

APPENDIX G

Division Alternatives Modeling Technical Memo

TECHNICAL MEMORANDUM

To: Darby Watson
Parametrix

From: Jennifer Emerson-Martin, Iteris, Inc.
Randy Knapick, IBI Group

Date: March 29, 2021

RE: Alternatives Modeling Results and Analysis

The purpose of this memorandum is to document the travel demand modeling process used to support the alternatives analysis for *Phase 1* of the Division Street Corridor Study. This memorandum documents the following:

- Methods and assumptions used for developing the travel model forecasts
- Detailed performance metric information
- Forecast analysis for each of the performance metrics
- A comparative analysis of each of the Build alternatives compared to the No Build condition

To ensure that the Division Street Corridor Study represents the most accurate regional background information and produces the most realistic forecasts, the project team coordinated with local agencies as follows:

- **Spokane Regional Transportation Council (SRTC):** The project team obtained the current 2015 and 2040 travel model files and met multiple times during the alternatives development process to discuss assumptions, model methodologies, and performance metrics analysis.
- **Spokane Transit Authority (STA):** The project team presented, and STA concurred with, background modeling assumptions for the 2040 model alternative to be used in the 2040 future year modeling (including the 2040 No Build alternative).
- **Washington State Department of Transportation (WSDOT):** The project team obtained network geometry and configuration for North Spokane Corridor (NSC), including adjacent ramps and local facilities, and met during the alternatives development process to discuss assumptions, model methodologies, and performance metrics analysis.

1 INTRODUCTION

The primary tool used in the analysis was the current SRTC Travel Model (for years 2015 and 2040). The SRTC model was used to forecast traffic volumes and transit ridership on Division Street and adjacent arterials within the Division Street Corridor Study project area. These travel model forecasts were used as inputs during the alternatives analysis, as a part of Phase 1 of the study. The study area includes the area within $\frac{3}{4}$ mile of either side of Division Street, which encompasses Hamilton Street to the east and Monroe Street to the west as illustrated in **Figure 1**.

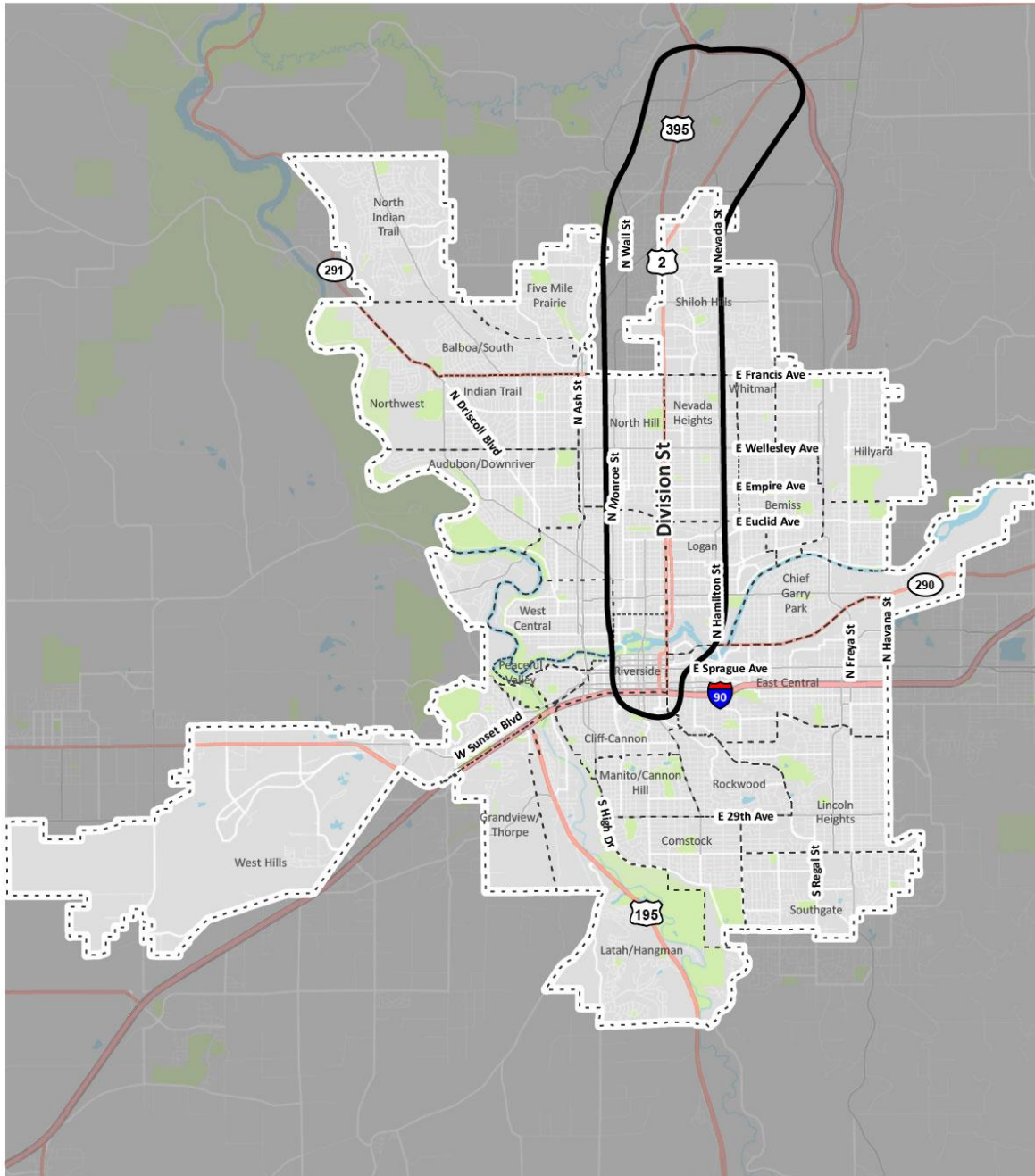
Four High-Performance Transit Build alternatives (Build alternatives) were developed and analyzed for the corridor. The Build alternatives are detailed as having sections for the *mainline*, which includes sections 3 and 4 from **Figure 1**. The *couplet* is illustrated in section 2 of **Figure 1**. The Build alternatives are described in **Table 1**, and a more detailed illustration is included in **Figure 2**.

Table 1 - Alternatives Description




Alternative	Mainline			Couplet		
	Bus Lane Configuration	Number of General Purpose Lanes	Activate Transportation Facilities	Bus Lane Configuration	Number of General Purpose Lanes	Activate Transportation Facilities
No Build	None	3 through lanes with left turn pockets at intersections	None	None	4 through lanes	None
Center-running	Center-running dedicated lanes	2 through lanes; left turns permitted at signalized intersections only	None; assumes off-corridor bicycle facility	Left side business access and transit (BAT) lanes	3 through lanes	Bike lanes
Side-running A	Right side-running BAT lanes	2 through lanes with left turn pockets at intersections	None; assumes off-corridor bicycle facility	Right side BAT lanes	3 through lanes	Protected bike lanes
Side-running B^a	Right side-running BAT lanes	2 through lanes with left turn pockets at intersections	None; assumes off-corridor bicycle facility	Right side BAT lanes on Ruby Street only; no bus lanes on Division Street	2 through lanes; On Division Street, two-way center turn lane and on-street parking on both sides of the street	Protected bike lanes on Ruby Street only
Side-running C	Right side-running BAT lanes	2 through lanes with left turn pockets at intersections	None; assumes off-corridor bicycle facility	Right side BAT lanes	2 through lanes; On-street parking on one side of Division Street	Two-way cycle track on Ruby Street only

^a Alternative Side-Running B would convert the one-way streets in the Couplet to two-way streets.

Figure 1: Study Area



Legend

-  Spokane City Limits
-  Study Area
-  Neighborhood Boundaries

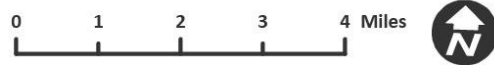


Figure 2: Alternative Roadway Configurations

*all sections looking north

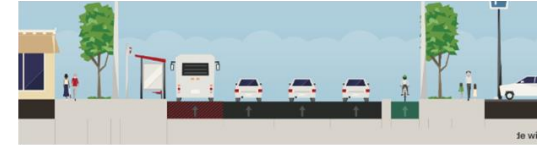
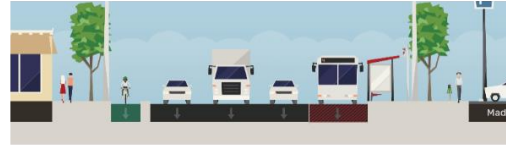
Couplet

Mainline

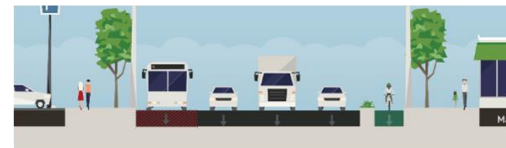
Division

Ruby

Center-Running



Side-running A



Side-running B



Side-Running C

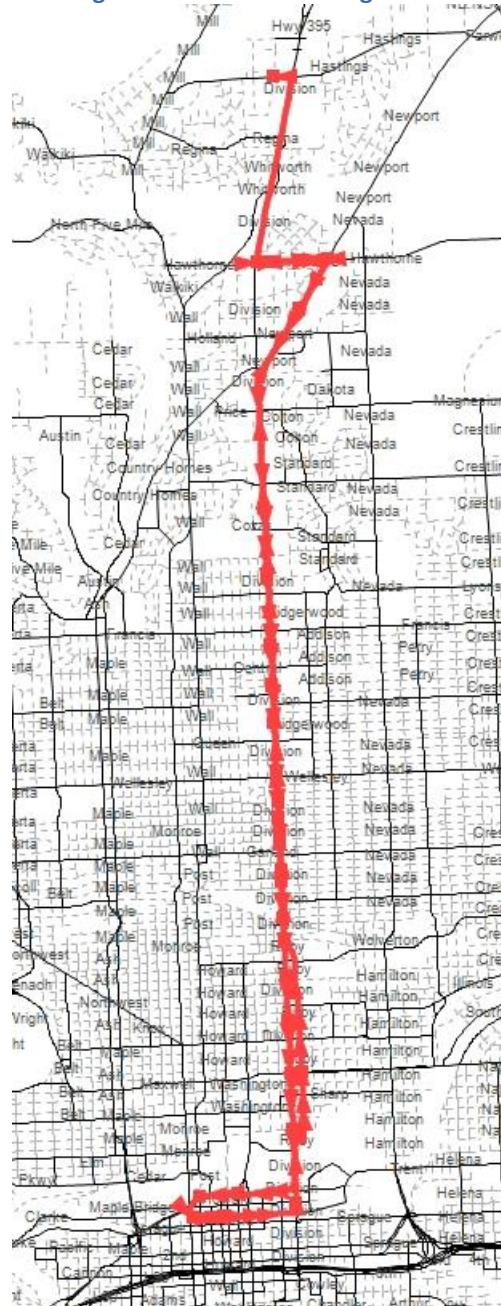


2 ASSUMPTIONS

For the four Build alternatives, it was assumed that all transit routes maintain the same headways throughout the day and have the same configurations north of the “Y” and south of the Spokane River. The headways used for the modeling effort represent the assumed typical weekday service.

All of the transit alternatives (including the No Build alternative) assume that all regional transit improvements assumed in the SRTC Metropolitan Transportation Plan (MTP) are included in the background conditions. Additionally, the alignment for all 2040 alternatives (including the No Build alternative) is identical to the existing conditions and is illustrated in **Figure 3**.

Figure 3: Transit Route Alignment



2.1 Build Alternatives: High-Performance Transit Service Plan

The headways for the High-Performance Build alternatives were assumed as typical weekday service. The Build alternatives service plan is consistent with the service plan of the future STA City Line bus rapid transit (BRT) (currently under construction), with a 19-hour service span from 5:00 AM to 12:00 PM.

Build alternative frequencies by time of day are:

- 5:00 AM to 6:00 AM (Early AM): 30 Minute Headways
- 6:00 AM to 8:30 AM (AM Peak): 7.5 Minute Headways
- 8:30 AM to 5:30 PM (Mid-Day): 10 Minute Headways
- 5:30 PM to 8:00 PM (PM Peak): 7.5 Minute Headways
- 8:00 PM to 11:00 PM (Evening): 15 Minute Headways
- 11:00 PM to 12:00 AM (Late PM): 30 Minute Headways

2.2 Mid-Block and Left Turn Access

One component of the operations that differs for each of the Build alternatives is the mid-block and left turns at intersections.

- For the BAT lane alternatives (Side-running A, Side-running B, and Side-running C) mid-block left-turn access is the same as the 2040 No Build alternative
- For the center-running alternative there would be no mid-block left turn access to adjacent properties, and left-turns and u-turns would only be allowed at five signalized intersections with Division Street: Empire Avenue/Garland Avenue, Wellesley Avenue, Francis Avenue, Lincoln Road, and Magnesium Road

It is important to note that the 2040 Build alternatives are based on an identical assumption for land use in the region, which results in identical person trips to and from each origin and destination. The VISUM travel demand model is a trip-based model, and not an economic model. This means that the sole purpose of the model is to assume identical economic activity while distributing trips using the most likely mode (e.g. vehicle, bus, walk) and path those trips will take. The mode and path are determined using a variety of data including travel time, travel cost, automobile maintenance cost, income of person, and other socioeconomic variabilities, although the travel time often is the highest weighted factor for determining travel path.

3 PERFORMANCE METRICS

Readily available performance metrics from the travel demand model were used to complete the alternatives analysis. Performance metrics were supported by information from the SRTC model, primarily related to transit speeds, ridership, and passenger delay. **Table 2** summarizes metrics used in the analysis and available data sources.

Table 2 – Division Corridor Transit Data Analysis Metrics

Metric	Description	Data Source(s)
Regional Travel Statistics	Average vehicle miles, vehicle hours, vehicle hours of delay, and overall average speed for the greater Spokane region as well as the study area	All data used in this analysis was obtained as direct output from the travel demand model
Mode Split	Comparison of drive alone person trips, shared-ride person trips, transit person trips, and non-motorized person trips in the Spokane region, including a comparison of the overall transit and non-motorized mode split	All data used in this analysis was obtained as direct output from the travel demand model
Screenline Comparison	A north-south travel comparison for four east-west screenlines drawn at different locations along the study corridor Vehicle travel for the AM peak period, PM peak period, and total average day were compiled Vehicle diversion between parallel north-south facilities was compared	All data used in this analysis was obtained as direct output from the travel demand model
Transit Ridership	A comparison of total regional transit ridership compared with Route 25 ridership	Existing ridership was obtained from STA Trapeze system/Automatic Passenger Counter (APC) data The change in ridership between future year alternatives was calculated from the travel demand model outputs and applied directly to the raw ridership data
Travel Time and Speed	Average inbound and outbound vehicular travel time and speeds on Division Street between the Plaza (assumed southern terminus) and the Hastings park and ride (assumed northern terminus) Travel time and speed were summarized by AM and PM peak periods and separated by direction of travel (inbound and outbound)	Existing travel time was obtained from WSDOT using bluetooth reader information The change in travel times between alternatives was calculated from the travel demand model outputs and applied directly to the raw WSDOT travel time data

Note: All analysis assumes a data sample from typical, pre-COVID operating conditions and ridership during the school year (e.g. October 2019)

3.1 Regional Travel Statistics

Regional travel statistics are general measures used to compare vehicular travel in a large geography. For this analysis, two study areas were analyzed to calculate average weekday Vehicle Miles of Travel (VMT), Vehicle Hours of Travel (VHT), and Vehicle Hours of Delay (VHD). **Table 3** summarizes the regional and study area travel statistics for the existing conditions, the future year No Build conditions, and all four future year Build alternatives. As detailed in **Table 3**, the Build alternatives result in the following:

- A decrease in VMT of approximately 2 to 3 percent
- An increase in VHT by approximately 1 to 2 percent
- A decrease in VHD of approximately 0 to 2 percent

Table 3 – Regional Travel Statistics Comparison (Average Weekday)

Description	2015	2040				
	Existing	No Build	Center-running	Side-running A	Side-running B	Side-running C
Spokane Region						
VMT	8,891,938	11,159,329	11,173,277	11,135,833	11,150,509	11,142,415
VHT	235,588	295,733	296,367	295,496	295,934	295,865
VHD	63,164	69,638	69,402	69,170	69,266	69,088
Study Area¹						
VMT	882,162	910,820	895,240	889,738	882,975	882,208
VHT	30,089	31,082	30,812	30,600	30,604	30,420
VHD	5,044	5,327	5,044	5,023	4,930	4,949
Change in VMT		3%	-2%	-2%	-3%	-3%
Change in VHT		3%	2%	2%	2%	1%
Change VHD		6%	0%	0%	-2%	-2%

Note: The No Build alternative is compared to the Existing conditions, and the 2040 Build alternatives are compared with the 2040 No Build.

¹The study area statistical area includes the area within ¼ mile of either side of Division Street, which encompasses Hamilton Street to the east and Monroe Street to the west as illustrated in **Figure 1**.

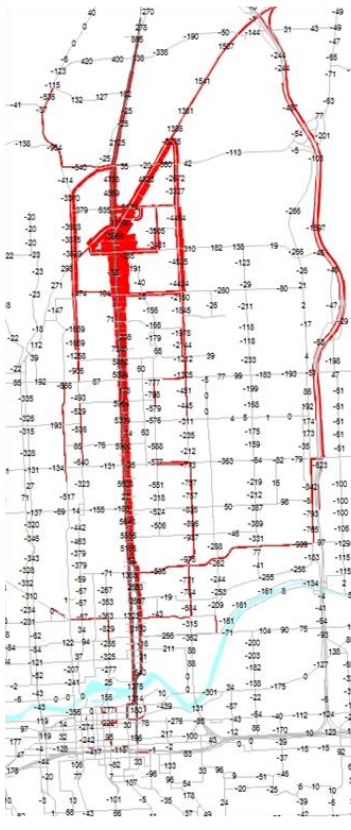
To understand the difference in regional travel for the Build alternatives, difference plots were made to illustrate regional changes in vehicular travel. **Figure 4** illustrates a side-by-side comparison of the reduction in average daily traffic from the No Build alternative with each of the Build alternatives. The wider sections of red show where the No Build alternative has more traffic volume than the Build alternatives. In general, all of the Build alternatives show a reduction in vehicular traffic throughout the corridor, with a greater reduction in vehicle trips north of Francis Avenue. More detailed figures for each of the difference plots are included in **Attachment A** (Figures A1 through A4).

Figure 4: Build Alternative Average Daily Traffic Flow Difference Plots (Versus No Build)

Center-running



Side-running A



Side-running B



Side-running C



3.2 Flow Bundle Analysis (No Build)

A flow bundle analysis was completed for the No Build alternative to illustrate general trip distribution throughout the region. The flow bundles illustrate the origins and destinations of trips through a specific location on the network. Flow bundles were developed for the following segments:

- Division Street and Ruby Street north of Mission Avenue
- Division Street north of Empire Avenue/Garland Avenue
- Division Street south of Lincoln Road
- Division Street north of Hawthorne Road

The flow bundle analysis for the AM and PM peak periods are illustrated in **Figure 5**, **Figure 6**, **Figure 7**, and **Figure 8**. Additionally, **Figure 9** illustrates the flow bundle analysis for any vehicles which travel through the entire corridor between the Spokane River and Hastings Road. **Figure 10** illustrates the flow bundle analysis for vehicles which travel on the North-South Corridor south of Francis Avenue. More detailed figures for each of the difference plots are included in **Attachment A** (Figures A5 through A16).

As illustrated in the flow bundle figures:

- For each of the segment locations, the PM peak period has a heavier traffic flow than the AM peak period
- For each of the segment locations, both the AM and PM peak periods show little traffic coming from/going to east on I-90, because within the model it is more efficient in 2040 to utilize the future North South Corridor for this movement.
- *Division Street and Ruby Street north of Mission Avenue*
 - Vehicular traffic in this segment comes from/goes to the north and south and west on I-90
 - Additional vehicles come from/go to Nevada Road north of Foothill Drive, as well as west on Francis Avenue, Wellesley Avenue, and Northwest Boulevard
- *Division Street north of Empire Avenue/Garland Avenue*
 - Vehicular traffic in this segment comes from/goes to the north and south, including west on I-90
 - Additional vehicles come from/go to the west on Francis Avenue and Wellesley Avenue
- *Division Street south of Lincoln Road*
 - Vehicular traffic in this segment comes from/goes to the north and south, as does a small amount of traffic west on I-90
 - The majority of vehicles appear to come from/goes to areas north of Francis Avenue, with some distribution around the Spokane River
- *Division Street north of Hawthorne Road*
 - Vehicular traffic in this segment comes from/go to the north and south
 - The majority of vehicles appear to come from/go to areas north of Francis Avenue, as well as to the west along Country Homes Boulevard and to the east along Nevada Street
- *Full Corridor Travel (Division Street/Ruby Street between Spokane River and Hastings Road)*
 - While there is vehicular traffic which completes the full length of trip along Division Street, it is still a minimal amount of vehicles when compared with select location trips as illustrated in Segment 3, Segment 4, Segment 5, and Segment 6 travel patterns
- *North-South Corridor Travel*
 - A significant amount of traffic from north Spokane (north of Francis Avenue) utilizes the North-South corridor for travel to/from east and west of Spokane via I-90
 - Additional traffic to/from downtown Spokane via 2nd Avenue utilizes the North-South corridor for travel through the region.

Figure 5: No Build AM/PM Peak Period Flow Bundle - North of Mission Avenue
AM Peak Period PM Peak Period



Figure 6: No Build AM/PM Peak Period Flow Bundle - North of Empire Avenue/Garland Avenue
AM Peak Period PM Peak Period

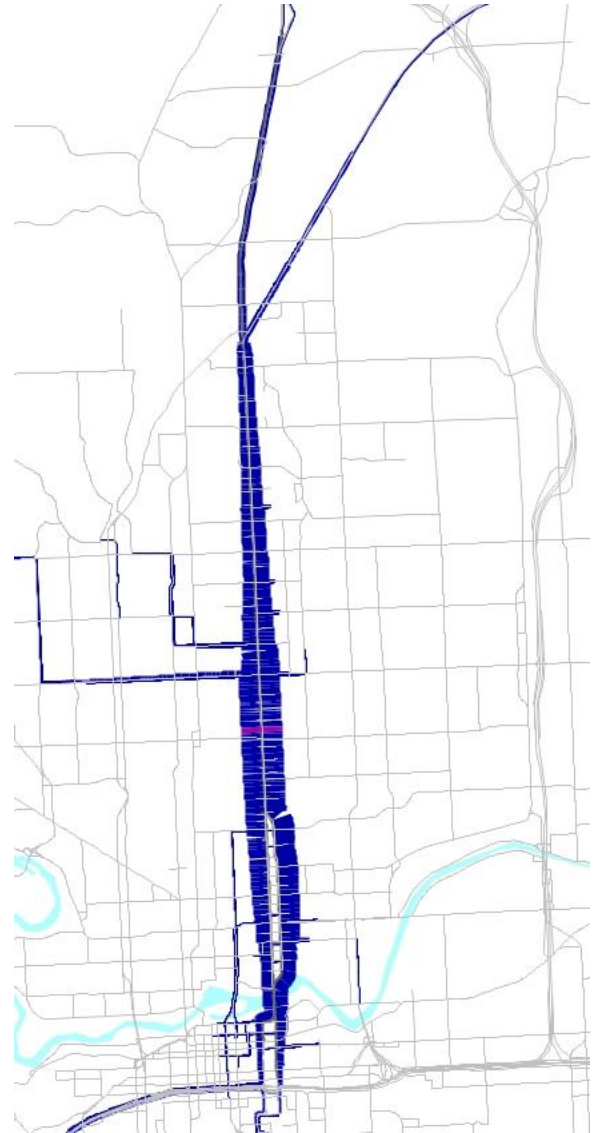


Figure 7: No Build AM/PM Peak Period Flow Bundle - South of Lincoln Road
AM Peak Period PM Peak Period



Figure 8: No Build AM/PM Peak Period Flow - North of Hawthorne Road
AM Peak Period PM Peak Period

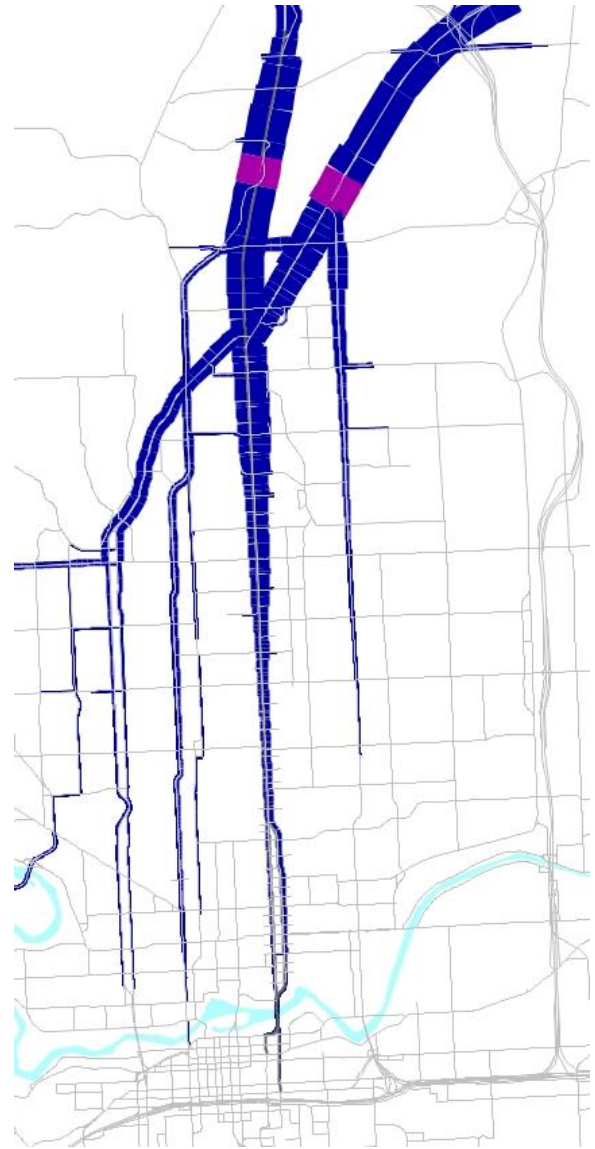


Figure 9: No Build AM/PM Peak Period Flow Bundle - Full Corridor Travel (Spokane River to Hastings Road)

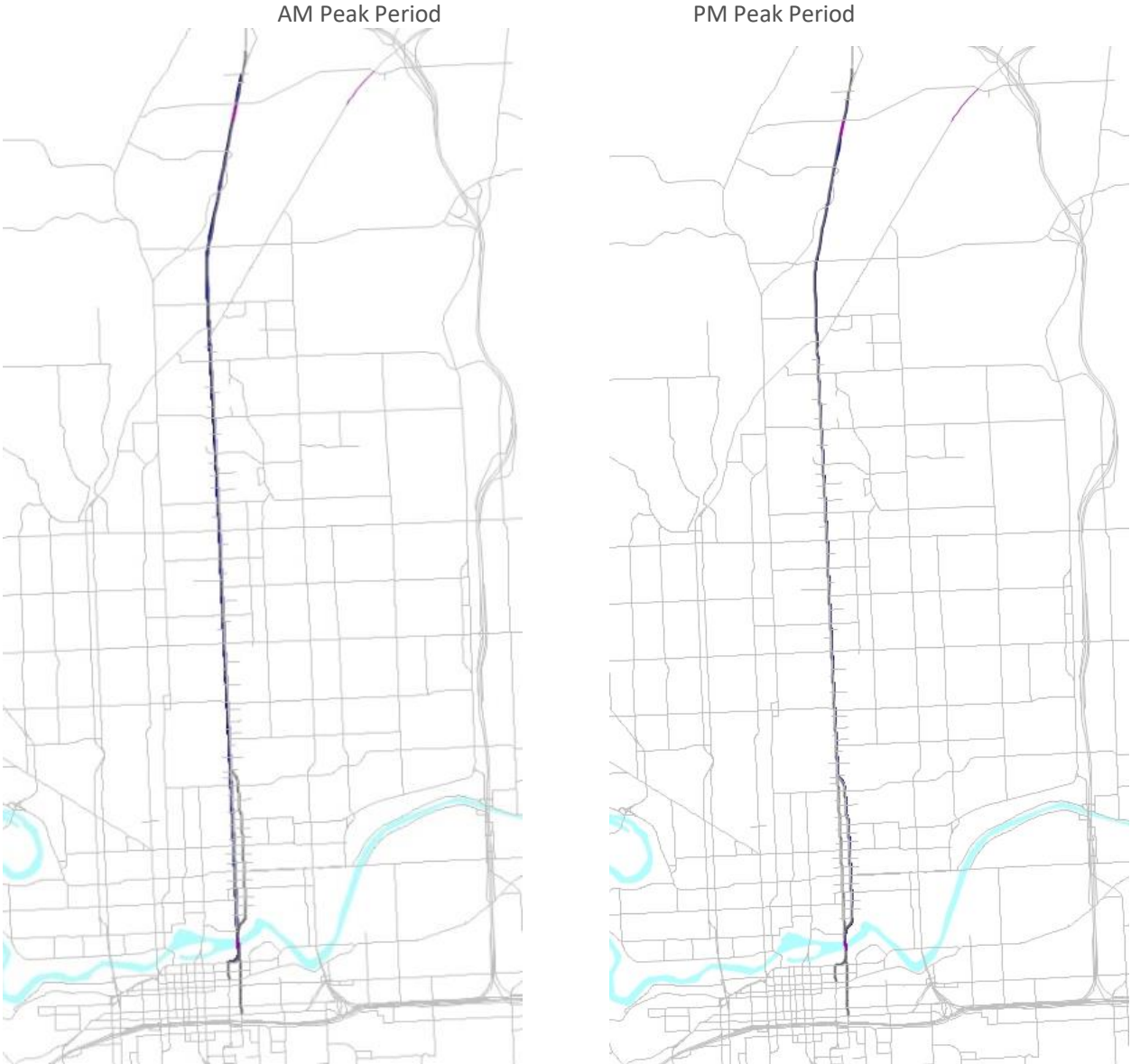


Figure 10: No Build AM/PM Peak Period Flow Bundle - North-South Corridor (South of Francis Avenue)



3.3 Regional Travel Congestion

Regional vehicle congestion was calculated to see the overall impact of each alternative on the roadways and travel patterns. Volume to Capacity (V/C) ratio and Level of Service (LOS) were calculated to identify the roadways that are forecast to perform poorly.

Figure 11 illustrates the regional comparison of PM peak period congestion for all future year alternatives. More detailed figures for each of the difference plots are included in **Attachment A** (Figures A17 through A21).

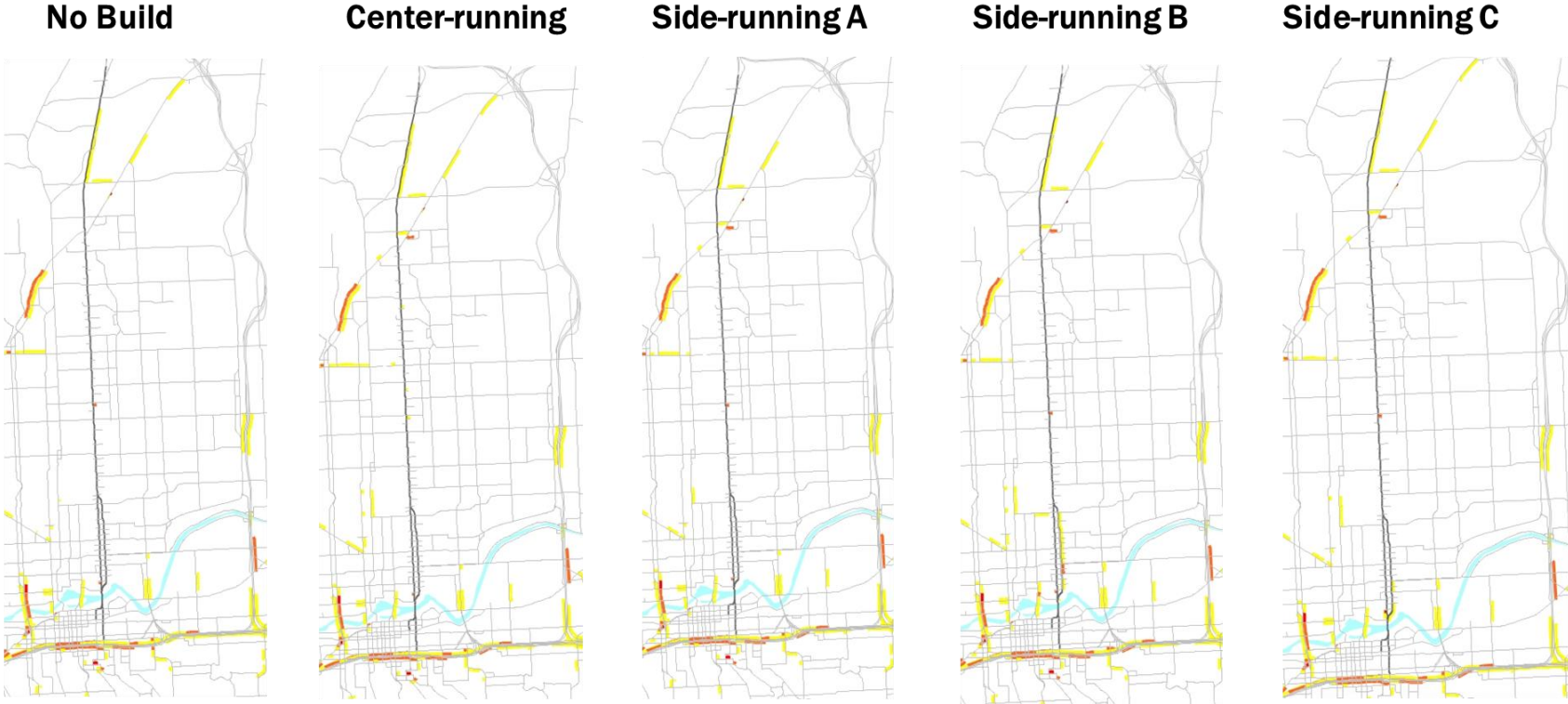
In all alternatives, including the No Build, roadway congestion includes:

- A bottleneck on the Maple Street Bridge north of the Spokane River
- Country Homes Boulevard is slightly congested west of Wall Street
- Minor congestion on parallel arterials around the Spokane River

In the Build alternatives, the following comparison is seen:

- Center-running, Side-running A, and Side-running C all present similar congestion levels across the region as the No Build alternative, with minor additional congestion on parallel arterials
- Side-running B shows an increase in congestion on Ruby Street throughout the couplet, as well as a new area of congestion on Washington Street north of the Spokane River

Figure 11: 2040 PM Peak Period Congestion Comparison



3.4 Mode Split

Mode split is the percentage of travelers using a particular mode (e.g. single-occupant vehicle, high-occupant vehicle, transit, or non-motorized). In this study, the transit and non-motorized mode split percentage is an important component in developing a sustainable transportation system. **Table 4** summarizes the transit and non-motorized mode splits for the existing conditions, the future year No Build conditions, and all four future year high-performing transit Build alternatives. As summarized in **Table 4**:

- Drive alone and shared-ride vehicular trips encompass most of the trips in the region
- Transit mode split is approximately 2 percent for each future year alternative, which is an increase of approximately 25 percent over the existing conditions
- Non-motorized mode split remains constant through all alternatives, which indicates that the travel demand model is not the best tool to be used to analyze non-motorized travel

Table 4 – Regional Travel Mode Split

Description	2015	2040				
	Existing	No Build	Center-running	Side-running A	Side-running B	Side-running C
Drive Alone Person Trips	1,079,270	1,321,740	1,321,570	1,321,260	1,321,420	1,321,120
Shared Ride Person Trips	1,268,760	1,563,470	1,563,020	1,563,470	1,562,670	1,565,190
Transit Person Trips	39,210	62,380	62,500	62,480	62,970	62,400
Non-Motorized Person Trips	158,420	195,110	195,380	195,420	195,500	194,730
Transit Mode Split	1.5%	2.0%	2.0%	2.0%	2.0%	2.0%
Non-Motorized Mode Split	6.2%	6.2%	6.2%	6.2%	6.2%	6.2%

Note: The travel statistics identified in this table are for the entire region, and not for the Route 25 study area, therefore the comparison between alternatives is relatively identical.

3.5 Transit Ridership

Transit ridership for the average weekday conditions was obtained from the travel demand model and compared to available Swiftly data. The transit ridership by direction for Route 25 is summarized in **Table 5**. As detailed in **Table 5**:

- The No Build alternative, which reflects baseline transit service improvements in the 2040 model, observes an increase in ridership of approximately 36 percent compared to existing conditions.
- The Build alternatives, with both physical transit running way improvements and enhanced High-Performance Transit service frequency and span, observe an increase in ridership of between 28 percent and 32 percent compared to the No Build alternative, and between 73 percent and 79 percent increase over existing conditions.
- Among the Build alternatives, the Side-running B alternative has the greatest increase ridership, with 32 percent over the No Build and 79 percent over existing conditions.
- All Build alternatives perform comparably with respect to total growth in ridership. The span of ridership difference among the alternatives is 175 riders, or about 3 percent of the average total daily projected ridership.

Table 5 – Average Daily Transit Ridership (Boardings)

Description	2015	2040				
	Existing	No Build	Center-running	Side-running A	Side-running B	Side-running C
Total System	34,958	54,774	56,594	56,049	56,594	56,594
Route 25 Outbound	1,468	2,107	2,655	2,646	2,725	2,652
Route 25 Inbound	1,614	2,080	2,705	2,709	2,783	2,683
Total Route 25 (Outbound + Inbound)	3,082	4,187	5,360	5,355	5,508	5,335
Total Growth in Ridership (vs. Existing)	--	36%	74%	74%	79%	73%
Total Growth in Ridership (vs. No Build)	-36%	--	28%	28%	32%	28%
Route 25 Percent of System	8.8%	7.6%	9.5%	9.6%	9.7%	9.4%

Note: One limitation to the transit ridership analysis was identified early in the process. The project team discussed a park and ride forecasting issue with SRTC related to model forecasts, because the modeled return park and ride trips appeared lower than expected, and in some cases zero. It was noted by SRTC that this model anomaly was a recognized issue and one that SRTC has discussed with PTV (the software developer). The recommendation was to consider post-processing the results for return trips, or to use the model as-is for relative comparison. For this analysis, the modeling team used the relative comparison of growth in boardings and did not post-processing return park and ride trips.

3.6 Travel Time and Speed

Travel times and speeds for the Division Street corridor were obtained from the travel demand model on a segment-by-segment basis, and then summed to the entire corridor. The travel times and speeds are summarized by direction and by analysis segment in **Table 6** (travel times) and **Table 7** (speeds). As detailed:

- The No Build average travel times for the corridor are equal to or less than the existing travel times
 - Northbound AM Peak Hour and southbound PM Peak Hour are equal to existing
 - Northbound PM Peak Hour and southbound AM Peak Hour are less than existing
- All Build alternatives have a slightly longer travel time than the No Build alternative
 - Northbound AM Peak Hour and Southbound AM Peak Hour travel times for the full corridor are greater than the No Build alternative by less than or equal to 1 minute
 - Northbound PM Peak Hour and southbound PM Peak Hour travel times for the full corridor are greater than the No Build alternative by less than or equal to 1.5 minutes
- The No Build average travel speeds for the corridor are equal to or slightly greater than the existing speeds
 - Northbound AM peak hour and southbound PM peak hour average travel speeds are identical to existing
 - Northbound PM peak hour and southbound AM peak hour average travel speeds are slightly greater than existing, but by less than 0.5 MPH
- All Build alternative travel speeds are slightly less than the No Build travel speed, with the Side-running B alternative operating at the slowest speeds overall

Table 6 – Average AM and PM Peak Hour Travel Time (Minutes) by Segment

Measure	2015	2040				
	Existing	No Build	Center-running	Side-running A	Side-running B	Side-running C
AM Peak Hour						
Northbound						
1. Riverside Avenue, Transit Plaza to Division Street	1.8	1.7	1.7	1.7	1.7	1.7
2. Division Street, 3rd Avenue to Spokane River	1.9	1.9	1.9	1.9	1.9	1.8
3. Division Street, Spokane River to Euclid Avenue	6.6	6.5	6.7	6.6	6.6	7.3
4. Division Street, Euclid Avenue to Francis Avenue	6.1	6.1	6.2	6.2	6.2	6.1
5. Division Street, Francis Avenue to Newport Highway ("Y")	3.9	4.1	4.2	4.2	4.2	4.2
6. Newport Highway, "Y" to North Spokane Corridor	6.7	6.7	6.7	6.7	6.7	6.6
Total Corridor	26.9	26.9	27.3	27.2	27.2	27.7
Southbound						
6. Newport Highway, North Spokane Corridor to "Y"	7.1	6.8	6.8	6.8	6.8	6.8
5. Division Street, "Y" to Francis Avenue	4.1	4.2	4.4	4.3	4.4	4.4
4. Division Street, Francis Avenue to Euclid Avenue	4.8	4.6	4.6	4.7	4.8	4.7
3. Division Street, Euclid Avenue to Spokane River	4.1	3.9	4.4	4.0	4.0	4.5
2. Division Street, Spokane River to Riverside Avenue	2.1	2.2	2.1	2.1	2.1	2.1
1. Riverside Avenue, Division Street to Transit Plaza	1.5	1.4	1.4	1.4	1.4	1.4
Total Corridor	23.7	23.1	23.7	23.4	23.5	23.8
PM Peak Hour						
Northbound						
1. Riverside Avenue, Transit Plaza to Division Street	2.2	2.0	2.0	2.0	2.0	2.0
2. Division Street, 3rd Avenue to Spokane River	2.2	2.2	2.2	2.2	2.2	2.1
3. Division Street, Spokane River to Euclid Avenue	6.3	6.2	6.4	6.3	6.3	7.7
4. Division Street, Euclid Avenue to Francis Avenue	7.3	7.2	7.2	7.3	7.2	7.2
5. Division Street, Francis Avenue to Newport Highway ("Y")	5.0	5.1	5.3	5.3	5.3	5.2
6. Newport Highway, "Y" to North Spokane Corridor	8.5	8.3	8.2	8.2	8.2	8.2
Total Corridor	31.4	31.0	31.4	31.3	31.2	32.5
Southbound						
6. Newport Highway, North Spokane Corridor to "Y"	8.9	8.9	8.9	8.9	8.9	8.9
5. Division Street, "Y" to Francis Avenue	5.2	5.5	5.5	5.5	5.6	5.6
4. Division Street, Francis Avenue to Euclid Avenue	6.2	6.1	6.2	6.2	6.2	6.2
3. Division Street, Euclid Avenue to Spokane River	4.7	4.6	4.8	4.7	4.7	4.9
2. Division Street, Spokane River to Riverside Avenue	2.4	2.4	2.4	2.4	2.4	2.4
1. Riverside Avenue, Division Street to Transit Plaza	1.8	1.6	1.6	1.6	1.6	1.6
Total Corridor	29.1	29.1	29.4	29.2	29.3	29.5

Table 7 – Average AM and PM Peak Hour Speed by Segment

Measure	2015	2040				
	Existing	No Build	Center-running	Side-running A	Side-running B	Side-running C
AM Peak Hour						
Northbound						
1. Riverside Avenue, Transit Plaza to Division Street	17.2	18.4	18.4	18.4	18.4	18.4
2. Division Street, 3rd Avenue to Spokane River	20.2	20.4	20.4	20.4	20.4	20.8
3. Division Street, Spokane River to Euclid Avenue	15.3	15.4	14.9	15.2	15.2	13.8
4. Division Street, Euclid Avenue to Francis Avenue	19.6	19.8	19.4	19.4	19.4	19.7
5. Division Street, Francis Avenue to Newport Highway ("Y")	27.5	25.8	25.5	25.5	25.5	25.5
6. Newport Highway, "Y" to North Spokane Corridor	27.5	27.5	27.5	27.5	27.5	27.5
Total Corridor	21.5	21.5	21.2	21.3	21.3	20.9
Southbound						
6. Newport Highway, North Spokane Corridor to "Y"	26.0	26.7	26.9	27.0	26.9	27.0
5. Division Street, "Y" to Francis Avenue	25.9	25.1	24.5	24.7	24.5	24.5
4. Division Street, Francis Avenue to Euclid Avenue	25.2	26.3	25.8	25.3	25.2	25.6
3. Division Street, Euclid Avenue to Spokane River	24.8	26.0	23.0	24.9	25.2	22.6
2. Division Street, Spokane River to Riverside Avenue	17.8	17.6	18.0	17.7	17.7	17.7
1. Riverside Avenue, Division Street to Transit Plaza	20.0	21.9	21.9	21.9	21.9	21.9
Total Corridor	24.5	25.1	24.4	24.7	24.7	24.3
PM Peak Hour						
Northbound						
1. Riverside Avenue, Transit Plaza to Division Street	14.2	15.1	15.0	15.0	15.0	15.1
2. Division Street, 3rd Avenue to Spokane River	17.2	17.3	17.6	17.3	17.4	18.0
3. Division Street, Spokane River to Euclid Avenue	16.0	16.3	15.6	16.0	16.0	13.1
4. Division Street, Euclid Avenue to Francis Avenue	16.5	16.7	16.6	16.5	16.6	16.7
5. Division Street, Francis Avenue to Newport Highway ("Y")	21.6	20.8	20.3	20.2	20.3	20.4
6. Newport Highway, "Y" to North Spokane Corridor	21.6	22.0	22.2	22.2	22.2	22.2
Total Corridor	18.5	18.7	18.5	18.5	18.5	17.8
Southbound						
6. Newport Highway, North Spokane Corridor to "Y"	20.5	20.6	20.6	20.6	20.6	20.6
5. Division Street, "Y" to Francis Avenue	20.5	19.6	19.2	19.5	19.2	19.2
4. Division Street, Francis Avenue to Euclid Avenue	19.4	19.6	19.4	19.4	19.4	19.4
3. Division Street, Euclid Avenue to Spokane River	21.6	21.9	20.9	21.4	21.5	20.5
2. Division Street, Spokane River to Riverside Avenue	16.0	15.8	16.0	15.9	15.9	15.9
1. Riverside Avenue, Division Street to Transit Plaza	17.5	18.8	18.8	18.8	18.8	18.8
Total Corridor	19.9	19.9	19.7	19.8	19.8	19.6

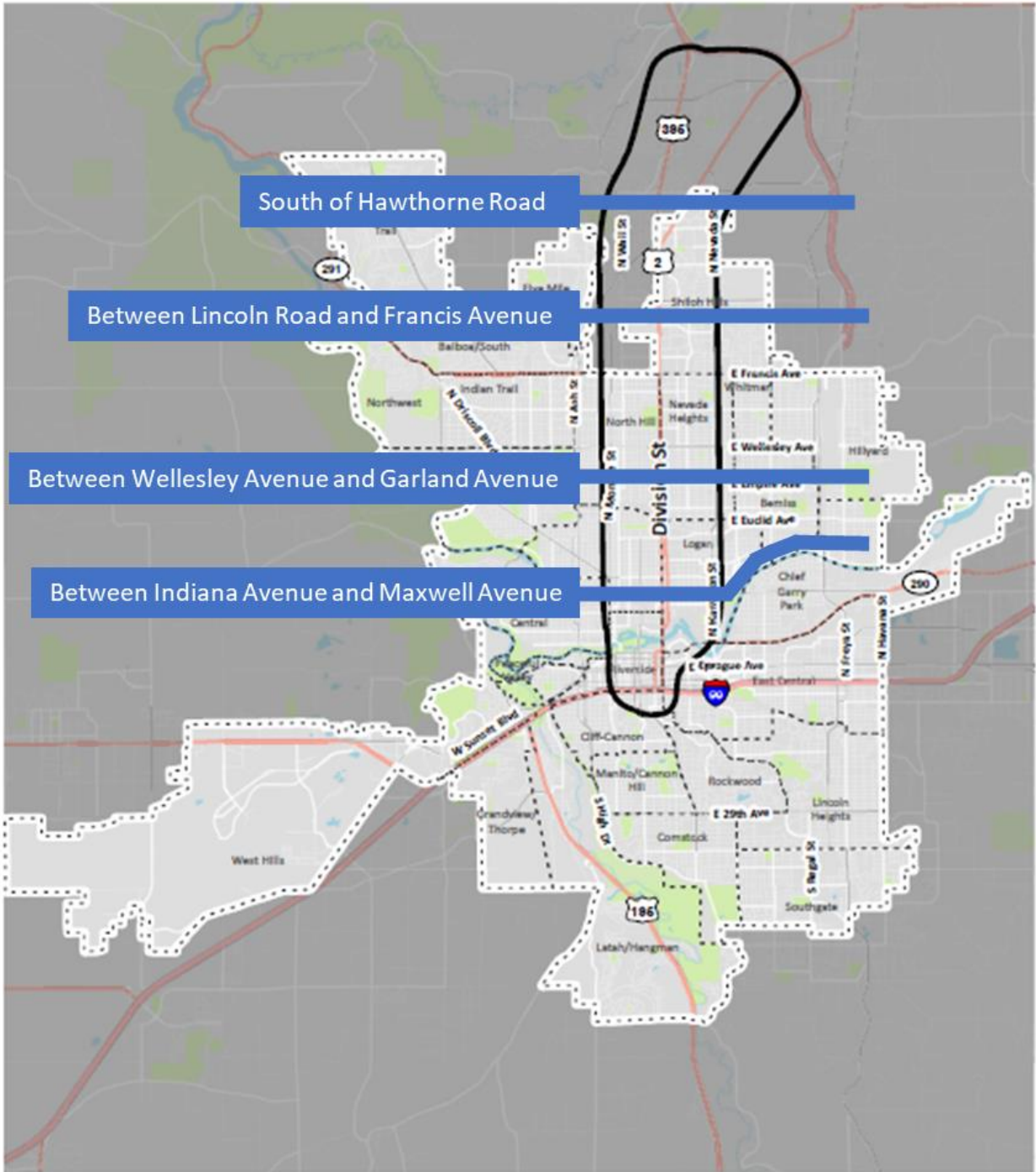
3.7 Screenline Comparison

A screenline comparison measures the combined travel which crosses the screenline. Four east-west screenlines were developed for this project to calculate total north-south regional travel. The four screenlines analyzed are illustrated in **Figure 12**. Detailed average daily north-south travel at the four project screenlines is summarized in **Table 8**. Additional detailed screenline supporting data is provided in **Attachment A** (Table A1).

As detailed in **Table 8**:

- Total Screenlines with North-South Corridor
 - When comparing the No Build alternative to the existing conditions, the overall north-south travel in the region grows by a combined average of 37 percent
 - When comparing the four Build alternatives to the No Build alternative, the overall north-south travel in the region for all alternatives remain nearly constant, with the 1 percent reduction for Build alternatives being directly related to shared-ride and mode shift to transit
- Total Screenlines without North-South Corridor
 - When comparing the No Build alternative to the existing conditions, the overall north-south travel on the combined parallel arterials reduces by a combined 7 percent, with some sections experiencing reduced average daily north-south travel by up to 12 percent (between Wellesley Avenue and Garland Avenue) and some sections remaining constant (between Lincoln Road and Francis Avenue)
 - When comparing the four Build alternatives to the No Build alternative, the overall north-south travel in the region for all alternatives illustrates an additional 1 to 3 percent reduction in trips, which is directly attributed to mode shift to transit as well as vehicular trip pattern shift onto a parallel arterial with available capacity
- Total Screenlines without North-South Corridor and without parallel arterials (Division Street/Ruby Street only)
 - When comparing the No Build to the existing conditions, overall average daily north-south traffic on Division Street/Ruby Street is reduced by a combined 8 percent
 - When comparing the four Build alternatives to the No Build alternative, Division Street/Ruby Street traffic is reduced by an average of 13-20 percent, with the greatest reduction on the screenline between Indiana Avenue and Maxwell Avenue in the Side-running B alternative of 30 percent

Figure 12: Screenline Locations



Legend

- Spokane City Limits
- Study Area
- Neighborhood Boundaries

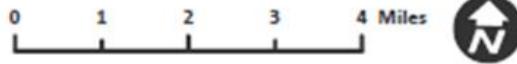


Table 8 – Average Daily Screenline Comparison

Measure	2015		2040			
	Existing	No Build	Center-running	Side-running A	Side-running B	Side-running C
Total Screenlines Including NSC						
South of Hawthorne Road	89,473	126,782	126,300	126,111	126,322	125,842
Between Lincoln Road and Francis Avenue	114,602	156,106	154,475	154,296	154,463	153,813
Between Wellesley Avenue and Garland Avenue	136,820	194,558	193,140	192,442	192,040	192,039
Between Indiana Avenue and Maxwell Avenue	195,749	256,612	255,428	254,753	253,294	253,426
Overall	536,644	734,058	729,343	727,602	726,119	725,120
South of Hawthorne Road		42%	0%	-1%	0%	-1%
Between Lincoln Road and Francis Avenue		36%	-1%	-1%	-1%	-1%
Between Wellesley Avenue and Garland Avenue		42%	-1%	-1%	-1%	-1%
Between Indiana Avenue and Maxwell Avenue		31%	0%	-1%	-1%	-1%
Overall		37%	-1%	-1%	-1%	-1%
Total Screenline Without NSC						
South of Hawthorne Road	78,895	74,665	73,587	73,567	73,644	73,252
Between Lincoln Road and Francis Avenue	104,024	103,989	101,762	101,752	101,785	101,223
Between Wellesley Avenue and Garland Avenue	136,820	119,913	117,910	117,483	116,687	116,802
Between Indiana Avenue and Maxwell Avenue	195,749	181,967	180,198	179,794	177,941	178,189
Overall	515,488	480,534	473,457	472,596	470,057	469,466
South of Hawthorne Road		-5%	-1%	-1%	-1%	-2%
Between Lincoln Road and Francis Avenue		0%	-2%	-2%	-2%	-3%
Between Wellesley Avenue and Garland Avenue		-12%	-2%	-2%	-3%	-3%
Between Indiana Avenue and Maxwell Avenue		-7%	-1%	-1%	-2%	-2%
Overall		-7%	-1%	-2%	-2%	-2%
Total Screenline Division Street/Ruby Street Only						
South of Hawthorne Road	22,861	21,718	21,002	21,094	21,152	21,126
Between Lincoln Road and Francis Avenue	41,652	38,473	29,857	32,438	32,263	32,001
Between Wellesley Avenue and Garland Avenue	38,202	34,602	27,572	28,123	26,813	27,211
Between Indiana Avenue and Maxwell Avenue	47,004	42,809	37,447	37,427	29,826	32,476
Overall	149,719	137,602	115,878	119,082	110,054	112,814
South of Hawthorne Road		-5%	-3%	-3%	-3%	-3%
Between Lincoln Road and Francis Avenue		-8%	-22%	-16%	-16%	-17%
Between Wellesley Avenue and Garland Avenue		-9%	-20%	-19%	-23%	-21%
Between Indiana Avenue and Maxwell Avenue		-9%	-13%	-13%	-30%	-24%
Overall		-8%	-16%	-13%	-20%	-18%

Note: The traffic flow volumes summarized are raw model volumes and not post-processed using existing count data.

While comparing the 2040 Build alternatives to 2040 No Build condition, a diversion of vehicular trips from Division Street to parallel arterials was observed. The diversion occurred because 1) when capacity is reduced on Division Street, some trips destined for locations not along Division Street modify their trip to a facility which has available capacity for additional trips and 2) the increase in transit services on Division Street attract person trips out of vehicles and onto busses further reducing the Division Street vehicular volume. Additionally, when comparing the No Build condition with the existing conditions, the development of the NSC changes the distribution of regional north-south travel. The total forecast volume on the NSC is expected to exceed the growth in north-south vehicle trips, thus reducing north-south travel on parallel arterials throughout Spokane, including Division Street, below existing conditions.

Table 9 provides daily traffic flows on all north-south arterials crossing each of the east-west screenlines. Existing

volumes that are greater than the future year volumes are shown in bold. Crossing the screenlines, Monroe Street, Division Street, Ruby Street, Hamilton Street, Perry Street, Nevada Street, Crestline Street, Market Street, and Green Street tend to have lower volumes in the future year alternatives.

Table 9 – Average Daily Arterial Diversion Comparison

Measure	2015	2040				
	Existing	No Build	Center-running	Side-running A	Side-running B	Side-running C
South of Hawthorne Road						
Wall	9,395	8,945	9,222	9,107	9,054	9,058
Division	29,142	26,995	25,746	26,030	26,054	25,839
Newport	22,861	21,718	21,002	21,094	21,152	21,126
Nevada	11,260	14,514	15,068	14,810	14,880	14,716
Market	6,237	2,493	2,549	2,526	2,504	2,513
NSC	10,578	52,117	52,713	52,544	52,678	52,590
<i>Total Screenline Traffic</i>	89,473	126,782	126,300	126,111	126,322	125,842
<i>Total Screenline Traffic Growth (%)</i>		42%	0%	-1%	0%	-1%
<i>Total Screenline Arterial Traffic (Arterials Only - Without NSC)</i>	78,895	74,665	73,587	73,567	73,644	73,252
<i>Total Screenline Arterial Traffic Growth (%) (Arterials Only - Without NSC)</i>		-5%	-1%	-1%	-1%	-2%
<i>Total Screenline Change in Arterial Traffic</i>		(4,230)	(1,078)	(1,098)	(1,021)	(1,413)
Between Lincoln Road and Francis Avenue						
Country Homes	18,293	19,149	19,556	19,329	19,624	19,573
Wall	14,565	14,885	16,995	18,473	16,680	16,714
Division	41,652	38,473	29,857	23,647	32,263	32,001
Standard	913	880	2,534	884	1,016	1,088
Nevada	11,040	11,131	13,304	14,159	12,612	12,291
Crestline	7,331	7,353	7,323	7,598	7,283	7,341
Market	9,482	6,750	6,793	7,036	6,883	6,777
Freya	748	5,368	5,400	5,371	5,424	5,438
NSC	10,578	52,117	52,713	54,983	52,678	52,590
<i>Total Screenline Traffic</i>	114,602	156,106	154,475	154,296	154,463	153,813
<i>Total Screenline Traffic Growth (%)</i>		36%	-1%	-1%	-1%	-1%
<i>Total Screenline Arterial Traffic (Arterials Only - Without NSC)</i>	104,024	103,989	101,762	101,752	101,785	101,223
<i>Total Screenline Arterial Traffic Growth (%) (Arterials Only - Without NSC)</i>		0%	-2%	-2%	-2%	-3%
<i>Total Screenline Change in Arterial Traffic</i>		(35)	(2,227)	(2,237)	(2,204)	(2,766)
Between Wellesley Avenue and Garland Avenue						
Maple	9,303	9,817	10,208	10,177	10,539	10,215
Ash	9,292	9,115	9,527	9,596	9,599	9,603
Monroe	17,700	17,081	17,914	18,056	17,903	17,920
Wall	6,827	6,373	7,013	7,088	7,073	7,030
Division	38,202	34,602	27,572	26,350	26,813	27,211
Addison	3,985	3,291	4,461	3,731	3,711	3,886
Nevada	14,635	12,654	13,616	13,528	13,575	13,507
Perry	6,280	5,422	5,659	5,672	5,704	5,566
Crestline	7,622	5,738	5,862	5,821	5,776	5,852
Market	22,974	15,820	16,078	16,576	15,994	16,012
NSC	-	74,645	75,230	76,253	75,353	75,237
<i>Total Screenline Traffic</i>	136,820	194,558	193,140	192,442	192,040	192,039
<i>Total Screenline Traffic Growth (%)</i>		42%	-1%	-1%	-1%	-1%

Measure	2015	2040				
	Existing	No Build	Center-running	Side-running A	Side-running B	Side-running C
Total Screenline Arterial Traffic (Arterials Only - Without NSC)	136,820	119,913	117,910	117,483	116,687	116,802
Total Screenline Arterial Traffic Growth (%) (Arterials Only - Without NSC)		-12%	-2%	-2%	-3%	-3%
Total Screenline Change in Arterial Traffic		(16,907)	(2,003)	(2,430)	(3,226)	(3,111)
Between Indiana Avenue and Maxwell Avenue						
Maple	14,880	15,783	15,918	15,992	16,190	16,049
Ash	15,534	15,942	16,222	16,208	16,279	16,318
Monroe	20,748	18,341	19,144	19,133	19,806	19,519
Post	9,371	9,451	10,075	9,878	10,408	10,213
Howard	2,373	2,477	2,554	2,551	3,186	3,000
Washington	15,275	15,494	16,146	16,115	17,492	17,084
Division	24,587	22,526	19,369	19,207	18,247	16,701
Ruby	22,417	20,283	18,078	17,388	11,579	15,775
Hamilton	28,057	24,624	25,071	25,132	26,258	25,718
Perry	14,450	12,414	12,839	12,803	13,719	13,137
Greene	28,057	24,632	24,782	24,640	24,777	24,675
NSC	-	74,645	75,230	76,253	75,353	75,237
Total Screenline Traffic	195,749	256,612	255,428	254,753	253,294	253,426
Total Screenline Traffic Growth (%)		31%	0%	-1%	-1%	-1%
Total Screenline Arterial Traffic (Arterials Only - Without NSC)	195,749	181,967	180,198	179,794	177,941	178,189
Total Screenline Arterial Traffic Growth (%) (Arterials Only - Without NSC)		-7%	-1%	-1%	-2%	-2%
Total Screenline Change in Arterial Traffic		(13,782)	(1,769)	(2,173)	(4,026)	(3,778)

Note: The traffic flow volumes summarized are raw model volumes and not post-processed using existing count data.

4 ALTERNATIVES ANALYSIS SUMMARY

Previous sections of this technical memo detailed various comparisons of future year alternatives. All conclusions and comparisons documented previously are summarized in this section. Notable comparisons include:

- Regional Travel Statistics (VMT, VHT, VHD)
 - All regional travel statistics are generally identical and consistent between alternatives, with a difference of less than 1 percent
- Study Area Travel Statistics (VMT, VHT, VHD)
 - The No Build alternative results in an increase in VMT, VHT, and VHD of 3 percent for the study area
 - The Build alternatives result in the following:
 - A decrease in VMT of approximately 2 to 3 percent
 - An increase in VHT by approximately 1 to 2 percent
 - A decrease in VHD of approximately 0 to 2 percent.
- Regional Traffic Flow Patterns at Select Locations (Flow Bundle Analysis)
 - For each of the segment locations, the PM peak period has a heavier traffic flow than the AM peak period
 - For each of the segment locations, both the AM and PM peak periods show little traffic coming from/going to east on I-90, because within the model it is more efficient in 2040 to utilize the future North South Corridor for this movement.
 - *Division Street and Ruby Street north of Mission Avenue*
 - Vehicular traffic in this segment comes from/goes to the north and south and west on I-90
 - Additional vehicles come from/go to Nevada Road north of Foothill Drive, as well as west on Francis Avenue, Wellesley Avenue, and Northwest Boulevard
 - *Division Street north of Empire Avenue/Garland Avenue*
 - Vehicular traffic in this segment comes from/goes to the north and south, including west on I-90
 - Additional vehicles come from/go to the west on Francis Avenue and Wellesley Avenue
 - *Division Street south of Lincoln Road*
 - Vehicular traffic in this segment comes from/goes to the north and south, as does a small amount of traffic west on I-90
 - The majority of vehicles appear to come from/goes to areas north of Francis Avenue, with some distribution around the Spokane River
 - *Division Street north of Hawthorne Road*
 - Vehicular traffic in this segment comes from/go to the north and south
 - The majority of vehicles appear to come from/go to areas north of Francis Avenue, as well as to the west along Country Homes Boulevard and to the east along Nevada Street
 - *Full Corridor Travel (Division Street/Ruby Street between Spokane River and Hastings Road)*
 - While there is vehicular traffic which completes the full length of trip along Division Street, it is still a minimal amount of vehicles when compared with select location trips as illustrated in Segment 3, Segment 4, Segment 5, and Segment 6 travel patterns
 - *North-South Corridor Travel*
 - A significant amount of traffic from north Spokane (north of Francis Avenue) utilizes the North-South corridor for travel to/from east and west of Spokane via I-90
 - Additional traffic to/from downtown Spokane via 2nd Avenue utilizes the North-South corridor for travel through the region.
- Traffic Congestion (V/C in the greater study area)
 - In all Build alternatives, including the No Build:
 - Roadway congestion is forecast on the Maple Street Bridge north of the Spokane River
 - Country Homes Boulevard is slightly congested west of Wall Street

- Minor congestion is forecast on parallel arterials around the Spokane River
 - In the Build alternatives, the following comparison is seen:
 - Center-running, Side-running A, and Side-running C all present similar congestion levels across the region as the No Build alternative, with minor additional congestion on parallel arterials
 - Side-running B shows an increase in congestion on Ruby Street throughout the couplet, as well as a new area of congestion on Washington Street north of the Spokane River
- Transit and Non-Motorized Mode Split (Percentage of regional non-vehicular mode share)
 - Drive alone and shared-ride vehicular trips encompass most of the trips in the region
 - Transit mode split is approximately 2 percent for each future year alternative, which is an increase of approximately 25 percent over the existing conditions
 - Non-motorized mode split remains constant through all alternatives, which indicates that the travel demand model is not the best tool to be used to analyze non-motorized travel.
- Transit Ridership
 - The No Build alternative, which reflects baseline transit service improvements in the 2040 model, observes an increase in ridership of approximately 36 percent compared to existing conditions.
 - The Build alternatives, with both physical transit running way improvements and enhanced High-Performance Transit service frequency and span, observe an increase in ridership of between 28 percent and 32 percent compared to the No Build alternative (and between 73 percent and 79 percent increase over existing conditions).
 - Among the Build alternatives, the Side-running B Alternative has the greatest increase ridership, with 32 percent over the No Build and 79 percent over existing conditions.
 - All Build alternatives perform comparably with respect to total growth in ridership. The span of ridership difference among the alternatives is 175 riders, or about 3 percent of the average total daily projected ridership.
- Travel Time and Speed
 - The No Build travel times are equal to or less than the existing travel times
 - Northbound AM Peak Hour and southbound PM Peak Hour are equal to existing
 - Northbound PM Peak Hour and southbound AM Peak Hour are less than existing
 - All Build alternatives have a slightly longer travel time than the No Build alternative, with a difference of less than 3 minutes in all cases
 - Northbound AM Peak Hour and Southbound AM Peak Hour travel times for the full corridor are greater than the No Build alternative by less than or equal to 1 minute
 - Northbound PM Peak Hour and southbound PM Peak Hour travel times for the full corridor are greater than the No Build alternative by less than or equal to 1.5 minutes
 - The No Build average travel speeds for the corridor are equal to or slightly greater than the existing speeds
 - Northbound AM peak hour and southbound PM peak hour average travel speeds are identical to existing
 - Northbound PM peak hour and southbound AM peak hour average travel speeds are slightly greater than existing, but by less than 0.5 MPH
 - All Build alternative travel speeds are slightly less than the No Build travel speed, with the Side-running B alternative operating at the slowest speeds overall
- Total Screenline with North-South Corridor
 - When comparing the No Build alternative to the existing conditions, the overall north-south travel in the region grows by a combined average of 37 percent
 - When comparing the four Build alternatives to the No Build alternative, the overall north-south travel in the region for all alternatives remain nearly constant, with the 1 percent reduction for Build alternatives being directly related to shared-ride and mode shift to transit
- Total Screenline without North-South Corridor

- When comparing the No Build alternative to the existing conditions, the overall north-south travel on the combined parallel arterials reduces by a combined 7 percent, with some sections experiencing reduced average daily north-south travel by up to 12 percent (between Wellesley Avenue and Garland Avenue) and some sections remaining constant (between Lincoln Road and Francis Avenue)
- When comparing the four Build alternatives to the No Build alternative, the overall north-south travel in the region for all alternatives illustrates an additional 1 to 3 percent reduction in trips, which is directly attributed to mode shift to transit as well as vehicular trip pattern shift onto a parallel arterial with available capacity
- Total Screenline without North-South Corridor and without parallel arterials (Division Street/Ruby Street only)
 - When comparing the No Build to the existing conditions, overall average daily north-south traffic on Division Street/Ruby Street is reduced by a combined 8 percent
 - When comparing the four Build alternatives to the No Build alternative, Division Street/Ruby Street traffic is reduced by an average of 13-20 percent, with the greatest reduction on the screenline between Indiana Avenue and Maxwell Avenue in the Side-running B alternative of 30 percent

ATTACHMENT A – SUPPORT FIGURES

Figure A1: No Build versus Center-running Average Daily Traffic Flows (No Build Minus Build Center-running)

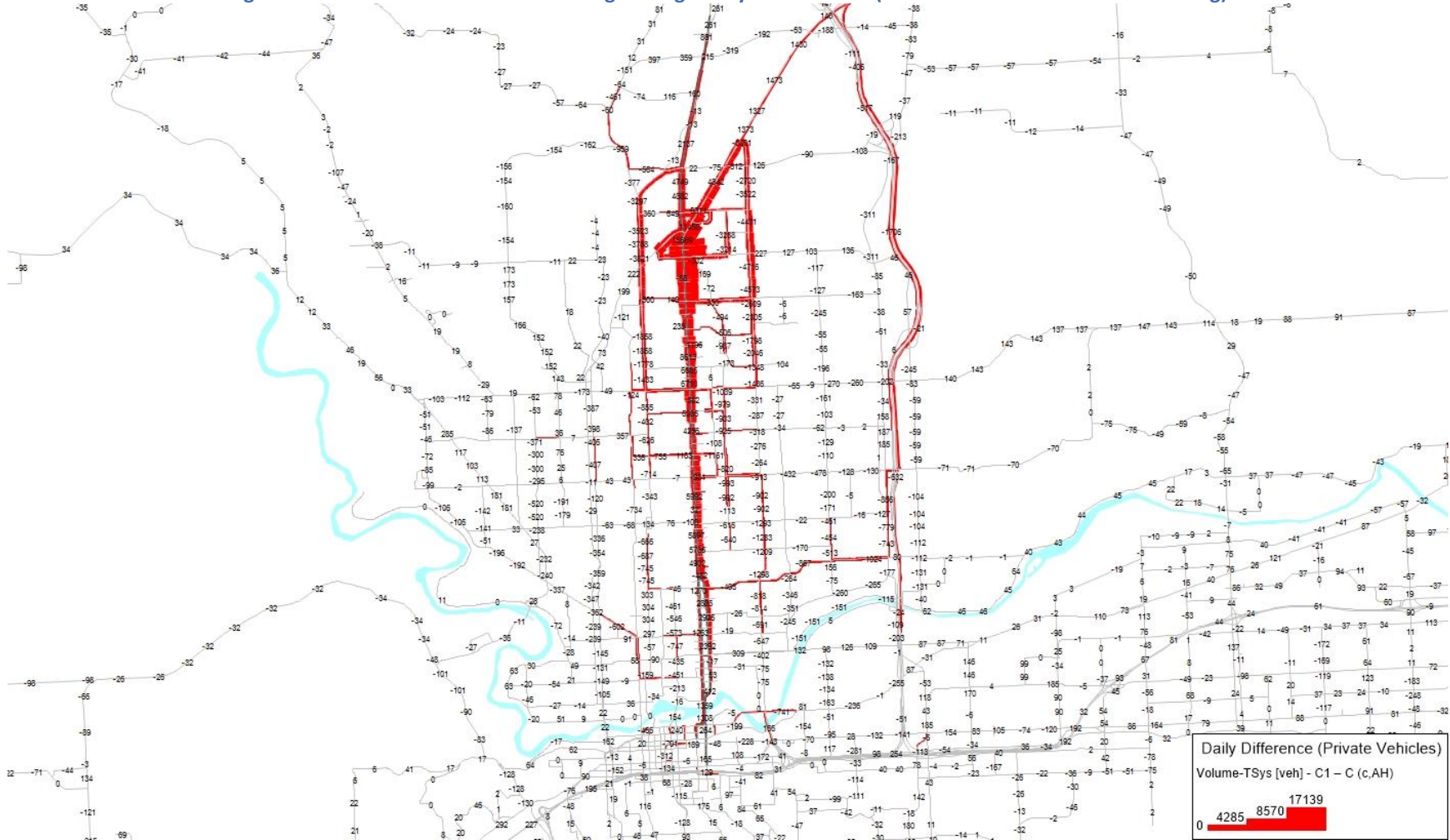


Figure A2: No Build versus Side-running A Average Daily Traffic Flows (No Build Minus Build Side Running A)

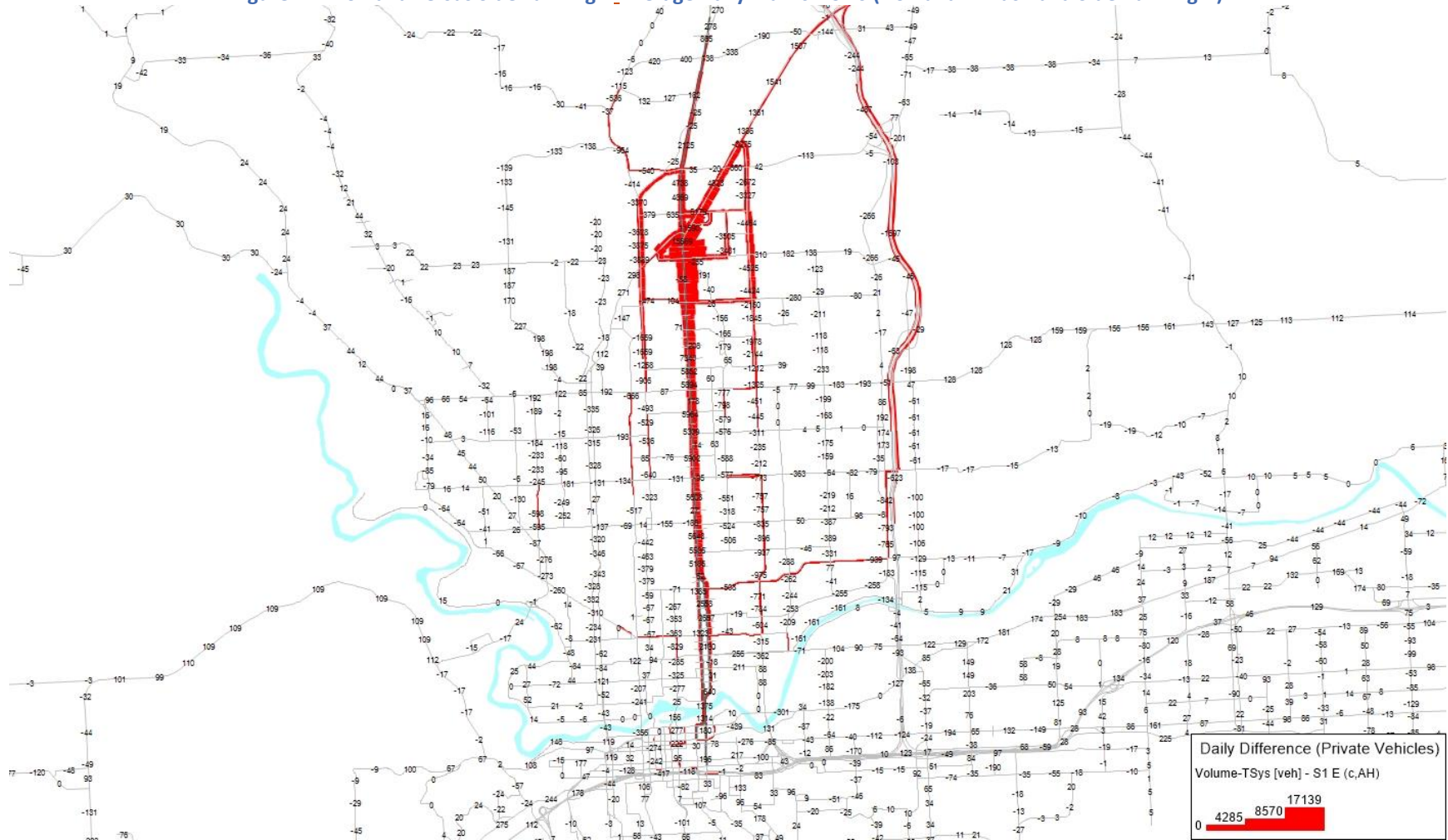


Figure A3: No Build versus Side Running B Average Daily Traffic Flows (No Build Minus Build Side Running B)

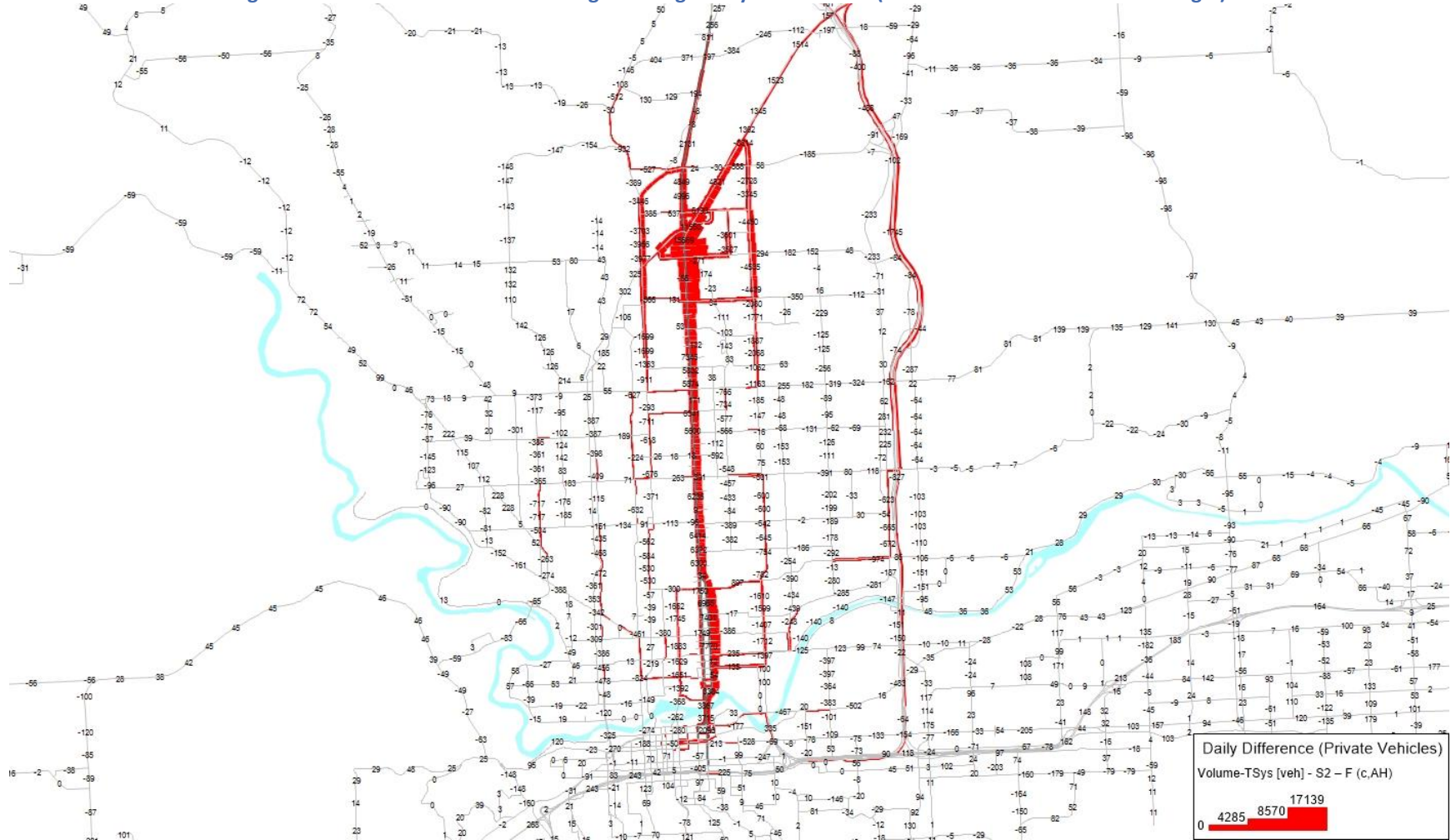


Figure A4: No Build versus Side Running C Average Daily Traffic Flows (No Build Minus Build Side Running C)

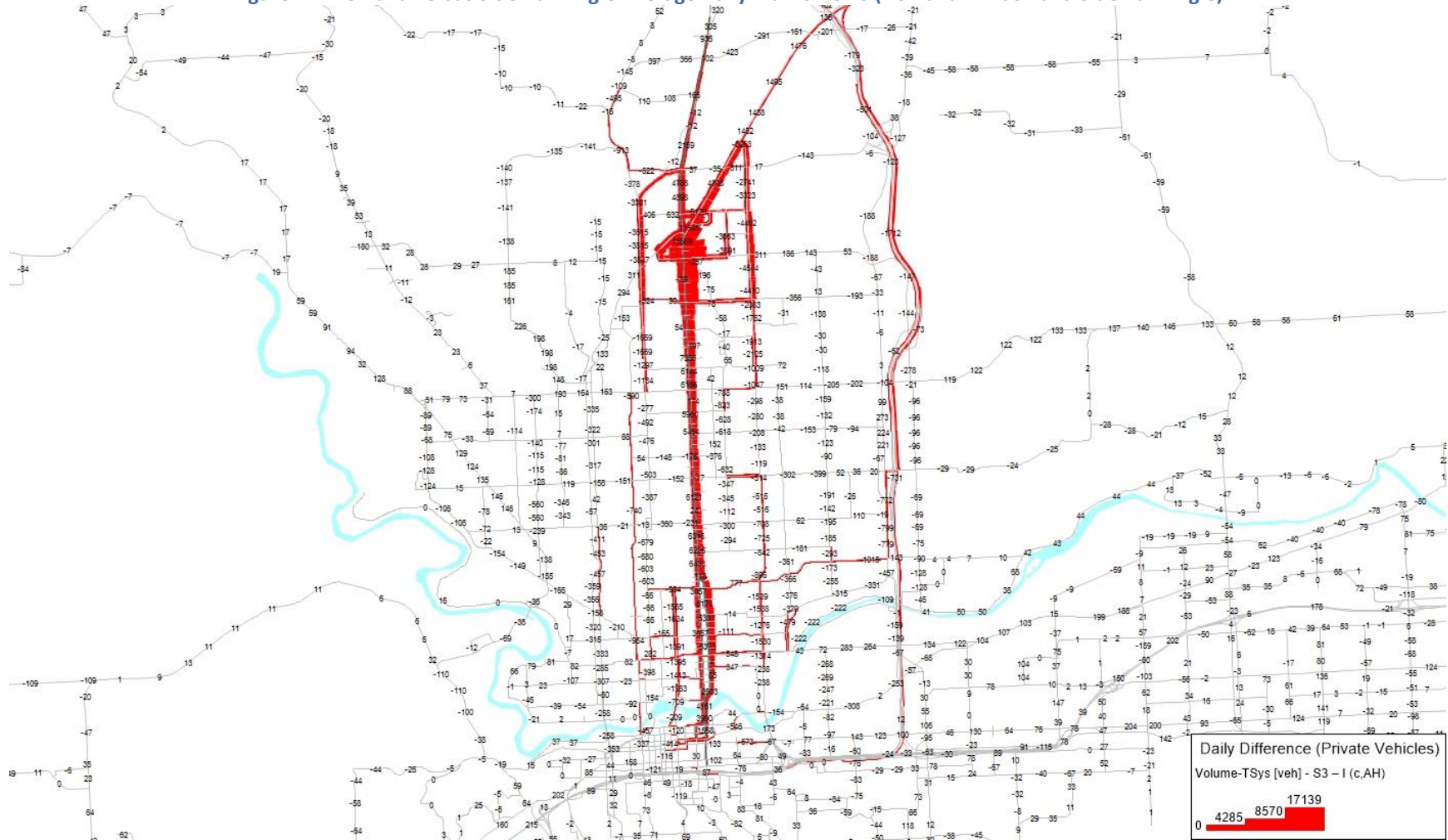


Figure A5: No Build AM Peak Period Flow Bundle for Segment 3 (North of Mission Avenue)

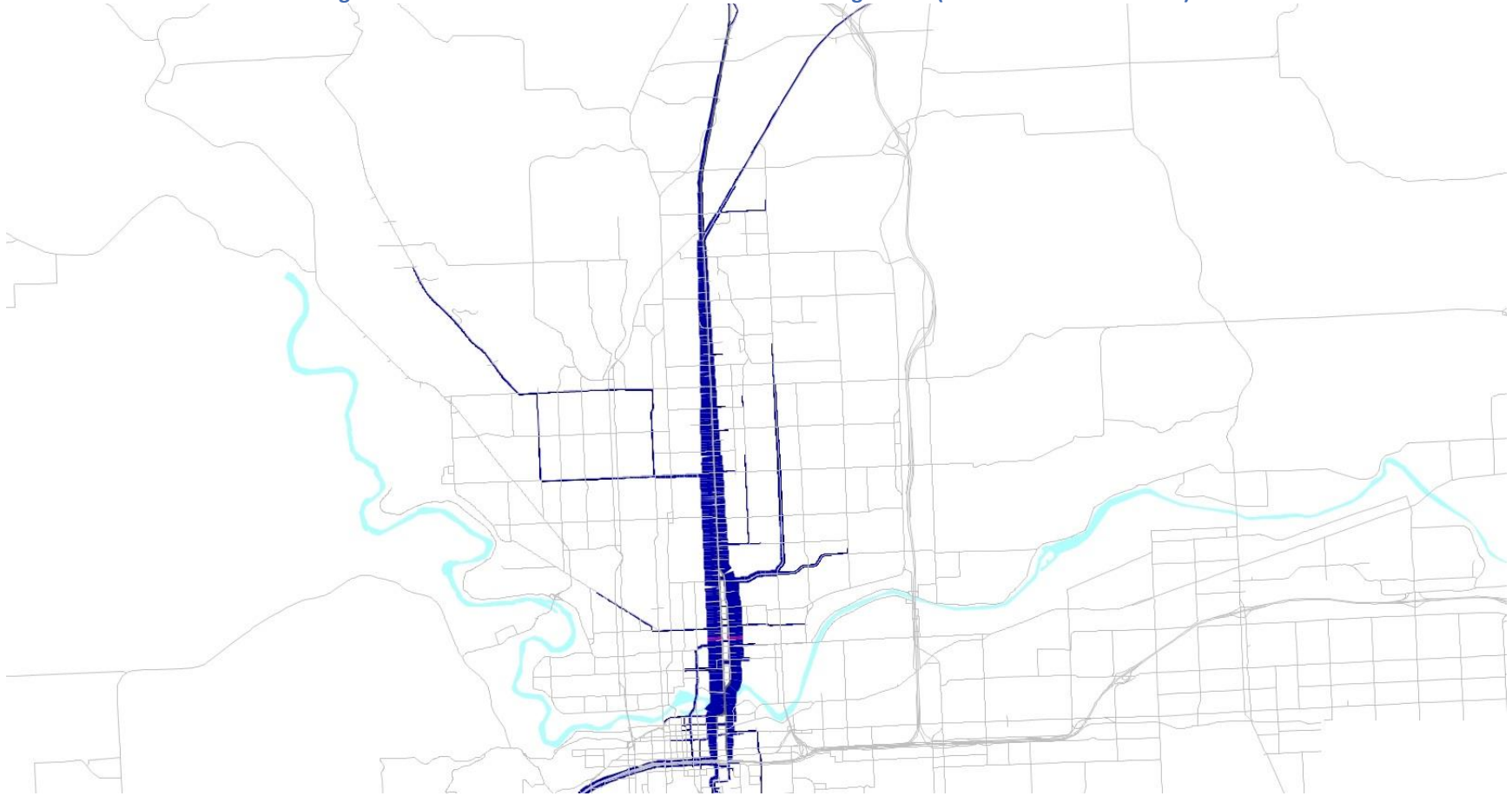


Figure A6: No Build PM Peak Period Flow Bundle for Segment 3 (North of Mission Avenue)

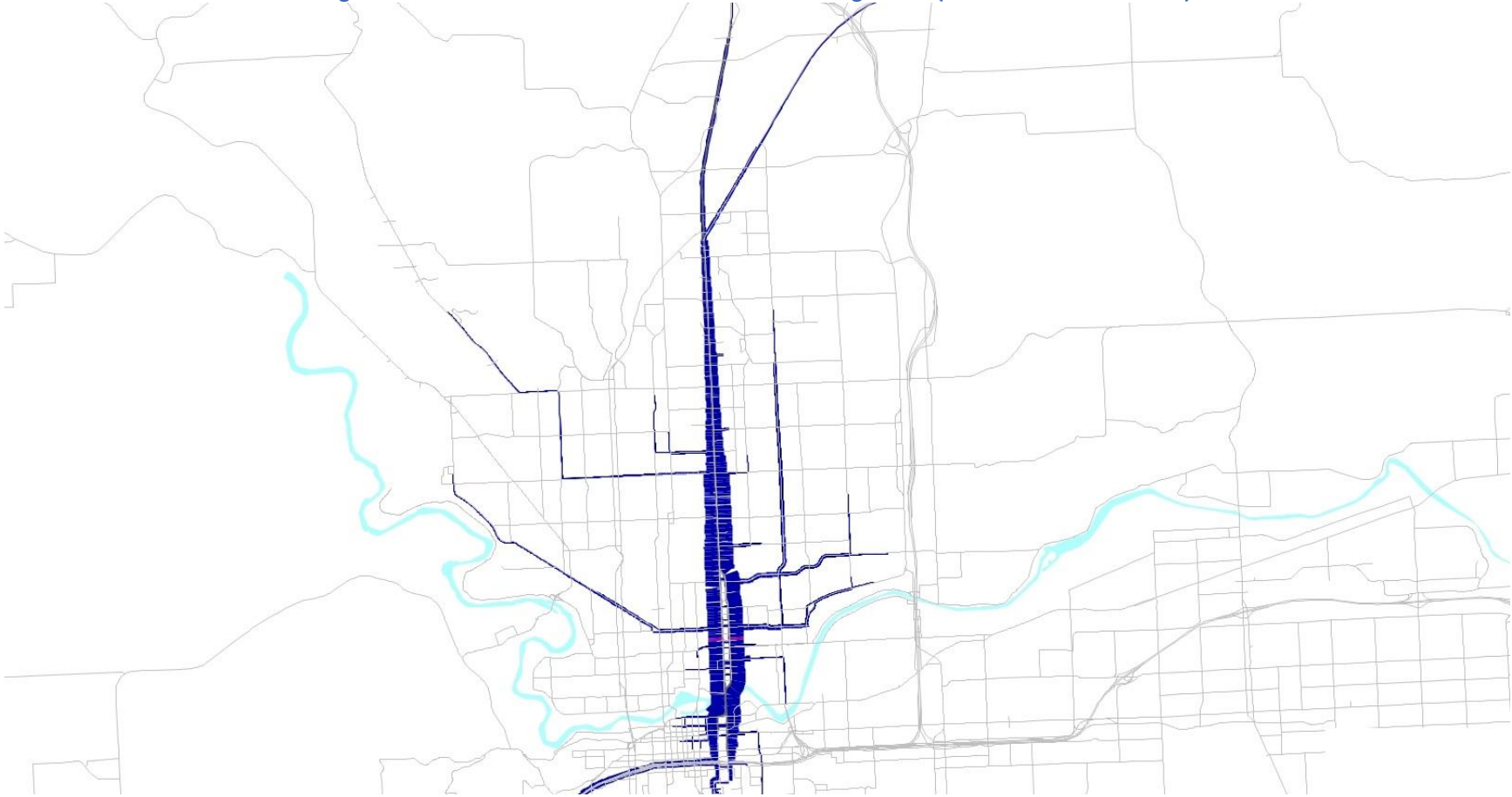


Figure A8: No Build PM Peak Period Flow Bundle for Segment 4 (North of Empire Avenue/Garland Avenue)

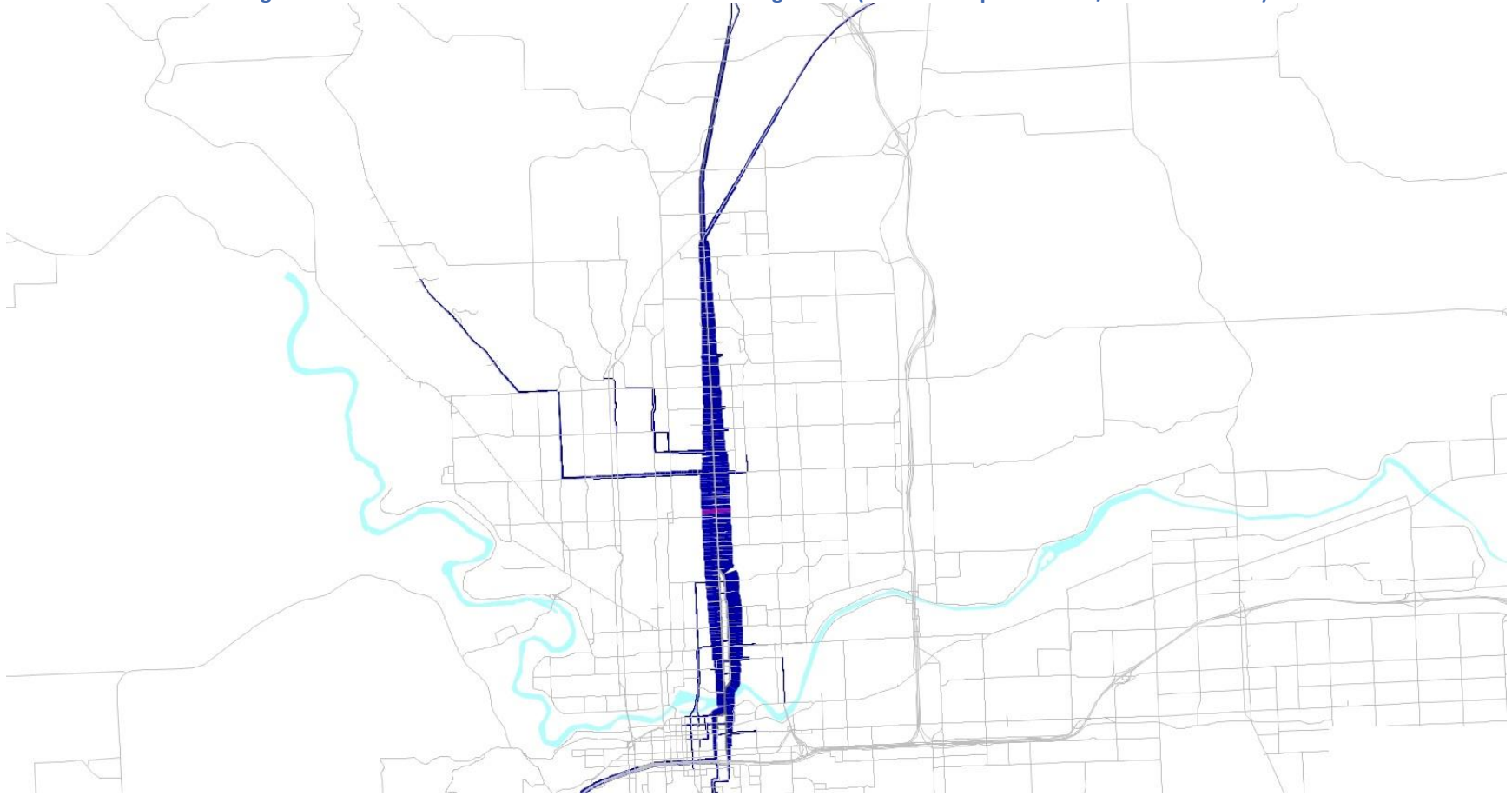


Figure A9: No Build AM Peak Period Flow Bundle for Segment 5 (South of Lincoln Road)

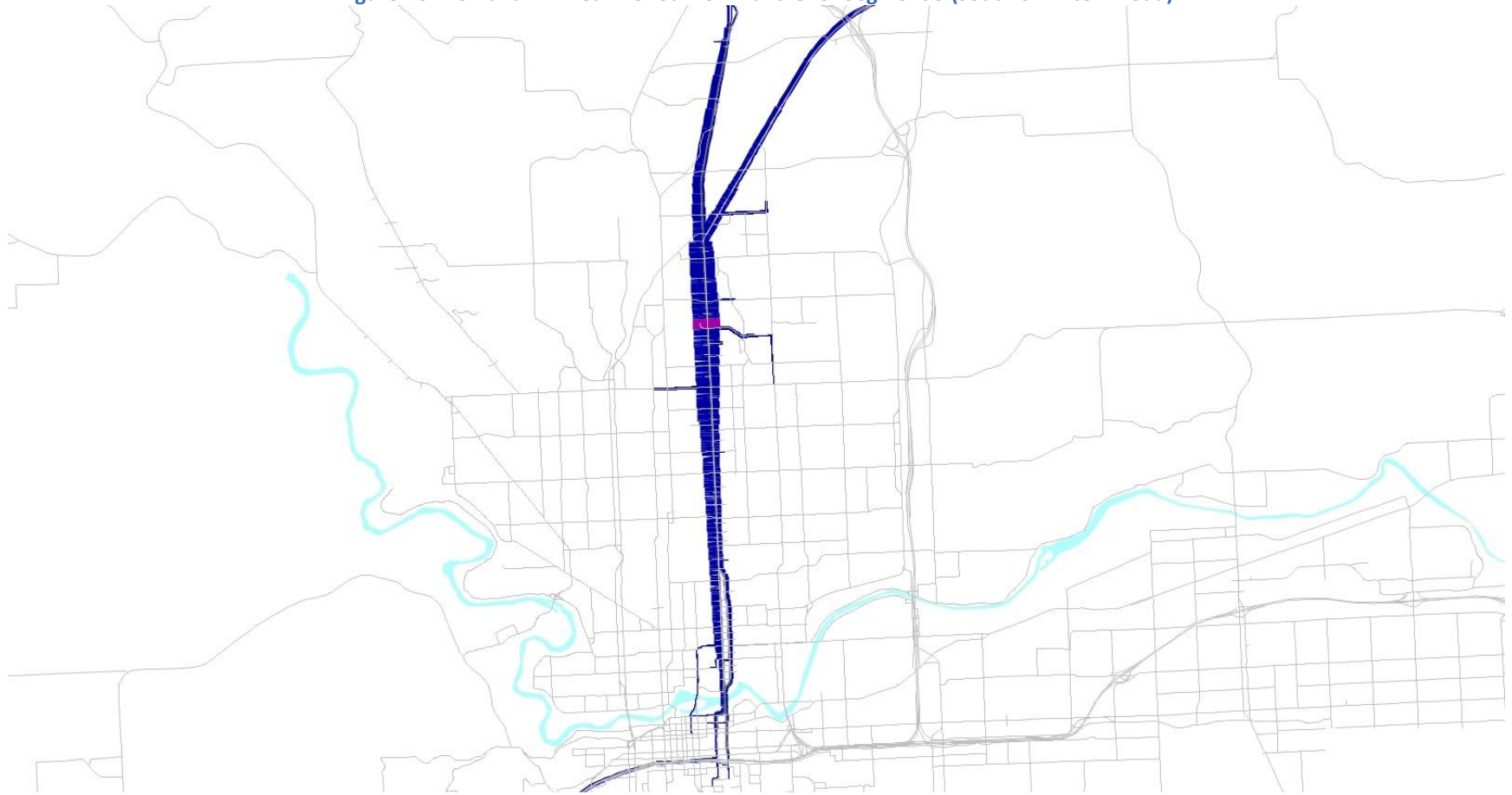


Figure A10: No Build PM Peak Period Flow Bundle for Segment 5 (South of Lincoln Road)

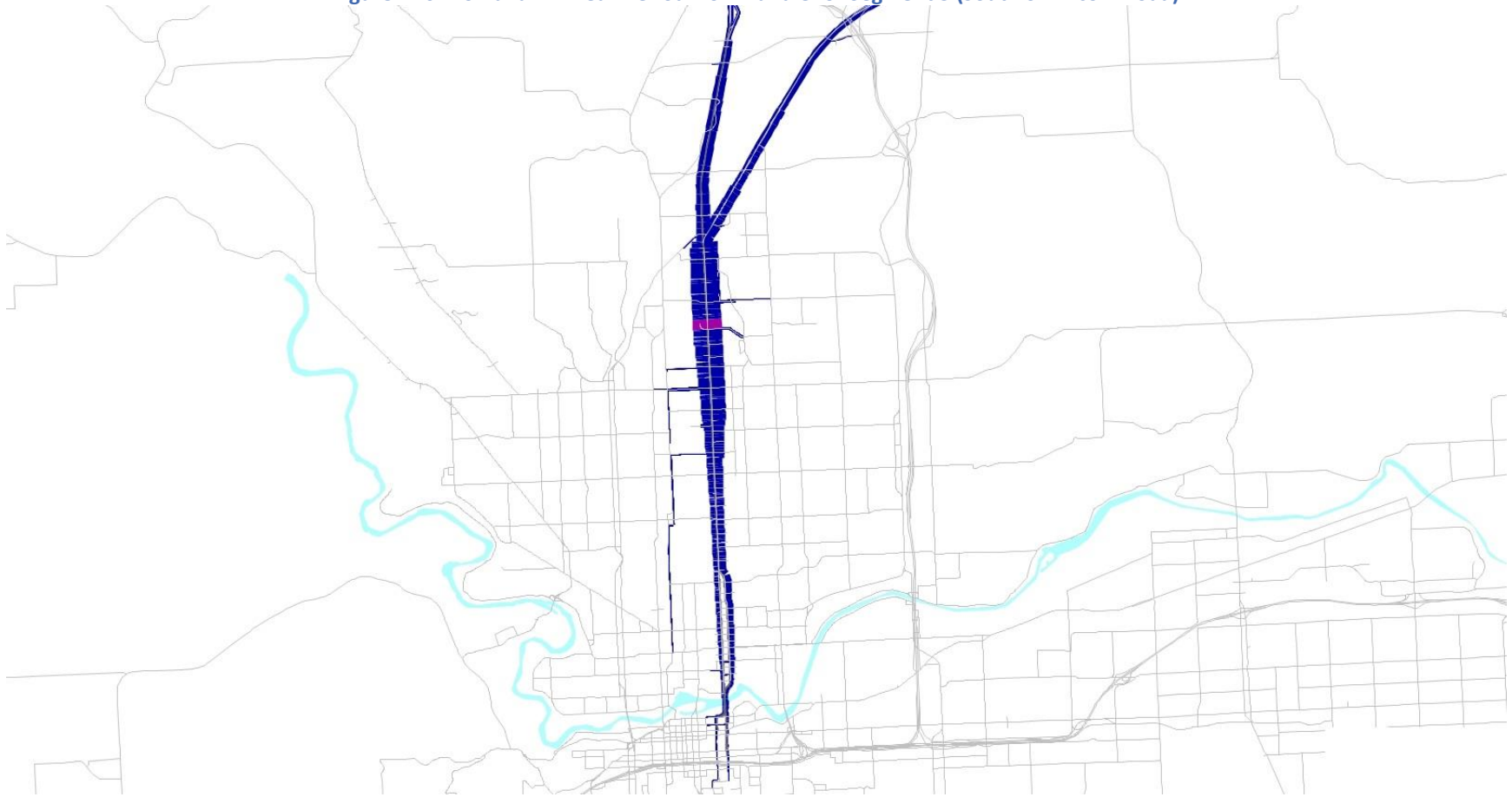


Figure A11: No Build AM Peak Period Flow Bundle for Segment 6 (North of Hawthorne Road)

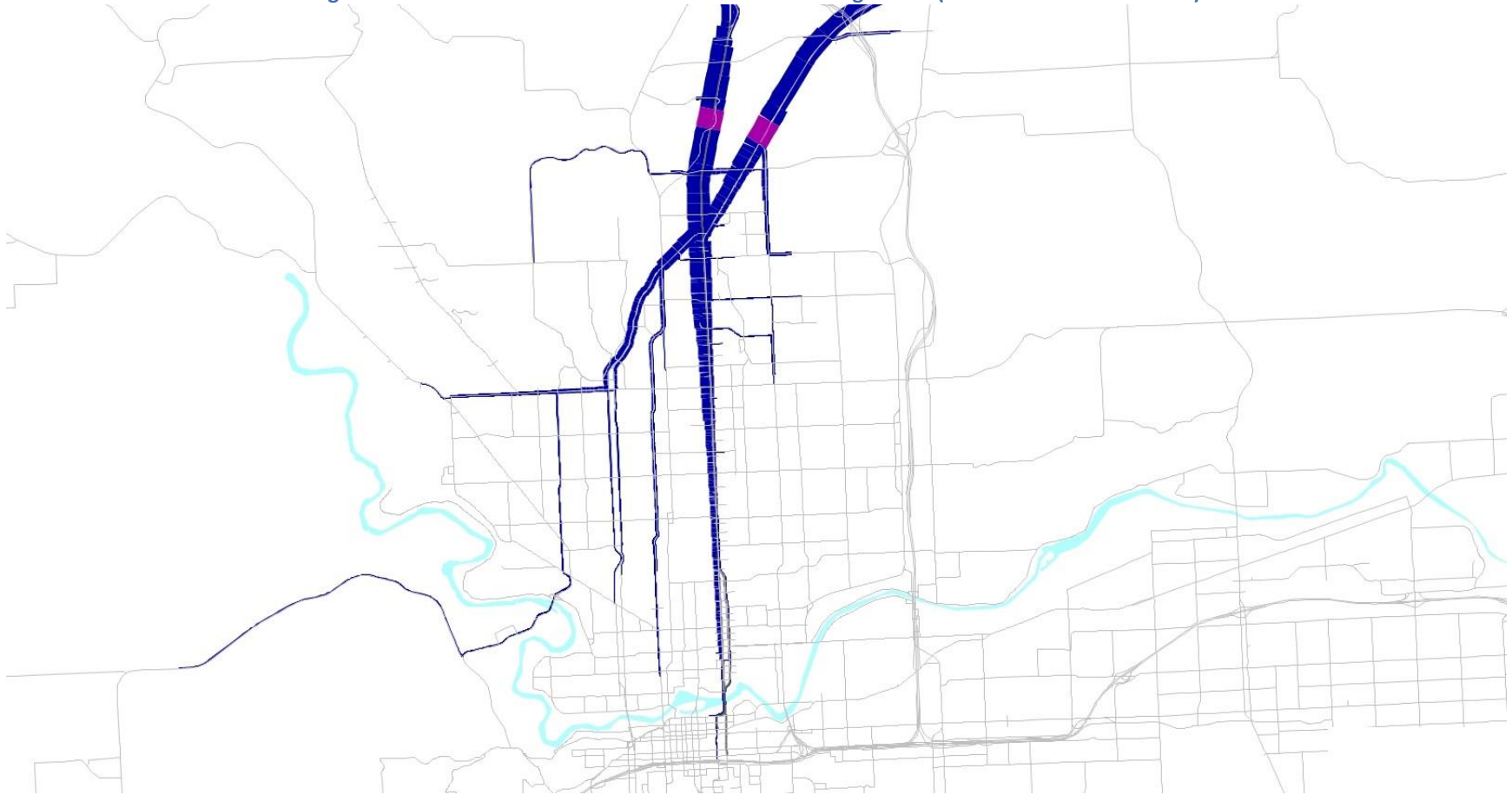


Figure A12: No Build PM Peak Period Flow Bundle for Segment 6 (North of Hawthorne Road)

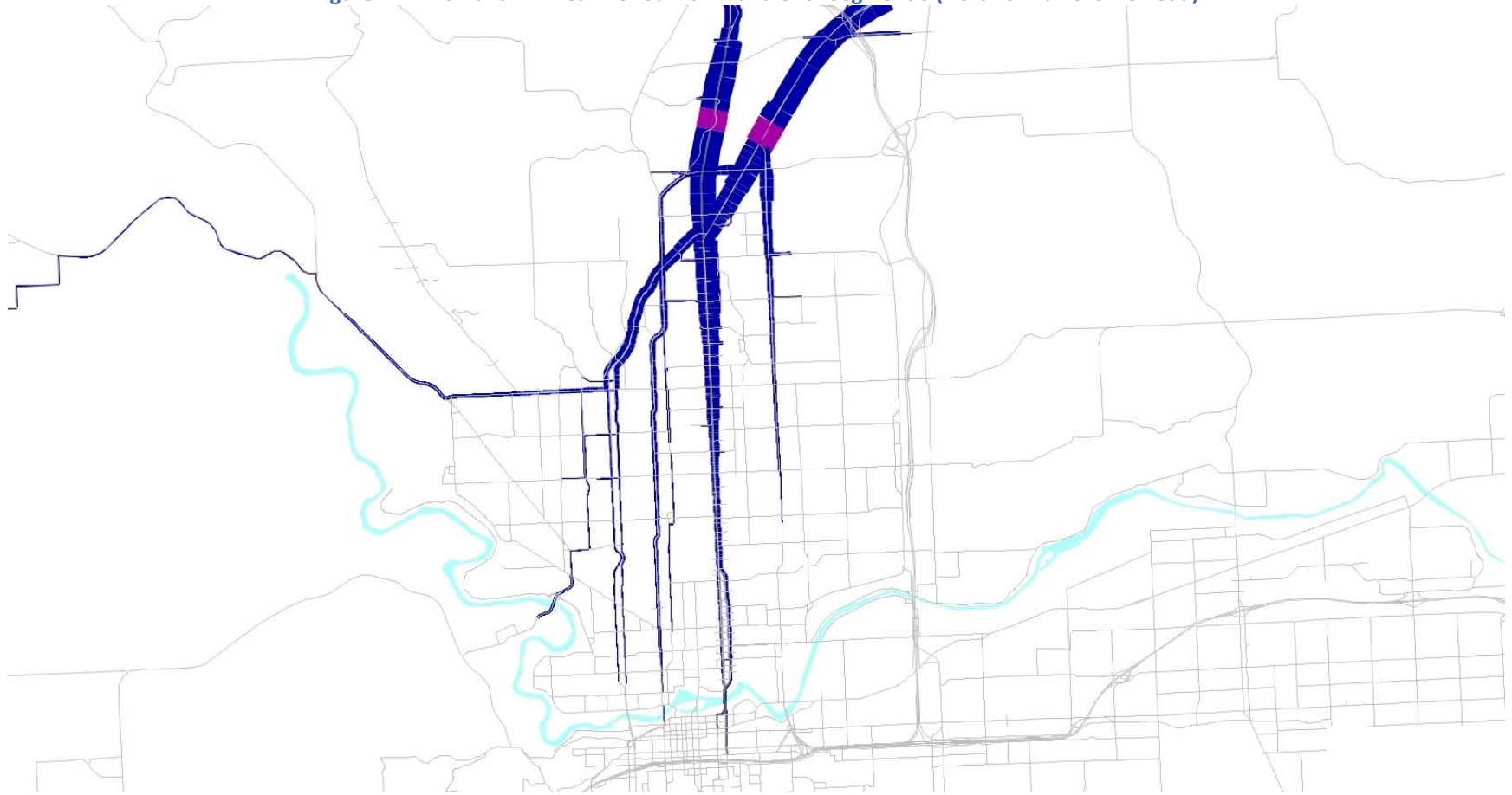


Figure A13: No Build AM Peak Period Flow Bundle for Full Corridor Travel (Spokane River to Hastings Road)



Figure A14: No Build PM Peak Period Flow Bundle for Full Corridor Travel (Spokane River to Hastings Road)



Figure A15: No Build AM Peak Period Flow Bundle for North-South Corridor Travel (South of Francis Avenue)

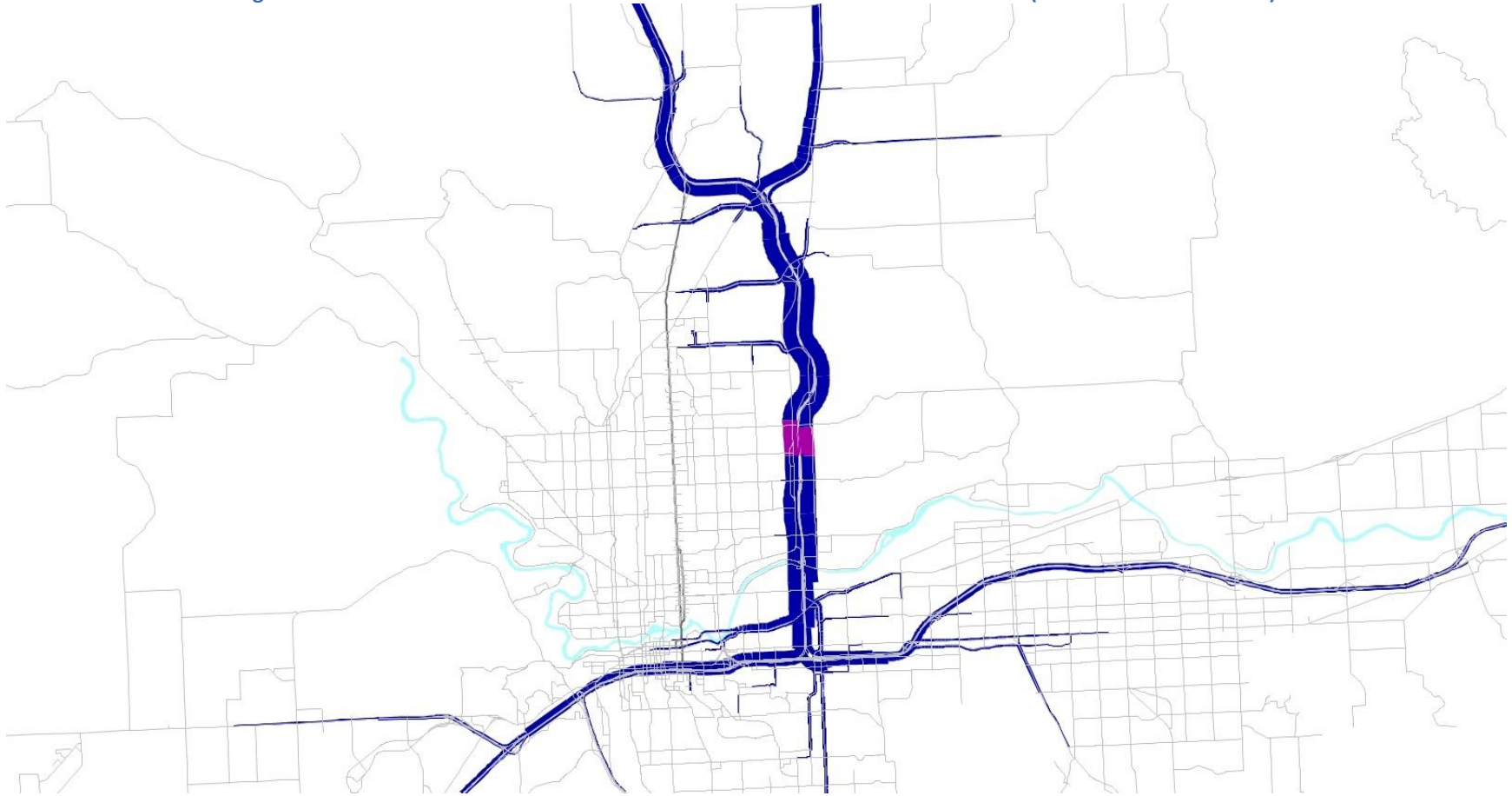


Figure A16: No Build PM Peak Period Flow Bundle for North-South Corridor Travel (South of Francis Avenue)

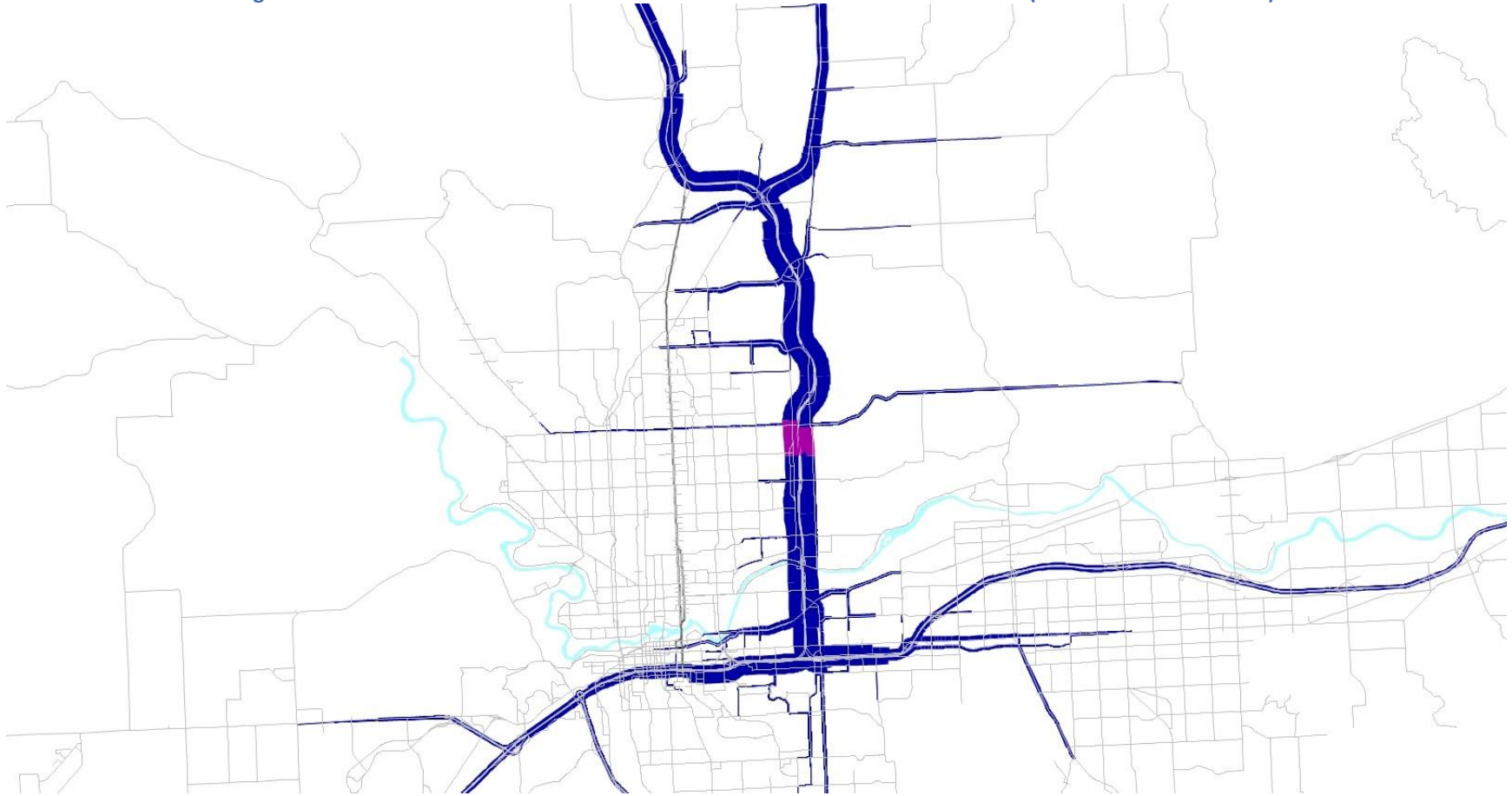


Figure A17: 2040 PM Peak Period Congestion – No Build Alternative

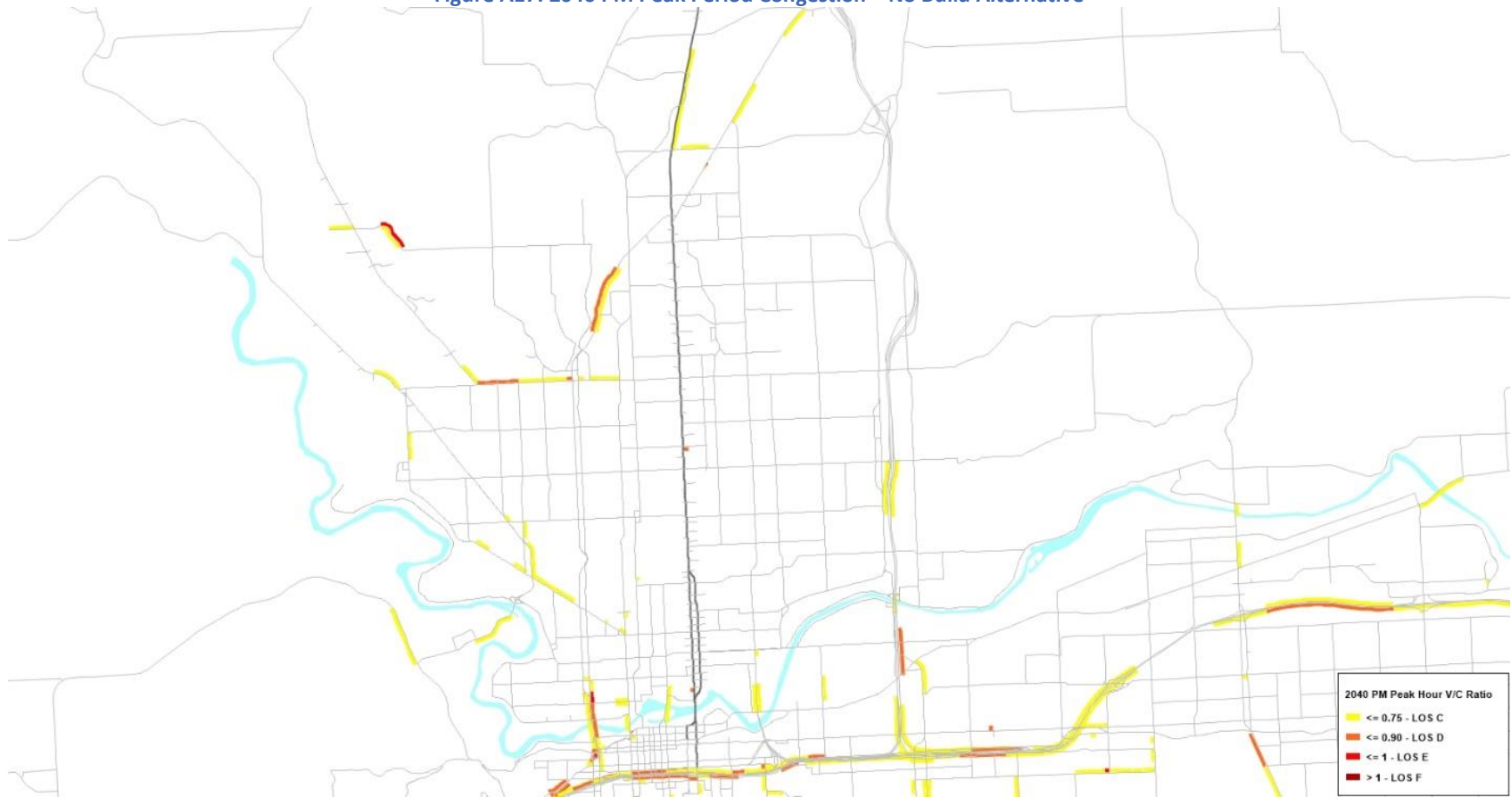


Figure A18: 2040 PM Peak Period Congestion – Center-running Alternative

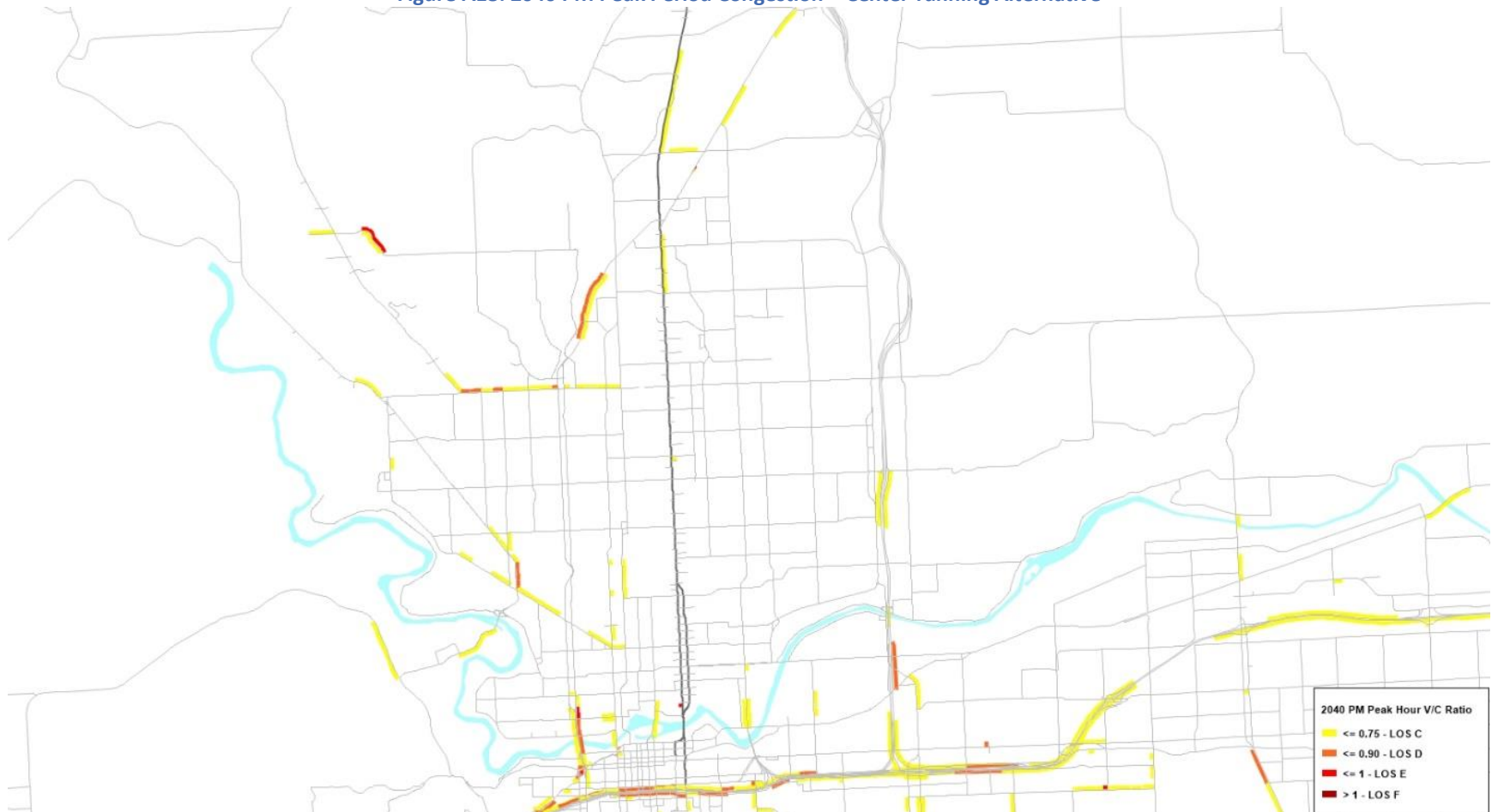


Figure A19: 2040 PM Peak Period Congestion – Side Running A Alternative

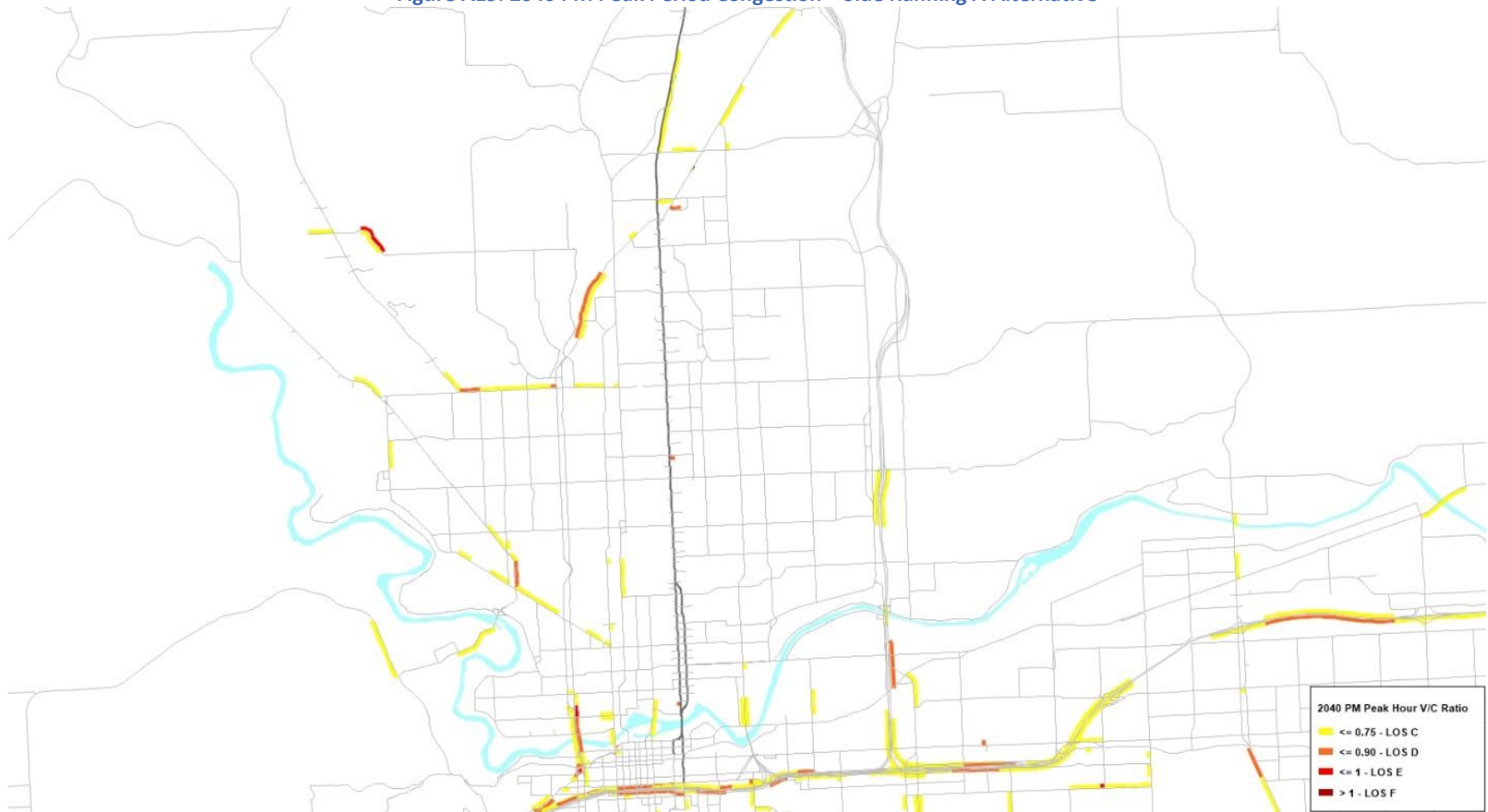


Figure A20: 2040 PM Peak Period Congestion – Side Running B Alternative

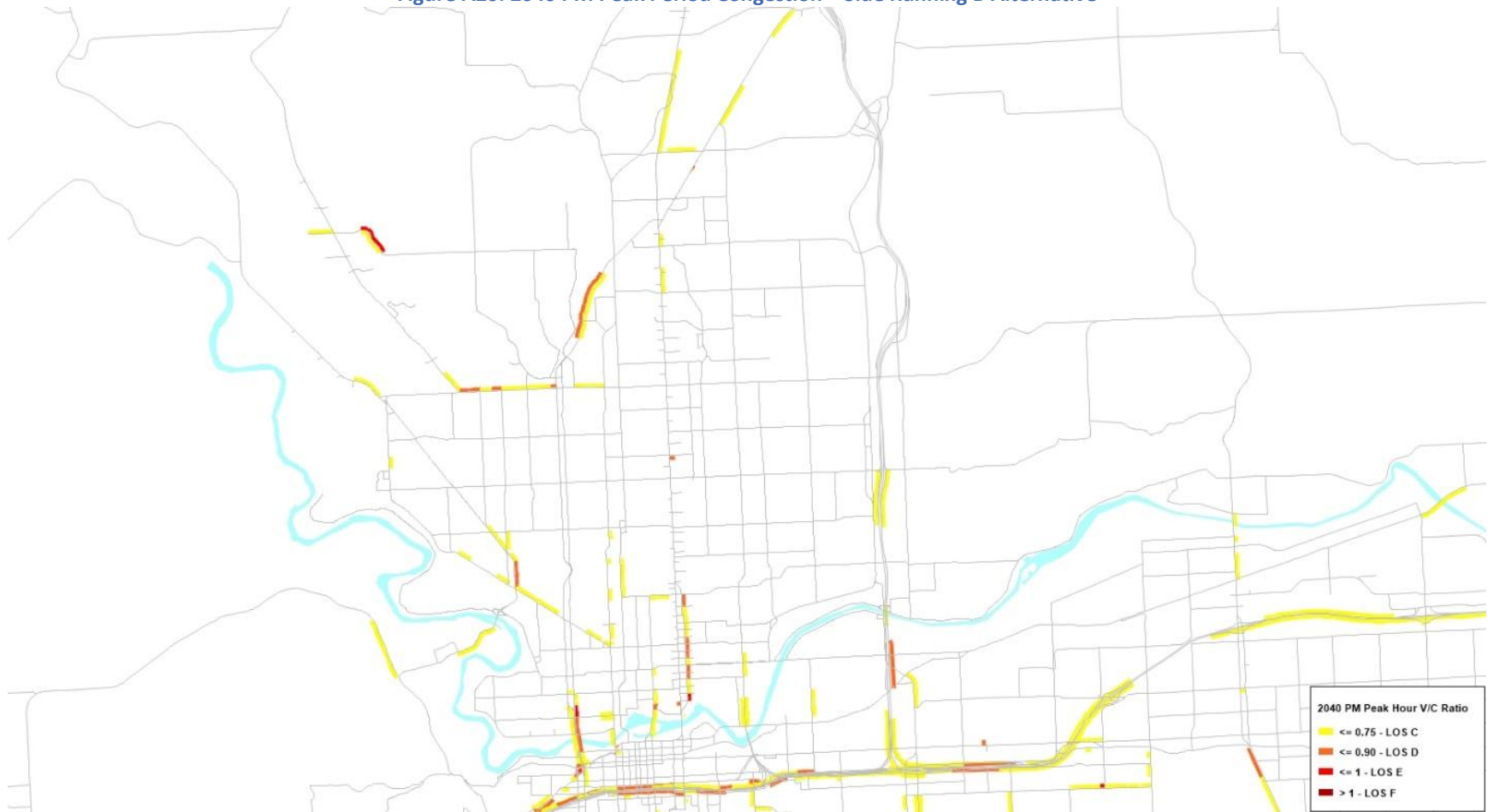


Figure A21: 2040 PM Peak Period Congestion – Side Running C Alternative

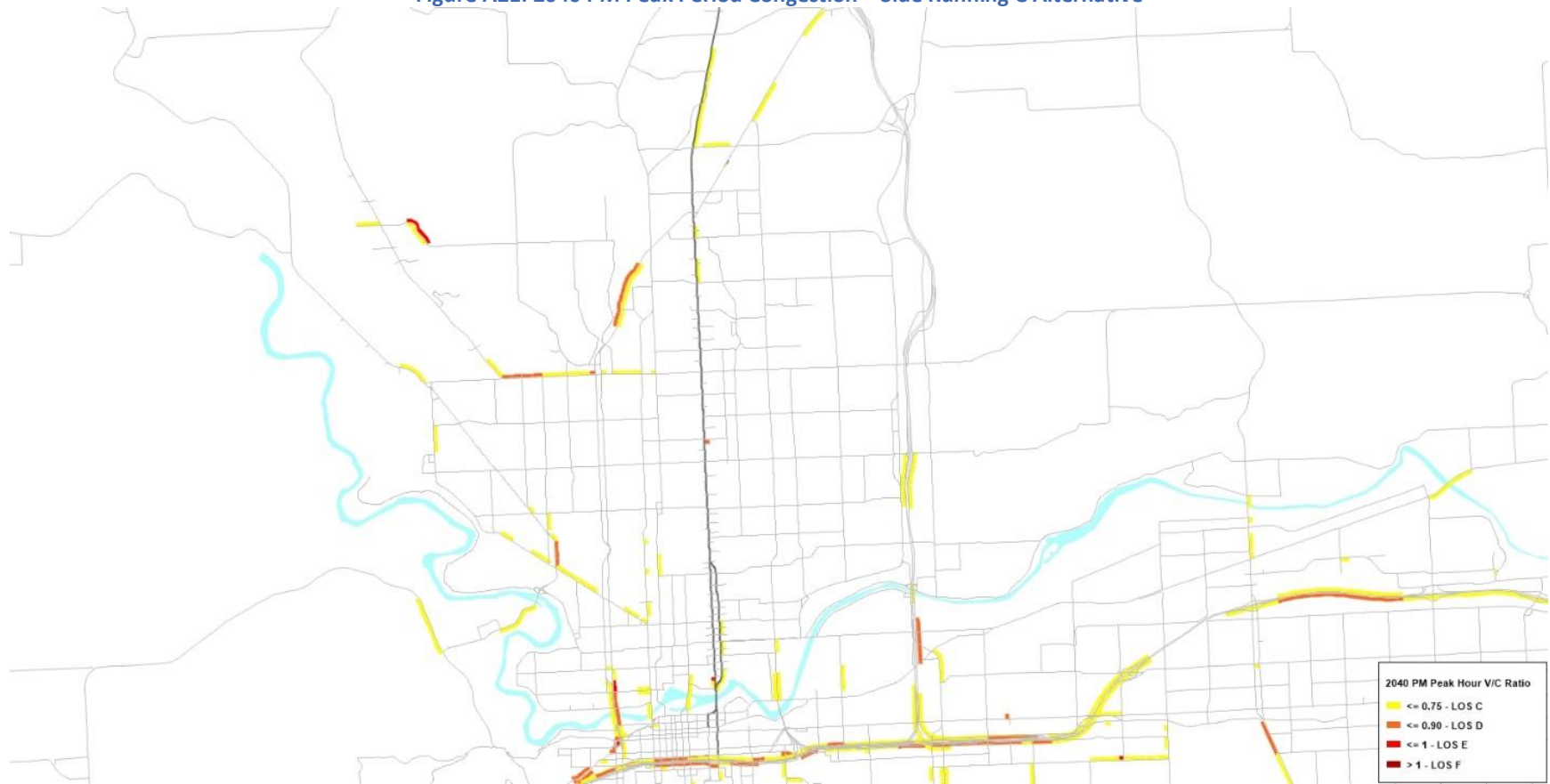


Table A1 – Detailed Average Daily Screenline Comparison

Description	Measure	2015	2040				
		Existing	No Build	Center-running	Side-running A	Side-running B	Side-running C
TOTAL Screenline (With NSC)							
Daily ADT	South of Hawthorne Road	89,473	126,782	126,300	126,111	126,322	125,842
	Between Lincoln Road and Francis Avenue	114,602	156,106	154,475	154,296	154,463	153,813
	Between Wellesley Avenue and Garland Avenue	136,820	194,558	193,140	192,442	192,040	192,039
	Between Indiana Avenue and Maxwell Avenue	195,749	256,612	255,428	254,753	253,294	253,426
	Overall	536,644	734,058	729,343	727,602	726,119	725,120
AM Peak Period ADT	South of Hawthorne Road	17,259	24,357	24,356	24,206	24,327	24,200
	Between Lincoln Road and Francis Avenue	21,499	29,251	29,013	28,848	28,950	28,873
	Between Wellesley Avenue and Garland Avenue	27,286	38,374	38,173	37,892	37,947	38,064
	Between Indiana Avenue and Maxwell Avenue	38,516	50,161	50,009	49,653	49,600	49,760
	Overall	104,560	142,143	141,551	140,599	140,824	140,897
PM Peak Period ADT	South of Hawthorne Road	23,405	32,836	32,574	32,621	32,570	32,693
	Between Lincoln Road and Francis Avenue	30,032	40,925	40,588	40,576	40,454	40,641
	Between Wellesley Avenue and Garland Avenue	35,205	50,681	50,135	50,111	49,842	50,106
	Between Indiana Avenue and Maxwell Avenue	50,130	65,748	65,338	65,423	64,623	65,116
	Overall	138,772	190,190	188,635	188,731	187,489	188,556
Daily ADT Difference %	South of Hawthorne Road		42%	0%	-1%	0%	-1%
	Between Lincoln Road and Francis Avenue		36%	-1%	-1%	-1%	-1%
	Between Wellesley Avenue and Garland Avenue		42%	-1%	-1%	-1%	-1%
	Between Indiana Avenue and Maxwell Avenue		31%	0%	-1%	-1%	-1%
	Overall		37%	-1%	-1%	-1%	-1%
AM Peak Period ADT Difference %	South of Hawthorne Road		41%	0%	-1%	0%	-1%
	Between Lincoln Road and Francis Avenue		36%	-1%	-1%	-1%	-1%
	Between Wellesley Avenue and Garland Avenue		41%	-1%	-1%	-1%	-1%
	Between Indiana Avenue and Maxwell Avenue		30%	0%	-1%	-1%	-1%
	Overall		36%	0%	-1%	-1%	-1%
PM Peak Period ADT Difference %	South of Hawthorne Road		40%	-1%	-1%	-1%	0%
	Between Lincoln Road and Francis Avenue		36%	-1%	-1%	-1%	-1%
	Between Wellesley Avenue and Garland Avenue		44%	-1%	-1%	-2%	-1%
	Between Indiana Avenue and Maxwell Avenue		31%	-1%	0%	-2%	-1%
	Overall		37%	-1%	-1%	-1%	-1%
TOTAL Screenline (Without NSC)							
Daily ADT	South of Hawthorne Road	78,895	74,665	73,587	73,567	73,644	73,252
	Between Lincoln Road and Francis Avenue	104,024	103,989	101,762	101,752	101,785	101,223
	Between Wellesley Avenue and Garland Avenue	136,820	119,913	117,910	117,483	116,687	116,802
	Between Indiana Avenue and Maxwell Avenue	195,749	181,967	180,198	179,794	177,941	178,189

Description	Measure	2015	2040				
		Existing	No Build	Center-running	Side-running A	Side-running B	Side-running C
	Overall	515,488	480,534	473,457	472,596	470,057	469,466
AM Peak Period ADT	South of Hawthorne Road	15,060	13,316	13,233	13,195	13,248	13,092
	Between Lincoln Road and Francis Avenue	19,300	18,210	17,890	17,837	17,871	17,765
	Between Wellesley Avenue and Garland Avenue	27,286	23,369	23,042	22,936	22,865	22,928
	Between Indiana Avenue and Maxwell Avenue	38,516	35,156	34,878	34,697	34,518	34,624
	Overall	100,162	90,051	89,043	88,665	88,502	88,409
PM Peak Period	South of Hawthorne Road	20,666	19,611	19,125	19,169	19,130	19,254
	Between Lincoln Road and Francis Avenue	27,293	27,700	27,139	27,124	27,014	27,202
	Between Wellesley Avenue and Garland Avenue	35,205	31,686	31,031	30,978	30,620	30,843
	Between Indiana Avenue and Maxwell Avenue	50,130	46,753	46,234	46,290	45,401	45,853
	Overall	133,294	125,750	123,529	123,561	122,165	123,152
Daily ADT Difference %	South of Hawthorne Road		-5%	-1%	-1%	-1%	-2%
	Between Lincoln Road and Francis Avenue		0%	-2%	-2%	-2%	-3%
	Between Wellesley Avenue and Garland Avenue		-12%	-2%	-2%	-3%	-3%
	Between Indiana Avenue and Maxwell Avenue		-7%	-1%	-1%	-2%	-2%
	Overall		-7%	-1%	-2%	-2%	-2%
AM Peak Period ADT Difference %	South of Hawthorne Road		-12%	-1%	-1%	-1%	-2%
	Between Lincoln Road and Francis Avenue		-6%	-2%	-2%	-2%	-2%
	Between Wellesley Avenue and Garland Avenue		-14%	-1%	-2%	-2%	-2%
	Between Indiana Avenue and Maxwell Avenue		-9%	-1%	-1%	-2%	-2%
	Overall		-10%	-1%	-2%	-2%	-2%
PM Peak Period ADT Difference %	South of Hawthorne Road		-5%	-2%	-2%	-2%	-2%
	Between Lincoln Road and Francis Avenue		1%	-2%	-2%	-2%	-2%
	Between Wellesley Avenue and Garland Avenue		-10%	-2%	-2%	-3%	-3%
	Between Indiana Avenue and Maxwell Avenue		-7%	-1%	-1%	-3%	-2%
	Overall		-6%	-2%	-2%	-3%	-2%
TOTAL Screenline (Division Street/Ruby Street Only)							
Daily ADT	South of Hawthorne Road	22,861	21,718	21,002	21,094	21,152	21,126
	Between Lincoln Road and Francis Avenue	41,652	38,473	29,857	32,438	32,263	32,001
	Between Wellesley Avenue and Garland Avenue	38,202	34,602	27,572	28,123	26,813	27,211
	Between Indiana Avenue and Maxwell Avenue	47,004	42,809	37,447	37,427	29,826	32,476
	Overall	149,719	137,602	115,878	119,082	110,054	112,814
AM Peak Period ADT	South of Hawthorne Road	4,415	3,806	3,708	3,760	3,759	3,746
	Between Lincoln Road and Francis Avenue	8,050	7,175	5,514	5,989	5,941	5,973
	Between Wellesley Avenue and Garland Avenue	7,968	7,077	5,740	5,832	5,587	5,624
	Between Indiana Avenue and Maxwell Avenue	9,809	8,667	7,737	7,734	6,380	6,493
	Overall	30,242	26,725	22,699	23,315	21,667	21,836

Description	Measure	2015	2040				
		Existing	No Build	Center-running	Side-running A	Side-running B	Side-running C
PM Peak Period	South of Hawthorne Road	5,742	5,693	5,337	5,391	5,365	5,404
	Between Lincoln Road and Francis Avenue	9,218	8,577	6,447	7,072	7,030	7,046
	Between Wellesley Avenue and Garland Avenue	8,450	7,715	5,810	6,011	5,652	5,764
	Between Indiana Avenue and Maxwell Avenue	11,943	10,492	9,268	9,319	6,435	7,510
	Overall	35,353	32,477	26,862	27,793	24,482	25,724
Daily ADT Difference %	South of Hawthorne Road		-5%	-3%	-3%	-3%	-3%
	Between Lincoln Road and Francis Avenue		-8%	-22%	-16%	-16%	-17%
	Between Wellesley Avenue and Garland Avenue		-9%	-20%	-19%	-23%	-21%
	Between Indiana Avenue and Maxwell Avenue		-9%	-13%	-13%	-30%	-24%
	Overall		-8%	-16%	-13%	-20%	-18%
AM Peak Period ADT Difference %	South of Hawthorne Road		-14%	-3%	-1%	-1%	-2%
	Between Lincoln Road and Francis Avenue		-11%	-23%	-17%	-17%	-17%
	Between Wellesley Avenue and Garland Avenue		-11%	-19%	-18%	-21%	-21%
	Between Indiana Avenue and Maxwell Avenue		-12%	-11%	-11%	-26%	-25%
	Overall		-12%	-15%	-13%	-19%	-18%
PM Peak Period ADT Difference %	South of Hawthorne Road		-1%	-6%	-5%	-6%	-5%
	Between Lincoln Road and Francis Avenue		-7%	-25%	-18%	-18%	-18%
	Between Wellesley Avenue and Garland Avenue		-9%	-25%	-22%	-27%	-25%
	Between Indiana Avenue and Maxwell Avenue		-12%	-12%	-11%	-39%	-28%
	Overall		-8%	-17%	-14%	-25%	-21%