APPENDIX 5—TRAFFIC ANALYSIS

Appendix 4

Traffic Analysis

Chanhassen 2005 AUAR Update

CHANHASSEN, MINNESOTA

UPDATED MARCH 2017

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Contents

TABLES

EXHIBITS

1.0 INTRODUCTION

This report documents a traffic analysis performed as part of the Chanhassen Alternative Urban Area Review (AUAR), Section 21, for a proposed development surrounded by Lyman Boulevard, Powers Boulevard, Pioneer Trail, and Audubon Road in the City of Chanhassen, Minnesota.

1.1 REPORT PURPOSE AND OBJECTIVES

The purpose of this study is to address traffic and transportation impacts of the proposed development on surrounding streets and intersections. This traffic impact study was prepared based on criteria set forth by the AUAR guidelines. The following specific information, per AUAR recommended content, should be provided:

- *A description and map of the existing and proposed roadway system, including state, regional, and local roads to be affected by the development of the AUAR area. This information should include existing and proposed roadway capacities and existing and projected background (i.e. without the AUAR development) traffic volumes;*
- *Trip generation data – trip generation rates and trip totals – for each major development scenario broken down by land use zones and/or other relevant subdivisions of the area. The projected distributions onto the roadway system must be included;*
- *Analysis of impacts of the traffic generated by the AUAR area on the roadway system, including: comparison of peak period total flows to capacities and analysis of Level of Service and delay times at critical points (if any);*
- *A discussion of structural and non-structural improvements and traffic management measures that are proposed to mitigate problems.*

Note: in the above analyses the geographical scope must extend outward as far as the traffic to be generated would have a significant effect on the roadway system and traffic measurements and projections should include peak days and peak hours, or other appropriate measures related to identifying congestion problems, as well as ADTs.

2.0 PROPOSED DEVELOPMENT

2.1 SITE LOCATION

The AUAR development is in the City of Chanhassen, Minnesota. The site is bordered by Lyman Boulevard to the north, Powers Boulevard to the east, Pioneer Trail to the south, and Audubon Road to the west. The project location is shown in **Exhibit 1**.

2.2 EXISTING AND FUTURE LAND USE

The overall development consists of a mix of residential, office, retail, and general light industrial. The total site area is on approximately 625 acres. **Table 1** provides a summary of the land uses that were assumed in the 2005 AUAR analysis.

TABLE 1: 2005 AUAR LAND USES

TAZ	LAND USE	SIZE
1 (Degler Property)	School	1,700 Students
2 (Town and Country)	Residential – Attached	313 DU
	Office/Light Industrial	56,584 SF
3 (Town and Country)	Residential – Attached	227 DU
	Office/Light Industrial	242,673 SF
4	Office/Light Industrial	153,026 SF
5	Residential – Detached	11 DU
	Office	271,531 SF
6	Residential – Detached	401 DU
	Residential – Attached	140 DU
7	Residential – Detached	207 DU
8	Residential – Detached	335 DU

Since the original AUAR document in 2005, some of the project area has been developed. The school that was planned for TAZ 1 has since been constructed on the north side of Lyman Boulevard.

Table 2 provides a summary of the existing land uses that have been constructed, as well as the remaining development that is unbuilt. The table provides specific information for the NE quadrant, which is the location of a proposed Planned Unit Development called Avienda. Two separate concept plans have been put together for the Avienda development; Concept A assumes the existing wetlands will be mitigated and developed, whereas Concept B assumes the wetlands would remain. In conjunction with the Avienda development, two concepts have been developed for the SE quadrant, both of which contain a mix of residential and office land uses. Concept A assumes a larger amount of residential development while Concept B assumes are larger amount of office development. **Exhibit 2** provides a map with the areas that have already been developed, as well as the locations of the remaining undeveloped areas.

TABLE 2: 2017 AUAR UPDATE LAND USES

DEVELOPED	LAND USE	SIZE	
SW Quadrant	Residential-Detached	+/- 240 Units	
	Residential-Attached	+/- 415 Units	
UNDEVELOPED	LAND USE	CONCEPT A	CONCEPT B
NW Quadrant	Light Industrial	440,100 SF	440,100 SF
NE Quadrant	Retail	419,500 SF	231,000 SF
	Office	150,000 SF	150,000 SF
	Residential-Attached (Apartments)	407 Units	280 Units
	Residential-Attached (Townhomes)	38 Units	80 Units
	Hotel	100 Rooms	150 Rooms
	Day Care Center	16,000 SF	6,000 SF
SE Quadrant	Office	240,600 SF	428,600 SF
	Residential-Attached (Townhomes)	157 Units	34 Units

As the future parcels develop, Bluff Creek Boulevard will be extended from its current terminus through the Avienda development and connect at the existing intersection of Powers Boulevard & TH 212 (North). The NW Quadrant will provide an internal collector that will connect the intersection of Lyman Boulevard & Audubon Road North and Audubon Road & Lakeview Drive.

Because of natural waterways and existing roadways, the SE quadrant is broken up into three areas. The eastern property (east of Highway 212) will be served by two cul-de-sac roadways, one connecting to Pioneer Trail and one connecting to Powers Boulevard. The western property (west of Highway 212) will be served by a cul-de-sac roadway that connects to Bluff Creek Drive, north of Pioneer Trail.

The existing and proposed connections that serve the AUAR development are shown in Exhibit 1.

2.3 ANALYSIS SCENARIOS

As part of the 2005 AUAR, the base year was assumed to be 2003 and the background year was assumed to be 2010. As part of the 2017 AUAR Update, the base year was assumed to be 2015 and the background year was assumed to be 2022. For the purposes of the analysis, it was assumed that all undeveloped parcels will be developed by 2022. **Table 3** describes the scenarios analyzed for the 2017 AUAR Update.

TABLE 3: TRAFFIC ANALYSIS SCENARIOS

SCENARIO	ANALYSIS PERIOD
WITHOUT UNDEVELOPED AUAR PARCELS	
E-1	Existing Traffic; Existing Network
F-1	2022 Projected Background Traffic
WITH UNDEVELOPED AUAR PARCELS	
F-2	2022 Projected Traffic, Concept A Land Uses; includes all internal roads
F-3	2022 Projected Traffic, Concept B Land Uses; includes all internal roads

3.0 STUDY AREA

3.1 STUDY AREA

The study area includes the existing and future intersections that have a significant effect on the roadway system due to the AUAR development. The study area for the 2017 AUAR update is generally consistent with the 2005 AUAR. These intersections include:

- Audubon Road & Lyman Boulevard
- Audubon Road & Lakeview Drive/NW Quadrant Access
- Audubon Road & Bluff Creek Boulevard/Butternut Drive
- Audubon Road & Pioneer Trail
- Pioneer Trail & Bluff Creek Drive
- Pioneer Trail & SE Quadrant Access
- Pioneer Trail & Powers Boulevard
- Powers Boulevard & SE Quadrant Access
- Powers Boulevard & TH 212 Ramp (South)
- Powers Boulevard & TH 212 Ramp (North)/NE Quadrant Access
- Lyman Boulevard & Powers Boulevard
- Lyman Boulevard & Sunset Trail/NE Quadrant Access
- Lyman Boulevard & Audubon Road (North)/NW Quadrant Access

The projected build out of the AUAR development is anticipated to be 2022. The Avienda development is anticipated to be under construction in 2018, with the NW and SE quadrants following in development.

3.2 ADJACENT LAND USE

The land uses adjacent to the AUAR development are generally residential. There is a golf course located on the south side of Pioneer Trail, to the southeast of the AUAR development. The existing high school is located on the north side of Lyman Boulevard, to the northwest of the AUAR development. There is open space on the east side of the AUAR development, across from Powers Boulevard.

3.3 SITE ACCESSIBILITY

The site is accessed locally via Audubon Road, Lyman Boulevard, Pioneer Trail, and Powers Boulevard. Regional access is provided by TH 212 and by other Principal Arterials such as Trunk Highway 5, Trunk Highway 41, and Trunk Highway 101.

3.4 SITE CIRCULATION

The locations of the intersections of the internal roadway system with the perimeter streets were based upon coordination with MnDOT and Carver County. Since the previous AUAR document, Bluff Creek Boulevard and Bluff Creek Drive have been constructed to serve as internal roadways. The following provides a summary of the existing and future internal roadway system:

Existing Roadways

- **Bluff Creek Boulevard** connects at the intersection of Audubon Road & Butternut Drive, and intersects Bluff Creek Drive at the existing roundabout. From there, Bluff Creek Drive heads to the north and east and will ultimately extend to Powers Boulevard once the Avienda development is completed.

- **Bluff Creek Drive** is a north-south roadway that connects to the realigned intersection of Pioneer Trail & Bluff Creek Drive, and continues north to the existing roundabout.

- **River Rock Road** has been constructed as a north-south roadway that intersects Bluff Creek Boulevard to the north and west of the existing roundabout.

Future Roadways

- **NW Quadrant:** An internal roadway will be constructed to serve the northwest quadrant development. The roadway will connect to the existing intersections of Audubon Road & Lakeview Drive and Lyman Boulevard & Audubon Road (North).

- **NE Quadrant (Avienda Development):** As previously mentioned, Bluff Creek Boulevard will be constructed as an east-west roadway through the development and connect at the existing intersection of Powers Boulevard & TH 212 (North). A north-south roadway will be constructed through the northern end of the development and connect at the existing intersection of Lyman Boulevard & Sunset Trail.

- **SE Quadrant:** The SE quadrant is broken up into three areas. The eastern property (east of Highway 212) will be served by two cul-de-sac roadways, one connecting to Pioneer Trail and one connecting to Powers Boulevard. The western property (west of Highway 212) will be served by a cul-de-sac roadway that connects to Bluff Creek Drive, north of Pioneer Trail.

4.0 EXISTING CONDITIONS

4.1 PHYSICAL CHARACTERISTICS

The existing roadway network within the study area includes Lyman Boulevard, Audubon Road, Pioneer Trail, Powers Boulevard, and Bluff Creek Drive. Several streets that compose the existing roadway network will carry trips generated by the AUAR development. Major characteristics of these roadways are summarized in **Table 4**.

Lyman Boulevard (CSAH 18) is an east-west roadway that runs along the northern boundary of the AUAR development. Since the original AUAR document was completed, Lyman Boulevard has been widened to a four-lane roadway between Audubon Road and Powers Boulevard, with full median openings at Audubon Road (North) and Sunset Trail.

Audubon Road (CSAH 15), between Lyman Boulevard and Pioneer Trail, is a County road that runs north-south in the vicinity of the development area. Audubon Road has offset intersections at Lyman Boulevard, which are approximately 1,530 feet apart. The westernmost intersection is signalized and the easternmost intersection is stop-controlled in the north and south approaches.

North of Lyman Boulevard, Audubon Road is a City collector road.

Pioneer Trail (CSAH 14) is an east-west roadway that is adjacent to the southern border of the AUAR development. Pioneer Trail is currently a three-lane roadway with approximately 48 feet of pavement.

Powers Boulevard (CSAH 17) runs north-south adjacent to the eastern border of the AUAR development. At the time of the previous AUAR document, Powers Boulevard terminated at Lyman Boulevard. Since then, the roadway has been extended to Pioneer Trail, and includes an interchange with TH 212.

Bluff Creek Boulevard has been constructed as part of the AUAR development, and was a future planned roadway in the 2005 AUAR document. Currently, Bluff Creek Boulevard is a two-lane divided roadway that extends from Audubon Road east to Bluff Creek Drive, then heads to the north and west. The roadway currently terminates just east of River Road Drive.

Bluff Creek Drive south of Pioneer Trail has been realigned to the east since the 2005 AUAR document. It is currently a two-lane undivided roadway south of Pioneer Trail. Bluff Creek Drive was constructed to the north of Pioneer Trail as part of the AUAR development.

TABLE 4: SUMMARY OF EXISTING ROADWAY CONDITIONS

STREET NAME	STREET NUMBER	FUNCITONAL CLASSIFICATION	NUMBER OF LANES	POSTED SPEED	MEDIAN	COMMENTS
Lyman Boulevard	CSAH 18	"A" Minor Expander (1) "A" Minor Expander (3)	4	50 mph	Yes	Widened to four-lane divided in 2014
Audubon Road (N)	--	Collector (2)	2		No	
Audubon Road (S)	CSAH 15	"A" Minor Expander (1) "A" Minor Expander (3)	2	50 mph	No	Currently has bypass lanes at "T" intersections. Curb and gutter at major intersections.
Pioneer Trail	CSAH 14	"A" Minor Reliever (1) "A" Minor Reliever (3)	2	45 mph	No	
Powers Boulevard	CSAH 17	"A" Minor Expander (1) "A" Minor Expander (3)	4	50 mph	Yes	There are left and right turn lanes at all street intersections. Path along both sides.
Bluff Creek Boulevard	--	Collector (2)	2	35 mph	Yes	
Bluff Creek Drive	--	Collector (2)	2	35 mph	No	
It should be noted that values in this table have been updated to reflect current roadway conditions as of 2016, and may vary from what was provided in the 2005 AUAR document.						

(1) Metropolitan Councils' Functional Classification Plan
(2) City of Chanhassen 2030 Comprehensive Plan
(3) Carver County 2030 Comprehensive Plan

The following intersections exist in the AUAR development and are shown with existing traffic control. Some of these intersections differ from existing operations reported in the 2005 AUAR.

- Audubon Road & Lyman Boulevard (Signalized, FYA phasing for left-turns)
- Audubon Road & Lakeview Drive (EB stop-controlled)
- Audubon Road & Bluff Creek Boulevard/Butternut Drive (Signalized, protected phasing N-S)
- Audubon Road & Pioneer Trail (Signalized, FYA phasing for left-turns)
- Pioneer Trail & Bluff Creek Drive (Signalized, FYA phasing for left-turns)
- Pioneer Trail & Powers Boulevard (SB stop-controlled)
- Powers Boulevard & TH 212 Ramp South (Signalized, protected phasing)
- Powers Boulevard & TH 212 Ramp North (Signalized, protected phasing)
- Powers Boulevard & Lyman Boulevard (Signalized, FYA phasing for left-turns)
- Lyman Boulevard & Sunset Trail (SB stop-controlled)
- Lyman Boulevard & Audubon Road North (NB-SB stop-controlled)

4.2 TRAFFIC VOLUMES

Average daily traffic (ADT) volumes were obtained from the MnDOT's *Transportation Data and Analysis Traffic Volume Maps*. Volumes for existing roadways within the study area are summarized in **Table 5**.

TABLE 5: EXISTING ADT VOLUMES

ROADWAY	FROM	TO	ADT VOLUME	
			2012/2013	2014/2015
Lyman Boulevard	West of Audubon Road	Audubon Road	11,000	12,100
	Audubon Road	Audubon Road North	9,400	14,600
	Audubon Road North	Powers Boulevard	8,800	9,700
	Powers Boulevard	East of Powers Boulevard	3,900	4,900
Audubon Road	North of Lyman Boulevard	Lyman Boulevard	3,250	3,300
	Lyman Boulevard	Bluff Creek Boulevard	7,900	8,600
	Bluff Creek Boulevard	Pioneer Trail	7,100	8,100
	Pioneer Trail	South of Pioneer Trail	8,300	9,600
Pioneer Trail	West of Audubon Road	Audubon Road	8,800	9,200
	Audubon Road	Powers Boulevard	8,300	10,500
Powers Boulevard	North of Lyman Boulevard	Lyman Boulevard	8,300	9,800
	Lyman Boulevard	TH 212	8,600	13,600
	TH 212	Pioneer Trail	6,500	9,600
Bluff Creek Boulevard	Audubon Road	East of Audubon Road	1,900	2,200
Bluff Creek Drive	Pioneer Trail	South of Pioneer Trail	2,950	2,950

Weekday AM and PM peak period turning movement counts were performed at the existing study area intersections during the month of April 2015, except for Lyman Boulevard & Audubon Road (North), Lyman Boulevard & Sunset Trail, and Audubon Road & Lakeview Drive. These counts were collected in 15-minute intervals. **Exhibit 3** provides a summary of the existing weekday AM and PM peak hour turning movement volumes. It should be noted that at the time of the traffic counts not all of the residential area was built-out (+/- 5% developed after the counts were taken).

5.0 PROJECTED TRAFFIC

5.1 SITE TRAFFIC FORECAST

The Institute of Transportation Engineers' (ITE) *Trip Generation*, 9th Edition was used to calculate the trip generation potential for the remaining undeveloped parcels as part of the AUAR development. The manual provides peak hour trips rates/equations and inbound-outbound percentages which were then used to estimate the number of daily and peak hour trips that can be attributed to the remaining undeveloped parcels. It was assumed that the traffic generated from the developed parcels is included in the existing turning movement counts. Trip reductions were considered to account for both internal capture and pass-by traffic for the Avienda development.

As previously mentioned, two future development scenarios were analyzed as part of this update to the 2005 AUAR. **Table 6** provides a summary of trip generation for Concept A and **Table 7** provides a summary of trip generation for Concept B. Additional information on the trip generation can be found in the **Appendix**.

TABLE 6: CONCEPT A TRIP GENERATION SUMMARY

Property	Land Use	Intensity	Trip Generation Values		
			Daily	AM Total (In/Out)	PM Total (In/Out)
NE Quadrant	Day Care Center	16,000 SF	1,185	195 (105/90)	195 (90/105)
	Retail	393,000 SF	16,780	375 (235/140)	1,460 (700/760)
	Restaurant	26,500 SF	3,370	285 (155/130)	260 (155/105)
	Office	150,000 SF	1,655	235 (205/30)	225 (40/185)
	Residential-Attached (Apartments)	407 DU	2,590	205 (40/165)	240 (155/85)
	Residential-Attached (Townhomes)	38 DU	125	10 (0/10)	10 (5/5)
	Hotel	100 Rooms	520	55 (30/25)	60 (30/30)
	Total Site Generated Trips		**26,225**	**1,360 (770/590)**	**2,450 (1,175/1,275)**
	Internal Capture Reduction		*6,448*	*295 (150/145)*	*660 (330/330)*
	Total Driveway Trips		**19,777**	**1,065 (620/445)**	**1,790 (845/945)**
	Pass-By Reduction		5,512	--	460 (230/230)
	Total Net New Trips		**14,265**	**1,065 (620/445)**	**1,330 (615/715)**
NW Quadrant	General Light Industrial	440,100 SF	3,065	405 (355/50)	425 (50/375)
	Total Net New Trips		**3,065**	**405 (355/50)**	**425 (50/375)**
SE Quadrant	Office	240,600 SF	2,655	375 (330/45)	360 (60/300)
	Residential-Attached (Apartments)	157 Units	1,075	80 (15/65)	105 (70/35)
	Total Site Generated Trips		3,730	455 (345/110)	465 (130/335)
	Internal Capture Reduction		*54*	*0 (0/0)*	*10 (5/5)*
	Total Net New Trips		**3,676**	**455 (345/110)**	**455 (125/330)**

TABLE 7: CONCEPT B TRIP GENERATION SUMMARY

Property	Land Use	Intensity	Trip Generation Values		
			Daily	AM Total (In/Out)	PM Total (In/Out)
NE Quadrant	Day Care Center	6,000 SF	445	75 (40/35)	75 (35/40)
	Retail	224,000 SF	9,565	215 (135/80)	830 (400/430)
	Restaurant	7,000 SF	890	75 (40/35)	70 (40/30)
	Office	150,000 SF	1,655	235 (205/30)	225 (40/185)
	Residential-Attached (Apartments)	280 DU	1,820	140 (30/110)	170 (110/60)
	Residential-Attached (Townhomes)	80 DU	265	20 (5/15)	25 915/10)
	Hotel	150 Rooms	970	80 (45/35)	90 (45/45)
	Total Site Generated Trips		**15,610**	**840 (500/40)**	**1,485 (685/800)**
	Internal Capture Reduction		*3,206*	*160 (80/80)*	*380 (190/190)*
	Total Driveway Trips		**12,404**	**680 (420/260)**	**1,105 (495/6100**
	Pass-By Reduction		2,958	--	240 (120/120)
	Total Net New Trips		**9,446**	**680 (420/260)**	**865 (375/490)**
NW Quadrant	General Light Industrial	440,100 SF	3,065	405 (355/50)	425 (50/375)
	Total Net New Trips		**3,065**	**405 (355/50)**	**425 (50/375)**
SE Quadrant	Office (West)	287,600 SF	3,170	450 (395/55)	430 (75/355)
	Office (East)	141,000 SF	1,555	220 (195/25)	210 (35/175)
	Residential-Attached (Townhomes)	34 Units	115	10 (0/10)	10 (5/5)
	Total Site Generated Trips		**4,840**	**680 (590/90)**	**650 (115/535)**

Considering the proposed land uses for Concept A, the remaining AUAR development is anticipated to add an additional 1,925 AM peak hour trips and 2,210 PM peak hour trips to the surrounding roadway network. Considering the proposed land uses for Concept B, the remaining AUAR development is anticipated to add an additional 1,765 AM peak hour trips and 1,940 PM peak hour trips to the surrounding roadway network.

Similar to the 2005 AUAR study, daily and weekday AM/PM peak hour project trips were distributed to the surrounding roadway network based on the Metropolitan Council's estimate of total residential population and employment opportunities within an 11.8 miles radius of the site. This distribution was further refined based on consideration for existing traffic volumes on the surrounding roadway network and discussion with City of Chanhassen staff. **Exhibit 4** provides the trip distribution for the undeveloped parcels.

Project trips were then assigned to the roadway network on the basis of the trip distribution and the likely travel patterns to and from the site. **Exhibit 5** provides the trip assignment for Concept A and **Exhibit 6** provides the trip assignment for Concept B.

5.2 FUTURE TRAFFIC FORECASTING

The background traffic volumes for the buildout year of 2022 were calculated based on applying a background growth rate to the existing turning movement volumes. Consistent with the 2005 AUAR, a 1.5% annual growth rate was applied. The background turning movement volumes for the study intersections are provided in **Exhibit 7** for the weekday AM and PM peak hours.

5.3 TOTAL TRAFFIC

The results of the traffic assignment from Figure 4 and Figure 5 were added to the 2022 background traffic volumes shown in Exhibit 6 to produce total traffic volumes. **Exhibit 8** provides the total traffic volumes for Concept A and **Exhibit 9** provides the total traffic volumes for Concept B.

6.0 TRAFFIC AND IMPROVEMENT ANALYSIS

Traffic generated for the remaining development was assigned to the future roadway network. From this traffic assignment that included background traffic growth, potential future impacts were determined.

Table 3 provides the traffic analysis scenarios for the AUAR update. Scenario E-1 was analyzed to determine existing conditions and to determine baseline conditions. Scenario F-1 was analyzed to determine if there would be any expected capacity issues at the study intersections when considering only background growth. Scenario F-2 and F-3 were analyzed to determine if any future impacts to the study area intersections can be expected with the potential buildout of Concept A and Concept B, respectively.

Level of service (LOS) analysis was conducted for the AM and PM peak hours (typically an hour between 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM, respectively) at each of the study intersections for the four traffic analysis scenarios described above. LOS is a quantitative measure used by traffic engineers to describe the operations of an intersection. It ranges from A to F, with A being the best and F being the worst level of operation. LOS A conditions are characterized by minimal vehicle delay and free-flow conditions, while LOS F is characterized by long vehicle delay – usually when demand exceeds available roadway capacity. Although LOS E is defined as at-capacity, LOS D is generally the minimum acceptable level of operation at an intersection. Each study intersection was analyzed based on the *Highway Capacity Manual using Synchro/SimTraffic software.*

For unsignalzied intersections, LOS was reported for the stop-controlled movements and major street left-turn movements. Major street through and right-turn movements were not reported because they are assumed to experience zero delay and it can disproportionately skew the weighted average of all movements, which can mask important LOS deficiencies. The overall intersection LOS was reported for signalized intersections. **Table 8** provides the LOS grading criteria for unsignalized and signalized intersections.

TABLE 8: LEVEL OF SERVICE GRADING CRITERIA

Level of Service	Average Control Delay (s/veh) at:	
	Unsignalized Intersections	Signalized Intersections
A	0 – 10	0 – 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

6.1 EXISTING LEVEL OF SERVICE ANALYSIS

The LOS for unsignalized intersections are shown in **Table 9** and LOS for signalized intersections are shown in **Table 10**. The analysis was based on existing intersection control and lane assignments.

TABLE 9: EXISTING LOS SUMMARY (UNSIGNALIZED)

Intersection	Analysis Period	NB			SB			EB			WB		
		L	T	R	L	T	R	L	T	R	L	T	R
Lyman Boulevard & Audubon Road North	AM				E		A	A	--			--	--
	PM				B		A	A	--			--	--
Lyman Boulevard & Sunset Trail	AM				A		A	A	--			--	--
	PM				B		A	A	--			--	--
Powers Boulevard & Pioneer Trail	AM				E		A	B	--			--	--
	PM				E		B	A	--			--	--
Audubon Road & Lakeview Drive	AM	A	--			--	--	B		A			
	PM	A	--			--	--	A		A			

(1) "--" = Not applicable
(2) Darkened boxes = movement not available

TABLE 10: EXISTING LOS SUMMARY (SIGNALIZED)

Intersection	Analysis Period	Overall Intersection
Lyman Boulevard & Audubon Road	AM	B
	PM	B
Lyman Boulevard & Powers Boulevard	AM	B
	PM	B
Powers Boulevard & TH 212 (North)	AM	B
	PM	B
Powers Boulevard & TH 212 (South)	AM	B
	PM	A
Pioneer Trail & Bluff Creek Drive	AM	B
	PM	B
Audubon Road & Pioneer Trail	AM	B
	PM	B
Audubon Road & Bluff Creek Boulevard	AM	B
	PM	A
Bluff Creek Boulevard & Bluff Creek Drive (Roundabout)	AM	A
	PM	A

Based on the existing conditions analysis for unsignalized intersections, all the stop-controlled approaches at the unisgnalzied study intersections are operating at an acceptable level of service (LOS D or better) for both the AM and PM peak hours except for the following: SB left-turn movement at the intersection of Lyman Boulevard & Audubon Road North and the SB left-turn movement at the intersection of Powers Boulevard & Pioneer Trail.

Based on the existing conditions analysis for signalized intersections, all signalized intersections are operating at an acceptable level of service for the weekday AM and PM peak hours.

6.2 YEAR 2022 BACKGROUND LEVEL OF SERVICE ANALYSIS

The LOS for unsignalized intersections are shown in **Table 11** and the LOS for signalized intersections are shown in **Table 12**. The analysis was based on Year 2022 background traffic volumes and existing intersection control and lane assignments.

TABLE 11: YEAR 2022 BACKGROUND LOS SUMMARY (UNSIGNALIZED)

Intersection	Analysis Period	NB			SB			EB			WB		
		L	T	R	L	T	R	L	T	R	L	T	R
Lyman Boulevard & Audubon Road North	AM				F	-	A	B	--			--	--
	PM				B	-	A	A	--			--	--
Lyman Boulevard & Sunset Trail	AM				B	-	A	A	--			--	--
	PM				B	-	A	A	--			--	--
Powers Boulevard & Pioneer Trail	AM				F	-	A	B	--			--	--
	PM				F	-	C	B	--			--	--
Audubon Road & Lakeview Drive	AM	A	A			A	A	B		A			
	PM	A	A			A	A	B		A			

(1) "--" = Not applicable
(2) Darkened boxes = movement not available

TABLE 12: YEAR 2022 BACKGROUND LOS SUMMARY (SIGNALIZED)

Intersection	Analysis Period	Overall Intersection
Lyman Boulevard & Audubon Road	AM	B
	PM	B
Lyman Boulevard & Powers Boulevard	AM	B
	PM	B
Powers Boulevard & TH 212 (North)	AM	B
	PM	B
Powers Boulevard & TH 212 (South)	AM	B
	PM	A
Pioneer Trail & Bluff Creek Drive	AM	B
	PM	B
Audubon Road & Pioneer Trail	AM	B
	PM	C
Audubon Road & Bluff Creek Boulevard	AM	B
	PM	A
Bluff Creek Boulevard & Bluff Creek Drive (Roundabout)	AM	A
	PM	A

Based on the 2022 Background conditions analysis for unsignalized intersections, all the stop-controlled approaches are anticipated to operate like Existing conditions. The SB left-turn movements at Lyman Boulevard & Audubon Road North and Powers Boulevard & Pioneer Trail are anticipated to operate at LOS F.

Based on the 2022 Background conditions analysis for signalized intersections, all the signalized intersections are anticipated to operate at an acceptable LOS during the weekday AM and PM peak hours.

6.3 YEAR 2022 BUILDOUT LEVEL OF SERVICE ANALYSIS

The analysis was based on Year 2022 buildout traffic volumes and existing intersection control and lane assignments, with changes only made at the site access points. As previously discussed, two buildout scenarios were analyzed based on varying future parcel development. **Table 13** provides a summary of LOS for unsignalized intersections for both development concepts, and **Table 14** provides a summary of LOS for signalized intersections for both development concepts.

TABLE 13: YEAR 2022 BUILDOUT LOS SUMMARY (UNSIGNALIZED)

Intersection	Development Concept	Analysis Period	NB			SB			EB			WB		
			L	T	R	L	T	R	L	T	R	L	T	R
Lyman Boulevard & Audubon Road North/NW Quadrant Access	A	AM	D	F	A	F	F	F	B	--	--	A	--	--
		PM	C	D	B	D	D	A	A	--	--	A	--	--
	B	AM	F	C	A	F	F	F	B	--	--	A	--	--
		PM	C	D	B	C	C	A	A	--	--	A	--	--
Audubon Road & Lakeview Drive/NW Quadrant Access	A	AM	A	--	--	A	--	--	C	A	A	C	A	A
		PM	A	--	--	A	--	--	C	A	B	C	A	A
	B	AM	A	--	--	A	--	--	C	A	A	C	A	A
		PM	A	--	--	A	--	--	C	A	B	C	A	A
Lyman Boulevard & Sunset Trail/NE Quadrant Access	A	AM	C	A	A	C	A	A	A	--	--	A	--	--
		PM	F	A	F	D	A	A	A	--	--	B	--	--
	B	AM	C	A	A	C	A	A	A	--	--	A	--	--
		PM	F	A	B	D	A	A	A	--	--	A	--	--
Powers Boulevard & SE Quadrant Access	A	AM	A	--	--	A	--	--	C	A	A	A	A	A
		PM	B	--	--	A	--	--	F	A	F	A	A	A
	B	AM	A	--	--	A	--	--	C	A	A	A	A	A
		PM	A	--	--	A	--	--	F	A	F	A	A	A
Powers Boulevard & Pioneer Trail	A	AM				F		D	B	--			--	--
		PM				F		F	B	--			--	--
	B	AM				F		A	B	--			--	--
		PM				F		F	B	--			--	--
Pioneer Trail & SE Quadrant Access	A	AM				C		A	A	--			--	--
		PM				D		C	A	--			--	--
	B	AM				C		A	A	--			--	--
		PM				D		C	A	--			--	--
Bluff Creek Drive & SE Quadrant Access	A	AM		--	--	A	--					A		A
		PM		--	--	A	--					A		A
	B	AM		--	--	A	--					A		A
		PM		--	--	A	--					A		A

(1) "--" = Not applicable
(2) Darkened boxes = movement not available

TABLE 14: YEAR 2022 BUILDOUT LOS SUMMARY (SIGNALIZED)

Intersection	Development Scenario	Analysis Period	Overall Intersection
Lyman Boulevard & Audubon Road	A	AM	B
		PM	B
	B	AM	B
		PM	B
Lyman Boulevard & Powers Boulevard	A	AM	B
		PM	C
	B	AM	B
		PM	D
Powers Boulevard & TH 212 (North)	A	AM	C
		PM	D
	B	AM	C
		PM	F
Powers Boulevard & TH 212 (South)	A	AM	B
		PM	E
	B	AM	B
		PM	F
Pioneer Trail & Bluff Creek Drive	A	AM	C
		PM	B
	B	AM	C
		PM	B
Audubon Road & Pioneer Trail	A	AM	B
		PM	C
	B	AM	B
		PM	C
Audubon Road & Bluff Creek Boulevard	A	AM	B
		PM	B
	B	AM	B
		PM	B
Bluff Creek Boulevard & Bluff Creek Drive (Roundabout)	A	AM	A
		PM	A
	B	AM	A
		PM	A

Unsignalized Intersection Summary

Based on the 2022 Buildout condition analysis for unsignalized intersections, all stop-controlled movements are anticipated to operate at an acceptable LOS except for the following:

- Lyman Boulevard & Audubon Road North
- Lyman Boulevard & Sunset Trail/NE Quadrant Access
- Powers Boulevard & Pioneer Trail
- Powers Boulevard & SE Quadrant Access

Based on Existing and Background conditions analysis, the SB left-turn movement at the intersection of Lyman Boulevard & Audubon Road North is anticipated to operate at LOS F during the AM peak hour. With the addition of traffic from the NW quadrant development, the side street approach will continue to operate at LOS F during the AM peak hour. Based on warrant guidance provided in the Manual On Uniform Traffic Control Devices (MUTCD), the side street volumes will likely meet the peak hour warrant threshold for installing a traffic signal during the AM and PM peak hours. It is recommended that this intersection continue to be monitored for a traffic signal, and a full warrant analysis be performed (including the eight-hour and four-hour warrants) as the NW quadrants begins to develop. The next section will provide a summary of intersection operations with the consideration of a traffic signal at this location.

Based on Buildout conditions, the NB left-turn movement at the intersection of Lyman Boulevard & Sunset Trail/NE Quadrant Access is anticipated to operate at LOS F during the PM peak hour for both Concept A and Concept B. Based on warrant guidance provided in the Manual On Uniform Traffic Control Devices (MUTCD), the side street volumes will likely meet the peak hour warrant threshold for installing a traffic signal during the PM peak hour for both Concept A and Concept B. It is recommended that a full warrant analysis be performed (including the eight-hour and four-hour warrants) to support a traffic signal at this location. The next section will provide a summary of intersection operations with the consideration of a traffic signal at this location.

The stop-controlled approach at the intersection of Powers Boulevard & Pioneer Trail is anticipated to operate at LOS F for both Concept A and Concept B. Consistent with the mitigation plan in the 2005 AUAR document, a traffic signal is recommended at this intersection. It is recommended that a full warrant analysis be performed (including the eight-hour and four-hour warrants) to support a traffic signal at this location. With the addition of a traffic signal, it is anticipated that the queueing will be significantly reduced and therefore improving the operations at the SE Quadrant Accesss along Powers Boulevard.

Signalized Intersection Summary

Based on the 2022 Buildout conditions analysis for signalized intersections, all signalized intersections are anticipated to operate at an acceptable LOS for the weekday AM and PM peak hours under both Concept A and Concept B, with the following exceptions:

- Powers Boulevard & TH 212 Ramp (North) during the PM peak hour for Concept B
- Powers Boulevard & TH 212 Ramp (South) during the PM peak hour for Concept A and Concept B

Queueing from the unsignalized intersection of Powers Boulevard & Pioneer Trial is spilling back through these intersections and is causing individual movements to operate at an acceptable LOS. As discussed in

the 2022 Buildout conditions section for unsignalized intersection, a traffic signal is recommended at the intersection of Powers Boulevard & Pioneer Trail. With the proposed signal, operations at these two intersections is expected to improve as the queueing will be significantly reduced. The next section provides an updated analysis with the inclusion of the traffic signal at Powers Boulevard & Pioneer Trail.

6.4 YEAR 2022 BUILDOUT LEVEL OF SERVICE ANALYSIS (WITH MITIGATION)

The analysis was based on 2022 Buildout conditions for the two development scenarios. The following mitigation measures as identified in Section 6.3 were analyzed:

- Traffic signal at Lyman Boulevard & Audubon Road North/NW Quadrant Access
- Traffic signal at Lyman Boulevard & Sunset Trail/NE Quadrant Access
- Traffic signal at Powers Boulevard & Pioneer Trail

Table 15 provides a summary of LOS for unsignalized intersections for both development concepts with mitigation, and **Table 16** provides a summary of LOS for signalized intersections for both development concepts with mitigation.

TABLE 15: YEAR 2022 BUILDOUT MITIGATION LOS SUMMARY (UNSIGNALIZED)

Intersection	Development Concept	Analysis Period	NB			SB			EB			WB		
			L	T	R	L	T	R	L	T	R	L	T	R
Audubon Road & Lakeview Drive/NW Quadrant Access	A	AM	A	--	--	A	--	--	C	A	A	C	A	A
		PM	A	--	--	A	--	--	C	A	B	C	A	A
	B	AM	A	--	--	A	--	--	C	A	A	C	A	A
		PM	A	--	--	A	--	--	C	A	B	C	A	A
Powers Boulevard & SE Quadrant Access	A	AM	A	--	--	A	--	--	C	A	A	A	A	A
		PM	A	--	--	A	--	--	F	A	E	A	A	A
	B	AM	A	--	--	A	--	--	C	A	A	A	A	A
		PM	A	--	--	A	--	--	F	A	F	A	A	A
Pioneer Trail & SE Quadrant Access	A	AM				C		A	A	--			--	--
		PM				D		C	A	--			--	--
	B	AM				C		A	A	--			--	--
		PM				E		D	A	--			--	--
Bluff Creek Drive & SE Quadrant Access	A	AM		--	--	A	--					A		A
		PM		--	--	A	--					A		A
	B	AM		--	--	A	--					A		A
		PM		--	--	A	--					A		A

(1) "--" = Not applicable
(2) Darkened boxes = movement not available

TABLE 16: YEAR 2022 BUILDOUT MITIGATION LOS SUMMARY (SIGNALIZED)

Intersection	Development Scenario	Analysis Period	Overall Intersection
Lyman Boulevard & Audubon Road	A	AM	B
		PM	B
	B	AM	B
		PM	B
Lyman Boulevard & Audubon Road North/NW Quadrant Access	A	AM	B
		PM	B
	B	AM	B
		PM	B
Lyman Boulevard & Sunset Trail/NE Quadrant Access	A	AM	A
		PM	B
	B	AM	A
		PM	A
Lyman Boulevard & Powers Boulevard	A	AM	B
		PM	C
	B	AM	B
		PM	C
Powers Boulevard & TH 212 (North)	A	AM	C
		PM	C
	B	AM	C
		PM	C
Powers Boulevard & TH 212 (South)	A	AM	B
		PM	B
	B	AM	B
		PM	B
Powers Boulevard & Pioneer Trail	A	AM	B
		PM	B
	B	AM	A
		PM	B
Pioneer Trail & Bluff Creek Drive	A	AM	C
		PM	B
	B	AM	C
		PM	B
Audubon Road & Pioneer Trail	A	AM	B
		PM	C
	B	AM	B
		PM	C
Audubon Road & Bluff Creek Boulevard	A	AM	B
		PM	B
	B	AM	B
		PM	B
Bluff Creek Boulevard & Bluff Creek Drive (Roundabout)	A	AM	A
		PM	A
	B	AM	A
		PM	A

With the addition of traffic signals, the intersections of Lyman Boulevard & Audubon Road North/NW Quadrant Access, Lyman Boulevard & Sunset Trail/NE Quadrant Access, and Powers Boulevard & Pioneer Trail are all anticipated to operate at an acceptable LOS during the AM and PM peak hours for both Concept A and Concept B.

The side-street movements at the SE Quadrant Access along Powers Boulevard are anticipate to operate at LOS F during the PM peak hour for both Concept A and Concept B. At this time, traffic signalization is not recommended at this intersection due to the close proximity to the signalized intersection of Powers Boulevard & TH 212 and that the traffic volumes would likely only meet a peak hour signal warrant. As this area begins to develop, it is recommended that additional traffic analysis be performed based on the specific land use and intensity being proposed.

6.5 TURN LANE ANALYSIS

Based on the mitigation plan from the 2005 AUAR study, a number of left and right turn lanes have been constructed along Lyman Boulevard, Audubon Road, Pioneer Trail, and Powers Boulevard. Based on the current geometry, there are dedicated turn lanes constructed at all of the study intersections, except for Audubon Road & Lakeview Drive/NW Quadrant Access. The proposed geometry is provided in Exhibit 10.

As part of the mitigation plan for the updated AUAR, it is recommended that the northbound and southbound approaches at Audubon Road & Lakeview Drive/NW Quadrant Access be restriped to provide a dedicated left-turn lane and shared through-right lane. The proposed geometry is provided in Exhibit 10.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Since the original 2005 AUAR study, many of the adjacent roadways have been improved, including the following:

- Construction of TH 212 as a limited access facility within the study area;
- Powers Boulevard was constructed as a four-lane divided roadway between Lyman Boulevard and Pioneer Trail, including interchange ramps at TH 212;
- Widening of Lyman Boulevard between Audubon Road and Powers Boulevard to a four-lane divided roadway;
- Bluff Creek Drive has been realigned so that it intersects Pioneer Trail west of the TH 212; and
- Bluff Creek Boulevard and Bluff Creek Drive were constructed within the AUAR area, including a roundabout where the two roadways intersect.

The AUAR document was updated in order to assess the impacts of development of the remaining AUAR parcels. There are three areas that currently remain undeveloped; the NW Quadrant, NE Quadrant (Avienda Development), and the SE Quadrant. Two site plan concepts for the NE Quadrant (Avienda Development) were considered in the AUAR update. Concept A considered a more intense development with building on top of existing wetlands, whereas Concept B considered a lower intensity development with the wetlands remaining. In conjunction with these two site plan alternatives, the SE Quadrant assumes a higher office land use intensity for Concept B to offset the reduction in development potential of the NE Quadrant. The NW Quadrant remained the same for both Concept A and Concept B.

The following salient observations and recommendations regarding the remaining AUAR land uses to be developed were noted.

7.1 EXISITNG LEVEL OF SERVICE ANALYSIS SUMMARY

This analysis was completed to determine the impact of existing traffic volumes on the existing roadway network. This includes the built-out of portions of the AUAR development. Results of the Existing analysis showed that all study intersections are currently operating at an acceptable LOS during the weekday AM and PM peak hours, except for Lyman Boulevard & Audubon Road North and Powers Boulevard & Pioneer Trail, where the SB left-turn movements are operating at LOS E during the weekday AM peak hour.

7.2 BUILDOUT LEVEL OF SERVICE ANALYSIS SUMMARY

In addition to the Existing analysis, an analysis of Year 2022 conditions was completed. This was completed to determine the impact of future traffic volumes on the adjacent roadway network, with and without the remaining AUAR undeveloped parcels.

Area traffic forecasts were computed for full development conditions. Two concepts were considered for full development; Concept A and Concept B. Results of the traffic analysis are as follows:

- The interchange with TH 212 is anticipated to accommodate the future growth of the area, including the Buildout of the entire AUAR development. The interchange has already been constructed with signals and with dedicated turn lanes for all turning movements.

- At the intersection of Audubon Road & Lakeview Drive/NW Quadrant Access, the northbound and southbound approaches are recommended to be restriped to provide a dedicated left-turn lane and shared through-right lane.

- It is recommended that the following intersections be periodically reviewed to determine if signal warrants are met as the area develops If signal warrants are met, signalization should be considered:
    - Lyman Boulevard & Audubon Road North/NW Quadrant Access
    - Lyman Boulevard & Sunset Trail/NE Quadrant Access
    - Powers Boulevard & Pioneer Trail

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7.3 MITIGATION PLAN

Proposed improvements to accommodate the future Buildout scenario traffic includes the following. It should be noted that the same improvements are recommended based on either Buildout of Concept A or Concept B. **Exhibit 10** provides the mitigation plan.

- Extend Bluff Creek Boulevard from its current terminus through the Avienda development and connect to the existing signalized intersection of Powers Boulevard & TH 212 North.

- Construct an internal connector roadway through the NW Quadrant to connect the intersections of Lyman Boulevard & Audubon Road North and Audubon Road & Lakeview Drive. As part of this, restripe the northbound and southbound approaches at Audubon Road & Lakeview Drive to provide a dedicated left-turn lane and shared through-right lane, and the WB approach provide a dedicated left-turn lane and shared through-right lane.

- With the proposed Avienda development, connections will be made to the intersection of Powers Boulevard & TH 212 North and Lyman Boulevard & Sunset Trail. At the intersection of Powers Boulevard & TH 212 North, the EB approach is recommended to be three lanes; one dedicated left-turn lane, one through lane, and one dedicated right-turn lane. At the intersection of Lyman Boulevard & Sunset Trail the NB approach is recommended to be two lanes; one dedicated left-turn lane and one shared through-right lane.

- The connections from the SE Quadrant development to Powers Boulevard and Pioneer Trail are both recommended to provide two lanes exiting; along Powers boulevard, the EB approach should provide a dedicated left-turn lane and a shared through right lane, and along Pioneer Trail, the SB approach should provide a dedicated left-turn lane and a dedicated right-turn lane. A third connection for the SE Quadrant is proposed along Bluff Creek Drive, which is recommended to be only a one lane approach.

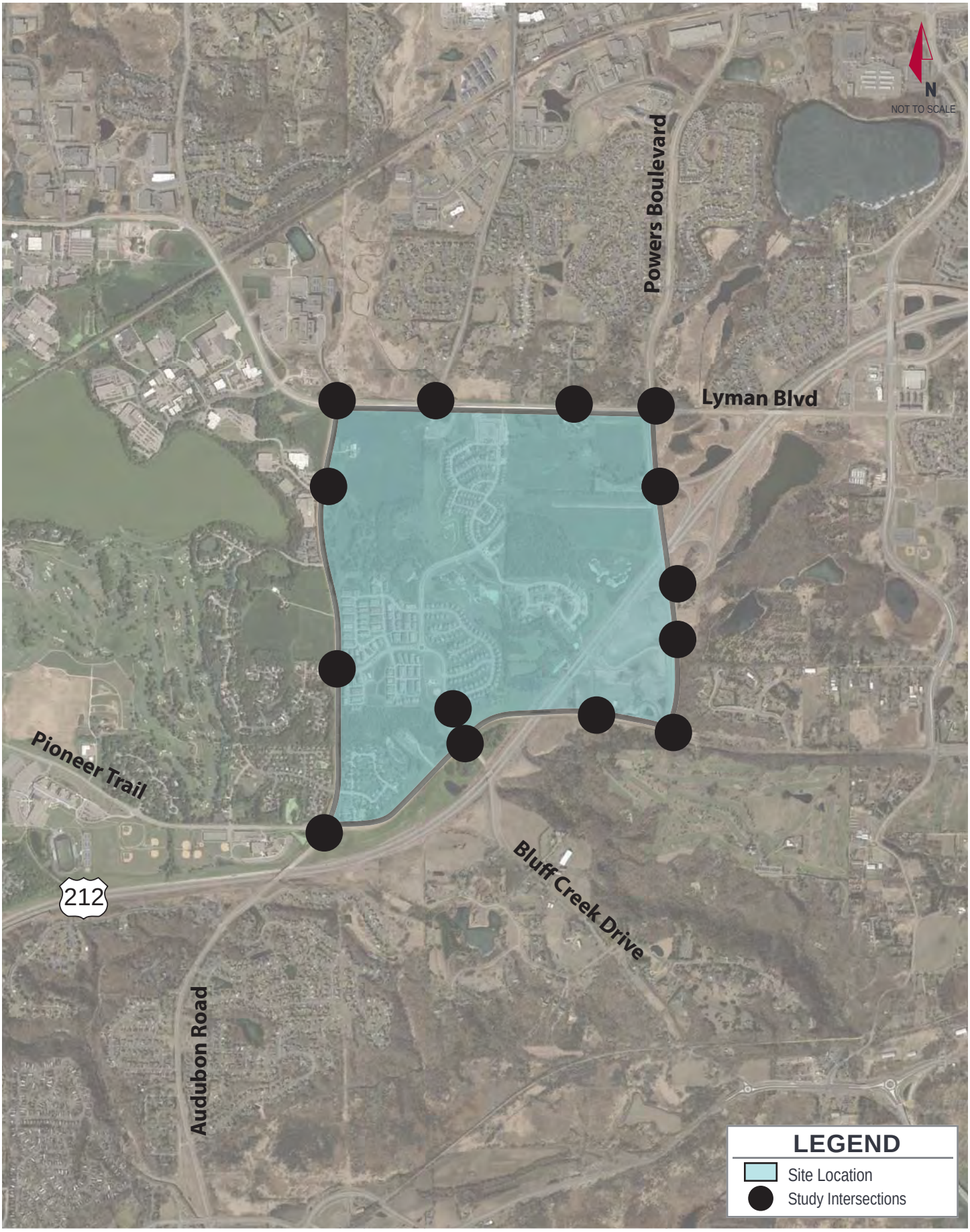
- It is recommended that the following intersections be periodically reviewed to determine if signal warrants are met as the area develops If warrants are met, signalization should be considered:
    - Lyman Boulevard & Audubon Road North/NW Quadrant Access
    - Lyman Boulevard & Sunset Trail/NE Quadrant Access
    - Powers Boulevard & Pioneer Trail

APPENDICES

APPENDIX A: EXHIBITS

APPENDIX B: TRIP GENERATION

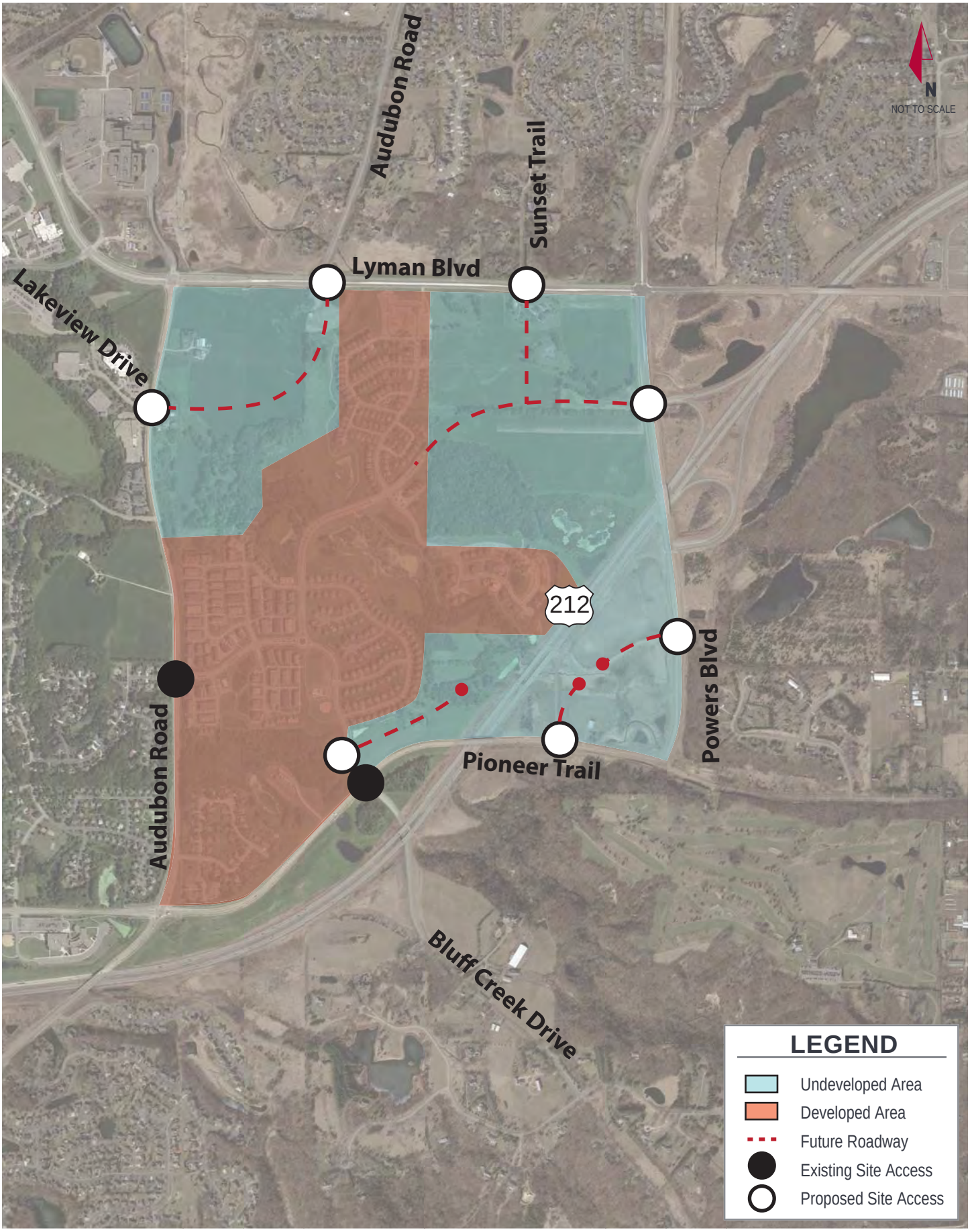
Appendix A: Exhibits



Kimley»Horn

EXHIBIT 1

PROJECT SITE LOCATION AND STUDY AREA



Kimley»Horn

EXHIBIT 2

EXISTING AND FUTURE AUAR DEVELOPMENT AREAS

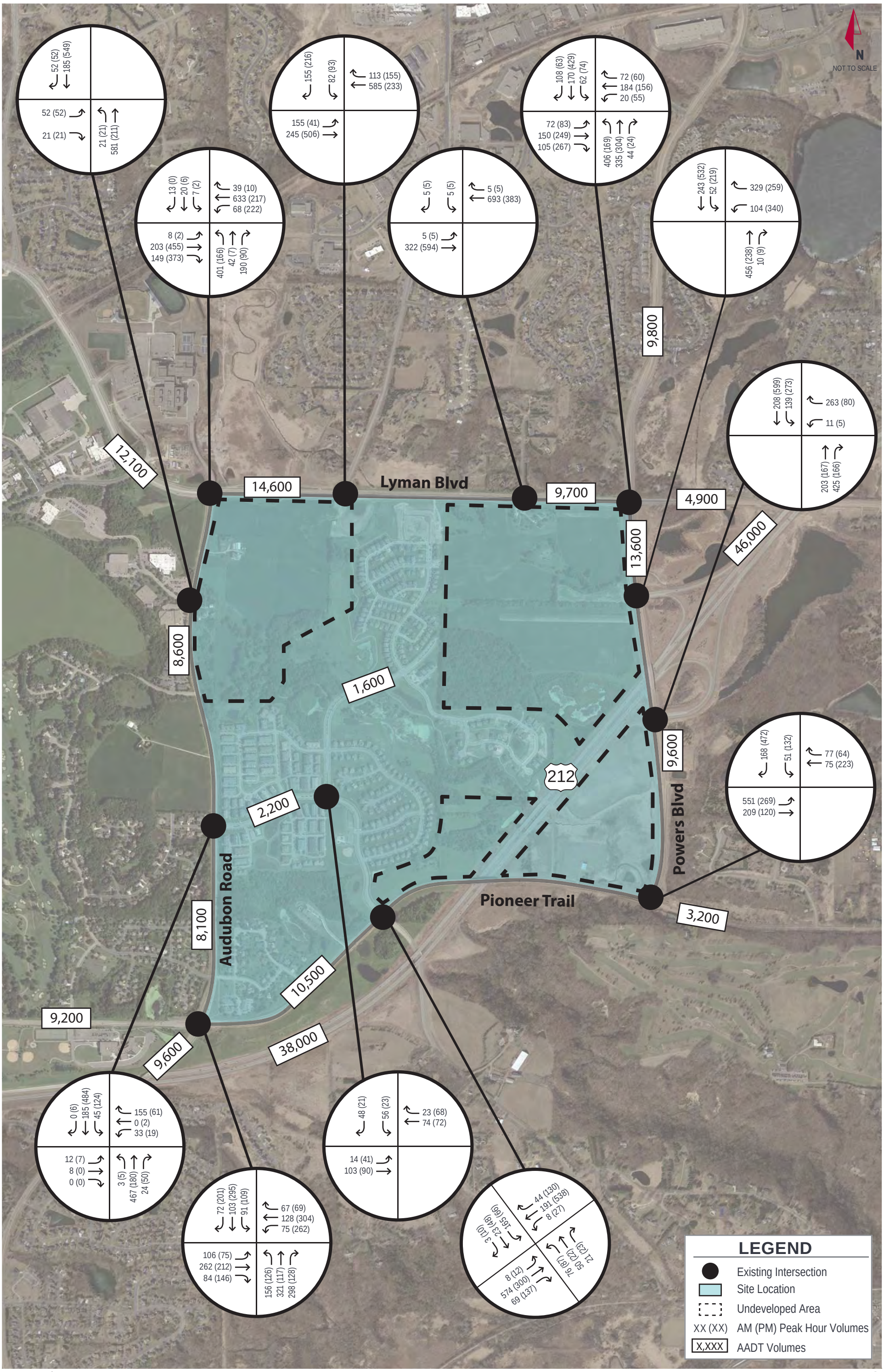


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EXHIBIT 3

EXISTING CONDITIONS PEAK HOUR TRAFFIC VOLUMES

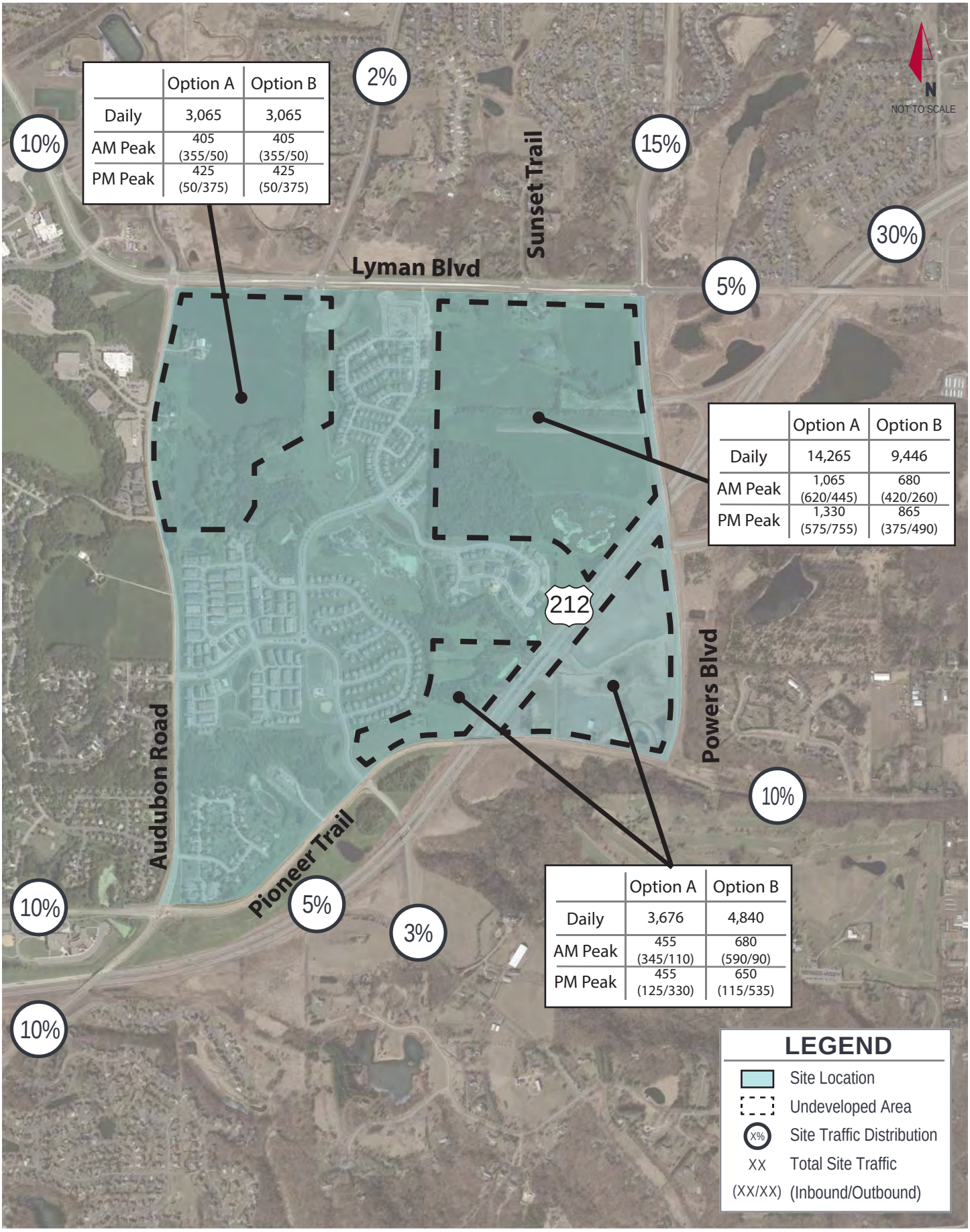

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EXHIBIT 4

FUTURE YEAR (2022)
TRIP GENERATION & DISTRIBUTION SUMMARY

N
NOT TO SCALE

Lyman Blvd

Audubon Road

Powers Blvd

Pioneer Trail

212

2,100
2,400
4,000
1,100
4,100
2,000
1,200
5,300
5,400
3,200

LEGEND

- Existing Intersection
- Site Access
- Site Location
- Undeveloped Area
- XX (XX) AM (PM) Peak Hour Volumes

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EXHIBIT 5

FUTURE YEAR (2022)

NET NEW SITE TRIP ASSIGNMENT - OPTION A

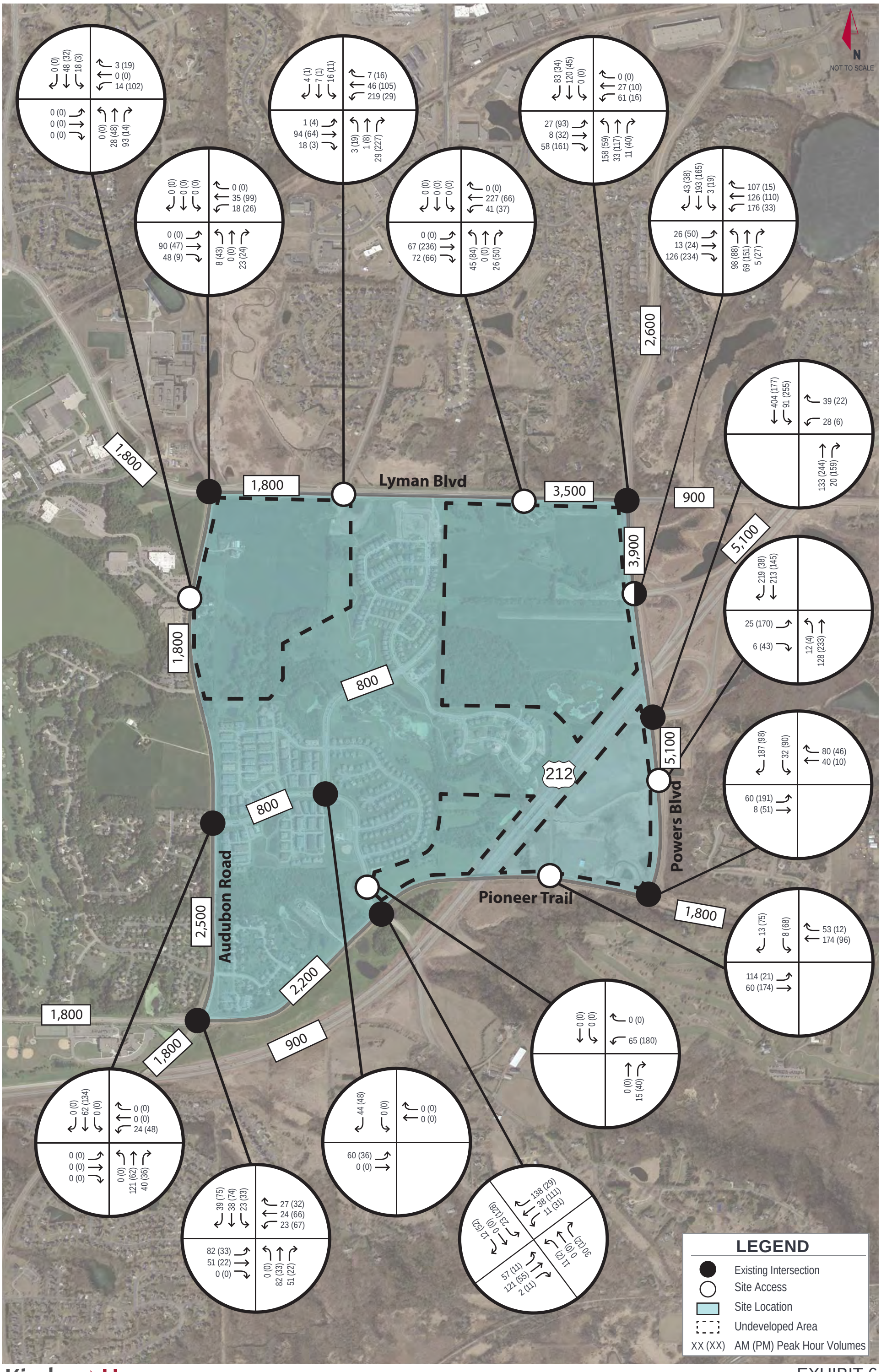

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EXHIBIT 6

FUTURE YEAR (2022)

NET NEW SITE TRIP ASSIGNMENT - OPTION B

N
NOT TO SCALE

Lyman Blvd
Audubon Road
Powers Blvd
Pioneer Trail
212

13,400
16,200
10,800
5,400
10,900
51,000
15,100
9,500
1,800
10,700
2,400
9,000
11,700
10,200
10,700
42,200
3,600

55 (55) 200 (593)
55 (55) 22 (22)
22 (22) 626 (228)

14 (0) 21 (7) 8 (2)
42 (11) 681 (234) 73 (239)
9 (2) 219 (491) 161 (402)
432 (179) 46 (8) 203 (96)

166 (233) 89 (100)
122 (166) 630 (251)
166 (44) 264 (545)

5 (5) 5 (5)
5 (5) 747 (412)
5 (5) 348 (640)

117 (68) 183 (462) 67 (80)
78 (64) 198 (167) 21 (59)
78 (90) 162 (268) 113 (287)
437 (182) 361 (327) 48 (26)

262 (573) 55 (235)
354 (279) 112 (366)
492 (256) 10 (10)

224 (645) 150 (294)
283 (86) 12 (6)
219 (180) 458 (178)

181 (508) 55 (143)
83 (69) 81 (240)
594 (289) 224 (129)

0 (7) 200 (522) 49 (133)
166 (65) 0 (2) 36 (20)
13 (8) 9 (0) 0 (0)
3 (6) 503 (194) 26 (54)

78 (216) 111 (317) 98 (118)
72 (74) 137 (327) 81 (282)
114 (81) 282 (228) 91 (158)
168 (135) 346 (127) 320 (138)

52 (22) 60 (24)
24 (73) 80 (78)
16 (44) 111 (97)

3 (11) 24 (52) 178 (71)
48 (140) 205 (579) 9 (29)
8 (13) 618 (323) 74 (148)
54 (23) 82 (93) 22 (24)

LEGEND

- Existing Intersection
- Site Location
- XX (XX) AM (PM) Peak Hour Volumes
- X,XXX AADT Volumes

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EXHIBIT 7

OPENING YEAR BACKGROUND (2022) PEAK HOUR TRAFFIC VOLUMES

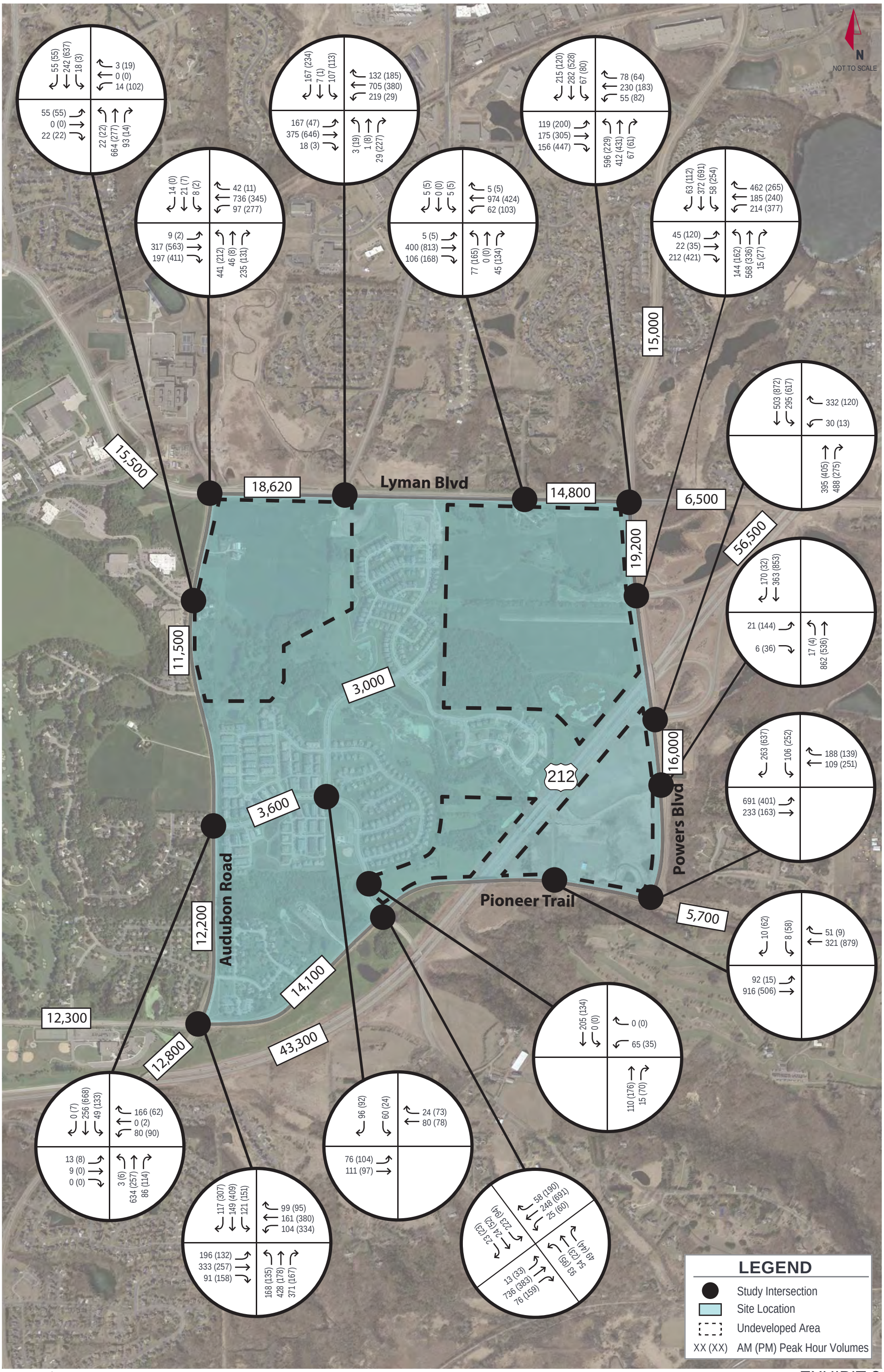

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EXHIBIT 8

FUTURE YEAR (2022)

PEAK HOUR TOTAL TRAFFIC VOLUMES - OPTION A

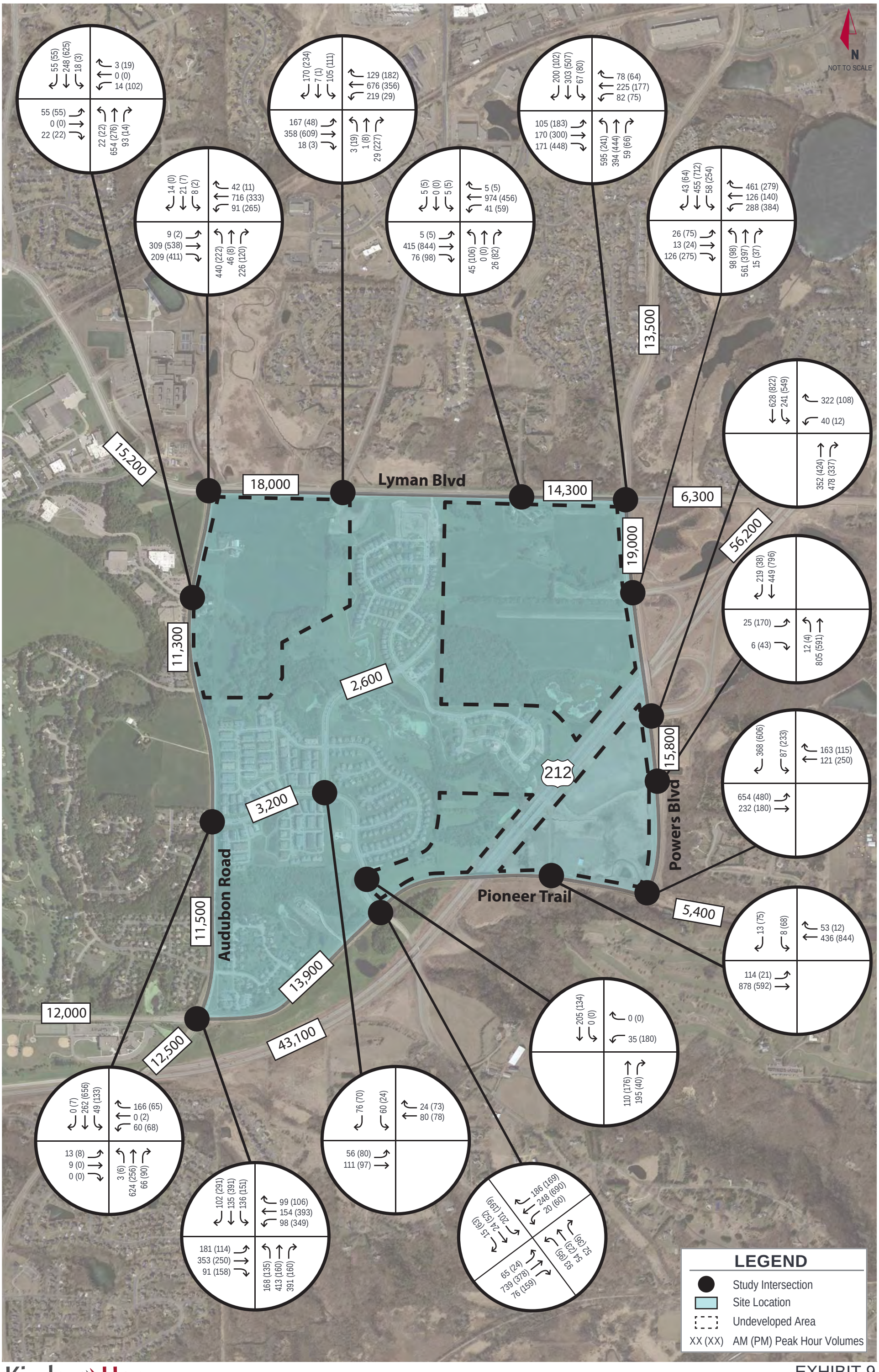

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EXHIBIT 9

FUTURE YEAR (2022) PEAK HOUR TOTAL TRAFFIC VOLUMES - OPTION B

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FUTURE INTERSECTION CONTROL AND LANE ASSIGNMENTS

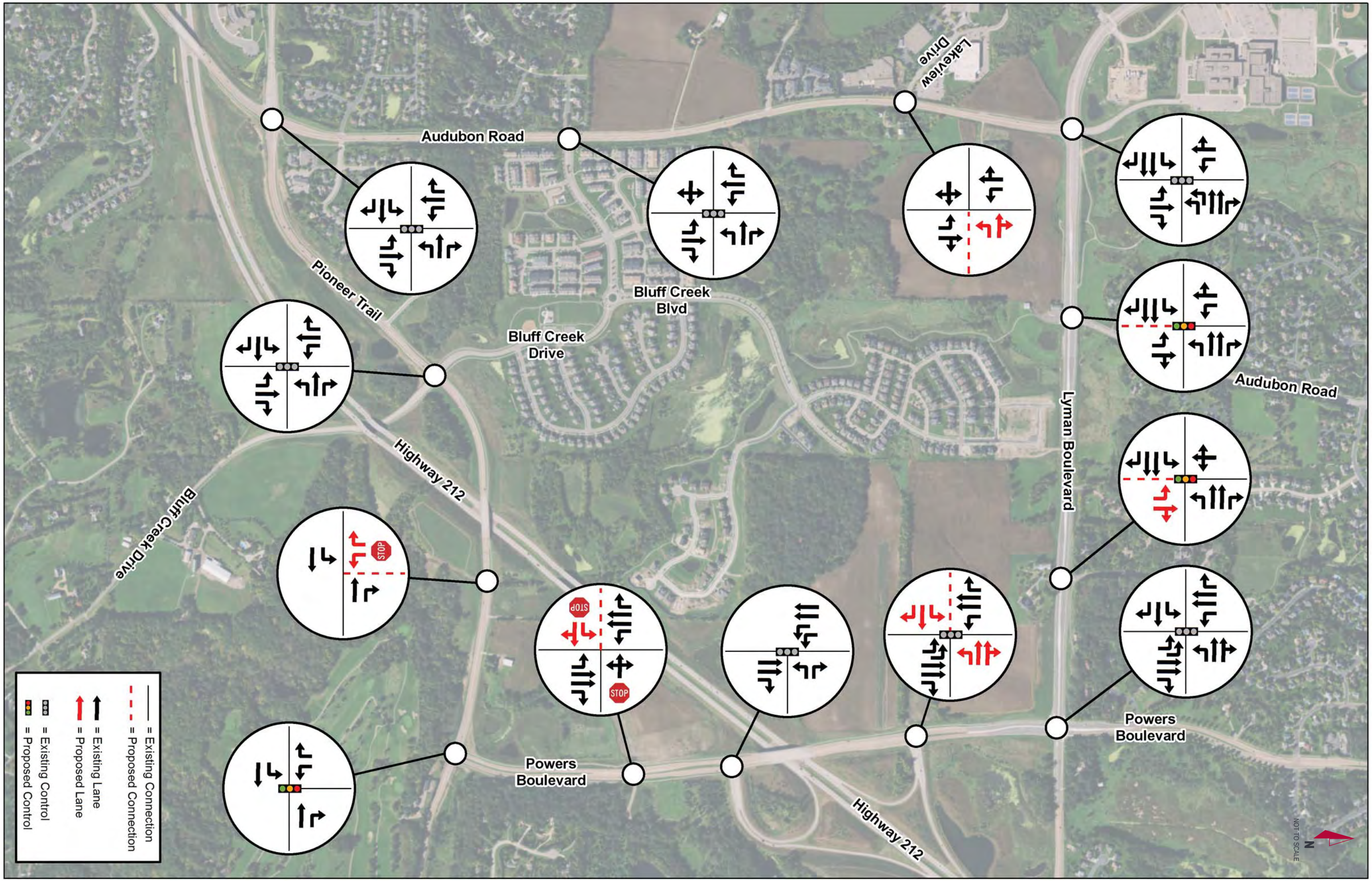

EXHIBIT 10

Appendix B: Site Trip Generation

Chanhassen Bluff Creek AUAR - NE Quadrant (Option A) Trip Generation Analysis									
DEVELOPMENT-GENERATED TRIPS									
Land Use Description	ITE LUC	Intensity / Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Day Care Center	565	16,000 Square Feet	1,185	105	90	195	90	105	195
Shopping Center	820	393,000 Square Feet	16,780	235	140	375	700	760	1,460
High-Turnover (Sit-Down) Restaurant	932	26,500 Square Feet	3,370	155	130	285	155	105	260
General Office Building	710	150,000 Square Feet	1,655	205	30	235	Chan	225	225
Apartment	220	407 Units	2,590	40	165	205	155	85	240
Residential Condominium/Townhouse	230	38 Units	125	0	10	10	5	5	10
Hotel	310	100 Rooms	520	30	25	55	30	30	60
TOTAL SITE GENERATED EXTERNAL TRIPS			26,225	770	590	1,360	1,135	1,315	2,450
Office Internal Capture Reduction			802	45	25	70	20	45	65
Retail Internal Capture Reduction			2,152	30	25	55	125	135	260
Restaurant Internal Capture Reduction			2,120	70	50	120	75	70	145
Residential Internal Capture Reduction			1,108	5	35	40	95	65	160
Hotel Internal Capture Reduction			266	0	10	10	15	15	30
Total Internal Capture Reduction			*6,448*	*150*	*145*	*295*	*330*	*330*	*660*
TOTAL DRIVEWAY TRIPS			19,777	620	445	1,065	805	985	1,790
Shopping Center (LUC 820) Pass-By Reduction			4,974	0	0	0	205	205	410
Restaurant (LUC 932) Pass-By Reduction			538	0	0	0	25	25	50
Total Pass-By Reduction			*5,512*	*0*	*0*	*0*	*230*	*230*	*460*
TOTAL NET NEW SITE GENERATED TRIPS									
TOTAL NET NEW PROJECT GENERATED TRIPS			14,265	620	445	1,065	575	755	1,330

Chanhassen Bluff Creek AUAR - SE Quadrant (Option A) Trip Generation Analysis									
DEVELOPMENT-GENERATED TRIPS									
Land Use Description	ITE LUC	Intensity / Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
General Office Building	710	240,600 Square Feet	2,655	330	45	375	60	300	360
Apartment	220	157 Units	1,075	15	65	80	70	35	105
TOTAL SITE GENERATED EXTERNAL TRIPS			3,730	345	110	455	130	335	465
Office Internal Capture Reduction			27	0	0	0	0	5	5
Residential Internal Capture Reduction			27	0	0	0	5	0	5
Total Internal Capture Reduction			*54*	*0*	*0*	*0*	*5*	*5*	*10*
TOTAL NET NEW SITE GENERATED TRIPS									
TOTAL NET NEW PROJECT GENERATED TRIPS			3,676	345	110	455	125	330	455

Chanhassen Bluff Creek AUAR - NW Quadrant (Option A) Trip Generation Analysis									
DEVELOPMENT-GENERATED TRIPS									
Land Use Description	ITE LUC	Intensity / Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
General Light Industrial	110	440,100 Square Feet	3,065	355	50	405	50	375	425
TOTAL NET NEW SITE GENERATED TRIPS									
TOTAL NET NEW PROJECT GENERATED TRIPS			3,065	355	50	405	50	375	425

Chanhassen Bluff Creek AUAR - NE Quadrant (Option B) Trip Generation Analysis									
DEVELOPMENT-GENERATED TRIPS									
Land Use Description	ITE LUC	Intensity / Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Day Care Center	565	6,000 Square Feet	445	40	35	75	35	40	75
Shopping Center	820	224,000 Square Feet	9,565	135	80	215	400	430	830
High-Turnover (Sit-Down) Restaurant	932	7,000 Square Feet	890	40	35	75	40	30	70
General Office Building	710	150,000 Square Feet	1,655	205	30	235	40	185	225
Apartment	220	280 Units	1,820	30	110	140	110	60	170
Residential Condominium/Townhouse	230	80 Units	265	5	15	20	15	10	25
Hotel	310	150 Rooms	970	45	35	80	45	45	90
TOTAL SITE GENERATED EXTERNAL TRIPS			15,610	500	340	840	685	800	1,485
Office Internal Capture Reduction			530	30	15	45	15	35	50
Retail Internal Capture Reduction			1,229	20	20	40	80	85	165
Restaurant Internal Capture Reduction			601	30	20	50	20	20	40
Residential Internal Capture Reduction			658	0	10	10	65	40	105
Hotel Internal Capture Reduction			188	0	15	15	10	10	20
Total Internal Capture Reduction			*3,206*	*80*	*80*	*160*	*190*	*190*	*380*
TOTAL DRIVEWAY TRIPS			12,404	420	260	680	495	610	1,105
Shopping Center (LUC 820) Pass-By Reduction			2,834	0	0	0	115	115	230
Restaurant (LUC 932) Pass-By Reduction			124	0	0	0	5	5	10
Total Pass-By Reduction			*2,958*	*0*	*0*	*0*	*120*	*120*	*240*
TOTAL NET NEW SITE GENERATED TRIPS									
TOTAL NET NEW PROJECT GENERATED TRIPS			9,446	420	260	680	375	490	865

Chanhassen Bluff Creek AUAR - SE Quadrant (Option B) Trip Generation Analysis									
DEVELOPMENT-GENERATED TRIPS									
Land Use Description	ITE LUC	Intensity / Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
General Office Building (East of 212)	710	287,600 Square Feet	3,170	395	55	450	75	355	430
General Office Building (West of 212)	710	141,000 Square Feet	1,555	195	25	220	35	175	210
Residential Condominium/Townhouse	230	34 Units	115	0	10	10	5	5	10
TOTAL SITE GENERATED EXTERNAL TRIPS			4,840	590	90	680	115	535	650
TOTAL NET NEW SITE GENERATED TRIPS									
TOTAL NET NEW PROJECT GENERATED TRIPS			4,840	590	90	680	115	535	650

Chanhassen Bluff Creek AUAR - NW Quadrant (Option B) Trip Generation Analysis									
DEVELOPMENT-GENERATED TRIPS									
Land Use Description	ITE LUC	Intensity / Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
General Light Industrial	110	440,100 Square Feet	3,065	355	50	405	50	375	425
TOTAL NET NEW SITE GENERATED TRIPS									
TOTAL NET NEW PROJECT GENERATED TRIPS			3,065	355	50	405	50	375	425