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TRAFFIC IMPACT ANALYSIS

for

Lake Street Place
Mixed Use Development

Prepared for:
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112 Lake Street S, Suite 200
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c/o:
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Note: Appendices A-G under separate cover

I. Introduction

The following traffic study was prepared in accordance with the Traffic Impact Analysis Guidelines for proposed developments in the City of Kirkland. This study summarizes the project trip generation, concurrency results including project distribution and assignment, intersection impacts and level of service, site access issues, and mitigation issues.

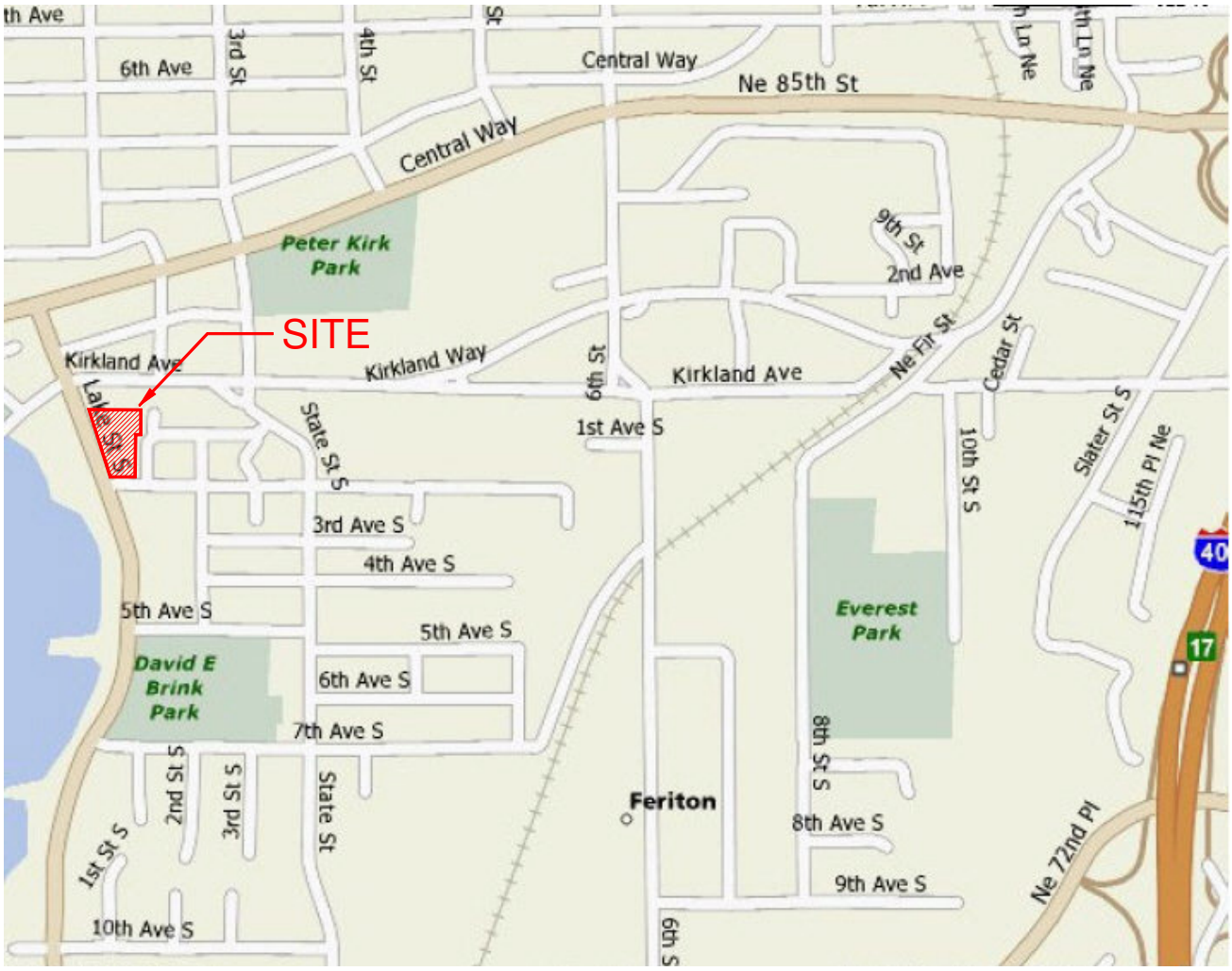
According to the City's transportation guidelines, all commercial developments (non-residential) of more than 12,000 square feet with associated parking of 40 or more spaces are subject to environmental review under the State Environmental Policy Act (SEPA) and to road concurrency evaluation under the City's Concurrency Management Ordinance. The traffic impact analysis guidelines and subsequent analysis will assist in the determination of project compliance with transportation concurrency requirements, allow a thorough and complete review of potential traffic impacts, and ensure that review and mitigation of all proposals occur in a consistent and equitable manner.

A. Project Description

McLeod Development Co. is proposing redevelopment of the site located on the east side of Lake St south of Kirkland Ave and north of 2nd Ave in the City of Kirkland. A mix of office, restaurants, and retail currently occupy the site. A vicinity map is presented in Figure 1.

The existing site uses consists of office, retail, and various restaurant uses. The total floor area for the existing site (as it would have been within one year of today) is approximately 28,607 gsf. The proposed redevelopment of the site will also be a mix of office, retail, and restaurant uses. The total floor area increases to 110,421 gsf. The net increase in building area is 81,814 gsf, which includes 83,786 gsf of proposed new floor area and 1,972 gsf removed.

Table 1 identifies the floor areas for existing and proposed redevelopment, and by the various land uses.



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VICINITY MAP

Figure 1

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development

Table 1
Project Specifications EXISITNG and FUTURE SITE Redevelopment [a]

Building	Retail (gsf)	Quality Restaurant (gsf)	High Turnover Restaurant (gsf)	Office (gsf)	Total (gsf)
EXISTING SITE BUIDING AREA SPECFIICATIONS [b]					
Hector's	0	4,670	0	2,528	7,198
Lakeside [b]	0	0	0	0	0
KWM [c]	2,163	6,503	1,626	11,117	21,409
Main St	0	0	0	0	0
Calabria [b]	0	0	0	0	0
All	2,163	11,173	1,626	13,645	28,607
PROPOSED FINAL PROJECT BUILDING AREA SPECIFCIATIONS (TOTAL AREA)					
Hector's	0	10,174	0	27,514	37,688
Lakeside [d]	0	0	0	0	0
KWM [c]	2163	8,592	1,626	24,894	37,275
Main St	15,349	0	0	20,109	35,458
Calabria [d]	0	0	0	0	0
All	17,512	18,766	1,626	72,517	110,421

[a] per Chesmore/Buck Architecture.
[b] Lakeside and Calabria currently demolished (in 2010). Floors areas are shown for trip mitigation fee and parking credit purposes only.
[c] KWM=Kirkland Waterfront Market.
[d] this building does not exist for future site.

As shown in Table 1, the existing total gross floor area is 28,607 gsf, which does not include the Lakeside and Calabria buildings, which were demolished in 2010. The proposed project redevelopment's gross floor area is proposed to be approximately 110,421 gsf. The largest land use increase in the project is in the office land use. The retail use increases significantly as well. There is a minor increase in the quality restaurant space, and the high turnover restaurant use declines slightly.

Future access to the site will be via an entrance from the alley to an above-grade parking garage. The parking garage entry/exit has been placed off the north alley per section 5.2 of the "Alley Easement Consideration Agreement" dated April 29, 2010 recorded between the property owner and the City of Kirkland. This agreement eliminates the possibility of locating an entry/exit to the property directly from Lake St or Main St.

The entrance will be operated with a gated ticket/card reader/scanner entrance and the exit will also be gated with a card reader/scanner and ticket payment with ticket booth operator. The parking garage is currently designed to accommodate 252 vehicles. The

garage access will be approximately 30 feet (center to center) from the 101 Bank of America building garage entrance. This alley provides access to Lake St as well as to the Main St extension south of Kirkland Ave.

A site plan is presented in Figure 2.

The site as it currently exists includes surface parking totaling 85 stalls with two access points to the alley. There is also on-street public 2-hour parking on Lake Street, Kirkland Ave, and 2nd Ave. It is important to note that the site has grandfathered parking in which 65 stalls must be maintained for the existing uses and 93 stalls are credited to new uses from the demolition of the Calabria and Lakeside buildings.

B. Phased Development

The development is proposed to be constructed in two phases. Phase 1 will consist of an increase in building area to the KWM building with an increase in restaurant and office space. The total floor area of KWM increases 16,183 gsf. The total building area on the site increases to 44,790 gsf with Phase 1 completion. There will be no major changes to the surface parking. A supplemental traffic study identifying the traffic impacts associated with Phase 1 is included in Appendix A.

C. Previous Project Approval

It is important to note that the site is currently approved for a significantly larger development with similar access. The project is approved for 181,452 gsf total floor area with primarily office use with supplementary restaurant and retail use. The parking garage is designed to accommodate approximately 500 vehicles. As this relates to traffic, this project is estimated to generate approximately 50% more trips than the current scaled back proposal.

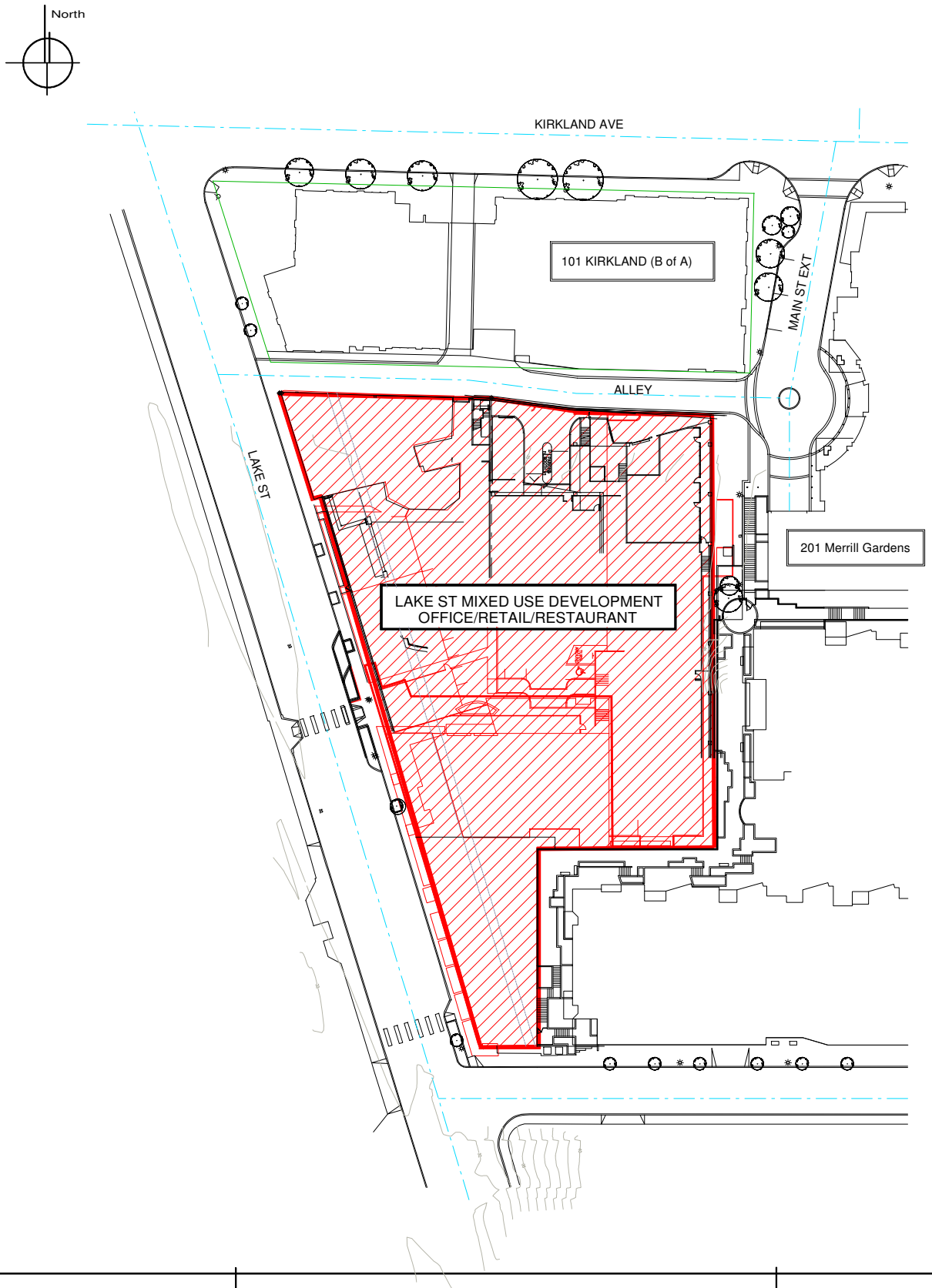
II. Existing Conditions

The existing conditions section identifies the roadway and channelization features, traffic volumes, transit, and site access sight distance.

A. Roadway Inventory

The primary existing road system utilized by project traffic would be Kirkland Avenue, Main Street, Lake Street, Central Way, 3rd Street, and State St. These streets are discussed below.

- Kirkland Avenue is a two lane Collector with connection between Lake Street to the west and ultimately to Central Way (NE 85th St) to the east. In the vicinity of the site,



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SITE PLAN

Figure 2

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development

the roadway is approximately 40 feet wide (curb to curb) with some narrowing at intersections (curb bulbs) for shorter/safer pedestrian crossing and protection. There is curb, gutter and sidewalks on both sides. On-street parking (parallel) is also permitted on both sides of the street. Parking is limited to 2 hours between 9:00 AM and 7:30 PM. The speed limit is 25 mph.

- Lake Street is a two lane Principal Arterial extending south from Central Way and ultimately turning into Lake Washington Boulevard near Carillon Point. There are curb, gutters, and sidewalks on both sides as well as bike lanes and on-street parallel parking. Marked pedestrian crosswalks are located at all of the signalized intersections, as well as most non-signalized locations along this roadway. Parking is limited to 2 hours between 9:00 AM and 7:30 PM. The posted speed limit is 25 mph.

- Main Street is a local access street with connection between Kirkland Avenue and Central Way. There is curb, gutter, and sidewalks on both sides. On-street parking is permitted on the east side and is drive-in angle parking. The speed limit is 25 mph.

- Main Street south of Kirkland Ave is also a local access street with connection to the 201 Merrill Gardens garage and public parking, as well as connection to the alley between the proposed project and the 101 Kirkland building. This roadway is approximately 30' wide with two 11' lanes and two on-street parking stalls on the west side, 8' x 40'. No parking is permitted on the east side except for a short zone marked for US Mail.

- 3rd Street is a two lane Collector with connection between Kirkland Avenue and Central Way. There is curb, gutter, and sidewalks on both sides. On-street parking is permitted on both sides. The posted speed limit is 25 mph.

- Central Way is a five lane principal arterial connecting between downtown Kirkland and I-405. The roadway becomes NE 85th Street (a designated state route, SR 908) east of I-405 with ultimate connection to downtown Redmond. There are curb, gutters, and sidewalks on both sides. Marked pedestrian crosswalks are located at all of the signalized intersections along this roadway. Traffic control is predominated by signals. The posted speed limit ranges between 30 mph and 35 mph.

- State Street is a two lane Collector with connection between Kirkland Avenue and NE 68th St. There is curb, gutter, and sidewalks on both sides. On-street parking is permitted on both sides. The posted speed limit is 25 mph north of 2nd Avenue S and 30 mph south.

- 6th St (aka 108th Ave NE) is a two to three lane minor arterial with connection between Central Way and Northup Way. In general, there is curb and gutter and sidewalks on both sides. The posted speed limit is 30 mph south of Kirkland Ave.

- NE 68th St is a three lane Minor Arterial connecting Houghton community with I-405 as well as easy connection to Lake Washington Boulevard via Lakeview Dr. There are curb, gutters, and sidewalks on both sides as well as bike lanes. Marked pedestrian crosswalks are located at all of the signalized intersections along this roadway. The posted speed limit is 25 mph in the vicinity of 6th St.

The near term future road system is expected to be similar as is today with some intersection improvement/modifications at selected intersections.

B. Traffic Volumes (Arterials)

Data regarding daily traffic volumes and historical trends on the selected study area links are available up through 2011 for the City. A brief discussion of selected links are noted as such:

- The 2011 Average Daily Traffic (ADT) volume on Kirkland Avenue east of Lake Street is approximately 6,600 vehicles per day (vpd) per City of Kirkland sources. The 2012 PM peak hour volume is approximately 340 vehicles with 60% in the westbound direction.

- Lake Street: The 2011 ADT south of Central Way is 17,500 vpd and the 2012 PM peak hour volume is 980 with 63% northbound.

- The 2011 ADT on Main Street south of Central Way is approximately 4,150 vpd. The 2012 PM peak hour volume north of Kirkland Ave is approximately 190 vehicles with 60% southbound.

- Central Way: The 2011 ADT on this arterial west of Lake Street is 19,400 vpd and east of Lake Street it is 13,460 vpd. The 2012 PM peak hour volume is 1,460 vph west of Lake St and 1,050 vph east of Lake St. The peak direction is westbound at 65% approximately.

- 3rd Street between Central Way and State Street: The 2011 ADT on this link is 10,800 vpd. The PM peak hour volume north of Kirkland Ave is approximately 740 with 63% oriented in the northbound direction.

- State Street south of Kirkland Avenue: The 2011 ADT estimate on this collector is estimated to be approximately 8,150 vehicles per day (vpd), and the PM peak hour volume is approximately 860 vehicles with 65% oriented in the northbound direction.

- 6th St north of NE 68th St: The 2011 ADT on this arterial is estimated to be approximately 10,860 vpd, and the PM peak hour volume is approximately 970 vehicles with 60% northbound.

- NE 68th St east and west of 6th St: The 2011 ADT on this arterial is estimated to be approximately 17,020 vpd east of, and 12,150 vpd west of 6th St. The PM peak hour volume is approximately 1,170 vph east leg, and 1,030 vph west leg. The peak direction is nearly evenly split east and west.

The ADT counts are attached in Appendix B. The existing AM and PM peak hour turning movement volumes at selected key intersection are shown in Figure 3a and 3b respectively. The intersections shown in these two figures were selected for further study based on the City's proportionate share worksheet calculations, which is discussed later.

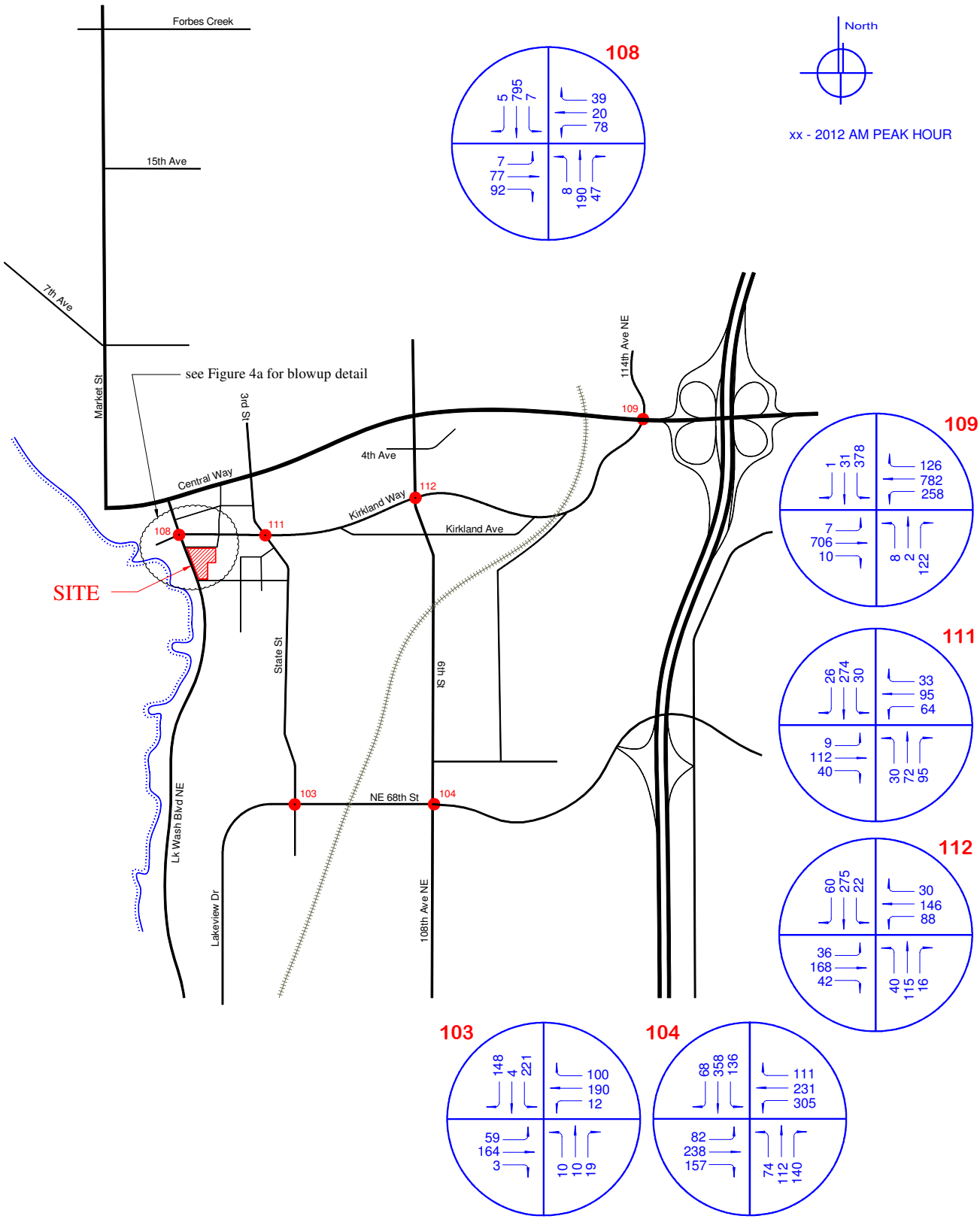
C. Local Area Inventory and Traffic Volumes

The Kirkland Ave/Main St intersection is a non-signalized intersection with stop sign control on both the north and south approaches. The intersection has pedestrian crosswalk marking on all legs: thermoplastic piano bar crosswalk bars on the north, east, and west legs, and a red brick paver pattern on the south leg. As part of the 201 Merrill Gardens development, this intersection was reconstructed to provide enhanced traffic calming to the intersection that included curb-bulbs on all approaches in order to minimize the pedestrian crossing distances all legs as well as to provide more visibility to pedestrians out in front of on-street parking thus making for a safer crossing environment. Parallel parking is permitted on both sides of Kirkland Ave east and west of the intersection.

Main St south of the Kirkland Ave is approximately 23 feet wide at the intersection and widens to 30 feet just south to include parallel parking stalls on the west side (two). The east side is marked as no parking (red curb) except for a short section for US Mail only (white curb). About 115 feet south of Kirkland Ave (measured from back of crosswalk) there is a small traffic circle/turn around area (50' diameter +/-) that adjoins: 1) 201 Merrill Gardens main pedestrian entrance to the building (east side of the circle), 2) the 201 Merrill Gardens parking garage south of the circle (with some shared public parking), and 3) the alley between the proposed project and 101 Kirkland to Lake St There are large sidewalks on both sides of Main St between Kirkland Ave and the alley.

The alley connects between Lake St and the Main St extension. The roadway width is approximately 17 feet wide throughout. There is 1-foot rolled curb/gutter on the north side at the west end and on both sides at the east end. In addition, there is a 4-foot concrete sidewalk on the north side continuous between Lake St and Main St extension. The overall alley width including rolled curb and sidewalk near the east end is approximately 23 feet, and 22 feet at the west end.

Traffic counts were conducted at the Kirkland Ave/Main St intersection and Lake St/alley driveway Wednesday February 27, 2013 4:00 pm to 6:00 pm and Thursday April 25, 2013 7:15 am to 9:00 am. In addition, alley counts were conducted Wednesday May 16,



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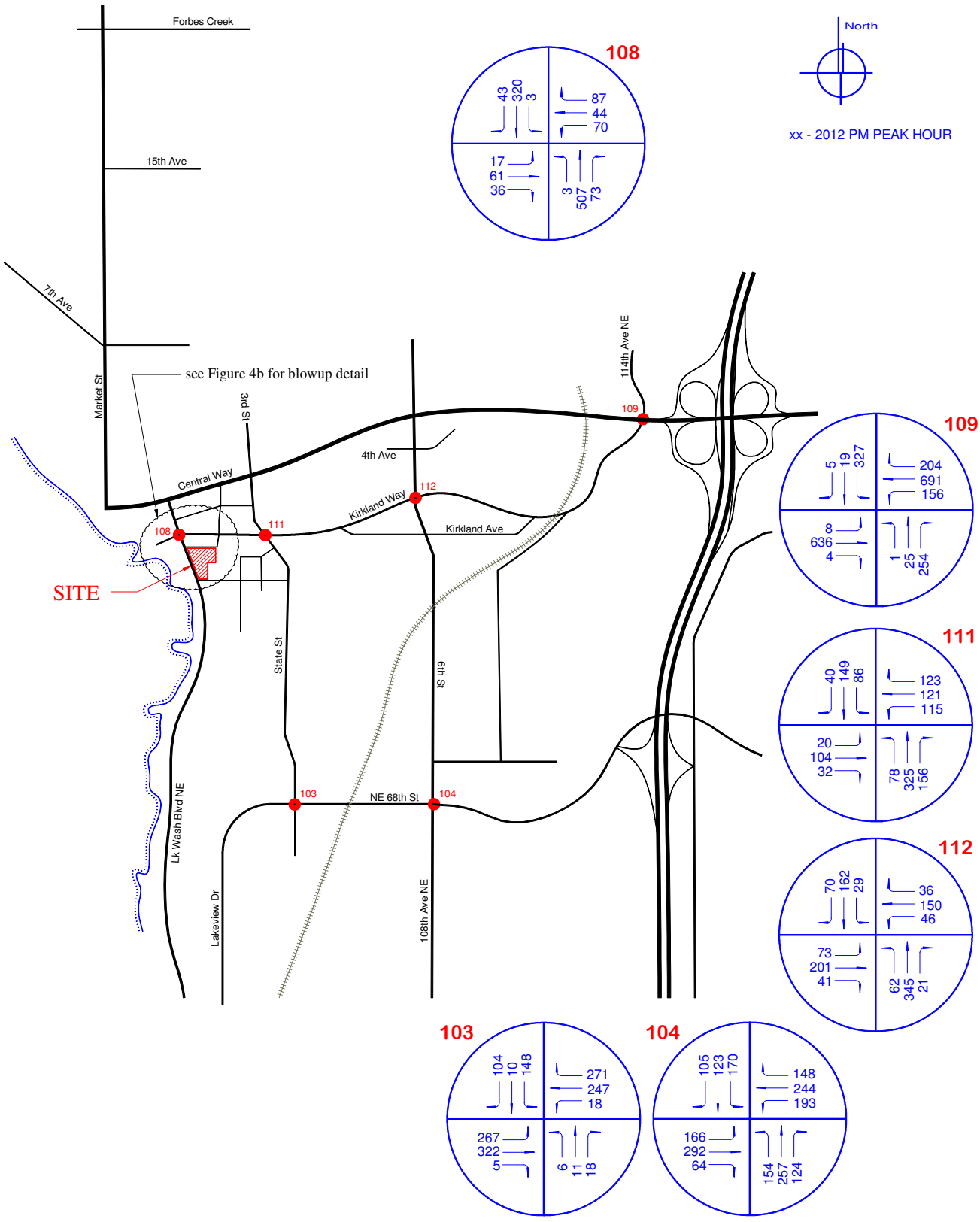
EXISTING AM PEAK HOUR VOLUMES

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development

Figure 3a



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EXISTING PM PEAK HOUR VOLUMES

Figure 3b

Lake Street Place
Office/Restaurant/Retail
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2012 for the PM peak period and Wednesday 5/1/13 for the AM peak period. Some minor volume balancing was performed on the alley counts to match the intersection endpoint counts.

A summary of these counts are shown in Table 2.

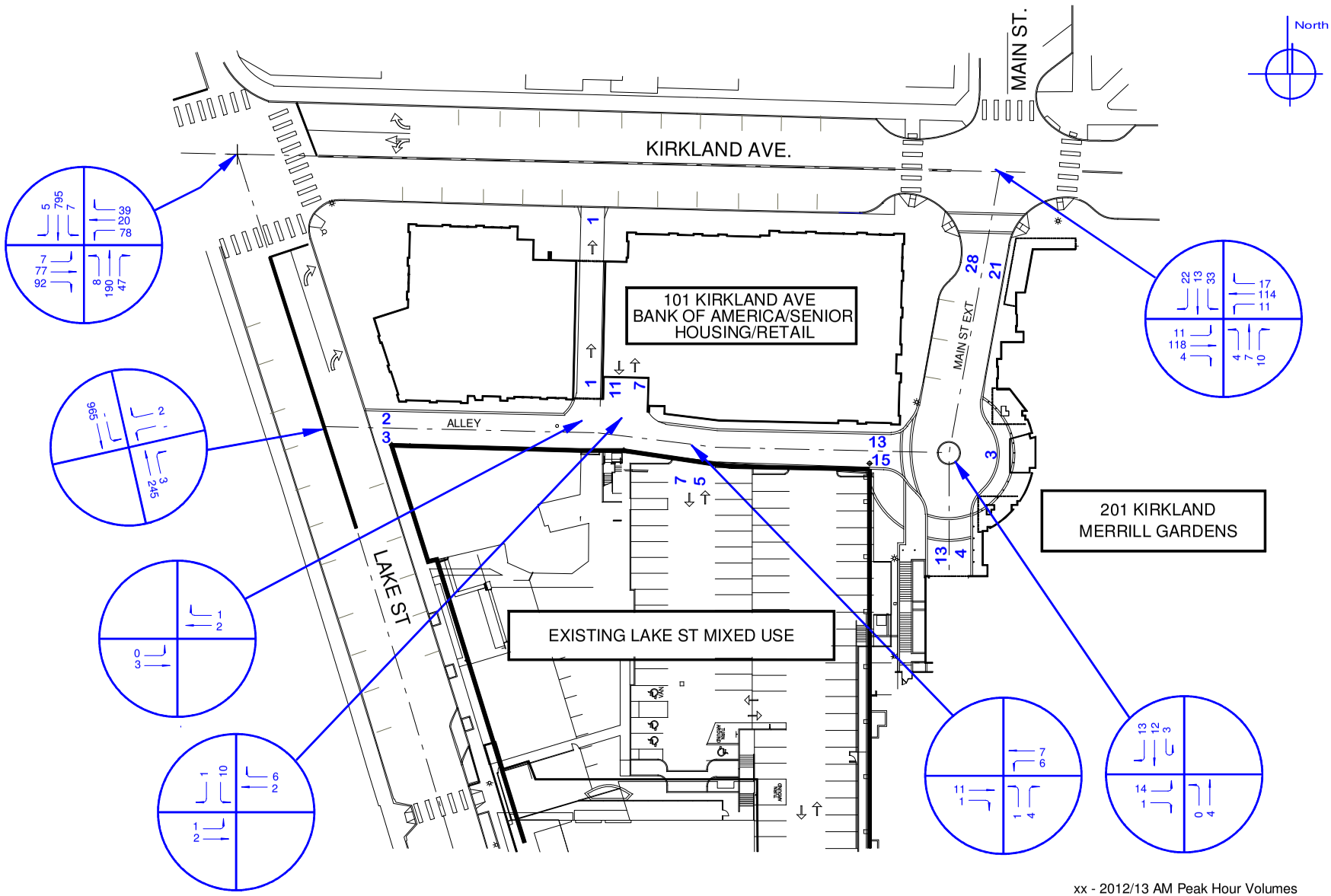
Table 2
Existing Site Area Traffic Volumes (Main St Extension and Alley)

Land Use		AM Peak Total	AM Peak In	AM Peak Out	PM Peak Total	PM Peak In	PM Peak Out
201 Merrill Gardens	Count [a]	17	13	4	34	20	14
U-turns at 201 MG		6	3	3	18	9	9
101 Kirkland Ave	Count [a]	18	7	11	33	20	13
Bank Drive-Thru		2	1	1	18	9	9
Hectors/KWM	Count [a]	12	7	5	51	34	17
All Existing Uses	Count [a]	55	31	24	154	92	62
Kirkland Ave/Main St (south leg)	Count [b]	49	28	21	136	86	50
Kirkland Ave/Bank Drive-Thru Exit	Count [a]	1	0	1	10	0	10
Lake St/Alley	Count [b]	5	3	2	8	6	2
All Trips (end points)	Count [c]	55	31	24	154	92	62

a counts conducted at the driveways for AM Wed 5/1/13 and for PM Wed 5/16/12 and Thur 5/30/13; minor volume balancing was conducted to match counts at Kirkland Ave/Main St and Lake St/Alley
b AM count conducted Thursday 4/25/13, and PM count conducted Wednesday 2/27/13
c A summation of all entrance and exit points for the subject area.

As shown here, the count volumes indicate that there were 55 and 154 vehicle trips in and out of the subject area for the AM and PM street peak hours respectively. The primary vehicle use for the area is to and from the Kirkland Ave/Main St intersection.

Figures 4a and 4b show the existing AM and PM peak hour traffic volumes, respectively, around the site including the alley driveways and Main St.



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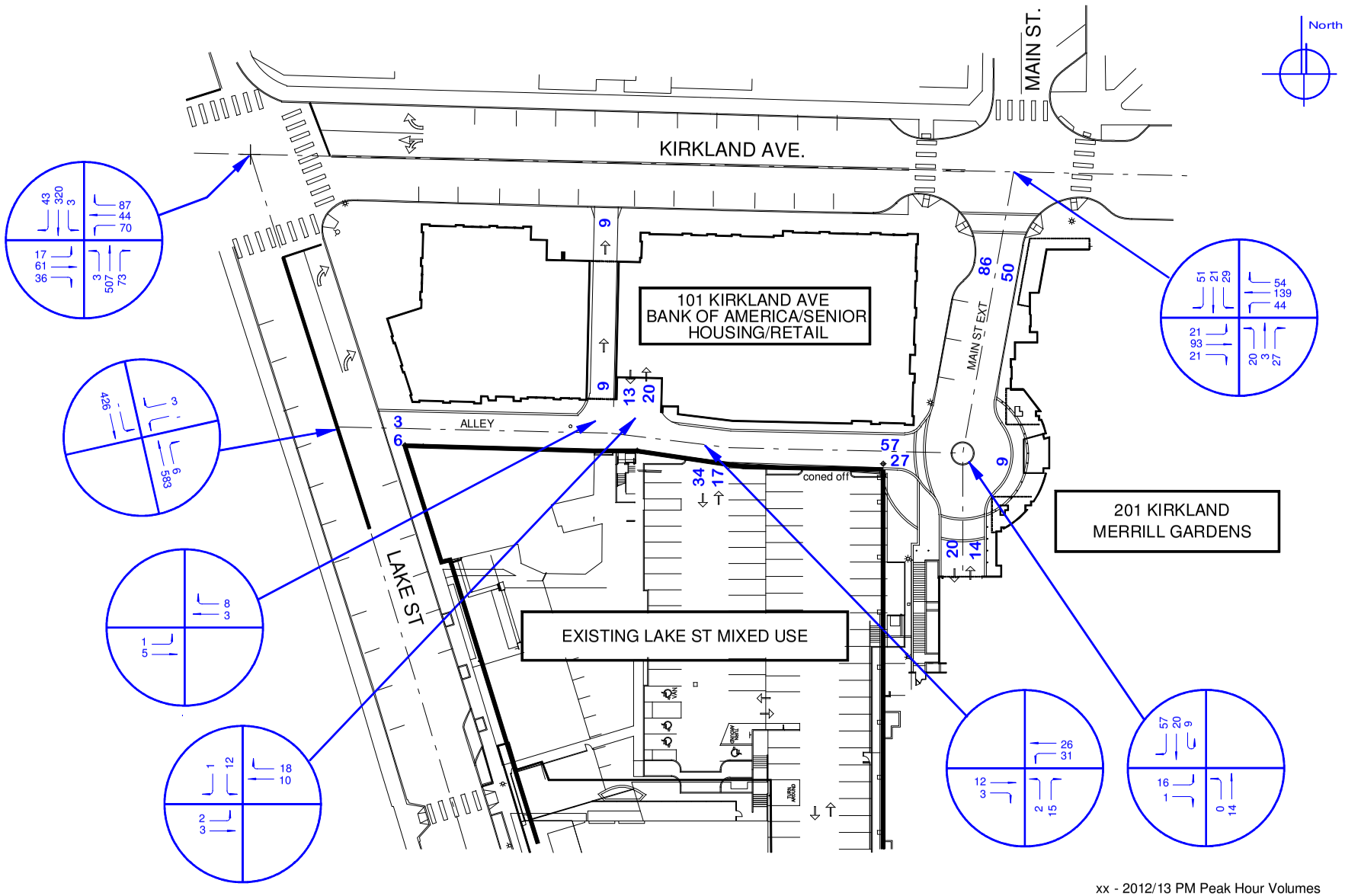
EXISTING AM PEAK HOUR VOLUMES

Figure 4a

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development



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EXISTING PM PEAK HOUR VOLUMES

Figure 4b

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development

D. Transit Service

King County Metro provides several bus routes near the site that stop at the Kirkland Transit Center on 3rd St just north of Kirkland Ave. There are no routes that run adjacent to the project. The Kirkland Transit Center serves 8 routes including Routes 234, 235, 236, 238, 245, 248, 255, and Sound Transit Route 540. This transit center is a relatively new facility (Apr 2005) that accommodates at least 8 buses (four 40' and four 60' long) in at least 4 bus bays. The transit center was developed with shelters and weather protection for riders, improved signage, information, and other amenities to support riders transferring between services or arriving by vehicle. Operator restrooms, passenger boarding areas, bike facilities, accessible design accommodations, and pedestrian/bike connections to the surrounding community have been included in the project. These routes at this transit center are discussed below:

Route 234 – This route runs north and south along Market St, 3rd St, State St, and Lakeview Dr. It runs between Kenmore and the Bellevue Transit Center.

Route 235 – This route runs between Totem Lake via Central Way and the Bellevue Transit Center via State St and Lakeview Dr.

Route 236 and 238 – This route runs a circuitous route through Bothell, Finn Hill, Juanita, Kingsgate, and Rose Hill. The route runs north-south on 3rd St and east-west on Kirkland Ave in the Transit Center vicinity.

Route 245 – This route runs between the Kirkland Transit Center and the Eastgate Park & Ride passing through Overlake area of Bellevue/Redmond through the Overlake Transit Center.

Route 248 – This route connects between the Kirkland Transit Center and east to and from the Avondale area of Redmond.

Route 255 – This route between the Brickyard Park & Ride near Bothell (NE 160th St I/C with I-405), across SR 520 and into Downtown Seattle.

Route 540 – This route is a Sound Transit route that connects between the Kirkland Transit Center and the University of Washington area.

Figure 5 shows the bus route map for the area surrounding the project.

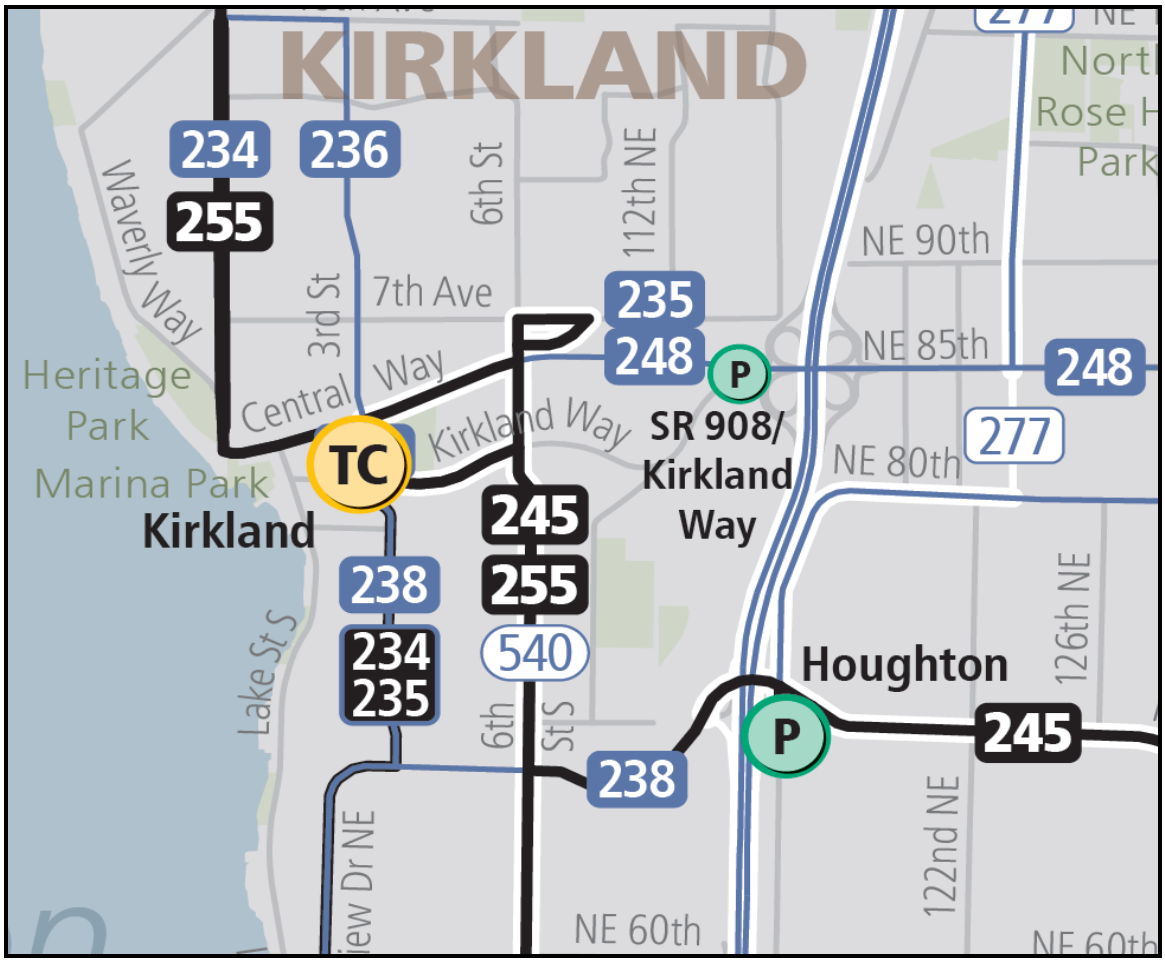


Figure 5

The walking distance between the Lake Street Place project and the Kirkland Transit Center is approximately 900 feet, along safe pedestrian sidewalks.

E. Intersection Sight Distance

Intersection sight distance (ISD) requirements are the design parameters set forth in order to provide sufficient sight distance for entering vehicles such that they do not impede the mainline traffic speed and in-turn do not reduce the capacity of the roadway. The City road standards require a minimum sight distance of 280 feet for a speed of 25 mph and 335 feet for a speed of 30 mph for a typical stop sign controlled intersection (minor street stop)(Case B). The City standard for driveways where the exiting driveway volume is less than 50 PM peak hour trips and the ADT on the major street is less than 15,000 is 150 feet for a 25 mph facility (Case E1 or E2). The sight distance requirement increases to 280 feet with an ADT exceeding 15,000 (Case E2).

Intersection sight distance evaluation was conducted in the field at the proposed site access points. Measurements were based on criteria of 3.5 feet for entering driver eye

height and an approaching vehicle height of 3.5 feet. Typically, the "driver's eye" for the entering vehicle is located 14 feet back from edge of traveled way. The edge of traveled way is exclusive of bike lanes or on-street parking.

The available sight distance from the alley looking south on Lake St is restricted by the adjacent on-street parking. If the parking were not occupied, the ISD extends in excess of 300 feet south. The ISD to the north extends through the Kirkland Ave signalized intersection, however, this measurement is not relevant given that the only permitted movement at the alley is right in and right out. There are two on-street parking stalls to the south where parking is restricted between 4:00 PM and 7:00 PM. When the parking stalls are occupied, the available sight distance from the alley looking south on Lake St varies between 37 feet and 44 feet depending on the setback assumption of 10 feet or 14 feet. These sight line measurements assume a sight line that crosses the front of the vehicle, presumably a van or similar vehicle without a front-end low profile. The available ISD without the two parking stalls occupied varies between 122 feet and 152 feet depending on the two noted setback assumptions. The shorter setback assumption yields a longer sight distance.

The available sight distance from the Main Street extension looking east on Kirkland Avenue is available up to the 3rd Street intersection, however, it can be restricted somewhat by on-street parking. The available sight distance from the site access looking west on Kirkland Avenue is available up to Lake St. The distance from the site access to each of these intersections is in excess of the 150-foot minimum distance. Thus, the available sight distance would be adequate for a 25 mph speed limit assumption.

F. Accidents

The 3 year accident history 2009 through 2011 at the study area intersections was provided by WSDOT Olympia Headquarters. The study area intersections noted in this table were determined based on the City's Concurrency analysis and the Significant Intersection impact analysis. This process is discussed later in this report. The "target threshold" intersection accident rate set at the city is 1.0 acc/mev.

The accident rates for the years 2009 and 2011 were computed based on estimates of total daily volume entering the intersection. Intersection (total entering) daily volumes were estimated based on selected link volume ADT from City counts compared with PM peak hour leg volume counts in order to develop K factors to apply to the PM peak hour total entering volume. The PM peak hour intersection volumes are 2012, thus the ADT entering volume each year back was adjusted down by 1%.

The number of accidents, the volume basis, and the subsequent annual accident rates are shown in Table 3.

Table 3
Intersection Accident History [a]

Intersection	2011 # of Acc[b]	2011 Entering Volume[c]	2011 Acc Rate[d]	2010 # of Acc[b]	2010 Entering Volume[c]	2010 Acc Rate[d]	2009 # of Acc[b]	2009 Entering Volume[c]	2009 Acc Rate[d]
Signalized Intersections									
State St/NE 68th St	1	16,620	0.16	0	16,450	0.00	0	16,290	0.00
108th Ave NE/NE 68th St	2	22,440	0.24	4	22,220	0.49	2	22,000	0.25
Lake St/Kirkland Ave	6	17,880	0.92	2	17,700	0.31	2	17,520	0.31
NE 85th St/114th Ave NE	7	25,630	0.75	2	25,370	0.22	8	25,120	0.87
Kirkland Ave/3rd St	1	17,810	0.15	1	17,630	0.16	3	17,450	0.47
Non-Signalized Intersection (all-way stop)									
Kirkland Way/6th St	3	15,300	0.54	2	15,150	0.36	1	15,000	0.18
Kirkland Ave/Main St	1	7,420	0.37	0	7,350	0.00	0	7,280	0.00

[a] Data summary provided by WSDOT Olympia HQ.
[b] Annual accidents; Intersection related.
[c] Total vehicles per day entering the intersection.
[d] Annual Accident Rate = [(# of Acc)(1,000,000)]/[(ADT)(365)]

As shown in Table 2, based on the historical data, there are no intersections that have experienced more than 10 accidents in any given year.

At the Lake St/Kirkland Ave intersection, over the course of the 3-year period shown, this intersection had 10 accidents over the 3 year period analyzed, resulting in an annual average of 3.33 accidents per year. The average accident rate was estimated to be 0.51 accidents per million vehicles entering; annual rates ranged between 0.31 and 0.92. This intersection is signalized. The K factor was assumed to be 7.0%.

At the State St/NE 68th St intersection, over the course of the 3-year period shown, this intersection had 1 accident over the 3-year period analyzed, resulting in an annual average of 0.33 accidents per year. The average accident rate was estimated to be 0.05 accidents per million vehicles entering; annual rates ranged between 0.00 and 0.16. This intersection is signalized. The K factor was assumed to be 8.5%.

For the 3-year period shown, the 108th Ave NE/NE 68th St intersection has had 8 intersection related accidents over the 3-year period analyzed, thus averaging 2.67 accidents per year. The average accident rate was estimated to be 0.33 accidents per million vehicles entering; annual rates ranged between 0.25 and 0.49. This intersection is signalized. The K factor (PM to daily ratio for total entering) was assumed to be 9.0%.

At the NE 85th St/114th Ave NE intersection, over the course of the 3-year period shown, this intersection had 17 accidents over the 3-year period analyzed, resulting in an annual average of 5.67 accidents per year. The average accident rate was estimated to be 0.61

accidents per million vehicles entering; annual rates ranged between 0.22 and 0.87. This intersection is signalized. The K factor was assumed to be 9.0%.

At the Kirkland Ave/3rd St intersection, over the course of the 3-year period shown, this intersection had 5 accidents over the 3-year period analyzed, resulting in an annual average of 1.67 accidents per year. The average accident rate was estimated to be 0.26 accidents per million vehicles entering; annual rates ranged between 0.15 and 0.47. This intersection is signalized. The K factor was assumed to be 7.5%.

At the Kirkland Way/6th St intersection, over the course of the 3-year period shown, this intersection had 6 accidents over the 3-year period analyzed, resulting in an annual average of 2.00 accidents per year. The average accident rate was estimated to be 0.36 accidents per million vehicles entering; annual rates ranged between 0.18 and 0.54. This intersection is non-signalized (all-way stop). The K factor was assumed to be 8.0%.

At the Kirkland Way/Main St intersection, over the course of the 3-year period shown, this intersection had 1 accident over the 3-year period analyzed, resulting in an annual average of 0.33 accidents per year. The average accident rate was estimated to be 0.12 accidents per million vehicles entering; annual rates ranged between 0.00 and 0.37. This intersection is non-signalized (nb/sb side street stop). The K factor was assumed to be 7.5%.

G. City Programmed Improvements

According to the City of Kirkland's Capital Facilities Plan, there are several proposed roadway projects that will have an improved ultimate affect on the roadway infrastructure utilized by the project. They would include:

- Traffic Signal Enhancements (Global) – Intelligent Transportation System (ITS)

  Intelligent Transportation System (ITS) involves the systematic implementation of advanced technology to improve traffic flow. It has several components including advanced traffic signal controllers, traffic surveillance cameras, video detection, and accessible pedestrian signals to name a few. A Traffic Management Center (TMC) is used to remotely manage all of the field devices with central traffic systems, allowing monitoring and adjustments to signal timing in a real-time environment.

  This project will be completed in two phases:

Phase I: Install traffic signal upgrades on designated ITS corridors including traffic surveillance cameras. Set up the TMC and connect fiber optic communication to link corridors to TMC.

1. Central Way from 6th Street to Lake Street
2. Lake Washington Blvd from NE 38th Street to Central Way
3. Market Street/100th Avenue NE from Central Way to NE 132nd Street

Between Phase I and Phase II, the **Citywide Safety & Traffic Flow Improvement** project will provide enhanced signal interconnection and communication to the City's new TMC.

Phase II: Install ITS upgrades at 15 intersections formerly on King County's network (six of which are located in the newly annexed area) to integrate them into Kirkland's Phase I ITS. Includes system engineering analysis, design, plans and specifications for the procurement and construction/installation of ITS devices such as controllers, cabinets, detection, traffic surveillance cameras and other related devices, as well as the fiber optic communication system that will allow devices to communicate to Kirkland's TMC presently under design.

1. NE 132nd Street
2. 120th Avenue/124th Avenue NE in Totem Lake
3. 100th Avenue NE/Juanita Woodinville Way

Project Timeline: Phase 1: Traffic Management Center 2013, Procurement and Testing 2013, Installations 2013. Phase 2: Procurement and Testing 2014, Installations 2014.

- Park Lane Pedestrian Enhancement

The intent of the project is to develop visual connections along Park Lane (consistent with the long term goal of connecting the Park to the Lake Washington waterfront) with enhanced Park Lane as a regional destination, encourage economic vibrancy and diversity, ensure equitable access for all, and create high performance greenscapes.

III. Trip Generation

A. Project Trip Generation

Trip generation estimates daily, AM and PM peak hours for the proposed project were calculated using trip generation rates obtained from the Eighth Edition of the ITE *Trip Generation Report*, 2008 as well as supplemented with information presented in the ITE Trip Generation Handbook. This would include estimates for internal site trip making characteristics as well as pass-by assumptions for the restaurant uses. The retail use is expected to also have some pass-by trips however; there is no information within ITE to support a pass-by rate for non-specified retail use. It is assumed the pass-by rate for retail to be approximately 25% of total external retail trips.

Trip generation estimates for the existing uses were computed with the same trip making assumptions noted for the future site.

The trip generation estimate for the existing conditions for Daily, AM, and PM street peak hours are shown in Table 4 below. The supporting trip capture assumptions used for the existing site uses are the same as for the future site uses.

It should be noted that the summary of trip generation for the City's concurrency run effort summarize only the external non-pass-by trips for each of the respective conditions. The external trips reflect those trips that have either an origin or destination trip end associated with the project. Due to the fact this is a mixed-use project, it is anticipated some of the trips will remain on-site for trips between land uses. In addition, this analysis summarizes only the non-pass-by trips since the pass-by trips are trips that would already be on the surrounding street system beyond the perimeter of the site.

Table 4
Trip Generation – EXISTING Site Uses

Land Use	AWDT	AM Peak Total	AM Peak In	AM Peak Out	PM Peak Total	PM Peak In	PM Peak Out
Office (13,645 gsf)							
LUC 710 Rate	11.01	1.55	0.88	0.12	1.49	0.17	0.83
All Trips	150	21	19	2	20	3	17
Internal Capture[1]	38	1	1	0	3	1	2
External[2]	112	20	18	2	17	2	15
Quality Restaurant (11,173 gsf)							
LUC 931 Rate	89.95	0.81	n/a	n/a	7.49	0.67	0.33
All Trips	1,005	9	7	2	84	56	28
Internal Capture[1]	56	1	0	1	4	2	2
External[2]	949	8	7	1	80	54	26
pass-by[3]	420	4	3	1	21	14	7
non-pass-by[4]	529	4	4	0	59	40	19
High Turnover Restaurant (1,626 gsf)							
LUC 931 Rate	89.95	0.81	n/a	n/a	7.49	0.67	0.33
All Trips	207	19	10	9	18	11	7
Internal Capture[1]	35	0	0	0	1	1	0
External[2]	172	19	10	9	17	10	7
pass-by[3]	73	8	4	4	6	3	3
non-pass-by[4]	99	11	6	5	11	7	4
Retail (2,163 gsf)							
LUC 814 Rate	44.32	1.09	0.66	0.34	2.71	0.44	0.56
All Trips	96	2	1	1	6	3	3
Internal Capture[1]	59	1	0	1	2	1	1
External [2]	37	1	1	0	4	2	2
TOTALS							
All Trips	1,458	51	37	14	128	73	55
Capture	188	3	1	2	10	5	5
External	1,270	48	36	12	118	68	50
pass-by	493	12	7	5	27	17	10
non-pass-by	777	36	29	7	91	51	40

[1] See Attachment 1, 2, and 3 for estimated internal trip capture for AM, PM, and Daily respectively.
[2] External vehicle trips entering or exiting the site
[3] Pass-by for Quality Restaurant: 26% for PM Peak, and 44% for AM and daily. Pass-by for high turnover restaurant is 43% for all cases. These are for trips entering or existing the site (excludes all internal trips).
[4] Non-pass-by trips are new and/or diverted trips entering or exiting the site (excludes all internal trips.

As shown in Table 4, the existing site is estimated to generate 777 daily, 36 AM, and 91 PM peak hour trips to the surrounding street system (non-pass-by trips only). Within the immediate area of the site including the alley and Main St, pass-by trips are included in the volume estimates: 1,270 daily trips, 48 AM, and 118 PM peak hour trips.

Table 5
Trip Generation – FUTURE Site Uses

Land Use	AWDT	AM Peak Total	AM Peak In	AM Peak Out	PM Peak Total	PM Peak In	PM Peak Out
Office (72,517 gsf)							
LUC 710 Rate	11.01	1.55	0.88	0.12	1.49	0.17	0.83
All Trips	798	112	99	13	108	18	90
Internal Capture[1]	93	1	1	0	5	2	3
External[2]	705	111	98	13	103	16	87
Quality Restaurant (18,766 gsf)							
LUC 931 Rate	89.95	0.81	n/a	n/a	7.49	0.67	0.33
All Trips	1,688	15	11	3	141	94	47
Internal Capture[1]	284	3	1	1	13	7	6
External[2]	1,404	12	10	2	128	87	41
pass-by[3]	621	6	4	2	33	22	11
non-pass-by[4]	783	6	6	0	95	65	30
High Turnover Restaurant (1,626 gsf)							
LUC 931 Rate	89.95	0.81	n/a	n/a	7.49	0.67	0.33
All Trips	207	19	10	9	18	10	8
Internal Capture[1]	67	2	1	1	4	2	2
External[2]	140	17	9	8	14	8	6
pass-by[3]	59	7	4	3	5	3	2
non-pass-by[4]	81	10	5	5	9	5	4
Retail (17,512 gsf)							
LUC 814 Rate	44.32	1.09	0.66	0.34	2.71	0.44	0.56
All Trips	776	19	13	6	47	22	25
Internal Capture[1]	312	4	2	2	14	7	7
External[2]	464	15	11	4	33	15	18
TOTALS							
All Trips	3,469	165	134	31	314	144	170
Capture	757	10	6	4	36	18	18
External	2,712	155	128	27	278	126	152
pass-by	680	12	8	4	38	25	13
non-pass-by	2,032	143	120	23	240	101	139

[1] See Attachment 1, 2, and 3 for estimated internal trip capture for AM, PM, and Daily respectively.
[2] External vehicle trips entering or exiting the site
[3] Pass-by for Quality Restaurant: 26% for PM Peak, and 44% for AM and daily. Pass-by for high turnover restaurant is 43% for all cases. These are for trips entering or existing the site (excludes all internal trips).
[4] Non-pass-by trips are new and/or diverted trips entering or exiting the site (excludes all internal trips.

As shown in Table 5, the proposed site redevelopment is estimated to generate 2,032 daily, 143 AM and 240 PM peak hour non-pass-by trips to the surrounding street network. It is important to note that all these trips noted above represent average

weekday conditions and reflect the external non-pass-by trips only. Within the immediate area of the site including the alley and Main St, pass-by trips are included in the volume estimates: 2,712 daily trips, 155 AM, and 278 PM peak hour trips.

Table 6 below identifies the change in trip generation "net new" conditions as a result of the land use and floor area adjustments for all of the four land use types.

Table 6
NET NEW Trip Generation

Land Use	AWDT	AM Peak Total	AM Peak In	AM Peak Out	PM Peak Total	PM Peak In	PM Peak Out
External Trips (without pass-by) [2]							
EXISTING SITE	777	36	29	7	91	51	40
FUTURE SITE	2,032	143	120	23	240	101	139
NET NEW	1,255	107	91	16	149	50	99
External Trips (with pass-by) [3]							
EXISTING SITE	1,270	48	36	12	118	68	50
FUTURE SITE	2,712	155	128	27	278	126	152
NET NEW	1,442	107	92	15	160	58	102

[1] Net New is Future Trips minus Existing Trips. All trip estimates are per ITE rates.
[2] Non-pass-by external-trips-only; see Table 4 for existing trip generation details, and Table 5 for future trip generation details. Totals do not include internal trips (trip capture for mixed use) and pass-by trips. Trip estimates are applicable to areas outside the immediate vicinity of the site.
[3] All trips entering and exiting the site; see Table 4 for existing trip generation details, and Table 5 for future trip generation details. Totals do not include internal trips (trip capture for mixed use). Trip estimates are applicable to only the immediate area of the site.

As shown in Table 6, per ITE trip generation rates, the net new trip generation totals show that the site redevelopment's net new vehicular trip impact on the surrounding street system (non-pass-by trips only) will result in an increase of 1,255 daily trips, 107 AM peak hour trips and 149 PM peak hour trips. These net new trips were used for the City's concurrency analysis for all off-site key intersection evaluation. The City concurrency results are included in Appendix C as well as the trip generation report.

For the immediate area of the site, the analysis includes all of the net new pass-by trips as well as the non-pass-by trips. The net new volume estimate (future minus existing) with inclusion of pass-by trips is 1,442 daily trips, 107 AM, and 160 PM peak hour trips. These trip estimates reflect the project's net increase in floor area and use.

The total trips estimated for the full development (to and from the site) were computed by adding the actual counts for the existing site to the estimated net new trips for the expansion. For the typical AM and PM street peak hours, it is therefore estimated that the

total trips to/from the site would be 119 (12+107) AM peak hour trips, and 211 (51+160) PM peak hour trips. The existing counts are shown back in Table 2.

B. Weekday Traffic Fluctuations

An estimate of hourly volumes, totals by land use type, for each hour of an average weekday condition was prepared. The off peak hour estimates were based on several factors including the known peak hour volumes, the estimated daily volume as a control total, hourly parking accumulation statistics, traffic engineering judgment, as well as information provided by the client regarding quality restaurant use peak activity.

Figure 6 shows the average weekday hourly distribution by land use type and total as well as an estimate for the existing site. The volumes in this figure represent the project trips with pass-by trips included for the entire site, ie., the net new with pass-by 1,442 daily, 107 AM and 160 PM trips added to the existing counts 550 daily (estimate), 12 AM and 51 PM trips. The site's peak is estimated to be 211 hourly trips occurring during the street PM peak hour. The AM street peak volume is estimated to be 119 vehicles.

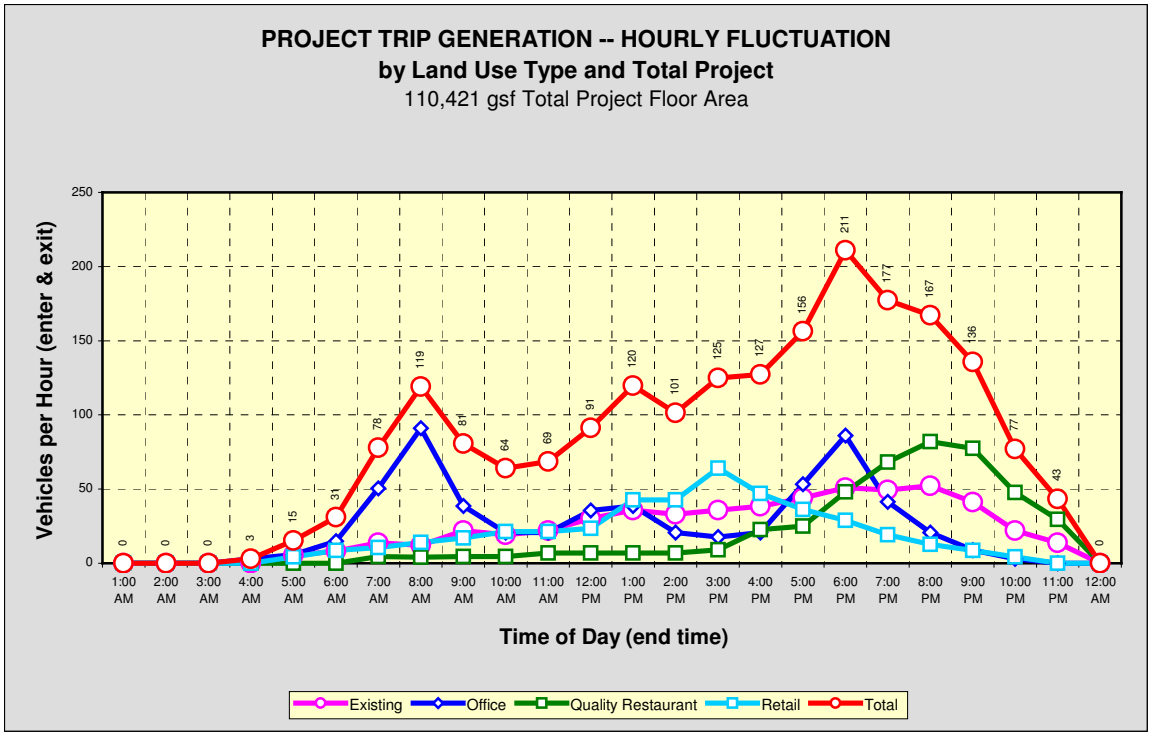


Figure 6

A second figure, Figure 7, represents the inbound and outbound total trips along with the total trips as shown above in Figure 6. This figure is intended to show the entering and exiting volume magnitude compared against the total volume.

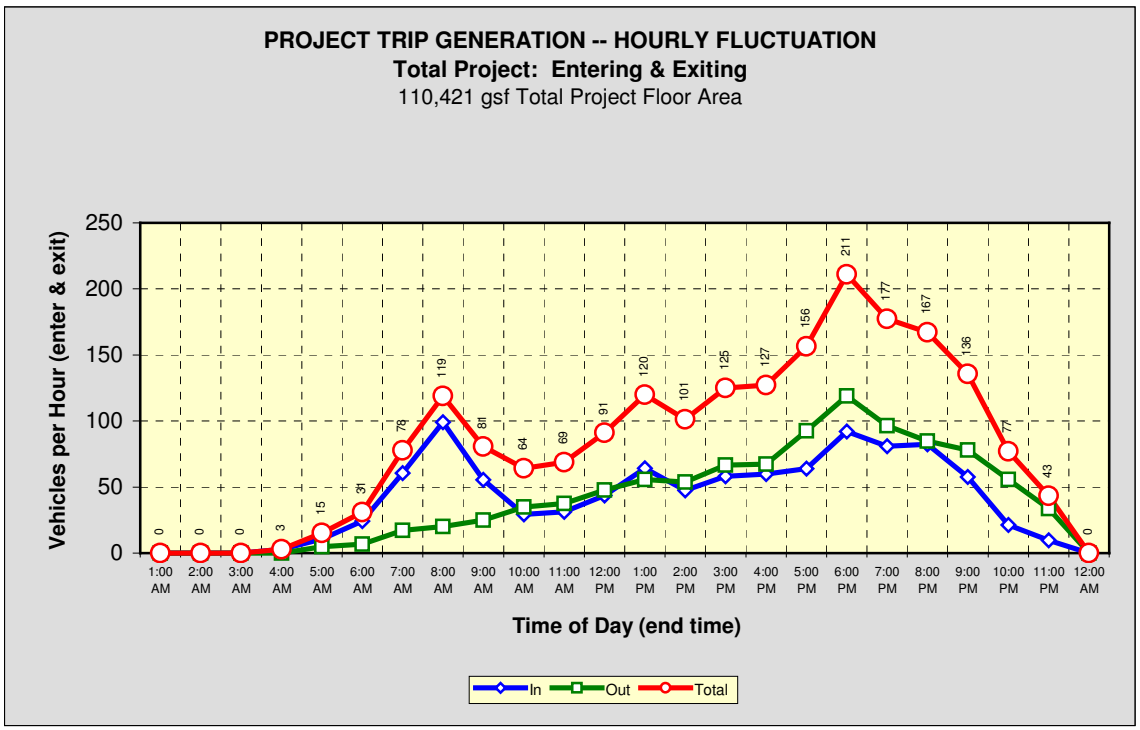


Figure 7

The peak entering volume ("In"; blue line) for the site peak is 99 vph, and 119 vph exiting ("Out"; green line). The peak inbound volume occurs around 8:00 am and the peak exiting volume occurs around 6:00 pm. The peak two way volume is 211 vph which also occurs around 6:00 pm

It is important to note that the volume estimates shown above are likely a conservative estimate that does not take into consideration factors that would lead to reduced trips such as increased transit use for office tenants, walk-in traffic for restaurants, on-street parking, as well as trip capture to/from ares beyond the site, within the CBD area.. This is also discussed more in detail later.

C. Traffic Count Comparison with Existing Development

There are two adjacent developments that share use of the alley and Main St Extension. These include 201 Merrill Gardens (Assisted Living/Retail) and 101 Kirkland Ave (Independent Senior Housing/Bank/Retail). In addition of course, Hectors and the Kirkland Waterfront Market (KWM) currently take sole access to the alley from the internal surface parking lot. A brief description of each project is discussed below:

- 201 Merrill Gardens. This development is located adjacent east of this project and also fronts to Kirkland Ave. This project is an assisted living retirement community consisting of 120 beds and 7,800 gsf of specialty retail. This project takes access to the Main St extension via a parking garage situated south of the east-west alley to

Lake St. Vehicle access can be either to/from Lake St via the alley or to/from Kirkland Ave via the new connection to the Kirkland Ave/Main St intersection.

- 101 Kirkland Ave. This development is located adjacent north of this project and also fronts to Kirkland Ave and Lake St. This project is a luxury is a luxury apartment building consisting of 66 units as well as 6,545 gsf of specialty retail and a new 5,500 gsf Bank of America. This project will have sole access to the southside alley via a parking garage with driveway access closer to Lake St. Vehicle access can be either to/from Lake St via the alley or to/from Kirkland Ave via the new connection to the Kirkland Ave/Main St intersection.

- The existing total gross floor area for Hectors and Kirkland Waterfront Market is 28,607 gsf. The uses consist of a mix of restaurant (quality and high turnover), office, and retail uses. The estimated trip generation was noted in back in Table 4.

Traffic counts were conducted at the Kirkland Ave/Main St intersection and Lake St/alley driveway Wednesday February 27, 2013 4:00 pm to 6:00 pm and Thursday April 25, 2013 7:15 am to 9:00 am, respectively. In addition, alley counts were conducted Wednesday May 16, 2012 and Thursday May 30, 2013 for the PM peak period and Wednesday 5/1/13 for the AM peak period.

Trip generation estimates for each of these projects are shown in Table 7 below.

Table 7
Trip Generation – Existing Site and Adjacent Development

		AM Peak			PM Peak		
Land Use	Source	Total	In	Out	Total	In	Out
201 Merrill Gardens	ITE [a]	26	17	9	47	20	27
	Count [d]	23	16	7	52	29	23
101 Kirkland Ave	ITE [b]	36	21	15	164	82	82
	Count [d]	20	8	12	51	29	22
Hectors/KWM	ITE [c]	48	36	12	118	68	50
	Count [d]	12	7	5	51	34	17
All Existing Uses	ITE [e]	110	74	36	329	170	159
	Count [d]	55	31	24	154	92	62

a per Table 1 of the 201 Merrill Gardens TIA 11/22/06; total trips (no pass-by trips assumed)
b per Table 1 of the 101 Kirkland Ave TIA 1/25/08; total trips (includes pass-by trips)
c per Table 4 of this TIA; total trips (includes pass-by element for AM and PM)
d counts conducted at the driveways for AM Wed 5/1/13 and for PM Wed 5/16/12, Thur 5/30/13; minor volume balancing was conducted to match counts at Kirkland Ave/Main St and Lake St/Alley
e total trip estimate for based on ITE rates.

As shown in Table 7, the recorded trips from these existing uses are noticeably less than what is estimated per ITE rates. The counts indicate a total volume entering and exiting the alley and Main St extension at 55 AM peak hour trips and 154 PM peak hour trips. By comparison, the ITE estimate was 110 AM trips and 329 PM trips.

Based on ITE rates for AM and PM for all three projects, the AM peak hour volumes are estimated to be about 33% of PM volumes. Actual traffic counts for entering and exiting the alley area indicate AM volumes during the street peak hour are 36% of PM volumes. The actual volumes generated from the three properties are about half of what was estimated per ITE rates.

Based on this information, it is assumed that there are several factors that would lead to the results observed. These would include: 1) a significant amount of restaurant and retail likely to utilize on-street parking, 2) given the location of the developments in the Kirkland CBD vicinity, there are more walk trips versus vehicle trips, 3) the bank volume observed prior to redevelopment was held constant even though the bank downsized approximately 40%, 4) on-line banking has likely continued to increase thus decreasing vehicle trips to the bank, 5) restaurant and retail likely to have a higher customer walkup percentage given the location, and 6) more trip linking (trip capture to a large extent beyond the bounds of the project) with all the other retail/restaurant/residential in the area.

Therefore, it is concluded that the net new trips estimated in Table 7 above are likely to be conservative estimates. Possibly as much as twice what may ultimately be realized. Nevertheless, the analysis utilizes the higher volumes to present worst case conditions.

IV. Trip Distribution and Assignment

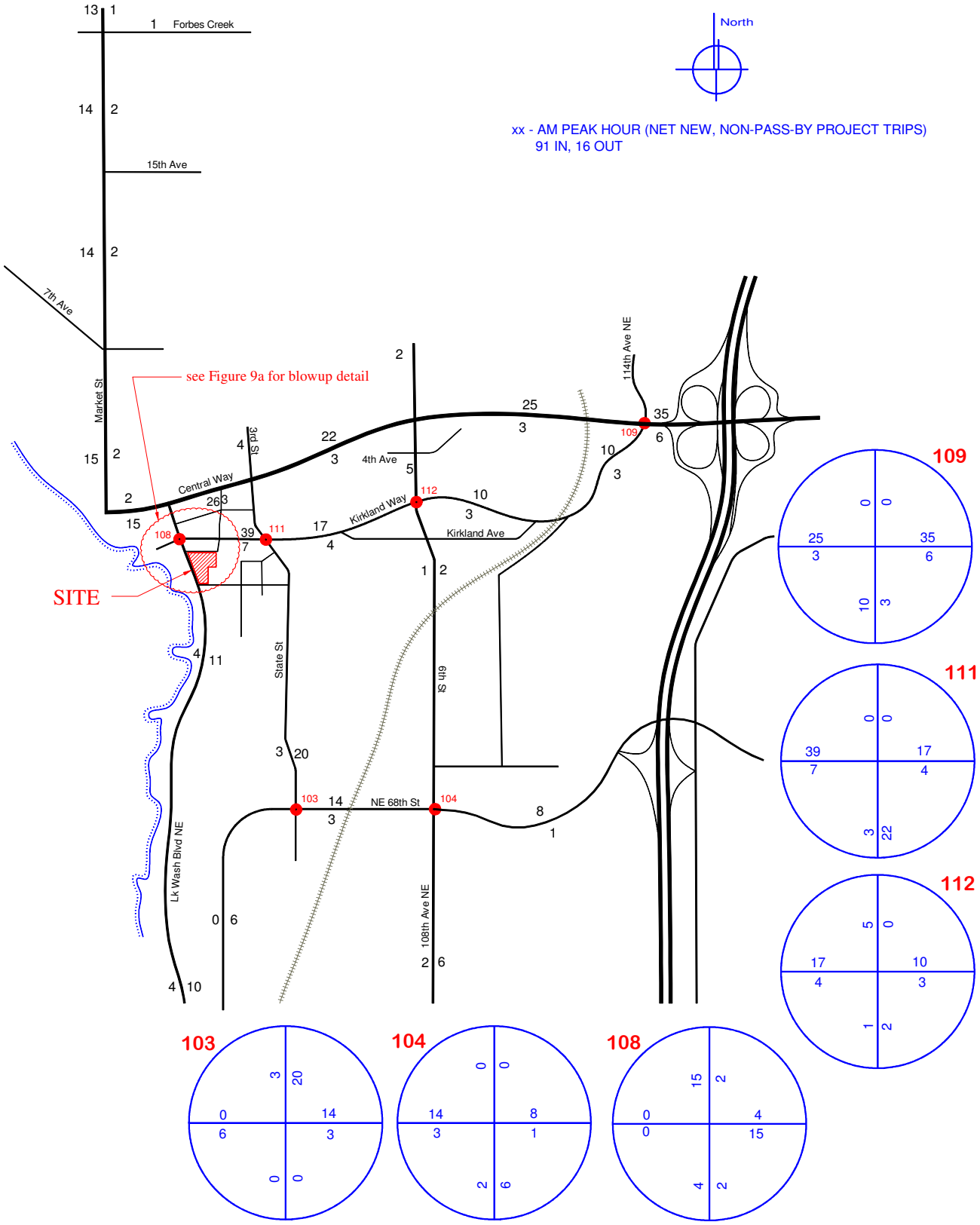
The distribution and assignment of project PM peak hour trips was performed by the City using the City's traffic model as part of the transportation concurrency test. The results suggest the majority of the project trips (70% +/-) will enter and exit to/from the east via Kirkland Ave and Central Way. Below is a detail of the PM trip assignment.

- 32% on Kirkland Ave east of State St.
- 20% on State St south of Kirkland Ave.
- 16% on Central Way east of 3rd St.
- 3% on 3rd St north of Central Way.
- 16% on Lake St south of the alley (south of 2nd Ave).
- 13% on Market St north of Central Way.

The distribution of the AM trips is typically not provided by the City. In this instance, the AM project trips were estimated based on a general reverse orientation of the PM distribution with an adjustment factor for the trip generation AM-PM ratios. There was some adjustment for the inbound trips from the south on Lake Washington Boulevard, where in this case all of the trips were assumed to enter the site from Lake St to Kirkland Ave, whereas in the PM, the southbound left turn movement at this intersection is not permitted, thus these trips were diverted to Main St and entered the site from the north.

The AM project trip assignment is shown in Figure 8a. The assignment of project weekday PM peak hour trips along with daily volumes is shown in Figure 8b. It is important to note that these two figures represent the net new non-pass-by trips from the site as a result of redevelopment. The AM and PM peak hour volumes are shown by turning movement at all the intersections defined as significant. The full assignment in tabular form can be found in Appendix C as part of the City's concurrency run.

The AM and PM peak hour project turning movement volumes in the vicinity of the site are shown in Figures 9a and 9b respectively. These two figures represent the net new trips to and from the site, including pass-by trips.



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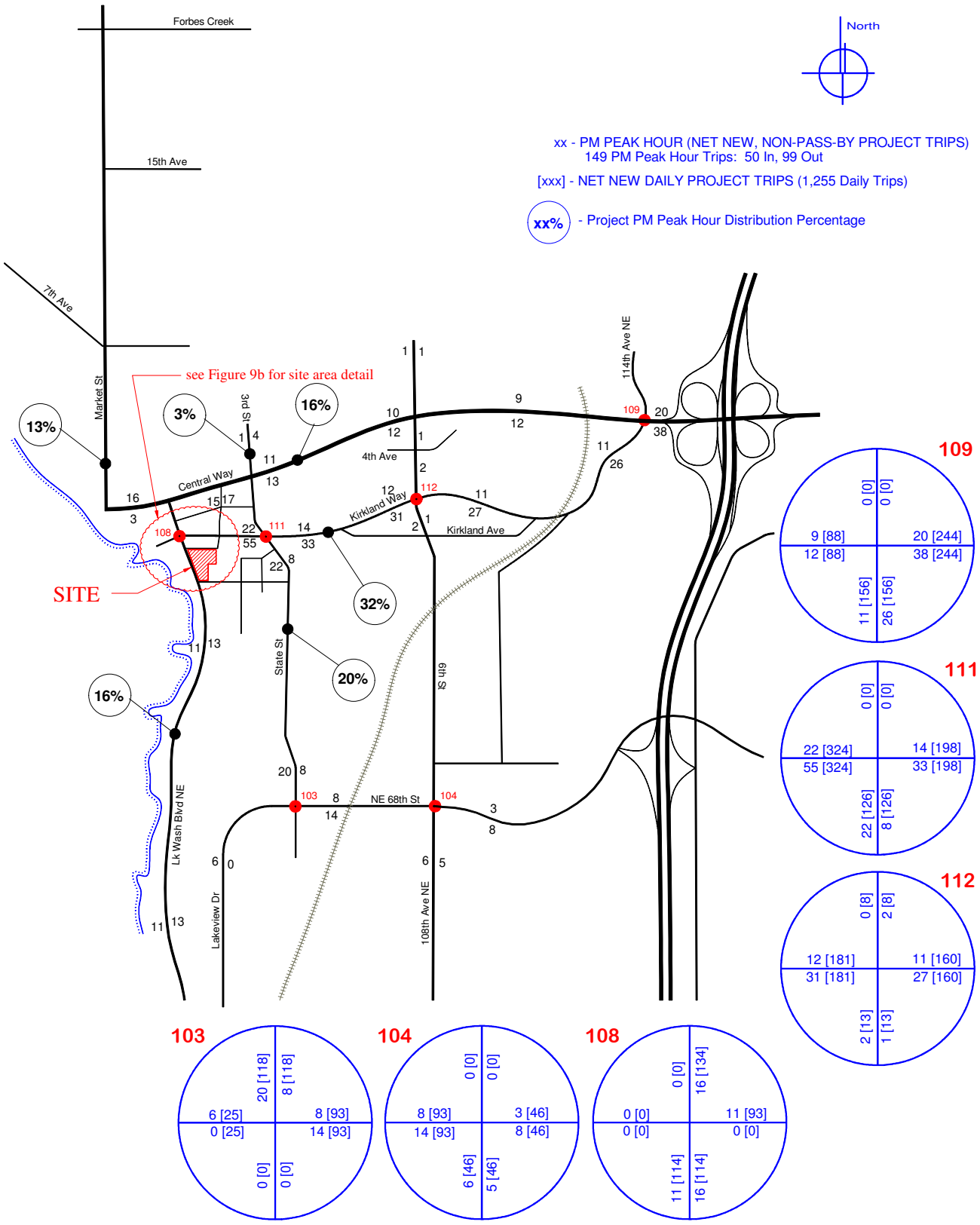
PROJECT AM PEAK HOUR TRIPS
Net New non Pass-By

Figure 8a

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development



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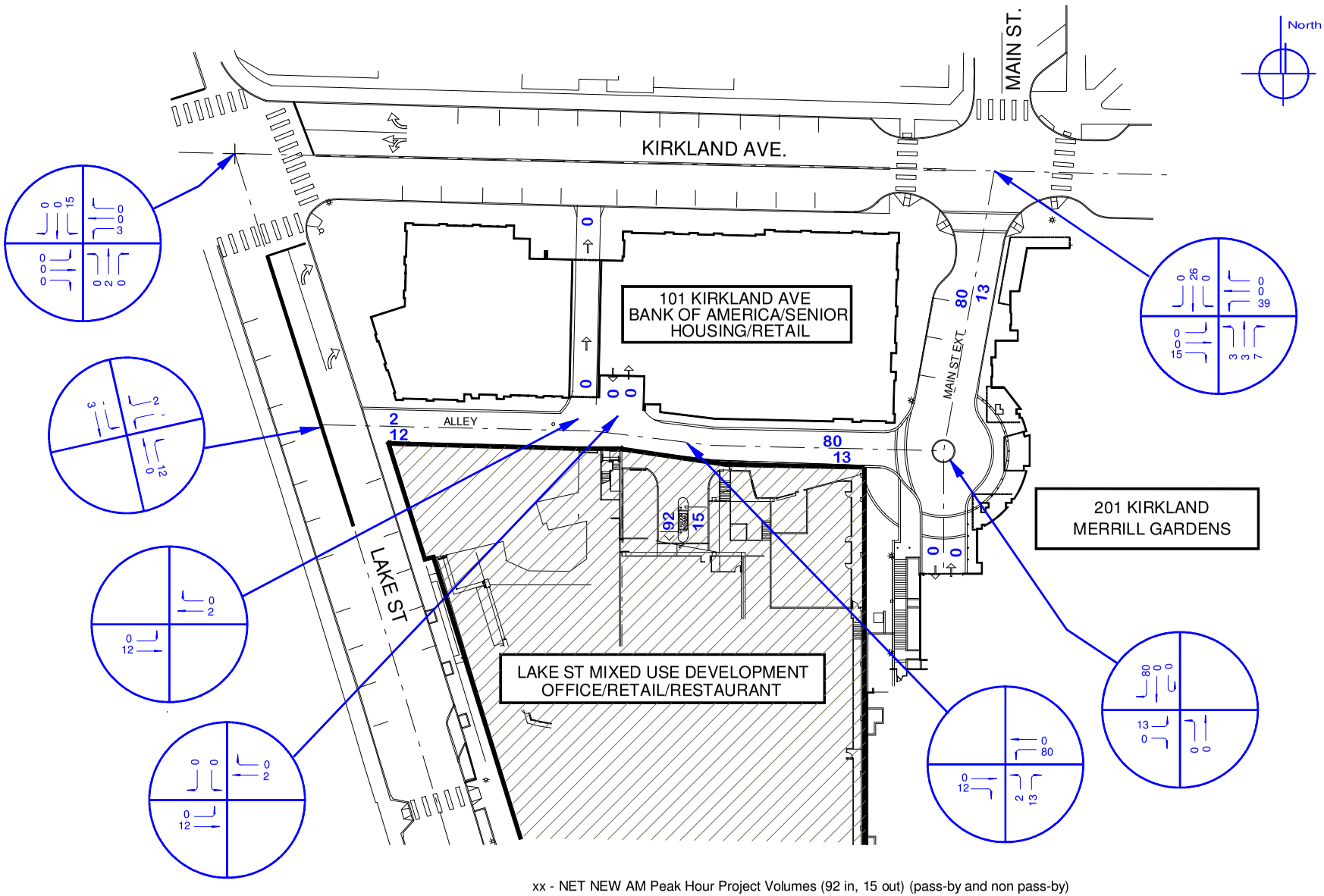
PROJECT PM PEAK HOUR TRIPS [plus Daily]
Net New non Pass-By

Figure 8b

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development



xx - NET NEW AM Peak Hour Project Volumes (92 in, 15 out) (pass-by and non pass-by)

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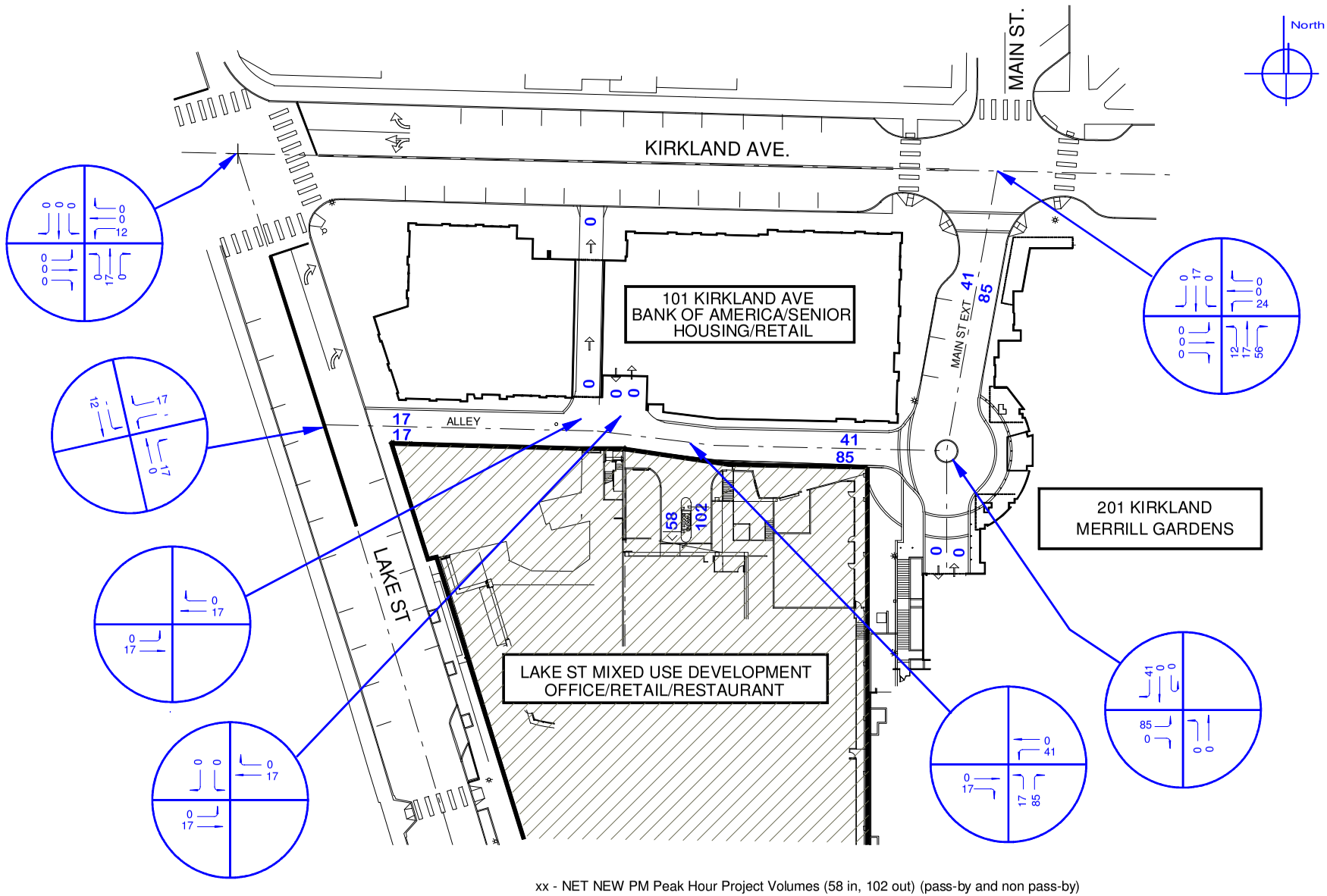
FUTURE AM PEAK HOUR PROJECT VOLUMES

Figure 9a

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development



xx - NET NEW PM Peak Hour Project Volumes (58 in, 102 out) (pass-by and non pass-by)

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FUTURE PM PEAK HOUR PROJECT VOLUMES

Figure 9b

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development

V. Transportation Concurrency

The City of Kirkland conducted a traffic concurrency test for this project and provided the results in a memo to the Planning Department dated April 4, 2013. The memo and concurrency results are attached. The project passed concurrency. The concurrency test notice shall expire and a new concurrency test application is required unless:

1. A complete SEPA checklist, traffic impact analysis and all require documentation are submitted to the City within 90 calendar days of the concurrency test notice
2. A Certificate of Concurrency is issued or an extension is requested and granted by the Public Works Department within one year of issuance of the concurrency test notice. A Certificate of Concurrency is issued at the same time a development permit or building permit is issued if the applicant holds a valid concurrency test notice.

Please refer to the memo for additional details including expiration dates.

VI. Significant Traffic Impact

The City's analysis guidelines require analysis of all intersections where the project's proportional share is greater than 1%. These intersections are defined as significant intersections.

Direct traffic mitigation improvements are required at intersections where the intersection level of service is E with project and the intersection proportional share is greater than 15%, or when the level of service is F with project and the intersection proportional share is greater than 5%.

Based on project trip distribution and assignment, there are six intersections that are identified as significant. All intersections reviewed and those determined to result in a proportionate share impact of 0.5% or greater are shown in Table 8 below. The intersections reviewed included all intersections identified in the concurrency run. It is important to note that the proportional share calculations utilize the net new daily trip estimates as shown in Table 6, which recognizes the existing estimated trips as existing trips already on the street system.

Table 8
Significant Intersection Check

	Intersection	Project AWDT[a]	Proportional Share[b]	Significant?[c]
102	Lake Wash/Lakeview Dr	269	0.9%	No
103	**State St/NE 68th St**	**235**	**1.4%**	**Yes**
104	**108th Ave NE/NE 68th St**	**185**	**1.5%**	**Yes**
105	Central Way/6th St	193	0.5%	No
106	Central Way/3rd St	219	0.6%	No
107	Central Way/Lake St	160	0.8%	No
108	**Lake St/Kirkland Ave**	**227**	**1.4%**	**Yes**
109	**NE 85th St/114th Ave NE**	**488**	**2.1%**	**Yes**
111	**Kirkland Ave/3rd St**	**648**	**5.5%**	**Yes**
112	**Kirkland Way/6th St**	**362**	**3.4%**	**Yes**
201	98th Ave NE/Juanita Dr	143	0.5%	No
205	Market St/Forbes Creek	168	0.5%	No
403	NE 85th St/ 120th Ave NE	202	0.5%	No
504	Juanita-Woodinville Wy/100th Ave NE	76	0.5%	No

a Project daily trips entering intersection (net new).
b Based on the City of Kirkland Proportional Share Impact Worksheet.
c A significant intersections defined as any intersection where the proportional share is equal to or exceeds 1.0%.

According to the results shown in Table 8, there are 6 intersections that meet the criteria to be defined as a significant intersection, ie., greater than 1%. It is important to note that at one intersection the proportionate share project impact exceeds 5%. The remaining intersections are determined not to be significant. The proportionate share worksheets can be found in Appendix D.

Thus, the six intersections that require additional analysis for AM and PM street peak period analysis are:

103 State St/NE 68th St
104 108th Ave NE/NE 68th St
108 Lake St/Kirkland Ave
109 NE 85th St/114th Ave NE
111 Kirkland Ave/3rd St
112 Kirkland Way/6th St

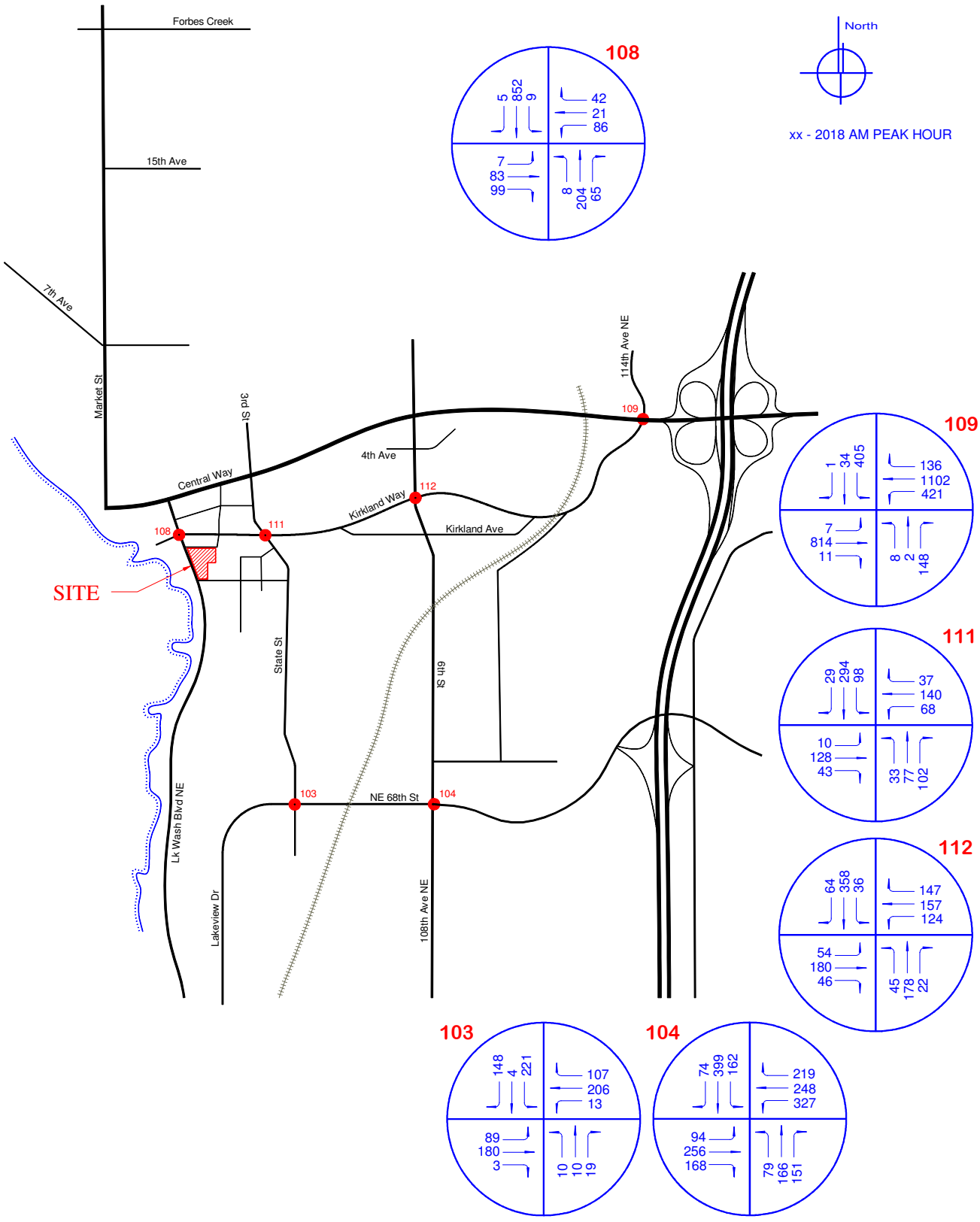
An AM and PM street peak hour analysis was also conducted at all of the site vicinity intersections including Kirkland Ave/Main St, Lake St/Alley, and the three intersections in the alley.

VII. Future Year (Year 2018) Traffic Volume Estimates

The horizon year of this project is estimated to be 2 to 4 years from today, however, the traffic study assumes a 2018 horizon year to coincide with the concurrency forecasts. The City provided PM peak hour traffic volume forecasts for the year 2018 that included traffic growth from all pipeline projects. WPA prepared estimates for future volume conditions for the AM condition. The horizon year volumes at the analysis intersections without the project are shown in Figure 10a and 10b for the AM and PM peak hours respectively.

The horizon year turning movement volumes at the analysis intersections with the project are shown in Figure 11a and 11b, for AM and PM peak hours respectively. It should be noted that the volumes in these figures reflect the net new non-pass-by project traffic.

The AM and PM peak hour project turning movement volumes in the vicinity of the site are shown in Figures 12a and 12b respectively. These two figures represent the total trips to and from the site, including pass-by trips.



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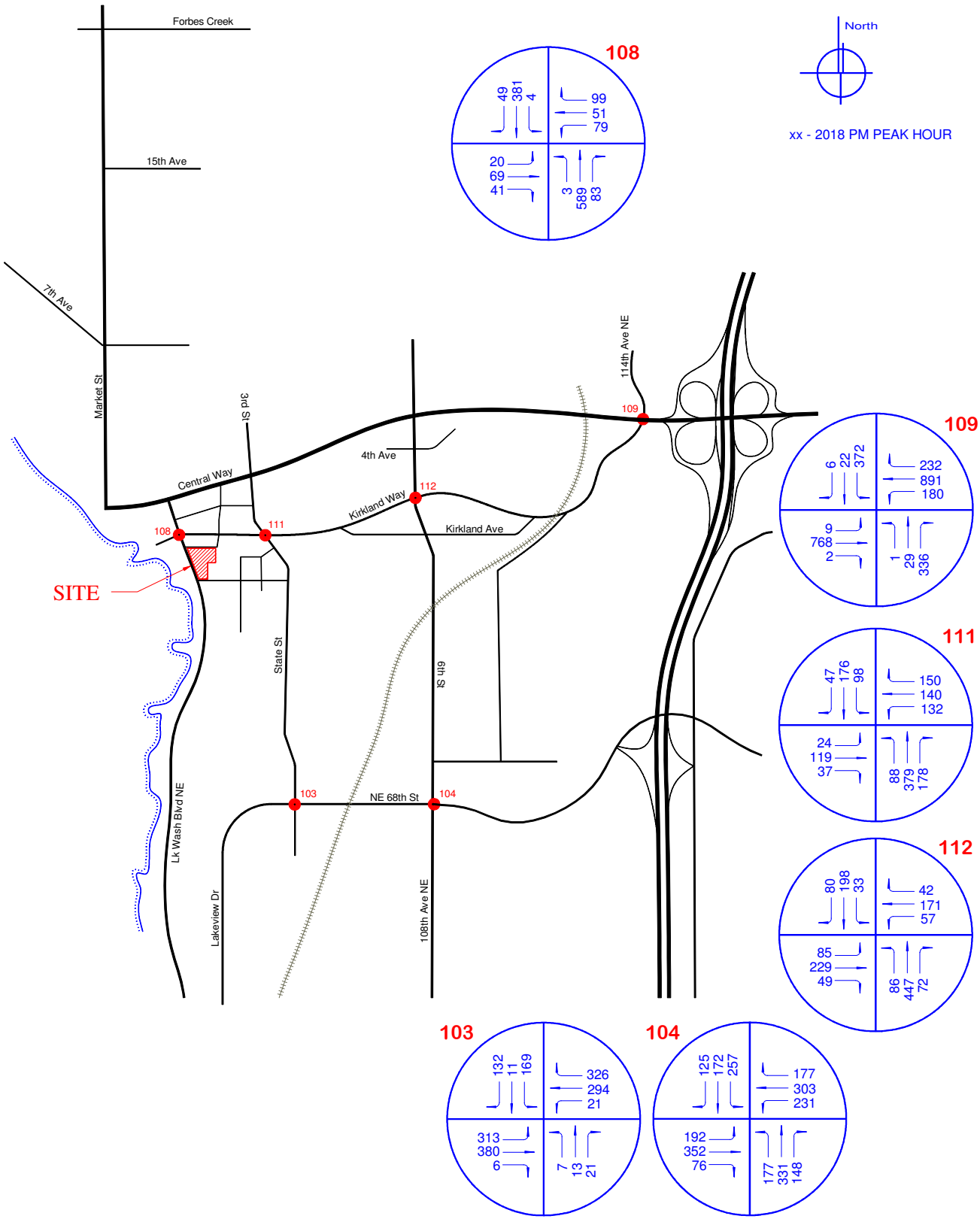
BACKGROUND AM PEAK HOUR VOLUMES

Figure 10a

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development



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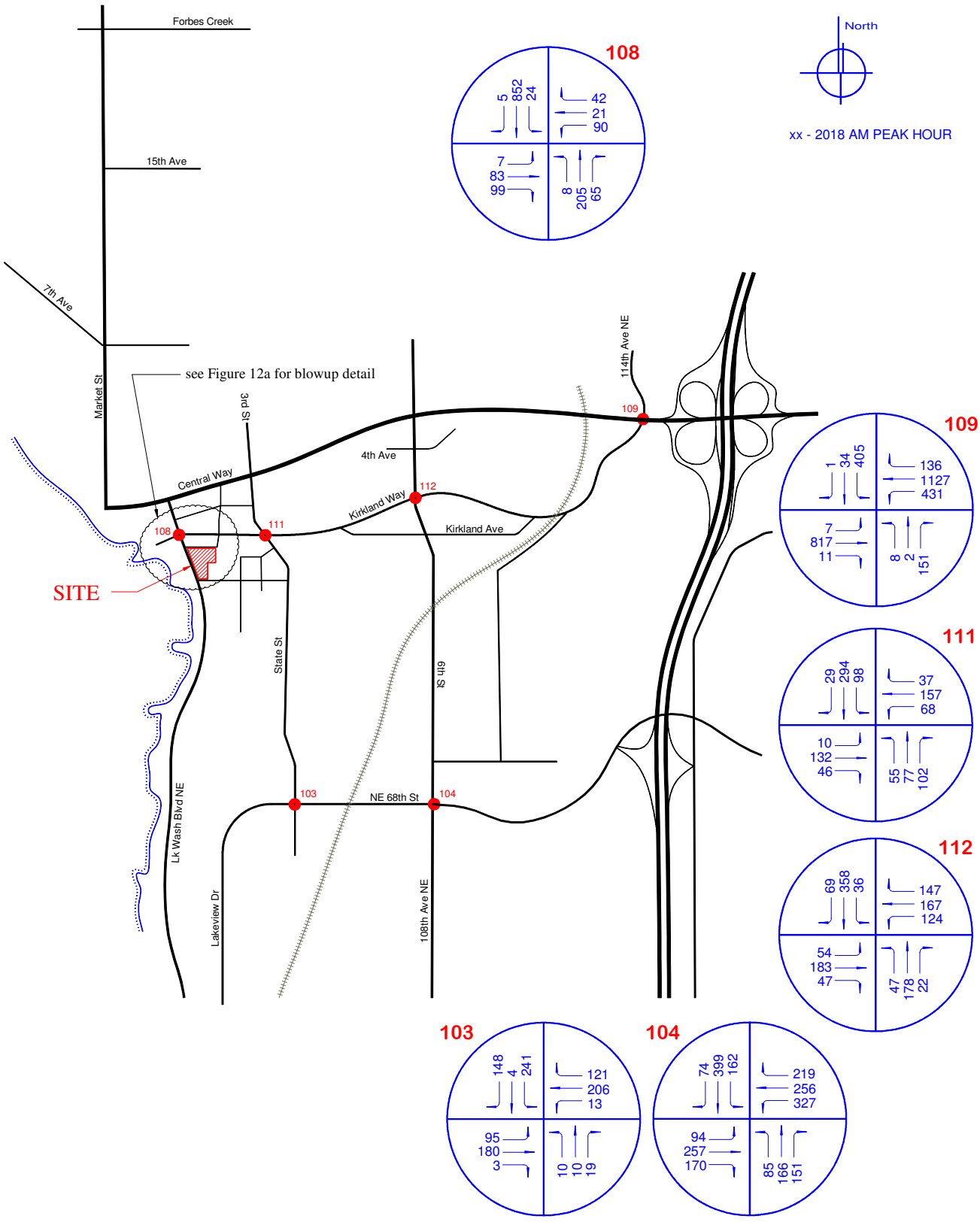
FUTURE BACKGROUND PM VOLUMES

Figure 10b

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development



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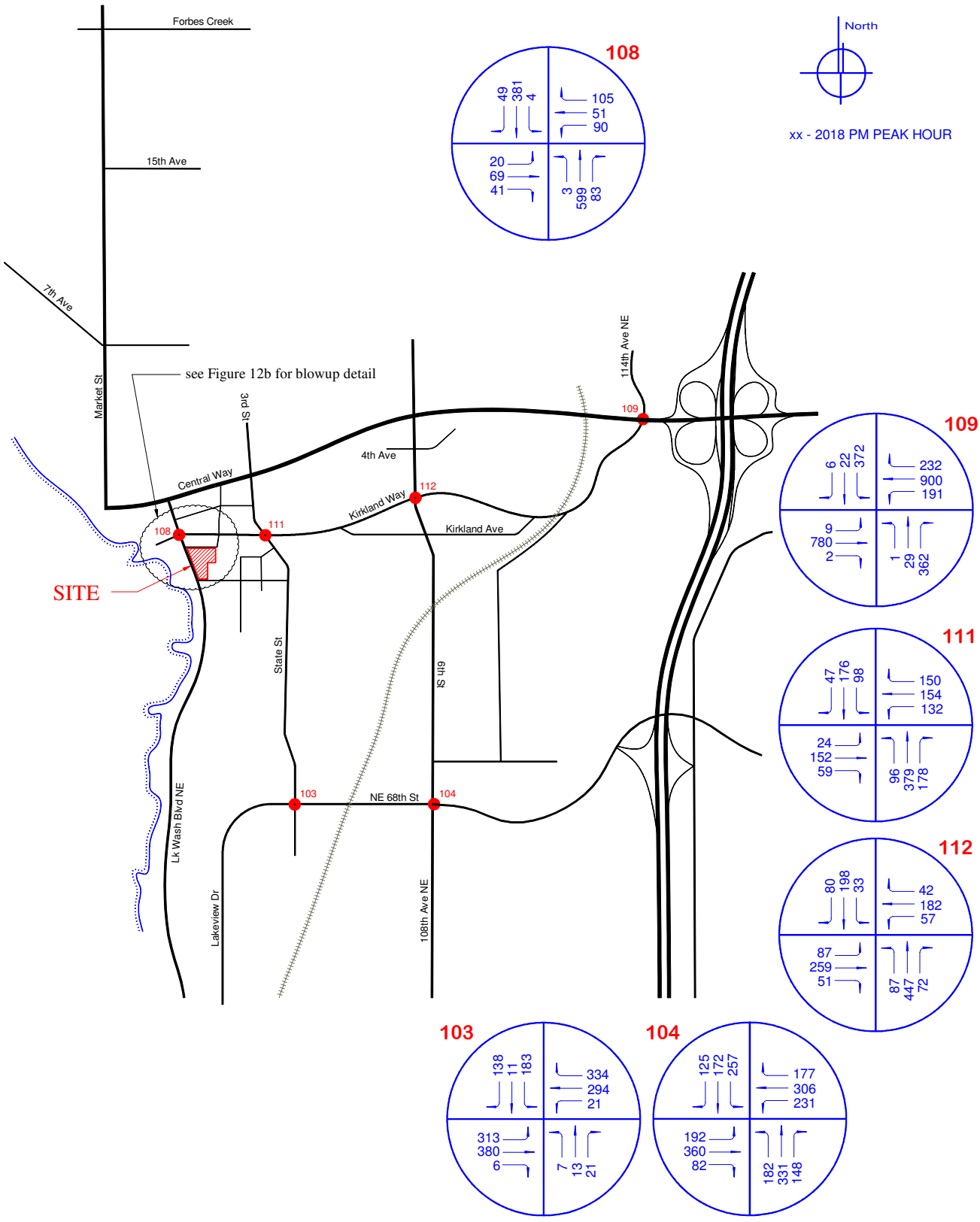
BACKGROUND PLUS PROJECT
AM PEAK HOUR VOLUMES

Figure 11a

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development



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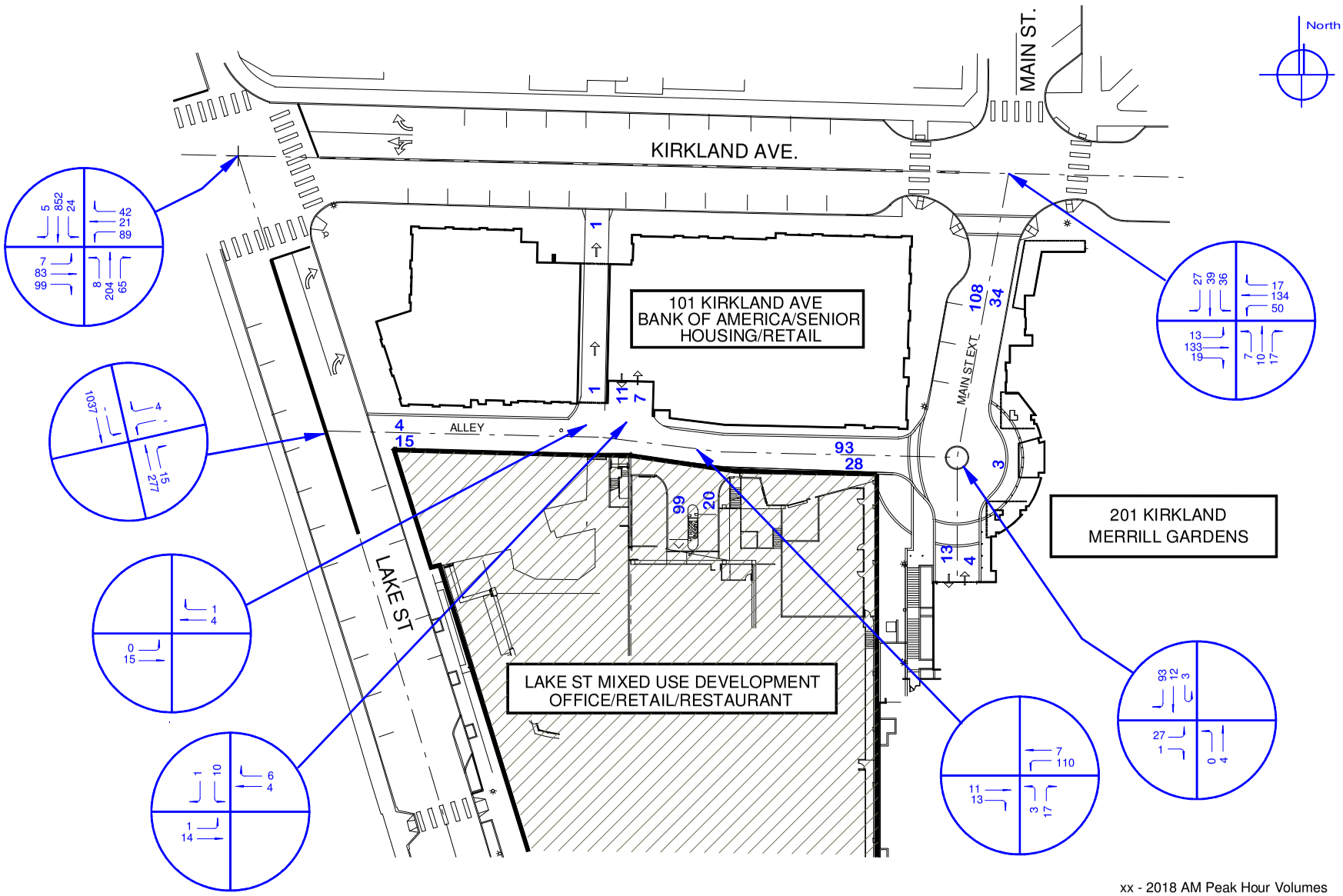
FUTURE WITH PROJECT PM VOLUMES

Figure 11b

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development



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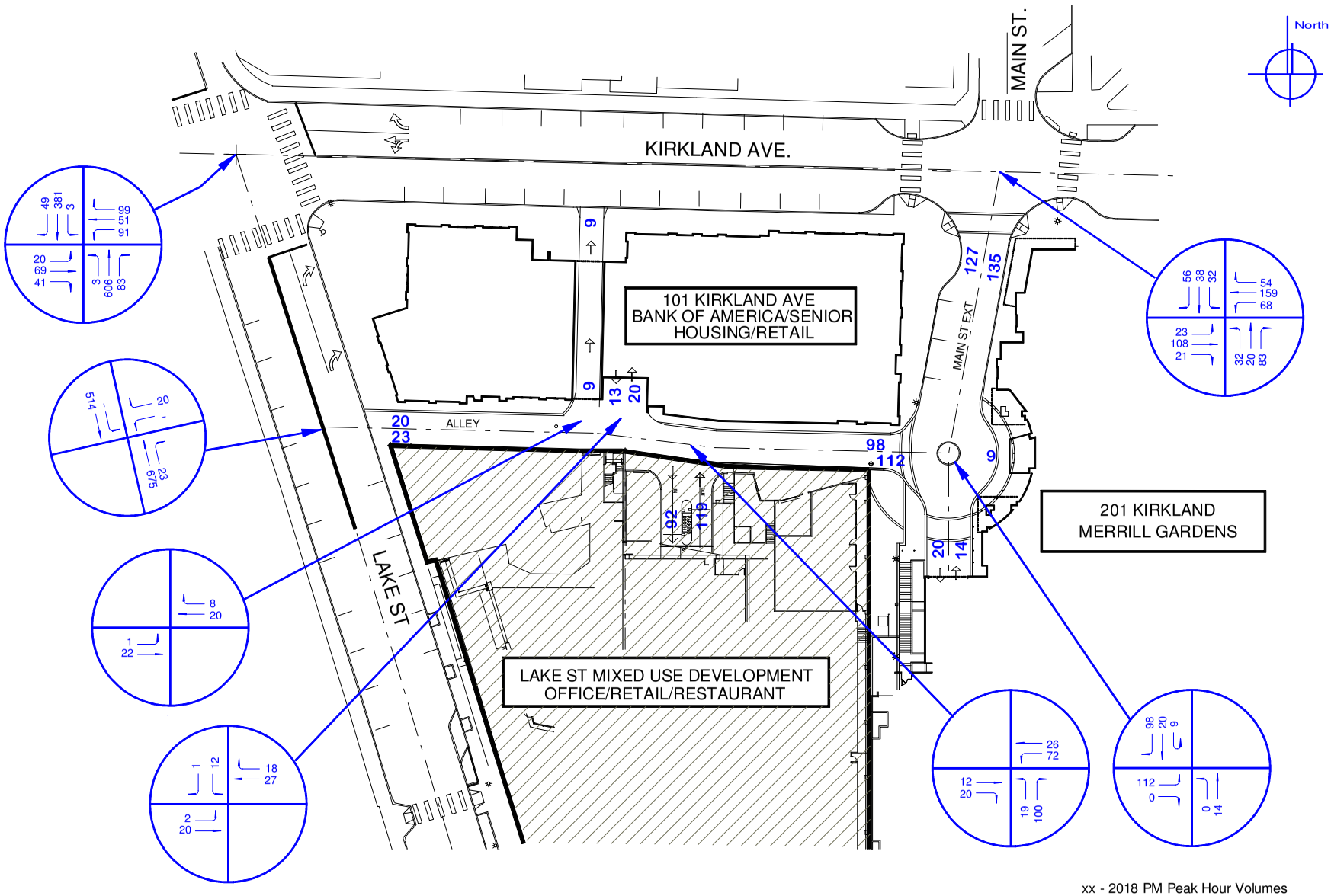
FUTURE AM PEAK HOUR VOLUMES

Figure 12a

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development



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FUTURE PM PEAK HOUR VOLUMES

Figure 12b

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development

VIII. Level of Service Analysis

Level-of-service for the existing condition, as well as future conditions, were calculated using the Trafficware Synchro intersection analysis software. It should be noted that both software packages and summary results are per the HCM signalized and unsignalized methodology. The delay as shown represents average delay per vehicle for all approaches at signalized and all-way stop controlled intersections. Note the delay presented for side street stop controlled intersections represents the delay for the critical approach or movement and not the overall intersection.

A. Key Intersections – Off-Site Locations

As defined in Section VI., there are six key intersections that require a level of service evaluation of existing and future conditions with and without the project, for both the AM and PM peak hours.

Level of service was calculated at the study area intersection for existing 2013, 2018 with and without project conditions. The results are shown in Table 9.

Table 9
AM & PM Peak Hour Level of Service – Key Intersections per Concurrency Results

Int #	Intersection [b]	Approach/ Movement	2012 Existing LOS (Delay) [a]		2018 without project LOS (Delay) [a]		2018 with project LOS (Delay) [a]	
AM PEAK HOUR								
103	State St/NE 68th St	overall	C	33.9	D	36.2	D	37.5
104	108th Ave NE/NE 68th St	overall	D	35.4	D	38.9	D	38.4
108	Lake St/Kirkland Ave [c]	overall	C	23	D	36	D	42
109	NE 85th St/114th Ave NE	overall	C	27.2	D	40.4	D	41.5
111	Kirkland Ave/3rd St	overall	C	26.0	C	32.3	C	33.9
112	Kirkland Way/6th St	overall	C	16.8	F	63.1	F	68.0
			-	-	-	-	B	11.3 [e]
PM PEAK HOUR								
103	State St/NE 68th St	overall	C	29.9	C	34.8	D	35.4
104	108th Ave NE/NE 68th St	overall	C	33.9	D	42.2	D	42.9
108	Lake St/Kirkland Ave [c]	overall	D	36	F	137	F	152
109	NE 85th St/114th Ave NE	overall	C	21.9	C	25.9	C	28.3
111	Kirkland Ave/3rd St	overall	C	33.5	C	34.7	D	35.8
112	Kirkland Way/6th St	overall	D	33.7	F	127	F	144
			-	-	-	-	B	11.5 [e]

a Delay is represented in seconds per vehicle. All results modeled using Synchro with HCM results methodology.
b Intersections 103, 104, 108, 109, and 111 are signalized. Intersection 112 is all-way stop.
c no left turns permitted northbound-southbound during the PM peak period, except for transit. The LOS and Delay shown are based on a simulation modeling effort (SimTraffic) to account for downstream queue spill back from Central Way/Lake St.
d City unfounded project – install signal, and add left turn lane on the south leg.

A summary of the level of service results at each intersection are discussed below.

- #103, Sate St/NE 68th St. This intersection is currently signalized, and is estimated to operate at LOS C for current conditions and LOS C or D for future conditions with or without the project, either peak period. The overall delay increase at this intersection with impact from net project traffic is 1.3 seconds per vehicle (s/v) for AM and 0.6 s/v for PM. The project's proportional share is 1.4%.

- #104, 108th Ave NE (aka 6th St)/NE 68th St. This intersection is currently signalized, and is estimated to operate at LOS D & C for current AM and PM conditions respectively. It is estimated to operate at LOS D for future conditions with or without the project for either peak period. The overall delay increase at this intersection with

impact from net project traffic is essentially 0 for the AM peak hour and 0.7 s/v for the PM peak hour. The project's proportional share is 1.5%.

- #108, Lake St/Kirkland Ave. This intersection is signalized and is estimated to operate at LOS C/D for AM conditions. For the PM peak hour, there is excessive queue spillback from the Central Ave/Lake St intersection resulting in significant congestion for northbound traffic. A simulation modeling test using SimTraffic is more effective in estimating delays at certain intersections that are impacted by upstream or downstream ones. The simulation test estimated a future (2018) with or without project average delay of between 140 and 150 seconds per vehicle, which falls in the LOS F range. The primary congestion is the northbound movement, all of the other movements at this intersection are estimated to operate at LOS D or better. The project's proportional share is 1.4%.

- #109, NE 85th St/114th Ave NE. intersection, signalized, is estimated to operate at LOS C for current AM and PM conditions. In the future with our without the project, this intersection is estimated to operate at LOS D and C for AM and PM peak hours respectively. The overall delay increase with impact from net project traffic is 1.1 seconds per vehicle for the AM condition and 2.4 s/v for the PM condition. The project's proportional share is 2.1%.

- #111, Kirkland Ave/3rd St. This intersection is currently signalized and includes left turn pockets all approaches and protected left turn signal phasing all approaches. It is estimated to operate at LOS C for current conditions for both the AM and PM peak hour. For future AM conditions, the intersection is estimated to operate also at LOS C. For PM conditions, the intersection is estimated to operate at the LOS C/D threshold. The overall delay increase with impact from net project traffic is 1.6 seconds per vehicle for the AM condition and 1.1 s/v for the PM condition. The project's proportional share is 5.5%.

- #112, Kirkland Way/6th St. This intersection is currently an all-way stop. It is estimated to operate at LOS C and D for current conditions AM and PM peak hours respectively. For future conditions with or without the project, this intersection is estimated to operate at LOS F for both peak hours. The project's proportional share is 3.4%. Improvements would be required at this intersection if the project's proportional share is greater than 15% for LOS E conditions, and greater than 5% for LOS F conditions. Thus, no direct mitigation should be required. The intersection is planned for signal however the project is currently unfounded. With construction of a signal, as well as adding a northbound left turn pocket (channelization modifications), the intersection is estimated to operate at LOS B.

All of the level of service results can be found in Appendix E.

B. Site Area Intersections

In addition to the off-site locations, a capacity analysis/level of service analysis was conducted for the local area intersections for existing and future conditions with the project, for both the AM and PM peak hours.

This analysis focuses on the immediate area intersections in the alley and on Main St. The intersections include: Kirkland Ave/Main St, Main St/Alley/201 Merrill Gardens garage access, Alley/Site Access, Alley/101 Kirkland Garage, and Lake St/Alley. The modeling effort also includes Kirkland Ave/Lake St and Central Way/Lake St to reflect congestion on Lake St.

The analysis for all of the alley intersections including Lake St/Alley and Main St/Alley assume a low saturation flow rate of 1,000 vph (default typical is 1,800 vph), 9' lanes (lowest possible), 5 mph turning speeds, and heavy pedestrian traffic at the endpoints. It also assumes 20% trucks on Main St for the AM and 10% trucks for the PM peak hour, and some u-turns based on recent traffic counts.

It should be noted that these capacity operations analyses assume minimal to no outside friction/congestion that may be due to trucks loading and unloading, garbage pickup, emergency vehicles, passenger pickup/drop off, and passenger vehicle encroachment into oncoming lanes for turning movements. It has been observed that some of this activity does occur during the peak period times and can cause undue delays not normally anticipated, however for existing conditions, the traffic volumes are very light and most congestion caused by this quickly dissipates once the parked vehicle has left. This pattern happens more often in the morning period than the evening, especially for delivery vehicles. With the estimated increase in traffic due to the project, mitigation recommendations are identified at managing delivery vehicles, emergency vehicles, and pickup/drop off such that the future analyses assume significantly reduced blockage associated with these activities.

The future volumes both AM and PM peak hour are still relatively light and will not tax the available capacity of the alley and Main St.

The results are shown in Table 10.

Table 10
AM and PM Peak Hour Level of Service – Site Vicinity Intersections

Peak Hour	Intersection	Approach/ Movement	2012 Existing Volume	LOS	(Delay) [a]	2018 with project Volume	LOS	(Delay) [a]
AM PEAK HOUR								
	Lake St/Alley Access [b1]	WB	2	B	10	4	B	10
	Kirkland Ave/Main St [c]	NB	21	B	11	34	B	13
		SB	76	B	12	102	B	15
		EB	150	A	1	165	A	1
		WB	162	A	1	201	A	2
	Main St/Alley/201 MG Garage [d]	EB	15	A	9	28	A	9
		NB	4	A	0	4	A	0
		SB	28	A	0	108	A	0
	Alley/Lake Street Place Access [e]	NB	5	A	8	20	A	9
		EB	15	A	0	24	A	0
		WB	13	A	3	93	A	7
	Alley/101 Kirkland Access [f]	SB	11	A	9	11	A	9
		EB	3	A	2	15	A	1
		WB	8	A	0	10	A	0
PM PEAK HOUR								
	Lake St/Alley Access [b1]	WB	3	B	13	20	C	15
				F	137 [g2]		F	279 [g2]
	Kirkland Ave/Main St [c]	NB	50	B	13	135	C	16
		SB	101	B	13	126	C	17
		EB	135	A	1	152	A	1
		WB	237	A	2	281	A	2
	Main St/Alley/201 MG Garage [d]	EB	27	A	9	112	A	10
		NB	14	A	0	14	A	0
		SB	86	A	0	127	A	0
	Alley/Lake Street Place Access [e]	NB	17	A	9	119	A	9
		EB	15	A	0	32	A	0
		WB	57	A	4	98	A	6
	Alley/101 Kirkland Access [f]	SB	13	A	9	13	A	9
		EB	5	A	3	22	A	1
		WB	28	A	0	45	A	0

a Delay is represented in seconds per vehicle (rounded to whole number). All results are Synchro/HCM based unless otherwise noted.
b1 Right-in, right-out only. Westbound exiting right turn generally blocked by northbound queue in PM. Computer modeling likely not accurate given human behavior. See discussion.
b2 Estimated delay for the westbound right turn out per a simulation test using SimTraffic, with stopped approach assumption. Delay is 0 with yield assumption.
c Northbound and southbound are the stopped approaches. All single lane approaches.
d The eastbound approach is the only stopped approach. The intersection is a widened circle. Analysis includes southbound u-turn movements.
e Proposed site access is the northbound approach. This approach is metered in and out with parking gates.
f The 101 Kirkland garage access just west of the proposed site access. Southbound approach to the alley. The bank drive-thru is exit only northbound from the alley.

A summary of the level of service results at each intersection are discussed below.

- Lake St/Alley Access. The alley access to Lake Street is restricted to right-in and right-out only. For the AM period, it is estimated that vehicles could exit to Lake St with relative ease since the northbound volume is light and the predominant flow of traffic is southbound: the right turn out is estimated to be LOS B. For the PM peak period, there is heavy congestion for the northbound movement through the Kirkland Ave intersection up to Central Way. The queue spill back stems from the Central Way/Lake St intersection. The northbound right turn movement at Kirkland Lake/St is light with minimal queuing. Observations of current activity indicate traffic from the alley merges into the northbound through movement with gaps created by signal startup lost time and/or courtesy "wave-in" from northbound motorists. The Synchro model reports a delay of around 13 to 15 seconds per vehicle, which is in the LOS B/C range, however it does not take into account the queue spillback and stop-and-go traffic from the downstream intersection. The delay when modeled through simulation (SimTraffic) with stop sign control for the right turn exiting from the alley results in very high congestion, LOS F operations. However, the modeling cannot and does not allow for motorist courtesy wave-in. If vehicles can exit the alley into the northbound right turn lane and are comfortable merging into the northbound flow via that merge movement, then when modeled as a merge rather than a stop, the estimated delay is significantly better. In general, without computer modeling, it is estimated that the delay incurred by the westbound right turn movement exiting the alley would be approximately 1 vehicle per signal cycle (a 60 second signal cycle at the Kirkland Ave/Lake St intersection), thus 60 seconds per vehicle, assuming the motorist heads north through the signal. The delay could be less if the exiting motorist turns right into the northbound right turn pocket to ultimately head east on Kirkland Ave, since there is no queue estimated for that movement. The estimated right turn movement for future conditions with the project from the alley to Lake St is 20 vph in the PM peak and only 4 vph in the AM peak.

  It is estimated that 20 trips would make this movement (19 from the project site). That would equate to about 1 vehicle every 3 minutes. Therefore, contrary to the delay estimates from the computer simulation, it is estimated that traffic from the alley should be able to adequately exit to Lake St with likely no more than 60 seconds/vehicle delay, and there shouldn't be any significant queue in the alley.

- Kirkland Ave/Main St. The stopped approaches at this intersection are the north and south ones. The LOS for these approaches is estimated to be LOS B for AM conditions with project, and LOS C for PM conditions with project. The existing LOS for both AM and PM peak hours is LO S B. The project is estimated to add 126 vehicles per hour (PM peak hour) through this intersection.

- Main St/Alley Circle. Presently, there are many friction factor events occurring at this intersection, in particular during the AM peak hour. These would include heavy truck activity with unload and loading, passenger pickup and drop off, some emergency vehicle activity, southbound u-turns with some stopping in front of 201 Merrill Gardens and some not stopping at all, and pedestrians crossing through the traffic circle. Regardless of all the friction, the vehicular traffic is very light such that it is estimated there are no capacity/LOS issues. The current level of service is estimated to be LOS A for either peak period.

  The project is estimated to add 93 vehicles during the AM peak hour (80 in and 13 out), and 126 vehicles during the PM peak hour (85 out, 41 in).

- Alley/Site Driveway. The intersection is estimated to operate at LOS A for either peak hour. The driveway will be gated, thus the volume entering and exiting will be metered.

- Alley/101 Kirkland Driveway. The intersection is estimated to operate at LOS A for either peak hour.

C. One-Way Alley Westbound

The City requested a review of future conditions with project with a conversion of the alley to one-way westbound. It is assumed that the loading dock would remain as currently designed facing east and that the one-way concept would begin west of the loading dock. The Lake St and 101 Kirkland Ave garage driveways would be signed as left out only and right out only respectively.

For the PM peak hour scenario (which is the worst case alley volume scenario), the one-way concept would result in 132 vehicles exiting to Lake St with approximately 112 turning northbound right at the Lake St/Kirkland Ave intersection. In addition, there would be 23 trips that would normally turn right into the alley from Lake St that would be required to divert around the block on to Kirkland Ave then enter the alley from the east end via Main St. It is estimated there would be an additional 135 trips using the northbound right turn pocket at Kirkland Ave/Lake St added to the future forecast of 65 vehicles, for a total of 200 right turning vehicles. At the Kirkland Ave/Main St intersection, the eastbound thru volume would increase by 112 and the eastbound right turn movement would increase 23 vph. Of course the northbound movements would all decrease. The estimated level of service at Kirkland Ave/Main St is estimated to be the same for all approaches; however, the southbound approach delay is estimated to increase very slightly, from 17 to 18 sec/veh. The delay for the northbound approach is estimated to remain at 16 sec/veh, as shown in Table 10 above for the alley two-way concept. The net decrease in traffic on Main St south of Kirkland Ave would be 89 trips (add an extra 23 southbound less 112 northbound equals a decrease of 89 vph for two-way volume).

A simulation modeling analysis of future PM peak hour conditions with the project for a one-way alley concept was prepared. The results indicate similar conclusions as the two-way concept at the Lake St/Alley intersection: if the alley is modeled as a stop sign then a significant queue backs up through the alley and up into Main St, if the alley is modeled as a yield/merge movement, then traffic exits the alley with minimal queue spill back. It is assumed that some of the motorists will be conservative drivers, thus the queue spill back depends on how successful motorists are able to enter into the stop-and-go queue on Lake St. Using the previous 1 vehicle per cycle rule of thumb equates to 60 vehicles entering, however, there are 132 vehicles predicted to enter. Nonetheless, the majority of these vehicles exiting the alley in this one-way concept will be turning into the northbound right turn pocket which is estimated to have a minimal queue, hence it is likely a few more cars than 1 per cycle could turn out of the alley.

IX. Local Area Operations Issues (Main St & Alley)

The discussion and analyses here is focused on the Main St extension south of Kirkland Ave and the alley between Lake St and Main St. It includes an evaluation of: traffic volumes, driveway functions, delivery & moving truck activity, garbage truck activity, emergency vehicle activity, and pedestrian activity.

A. Internal Traffic Volumes (Alley and Main St Extension)

There are three developments that will share use of the alley connection between Lake Street and Kirkland Avenue. The Lake Street Place mixed use development is estimated to generate 278 PM street peak hour trips (including pass-by trips). The 101 Kirkland Ave development was estimated to generate 164 PM peak hour trips (including pass-by), and the 201 Merrill Gardens development was estimated to generate 47 PM peak hour trips (no –pass-by assumed). The existing Lake Street Place site with Hector's and Kirkland Waterfront Market is estimated to generate 118 PM peak hour trips (pass-by trips included). The total PM street peak trips estimated to be generated from these three projects is 329 for existing conditions and 489 for future conditions (which includes all pass-by trips).

As noted earlier, a traffic count was conducted at the Kirkland Ave/Main St intersection as well as at the Lake St/Alley intersection. This is very useful data for comparing data per ITE against actual counts for vehicle trips to and from the alley driveways. The counts indicate a total volume (entering and exiting) for the PM peak hour at 146 trips, compared to 329 indicates that volumes realized are about 45% of estimated volumes.

Based on ITE rates for AM and PM for all three projects, the AM peak hour volumes are estimated to be about 45% of PM volumes. Traffic counts for entering and exiting the alley area indicate AM volumes during the street peak hour are 35% of PM volumes.

1. Existing Counts

The existing traffic volumes to and from the area via the Kirkland Ave/Main St intersection reflect approximately 95% of the total volume compared with volumes to and from Lake St. Figure 13 shows the 15-minute volume summaries between 7:30 am and 9:00 am for all approaches at the Kirkland Ave/Main St intersection.

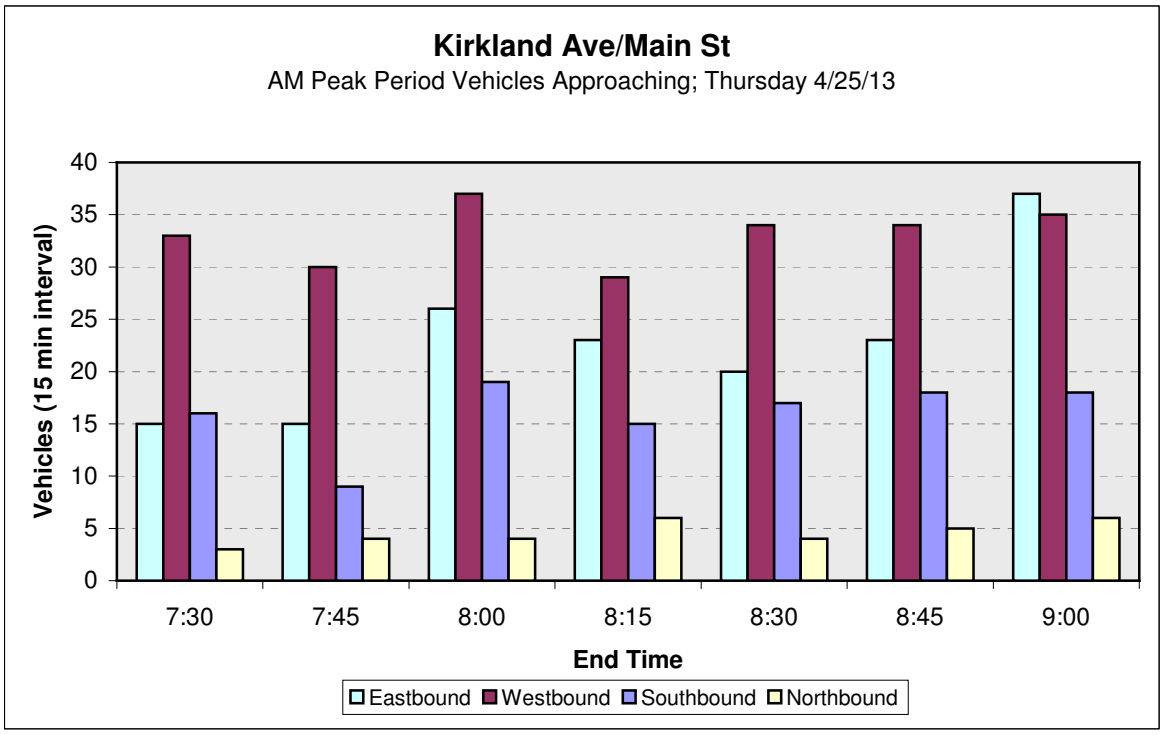


Figure 13

The intent of this figure is to show the magnitude of volumes by approach at this intersection. The eastbound and westbound approaches are the heaviest movements, although the southbound approach is too much lower. The northbound approach is averaging about 5 vehicles per 15-minute period.

Figure 14 shows the 15-minute volume summaries between 4:15 pm and 6:00 pm for all approaches at the Kirkland Ave/Main St intersection.

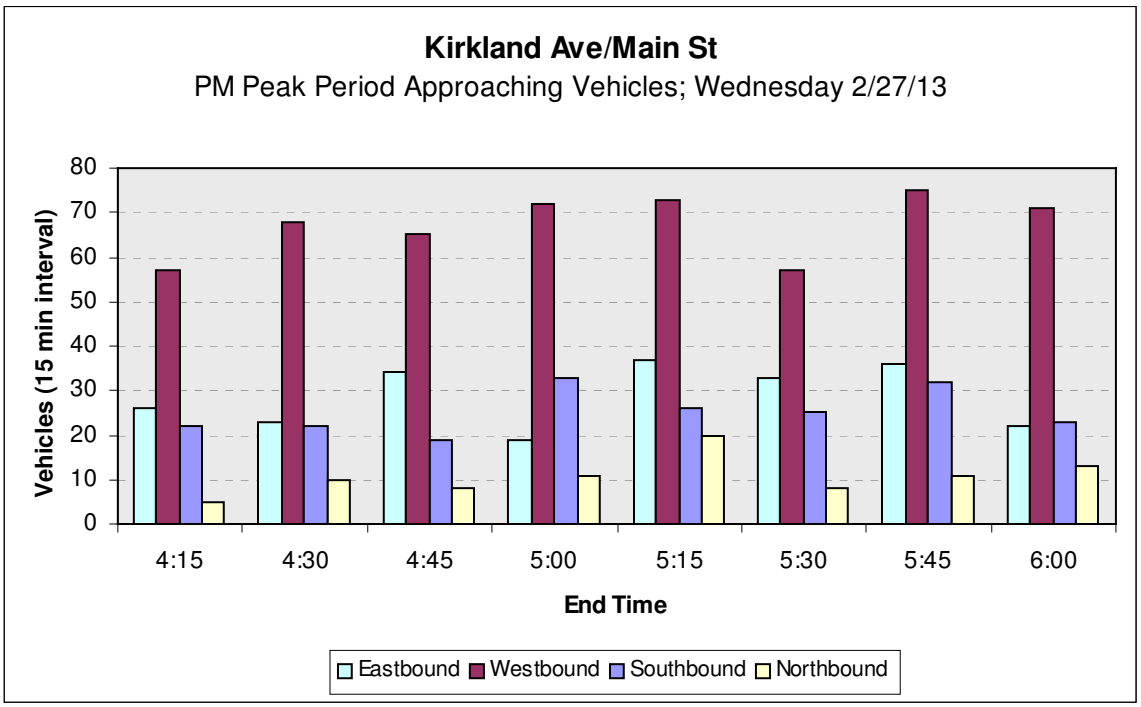


Figure 14

The figure shows that the westbound approach is the heaviest movement. The eastbound and south approaches are similar in volume and significantly less than the westbound. The northbound approach is averaging about 10 vehicles per 15-minute period with a spike of 20 between 5:00 and 5:15 pm.

2. Future Volumes

The proposed project is estimated to add 107 AM peak hour trips to the alley: 14 to the west and 93 to the east. For the PM peak hour, the project is estimated to add 160 trips to the alley, 34 to the west and 126 to the east. Of course the trip estimates to/from the east also would impact Main St between the alley and Kirkland Ave.

Table 11 below shows the peak hour volume estimates by segment on the alley and on Main St for existing conditions and with the project.

Table 11
AM & PM Alley and Main St Link Volume Estimates [a]

Peak Hour	Link Segment	Existing 2012/13 (vph)	With Project 2018 +/- (vph)
AM Street Peak Hour			
	Alley: Lake St – 101 Kirkland Garage	5	19
	Alley: 101 Kirkland Garage – Site Access	20	34
	Alley: Site Access – Main St	28	121
	Main St: Alley – Kirkland Ave	49	142
PM Street Peak – Vehicles Entering Garage			
	Alley: Lake St – 101 Kirkland Garage	9	43
	Alley: 101 Kirkland Garage – Site Access	43	77
	Alley: Site Access – Main St	84	210
	Main St: Alley – Kirkland Ave	136	262

a vehicles per hour; both directions.

The majority of project trips are to and from the east. This is also true for the existing Lake St uses and 101 Kirkland. The volume is heaviest in the PM peak hour. The peak volume for all sections is 262 vph on Main St between the alley and Kirkland Ave; the directional flow is estimated to be nearly balanced with 127 south and 135 north. The volume increase is approximately double current conditions. Even so, the future volume should be considered relatively light, with approximately one vehicle per direction every 30 seconds.

B. Driveway Functions

The proposed alley configuration will be 17 feet wide with a 1 foot rolled curb on both sides, and a 4-foot sidewalk on the north side, and a 4-foot sidewalk on the south side east of Hector's to Main St. The building on the north side abuts to the back of sidewalk and the proposed building will have a varying clearance east from the existing Hector's building. There will be ultimately two driveways accessing the alley, and one northbound bank drive-thru access from the alley to Kirkland Ave. The proposed Lake Street Place mixed use parking garage driveway will be located approximately 135 feet west from the Main St traffic circle, 30 feet from the 101 Kirkland Ave parking garage driveway, and 160 feet to Lake St. The Lake Street Place driveway will consist of a single entrance and single exit lanes, separated by a ticket taker/gate for entry and tollbooth window/ticket taker/gate for exit. The gates will be setup for quick scan entry and exit for all monthly permit holders.

As currently designed, the entrance driveway ticket taker and card reader is located approximately 39 feet from the alley curb.

Based on the project assignment of trips, it is estimated that 90% of the trips entering and exiting the Lake Street Place development will be to and from the east on the alley. Thus the predominant movements at the garage entrance will be left in and right out.

The 101 Kirkland Ave development includes one driveway to the parking garage and a bank drive-thru (one-way north) that exits to Kirkland Ave. The distribution and assignment of project trips suggests approximately 70% will be to and from the east on the alley. Twenty percent will enter and exit via Lake Street and 10% will exit to Kirkland Ave from the bank drive-thru.

The 201 Merrill Gardens project is estimated to use the Main Street extension to Kirkland Ave, with very minimal trips to and from Lake Street via the alley.

C. Parking Garage Gate Operations

The current design proposal includes an automated garage door (roll down grill) that would be up during business hours (5am to midnight) and would be closed after hours (12 pm to 5 am). It is assumed that tenants would have a key card that could open the gate for after hour's entry access. Any vehicles leaving when the door is down would activate a sensor or tube to activate the door.

During normal business hours there will be a center parking booth with typical lift arm gates to control entry and payment/exit. Typical with most gated garage entrances, the entry lift arm gate will be activated by taking a ticket or swiping/scanning a key card for monthly parking tenants. A parking attendant will occupy the booth for any payment upon exit during normal business hours. All tenants, visitors, customers would enter via this single entry point.

The parking garage will be pay-to-park for public parking.

D. Parking Gate Queuing

A queue-modeling estimate was conducted for the site entrance and exit. The average queue and the 95th percentile queue were calculated for the AM and PM street peak hour for the gated entrance/exit at the alley, as well for the estimated peak time for the site. The queue estimate as calculated based on the methodology presented in the ITE Transportation and Traffic Engineering Handbook. Several assumptions were required including time duration, volume, and average service time. The time duration was assumed to be one hour, and the volume is of course the peak hour volume. The average service time was assumed to be 10 seconds per vehicle.

A count was conducted at the City of Bellevue's guest parking entrance to City Hall during the AM period. This entrance is a single driveway entrance with a push button ticket dispenser and gate. The count recorded 31 vehicles entering the gated driveway to

the garage. The service time was recorded for each vehicle to roll down window take ticket and completely pass-thru gate. The gate service times for each vehicle are shown below in Figure 15.

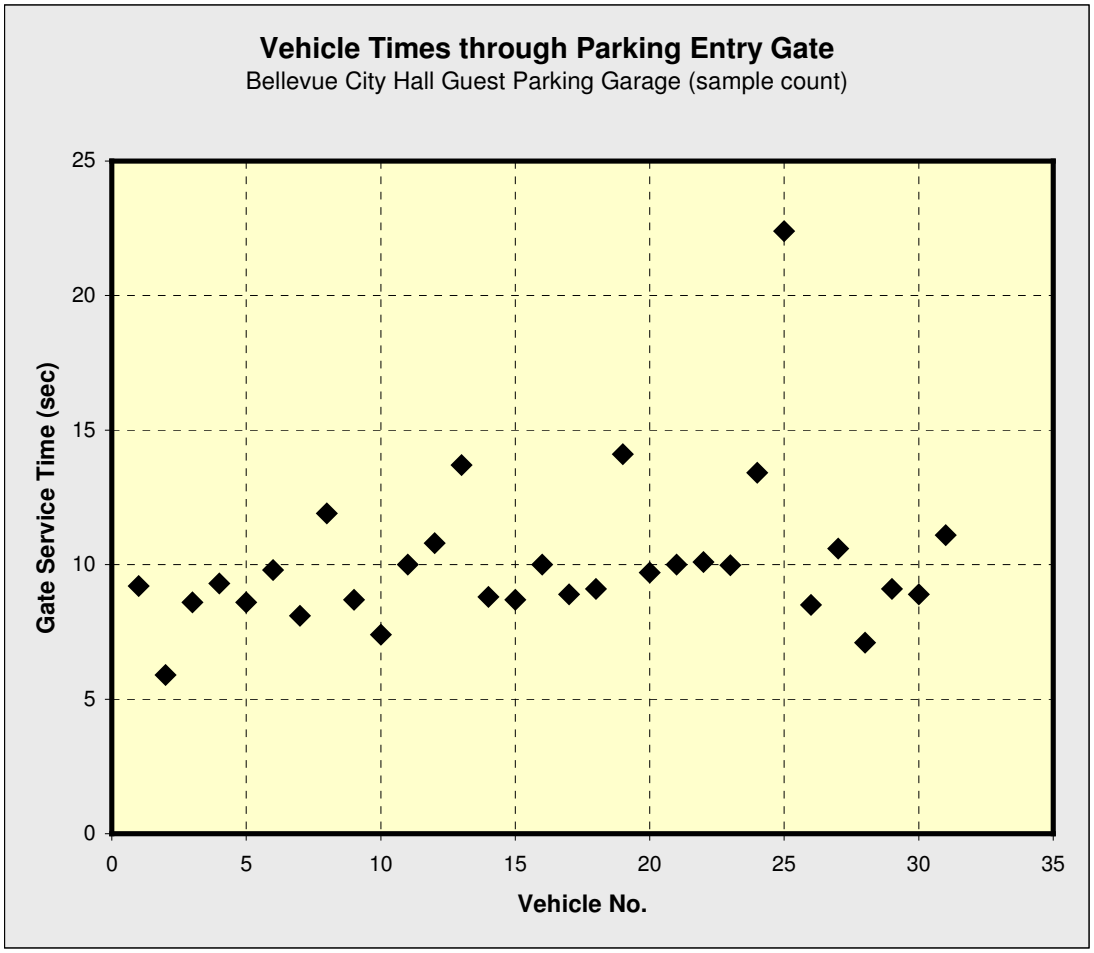


Figure 15

As shown in this scatter gram, there was one quick entry and one slow entry outlier, however for the most part the data hovered around the 10-second service time. The average time excluding the high and the low was 9.8 seconds per vehicle.

A frequency distribution plot was prepared with 0.5-second gate increment times, shown in Figure 16.

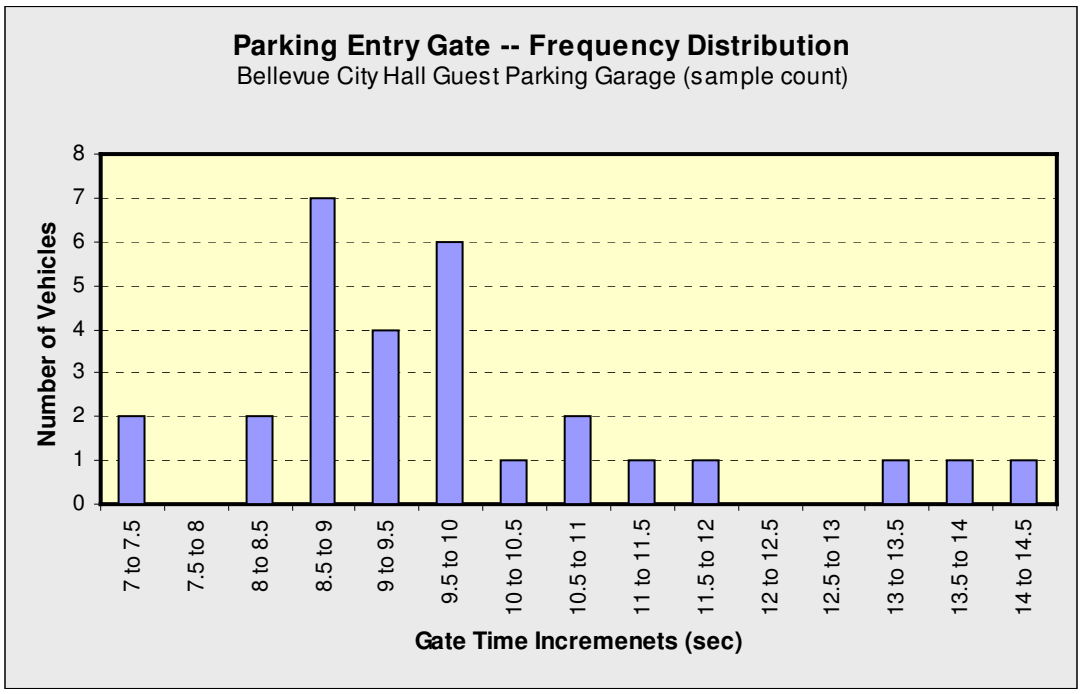


Figure 16

As shown here, given the sample size, most of the service times were between 8.5 and 10 seconds. There was some outlying data in the 13 to 14.5 second times, thus the average is around 10.

Table 12 below identifies queue estimates for average conditions and 95th percentile queue for service times of 5, 10, and 15 seconds per vehicle. The queuing was summarized for: AM Street Peak Vehicles Entering Garage, AM Street Peak Vehicles Exiting Garage, PM Street Peak Vehicles Entering Garage, PM Street Peak Vehicles Exiting Garage, and PM Site Peak Vehicles Entering Garage.

The 95th percentile queue estimates were obtained from a lookup table provided by WSDOT for known average queue estimates.

Table 12
AM & PM Queue Estimates at Garage

Vehicles at Gate (veh/hr) [a]	Service Time (sec/veh) [b]	Avg No. In System (veh) [c]	95th Q estimate (Veh) [d]
AM Street Peak – Vehicles Entering Garage			
99	5	0.16	0.3
99	10	0.38	0.9
99	15	0.70	2.1
AM Street Peak – Vehicles Exiting Garage			
20	5	0.03	0.1
20	10	0.06	0.2
20	15	0.09	0.2
PM Street Peak – Vehicles Entering Garage			
92	5	0.15	0.3
92	10	0.34	0.9
92	15	0.62	1.8
PM Street Peak – Vehicles Exiting Garage			
119	5	0.20	0.3
119	10	0.49	1.2
119	15	0.98	2.7

a Vehicles at gate, entering or exiting. Entering gate is assumed to be take ticket and enter. Exit could either be card reader or tollbooth attendant service. Volume assumes worst-case scenario to include all trips including pass-by.
b Service time for entering estimated to be no more than 5 seconds per vehicle.
c includes vehicles waiting.
d Queue estimated to not exceed this amount 95% of the time.

As noted in Table 12, the entering and exiting volume assumes the trip generation estimates for the net new building area (with pass-by) plus the existing trips for the existing site based on traffic counts. This in theory presents a worst-case scenario for the entrance gate and assumes all trips to and from the site, including pass-by trips, will use the garage. It is likely that a portion of these trips will use on-street parking (retail and restaurant). In addition, it is assumed that the total number of vehicle trips will be less given the location of the project in the CBD setting with close proximity to a major transit center and surrounding restaurant and retail uses resulting in a likely significant walk-up trip count.

Nevertheless, assuming worst-case volume conditions, it was estimated that the entrance gate service time (time to take ticket, and clear gate) to be approximately 10 seconds. The entering volume estimate for the AM street peak hour is 99 vehicles, and 92 vehicles entering in the PM street peak hour. The estimated entering volume for either peak hour is approximately 1 vehicle every 40 seconds. The average entering queue estimate for AM and PM is 0.38 and 0.34 vehicles respectively assuming a gate service time of 10 seconds. The 95th percentile queue estimate is 0.9 vehicles for either peak hour. The 95th percentile queue is closer to 2 vehicles (50' +/-) if the average gate time is around 15 seconds.

For vehicles exiting the garage, the delay at the gate is assumed to be slightly longer as some vehicles might be paying cash with the tollbooth attendant, some will pass-through validated tickets for no payment, and some will be regular tenants with card readers. In this case, the estimated service time at the gate is 10 to 15 seconds; assume 15 seconds average. For the AM peak hour condition, it is predicted there will be essentially no queuing at the gate given the low volume estimate. For the PM street peak hour, it is estimated there could be as many as 119 vehicle trips exiting the site (30 seconds per vehicle assuming a constant rate of departure). Assuming all of these trips exit from the garage for a worst-case scenario, and assuming 15 seconds gate service time, the estimated average queue at the gate is 0.98 vehicles. The 95th percentile queue is predicted to be 2.7 vehicles. The queue storage of these vehicles exiting the garage of course would be inside the garage.

The design of the garage should consider adequate queue storage for the exiting movement such that there is no blockage of the entering vehicles. It is recommended that the entrance gate/reader be located as far as possible into the garage to maximize storage. Assuming a 2-car queue, the estimated storage could range between 40 and 50 feet depending on the size of vehicle.

E. Alley Pedestrian – Vehicle Use and Conflict

Lake Street Place is not expected to generate any noticeable amount of pedestrian traffic within the alley. The main entrance to the site, Hectors, and KWM will be from Lake St. Restaurant and retail customers walking to the site from east on Kirkland Ave (and vice-versa) are predicted to use Kirkland Ave and Lake St in lieu of the alley. Office employees that utilize transit for work trips are anticipated to walk along Lake St and Kirkland Avenue to and from the Kirkland Transit Center. Furthermore, general pedestrian traffic is not expected to use Main St and the alley for any cut-through route.

Nevertheless, the 101 Kirkland development and the 201 Merrill Gardens development do generate pedestrian traffic to and from Lake St via the alley and across Main Street. Pedestrian traffic is likely to be greater during off peak times, evenings, and weekends, in particular in warmer weather months. Regardless of the amount of pedestrian activity, with the additional passenger vehicle traffic, traffic management including traffic calming and better management of truck load/unload activity will be necessary to ensure pedestrian safety.

Traffic calming measures are discussed in Section G, and management of truck delivery load/unload activity is discussed in Section H.

F. Vehicle Paths within Alley

The heaviest volume of traffic will be on the east half of the alley, between the Lake Street Place driveway and Main St. The alley roadway width is approximately 17’ not

including the rolled curb/gutters on both sides. This narrowed width will be in effect a traffic-calming feature to control speeds. Passenger vehicles are estimated to pass each other with minimal sidewalk encroachment. Passenger car turning movements in and out of the alley driveways will conflict with opposing movements, which will in effect slow down traffic.

Figure 17 shows the passenger car conflict for a vehicle entering the 101 Kirkland garage from the east and a vehicle exiting the Lake Street Place garage to the east assuming they arrive at the same time.

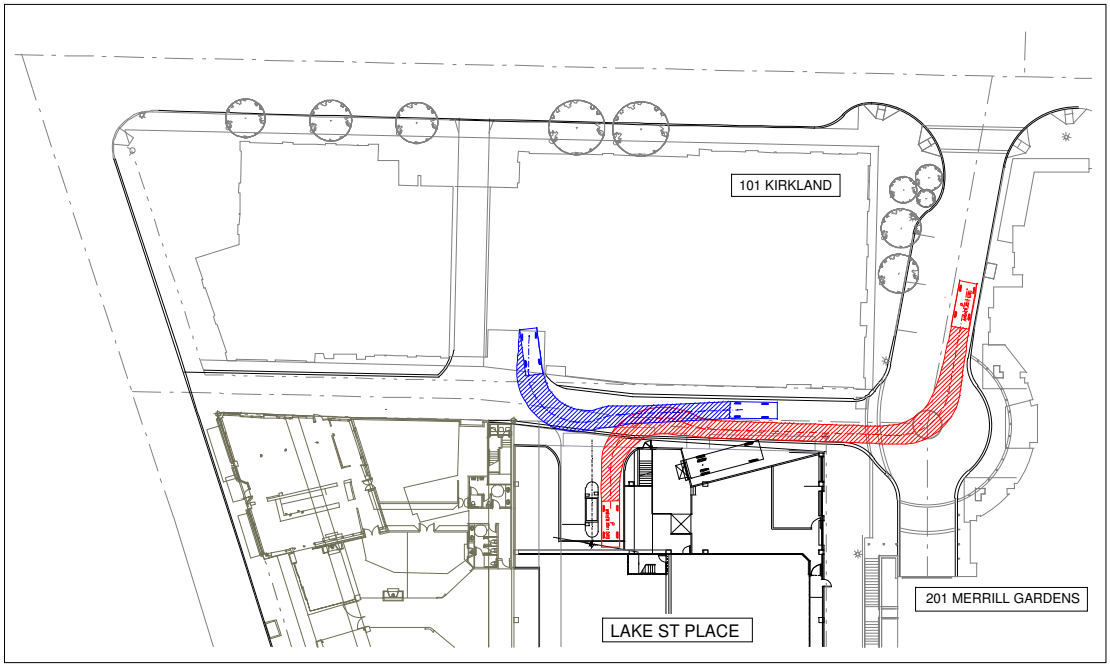


Figure 17

As shown here, a vehicle exiting the project would conflict with a vehicle entering the 101 garage.

Figure 18 shows the passenger car conflict for a vehicle entering the Lake Street Place garage from the east and a vehicle exiting the Lake Street Place garage to the east.

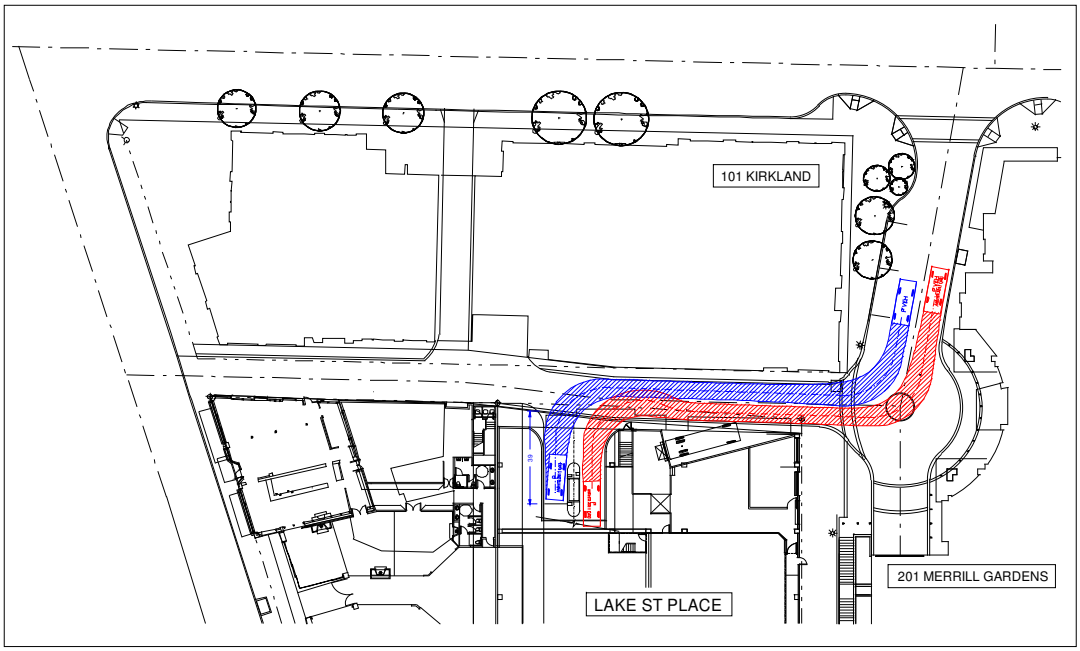


Figure 18

As shown here, similar to the previous figure, a vehicle exiting the project would conflict with a vehicle entering the garage.

Two passenger type vehicles passing each other in opposite directions is feasible but narrow. Vehicles turning in and out of driveways on the alley will require full use of the alley width for the movement. Exiting vehicles are expected to wait (yield) until the alley in the vicinity of the driveway is clear before turning out.

Courtesy yielding of right-of-way should be expected for vehicles turning into driveways, in particular right turn in.

G. Alley Traffic Calming

As noted above, the narrow width of the roadway section of the alley will control speeds. Other recommended traffic calming features could include:

- Install a raised crosswalk (crosswalk speed hump) on Main St just north of the traffic circle.
- Install a stop bar (18" wide) at the east end of the alley to augment the stop sign.

In addition, it should be noted that the vehicles exiting the Lake Street Place garage will be gate controlled, thus all vehicles will be required to stop for card reader or toll booth

attendant before entering the alley. This of course will meter the traffic exiting the project.

H. Truck Load / Unload

Presently, there is minimal control of where and when trucks park for load/unload activity. Morning observations show trucks primarily unloading on Lake St in front of Hectors, on the south side of Kirkland Ave just east of Main St, and on Main St east side south of Kirkland Ave. The width of the Main St extension does not allow for the passage of two passenger vehicles (opposite directions) with truck(s) parking on the east side. In addition, any truck currently parking in the alley significantly impedes the movement of passenger cars around the parked truck.

The adjoining properties including the subject development must mitigate truck load and unload activity. This could entail specifying delivery hours, move-in move-out times for residents/tenants, and designate more specific load/unload locations. More enforcement of no parking (currently signed no parking in the alley) on the alley and on Main St.

Existing load/unload locations for 101 Kirkland Ave are not readily available aside from on-street parking. 201 Merrill Gardens has a load/unload location in the garage that might be better utilized with improved communication between the building owners and delivery services and tenants.

To assist trucks with load/unload locations, special consideration should be given for new on-street load/unload zones. Suggested locations should include: 1) sign the two on-street parallel parking stalls on the west side of Main St for 15-min load/unload during morning periods, likely between 7am and 10am, and 2) sign two on-street parallel stalls on the south side of Kirkland Ave east of the bank drive-thru exit to 30-min load/unload during the same suggested morning times, or even 24-hour except Sunday and holidays.

Suggested load/unload zones are shown below in Figure 19.

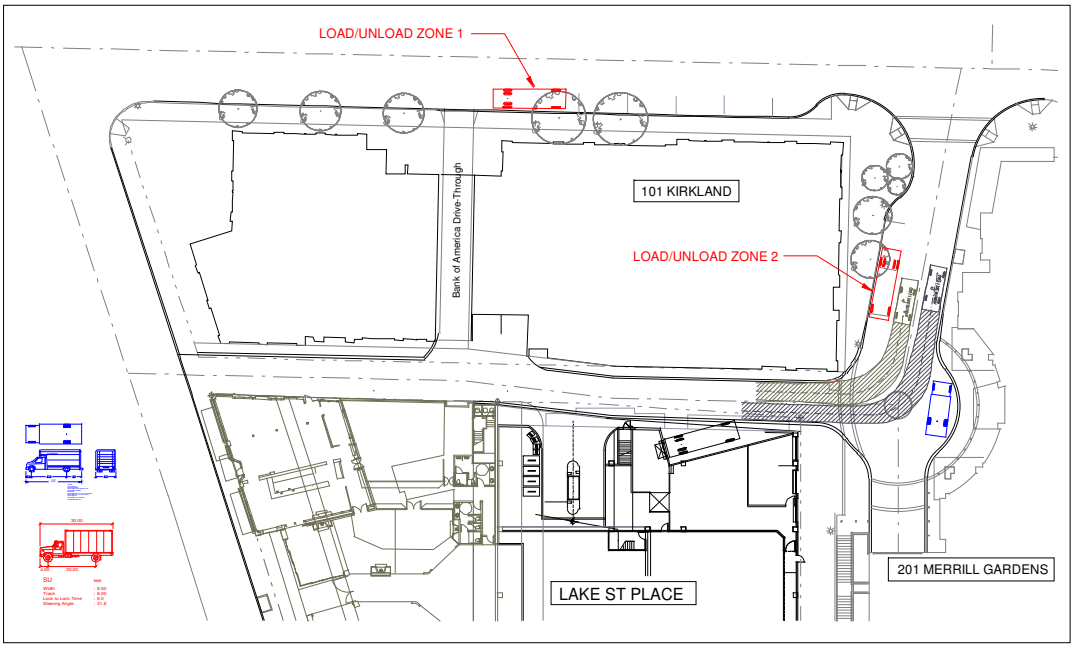


Figure 19

As shown here, two load unload zones are recommended to help with truck activity. Not shown here is also a recommendation for a load/unload zone on Lake St on the west side adjacent to Anthony's Home Port restaurant near the south end of the site. Also not shown here is an existing 24-hour load/unload zone on the south side of Kirkland Ave just east of Main St. This zone is approximately 40 feet in length.

The Lake Street Place development will be providing a loading dock on the alley facing to the east. Smaller trucks could back into this dock entering from Lake St, larger trucks (30' SU average) would likely need to enter from Main St and back into the stall. A detail of this truck path is shown is Section I.

Passenger vehicles can pass each other on Main St with a truck in the load zone on the west side. In addition, vehicles can pass-by any larger truck size vehicle properly parked in the circle in front of 201 Merrill Gardens.

The "US Mail" parking zone on the east side of Main St (south of Kirkland Ave) should be eliminated.

Garbage truck activity is discussed separately in Section J.

I. Lake Street Place Loading Dock

The proposed loading dock for the project will be located at the east end of the site, east end of the alley. It will be designed to accommodate a SU truck (30' x 8' +/-), which is a typical truck currently serving the site (Charlie's Produce for example).

Figure 20 below shows a SU truck entering from the Kirkland Ave/Main St intersection and turning around in the traffic circle and backing into the loading dock. The truck path will temporarily block the alley and the 201 garage for a short duration until parked. The exiting movement should be relatively simple to the Kirkland Ave/Main St intersection.

Also shown here is an SU entering from Lake St shown in red, which is close but not feasible based on AutoTurn details. Smaller trucks (less than 30') are likely to be able to make this movement. An SU 30 truck can exit from the alley to Lake St.

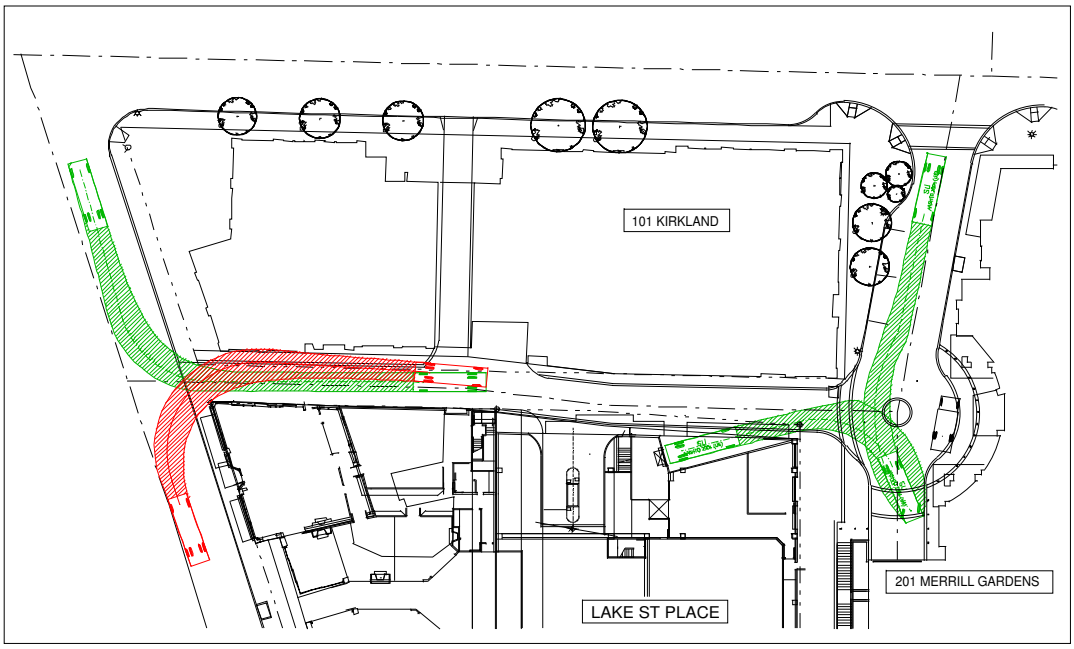


Figure 20

For the Lake Street Place project, typical truck traffic estimated to be 1 to 2 deliveries per day, usually during the morning period.

J. Garbage Trucks

The trash room for the proposed development is located just to the west of the parking garage entry (and directly across the alley from the 101 Kirkland parking entry). The containers will be wheeled out of the room to the truck by the driver in the alley similar as

they do at 101 Kirkland today. The 101 Kirkland trash room is located across the alley from where the proposed loading dock starts to angle in off the alley.

For the pickups in the alley, it is assumed the garbage truck would enter from Main St, load at each location and depart to Lake St. Garbage pickup is generally 2 to 3 times per week, currently in the early morning during the AM street peak period.

Figure 21 shows the garage truck and the two pickup locations in the alley. The pickup for 201 Merrill Gardens is just south of the alley.

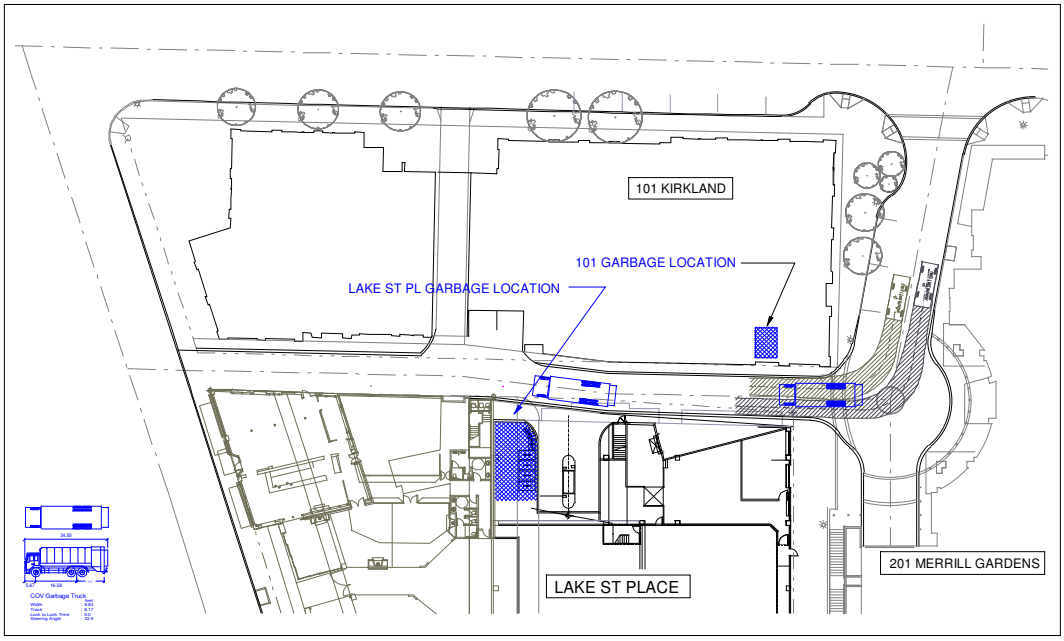


Figure 21

The garbage truck currently blocks the alley to service 101 and will block the alley for service to Lake Street Place. Given this situation, it is recommended that the garbage pickup time be set for a weekday time before 7:00 am. Traffic volumes for the project are estimated to be very light up until 7:00 am.

K. Emergency Vehicles

A one-year history (May 5, 2012 thru May 6, 2013) of emergency medical calls to both 101 Kirkland and 201 Merrill Gardens was obtained from the City of Kirkland Fire/EMS. There were a total of 11 calls made to 101 Kirkland. There were 82 calls made to 201 Merrill Gardens. Thus for both buildings, there were 93 emergency vehicle calls/visits for the past one-year period. The nearest Fire Station is Station 22 at 6602 108th Ave NE.

Figure 22 shows the annual number of emergency calls by hour of day for weekday conditions.

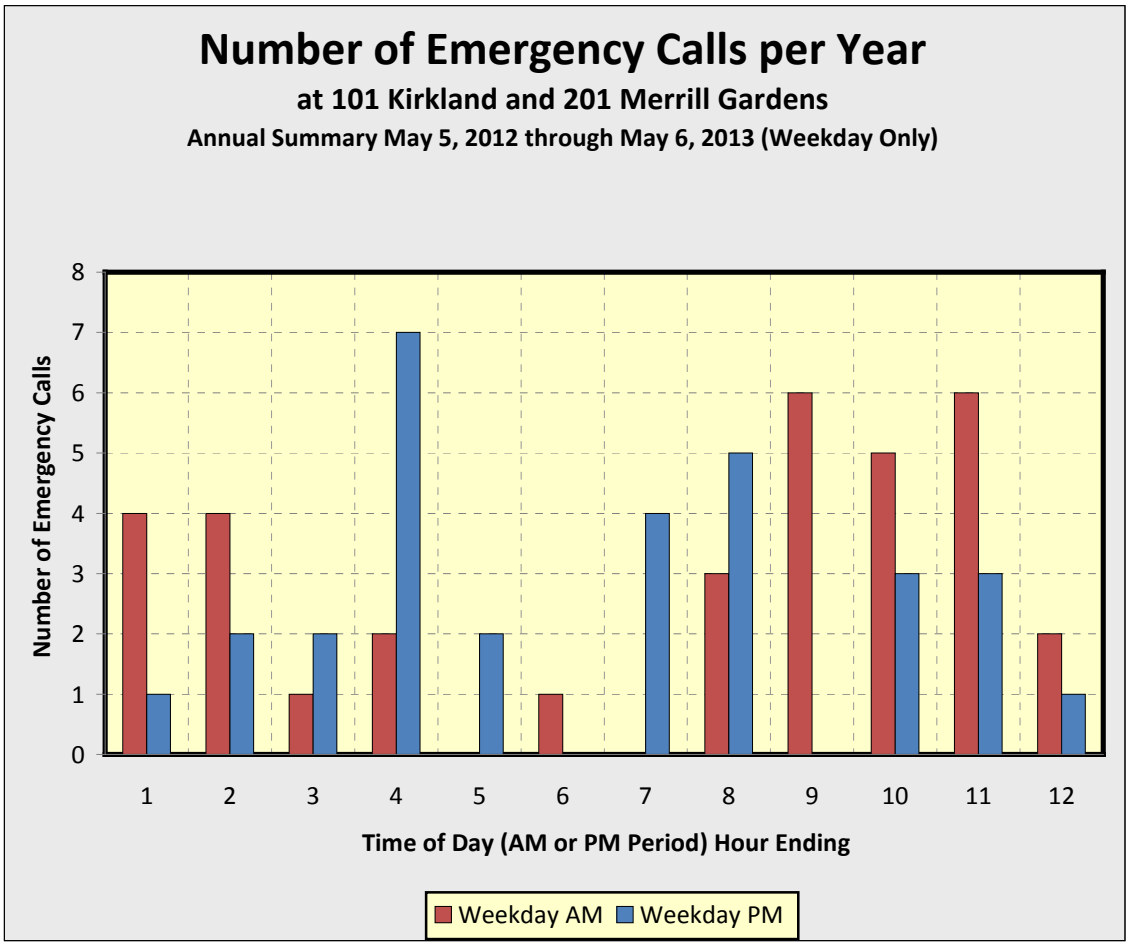


Figure 22

For the weekday period (Monday thru Friday), for the AM period, there were 34 calls, 14 of which occurred during the 4-hour period between 6 am and 10am. For the PM period, there were 30 calls, 13 of which occurred during the 4-hour period between 3 pm and 7 pm. Based on this information, it is estimated that on average there are 13.5 calls per year for either the AM or PM street peak periods. The peak periods noted here are 4-hour periods; which shoulder both sides of the typical street peak 2-hour period; one hour prior to and 1 hour after for either the AM or PM condition. The number of calls during this time (13.5 per year) equates to approximately 1 call per month in either the AM or PM extended street peak period.

It is recommended that 201 MG communicate with Kirkland Fire/EMS to implement parking area strategies for typical emergency aid car calls. Ideally any aid car would park in front of 201 MG assuming the parking area is vacant (the eastside of the circle). It is recommended that regulatory parking signs be installed to identify EMS type vehicle parking.

Of course for any catastrophic fire/emergency clearly the fire department would use the roadway as they see fit and traffic circulation must accommodate until emergency situation has been addressed. Any traffic exiting from Lake Street Place or 101 Kirkland could go west to Lake St.

X. On-Site Parking

The site currently has 65 surface parking stalls with sole access to the alley. The total floor area was 40,026 gsf prior to the demo of the Lakeside and Calabria buildings. The existing site is a mix of restaurant (quality and high turnover), retail, and office uses. The required parking supply per Kirkland Parking Code would equate to 225 stalls based on City parking ratio's for each use and the floor area noted. It should be noted the City does not differentiate between the different types of restaurant uses that are in the trip generation analysis.

It is assumed that the parking code for each respective land use reflects a theoretical peak parking demand for each use. There are four different uses competing for parking and the peak demand for each of these uses is estimated not to coincide with one another. The hourly parking demand for each of the four uses, office, retail, quality restaurant and high turnover fast-food restaurant, was estimated based on data from both the ITE Parking Generation manual and the Urban Land Institute's Shared Parking manual. For office, the peak demand occurs between the hours of 10:00 AM and Noon. The peak demand for retail occurs in the afternoon period around 1:00 PM. The peak demand for quality restaurant is estimated to occur closer to the evening hours, and the peak demand for high turnover restaurant is estimated to occur around the noon hour and early evening times.

The hourly parking demand by use is shown in Table 13.

Table 13
Parking Demand Hourly Accumulation Percentages

Time of Day	Percent Parking Accumulation by Time of Day Weekday by Use			
	Office	Retail	Quality Restaurant	HT Restaurant
6:00 AM	10%	1%	0%	26%
7:00 AM	40%	7%	1%	44%
8:00 AM	71%	18%	4%	57%
9:00 AM	94%	40%	8%	76%
10:00 AM	100%	61%	15%	85%
11:00 AM	99%	87%	25%	92%
12:00 PM	90%	99%	51%	100%
1:00 PM	84%	100%	63%	90%
2:00 PM	91%	95%	50%	53%
3:00 PM	87%	91%	44%	42%
4:00 PM	75%	85%	39%	42%
5:00 PM	47%	69%	55%	76%
6:00 PM	24%	76%	81%	83%
7:00 PM	15%	86%	100%	63%
8:00 PM	7%	79%	99%	66%
9:00 PM	3%	52%	88%	63%
10:00 PM	3%	21%	78%	48%
11:00 PM	0%	10%	58%	44%
12:00 AM	0%	0%	38%	20%

a HT = High Turnover

The parking demand by time of day for the existing uses was computed utilizing the parking ratio's identified by the City's code and then allocated for each hour of the day by type of use. The total parking demand when adding all peaks for the individual uses together equates to 225 stalls. The actual peak was computed to be 181 stalls, occurring at 7:00 pm. The existing site at 40,026 gsf is grandfathered in at 65 stalls. Thus, assuming the peak demand equal to the parking supply and occurring at 7:00 pm, parking demand was proportionally allocated back to the other hours of the day. The parking demand fluctuation is shown in summary in Table 14.

The peak parking demand for the demolished areas (13,391 gsf) is estimated to be 93.5 stalls when summing the individual use peaks together. The estimated peak when accounting for the different peak periods for each of the four uses equates to 87 stalls. These parking demand estimates are to be used as credit against the new areas proposed.

The peak parking demand for the new areas (83,786 gsf) is estimated to be 289 stalls when summing the individual use peaks together. The estimated peak when accounting for the different peak periods for each of the four uses equates to 222 stalls.

The net new parking demand by time of day was estimated by negating the demo area demand from the new area demand. The estimated peak parking demand for the net new area is estimated at 176 stalls. The peak time is estimated to occur at 11:00 am, presumably driven by the large office and retail expansions.

The estimated total parking demand was computed by adding the grandfathered parking for the existing use with the net new parking demand for the project expansion. The estimated peak parking demand is 220 stalls, estimated to occur at 2:00 pm.

Table 14
Parking Demand Summaries [a]

Time of Day	Existing Site (40.026 ksf)	New Area (83.786 ksf)	Demo Area (13.391 ksf)	Net New Area (70.395 ksf)	Total Project (110.421)
6:00 AM	4	16	-3	13	17
7:00 AM	11	67	-7	60	71
8:00 AM	18	124	-12	112	130
9:00 AM	26	172	-18	154	180
10:00 AM	33	196	-26	170	203
11:00 AM	40	212	-36	176	216
12:00 PM	53	222	-57	165	218
1:00 PM	58	221	-65	156	214
2:00 PM	49	221	-50	171	220
3:00 PM	43	209	-45	164	207
4:00 PM	38	182	-40	142	180
5:00 PM	46	143	-55	88	134
6:00 PM	57	129	-74	55	112
7:00 PM	65	133	-87	46	111
8:00 PM	63	116	-87	29	92
9:00 PM	55	91	-76	15	70
10:00 PM	47	70	-64	6	53
11:00 PM	35	46	-49	-3	32
12:00 AM	22	27	-30	-3	19

a refer to Appendix F for details of the parking calculations for each scenario.

The total proposed parking supply with the full build development is 252 stalls: 65 stalls from the existing site (formerly 68 stalls less 3 removed with alley improvements) plus 187 new stalls. The required parking per Kirkland Parking Code (including grand-fathered parking) is 260 stalls.

The estimated peak parking demand with shared parking adjustments is 220 occupied stalls, occurring at or around 2 pm. This assumes 171 vehicles for the net new floor area (70.395 ksf) added to the existing parking supply for the existing 40.026 ksf. This assumes the supply equals demand for the existing condition. The overall parking demand with grandfathered credit of 220 vehicles is less than the 252 stalls provided. The supply provided is estimated to exceed demand, but as noted above, the supply is less than the parking code requirement of 260 stalls.

Also, it is important to note that some of the retail and restaurant parking could and would likely park on Lake Street or Kirkland Avenue, thus reducing demand within the garage.

On a side note, the office use, which is the primary parking demand generator could be mitigated somewhat with transportation demand management strategies such as transit incentives, carpooling, and non-motorized uses such as bicycling and walking. There is the Kirkland Transit Center located approximately 800 feet away from the site. Assuming that 90% of the office parking demand is employee based, and assuming 10% transit use and 5% carpool, that would result in a parking demand reduction of approximately 30 vehicles (or occupied stalls).

McLeod Development, Co., predicts that up to 30% of the office tenant trips would be via transit. Current leasing negotiations for future tenants indicate the project location is close proximity to the transit center is a valuable asset to the project and prospective tenants are looking for this.

XI. Transportation Demand Management Plan (TDM)

The transportation demand management (TDM) plan goal is to help achieve mode-split goals by reducing the single occupant vehicle (SOV) percentage of office trips from the project thereby reducing the overall SOV travel to and from the site.

The following are examples of suggested TDM strategies that may or may not be implemented as part of this project:

- Provide a Commuter Information Center (CIC): A CIC would be located in a prominent location, typically in the lobby of the building. A CIC is a transportation information display in a freestanding, wall mounted, or kiosk configuration, which provides rideshare and transit service information including a destination brochure, targeted specifically to the commuter market. Preferred location will be determined by the BTC.

- Designate a Building Transportation Coordinator (BTC): The BTC would be appointed (identified by name and position) by the building or institution owner(s) and/or responsible party(s) prior to issuance of the Certificate of Occupancy. The BTC will be responsible for accomplishing program goals, and will maintain and stock the Commuter Information center. The BTC will be located on the site, available to the building's tenants, and be part of Building Management. The BTC's name, phone number and location will be displayed on the building's directories.

- Periodic Promotional Events: A minimum of one promotional event per year is recommended to promote transit and high occupancy vehicle (HOV) use and flextime programs for employees and/or tenants.

- Ridematch Opportunities: Depending on the success of the TMP, a ridematch program may be implemented. Ridematch is a Metro's computer-assisted service that matches commuting customers with similar origins, destinations, and work schedules for purposes of forming, joining, or adding to carpools, vanpools, and custom buses.

- Preferential Parking for HOV's: Preferential parking could be provided at the building near employee entrances for carpools/vanpools. Preferential parking for HOV's could be provided at a rate of 5% of total office parking stalls. These spaces will be designated specifically for carpools and will have high visibility to encourage program participation. A carpool or vanpool is defined as containing at least one person who works in the Marina Suites Office Building and others who work in the vicinity. The carpool/vanpool should commute at least four days per week to and from work. These spaces will be reserved for exclusive use by carpools/vanpools between the hours of 7:00 and 10:00 AM. Carpool/Vanpool spaces will be clearly identified with signs and located near the elevator lobby.

- Incentives for Carpool/Vanpool: A two-person carpool would receive a 25% discount from the normal monthly parking rate and a three person or larger carpool/vanpool would receive a 50% discount.

- Transit Subsidy: A peak hour transit subsidy of 50% could be offered to all employees (by tenant) that primarily commute to and from work by bus.

- Signage: Signage could be provided in the parking lot giving preferential treatment for carpools and vanpools.

- Bicycle Racks - Provide weather protected lockable bicycle racks and/or hangers to be used by employees and/or visitors.

XII. Summary

Lake Street Place mixed use development is a proposed 110,421 gsf mixed-use office/retail/restaurant development located on the east side of Lake Street south of Kirkland Ave and north of 2nd Ave. The existing site floor area is 28,607 gsf, which will be for the most part maintained. The project will be constructed in two phases, with the first phase constructed to 44,790 gsf.

The following are the summaries of this traffic study.

A. Trip Generation, Trip Distribution & Assignment

The Lake Street Place Development expansion is estimated to generate a net new of 1,442 daily, 107 AM and 160 PM peak hour trips to and from the site, including pass-by trips. The impact on the surrounding street system will be slightly less due to the fact pass-by trips are existing trips already on the street.

Without pass-by trips, the net new trips (non-pass-by) is 1,255 daily, 107 AM and 149 PM trips. These trip estimates were used for the City's transportation concurrency test. The existing site uses are estimated to generate (non pass-by) 777 daily, 36 AM and 91 PM peak hour trips.

There is one entrance/exit to the proposed parking garage. Access to the garage can be taken from Lake St via the east-west alley on the north side of the site, or from Kirkland Avenue via Main St south of Kirkland Ave. Of the 160 trips entering and exiting the site during the PM peak hour, it is estimated that 80% will use the easterly access to Kirkland Ave. The remainder will exit to Lake St.

B. Reduced Volume Assumptions

Traffic counts conducted at each of the three buildings utilizing the alley and Main St indicate that actual counts are noticeably less than volumes predicted per ITE. The actual volumes generated from the three sites is about half of what was estimated per ITE rates. Thus, the trip generation estimates for the proposed expansion are likely to err to the high side and reflect overly conservative impacts. It is theorized that the volumes are less, in particular at 101 Kirkland and Hectors/KWM is due to the following: 1) a significant amount of restaurant and retail likely to utilize on-street parking, 2) given the location of the developments in the Kirkland CBD vicinity, there are more walk trips versus vehicle trips, 3) the bank volume observed prior to redevelopment was held constant even though the bank downsized approximately 40%, 4) on-line banking has likely continued to increase thus decreasing vehicle trips to the bank, 5) restaurant and retail likely to have a

higher customer walkup percentage given the location, and 6) more trip linking (trip capture to a large extent beyond the bounds of the project) with all the other retail/restaurant/residential in the area.

Therefore, it is concluded that the net new trips estimated in this analysis above are likely to be conservative estimates.

C. Concurrency, Significant Intersections

Based on the concurrency test, this project passed concurrency. There are six significant intersections defined based on the proportional share impact calculations. These intersections include:

- State St /NE 68th St (#103): Proportionate Share = 1.4%
- 108th Ave NE/NE 68th St (#104): Proportionate Share = 1.5%
- Lake St/Kirkland Ave (#108): Proportionate Share = 1.4%
- NE 85th St/114th Ave NE (#109): Proportionate Share = 2.1%
- Kirkland Ave/3rd St (#111): Proportionate Share = 5.5%
- Kirkland Way/6th St (#112): Proportionate Share = 3.4%

The project's proportional share impact at each of these intersections is greater than 1% but less than 5% except for the Kirkland Ave/3rd St intersection where the project's impact is over 5%, but under 15%.

D. Accidents

There are no intersections (of the 7 studied herein) that have experienced more than 10 accidents in any given year. The "target" intersection accident rate set at the city is 1.0 accidents per million entering vehicles (acc/mev) and focus on locations with 10 or more accidents per year. The NE 85th St/114th Ave NE intersection has experienced annual accidents close to 10 and accidents rates near 1.0 but both below. The other locations are all well below the threshold values.

E. Site Access Sight Distance

The available sight distance at the alley access to Lake St and at the Kirkland Ave/Main St intersection are both adequate with consideration of on-street parking. The on-street parking on the east side of Lake Street south of the alley restricts sight distance to the south, presuming there is a car parked nearest the driveway. This appears to be a common occurrence in the CBD setting. It is recommended that the nearest on-street parking stall be removed to improve sight distance and turn radii for trucks entering the alley. It is also recommended that the building corner at the southeast corner of this driveway include a convex mirror to improve visibility between exiting vehicles and north-south pedestrian activity near the driveway.

F. Site Access Driveway Operations

There is one driveway proposed to the project's parking garage, that will include a single entry drive and single exit drive separated by an island for ticket dispenser, gate, and parking attendant booth. The majority of the project traffic (80%) will enter and exit via Kirkland Ave. Thus, the primary movements from the alley to the parking garage will be left turns in and the primary movement exiting the garage will be right turn out.

G. Level of Service

Off-Site Intersections – with Significant Impact (>1%)

Two intersections are estimated to operate at LOS F in the future (2018) with the project. These are:

- Lake St/Kirkland Ave (#108); PM
- Kirkland Way/6th St (#112); AM and PM

At #108, the project's proportional share impact is 1.4%, less than 5%. Five percent is the threshold percentage for LOS F conditions. This intersection is currently signalized. The primary cause of the congestion at this intersection is due to the queue spillback from the Central Way/Lake St intersection. The City has in their planned improvement program a project to improve signal coordination along Central Way as well as along Lake St (NE 38th St to Central Way) that should provide a benefit to this roadway.

At #112, the project's proportional share impact is 3.4%, less than 5%. Five percent is the threshold percentage for LOS F conditions. This intersection is currently an all-way stop controlled intersection but is slated for signalization by the City, however, the project is currently unfunded.

The remaining analysis intersections are all estimated to operate at LOS D or better in 2018 with the project thus no improvements are required or suggested.

The mitigation fees that will be required per City ordinance based on the project's floor area are assumed to provide assistance in the form of traffic mitigation towards the City's roadway/intersection improvement projects for the problem analysis intersections.

Local Area Intersections and Driveways

There are six intersections/driveways that were reviewed as part of this study. Each are discussed below.

a. Lake St/Alley. The alley access to Lake St is restricted to right-in and right-out given the center c-curb configuration on Lake St. The estimated level of service for the AM peak hour is estimated to be LOS B. For the PM peak hour future condition, the level of service for a right turn exiting to Lake St is estimated to be LOS F. However, due to the heavy stop-and-go congestion on Lake St, it is estimated that the actual delay will likely be less than reported herein due to the assumption that northbound motorists will likely "wave-in" vehicles from the alley, and some aggressive motorists from the alley may take gaps left by northbound motorists with start-up delay with signal change to green. It is assumed that one car from the alley per signal cycle at Kirkland Ave/Lake St could merge into the northbound thru queue. Given that the signal cycle is approximately 60 seconds at Kirkland Ave/Lake St, it is estimated that the potential average delay for a right turn out from the alley turning into the northbound thru queue would be approximately 60 seconds assuming motorist courtesy wave-in by the northbound thru queue.

   The City has noted that they reserve the right to convert the alley to one-way westbound should traffic congestion issues arise with the current recommended and mitigated conditions. The critical point of issue with this concept would be where the alley exits to Lake St. It is estimated that the volume increase across this driveway for future PM peak hour conditions would go from 23 entering and 20 exiting to 132 exiting and 0 entering: 43 to 132. During the PM peak period Lake St is stop-and-go congested northbound through Kirkland Ave to Central Way. The modeling analysis for this condition indicates severe queue spill back through the alley into Main St. However, the modeling cannot and does not predict human/motorists courtesy factors for "wave-in" situations. Some of this is sure to occur and queues through the alley should be less than estimated. However, the ultimate queue estimate is dependent on the motorist courtesy of the northbound traffic flow. Another factor to consider is the impact to pedestrian safety along the eastside sidewalk of Lake St and the conflict with vehicles, on average about 1 vehicle every 30 seconds exiting to Lake St. As a general rule of thumb, and as noted previously, if one vehicle is "waved-in" per signal cycle (60 second signal cycle at Kirkland Ave/Lake St) then the discharge rate of the alley would be 60 vehicles. Thus queue spill back through the alley would occur. However, most of these motorists would exit the alley to ultimately head east on Kirkland Ave, thus the predominant movement would be a right turn into the northbound right turn pocket at Kirkland Ave/Lake St. Hence, the discharge rate from the alley could be greater than 60 vph. It is recommended that the one-way westbound alley concept be further evaluated only after the recommended mitigation measures to improve

the existing alley and Main St operations be set in place are tested and issues arise. It is assumed the proposed loading dock configuration would remain facing east.

b. Kirkland Ave/Main Street. The Kirkland Ave/Main Street intersection is presently a side-street stop controlled intersection with stop control on the north and south legs. The total future vehicular volume entering the intersection during street peak hours is 502 vph in the AM and 694 vph in the PM. The future AM peak hour conditions with the project are estimated to be LOS B for both the northbound and southbound approaches. For the future PM peak hour with project, the level of service is estimated to be LOS C for both the northbound and southbound approaches. The delay estimates are near the LOS B range. The analyses assume a relatively high component of pedestrian crossings all legs based on existing counts.

c. Main St/Alley/201 MG garage. This intersection was designed with a circular them, similar to a traffic circle without a center island. The circle serves the alley, the 201 Merrill Gardens parking garage, the front door entrance to 201 Merrill Gardens for passenger drop-off and pick-up as well as some truck loading and unloading and emergency vehicles due to the fact this is an assisted living retirement development. The traffic counts indicate there are u-turns that stop at 201 Merrill Gardens side of the circle and some that don't stop at all. There is also a fair amount of truck activity to all of the properties adjacent and nearby. The estimated total entering volume through this intersection is 140 vph during the AM peak hour and 253 vph during the PM peak hour. It is assumed that through mitigation recommendations as part of this study, truck activity and emergency vehicle activity will be more efficiently managed.

   The traffic control at this intersection consists of a stop sign for the approach from the alley. There are no channelization markings. With the estimated increase in traffic associated with the project, the level of service is estimated to be LOS A for both peak hours. The friction factors associated with trucks, pedestrians, EMS, u-turns, etc., will need to be better managed with the increase in vehicles.

d. Alley/Site Access. The proposed driveway is estimated to operate at LOS A for both peak hour conditions analyzed. The movements to and from the east will have some overlap in use of the alley width near the driveway, thus some extra delay is likely by the later arriving vehicle whenever this occurs. The estimated volume exiting the alley is 100 vph for the PM peak hour opposed by 98 in the opposite direction (westbound). The arrival rate for each approach is approximately 36 seconds per vehicle, thus it is anticipated there would be a low instance of similar arrival time resulting in some additional delay not estimated by the modeling analysis.

e. Alley/101 Kirkland Garage. This intersection is estimated to operate at LOS A for both peak hours. The volume on the alley and entering/exiting the garage at this

point is estimated to be light. The total entering volume is 80 vph for the PM peak hour: 33 entering and exiting the garage, and 47 thru trips on the alley.

f. Alley/Bank of America Drive Through. This drive-thru is one-way north through the 101 Kirkland property. It is estimated there would be 9 vph during the PM peak hour using the drive-through, and significantly fewer in the AM peak hour. Vehicles turning right into the drive-through will conflict with vehicles eastbound on the alley from Lake St. However, the volume and occurrence will be very light. The conflict occurrence is 8 turning vehicles opposing 20 vehicles through eastbound. This would equate to a maximum potential conflict of only 1 instance every 7.5 minutes. Of course these estimates reflect average weekday conditions.

H. Mitigation Fee Analysis

Per City Ordinance No. 3685, road impact fees will be required. Fees must be paid prior to issuance of building or tenant improvement permit. According to the City's current Road Impact Fee schedule dated January 1, 2013, the transportation impact fees by use are:

- General Office fee is $2.43 per gsf (GFA),
- Specialty Retail is $1.15 per gsf (GFA),
- Restaurant is $7.24 per gsf (GFA).

The road impact fee rates are for projects located in the CBD.

It is recognized that the City will allow a traffic mitigation fee credit for any existing use that is currently occupied or was demolished after 2009. The Lakeside and Calabria buildings were demolished in 2010. Typically, the City will identify all uses permitted on the site from 1998 to current and allow credit for the most significant. The credit would be based on the City's current Road Impact Fee Schedule and be based on floor area.

Table 15 below provides an estimate of what should be required by this development for traffic impact fees.

Table 15
TRAFFIC MITIGATION FEE ESTIMATE [a]

Building	Retail (gsf)	Quality Restaurant (gsf)	High Turnover Restaurant (gsf)	Office (gsf)	Total (gsf)
EXISTING SITE BUIDING AREA SPECFIICATIONS [b]					
Hector's	0	4,670	0	2,528	7,198
Lakeside [b]	1,646	2,715	1,667	128	6,156
KWM [c]	2,163	6,503	1,626	11,117	21,409
Main St	0	0	0	0	0
Calabria [b]	876	4,387	0	0	5,2630
All	4,685	18,275	3,293	13,773	40,026
PROPOSED FINAL PROJECT BUILDING AREA SPECIFCIATIONS (TOTAL AREA)					
Hector's	0	10,174	0	27,514	37,688
Lakeside [d]	0	0	0	0	0
KWM [c]	2163	8,592	1,626	24,894	37,275
Main St	15,349	0	0	20,109	35,458
Calabria [d]	0	0	0	0	0
All	17,512	18,766	1,626	72,517	110,421
NET INCREASE	12,827	491	-1,667	58,744	70,395
City Mitigation Fee/GFA	$1.15	$7.24	$7.24	$2.43	
Estimated Fee	$14,751	$3,555	- $12,069	$142,748	$148,985

[a] per City's Jan 1, 2013 Transportation Impact Fee Schedule and floor area estimates per Chesmore/Buck Architecture.
[b] Lakeside and Calabria demolished in 2010. Floors areas are shown for trip mitigation fee and parking credit purposes only.
[c] KWM = Kirkland Waterfront Market.
[d] this building does not exist for future site.

As shown in Table 15, the project is estimated to be responsible for $148,985 in traffic mitigation fees for the Lake Street Place project based on the estimated floor areas noted above.

I. Frontage Improvements

The project will be constructing frontage improvements on three sides of the site. These will include:

- Frontage improvements along Lake Street including: new street tree's, new street lights, new sidewalk, new curb and gutter adjacent to crosswalk, and new planters/landscaping adjacent to crosswalk.

- Frontage improvements along the Alley to include: new curb, gutter and sidewalk from Hector's to Main St.

- Frontage improvements at Main Street will include: new curb, gutter and sidewalk to complement existing traffic circle details, new planters including landscaping to screen existing electrical transformer, and overhead weather protection (sidewalk canopies).

XIII. Site Specific Mitigation Recommendations

As noted above in Section XII.G., the project will be required to pay towards the City's traffic impact fee program based on the City's current fee structure and project floor area/land use type. In addition to that, the following are recommendations for the project for immediate area concerns to better manage the following:

Truck Load/Unload Management

1. Convert the two parking stalls on the north side of Main St between Kirkland Ave and the alley to a load/unload zone.
2. Convert the two on-street parking stalls on Kirkland Ave south side immediately east of the Bank of America drive through to a 40' load/unload zone 24-hour duration, except Sundays and holidays.
3. Move the short load/unload zone on the west side of Lake St near the south end of the site to a longer curb-front in front of the Anthony's Home Port.
4. Install a "No Outlet" sign in SW corner of the Kirkland Ave/Main St intersection, south leg facing north. The intent of this sign would be to reduce U-turn activity in the traffic circle that does not stop.
5. Make more efficient use of the load/unload parking area within the 201 Merrill Gardens garage. This will be the responsibility of 201 MG to communicate with tenants and delivery vehicles for acceptable parking locations.
6. Add signage along the alley to note "NO LOADING or UNLOADING". Current signage along the alley on the north side (attached to the 101 Kirkland building) includes several "No Parking" signs that are expected to remain.
7. Coordinate with the garbage company for preferred pickup times to minimize alley traffic disruption. Pickup times would preferably be before 7 am on weekdays.
8. Work with the City of Kirkland to enforce these loading areas in the normal course of monitoring on-street parking.
9. Establish a mutual loading management plan (or program) among the owners/property managers of the buildings with frontage on the alley and Main Street to:
    a. Self-monitor compliance with City of Kirkland loading restrictions,
    b. Manage the loading activities of each of their own buildings to minimize conflicts with through traffic, and,

c. Regularly meet and/or communicate with each other to discuss and resolve any unanticipated loading/unloading problems.

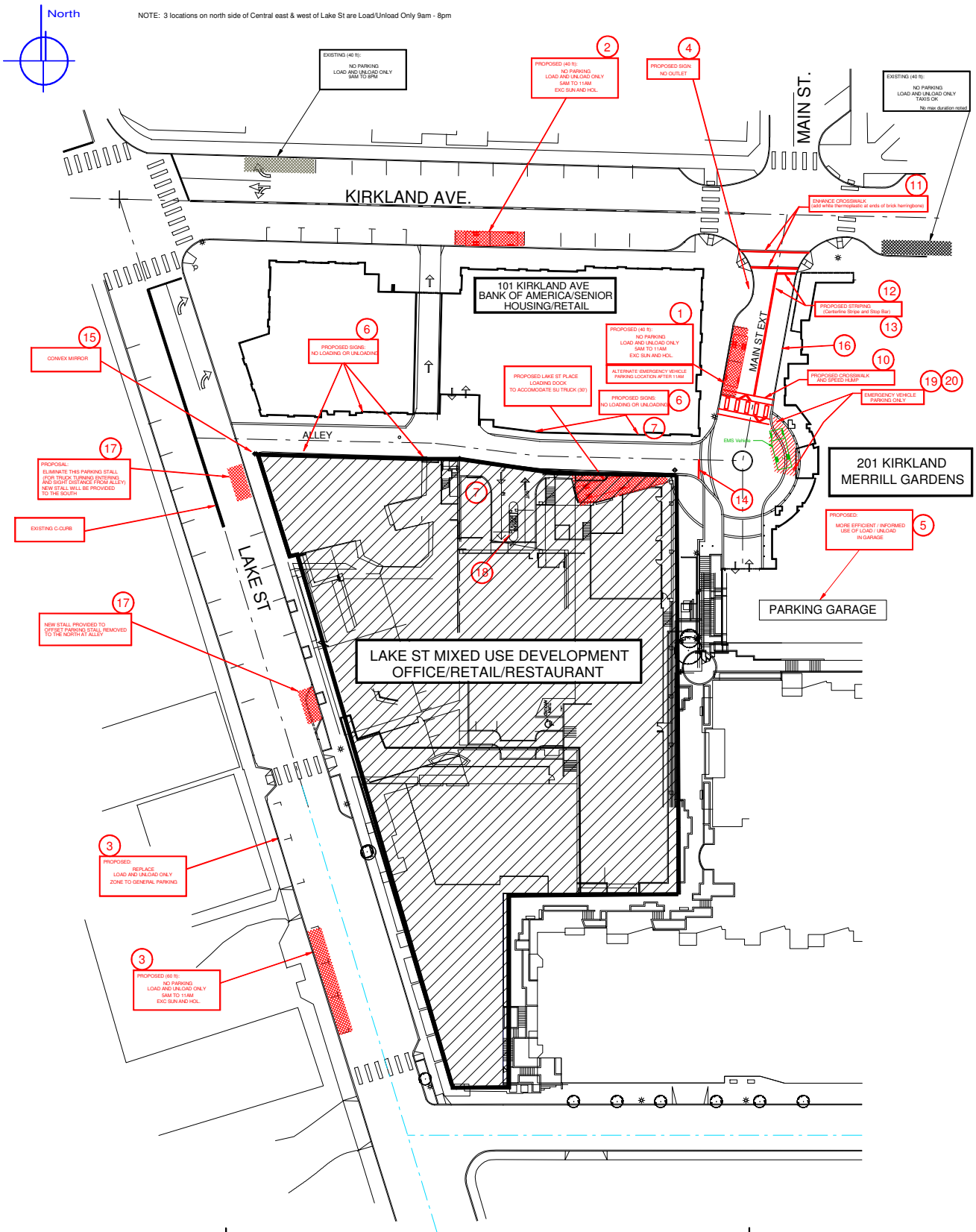
Traffic Calming/Safety Measures

10. Install a raised pedestrian crosswalk speed hump on Main St north of the traffic circle to provide pedestrian access to and from 201 Merrill Gardens to Lake St and to control speeds on Main St in this area.
11. Install 10" thermoplastic crosswalk bars on both sides of the brick paver crosswalk on the south leg of the Kirkland Ave/Main St intersection.
12. Install an 18" thermoplastic stop bar for the northbound approach at the Kirkland Ave/Main St intersection.
13. Install a 4" yellow solid centerline stripe on Main St from Kirkland Ave south to the proposed raised crosswalk north of the alley.
14. Install an 18" thermoplastic stop bar at the east end of the alley for the eastbound approach at Main St and new stop sign on metal post.
15. Install a convex mirror on the hector's building to enhance visibility around corner for pedestrians and vehicles exiting the alley.
16. Eliminate any parking zone including the U.S. Mail curb-front on the east side of Main St between the traffic circle and Kirkland Ave.
17. Eliminate the first parking stall on the east side of Lake St just south of the alley to provide a more comfortable radius for large vehicles turning into the alley, which will also allow for better sight distance for vehicles exiting the alley looking south. A new stall will be provided mid-block just north of crosswalk.
18. Install the parking gate and ticket dispenser for vehicles entering the garage such that the storage distance between the ticket dispenser and the alley can accommodate two vehicles to minimize queue spill back into the alley.

Emergency Vehicles

19. Provide an emergency vehicle parking near the north end of the plaza area in front of 201 Merrill Gardens. Location shall be set back as to not block any northbound vehicle movement on Main St. Mutual property owner coordination (101 Kirkland, 201 MG, and Lake Street Place) and City of Kirkland Fire Department to communicate ideal parking locations to minimize disruptions to general traffic activity.
20. Sign the preferred location "NO PARKING EXCEPT EMERGENCY VEHICLES" to provide dedicated space for EMS, Police and Fire vehicles.

Refer to Figure 23 for a depiction of these recommendations along with key code numbering matching these 20 items.



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MITIGATION PLAN

Figure 23

Lake Street Place
Office/Restaurant/Retail
Mixed Use Development