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May 28, 2026

James Guerrier, Principal
Everstead Partners, LLC
182 Prospect Street
South Easton, MA, 02375

Reference: Traffic Characteristics of Subdivision known as: "Violet Hills"
217 Mill St., Randolph, MA

Dear Mr. Guerrier,

As requested, I have reviewed the traffic characteristics of a 10-lot single family subdivision known as "Violet Hills" at 217 Mill Street in Randolph, MA. (Figure 1). A single all-access driveway will serve the site (Figure 2).

The existing traffic volumes were collected on May 26th and May 27th as provided on Figure 3 where Mill Street carries about 3,150 vehicles per day. The directional distribution shows a slight predominate southeast flow in the morning peak hour while northwest bound flow is slightly higher in the evening peak hour (Figure 5).

The latest edition of the Institute of Transportation Engineer's Trip Generation Manual was used to project the number of vehicle trips that may be generated by the residential project. As can be seen on Figure 6, the site is expected to generate about 7 morning peak hour trips with 2 inbound and 5 outbound. During the evening peak hour, the site is expected to generate about 9 peak hour trips with 6 inbound and 3 outbound. Projected peak hour traffic volumes are provided on Figure 7.

The Highway Capacity Manual (HCM) 2000 defines the capacity as: Capacity of a route is the maximum hourly rate at which persons or vehicles can move in a reasonable order of a point or a lane of road, during a period of time under the prevailing conditions of path, traffic and control. The capacity suggested by the new HCM for two-lane rural roadway is 2 ,800 passenger vehicles per hour, both directions, under ideal conditions. The old HCM gave an ideal value of 2,000 passenger vehicles per hour which is over eight times higher than the current level on Mill Street during the commuting peak hours.

I have conducted an independent speed survey of the proposed # 217 Mill Street driveway to identify the required stopping sight distance for the project and determine if there will be sufficient stopping sight distance. The approaching vehicle on Mill Street must be able to stop in time to avoid making contact with a vehicle emerging from a residential driveway.

The required stopping sight distance is obtained from "A Policy on Geometric Design of Highways and Streets" as published by the American Association of State Highway and Transportation Officials (AASHTO) 7th Edition published in 2018. Unlike the minimum safe stopping distance (MSSD) along a section of roadway, stopping sight distance at a minor street is not measured along either the center line or gutter line of a roadway. On page 9-35 of the manual, it is stated "If the available sight distance for an entering or crossing vehicle (at an intersection corner) is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions." Existing Speed Characteristics of Mill Street are provided on Figure 8.

The stopping distance for the design speed is based on the formula as follows:

$$MSSD = 1.47\ Vt + 1.075\ \frac{V^2}{a}$$

Where t = brake reaction time, 2.5 sec.
V = design speed, mph
a = deceleration rate, 11.2 ft/sec^2

Since the calculated 85th percentile speed in the northwest direction is 36 mph, the required stopping sight distance lfor bothdirections can be computed as follows:

$$MSSD = 1.47 * 36 * 2.5 + 1.075 * \frac{(36)^2}{11.2}$$

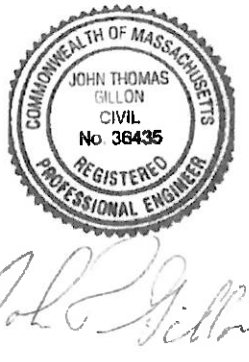
$$MSSD = 132 + 125 = 257 \text{ feet}$$

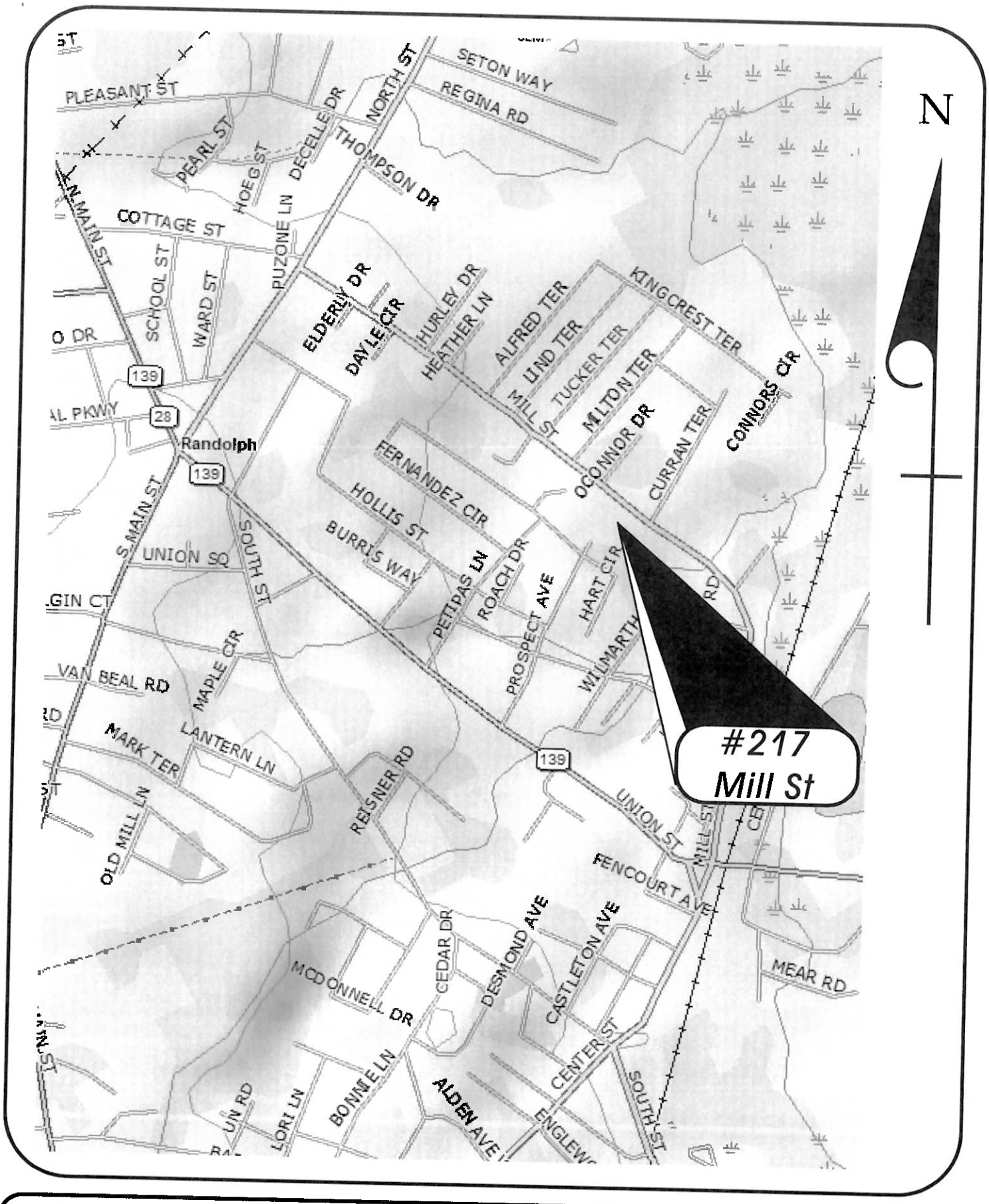
Mill Street is both straight and relatively flat while looking both northwest and southeast of the driveway and there is over 400 feet of sight distance in each direction. Thus, the driveway location is safe.

I have also reviewed the crash history in the study area and have found there were no crashes on Mill Street in the vicinity of the driveway over a five-year period between 2021 through 2025. his crash history is not considered unique or hazardous.

In essence, while the intensity of the site is expected to increase slightly, the roadway is safe and the minor increase in volume can be accommodated quite easily.

I hope this information proves useful but please do not hesitate to call if you have any questions regarding this material.





General Location Map

Figure 1

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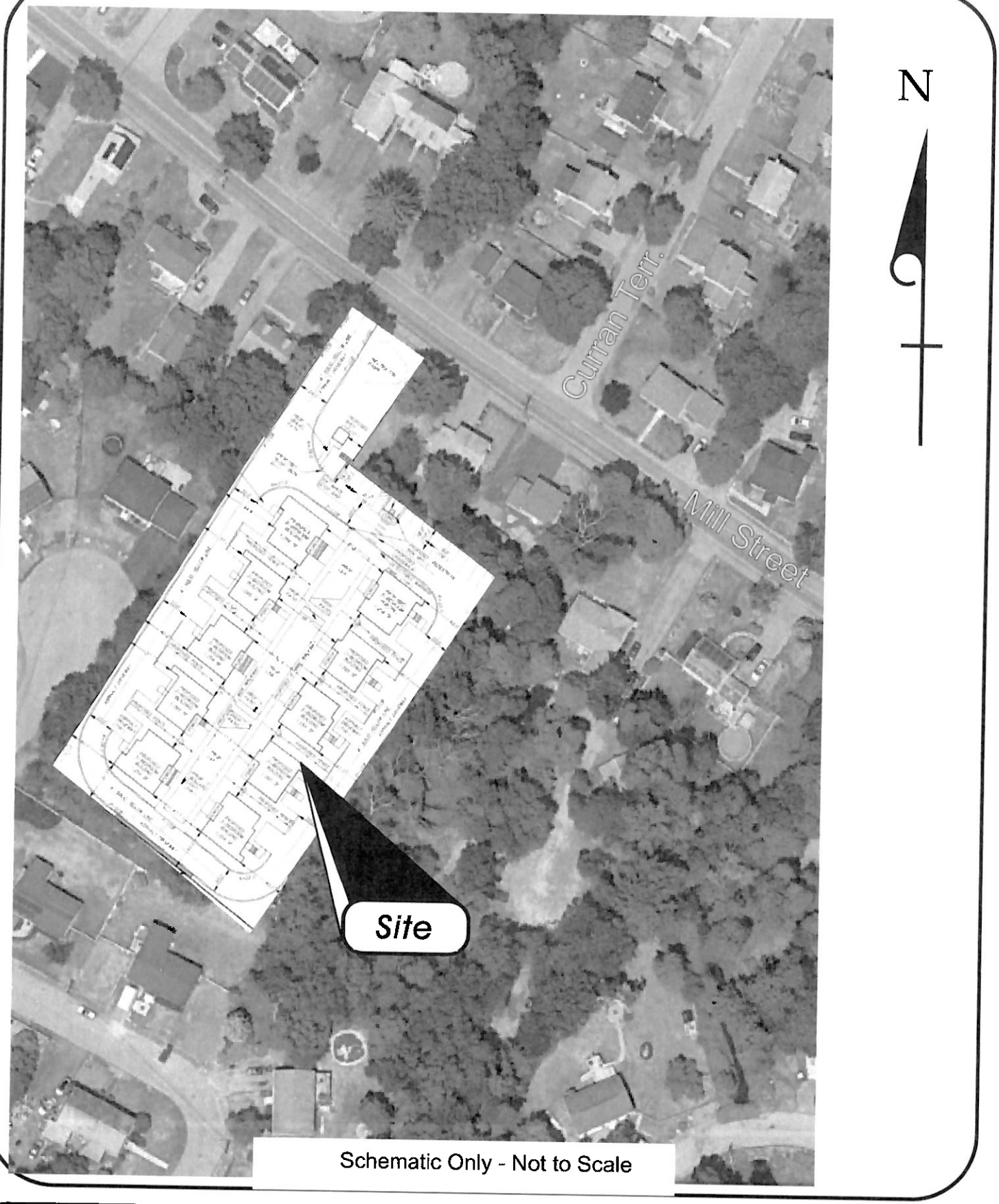

Locus Map

Figure 2

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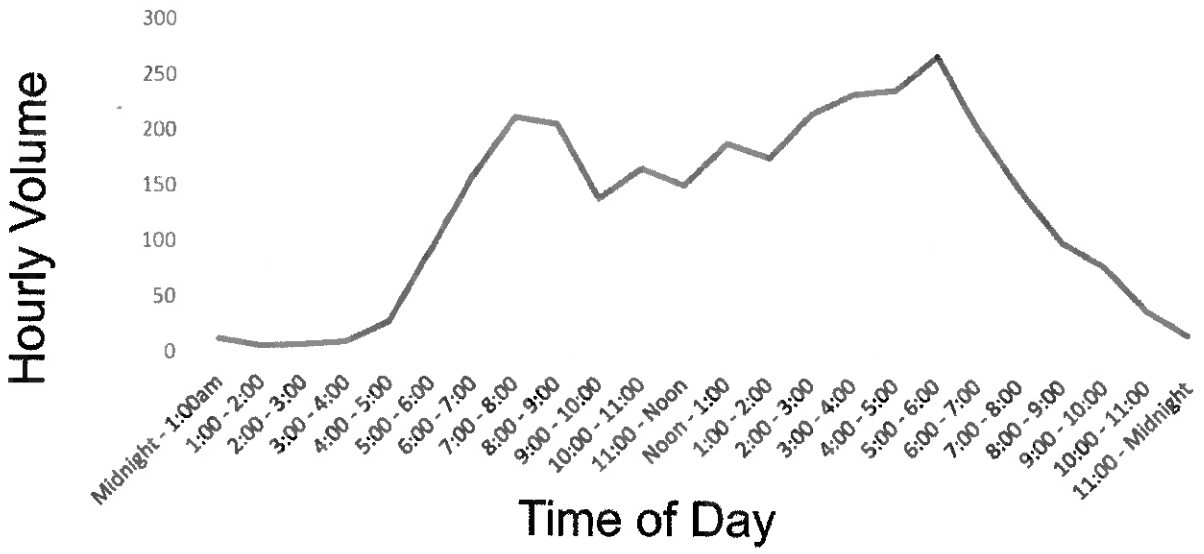

Time of Day	Hourly Volume
Midnight - 1:00am	13
1:00 - 2:00	7
2:00 - 3:00	8
3:00 - 4:00	11
4:00 - 5:00	29
5:00 - 6:00	94
6:00 - 7:00	161
7:00 - 8:00	214
8:00 - 9:00	208
9:00 - 10:00	141
10:00 - 11:00	168
11:00 - Noon	153
Noon - 1:00	191
1:00 - 2:00	178
2:00 - 3:00	218
3:00 - 4:00	236
4:00 - 5:00	240
5:00 - 6:00	271
6:00 - 7:00	206
7:00 - 8:00	151
8:00 - 9:00	104
9:00 - 10:00	82
10:00 - 11:00	43
11:00 - Midnight	21
Total	3,148

Mill Street Weekday Hourly Traffic Volume

Figure 3

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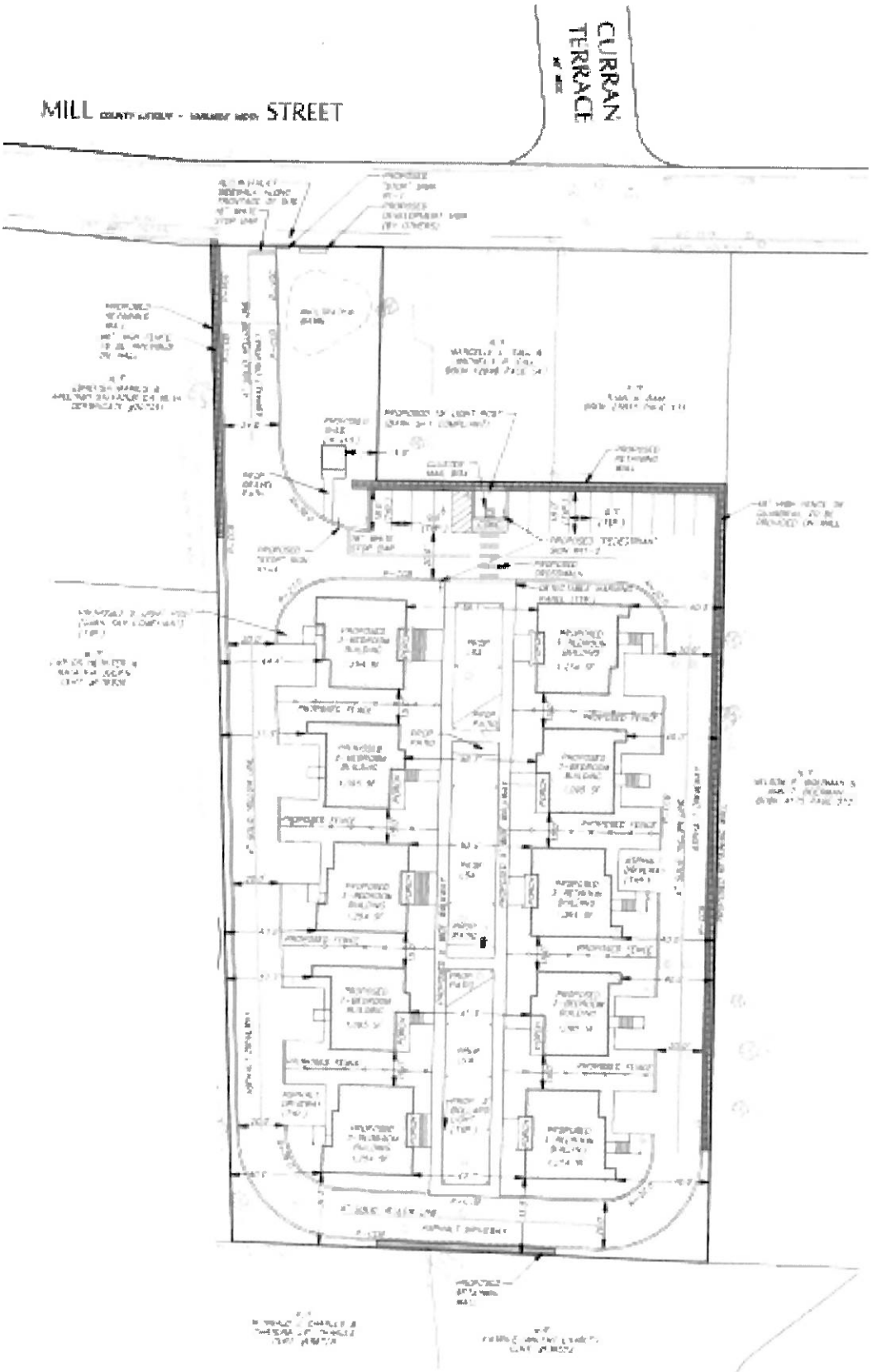

Site Plan

Figure 4

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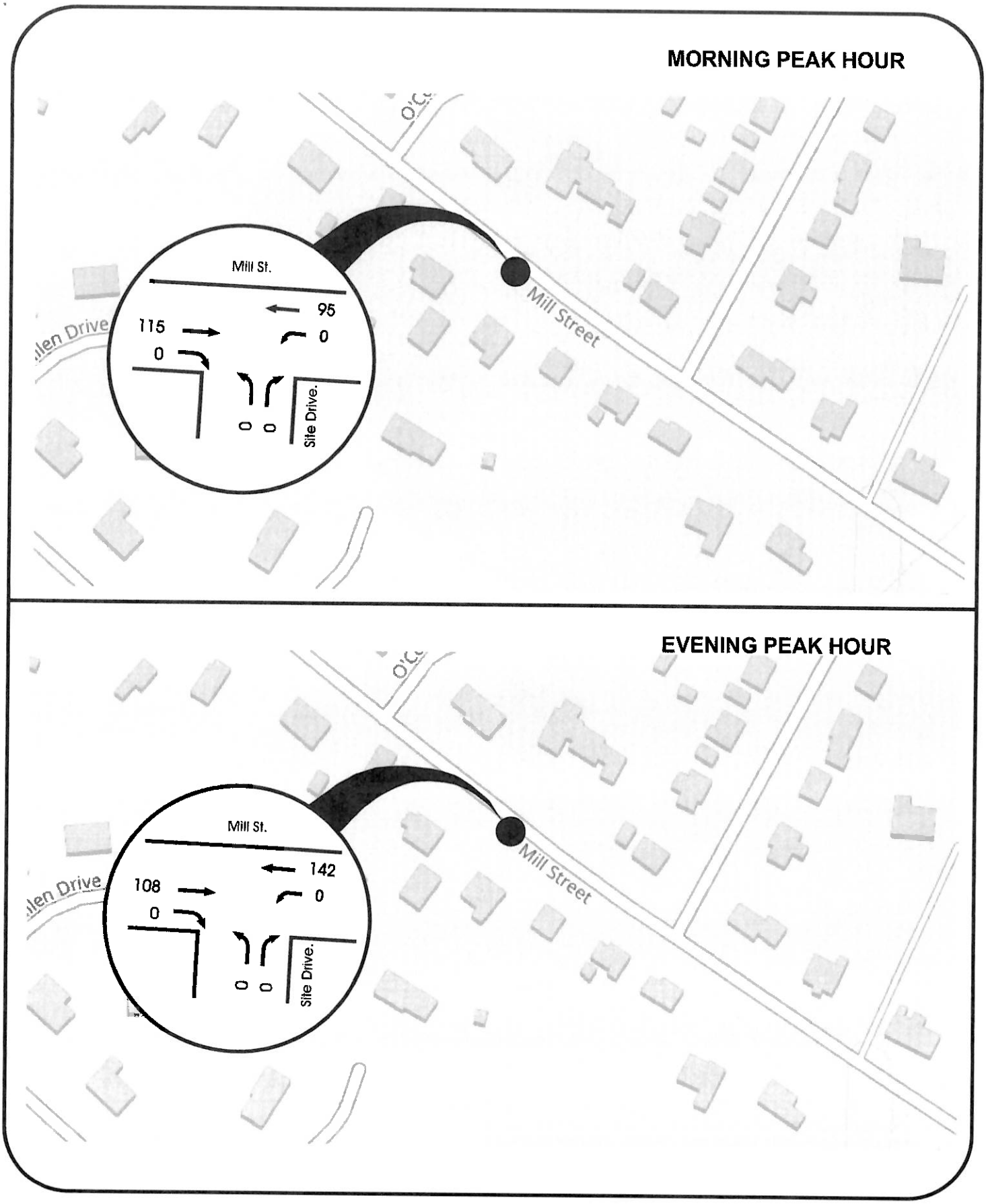

Existing Mill Street Peak Hour Traffic Volumes

Figure 5

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Source of Data
ITE Report 12th Edition
ITE Land Use Code: 210
Single Family Detached Housing

	AM			PM		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Trips per Unit	T = 0.70 (x)			T = 0.93 (x)		
Directional Split	27%	73%		62%	38%	
Trips Projected (Based on 10 Units)	2	5	7	6	3	9

Trips per Weekday
Single Family Detached Housing
T = 9.09(x)
Trips Based on 10 Units and Average Rate:
T = 91 (45 Inbound and 46 Outbound)

Trip Generation Summary

Figure 6

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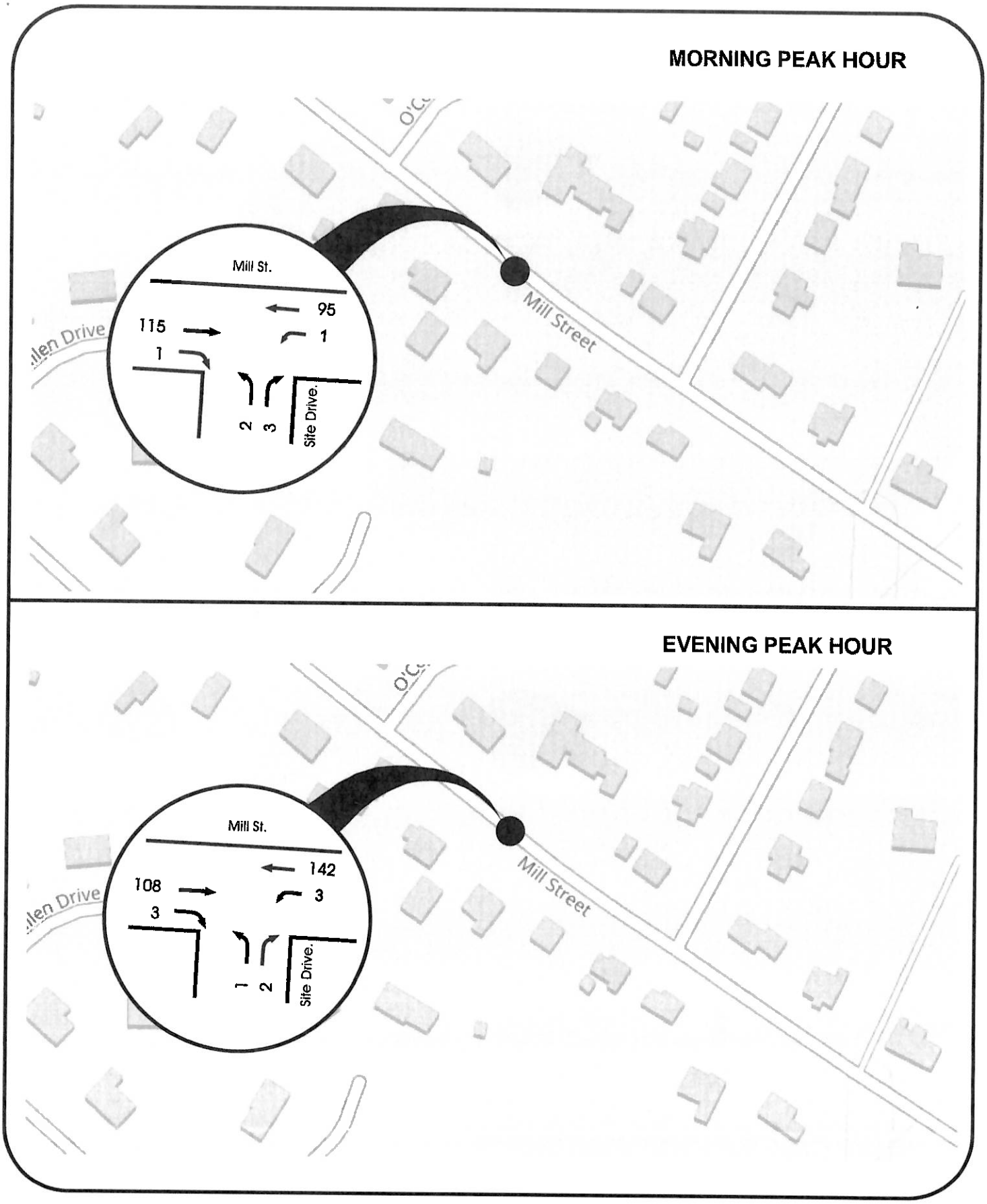

Projected Mill Street Peak Hour Traffic Volumes

Figure 7

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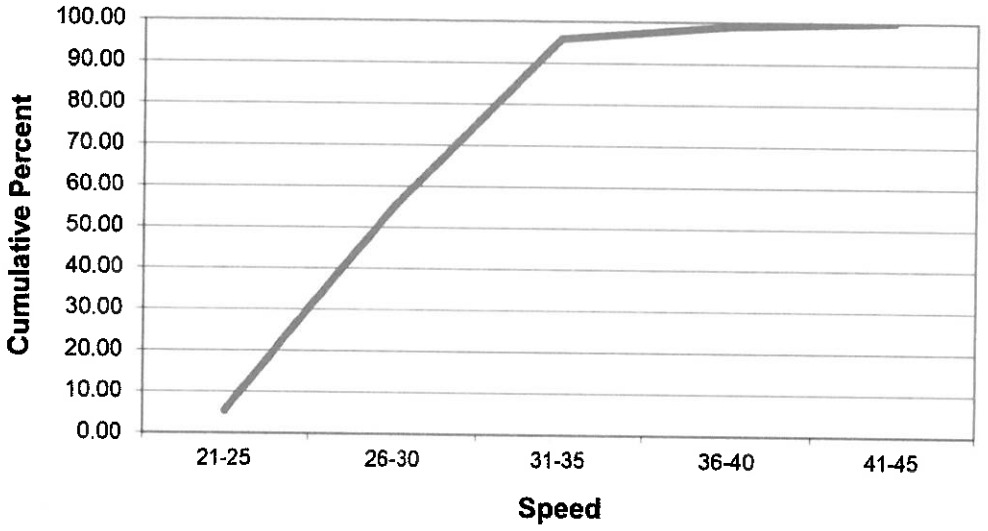
Speed Data

	21-25	26-30	31-35	36-40	41-45	Total
Northwest	3	20	16	0	0	39
Southeast	2	27	22	3	1	55
	5	47	38	3	1	94

Speed	Cum. %
21-25	5.32
26-30	55.32
31-35	95.74
36-40	98.94
41-45	100.00



East Bound

SPEED	Percent	Cum %
25	4.80%	4.80%
27	5.18%	9.98%
28	5.37%	15.36%
29	5.57%	20.92%
31	5.95%	26.87%
31	5.95%	32.82%
33	6.33%	39.16%
33	6.33%	45.49%
33	6.33%	51.82%
34	6.53%	58.35%
34	6.53%	64.88%
35	6.72%	71.59%
35	6.72%	78.31%
35	6.72%	85.03%
37	7.10%	92.13%
41	7.87%	100.00%

Avg.= 33 85th % = 35 mph

West Bound

SPEED	Percent	Cum %
28	5.28%	5.28%
29	5.47%	10.75%
30	5.66%	16.42%
32	6.04%	22.45%
32	6.04%	28.49%
32	6.04%	34.53%
33	6.23%	40.75%
33	6.23%	46.98%
33	6.23%	53.21%
34	6.42%	59.62%
34	6.42%	66.04%
34	6.42%	72.45%
35	6.60%	79.06%
36	6.79%	85.85%
37	6.98%	92.83%
38	7.17%	100.00%

Avg.= 33 85th % = 36 mph

Mill Street Speed Characteristics

Figure 8

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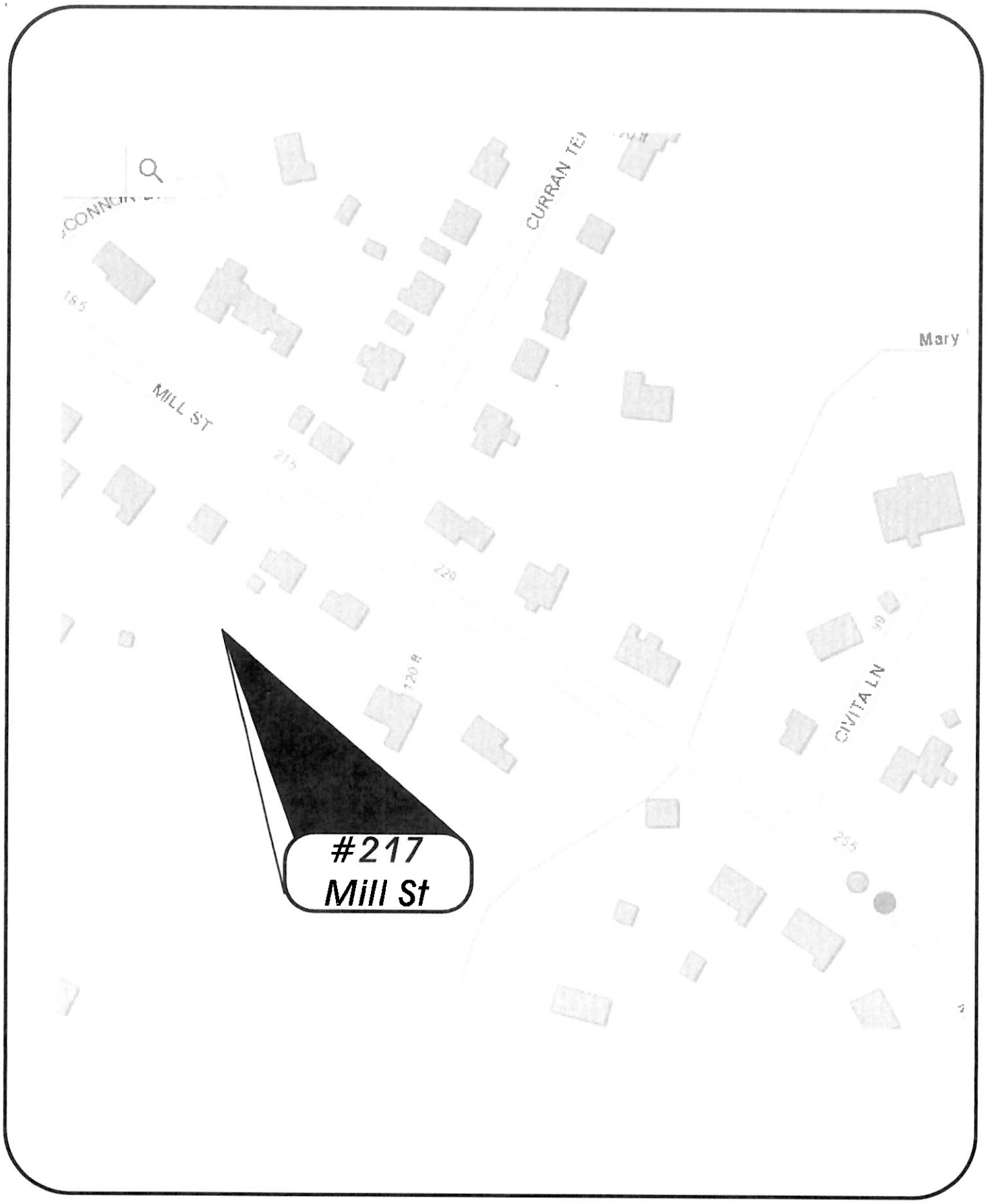

Mill Street Crash Data = Zero in Vicinity of Site

Figure 9

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APPENDIX

Signalized Intersections

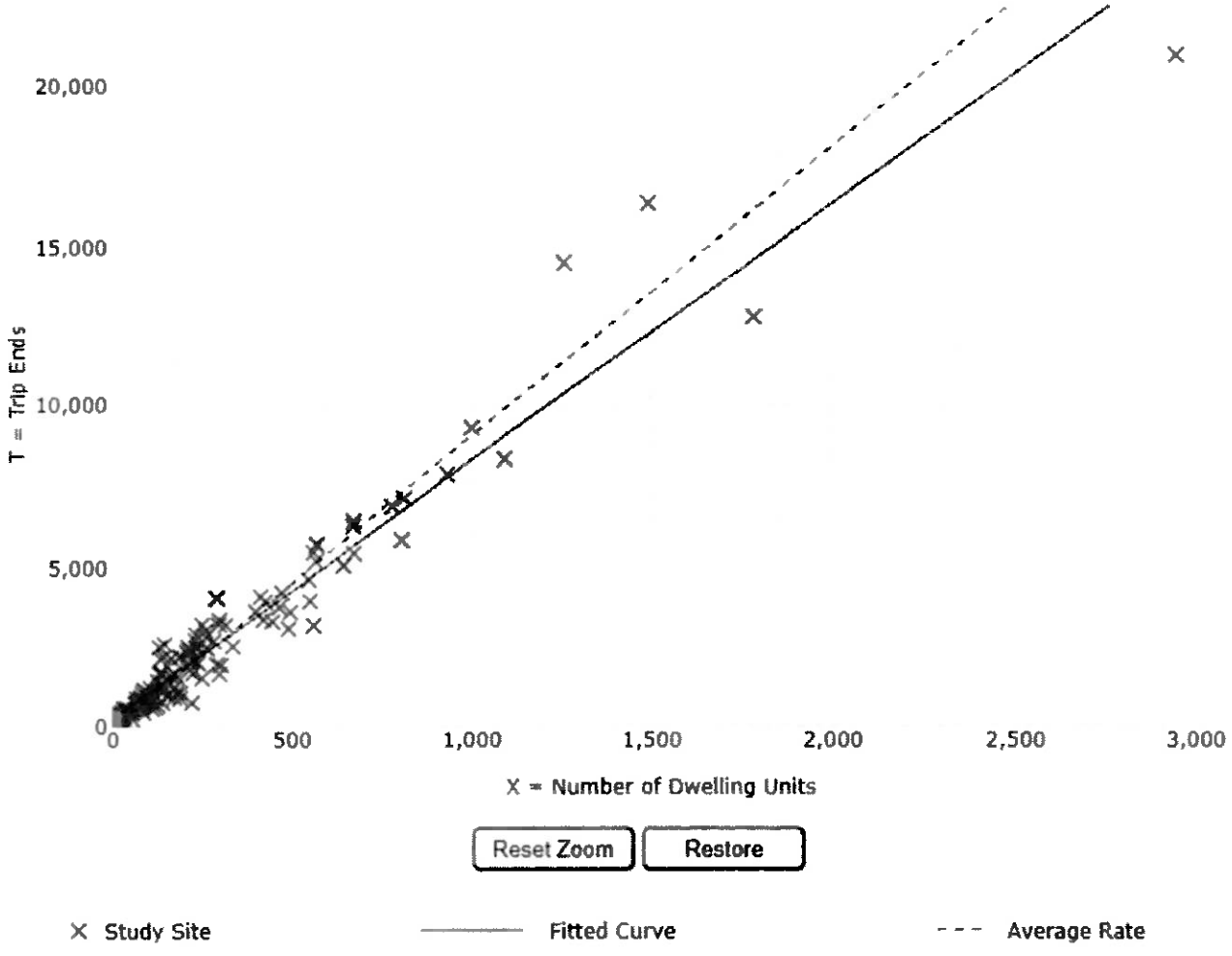
LOS	Control Delay per Vehicle (s/veh)
A	≤ 10
B	> 10–20
C	> 20–35
D	> 35–55
E	> 55–80
F	> 80

Un-Signalized Intersections

Level of Service	Average Control Delay (s/veh)
A	0–10
B	> 10–15
C	> 15–25
D	> 25–35
E	> 35–50
F	> 50

Intersection Levels of Service

Data Plot and Equation



DATA STATISTICS

Land Use:
Single-Family Detached Housing (210) (Click for Description and Data Plots)

Independent Variable:
Dwelling Units

Time Period:
Weekday

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
155

Avg. Num. of Dwelling Units
261

Average Rate
9.09

Range of Rates
3.47 - 23.80

Standard Deviation
2.29

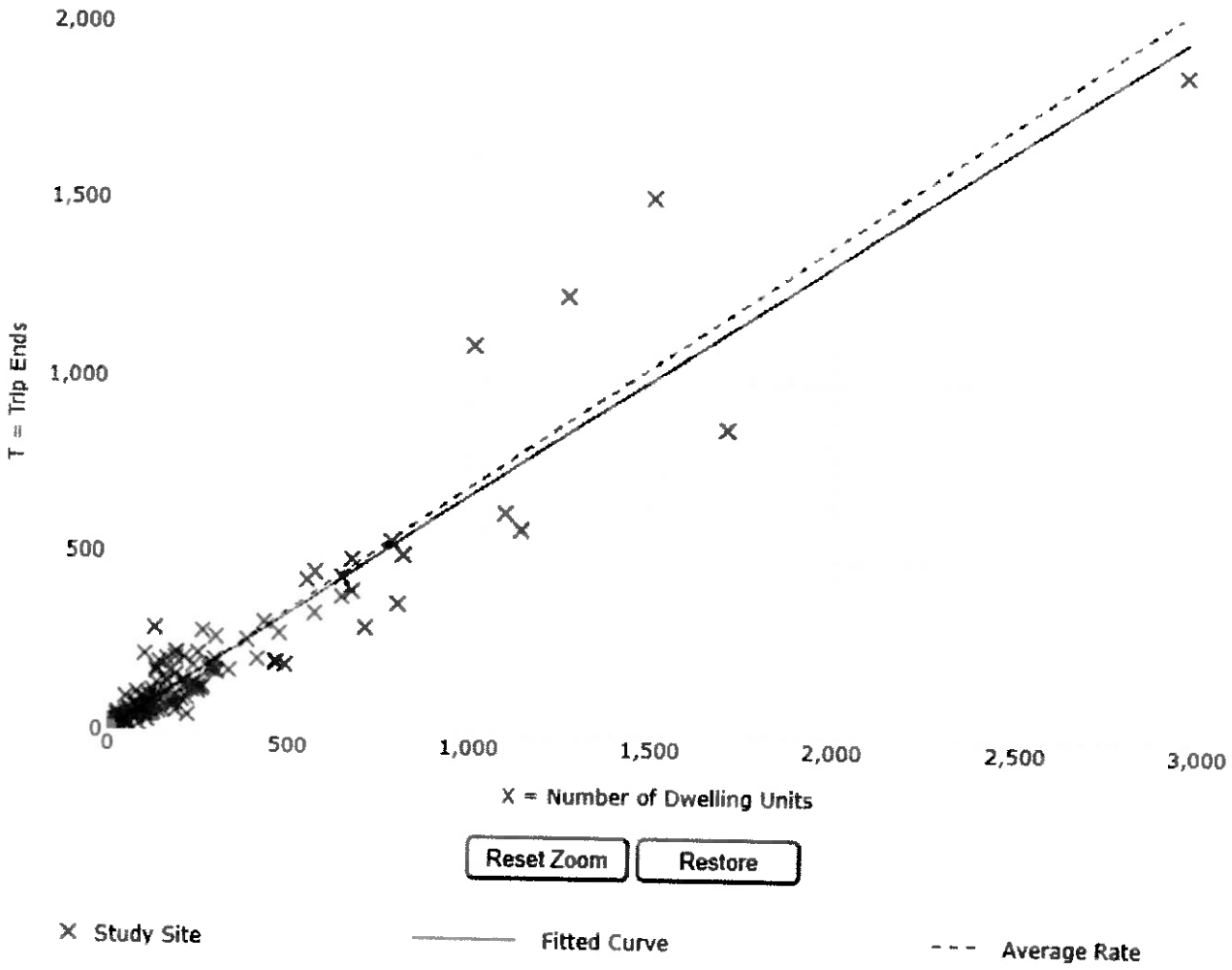
Fitted Curve Equation:
T = 8.07(X) + 265.45

R^2
0.94

Directional Distribution:
50% entering, 50% exiting

Calculated Trip Ends:
Average Rate: 91 (Total), 45 (Entry), 46 (Exit)
Fitted Curve: 346 (Total), 173 (Entry), 173 (Exit)

Data Plot and Equation



DATA STATISTICS

Land Use:
Single-Family Detached Housing (210) (Click for Description and Data Plot)

Independent Variable:
Dwelling Units

Time Period:
Weekday,
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a m

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
153

Avg. Num. of Dwelling Units
239

Average Rate
0 70

Range of Rates
0 22 - 2 27

Standard Deviation
0 26

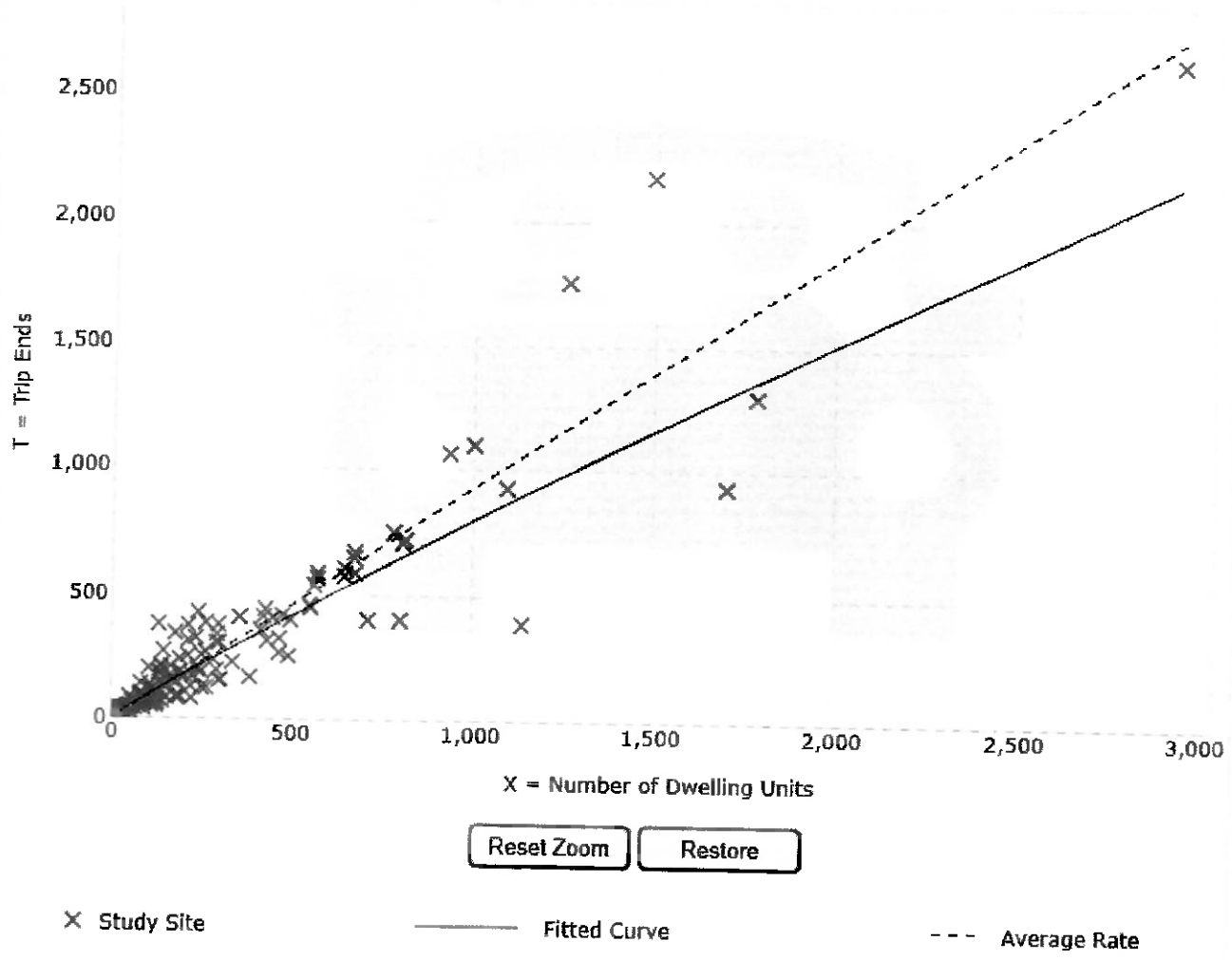
Fitted Curve Equation:
T = 0 67(X) + 5 59

R^2
0 89

Directional Distribution:
27% entering, 73% exiting

Calculated Trip Ends:
Average Rate 7 (Total) 2 (Entry), 5 (Exit)
Fitted Curve 12 (Total) 3 (Entry), 9 (Exit)

Data Plot and Equation



DATA STATISTICS

Land Use:
Single-Family Detached Housing (210) Click for Description and Data Plots

Independent Variable:
Dwelling Units

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
166

Avg. Num. of Dwelling Units:
266

Average Rate:
0 93

Range of Rates:
0.35 - 2 98

Standard Deviation:
0 33

Fitted Curve Equation:
Ln(T) = 0.92 Ln(X) + 0.33

R^2:
0 90

Directional Distribution:
62% entering, 38% exiting

Calculated Trip Ends:
Average Rate: 9 (Total), 6 (Entry), 3 (Exit)
Fitted Curve 12 (Total), 7 (Entry), 5 (Exit)