

TRAFFIC IMPACT & MITIGATION ANALYSIS
FOR THE

NWC of Scottsdale Road & Lincoln Drive
Scottsdale, Arizona

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UCG Project Number: TR21092

Prepared for:
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I. INTRODUCTION

United Civil Group (UCG) was retained by Iannitelli Marcolini to perform this Transportation Impact & Mitigation Analysis (TIMA) to accompany the rezoning application for the site located on the immediate northwest corner of Scottsdale Road & Lincoln Drive in Scottsdale, Arizona. The requested rezoning of the site is from C-O to C-1.

UCG performed this TIMA in general accordance with the City of Scottsdale *Design Standards & Policies Manual 2018, Section 5-1.100 Traffic Impact and Mitigation Requirements*; per scoping discussions and information provided by the City of Scottsdale Traffic Engineering staff; locally accepted standards and industry practice. The major objectives of this traffic study are as follows:

- Document the existing conditions of the subject site and its surroundings with respect to the existing land uses and transportation facilities.
- Estimate and compare the trips generated by the current users of the existing buildings on the subject site and the potential allowable uses under the proposed C-1 zoning.
- Provide discussion on the site's pedestrian connections and the existing driveways with respect to vehicular circulation.

II. EXISTING CONDITIONS

A. SUBJECT SITE

The subject site is located on the immediate northwest corner of Scottsdale Road & Lincoln Drive; having parcel number 174-57-004B. The subject site has a net lot area of approximately 48,000 square feet and is zoned C-O. *Figure 1: Aerial View* presents the location of the subject site within the context of the immediate area, and shows the existing driveway conditions, pedestrian connections, and existing parking areas. Figure 1 is attached at the end of this document.

B. EXISTING LAND USE

Two existing buildings are on the subject site; a north building having two levels with a total of approximately 8,375 square feet and a south building having two levels with a total of approximately 6,050 square feet. The following presents the existing uses of the existing buildings:

- North Building
 - 2,816 square foot upper level – yoga/pilates fitness studio
 - 5,558 square foot lower level – vacant
- South Building
 - 2,644 square foot ground level – dentist office
 - 3,402 square foot basement level - vacant

C. SITE ACCESSIBILITY AND CIRCULATION

As depicted in Figure 1, the subject site is served by two vehicular driveways. One driveway connects to Scottsdale Road on the northeastern side of the site; one driveway connects to Lincoln Drive on the southwestern side of the site. Both driveways permit entry and exit and are limited to right-in, right-out movements by raised medians on Scottsdale Road and Lincoln Drive.

Along the north side of the northern drive aisle, 5 parallel parking stalls are provided with a small raised landscape island abutting the northern driveway. The width of the northern drive aisle adjacent to these parking spaces is just 16 feet, while still allowing for two-way traffic. Future site improvements should consider removal of these parallel parking spaces and the raised island to reduce conflict and allow more width for vehicular entry and exit circulation.

Pedestrian connections to the site are provided via existing sidewalks along the Scottsdale Road and Lincoln Drive frontages and internal sidewalk connections to the existing buildings from both Scottsdale Road to the east and Lincoln Drive to the south. The intersection of Scottsdale Road/Lincoln Driveway is signalized with available pedestrian phasing to assign pedestrian right-of-way across the intersecting streets.

D. ADJACENT LAND USES

The following describes the existing land uses surrounding the subject site:

NORTH: Small scale commercial uses with the upscale SumoMaya restaurant immediately to the north.

SOUTH: Lincoln Drive followed by specialty commercial retail and restaurants.

EAST: Scottsdale Road followed the El Dorado Business Center.

WEST: The Lincoln on Scottsdale Luxury Apartments.

E. EXISTING ADJACENT ROADWAYS

Scottsdale Road is classified as a Major Arterial adjacent to the subject site per the City of Scottsdale *Transportation Master Plan, 2016*. Scottsdale Road is a six-lane street section (three northbound lanes, three southbound lanes), with a raised median, curb/gutter and sidewalk, and lacks bicycle lanes. The posted speed limit on Scottsdale Road adjacent to the site is 45 miles per hour.

Per the most recent City of Scottsdale Segment Average Daily Traffic Count map, the ADT on Scottsdale Road north of Lincoln Drive is 48,300.

Lincoln Drive is classified as a Minor Collector adjacent to the subject site per the City of Scottsdale *Transportation Master Plan, 2016*. East of Scottsdale Road, Lincoln Drive is a four-lane street section (two eastbound lanes, two westbound lanes), with a raised median, curb/gutter and sidewalk, and lacks bicycle lanes. The posted speed limit on Lincoln Drive adjacent to the site is 35 miles per hour.

The Scottsdale Road/Lincoln Drive intersection is signalized with protected left-turn phasing on all legs. Per the most recent City of Scottsdale Intersection Average Daily Traffic Count map, the ADT of the intersection of Scottsdale Road/Lincoln Drive is 60,900.

III. TRIP GENERATION OF THE SUBJECT SITE

Estimates of the trips generated by the current users of the subject site under the existing C-O zoning and by potential users under its proposed C-1 zoning are determined from transportation planning data within the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition, 2021*. *Table 1: Existing and Potential Land Uses* presents the existing and potential land uses of the site and the ITE Land Use Code (LUC) utilized for trip generation purposes. The associated independent variable for potential uses is the approximate overall size of the existing buildings on site (+/- 14,400 square feet), the approximate square footage of each level of each building, or per existing sites of similar size (i.e. 150-student day care center). The potential uses in Table 1 consider the size of the site, its location within the Southern Scottsdale Character Area, and are assumed for the existing or most likely potential uses under its existing C-O and proposed C-1 zoning per the Scottsdale Revised Code.

Higher trip generators such as a fast-food/quick serve restaurant or coffee shop with drive-through window are permitted uses under C-1 zoning and will be utilized for trip generation comparison purposes below as part of this study. However, this type of use does not appear to fit within the Southern Scottsdale Character Area and may not ultimately be a likely potential land use for the subject site.

TABLE 1: EXISTING AND POTENTIAL LAND USES

Land Use	Potential Size	ITE LUC Used	Zoning Designation Permitted Under
Health & Fitness Studio/Gym ¹	14,400 square feet	LUC 492 – Health/Fitness Club	C-O & C-1
Medical/Dental Office ¹	14,400 square feet	LUC 720 – Medical-Dental Office Building (Stand Alone)	C-O & C-1
Day Care Center	150 students	LUC 565 – Day Care Center	C-O & C-1
General Office	14,400 ² square feet	LUC 710 – General Office Building	C-O & C-1
Small/Specialty Retail, Gallery, and Special Services ³	14,400 square feet	LUC 822 – Strip Retail Plaza (<40k)	C-1
Upscale Restaurant	14,400 square feet	LUC 931 – Fine Dining Restaurant	C-1
Coffee/Donut Shop with Drive-Through Window	3,000 ⁴ square feet	LUC 937 – Coffee/Donut Shop with Drive-Through Window	C-1

1 Existing use of the subject site; current users do not occupy the entirety of both buildings.

2 Zoning ordinance would allow up to 0.80 FAR on the 48,000 net-square foot parcel. For the purposes of this study, the existing building’s size of 14,400 square feet is utilized.

3 Proposed pet care service and proposed gallery users fall under this land use assumption

4 Re-development of the site into a coffee shop would likely include a much smaller building size; 3,000 square feet assumed from other existing sites.

A. TRIP GENERATION BY EXISTING USERS OF SITE UNDER CURRENT C-O ZONING

Currently, a medical/dentist office occupies 2,644 square feet of the overall south building; a yoga and pilates fitness studio occupies 2,816 square feet of the overall north building. The remaining space of the north and south buildings is vacant (+/- 8,960 square feet). *Table 2: Current User Trip Generation* presents the estimated daily and peak hour trips generated by the existing uses of the subject site under the current zoning designation for a typical weekday. Note: these are permitted potential uses under the proposed C-1 zoning as well.

TABLE 2: CURRENT USER TRIP GENERATION

Land Use	ITE LUC	Units	Size	Daily	AM Peak			PM Peak		
					in	out	total	in	out	total
Yoga Fitness Studio	492	1000s SF	2.8	N/A* 230*	2	2	4	13	10	23
Medical-Dental Office	720	1000s SF	2.6	94	7	2	9	2	5	7
TOTAL				324*	9	4	13	15	15	30

* Daily trip generation estimates not provided for LUC 492; for the purposes of this study, it is assumed The PM peak hour is 10% of the overall daily trips to determine the daily trip estimate.

Health & Fitness Club – LUC 492

AM Peak Hour	$T = 1.31 \times (X)$	51% entering, 49% exiting
PM Peak Hour	$T = \ln(T) = 0.67 \ln(X) + 2.44$	57% entering, 43% exiting
Daily	N/A	N/A entering, N/A exiting

Medical-Dental Office Building (Stand Alone) – LUC 720

AM Peak Hour	$\ln(T) = 0.90 \ln(X) + 1.34$	79% entering, 21% exiting
PM Peak Hour	$T = 4.07(X) - 3.17$	30% entering, 70% exiting
Daily	$T = 36.00 \times (X)$	50% entering, 50% exiting

B. TRIP GENERATION BY EXISTING USERS OF SITE PLUS POTENTIAL USERS FOR VACANT SPACE UNDER CURRENT C-O ZONING

Currently, a medical/dentist office occupies 2,644 square feet of the overall south building; a yoga and pilates fitness studio occupies 2,816 square feet of the overall north building. A potential user of the vacant space (+/- 8,960 square feet) under the existing C-O zoning would be general office uses. Table 3: Current User Plus Filled Vacant Space Trip Generation presents the estimated daily and peak hour trips generated by the existing uses of the subject site plus the existing vacant space filled with a general office user allowed under the current zoning designation for a typical weekday. Note: these are permitted potential uses under the proposed C-1 zoning as well.

TABLE 3: CURRENT USER PLUS FILLED VACANT SPACE TRIP GENERATION

Land Use	ITE LUC	Units	Size	Daily	AM Peak			PM Peak		
					in	out	total	in	out	total
Yoga Fitness Studio	492	1000s SF	2.8	N/A* 230*	2	2	4	13	10	23
Medical-Dental Office	720	1000s SF	2.6	94	7	2	9	2	5	7
General Office	710	1000s SF	9	143	18	3	21	4	19	23
TOTAL				467*	27	7	34	19	34	53

* Daily trip generation estimates not provided for LUC 492; for the purposes of this study, it is assumed The PM peak hour is 10% of the overall daily trips to determine the daily trip estimate.

Health & Fitness Club – LUC 492

AM Peak Hour	$T = 1.31 \times (X)$	51% entering, 49% exiting
PM Peak Hour	$T = \ln(T) = 0.67 \ln(X) + 2.44$	57% entering, 43% exiting
Daily	N/A	N/A entering, N/A exiting

Medical-Dental Office Building (Stand Alone) – LUC 720

AM Peak Hour	$\ln(T) = 0.90 \ln(X) + 1.34$	79% entering, 21% exiting
PM Peak Hour	$T = 4.07(X) - 3.17$	30% entering, 70% exiting
Daily	$T = 36.00 \times (X)$	50% entering, 50% exiting

General Office Building – LUC 710

AM Peak Hour	$\ln(T) = 0.86 \ln(X) + 1.16$	88% entering, 12% exiting
PM Peak Hour	$\ln(T) = 0.83 \ln(X) + 1.29$	17% entering, 83% exiting
Daily	$\ln(T) = 0.87 \ln(X) + 3.05$	50% entering, 50% exiting

C. TRIP GENERATION BY POTENTIAL USERS UNDER PROPOSED C-1 ZONING DESIGNATION

Table 4: Proposed C-1 Zoning Potential Trip Generation presents the estimated daily and peak hour trips generated by potential uses for the site under C-1 zoning designation for a typical weekday using the assumptions from Table 1 above. Note: the permitted potential uses under the current C-O zoning as shown in Table 1 are allowed under C-1 as well and are not included in Table 3.

TABLE 4: PROPOSED C-1 ZONING POTENTIAL USERS TRIP GENERATION

Land Use	ITE LUC	Units	Size	Daily	AM Peak			PM Peak		
					in	out	total	in	out	total
Small/Specialty Retail & Services	822	1000s SF	14.4	837	22	15	37	50	51	101
Upscale Restaurant	931	1000s SF	14.4	1,207	*	*	*	75	37	112
Coffee Shop W/ Drive Thru	937	1000s SF	3	1,601	131	127	258	58	59	117

*Upscale Restaurant assumed to be closed in the AM

Strip Retail Plaza (<40k) – LUC 822

AM Peak Hour $\ln(T) = 0.66 \ln(X) + 1.84$ 60% entering, 40% exiting
 PM Peak Hour $\ln(T) = 0.71 \ln(X) + 2.72$ 50% entering, 50% exiting
 Daily $T = 42.20(X) + 229.68$ 50% entering, 50% exiting

Fine Dining Restaurant – LUC 931

AM Peak Hour N/A N/A% entering, N/A% exiting
 PM Peak Hour $T = 7.80 \times (X)$ 67% entering, 33% exiting
 Daily $T = 83.84 \times (X)$ 50% entering, 50% exiting

Coffee/Donut Shop with Drive-Through Window – LUC 937

AM Peak Hour $T = 85.88 \times X$ 51% entering, 49% exiting
 PM Peak Hour $T = 38.99 \times X$ 50% entering, 50% exiting
 Daily $T = 533.57 \times (X)$ 50% entering, 50% exiting

NOTE: A significant portion of a coffee shop’s trips would be pass-by trips. As defined by ITE’s *Trip Generation*, pass-by trips are made as an immediate stop on the way from an origin to a primary trip destination, without a route diversion; i.e. trips already on the adjacent roadway regardless of an intermediate subject site. The ITE-reported average pass-by trip percentage for Land Use Code 938 – *Coffee/Donut Shop with Drive-Through Window and no Indoor Seating* (very similar to LUC 937) is 89% for weekdays (no data provided specifically for AM and PM peak periods). Therefore, the primary trips generated by a potential coffee shop would be significantly fewer than the gross trips presented in Table 3 above.

D. TRIP GENERATION BY PLANNED USERS UNDER PROPOSED C-1 ZONING DESIGNATION

The following presents the planned users of the existing buildings on site under the proposed C-1 zoning. This includes the existing dentist office remaining, a planned pet care service user, and likely potential general office and gallery users:

- North Building
 - 2,816 square foot upper level – general office
 - 5,558 square foot lower level – pet care service
- South Building
 - 2,644 square foot ground level – dentist office
 - 3,402 square foot basement level – art gallery

Table 5: Proposed C-1 Zoning Planned Users Trip Generation presents the estimated daily and peak hour trips generated by the planned and likely potential users for the site under the proposed C-1 zoning designation for a typical weekday using the assumptions planned user information above and information from Table 1 above.

TABLE 5: PROPOSED C-1 ZONING PLANNED USERS TRIP GENERATION

Land Use	ITE LUC	Units	Size	Daily	AM Peak			PM Peak		
					in	out	total	in	out	total
Pet Care Service ^A	822	1000s SF	5.6	305	8	5	13	18	19	37
General Office	710	1000s SF	2.8	52	7	1	8	1	8	9
Medical-Dental Office	720	1000s SF	2.6	94	7	2	9	2	5	7
Art Gallery ^A	822	1000s SF	3.4	185	5	3	8	11	11	22
TOTAL				636	27	11	38	32	43	75

A Exact land use not provided in the ITE Trip Generation manual, LUC 822 assumed for all potential specialty services/specialty retail users.

Strip Retail Plaza (<40k) - LUC 822

AM Peak Hour	$T = 2.36 \times (X)$	60% entering, 40% exiting
PM Peak Hour	$T = 6.59 \times (X)$	50% entering, 50% exiting
Daily	$T = 54.45 \times (X)$	N/A entering, N/A exiting

Medical-Dental Office Building (Stand Alone) – LUC 720

AM Peak Hour	$\ln(T) = 0.90 \ln(X) + 1.34$	79% entering, 21% exiting
PM Peak Hour	$T = 4.07(X) - 3.17$	30% entering, 70% exiting
Daily	$T = 36.00 \times (X)$	50% entering, 50% exiting

General Office Building – LUC 710

AM Peak Hour	$\ln(T) = 0.86 \ln(X) + 1.16$	88% entering, 12% exiting
PM Peak Hour	$\ln(T) = 0.83 \ln(X) + 1.29$	17% entering, 83% exiting
Daily	$\ln(T) = 0.87 \ln(X) + 3.05$	50% entering, 50% exiting

E. TRIP GENERATION COMPARISONS

Table 6: Trip Generation Comparison 'A' presents the difference in estimated site trip generation between the current users of the subject site under the existing C-O zoning and the proposed C-1 zoning utilizing the worse-case land use as presented in Table 4.

TABLE 6: TRIP GENERATION COMPARISON 'A'

Lane Use Plan	Daily	AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
Current Users of Subject Site under existing C-O zoning	324	9	4	13	15	15	30
Proposed C-1 zoning Coffee Shop Land Use	1,601	131	127	258	58	59	117
Total Difference	+1,277	+122	+123	+245	+43	+44	+87

The comparison above considers the gross number of trips estimated for a potential coffee shop land use under the proposed C-1 zoning, disregarding pass-by trips. In addition, a quick service coffee shop or fast-food restaurant land use may not ultimately be a likely potential land use for this site given the location and character of the surrounding uses within the Southern Scottsdale Character Area.

Table 7: Trip Generation Comparison 'B' presents the difference in estimated site trip generation between the current users of the subject site under the existing C-O zoning and the proposed C-1 zoning utilizing the planned users of the subject site as presented in Table 5.

TABLE 7: TRIP GENERATION COMPARISON 'B'

Lane Use Plan	Daily	AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
Current Users of Subject Site under existing C-O zoning	324	9	4	13	15	15	30
Planned Users of Subject Site under proposed C-1 zoning	636	27	11	38	32	43	75
Total Difference	+312	+18	+7	+25	+17	+28	+45

Table 8: Trip Generation Comparison 'C' presents the difference in estimated site trip generation between the current users of the subject site plus the currently vacant space being filled with an allowable use under the existing C-O zoning (as presented in Table 3) and the proposed C-1 zoning utilizing the planned users of the subject site (as presented in Table 5).

TABLE 8: TRIP GENERATION COMPARISON 'C'

Lane Use Plan	Daily	AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
Current Users of Subject Site plus filled vacant space under existing C-O zoning	467	27	7	34	19	34	53
Planned Users of Subject Site under proposed C-1 zoning	636	27	11	38	32	43	75
Total Difference	+169	+0	+4	+4	+13	+9	+22

IV. CONCLUSIONS

This Category 1 Transportation Impact & Mitigation Analysis accompanies the rezoning application for the subject site located on the immediate northwest corner of Scottsdale Road & Lincoln Drive in Scottsdale, Arizona. The requested rezoning of the site is from C-O to C-1.

Trip generation estimates for the potential and planned land uses of the subject site permitted under the proposed C-1 zoning designation were compared to the estimated trip generation for the current users (existing plus vacant space and existing plus filled vacant space) of the subject site under its existing C-O zoning designation.

Considering the permitted land use that provides the "worst case" estimated trip generation volumes under the proposed C-1 zoning (Coffee Shop with Drive Through Window), the potential permitted use under the C-1 zoning is estimated to generate 1,277 more daily trips, 245 more AM peak hour trips, and 87 more PM peak hour trips than the estimated trips generated by the current users of the site. However, the majority of trips to a coffee shop would be expected to be pass-by trips. Additionally, a coffee shop/fast-food/quick service use with a drive through window does not appear to fit within the Southern Scottsdale Character Area and may not ultimately be a likely potential land use for the subject site.

A trip generation comparison was made between the current users of the subject site (with existing vacant space remaining) and the planned users of the subject site under the proposed C-1 zoning; which includes the existing dentist office remaining, a planned pet care service user, and likely potential general office and gallery users.

The planned users under the proposed C-1 zoning is estimated to generate 312 more daily trips, 25 more AM peak hour trips, and 45 more PM peak hour trips than the estimated trips generated by the current users of the site (with existing vacant space remaining) under its existing C-O zoning designation.

A trip generation comparison was made between the current users of the subject site (with existing vacant space filled with allowable general office users) and the planned users of the subject site under the proposed C-1 zoning; which includes the existing dentist office remaining, a planned pet care service user, and likely potential general office and gallery users. The planned users under the proposed C-1 zoning are estimated to generate 169 more daily trips, 4 more AM peak hour trips, and 22 more PM peak hour trips than the estimated trips generated by the current users of the site (with existing vacant space filled with allowable general office users) under its existing C-O zoning designation.

Along the north side of the northern drive aisle, 5 parallel parking stalls exist with a small raised landscape island abutting the northern driveway. The width of the northern drive aisle adjacent to these parking spaces is just 16 feet, while still allowing for two-way traffic. Future site improvements should consider removal of these parallel parking spaces and the raised island to reduce conflict and allow more width for vehicular entry and exit circulation.