SR 900/Martin Luther King Jr. Way South

Corridor Study

Management of Mobility Division

WSDOT

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION NORTHWEST REGION

SR 900/Martin Luther King Jr. Way South Corridor Study

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1.0 Introduction

1.1 Background

State Route (SR) 900/Martin Luther King Jr. Way South in the unincorporated Skyway-West Hill community is a busy roadway between Renton and Seattle that serves commuter and local trips, freight, freight, transit, bicyclists, and pedestrians, and divides the Skyway community in two. This targeted study focuses on the section of SR 900 between 57th Avenue South (milepost 7.51) and South 135th Street (milepost 8.46) and will address, and document, the lack of complete bicycle and pedestrian facilities collectively known as active transportation facilities. This study also considers the roadway's safety, operational, and performance issues.

SR 900 serves as a direct connection from Interstate 5 (I-5) to the Skyway Community and the City of Renton and has a posted speed of 50 MPH from I-5 to the Renton city limits, just to the east of the study limits. Average daily traffic (ADT) ranges from 21,000 east of South 129th Street to 13,000 west of South 135th Street. There are signalized intersections at South 129th Street and 68th Avenue South. This is also a busy transit corridor, and it is served by King County Metro transit routes 101 and 102. The two transit routes provide direct commuter service between Renton and downtown Seattle from bus stops at South 129th Street and between 68th Avenue South and South 135th Street.

This stretch of SR 900 lacks complete active transportation facilities and has limited crossing options. It is especially notable as the majority of SR 900 is bordered by residential neighborhoods and apartment complexes, and these users have limited options to walk, bike, or roll to transit stops and community markets. Identifying and documenting these concerns are a driving force of this study.

This corridor study is funded through the WSDOT Transportation, Planning, Data, and Research program.

1.2 Study Goals and Objectives

The goal of this study is to provide recommendations that address and resolve active transportation facility gaps and provide operational improvements. These recommendations are based on data and informed by feedback from the community. They will likely need to be implemented in phases due to cost and engineering needs. Presently, there is no funding available to implement any of the study recommendations.

Planning level cost estimates for key recommendations are provided so WSDOT and stakeholders can pursue grant funding for next steps, such as preliminary engineering and design work. The planning level cost estimates reflect the fact that this section of SR 900 does not have

active transportation infrastructure and as such, includes extra costs to prepare the land for infrastructure such as sidewalks and shared use paths.

This study's recommendations identify strategies to address pedestrian, bicycle and traveler safety, multimodal access, and provide traffic calming. The strategies are based on previous and current planning efforts on SR 900.

A previous WSDOT-led corridor sketch analysis of SR 900 which recommended WSDOT conduct a planning study using a practical solutions approach to identify long-term solutions to the identified congestion and safety issues on this corridor.

In the WSDOT Active Transportation Plan equity serves as a critical consideration for active transportation throughout the research, engagement, and analysis phases. Inequities in available transportation infrastructure connecting people to jobs, housing, food access, and other essential services have their roots in a history of residential segregation. To avoid further burdening such populations, an equity approach was outlined for each of the five WSDOT Active Transportation Plan goals (Connectivity, Safety, Opportunity, Participation and Partnership) to be considered during studies like this. The approach to equity developed for this plan helps identify disparities and gaps in performance associated with each of the plan's goals by considering metrics in terms of equity checks.

In recent years, the county and community-led planning efforts in the Skyway-West Hill area identified pedestrian improvements and congestion relief as top community priorities. The SR 900 study recommendations support the Skyway-West Hill Community Vision detailed in the Skyway-West Hill Community Service Area Subarea Plan.

Skyway-West Hill will grow into a vibrant, walkable, neighborhood where housing is affordable and local, community-based businesses are thriving. Skyway-West Hill will be an ethnically diverse and civically engaged community where the collective voice, wisdom, and expertise of its residents and business owners are vital in ongoing civic decision-making.

1.3 Planning Context

In the summer of 2020, WSDOT commenced the study to address issues and concerns consistent with previous planning efforts, and incorporated state and local planning efforts. Critical efforts include the Skyway-West Hill Community Service Area Subarea Plan; Washington State Active Transportation Plan, 2020 and Beyond; WSDOT ADA Transition Plan for Public Rights of Way and Ferries; WSDOT's Healthy Environment for All (HEAL) Act; Complete Streets; Target Zero; King County Metro planning documents; and King County ADA Transition Plan and Strategic Plan for Road Services.

Skyway-West Hill Community Service Area Subarea Plan

The Skyway-West Hill Community Service Area Subarea Plan includes guiding principles that support the community vision. These guiding principles were used to inform and direct the development of the Subarea Plan:

- Create healthy connected neighborhoods where residents have safe and adequate means to connect with their neighbors, schools, community services and programs, and local businesses.
- Ensure the community grows in a well-planned and sustainable way and that it has the resources necessary for all its residents to thrive and enjoy a high quality of life.
- Ensure Skyway-West Hill's youth are thriving and engaged in local decision-making so they can advocate for and receive the services and resources they and their families need to succeed.
- Encourage equitable development by promoting access to a variety of housing choices, incentivizing the creation of public amenities, addressing displacement, encouraging economic opportunity, and cultivating neighborhood character.
- Protect existing and create new affordable housing that focuses on preventing displacement and providing options and opportunities for Skyway-West Hill residents to remain in their community.
- Inform all policies, regulations, and County actions affecting Skyway-West Hill with the principles of equity and social justice.
- Protect and enhance the existing character of the community's residential neighborhoods and enhance connections between these areas and business districts.

Community Engagement - Transportation

There were multiple community engagement strategies that informed this planning effort. The transportation related feedback is summarized below.

Interviews:
Many respondents commented on the poor pedestrian infrastructure in the community and the need for more and better sidewalks in the commercial districts, on main arterials like Martin Luther King Jr Way South (SR 900), and in some of the school zones.

Focus Groups:
Participants identified physical features they felt characterized a thriving/healthy community, and there was significant alignment around the need for more parks, sidewalks, lighting, places for youth, transit, and police service.

Public Meetings:
First Community Open House – Needs within the community were identified including new stop signs in the area, sidewalks in areas like Creston Point, and road improvements.

- Second Community Forum – Identified a need for improved sidewalks and streetlights.
- Fall Planning Kick-Off – Sidewalks, especially in the residential areas to make walking safer, transit service and greater access to service were highlighted as a strong desire from the community.

Surveys: Two surveys were completed. Participants identified their top priorities related to creating healthy and connected neighborhoods:

- More walkable spaces or sidewalks in the residential areas (no specified location).
- Improve pedestrian and bicycle routes in north/south corridors.
- Improve safety for pedestrians on Martin Luther King Jr. Way S (SR 900).
- Add crosswalks and speed limit signs to high traffic streets.
- Improve bus stop sitting areas with lighting, safety, and signage.

Their top priorities for creating sustainable growth were:

- Pursue improvements to transit (bus services/facilities) in the community to access locations more easily in surrounding cities.
- Provide pedestrian/bicycle access along streets, parking lots, and between and through residential areas.

Skyway Community Voices Engagement
Engagement with Skyway Community Voices identified similar priorities:

- Improve transit services.
- Improve safety and control speeds on local streets and Martin Luther King Jr. Way S (SR 900).
- Install sidewalks, crosswalks, and streetlights on neighborhood streets.

Washington State Active Transportation Plan, 2020 and Beyond

The key goals identified in the Washington State Active Transportation Plan, 2020 and Beyond, are as follows:

- Connectivity: Create and connect comfortable and efficient walking and rolling networks so people can reach their destinations and other forms of transportation and have everyday access to physical activity.
- Safety: Eliminate deaths and serious injuries of people walking and rolling.
- Opportunity: Eliminate disparities in access to safe, healthy, active transportation connections for people and communities most dependent on walking, bicycling, and transit.
- Participation: Increase the percentage of everyday trips made by walking or bicycling.
- Partnership: Collaborate and coordinate with public, tribal, nonprofit, and private partners to complete and improve the network across boundaries.

Recommendations to accomplish the plan's goals include:

- Develop implementation plans with clear responsibilities for the strategies identified in this plan and others that may be identified as necessary for progress.

- Prioritize investments in locations with highest needs to make the most difference in addressing existing disparities in safety, mobility, access, and human and environmental health.
- Address gaps located on or created by state highways by identifying the best available locations to close these gaps. These locations may be on or off the state highway depending on local plans and facilities.
- Reduce the level of traffic stress on the network to make it possible for more people to use active transportation safely and comfortably.
- Align policy changes, funding, and commitment to meet the state's Target Zero goal to reduce traffic fatalities and serious injuries to zero and to meet the mobility and environmental goals for mode shift and reductions in vehicle miles traveled.

The Active Transportation Plan also requires the study to evaluate roadway characteristics to determine a perceived level of comfort and safety for pedestrians and bicyclists under varied conditions and to consider roadway improvements aligned with the Safe System Approach. Additional information on the Safe System Approach can be found in the Target Zero section below.

WSDOT ADA Transition Plan for Public Rights of Way and Ferries

WSDOT will continue to rely upon and expand partnerships with the disability community and other stakeholders, including cities, counties, and transit districts who share a common interest in addressing accessibility needs.

WSDOT's Community Engagement Plan (2016)

A high priority for state agencies is ensuring access and participation of diverse communities in the decision-making processes. It is our intent to ensure that all voices are heard, emphasizing the fair and meaningful involvement of all people including minority and low-income populations. WSDOT's Community Engagement Plan provides high-level guidance for community engagement efforts and enhances agency accountability and transparency. It focuses on outcomes and usable guidance rather than process and was modeled using a variety of good examples from other states and agencies. The plan guides how the agency engages with partners, stakeholders, tribes, and communities for all WSDOT efforts. It includes strategies to increase consent on decisions, enhance understanding, and improve public access to information and decision making. The plan presents best practices for community engagement and is intended to provide guidance to employees and the public on WSDOT's community engagement program and process. The plan includes legal and policy requirements, a resident's guide to engaging, guidance and strategies for practitioners, a guide about evaluating engagement effectiveness, and appendices including best practice examples.

Complete Streets

In 2022, the Washington State Legislature passed Senate Bill 5974 (PDF 738KB), the Move Ahead Washington package. It included a Complete Streets requirement added to RCW 47.24.060, which directs that "in order to improve the safety, mobility and accessibility of state

highways, it is the intent of the Legislature that the department must incorporate the principles of complete streets with facilities that provide street access with all users in mind, including pedestrians, bicyclists and public transportation users" for "state transportation projects starting design on or after July 1, 2022 and that are $500,000 or more."

Target Zero

WSDOT is guided by the strategies and recommendations in Target Zero, the state's Strategic Highway Safety Plan. Target Zero's goal is to reduce the number of deaths and serious injuries on Washington's roadways to zero by year 2030. WSDOT approaches safety using the Safe System Approach, which places safety as a primary factor in road system investment decisions. The Safe Systems Approach includes five elements in synergy-safe road users, safe vehicles, safe speeds, safe roads, and post-crash care. All five elements must be addressed and strengthened to achieve the Target Zero goal of zero traffic deaths and serious injuries.

Courtesy FHWA

King County Metro

King County Metro representatives continue to collaborate with WSDOT to identify potential bus stops and bus stop improvements consistent with King County Metro's Mobility Framework; Strategic Plan for Public Transportation 2011-2021; and Long-Range Plan.

King County Road Services

King County representatives continue to collaborate with WSDOT to address gaps in the sidewalk network consistent with the King County ADA Transition Plan and Strategic Plan for Road Services.

1.4 Current and Future Projects

Completed projects on this section of SR 900 are as follows:

- Pavement marking refresh and pedestrian crossing signs at South 129th Street. Completed in November 2020.
- Flashing yellow arrow signal head for right turn from westbound South 129th Street to westbound SR 900: Completed in June 2021.
- Leading pedestrian interval (LPI) for pedestrian signals at South 129th: Completed in June 2021.

While there are no programmed future projects for SR 900 in the Skyway-West Hill Community study area, there is an effort to develop and implement near-term solutions to address safety concerns at an elementary school bus stop at the Creston Point Apartments. The effort is a partnership between WSDOT, the Renton School District, King County Local Services, and King County Metro.

1.5 SR 900 Corridor Study Milestones

WSDOT established the following key milestones for this study:

- Engage with key stakeholders and nearby communities.
- Gather corridor user feedback through online survey and analyze survey data.
- Analyze safety and traffic data.
- Conduct scan of environmental features.
- Develop practical concepts based on community input and data analysis.
- Share concepts with the community and gather additional feedback.
- Summarize findings in a final report.

2.0 Study Process

WSDOT completed a corridor sketch summary for SR 900 in 2019. The purpose of a corridor sketch is to identify issues requiring further study. Identified issues were based on data and were identified in cooperation with stakeholders. The corridor sketch noted no further study was needed for freight movement, habitat connectivity, chronic environmental deficiencies, or fish passage. An environmental screening was completed to ensure that environmental context and priorities inform the study practical recommendations. The screening identified 5 categories

Map of SR 900 study limits from 57th Avenue South to South 135th Street.

meeting the criteria for consideration, Demographic, Climate Vulnerability, Pollinator Habitats, Urban Gateway Habitats, and Hazardous Materials. The full Environmental Screening is detailed in Appendix B. Issues needing further study were traffic congestion and the lack of active transportation facilities.

3.0 Study Area

This study is in the Skyway-West Hill unincorporated area of King County on a portion of SR 900 between 57th Avenue South and South 135th Street (the Renton city limits).

4.0 Community Engagement

The study team conducted outreach to the affected neighborhoods, agencies, and residents who use SR 900. Community members shared their experiences, identified concerns and potential solutions, and provided feedback throughout the corridor study process. Given the significant number of residents with limited English proficiency in the study area (see section 5.1 demographics for more detail), the open house, survey and other materials were translated into Spanish, Somali and Vietnamese to encourage wider participation. Because the community engagement strategy was constrained by the COVID-19 pandemic, all community outreach through the Spring of 2022 was virtual. This included virtual stakeholder committee meetings, one-on-one phone calls with constituents, and an online open house and survey. Transportation feedback from other engagement efforts in Skyway were collected as part of the effort to understand the transportation challenges and priorities of the Skyway community. In late 2021, the study team used all feedback to develop the draft list of strategies presented as part of the concept evaluation process.

The draft list of strategies was presented to the community in Spring 2022, and afterwards concerns were raised about two of the draft strategies – the roundabout at South 129th Street and the new enhanced pedestrian crossing near Creston Point Apartments. Additional outreach was completed to seek feedback on these strategies and consisted of in-person events and virtual meetings. See Appendix A for more details on outreach.

4.1 Stakeholder Committee Meetings (Phase 1)

The study team convened two meetings of a diverse stakeholder committee to provide feedback and guide the corridor study process. The following groups were invited to participate, City of Renton, King County Roads Division, King County Local Services, King County Metro, the West

Hills Community Association, the Renton Innovations Zone Partnership, Puget Sound Regional Council (PSRC), tribal governments[1], Washington State Patrol, and WSDOT.

The committee met twice and reviewed the study's goals and objectives, brainstormed potential corridor improvements, provided background data and related documents, and offered feedback on strategies as well as suggestions for implementation.

4.2 Public Survey and Online Open Houses (Phase 1)

WSDOT hosted a virtual online open house in October and November of 2020 through the WSDOT Online open houses website. The website included corridor maps, an overview of existing conditions, aggregated crash data from 2015 to 2019, and an online survey.

The study team advertised the online open house and survey through the following methods:

- Social media and established email lists.
- WSDOT website.
- Postcard mailers to more than 3,000 households within the study area.
- Local and tribal governments and community-based organizations that connect with low-income and limited English proficiency populations.

The open house and survey – offered in English, Spanish, Somali and Vietnamese – reached a diverse audience with people of all ages from multiple ethnic, cultural, and economic backgrounds participating. The online open house was viewed 3,188 times, and the survey was completed by 196 respondents who shared information about how and why they use the corridor.

Four key themes emerged from the community outreach:

- The lack of pedestrian facilities.
- Excessive driver speeds.
- Congestion on SR 900.
- Lack of illumination along the corridor.

4.3 Community Events and Meetings (Phase 2)

A second phase of outreach was initiated after presenting the draft recommendations in Spring 2022. The intent was to seek feedback on two recommended strategies, the roundabout at South 129th Street and the new enhanced pedestrian crossing near Creston Point Apartments. In this phase, WSDOT participated in two in-person community events to seek specific feedback on these strategies. Feedback on the roundabout at South 129th Street focused on:

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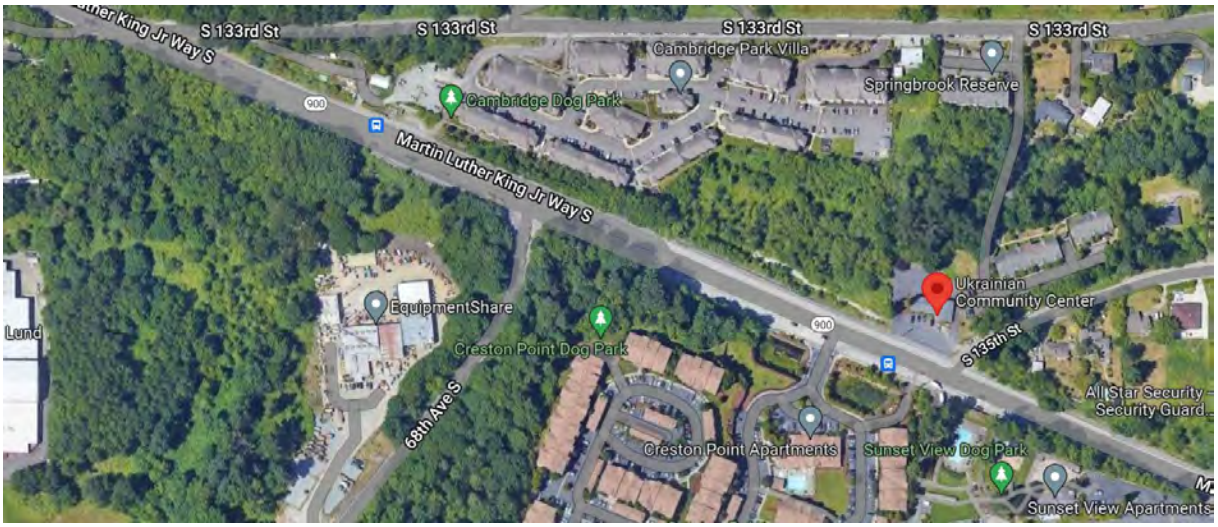
[1] Three letters requesting participation were sent to the chairs of the Muckleshoot Indian Tribe, Snoqualmie Indian Tribe, Stillaguamish Tribe of Indians, and the Yakama Nation.

- Ability of freight, specifically large trucks, to navigate the intersection.
- Concern with drivers simply driving over the roundabout.
- Vehicle speed.
- Ability of pedestrians to safely cross the street.
- Incorporating the community vision in the design.
- Create a gateway to the Skyway-West Hill Community.

Feedback on the new enhanced pedestrian crossing near Creston Point Apartments focused less on the potential location of a new pedestrian crossing and more on frustration with the location of the westbound bus stop to Seattle for King County Metro routes 101 and 102. Specifically, there was a strong community sentiment to move the stop east within proximity to the eastbound bus stop. The preferred location for the pedestrian crossing was where both the existing eastbound bus stop and relocated westbound bus stop could be easily accessed.



Aerial of SR 900 from South 133rd Street to South 135th Street.

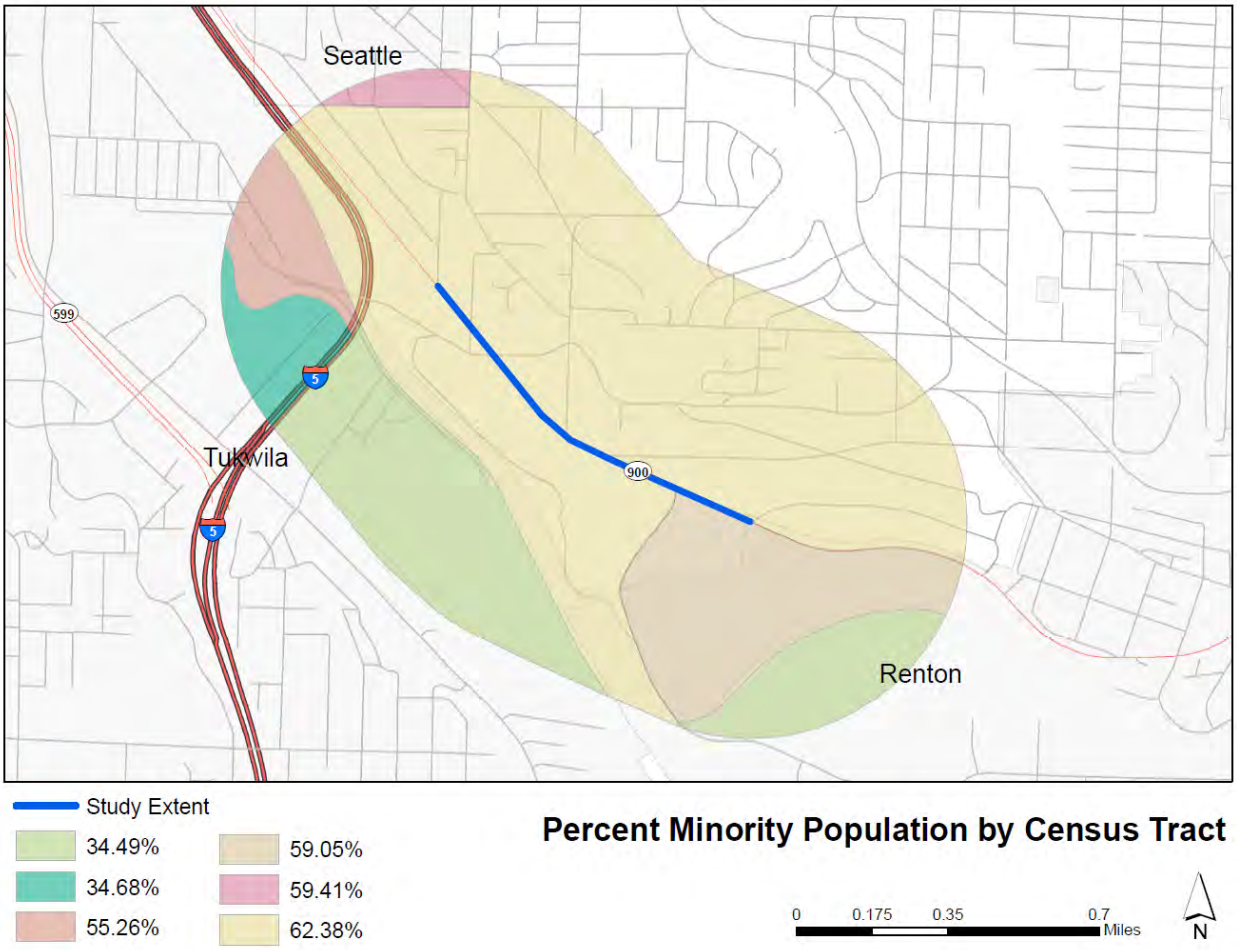
During the second outreach phase, WSDOT attended community and county-led meetings to learn about opportunities to connect with the community as well as share updates on the study, outreach, and funding opportunities.

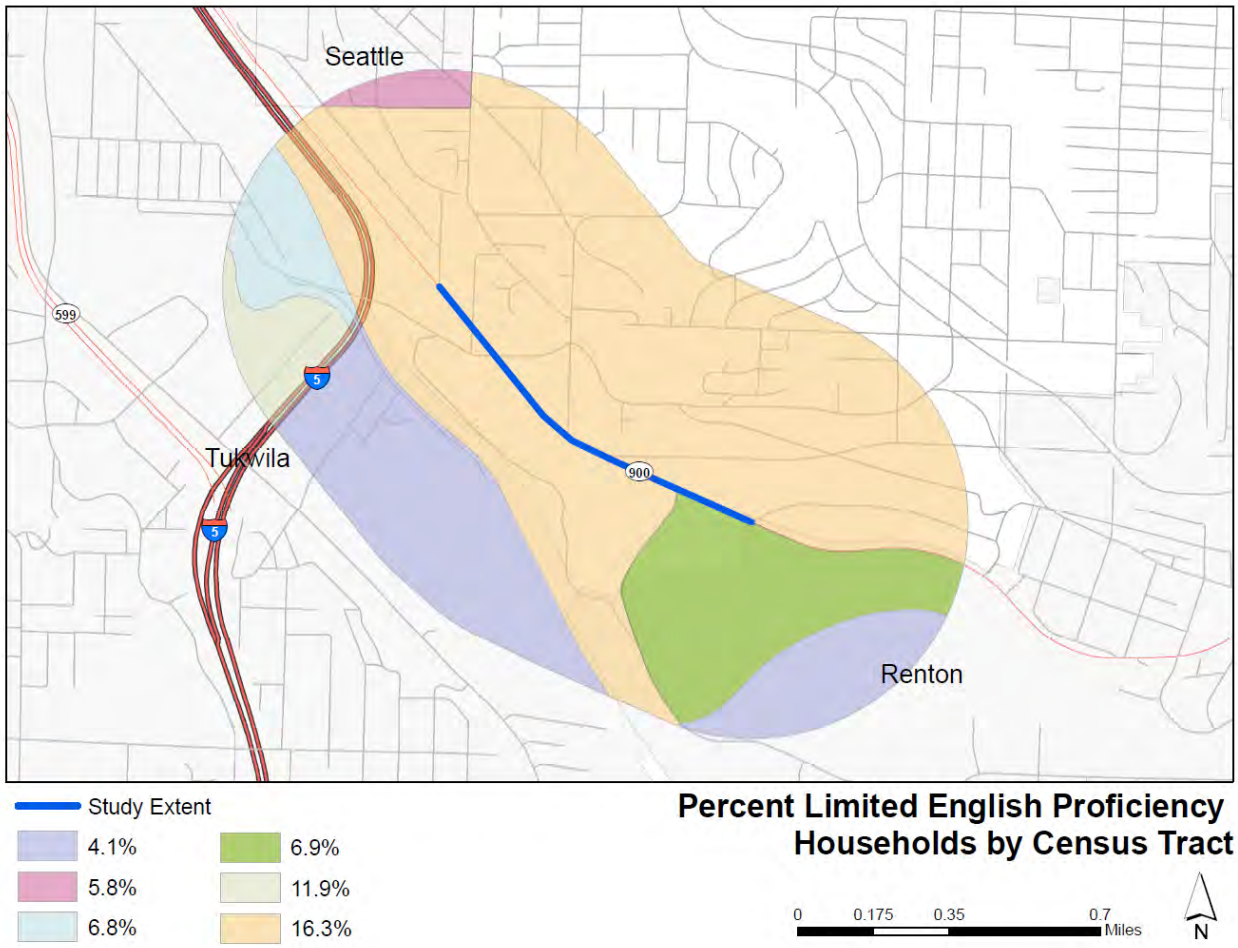
5.0 Environmental Screening

An environmental screening was completed to ensure the environmental context and priorities of the area were highlighted and accounted for in this study. A brief description of the five environmental screening categories relevant to this study are provided below. Appendix B contains maps illustrating all environmental screening categories that were analyzed in this study.

5.1 Demographics

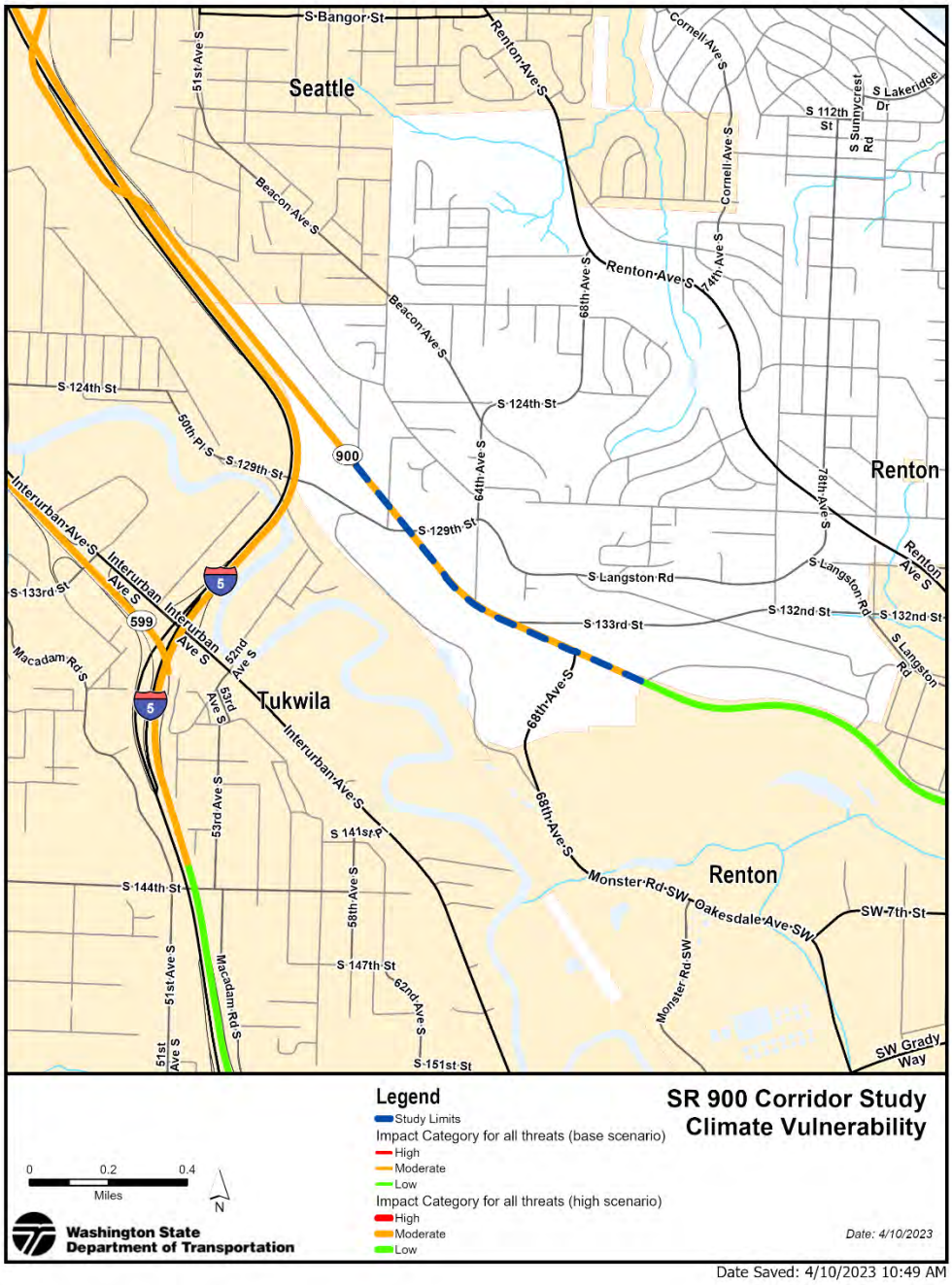
Within a half mile of the study area limits approximately 34.39-62.38% of the population is considered part of a minority group according to census tract data. Additionally, Limited English Proficiency (LEP) households constitute 4.1% to 16.3% of the households within the same area. This information was used to inform the community engagement process by ensuring that materials were translated into the additional non-English languages present in the surrounding community – including Spanish, Somali and Vietnamese.




Seattle
599
5
Tukwila
5
900
Renton
Study Extent
4.1%
5.8%
6.8%
6.9%
11.9%
16.3%
Percent Limited English Proficiency Households by Census Tract
0
0.175
0.35
0.7
Miles
N

5.2 Climate Vulnerability

This corridor has a climate vulnerability rating of “Moderate.” That implies this segment of SR 900 could experience temporary operational failures at one or more locations.



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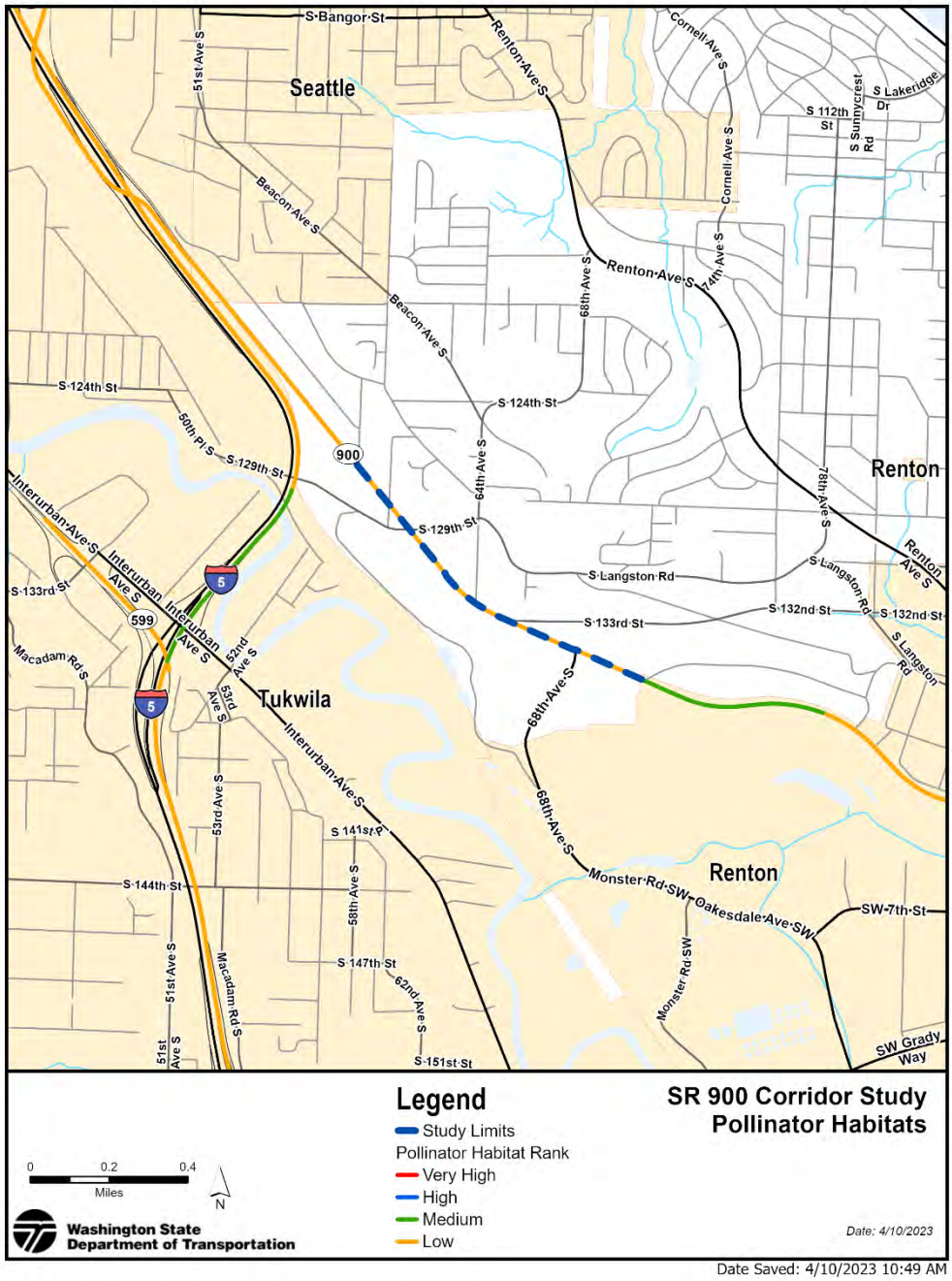
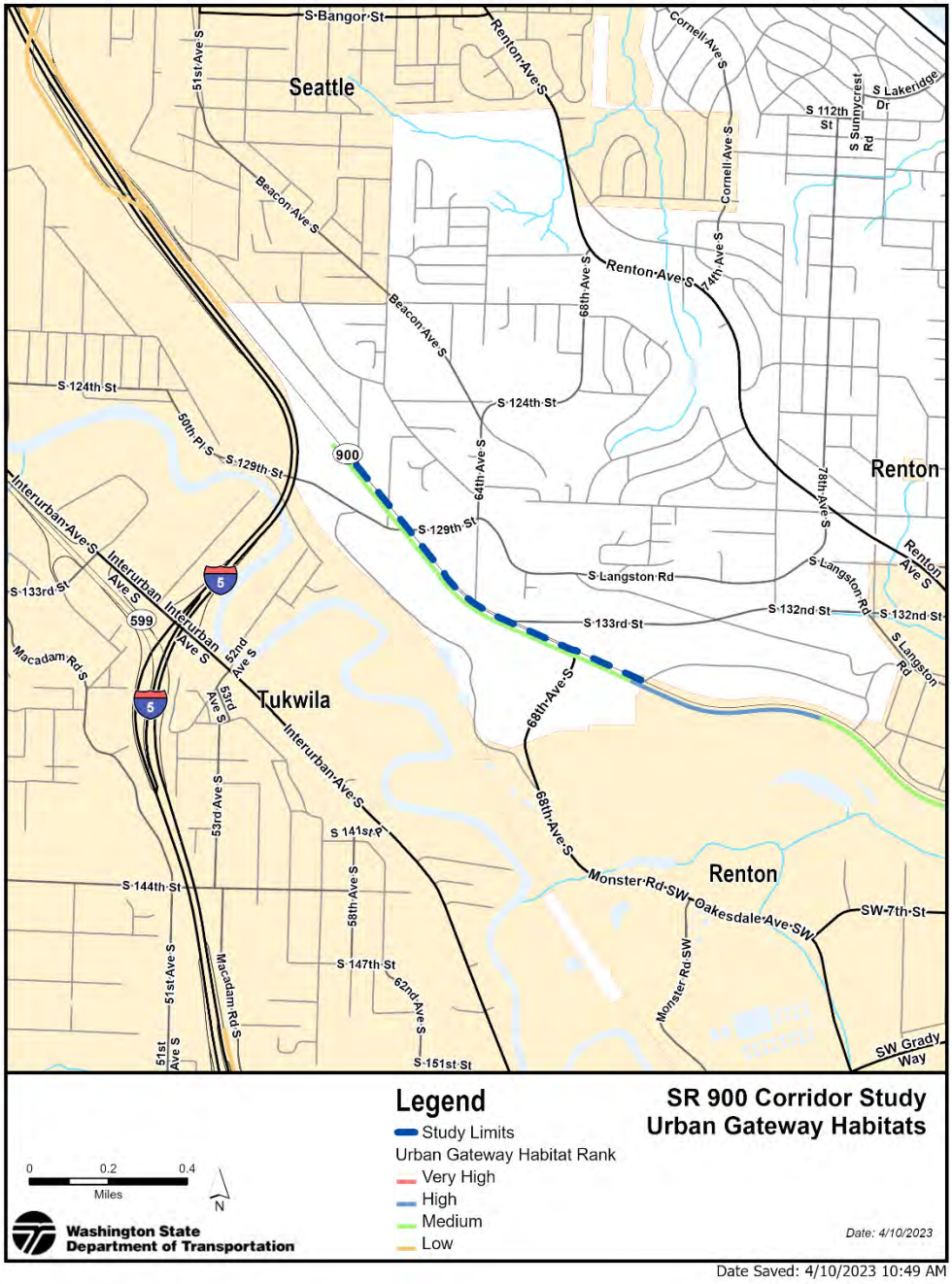
5.3 Pollinator Habitat Rankings

A short segment at the eastern end of the corridor is ranked as “Medium” for pollinator habitats. Consideration should be given to modifications that could improve pollinator habitats in this area.



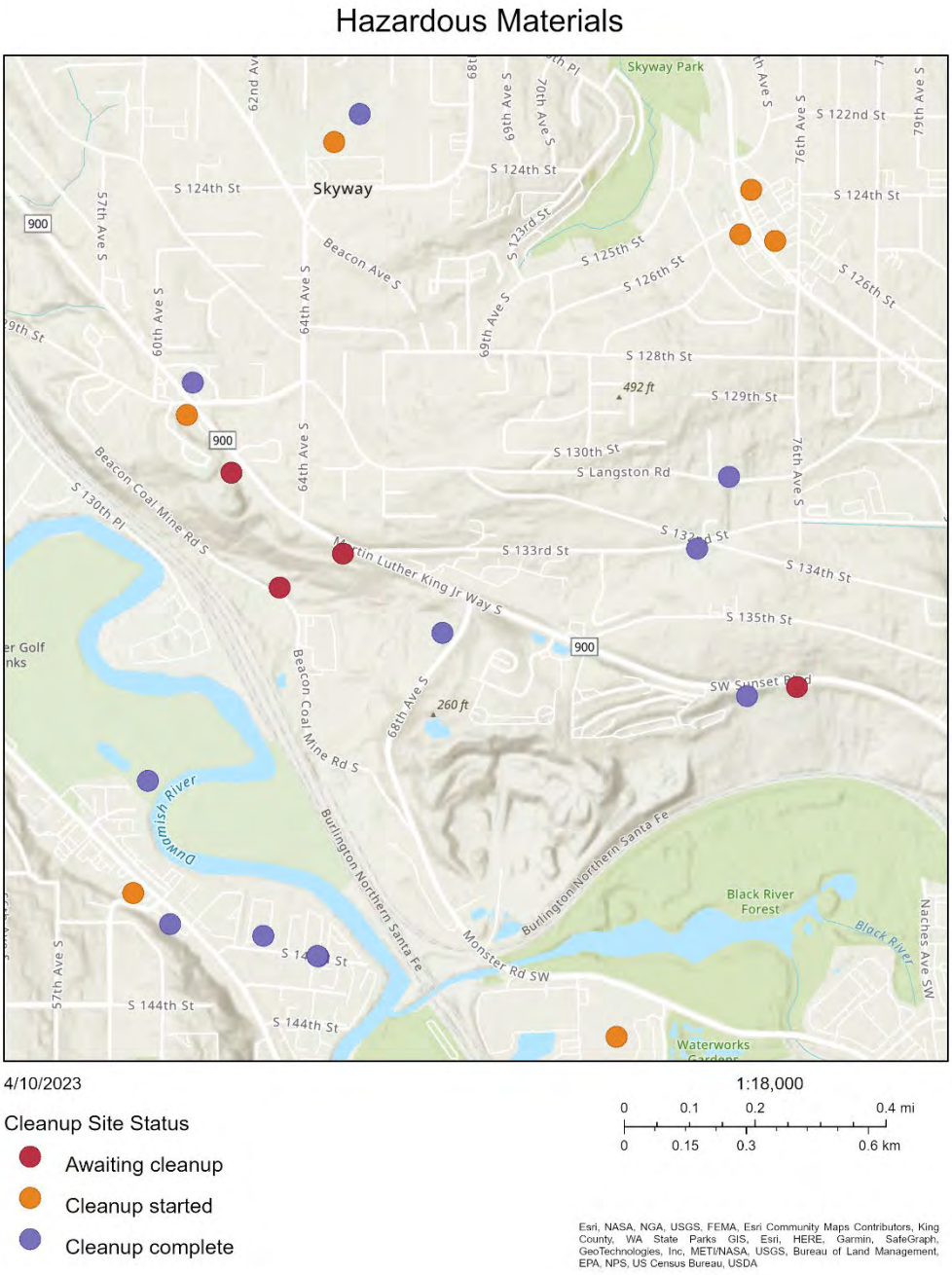
5.4 Urban Gateway Habitat Rankings

This corridor has an Urban Gateway Habitat ranking of “Medium” or “High” throughout its limits. The Urban Gateway Rank identifies high-value areas for creating, preserving, or enhancing pollinator habitats along a state highway that is within an urban area and where natural pollinator habitats are present. A high rank indicates good conditions for providing pollination and aesthetic benefits where they are likely to be appreciated by an urban community.



5.5 Hazardous Materials

There are multiple hazardous materials sites located on this corridor that are either awaiting cleanup or cleanup has already started. These sites could pose health hazards to the surrounding community until they have been successfully cleaned up.



6.0 Strategy Development and Evaluation Process

6.1 Development and Screening Process

A set of near and mid-term strategies were developed based upon available data and input from the community and stakeholders. The near-term improvement strategies focused on addressing speed concerns, illumination, active transportation facilities, and marked pedestrian crossings. The focus of these improvement strategies was on changing the driving environment to provide a calming and welcoming space and improving accessibility for all users.

The study's mid-term focus was on improving safety and accessibility rather than addressing congestion. There are limited opportunities to address congestion in the corridor, and any future strategies would require further study of the broader network including I-5 and I-405.

6.2 Performance Metrics

The criteria used to evaluate strategies included the following:

- Baseline needs.
- Safety performance.
- Active transportation connectivity (transit, businesses, homes, etc.) and accessibility.
- Contextual needs.
- Consistency with the Washington State Strategic Highway Safety Plan (Target Zero) and the reduction in crash potential.
- Constructability.
- Cost and technical feasibility.
- Community support.
- Avoidance of displacement and ability to preserve community character.

6.3 Performance Evaluation

The eight intersections evaluated for performance:

Intersection	Intersection Control
SR 900/57th Avenue South	One-way Stop
SR 900/60th Ave South	Two-way Stop
SR 900/South 129th Street	Signal
SR 900/64th Ave South	One-way Stop
SR 900/South 133rd Street	One-way Stop
SR 900/68th Ave South	Signal
SR 900/Creston Apartments (Private Driveway)	One- way Stop
SR 900/ South 135th Street/Sunset Apartments (Private Driveway)	One-way stop

Existing Peak Period Operations

During the AM peak period, all intersections operate at Level-of-Service (LOS) C or better except for the South 129th Street intersection which operates at LOS F. In the morning, SR 900 traffic is

predominately heading west to I-5. During the PM peak period, all intersections operate at LOS D or better, except for the South 129th Street intersection which operates at LOS F. In the afternoon, there is heavy traffic demand heading east toward Renton.

The South 129th Street intersection is the focal intersection of SR 900 within the Skyway community because it is the only continuous east-west roadway that intersects with SR 900. The high pass-through commuter traffic coupled with local demand saturates the South 129th Street intersection. As a result, it experiences a reduced level of service and long queues can build, especially on eastbound SR 900 approaching the intersection. In addition, during the PM peak, the queue to make the eastbound left turn to South 133rd Street can intermittently exceed the available lane storage, even after the eastbound left-turn pocket length was increased in 2016.

The second signalized intersection in the corridor is 68th Avenue South. This serves as the arterial for industrial and commercial land use adjacent to the Duwamish and Black rivers. The northbound approach to the intersection is a single lane and does not have turn channelization, so drivers turning in either direction must wait in a single queue. This can result in long queues northbound during the peak periods.

Crash History[2]

As a key component for the safety analysis of this study was five years of crash history for vehicles and pedestrians. The safety analysis below used the most recent five-year period (2015-2019) between milepost 7.51 (57th Avenue South) and milepost 8.48 (100 feet east of South 135th Street). No bicycle-related crashes were recorded.

The pedestrian involved collisions noted on this section of SR 900 include the following:

- There were three recorded collisions at South 129th Street involving turning vehicles that struck pedestrians using the crosswalk. A fourth crash at South 129th Street involved an eastbound vehicle striking a pedestrian crossing SR 900 while not in a crosswalk.
- Two additional pedestrian collisions occurred midblock involving pedestrians crossing SR 900. One occurred between South 133rd Street and 68th Avenue South and the other east of South 135th Street.
- There were two additional pedestrian collisions that involved turning vehicles at driveways.

Vehicle-only collisions

[2] Under 23 U.S. Code § 148 and 23 U.S. Code § 409, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

- Vehicle-only collisions were predominantly rear-end and angle ones occurring at signalized intersections during the peak commute hours. The crash data yielded a pattern of vehicles entering at angle and "T-bone" related collisions at South 129th Street.
- The intersection of South 133rd Street also has a pattern of angle collisions in this five-year analysis timeframe. They occurred when eastbound drivers making a left turn collided with westbound drivers heading straight. Existing intersection control consists of a stop sign for southbound South 133rd Street.

Improvements (Alternatives) Analyzed

Improvements (alternatives) that address the study goals and objectives were developed based on data, feedback, and crash history. These alternatives were subsequently analyzed and screened before they were included in the final recommended concepts.

At South 129th Street, two alternatives were analyzed. First, a bus priority lane was modeled for the eastbound and westbound directions of SR 900 approaching the intersection. The bus priority signal adds delay to traffic in the AM and PM peak period model, but it would provide some benefit to transit progression. The alternative was neutral for benefits and impacts on pedestrians or bicyclists using the intersection. Second, a roundabout was modeled. While queues and delays are still evident, a roundabout offers an improvement over the signalized alternative, providing benefit to both transit and general traffic.

Two locations were identified for additional pedestrian crossings. One location is the intersection of South 133rd Street, where a signal would also reduce the potential for collisions[3] involving turning vehicles. The queues observed in the existing conditions in the eastbound left turn lane were mitigated by the modeled signal. Introducing a signal at South 133rd Street would partition the queue on westbound SR 900 that currently concentrates at South 129th Street, while also benefiting pedestrians and bicyclists by adding a new enhanced pedestrian crossing. At this stage, the signal control was identified to address the left turn and minimize right-of-way impacts, but the final intersection control type will need to be analyzed and documented through WSDOT's Intersection Control Evaluation (ICE) process once the project is funded, and preliminary engineering begins. An ICE analysis is required by WSDOT when major changes to intersection design or operation are proposed. ICEs are addressed in WSDOT policy guidance and direction in the Design Manual.

The second location identified for a pedestrian crossing is likely to be located midblock in the vicinity of South 135th Street. It would facilitate pedestrian crossings between the eastbound

[3] Under 23 U.S. Code § 148 and 23 U.S. Code § 409, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

bus stop and the residential community north of SR 900. The westbound metro bus stop would also be relocated to this crossing location.

At 68th Avenue South, a roundabout was modeled to replace the signal, and it showed reduced queues for the northbound approach on 68th Avenue South. This alternative was not advanced in this study because the primary focus of feedback was to improve pedestrian/bicycle facilities, crossings, and the relocation of the westbound bus stop near 68th Avenue South and a roundabout did not adequately address those concerns. But it could be re-visited in the future and re-evaluated for traffic calming measures and speed mitigation.

7.0 Recommended Improvement Strategies

7.1 Near-Term Strategies

There are several near-term improvement strategies proposed for SR 900 that build on recently completed actions.

Speed reduction: WSDOT will investigate the feasibility of reducing the speed limit between South 129th Street and 68th Avenue South. This would be implemented as an interim measure to address speed along the corridor and would be accompanied by a subsequent WSDOT speed study. WSDOT is developing a speed reduction justification for the area between 68th Avenue South and just east of South 135th Street in conjunction with near-term solutions.

Signing and Striping: WSDOT is investigating adding striping to minor intersections along the corridor, which might include tighter intersection radii to slow down turning vehicles where pedestrians are crossing.

Pedestrian Crossing Enhancement: Interim pedestrian crossing improvements at 129th Street could include new curb extensions at the bus pullouts to reduce the pedestrian crossing distance across SR 900.

School Bus Loading Zone: WSDOT, in partnership with the Renton School District, King County Local Services, and King County Metro, is developing a set of near-term solutions to address safety concerns at an elementary school bus stop on SR 900 at Creston Point Apartments.

Upcoming Construction Project: In the Bryn Mawr-Skyway area of King County between Seattle and Renton, just west of 68th Avenue South, WSDOT is working in conjunction with King County Metro to build a section of sidewalk and a raised platform for pedestrians to access a Metro bus stop on the east side of the highway. The improvements are part of a larger SR 900/68th Ave South project to make pedestrian safety modifications and pavement repairs.

Completed Actions: Recently completed project actions at the South 129th Street intersection include the following:

- WSDOT installed leading pedestrian interval (LPI) signal timing.

- WSDOT added crosswalk striping and pedestrian warning signs to the right turn slip lanes at the intersection of SR 900 and the South 129th Street.
- WSDOT installed a supplemental signal head for right-turning traffic from westbound South 129th Street to northbound SR 900.

7.2 -Mid-Term Strategies

For all intersection recommendations, it is important to note any modifications to the intersection will require the completion of an Intersection Control Evaluation (ICE) study during project design. The ICE process would determine the new intersection control type (i.e., signal, roundabout, stop control). Additionally, if there are any proprietary designs, Design/Contract mitigation and compliance plans should be included in owner manuals to ensure consistency between asset management and asset management plans. Example assets covered under these plans include storm water ponds and fish passages. The recommended mid-term (3-15 years) strategies include:

SR 900 at South 129th Street intersection

A roundabout with enhanced pedestrian crossings at the intersection of SR 900 and South 129th Street. The WSDOT Strategic Highway Safety Plan, Target Zero, identifies roundabouts as a key countermeasure to reduce serious injuries and fatalities, particularly in locations with a history of angle crashes[4]. Roundabouts achieve injury-minimization goals by creating a lower-speed environment and reducing conflict points when compared to a traditional intersection.

Aerial view of SR 900 and South 129th Street intersection

Roundabouts also reduce crash potential between drivers and active transportation users. The physical channeling of vehicles reduces their speed which is a benefit to active transportation

[4] Under 23 U.S. Code § 148 and 23 U.S. Code § 409, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

users. In addition, pedestrian crossings can be emphasized with enhanced pedestrian crossing treatments such as rectangular rapid flashing beacons (RRFB), pedestrian signals, or pedestrian hybrid beacons (PHB) to highlight the crossings.

This recommendation addresses concerns highlighted by the data, notably the crash history, as well as priorities identified by the community, the need to improve pedestrian safety and the need to mitigate vehicle speed on SR 900. Additionally, a roundabout at South 129th Street can serve as a gateway to the Skyway-West Hill community.

Lastly, community feedback received in the second outreach phase highlighted the need for continued engagement with the Skyway-West Hill community during project planning, design, and construction to ensure the intersection improvement strategy ultimately constructed addresses specific transportation challenges related to freight and vehicles and incorporates the community vision for a gateway for Skyway-West Hill. Specific feedback indicated a need for speed mitigation (traffic calming) and concerns drivers would not be able to navigate the roundabout, which will be addressed with community outreach on the roundabout. The center island will also house a focal point developed by the Skway-West Hill community.

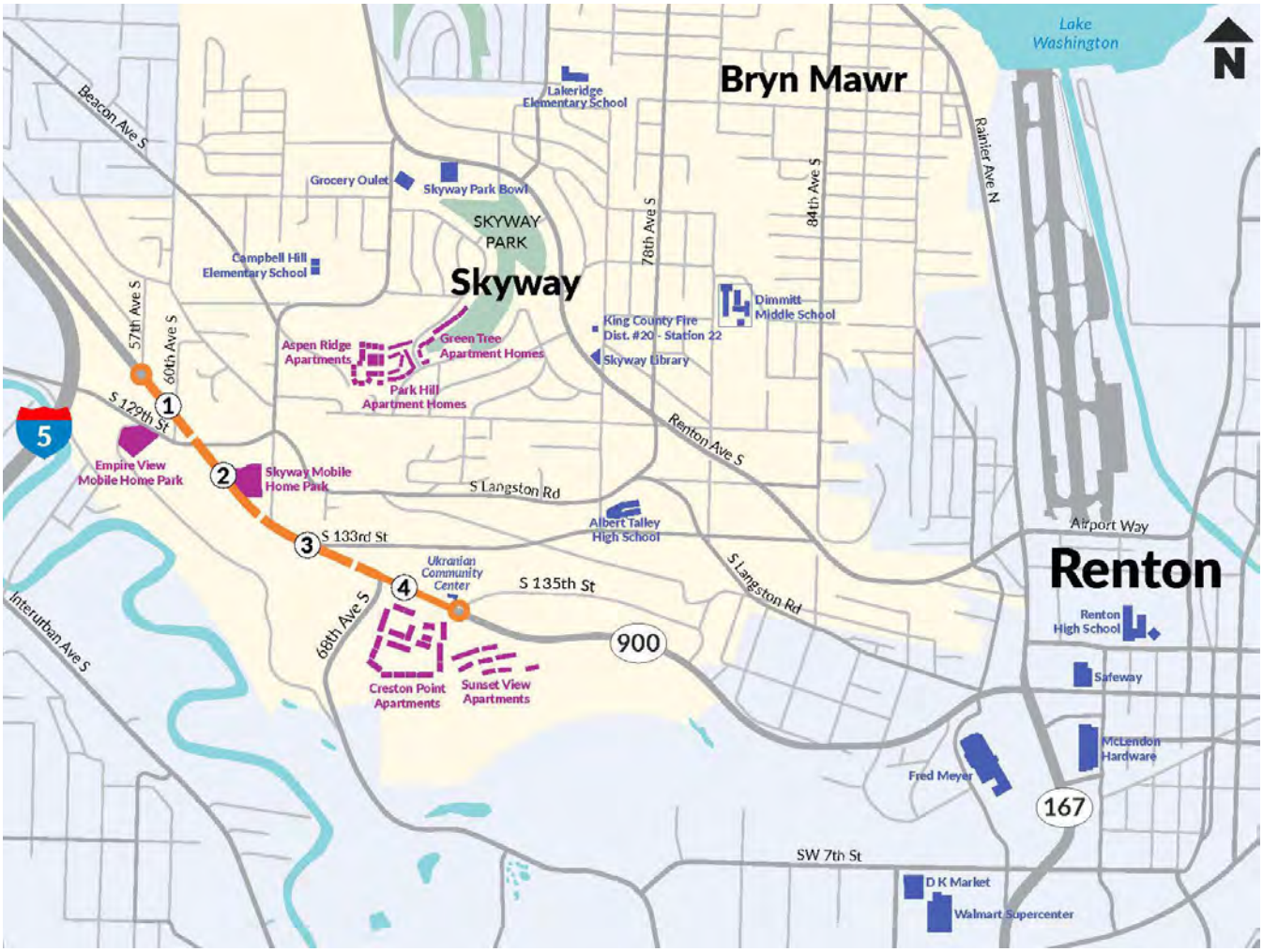
Roundabout concept on SR 900 at South 129th Street illustrating route from community markets to neighborhoods accessed via South 129th Street.

Complete Active Transportation Facilities on SR 900

The other major improvement strategy proposed for SR 900 in the Skyway-West Hill community is the development of active transportation facilities between South 129th Street and South 135th Street, at the end of the study limits.

The recommended facilities include a 10-foot (at a minimum) shared use path with a buffer on the north side of SR 900 for pedestrians and bicyclists, along with illumination and landscaped features. Shared use paths with signalized crossings throughout the corridor for active transportation users is another Target Zero strategy and is a Level of Traffic Stress 1/ Level of Traffic Stress 2 (LT 1/LTS 2) facility for both bicyclists (BLTS) and pedestrians (PLTS) as defined

in the WSDOT Active Transportation Plan. Pedestrian scale illumination, landscaping, and a minimum of a 10-foot shared use paths with a minimum 2-foot buffer between the shared use path and traffic will reinforce the urban, residential character of Skyway and can provide a measure of traffic calming for the corridor. In addition, installing shared use paths would involve creating new driveways or revisions to existing driveways to better manage access and highlight pedestrians and bicyclists.



A map of the SR 900 corridor, showing certain wayfinding points to help illustrate the existing conditions and other factors contributing to performance and access issues along the roadway.

Segment 1: Between 57th Street South and South 129th Street

Segment 2: Between South 129th Street and 64th Avenue South

Segment 3: Between 64th Avenue South and 68th Avenue South

Segment 4: Between 68th Avenue South and South 135th Street

A shared use path was selected for the north side because of the low number of driveways and higher number of destinations to the north of SR 900. On the south side, the recommended facilities include a 6-foot sidewalk with a 2-foot buffer at minimum. The southside sidewalk width will increase in spot locations based on land use context.

SR 900 at South 133rd Street intersection

WSDOT is also proposing to install a traffic signal at South 133rd Street to mitigate collisions at this intersection and add a new signalized pedestrian crossing.

New Enhanced Pedestrian Crossing – Vicinity of Creston Point Apartments

A new enhanced pedestrian crossing is recommended in the vicinity of Creston Point Apartments to connect area residents to the eastbound bus stop in front of the Creston Point Apartments and the relocated westbound stop. The initial concept identified the new pedestrian crossing in the vicinity of South 135th Street, but feedback from the second outreach phase highlighted the importance of relocating the westbound stop to be closer to the eastbound bus stop, with the new pedestrian crossing serving both stops. The recommendation therefore also includes relocating the westbound stop and constructing the new pedestrian intersection simultaneously to address the transportation needs of residents of Creston Point.

7.3 Phasing

The recommended concepts will likely need to be designed and implemented in phases due to the anticipated costs. Below is a potential phasing option and maintenance with planning level cost estimates:

Phase A: Shared use path with buffer on northside of SR 900, new pedestrian crossing at Creston Point Apartments, relocated westbound bus stop, removal of bus pullouts near Creston point Apartments, South 133rd Street traffic signal and pedestrian crossing. Cost estimate is $20.171M[5].

Phase B: Roundabout at South 129th Street. Cost estimate is $5.781M.

Phase C: Buffered sidewalk on south side of SR 900. Planning cost estimate is $12.801M.

Maintenance: Cost estimate is $19.646 million.

If feasible, and if all funding were made available, designing all strategies simultaneously and then constructing in phases would be ideal.

8.0 Next Steps

WSDOT has maintained most of this section of SR 900 in fair or better condition; and the study recommendations assume that WSDOT and its partners will continue to maintain and preserve

[5] Costs associated with the relocated bus stop and removal of the bus pull-outs near Creston Point Apartments are not include.

the transportation system in a state of good repair so that roadway operations and capacity will be maintained.

WSDOT will work with local stakeholders (King County, Renton, King County Metro, Puget Sound Regional Council (PSRC), Skyway-West Hill Community, and others) to incorporate study findings and recommendations into local/regional plans where appropriate.

Additional funding is needed for further design, and eventual construction, of the recommended strategies, and those opportunities will need to be pursued in 2023 and in years beyond. The near-term, immediate funding needs are to complete design for key study strategies. The PSRC's next federal funding grant applications (FHWA/FTA) will commence in Spring 2024, and the next WSDOT Pedestrian and Bicycle Program and Safe Routes to School (SRTS) Program will commence in Spring 2024. This will be an opportunity to seek further funding for SR 900 strategies. Additional grant funding for project development and construction are available directly from the federal government. The effort to seek grants will likely be a multi-year process.

WSDOT will also consider the recommended strategies identified in this study when making determinations on capital improvements within its project development processes. Additionally, WSDOT may also be directed to fund strategies or portions of strategies in this plan by the Washington State Legislature. As funding becomes available to further develop the strategies, WSDOT will initiate further design and construction.

As the strategies enter pre-design, additional data collection and analysis will be required to refine the details of the strategies. But during the planning study, data collection and analysis limitations required certain assumptions. The assumptions are listed below:

- Assumption #1: The planning study assumed limited right-of-way needs for all strategies in the recommendation, except for the roundabout at South 129th Street. Survey data will be required to confirm this assumption, and the optimal lane configuration and width will need to be determined in pre-design.
- Assumption #2: The study assumed that a roundabout at South 129th Street was the best alternative. This assumption will need to be confirmed with an Intersection Control Evaluation (ICE).
- Assumption #3: Due to the angle of the intersection, difficult grades, and a scan of environmental constraints, the study assumed that a traffic signal at South 133rd Street was the best alternative. This assumption will need to be confirmed with an Intersection Control Evaluation (ICE).
- Assumption #4: The study assumed continued engagement with the community at key decision points from pre-design to construction.

- Assumption #5: The study assumed the exact location of the pedestrian crossing near South 135th Street, and the related northbound bus stop, would be determined in pre-design in consultation with the community and King County Metro.
- Assumption #6: The center island focal point of the proposed South 129th Street roundabout will be developed by the Skway-West Hill community with WSDOT engineering and planning support.
- Assumption #7: The study assumed access management strategies would be required to change the context of the corridor.
- Assumption #8: The study assumed no parking on shoulders which is a change from current conditions.

Appendix A: Community Outreach

A.1 Study Communications Plan

Overview

SR 900 is a heavily traveled commuter corridor that lacks pedestrian accommodation and connectivity between residential centers and community hubs. The corridor does not currently meet the needs of all users and has documented roadway operations and performance issues.

WSDOT will conduct a high-level assessment of multimodal, access, safety, and environmental needs for SR 900 from the 57th Ave South/129th Street intersection to Renton city limits. Strategies and concepts will be developed to improve operations, safety performance, and accessibility for all corridor users.

Communication Goals

- Gather information about how residents and travelers use SR 900 and understand community preferences for potential corridor improvements.
- Summarize and communication corridor needs to be addressed in the study.
- Communicate how WSDOT plans to mitigate potential impacts to surrounding areas.
- Educate residents about transportation strategies under consideration.

Measurable Objectives

- Residents will understand when and how they will be able to provide input on the study.
- Goal of 500–1000-person response rate: Target audiences will provide input on existing performance along SR 900 and share their preferences for corridor improvements.
- Residents will understand how concepts may be implemented after the study is complete.
- Resident will understand how the project team considered and incorporated their input.

Target audiences

- Area residents (Skyway-West Hill)
- Roadway users (commuters, cyclists, pedestrians)
- King County Roads division
- King County Metro
- Area businesses
- Washington State Patrol
- King County Sheriff
- Renton School District
- Community Groups

Communications Strategies

Coordinated messaging: We will provide consistent information across regional or agency boundaries and among our stakeholders. Everyone on the team will use the same key messages. Messaging will be established through a structured review process before going public.

No surprises: Take control of messaging by being proactive and clearly communicating progress and project benefits to internal staff, the media, elected officials, stakeholders, local jurisdictions and the public.

- Proactively/clearly communicate plans, goals, timelines, progress, and study results with the public
- Provide timely information about the study to the public and the media
- Educate community members, media, and elected officials about the study and set realistic expectations

Lead with the web:

- Develop corridor study web page
- Continue to post updates and information about key milestones to the web
- Continue to answer and respond to public feedback obtained via the web portal
- Direct the public to visit the website for project information and updates

Existing communications channels: Use various WSDOT social media platforms to post updates and drive the public to existing webpages.

Communications tactics and tools

Webpage: Communicating plans, goals updates, study results/recommendations, timelines, and progress with the public.

Social media: Platforms such as Twitter, Facebook, Nextdoor, and the WSDOT blog will help distribute our message and expand our traditional outreach.

Email distribution lists: Send study updates, results and need for input to email subscribers made up of area residents and corridor users.

Teamwork makes the dream work: Utilize the distribution methods of partner agencies to broaden outreach.

Media as a partner: Coordinate with distributors of local newsletters to get the word out about the study and opportunities to participate.

Inclusion

The study team will aim to consult with all potentially affected residents, including historically underserved populations such as minority, limited-English proficient, and low-income community members.

WSDOT will also determine what types of translations will be needed for outreach materials, including the following:

- Materials posted on the project web page
- Accommodating language access needs of residents requesting translation during outreach

Timeline

Summer 2020

- Initial outreach to study stakeholders / 1:1 meetings
- First coordination meeting with King County
- Study scoping and finalize schedule/budget
- Confirm WSDOT resources to support the SR 900 mini study
- Attend community meeting on August 18 – share study one-pager and webpage
- Summer - Fall 2020
- Traffic and existing conditions data analysis (traffic counts, safety data etc.)
- Synchro/Sim-Traffic model development

Early Fall 2020

- First stakeholder meeting – Kickoff
- Planning context and focus
- Review existing conditions, data collection, traffic analysis, etc.
- Gather input on priorities, including corridor performance
- Share draft corridor vision/goals statements and alternatives evaluation criteria
- First community meeting/presentation
- Planning context and focus
- Review existing conditions, data collection, traffic analysis, etc.
- Gather input on priorities, including corridor performance
- Share draft corridor vision/goals statements and alternatives evaluation criteria (potentially slides into late fall)
- Website development & updates
- Develop public outreach survey for review by study stakeholders

Late Fall 2020

- Continue coordination with King County, stakeholder committee
- Review and finalize draft public web survey
- Review what we heard from community meeting
- Review and confirm draft performance metrics (may be completed in winter)
- Post online web survey

Winter 2020

- Ongoing engagement to elected officials/policymakers
- Ongoing technical analysis work, development of performance metrics, screening of options/concepts

Spring 2021

- Continued technical analysis, modeling of concepts, screening
- Continued virtual coordination with King County and other stakeholders
- Review preliminary modeling results and related technical work
- Second community meeting
- Review results of public web survey, get feedback on screening process and outcomes, and discuss the draft final report structure, content, and format

Summer/Fall 2021

- WSDOT study team develops draft report and folio
- Internal review and review with study stakeholders
- Communications support to prepare draft report and folio (graphics, layouts, etc.)
- Final stakeholder committee to present findings and get concurrence
- Post draft report and folio to study webpage
- Notify residents and study stakeholders that the materials are available online
- Possible local elected/policy maker briefings on study findings

Winter 2021/Spring 2022

- WSDOT study team attend community meetings to present draft recommendations.

Summer 2022

- WSDOT study team review community feedback detailed in adopted Skyway-West Hill Community Service Area Subarea Plan.
- WSDOT team develop strategy for outreach phase 2 to seek focused feeback.
- Participant in in-person outreach events.
- Participte in community and county led meetings.

Fall 2022

- WSDOT study team shares updated recommendation incorporated feedback from outreach phase 2.
- Present and seek feedback on updated recommendation at community and county led meetings.
- Update webpage.
- WSDOT study team updates recommended strategies and the report, folio, and related graphics.
- Brief leadership at WSDOT Northwest.

Winter 2023

- Release final report.

A.2 Stakeholder Committee

The study team convened two meetings of a diverse stakeholder committee to provide feedback and guide the corridor study process. Members of the stakeholder committee that were invited included representatives from the City of Renton, King County Roads Division, King County Local Services, King County Metro, the West Hills Community Association, the Renton Innovations Zone Partnership, Puget Sound Regional Council, tribal governments[6], Washington State Patrol, and WSDOT.

The committee met twice and reviewed the study's goals and objectives, brainstormed potential corridor improvements, provided background data, and related documents, and offered feedback on strategies as well as suggestions for implementation.

6 Letters requesting participation were send to the chairs of the Muckleshoot Indian Tribe, Snoqualmie Indian Tribe, Stillaguamish Tribe of Indians, and the Yakama Nation.

SR 900 Corridor-Study

Final Stakeholder Committee Meeting

July 29, 2021

Attendees

Maan Sidhu – WSDOT – Traffic; Nazmul Alam – WSDOT MoM Division; Thomas Noyes – MoM Division; Vangie Garcia – city of Renton; Kevin LeClair – King County Local Services; John Vander Sluis - King County Roads Division; Christopher Noll – Washington State Patrol; Jennifer Mayer, King County; Tricia Davis – King County Roads Services Division; Masha Podolsky Soroka – King County Metro Transit Mobility Group; Jeannie Williams - West Hill Community Association; Chris Barnes - City of Renton

Agenda / Overview

Nazmul Alam, WSDOT, welcomed everyone to today's meeting, which is the second and final Stakeholder Committee for the SR 900 Corridor Study. The purpose of today's meeting is to present proposed final improvement concepts for SR 900 in the Renton/ Skyway area and seek stakeholder input and concurrence on these recommendations. This study focuses on SR 900 between the intersections of 57th Avenue South and South 135th Street. It is focused on the lack of pedestrian connectivity and access on this section of SR 900 in Skyway/Renton. We have identified strategies to address pedestrian and traveler safety as well as multimodal access.

Existing conditions for this study identified low-income and English-limited proficiency residents and the technical analysis also examined pedestrian connectivity, transit access, and pedestrian crashes. The intersection of SR 900 with South 129th Street is a section of particular focus, given pedestrian access concerns and several pedestrian crashes here. The intersection of SR 900 and South 133rd Street is also of concern, given a number of 'T-bone' vehicle crashes that have occurred at this skew-angle intersection.

Nazmul briefly reviewed the previous Stakeholder Committee meeting results and next steps in the study process. The SR 900 study conducted public engagement through an online web survey, an online open-house, office hours, and participation in a King County – West Hill Subarea virtual community meeting in Fall 2020.

Community feedback from this engagement indicated public concerns in four key areas:

- Cars/vehicles that are driving too fast.
- Lack of sidewalks.
- Not enough lighting/illumination.
- Congestion at the 129th Avenue/SR 900 intersection.

Draft evaluation criteria presented at the first SR 900 Stakeholder Committee in October 2020 were developed to focus on the key study objectives (multimodal access, pedestrian connectivity, safety, and community support). These criteria included:

- Safety (Target Zero & crash-reduction)
- Accessibility (pedestrian connectivity / access to transit)
- Constructability (cost, technical feasibility, and so forth)
- Community support (avoidance of displacement, preserving community character, etc.)

Concept/strategy development & evaluation

Maan Sidhu, Assistant King Area Traffic Engineer, provided an overview of the near/mid-term concepts that were developed to address identified needs related to pedestrian safety, access, and intersection operations. There was a continuous sidewalk identified for the corridor to provide complete and safe pedestrian connectivity. A roundabout was identified as the improvement concept for the South 129th Street/SR 900 intersection to address speed management concerns approaching the intersection, crash reduction, and access to local businesses. A new traffic signal has been identified as the optimal strategy at South 133rd Street to address a history of angle crashes at this intersection. There would also be a signalized pedestrian crossing at the South 135th Street intersection with SR 900.

Although the identified near and mid-term improvement concepts would address key study objectives related to pedestrian connectivity, safety, and transit access, they would not improve current and future congestion levels on the corridor.

By way of other local improvements, King County has identified and funded a sidewalk at 68th Avenue South to address pedestrian connectivity at this intersection. Interim speed reductions to 45 MPH are also envisioned as a near-term action on SR 900 through the study area. A corridor-wide engineering speed study would be undertaken as a next step to determine if further lowering of the speed limit below 45 MPH is warranted.

The roundabout at the intersection of SR 900 and South 129th Street was devised to manage speeds on the corridor and correct a history of crashes involving turning vehicles. In addition, access to the local businesses adjacent to this intersection as well as the businesses here is improved. This concept enables drivers leaving community markets to make a “U-turn” instead of attempting to make a left turn across queues from the signalized intersection. The planning-level cost-estimate for the roundabout at the South 129th Street intersection is $3.9 million.

Maan mentioned there had been a previous analysis done by King County Metro Transit for a transit queue-jump lane on SR 900. Due to several technical factors plus an $8M+ cost-estimate for the transit queue-jump alternative, the roundabout was selected as the preferred intersection treatment.

In response to a question from Masha Podolsky Soroka, with the King County Metro Transit Mobility Group, Maan indicated that an Auto-turn design template had been used for preliminary

analysis for a typical Metro bus navigating through the roundabout design at the S. 129th Street intersection. Coordination with Transit Planning and the Speed and Reliability team will need to continue beyond the planning phase, into the design phase, and beyond.

Phasing / Completed near-term actions

As the full corridor sidewalk completion concept is anticipated to cost approximately $20M, Maan indicated that yes, the sidewalk concept could, and probably would be, a phased project when it goes into implementation. It is not possible to define specific phases for this improvement concept in the planning stages and the phasing definition would occur within the design phase. The first step to proceed with this concept is to seek grant funding from PSRC, or other sources for preliminary design.

In terms of completed actions, Maan mentioned three low-cost strategies and improvements completed at the South 129th Street intersection: 1) Pavement markings refresh and pedestrian crossing at South 129th Street (complete November 2020); 2) Installation of a flashing yellow-arrow signal head for right-turning traffic from westbound South 129th Street to northbound SR 900 (Complete June 2021). And 3) Implemented leading pedestrian-interval (LPI) for pedestrian signals at South 129th Street (complete June 2021).

A.3 Outreach Materials

Mailers announcing the October 6-November 6, 2020, online open house included:

- Link to survey
- Requests for paper copies or translation in English, Spanish, Vietnamese, and Somali.
- Addresses of free local WiFi access hotspots

Need paper copies or translations? Give us a call!

¿Necesita obtener copias impresas o traducciones de estos materiales? ¡Llámenos!

Quý vị cần bản in hoặc bản dịch của những tài liệu này? Hãy gọi cho chúng tôi!

Ma ubaahan tahay nuqulo daabacan ama in laguu turjumo sheeyaashan? Nasoo wac!

A.4 Survey

The survey received 196 responses with 180 complete responses.

More than 96 percent of the respondents said they used a private vehicle to travel along SR 900, while more than 11 percent of respondents take transit, and almost 15 percent of travelers walk or bike along the corridor, as shown in the figure below. Respondents were able to select more than one mode of transportation.

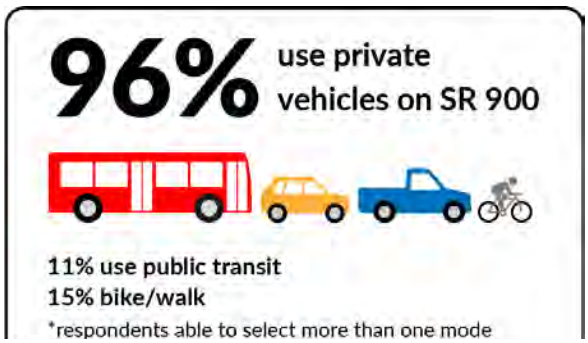


Figure 5 – Survey: Modal split

Survey respondents were asked to rank their top concerns for the following sections of the SR 900 corridor (shown in the below figure):

- 57th Avenue South to east of 60th Avenue South
- At the South 129th Street intersection
- East of the South 129th Street intersection to west of 68th Avenue South
- 68th Avenue South to South 135th Street

Respondents expressed concerns about high speeds, lack of sidewalks, and insufficient lighting, which all ranked as the top concerns for three of the four roadway segments. Vehicle congestion, high speeds, and a lack of sidewalks were the highest-ranked concerns in the remaining segment, the South 129th Street intersection, which reflects the existing conditions the study team observed during the field review.

Some respondents also chose to clarify their answers and described feeling unsafe walking along the corridor at night, expressed concerns about roadway maintenance and potholes, and a desire for better pedestrian visibility at crosswalks. They also suggested roundabouts at the South 129th Street and South 133rd Street intersections.

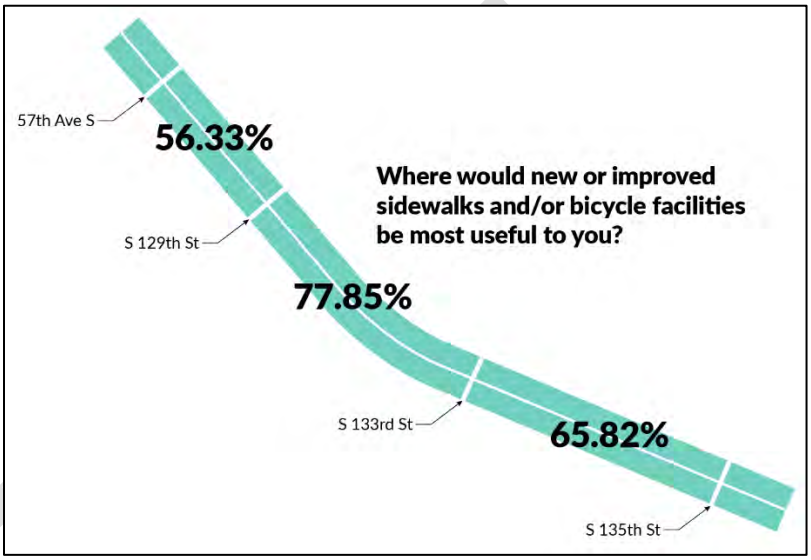


Figure 3: Survey – New or improved sidewalk and bikeway locations ranked by respondents

When asked where new or improved sidewalks and/or bike lanes would be most useful, more than three-fourths of the respondents selected the South 129th Street to South 133rd Street segment. More than 65 percent of respondents chose the South 133rd Street to South 135th Street segment, and more than half selected the 57th Ave South to South 129th Street segment. Respondents were able to choose more than one segment.

129 survey participants answered that they heard about the survey from:

Email	29.46%
Social Media	41.86%
Word of mouth	4.65%
At your place of work	2.33%
At your school	0.78%
News media (radio, newspaper)	20.93%

142 survey participants answered their age:

Under 18	0.00%
18-24	2.82%
25-34	21.83%
35-44	30.99%
45-54	19.01%
55-64	14.79%
65+	10.56%

142 survey participants answered how they identified:

Black/African American	9.86%
Hispanic, Latinx, or Spanish origin	5.63%
Asian/Asian-American	10.56%
White/Caucasian	72.54%
American or Alaska Native/Indigenous	3.52%
Native Hawaiian or Other Pacific Islander	2.11%
Other	4.23%
Prefer not to answer	2.11%

133 survey participants answered their yearly household income:

$0 to $24,999	1.50%
$25,000 to less than $49,999	9.02%
$50,000 to less than $74,999	16.54%
$75,000 to less than $99,999	12.03%
$100,000 to less than $124,999	27.07%
$150,000 to $174,999	12.03%
$175,999 to $199,999	8.27%
$200,000 and up	13.53%

Note: See B.5 for US Census demographic information.

Appendix B: Existing Conditions

B.1 Intersection and Corridor Operations

Summary Table

AM Peak Intersection	Existing Intersection Control	Existing LOS	Existing Delay (sec)	Proposed Intersection Control	Proposed LOS	Proposed Delay (sec)
SR 900/57th Ave S	Two-Way Stop	C	20.6	Two-Way Stop	C	21
SR 900/60th Ave S	Two-Way Stop	C	16.7	Two-Way Stop	C	16.7
SR 900/S 129th St	Signal	D*	35.5*	Roundabout	B*	12.1*
SR 900/64th Ave S	Two-Way Stop	NA	NA	Two-Way Stop	NA	NA
SR 900/S 133rd St	Two-Way Stop	C	24.8	Signal	A*	8.6*
SR 900/68th Ave S	Signal	B*	12.6*	Signal	B*	12.6
SR 900/Creston Apts	Two-Way Stop	C	16.1	Two-Way Stop	C	16.1
SR 900/Sunset Apt/S 135th St	Two-Way Stop	C	16.3	Two-Way Stop	C	16.3

*Please note pre-COVID levels of traffic demand and congestion would yield degraded LOS and delay.

PM Peak Intersection	Existing Intersection Control	Existing LOS	Existing Delay (sec)	Proposed Intersection Control	Proposed LOS	Proposed Delay (sec)
SR 900/57th Ave S	Two-Way Stop	C	15.4	Two-Way Stop	C	16.4
SR 900/60th Ave S	Two-Way Stop	D	32.8	Two-Way Stop	C	18
SR 900/S 129th St	Signal	F*	160.6*	Roundabout	F*	104.4*
SR 900/64th Ave S	Two-Way Stop	NA	NA	Two-Way Stop	NA	NA
SR 900/S 133rd St	Two-Way Stop	D	27.3	Signal	B*	15.1*
SR 900/68th Ave S	Signal	D*	39*	Signal	D*	46.5*
SR 900/Creston Apts	Two-Way Stop	F	78.2	Two-Way Stop	F	82
SR 900/Sunset Apt/S 135th St	Two-Way Stop	B	11.2	Two-Way Stop	B	11.4

*Please note pre-COVID levels of traffic demand and congestion would yield degraded LOS and delay.

MOVEMENT SUMMARY

Site: 101v [SR 900/S 129th St - Metered (Site Folder: General)]

Network: N101 [Network2 - 133rd TWSC (Network Folder: General)]

AM Peak
Site Category: (None)
Roundabout Metering

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
SouthEast: SR 900 (NWB)														
3ax	L1	72	1.5	72	1.5	0.465	4.5	LOS A	1.1	28.6	0.38	0.23	0.38	40.5
8x	T1	1256	1.5	1256	1.5	0.465	4.8	LOS A	1.1	28.6	0.39	0.25	0.39	40.6
18bx	R3	33	1.5	33	1.5	0.465	4.9	LOS A	1.1	27.5	0.41	0.26	0.41	39.0
Approach		1361	1.5	1361	1.5	0.465	2.7	LOS A	1.1	28.6	0.39	0.25	0.39	40.5
East: S 129th St (WB)														
1b	L3	153	1.5	153	1.5	0.992	56.0	LOS E	24.0	608.3	1.00	1.92	4.02	12.9
6	T1	102	1.5	102	1.5	0.992	56.0	LOS E	24.0	608.3	1.00	1.92	4.02	19.3
16a	R1	167	1.5	167	1.5	0.992	56.0	LOS E	24.0	608.3	1.00	1.92	4.02	19.0
Approach		422	1.5	422	1.5	0.992	56.0	LOS E	24.0	608.3	1.00	1.92	4.02	17.2
NorthWest: SR 900 (SEB)														
7ax	L1	89	1.5	89	1.5	0.384	4.2	LOS A	1.0	25.6	0.54	0.38	0.54	39.1
4x	T1	886	1.5	886	1.5	0.384	4.5	LOS A	1.0	25.6	0.54	0.39	0.54	37.3
14bx	R3	11	1.5	11	1.5	0.384	4.3	LOS A	0.9	23.6	0.55	0.41	0.55	38.1
Approach		986	1.5	986	1.5	0.384	3.1	LOS A	1.0	25.6	0.54	0.39	0.54	37.6
West: S 129th St (EB)														
5b	L3	44	1.5	44	1.5	0.298	6.8	LOS A	0.5	12.7	0.67	0.67	0.68	33.6
2	T1	44	1.5	44	1.5	0.298	6.8	LOS A	0.5	12.7	0.67	0.67	0.68	33.5
12a	R1	92	1.5	92	1.5	0.298	6.8	LOS A	0.5	12.7	0.67	0.67	0.68	28.3
Approach		180	1.5	180	1.5	0.298	6.4	LOS A	0.5	12.7	0.67	0.67	0.68	31.5
All Vehicles		2949	1.5	2949	1.5	0.992	12.1	LOS B	24.0	608.3	0.55	0.56	0.98	33.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101v [SR 900/S 129th St - Metered (Site Folder: General)]

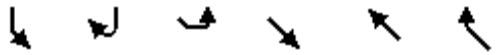
Network: N101 [Network2 - Existing (Network Folder: General)]

PM Peak
Site Category: (None)
Roundabout Metering

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
SouthEast: SR 900 (NWB)														
3ax	L1	146	1.5	146	1.5	0.501	5.6	LOS A	1.6	40.1	0.59	0.40	0.59	39.4
8x	T1	1046	1.5	1046	1.5	0.501	6.0	LOS A	1.6	40.1	0.60	0.42	0.60	39.4
18bx	R3	126	1.5	126	1.5	0.501	6.3	LOS A	1.5	37.8	0.61	0.44	0.61	38.1
Approach		1318	1.5	1318	1.5	0.501	4.2	LOS A	1.6	40.1	0.60	0.42	0.60	39.3
East: S 129th St (WB)														
1b	L3	258	1.5	258	1.5	1.578	280.7	LOS F	63.0	1594.1	1.00	5.14	14.26	3.8
6	T1	183	1.5	183	1.5	1.578	280.7	LOS F	63.0	1594.1	1.00	5.14	14.26	6.7
16a	R1	114	1.5	114	1.5	1.578	280.7	LOS F	63.0	1594.1	1.00	5.14	14.26	6.7
Approach		555	1.5	555	1.5	1.578	280.7	LOS F	63.0	1594.1	1.00	5.14	14.26	5.4
NorthWest: SR 900 (SEB)														
7ax	L1	216	1.5	216	1.5	1.120	84.7	LOS F	28.9	730.4	1.00	2.04	4.24	16.2
4x	T1	2362	1.5	2362	1.5	1.120	81.1	LOS F	32.7	828.5	1.00	1.99	4.06	10.9
14bx	R3	20	1.5	20	1.5	1.120	78.3	LOS F	32.7	828.5	1.00	1.96	3.95	17.1
Approach		2598	1.5	2598	1.5	1.120	80.4	LOS F	32.7	828.5	1.00	1.99	4.08	11.5
West: S 129th St (EB)														
5b	L3	53	1.5	53	1.5	1.695	363.8	LOS F	21.8	551.1	1.00	2.88	7.77	5.4
2	T1	156	1.5	156	1.5	1.695	364.4	LOS F	21.8	551.1	1.00	2.88	7.77	5.4
12a	R1	144	1.5	144	1.5	1.695	364.2	LOS F	21.8	551.1	1.00	2.88	7.77	3.0
Approach		353	1.5	353	1.5	1.695	357.8	LOS F	21.8	551.1	1.00	2.88	7.77	4.4
All Vehicles		4824	1.5	4824	1.5	1.695	104.4	LOS F	63.0	1594.1	0.89	1.99	4.57	11.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

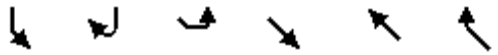


Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (vph)	0	204	165	882	1194	2
Future Volume (vph)	0	204	165	882	1194	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7	7.4	7.4	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1719	3438	3405	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1719	3438	3405	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	227	183	980	1327	2
RTOR Reduction (vph)	0	57	0	0	0	0
Lane Group Flow (vph)	0	170	183	980	1329	0
Heavy Vehicles (%)	0%	2%	5%	5%	6%	0%
Turn Type		Perm	Prot	NA	NA	
Protected Phases			5	2	6	
Permitted Phases		5				
Actuated Green, G (s)		13.0	13.0	68.7	42.6	
Effective Green, g (s)		13.0	13.0	68.7	42.6	
Actuated g/C Ratio		0.19	0.19	1.00	0.62	
Clearance Time (s)		5.7	5.7	7.4	7.4	
Vehicle Extension (s)		3.0	3.0	5.0	5.0	
Lane Grp Cap (vph)		304	325	3438	2111	
v/s Ratio Prot			c0.11	0.29	c0.39	
v/s Ratio Perm		0.11				
v/c Ratio		0.56	0.56	0.29	0.63	
Uniform Delay, d1		25.3	25.3	0.0	8.1	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		2.4	2.2	0.1	0.8	
Delay (s)		27.6	27.5	0.1	9.0	
Level of Service		C	C	A	A	
Approach Delay (s)	27.6			4.4	9.0	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	68.7	Sum of lost time (s)	13.1
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	240	26	590	377	29	716
Future Volume (vph)	240	26	590	377	29	716
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5		7.4	5.5	5.7	7.4
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frt	0.99		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1534		3471	1455	1805	3539
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1534		3471	1455	1805	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	27	621	397	31	754
RTOR Reduction (vph)	3	0	0	135	0	0
Lane Group Flow (vph)	277	0	621	262	31	754
Heavy Vehicles (%)	17%	17%	4%	11%	0%	2%
Turn Type	Prot		NA	pm+ov	Prot	NA
Protected Phases	8		2	8	1	6
Permitted Phases				2		
Actuated Green, G (s)	18.1		22.7	40.8	2.5	30.9
Effective Green, g (s)	18.1		22.7	40.8	2.5	30.9
Actuated g/C Ratio	0.29		0.37	0.66	0.04	0.50
Clearance Time (s)	5.5		7.4	5.5	5.7	7.4
Vehicle Extension (s)	3.0		5.0	3.0	3.0	5.0
Lane Grp Cap (vph)	448		1272	959	72	1766
v/s Ratio Prot	c0.18		c0.18	0.08	0.02	c0.21
v/s Ratio Perm				0.10		
v/c Ratio	0.62		0.49	0.27	0.43	0.43
Uniform Delay, d1	18.9		15.1	4.4	29.0	9.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5		0.6	0.2	4.1	0.3
Delay (s)	21.5		15.7	4.5	33.1	10.2
Level of Service	C		B	A	C	B
Approach Delay (s)	21.5		11.4			11.1
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	61.9	Sum of lost time (s)	18.6
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (vph)	0	191	441	2226	1366	5
Future Volume (vph)	0	191	441	2226	1366	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7	7.4	7.4	
Lane Util. Factor		1.00	1.00	0.95	0.95	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	1719	3438	3404	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	1719	3438	3404	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	212	490	2473	1518	6
RTOR Reduction (vph)	0	27	0	0	0	0
Lane Group Flow (vph)	0	185	490	2473	1524	0
Heavy Vehicles (%)	0%	2%	5%	5%	6%	0%
Turn Type		Perm	Prot	NA	NA	
Protected Phases			5	2	6	
Permitted Phases		5				
Actuated Green, G (s)		34.3	34.3	113.0	65.6	
Effective Green, g (s)		34.3	34.3	113.0	65.6	
Actuated g/C Ratio		0.30	0.30	1.00	0.58	
Clearance Time (s)		5.7	5.7	7.4	7.4	
Vehicle Extension (s)		3.0	3.0	5.0	5.0	
Lane Grp Cap (vph)		489	521	3438	1976	
v/s Ratio Prot			c0.29	c0.72	0.45	
v/s Ratio Perm		0.11				
v/c Ratio		0.38	0.94	0.72	0.77	
Uniform Delay, d1		31.0	38.4	0.0	18.0	
Progression Factor		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.5	25.4	0.9	2.3	
Delay (s)		31.4	63.7	0.9	20.2	
Level of Service		C	E	A	C	
Approach Delay (s)	31.4			11.3	20.2	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	113.0	Sum of lost time (s)	13.1
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	449	90	1524	539	44	758
Future Volume (vph)	449	90	1524	539	44	758
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5		7.4	5.5	5.7	7.4
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frt	0.98		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1524		3471	1455	1805	3539
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1524		3471	1455	1805	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	473	95	1604	567	46	798
RTOR Reduction (vph)	4	0	0	99	0	0
Lane Group Flow (vph)	564	0	1604	468	46	798
Heavy Vehicles (%)	17%	17%	4%	11%	0%	2%
Turn Type	Prot		NA	pm+ov	Prot	NA
Protected Phases	8		2	8	1	6
Permitted Phases				2		
Actuated Green, G (s)	50.1		75.2	125.3	7.9	88.8
Effective Green, g (s)	50.1		75.2	125.3	7.9	88.8
Actuated g/C Ratio	0.33		0.50	0.83	0.05	0.58
Clearance Time (s)	5.5		7.4	5.5	5.7	7.4
Vehicle Extension (s)	3.0		5.0	3.0	3.0	5.0
Lane Grp Cap (vph)	502		1719	1200	93	2070
v/s Ratio Prot	c0.37		c0.46	0.13	0.03	c0.23
v/s Ratio Perm				0.19		
v/c Ratio	1.12		0.93	0.39	0.49	0.39
Uniform Delay, d1	50.9		35.9	3.4	70.0	16.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	78.6		10.2	0.2	4.1	0.3
Delay (s)	129.5		46.1	3.6	74.1	17.1
Level of Service	F		D	A	E	B
Approach Delay (s)	129.5		35.0			20.2
Approach LOS	F		D			C

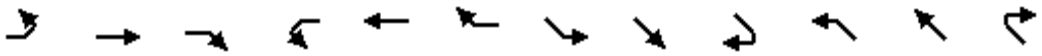
Intersection Summary			
HCM 2000 Control Delay	46.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	151.8	Sum of lost time (s)	18.6
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	44	44	92	153	102	167	89	886	9	72	1256	33
Future Volume (vph)	44	44	92	153	102	167	89	886	9	72	1256	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	5.5	6.7		5.5	6.7	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.90		1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1641	1620		1805	1863	1568	1770	3435		1612	3458	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1641	1620		1805	1863	1568	1770	3435		1612	3458	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	46	46	96	159	106	174	93	923	9	75	1308	34
RTOR Reduction (vph)	0	45	0	0	0	141	0	1	0	0	1	0
Lane Group Flow (vph)	46	97	0	159	106	33	93	931	0	75	1341	0
Heavy Vehicles (%)	10%	0%	8%	0%	2%	3%	2%	5%	0%	12%	4%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4						
Actuated Green, G (s)	7.4	15.2		17.1	24.9	24.9	12.1	62.9		11.6	62.4	
Effective Green, g (s)	7.4	15.2		17.1	24.9	24.9	12.1	62.9		11.6	62.4	
Actuated g/C Ratio	0.06	0.12		0.13	0.19	0.19	0.09	0.48		0.09	0.48	
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5	5.5	6.7		5.5	6.7	
Vehicle Extension (s)	2.5	3.0		2.5	3.0	3.0	2.5	5.0		2.5	5.0	
Lane Grp Cap (vph)	93	189		237	356	300	164	1662		143	1659	
v/s Ratio Prot	0.03	c0.06		c0.09	0.06		c0.05	0.27		0.05	c0.39	
v/s Ratio Perm						0.02						
v/c Ratio	0.49	0.51		0.67	0.30	0.11	0.57	0.56		0.52	0.81	
Uniform Delay, d1	59.5	53.9		53.8	45.1	43.4	56.4	23.8		56.6	28.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.0	2.3		6.6	0.5	0.2	3.6	0.7		2.6	3.4	
Delay (s)	62.5	56.3		60.4	45.5	43.6	60.1	24.5		59.2	32.1	
Level of Service	E	E		E	D	D	E	C		E	C	
Approach Delay (s)		57.8			50.1			27.7			33.6	
Approach LOS		E			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	23.2
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	240	26	590	377	29	716
Future Volume (vph)	240	26	590	377	29	716
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5		7.4	5.5	5.7	7.4
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frt	0.99		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1534		3471	1455	1805	3539
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1534		3471	1455	1805	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	27	621	397	31	754
RTOR Reduction (vph)	3	0	0	135	0	0
Lane Group Flow (vph)	277	0	621	262	31	754
Heavy Vehicles (%)	17%	17%	4%	11%	0%	2%
Turn Type	Prot		NA	pm+ov	Prot	NA
Protected Phases	8		2	8	1	6
Permitted Phases				2		
Actuated Green, G (s)	18.1		22.7	40.8	2.5	30.9
Effective Green, g (s)	18.1		22.7	40.8	2.5	30.9
Actuated g/C Ratio	0.29		0.37	0.66	0.04	0.50
Clearance Time (s)	5.5		7.4	5.5	5.7	7.4
Vehicle Extension (s)	3.0		5.0	3.0	3.0	5.0
Lane Grp Cap (vph)	448		1272	959	72	1766
v/s Ratio Prot	c0.18		c0.18	0.08	0.02	c0.21
v/s Ratio Perm				0.10		
v/c Ratio	0.62		0.49	0.27	0.43	0.43
Uniform Delay, d1	18.9		15.1	4.4	29.0	9.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5		0.6	0.2	4.1	0.3
Delay (s)	21.5		15.7	4.5	33.1	10.2
Level of Service	C		B	A	C	B
Approach Delay (s)	21.5		11.4			11.1
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	61.9	Sum of lost time (s)	18.6
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	53	156	144	258	183	114	216	2362	20	146	1046	126
Future Volume (vph)	53	156	144	258	183	114	216	2362	20	146	1046	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5	5.5	6.7		5.5	6.7	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1752	1746		1787	1900	1568	1770	3533		1736	3475	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1752	1746		1787	1900	1568	1770	3533		1736	3475	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	56	166	153	274	195	121	230	2513	21	155	1113	134
RTOR Reduction (vph)	0	14	0	0	0	94	0	0	0	0	4	0
Lane Group Flow (vph)	56	305	0	274	195	27	230	2534	0	155	1243	0
Heavy Vehicles (%)	3%	1%	1%	1%	0%	3%	2%	2%	8%	4%	2%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases						4						
Actuated Green, G (s)	11.9	35.0		25.0	48.1	48.1	30.0	116.0		20.0	106.0	
Effective Green, g (s)	11.9	35.0		25.0	48.1	48.1	30.0	116.0		20.0	106.0	
Actuated g/C Ratio	0.05	0.16		0.11	0.22	0.22	0.14	0.53		0.09	0.48	
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5	5.5	6.7		5.5	6.7	
Vehicle Extension (s)	2.5	3.0		2.5	3.0	3.0	2.5	5.0		2.5	5.0	
Lane Grp Cap (vph)	95	278		203	416	344	242	1869		158	1680	
v/s Ratio Prot	0.03	c0.17		c0.15	0.10		c0.13	c0.72		0.09	0.36	
v/s Ratio Perm						0.02						
v/c Ratio	0.59	1.10		1.35	0.47	0.08	0.95	1.36		0.98	0.74	
Uniform Delay, d1	101.3	92.1		97.1	74.4	67.9	93.9	51.6		99.4	45.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.5	82.1		186.3	0.8	0.1	44.1	163.6		65.6	2.1	
Delay (s)	108.8	174.2		283.4	75.3	68.0	137.9	215.2		165.0	47.6	
Level of Service	F	F		F	E	E	F	F		F	D	
Approach Delay (s)		164.5			170.4			208.8			60.6	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	160.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	219.2	Sum of lost time (s)	23.2
Intersection Capacity Utilization	124.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Volume (vph)	449	90	1524	539	44	758
Future Volume (vph)	449	90	1524	539	44	758
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5		7.4	5.5	5.7	7.4
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frt	0.98		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1734		3574	1509	1752	3610
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1734		3574	1509	1752	3610
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	478	96	1621	573	47	806
RTOR Reduction (vph)	4	0	0	101	0	0
Lane Group Flow (vph)	570	0	1621	472	47	806
Heavy Vehicles (%)	3%	2%	1%	7%	3%	0%
Turn Type	Prot		NA	pm+ov	Prot	NA
Protected Phases	8		2	8	1	6
Permitted Phases				2		
Actuated Green, G (s)	50.2		74.5	124.7	8.1	88.3
Effective Green, g (s)	50.2		74.5	124.7	8.1	88.3
Actuated g/C Ratio	0.33		0.49	0.82	0.05	0.58
Clearance Time (s)	5.5		7.4	5.5	5.7	7.4
Vehicle Extension (s)	3.0		5.0	3.0	3.0	5.0
Lane Grp Cap (vph)	574		1758	1242	93	2105
v/s Ratio Prot	c0.33		c0.45	0.13	0.03	c0.22
v/s Ratio Perm				0.19		
v/c Ratio	0.99		0.92	0.38	0.51	0.38
Uniform Delay, d1	50.4		35.8	3.4	69.7	16.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	35.6		8.9	0.2	4.3	0.2
Delay (s)	86.0		44.6	3.6	74.0	17.2
Level of Service	F		D	A	E	B
Approach Delay (s)	86.0		33.9			20.3
Approach LOS	F		C			C

Intersection Summary			
HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	151.4	Sum of lost time (s)	18.6
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.7

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	0	85	0	1024	1544	31
Future Vol, veh/h	0	85	0	1024	1544	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	6	4	0
Mvmt Flow	0	90	0	1089	1643	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	838	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	314	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	314	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	21	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NWT	NWR	SET	SBLn1
Capacity (veh/h)	-	-	-	314
HCM Lane V/C Ratio	-	-	-	0.288
HCM Control Delay (s)	-	-	-	21
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	1.2

Intersection	
Int Delay, s/veh	0

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	1222	1418	45
Future Vol, veh/h	0	0	0	1222	1418	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	5	5	3
Mvmt Flow	0	0	0	1314	1525	48

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	787	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	339	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	339	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NWT	NWR	SET	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	75	38	582	36	26	660
Future Vol, veh/h	75	38	582	36	26	660
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	4	8	6	3
Mvmt Flow	79	40	613	38	27	695

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1034	326	0	0	651	0
Stage 1	632	-	-	-	-	-
Stage 2	402	-	-	-	-	-
Critical Hdwy	6.88	6.98	-	-	4.22	-
Critical Hdwy Stg 1	5.88	-	-	-	-	-
Critical Hdwy Stg 2	5.88	-	-	-	-	-
Follow-up Hdwy	3.54	3.34	-	-	2.26	-
Pot Cap-1 Maneuver	225	664	-	-	905	-
Stage 1	486	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	218	664	-	-	905	-
Mov Cap-2 Maneuver	340	-	-	-	-	-
Stage 1	471	-	-	-	-	-
Stage 2	638	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	16.1	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	NWL	NWT	SET	SER
Capacity (veh/h)	340	664	905	-	-	-
HCM Lane V/C Ratio	0.232	0.06	0.03	-	-	-
HCM Control Delay (s)	18.8	10.8	9.1	-	-	-
HCM Lane LOS	C	B	A	-	-	-
HCM 95th %tile Q(veh)	0.9	0.2	0.1	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	38	0	8	2	0	9	2	346	8	8	926	2
Future Vol, veh/h	38	0	8	2	0	9	2	346	8	8	926	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	2	2	2	0	4	0	0	2	0
Mvmt Flow	42	0	9	2	0	10	2	384	9	9	1029	2

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	926	1442	197	1244	1445	516	1031	0	0	393	0	0
Stage 1	393	393	-	1048	1048	-	-	-	-	-	-	-
Stage 2	533	1049	-	196	397	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.54	6.54	6.94	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.52	4.02	3.32	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	227	134	817	131	131	504	682	-	-	1177	-	-
Stage 1	609	609	-	244	303	-	-	-	-	-	-	-
Stage 2	503	307	-	787	602	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	221	133	817	129	130	504	682	-	-	1177	-	-
Mov Cap-2 Maneuver	221	133	-	129	130	-	-	-	-	-	-	-
Stage 1	607	607	-	243	301	-	-	-	-	-	-	-
Stage 2	489	305	-	776	600	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	22.8	16.3	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	253	1177	-	-	682	-	-	330
HCM Lane V/C Ratio	0.202	0.008	-	-	0.003	-	-	0.037
HCM Control Delay (s)	22.8	8.1	-	-	10.3	-	-	16.3
HCM Lane LOS	C	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.3

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	0	71	0	2584	1170	129
Future Vol, veh/h	0	71	0	2584	1170	129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	6	4	0
Mvmt Flow	0	76	0	2749	1245	137

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	691	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	392	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	392	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	16.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NWT	NWR	SET	SBLn1
Capacity (veh/h)	-	-	-	392
HCM Lane V/C Ratio	-	-	-	0.193
HCM Control Delay (s)	-	-	-	16.4
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.7

Intersection	
Int Delay, s/veh	0

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	0	5	0	2756	1536	150
Future Vol, veh/h	0	5	0	2756	1536	150
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	5	5	3
Mvmt Flow	0	5	0	2963	1652	161

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	907	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	282	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	282	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	18	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NWT	NWR	SET	SBLn1
Capacity (veh/h)	-	-	-	282
HCM Lane V/C Ratio	-	-	-	0.019
HCM Control Delay (s)	-	-	-	18
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection	
Int Delay, s/veh	5.9

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	83	80	1428	120	74	708
Future Vol, veh/h	83	80	1428	120	74	708
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	4	8	6	3
Mvmt Flow	87	84	1503	126	78	745

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2095	815	0	0	1629	0
Stage 1	1566	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Critical Hdwy	6.88	6.98	-	-	4.22	-
Critical Hdwy Stg 1	5.88	-	-	-	-	-
Critical Hdwy Stg 2	5.88	-	-	-	-	-
Follow-up Hdwy	3.54	3.34	-	-	2.26	-
Pot Cap-1 Maneuver	~ 44	316	-	-	377	-
Stage 1	154	-	-	-	-	-
Stage 2	550	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 35	316	-	-	377	-
Mov Cap-2 Maneuver	98	-	-	-	-	-
Stage 1	122	-	-	-	-	-
Stage 2	550	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	82	0	1.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	NWL	NWT	SET	SER
Capacity (veh/h)	98	316	377	-	-	-
HCM Lane V/C Ratio	0.892	0.266	0.207	-	-	-
HCM Control Delay (s)	141.2	20.5	17	-	-	-
HCM Lane LOS	F	C	C	-	-	-
HCM 95th %tile Q(veh)	5.1	1.1	0.8	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	8.6

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	27	0	18	0	0	11	17	1452	50	33	764	2
Future Vol, veh/h	27	0	18	0	0	11	17	1452	50	33	764	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	2	2	2	0	4	0	0	2	0
Mvmt Flow	30	0	20	0	0	12	19	1613	56	37	849	2

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	2178	2604	835	1769	2631	426	851	0	0	1669	0	0
Stage 1	1679	1679	-	924	924	-	-	-	-	-	-	-
Stage 2	499	925	-	845	1707	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.54	6.54	6.94	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.52	4.02	3.32	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 26	25	315	53	23	577	796	-	-	390	-	-
Stage 1	101	153	-	290	346	-	-	-	-	-	-	-
Stage 2	527	351	-	324	145	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 23	22	315	45	20	577	796	-	-	390	-	-
Mov Cap-2 Maneuver	~ 23	22	-	45	20	-	-	-	-	-	-	-
Stage 1	99	149	-	283	313	-	-	-	-	-	-	-
Stage 2	467	318	-	296	142	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	$ 437.1	11.4	0.1	0.6
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	37	390	-	-	796	-	-	577
HCM Lane V/C Ratio	1.351	0.094	-	-	0.024	-	-	0.021
HCM Control Delay (s)	$ 437.1	15.2	-	-	9.6	-	-	11.4
HCM Lane LOS	F	C	-	-	A	-	-	B
HCM 95th %tile Q(veh)	5.2	0.3	-	-	0.1	-	-	0.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.6

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	0	80	0	1024	1544	26
Future Vol, veh/h	0	80	0	1024	1544	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	6	4	0
Mvmt Flow	0	85	0	1089	1643	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	836	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	315	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	315	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	20.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NWT	NWR	SET	SBLn1
Capacity (veh/h)	-	-	-	315
HCM Lane V/C Ratio	-	-	-	0.27
HCM Control Delay (s)	-	-	-	20.6
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	1.1

Intersection	
Int Delay, s/veh	0

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	5	0	1018	2	0	1572	5
Future Vol, veh/h	0	0	0	0	0	5	0	1018	2	0	1572	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	4	0
Mvmt Flow	0	0	0	0	0	5	0	1083	2	0	1672	5

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	-	-	543	-	-	839	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	489	0	0	313	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	489	-	-	313	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	0	16.7	0	0
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBLn1	NWT	NWR	SET	SER	SBLn1
Capacity (veh/h)	-	-	-	-	-	313
HCM Lane V/C Ratio	-	-	-	-	-	0.017
HCM Control Delay (s)	0	-	-	-	-	16.7
HCM Lane LOS	A	-	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	1222	1418	45
Future Vol, veh/h	0	0	0	1222	1418	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	5	5	3
Mvmt Flow	0	0	0	1314	1525	48

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	787	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	339	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	339	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NWT	NWR	SET	SBLn1
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	-	0
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	0	204	165	882	1194	2
Future Vol, veh/h	0	204	165	882	1194	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	440	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	5	5	6	0
Mvmt Flow	0	227	183	980	1327	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	665	1329	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.2	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.25	-	-	-
Pot Cap-1 Maneuver	0	403	500	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	403	500	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	SE	NW
HCM Control Delay, s	24.8	2.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NWT	NWR	WBLn1	SEL	SET
Capacity (veh/h)	-	-	403	500	-
HCM Lane V/C Ratio	-	-	0.562	0.367	-
HCM Control Delay (s)	-	-	24.8	16.3	-
HCM Lane LOS	-	-	C	C	-
HCM 95th %tile Q(veh)	-	-	3.3	1.7	-

Intersection	
Int Delay, s/veh	1.4

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	75	38	582	36	26	660
Future Vol, veh/h	75	38	582	36	26	660
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	4	4	8	6	3
Mvmt Flow	79	40	613	38	27	695

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1034	326	0	0	651	0
Stage 1	632	-	-	-	-	-
Stage 2	402	-	-	-	-	-
Critical Hdwy	6.88	6.98	-	-	4.22	-
Critical Hdwy Stg 1	5.88	-	-	-	-	-
Critical Hdwy Stg 2	5.88	-	-	-	-	-
Follow-up Hdwy	3.54	3.34	-	-	2.26	-
Pot Cap-1 Maneuver	225	664	-	-	905	-
Stage 1	486	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	218	664	-	-	905	-
Mov Cap-2 Maneuver	340	-	-	-	-	-
Stage 1	471	-	-	-	-	-
Stage 2	638	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	16.1	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	NWL	NWT	SET	SER
Capacity (veh/h)	340	664	905	-	-	-
HCM Lane V/C Ratio	0.232	0.06	0.03	-	-	-
HCM Control Delay (s)	18.8	10.8	9.1	-	-	-
HCM Lane LOS	C	B	A	-	-	-
HCM 95th %tile Q(veh)	0.9	0.2	0.1	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	38	0	8	2	0	9	2	346	8	8	926	2
Future Vol, veh/h	38	0	8	2	0	9	2	346	8	8	926	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	2	2	2	0	4	0	0	2	0
Mvmt Flow	42	0	9	2	0	10	2	384	9	9	1029	2

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	926	1442	197	1244	1445	516	1031	0	0	393	0	0
Stage 1	393	393	-	1048	1048	-	-	-	-	-	-	-
Stage 2	533	1049	-	196	397	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.54	6.54	6.94	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.52	4.02	3.32	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	227	134	817	131	131	504	682	-	-	1177	-	-
Stage 1	609	609	-	244	303	-	-	-	-	-	-	-
Stage 2	503	307	-	787	602	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	221	133	817	129	130	504	682	-	-	1177	-	-
Mov Cap-2 Maneuver	221	133	-	129	130	-	-	-	-	-	-	-
Stage 1	607	607	-	243	301	-	-	-	-	-	-	-
Stage 2	489	305	-	776	600	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	22.8	16.3	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	253	1177	-	-	682	-	-	330
HCM Lane V/C Ratio	0.202	0.008	-	-	0.003	-	-	0.037
HCM Control Delay (s)	22.8	8.1	-	-	10.3	-	-	16.3
HCM Lane LOS	C	A	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.3

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	0	65	0	2566	1170	102
Future Vol, veh/h	0	65	0	2566	1170	102
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	0	67	0	2645	1206	105

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	656	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	413	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	413	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	15.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NWT	NWR	SET	SBLn1
Capacity (veh/h)	-	-	-	413
HCM Lane V/C Ratio	-	-	-	0.162
HCM Control Delay (s)	-	-	-	15.4
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.6

Intersection	
Int Delay, s/veh	0.1

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	0	0	6	0	0	6	0	2584	15	0	1330	27
Future Vol, veh/h	0	0	6	0	0	6	0	2584	15	0	1330	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	0	0	6	0	0	6	0	2749	16	0	1415	29

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	-	-	1383	-	-	722	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	136	0	0	374	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	136	-	-	374	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	32.8	14.8	0	0
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBLn1	NWT	NWR	SET	SER	SBLn1
Capacity (veh/h)	136	-	-	-	-	374
HCM Lane V/C Ratio	0.047	-	-	-	-	0.017
HCM Control Delay (s)	32.8	-	-	-	-	14.8
HCM Lane LOS	D	-	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	0	5	0	2756	1536	150
Future Vol, veh/h	0	5	0	2756	1536	150
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	2	1	0
Mvmt Flow	0	5	0	2871	1600	156

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	878	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	295	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	295	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	17.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NWT	NWR	SET	SBLn1
Capacity (veh/h)	-	-	-	295
HCM Lane V/C Ratio	-	-	-	0.018
HCM Control Delay (s)	-	-	-	17.4
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection	
Int Delay, s/veh	9.7

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	0	191	441	2226	1366	5
Future Vol, veh/h	0	191	441	2226	1366	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	440	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	2	1	3	1	0
Mvmt Flow	0	205	474	2394	1469	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	737	1474	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.21	-	-	-
Pot Cap-1 Maneuver	0	361	~ 458	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	361	~ 458	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	SE	NW
HCM Control Delay, s	27.3	13.5	0
HCM LOS	D		

Minor Lane/Major Mvmt	NWT	NWR	WBLn1	SEL	SET
Capacity (veh/h)	-	-	361	~ 458	-
HCM Lane V/C Ratio	-	-	0.569	1.035	-
HCM Control Delay (s)	-	-	27.3	81.9	-
HCM Lane LOS	-	-	D	F	-
HCM 95th %tile Q(veh)	-	-	3.4	14.4	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.6

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	83	80	1428	120	74	708
Future Vol, veh/h	83	80	1428	120	74	708
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	88	85	1519	128	79	753

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2118	824	0	0	1647	0
Stage 1	1583	-	-	-	-	-
Stage 2	535	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	~ 44	320	-	-	398	-
Stage 1	157	-	-	-	-	-
Stage 2	557	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 35	320	-	-	398	-
Mov Cap-2 Maneuver	101	-	-	-	-	-
Stage 1	126	-	-	-	-	-
Stage 2	557	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	78.2	0	1.5
HCM LOS	F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	NWL	NWT	SET	SER
Capacity (veh/h)	101	320	398	-	-	-
HCM Lane V/C Ratio	0.874	0.266	0.198	-	-	-
HCM Control Delay (s)	134.1	20.3	16.3	-	-	-
HCM Lane LOS	F	C	C	-	-	-
HCM 95th %tile Q(veh)	5	1	0.7	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	6.9

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	27	0	18	0	0	11	17	1452	50	33	764	2
Future Vol, veh/h	27	0	18	0	0	11	17	1452	50	33	764	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	6	0	8	0	0	0	0	1	3	4	0	0
Mvmt Flow	29	0	19	0	0	12	18	1545	53	35	813	2

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	2085	2493	799	1693	2518	408	815	0	0	1598	0	0
Stage 1	1608	1608	-	884	884	-	-	-	-	-	-	-
Stage 2	477	885	-	809	1634	-	-	-	-	-	-	-
Critical Hdwy	7.62	6.5	7.06	7.5	6.5	6.9	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.62	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.62	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.56	4	3.38	3.5	4	3.3	2.2	-	-	2.24	-	-
Pot Cap-1 Maneuver	29	30	316	62	28	598	821	-	-	397	-	-
Stage 1	105	166	-	311	366	-	-	-	-	-	-	-
Stage 2	528	366	-	345	161	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 26	27	316	53	25	598	821	-	-	397	-	-
Mov Cap-2 Maneuver	~ 26	27	-	53	25	-	-	-	-	-	-	-
Stage 1	103	162	-	304	334	-	-	-	-	-	-	-
Stage 2	472	334	-	317	157	-	-	-	-	-	-	-

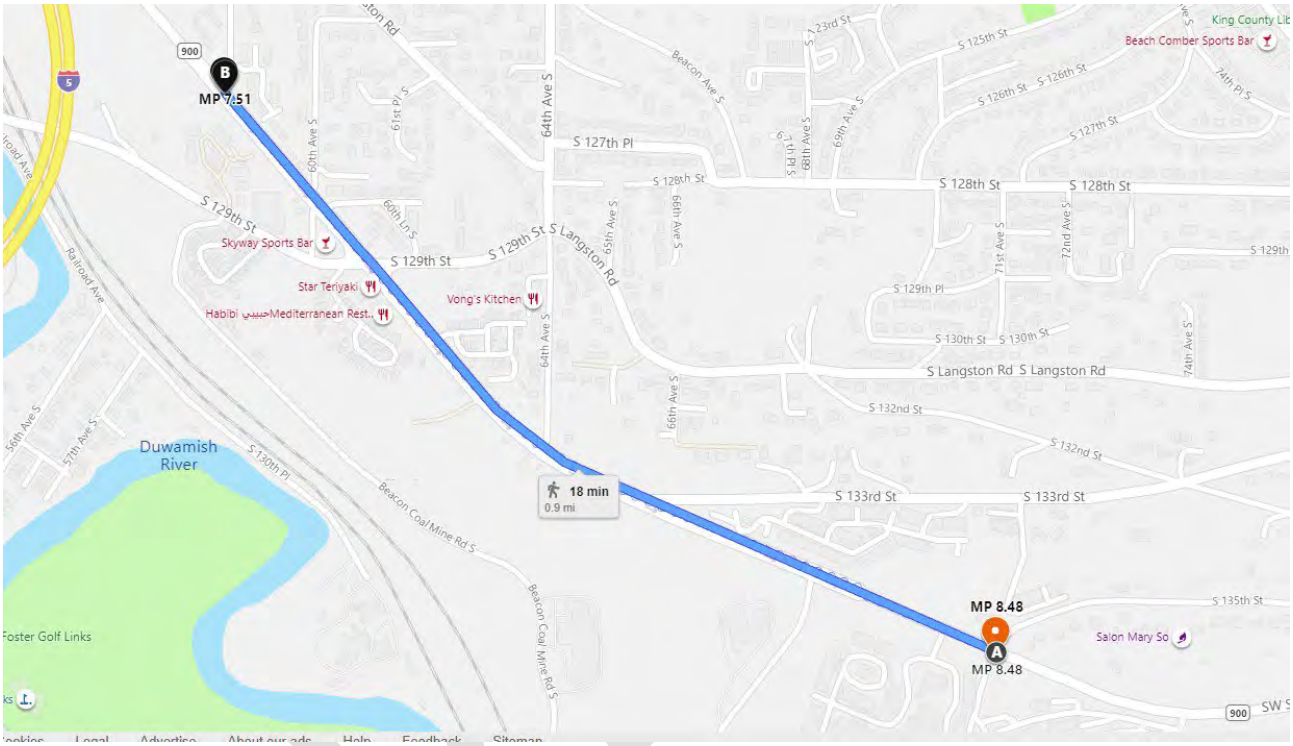
Approach	NB	SB	SE	NW
HCM Control Delay, s	$ 348.6	11.1	0.1	0.6
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	41	397	-	-	821	-	-	598
HCM Lane V/C Ratio	1.168	0.088	-	-	0.022	-	-	0.02
HCM Control Delay (s)	$ 348.6	14.9	-	-	9.5	-	-	11.1
HCM Lane LOS	F	B	-	-	A	-	-	B
HCM 95th %tile Q(veh)	4.7	0.3	-	-	0.1	-	-	0.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

B.2 SR 900 Corridor Study

From 57th Ave South intersection to South 135th Street intersection |MP 7.51 – 8.48



August 2020

WSDOT NWR – Traffic Safety Management

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Background

SR 900 between the neighborhood of Skyway and Renton City Limits has been identified for a high level assessment of multimodal, access, safety, and environmental needs. SR 900 is a heavily traveled commuter corridor that lacks pedestrian accommodation and connectivity between residential centers and community hubs. The corridor does not currently meet the needs of all users and has documented roadway operations and performance issues.

This document will review the collisions along SR 900 between 57th Ave South and South 135th Street (MP 7.51 – 8.48) between 2015 and 2020. The crashes in 2020 are for the January – June time period.

Abbreviations

A list of abbreviations used throughout the report are:

AC = entering at angle crash

CC = contributing circumstances

DNG R/W = did not grant right-of-way

EB = eastbound

EI = evident injury/suspected minor injury

FO = fixed object

LT = left

OD = opposite direction

ODLT = opposite direction 1 LT-1 STR

NB = northbound

PDO = property damage only/no apparent injury

PI = possible injury

RE = rear-end crash

RT = right

SD – misc. = same dir. – misc.

SB = southbound

SI = serious injury/suspected serious injury

Unk = unknown injury

WB = westbound

CAL/CAC History

The table below lists the locations reviewed as part of our safety program for the past 10 years.

Year	Type	Description	Begin MP	End MP
2010	IAL	$900K South 129th Street - Signalized	7.71	7.71
2018	IAL	South 133rd Street	8.08	8.08
2019 - 2020	FA	I-5 to I-405	5.93	12.50

Table 1: Safety Program History

Crash Analysis

From 2015 – 2019, there were 265 total crashes; 32% were injury crashes. There were an additional 17 crashes in 2020.

COLLISION TYPE (SIMPLE)	2015	2016	2017	2018	2019	Grand Total	Percentage	2020
Entering at angle	8	13	10	13	8	52	20%	4
Fire		1		1		2	1%	
Fixed object	1	4	6	4	6	21	8%	2
Opp Dir 1LT-1STR	3	3	6	2	2	16	6%	2
Opposite direction	2	2	5	1	2	12	5%	3
Pedestrian		2	2	4		8	3%	1
Rear-end	19	31	12	19	26	107	40%	1
Same Dir-Misc	2	2	7	3	4	18	7%	2
Sideswipe	5	6	6	6	6	29	11%	2
Grand Total	**40**	**64**	**54**	**53**	**54**	**265**		**17**

Table 2: SR 900 Crash Types by Year

Serious Injury Crashes (2015 – 2019)

There were four serious injury crashes between 2015 and 2019. The serious injury crashes are described below:

- MP 7.53 (11/3/15) **RE** – SB V1 struck the rear of SB V2. CC: Driver distraction
- MP 7.75 (11/21/17) **Pedestrian** – EB V1 struck NB V2/pedestrian as V2 was crossing traffic. V2 was attempting to beat traffic and crossed outside of crosswalk that was 50 ft. from a marked one. CC: None
- MP 7.84 (3/18/19) **AC** – EB V1/motorcycle was traveling at a high rate of speed and struck NB V2 as V2 was exiting a parking lot. V2 was making a left turn from the parking lot. CC: Speed
- MP 7.98 (3/11/17) **RE** – WB V1 had stopped to make a left turn and was struck in the rear by WB V2. Both vehicles were in lane 2. CC: None

Fatal and Serious Injury Crashes (2020)

There was a fatal crash and two additional serious injury crashes that occurred in 2020. The details are:

- **FATAL** – MP 8.11 (3/9/20) **Pedestrian** – WB V1/semi-truck struck SB V2/pedestrian as V2 ran into traffic. V1 was unable to avoid striking V2. V2 ran from the right shoulder into traffic. CC: None
- SI – MP 7.51 (6/13/20) **OD** – WB V1 made a u-turn over center median and was struck by EB V2. CC: DUI
- SI – MP 7.72 (2/9/20) **AC** – EB SR 900 V2 was struck by WB South 129th Streeet V1/motorcycle since V1 failed to stop for the red signal. CC: Disregard control

COLLISION TYPE (SIMPLE)	Suspected Serious Injury	Suspected Minor Injury	Possible Injury	No Apparent Injury	Unknown	Grand Total
Entering at angle	1	1	15	35		52
Fire				2		2
Fixed object			1	13	7	21
Opp Dir 1LT-1STR		1	6	9		16
Opposite direction		1	4	7		12
Pedestrian	1	3	3	1		8
Rear-end	2	1	38	64	2	107
Same Dir-Misc			3	15		18
Sideswipe		1	4	24		29
Grand Total	**4**	**8**	**74**	**170**	**9**	**265**

Table 3: 2015 – 2019 Crash Types by Injury Severity

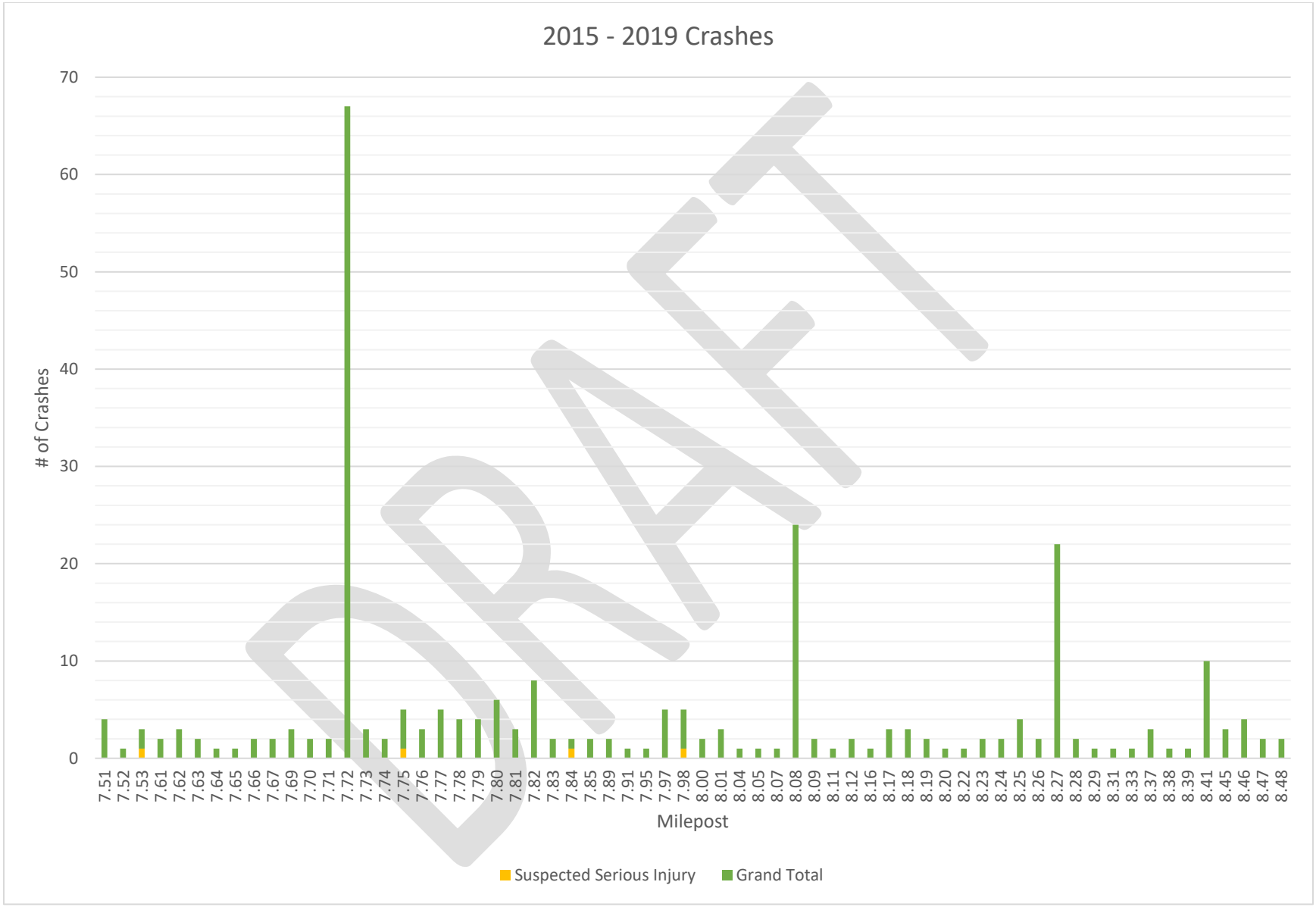


Figure 1: Total Corridor 2015 – 2019 Crashes

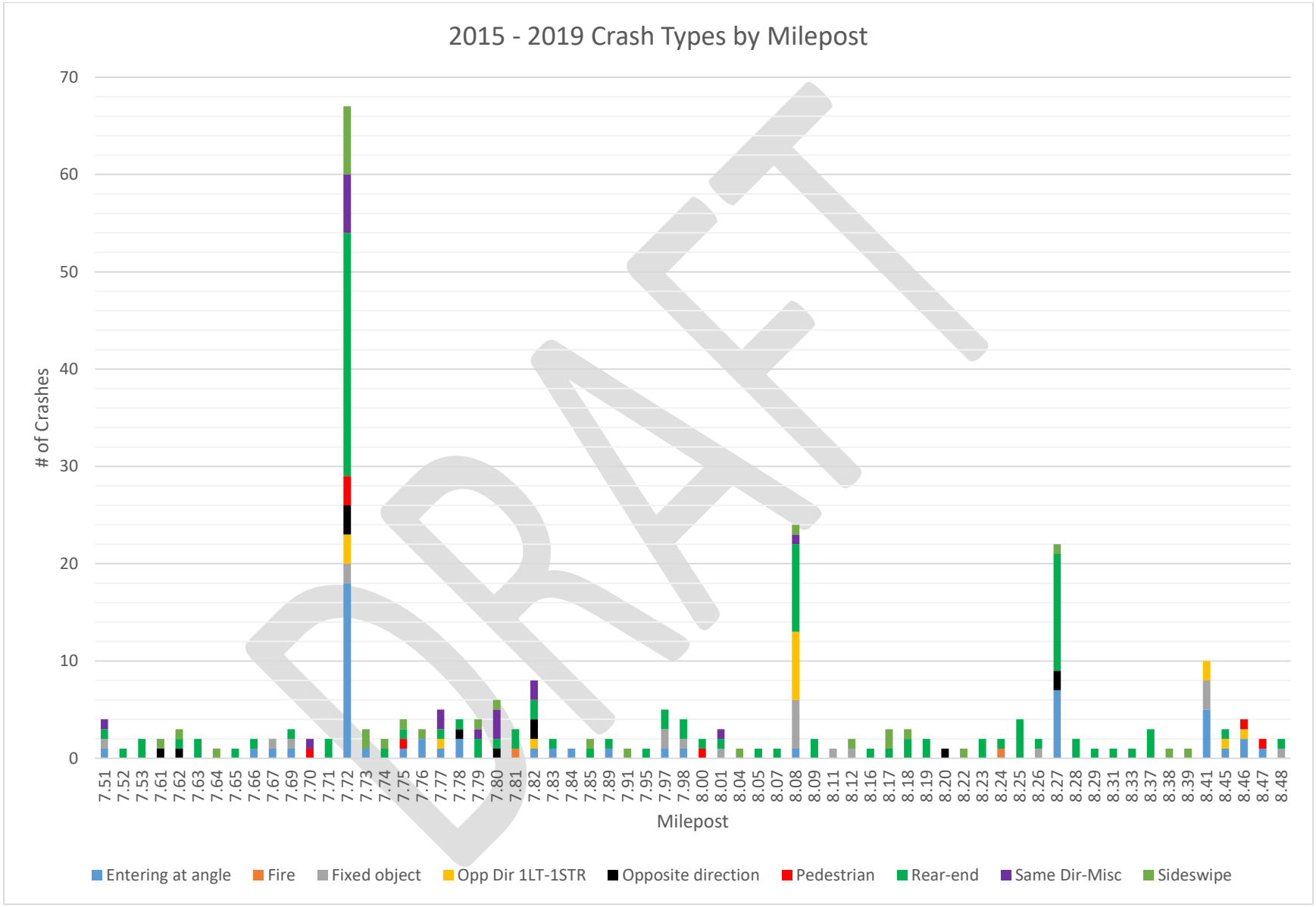


Figure 2: Corridor Crashes by Crash Type

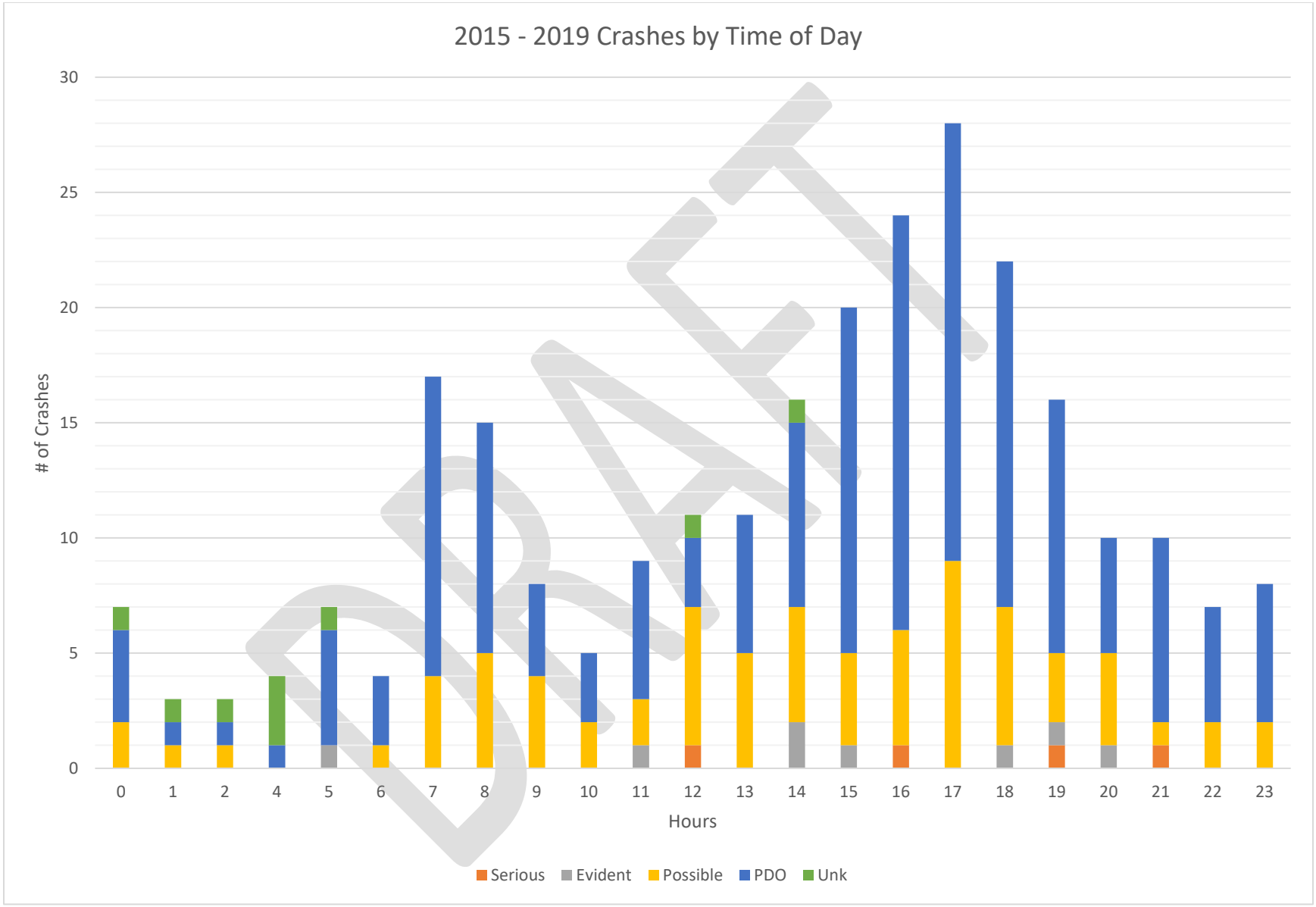


Figure 3: Corridor Crash Types by Time of Day

Pedestrian Crashes

MILEPOST	2015	2016	2017	2018	2019	Grand Total	Percentage	2020
7.70			1			1	13%	
7.72		1		2		3	38%	
7.75			1			1	13%	
8.00				1		1	13%	
8.11						0	0%	1
8.46				1		1	13%	
8.47		1				1	13%	
Grand Total		**2**	**2**	**4**		**8**		**1**

- One SI, three EI, three PI
- **FATAL** – MP 8.11 (3/9/20) – WB V1/semi-truck struck SB V2/pedestrian as V2 ran into traffic. V1 was unable to avoid striking V2. V2 ran from the right shoulder into traffic. CC: None
- 5/8 occurred between 6:00 PM and 9:00 PM.
- 6/8 occurred on wet roadway surface
- Four were crossing within a marked crosswalk. Two were crossing outside of marked crosswalk. One was walking along roadway shoulder. One within commercial parking lot.
- CC: One each DNG R/W, inattention, DUI, disregard stop light, DNG R/W to vehicle, and others

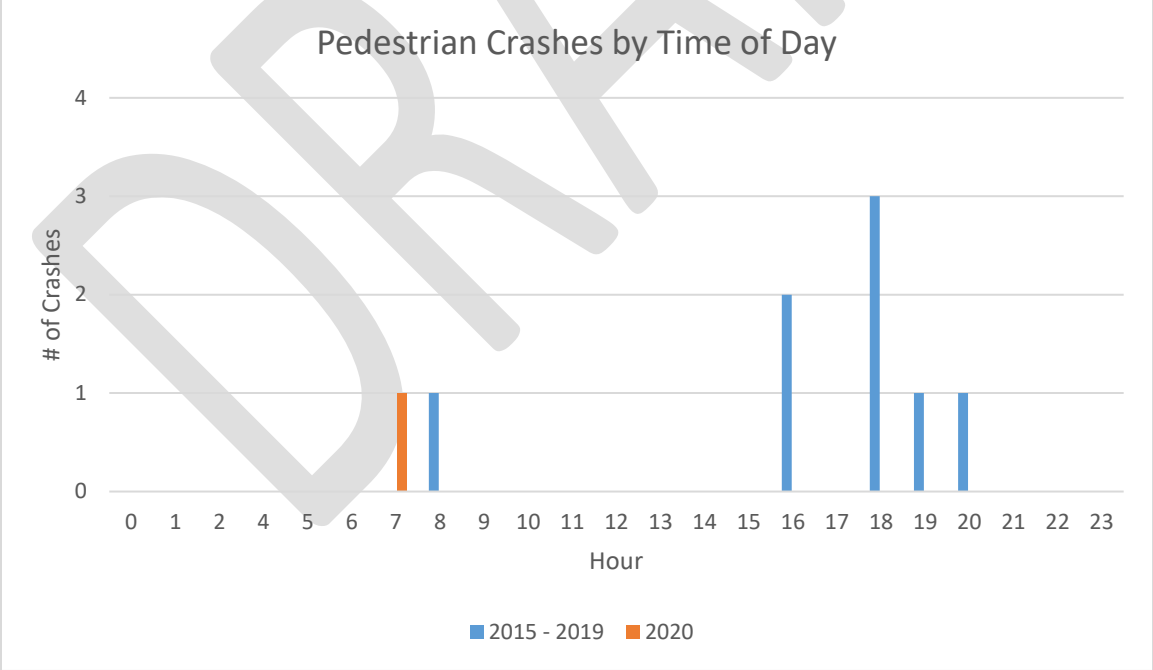


Figure 4: Pedestrian Crashes by Time of Day

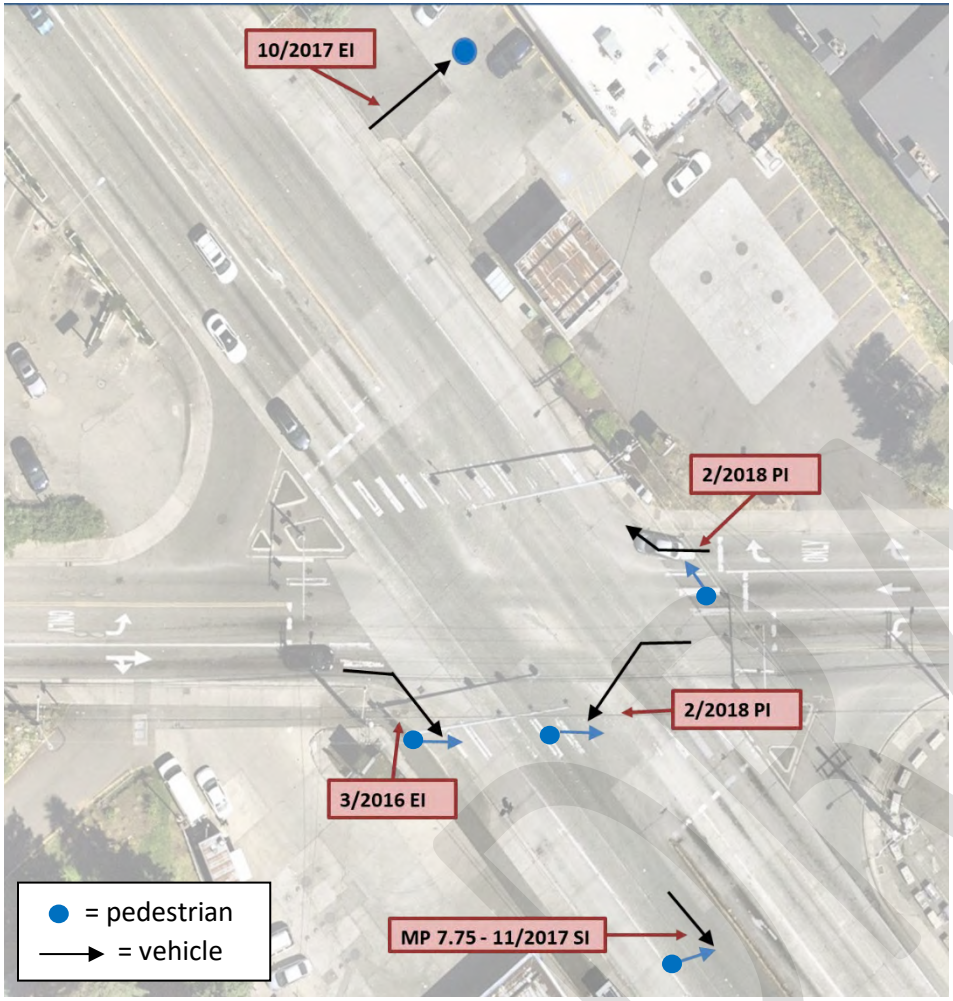


Figure 6: MP 7.70 – 7.75 Pedestrian Crashes

Figure 5: MP 8.00 Pedestrian Crash

Figure 7: MP 8.11 Pedestrian Crash

Figure 8: MP 8.46 – 8.47 Pedestrian Crashes

Non – intersection related Angle Crashes

MILEPOST	2015	2016	2017	2018	2019	Grand Total	Percentage	2020
7.66				1		1	4%	
7.67					1	1	4%	
7.69			1			1	4%	
7.72 (S 129th St.)	2	5				7	25%	
7.73					1	1	4%	
7.75				1		1	4%	
7.76				2		2	7%	
7.77		1				1	4%	
7.78		1	1			2	7%	
7.82					1	1	4%	
7.83	1					1	4%	
7.84					1	1	4%	
7.89				1		1	4%	
8.41 (Creston Point Apt.)	1	1	2	1		5	18%	
8.45	1					1	4%	
8.46	1					1	4%	1
Grand Total	**6**	**8**	**4**	**6**	**4**	**28**		**1**

- One SI, 10 PI
- Eleven NB turning LT vs. EB Thru
    - SI – MP 7.84 (3/18/19) – EB V1/motorcycle was traveling at a high rate of speed and struck NB V2 as V2 was exiting a parking lot. V2 was making a left turn from the parking lot. CC: Speed
- Six NB turning RT vs. EB Thru
- Two SB turning RT vs. WB Thru
- Two NB turning LT vs. WB Thru
- One SB Thru vs. WB Thru
- One SB turning LT vs. WB Thru
- One NB Thru vs. EB Thru
- Four involved vehicles turning RT from a commercial driveway striking a side street vehicle. All at South 129th Street intersection.
- CC: 16 DNG R/W, three inattention, two speed, one each driver distraction and improper action, and others.

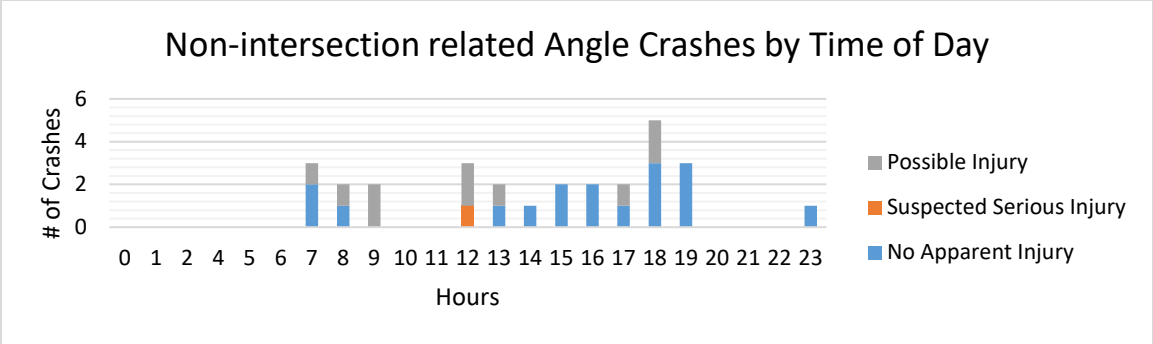


Figure 9: Non-intersection related Angle Crashes by Time of Day

South 129th Street intersection (MP 7.72)

COLLISION TYPE (SIMPLE)	2015	2016	2017	2018	2019	Grand Total	Percentage	2020
Entering at angle	4	7	2	3	3	19	26%	2
Fixed object		1		1		2	3%	1
Opp Dir 1LT-1STR	1	1	1			3	4%	
Opposite direction			1	1	1	3	4%	1
Pedestrian		1	1	2		4	5%	
Rear-end	9	11	3	2	2	27	36%	
Same Dir-Misc	1	1	3	2		7	9%	
Sideswipe	3	2	1	1	2	9	12%	2
Grand Total	**18**	**24**	**12**	**12**	**8**	**74**		**6**

27 RE. 12 PI

- 12 EB/8 WB/5 NB/2 SB
- 11/27 occurred between 4:00 PM and 9:00 PM
- CC: Eight inattention, five following, three speed, two DNG R/W, and others

19 AC. 4 PI

- SI – 2/9/20, Monday @ 12:49 PM – EB SR 900 V2 was struck by WB S 129th St V1/motorcycke since V1 failed to stop for the red signal. CC: Disregard control
- 10/19 occurred between 4:00 PM and 8:00 PM
- CC: Seven DNG R/W, four disregard control, three each improper action and speed, and others
- See Figure 9 for movements

7 SD – misc. All PDO

- 2015 – WB South 129th Street V1 was stopped in the through lane. WB South 129th Street V2 was next to V1 in the LT turn lane; also stopped. V1 wanted to make a LT turn and decided to back-up behind V2. V1 struck the side of V2. V1 fled the scene to WB SR 900.
- 2016 – WB V1/metro bus was within a construction zone with traffic control set-up. Stopped WB V2/truck attenuator was set-up to the left of V1. V1 attempted to turn LT and the side struck the front of V2.
- 3/2017 – From commercial driveway, V1 turning RT to WB S 129th St in front of WB South 129th Street V2. V2 was already in lane 2.
- 9/2017 – EB South 129th Street V1 and EB South 129th Street V2 were stopped in the LT turn lane to go WB SR 900. V2 was behind V1. V1 ran out of gas and began to roll backwards striking V2's front at an angle.
- 11/2017 – EB V1 and EB V2 were in the LT turn lane. V1 began to make a u-turn but could not complete the movement without striking the sidewalk. V1 began to back-up into V2 as V2 was also making the u-turn.
- 3/2018 – WB V1 was stopped in the LT turn lane with WB V2 directly behind them. V1 decided she wanted to go through the I/S and began to back up. V1 backed up into V2.

- 10/2018 – EB V2 was waiting to turn LT to WB SR 900. EB V1 was slightly ahead of V2 in the lane to the right of V2. When the light changed green, V2 began to turn LT but V1 failed to provide right of way to the left turn lane and struck V2. V1 fled the scene.

Four Pedestrian. Two EI, two PI

- 2017 – collision occurred within 7-11 parking lot. Pedestrian was extremely intoxicated.
- 3/4 were within a marked crosswalk (two southern, one eastern)
- 2/3 had pedestrians with 'walk' signal
- 2/3 occurred between 6:00 PM and 8:00 PM

COLLISION TYPE (SIMPLE)	Suspected Minor Injury	Possible Injury	No Apparent Injury	Grand Total
Entering at angle		4	15	19
Fixed object			2	2
Opp Dir 1LT-1STR	1	1	1	3
Opposite direction			3	3
Pedestrian	2	2		4
Rear-end		12	15	27
Same Dir-Misc			7	7
Sideswipe		2	7	9
Grand Total	**3**	**21**	**50**	**74**

Table 4: South 129th Street 2015 – 2019 Crash Types by Injury Severity

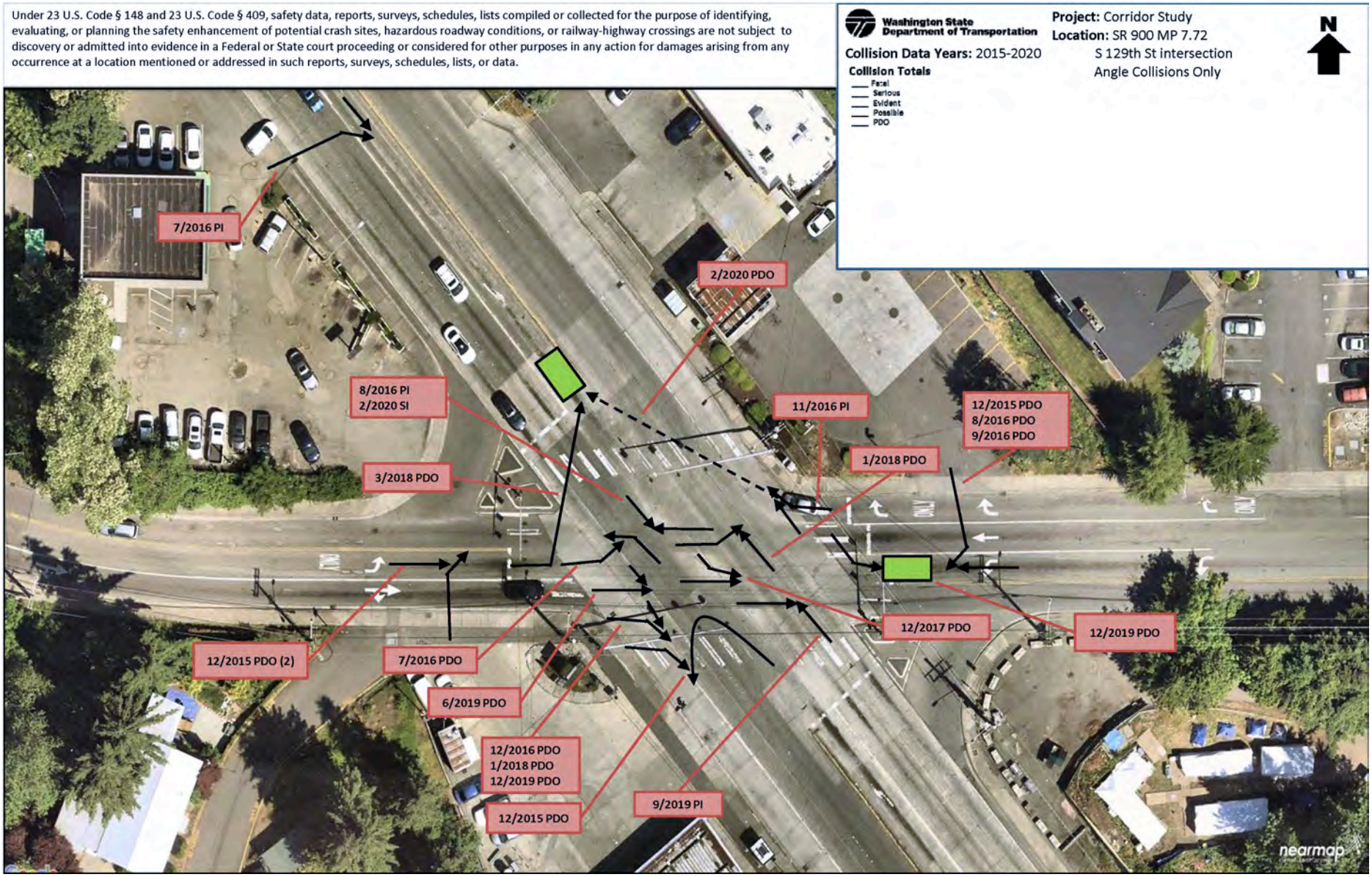


Figure 10: South 129th Street Collision Diagram – Angle Collisions Only

South 133rd Street intersection (MP 8.08)

COLLISION TYPE (SIMPLE)	2015	2016	2017	2018	2019	Grand Total	%	2020
Entering at angle			1			1	4%	
Fixed object	1		2		2	5	20%	
Opp Dir 1LT-1STR	1	1	4		1	7	28%	2
Rear-end	1	2	1	3	3	10	40%	
Same Dir-Misc		1				1	4%	
Sideswipe				1		1	4%	
Grand Total	**3**	**4**	**8**	**4**	**6**	**25**		**2**

10 RE. 2 PI

- One EB/1 WB/8 SB
- 6/10 occurred between 1:00 PM and 7:00 PM
- CC: Four inattention, two speed, one each following and sleep/fatigue, and others

7 ODLT. 4 PI

- All EB turning LT vs. WB Thru
- Six occurred in afternoon with five between 5:00 PM and 10:00 PM
- CC: Three DNG R/W, two inattention, one speed, and others

5 FO.

- Three WB/1 SB/1 NB
- Three on wet roadway surface
- 2/5 between 1:00 AM and 3:00 AM, 2/5 occurred between 1:00 PM and 2:00 PM
- 3/4 struck on the WB side
- CC: One each driver distraction and speed, and others

SD – misc crash involved WB V2 was making a RT turn to S 133rd St and was struck from behind by WB V1. V1 was traveling too fast for conditions and unable to stop. CC: Speed

COLLISION TYPE (SIMPLE)	Suspected Minor Injury	Possible Injury	No Apparent Injury	Unk	Grand Total
Entering at angle	1				1
Fixed object			3	2	5
Opp Dir 1LT-1STR		4	3		7
Rear-end		2	6	2	10
Same Dir-Misc			1		1
Sideswipe		1			1
Grand Total	**1**	**7**	**13**	**4**	**25**

Table 5: S 133rd St 2015 – 2019 Crash Types by Injury Severity

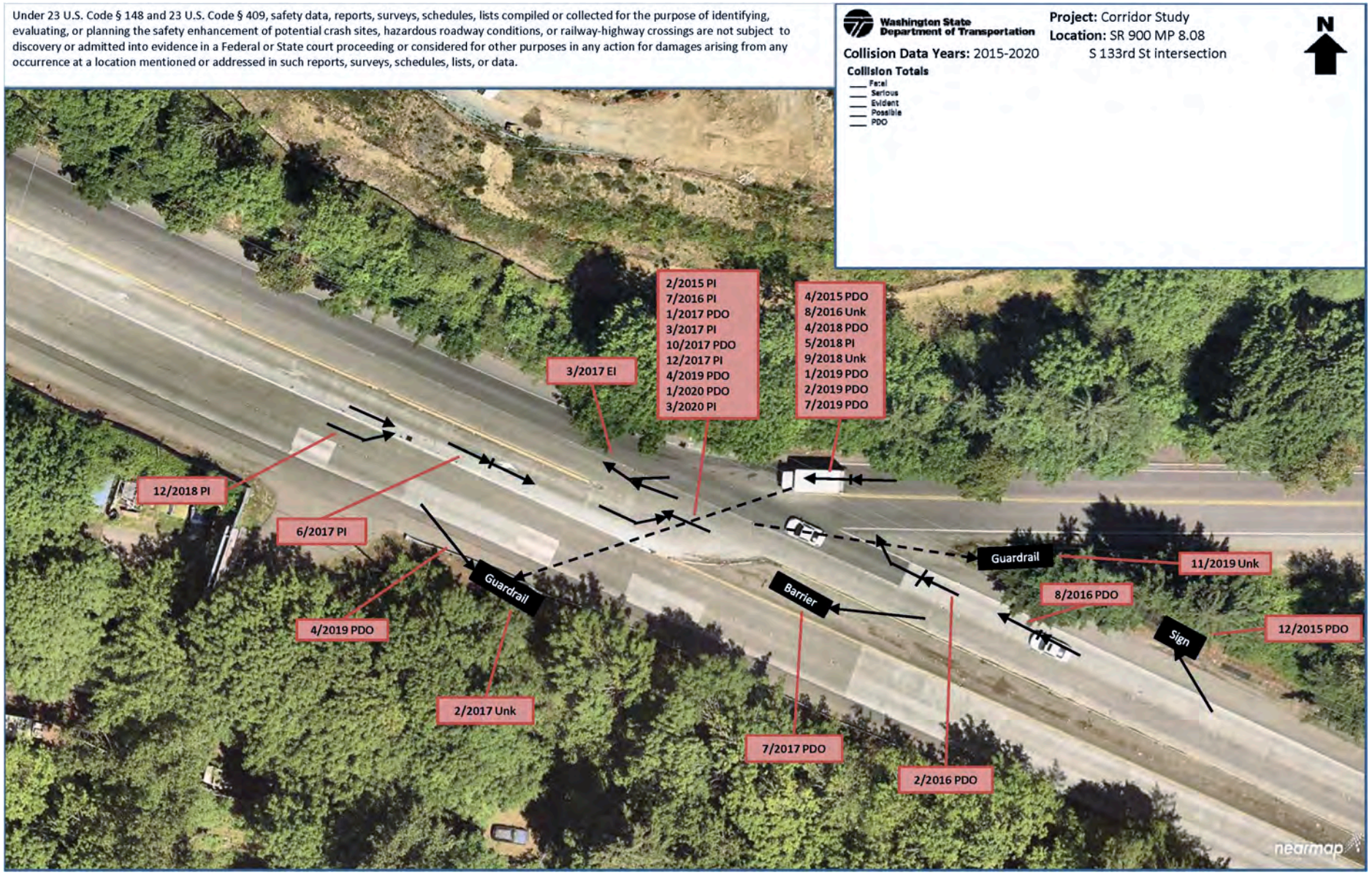


Figure 11: South 133rd Street Collision Diagram

68th Avenue South intersection (MP 8.27)

COLLISION TYPE (SIMPLE)	2015	2016	2017	2018	2019	Grand Total	Percentage	2020
Entering at angle		3	2	1	1	7	18%	1
Fire				1		1	3%	
Fixed object					1	1	3%	
Opposite direction	1		1			2	5%	
Rear-end	2	10	5	4	5	26	68%	
Sideswipe			1			1	3%	
Grand Total	**3**	**13**	**9**	**6**	**7**	**38**		**1**

26 RE. 9 PI.

- 15 EB/11 WB
- Nine occurred in lane 2 EB. Six occurred in lane 1 WB.
- Eleven occurred between 4:00 PM and 6:00 PM. 5 occurred between 7:00 AM and 8:00 AM
- 16/26 occurred on wet roadway surface
- CC: Nine inattention, six speed, five following, one each DUI and driver distraction, and others

7 AC. 3 PI.

- Four EB Thru vs. NB turning LT
- Two NB turning LT vs. stopped EB
- One WB Thru vs. NB turning LT
- 3/7 occurred on wet roadway surface
- 5/7 occurred between 12:00 PM and 9:00 PM
- CC: Three speed, one each disregard control and DNG R/W, and others

COLLISION TYPE (SIMPLE)	Possible Injury	No Apparent Injury	Grand Total
Entering at angle	3	4	7
Fire		1	1
Fixed object		1	1
Opposite direction	1	1	2
Rear-end	9	17	26
Sideswipe		1	1
Grand Total	**13**	**25**	**38**

Table 6: 68th Avenue South 2015 – 2019 Crash Types by Injury Severity

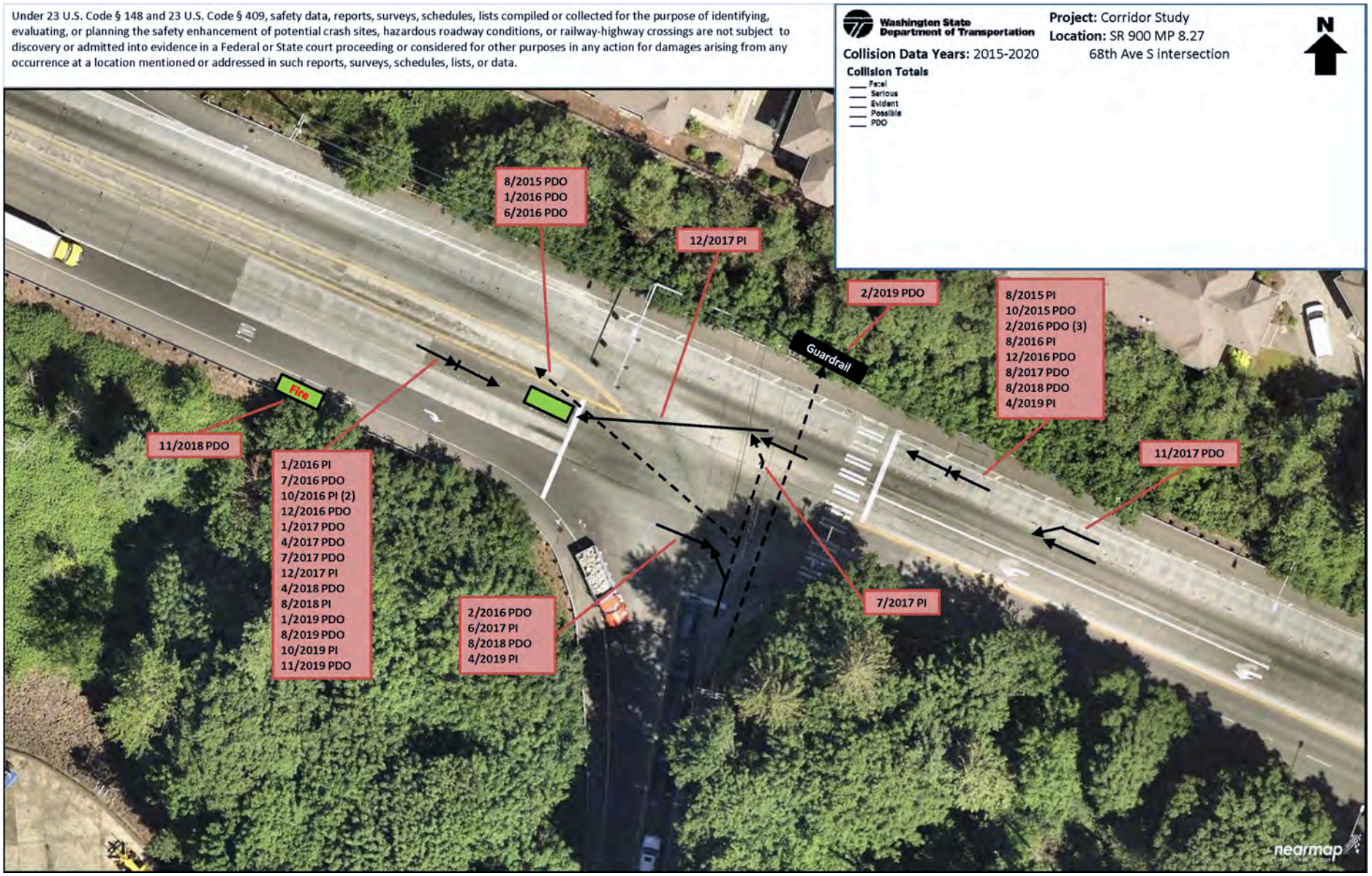


Figure 12: 68th Avenue South Collision Diagram

B.3 Pedestrian and Bicycle Facilities

According to the Corridor Sketch, there are:

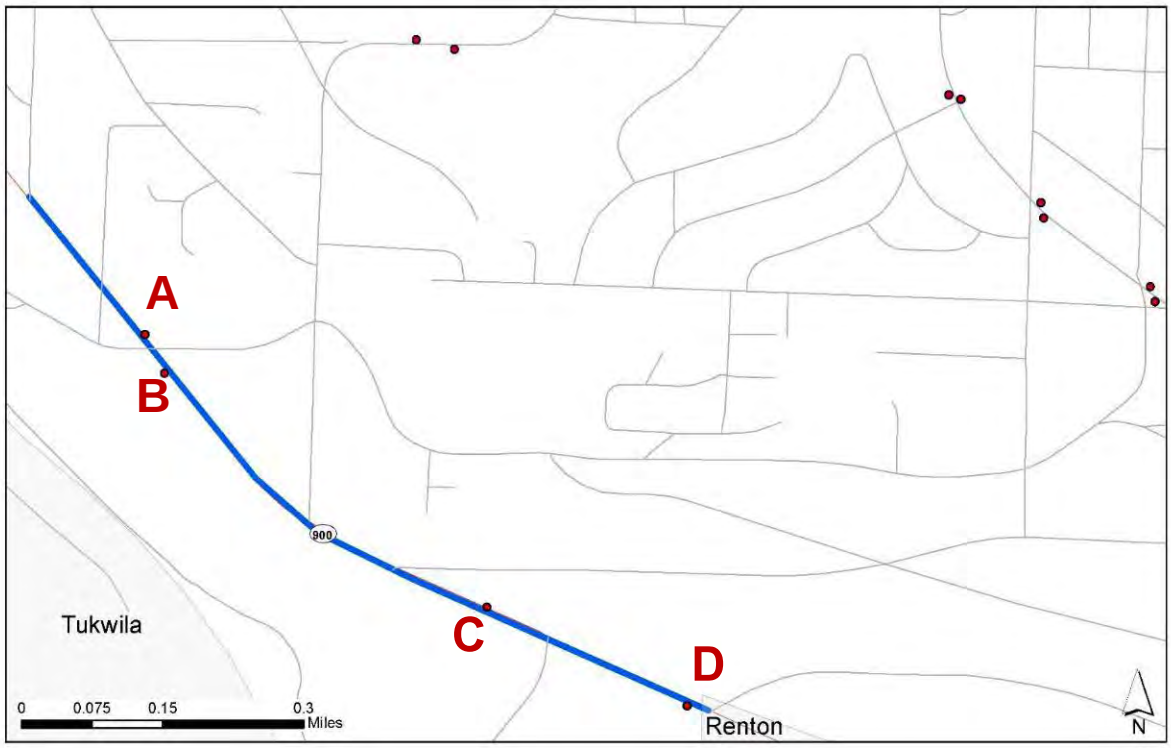
- Marked crosswalks.
- Activated signals at crosswalks.
- Unknown if any existing or planned local trail/sidewalk to connect.
- No dedicated bicyclist facilities on this corridor and intermittent sidewalks.
- Bicyclists and pedestrians are present on the corridor and are permitted to use the roadway shoulders.

B.4 Public Transportation

Existing and planned routes and stops

King County Metro provides transit service along this route as shown:

ID	Period	Routes	Avg Ons	Avg Offs
A	AM	101, 102	98	7
	MID	101	55	32
	PM	101	20	35
B	AM	101	19	8
	MID	101	40	35
	PM	101, 102	41	104
C	AM	101, 102	90	4
	MID	101	45	25
	PM	101	19	36
D	AM	101	39	10
	MID	101	47	35
	PM	101, 102	32	86



Transit stops are shown as red dots.

B.5 Freight Mobility

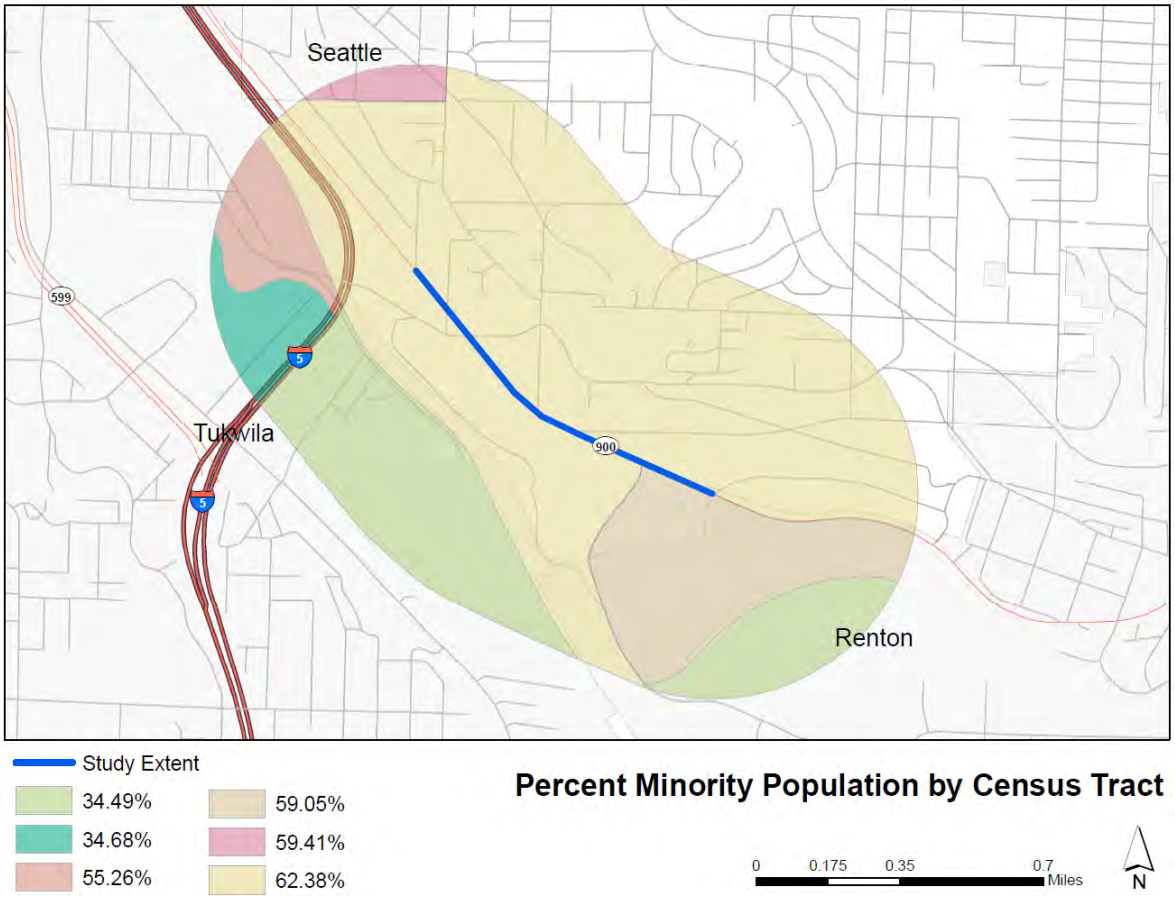
2019 FGTS T2 with annual tonnage estimated at 5.5 million and average annual daily truck volume at 1,600. 5.1% of total traffic is trucks.
2020 MP 7.74 to MP 7.98 = AADT 27,000
Traffic generators for the corridor include major employers such as Boeing and PACCAR, as well as employment and services in downtown Renton.

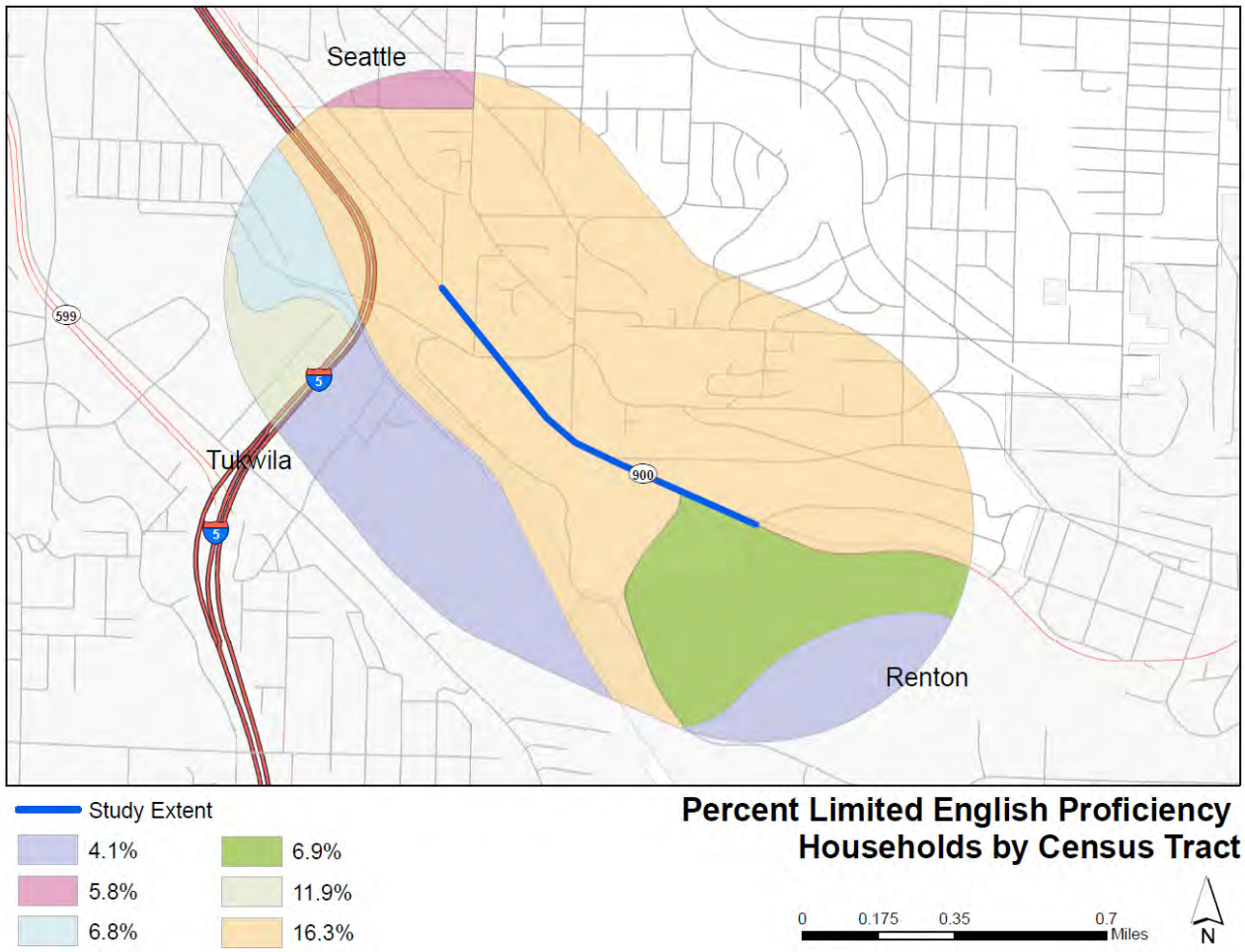
B.6 Environmental Screening

See Section 5.0 Environmental Screening for a discussion of environmental screening categories that are relevant to this project.

B.6.1 Demographic Data

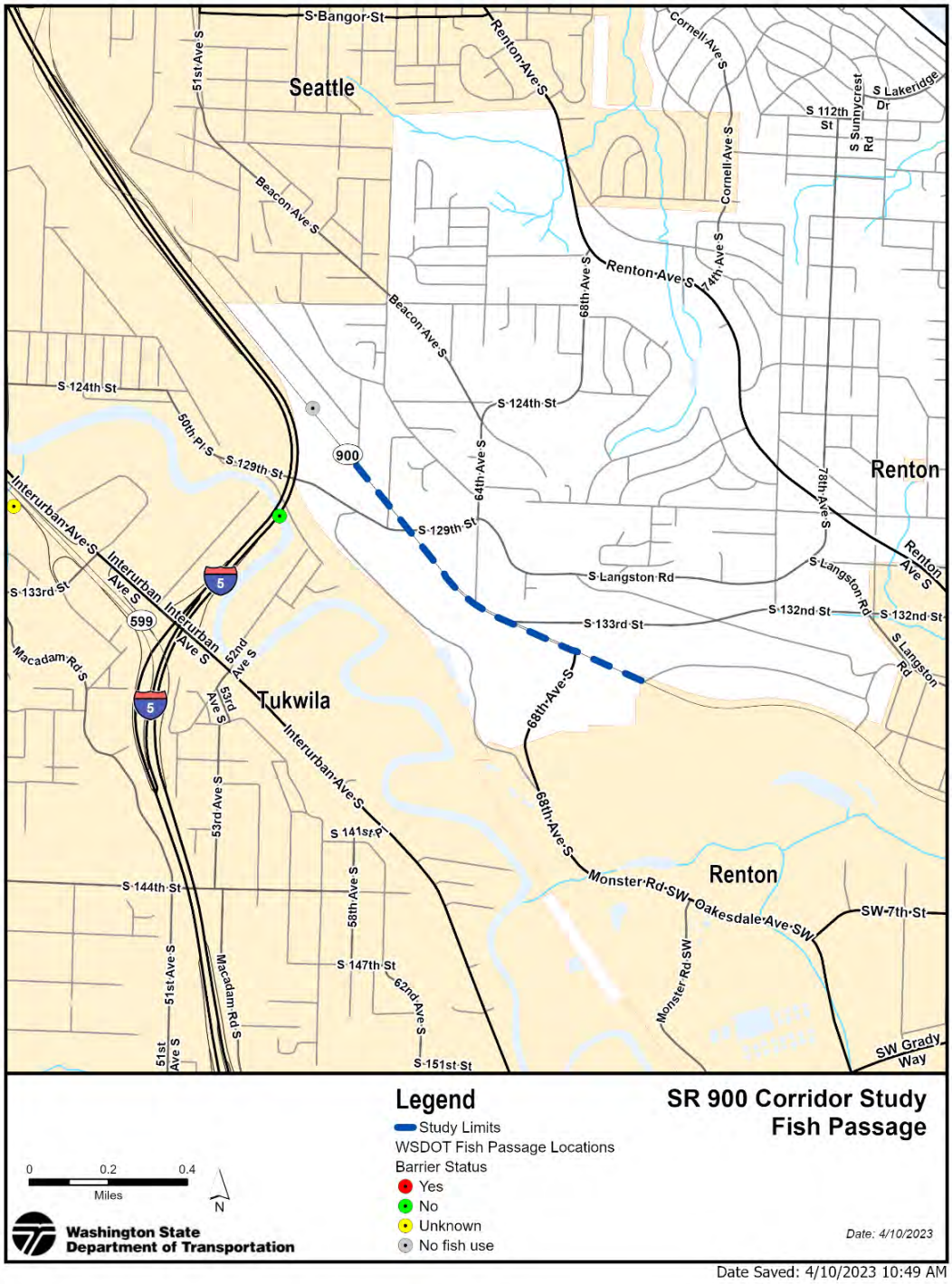
Minority populations range from 34.39% to 62.38% in the census tracts located within 0.5 miles of the study area limits. Additionally, Limited English Proficiency (LEP) households constitute 4.1% to 16.3% of the households located in the census tracts within 0.5 miles of the study area limits. Based on the LEP data, all outreach materials were Spanish, Somali and Vietnamese




Seattle
599
5
Tukwila
900
5
Renton
Study Extent
4.1%
5.8%
6.8%
6.9%
11.9%
16.3%
Percent Limited English Proficiency Households by Census Tract
0
0.175
0.35
0.7
Miles
N

B.6.2 Fish Passage

There are no fish passage barriers on this corridor.



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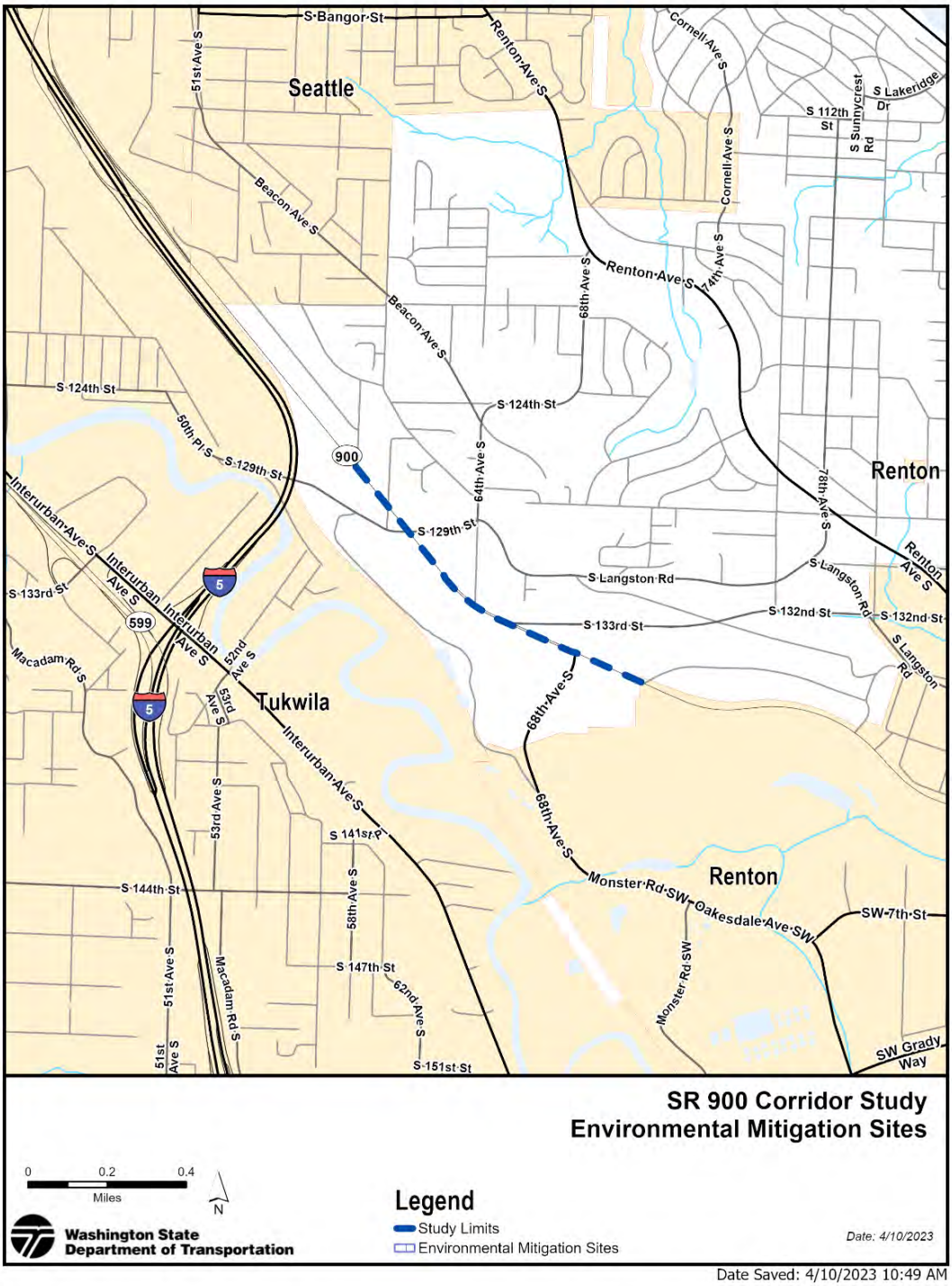
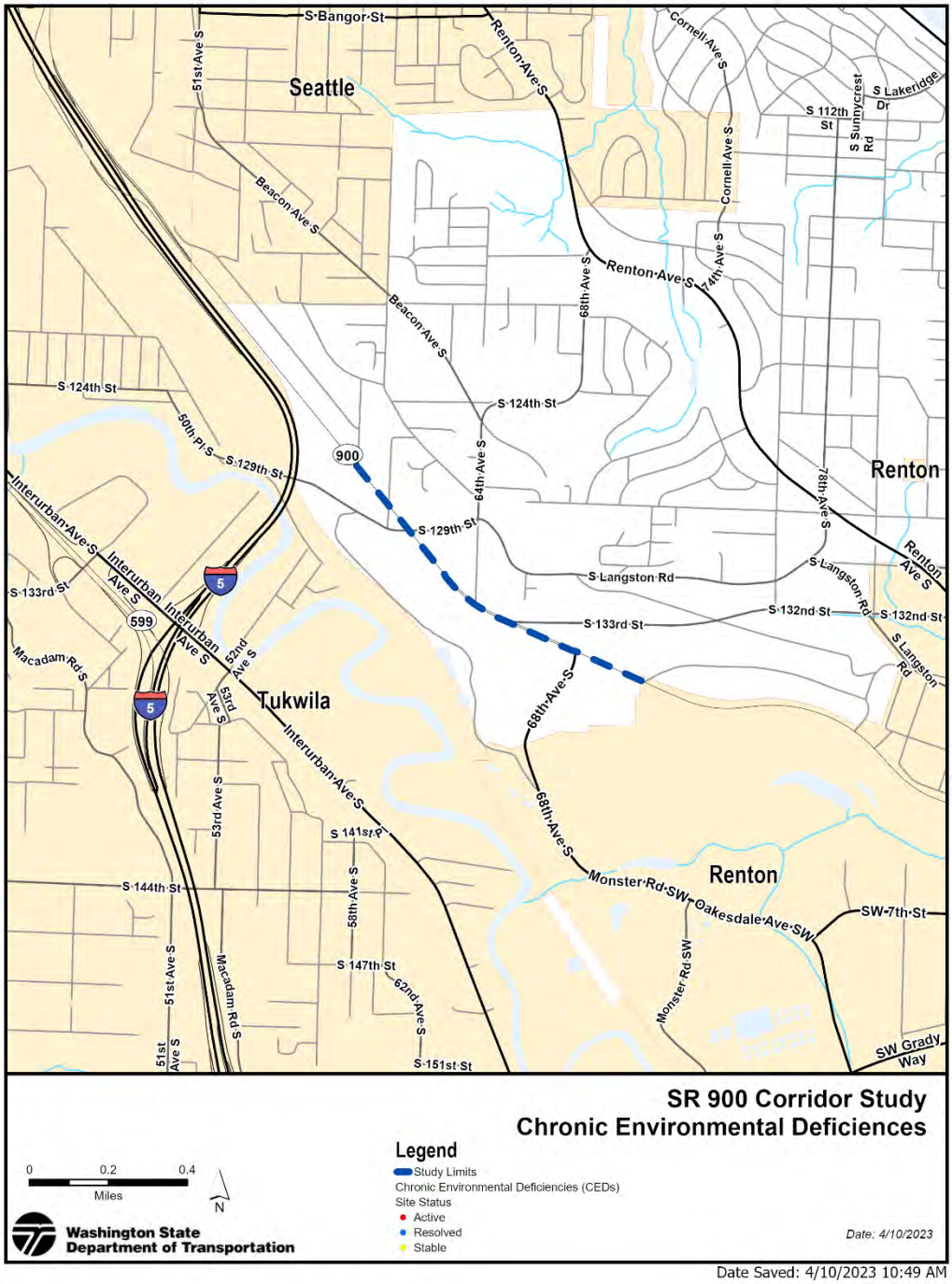
B.6.3 Wetlands/Environmental Mitigation

There are no documented wetlands or environmental mitigation sites on this corridor.



B.6.4 Chronic Environmental Deficiencies

There are no documented chronic environmental deficiencies on this corridor.



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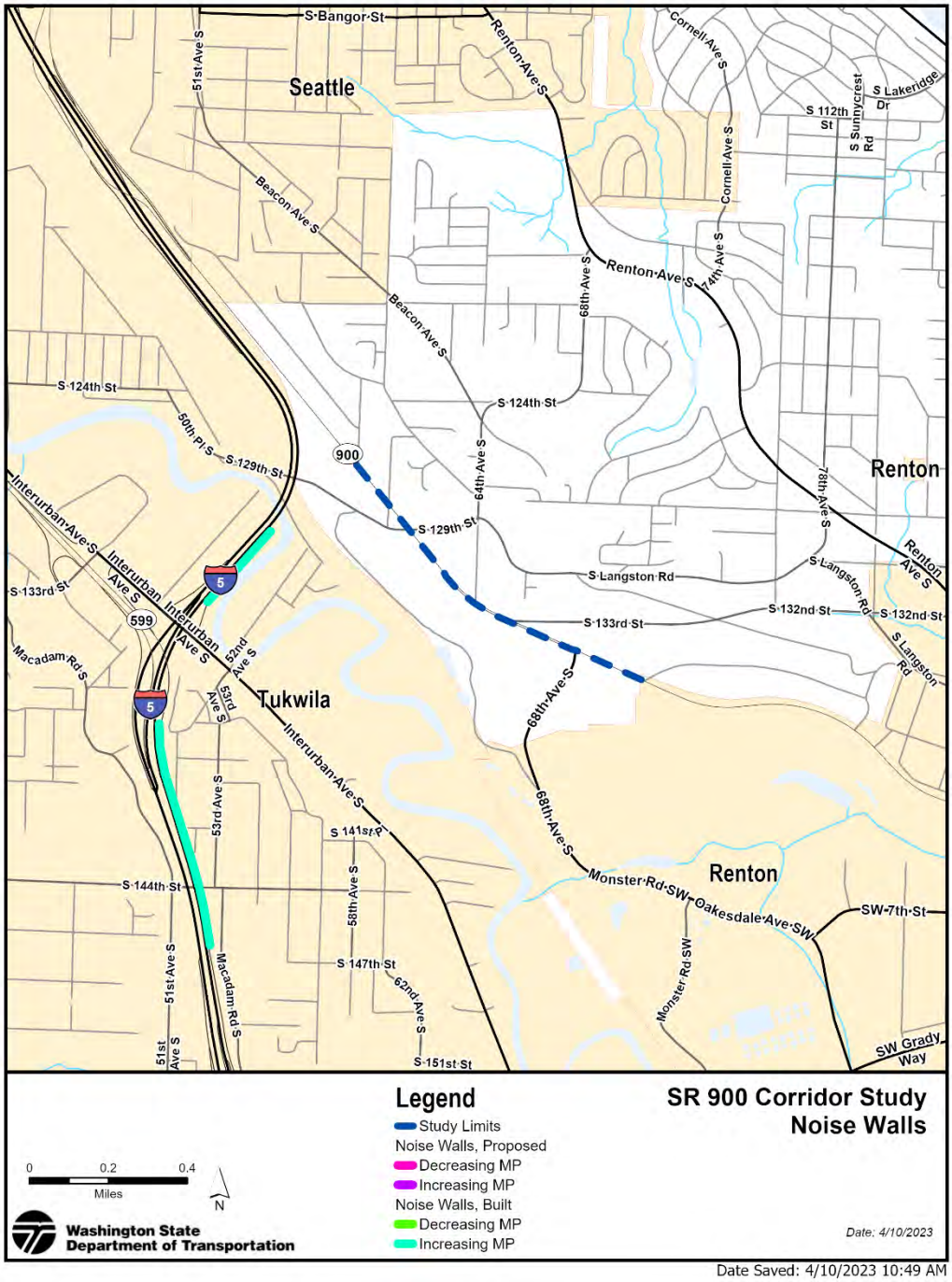
B.6.5 Noise Walls

There are no existing or proposed noise walls on this corridor.



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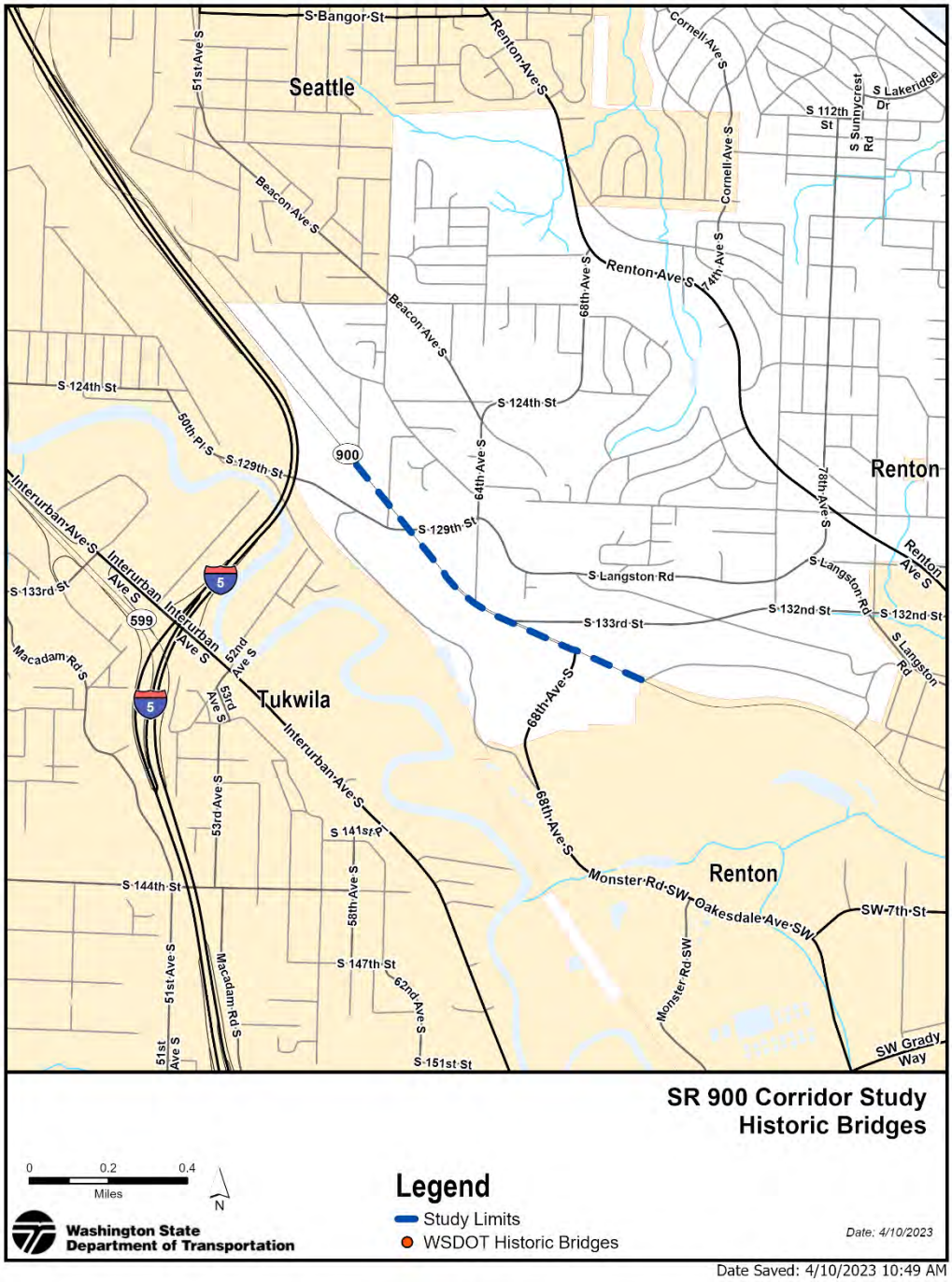
B.6.6 Historic Bridges

There are no historic bridges on this corridor.



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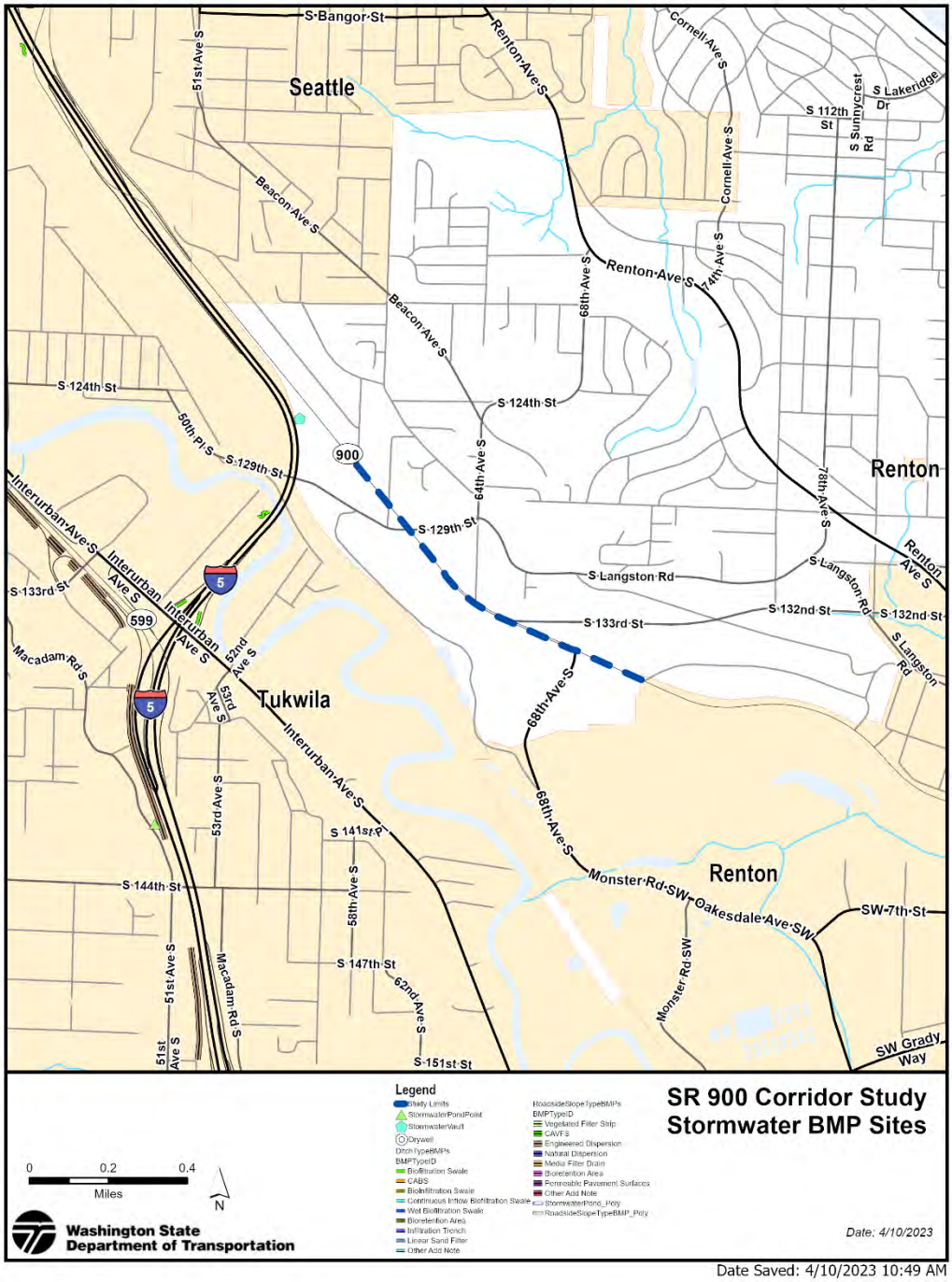
B.6.7 Stormwater BMP Sites and Retrofit Priorities

There are no documented stormwater BMP or retrofit sites on this corridor.



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B.6.8 Climate Vulnerability

This corridor has a climate vulnerability rating of “Moderate”.

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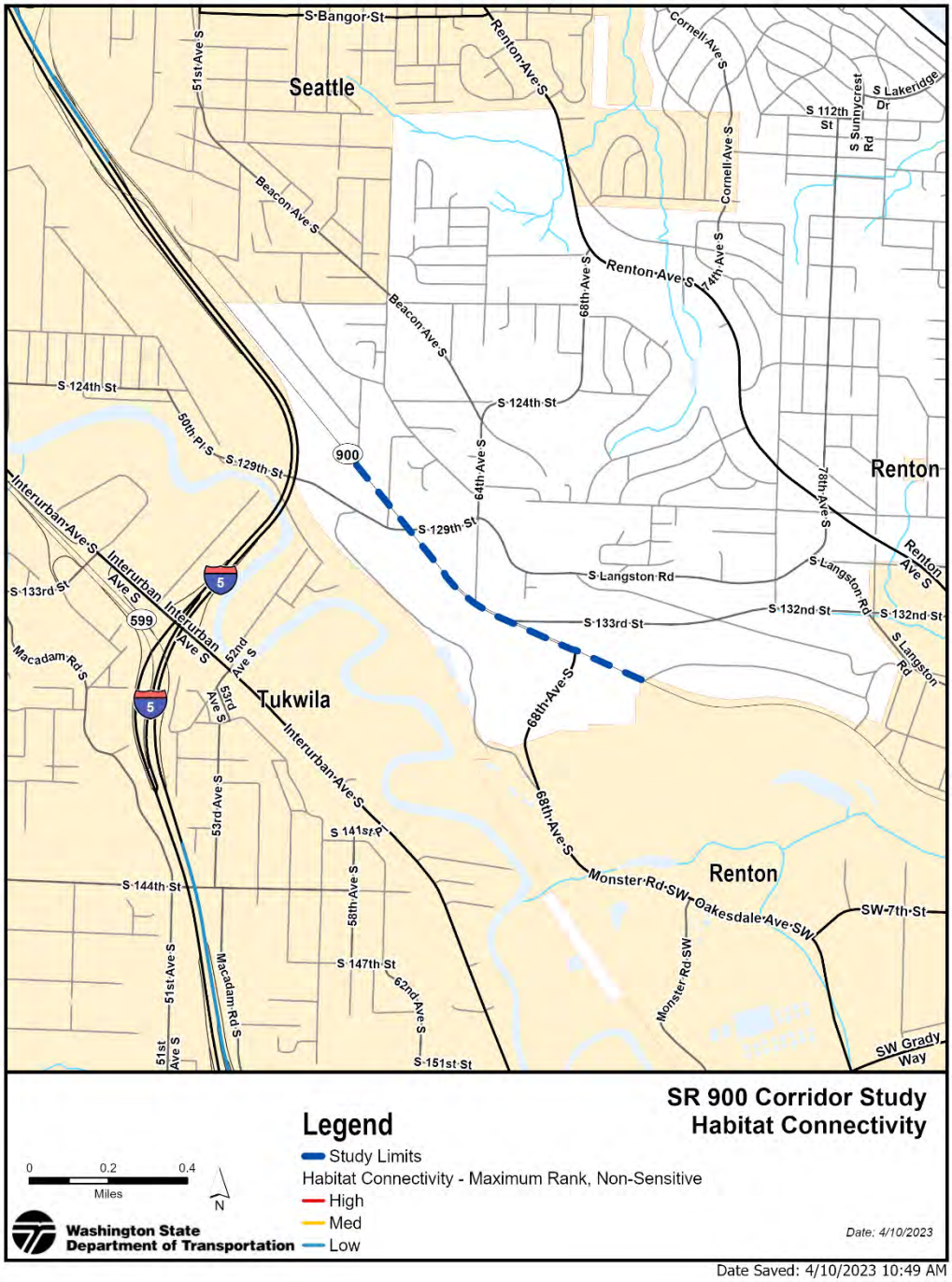
B.6.9 Habitat Connectivity

There are no documented habitat connectivity ratings on this corridor.



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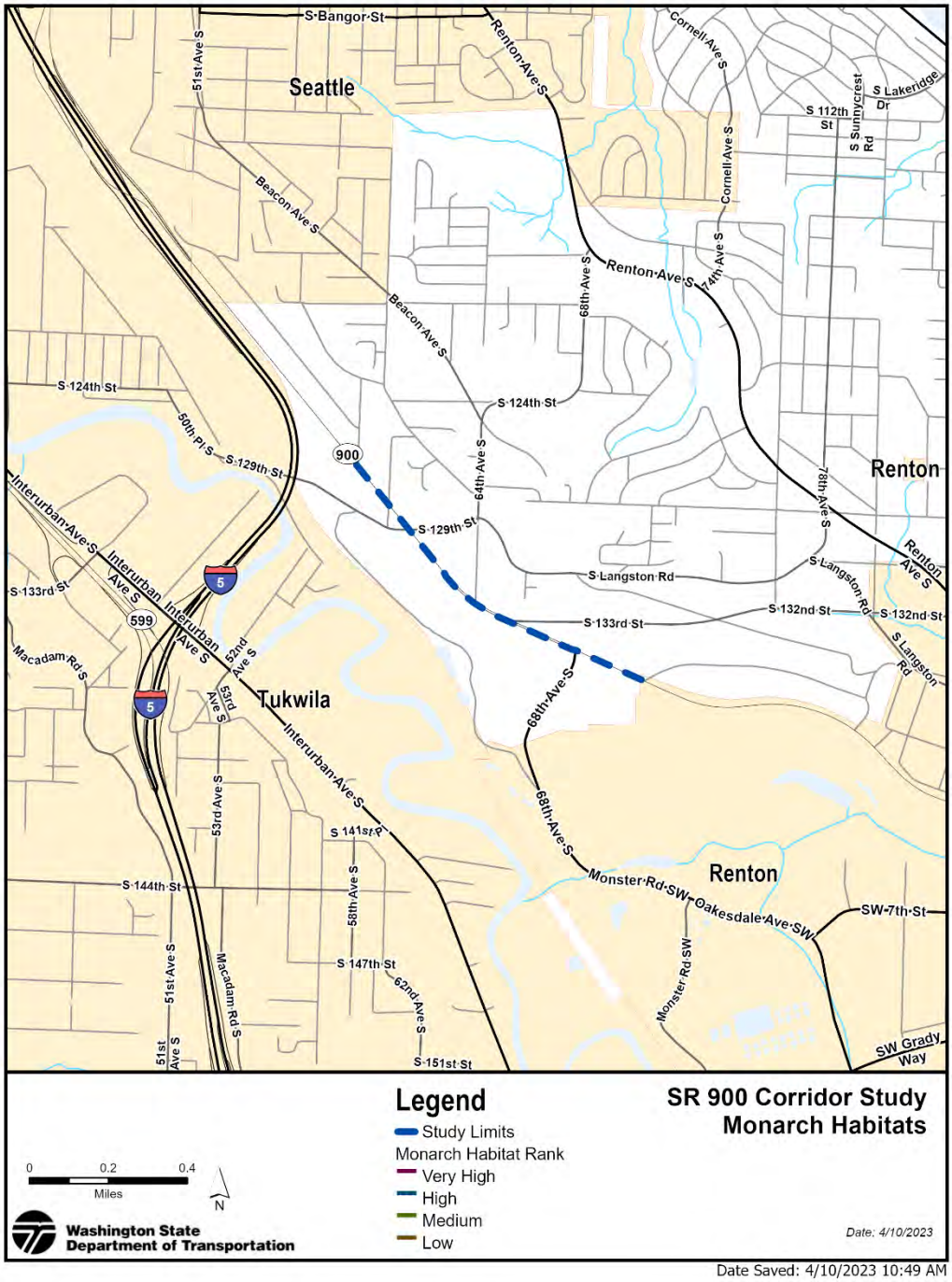
B.6.10 Monarch Habitats Rankings

There are no documented monarch habitats on this corridor.



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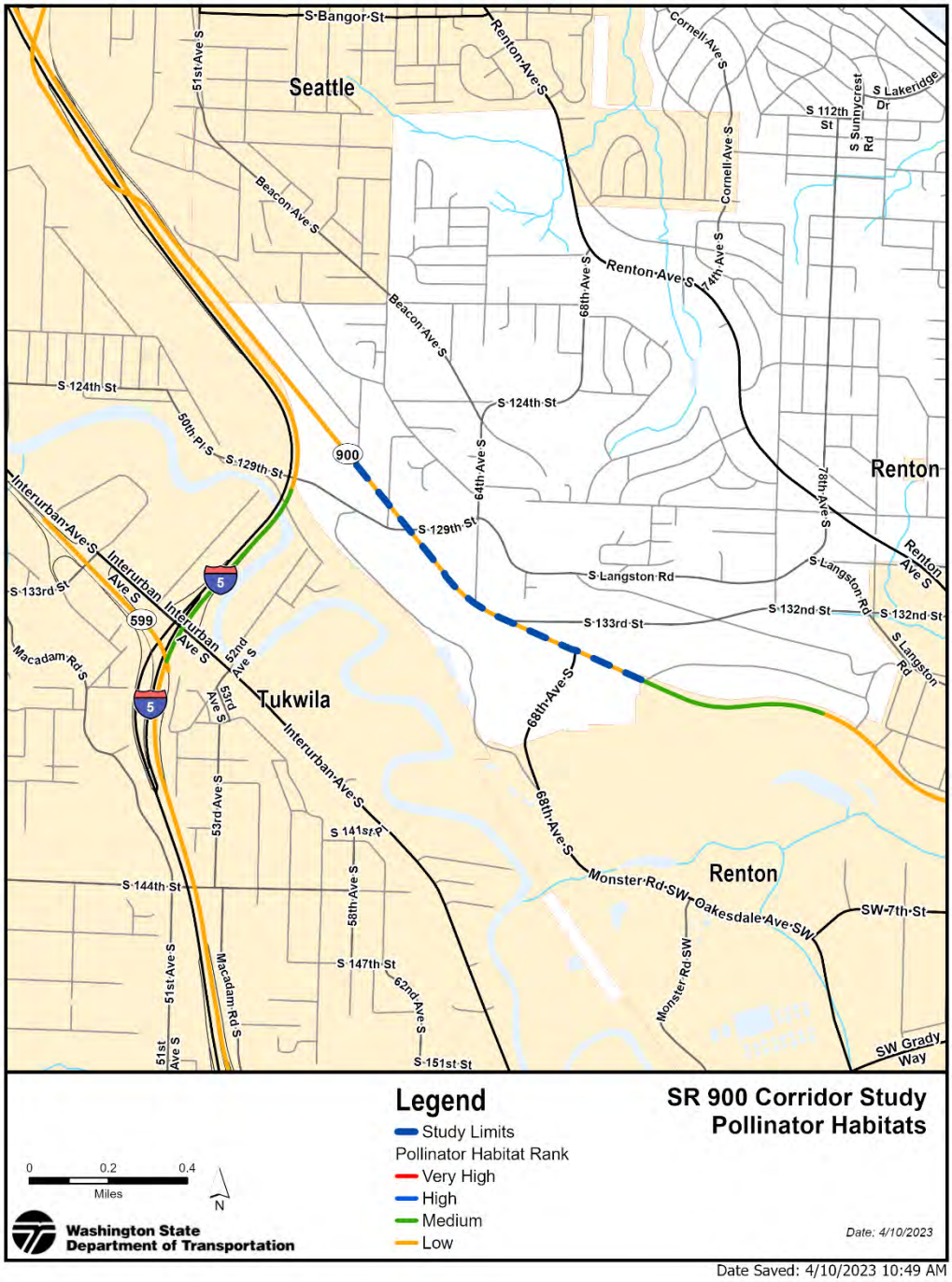
B.6.11 Pollinator Habitat Rankings

A short segment at the eastern end of the corridor is ranked as “Medium” for pollinator habitats.



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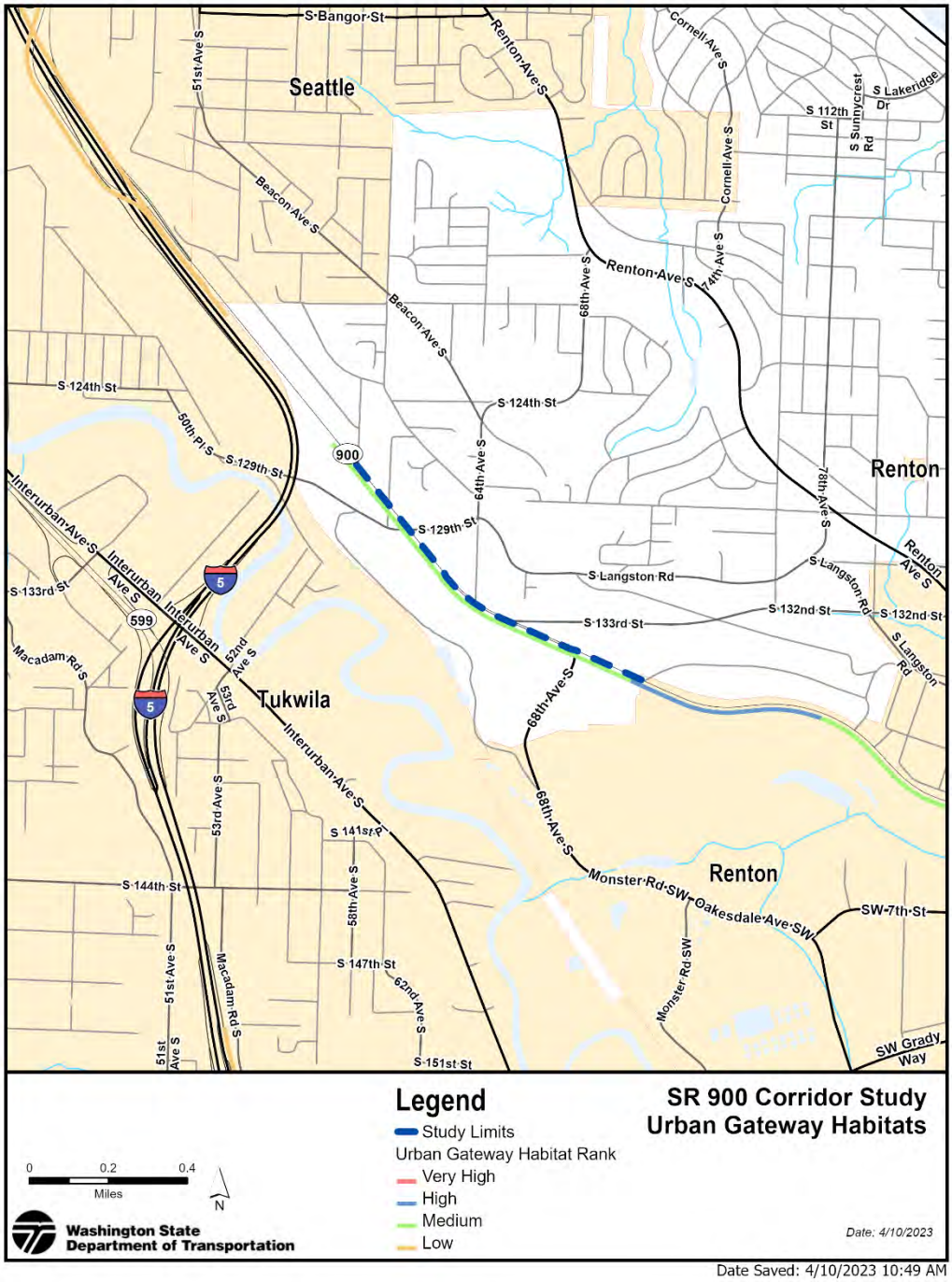
B.6.12 Urban Gateway Habitat Rankings

This corridor has an Urban Gateway Habitat ranking of “Medium” or “High” throughout its limits.



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B.6.13 Hazardous Materials

There are multiple hazardous materials sites located on this corridor that are where the site is awaiting cleanup, cleanup has started, or cleanup is complete.