MEMORANDUM

To: Emily Benoit, Brett Setterfield, City of Vancouver

From: Alta Planning + Design

Date: April 12, 2024

Re: St. Johns-St. James Safety and Mobility Project Existing Conditions Memorandum FINAL

Introduction

This Existing Conditions Memorandum assembles available data to understand the current operations and conditions of the St. Johns-St. James corridor for the St Johns and St James Safety and Mobility Project for all transportation user groups. This information provides a basis for determining potential and appropriate treatments for the corridor, as well as a pre-project baseline for comparison and evaluation of project impacts. The data examined includes:

- Demographics
- Roadway Conditions
- Collisions
- Transit Ridership
- Existing Plans

Existing Conditions

The St. Johns-St. James Safety and Mobility Project aims to improve a 2.5-mile-long roadway segment consisting of St. Johns Boulevard, St. Johns Road, and St. James Road between Fourth Plain Boulevard and NE 68th Street. The corridor also includes Fort Vancouver Way between St Johns Boulevard and Fourth Plain Boulevard. Since this stretch of Fort Vancouver Way was not included in the initial area of study, it is not featured in all of the analysis presented below, but is included in the maps and data as appropriate. The roadway corridor is bidirectional between Fourth Plain Boulevard and SR-500 and a couplet between Petticoat Lane and NE 65th Street, made up of northbound St. Johns Road and southbound St. James Road, and bidirectional as NE St Johns Road between NE 65th Street and NE 68th Street. This corridor serves as a critical connection for people traveling north-south through the Rose Village and Fourth Plain Village Neighborhoods to the Minnehaha Neighborhood. It is also critical because it is the only both north and south crossing of SR-500 between NE 15th Avenue/P Street and NE Andresen Road. The St. Johns-St. James corridor serves automobile, freight, transit, pedestrian,bicycle and small mobility trips.

The corridor is identified in the City's Transportation System Plan (TSP) to have continuous protected bike lanes along the project extent.[1] According to the TSP, the St. Johns-St. James roadway is a minor arterial from Fourth Plain Boulevard to 33rd Street and is a principal arterial from 33rd Street to 68th Street. The corridor is also identified in the City's Transportation Improvement Program[2] as TRANS-924, an active transportation improvement project.

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[1] City of Vancouver Transportation System Plan (TSP) Project 204: NE Saint Johns Rd, NE Saint James Rd: www.cityofvancouver.us/wp-content/uploads/2024/01/Vancouver-TSP-2024_reduced_size.pdf

[2] City of Vancouver Transportation Improvement Program (TIP): www.cityofvancouver.us/wp-content/uploads/2023/07/2024-2029-TIP-Final_compressed.pdf

Although the roadway is located entirely within the City of Vancouver's jurisdictional boundary, its eastern side borders parts of unincorporated Clark County. To the north of the corridor past the City limit, the Clark County, WA Bicycle and Pedestrian Master Plan[3] calls for bike lanes to be continued along the full extent of St. Johns Road. The County plan also shows that the future Chelatchie Prairie Trail will connect to the St. Johns-St. James corridor north of 65th St where it intersects the railroad. Notably, the City's TSP calls for connecting the Ellen Davis Trail to St. James Road just south of NE Minnehaha Street.

Corridor Segmentation

The St Johns – St James Corridor is approximately 2.5 miles, a stretch that covers a wide array of land use contexts and which feature different roadway configurations. Separating the corridor into segments can help the project team better identify problems and focus solutions at a more precise and context specific scale than the corridor as a whole. This may also help communicate the results of the planning process, potential improvements, and design tradeoffs to the public.

Segment 1

Fourth Plain Boulevard to Fort Vancouver Way

- This segment is the most southern portion of the corridor and is adjacent to the largest cluster of multifamily residential buildings along the corridor, making it one of the highest density places in the project extent (Figure 1). It is also unique in that this stretch of roadway does not run completely north and south but is oriented northeast and southwest surrounded by a traditional street grid. The segment is primarily two vehicle travel lanes wide with on-street parking on both sides. There are multiple crosswalks within a short distance and there is a raised crosswalk at S Street. Sidewalks are complete along this stretch and are approximately 5 to 6 feet wide. Unlike other segments of the corridor, this segment does not feature transit services or any bike lanes. Finally, the segment has a southbound slip lane at the intersection of Fourth Plain Boulevard. This segment does not have any C-TRAN bus stops. This segment also includes Fort Vancouver Way between St Johns Boulevard and Fourth Plain Boulevard. The segment similarly is two vehicle travel lanes with a center turn lane, does not have on-street parking and does include marked bike lanes against the curb on either side. This segment does have C-TRAN service, with two bus stops on either side of the roadway in each the north and the south directions on Fort Vancouver Way.

Segment 2

Fort Vancouver Way to Petticoat Lane

- This segment features a mix of residential and commercial uses but has a two-way center turn lane, no on-street parking and marked mobility lanes. The segment begins with a skewed intersection with Fort Vancouver Way, and transitions to a wider cross section north of 33rd Street which continues to Petticoat Lane over the Highway 500 bridge (Figure 1). The intersection at 33rd Street is signalized and has a signal controlled westbound slip lane onto St Johns Boulevard. The slip lane has a crosswalk and is signed for no right turn on a red signal. The southeast corner of St. Johns Boulevard and Petticoat Lane also has a connection to the Burnt Bridge Creek Greenway Trail. There is one northbound bus stop and one southbound bus stop along this segment and another bus stop pair located just south on the corridor along Fort Vancouver Way.

[3] Clark County, "Bicycle Pedestrian Master Plan," https://clark.wa.gov/sites/default/files/dept/files/community-planning/bike-pedestrian-advisory-committee/10-1110_BPMP-Plan-wo-Appendices_PC_approved.pdf

Segment 3

Petticoat Lane to 49th Street

- This segment begins at the point where St. Johns Rd becomes a two-way couplet with St. James Road (Figure 1). The southern end of this segment connects to Arnold Park and the Burnt Bridge Creek Greenway Trail, and has a Pedestrian Hybrid Beacon, otherwise known as a High Intensity Activated Crosswalk (HAWK) signal for pedestrians, bicycles and small mobility users to cross the roadway. Moving northward from Arnold Park, NE 44th Street is the first collector street that connects east and west bound traffic across both St. Johns Road and St. James Road. 44th Street also provides a connection to Harry S Truman Elementary School in unincorporated Clark County. 49th Street to the north is also a collector and provides an east and west connection. The segment also contains a mix of residential, commercial, and other uses. Some portions of this segment have marked on-street parking and the segment has complete bike lanes and bus stops throughout. There are sidewalk gaps in this section. The neighborhoods on both sides of the couplet are primarily single-family residential areas; however, the neighborhoods to the east of the roadway have been zoned for medium-density residential. An important geographic feature in this segment is the steep grade that climbs about 100 ft from NE Petticoat at the south to NE 44th at the north. This segment has been identified as a Commercial Corridor through the City's Commercial Corridors Strategy,[4] a community planning process intended to enhance existing commercial corridors, increase walkability, ensure access to services and amenities, support job growth, and increase housing opportunities, and will be incorporated in the City's Comprehensive Plan update. There are four northbound bus stops and three southbound bus stops along this corridor segment.

Segment 4

49th Street to Minnehaha Street

- This segment is a couplet between St Johns Road in the northbound direction and St James Road in the southbound direction (see Figure 1). The land use features a mix of residential, commercial, and other uses. This segment features the largest current shopping center at NE 52nd Street, a planned transit node at NE 54th Street, and Minnehaha Elementary School just a few blocks east along 54th Street. The segment ends at Minnehaha Street which is a major east-west arterial in the City. There is also a connection to the Ellen Davis Trail on the southwest corner of St. Johns Rd and Minnehaha St. Like Segment 3, there are some portions of Segment 4 that have on-street parking, and the segment has complete bike lanes and bus stops throughout. However, there are sidewalk gaps. The neighborhoods on both sides of the couplet are primarily single-family residential areas. This segment has been identified as a Commercial Corridor through the City's Commercial Corridors Strategy, a community planning process intended to enhance existing commercial corridors, increase walkability, ensure access to services and amenities, support job growth, and increase housing opportunities, and will be incorporated in the City's Comprehensive Plan update. There are four northbound bus stops and five southbound bus stops along this corridor segment.

Segment 5

Minnehaha Street to 68th Street

- This segment is very different in character from the other segments because the land use shifts from primarily residential to primarily light industrial and crosses a railroad tract at the far northern extent. From NE Minnehaha St to NE 68th Street, the St Johns-St James couplet shifts to a bidirectional roadway of St Johns Road and maintains 4 vehicle travel lanes, two in each direction, and bike lanes (Figure 1). There are complete sidewalks on both sides and bus stops. This segment has been identified as a Commercial

[4] City of Vancouver, "Commercial Corridors Strategy," www.cityofvancouver.us/business/planning-development-and-zoning/long-range-planning/commercial-corridors-strategy

Corridor through the City's Commercial Corridors Strategy, a community planning process intended to enhance existing commercial corridors, increase walkability, ensure access to services and amenities, support job growth, and increase housing opportunities, and will be incorporated in the City's Comprehensive Plan update. There are two northbound bus stops and one southbound bus stop along this corridor segment.

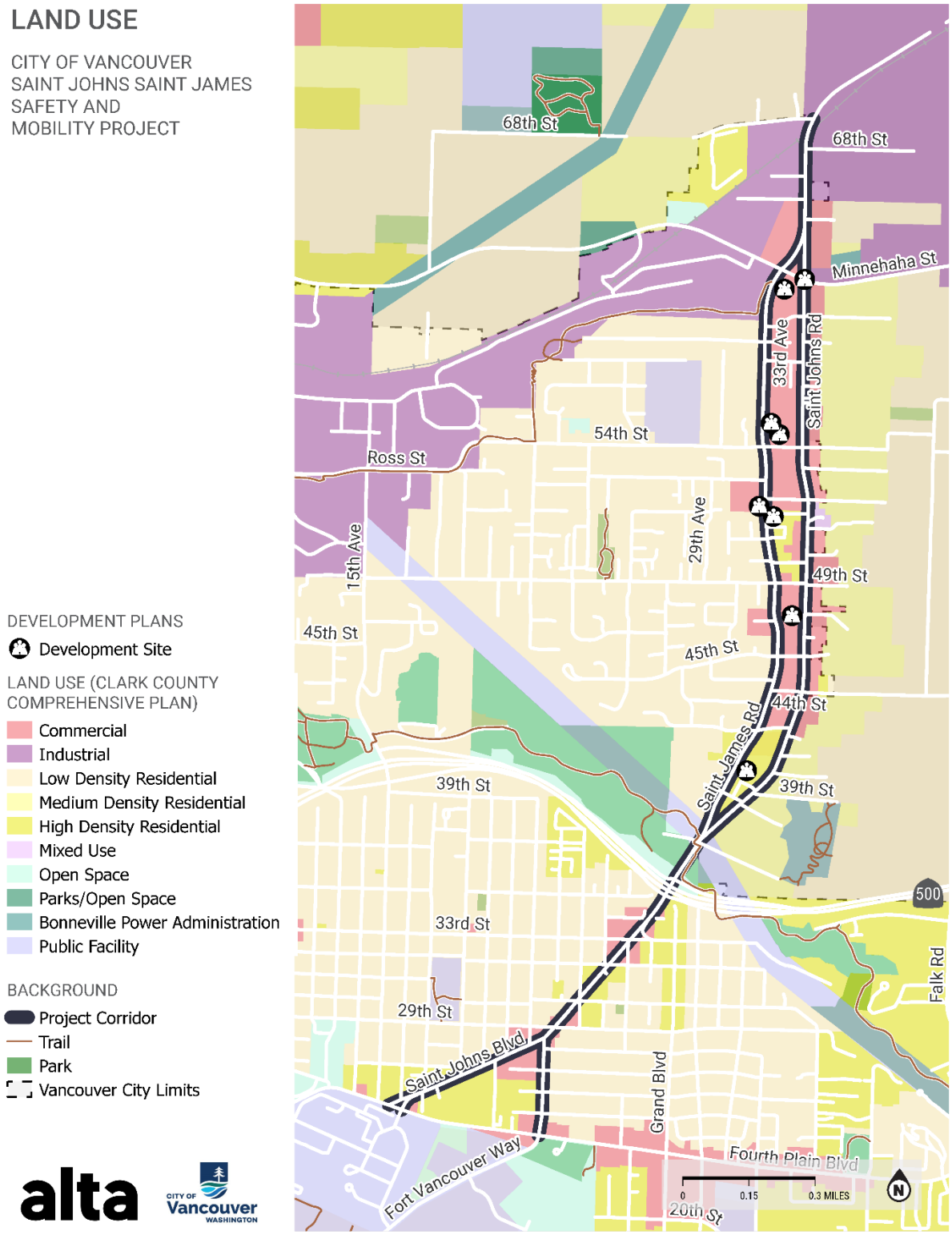
Figure 1: Project segments

Land Use and Corridor Context

Immediately adjacent to the corridor, the land use is primarily commercial and higher density residential, while surrounding neighborhoods to the east of the roadway have been zoned for low-density residential and neighborhoods to the west of the roadway, which are located in Clark County, have been zoned for medium-density residential according to the Clark County Comprehensive Plan (See Figure 2). There is industrial land-use located at the northern edge of the project corridor, where the St. Johns -St. James couplet intersects with NE Minnehaha Street. Several affordable housing developments have been constructed or are planned within the project corridor.[5] (See Figure 2)

[5] City of Vancouver, "Development Projects Map." https://app.powerbigov.us/view?r=eyJrIjoiNDNiY2ExMjYtOWU4YS00Zjk3LThmNmEtYmFiYzY1ZjNhMDIyIiwidCI6ImJmNmQxOWI2LTkyNjYtNDY4Ni1hOTNhLTUwYjUzN2RjNTgzYSJ9

Figure 2: Land Use Profile



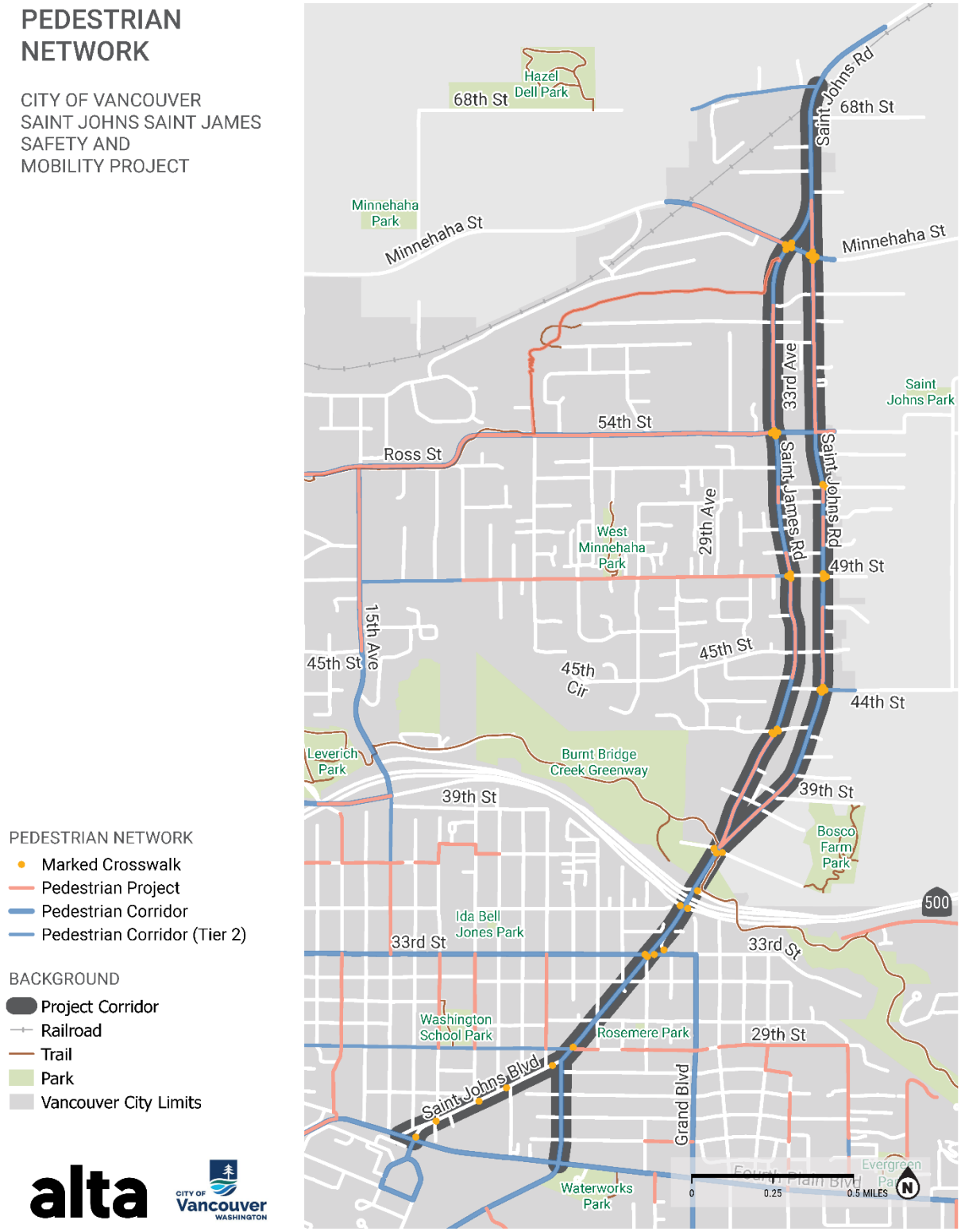
Pedestrian, Bicycle and Transit Conditions

Pedestrian Network

People walking in Vancouver use the St Johns-St James corridor to travel throughout the adjacent neighborhoods, to school, work and to recreate, to places of worship, to access transit stops, and patron stores and restaurants. The City's TSP designated much of the St Johns-St James corridor as a Pedestrian Corridor, except for St Johns Boulevard between Fourth Plain Road and Fort Vancouver Way, which does not have any special designation (Figure 3). The corridor serves as a significant and continuous north-south thoroughfare east of I-5 and north of SR-500 for people walking. At the southern end of the corridor, Fourth Plain Boulevard and NE 33rd Street are also designated as Tier 1 Pedestrian Corridors. Similarly, at the norther end of the corridor, 54th Street and Minnehaha Street are also designated Tier 1 Pedestrian Corridors. The highest density of marked crosswalks exists in the southernmost segment, along St. Johns Boulevard. In other areas, there is an absence of sidewalks. Sidewalks are also most complete in the southern segment which contribute to more comfortable walking conditions (see Figure 4).

Two significant trails intersect the corridor, one in the middle near the SR-500 bridge - the Burnt Bridge Creek Greenway Trail – and one at the northern end of the project extent just south of Minnehaha Street – the Ellen Davis Trail. While the Burnt Bridge Creek Greenway Trail has adequate pedestrian access across St Johns-St James, the Ellen Davis Trail connection remains unfinished, and connections between these two trails with most residential and commercial uses are limited or difficult to reach given the necessarily of crossing SR-500 or NE Minnehaha Street.

Figure 3: Pedestrian Network



Pedestrian Level of Traffic Stress (P-LTS)

Pedestrian level of traffic stress (P-LTS) is an analysis performed to evaluate how a person who is walking or rolling (not on a bicycle, small mobility device nor in a motor vehicle) along a roadway segment may perceive the experience. P-LTS can be used to assess the quality of the pedestrian facilities that are adjacent to vehicle traffic on a 1-4 scale of comfortable to stressful, with 1 representing the most comfortable and least stressful, and 4 representing the least comfortable and most stressful. The Washington State Department of Transportation (WSDOT)- methods to assess the P-LTS of the corridor was used and includes the following metrics:[6]

- Posted speed of the facility
- Annual Average Daily Traffic (AADT)
- Number of vehicle travel lanes
- Cross section characteristics (sidewalk width)

Methodology

P-LTS scores are measured on a scale of one to four. A higher P-LTS score suggests a less comfortable experience for a person walking or rolling along the roadway segment. P-LTS scores are divided into four levels:

- PLTS 1 - Due to the presence of sidewalks that are not adjacent to high volumes of traffic, people walking feel little to no traffic stress as there is more space separating pedestrians from vehicle traffic.
- PLTS 2 – People walking feel some traffic stress along the street and requires more attention to the traffic situation than PLTS 1.
- PLTS 3 - People feel moderate stress being adjacent to moderately fast vehicle traffic.
- PLTS 4 - People feel high traffic stress being adjacent to a lot of fast vehicle traffic.

Key assumptions for this analysis include:

- Sidewalk coverage data was only evaluated for sidewalks within 500 feet of the project area, and along Fort Vancouver Way for additional context.
- Any street without sidewalks on both sides of the street was automatically given a rating of four, as it is not a complete street. This approach takes into account the need for out of direction travel, multiple crossings, and potential conflicts with vehicles where sidewalks are not continuous on both sides. There may be exceptions to this rule, but it provides a more conservative approach to scoring the quality of the facilities, and helps to more readily identify gaps in the pedestrian network as a starting point.
- For roadway segments that have sidewalks on both sides of the street, the narrower of the two sidewalk widths was used to calculate the P-LTS score.
- Shared use paths which are physically separated from vehicular traffic were automatically scored as a one.
- Only through lanes, not turn lanes, were factored into the number of lanes criteria.
- Average Daily Traffic (ADT) was collected along the corridor as part of this analysis. ADT for streets that were not counted was sourced from modeled estimates from Replica Places (2023).

Results of the P-LTS analysis are shown in Figure 3. Key findings from the analysis include the following:

- The most sidewalks exist in the southern portion of the project extent. The most comfortable areas to walk along the corridor are in the southern segments, in large part because the posted speeds are lower, the number of lanes less, the width of lanes narrower, and sidewalks feature less gaps.
- Much of the northern segments score P-LTS 4 for pedestrian level of traffic stress because of sidewalk gaps, higher speeds (35 mph) and the fact that the majority of sidewalks are less than 6-feet wide.

[6] Washington State Department of Transportation Designing for Level of Traffic Stress Bulletin #2022-01. https://wsdot.wa.gov/sites/default/files/2022-06/DesignBulletin2022-01.pdf

- Some areas towards the middle of the corridor over the SR-500 would score as P-LTS 2, but were downgraded to P-LTS 3 due to higher vehicle turning movement conflicts and long crossing distances across highway on and off ramps.
- The analysis reveals that many of the surrounding neighborhoods lack complete sidewalks.

Results By Study Segment: The following discussion relates in part to the P-LTS results as well as sidewalk width maps that can be found in the Appendix A.[7]

Segment 1

In study Segment 1 (between Fourth Plain Boulevard and Fort Vancouver Way) the sidewalks are complete on both sides of the roadway, and some sections on the east side are at least six feet wide. The narrower roadway, combined with slower speeds and complete sidewalks create a more comfortable pedestrian experience.

Segment 2

In study Segment 2 (between Fort Vancouver Way and Petticoat Lane) the sidewalks are complete on both sides of the roadway, and some sections on both the west side and east side are at least 6 feet wide. The roadway is wider in Segment 2 than in Segment 1, but not wide enough to raise the pedestrian level of traffic stress score above 2. The roadway does widen north of 33rd Street, but the pedestrian level of traffic stress score remains a 2 because the sidewalks on both sides of the roadway are at least six feet wide. The bridge over SR-500 introduces more traffic stress to pedestrians primarily due to the higher number of vehicle turning movements occurring at those on and off ramps.

Segment 3

North of Petticoat Lane, in study Segment 3, gaps in the sidewalk network become more frequent than in Segments 1 and 2. The sidewalks that are present are often less than 6 ft wide. Some of the largest sidewalk gaps are on the west side of St. Johns Road between Petticoat Lane and 39th Street. Other large sidewalk gaps exist on the west side of St. Johns Road between 44th Street and 45th Street, as well as on St. James Road between 45th Street and 49th Street. The roadways becomes wider and has a higher speed limit, contributing to a more stressful pedestrian experience than in Segments 1 and 2.

Segment 4

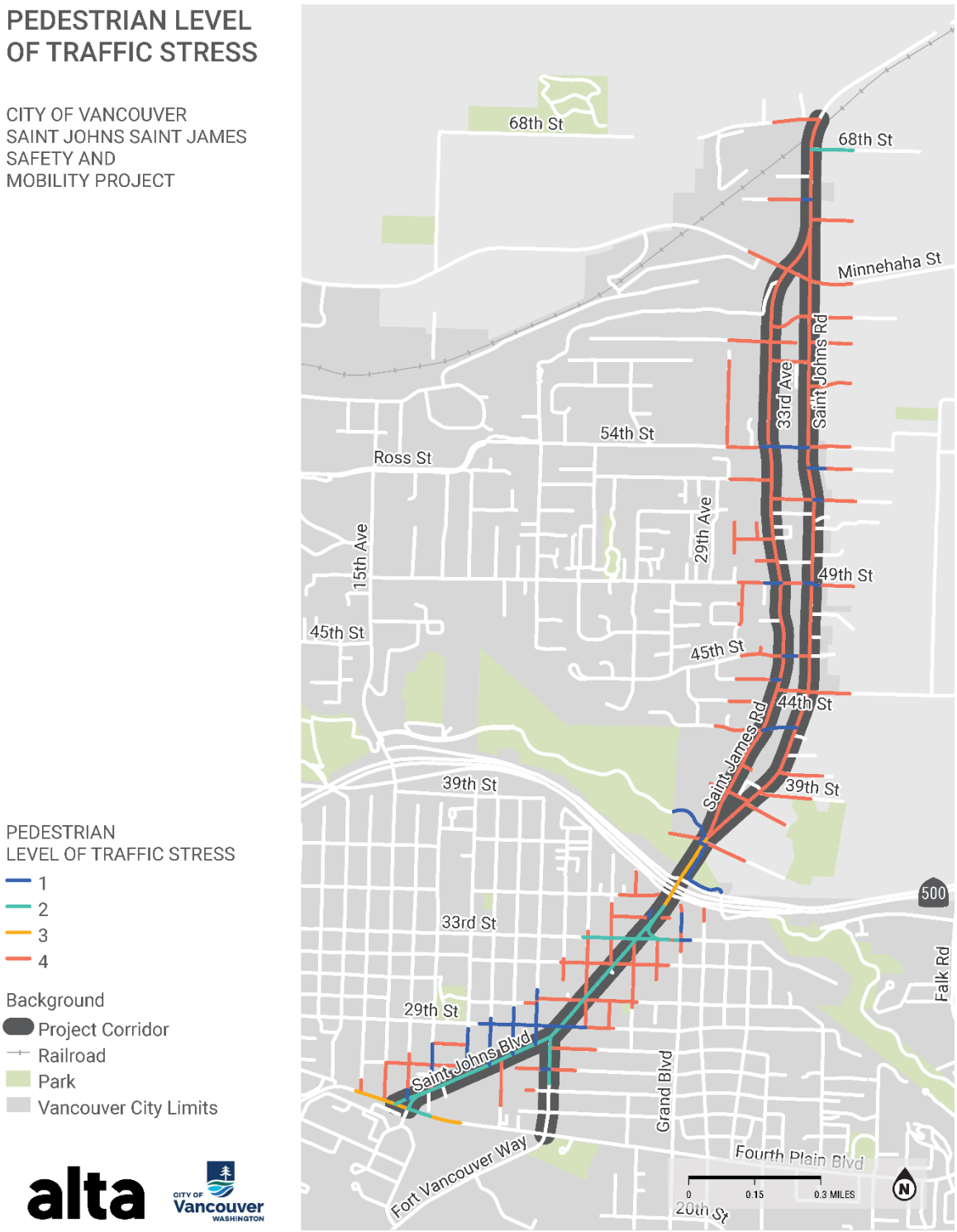
In study Segment 4, (between 49th Street and Minnehaha Street) there are no sidewalks that are six feet wide on either St. Johns Road or St. James Road. Notable sidewalk gaps in this segment include the east side of St. Johns Road between 54th Street and 60th Street. The pedestrian experience scores as more stressful in this segment due to the many sidewalk gaps, high speeds, and number of vehicle travel lanes.

Segment 5

In study segment 5, (between Minnehaha Street and 68th Street) there are more complete sidewalks than in Segment 4. However, a notable sidewalk gap remains on the west side of St. Johns Road between Minnehaha Street and 65th Street. The sidewalks in this segment, however, are nearly all less than 6 feet wide. This, combined with a higher posted speed and 2 vehicle travel lanes per direction, increases the pedestrian level of traffic stress.

[7] See Appendix A for detailed sidewalk maps. Note that the sidewalk data shown is not comprehensive for areas further away from the study corridor; sidewalk data was only provided within a small distance from the study corridor.

Figure 4: Pedestrian Level of Traffic Stress (P-LTS)



Bicycle Network

Existing Facilities

Conventional striped mobility lanes currently exist on the St Johns-St James corridor from Fort Vancouver Way to 68th Street. This mobility lane varies in width from 4-6 feet throughout the corridor. There are several key east-west connection points along the corridor, including Fort Vancouver Way, 29th Street, 33rd Street, 49th Street, 54th Street, and Minnehaha Street (See Figure 5). There is also a connection to the Burnt Bridge Creek Greenway Trail along the corridor that crosses east-west at Petticoat Lane.

Planned Facilities

The TSP recommends expanding protected bike connections in the southern extent on roads such as Fourth Plain Boulevard and St. Johns Boulevard, as well as protected bikeways on 49th Street, 54th Street, and Minnehaha Street (See Figure 6). The TSP also recommends designating V Street and 29th Street near the southern portion of the study corridor as neighborhood greenways.

Figure 5: Existing bicycle and small mobility network

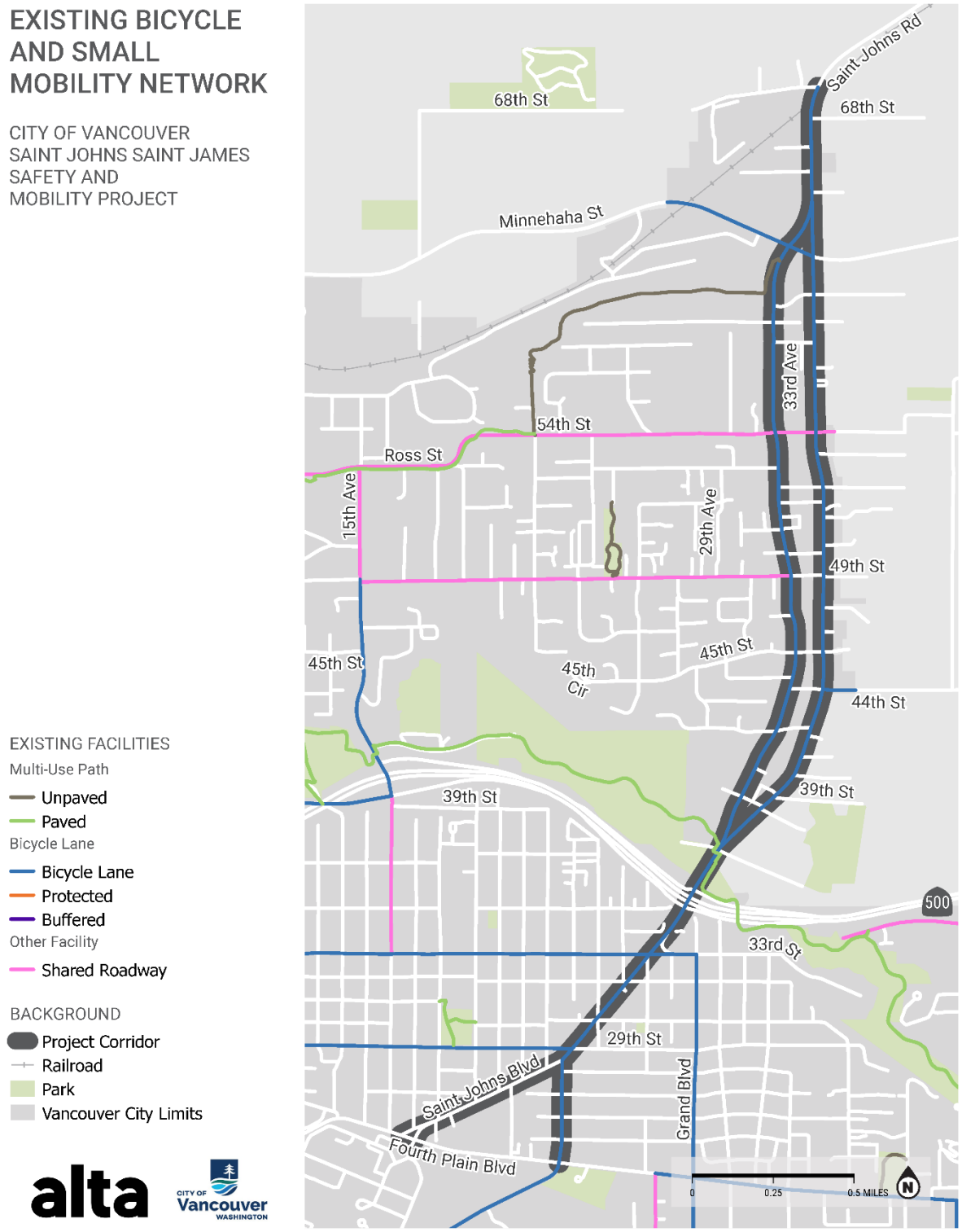
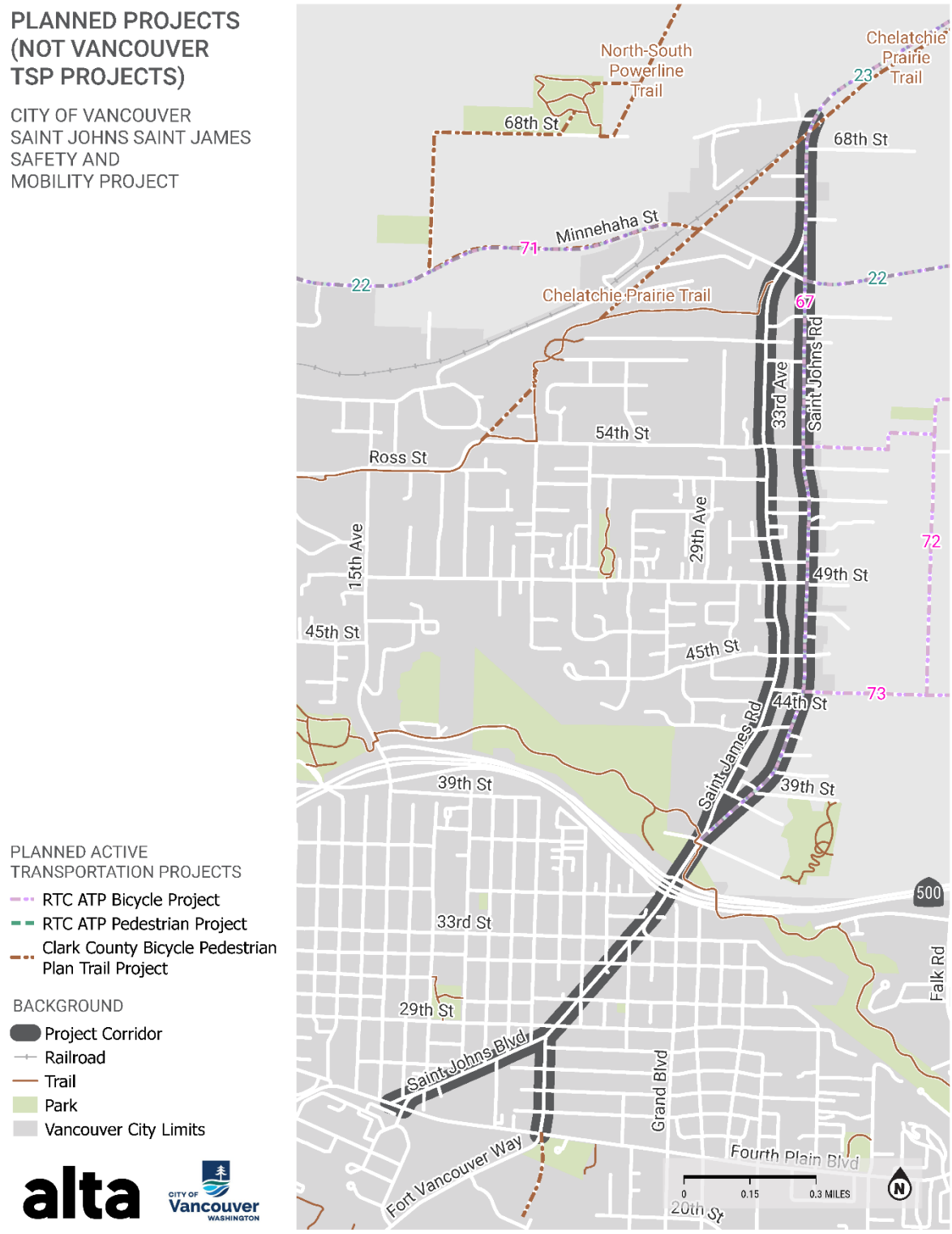


Figure 6: Planned bicycle and small mobility network (Vancouver Draft TSP)

Figure 7: Planned Projects (Multiple Plans excluding Vancouver TSP)



Bicycle Level of Traffic Stress (B-LTS)

The Bicycle Level of Traffic Stress (B-LTS) is an analysis performed to demonstrate how a person traveling by bike along a roadway segment may perceive the experience given the adjacent vehicle traffic conditions. WSDOT standards for B-LTS include:

- Posted speed of the facility
- Average Daily Traffic (AADT)
- Number of vehicle travel lanes
- Cross section characteristics

The three B-LTS cross section categories used to score facilities are:

- Mixed traffic (no marked bicycle lane, with or without shoulder)
- Bike lane without separation from traffic (paint stripe or buffer <2 ft wide)
- Bike lane with separation from traffic (buffer 2 ft wide or greater)

WSDOT B-LTS scores are measured between 1 and 4. A higher B-LTS score suggests a less comfortable experience for a person traveling by bicycle on the roadway segment. B-LTS scores are divided into four levels:

- LTS 1- Due to the separation of people biking from moving cars and trucks, this score represents little traffic stress. Generally suitable for use by people of all ages and abilities.
- LTS 2 - People feel some traffic stress. Biking on the street requires more attention to traffic, so is suitable for those with adequate bike handling skills.
- LTS 3 - People feel moderate stress when biking and need to pay more attention to and interact with surrounding traffic. Suitable for more experienced bikers.
- LTS 4 – Most people feel high levels of stress due to the proximity to and interactions with traffic. Only suitable for skilled and experienced bikers.

This memo reports the results of a B-LTS analysis performed by Alta as a part of the City of Vancouver's Transportation System Planning process in 2023.

As illustrated in Figure 8, much of the St Johns-St James Corridor is either B-LTS 3 or B-LTS 4, meaning that most people will feel uncomfortable riding along it. This is particularly true in areas that are LTS 4, which is where the number of vehicle travel lanes increase, and where larger right-turn lane conflict zones exist, such as the area around the SR-500 bridge, and the couplet around Minnehaha Street. Although not directly part of this analysis, it's important to point out that the slope up St. Johns Rd between Petticoat and NE 49th St. poses a challenge for many people on conventional bikes. Topography can also play a factor north of 51st St, as the downhill slope can encourage faster speeds. The reverse is true of St James Rd in the southbound direction.

Segment 1

This corridor segment begins where St Johns Boulevard intersects with Fourth Plain Boulevard, and ends where St Johns Boulevard meets Fort Vancouver Way. This segment is primarily B-LTS level 3.

Segment 2

This corridor segment begins where St Johns Boulevard intersects with Fort Vancouver Way and ends at Petticoat Lane. This segment is B-LTS level 2 between Fort Vancouver Way and 33rd Street, and level 4 near the intersection of St Johns Avenue and SR-500.

Segment 3

This corridor segment is between Petticoat Lane and 49th Street. The segment is primarily B-LTS level 3 between 39th Street and 49th Street and for a small portion between 39th Street and Petticoat Lane, the segment is B-LTS level 2.

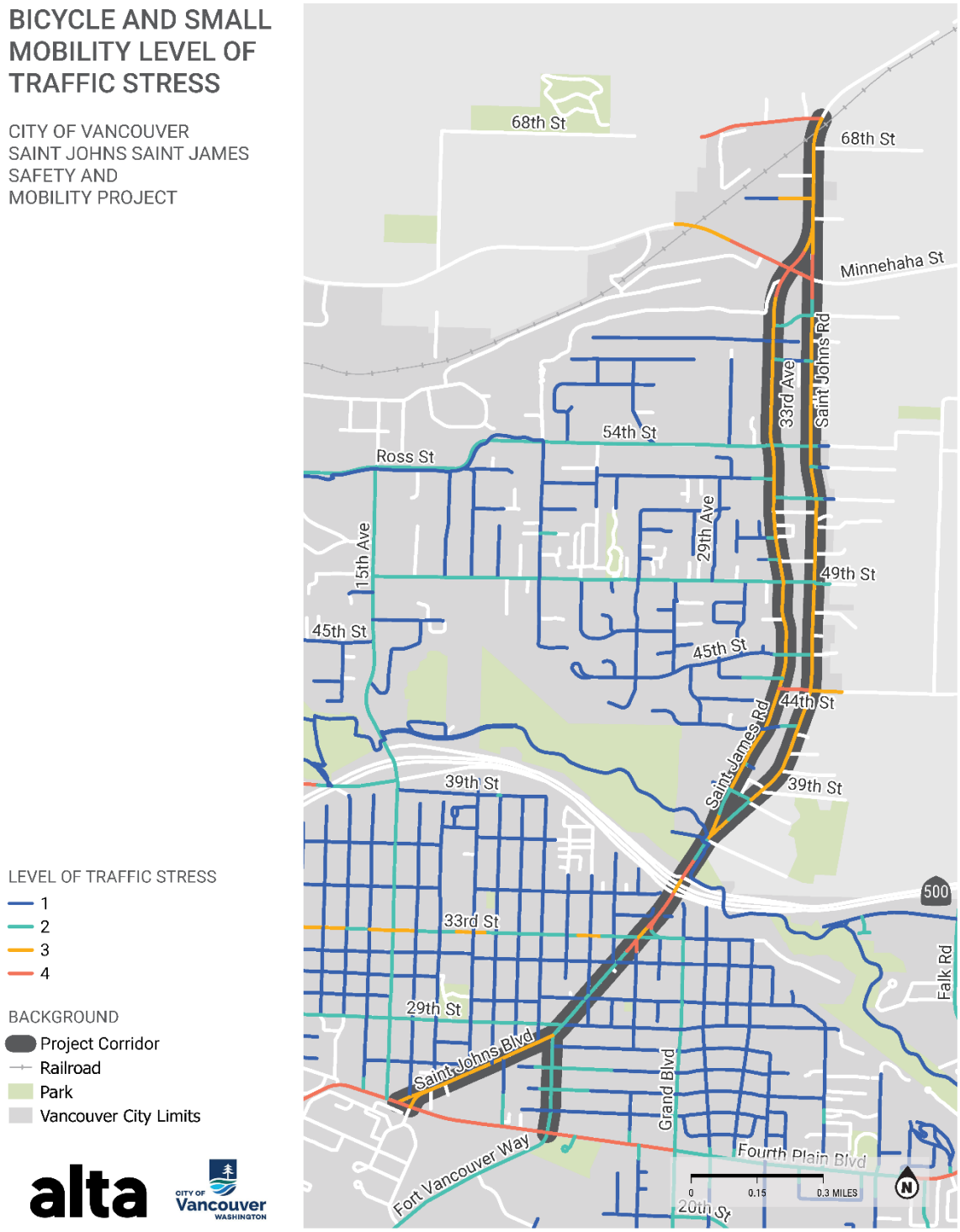
Segment 4

This corridor segment is between 49th Street and Minnehaha Street with northbound traffic flow on St Johns Road and Southbound traffic flow on St James Road. This segment is primarily B-LTS level 3 except for the section closest to Minnehaha Street, where the B-LTS scores higher at level 4. Notably, B-LTS is also high on the adjacent section of Minnehaha Street traveling to the west which may make the intersections of Minnehaha with the St Johns St James couplet particularly uncomfortable for cyclists. These scores are despite the presence of conventional striped mobility lanes on Minnehaha Street and the St Johns St James couplet.

Segment 5

This corridor segment is between Minnehaha Street and the City Line. This segment of the corridor is primarily B-LTS level 3 besides the section adjacent to Minnehaha Street, which is B-LTS 4. NE 68th Street, just off the corridor to the north, is B-LTS level 4.

Figure 8: Bicycle and small mobility Level of Traffic Stress (B-LTS)



Transit Service and Ridership

There are currently three C-TRAN fixed-route bus lines that provide service within the vicinity of the St Johns-St James corridor, as pictured in the map shown in Figure 9:

- #6 Fruit Valley / Grand
- #25 St Johns
- The Vine on Fourth Plain

Line #25 St. Johns provides north-south service along the St Johns-St James couplet along the extent of the study corridor, while line #6 Fruit Valley / Grand and The Vine on Fourth Plain provide variations of east-west service along Fourth Plain Boulevard (see Figure 9). Line #25 provides service to the study area with a northern terminus at 99th Street Transit Center and a southern terminus in Downtown Vancouver.

Table 1, Table 2, and Table 3 show the average daily boardings for weekdays and dwell time for each stop. Based on this data:

- The southbound bus stop with the greatest number of weekday average daily boardings in the study area was St James and 52nd Street with about 10boardings per day.
- The northbound bus stop with the greatest number of weekday average daily boardings in the study area was Ft Vancouver Way and St Johns Boulevard with about 6 boardings per day.
- Weekday boardings were considerably higher than weekend boardings for all stops in the study area.
- The bus stop with the longest average dwell time was St Johns and 32nd Street (Northbound) of about 10 minutes.

Table 1. Southbound Transit Ridership in the St. Johns-St. James Corridor Study Area

Stop ID	Stop Name	Routes Served	Weekday Average Daily Boardings (2023)	Weekend Average Daily Boardings (2023)	Average Dwell [Seconds] (2023)
1023	Saint James & 52nd St (SB)	#25	10.42	3.98	245.86
2082	Saint James & Cherry Rd (SB)	#25	8.05	2.44	178.82
1024	Saint James 4600 Block (SB)	#25	7.62	2.92	201.54
1026	Saint James 4300 Block (SB)	#25	5.58	2.02	144.11
2099	Saint James & 50th Cir (SB)	#25	5.46	2.3	167.03
1028	Saint Johns & 32nd St (SB)	#25	5.01	1.25	497.46
1022	Saint James & 54th St (SB)	#25	4.75	1.91	121.78
1019	Saint Johns & 65th St (SB)	#25	4.5	1.05	109.5
2098	Saint James & 59th St (SB)	#25	3.59	1.09	89.91
1020	Saint James & Minnehaha (SB)	#25	3.34	0.8	101.12
1030	Ft Vancouver Wy & Saint Johns (SB)	#25	2.07	0.57	116.9
1031	Ft Vancouver Wy & 25th St (SB)	#25	2.3	1	26

Table 2. Northbound Transit Ridership in the St. Johns-St. James Corridor Study Area

Stop ID	Stop Name	Routes Served	Weekday Average Daily Boardings (2023)	Weekend Average Daily Boardings (2023)	Average Dwell [Seconds] (2023)
974	Ft Vancouver Wy & 25th St (NB)	#25	31.5	9.7	60
975	Ft Vancouver Wy & 28th St (NB)	#25	6.08	2.2	177.81
982	Saint Johns & 49th St (NB)	#25	5.69	1.81	242.54
977	Saint Johns & 32nd St (NB)	#25	4.65	1.67	620.61
981	Saint Johns & 45th St (NB)	#25	3.44	1.6	156.49
983	Saint Johns & 52nd St (NB)	#25	3.39	1.98	138.47
979	Saint Johns & 41st St (NB)	#25	2.2	0.93	130.9
978	Saint Johns & Petticoat Lane (NB)	#25	1.85	0.77	47.64
985	Saint Johns & 58th St (NB)	#25	1.14	0.34	91.14
986	Saint Johns & Minnehaha (NB)	#25	1.14	0.41	82.74
4162	Saint Johns & 68th St (NB)	#25	1.1	0.48	117.29
984	Saint Johns & 54th St (NB)	#25	0.75	0.49	45.68
980	Saint Johns 4200 Block (NB)	#25	0.56	0.5	76.83

Table 3. Eastbound Transit Ridership in the St. Johns-St. James Corridor Study Area

Stop ID	Stop Name	Routes Served	Weekday Average Daily Boardings (2023)	Weekend Average Daily Boardings (2023)	Average Dwell [Seconds] (2023)
321	Fourth Plain & Saint Johns (EB)	#6	4.64	1.29	127.6

Figure 9: Public transit network

Current Roadway Conditions

The St Johns-St James corridor currently is striped from two to four lanes and range from 11-21 feet wide. South of E 33rd Street there is one travel lane per direction, sometimes with an additional center turn lane, and north of E 33rd Street there are two vehicle travel lanes in each direction.

Segment 1

This corridor segment begins where St Johns Boulevard intersects with Fourth Plain Boulevard and ends where the corridor intersects with Fort Vancouver Way and on Fort Vancouver Way between Fourth Plain Boulevard and St Johns Boulevard. There is a slip lane southbound on St Johns Boulevard as well as a left turn pocket for southbound St Johns Boulevard traffic onto eastbound Fourth Plain Boulevard. The travel lanes in this section can be approximately 13 feet wide in some sections and up to 21 feet wide where there is on-street parking between V Street and R Street. There are marked crosswalks across St Johns Avenue at Fourth Plain Boulevard, R Street, S Street, T Street, and V Street and on Fort Vancouver Way at E 28th Street and Fourth Plain Boulevard. All these crosswalks are in the continental configuration except for the two crossing on Fort Vancouver Way.

Segment 2

This corridor segment begins where St Johns Boulevard intersects with Fourth Plain Boulevard and ends at Petticoat Lane. The segment features two travel lanes in each direction and a center turn lane. The highway interchange also has two left turn pockets for northbound and southbound St Johns Road. There is also a striped mobility lane throughout this section. The mobility lane also includes green conflict markers in places where it intersects with right turn pockets, such as those on the southbound and northbound approaches to SR-500. The centerline is hardened in certain locations such as south of E 33rd Street, south of the southern ramps of SR-500, and north of the northern ramps of SR-500.

Segment 3

This corridor segment is between Petticoat Lane and 49th Street. Beginning from the south, this corridor diverges where northbound travel flows on St Johns Road and southbound travel flows on St James Road. Each travel direction has two vehicle travel lanes which typically range from 11 to 12 feet wide. There are also striped mobility lanes throughout this section that can range from approximately 5 to 6 feet wide. There are also significant portions of this roadway outside the travel lane, on the right sides of the roadway use for parking in between the curb and the mobility lane, and on the left side as shoulder between the yellow stripe and the curb. In some sections, this space can measure in width between 6-8 feet. There are marked crosswalks at the intersections of St James Road and 42nd Street, St Johns Road and Petticoat Lane, 44th Street and St Johns Road.

Segment 4

This corridor segment is between 49th Street and Minnehaha Street with northbound traffic flow on St Johns Road and Southbound traffic flow on St James Road. Each travel direction has two vehicle travel lanes which typically range from 11 to 12 feet wide. There are also conventional striped mobility lanes throughout this section that can range from approximately 5 to 6 feet wide. There are significant portions of this roadway outside the travel lane, on the right side of the roadway use for parking in between the curb and the mobility lane, and on the left side as shoulder between the yellow stripe and the curb. In some sections, this space can measure in width between 6-8 feet. On northbound St Johns Road between 60th Street and Minnehaha Street, there is no yellow striping between the left travel lane and the left curb. This section, thus, has significantly wide travel lanes of approximately 19 feet wide. There are marked crosswalks at the intersections of St James Road and 49th Street, St Johns Road and 49th Street, St Johns Road and 52nd Street, and St James and 54th Street.

Segment 5

This corridor segment is between Minnehaha Street and the City limit at NE 68th Street. Northbound and southbound traffic are separated onto St Johns Road and St James Road respectively between Minnehaha Street and 65th Street. In this section, the travel lane is significantly wider than the rest of the corridor, with some sections having widths between 17 and 21 feet. There is a left turn pocket from northbound St Johns Road onto 65th Street and two travel lanes in each direction on a single roadway. The northern City limits coincide with a railway track. There is a stop line approaching the railroad tracks on the northbound lanes and railroad crossing arms with flashing lights.

Pavement Condition, Driveways, and Parking

The areas of the project corridor with the best pavement quality include St James Road south of E 42nd Street and St Johns Road north of NE Minnehaha Road (See Figure 10). Areas of the corridor with higher concentrations of driveways include segments of St James Road and St Johns Road between 39th Street and Minnehaha Street and St Johns Boulevard between Fourth Plain Boulevard and E 33rd Street.

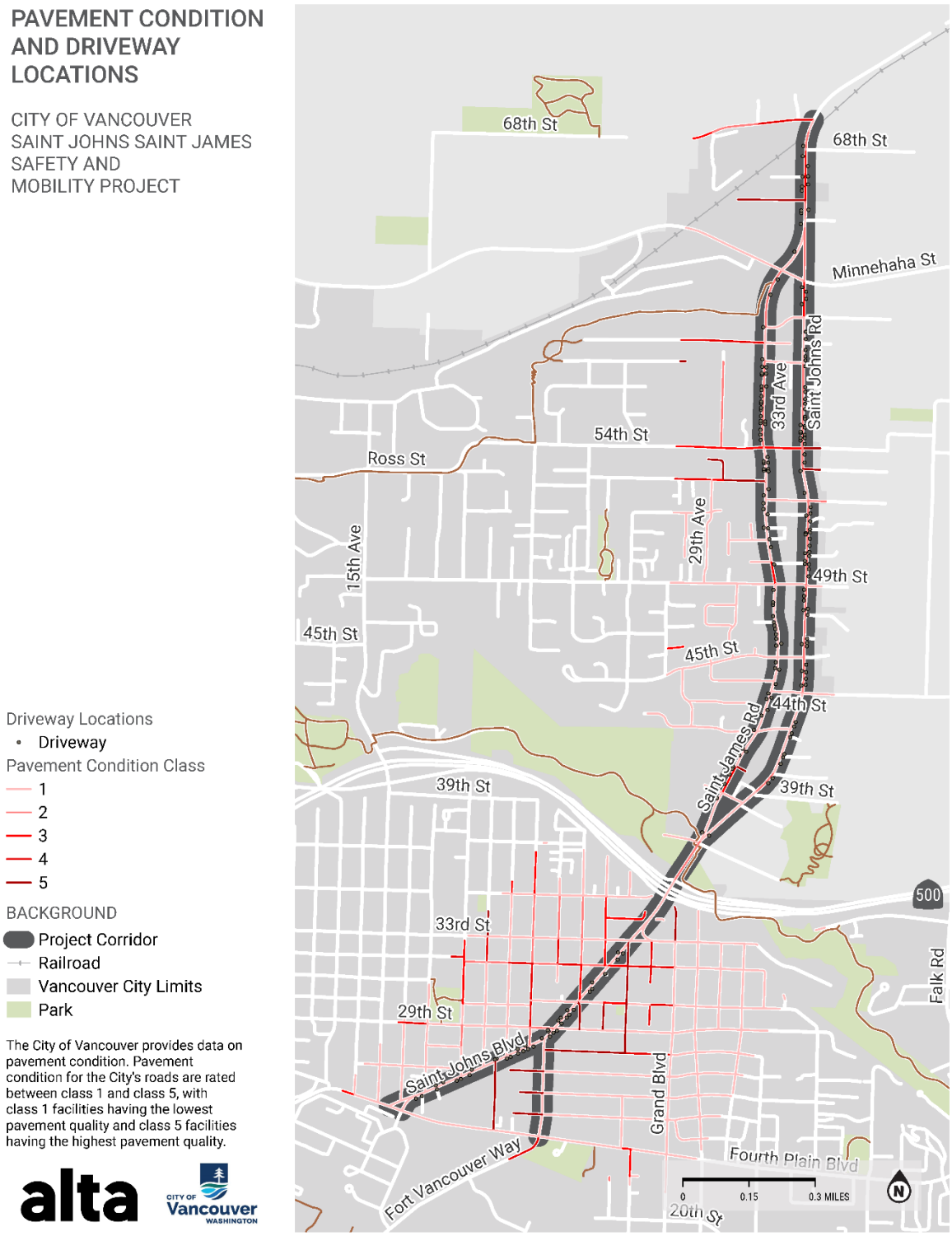
In December 2023, the project team conducted parking counts along the project corridor, for the following locations:

- St. Johns Boulevard between R Street and V Street
- St. Johns Road between 39th Street and 68th Street
- St. James Road between 39th Street and 68th Street

Parking data was collected at intermittent weekday times of 10am, 12pm, 4pm, and 7pm as well as Saturday at 10am. Along St Johns Boulevard, four to eight vehicles were typically observed parked per block, including both sides of the street, St Johns Road had higher volumes of parking between 45th Street and 49th Street but was infrequently parked north and south of the forementioned area during the observed time points. St James Road also had low volumes of on-street parked vehicles except for the segment between Minnehaha St and 60th St, where six to eight vehicles were parked during the weekday and weekend near the Ellen Davis trailhead.

The results of the parking counts can be found in Appendix B.

Figure 10: Pavement Location and Driveway Locations



Traffic Volumes and Speeds

Speed and volume counts were collected on the corridor to gather a baseline of existing travel conditions by mode, as shown in Table 6 and Table 7.

- Segment 1 and 2: St Johns Boulevard from E Fourth Plain Boulevard to SR-500 has a posted speed of 30 mph.
- Segment 3 and 4: The posted speed along St James Road and St Johns Road increases to 35 mph north of SR-500 to Minnehaha Street.
- Segment 5: In this segment from Minnehaha St to NE 68th St, the speed limit along St Johns Road is 40 mph.

The turning movement counts were collected on Thursday, December 14, 2023, for the AM and PM peaks. The AM peak was 6:30 to 8:30 AM and the PM peak was 4:00 to 6:00 PM. The weekend turning movement counts were collected on Saturday, December 23, 2023. The weekend peak periods were 10:00 AM to 2:00 PM. In addition, 72-hour traffic counts and speeds were collected between the days of December 14 to December 16, 2023. These traffic counts were averaged resulting in an estimate for average daily traffic. Traffic counting devices were placed in specific locations across the corridor and the segments created to visualize those counts in Figure 11 are an estimate of the traffic flows that were captured by those counters as described by the traffic analysis team. Note that one-way facilities will have lower ADT flows than two-way facilities.

Bicycle and pedestrian volumes at intersections were collected as part of the turning movement counts (TMC), as shown in Table 8. Pedestrian and bicycles counts are measured by reporting the total number of pedestrians or bicycles per intersection. The pedestrian and bicycle counts are visually shown in Figure 12, and Figure 13, respectively.

Collected volume counts can be found in Appendix C and speed counts can be found in Appendix D. The locations where counts were collected are as follows:

Turning Movement Counts (TMC):

- St Johns Boulevard at Fourth Plain Boulevard
- St Johns Boulevard at Fort Vancouver Way (12-hour count for signal warrant analysis)
- St Johns Boulevard at E 33rd Street
- St Johns Boulevard at SR-500 South
- St Johns Boulevard at SR-500 North
- St Johns Boulevard at NE Petticoat Lane (HAWK beacon signal)
- St James Road at NE 42nd Street
- St Johns Road at NE 44th Street
- St James Road at NE 49th Street
- St Johns Road at NE 49th Street
- St James Road at NE 54th Street
- St Johns Road at NE 54th Street
- St Johns Road at NE Minnehaha Street
- St James Road at NE Minnehaha Street
- Fort Vancouver Way at E 25th Street
- Fort Vancouver Way at E 26th Street
- Fort Vancouver Way at E 27th Street
- Fort Vancouver Way at E 28th Street

Average Daily Traffic and Speed Counts:

- St Johns Boulevard between R Street and S Street
- St Johns Boulevard between 29th Street and 30th Street
- St Johns Boulevard at E 33rd Street 300 feet north of 33rd Street
- St James Road and St Johns Road 300 feet north of Petticoat Lane
- St James Road and St Johns Road 200 feet north of 49th Street
- St James Road and St Johns Road 200 feet south of 60th Street
- 68th Street north of railroad (northern city limit and project extent)
- Fort Vancouver Way north of E 4th Plain Boulevard
- Fort Vancouver Way south of E 28th Street

Figure 11: Average Daily Traffic

Table 4: Weekday Average Daily Traffic Counts

Intersection	Southbound Peak	Northbound Peak	Southbound ADT	Northbound ADT
St Johns Boulevard from Fourth Plain Boulevard to 33rd Street	579	379	3970	3582
St Johns Boulevard from 33rd Street to Petticoat Lane	442	576	5028	6428
St James Road from Petticoat Lane to 49th Street	798		9556	
St Johns Road from Petticoat Lane to 49th Street		904		9618
St James Road from 49th Street to 59th Street	678		8454	
St Johns Road from 49th Street to 59th Street		770		8213
St James Road from 59th Street to railroad	757		8264	
St Johns Road from 59th Street to railroad		762		7979
St Johns Road from Minnehaha St to 68th St	514	581	6029.5	6217
Fort Vancouver Way from 26th Street to St Johns Boulevard	590	314	6959	9641
Fort Vancouver Way from 4th Plain Boulevard to 26th Street	377	345	7658	7052

Table 5: Weekend Average Daily Traffic Counts

Intersection	Southbound Peak	Northbound Peak	Southbound ADT	Northbound ADT
St Johns Boulevard from Fourth Plain Boulevard to 33rd Street	212	205	2481	2488
St Johns Boulevard from 33rd Street to Petticoat Lane	386	437	4999	5666
St James Road from Petticoat Lane to 49th Street	602		7087	
St Johns Road from Petticoat Lane to 49th Street		615		7349
St James Road from 49th Street to 59th Street	516		6194	
St Johns Road from 49th Street to 59th Street		507		6107
St James Road from 59th Street to railroad	501		5808	
St Johns Road from 59th Street to railroad		495		5852
St Johns Road from Minnehaha St to 68th St	367	395	4186	4448

Table 6: Northbound Traffic Speed Range Percentages

Intersection	1-15 MPH	16-20 MPH	21-25 MPH	26-30 MPH	31-35 MPH	36-40 MPH	41-45 MPH	46-50 MPH	51-55 MPH	Over 56 MPH
St Johns Boulevard from Fourth Plain Boulevard to 33rd Street	4.9%	3.9%	10.6%	36.3%	34.7%	8.1%	1.1%	0.2%	0.1%	0.2%
St Johns Boulevard from 33rd Street to Petticoat Lane	15.6%	31.8%	8.9%	23.2%	17.2%	2.4%	0.3%	0.1%	0.1%	0.4%
St Johns Road from Petticoat Lane to 49th Street	0.3%	0.0%	0.3%	2.0%	12.0%	37.5%	34.1%	11.0%	2.2%	0.6%
St Johns Road from 49th Street to 59th Street	2.1%	1.8%	3.6%	14.7%	33.5%	31.3%	10.6%	1.9%	0.4%	0.1%
St Johns Road from 59th Street to railroad	0.7%	2.7%	5.8%	12.7%	36.3%	31.7%	8.4%	1.4%	0.2%	0.0%
St Johns Road from Minnehaha St to 68thSt	3.8%	2.0%	5.3%	8.4%	20.7%	34.1%	19.8%	4.6%	0.9%	0.4%
Fort Vancouver Way from 26th Street to St Johns Boulevard	3.7%	6.3%	27.5%	45.8%	14.4%	1.9%	0.1%	0%	0%	0.1%
Fort Vancouver Way from 4th Plain Boulevard to 26th Street	7.5%	22.3%	39.4%	26.2%	4.3%	0.2%	0.1%	0%	0%	0%

Table 7: Southbound Traffic Speeds Range Percentages

Intersection	1-15 MPH	16-20 MPH	21-25 MPH	26-30 MPH	31-35 MPH	36-40 MPH	41-45 MPH	46-50 MPH	51-55 MPH	Over 56 MPH
St Johns Boulevard from Fourth Plain Boulevard to 33rd Street	4.4%	3.0%	6.3%	31.8%	40.8%	11.5%	1.8%	0.2%	0.0%	0.1%
St Johns Boulevard from 33rd Street to Petticoat Lane	20.2%	12.5%	23.3%	25.9%	14.0%	3.1%	0.5%	0.2%	0.0%	0.2%
St James Road from Petticoat Lane to 49th Street	0.3%	0.1%	0.8%	4.8%	23.3%	39.6%	23.0%	6.7%	1.3%	0.2%
St James Road from 49th Street to 59th Street	6.6%	8.7%	10.9%	13.0%	22.5%	25.8%	9.8%	2.1%	0.4%	0.1%
St James Road from 59th Street to railroad	0.7%	0.4%	2.7%	20.6%	42.5%	24.2%	7.3%	1.4%	0.2%	0.1%
St Johns Road from railroad to city limits	3.9%	1.5%	4.0%	7.9%	13.0%	32.4%	27.6%	8.1%	1.3%	0.3%
Fort Vancouver Way from 26th Street to St Johns Boulevard	4.2%	6.3%	22.8%	44.4%	18.4%	1.7%	0.2%	0%	0%	0%
Fort Vancouver Way from 4th Plain Boulevard to 26th Street	29.1%	39.1%	20.6%	7.0%	3.3%	0.7%	0.1%	0%	0%	0%

Table 8: Peak Hour Bicycle and Pedestrian Counts

Location	Weekday						Weekend	
	AM Peak Ped Count	PM Peak Ped Count	**Total** Ped Count	AM Peak Bike Count	PM Peak Bike Count	**Total** Bike Count	**Total** Ped Count	**Total** Bike Count
Fourth Plain Boulevard & St Johns	21	13	34	1	1	2	5	20
St Johns Boulevard & Fort Vancouver Way	8	13	21	0	0	0	0	33
St Johns Boulevard & 33rd Street	2	13	15	1	4	5	1	22
St Johns Boulevard & SR 500 South	1	8	9	4	5	9	0	24
St Johns Boulevard & SR 500 North	1	7	8	0	2	2	0	23
St Johns Road & Petticoat Lane	2	16	18	3	5	8	16	33
St James Road & 42nd Street	1	6	7	0	0	0	0	13
St Johns Road & 44th Street	5	16	21	0	0	0	2	33
St James Road & 49th Street	10	7	17	0	0	0	0	6
St Johns Road & 49th Street	10	23	33	0	0	0	0	12
St James Road & 54th Street	4	6	10	1	0	1	0	46
St Johns Road & 54th Street	3	9	12	0	0	0	0	32
St Johns Road & Minnehaha Street	8	7	15	1	1	2	0	7
St James Road & Minnehaha Street	7	11	18	0	0	0	0	19
Fort Vancouver Way & 25th Street	12	12	24	1	0	1	47	4
Fort Vancouver Way & 26th Street	13	14	27	1	0	1	42	4
Fort Vancouver Way & 27th Street	15	10	25	1	0	1	47	4
Fort Vancouver Way & 28th Street	15	8	23	0	0	0	38	4

Figure 12: Pedestrian Count (AM + PM)

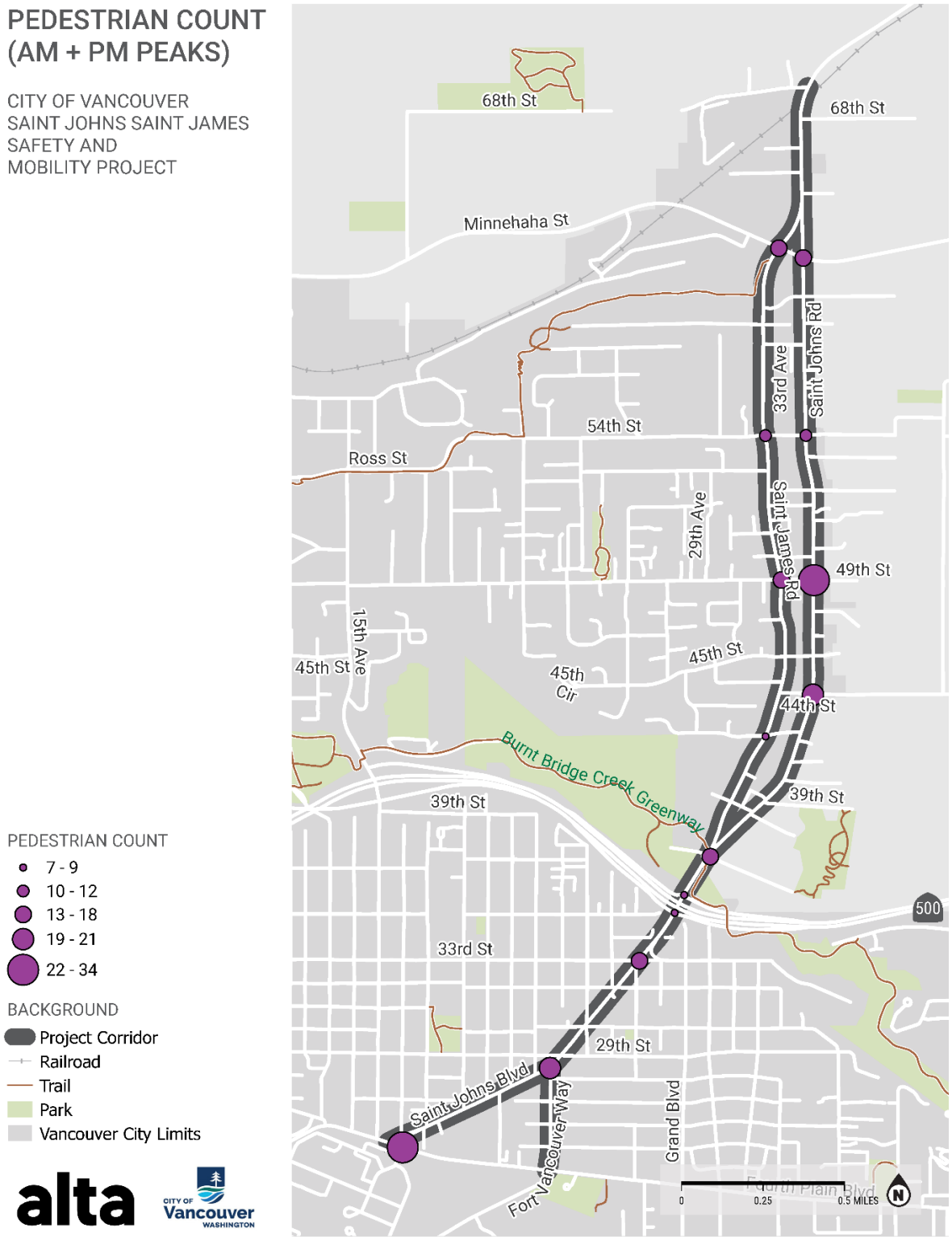
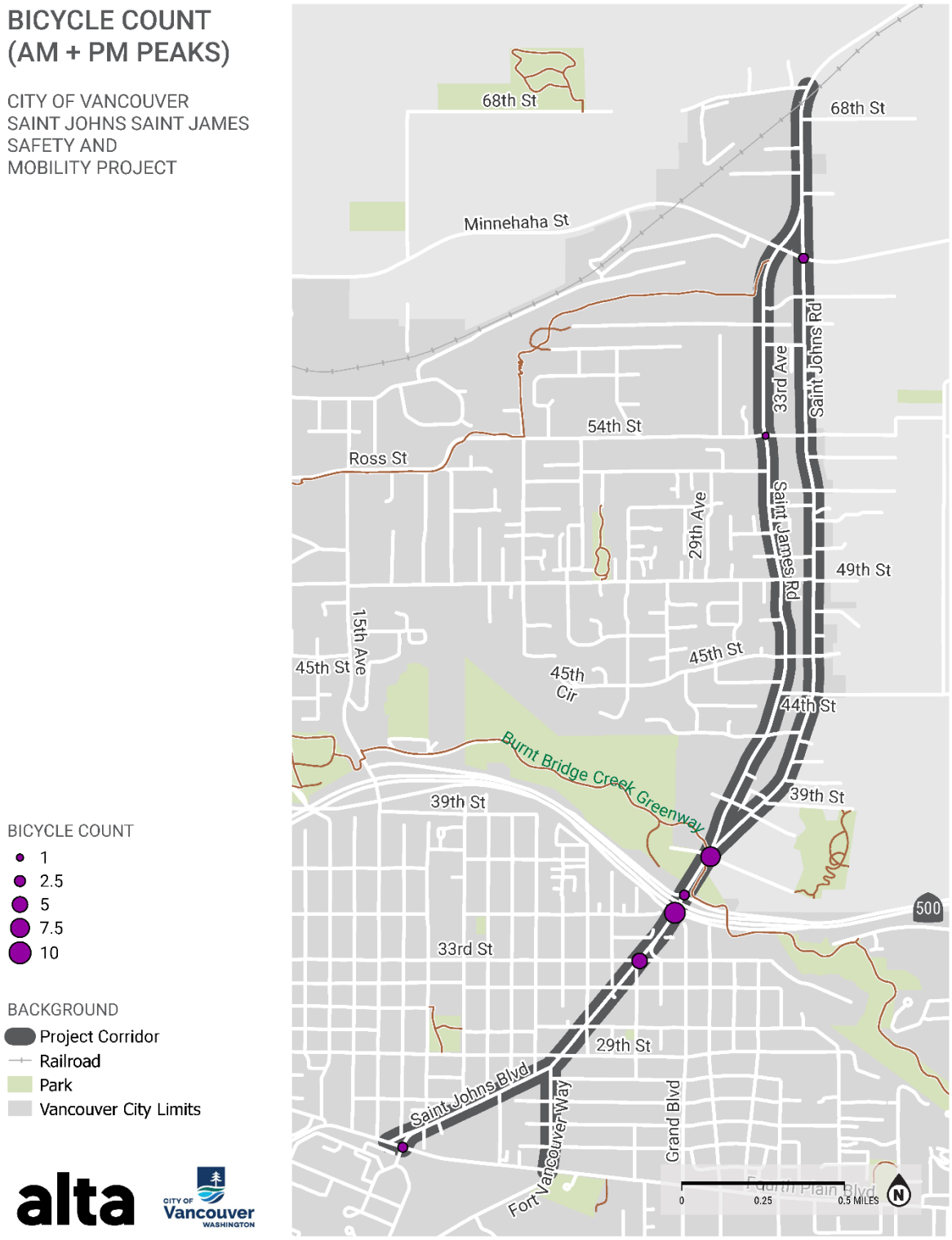


Figure 13: Bicycle Counts (AM + PM)



Key Findings

- The highest weekday average daily traffic volumes observed were on Fort Vancouver Way between Fourth Plain Boulevard and St Johns Boulevard in Segment 1 with an ADT of 16,600. The second highest traffic volumes observed were in Segment 5 at the very northern end of the corridor north of 65th Street with an ADT of 12,247. The third highest traffic volume observed was on the Segment 2 section between 33rd Street and Petticoat Lane at the SR500 interchange with an ADT of 11,456.
- Overall, the areas where there were the greatest percentage of vehicles traveling at the highest speeds were in Segment 3 from Petticoat Lane to 49th Street, where 23.0% of vehicles were traveling between 41 to 45 miles per hour in the southbound direction while 34.1% of vehicles were traveling between 41 to 45 miles per hour in the northbound direction.
- Slower speeds were observed in Segment 1 and 2 between Fourth Plain Boulevard and Petticoat Lane compared to Segments 3 and 4 between Petticoat Lane and NE 68th Street.
- In Segment 1 and 2, from Fourth Plain Boulevard to 33rd Street, the observed 85th percentile speed was 34 mph which is 4 mph over the speed limit. Speed distribution changed during different times of day, with a higher frequency of vehicles traveling 16-20 mph during the peaks, but during off peaks the speeds increase to the 26-35 mph range. Outlier speeds at 40 mph or above were most frequent from 9:00am to 10:00am and 12:00pm to 1:00pm.
- In the north half of Segment 2, from 33rd Street to Petticoat Lane, the observed 85th percentile speed was 31 mph. Speed distribution did not significantly change during different times of day, however, outlier speeds above 40 mph were most frequent from 11:00am to 1:00pm.
- In Segment 3 and the southern half of Segment 4, St James Road between 49th St and 59th St had an observed 85th percentile speed of 39 mph. Outlier speeds at or above 40 mph were most frequent between the hours of 11:00am to 12:00pm and 1:00pm to 2:00pm.
- In addition, Segment 3 along St Johns Road from Petticoat Lane to 49th St, the observed 85th percentile speed was 44 mph which is 9 mph over the 35mph speed limit. Outlier speeds at or above 45 mph were most frequent between the hours of 10:00am to 11:00am and 3:00pm to 4:00pm.
- In Segment 4 along St Johns Road between 49th St and 59th St, the observed 85th percentile speed was 39 mph which is 4 mph above the 35mph speed limit. Outlier speeds at or above 40mph were most frequent between the hours of 11:00am to 12:00pm and 5:00pm to 6:00pm. Nine vehicles were observed traveling above 65 mph during daytime hours.
- There are more people walking than traveling by bicycle at intersection along the corridor.
- The greatest number of bicyclists and pedestrians were observed at the location near the intersection of Petticoat Lane. This is likely due to its proximity to the Burnt Creek Trail. The greatest number of people walking and traveling by bicycle were observed around midday between 11 AM and 1 PM
- The greatest number of pedestrians was at the intersections of St Johns Road and 49th St with a total of 76 pedestrians recorded over the course of a 24-hour period.
- The most bicyclists were in the area where the Burnt Bridge Creek Greenway Trail and SR-500 intersect with St Johns Boulevard.

Vehicle Performance Baseline

Capacity analysis was conducted using Synchro version 11 to assess the existing conditions at the intersections. Reports were created to establish the vehicular delay and level of service (LOS), as well as 95th percentile queues. LOS is a measure of the delay experienced by stopped vehicles at intersections. LOS is rated on a scale from A to F, with A describing a condition of very low delay (less than 10 seconds per vehicle), and F describing a condition where delays will exceed 80 seconds per vehicle for signalized intersections and 50 seconds per vehicle for unsignalized intersections. Delay is a measure of the additional time it takes for a vehicle to travel from point to point due to a variety of traffic conditions and can also provide a useful indication of general driver discomfort, frustration, fuel consumption, and lost time. The delay limits for each category, based on the *Highway Capacity Manual*, sixth edition, are shown in Table 9.

Table 9: Level of Service Delay Limits

LOS	Signalized Intersection Delay per Vehicle (sec/veh)	Unsignalized Intersection Delay per Vehicle (sec/veh)
A	≤10.0	≤10.0
B	10.1–20.0	10.1–15.0
C	20.1–35.0	15.1–25.0
D	35.1–55.0	25.1–35.0
E	55.1–80.0	35.1–50.0
F	> 80.0	> 50.0

For the traffic analysis, the City of Vancouver provided the signal timings sheets for all signalized intersections along the corridor. The forementioned December turning movement volumes and signal timings were input into Synchro to determine the level of service (LOS) and delay in seconds per vehicle. SimTraffic was then used to conduct a microsimulation of the traffic operations and 95th percentile queues in feet were reported to provide a better understanding of the queuing along the corridor.

Table 10 reports the delay in seconds per vehicle and the corresponding LOS for the existing conditions AM, PM, and Weekend MD 1-hour peaks (2-hour peak counts were collected to obtain the 1-hour peak that is used as an input into Synchro). Table 11 reports the 95th percentile queues lengths in feet for the existing conditions in the AM, PM and Weekend MD peaks. Highway Capacity Manual (HCM) 6 results were used where applicable. Several intersections had unique phasing that the HCM 6 would not provide results due to methodology limitations. In these instances, methodology from a prior version of the Highway Capacity Manual, HCM 2000, was used to derive the LOS results. In general, HCM 6 and HCM 2000 have similar methodology, but slight variations between the two HCM versions may result in a difference of delay time and other outputs.

Table 10: Existing Conditions Peak Hour Operational Analysis

Intersection	Weekday AM (7:30 to 8:30 AM)		Weekday PM (4:00 to 5:00 PM)		Weekend Midday (12:30 to 1:30 PM)	
	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]
St Johns Blvd at Fourth Plain Boulevard	***B***	**13.1**	**B**	**13.6**	**A**	**7.7**
Eastbound	B	13.5	*B*	*12.5*	*A*	*7.2*
Westbound	*B*	*13.4*	*B*	*14.0*	*A*	*7.9*
Northbound	*B*	*12.9*	*B*	*15.1*	*B*	*13.0*
Southbound	*B*	*12.0*	*B*	*13.2*	*B*	*13.1*
St Johns Blvd at Fort Vancouver Way	***A***	***5.1***	***A***	***6.1***	***A***	***5.1***
Eastbound	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*
Westbound	*A*	*4.6*	*A*	*5.1*	*A*	*4.5*
Northbound	*A*	*10.0*	*B*	*12*	*B*	*10*
Southbound	-	-	-	-	-	-
St Johns Blvd at E 33rd St	***E***	***58.7***	***F***	***191.8***	***D***	***48.3***
Eastbound	*E*	*78.8*	*F*	*239.7*	*D*	*41.4*
Westbound	*F*	*124.4*	*F*	*464.2*	*F*	*82.8*
Northbound	*D*	*37.3*	*D*	*44.1*	*C*	*32.8*
Southbound	*D*	*35.4*	*D*	*36.5*	*C*	*29.8*
St Johns Blvd at SR-500 South (north of E 33rd St)	***C***	***31.7***	***D***	***37.2***	***C***	***33.5***
Eastbound	*D*	*50.8*	*D*	*43.3*	*D*	*44.1*
Westbound	-	-	-	-	-	-
Northbound	*C*	*29.5*	*C*	*31.1*	*C*	*25.2*
Southbound	*C*	*29.8*	*D*	*40.7*	*D*	*35.9*
St Johns Blvd at SR-500 North (south of Petticoat Ln)	***C***	***24.8***	***C***	***20.8***	***C***	***20.2***
Eastbound	-	-	-	-	-	-
Westbound	*C*	*28.3*	*C*	*34.7*	*D*	*36.4*
Northbound	*A*	*3.1*	*A*	*2.4*	*A*	*5.3*
Southbound	*C*	*31.3*	*C*	*30.9*	*C*	*20.4*
St Johns Blvd at NE Petticoat Ln	***A***	***0.3***	***A***	***0.4***	***A***	***0.3***
Eastbound	*E*	*35.46*	*A*	*0.0*	*A*	*0.0*
Westbound	*B*	*13.94*	*E*	*38.61*	*C*	*16.35*
Northbound	*A*	*0.02*	*A*	*0.02*	*A*	*0.02*
Southbound	*A*	*0.01*	*A*	*0.11*	*A*	*0.11*
St James Rd at NE 42nd St	***A***	***4.2***	***A***	***3.7***	***A***	***3.5***
Eastbound	*B*	*12.7*	*B*	*12.8*	*B*	*12.7*
Westbound	*B*	*12.9*	*B*	*13.3*	*B*	*12.9*

Intersection	Weekday AM (7:30 to 8:30 AM)		Weekday PM (4:00 to 5:00 PM)		Weekend Midday (12:30 to 1:30 PM)	
	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]
Northbound	-	-	-	-	-	-
Southbound	*A*	*3.6*	*A*	*3.1*	*A*	*2.8*
St Johns Rd at NE 44th St	***A***	***6.9***	***A***	***6.4***	***A***	***5.6***
Eastbound	*B*	*11.6*	*B*	*12.0*	*B*	*12.1*
Westbound	*B*	*13.0*	*B*	*12.2*	*B*	*12.5*
Northbound	*A*	*4.4*	*A*	*5.1*	*A*	*3.8*
Southbound	-	-	-	-	-	-
St James Rd at NE 49th St	***A***	***7.5***	***A***	***7.5***	***A***	***7.0***
Eastbound	*B*	*14.0*	*B*	*13.0*	*B*	*12.1*
Westbound	*B*	*16.2*	*B*	*15.4*	*B*	*13.9*
Northbound	-	-	-	-	-	-
Southbound	*A*	*5.6*	*A*	*5.6*	*A*	*4.7*
St Johns Rd at NE 49th St	***A***	***7.2***	***A***	***7.9***	***A***	***6.8***
Eastbound	*B*	*11.8*	*B*	*14.8*	*B*	*11.6*
Westbound	*B*	*11.9*	*B*	*14.2*	*B*	*12.1*
Northbound	*A*	*5.3*	*A*	*6.2*	*A*	*5.1*
Southbound	-	-	-	-	-	-
St James Rd at NE 54th St	***B***	***13.7***	***B***	***13.7***	***B***	***10.8***
Eastbound	*B*	*12.5*	*A*	*9.9*	*A*	*7.6*
Westbound	*B*	*12.0*	*B*	*10.3*	*A*	*8.0*
Northbound	-	-	-	-		
Southbound	*B*	*14.6*	*A*	*14.3*	*B*	*11.4*
St Johns Rd at NE 54th St	***A***	***3.0***	***A***	***2.4***	***A***	***2.1***
Eastbound	*B*	*14.8*	*C*	*20.2*	*B*	*12.9*
Westbound	*B*	*13.6*	*C*	*19.1*	*B*	*11.8*
Northbound	*A*	*0.4*	*A*	*0.0*	*A*	*0.0*
Southbound	-	-	-	-	-	-
St Johns Rd at NE Minnehaha St	***B***	***15.8***	***B***	***18.1***	***B***	***16.0***
Eastbound	*A*	*3.8*	*A*	*5.8*	*A*	*3.6*
Westbound	*B*	*11.1*	*B*	*16.0*	*A*	*8.6*
Northbound	*C*	*26.1*	*C*	*27.2*	*C*	*27.0*
Southbound	-	-	-	-	-	-
St James Rd at NE Minnehaha St	***B***	***16.1***	***B***	***17.2***	***B***	***13.0***
Eastbound	*B*	*12.4*	*B*	*17.7*	*A*	*9.2*
Westbound	*A*	*5.7*	*A*	*7.2*	*A*	*4.3*

Intersection	Weekday AM (7:30 to 8:30 AM)		Weekday PM (4:00 to 5:00 PM)		Weekend Midday (12:30 to 1:30 PM)	
	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]
Northbound	-	-	-	-	-	-
Southbound	*C*	*28.0*	*C*	*25.0*	*C*	*25.0*

1 – Level of Service – see Table 10
2 – Delay in seconds per vehicle

Table 11: Existing Conditions 95th Percentile Queue Summary

Intersection	Approximate Storage Lengths			Weekday AM Queue Lengths			Weekday PM Queue Lengths			Weekend MD Queue Lengths		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
St Johns Blvd at Fourth Plain Blvd												
Eastbound	*115*	*134*	*134*	*53*	*88*	*88*	*82*	*100*	*100*	*65*	*71*	*71*
Westbound	*90*	*422*	*422*	*66*	*138*	*138*	*46*	*161*	*161*	*26*	*112*	*112*
Northbound	*141*	*141*	*141*	*56*	*50*	*50*	*129*	*95*	*95*	*30*	*33*	*33*
Southbound	*60*	*91*	*--*	*38*	*79*	*--*	*31*	*26*	*--*	*27*	*27*	*--*
St Johns Blvd at Fort Vancouver Wy												
Eastbound	*1020*	*1020*	*1020*	*--*	*3*	*3*	*--*	*8*	*8*	*--*	*3*	*3*
Westbound	*110*	*1480*	*1480*	*84*	*8*	*--*	*73*	*73*	*--*	*54*	*--*	*--*
Northbound	*60*	*210*	*210*	*16*	*--*	*28*	*33*	*--*	*63*	*27*	*--*	*35*
Southbound	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*
St Johns Blvd at E 33rd St												
Eastbound	*186*	*186*	*186*	*170*	*170*	*170*	*197*	*197*	*197*	*112*	*112*	*112*
Westbound	*318*	*318*	*318*	*312*	*312*	*312*	*349*	*349*	*349*	*253*	*253*	*253*
Northbound	*85*	*1480*	*1480*	*3*	*118*	*118*	*35*	*263*	*263*	*3*	*117*	*117*
Southbound	*180*	*273*	*273*	*253*	*317*	*317*	*297*	*206*	*206*	*199*	*102*	*102*
St Johns Blvd at SR-500 South (north of E 33rd St)												
Eastbound	*200*	*577*	*200*	*157*	*157*	*62*	*93*	*327*	*175*	*48*	*184*	*70*
Westbound	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*
Northbound	*--*	*570*	*250*	*--*	*113*	*134*	*--*	*187*	*167*	*--*	*126*	*77*
Southbound	*165*	*165*	*--*	*197*	*218*	*--*	*213*	*223*	*--*	*193*	*154*	*--*
St Johns Blvd at SR-500 North (south of Petticoat Ln)												
Eastbound	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*
Westbound	*550*	*550*	*550*	*175*	*287*	*161*	*160*	*214*	*133*	*122*	*164*	*70*
Northbound	*166*	*166*	*166*	*52*	*151*	*--*	*61*	*214*	*--*	*60*	*165*	*--*
Southbound	*--*	*440*	*360*	*--*	*530*	*194*	*--*	*327*	*56*	*--*	*150*	*42*

Intersection	Approximate Storage Lengths			Weekday AM Queue Lengths			Weekday PM Queue Lengths			Weekend MD Queue Lengths		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
St Johns Blvd at NE Petticoat Ln												
Eastbound	250	250	250	71	71	71	--	--	--	--	--	--
Westbound	250	250	250	18	18	18	40	40	40	33	33	33
Northbound	90	450	450	5	5	5	4	17	17	--	14	14
Southbound	450	450	450	60	60	60	30	30	30	--	20	20
St James Rd at NE 42nd St												
Eastbound	--	150	150	--	42	42	--	34	34	--	16	16
Westbound	150	150	--	40	40	--	36	36	--	36	36	--
Northbound	--	--	--	--	--	--	--	--	--	--	--	--
Southbound	500	500	500	85	85	85	60	60	60	48	48	48
St Johns Rd at NE 44th St												
Eastbound	150	150	--	63	63	--	67	67	--	56	56	--
Westbound	--	150	150	--	78	78	--	61	61	--	51	51
Northbound	500	500	500	104	104	104	152	152	152	83	83	83
Southbound	--	--	--	--	--	--	--	--	--	--	--	--
St James Rd at NE 49th St												
Eastbound	--	150	150	--	68	68	--	56	56	--	51	51
Westbound	350	350	--	93	93	--	82	82	--	69	69	--
Northbound	--	--	--	--	--	--	--	--	--	--	--	--
Southbound	200	200	200	140	140	140	126	126	126	93	93	93
St Johns Rd at NE 49th St												
Eastbound	350	350	--	73	73	--	76	76	--	70	70	--
Westbound	--	175	175	--	88	88	--	69	69	--	70	70
Northbound	200	200	200	82	82	82	132	132	132	81	81	81
Southbound	--	--	--	--	--	--	--	--	--	--	--	--
St James Rd at NE 54th St												
Eastbound	--	150	150	--	110	110	--	54	54	--	42	42
Westbound	425	425	--	97	97	--	64	64	--	45	45	--
Northbound	--	--	--	--	--	--	--	--	--	--	--	--
Southbound	1000	1000	1000	193	193	193	183	183	183	112	112	112
St Johns Rd at NE 54th St												
Eastbound	435	435	--	56	56	--	52	52	--	53	53	--
Westbound	--	150	150	--	58	58	--	53	53	--	42	42
Northbound	150	150	150	10	10	10	17	17	17	6	6	6
Southbound	--	--	--	--	--	--	--	--	--	--	--	--
St Johns Rd at NE Minnehaha St												
Eastbound	50	250	--	66	68	--	68	76	--	38	42	--

Intersection	Approximate Storage Lengths			Weekday AM Queue Lengths			Weekday PM Queue Lengths			Weekend MD Queue Lengths		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Westbound		*525*	*525*	*--*	*143*	*143*	*--*	*170*	*170*	*--*	*97*	*97*
Northbound	*340*	*340*	*340*	*153*	*153*	*153*	*176*	*176*	*176*	*138*	*138*	*138*
Southbound	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*
St James Rd at NE Minnehaha St												
Eastbound	*--*	*300*	*300*	*--*	*143*	*143*	*--*	*200*	*200*	*--*	*96*	*96*
Westbound	*50*	*250*	*250*	*78*	*118*	*--*	*73*	*99*	*--*	*56*	*73*	*73*
Northbound	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*
Southbound	*340*	*340*	*340*	*255*	*255*	*255*	*226*	*226*	*226*	*158*	*158*	*158*

Notes:

- *Storage lengths and queue lengths are in feet. Storage length is measured as the distance from the stop bar to the nearest signalized or all-way stop-controlled intersection. Minor street stop-controlled intersections are not considered in the storage length capacity, and may still result in blockages, even if the queue length is less than the storage length.*
- *95th Percentile Queues are represented in the table above. Values are represented in feet.*
- *Red queues represent queues that exceed the length between intersections or storage length of turn movement, resulting in queue overflow.*

Existing Conditions Key Findings:

- Most intersections operate at LOS C or better, except at St Johns Boulevard and E 33rd Street which operates at LOS F for the weekday evening peak hour, LOS E for the weekday morning peak hour, and LOS D for the weekend midday peak hour. St Johns Boulevard and SR-500 South also operates at LOS D for the weekday evening peak hour.
- At St Johns Boulevard and E 33rd Street, the westbound approach is LOS F for all peak hour scenarios. The eastbound approach LOS is also LOS F for the weekday evening peak hour.
- At St Johns Boulevard and E 33rd Street, LOS F is observed due to a combination of factors including high vehicle volumes during peak hours, dedicated left turn signals, and skewed intersection geometry. The dedicated left turn signals along St Johns Boulevard allow drivers to make a turn without yielding to oncoming traffic, who are stopped at a red light. The left turn phase is particularly important to accommodate the high volumes of southbound left turning vehicles during the evening peak hour who turn at an acute angle to enter E 33rd Street. Consequently, the turn phase increases the signal cycle length which in turn increases the delay at the intersection. It should be noted that the westbound and eastbound movement have a higher level of delay, as the signal timing prioritizes mainline streets (St Johns Boulevard) over minor streets.
- Under existing peak hour conditions, the following movements exceed available storage capacity:
    - At St Johns Boulevard and 33rd Street, the eastbound and westbound approaches exceed storage capacity for all movement during the evening peak hour by one to two vehicles. The southbound approach exceeds storage capacity by one to two vehicles in the morning peak hour, as well as the southbound left turn in the evening and weekend peak hour.
    - At SR-500 South, the southbound approach exceeds capacity during the evening peak hour for all movements, and the southbound left turn during the weekend peak hour. Both scenarios exceed capacity by one to two vehicles.
    - At SR 500 North, the southbound through movement exceeds capacity during the morning peak hour by approximately four to five vehicles.
    - The eastbound left turn at St Johns Road and Minnehaha Street exceeds the storage capacity by one to two vehicles for morning and evening peak hours.

- The westbound left turn at St James Rd and Minnehaha St exceeds the storage capacity by one to two vehicles for all peak hour scenarios.
- Except for the movements noted above, queues do not exceed the available storage capacity during peak hour conditions.

Key Findings Future Conditions

Table 12 and Table 14 reports the delay in seconds per vehicle and the corresponding LOS for the 2028 and 2040 no-build conditions, respectively. Table 13 and Table 15 report the 95th percentile queue lengths in feet for the 2028 and 2040 no-build conditions, respectively. To determine the growth rate, the Southwest Washington Regional Transportation Council (RTC) Regional Travel Demand Model (RTDM) volumes from 2015 and 2040 were used to calculate an average annual growth rate for the project area. Per the National Cooperative Highway Research Program (NCHRP) report 765, using a growth rate is an appropriate form of volume growth for predicting future turning movement counts. Using the determined average annual growth rate of 1.16%, 2023 turning movement counts were grown to the future years 2028 and 2040. Furthermore, based on expected future changes to zoning and development in the City's update to the Comprehensive Plan, Segments 3, 4, and 5 north of SR-500 may increase in volume but the predicted growth was not known at the time of this report.

Table 12: 2028 No-Build Conditions Peak Hour Operational Analysis

Intersection	Weekday AM		Weekday PM		Weekend MD	
	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]
St Johns Blvd at Fourth Plain Blvd	**B**	**10.6**	**B**	**11.3**	**A**	**9.6**
Eastbound	*B*	*10.5*	*A*	*9.8*	*A*	*8.5*
Westbound	*B*	*10.4*	*B*	*11.1*	*A*	*9.6*
Northbound	*B*	*12.1*	*B*	*14.9*	*B*	*12.9*
Southbound	*B*	*11.6*	*B*	*14.8*	*B*	*13.0*
St Johns Blvd at Fort Vancouver Wy	***A***	***5.2***	***A***	***6.2***	***A***	***5.2***
Eastbound	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*
Westbound	*A*	*4.7*	*A*	*5.1*	*A*	*4.5*
Northbound	*B*	*12.6*	*B*	*12.2*	*B*	*10.1*
Southbound	-	-	-	-	-	-
St Johns Blvd at E 33rd St	***E***	***71.1***	***F***	***229.1***	***E***	***58.7***
Eastbound	*F*	*110.2*	*F*	*321.6*	*D*	*44.3*
Westbound	*F*	*166.2*	*F*	*551.0*	*F*	*113.1*
Northbound	*D*	*38.2*	*D*	*45.3*	*C*	*34.3*
Southbound	*D*	*35.4*	*D*	*37.6*	*C*	*30.4*
St Johns Blvd at SR-500 South (north of E 33rd St)	***C***	***32.0***	***D***	***38.9***	***D***	***35.0***
Eastbound	*D*	*51.0*	*D*	*44.2*	*D*	*44.6*
Westbound	-	-	-	-	-	-
Northbound	*C*	*30.6*	*C*	*33.1*	*C*	*26.4*
Southbound	*C*	*29.7*	*D*	*42.4*	*D*	*38.0*
St Johns Blvd at SR-500 North (south of Petticoat Ln)	***C***	***25.8***	***C***	***21.7***	***C***	***21.5***
Eastbound	-	-	-	-	-	-

Intersection	Weekday AM		Weekday PM		Weekend MD	
	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]
Westbound	*C*	*29.0*	*D*	*35.0*	*D*	*36.3*
Northbound	*A*	*3.3*	*A*	*2.6*	*A*	*5.3*
Southbound	*C*	*32.8*	*C*	*33.1*	*C*	*24.0*
St Johns Blvd at NE Petticoat Ln	***A***	***0.5***	***A***	***0.5***	***A***	***0.3***
Eastbound	*E*	*43.6*	*A*	*0.0*	*A*	*0.0*
Westbound	*C*	*16.5*	*E*	*44.8*	*C*	*17.3*
Northbound	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*
Southbound	*A*	*0.0*	*A*	*0.2*	*A*	*0.1*
St James Rd at NE 42nd St	***A***	***4.5***	***A***	***3.8***	***A***	***3.6***
Eastbound	*B*	*12.6*	*B*	*12.8*	*B*	*12.6*
Westbound	*B*	*12.9*	*B*	*12.9*	*B*	*12.9*
Northbound	*-*	*-*	*-*	*-*	*-*	*-*
Southbound	*A*	*3.9*	*A*	*3.2*	*A*	*2.9*
St Johns Rd at NE 44th St	***A***	***6.9***	***A***	***6.6***	***A***	***5.7***
Eastbound	*B*	*11.5*	*B*	*12.1*	*B*	*12.1*
Westbound	*B*	*13.0*	*B*	*12.2*	*B*	*12.5*
Northbound	*A*	*4.5*	*A*	*5.3*	*A*	*4.0*
Southbound	*-*	*-*	*-*	*-*	*-*	*-*
St James Rd at NE 49th St	***A***	***7.6***	***A***	***7.7***	***A***	***7.2***
Eastbound	*B*	*14.3*	*B*	*13.4*	*B*	*12.0*
Westbound	*B*	*16.5*	*B*	*16.3*	*B*	*14.0*
Northbound	*-*	*-*	*-*	*-*	*-*	*-*
Southbound	*A*	*5.7*	*A*	*5.7*	*A*	*4.9*
St Johns Rd at NE 49th St	***A***	***7.4***	***A***	***8.2***	***A***	***7.0***
Eastbound	*B*	*12.0*	*B*	*15.4*	*B*	*11.7*
Westbound	*B*	*12.0*	*B*	*14.7*	*B*	*12.1*
Northbound	*A*	*5.5*	*A*	*6.4*	*A*	*5.3*
Southbound	*-*	*-*	*-*	*-*	*-*	*-*
St James Rd at NE 54th St	***B***	***14.3***	***B***	***14.2***	***B***	***10.9***
Eastbound	*B*	*13.7*	*B*	*10.4*	*A*	*7.5*
Westbound	*B*	*13.3*	*B*	*10.9*	*A*	*8.0*
Northbound	*-*	*-*	*-*	*-*	*-*	*-*
Southbound	*B*	*14.7*	*B*	*14.8*	*B*	*11.5*
St Johns Rd at NE 54th St	***A***	***3.2***	***A***	***2.7***	***A***	***2.2***
Eastbound	*C*	*15.7*	*C*	*22.3*	*B*	*13.4*
Westbound	*B*	*14.3*	*C*	*20.8*	*B*	*12.1*
Northbound	*A*	*0.4*	*A*	*0.0*	*A*	*0.0*

Intersection	Weekday AM		Weekday PM		Weekend MD	
	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]
Southbound	-	-	-	-	-	-
St Johns Rd at NE Minnehaha St	***B***	***16.0***	***B***	***18.6***	***B***	***16.3***
Eastbound	*A*	*3.9*	*A*	*6.1*	*A*	*3.6*
Westbound	*B*	*11.6*	*B*	*17.2*	*A*	*8.9*
Northbound	*C*	*26.1*	*C*	*27.1*	*C*	*27.2*
Southbound	-	-	-	-	-	-
St James Rd at NE Minnehaha St	***B***	***16.5***	***B***	***18.0***	***B***	***13.1***
Eastbound	*B*	*13.1*	*B*	*19.2*	*A*	*9.5*
Westbound	*A*	*6.0*	*A*	*8.3*	*A*	*4.5*
Northbound	-	-	-	-	-	-
Southbound	*C*	*28.2*	*C*	*24.8*	*C*	*24.9*

1 – Level of Service – see Table 10
2 – Delay in seconds per vehicle

Table 13: 2028 No Build Conditions Peak Hour Queue Summary

Intersection	Approximate Storage Lengths			Weekday AM Queue Lengths			Weekday PM Queue Lengths			Weekend MD Queue Lengths		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
St Johns Blvd at Fourth Plain Blvd												
Eastbound	*115*	*134*	*134*	*51*	*105*	*105*	*98*	*108*	*108*	*72*	*77*	*77*
Westbound	*90*	*422*	*422*	*66*	*132*	*132*	*57*	*176*	*176*	*18*	*122*	*122*
Northbound	*141*	*141*	*141*	*54*	*47*	*47*	*103*	*98*	*98*	*29*	*42*	*42*
Southbound	*60*	*91*	*--*	*31*	*85*	*--*	*34*	*29*	*--*	*30*	*71*	*--*
St Johns Blvd at Fort Vancouver Wy												
Eastbound	*--*	*1020*	*1020*	*--*	*6*	*6*	*--*	*12*	*12*	*--*	*4*	*4*
Westbound	*110*	*1480*	*--*	*88*	*--*	*--*	*88*	*--*	*--*	*48*	*--*	*--*
Northbound	*60*	*210*	*210*	*16*	*--*	*28*	*28*	*--*	*67*	*27*	*--*	*34*
Southbound	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*
St Johns Blvd at E 33rd St												
Eastbound	*186*	*186*	*186*	*191*	*191*	*191*	*214*	*214*	*214*	*128*	*128*	*128*
Westbound	*318*	*318*	*318*	*350*	*350*	*350*	*349*	*349*	*349*	*290*	*290*	*290*
Northbound	*85*	*1480*	*1480*	*5*	*131*	*131*	*38*	*285*	*285*	*16*	*159*	*159*
Southbound	*180*	*273*	*273*	*274*	*349*	*157*	*307*	*180*	*77*	*251*	*140*	*40*
St Johns Blvd at SR-500 South (north of E 33rd St)												
Eastbound	*200*	*577*	*200*	*32*	*172*	*172*	*323*	*323*	*189*	*208*	*208*	*58*

Intersection	Approximate Storage Lengths			Weekday AM Queue Lengths			Weekday PM Queue Lengths			Weekend MD Queue Lengths		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Westbound	--	--	--	--	--	--	--	--	--	--	--	--
Northbound	--	570	250	--	114	151	--	185	172	--	137	90
Southbound	165	165	--	189	211	--	208	225	--	199	159	--
St Johns Blvd at SR-500 North (south of Petticoat Ln)												
Eastbound	--	--	--	--	--	--	--	--	--	--	--	--
Westbound	550	550	550	351	351	222	247	247	156	190	190	82
Northbound	166	166	166	49	162	--	55	217	--	61	180	--
Southbound	--	440	360	--	526	239	--	433	56	--	171	48
St Johns Blvd at NE Petticoat Ln												
Eastbound	250	250	250	26	26	26	--	--	--	--	--	--
Westbound	250	250	250	24	24	24	37	37	37	34	34	34
Northbound	90	450	450	5	--	--	7	3	3	--	5	5
Southbound	450	450	450	59	59	59	35	35	35	22	22	22
St James Rd at NE 42nd St												
Eastbound	--	150	150	--	35	35	--	36	36	--	16	16
Westbound	150	150	--	41	41	--	41	41	--	39	39	--
Northbound	--	--	--	--	--	--	--	--	--	--	--	--
Southbound	500	500	500	102	102	102	71	71	71	48	48	48
St Johns Rd at NE 44th St												
Eastbound	150	150	--	54	54	--	68	68	--	55	55	--
Westbound	--	150	150	--	83	83	--	69	69	--	56	56
Northbound	500	500	500	106	106	106	154	154	154	99	99	99
Southbound	--	--	--	--	--	--	--	--	--	--	--	--
St James Rd at NE 49th St												
Eastbound	--	150	150	--	73	73	--	58	58	--	59	59
Westbound	350	350	--	89	89	--	95	95	--	71	71	--
Northbound	--	--	--	--	--	--	--	--	--	--	--	--
Southbound	200	200	200	133	133	133	136	136	136	94	94	94
St Johns Rd at NE 49th St												
Eastbound	350	350	--	67	67	--	84	84	--	74	74	--
Westbound	--	175	175	--	83	83	--	73	73	--	73	73
Northbound	200	200	200	98	98	98	136	136	136	79	79	79
Southbound	--	--	--	--	--	--	--	--	--	--	--	--
St James Rd at NE 54th St												
Eastbound	--	150	150	--	116	116	--	59	59	--	40	40
Westbound	425	425	--	89	89	--	63	63	--	47	47	--

Intersection	Approximate Storage Lengths			Weekday AM Queue Lengths			Weekday PM Queue Lengths			Weekend MD Queue Lengths		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Northbound	--	--	--	--	--	--	--	--	--	--	--	--
Southbound	500	500	500	183	183	183	197	197	197	119	119	119
St Johns Rd at NE 54th St												
Eastbound	435	435	--	59	59	--	53	53	--	53	53	--
Westbound	--	150	150	--	53	53	--	49	49	--	40	40
Northbound	150	150	150	7	7	7	8	8	8	5	5	5
Southbound	--	--	--	--	--	--	--	--	--	--	--	--
St Johns Rd at NE Minnehaha St												
Eastbound	50	250	--	66	59	--	70	87	--	44	43	--
Westbound	--	525	525	--	145	145	--	177	177	--	90	90
Northbound	340	340	340	157	157	157	174	174	174	137	137	137
Southbound	--	--	--	--	--	--	--	--	--	--	--	--
St James Rd at NE Minnehaha St												
Eastbound	--	300	300	--	166	166	--	225	225	--	99	99
Westbound	50	250	250	77	98	--	81	109	--	65	81	--
Northbound	--	--	--	--	--	--	--	--	--	--	--	--
Southbound	340	340	340	236	236	236	254	254	254	166	166	166

Notes:

- *Storage lengths and queue lengths are in feet. Storage length is measured as the distance from the stop bar to the nearest signalized or all-way stop-controlled intersection. Minor Street stop-controlled intersections are not considered in the storage length capacity, and may still result in blockages, even if the queue length is less than the storage length.*
- *95th Percentile Queues are represented in the table above. Values are represented in feet.*
- *Red queues represent queues that exceed the length between intersections or storage length of turn movement, resulting in queue overflow.*

Future 2028 Key Findings:

- Similar to 2023 Existing Conditions, the majority of intersections operate at LOS C or better for peak hour conditions, except at St Johns Boulevard and E 33rd Street which operates at LOS F for the weekday evening peak hour and LOS E for the weekday morning and weekend midday peak hours. St Johns Boulevard and SR-500 S operates at LOS D for weekday evening and weekend midday peak hours.
- At St Johns Boulevard and E 33rd Street, the eastbound and westbound approach operate at LOS F during the weekday morning and evening peak hours. The westbound approach is also LOS F during the weekend midday peak hour.
- With growth, the delay at the intersection of St Johns Boulevard and 33rd Street will increase while the signal timing and cycle length remain constant. The eastbound and westbound movements are the most impacted as the signal prioritizes timing for the mainline (St Johns Boulevard) over minor streets. To mitigate delay in the future, signal timing changes could be studied to provide an optimized signal timing plan for all movements.
- Under 2028 peak hour conditions, the following movements exceed available storage capacity:
    - All eastbound movements at St Johns Boulevard and E 33rd Street exceeds the storage capacity during the weekday morning and evening peak hours by approximately one vehicle.

- Likewise, all westbound movements at St Johns Boulevard and E 33rd Street exceeds the storage capacity during the weekday morning and evening peak hours by approximately one to two vehicles.
- The southbound approach at St Johns Boulevard and E 33rd Street also exceeds capacity for all movements by four to five vehicles.
- At SR-500 South, the southbound through and left turn storage capacity is exceeded by two to three vehicles during the weekday morning and evening peak hours.
- The southbound through movement at St Johns Boulevard and SR-500 North exceeds the storage capacity during all peak hour scenarios by three to five vehicles. During the weekday evening peak hour, the northbound through movement also exceeds capacity by one to two vehicles.
- The eastbound left turn at St Johns Road and Minnehaha St exceeds the storage capacity by one to two vehicles for the weekday morning and evening peak hour.
- The westbound left turn at St James Road and Minnehaha Street exceeds the storage capacity by one to two vehicles for all peak hour scenarios.

- Except for the movements noted above, queues do not exceed the available storage capacity during peak hour conditions.

Table 14: 2040 No-Build Conditions Peak Hour Operational Analysis

Intersection	Weekday AM		Weekday PM		Weekend MD	
	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]
St Johns Blvd at Fourth Plain Blvd	**B**	**11.3**	**B**	**13.6**	**A**	**8.3**
Eastbound	*B*	*11.3*	*B*	*11.9*	*A*	*7.4*
Westbound	*B*	*11.2*	*B*	*13.6*	*A*	*8.7*
Northbound	*B*	*12.4*	*B*	*16.8*	*B*	*13.1*
Southbound	*B*	*11.8*	*B*	*16.3*	*B*	*13.2*
St Johns Blvd at Fort Vancouver Wy	***A***	***5.6***	***A***	***6.8***	***A***	***5.3***
Eastbound	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*
Westbound	*A*	*4.9*	*A*	*5.3*	*A*	*4.6*
Northbound	*B*	*14.9*	*B*	*13.7*	*B*	*10.5*
Southbound	-	-	-	-	-	-
St Johns Blvd at E 33rd St	***F***	***106.9***	***F***	***321.0***	***F***	***98.9***
Eastbound	*F*	*202.7*	*F*	*528.1*	*D*	*50.7*
Westbound	*F*	*267.0*	*F*	*754.2*	*F*	*232.6*
Northbound	*D*	*38.1*	*D*	*47.6*	*D*	*38.4*
Southbound	*D*	*42.7*	*D*	*51.6*	*C*	*32.8*
St Johns Blvd at SR-500 South (north of E 33rd St)	***C***	***31.7***	***D***	***42.2***	***D***	***37.9***
Eastbound	*D*	*52.4*	*D*	*46.2*	*D*	*47.7*
Westbound	-	-	-	-	-	-
Northbound	*C*	*34.5*	*D*	*38.1*	*C*	*31.2*
Southbound	*C*	*27.6*	*D*	*44.5*	*D*	*39.5*
St Johns Blvd at SR-500 North (south of Petticoat Ln)	***C***	***30.0***	***C***	***24.2***	***C***	***23.7***
Eastbound	-	-	-	-	-	-
Westbound	*C*	*31.5*	*D*	*36.5*	*D*	*37.1*

Intersection	Weekday AM		Weekday PM		Weekend MD	
	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]
Northbound	*A*	*3.3*	*A*	*3.0*	*A*	*5.9*
Southbound	*D*	*39.9*	*D*	*38.5*	*C*	*28.6*
St Johns Blvd at NE Petticoat Ln	***A***	***0.7***	***A***	***0.7***	***A***	***0.4***
Eastbound	*F*	*66.6*	*A*	*0.0*	*A*	*0.0*
Westbound	*C*	*19.5*	*F*	*75.4*	*C*	*20.3*
Northbound	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*
Southbound	*A*	*0.0*	*A*	*0.2*	*A*	*0.1*
St James Rd at NE 42nd St	***A***	***4.8***	***A***	***4.0***	***A***	***3.7***
Eastbound	*B*	*12.5*	*B*	*12.7*	*B*	*12.5*
Westbound	*B*	*13.0*	*B*	*12.9*	*B*	*12.8*
Northbound	*-*	*-*	*-*	*-*	*-*	*-*
Southbound	*A*	*4.2*	*A*	*3.4*	*A*	*3.1*
St Johns Rd at NE 44th St	***A***	***7.2***	***A***	***7.2***	***A***	***5.9***
Eastbound	*B*	*11.3*	*B*	*12.2*	*B*	*12.1*
Westbound	*B*	*12.9*	*B*	*12.2*	*B*	*12.5*
Northbound	*A*	*5.0*	*B*	*5.9*	*A*	*4.2*
Southbound	*-*	*-*	*-*	*-*	*-*	*-*
St James Rd at NE 49th St	***A***	***8.6***	***A***	***8.8***	***A***	***7.5***
Eastbound	*B*	*16.3*	*B*	*14.9*	*B*	*12.1*
Westbound	*C*	*20.2*	*B*	*19.7*	*B*	*14.4*
Northbound	*-*	*-*	*-*	*-*	*-*	*-*
Southbound	*A*	*6.2*	*A*	*6.3*	*A*	*5.2*
St Johns Rd at NE 49th St	***A***	***7.8***	***A***	***9.3***	***A***	***7.4***
Eastbound	*B*	*12.9*	*B*	*16.4*	*B*	*12.7*
Westbound	*B*	*12.6*	*B*	*15.4*	*B*	*12.9*
Northbound	*A*	*5.8*	*A*	*7.6*	*A*	*5.5*
Southbound	*-*	*-*	*-*	*-*	*-*	*-*
St James Rd at NE 54th St	***B***	***16.3***	***B***	***14.9***	***B***	***11.1***
Eastbound	*B*	*17.5*	*B*	*12.3*	*A*	*7.6*
Westbound	*B*	*17.6*	*B*	*13.0*	*A*	*8.1*
Northbound	*-*	*-*	*-*	*-*	*-*	*-*
Southbound	*B*	*15.5*	*B*	*15.3*	*B*	*11.8*
St Johns Rd at NE 54th St	***A***	***3.5***	***A***	***3.5***	***A***	***2.4***
Eastbound	*C*	*18.0*	*D*	*29.3*	*B*	*14.9*
Westbound	*C*	*16.1*	*C*	*26.7*	*B*	*13.0*
Northbound	*A*	*0.4*	*A*	*0.0*	*A*	*0.0*
Southbound	*-*	*-*	*-*	*-*	*-*	*-*

Intersection	Weekday AM		Weekday PM		Weekend MD	
	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]
St Johns Rd at NE Minnehaha St	***B***	***16.6***	***C***	***20.1***	***B***	***16.5***
Eastbound	*A*	*4.5*	*A*	*8.0*	*A*	*4.2*
Westbound	*B*	*14.4*	*C*	*20.6*	*B*	*10.9*
Northbound	*C*	*25.1*	*C*	*27.3*	*C*	*26.2*
Southbound	-	-	-	-	-	-
St James Rd at NE Minnehaha St	***B***	***17.4***	***C***	***21.1***	***B***	***13.6***
Eastbound	*B*	*15.6*	*C*	*23.8*	*B*	*11.1*
Westbound	*A*	*7.2*	*B*	*13.2*	*A*	*5.2*
Northbound	-	-	-	-	-	-
Southbound	*C*	*27.3*	*C*	*24.7*	*C*	*24.0*

1 – Level of Service – see Table 10
2 – Delay in seconds per vehicle

Table 15: 2040 No-Build Conditions Peak Hour Queue Summary

Intersection	Approximate Storage Lengths			Weekday AM Queue Lengths			Weekday PM Queue Lengths			Weekend MD Queue Lengths		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
St Johns Blvd at Fourth Plain Blvd												
Eastbound	*115*	*134*	*134*	*56*	*102*	*102*	*108*	*129*	*129*	*76*	*91*	*91*
Westbound	*90*	*422*	*422*	*62*	*159*	*159*	*70*	*207*	*207*	*28*	*163*	*163*
Northbound	*141*	*141*	*141*	*62*	*48*	*48*	*157*	*115*	*115*	*25*	*50*	*50*
Southbound	*60*	*91*	*--*	*36*	*87*	*--*	*34*	*32*	*--*	*34*	*--*	*--*
St Johns Blvd at Fort Vancouver Wy												
Eastbound	*1020*	*1020*	*1020*	*--*	*11*	*11*	*--*	*8*	*8*	*--*	*9*	*9*
Westbound	*110*	*1480*	*1480*	*93*	*4*	*--*	*95*	*24*	*--*	*55*	*4*	*--*
Northbound	*60*	*210*	*210*	*20*	*--*	*32*	*39*	*--*	*68*	*28*	*--*	*40*
Southbound	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*
St Johns Blvd at E 33rd St												
Eastbound	*186*	*186*	*186*	*211*	*211*	*211*	*241*	*241*	*241*	*131*	*131*	*131*
Westbound	*318*	*318*	*318*	*432*	*432*	*432*	*349*	*349*	*349*	*371*	*371*	*371*
Northbound	*85*	*1480*	*1480*	*6*	*147*	*147*	*47*	*340*	*340*	*5*	*166*	*166*
Southbound	*180*	*273*	*273*	*295*	*357*	*191*	*361*	*239*	*125*	*277*	*158*	*66*
St Johns Blvd at SR-500 South (north of E 33rd St)												
Eastbound	*577*	*577*	*200*	*203*	*203*	*93*	*462*	*462*	*237*	*231*	*231*	*111*
Westbound	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*

Intersection	Approximate Storage Lengths			Weekday AM Queue Lengths			Weekday PM Queue Lengths			Weekend MD Queue Lengths		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Northbound	--	*570*	*250*	--	*134*	*182*	--	*232*	*189*	--	*162*	*104*
Southbound	*165*	*165*	--	*189*	*221*	--	*192*	*226*	--	*211*	*183*	--
St Johns Blvd at SR-500 North (south of Petticoat Ln)												
Eastbound												
Westbound	*550*	*550*	*240*	*466*	*466*	*278*	*270*	*270*	*183*	*223*	*223*	*124*
Northbound	*166*	*166*	*166*	*57*	*185*	--	*54*	*199*	--	*66*	*201*	--
Southbound		*440*	*360*	--	*528*	*206*	--	*543*	*212*	--	*223*	*51*
St Johns Blvd at NE Petticoat Ln												
Eastbound	*250*	*250*	*250*	*23*	*23*	*23*	--	--	--	--	--	--
Westbound	*250*	*250*	*250*	*27*	*27*	*27*	*51*	*51*	*51*	*38*	*38*	*38*
Northbound	*90*	*450*	*450*	*5*	--	--	*7*	*17*	*17*	--	*16*	*16*
Southbound	*450*	*450*	*450*	*60*	*60*	*60*	*55*	*55*	*55*	*25*	*25*	*25*
St James Rd at NE 42nd St												
Eastbound	--	*150*	*150*	--	*36*	*36*	--	*37*	*37*	--	*18*	*18*
Westbound	*150*	*150*	--	*46*	*46*	--	*41*	*41*	--	*39*	*39*	--
Northbound	--	--	--	--	--	--	--	--	--	--	--	--
Southbound	*500*	*500*	*500*	*123*	*123*	*123*	*85*	*85*	*85*	*55*	*55*	*55*
St Johns Rd at NE 44th St												
Eastbound	*150*	*150*	--	*59*	*59*	--	*78*	*78*	--	*60*	*60*	--
Westbound	--	*150*	*150*	--	*87*	*87*	--	*74*	*74*	--	*61*	*61*
Northbound	*500*	*500*	*500*	*111*	*111*	*111*	*163*	*163*	*163*	*107*	*107*	*107*
Southbound	--	--	--	--	--	--	--	--	--	--	--	--
St James Rd at NE 49th St												
Eastbound	--	*150*	*150*	--	*78*	*78*	--	*60*	*60*	--	*57*	*57*
Westbound	*350*	*350*	--	*97*	*97*	--	*110*	*110*	--	*83*	*83*	--
Northbound	--	--	--	--	--	--	--	--	--	--	--	--
Southbound	*200*	*200*	*200*	*151*	*151*	*151*	*156*	*156*	*156*	*119*	*119*	*119*
St Johns Rd at NE 49th St												
Eastbound	*350*	*350*	--	*68*	*68*	--	*93*	*93*	--	*74*	*74*	--
Westbound	--	*175*	*175*	--	*94*	*94*	--	*90*	*90*	--	*79*	*79*
Northbound	*200*	*200*	*200*	*102*	*102*	*102*	*165*	*165*	*165*	*91*	*91*	*91*
Southbound	--	--	--	--	--	--	--	--	--	--	--	--
St James Rd at NE 54th St												
Eastbound	--	*150*	*150*	--	*129*	*129*	--	*66*	*66*	--	*46*	*46*
Westbound	*425*	*425*	--	*111*	*111*	--	*70*	*70*	--	*56*	*56*	--
Northbound	--	--	--	--	--	--	--	--	--	--	--	--

Intersection	Approximate Storage Lengths			Weekday AM Queue Lengths			Weekday PM Queue Lengths			Weekend MD Queue Lengths		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Southbound	*500*	*500*	*500*	*231*	*231*	*231*	*215*	*215*	*215*	*140*	*140*	*140*
St Johns Rd at NE 54th St												
Eastbound	*435*	*435*	*--*	*60*	*60*	*--*	*54*	*54*	*--*	*57*	*57*	*--*
Westbound	*--*	*150*	*150*	*--*	*70*	*70*	*--*	*61*	*61*	*--*	*41*	*41*
Northbound	*150*	*150*	*150*	*12*	*12*	*12*	*8*	*8*	*8*	*8*	*8*	*8*
Southbound	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*
St Johns Rd at NE Minnehaha St												
Eastbound	*50*	*250*	*--*	*70*	*72*	*--*	*82*	*117*	*--*	*46*	*50*	*--*
Westbound	*--*	*525*	*525*	*--*	*188*	*188*	*--*	*227*	*227*	*--*	*120*	*120*
Northbound	*340*	*340*	*340*	*164*	*164*	*164*	*170*	*170*	*170*	*148*	*148*	*148*
Southbound	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*
St James Rd at NE Minnehaha St												
Eastbound	*--*	*300*	*300*	*--*	*200*	*200*	*--*	*279*	*279*	*--*	*128*	*128*
Westbound	*50*	*250*	*--*	*85*	*136*	*--*	*89*	*165*	*--*	*74*	*89*	*--*
Northbound	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*	*--*
Southbound	*340*	*340*	*340*	*259*	*259*	*259*	*262*	*262*	*262*	*181*	*181*	*181*

Notes:

- *Storage lengths and queue lengths are in feet. Storage length is measured as the distance from the stop bar to the nearest signalized or all-way stop-controlled intersection. Minor Street stop-controlled intersections are not considered in the storage length capacity, and may still result in blockages, even if the queue length is less than the storage length.*
- *95th Percentile Queues are represented in the table above. Values are represented in feet.*
- *Red queues represent queues that exceed the length between intersections or storage length of turn movement, resulting in queue overflow.*

Future 2040 Key Findings:

- Similar to 2023 and 2028 conditions, the majority of intersections operate at LOS C or better, except at St Johns Boulevard and E 33rd Street which operates at LOS F for all peak hour scenarios and St Johns Boulevard and SR-500 South which operates at LOS D for weekday evening and weekend midday peak hours.
- At St Johns Boulevard and E 33rd Street, the westbound approach is LOS F for all peak hour scenarios and the eastbound approach is LOS F for the weekday morning and evening peak hours.
- Other LOS F approaches include the eastbound and westbound approaches at St Johns Boulevard and Petticoat Lane during the weekday morning and weekday evening peak hours, respectively. This delay can be attributed to vehicles on Petticoat Lane waiting to find a sufficient gap to enter the intersection.
- As more vehicles enter the intersection of St Johns Boulevard and E 33rd Street in the future, the delay will increase as the cycle length and signal timing remains constant. The mainline street (St Johns Boulevard) is prioritized over the minor street, but future signal timing changes can be studied to provide an optimized signal timing plan for all movements.
- Under 2040 peak hour conditions, the following movements exceed available storage capacity:
    - All eastbound movements at St Johns Boulevard and E 33rd Street exceeds the storage capacity during the weekday morning and evening peak hours by approximately one to two vehicles.

- Likewise, all westbound movements at St Johns Boulevard and E 33rd Street exceeds the storage capacity during all peak hour scenarios by approximately two to four vehicles.
- The southbound left turn approach at St Johns Boulevard and E 33rd Street also exceeds capacity for all movements by five to six vehicles for all peak hour scenarios. The southbound through movement exceeds the storage capacity by four to five vehicles for the weekday morning peak hour.
- At St Johns Boulevard and SR-500 South, the eastbound right movement exceeds capacity for the weekday evening peak hour by one two vehicles. The southbound through and left storage capacity is exceeded by two to three vehicles during all peak hour scenarios.
- At St Johns Boulevard and SR-500 North, the westbound right movement exceeds capacity by one to two vehicles during the weekday morning peak hour. The northbound through movement the storage capacity during all peak hour scenarios by three to five vehicles. The southbound through movement exceeds capacity by one to two vehicles during the weekday morning and evening peak hours.
- The eastbound left turn at St Johns Road and Minnehaha Street exceeds the storage capacity by one to two vehicles for the weekday morning and evening peak hour.
- The westbound left turn at St James Road and Minnehaha Street exceeds the storage capacity by one to two vehicles for all peak hour scenarios.

- Except for the movements noted above, queues do not exceed the available storage capacity during peak hour conditions.

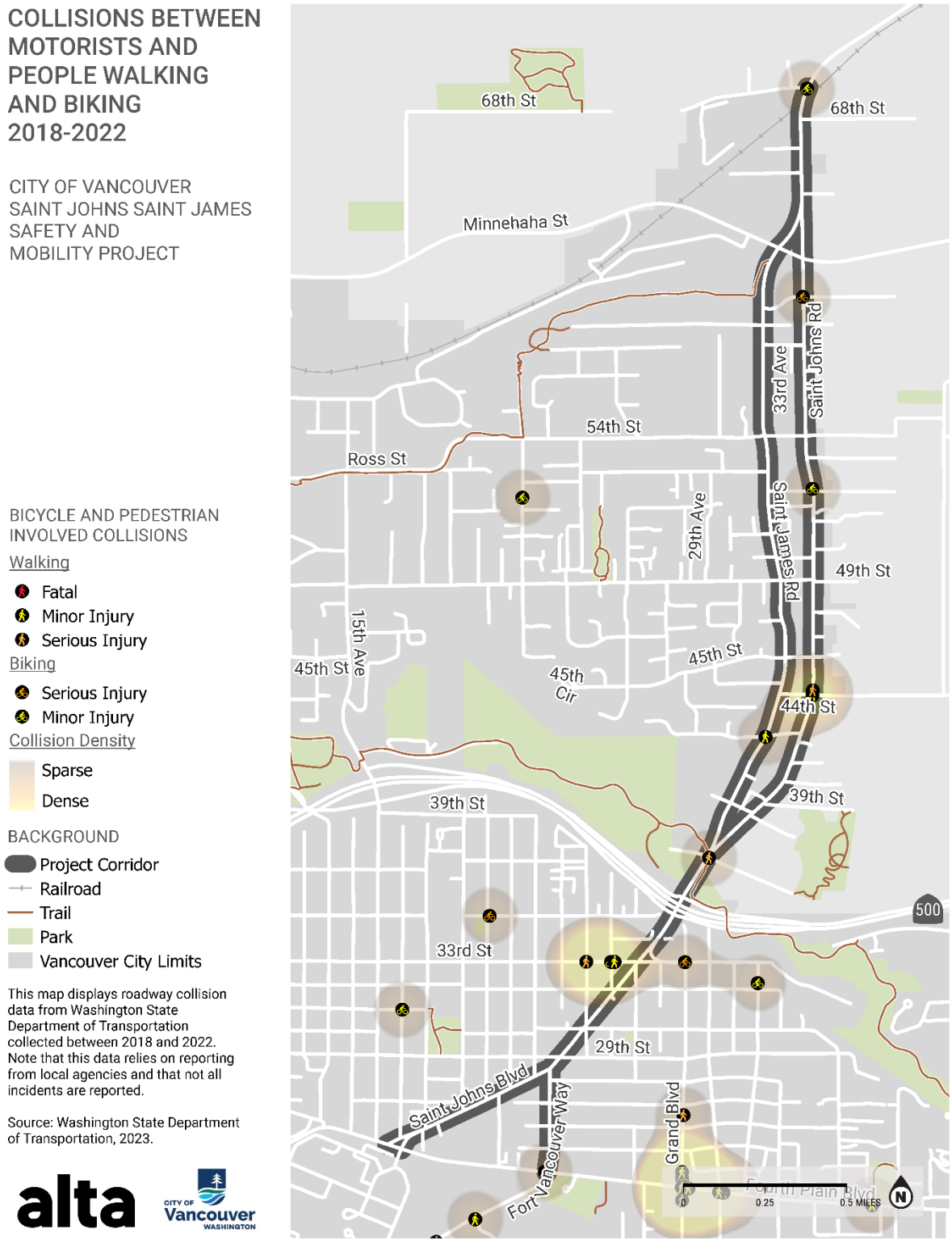
Collision History

Pedestrian and Bicycle Collisions

Understanding where there have been collisions between vehicles and bicycles or pedestrians inform decisions about where to focus safety countermeasures along the St Johns and St James corridor. There have been several incidents involving both bicyclists and pedestrians along the corridor, and these crashes have led to injuries of varying severity and fatality. As shown in Figure 14, areas of considerable collision density on the corridor include 33rd Street and 44th Street. Between 2018-2022 there have been eight collisions between vehicles and people walking (5) and biking (3). Of these collisions, four took place during the dark-street hours with streetlights on and the other four took place during daylight hours. Three of the collisions involving pedestrians took place while the pedestrian was crossing a marked crosswalk at Fort Vancouver Way and Fourth Plain Boulevard, St Johns Road and Petticoat Lane, and St James Road and 42nd Street. One person was hit by a vehicle while crossing St Johns Road at an unmarked crosswalk just north of the intersection of St Johns and 44th Street. Notably, along the corridor, the five pedestrian-involved collisions occurred south of 45th Street while the three bicycle-involved collisions occurred north of 45th Street. Of these collisions, six occurred on days where it was described to be clear or clear or partly cloudy and two occurred on days where it was raining, foggy, smoggy, or smokey. Vehicle speed was not reported as a factor in any of these collisions.

One of these collisions resulted in the death of a person who was walking on a marked crosswalk with the traffic signal. This incident occurred at the intersection of Fourth Plain Boulevard and Fort Vancouver Way in the evening hours on March 15, 2020. The weather was clear. The police report indicated that the driver was under the influence of alcohol. Notably, this intersection is located at the convergence of three C-TRAN bus lines and located near a park, both of which may generate walking trips and are being improved with the Fourth Plain Boulevard and Fort Vancouver Way Safety and Mobility Project.

Figure 14: Collisions between motorists and people walking and biking (2018-2022)



Vehicle-Only Collisions

In addition to collisions with bicycles and pedestrians, there have also been numerous collisions between vehicles on the St Johns and St James corridor (see Figure 15). While these crashes did not involve pedestrians and bicyclists, there are still areas of potential danger for all road users to be addressed.

Areas of considerable collision density in the corridor include:

- Fourth Plain Boulevard, especially near Fort Vancouver Way
- 33rd Street
- St James Road between 40th Street and Petticoat Lane
- 44th Street
- 49th Street
- 54th Street
- Minnehaha Street
- 68th Street

Figure 15: Collisions involving vehicles (2018-2022)

Demographic and Geographic Characteristics

To better understand demographics and equity populations along the corridor, the Project Team analyzed data on equity with the City's equity index scores (See Figure 16). The following equity factors were used to score each census tract:

- People of color
- People below 200% poverty
- Renter households
- Adults without a 4-year degree
- Households with limited English proficiency (LEP)
- Persons with disabilities
- Youth (0-17 years old)
- Older Adults (65 years and older)

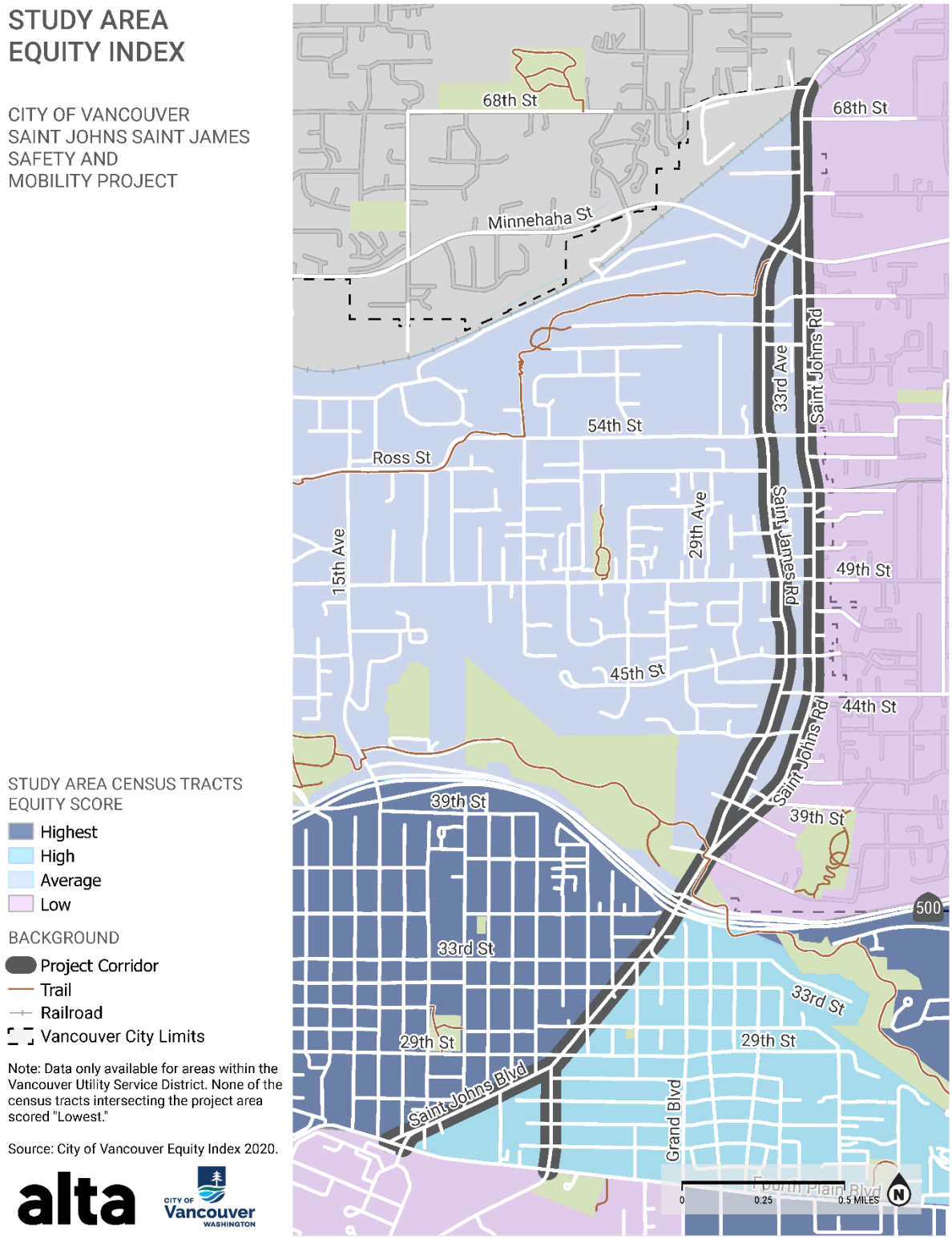
Data for the City's equity index were drawn from the 2010, 2015, and 2020 ACS estimates over a five-year sampling period. Data for persons with disabilities was not available for 2006-2010 ACS estimates, so estimates for 2008-2012 ACS were used instead. Each of the eight equity metrics were given the same weight. Based on these factors, each of the census tracts are assigned a composite score, the raw sum of all contributing variables, multiplied by the weights. The composite score is then indexed by adjusting the values to fall between 0 and 100. Higher index scores indicate a greater equity need. The City uses this language to describe the equity needs of the ranges in the index:

- 0 – 20: Lowest
- 0 – 40: Low
- 0 – 60: Average
- 60 – 80: High
- 80 – 100: Highest

The neighborhoods south of SR-500, closer to Fourth Plain Boulevard have higher equity needs based on the index scores whereas the neighborhoods north of SR-500, closer to Minnehaha, have lower equity needs based on the index scores. Among neighborhoods north of SR-500, the area to the west of the corridor has greater need than the area to the east of the corridor. The Rose Village neighborhood has the highest ranked equity need for any of the census tracts intersecting with the project corridor. In particular, the area has 43% people of color compared to the city, with 30%[8]. Additionally, approximately 80% of adults lack a four-year college degree compared with the entire city, with 70%[9].

[8] Nick Kobel, "Equity Index Analysis and Methodology for the City of Vancouver." December 2022.
[9] Ibid.

Figure 16: City of Vancouver Equity index Scores



Opportunities and Constraints

The St Johns-St James corridor is a critical connection in Vancouver's transportation system. It is utilized by many different types of travelers and modes, for different trip purposes, along a range of frontage and land use contexts. Examination of the existing conditions of the roadway supports the need for improvements along St Johns-St James to address safety issues and for the expected commercial corridor changes coming from the City's Comprehensive Plan update. Below are several initially observed opportunities and constraints for the corridor.

Segment	Opportunities	Constraints
1. Fourth Plain Boulevard to Fort Vancouver Way	• The primary connection between St Johns-St James to Fourth Plain Boulevard comes from Fort Vancouver Way, not St Johns Boulevard. This is confirmed by both traffic analysis and TSP designation. The difference in character and fundamental roadway typology between St Johns Boulevard south of Fort Vancouver Way (Segment 1) and that of the roadway north of Fort Vancouver Way (Segments 2) means that the design of Segment 1 should depart from that offered for Segment 2 to suit its specific context; and that the intersection of St Johns Boulevard and Fort Vancouver Way could be a good fit for larger changes, especially those related to pedestrians, bicyclists and small mobility users. • At the intersection of St Johns Road and Fourth Plain Boulevard, the slip lane geometry offers a generous approach angle for drivers of westbound vehicles encouraging higher approach speeds. This currently presents conflicts for crossing pedestrians and could be modified to increase safety.	• There are multiple off-set intersections and many driveways along Segment 1 which increase the amount of conflict points between vehicles and people walking, biking, and rolling along the corridor, and can introduce other challenges such as poor sightlines, and poor driver behavior at the crossing.

Segment	Opportunities	Constraints
2. Fort Vancouver Way to Petticoat Lane	• Both 29th Street and 33rd Street are key east-west connections for bike and small mobility connections and are planned to be the next Complete Streets Projects so the upgraded facilities will connect well to St Johns Boulevard (as well as Main Street in the Upper Main Street Safety and Mobility Project), creating opportunities to make turning movements on and off these streets safer and more comfortable for all modes. • Improving the connection to the Burnt Bridge Creek Greenway Trail will be an opportunity for people walking, biking, and using small mobility devices along St Johns-St James to connect to other local and regional trails.	• The slip lane on E 33rd Street for vehicles wanting to go northbound on St Johns Boulevard is a conflict point for people walking, biking and rolling at the crossing. • Changes to the interchange bridge over SR-500 could be challenging in the short term if needed given the constrained width of the bridge and needed coordination with WSDOT.
3. Petticoat Lane to 49th Street	• The surrounding land use puts the majority of commercially zoned areas to the east of St James Road, which will have implications for bike, small mobility and pedestrian access in terms of crossings and visibility. • Implement countermeasure recommendation from 2022 Local Roads Safety Plan, by installing rectangular rapid flashing beacons and pedestrian hybrid beacons where crosswalk enhancements are needed: at bus stops between intersections (e.g. north of 45th); at 44th on SB St Johns and/or at 42nd on NB St Johns Road	• The high number of driveways, both residential and commercial, will need to be considered in designs options for where continuously protected mobility lanes may or may not be feasible.

Segment	Opportunities	Constraints
	• Multiple opportunities to close sidewalk gaps such as both sides of St Johns Road just north of Petticoat Lane where sidewalks are discontinuous. Sidewalks, multi-use path or other pedestrian facility may address these gaps. • One-way traffic direction at the intersections of St Johns-St James and Minnehaha Street may allow for design opportunties that are not available to bidirectional intersections, including pedestrian/bike transitions to and from the corridor. • Facilities along the couplet need to account for conflicts coming from one major direction on the one-way street, rather than two.	
4. 49th Street to Minnehaha Street	• The surrounding land use puts most commercially zoned areas to the east of St James Road, which will have implications for bike, small mobility and pedestrian access in terms of crossings and visibility. • 49th Street and 54th provide connectivity east and west across the corridor and provides access to Minnehaha Elementary and surrounding neighborhoods. Pedestrian, bike and small mobility improvements at these locations on the corridor will improve the safety and comfort of all people traveling.	• The high number of driveways, both residential and commercial, will need to be considered in designs options where continuously protected mobility lanes may or may not be feasible.

Segment	Opportunities	Constraints
	• Multiple opportunities to close sidewalk gaps such as portions of the west side of St Johns Road. Solutions may include extending the sidewalk, constructing a multi-use path or other pedestrian gaps. • The City's comprehensive plan designates this a commercial corridor and Our Vancouver, the comprehensive plan update currently occurring, may result in land uses and density changes, increasing active transportation usage on the corridor and in surrounding neighborhoods. • One-way traffic direction at the intersections of St Johns-St James and Minnehaha Street may allow for design opportunties that are not available to bidirectional intersections, including pedestrian/bike transitions to and from the corridor.	
5. Minnehaha St to 68th Street	• The future Chelatchie Prairie Trail will connect to the St. Johns St. James corridor north of NE 65th Street where the corridor intersects the railroad. This is a project in the Clark County Bicycle and Pedestrian Plan. There is no timeline for the completion of this portion of the trail; however, when completed, the trail intends to connect the Burnt Creek Trail to Battle Ground Lake State Park and potentially beyond. Understanding how people walk, bike and roll from this location to the start of the Ellen Davis Trail could be an important trail connection.	• Bike and pedestrian improvements will need to account for the at grade railroad crossing and freight traffic given the industrial land uses near Minnehaha Street and north into Clark County. • Connection north of the Project area is outside the City. This City is in coordination with Clark County about these changes but no facility changes or upgrades are currently expected or planned by the County.

Segment	Opportunities	Constraints
	• One-way traffic direction at the intersections of St Johns-St James and Minnehaha Street may allow for design opportunties that are not available to bidirectional intersections, including pedestrian/bike transitions to and from the corridor.Large width of existing right-of-way provides sufficient space for increased separation between modes and lane reconfiguration. • The currently vacant land parcel north of Minnehaha Street at the intresections with St Johns Street and St James Street could be repurposed for new uses.	
Overall	• Most of the corridor has more than 60 feet of right of way which offers greater flexibility and options for design concepts that consider possible lane width configurations to better accommodate operations and all modes more safely. • The corridor carries traffic from north and south, parallel to I-5, so there are opportunities to enhance this corridor for multi-modal travel and create more connections for different travel modes other than cars.	• Segments 1 and 2 are constrained by narrower right of way, especially in Segment 1 and Segment 2 near 33rd Street. • Roadway widths vary drastically by segment, so different treatments will be needed along the corridor. Segment 1 is narrow at about 40 feet wide while Segment 5 is up to approximately 85 feet wide. Tradeoffs in design will be evaluated to enhance safety and comfort for vulnerable users. • Segments 3 and 4 are one direction and have most of the commercial use and many driveways, so the mobility lane placement and turning configurations may differ from other segments or roadways in the City. • Poor driver behavior, e.g. turning movements from side streets that intersect the one-way couplet road causes safety concern for vulnerable users crossing intersections, so design treatments will need to accommodate for this.