



HSQ GROUP, INC.
Consulting Engineers • Planners • Transportation
1489 W. Palmetto Park Road, Suite 340
Boca Raton, FL. 33486
(561) 392-0221 Phone • (561) 392-6458 Fax

July 12, 2017

Mrs. Jae Eun Kim

City of Pompano Beach Planning Department
100 West Atlantic Boulevard
Pompano Beach, FL 33060

Re: **RICK CASE HABITAT – RPUD documents**
HSQ Project Number: **1406-34**

Dear Jae:

Please find attached the traffic study for back up informational purposes for the 2nd reading for the RPUD approval.

If you have any questions or require additional information please do not hesitate to contact my office.

Sincerely,
HSQ GROUP, INC.

A handwritten signature in black ink that reads 'Jay Huebner'.

Jay Huebner, P.E., A.I.C.P., LEED AP
Principal



McMAHON ASSOCIATES, INC.
2090 Palm Beach Lakes Boulevard, Suite 400
West Palm Beach, FL 33409
p 561-840-8650 | f 561-840-8590

PRINCIPALS

Joseph W. McMahon, P.E.
Joseph J. DeSantis, P.E., PTOE
John S. DePalma
William T. Steffens
Casey A. Moore, P.E.
Gary R. McNaughton, P.E., PTOE

ASSOCIATES

John J. Mitchell, P.E.
Christopher J. Williams, P.E.
R. Trent Ebersole, P.E.
Matthew M. Kozsuch, P.E.
Maureen Chlebek, P.E., PTOE
Dean A. Carr, P.E.

April 14, 2017

VIA E-MAIL

Ms. Nancy Robin
Habitat for Humanity
3564 N. Ocean Blvd.
Fort Lauderdale, FL 33308

**RE: Habitat for Humanity Pompano Beach Traffic Analysis
McMahon Project No. L17283.01**

Dear Nancy:

McMahon Associates, Inc. (McMahon) has completed a trip generation analysis for the rezoning of a parcel of land generally located on the southwest corner of NW 6th Avenue and NW 15th Street, in the City of Pompano Beach. The original zoning designation for the site was C (Commercial) and RS-4, which allowed 449,669 square feet of retail and 24 single family residential units. The current zoning designation for the site is RS-12, which allows 108 single family residential units. The proposed zoning designation is RPUD, which allows 77 single family units.

Trip Generation Analysis

Using trip generation information obtained from the Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 9th Edition, trip generation estimates were developed for the original, current and proposed zoning designations for the site.

Original Versus Proposed Zoning

The trip comparison of development intensities between the original and proposed zoning designations is summarized in **Table 1**. Results of the analysis indicate that the rezoning is anticipated to result in a decrease of 11,365 daily trips, a decrease of 220 AM peak hour trips and a decrease of 1,028 PM peak hour trips. Excerpts from ITE are attached in **Appendix A**.

Current Versus Proposed Zoning

The trip comparison of development intensities between the current and proposed zoning designations is summarized in **Table 2**. Results of the analysis indicate that the rezoning is anticipated to result in a decrease of 301 daily trips, a decrease of 21 AM peak hour trips and a decrease of 30 PM peak hour trips.

TABLE 1
TRIP GENERATION ANALYSIS - ORIGINAL VERSUS PROPOSED ZONING
HABITAT FOR HUMANITY POMPANO BEACH TRAFFIC ANALYSIS

DAILY

LAND USE	ITE CODE	INTENSITY	TRIP GENERATION RATE ⁽¹⁾	IN	OUT	TOTAL TRIPS			PASS-BY ⁽¹⁾⁽²⁾		NEW TRIPS		
						IN	OUT	TOTAL			IN	OUT	TOTAL
ORIGINAL ZONING													
Retail (C)	820	449,669 SF	Ln(T)= 0.65 *Ln(X)+ 5.83	50%	50%	9,022	9,021	18,043	6,135	34.00%	5,954	5,954	11,908
Single Family (RS-4)	210	24 DU	Ln(T)= 0.92 *Ln(X)+ 2.72	50%	50%	141	142	283	0	0.00%	141	142	283
SUBTOTAL						9,163	9,163	18,326	6,135		6,095	6,096	12,191
PROPOSED ZONING													
Single Family (RPUD)	210	77 DU	Ln(T)= 0.92 *Ln(X)+ 2.72	50%	50%	413	413	826	0	0.00%	413	413	826
SUBTOTAL						413	413	826	0		413	413	826
NET DIFFERENCE						-8,750	-8,750	-17,500	-6,135		-5,682	-5,683	-11,365

AM PEAK HOUR

LAND USE	ITE CODE	INTENSITY	TRIP GENERATION RATE ⁽¹⁾	IN	OUT	TOTAL TRIPS			PASS-BY ⁽¹⁾⁽²⁾		NEW TRIPS		
						IN	OUT	TOTAL			IN	OUT	TOTAL
ORIGINAL ZONING													
Retail (C)	820	449,669 SF	Ln(T)= 0.61 *Ln(X)+ 2.24	62%	38%	242	148	390	133	34.00%	176	81	257
Single Family (RS-4)	210	24 DU	T= 0.70 *(X)+ 9.74	25%	75%	7	20	27	0	0.00%	7	20	27
SUBTOTAL						249	168	417	133		183	101	284
PROPOSED ZONING													
Single Family (RPUD)	210	77 DU	T= 0.70 *(X)+ 9.74	25%	75%	16	48	64	0	0.00%	16	48	64
SUBTOTAL						16	48	64	0		16	48	64
NET DIFFERENCE						-233	-120	-353	-133		-167	-53	-220

PM PEAK HOUR

LAND USE	ITE CODE	INTENSITY	TRIP GENERATION RATE ⁽¹⁾	IN	OUT	TOTAL TRIPS			PASS-BY ⁽¹⁾		NEW TRIPS		
						IN	OUT	TOTAL			IN	OUT	TOTAL
ORIGINAL ZONING													
Retail (C)	820	449,669 SF	Ln(T)= 0.67 *Ln(X)+ 3.31	48%	52%	787	853	1,640	558	34.00%	508	574	1,082
Single Family (RS-4)	210	24 DU	Ln(T)= 0.90 *Ln(X)+ 0.51	63%	37%	18	11	29	0	0.00%	18	11	29
SUBTOTAL						805	864	1,669	558		526	585	1,111
PROPOSED ZONING													
Single Family (RPUD)	210	77 DU	Ln(T)= 0.90 *Ln(X)+ 0.51	63%	37%	52	31	83	0	0.00%	52	31	83
SUBTOTAL						52	31	83	0		52	31	83
NET DIFFERENCE						-753	-833	-1,586	-558		-474	-554	-1,028

(1) Source: Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 9th Edition.

(2) Pass-By Rates are consistent with PM conditions, as they are not available in AM or Daily conditions



TABLE 2
TRIP GENERATION ANALYSIS - CURRENT VERSUS PROPOSED ZONING
HABITAT FOR HUMANITY POMPANO BEACH TRAFFIC ANALYSIS

DAILY

LAND USE	ITE CODE	INTENSITY	TRIP GENERATION RATE ⁽¹⁾	IN	OUT	TOTAL TRIPS			PASS-BY ⁽¹⁾⁽²⁾		NEW TRIPS			
						IN	OUT	TOTAL			IN	OUT	TOTAL	
CURRENT ZONING														
Single Family (RS-12)	210	108 DU	Ln(T)= 0.92 *Ln(X)+ 2.72	50%	50%	564	563	1,127	0	0.00%	564	563	1,127	
SUBTOTAL						564	563	1,127	0		564	563	1,127	
PROPOSED ZONING														
Single Family (RPUD)	210	77 DU	Ln(T)= 0.92 *Ln(X)+ 2.72	50%	50%	413	413	826	0	0.00%	413	413	826	
SUBTOTAL						413	413	826	0		413	413	826	
NET DIFFERENCE						-151	-150	-301	0		-151	-150	-301	

AM PEAK HOUR

LAND USE	ITE CODE	INTENSITY	TRIP GENERATION RATE ⁽¹⁾	IN	OUT	TOTAL TRIPS			PASS-BY ⁽¹⁾⁽²⁾		NEW TRIPS			
						IN	OUT	TOTAL			IN	OUT	TOTAL	
CURRENT ZONING														
Single Family (RS-12)	210	108 DU	T= 0.70 *(X)+ 9.74	25%	75%	21	64	85	0	0.00%	21	64	85	
SUBTOTAL						21	64	85	0		21	64	85	
PROPOSED ZONING														
Single Family (RPUD)	210	77 DU	T= 0.70 *(X)+ 9.74	25%	75%	16	48	64	0	0.00%	16	48	64	
SUBTOTAL						16	48	64	0		16	48	64	
NET DIFFERENCE						-5	-16	-21	0		-5	-16	-21	

PM PEAK HOUR

LAND USE	ITE CODE	INTENSITY	TRIP GENERATION RATE ⁽¹⁾	IN	OUT	TOTAL TRIPS			PASS-BY ⁽¹⁾		NEW TRIPS			
						IN	OUT	TOTAL			IN	OUT	TOTAL	
CURRENT ZONING														
Single Family (RS-12)	210	108 DU	Ln(T)= 0.90 *Ln(X)+ 0.51	63%	37%	71	42	113	0	0.00%	71	42	113	
SUBTOTAL						71	42	113	0		71	42	113	
PROPOSED ZONING														
Single Family (RPUD)	210	77 DU	Ln(T)= 0.90 *Ln(X)+ 0.51	63%	37%	52	31	83	0	0.00%	52	31	83	
SUBTOTAL						52	31	83	0		52	31	83	
NET DIFFERENCE						-19	-11	-30	0		-19	-11	-30	

(1) Source: Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 9th Edition.

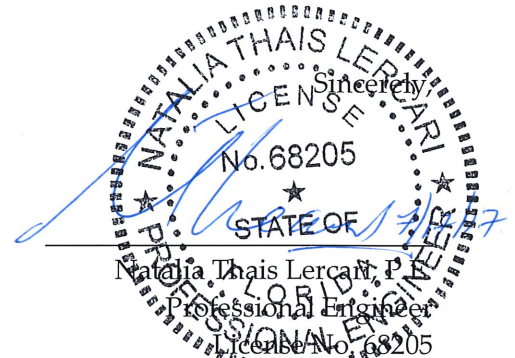
(2) Pass-By Rates are consistent with PM conditions, as they are not available in AM or Daily conditions



Conclusion

Based on the analysis contained herein, the development intensity associated with the proposed zoning designation is expected to result in a decrease in trips when compared to the development intensities associated with the original or current zoning designations for the site.

Should you have any questions or comments regarding these findings, please do not hesitate to call me.



Natalia Thais Lercari, P.E.
Professional Engineer
License No. 68205
State of Florida, Board of Professional Engineers
Certificate of Authorization No. 4908
NTL/amp
Enclosure

APPENDIX A

TRIP GENERATION INFORMATION

Single-Family Detached Housing (210)

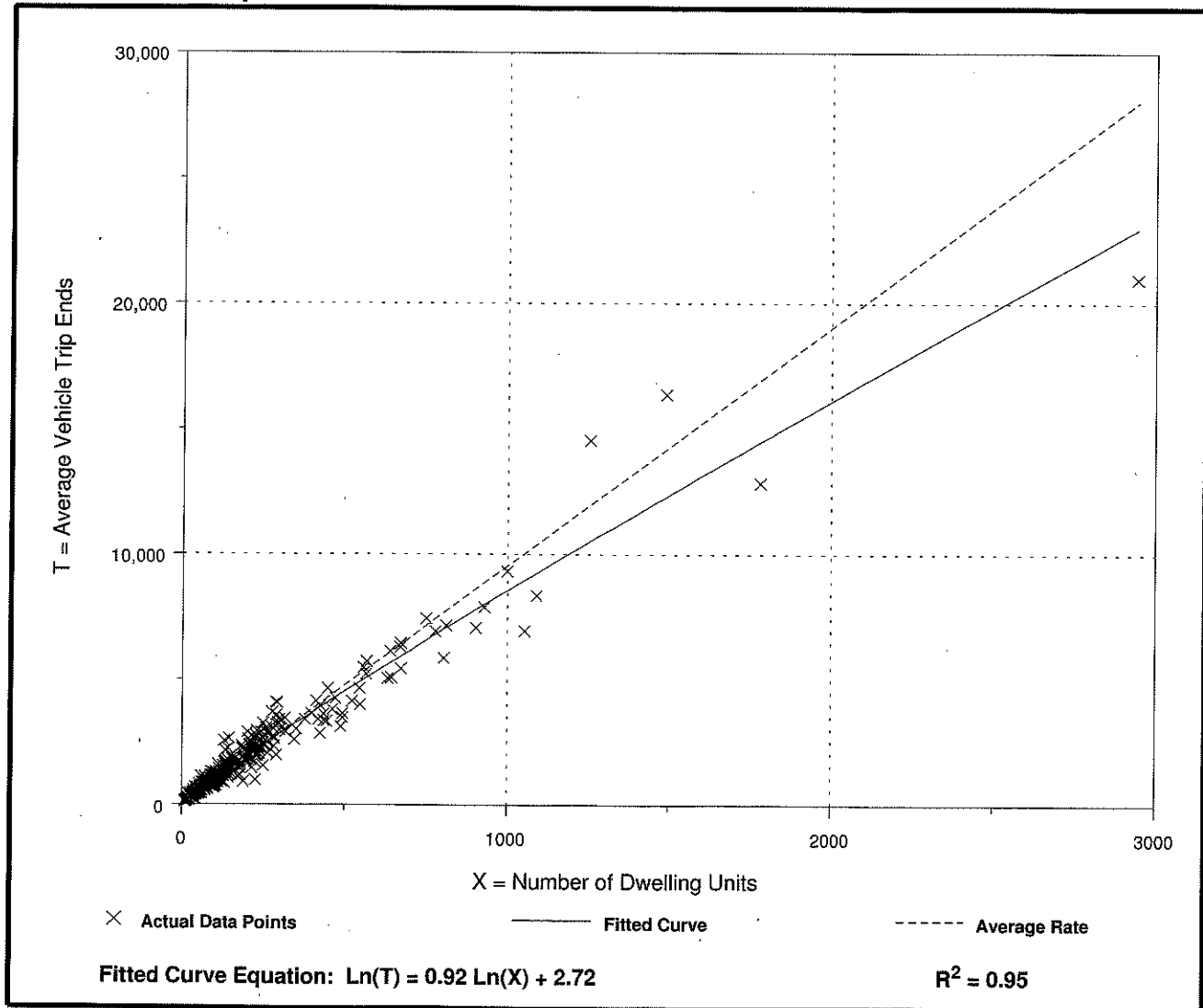
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 355
Avg. Number of Dwelling Units: 198
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.52	4.31 - 21.85	3.70

Data Plot and Equation



Single-Family Detached Housing (210)

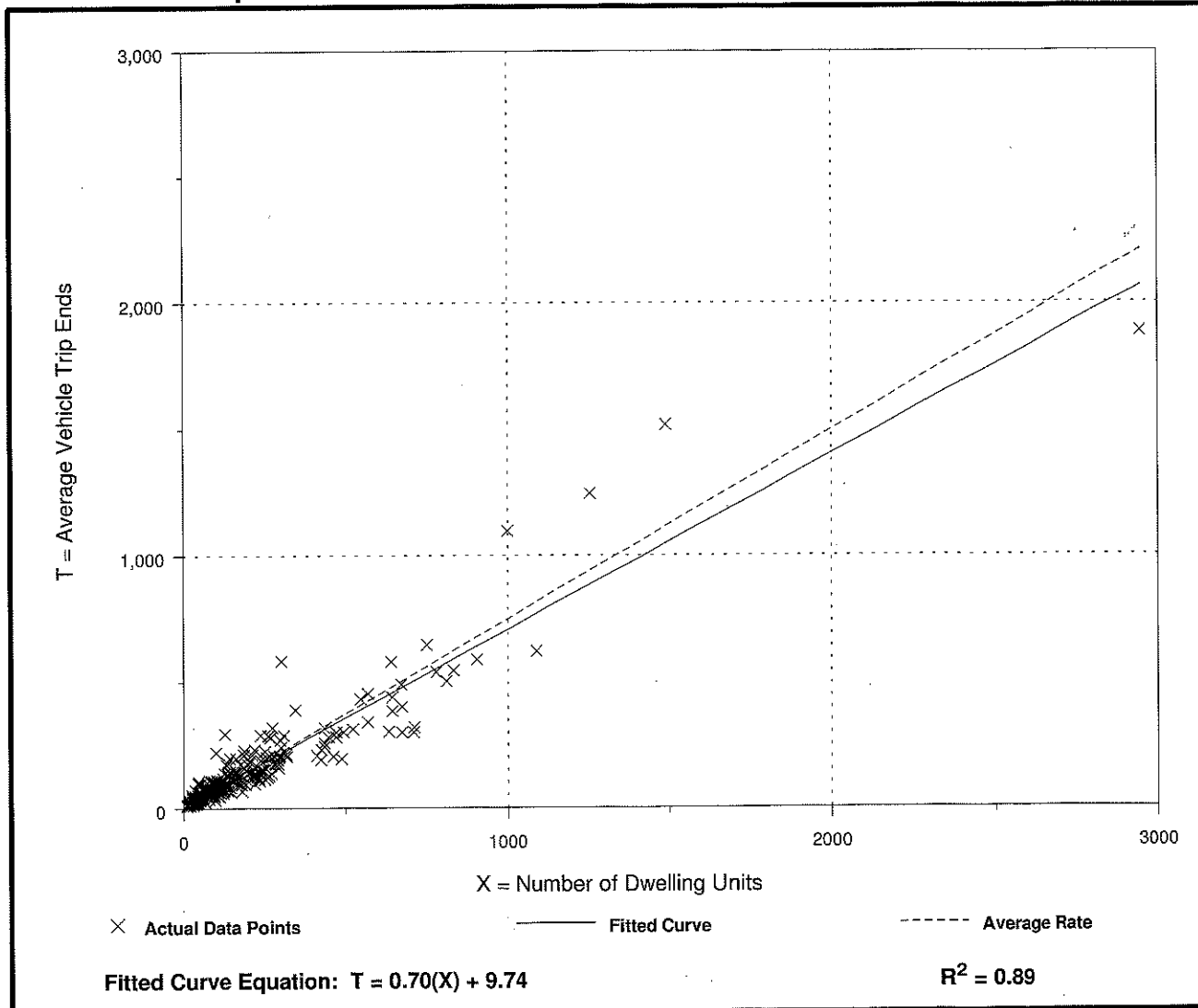
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 292
 Avg. Number of Dwelling Units: 194
 Directional Distribution: 25% entering, 75% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.75	0.33 - 2.27	0.90

Data Plot and Equation



Single-Family Detached Housing (210)

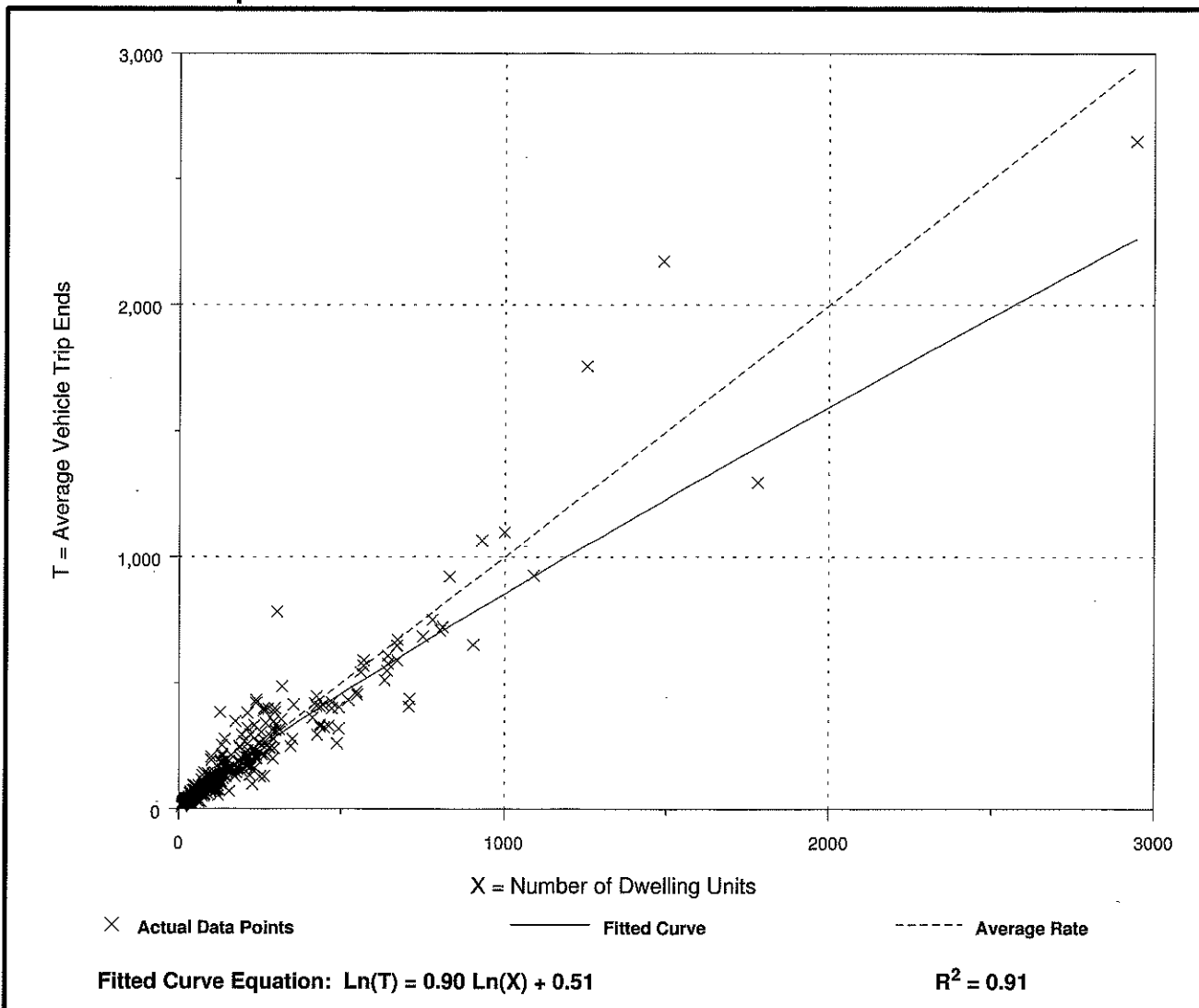
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 321
 Avg. Number of Dwelling Units: 207
 Directional Distribution: 63% entering, 37% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
1.00	0.42 - 2.98	1.05

Data Plot and Equation



Shopping Center (820)

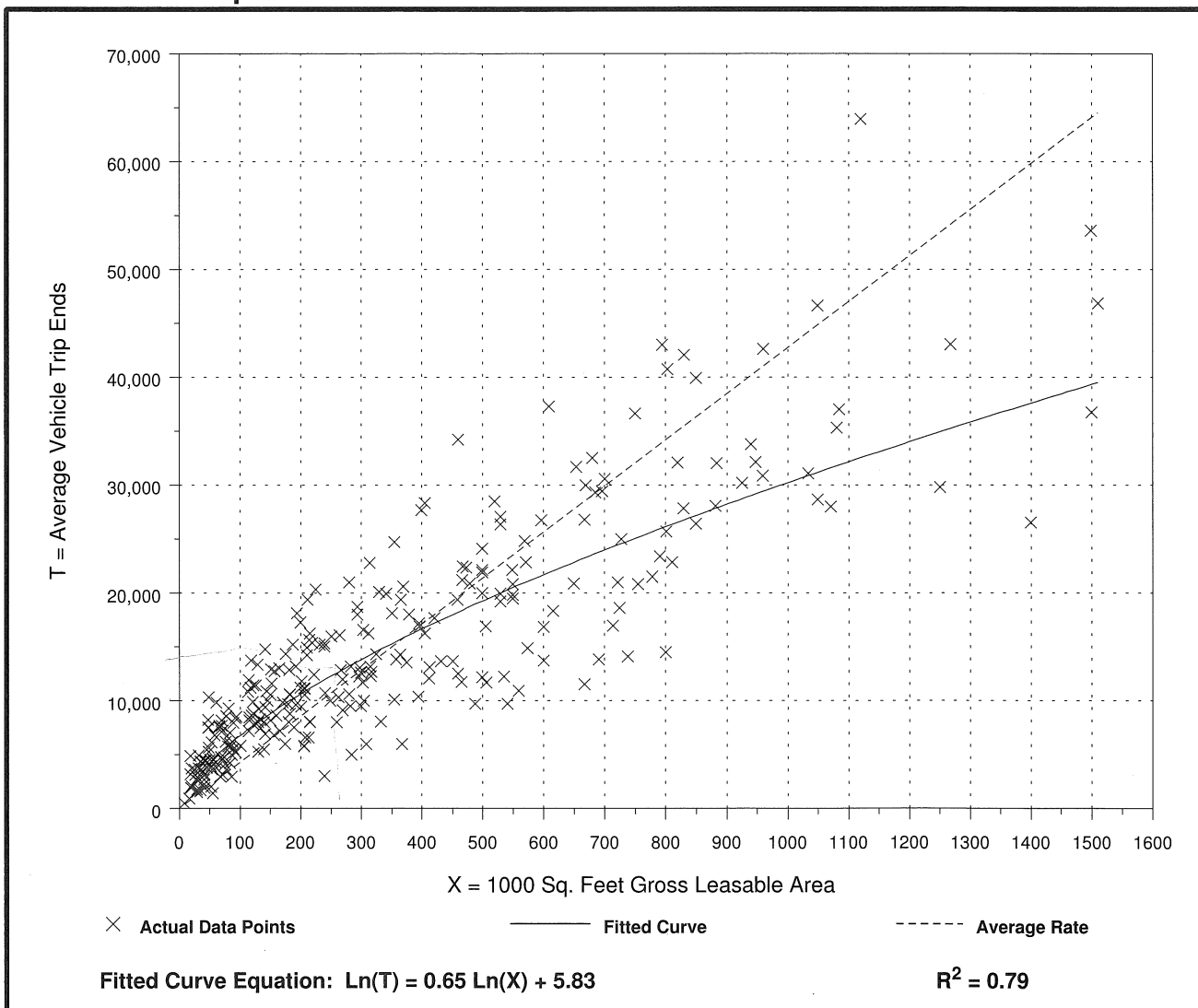
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Leasable Area
On a: Weekday

Number of Studies: 302
Average 1000 Sq. Feet GLA: 331
Directional Distribution: 50% entering, 50% exiting

Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
42.70	12.50 - 270.89	21.25

Data Plot and Equation



Shopping Center (820)

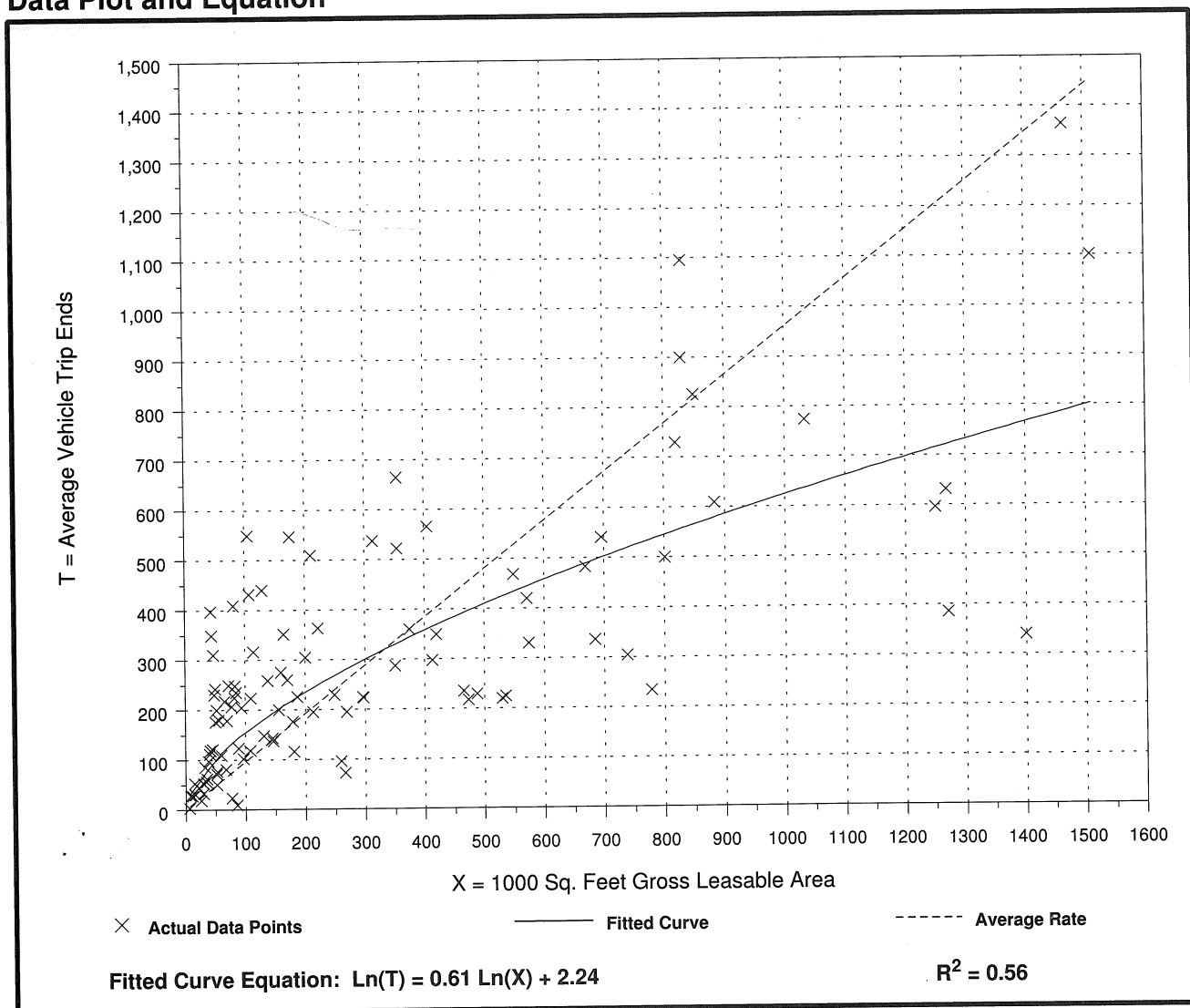
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Leasable Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 104
 Average 1000 Sq. Feet GLA: 310
 Directional Distribution: 62% entering, 38% exiting

Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
0.96	0.10 - 9.05	1.31

Data Plot and Equation



Shopping Center (820)

Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Leasable Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 426
 Average 1000 Sq. Feet GLA: 376
 Directional Distribution: 48% entering, 52% exiting

Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
3.71	0.68 - 29.27	2.74

Data Plot and Equation

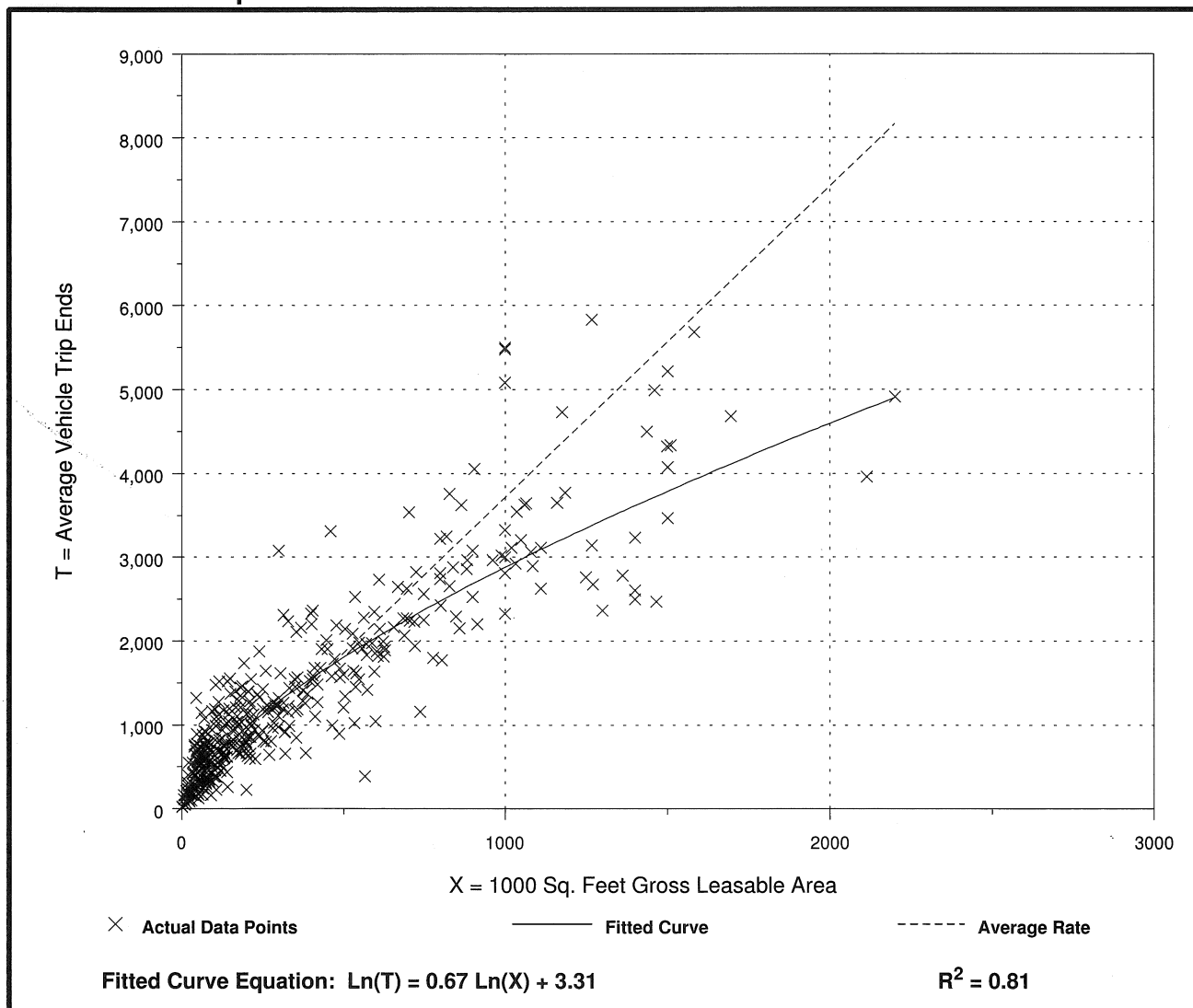


Table 5.6 (Cont'd)
Pass-By Trips and Diverted Linked Trips
Weekday, p.m. Peak Period

Land Use 820—Shopping Center

SIZE (1,000 SQ. FT. GLA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS- BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	ADJ. STREET PEAK HOUR VOLUME	AVERAGE 24-HOUR TRAFFIC	SOURCE
237	W. Windsor Twp, NJ	Winter 1988/89	n/a	4:00–6:00 p.m.	—	52	—	48	n/a	46,000	Booz Allen & Hamilton
242	Willow Grove, PA	Winter 1988/89	n/a	4:00–6:00 p.m.	—	63	—	37	n/a	26,000	McMahon Associates
297	Whitehall, PA	Winter 1988/89	n/a	4:00–6:00 p.m.	—	67	—	33	n/a	26,000	Orth-Rodgers & Assoc. Inc.
360	Broward Cnty., FL	Winter 1988/89	n/a	4:00–6:00 p.m.	—	56	—	44	n/a	73,000	McMahon Associates
370	Pittsburgh, PA	Winter 1988/89	n/a	4:00–6:00 p.m.	—	81	—	19	n/a	33,000	Wilbur Smith
150	Portland, OR	n/a	519	4:00–6:00 p.m.	6	—	26	68	n/a	25,000	Kittleson and Associates
150	Portland, OR	n/a	655	4:00–6:00 p.m.	7	—	28	65	n/a	30,000	Kittleson and Associates
760	Calgary, Alberta	Oct-Dec 1987	15,436	4:00–6:00 p.m.	39	—	41	20	n/a	n/a	City of Calgary DOT
178	Bordentown, NJ	Apr. 1989	154	2:00–6:00 p.m.	—	65	—	35	n/a	37,980	Raymond Keyes Assoc.
144	Manalapan, NJ	Jul. 1990	176	3:30–6:15 p.m.	44	—	24	32	n/a	69,347	Raymond Keyes Assoc.
549	Natick, MA	Feb. 1989	n/a	4:45–5:45 p.m.	26	—	41	33	n/a	48,782	Raymond Keyes Assoc.

Average Pass-By Trip Percentage: 34