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September 22, 2011

Mr. Gary Myre
3195 11th Street
Boulder, CO 80304

Re: Boulder Creek Commons
Boulder, CO
(LSC #110320)

Dear Mr. Myre:

At your request, we have evaluated the probable traffic characteristics associated with the proposed Boulder Creek Commons to be located near 55th Street and South Boulder Road in Boulder, Colorado. The site is proposed to contain 65 single-family homes, six duplex units and 50 senior housing units. This letter analyzes the estimated trip generation, trip distribution, and trip assignment of the proposed development as per sections 2.03(j) and 2.03(k) of the City of Boulder's *Design and Construction Standards*.

Previous Traffic Studies

Several traffic studies have been completed for this site, the most recent of which was the *Transportation Impact Feasibility Study (TIFS)*, May, 2010, revised, November, 2010, prepared by Drexel Barrell & Co. The November, 2010 report incorporated comments received from the City of Boulder regarding alternate mode use assumptions and trip distribution assumptions. Those assumptions are reflected in this report. The November, 2010 TIFS included 70 single-family dwelling units and 71 senior adult housing units while the current plan reduces the total number of dwelling units. The November, 2010 TIFS also included evaluation of two access scenarios: with and without a connection to Kewanee Drive.

In addition to these studies, the Fox Higgins Transportation Group prepared the *East Boulder Community Park Traffic Study* in October, 2008 which analyzed the traffic impacts of this park's expansion and improvements on the surrounding street network.

Land Use and Access Plan

The 22.2-acre site is currently undeveloped and is proposed to contain 65 single-family homes, six duplex units and 50 senior housing units. It is located between 55th Street and Manhattan Drive, about one-quarter mile north of South Boulder Road.

The site currently is proposed to have one access onto 55th Street and one on Kewanee Drive. Figure 1, enclosed, depicts the location of the site with respect to the surrounding land uses and roadway network.

Existing Roadways and Traffic Conditions

Major roadways in the vicinity of the site are illustrated in Figure 1. Characteristics of the major roadways are described as follows:

- South Boulder Road is a four-lane east-west arterial roadway connecting US 36 on the west with the City of Louisville to the east. It is posted at 35 mph in the vicinity of 55th Street, but changes to 45 mph about 400 feet to the east of 55th Street.
- Baseline Road is a four-lane east-west arterial roadway in the vicinity of 55th Street, but narrows to two lanes east of 55th Street. It is posted at 35 mph.
- 55th Street is a two-lane north-south collector street in the vicinity of the proposed development. It connects Pearly Parkway on the north with South Boulder Road on the south. It is posted at 25 mph in the vicinity of the site.
- Manhattan Drive is a north-south local street connecting South Boulder Road on the south with Baseline Road on the north. It is posted at 25 mph.
- Kewanee Drive is an east-west community collector street that extends east from Manhattan Drive and terminates at the site of the proposed development.

Alternative Modes Reduction

An alternative mode reduction percentage of 15% was assumed based on comments contained in the City of Boulder's letter, dated August 20, 2010. A separate plan has been developed for Travel Demand Management.

Estimated Traffic Generation

Based on generation rates cited in the current edition (2008) of *Trip Generation*, published by the Institute of Transportation Engineers (ITE), traffic generation estimates have been calculated for the proposed Boulder Creek Commons. The results of these calculations are depicted in the enclosed Table 1.

As indicated in Table 1, with an alternate mode reduction of 15%, the proposed use is expected to generate about 707 new external vehicle-trips during an average weekday. During the morning peak-hour, the site will generate a total of 49 vehicle-trips with 12 entering and 37 exiting the site. During the evening peak-hour, a total of 66 vehicle-trips will be generated with 41 vehicles entering and 25 exiting the site. Also shown in Table 1 are the trip generation estimates of the November, 2010 land use plan. The current proposal will generate about 69 less daily vehicle-trips than what was estimated in November, 2010. Note that 50 of the dwelling units are senior housing units which are estimated to generate less than 40% of what a single-family dwelling units generates on a daily basis and less than 20% of what single-family units generate during peak-hours.

Estimated Traffic Distribution and Assignment

A key element in the determination of the proposed project's traffic impacts is the directional distribution of its traffic onto the surrounding roadway system. The relative location of the site, the type of land use, and specific characteristics of the roadway and access system will dictate what this distribution will be. With the majority of the employment, shopping, and recreational opportunities located to the west, vehicle-trips will be oriented in this direction. About 35 percent of site-generated traffic will utilize Baseline Road to and from the west to access the site; 30 percent will utilize South Boulder Road to and from the west; 15 percent will utilize 55th Street to and from the north; 15 percent will utilize Baseline Road to and from the east; and five percent will utilize S. Boulder Road to and from the east. These trip distribution percentages are the same as used in the November, 2010 TIFS and were developed after discussion with the City of Boulder.

Applying the trip distribution percentages shown in Figure 2 to the trip generation estimates given in Table 1 yields the site-generated traffic volumes shown in Figure 3. The primary intersections impacted by site-generated traffic will be Baseline Road/Manhattan Drive and Baseline Road/55th Street, but less than 30 vehicles will be added during each of the morning and evening peak-hours. Since each of these intersections is controlled by a traffic signal with left-turn lanes on all approaches, they can easily accommodate this small increase in traffic.

Average weekday traffic impacts are illustrated in Figure 4. The daily site-generated traffic added to the surrounding street network is displayed along with estimated 2008 traffic volumes and the site-generated traffic's percentage of total traffic.

Summary and Conclusions

Based on the foregoing analysis, the following conclusions can be made about the Boulder Creek Commons:

1. The proposed use will contain 65 single-family homes, six duplex units, and 50 senior housing units. The use is expected to generate about 707 vehicle-trips on an average weekday. During the morning peak-hour, the site will generate a total of 49 vehicle-trips with 12 entering and 37 exiting the site. During the evening peak-hour, a total of 66 vehicle-trips will be generated with 41 vehicles entering and 25 exiting the site. This assumes an alternative mode reduction of 15 percent.
2. The site will be accessed via one access drive on 55th Street and a connection to Kewanee Drive.
3. About 35 percent of site-generated traffic will utilize Baseline Road to and from the west to access the site; 30 percent will utilize South Boulder Road to and from the west; 15 percent will utilize 55th Street to and from the north; 15 percent will utilize Baseline Road to and from the east; and five percent will utilize S. Boulder Road to and from the east.
4. The primary intersections impacted by site-generated traffic will be Baseline Road/Manhattan Drive and Baseline Road/55th Street, but less than 30 vehicles will be added during each of the morning and evening peak-hours. Since these intersections

are controlled by traffic signals with left-turn lanes on all approaches, they can easily accommodate this small increase in traffic.

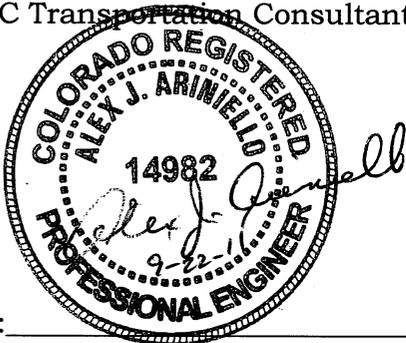
- 5. If the Kewanee Drive connection is made, about 375 daily vehicle-trips will be added with 26 vehicle-trips added during the morning peak-hour and 33 vehicle-trips added during the evening peak-hour. During the evening peak-hour, this is equivalent to adding a vehicle every two minutes.

* * *

We trust this information will assist with planning for the proposed Boulder Creek Commons. Please contact me if there are any questions.

Respectfully submitted,

LSC Transportation Consultants, Inc.



By: _____
Alex J. Ariniello, P.E., PTOE

AJA/wc

Enclosures: Table 1
Figures 1 - 4

**Table 1
ESTIMATED TRAFFIC GENERATION
Boulder Creek Commons
Boulder, Colorado
(LSC #110320; August, 2011)**

ITE Category	Quantity	Trip Generation Rates (1)				Alternative Mode Trip Reduction	External Vehicle - Trips Generated							
		Average Weekday	AM Peak-Hour In	PM Peak-Hour Out	AM Peak-Hour In		PM Peak-Hour Out	Average Weekday	AM Peak-Hour In	PM Peak-Hour Out	Total	AM Peak-Hour In	PM Peak-Hour Out	Total
<i>November, 2010 Land Use Plan</i>														
Single-Family Housing (3)	70 DU (5)	9.57	0.19	0.56	0.64	0.37	15%	569	11	33	44	38	22	60
Senior Adult Housing (2)	70 DU (5)	3.48	0.05	0.08	0.10	0.06	15%	207	3	5	8	6	4	10
								776	14	38	52	44	26	70
<i>September, 2011 Land Use Plan</i>														
Single-Family Housing (3)	65 DU (5)	9.57	0.19	0.56	0.64	0.37	15%	529	10	31	41	35	21	56
Senior Adult Housing (2)	50 DU (5)	3.48	0.05	0.08	0.10	0.06	15%	148	2	4	6	4	3	7
Multi-Family Residential (4)	6 DU (5)	5.81	0.07	0.37	0.35	0.17	15%	30	0	2	2	2	1	3
								707	12	37	49	41	25	66
							Difference	69	2	1	3	3	1	4

Notes:

- (1) Source: *Trip Generation*, Institute of Transportation Engineers, 8th Edition, 2008.
- (2) ITE Land Use #252 - Senior Adult Housing - Attached
- (3) ITE Land Use # 210, Single-Family Detached Housing
- (4) ITE Land Use #230 - Residential Condominium/Townhouse
- (5) DU = Dwelling Units



Approximate Scale
Scale: 1" = 1,000'



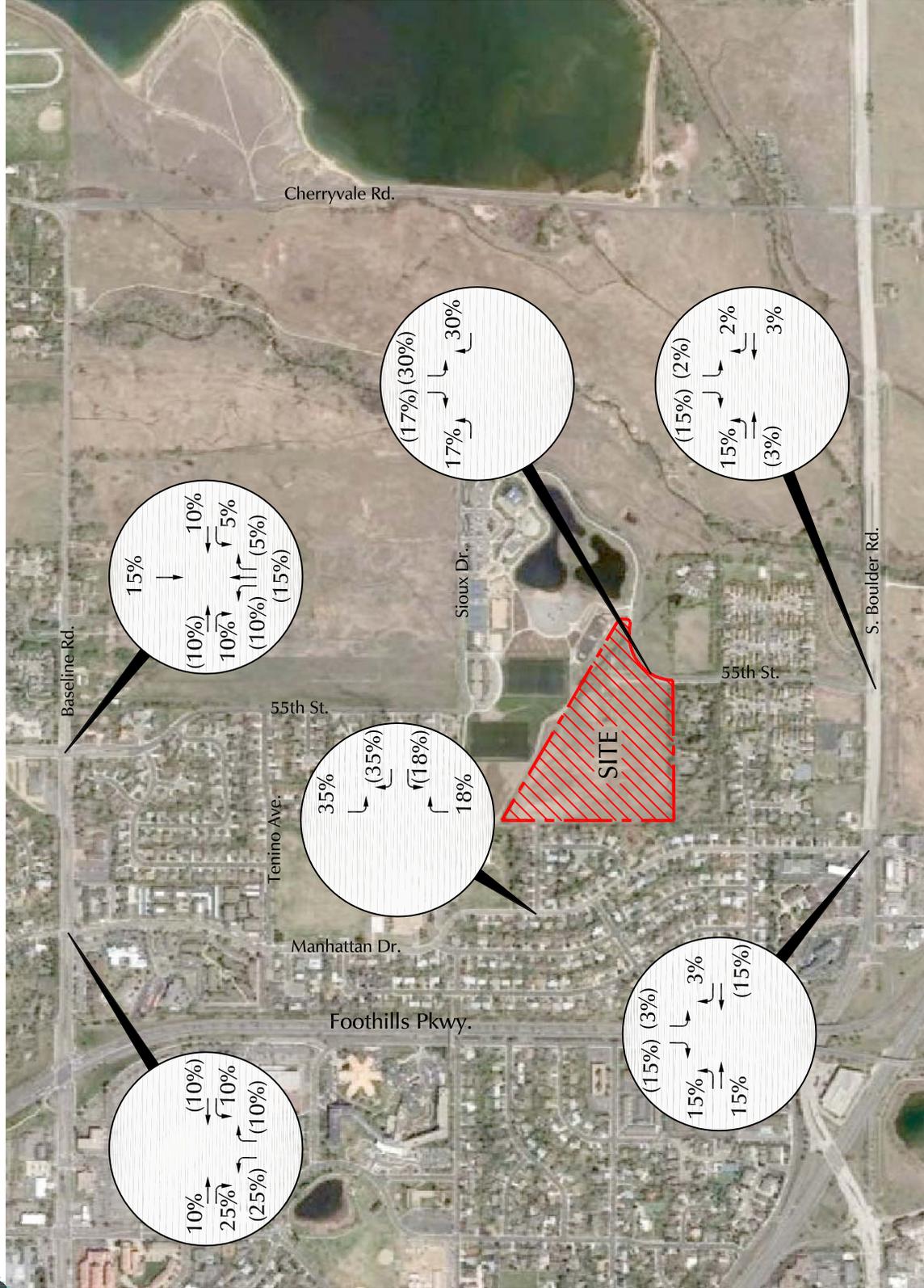
Figure 1

Vicinity Map

Boulder Creek Commons (LSC #110320)



Approximate Scale
Scale: 1" = 1,000'



LEGEND:
 10% = Inbound Distribution
 (10%) = Outbound Distribution Turning Movements

Figure 2
Trip Distribution
 Boulder Creek Commons (LSC #110320)



Approximate Scale
Scale: 1" = 1,000'

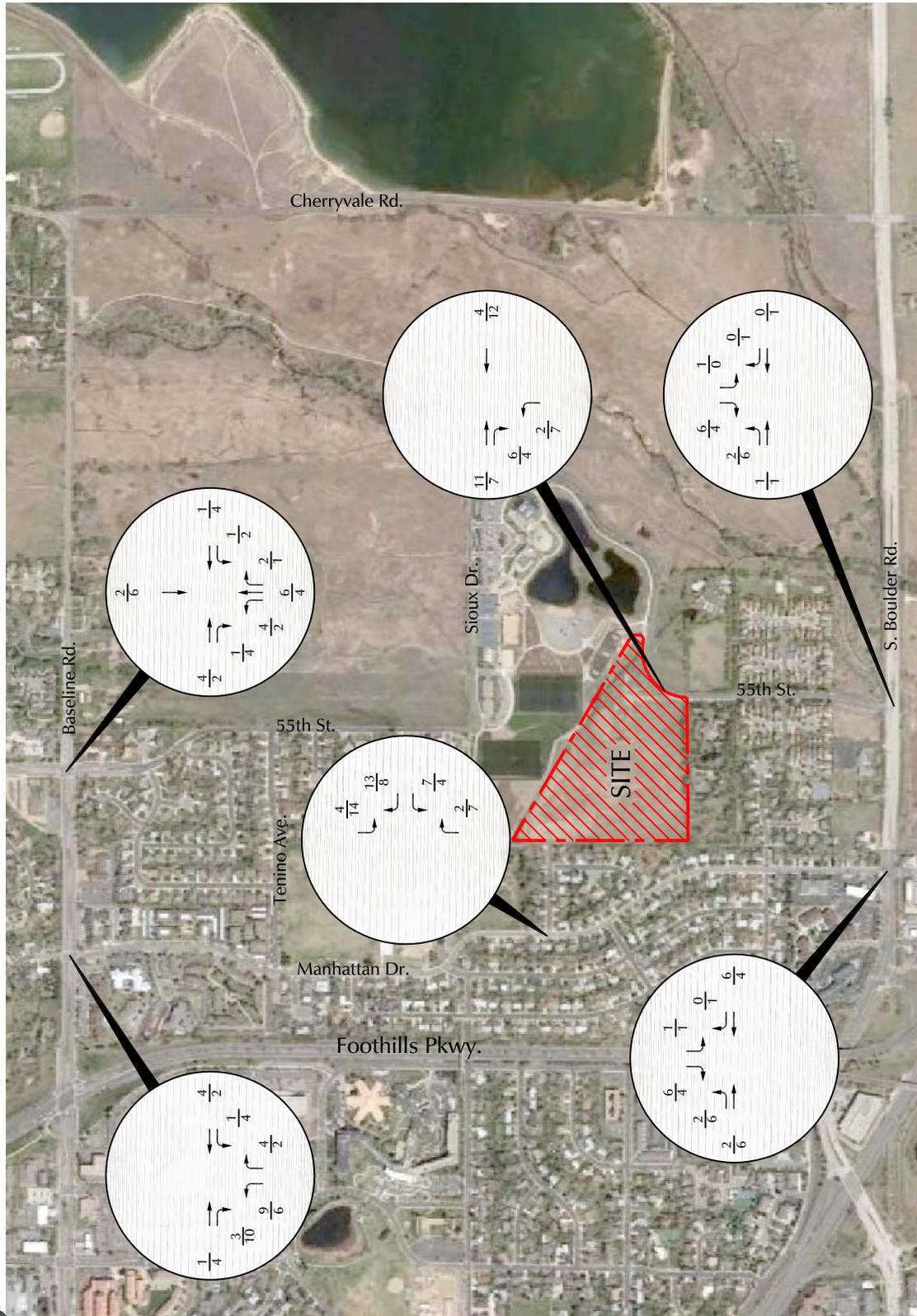


Figure 3

Assignment of Site-Generated Traffic

Boulder Creek Commons (LSC #110320)

LEGEND:
 $\frac{45}{65}$ = AM Peak-Hour Traffic
 $\frac{65}{65}$ = PM Peak-Hour Traffic



Approximate Scale
Scale: 1" = 1,000'

Figure 4

Average Daily Traffic

Boulder Creek Commons (LSC #110320)

LEGEND:

$\frac{1,016/120}{1,136/11\%} =$	$\frac{\text{Daily 2008 Traffic Volume}}{\text{2008 Total Daily Traffic Volume}} =$	$\frac{\text{Daily Site-Generated Traffic Volume}}{\text{Site-Generated Percentage of Total Traffic Volume}}$
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