 Puget Sound Regional Council (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.

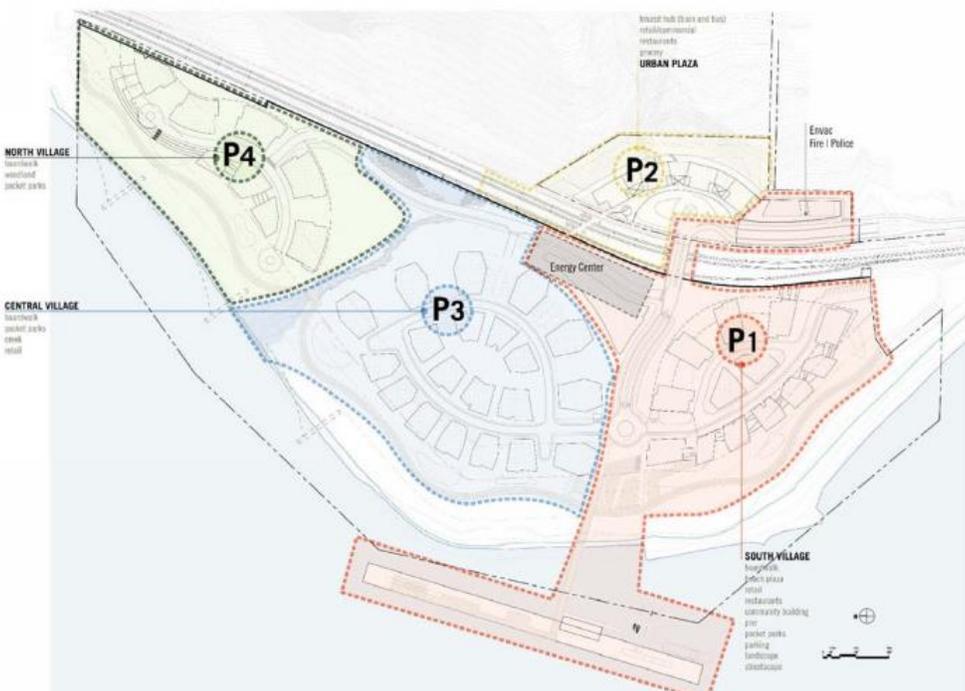
1.4. Proposed Project Development

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~~ **is expected to occur for** each phase during the design and permitting of the site improvements of that corresponding phase.

Commented [CR1]: Keep language vague here because the application does not actually provide a definitive level of detail.

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** 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 1,000 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.~~

Commented [CR2]: Site population is only one factor. In any event, the first sentence is sufficient.

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 for 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.

Commented [CR3]: Is this intended to be the contract bus service? Some elaboration would help because there are currently no local routes to the site.

Commented [CR4]: The applicant has not provided evidence to support the concept of sounder service here. Is there now an agreement with Sound Transit? If there is, then the applicant needs to provide documentation to Snohomish County. If not, then this should be removed from the final report.

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.

Commented [CR5]: I do not see a pocket park on the application.

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.

1.5. Project Alternatives Analyzed

Two (2) separate Build Alternatives have been analyzed with respect to traffic for the Point Wells site development. Each development alternative involves approximately the same footprint on the site, but they are principally different from each other because of the different heights of the proposed residential buildings. Two (2) separate No Action Alternative Scenarios were also analyzed with respect to traffic because of ~~the~~ different options for continued industrial use of the site.

Alternative 1 – Urban Center Alternative: The site would be redeveloped as a mixed-use urban center, consistent with the Urban Center land use designation/zoning classification of the site at the time complete applications were submitted to the County in 2011. Development would include approximately 3,081,000 square feet (sq. ft.) of residential uses (3,081 units), 35,862 sq. ft. of commercial/office uses (with space for on-site police and fire facilities), 82,935 sq. ft. of retail uses, and 19.3 acres of publicly-accessible open space.

Alternative 2 – Urban Village Alternative: The site would be redeveloped as a mixed-use urban village, consistent with the current Urban Village land use designation of the site. The urban village development would include the same site plan as Alternative 1. However, the maximum building height would be less. Approximately 2,600,000 sq. ft. of residential uses (2,600 units) would be provided under Alternative 2. The same amounts of commercial/office uses with space for on-site police and fire facilities (35,862 sq. ft.), retail uses (82,935 sq. ft.), and open space (19.3 acres) as Alternative 1, are assumed for Alternative 2.

Alternative 3 – No Action Alternative: The site would remain in industrial use, with possible reuse of existing underutilized industrial facilities. The site could also be developed in the future in accordance with the uses allowed by the site’s current Planned Community Business (PCB) zoning. Two (2) scenarios were analyzed for Alternative 3: Scenarios A and B.

Scenario A – Continuation of Existing Conditions

Under Scenario A, no redevelopment would occur on the Point Wells site. Existing industrial uses would continue as at present. This would be considered a continuation of non-conforming land uses per Snohomish County Code (SCC) 30.28.072, since the uses were legally established prior to the effective date of applicable County land use regulations (i.e., the current County FLUM and zoning map), but no longer conform to the applicable regulations.

Scenario B – Reuse of Existing Underutilized Industrial Facilities

Under Scenario B, no redevelopment would occur on the Point Wells site. Existing industrial uses would continue, and currently underutilized on-site industrial facilities would be renovated where necessary and reused. Similar to Scenario A, these would be considered a continuation of legally-established non-conforming land uses.

Commented [CR6]: The application does not have enough detail to conclude that the on-site police and fire facilities are indeed part of the 35,862 sq ft of commercial/office uses. Police/fire may be in addition to this figure. If so, the traffic analysis may not adequately address impacts from police/fire traffic.

Commented [CR7]: Similar to the previous comment, the two retail buildings above the police/fire uses may or may not be part of the retail square footage given here.

Commented [CR8]: The Future Land Use Map and zoning have actually changed twice since the current uses were established. Therefore, the effective regulations are not the “current” version of either.

1.6. Development Totals by Phase for Build Alternatives

The basis of the Point Wells expanded TIA was conducted on an assumed set of general land use characteristics, per development phase. **Table 1** is broken out by each individual phase (as identified in Section 1.4), including the total amount of commercial and retail areas listed by square feet, the level of publicly-used space by acres, and the total number of residential units. Similarly, **Table 2** illustrates the level of development proposed for the Build Alternative.

Table 1: Development by Phase for Alternative 1, Urban Center

	Project Phase	Commercial (Sq. Ft.)	Retail (Sq. Ft.)	Beach Park/ Public Pier (Acres)	Residential (No. of Units)
South Village	I	3,600	32,635	19.3	653
Urban Center	II	32,262	26,300		254
Central Village	III	0	24,000		1,271
North Village	IV	0	0		903
TOTAL	I-IV	35,862	82,935		3,081

Table 2: Development by Phase for Alternative 2, Urban Village

	Project Phase	Commercial (Sq. Ft.)	Retail (Sq. Ft.)	Beach Park/ Public Pier (Acres)	Residential (No. of Units)
South Village	I	3,600	32,635	19.3	575
Urban Center	II	32,262	26,300		242
Central Village	III	0	24,000		1,128
North Village	IV	0	0		655
TOTAL	I-IV	35,862	82,935		2,600

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 brokerage, banking, 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. Project Analysis

2.1. Methods and Assumptions

The methods and assumptions for the transportation analysis of the Project are outlined in a technical memorandum that is included in **Appendix B**. The following elements are included within this document:

- Study Area, Periods, and Background
 - Study Area
 - Study Periods
 - Study Background
- Existing Conditions
 - Street System Inventory
 - Collision Data Evaluation
 - Traffic Volumes
 - Traffic Operations
 - Pedestrian and Bicycle Facilities
 - Transit and Rail Services
- Build Condition for Urban Center Alternative and Urban Village Alternative
 - Street System with Proposed Improvement Options
 - Land Use Alternatives and Construction Phasing
 - Urban Center Alternative Land Use/Phasing (Alternative 1)
 - Urban Village Alternative Land Use/Phasing (Alternative 2)
 - Trip Generation/Internal Capture for Urban Center and Urban Village Alternatives
 - Trip Distribution and Assignment in Build Condition
 - Traffic Volumes in Build Condition
 - Traffic Operations in Build Condition
 - Traffic Safety in Build Condition
 - Pedestrian and Bicycle Facilities in Build Condition
 - Transit and Rail Services in Build Condition
- No Action Condition
 - No Action Street System
 - No Action Traffic Volumes
 - No Action Traffic Operations

The following **Attachments** are also included as part of the Methods and Assumptions technical memorandum included in **Appendix B**:

- A. Study Intersections in Vicinity
- B. Study Intersections and Control Types
- C. Corridor Study General Scope and Assumptions from Memorandum of Understanding (MOU) between Shoreline and the Project Owner
- D. SYNCHRO Level of Service (LOS) Evaluation Assumptions for Signalized and Unsignalized Intersections
- E. aaSidra LOS Evaluation Assumptions for Roundabouts
- F. Primary Access Options and Build Strategies Analyzed
- G. Traffic Analysis Scenarios Analyzed
- H. Building Heights, Dwelling Units, and Land Use Codes for Build Alternatives
- I. Urban Center Alternative Site Layout with Land Use Codes and Building Heights
- J. Urban Village Alternative Site Layout with Land Use Codes and Building Heights
- K. Urban Center Alternative – Trip Generation Calculations by Project Phase
- L. Urban Village Alternative – Trip Generation Calculations by Project Phase
- M. NCHRP 684 Trip Capture Estimation Tool – Blank Template
- N. NCHRP 684 Trip Capture Estimation Tool – Mode Split Adjustments
- O. NCHRP 684 Trip Capture Estimation Tool – Calculations for Traffic Analysis Scenarios
- P. Urban Center Alternative – Summary of Cumulative Trip Generation and Phase Trip Generation by Project Phase
- Q. Urban Village Alternative – Summary of Cumulative Trip Generation, and Phase Trip Generation by Project Phase
- R. No Build Alternative, Scenarios A and B – Trip Generation Calculations
- S. Average Land Use Interchange Distances (Feet Walking Distances) by Project Phase
- T. Summary of Person-Trips by Transit

2.1.1. 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 228th Street SW, east to I-5, and south to N 130th Street.

2.1.2. 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. A list of intersections and their control types within the cities of Shoreline, Edmonds, and Seattle, and the town of Woodway, are shown in Attachments A, B, and C of **Appendix B**.

2.1.3. 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.

- AM and PM peak turning movement traffic counts were collected and/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 7:00 to 9:00 AM and 4:00 to 6:00 PM. Other previously conducted counts were obtained through WSDOT and the City of Seattle. The Point Wells project team had counts collected for any additional locations where counts were not present. Intersections were counted between February 2011 and January 2014 by Traffic Count Consultants, All Traffic Data, IDAX Data, and Traffic Data Gathering.
- 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 and/or was provided by the applicable jurisdiction.
- 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.

Traffic counts used in this analysis can be found in **Appendix I**.

2.1.4. Trip Generation and Internal Capture

The Methods and Assumptions memo included in **Appendix B** includes the trip generation calculations for development Phases I through IV of both Alternative 1 (Urban Center) and Alternative 2 (Urban Village), as well as for Alternative 3 (No Action, Scenarios A and B). These calculations may be found in Attachments K, L, and R, respectively. Internal capture calculations for each of the four (4) development phases for Alternatives 1 and 2 are also included in Attachment O of the same appendix.

2.1.5. Travel Demand Forecast Model Validation

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 R2 value) is 0.75. Refer to **Appendix C** for additional model validation results.

2.2. Travel Demand Forecast Model / 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%) are attracted south to the Shoreline and Seattle areas - the employment and commercial generators - via Richmond Beach Drive NW, NW 196th Street, NW Richmond Beach Road, and I-5 or SR 99, while less (roughly 25%) Project trips are attracted north, to areas such as the town of Woodway and the cities of Edmonds, Lynnwood, and Everett via the north-south arterials such as SR 99 and I-5.

Refer to **Appendix D** for the cumulative, per development phase trip distribution for Alternative 1, Urban Center. Refer to **Appendix E** for the cumulative, per development phase trip distribution for Alternative 2, Urban Village.

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. The primary impacted corridors, in order of impact are:

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

2.3. Traffic Operations Analysis

The combination of project-generated trips and background traffic that was distributed by the Travel Demand Forecast Model for each Build and No Action alternative/scenario was used to determine the traffic operational impacts of the Point Wells Development. Level of service (LOS) analysis results for each intersection within the study area are included in **Appendix F**.

2.3.1. Intersection Level of Service Criteria

The Highway Capacity Manual (HCM) methodology was used to calculate the LOS at the intersections within the project study area 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 3 provides LOS definitions for signalized and un-signalized intersections.

Table 3: 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)

2.3.2. Jurisdiction LOS and V/C Standards

Intersection LOS and segment volume-to-capacity (V/C) standards are used to evaluate the project impacts and concurrency. Jurisdictions adopt the minimum acceptable LOS for intersection operating conditions, and the maximum acceptable for V/C for roadway segment operations. Deficiencies are identified if intersection operations fall below the minimum acceptable LOS standards. Similarly, deficiencies are identified if segment operations rise above the maximum acceptable V/C standards.

The specific standards applicable to agencies in the study area are included in the Methods and Assumptions memo included in **Appendix B**.

2.4. Transit Operations Assessment

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. Bus Transit options are being proposed for the project vicinity. The Point Wells Development is working with King County Metro to provide additional transit services via bus routes to the on-site transit center. Refer to **Appendix G** for all current transit route mapping.

2.4.1. Sound Transit

Sound Transit is currently producing the final design documents on the new “Lynnwood Link Extension” for the Link Light Rail system. The Lynnwood Link Extension Project targeted to be completed and in operation in late 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 145th Street, NE 185th Street, and the Mountlake Terrace Transit Center, in addition to its terminus locations. There are also accommodations for a future station at NE 130th Street. Although the Lynnwood Link Extension continues through final design, 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 Angle Lake area to the south (Sound Transit, 2016). Easy access from the Point Wells Development to the Link Light Rail system will is assumed to be provided by contract between the developer and the King County Metro bus system.

~~A possible future site concept to the Point Wells facility, a Sound Transit Sounder Station could be constructed on site, allowing residents to travel along the existing Sound Transit Commuter 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. If a future 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 and/or Everett.~~

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 construct a Metro bus terminal. It is assumed that 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, they will also provide connections to the existing Community Transit SWIFT bus system, the future Sound Transit Link Light Rail system, and Metro RapidRide.

A separate Metro service in the Point Wells project vicinity is the RapidRide bus system. RapidRide is based on a bus rapid transit (BRT) model in which bus service provides frequent, reliable transit offerings along

Commented [CR9]: Unless BSRE can provide documentation of progress being made on this front, the conceptual sounder stop at Point Wells cannot be relied on and will need to be eliminated from the proposal when BSRE revises their application.

Commented [CR10]: Awkward phrasing

Commented [CR11]: Snohomish County has not received any indication from BSRE that the buses from Point Wells would go to any regional destinations, such as downtown Seattle. Rather, they would go to the 185th Street rail station and make connections along the way.

Commented [CR12]: As discussed in section 2.4.3, the SWIFT system operates on the Snohomish County part of SR-99. This is an indirect connection made possible by transferring to a metro bus on SR-99 first. Saying here that buses leaving Point Wells links to SWIFT overstates the degree of connectivity.

high-use and heavily-congested corridors. The RapidRide segment E runs 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, 2016).

2.4.3. Community Transit

Community Transit currently offers two different transit options within the project vicinity. Standard bus routes are located east and north of the project site, connecting from the Aurora Village Transit Center to destinations north of Point Wells, including Edmonds, Bothell, Mountlake Terrace, Mill Creek, Lynnwood, Mukilteo, Marysville, Stanwood, Lake Stevens, Snohomish, and Monroe. SWIFT BRT is the second Community Transit option 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, 2016).

2.5. Non-Motorized Facilities Assessment

Connections to the site by means other than motorized vehicle are challenging given the conditions of the existing transportation network.

2.5.1. Pedestrians

Richmond Beach Drive, which connects directly to the project site, provides limited capacity for pedestrians to safely and/or comfortably walk along the corridor due to the absence of sidewalks and presence of narrow paved shoulders. The transportation corridor principally along Richmond Beach Road, between Richmond Beach Drive and SR 99, includes sidewalks on both sides of the road that generally vary in width between 5 and 7 feet with no lateral buffer to the travel way. A section of the corridor between 23rd Avenue NW and 21st Avenue NW that is approximately 600 feet long does not have a sidewalk along the south side of the roadway.

2.5.2. Bicyclists

Bicyclists that elect to use the corridor between the location of the project site and SR 99 must use a portion of the vehicular lane to ride, as there are no dedicated on-street bike lanes. Richmond Beach Drive and NW 196th Street, west of 24th Avenue NW, are currently two-lane facilities. NW 196th Street, east of 24th Avenue NW, and Richmond Beach Road are currently four-lane facilities.

3. Project Impacts

3.1. Roadway System Impacts

Each intersection within the study area was analyzed based on the LOS standards defined for each jurisdiction, the trip generation from the site, the trip distribution from the travel demand model, existing lane configurations, and the type of traffic control.

Figure 2 illustrates the operational layout of each intersection on the existing roadway that was analyzed. [\[Add discussion related to the rechannelization project. Intersections 4-9 would have fewer east-west lanes\]](#)

Figure 3 illustrates the operational layout of those intersections planned to be modified as part of the Build roadway network. The results of the operational LOS analysis are included in **Appendix F**.

LOS analysis of the Existing roadway network assumed that no improvements would be incorporated within the study area. A comparison between the Synchro model network and the aerial mapping of the study area was completed to verify that the lane configurations in the model were consistent with the current conditions.

LOS analysis of the Build roadway network assumed that six (6) intersections along the primary access route to the Project site would be improved, as described in **Figure 3**. These assumed improvements to the primary corridor between the project site and SR 99 were discussed with Shoreline as part of the [Transportation Corridor Study process](#).

[The City of Shoreline plans a capital improvement project in 2017 called "Richmond Beach Rechannelization" that would re-channelize Richmond Beach Rd/NW 195th St/NW 196th St from 24th Ave NW to Dayton Ave N from four lanes to one lane in each direction plus a center turn lane.¹ Table 8, page 23, includes analysis of corridor segment impacts for this corridor under both the existing four-lane configuration and the planned new configuration.](#)

¹ See <http://www.shorelinewa.gov/home/showdocument?id=22237> page 383.

Commented [CR13]: Five of the 64 intersections illustrated in Figure 2 may need revision. These are intersections 5, 27, 29, 42, and 58.

Intersection 5 does not reflect the existing conditions. It is a "T" intersection that differs completely from how it is depicted on Figure 2. Please correct on Figure 2 and remodel the intersection.

Intersection 27 contains a typo. It is Timber Ln not Timer Ln.

Intersection 29 seems to be illustrating two off-set T intersections as if they were a single four-way intersection (Woodway Park Rd and Algonquin/South Dogwood). Please explain how modeling this as a four-way intersection is appropriate, or revise the figure and remodel.

Intersection 42 is titled incorrectly. It illustrates 175th & SR-99 rather than 160th and SR-99. (Intersection 43 shares the same title but illustrates the lanes at 160th). Please confirm that the analysis for Intersection 42 elsewhere in the document represents 175th & SR-99 not 160th & SR-99. If the incorrect analysis has been used, please correct.

Intersection 58 seems to be illustrating two off-set T intersections as if they were a single four-way intersection (Dayton and 171st/172nd). Please depict and remodel Dayton & 172nd as a T intersection.

Commented [CR14]: According to the Shoreline 2016 to 2021 Transportation Improvement Plan (TIP), the inconclusive TCS discussions envisioned additional improvements not shown on Figure 3. The TIP identifies TCS-related improvements under the umbrella of Project 17 (see <http://www.cityofshoreline.com/home/showdocument?id=20864>).

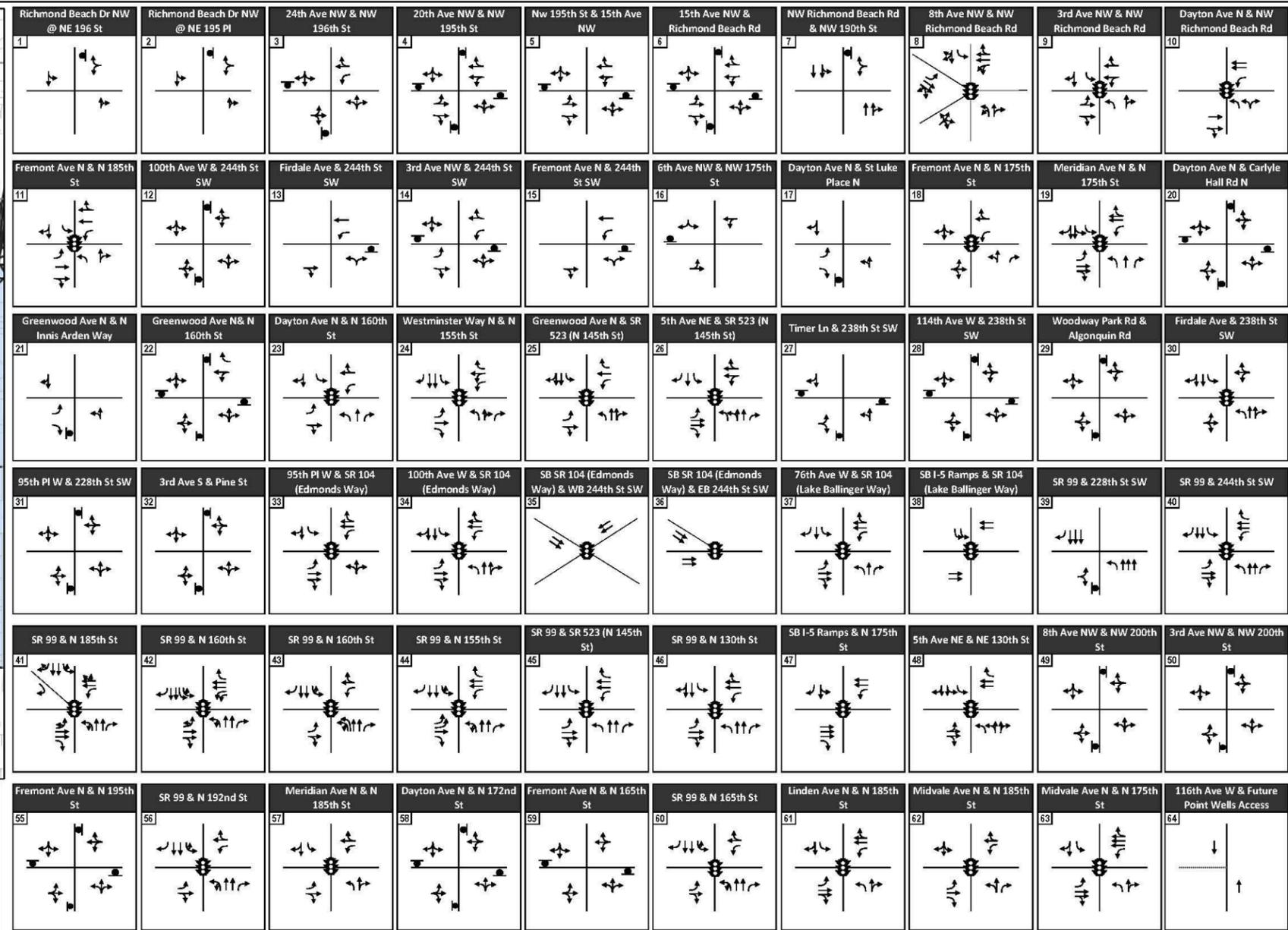
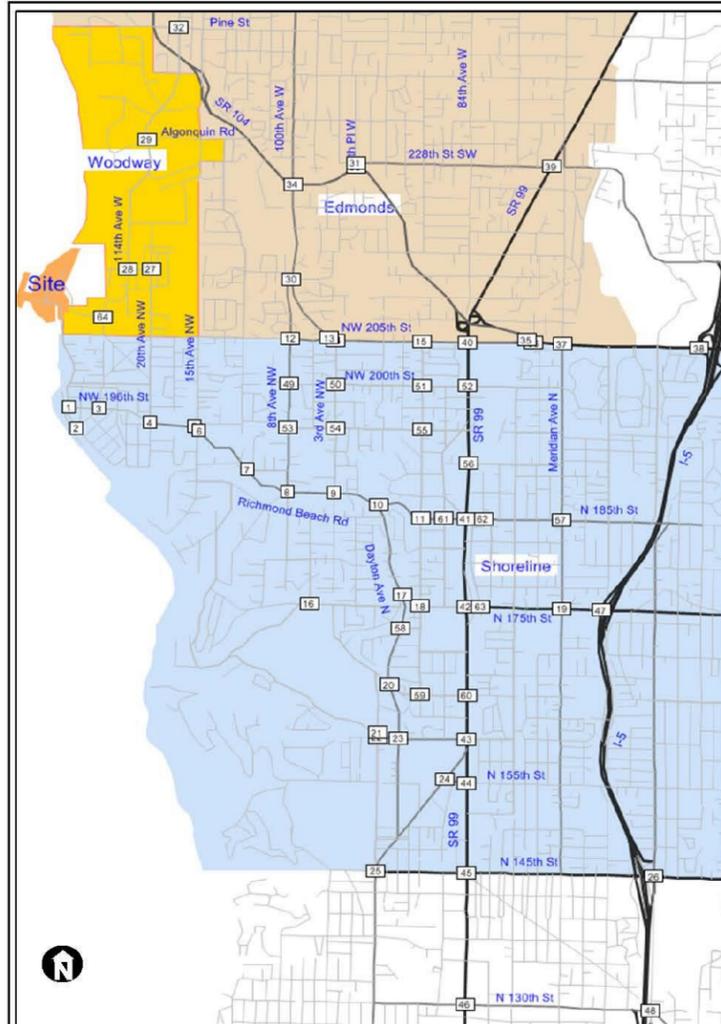
17.a Addition of left-turn lanes to NW Richmond Beach Rd at 3rd Ave NW (Intersection 9 on Figure 2) that do not appear in Figure 3.

17.b Discusses a "roundabout or other traffic calming techniques" at Richmond Beach Dr NW and 24th Ave NW (intersection 3 on Figure 2). Figure 3 discusses changing stop signs at this intersection. Does this meet the "other traffic calming" intended by 17.b?

17.e Involves a pair of off-set intersections, NW Richmond Beach Rd/15th Ave NW (intersection 6, Figures 2 and 3) and NW 195th St/15th Ave W (intersection 5). 17.e says that changes "could include signalization or construction of roundabouts." Figures 2 and 3 incorrectly characterize 195th St at intersection 5 as a four lane through road. In reality, it is a two lane road east of 15th Ave W and a parking lot west of 15th. Figure 3 proposes signalization at both intersections. If the road configuration of intersection 5 is corrected, would the recommendations still both be for two new signals or would different solutions be found?

17.g Discusses safety and operation improvements at the five legged intersection at Richmond Beach Rd and 8th Ave NW. See intersection 8 on Figure 2. Why are no improvements shown here in Figure 3?

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Legend	
	Signalized intersection
	STOP Controlled Approach
	Lane Configuration

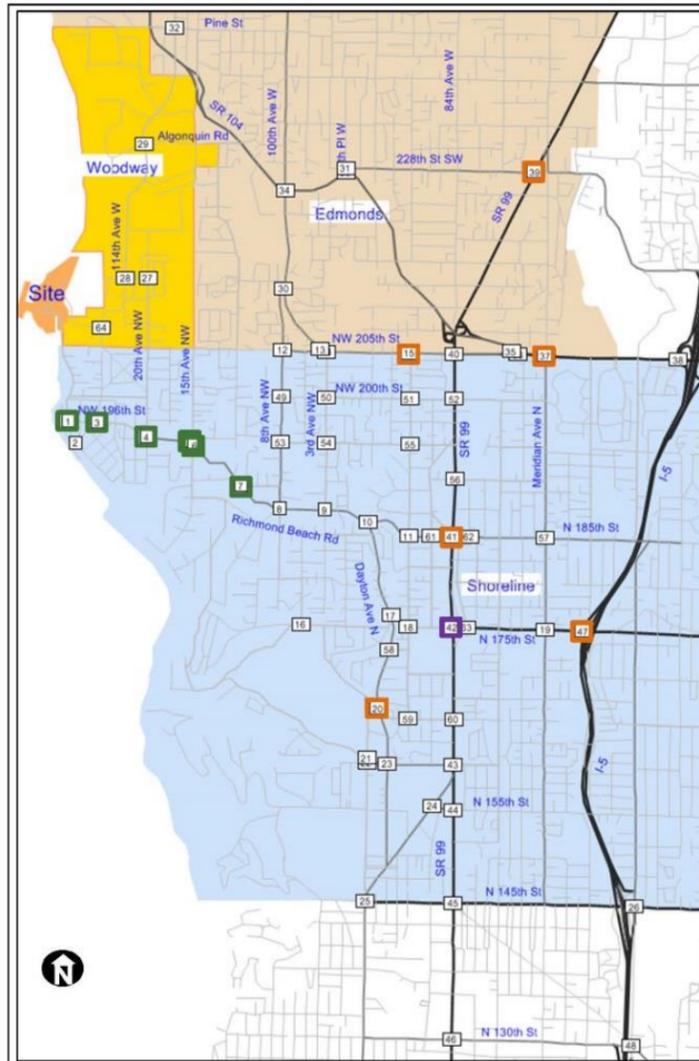
FIGURE 2

Existing Lane Configurations and Traffic Control

Point Wells Mixed Use Development

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Figure 3: Build Lane Configurations and Traffic Control Improvements



Both Build Scenarios assume the following improvements are in place (all in City of Shoreline):

<p>1 Richmond Beach Dr NW @ NW 196th St</p> <p>Convert north leg to be west leg, move stopped approach to south leg</p>	<p>3 24th Ave NW & NW 196th St</p> <p>Remove eastbound stop and install northbound stop</p>	<p>4 20th Ave NW & NW 195th St</p> <p>Install Signal</p>	<p>5 NW 195th St & 15th Ave NW</p> <p>Install Signal</p>	<p>6 15th Ave NW & NW Richmond Beach Rd</p> <p>Install Signal</p>	<p>7 NW Richmond Beach Rd & NW 190th St</p> <p>Restrict turn movements to right-in/right-out</p>
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The following additional improvements are needed to meet standards for the Urban Center Scenario:

<p>15 Fremont Ave N & 244th St SW</p> <p>Construct dedicated northbound right-turn lane</p> <p>City of Shoreline</p>	<p>20 Dayton Ave N & Carlyle Hall Rd N</p> <p>Construct dedicated southbound right-turn lane</p> <p>City of Shoreline</p>	<p>37 76th Ave W & SR 104 (Lake Ballinger Way)</p> <p>Construct dedicated eastbound and westbound right-turn lanes and convert northbound and southbound left-turns to permitted/protected phasing</p> <p>WSDOT</p>	<p>39 SR 99 & 228th St SW</p> <p>Install Signal <i>(City of Edmonds project, Completion estimated for June 2016)</i></p> <p>City of Edmonds</p>	<p>41 SR 99 & N 185th St</p> <p>Incorporate Adaptive Traffic Signal Control System to optimize timing and reduce delay; and add eastbound right-turn overlap phase</p> <p>WSDOT</p>	<p>42 SR 99 & N 175th St</p> <p>Signal timing optimization to reduce delay; Retime signal to reduce intersection delay by 3 seconds</p> <p>WSDOT</p>	<p>47 SB I-5 Ramps & N 175th St</p> <p>Adjust phasing and timing of interchange ramp terminals to reduce delay</p> <p>WSDOT</p>
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The following additional improvements are needed to meet standards for the Urban Village Scenario:

<p>15 Fremont Ave N & 244th St SW</p> <p>Construct dedicated northbound right-turn lane</p> <p>City of Shoreline</p>	<p>20 Dayton Ave N & Carlyle Hall Rd N</p> <p>Construct dedicated southbound right-turn lane</p> <p>City of Shoreline</p>	<p>37 76th Ave W & SR 104 (Lake Ballinger Way)</p> <p>Construct dedicated EB and WB RT lanes and convert NB and SB left-turns to permitted/protected phasing</p> <p>WSDOT</p>	<p>39 SR 99 & 228th St SW</p> <p>Install Signal <i>(City of Edmonds project, Completion estimated for June 2016)</i></p> <p>City of Edmonds</p>	<p>41 SR 99 & N 185th St</p> <p>Incorporate Adaptive Traffic Signal Control System to optimize timing and reduce delay; and add eastbound right-turn overlap phase</p> <p>WSDOT</p>	<p>47 SB I-5 Ramps & N 175th St</p> <p>Adjust phasing and timing of interchange ramp terminals to reduce delay</p> <p>WSDOT</p>
--	---	---	---	---	---



Legend

- Signalized intersection
- Newly Signalized intersection
- Improved Signal Timing for overall intersection
- Intersections with improvements assumed in Builds
- STOP Controlled Approach
- Newly STOP Controlled Approach
- Improved Signal Timing for this approach
- Intersections needing additional improvement under Urban Center and Urban Village scenarios
- Lane Configuration
- New Lane Configuration
- Improved Signal Timing for this movement
- Intersection needing additional improvement under Urban Center

FIGURE 3

Build Lane Configurations and Traffic Control Improvements

Point Wells Mixed Use Development

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3.1.1. Intersection LOS Impacts

Intersection performance was affected by Project phasing. Comparing the Existing condition to the Build condition in Phase I, the intersections with LOS falling below LOS standards are summarized in **Table 4**. There are three (3) intersections operating below LOS standards with the Project for both the Existing roadway network and the Build roadway network (#15, #37, and #47). However these three (3) intersections also operate below LOS standards without the Project with the Existing roadway network in the current timeframe and in the same time period as Phase I. The Phase I Build scenario adds more delay into the intersections, downgrades intersection #15 from LOS E to F, and does not downgrade the LOS for intersections #37 and #47.

Commented [CR15]: Add discussion of intersections 4-9 that would have fewer lanes if the rechannelization project happens.

Table 4: Intersections with LOS Deficiencies in Phase I

No.	Intersection	Jurisdiction	LOS Standard	Alt. 1 – Urban Center		
				Existing	Build	
				LOS (Delay)	LOS (Delay)	
15	244 th St SW & Fremont Ave N	Shoreline	LOS D	PM	F (50.2)	F (50.0)
37	76 th Ave W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	AM	E (57.0)	D (49.6)
37	76 th Ave W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	PM	E (65.5)	E (65.5)
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	LOS D	PM	F (106.9)	F (108.2)

No.	Intersection	Jurisdiction	LOS Standard	Alt. 2 – Urban Village		
				Existing	Build	
				LOS (Delay)	LOS (Delay)	
15	244 th St SW & Fremont Ave N	Shoreline	LOS D	PM	F (50.3)	F (50.1)
37	76 th Ave W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	PM	E (65.5)	E (58.8)
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	LOS D	PM	F (107.9)	F (103.2)

Table 5 summarizes the intersections with LOS that fall below LOS standards for Phase II. With the Project, there are the same three (3) intersections that operate below LOS standards as in Phase I along with three (3) additional intersections (#5, #20, and #41) which are included on both lists for Phase II. Three (3) intersections (#15, #37, and #47) operate below LOS standards without the Project with the Existing roadway network in the current timeframe and in the same time period as Phase II. The Phase II Build scenario adds more delay at intersections, downgrades the LOS for four (4) of six (6) intersections on the lists for Alternative 1 and Alternative 2, and does not downgrade the LOS for two (2) intersections (#15 and #47) as they are forecasted to be LOS F without the Project for the same time period as Phase II. With the Project, under the Build conditions for both Alternatives 1 and 2, one (1) intersection (#5) is removed from the list of LOS deficiencies by changing it from a two-way, stop-controlled intersection to a signalized intersection.

Table 5: Intersections with LOS Deficiencies in Phase II

No.	Intersection	Jurisdiction	LOS Standard	Alt. 1 – Urban Center		
				Existing	Build	
				LOS (Delay)	LOS (Delay)	
5	NW 195 th St & 15 th Ave NW	Shoreline	LOS D	PM	E (43.5)	C (30.5)
15	244 th St SW & Fremont Ave N	Shoreline	LOS D	PM	F (56.5)	F (56.0)
20	Carlyle Hall Rd & Dayton Ave N	Shoreline	LOS D	AM	E (36.5)	E (36.5)
37	76 th Ave W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	AM	E (58.2)	D (50.2)
37	76 th Ave W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	PM	E (70.3)	E (63.6)
41	N 185 th St & SR 99	WSDOT	LOS E	AM	F (83.6)	F (81.6)
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	LOS D	PM	F (110.6)	F (114.4)

No.	Intersection	Jurisdiction	LOS Standard	Alt. 2 – Urban Village		
				Existing		Build
				LOS (Delay)	LOS (Delay)	LOS (Delay)
5	NW 195 th St & 15 th Ave NW	Shoreline	LOS D	PM	E (43.2)	C (30.4)
15	244 th St SW & Fremont Ave N	Shoreline	LOS D	PM	F (56.3)	F (56.1)
20	Carlyle Hall Rd & Dayton Ave N	Shoreline	LOS D	AM	E (36.5)	E (36.5)
37	76 th Ave W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	PM	E (70.0)	E (63.9)
41	N 185 th St & SR 99	WSDOT	LOS E	AM	F (83.1)	F (81.8)
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	LOS D	PM	F (108.8)	F (111.7)

Table 6 summarizes the intersections with LOS that fall below LOS standards for Phase III. With the Project, there are the same six (6) intersections that operate below LOS standards as in Phase II along with one (1) additional intersection (#39) which are included on the both lists for Phase III. The Phase III Build scenarios add more delay at intersections, downgrades the LOS for four (4) of seven (7) intersections on the list, and do not downgrade the LOS for two (2) intersections (#15 and #47) as they are forecasted to be LOS F without the Project for the same time period as Phase III. With the Project, under the Build conditions for both Alternatives 1 and 2, one (1) intersection (#5) is removed from the list of LOS deficiencies by changing it from a two-way, stop-controlled intersection to a signalized intersection.

Table 6: Intersections with LOS Deficiencies in Phase III

No.	Intersection	Jurisdiction	LOS Standard	Alt. 1 – Urban Center		
				Existing		Build
				LOS (Delay)	LOS (Delay)	LOS (Delay)
5	NW 195 th St & 15 th Ave NW	Shoreline	LOS D	PM	F (125.6)	C (22.4)
15	244 th St SW & Fremont Ave N	Shoreline	LOS D	PM	F (66.1)	F (62.0)
20	Carlyle Hall Rd & Dayton Ave N	Shoreline	LOS D	AM	E (41.7)	E (41.7)
37	76 th Ave W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	AM	E (61.9)	D (53.8)
37	76 th Ave W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	PM	E (75.2)	E (68.1)
39	228 th St SW & SR 99	WSDOT	LOS E	AM	E (47.6)	F (73.9)
41	N 185 th St & SR 99	WSDOT	LOS E	AM	F (142.3)	F (131.2)
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	LOS D	PM	F (123.0)	F (121.6)

No.	Intersection	Jurisdiction	LOS Standard	Alt. 2 – Urban Village		
				Existing		Build
				LOS (Delay)	LOS (Delay)	LOS (Delay)
5	NW 195 th St & 15 th Ave NW	Shoreline	LOS D	PM	F (108.7)	B (19.7)
15	244 th St SW & Fremont Ave N	Shoreline	LOS D	PM	F (65.8)	F (62.0)
20	Carlyle Hall Rd & Dayton Ave N	Shoreline	LOS D	AM	E (41.2)	E (41.2)
37	76 th Ave W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	PM	E (76.0)	E (75.7)
39	228 th St SW & SR 99	WSDOT	LOS E	AM	E (47.5)	F (70.3)
41	N 185 th St & SR 99	WSDOT	LOS E	AM	F (129.9)	F (130.4)
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	LOS D	PM	F (120.3)	F (121.1)

Table 7 summarizes the intersections with LOS that fall below LOS standards for Phase IV. With the Project, there are the same seven (7) intersections that operate below LOS standards as in Phase III along with three (3) additional intersections (#4, #6, and #42) which are included on the both lists for Phase III. The Phase III Build scenarios add more delay at intersections, downgrades the LOS for five (5) of ten (10) intersections on the list, and do not downgrade the LOS for two (2) intersections (#15 and #47) as they are forecasted to be LOS F without the Project for the same time period as Phase III. With the Project, under the Build conditions for both Alternatives 1 and 2, three (3) intersections (#4, #5, and #6) are removed from the list of LOS deficiencies by changing them from stop-controlled intersections to signalized intersections.

Table 7: Intersections with LOS Deficiencies in Phase IV

No.	Intersection	Jurisdiction	LOS Standard	Alt. 1 – Urban Center		
				Existing	Build	
				LOS (Delay)	LOS (Delay)	
4	NW 196 th St & 20 th Ave NW	Shoreline	LOS D	PM	F (51.4)	D (51.9)
5	NW 195 th St & 15 th Ave NW	Shoreline	LOS D	AM	F (35.8)	B (17.0)
5	NW 195 th St & 15 th Ave NW	Shoreline	LOS D	PM	F (227.5)	B (19.4)
6	N Richmond Beach Rd & 15 th Ave NW	Shoreline	LOS D	PM	E (41.4)	C (26.2)
15	244 th St SW & Fremont Ave N	Shoreline	LOS D	PM	F (74.9)	F (68.4)
20	Carlyle Hall Rd & Dayton Ave N	Shoreline	LOS D	AM	E (44.6)	E (44.3)
37	76 th Ave W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	AM	E (66.2)	E (57.3)
37	76 th Ave W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	PM	F (82.7)	E (72.9)
39	228 th St SW & SR 99	WSDOT	LOS E	AM	F (51.4)	F (134.7)
41	N 185 th St & SR 99	WSDOT	LOS E	AM	F (174.0)	F (166.4)
42	N 175 th St & SR 99	WSDOT	LOS E	AM	F (90.3)	F (82.3)
42	N 175 th St & SR 99	WSDOT	LOS E	PM	F (81.5)	F (77.9)
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	LOS D	PM	F (131.5)	F (134.1)

No.	Intersection	Jurisdiction	LOS Standard	Alt. 2 – Urban Village		
				Existing	Build	
				LOS (Delay)	LOS (Delay)	
4	NW 196 th St & 20 th Ave NW	Shoreline	LOS D	PM	E (40.3)	D (37.1)
5	NW 195 th St & 15 th Ave NW	Shoreline	LOS D	PM	F (160.5)	B (32.8)
15	244 th St SW & Fremont Ave N	Shoreline	LOS D	PM	F (73.6)	F (67.6)
20	Carlyle Hall Rd & Dayton Ave N	Shoreline	LOS D	AM	E (43.5)	E (43.5)
37	76 th Ave W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	AM	E (57.5)	E (58.5)
37	76 th Ave W & SR 104 (Lake Ballinger Way)	WSDOT	LOS D	PM	F (83.1)	E (82.5)
39	228 th St SW & SR 99	WSDOT	LOS E	AM	F (51.2)	F (103.1)
41	N 185 th St & SR 99	WSDOT	LOS E	AM	F (150.1)	F (143.4)
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	LOS D	PM	F (127.0)	F (126.3)

3.1.2. Segment V/C Impacts

The site trip distribution for Phases I-IV in **Appendices D and E** indicates that the majority of Project trips will be traveling on Richmond Beach Drive NW, NW 196th Street, NW Richmond Beach Road, SR 99 south of N 175th Street, and I-5 south of N 175th Street.

[\[Add description of the rechannelization project\]](#)

The corridor of Richmond Beach Drive NW, NW 196th Street, and NW Richmond Beach Road between the Project site and SR 99 is expected to operate at an acceptable V/C ratio of 0.90 or less within Shoreline after the Phase IV build-out for both Alternative 1 (Urban Center) and Alternative 2 (Urban Village) based on the projected intersection LOS on this corridor. The roadway capacity of this corridor is constrained by intersection operations; however, only one (1) LOS deficient intersection occurs at SR 99 and NW Richmond Beach Road (N 185th Street) (Intersection #41) with the Phase IV Build scenario. The total Phase IV full build-out PM peak hour volumes are still within the Shoreline-allowable per direction capacity, as shown in **Table 8**.

Commented [CR16]: Revise to include impacts of rechannelization project.

The per lane directional capacity of each segment shown in **Table 8** is consistent with Shoreline's Transportation Master Plan with the exception of the per lane capacity of Richmond Beach Drive and NW 196th Street east of Richmond Beach Drive and west of 24th Avenue NW. These two segments of the primary transportation corridor between the Project site and SR 99 were the subject of discussion with Shoreline staff and as part of the preparation for the Transportation Corridor Study and Workshops (see **Section 4.5 Transportation Corridor Study**). During these work sessions, City staff indicated that a directional capacity of 700 vehicles would be acceptable for the City's preferred improved roadway section for Richmond Beach Drive and the western section of NW 196th Street. As such, the City's preferred roadway section was shared during the workshop process, and the per lane capacity of 700 vehicles was incorporated into the traffic analysis.

Commented [CR17]: This statement should be qualified to reflect that it only applies if the road sections planned for rechannelization either stay at four lanes or revert back to four when necessary for traffic capacity. If rechannelization happens and the road sections stay at 3 lanes, then the conclusions are very different.

Table 8: Shoreline Corridor Segment Impacts in Full Build-out of Phase IV

Intersection	Per Lane Capacity	Number of Lanes	Functional Classification	Directional Capacity	Two-Way Total															
					Urban Center PM Peak Volume (V/C)				Urban Village PM Peak Volume (V/C)				Urban Center AM Peak Volume (V/C)				Urban Village AM Peak Volume (V/C)			
					EB	WB	EB	WB	EB	WB	EB	WB	EB	WB						
Richmond Beach Drive NW: North of NE 196 th Street	700	2	Collector	700	388	(0.55)	573	(0.82)	352	(0.5)	510	(0.73)	587	(0.84)	326	(0.47)	532	(0.76)	288	(0.41)
NW 196 th Street: East of Richmond Beach Drive NW	700	2	Collector	700	383	(0.55)	586	(0.84)	347	(0.5)	523	(0.75)	584	(0.83)	327	(0.47)	529	(0.76)	289	(0.41)
NW 196 th Street: East of 24 th Avenue NW	700	4 <i>(existing)</i>	Collector	1,400	418	(0.3)	608	(0.43)	382	(0.27)	545	(0.39)	661	(0.47)	337	(0.24)	606	(0.43)	317	(0.23)
<u>NW 196th Street: East of 24th Avenue NW</u>	<u>700</u>	<u>3 (as planned)</u>	<u>Collector</u>	<u>840</u>	<u>418</u>	<u>(0.50)</u>	<u>608</u>	<u>(0.72)</u>	<u>382</u>	<u>(0.45)</u>	<u>545</u>	<u>(0.65)</u>	<u>661</u>	<u>(0.79)</u>	<u>337</u>	<u>(0.40)</u>	<u>606</u>	<u>(0.72)</u>	<u>317</u>	<u>(0.38)</u>
NW 195 th Street: East of 20 th Avenue NW	800	4 <i>(existing)</i>	Minor Arterial	1,600	659	(0.41)	986	(0.62)	623	(0.39)	922	(0.58)	1,009	(0.63)	419	(0.26)	953	(0.6)	399	(0.25)
<u>NW 195th Street: East of 20th Avenue NW</u>	<u>800</u>	<u>3 (as planned)</u>	<u>Minor Arterial</u>	<u>960</u>	<u>659</u>	<u>(0.69)</u>	<u>986</u>	<u>(1.03)</u>	<u>623</u>	<u>(0.65)</u>	<u>922</u>	<u>(0.96)</u>	<u>1,009</u>	<u>(1.05)</u>	<u>419</u>	<u>(0.44)</u>	<u>953</u>	<u>(0.99)</u>	<u>399</u>	<u>(0.42)</u>
NW Richmond Beach Road: East of 15 th Avenue NW	800	4 <i>(existing)</i>	Minor Arterial	1,600	690	(0.43)	998	(0.62)	655	(0.41)	934	(0.58)	1,056	(0.66)	434	(0.27)	1,000	(0.63)	414	(0.26)
<u>NW Richmond Beach Road: East of 15th Avenue NW</u>	<u>800</u>	<u>3 (as planned)</u>	<u>Minor Arterial</u>	<u>960</u>	<u>690</u>	<u>(0.72)</u>	<u>998</u>	<u>(1.04)</u>	<u>655</u>	<u>(0.68)</u>	<u>934</u>	<u>(0.97)</u>	<u>1,056</u>	<u>(1.10)</u>	<u>434</u>	<u>(0.45)</u>	<u>1,000</u>	<u>(1.04)</u>	<u>414</u>	<u>(0.43)</u>
NW Richmond Beach Road: East of NW 190 th Street	800	4 <i>(existing)</i>	Minor Arterial	1,600	738	(0.46)	1,045	(0.65)	703	(0.44)	981	(0.61)	1,076	(0.67)	448	(0.28)	1,020	(0.64)	428	(0.27)
<u>NW Richmond Beach Road: East of NW 190th Street</u>	<u>800</u>	<u>3 (as planned)</u>	<u>Minor Arterial</u>	<u>960</u>	<u>738</u>	<u>(0.77)</u>	<u>1,045</u>	<u>(1.09)</u>	<u>703</u>	<u>(0.73)</u>	<u>981</u>	<u>(1.02)</u>	<u>1,076</u>	<u>(1.12)</u>	<u>448</u>	<u>(0.47)</u>	<u>1,020</u>	<u>(1.06)</u>	<u>428</u>	<u>(0.45)</u>
NW Richmond Beach Road: East of 8 th Avenue NW	800	4 <i>(existing)</i>	Minor Arterial	1,600	734	(0.46)	1,214	(0.76)	699	(0.44)	1,131	(0.71)	1,083	(0.68)	476	(0.3)	1,029	(0.64)	457	(0.29)
<u>NW Richmond Beach Road: East of 8th Avenue NW</u>	<u>800</u>	<u>3 (as planned)</u>	<u>Minor Arterial</u>	<u>960</u>	<u>734</u>	<u>(0.76)</u>	<u>1,214</u>	<u>(1.26)</u>	<u>699</u>	<u>(0.73)</u>	<u>1,131</u>	<u>(1.18)</u>	<u>1,083</u>	<u>(1.13)</u>	<u>476</u>	<u>(0.50)</u>	<u>1,029</u>	<u>(1.07)</u>	<u>457</u>	<u>(0.48)</u>
NW Richmond Beach Road: East of 3 rd Avenue NW	800	4 <i>(existing)</i>	Minor Arterial	1,600	782	(0.49)	1,380	(0.86)	765	(0.48)	1,289	(0.81)	1,212	(0.76)	485	(0.3)	1,154	(0.72)	468	(0.29)
<u>NW Richmond Beach Road: East of 3rd Avenue NW</u>	<u>800</u>	<u>3 (as planned)</u>	<u>Minor Arterial</u>	<u>960</u>	<u>782</u>	<u>(0.81)</u>	<u>1,380</u>	<u>(1.44)</u>	<u>765</u>	<u>(0.80)</u>	<u>1,289</u>	<u>(1.34)</u>	<u>1,212</u>	<u>(1.26)</u>	<u>485</u>	<u>(0.51)</u>	<u>1,154</u>	<u>(1.20)</u>	<u>468</u>	<u>(0.49)</u>
NW Richmond Beach Road: East of Dayton Avenue N	800	4	Minor Arterial	1,600	707	(0.44)	1,134	(0.71)	679	(0.42)	1,081	(0.68)	1,064	(0.67)	430	(0.27)	1,009	(0.63)	414	(0.26)
N 185 th Street: East of Fremont Avenue N	800	5*	Minor Arterial	1,760	740	(0.42)	919	(0.52)	712	(0.4)	867	(0.49)	1,012	(0.57)	403	(0.23)	957	(0.54)	388	(0.22)

NOTES:

Per Lane Capacity was reviewed and agreed to by City of Shoreline staff on 5/15/2014.

* The center left-turn lane is assumed by Shoreline standards to add 20% of the capacity of a full/through lane.

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3.2. Transit Impacts

High-density urban residential projects like the Point Wells Development create significant transit demand by virtue of the lower car ownership rates and travel choices of the owners and tenants of mid and 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 if services are not increased. 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 Plaza to integrate bus and (if applicable) 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 rail 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 (if applicable) 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.

Commented [CR18]: Add discussion of contract bus service here. Without contract bus service, the project will need to be scaled down because the maximum building height would be 90 feet.

Commented [CR19]: Unless BSRE has been making progress on this with Sound Transit and is prepared to share documentation that this concept is viable, this section will need to be deleted. Based on information currently available to Snohomish County, the commuter rail concept will need to be removed from the proposal.

4. 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.). As such, there are a number of potential mitigation strategies that may be employed to mitigate the impacts of increased traffic as a result of the Project.

4.1. Intersection Mitigation

Impacts to the intersections have been identified for each phase of the Project. **Figure 3** illustrates the proposed intersection mitigation of Project-related impacts for those intersections that are calculated to operate below LOS standards for the applicable jurisdiction.

Commented [CR20]: Update figure 3 as necessary to reflect the rechannelization 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 relatively high. Some intersections have been shown to fail the LOS requirement 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.

Mitigation of LOS-failing intersections includes a combination of modifying the layout of stop sign-controlled intersections, adding signalization at existing stop sign-controlled intersections, modifying the timing of existing signalized intersections, and adding turn lanes or additional through lanes at existing intersections.

Since proportional mitigation of impacts is based on traffic volume, the developer could provide direct construction improvements of its proportional share of each of the affected projects, or it could pay the proportional mitigation shares in lieu of direct improvements. **Table 9 through Table 12** 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.

Commented [CR21]: Update tables as necessary to reflect the rechannelization project.

Table 9: Intersection Proportional Mitigation Share - Phase I

Urban Center							
No.	Intersection	Jurisdiction	Failing Peak	Site Trips	Total Volume	Proportional Share	Analysis Scenario
15	244 th St SW & Fremont Ave N	Shoreline	PM	27	1,462	1.8%	27
37	244 th St SW & Meridian Ave N	WSDOT	PM	6	4,387	0.1%	27
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	PM	118	2,882	4.1%	27
Urban Village							
No.	Intersection	Jurisdiction	Failing Peak	Site Trips	Total Volume	Proportional Share	Analysis Scenario
15	244 th St SW & Fremont Ave N	Shoreline	PM	28	1,463	1.9%	35
37	244 th St SW & Meridian Ave N	WSDOT	PM	6	4,387	0.1%	35
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	PM	108	2,872	3.8%	35

Table 10: Intersection Proportional Mitigation Share - Phase II

Urban Center							
No .	Intersection	Jurisdiction	Failing Peak	Site Trips	Total Volume	Proportiona l Share	Analysis Scenario
15	244 th St SW & Fremont Ave N	Shoreline	PM	46	1,498	3.1%	29
20	Carlyle Hall Rd & Dayton Ave N	Shoreline	AM	16	1,118	1.4%	4
37	244 th St SW & Meridian Ave N	WSDOT	PM	10	4,447	0.2%	29
41	N 185 th St & SR 99	WSDOT	AM	329	3,363	9.8%	4
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	PM	184	2,984	6.2%	29
Urban Village							
No .	Intersection	Jurisdiction	Failing Peak	Site Trips	Total Volume	Proportiona l Share	Analysis Scenario
15	244 th St SW & Fremont Ave N	Shoreline	PM	47	1,499	3.1%	37
20	Carlyle Hall Rd & Dayton Ave N	Shoreline	AM	16	1,181	1.4%	12
37	244 th St SW & Meridian Ave N	WSDOT	PM	13	4,450	0.3%	37
41	N 185 th St & SR 99	WSDOT	AM	325	3,359	9.7%	12
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	PM	191	2,991	6.4%	37

Table 11: Intersection Proportional Mitigation Share - Phase III

Urban Center							
No .	Intersection	Jurisdiction	Failing Peak	Site Trips	Total Volume	Proportiona l Share	Analysis Scenario
15	244 th St SW & Fremont Ave N	Shoreline	PM	53	1,523	3.5%	31
20	Carlyle Hall Rd & Dayton Ave N	Shoreline	AM	29	1,207	2.4%	6
37	244 th St SW & Meridian Ave N	WSDOT	PM	17	4,507	0.4%	31
39	228 th St SW & SR 99	WSDOT	AM	62	2,460	2.5%	6
41	N 185 th St & SR 99	WSDOT	AM	565	3,635	15.5%	6
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	PM	267	3,099	8.6%	31
Urban Village							
No .	Intersection	Jurisdiction	Failing Peak	Site Trips	Total Volume	Proportiona l Share	Analysis Scenario
15	244 th St SW & Fremont Ave N	Shoreline	PM	52	1,522	3.4%	39
20	Carlyle Hall Rd & Dayton Ave N	Shoreline	AM	27	1,205	2.2%	14
37	244 th St SW & Meridian Ave N	WSDOT	PM	23	4,513	0.5%	39
39	228 th St SW & SR 99	WSDOT	AM	59	2,457	2.4%	14
41	N 185 th St & SR 99	WSDOT	AM	530	3,600	14.7%	14
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	PM	239	3,071	7.8%	39

Table 12: Intersection Proportional Mitigation Share - Phase IV

Urban Center							
No .	Intersection	Jurisdiction	Failing Peak	Site Trips	Total Volume	Proportiona l Share	Analysis Scenario
15	244 th St SW & Fremont Ave N	Shoreline	PM	58	1,546	3.8%	33
20	Carlyle Hall Rd & Dayton Ave N	Shoreline	AM	33	1,226	2.7%	8
37	244 th St SW & Meridian Ave N	WSDOT	AM	29	3,290	0.9%	8
37	244 th St SW & Meridian Ave N	WSDOT	PM	22	4,567	0.5%	33
39	228 th St SW & SR 99	WSDOT	AM	87	2,517	3.5%	8
41	N 185 th St & SR 99	WSDOT	AM	650	3,760	17.3%	8
42	N 175 th St & SR 99	WSDOT	AM	628	3,975	15.8%	8
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	PM	340	3,208	10.6%	33

Urban Village							
No .	Intersection	Jurisdiction	Failing Peak	Site Trips	Total Volume	Proportiona l Share	Analysis Scenario
15	244 th St SW & Fremont Ave N	Shoreline	PM	49	1,537	3.2%	41
20	Carlyle Hall Rd & Dayton Ave N	Shoreline	AM	29	1,222	2.4%	16
37	244 th St SW & Meridian Ave N	WSDOT	AM	30	3,291	0.9%	16
37	244 th St SW & Meridian Ave N	WSDOT	PM	20	4,565	0.4%	41
39	228 th St SW & SR 99	WSDOT	AM	74	2,504	3.0%	16
41	N 185 th St & SR 99	WSDOT	AM	579	3,689	15.7%	16
47	N 175 th St & I-5 SB Off-Ramp	WSDOT	PM	321	3,189	10.1%	41

4.2. Roadway Mitigation

The MOU between Shoreline and BSRE identified two corridors which required specific study to identify, prepare, and recommend improvements. The two corridors are Richmond Beach Drive NW/NW 196th Street (Segment A), and NW Richmond Beach Road (Segment B). The study of these corridors identified where roadway capacity improvements, non-motorized enhancements, traffic calming techniques, safety upgrades, and functionality changes would be required to maintain the roadway for current residents and for those of the Point Wells Development. The overall goal of the roadway mitigation improvements is to keep the neighborhood character and mitigate traffic impacts, while focusing on safety and functionality.

Section 4.5 Transportation Corridor Study (TCS) identifies the process by which the study of the Richmond Beach Drive and Richmond Beach Road corridors was conducted. An outcome of the TCS was the identification of specific roadway mitigation improvements to be made to Segment A as a result of increased traffic due to the Project. **Figures 4, 5, and 6** illustrate those proposed roadway section improvements that were preferred by City staff and achieved consensus from the public during the TCS public workshop process. Roadway and intersection LOS analysis of the Build roadway network incorporated the roadway improvements proposed for Segment A, and are shown in **Figures 4, 5, and 6**.

The Richmond Beach Drive NW corridor directly connects 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 established public right-of-way width and existing development along the corridor limit street widening options. The forecasted traffic volumes indicate that a two-lane road section, including pedestrian facilities on one side of the road, and locations for mailbox pullouts, will accommodate the Project-generated trips. Additional considerations include maintaining the safe operation of existing driveways and providing sufficient width for emergency vehicles.

The preferred Richmond Beach Drive NW roadway mitigation includes the following elements:

- Two 12-foot lanes
- Two 3-foot shoulders
- Curb and gutter along each side of the roadway
- A 4-foot amenity zone on the west side of the roadway (for mailboxes, utilities, guardrail, and/or retaining walls)
- One 8 to 10-foot walkway on the east side of the roadway
- An amenity zone between the roadway and the walkway on the east side that varies in width between 2 and 5-feet (except north of 204th Street NW where the amenity zone was removed due to existing right-of-way constraints)
- Mailbox pullouts (where applicable), 6 feet wide

The preferred NW 196th Street roadway mitigation includes the following elements:

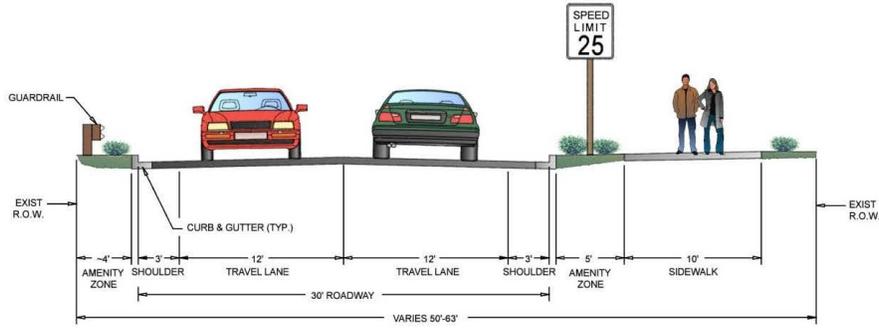
- Two 12-foot lanes
- Two 3-foot shoulders
- Curb and gutter along each side of the roadway
- A 5-foot amenity zone on each side of the roadway (for mailboxes, utilities, and/or walls)
- A 6-foot sidewalk on each side of the roadway

Conceptual designs of the preferred roadway sections for Segment A were developed based upon direct feedback received during neighborhood meetings/workshops from Shoreline staff and residents of the neighborhood adjacent to the Project site who are serviced by the corridor. Selected plan views of the proposed roadway sections for Richmond Beach Drive and NW 196th Street are shown in **Figures 7 through 13**.

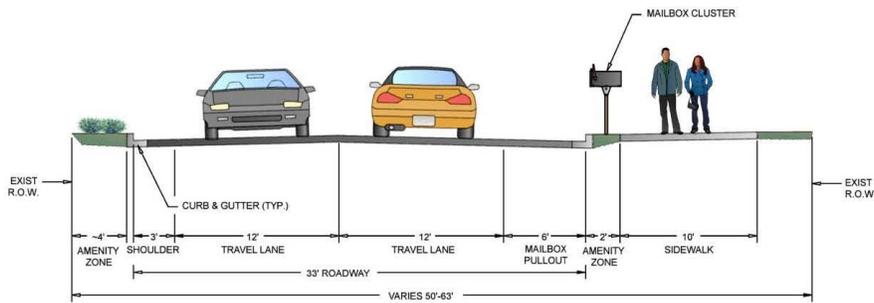
Figures 14 and 15 illustrate the proposed roadway and intersection improvements to intersections #4 (NW 196th Street and 20th Avenue NW), #5 (NW 195th Street and 15th Avenue NW), and #6 (N Richmond Beach Road and 15th Driveway) of the Segment B corridor, which correspond to the proposed Build improvements cited in **Figure 3**.

Figure 4: Richmond Beach Drive – Proposed Two Lane Sections

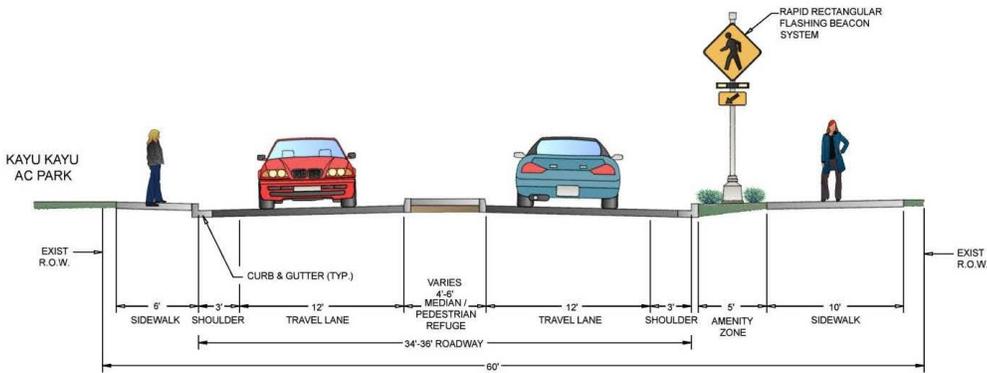
Commented [CR22]: The discussion on the previous page describes the amenity zone as being 4' and this figure shows 5'. Similarly, the sidewalk is described as varying from 8-10' above but shown here as 10'. Confirm the values and revise as necessary.



RICHMOND BEACH DR. - TWO LANE SECTION

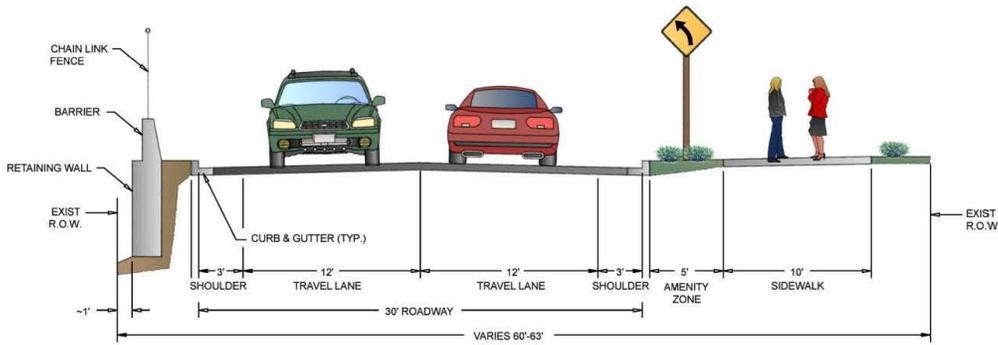


RICHMOND BEACH DR. - TWO LANE SECTION WITH MAILBOX PULLOUT

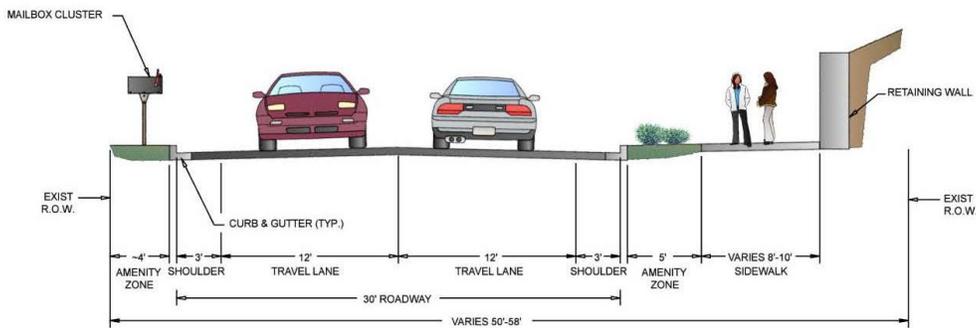


RICHMOND BEACH DR. - TWO LANE SECTION WITH MEDIAN / PEDESTRIAN REFUGE

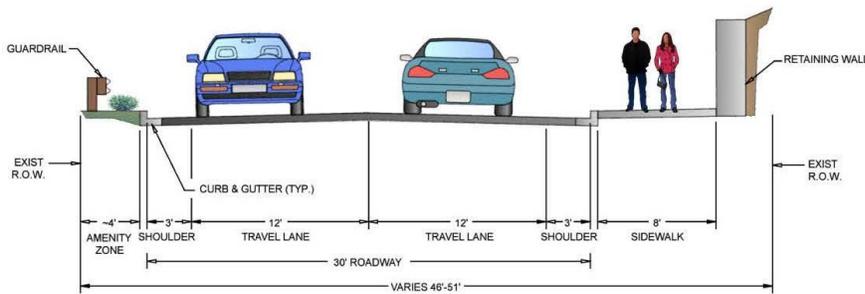
Figure 5: Richmond Beach Drive – Proposed Two Lane Sections with Walls



RICHMOND BEACH DR. - TWO LANE SECTION WITH FILL WALL



RICHMOND BEACH DR. - TWO LANE SECTION WITH CUT WALL



RICHMOND BEACH DR. - TWO LANE SECTION WITHOUT EAST AMENITY ZONE

Figure 6: NW 196th Street – Proposed Two Lane Section

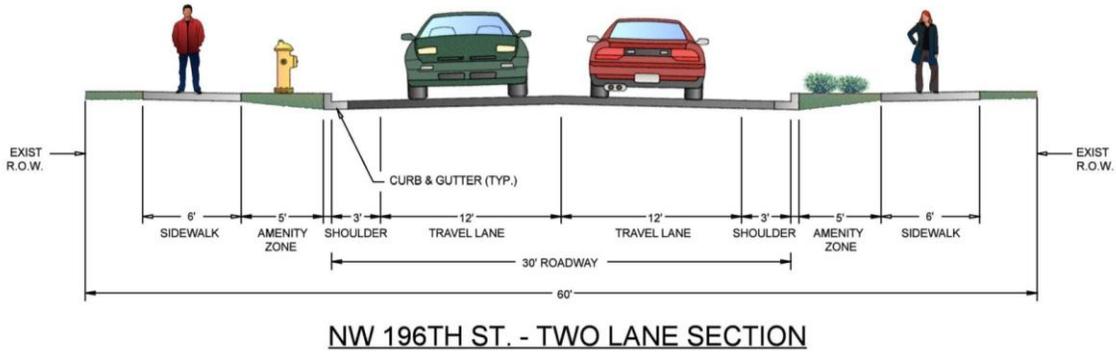


Figure 7: Richmond Beach Drive – Proposed Plan at NW 197th Street



Figure 8: Richmond Beach Drive – Proposed Plan at NW 198th Street



Figure 9: Richmond Beach Drive – Proposed Plan at NW 202nd Place

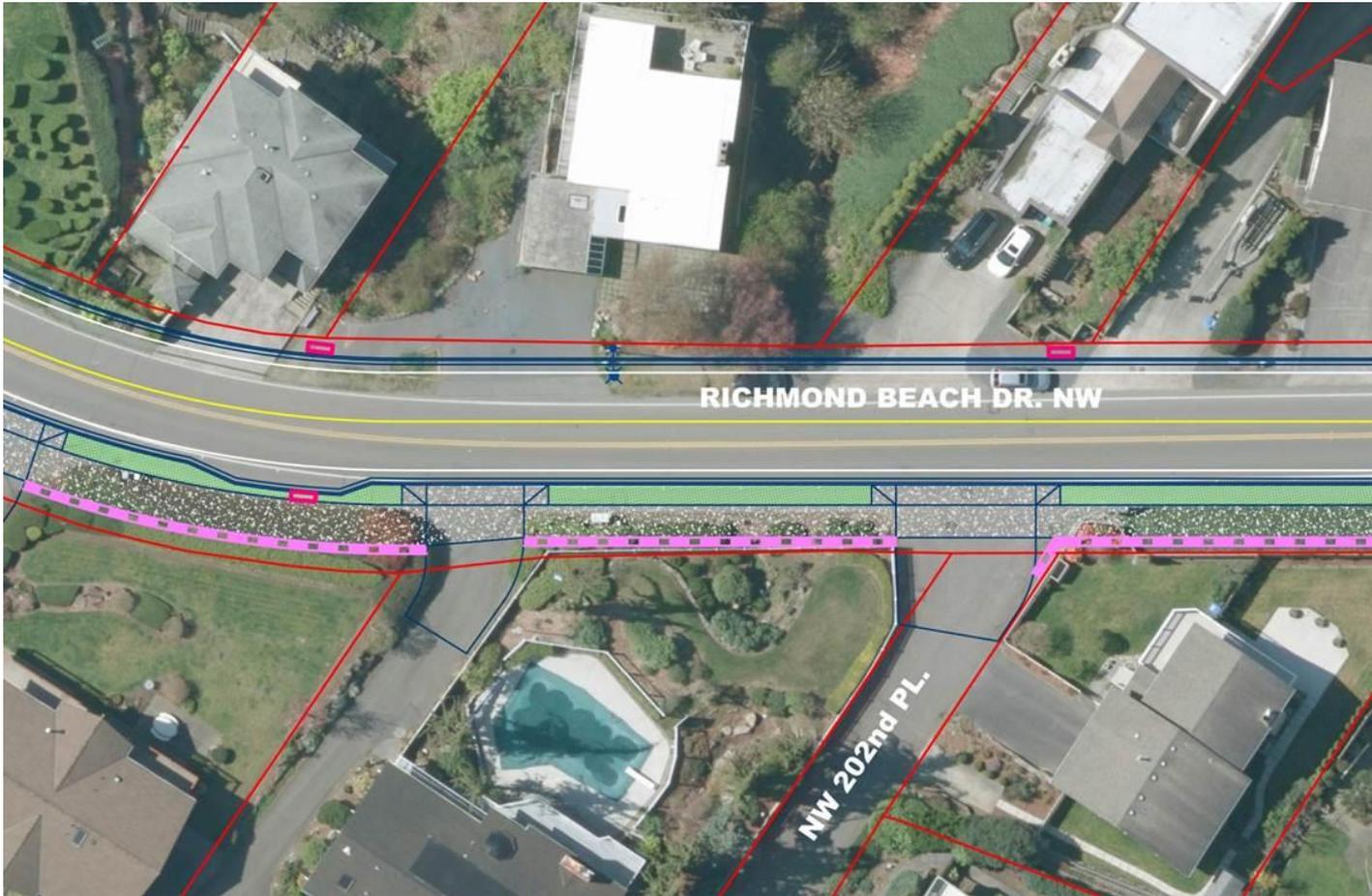


Figure 10: Richmond Beach Drive – Proposed Plan at NW 204th Street



Figure 11: NW 196th Street – Proposed Plan at Richmond Beach Drive



Figure 12: NW 196th Street – Proposed Plan at 26th Avenue NW



Figure 13: NW 196th Street – Proposed Plan at 24th Avenue NW

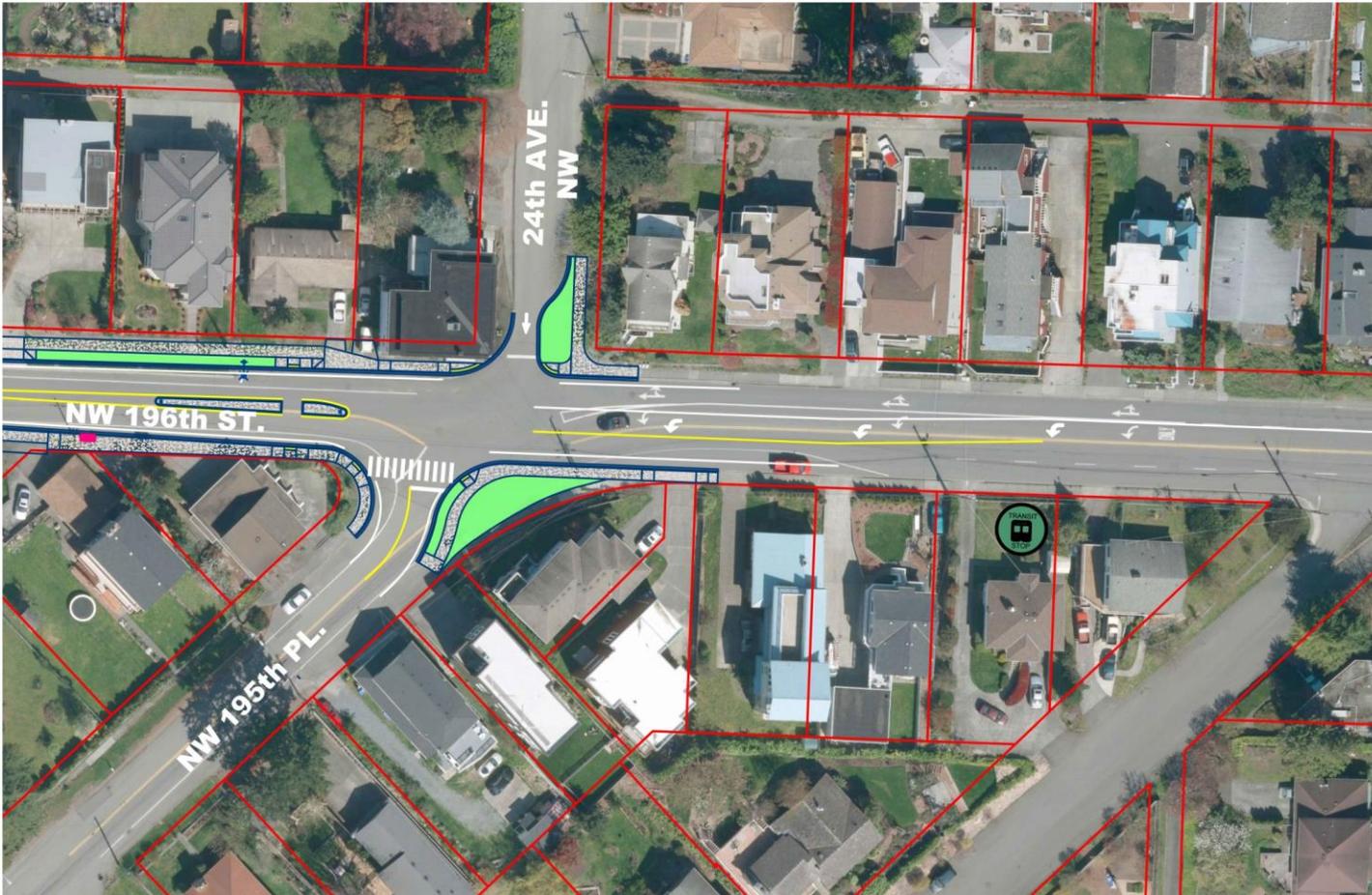
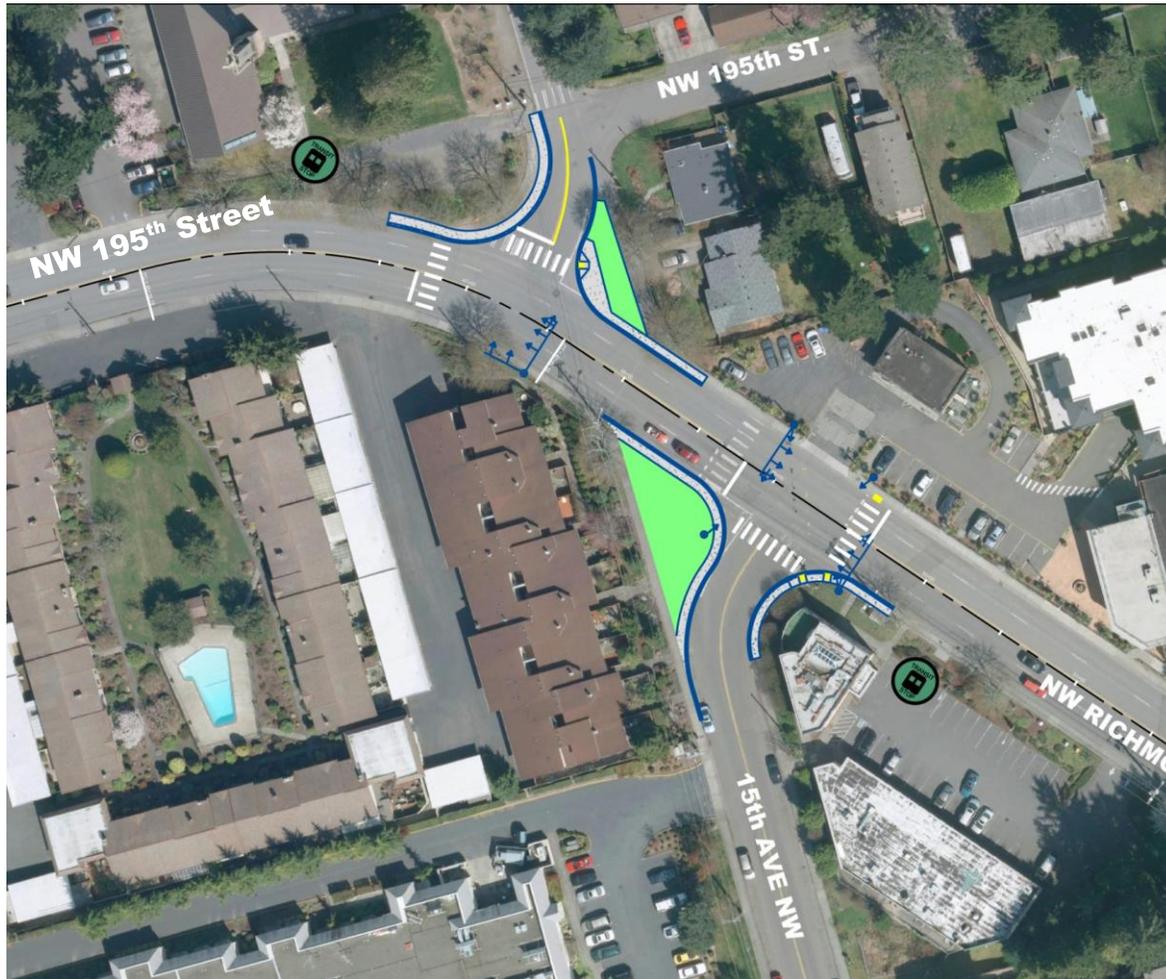


Figure 14: NW 196th Street and 20th Avenue NW – Proposed Plan



Figure 15: NW 195th Street & 15th Ave NW and Richmond Beach Road & 15th Ave NW – Proposed Plan



4.3. Transit Enhancements

The site requires transit service beyond what is currently available on Richmond Beach Drive NW. The Project proposes to provide transit facilities within the Upper Village at the site access on Richmond Beach Drive NW to support both bus and (if applicable) ~~commuter rail service~~. The ability to provide between 3,081 (Alternative 1, Urban Center) and 2,600 (Alternative 2, Urban Village) high-density residential units within an easy walk to a bus transit center (provided by the Project) ~~and (if applicable) commuter rail station~~ is a unique opportunity in the region.

Commented [CR23]: References to rail service may need to be struck. See comments above.

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~~ The increased bus service requirements are ~~only~~ necessary to connect the site to SR 99 ~~and to a planned light rail station on 185th~~. This increase in bus service will provide additional transit access for existing Shoreline residents along the Richmond Beach corridor as well.

4.4. Non-Motorized Enhancements

The increase in vehicular traffic on Richmond Beach Drive NW and NW Richmond Beach Road resulting from the Point Wells project warrants enhancements for non-motorized users of the corridor.

Existing development patterns create challenges for much of the length of Richmond Beach Drive NW, which resulted in a preferred roadway section that included a shared bicycle/auto roadway with a single pedestrian facility on the east side of the roadway. Illustrations of this proposed facility are shown in **Figures 4 through 10**. **Figures 11 through 13** illustrate the proposed non-motorized enhancements along 196th Street NW. The outcomes of the TCS process resulted in concepts integrating the vehicle and non-motorized elements of the corridor.

4.5. Transportation Corridor Study

As outlined in the MOU between Shoreline and the Project Owner, a TCS was conducted between January 2014 and April 2014 that focused on the Project's transportation impacts to the Shoreline community. The study looked at forecasted traffic volume increases resulting from the Project, forecasted delay at intersections affected by the Project, safety issues for pedestrians and bicyclists, as well as potential infrastructure improvements to Shoreline's transportation network as mitigation for the proposed Project.

Traffic analysis prepared for the Project's Expanded TIA dated March 2011 was updated for the TCS in response to feedback received from Shoreline, Woodway, and WSDOT and as part of the MOU. The updated analysis and TCS was used to prepare for the public workshops hosted by Shoreline. Feedback received from Shoreline staff and the public during the TCS study and workshop process has been incorporated into this document.

The traffic analysis for the TCS focused on the corridor between the Project site and Aurora Avenue N (SR 99) located along Richmond Beach Drive NW – NW 196th Street – NW 195th Street – NW Richmond Beach Road – N 185th Street. For the workshops, and as described in the MOU, the corridor was divided into Segment A (Richmond Beach Drive NW – NW 196th Street) and Segment B (NW 195th Street – NW Richmond Beach Road – N 185th Street), as shown in **Figure 16** below.

Figure 16: TCS Project Area



4.5.1. Transportation Corridor Study Workshops

Shoreline hosted a series of seven (7) public workshop meetings between February 2014 and April 2014 to provide the community an opportunity to learn more about the transportation elements associated with the Project and to provide input on them. As part of the workshop process, Shoreline provided a third party facilitator to facilitate the events. The objective of the workshops was to develop consensus with respect to the community’s preferred improvements to the connecting corridors.

The workshop meetings were divided in focus between Segment A and Segment B. Segment A meetings were held on February 12, February 26, March 13, and April 3. Segment B meetings were held on March 19 and April 1. There was a final wrap-up meeting for both segments on April 16. Materials from those workshops are included in **Appendix H**. An outline of workshop material documents prepared for and/or as a result of each of the meetings is included in the appendix and are listed as follows:

Wednesday, February 12, 2014 (at City Hall)

Segment A – Meeting #1: Overview and Identifying Issues

- Segment A, Workshop #1 Meeting Summary
- PowerPoint presentation
- Comments and suggestions from stations
- Comment forms and letters
- Additional emails and letters

Wednesday, February 26, 2014 (at City Hall)

Segment A – Meeting #2: Confirmation and Prioritization of Issues

- Segment A, Workshop #2 Meeting Summary
- PowerPoint presentation
- Comments and suggestions from stations
- Comment forms and letters

Thursday, March 13, 2014 (at City Hall)

Segment A – Meeting #3: Review Proposed Design Options

- Segment A, Workshop #3 Meeting Summary
- PowerPoint presentation
- RBD Plan Exhibit Option 1
- RBD Plan Exhibit Option 2
- RBD Plan Exhibit Option 3
- RBD Plan Exhibit Option 4
- Option 1 - 3 Drawing
- Option 4a - c Drawing
- NW 196th Plan Exhibit Option 1
- NW 196th Street Option Drawing
- Comments and suggestions from stations
- Comment forms and letters
- Recommended Options for RBD_Option 4c Signatures

Wednesday, March 19, 2014 (at City Hall)

Segment B – Meeting #1: Understanding and Prioritizing Issues

- Segment B, Workshop #4 Meeting Summary
- PowerPoint presentation
- Comments and suggestions from stations
- Comment Forms and Letters

Tuesday, April 1, 2014 (at City Hall)

Segment B – Meeting #2: Review Proposed Design Options

- Segment B, Workshop #5 Meeting Summary
- PowerPoint presentation
- RBD Plan Exhibit Option 1 [PDF - 32 MB]
- RBD Plan Exhibit Option 2 [PDF - 11 MB]
- RBD Plan Exhibit Option 3 [PDF - 32 MB]
- RBD Plan Exhibit Option 4 [PDF - 11 MB]
- Comments and suggestions from stations
- Comment forms
- Letters and emails

Thursday, April 3, 2014 (at Richmond Beach Library)

Segment A – Open House to Review the Proposed Design Options

- Comments and suggestions
- Comment forms
- Additional comments (April 14)

Wednesday, April 16, 2014 (at City Hall)
Segments A & B – Final Wrap-Up Meeting

- PowerPoint presentation
- RB Drive_exhibits_2-lane [PDF - 6.7 MB]
- RB_Drive sections_2-lane
- RB_Drives sections_2-lane
- NW 196th section_2-lane
- NW 196th Street Rollplot_2-lane [PDF - 4.4 MB]
- RB Road_exhibits_3-Lane-2 [PDF - 11 MB]
- RB Road_exhibits_3-Lane [PDF - 33 MB]
- Comments and suggestions
- Comment Forms
- Letters and emails
- Additional letters, emails, and forms

4.5.2. Transportation Corridor Design

The corridor concept design process involved Shoreline staff and incorporated feedback received from the public during and after the workshop events. Specific design concepts prepared for the workshops are included within the meeting materials included in **Appendix H**.

A general consensus was achieved on improvements associated with Segment A based upon a review of the feedback received from the public during and after the workshops. The City's preferred alternative for Segment A involved improving the existing Richmond Beach Drive and NW 196th Street corridors to include pedestrian walkways, while maintaining the same number of vehicular lanes.

A general consensus was not achieved on improvements associated with Segment B as a result of the workshop process based upon a review of the feedback received from the public during and after the workshops. The City's preferred alternative for Segment B involved converting the existing four-lane section to three lanes with on-street bike lanes in each direction, which was met with opposition by some. Certain elements of the improvements to the corridor, such as adding a traffic signal to the corridor intersections with 20th Avenue NW and 15th Avenue NW, were acceptable, but converting the corridor with a "road diet" was not. Issues associated with the long steep grade of the Segment B corridor was a common theme found among comments received from citizens as a reason to not convert the roadway. It was noted that the existing grade currently causes heavy vehicles such as trucks and busses to travel below the speed limit. The steep grade was cited as another reason that future use by bicyclists would be limited.

Alternate roadway sections that reduce the number of through lanes in either direction along the Richmond Beach Road corridor (Segment B) from two lanes to one would significantly change the volume to capacity (V/C) calculations for that corridor, with the calculated capacity of the corridor effectively reduced by half. Although the LOS calculations for the intersections in the Build condition along the Segment B corridor indicate that a three-lane section would meet Shoreline intersection LOS standards, using the City's adopted per lane capacities for the roadway segments in Segment B, calculations indicate that a three-lane section would not meet V/C standard of 0.90 or lower, [see Table 8 on page 23](#).

Policy T39 of Shoreline's Transportation Master Plan (City of Shoreline, 2011) allows for acceptance of a segment V/C ratio over 0.90 for specific principal and minor arterial segments when an alternate level of service has been adopted in a subarea plan. Acceptance of this revised V/C ratio is allowable when *widening the roadway cross-section is not feasible due to significant topographic constraints*,

Commented [CR24]: This part seems slanted. Add the reasons given by the city to make the change in order to have a balanced narrative.

and/or rechannelization and safety improvements result in acceptable levels of increased congestion in light of the improved operational safety of the roadway. There are two existing arterial segment corridors within Shoreline meeting at least one of these criteria.

While the option exists to exercise the use of Policy T39, thus allowing a conversion of the roadway from four lanes to three, the Project demonstrates other options to improve the existing Segment B corridor which meet the standards for both intersection LOS and segment V/C.

Input received from the TCS workshops was used in the preparation of this document, including the Methods and Assumptions outlined in Section 2.

Commented [CR25]: This statement seems at odds with other information in the report. Add supporting information or revise for clarity.

4.6. Consistency with City of Shoreline Transportation Master Plan

This Expanded TIA sets forth to address impacts upon all of the affected local jurisdictions, 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. 352 on December 2, 2013 and Resolution No. 335 which amended the 2011 TMP (City of Shoreline, 2011).

Commented [CR26]: If discussion of Snohomish County roads is appropriate under this heading, then Woodway roads need mention too.

5. Summary of Impacts and Mitigation

Traffic impacts as a result of the Project and mitigation of those impacts have been identified within the preceding sections of this report. The following discusses the traffic impacts associated with each jurisdiction included within the study area.

5.1. Snohomish County Impacts and Mitigation

There are no LOS-deficient intersections or roadways projected within unincorporated Snohomish County.

5.2. Shoreline Impacts and Mitigation

The Project site is primarily accessed via Richmond Beach Drive NW and NW Richmond Beach Road through Shoreline. The impacts to this corridor and adjacent neighborhood streets as a result of the increased traffic due to the Project can be mitigated to an allowable LOS.

5.2.1. Richmond Beach Drive/NW 196th St Impacts and Mitigation

The study demonstrates that impacts to Richmond Beach Drive NW and NW 196th Street, while significant, can be mitigated. The key impact to these roads is the change in character from a lightly-traveled residential/industrial road to a heavily-traveled urban street. The roadway improvements are intended to focus on safety and speed management.

Through the TCS process an urban roadway section was developed as mitigation for the increased traffic on Richmond Beach Drive that includes a two-lane section with shoulders, a multi-use walkway on the west side, and amenity zones for landscaping and utilities on each side, (see **Figures 4, 5, 7, 8, 9, and 10**). Through this same TCS process an urban section was similarly developed for NW 196th Street that includes a two lane section with landscape buffers and sidewalks on each side of the roadway (see **Figures 6, 11, 12, and 13**). Improvements included to this section of the corridor are proposed to accommodate both motorized and non-motorized users.

Intersections within this segment of the corridor with specific proposed mitigations to meet LOS requirements are as follows:

- Richmond Beach Drive & NW 196th Street: Move stop sign from east leg and westbound movement to south leg and northbound movement (see **Figure 11**).
- NW 196th Street & 24th Avenue W: Move stop sign from west leg and eastbound movement to southwest leg and northeast movement (see **Figure 13**).

5.2.2. Richmond Beach Road/NW 196th St/NW 195th St Impacts and Mitigation

The study demonstrates that impacts to NW Richmond Beach Road can be mitigated. Maintaining the existing four-lane configuration of this stretch of the corridor is consistent with the public input received during the TCS process and the Project correspondingly stays in compliance with the City's segment V/C requirement. [\[Add discussion and impacted corridors & intersections if the rechannelization goes forward.\]](#)

Intersections within this segment of the corridor with specific proposed mitigations to meet LOS requirements are as follows:

Commented [CR27]: This discussion is important. A mitigation step might be to restore the section to four lanes, but this cannot be taken for granted.

- NW 195th Street & 20th Avenue NW:
Install a traffic signal to this existing all-way stop-sign controlled intersection (see **Figure 14**).
- NW 195th Street & 15th Ave NW and Richmond Beach Road & 15th Ave NW:
Install a coordinated traffic signal system for these two adjacent intersections to these two existing stop-sign controlled intersections (see **Figure 15**).

5.2.3. Off-Primary Access Corridor Intersection Impacts and Mitigation

The study demonstrates that there are impacts to two (2) intersections off of the primary access corridor to the Project site. The intersections with specific proposed mitigations to meet LOS requirements are as follows:

- Fremont Avenue N & N 205th Street (244th Street SW):
Construct a dedicated northbound right turn lane at this unsignalized intersection.
- Dayton Avenue N & Carlyle Hall Road N:
Construct a dedicated southbound right turn lane at this unsignalized intersection.

5.2.4. Neighborhood Cut-Through Traffic Impacts and Mitigation

The study confirms the potential for neighborhood cut-through traffic in 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.

Neighborhood streets east of Richmond Beach Drive (such as NW 197th Street, NW 198th Street, NW 199th Street, 23rd Avenue NW and 24th Avenue NW) and NW 190th Street (between Richmond Beach Road and 8th Avenue West) were modeled with a lower than posted speed limit to simulate traffic calming that would be intended to limit cut-through traffic. During the TCS process, Shoreline provided examples of traffic calming measures that may be implemented as mitigation measures within these two areas. Specific examples of limiting options for cut-through traffic that stemmed from the TCS process include:

- Limit vehicular movements from 24th Ave. W to egress only at NW 196th Street (see **Figure 13**)
- Limit vehicular movements from NW 190th St. to right-in/right-out only at Richmond Beach Road

5.3. Woodway Impacts and Mitigation

The Project site is primarily accessed via Richmond Beach Drive through Shoreline. ~~For modeling purposes, a second, fully-opened-to-the-public, two-lane, vehicular access is assumed being required of the Project by Snohomish County and is proposed to connect to the Project site via a new intersection with 116th Avenue W south of Quail Lane. Final configuration of second access to the site will be determined at a later date. If different than what has been modeled here, new analysis may be necessary to update to the assumed impacts and to identify mitigation measures in the Town of Woodway.~~

Traffic analysis of the Project has incorporated this new secondary access ~~assumption for a connection to 116th Avenue West. In this configuration, via Woodway and has determined that~~ there are no LOS deficient intersections projected for the Town of Woodway.

~~[Add discussion of road segment impacts to the portion of Richmond Beach Drive that is in the Town of Woodway before reaching Shoreline.]~~

The study confirms the potential for neighborhood cut-through traffic in Woodway northeast of the site. The potential volumes would not affect LOS on these neighborhood streets; however cut-through traffic can cause

Commented [CR28]: While it is likely that this section of Richmond Beach Drive cannot be mitigated to maintain LOS A, the report (and DEIS) must disclose that this is an unavoidable impact. Others will debate after the ETIA whether an LOS below A is a significant adverse impact or just something that cannot be mitigated. For this report, simple disclosure is enough.

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.

5.4. WSDOT Impacts and Mitigation

The study demonstrates that impacts to SR 99 can be mitigated and do not significantly affect the performance of the business access and transit (BAT) lane. The Project is designed to be transit-oriented and to encourage people to travel using [new transit options that will connect to](#) available [existing](#) transit service [and planned future light rail extensions](#).

The study demonstrates that there are impacts to four (4) intersections associated with Alternative 1, Urban Center, with three (3) of these intersections associated with Alternative 2, Urban Village. The intersections with specific proposed mitigations to meet LOS requirements are as follows:

- SR 104 (244th St SW/NE 205th St/Lake Ballinger Way) and 76th Avenue W (Meridian Ave N): Construct dedicated eastbound and westbound right-turn lanes and convert northbound and southbound left-turns to permitted/protected phasing.
- SR 99 (Aurora Avenue N) and N 185th Street: Add an eastbound right-turn overlap phase and incorporate an adaptive traffic signal control system upon completion of the BAT lane system to optimize timing and reduce delay by improving coordination of traffic signals along SR 99.
- SR 99 (Aurora Avenue N) and N 175th Street (Alternative 1, Urban Center only): Retime and optimize traffic signal to reduce intersection delay by 3 seconds and incorporate an adaptive traffic signal control system to further optimize timing and reduce delay.
- I-5 Southbound Ramps and N 175th Street: Adjust phasing and traffic signal timing of interchange ramp terminals to reduce delay

5.5. Edmonds Impacts and Mitigation

There are no LOS deficient intersections projected for the City of Edmonds. The one (1) intersection identified by the study in need of improvements due to increased traffic is nearing completion of construction of its improvements and will meet LOS standards when the Project is developed.

5.6. Seattle Impacts and Mitigation

There are no LOS deficient intersections or roadways projected for the City of Seattle.

5.7. Transit Impacts and Mitigation

The site requires transit service beyond what is 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 extending existing bus to the site along with increased frequency of the service and commuter rail service in the event that a commuter rail stop is included in the facilities plan for Sound Transit.~~ An increase in bus transit service between Richmond Beach Drive NW and SR 99 will be required to serve the Project [both as a traffic mitigation measure and to meet Snohomish County code requirements for buildings over 90 feet tall](#). Significant bus transit service including BRT is already present on SR 99, therefore the increased bus service requirements are only necessary to connect the site to SR 99 and to the future Link Light Rail station at I-5 and NE 185th Street.

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.~~

Works Cited

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Appendix A – Existing Conditions and Overall Site Plan

Appendix B – Methods and Assumptions

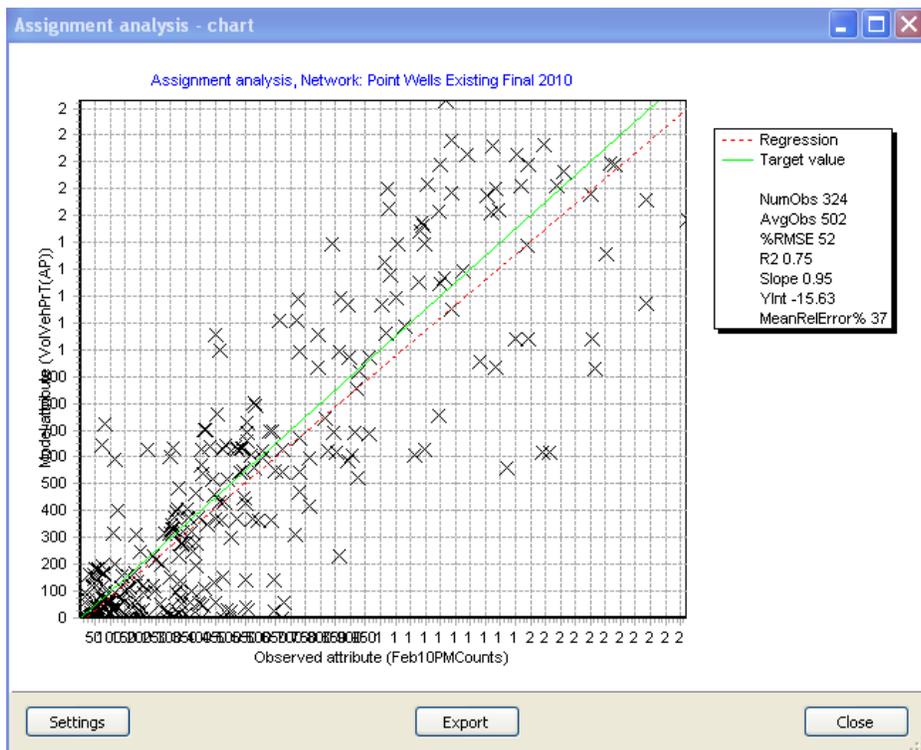
Technical Memorandum

Appendix C – VISUM Model Validation

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.



Appendix D – Project Trip Distribution Alternative 1, Urban Center

Appendix E – Project Trip Distribution Alternative 2, Urban Village

Appendix F – Intersection Operations Summary (Alternatives 1, 2, 3)

Appendix G – Transit Route Mapping

Appendix H – TCS Workshop Materials

Appendix I – Traffic Counts

Appendix J – Intersection Operations SYNCHRO Outputs
