GORRILL PALMER
An LJB Engineering Company

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Memorandum
Preliminary Traffic Evaluation of:
Hammond Ridge Development
Millinocket, Maine
May 16, 2025

Introduction:

The following is a preliminary traffic evaluation for the proposed development off Katahdin View Drive (private) in Millinocket, Maine. The project includes 41 detached single-family homes and 53 attached residential units distributed among six buildings, of which approximately 10 will have commercial space on the first floor. Two commercial buildings will also support the site's operations, but are not expected to generate any traffic.

In addition to providing access to the proposed site, Katahdin View Drive currently includes access to Knife Edge Brewing/Pizzeria and New England Outdoor Center, which consists of an event center, River Drivers Restaurant, and cabins/lodges.

The proposed project is anticipated to complement the existing uses, with significant interaction between them and the proposed use, without leaving the property.

Conceptual Layout is attached.

Purpose of Traffic Evaluation:

This evaluation aims to provide a preliminary estimate of trip generation for the proposed uses and to address site access onto the adjacent roadway network generally. It should be noted that a MaineDOT Entrance Permit (8679 issued October 27, 2008—attached) was obtained for the Katahdin View Drive/Millinocket Lake Road intersection for existing uses.

The proposed project will require a permit from MaineDOT. If the proposed development is forecast to generate more than 100 peak-hour trip ends, it will require a MaineDOT Traffic Movement Permit. If the project's trip generation does not reach the 100 peak-hour trip threshold, it will still require a new MaineDOT Entrance Permit. Gorrill Palmer and the applicant have already contacted MaineDOT for this project and had a pre-submittal meeting 4-17-25 with Ray DeMerchant (MaineDOT Region Traffic Engineer). The results of this evaluation will also be submitted to MaineDOT for their review and pursuit of the proper permitting.

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Trip Generation:

Proposed Uses:

Trip generation for the proposed uses has been calculated using the Institute of Transportation Engineers' (ITE) publication, *Trip Generation,* Eleventh Edition, the most recent edition accepted by MaineDOT. Based on our review of ITE land uses, the following Land Use Codes (LUC) were used for the proposed development:

- 41 Assumed: LUC 260 – Recreational Homes
- 43 Assumed: LUC 220 – Multifamily Housing (Low-Rise)
- 10 Assumed: LUC 230 – Low Rise Residential with Ground-Floor Commercial

Items to Note:

- Assumed 10 LUC 230 – Low Rise Residential with Ground-Floor Commercial. It should be noted that trip generation is based on one study for the "weekday" and two studies for the other time periods, and that these locations are typically located in higher-density areas. However, the resulting trip generation appears reasonable for the proposed use and location, with the exception of the "weekday", which appears too low. Fortunately, this time period is not used for anything.

In calculating trip generation, the MaineDOT methodology requires reviewing the average rate and the fitted curve equation. If $r^2 \geq 0.80$, the fitted curve equation is typically used, and if $r2 < 0.80$, the average rate is generally used. Trip generation calculations are attached.

Existing Uses:

In determining the need for a MaineDOT TMP, existing uses constructed and occupied within the last 10 years must also be added. For this site, that would include the following:

- Knife Edge Brewery / Pizzeria (Built 2022) - This is shown as building "01" on the attached plan. In discussing the use with the owner, the brewery does not generate traffic; the beer is only sold on-site and not transported off-site. There are only one or two employees, including the owner. Therefore, the only traffic generator is the pizzeria. Based on discussions with the owner, approximately two-thirds of the traffic is from off-site, and approximately one-third is from people who are already on-site. In reviewing the PM and Saturday peak hour point-of-sale information, in peak summer months, the peak number of customers was approximately 40. Assuming 2.5 customers per vehicle, this is approximately 16 vehicles in a peak hour, with approximately 11 from off-site and 5 from on-site. Since turnover time is typically over an hour, the trips were not doubled

to reflect in and out. The restaurant is open from 11:00 AM to 9:00 PM. To be conservative, the 16 vehicles (both on and off-site) were added to all the PM and Saturday peak hours, but not the AM peak hours.

- Event Center (Built 2023)—This facility is used for weddings and business gatherings. According to the owner, when these events occur, almost everyone is already on-site and very little, if any, traffic is generated off-site. Therefore, no additional traffic was added to the trip generation summary table.

Total Uses:

The following Table 1 summarizes the trip generation for the proposed uses combined with the existing pizzeria.

Table 1 – Trip Generation

Time Period	Trip Generation (Trip Ends)				
	LUC 260	LUC 220	LUC 230	Brewery / Restaurant	Total
Weekday	170	351	35**	---	---
AM Peak Hour of Adjacent Street	9	17	5	NA	31
PM Peak Hour of Adjacent Street	15	39	4	16	74
AM Peak Hour Generator	28	20	5	NA	53
PM Peak Hour Generator	25	53	4	16	98
Saturday Peak Hour Generator	16*	18**	5	16	55

*Average rate was used, **Only one source

It should be emphasized that, given the uniqueness of the overall larger property and all the complementary uses on-site, the trip generation summarized in the above table is most likely greater than would be expected to reach the public roadway network.

Of special note is the area identified on the attached plan as "07." Based on discussions with the owner, this area is intended to eventually be used as an amphitheater, with outdoor concerts and gatherings. Although most of the attendees are expected to already be on-site, the concerts will be open to the public and are expected to draw from off-site. These concerts are expected to be seasonal special events and, as such, are not included in the above trip generation table.

MaineDOT Traffic Movement Permit: The highest peak hour forecast for the project (plus some existing uses) is 98 trip ends during the PM Peak Hour of the Generator. This is very close to the 100 peak hour threshold that would require a MaineDOT Traffic Movement Permit (TMP). This evaluation will be submitted to MaineDOT for their review and determination of what level of permit will be required for this project.

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Vehicular Circulation, Access, and Pedestrian Movement Within the Project:

Primary access to the project is directly via Katahdin View Drive (a compacted gravel private roadway) and indirectly via Millinocket Lake Road. Millinocket Lake Road is a paved, two-lane, State Aid roadway

with an AADT of approximately 1420 vehicles. According to MaineDOT Public Map Viewer, the speed limit near the site access is "unposted," so it is assumed to be 45 mph. A second means of access to the site can be made via Blackcat Road; however, that use is expected to be minimal for this project.

The Katahdin View Drive intersection with Millinocket Lake Road received a MaineDOT Entrance Permit (#8679) on October 27, 2008. As identified above, the MaineDOT will need to evaluate if the proposed project will require a MaineDOT TMP, or MaineDOT Entrance Permit. Regardless of which permit is pursued, this intersection will be reviewed for safety, operations, and sight distance.

As shown on the attached conceptual plan, the project proposes strategically locating access onto Katahdin View Drive to minimize the curb cuts and provide better access management. It is our understanding and recommendation that the driveways onto Katahdin View Drive be reviewed to ensure they provide adequate sight distances. Because of the low traffic volumes both from the project and on Katahdin View Drive, congestion is not expected.

It is our understanding that the overall site, including the proposed project, has been carefully designed with an internal network of trails that encourages pedestrians to walk throughout the site and to/from the various uses.

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HAMMOND RIDGE | L 1-00 DEVELOPMENT CONTEXT PLAN

03-16-2025

ACETO LANDSCAPE ARCHITECTURE + URBAN DESIGN

LAND USE KEY

- *MIXED USE COMMERCIAL (RETAIL AND FOOD SERVICE)*
- *COMMERCIAL (OPERATIONS, MAINTENANCE, OFFICE, LAUNDRY)*
- *RESIDENTIAL MIXED USE (MULTI-UNIT RES., LIGHT RETAIL)*
- *SINGLE FAMILY RESIDENTIAL*

Lot	Use	Bldg. Ht.	Res. Units	Non-Residential GSF	Parking Required	Parking Provided (#ADA)	Lot Area (Acres)	Lot Coverage (Total Impervious)
1	Retail/Food/MU*	35'	0	10,000	34	46 (4)	4.9	50% Max.
2	Commercial/Operations*	35'	0	7500	n/a	50 (4)	3.7	50% Max.
3	Resi/Retail/Mixed Use	35'	4	2000	12	15 (2)	1.4	50% Max.
4	Resi/Retail/Mixed Use	35'	11	4000	25	25 (2)	2.6	50% Max.
5	Resi/Retail/Mixed Use	35'	10	4000	24	42 (4)	3	50% Max.
6	Resi/Retail/Mixed Use	35'	6	2500	16	22 (2)	1.34	50% Max.
7	Open Space	35'	0	0	0	0	4.3	50% Max.
8	Resi/Retail/Mixed Use	35'	8	2500	17	32 (4)	1.9	50% Max.
9	Resi/Retail/Mixed Use	35'	14	2500	23	23 (2)	2.1	50% Max.
10	Commercial/Operations*	35'	0	20000	n/a	10 (2)	8.2	50% Max.
11	SF Residential	35'	1	0	1	2	0.55	50% Max.
12	SF Residential	35'	1	0	1	2	0.74	50% Max.
13	SF Residential	35'	1	0	1	2	0.88	50% Max.
14	SF Residential	35'	1	0	1	2	0.84	50% Max.
15	SF Residential	35'	1	0	1	2	1.25	50% Max.
16	SF Residential	35'	1	0	1	2	1.21	50% Max.
17	SF Residential	35'	1	0	1	2	1.67	50% Max.
18	SF Residential	35'	1	0	1	2	1.1	50% Max.
19	SF Residential	35'	1	0	1	2	0.91	50% Max.
20	SF Residential	35'	1	0	1	2	0.74	50% Max.
0.53	SF Residential	35'	1	0	1	2	0.53	50% Max.
22	SF Residential	35'	1	0	1	2	0.56	50% Max.
23	SF Residential	35'	1	0	1	2	0.87	50% Max.
24	SF Residential	35'	1	0	1	2	1.08	50% Max.
25	SF Residential	35'	1	0	1	2	0.75	50% Max.
26	SF Residential	35'	1	0	1	2	0.63	50% Max.
27	SF Residential	35'	1	0	1	2	0.58	50% Max.
28	SF Residential	35'	1	0	1	2	0.5	50% Max.
29	SF Residential	35'	1	0	1	2	0.55	50% Max.
30	SF Residential	35'	1	0	1	2	0.5	50% Max.
31	SF Residential	35'	1	0	1	2	0.56	50% Max.
0.8	SF Residential	35'	1	0	1	2	0.8	50% Max.
33	SF Residential	35'	1	0	1	2	1.07	50% Max.
34	SF Residential	35'	1	0	1	2	0.71	50% Max.
35	SF Residential	35'	1	0	1	2	0.58	50% Max.
36	SF Residential	35'	1	0	1	2	0.53	50% Max.
37	SF Residential	35'	1	0	1	2	0.52	50% Max.
38	SF Residential	35'	1	0	1	2	0.52	50% Max.
39	SF Residential	35'	1	0	1	2	0.51	50% Max.
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41	SF Residential	35'	1	0	1	2	0.51	50% Max.
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44	SF Residential	35'	1	0	1	2	0.51	50% Max.
45	SF Residential	35'	1	0	1	2	0.5	50% Max.
46	SF Residential	35'	1	0	1	2	0.78	50% Max.
47	SF Residential	35'	1	0	1	2	0.64	50% Max.
48	SF Residential	35'	1	0	1	2	0.5	50% Max.
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50	SF Residential	35'	1	0	1	2	0.51	50% Max.
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* Per Chapter 10 Standards parking supply shall be shared across parcels/lots where any deficiency be present or need for overflow required.
* Lot 1 calculations based on approximate square footage and seating breakdown of buildings current use per Chapter 10 Standards
* Lots 2 and 10 intended for operational use and equipment storage. Parking requirement calculation based on projected staff demand
* For nonresidential/commercial uses 'retail' standard (Chapter 10) was applied (1/300sf)

NOTES:
1. THIS PLAN INTENDED TO DEPICT CONCEPTUAL DESIGN INTENT ONLY. FINAL LAYOUT AND TREE CLEARING SUBJECT TO MINOR MODIFICATION PRIOR TO CONSTRUCTION.

NORTH 0 125 250 500 FEET
SCALE: 1"=250'-0"

HAMMOND RIDGE | L 1-01 OVERALL ILLUSTRATIVE MASTER PLAN

03-16-2025

ACETO LANDSCAPE ARCHITECTURE + URBAN DESIGN

COMMON OPEN SPACE

TOTAL AREA: 73 ACRES

ROAD LENGTH

A	924 FEET	G	310 FEET
B	365 FEET	H	530 FEET
C	385 FEET	I	390 FEET
D	1,250 FEET	J	1,120 FEET
E	645 FEET	K	440 FEET
F	380 FEET	L	220 FEET

DEVELOPMENT

TOTAL AREA: 72 ACRES

MIXED USE
MIN LOT SIZE: 20,000 SF
PARKING: 1:1
MIN RD. FRONTAGE: 50FT
MAX LOT COVERAGE: 50%
MAXIMUM BLDG. HTS: 35FT
SETBACKS:
ROADS: 20FT
SIDE/REAR: 10FT

SINGLE FAMILY RESIDENTIAL
SF DETACHED (2ST) 1500-3000 SF
MIN. LOT SIZE: 20,000 SF
MIN. RD. FRONTAGE: 50FT
MAX LOT COVERAGE: 50%
MAXIMUM BLDG. HTS: 35FT
SETBACKS:
ROADS: 20FT
SIDE: 10FT
REAR: 10FT

LAND USE SUMMARY

Lot	Use	Bldg. Ht.	Res. Units	Non-Residential GSF	Parking Required	Parking Provided (#ADA)	Lot Area (Acres)	Lot Coverage (Total Impervious)
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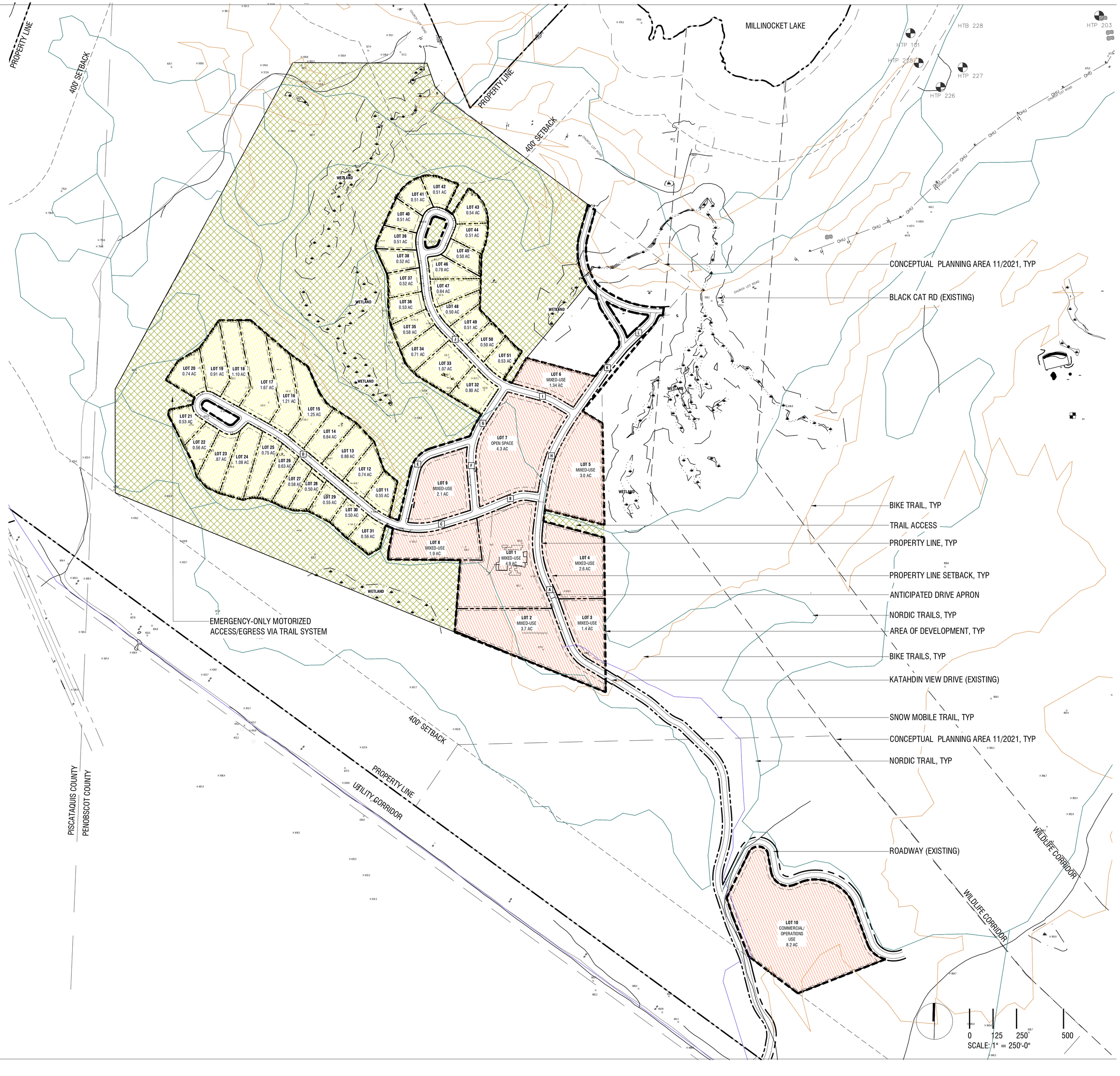
* For nonresidential/commercial uses 'retail' standard (Chapter 10) was applied (1/300sf)

LAND USE SUMMARY NOTES:

1. *LOT 2 PARKING CALCULATION BASED ON ASSUMED STAFF DEMAND OF 10. ADDITIONAL PARKING INDICATED INTENDED FOR EVENT OVERFLOW. SHARED PARKING AND BUS/SHUTTLE SERVICE TO BE UTILIZED FOR SPECIAL EVENTS.*
2. *SEE SHEET L1-00 FOR LOT COVERAGE AND OVERALL CONCEPTUAL TREE CLEARING LIMITS AND IMPERVIOUS SURFACE.*



ACETO LANDSCAPE ARCHITECTS
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SEAL

PROJECT TITLE

HAMMOND RIDGE DEVELOPMENT

T1 R8 WELS, ME

PREPARED FOR

REVISIONS | DATE

ISSUE DATE

JANUARY 9, 2025

SHEET TITLE

OVERALL SUBDIVISION LOT PLAN

SHEET INFORMATION

L 1-02

NOT FOR CONSTRUCTION

COMMON OPEN SPACE

TOTAL AREA: 73 ACRES

ROAD LENGTH

A	924 FEET	G	310 FEET
B	365 FEET	H	530 FEET
C	385 FEET	I	390 FEET
D	1,250 FEET	J	1,120 FEET
E	645 FEET	K	440 FEET
F	380 FEET	L	220 FEET

LANDSCAPE BUFFER

BUFFER PLANTING, MIX OF NATIVE PLANT SPECIES; CONCOLOR FIR, SPRUCE, BLUEBERRY, DOGWOOD, OAK, AND BIRCH.

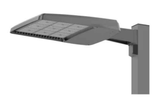
LANDSCAPE NOTES:

1. *PLANTING AREAS INDICATED TO CONVEY PLANNING PURPOSES. FINAL SPECIES SELECTION AND QUANTITY TO BE DETERMINED PRIOR TO CONSTRUCTION.*
2. *ALL PLANTING SHALL BE NATIVE SPECIES SELECTED FOR THEIR APPROPRIATE HARDINESS TO THE LOCAL CLIMATE AND MICRO-CLIMATE ZONES.*
3. *A PLANTING PLAN SHALL BE PREPARED BY A LICENSED LANDSCAPE ARCHITECT FOR EACH LOT AND ROAD SEGMENT PRIOR TO CONSTRUCTION AND SUBJECT TO REVIEW AND APPROVAL*

SITE LIGHTING

	DESCRIPTION	QTY.	LUMENS	COLOR TEMP.	MOTION	
▲	BUILDING-MOUNTED (10' MAX. HT. AFG)	53	1767 (93,651)	3000 K	NO	
●	BOLLARD (48" MAX. HT AFG)	51	2886 (147,186)	3000 K	NO	
◉	POLE FIXTURE (20' MAX HT AFG)	17	4297 (73049)	3000 K	NO	
	TOTAL		313,886			

POLE MOUNTED FIXTURE EXAMPLE



BUILDING MOUNTED FIXTURE EXAMPLE

BOLLARD FIXTURE EXAMPLE

SITE LIGHTING NOTES:

1. *ALL NEW EXTERIOR LIGHTING SOURCES FOR RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL DEVELOPMENT MUST HAVE A CORRELATED COLOR TEMPERATURE OF 3,000 KELVIN (K) OR LESS.*
2. *ALL NEW EXTERIOR LIGHTING SOURCES FOR RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL DEVELOPMENT MUST BE FULLY SHIELDED LIGHT FIXTURES, EXCEPT FOR LIGHTS OF 1,800 LUMEN OR LESS.*
3. *LIGHT FIXTURES MOUNTED ON COMMERCIAL AWNINGS OR CANOPIES SUCH AS THOSE FOUND AT GASOLINE STATIONS OR CONVENIENCE STORES MUST BE RECESSED SO THAT FIXTURES ARE FLUSH WITH THE CANOPY.*
4. *ALL EXTERIOR LIGHTING MUST BE DESIGNED, LOCATED, INSTALLED, AND DIRECTED DOWNWARD TO ILLUMINATE ONLY THE TARGET AREA, TO THE EXTENT PRACTICABLE. ACTIVITIES MUST NOT PRODUCE A STRONG, DAZZLING LIGHT OR REFLECTION OF THAT LIGHT BEYOND LOT LINES ONTO NEIGHBORING PROPERTIES, ANY WATER BODIES, OR ANY ROADWAY SO AS TO IMPAIR THE VISION OF THE DRIVER OF ANY VEHICLE UPON THAT ROADWAY OR TO CREATE NUISANCE CONDITIONS.*
5. *FOR COMMERCIAL, INDUSTRIAL, AND OTHER NON-RESIDENTIAL DEVELOPMENT, ALL NON-ESSENTIAL LIGHTING MUST BE TURNED OFF AFTER BUSINESS HOURS, LEAVING ONLY THE MINIMAL NECESSARY LIGHTING FOR SITE SECURITY.*
6. *THIS PLAN IS FOR PERMITTING REVIEW PURPOSES ONLY. FINAL SPECIFICATION AND LOCATION OF FIXTURES MAY VARY AND SHALL BE DETERMINED PRIOR TO CONSTRUCTION. FINAL SPECIFICATIONS AND LOCATIONS SHALL GENERALLY CORRESPOND TO THIS PLAN.*
7. *ANY NECESSARY ELECTRICAL ENGINEERING AND DESIGN SHALL BE PERFORMED BY OTHERS.*

ACETO LANDSCAPE ARCHITECTS
207 221 3390 | ACETOLA.COM

SEAL

PROJECT TITLE

HAMMOND RIDGE DEVELOPMENT

T1 R8 WELS, ME

PREPARED FOR

REVISIONS DATE

ISSUE DATE

JANUARY 9, 2025

SHEET TITLE

OVERALL SITE/ SUBDIVISION DEVELOPMENT PLAN

SHEET INFORMATION

L 1-03

NOT FOR CONSTRUCTION

Land Use: 260
Recreational Homes

Description

A recreational home is either (1) a second home used by its owner periodically for recreation or (2) rented on a seasonal basis. Some sites in the database are located within a resort that contains local services and complete recreational facilities. Timeshare (Land Use 265) is a related land use.

Additional Data

A large number of internal trips are made for recreational purposes in resort communities containing recreational homes.

The sites were surveyed in the 1980s, the 2000s, and the 2010s in California, New York, and Oregon.

Source Numbers

187, 901, 968, 1046

Recreational Homes
(260)

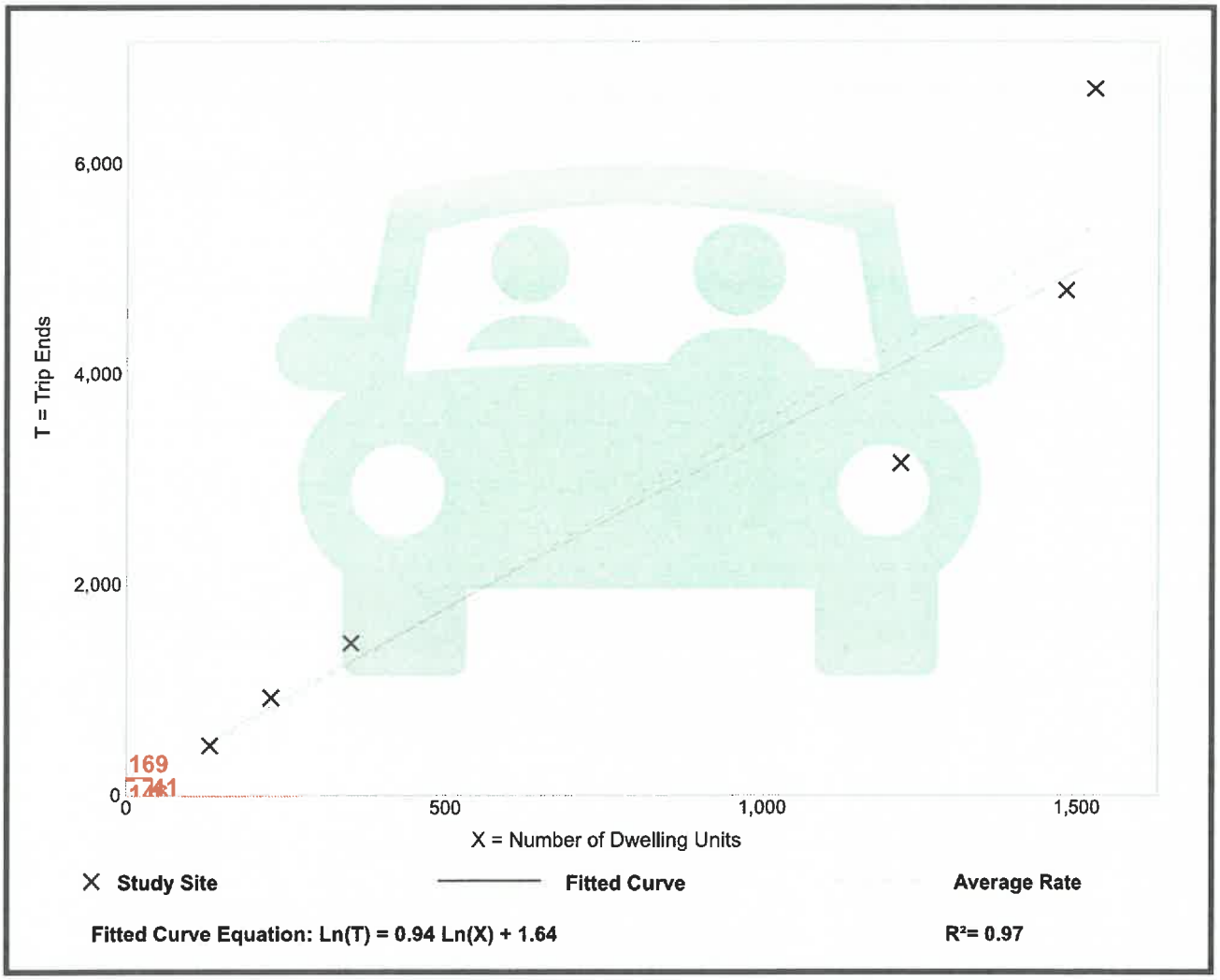
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **Rural**
Number of Studies: 6
Avg. Num. of Dwelling Units: 823
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
3.55	2.60 - 4.40	0.78

Data Plot and Equation



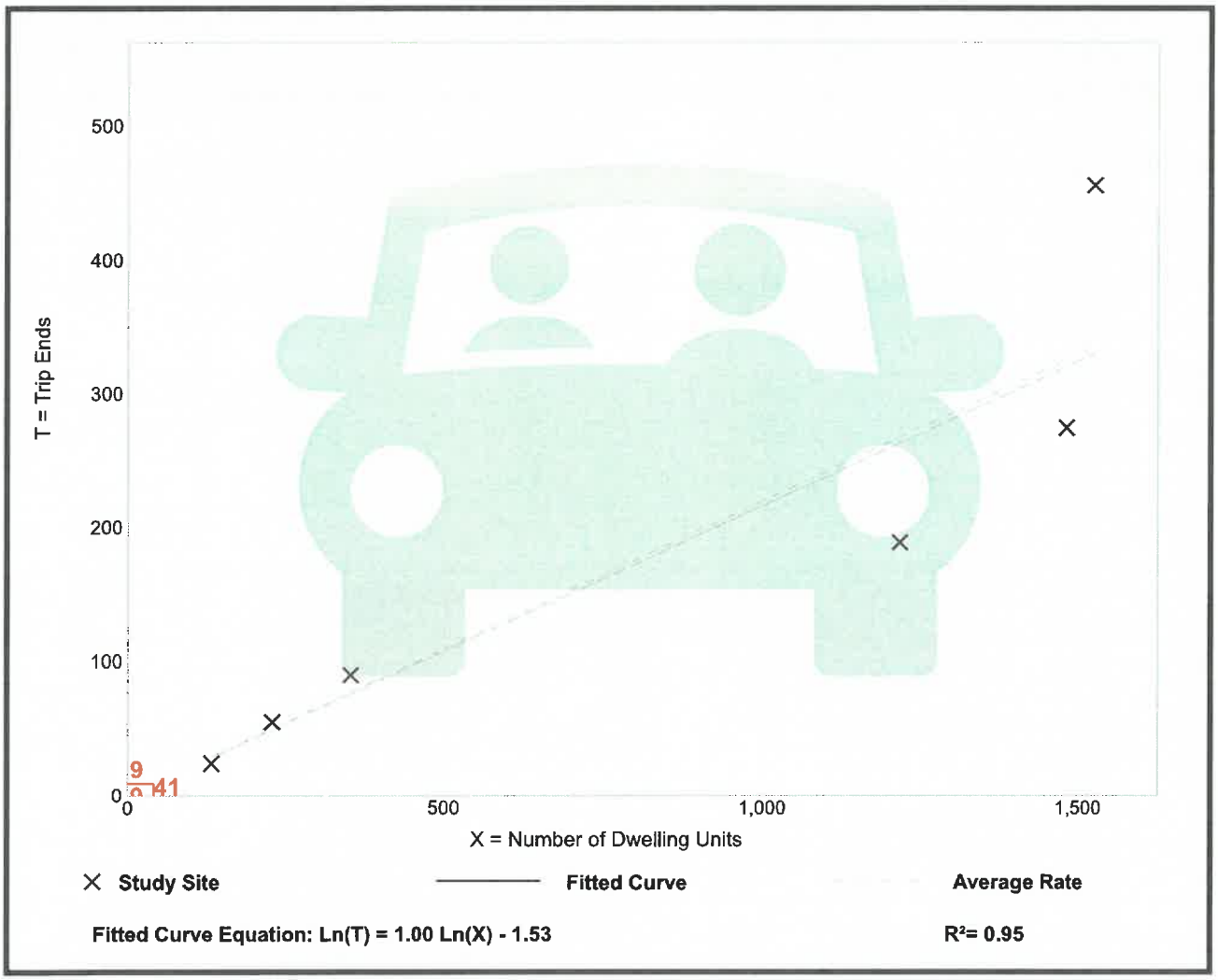
Recreational Homes
(260)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**Rural**
Number of Studies:	6
Avg. Num. of Dwelling Units:	823
Directional Distribution:	55% entering, 45% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.22	0.16 - 0.30	0.06

Data Plot and Equation



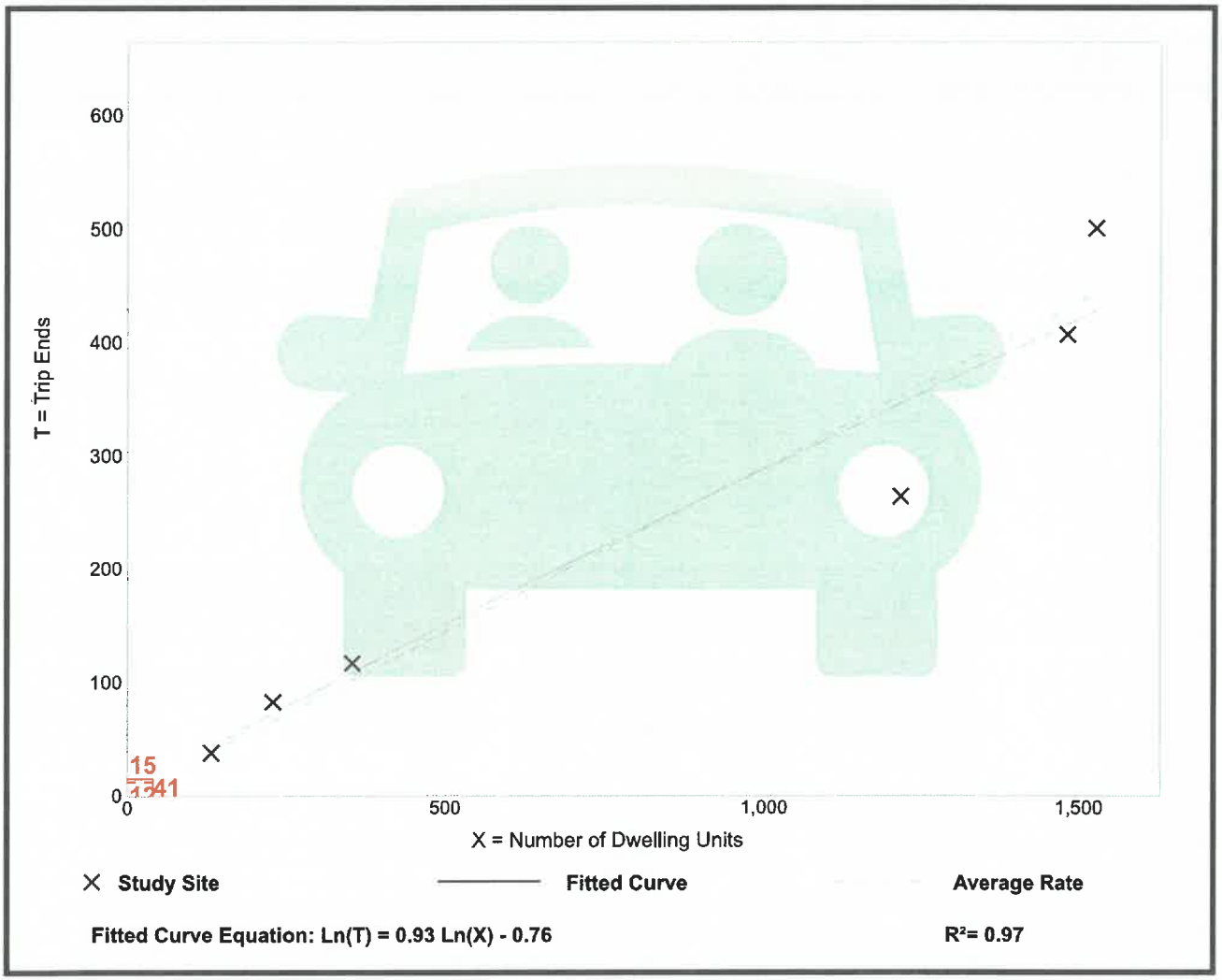
Recreational Homes
(260)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **Rural**
Number of Studies: 6
Avg. Num. of Dwelling Units: 823
Directional Distribution: 46% entering, 54% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.29	0.22 - 0.36	0.05

Data Plot and Equation



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Recreational Homes
(260)

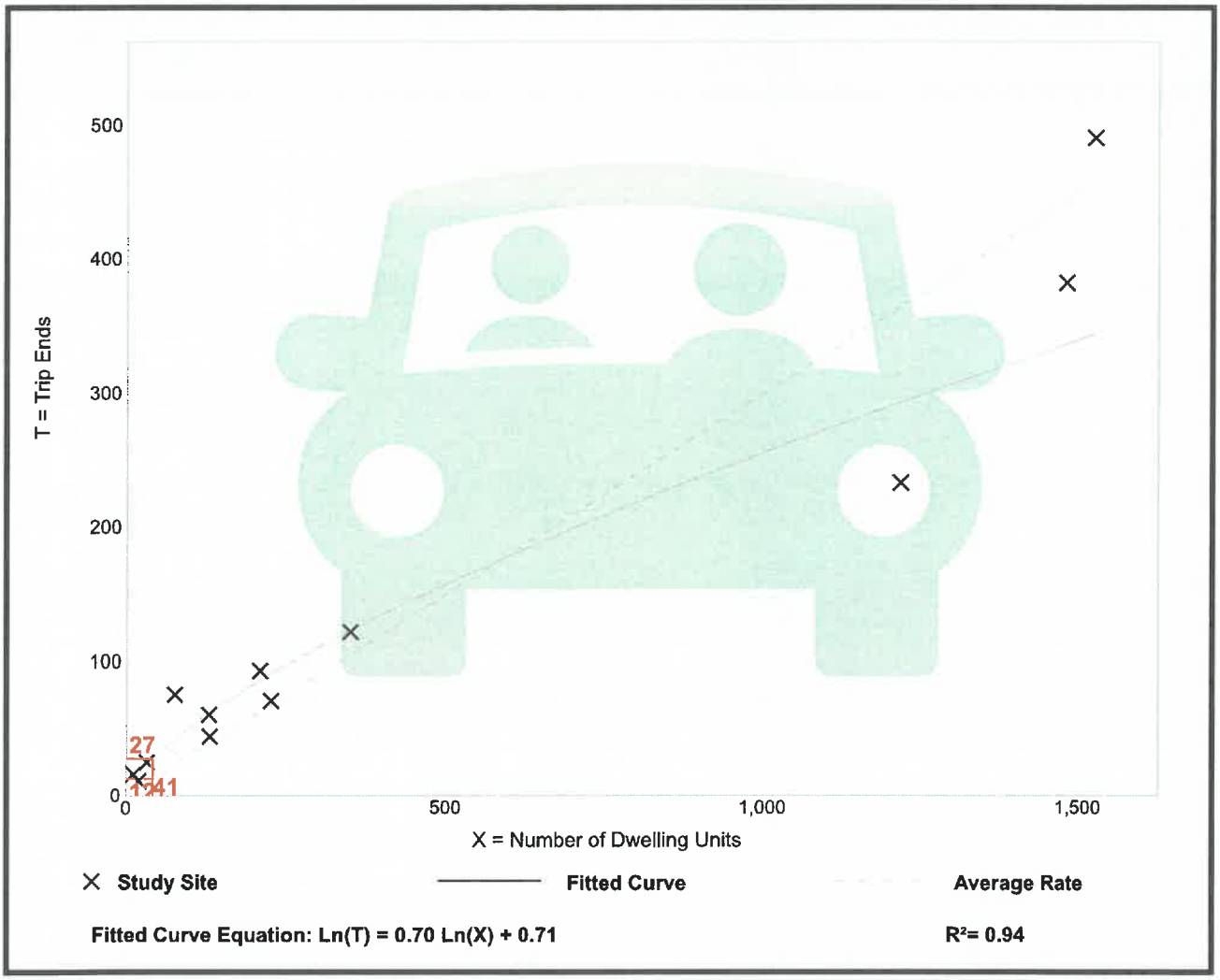
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
AM Peak Hour of Generator

Setting/Location: **Rural**
Number of Studies: 12
Avg. Num. of Dwelling Units: 452
Directional Distribution: 46% entering, 54% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.30	0.19 - 1.33	0.13

Data Plot and Equation



Recreational Homes
(260)

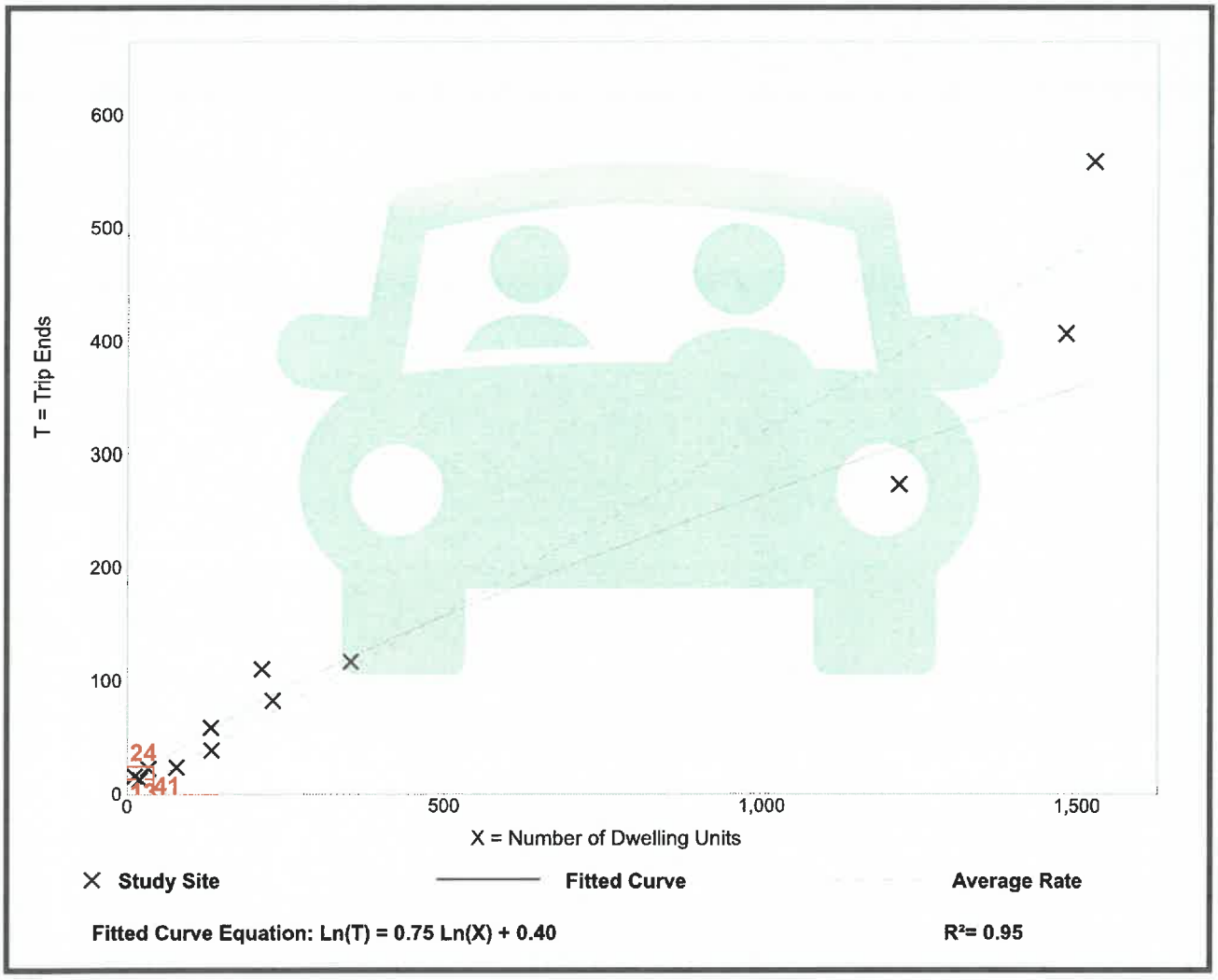
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
PM Peak Hour of Generator

Setting/Location: **Rural**
Number of Studies: 12
Avg. Num. of Dwelling Units: 452
Directional Distribution: 47% entering, 53% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.32	0.23 - 1.33	0.10

Data Plot and Equation



Recreational Homes
(260)

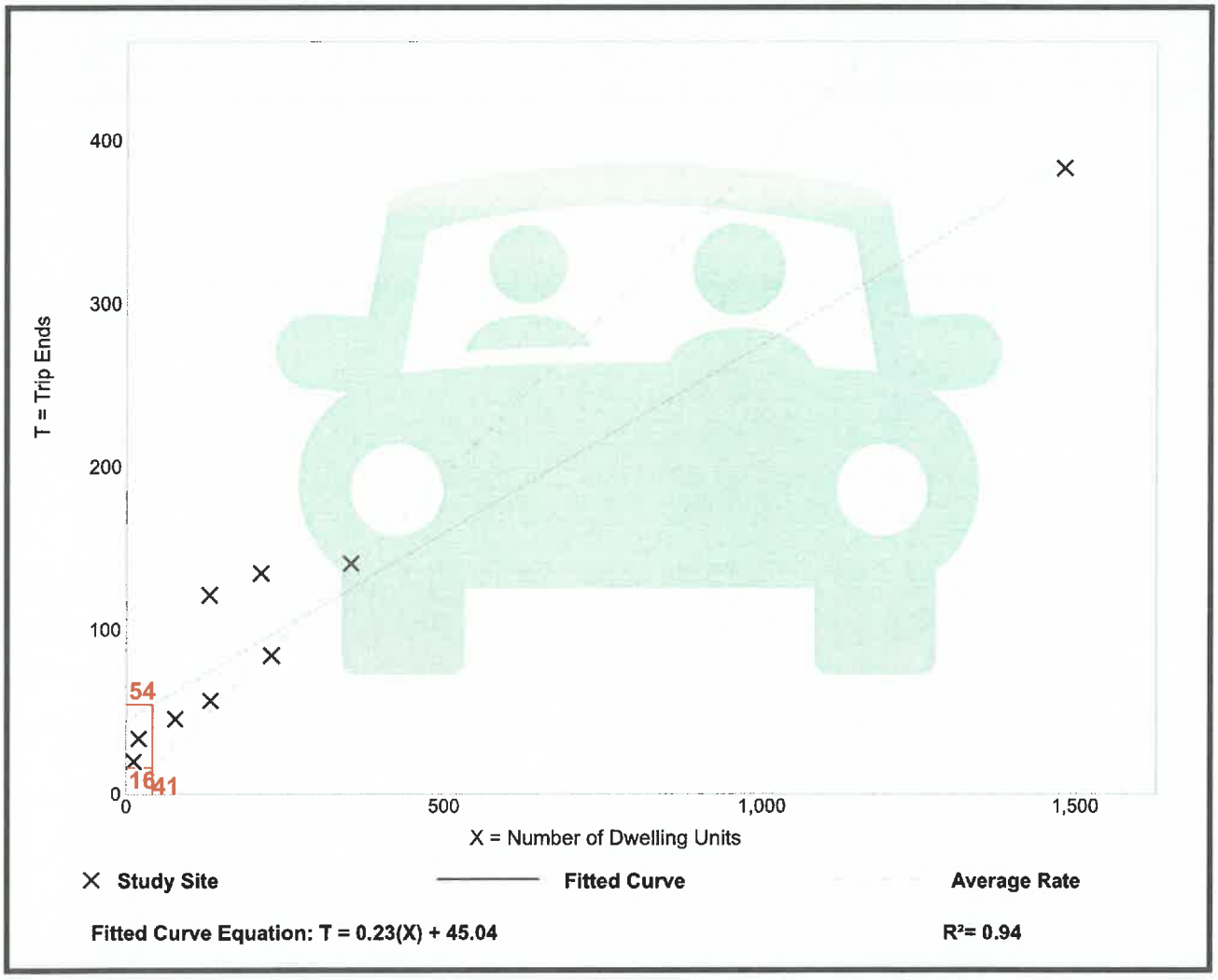
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Saturday, Peak Hour of Generator**

Setting/Location: **Rural**
Number of Studies: 9
Avg. Num. of Dwelling Units: 294
Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.26 - 1.70	0.24

Data Plot and Equation



Land Use: 220
Multifamily Housing (Low-Rise)

Description

Low-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have two or three floors (levels). Various configurations fit this description, including walkup apartment, mansion apartment, and stacked townhouse.

- A walkup apartment typically is two or three floors in height with dwelling units that are accessed by a single or multiple entrances with stairways and hallways.
- A mansion apartment is a single structure that contains several apartments within what appears to be a single-family dwelling unit.
- A fourplex is a single two-story structure with two matching dwelling units on the ground and second floors. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.
- A stacked townhouse is designed to match the external appearance of a townhouse. But, unlike a townhouse dwelling unit that only shares walls with an adjoining unit, the stacked townhouse units share both floors and walls. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.

Multifamily housing (mid-rise) (Land Use 221), multifamily housing (high-rise) (Land Use 222), affordable housing (Land Use 223), and off-campus student apartment (low-rise) (Land Use 225) are related land uses.

Land Use Subcategory

Data are presented for two subcategories for this land use: (1) not close to rail transit and (2) close to rail transit. A site is considered close to rail transit if the walking distance between the residential site entrance and the closest rail transit station entrance is ½ mile or less.

Additional Data

For the three sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.72 residents per occupied dwelling unit.

For the two sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 96.2 percent of the total dwelling units were occupied.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip

Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

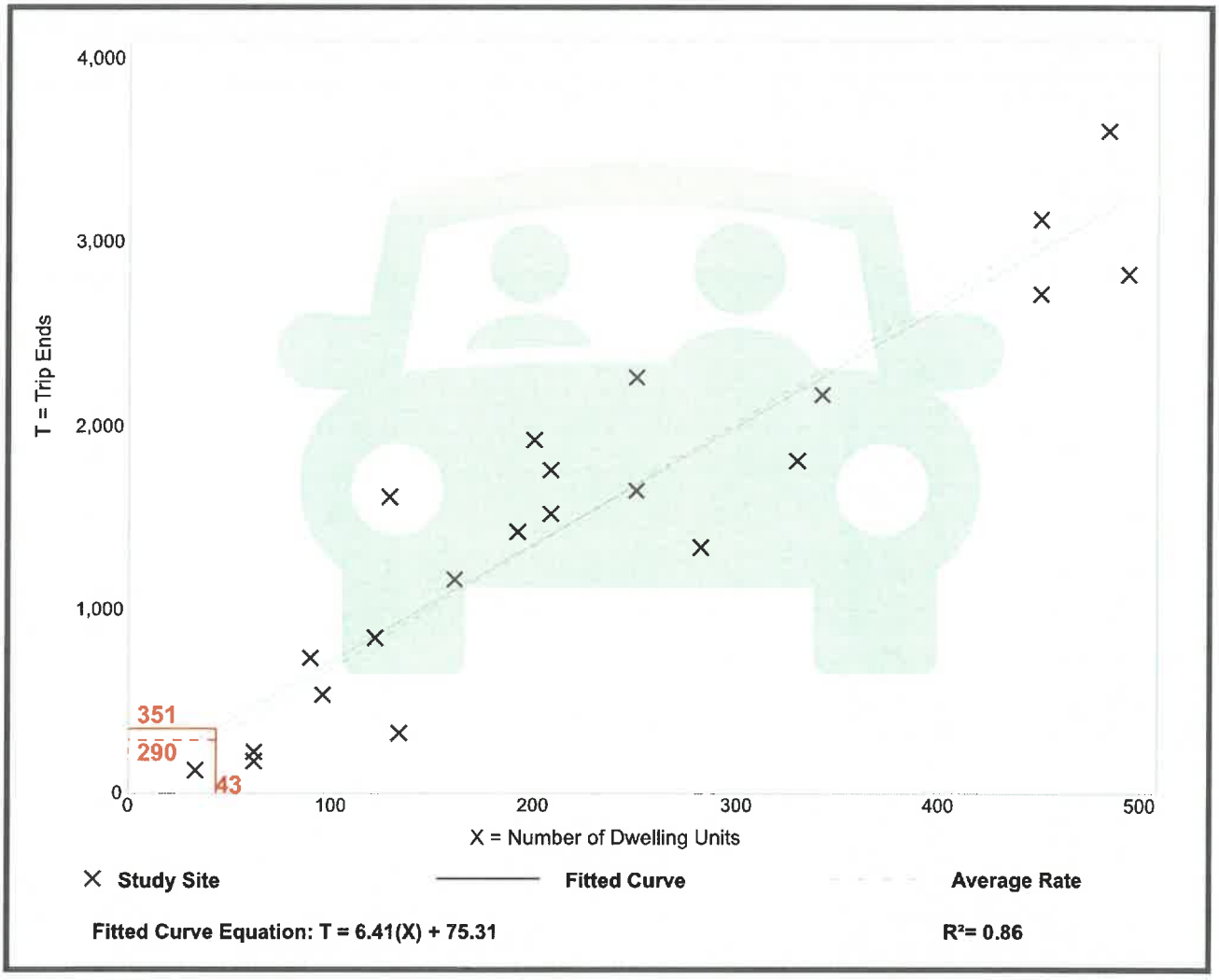
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 22
Avg. Num. of Dwelling Units: 229
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.74	2.46 - 12.50	1.79

Data Plot and Equation



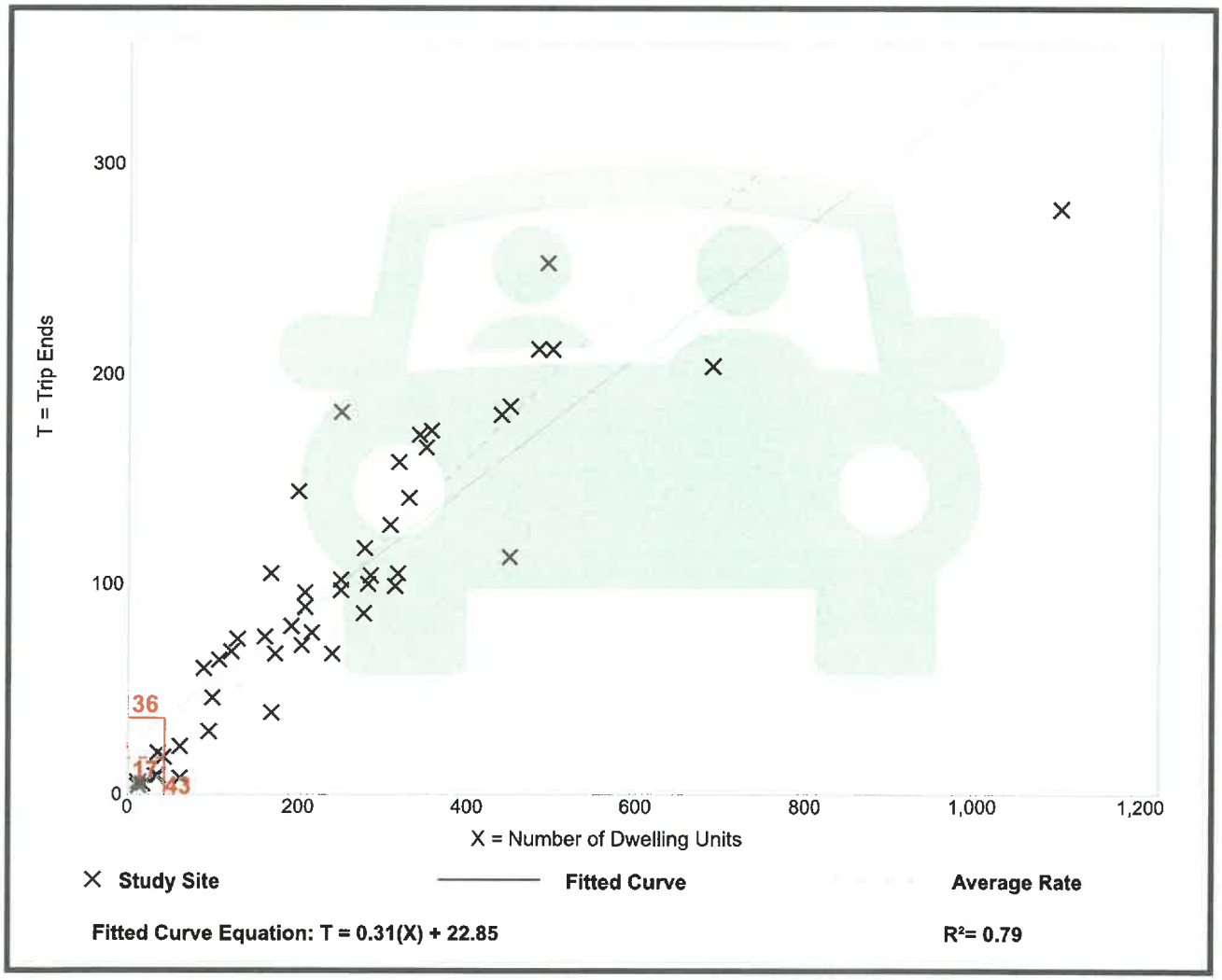
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	49
Avg. Num. of Dwelling Units:	249
Directional Distribution:	24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



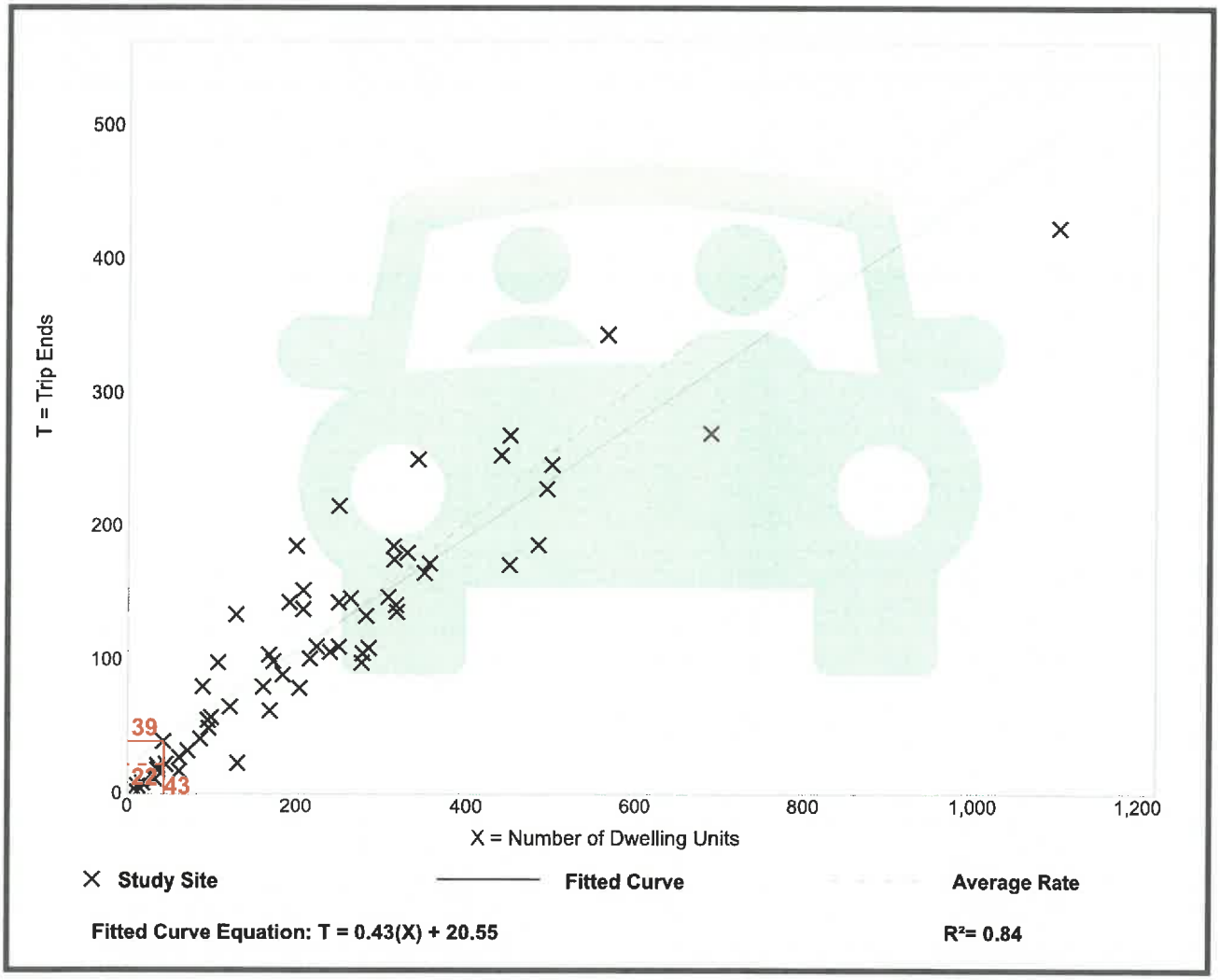
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 59
Avg. Num. of Dwelling Units: 241
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

Data Plot and Equation



Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

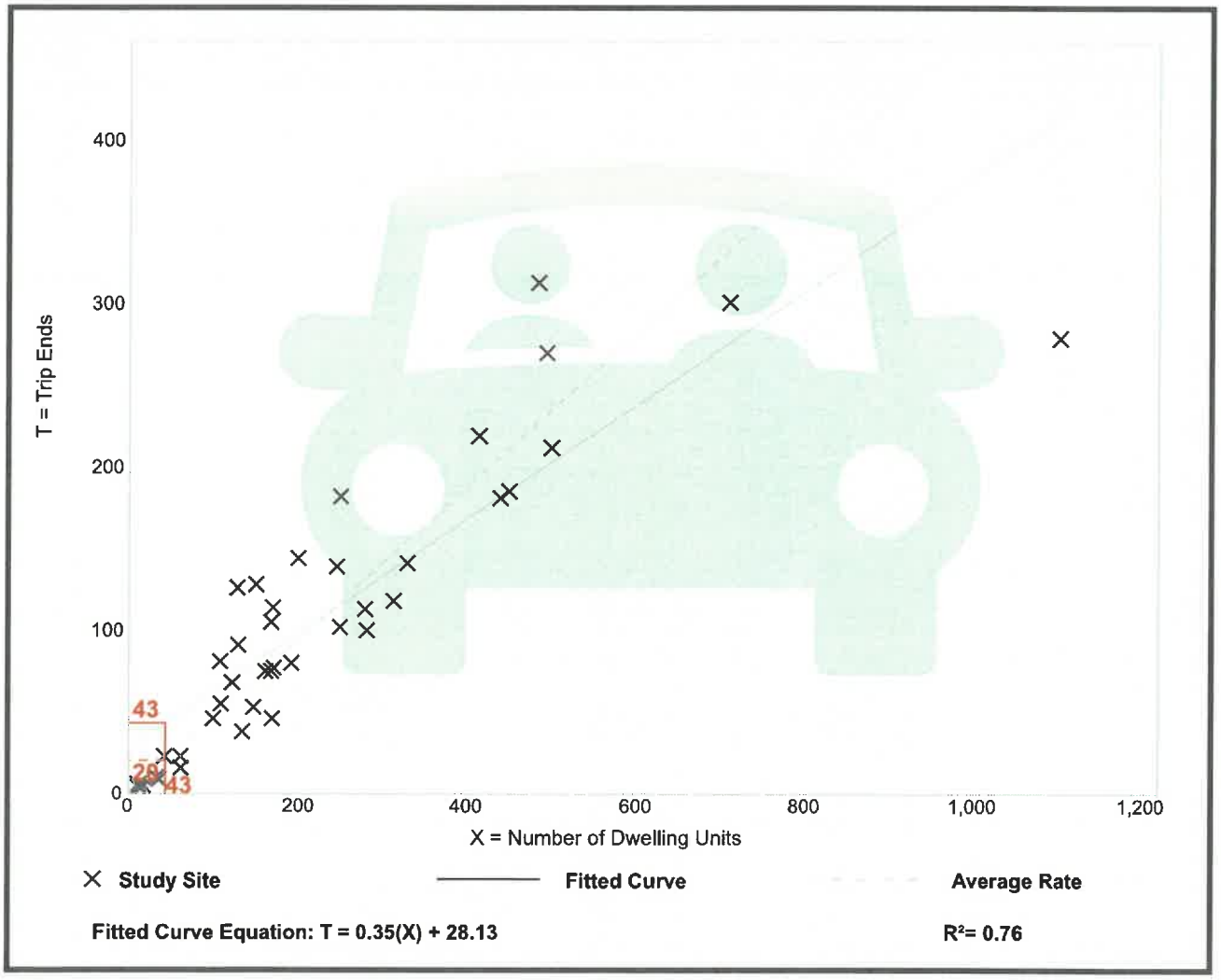
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
AM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 40
Avg. Num. of Dwelling Units: 234
Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.47	0.25 - 0.98	0.16

Data Plot and Equation



Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

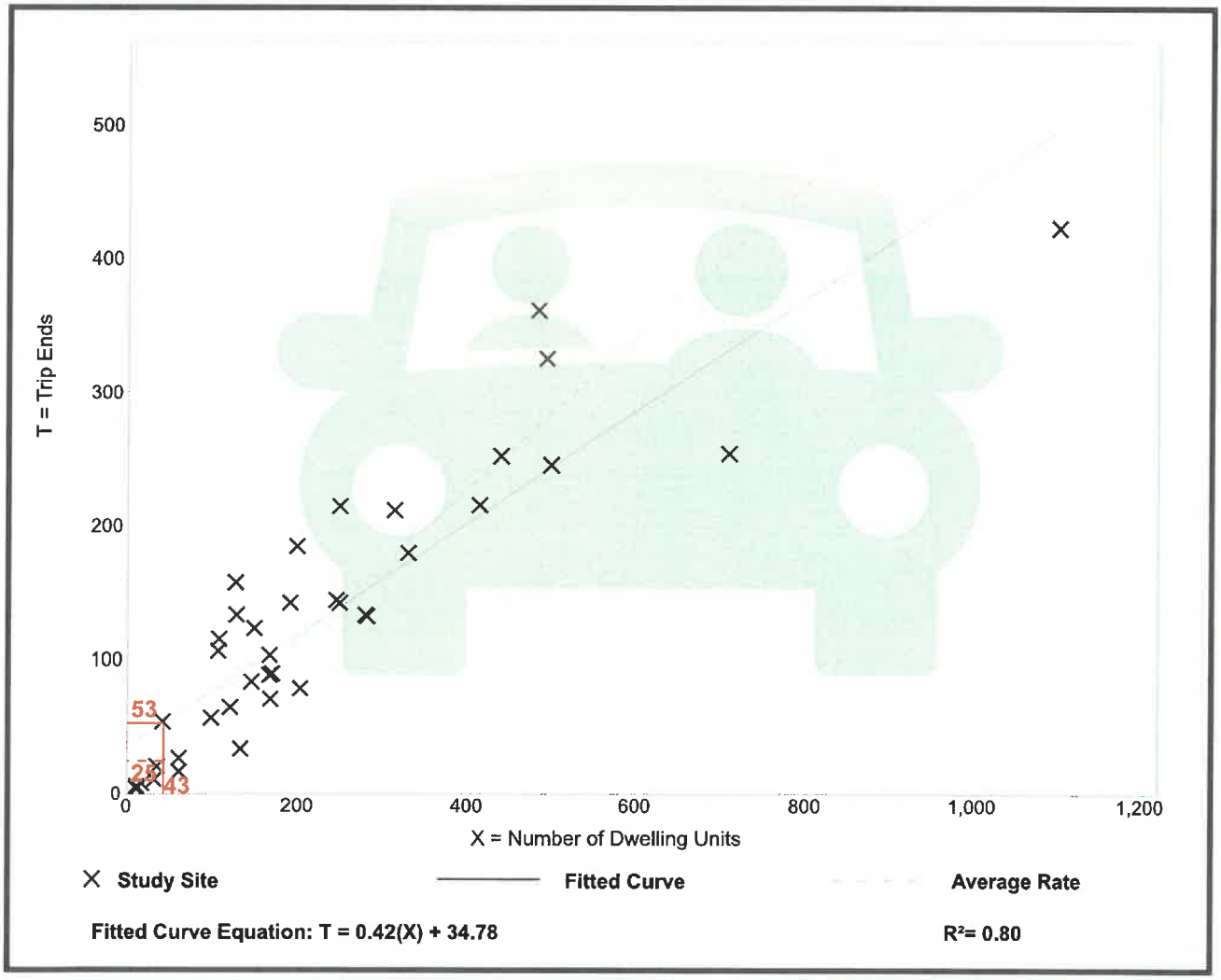
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
PM Peak Hour of Generator

Setting/Location: **General Urban/Suburban**
Number of Studies: 38
Avg. Num. of Dwelling Units: 231
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.25 - 1.26	0.20

Data Plot and Equation



Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Saturday, Peak Hour of Generator**

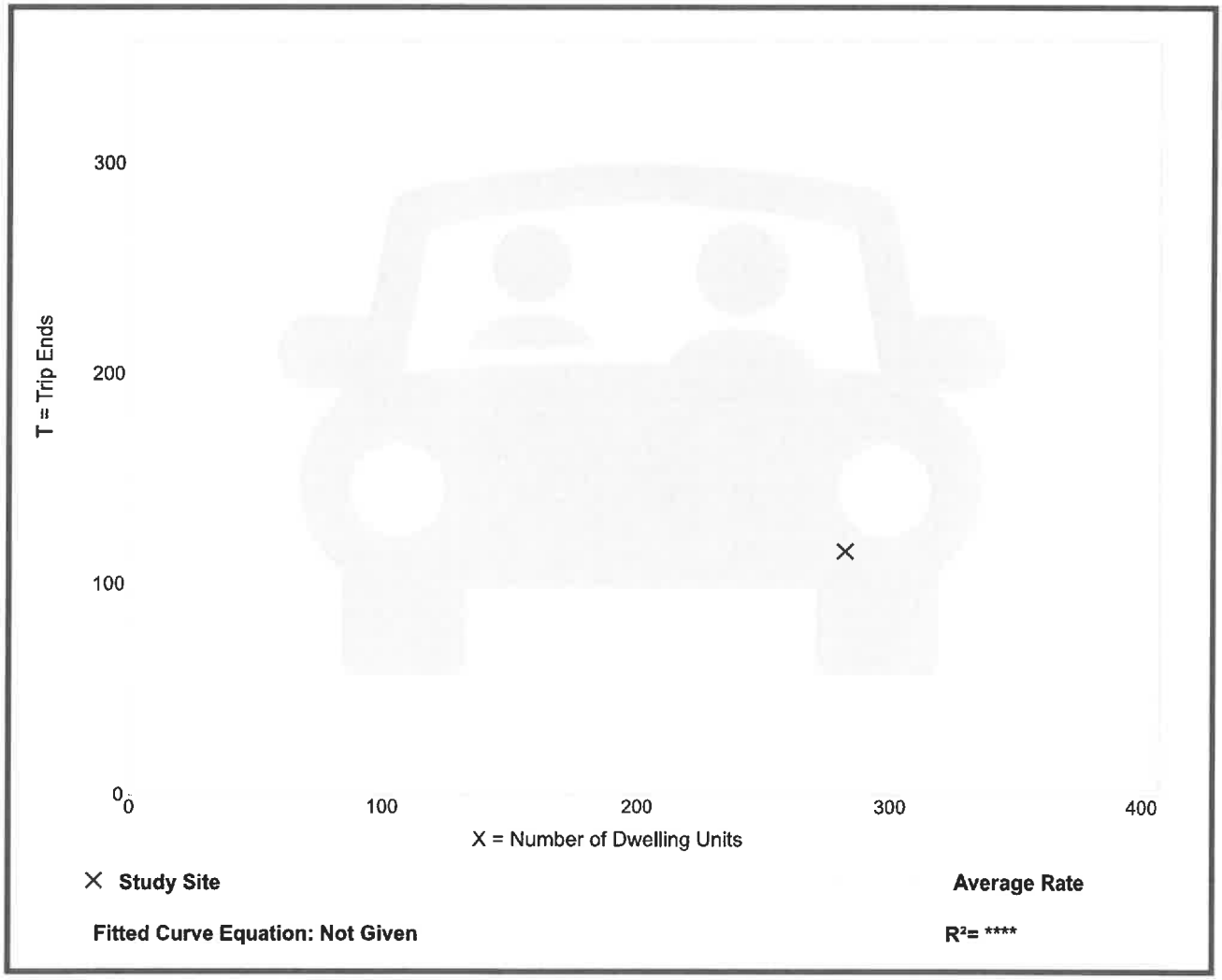
Setting/Location: **General Urban/Suburban**
Number of Studies: 1
Avg. Num. of Dwelling Units: 282
Directional Distribution: Not Available

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.41	0.41 - 0.41	*

Data Plot and Equation

Caution – Small Sample Size



Land Use: 230
Low-Rise Residential with Ground-Floor Commercial

Description

Low-rise residential with ground-floor commercial is a mixed-use multifamily housing building with two or three floors of residential living space and commercial space open to the public on the ground level. These facilities are typically found in dense multi-use urban and center city core settings. Multifamily housing (low-rise) (Land Use 220), mid-rise residential with ground floor commercial (Land Use 231), and high-rise residential with ground-floor commercial (Land Use 232) are related land uses.

Land Use Subcategory

The data included in this land use have been stratified into two subcategories: (1) sites with a commercial gross leasable area that ranges between 1,000 and 25,000 square feet (2) sites with a commercial gross leasable area that ranges between 25,000 and 65,000 square feet.

Additional Data

The trips displayed in the data plots represent the total trips that enter or exit the site. Any trips internal to the site between its residential and commercial components are not included.

The ITE *Trip Generation Handbook* (TGH) presents an alternative approach for estimating trips generated by a site that fits this land use. The TGH method involves the estimation of the internal trip-making at a mixed-use site.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

Additional Data

The sites were surveyed in the 2010s in the District of Columbia and Oregon.

Source Numbers

901, 949, 950

Low-Rise Residential with Ground-Floor Commercial
GFA (1-25k) (230)

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

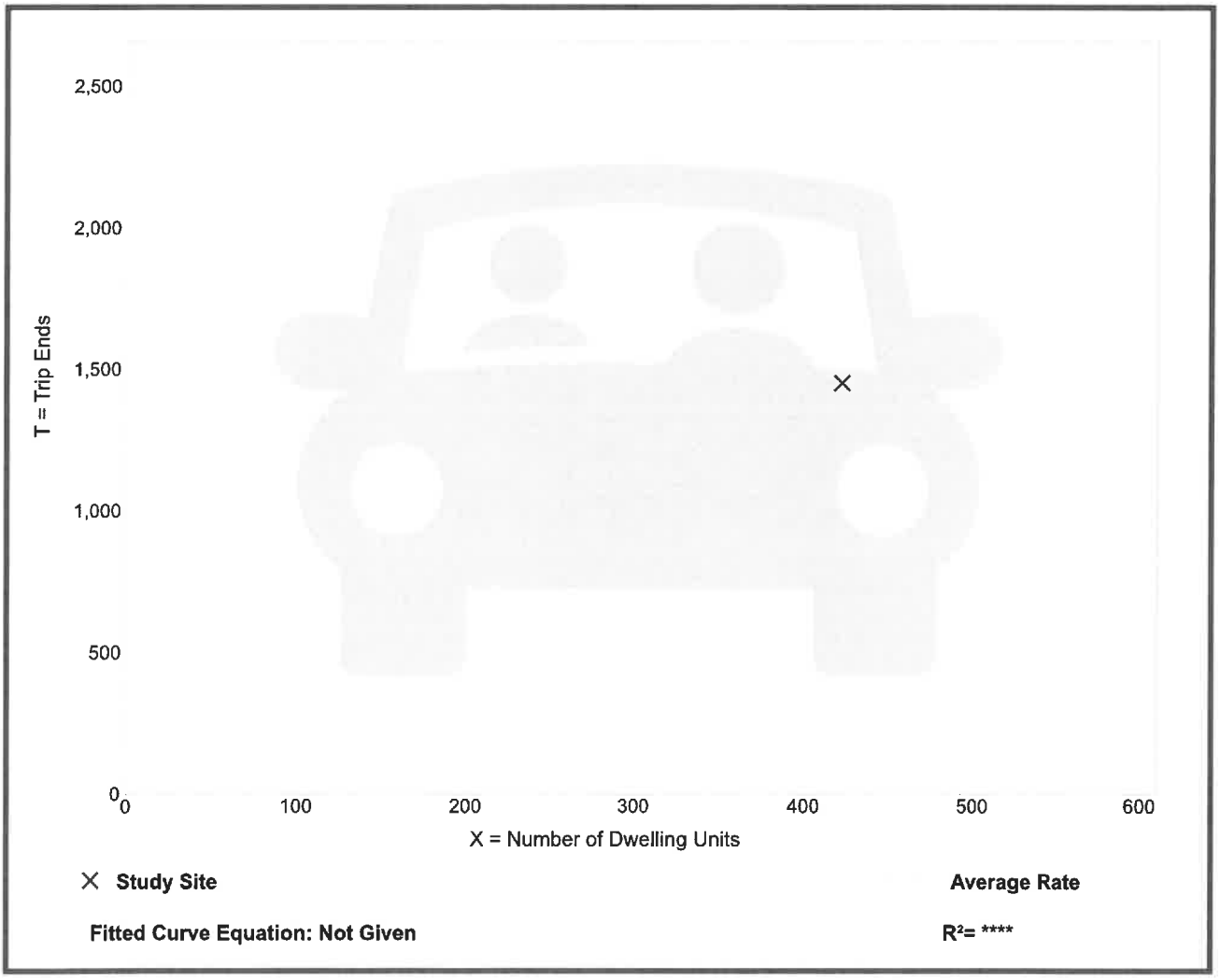
Setting/Location: **General Urban/Suburban**
Number of Studies: 1
Avg. Num. of Dwelling Units: 422
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
3.44	3.44 - 3.44	*

Data Plot and Equation

Caution – Small Sample Size



Low-Rise Residential with Ground-Floor Commercial
GFA (1-25k) (230)

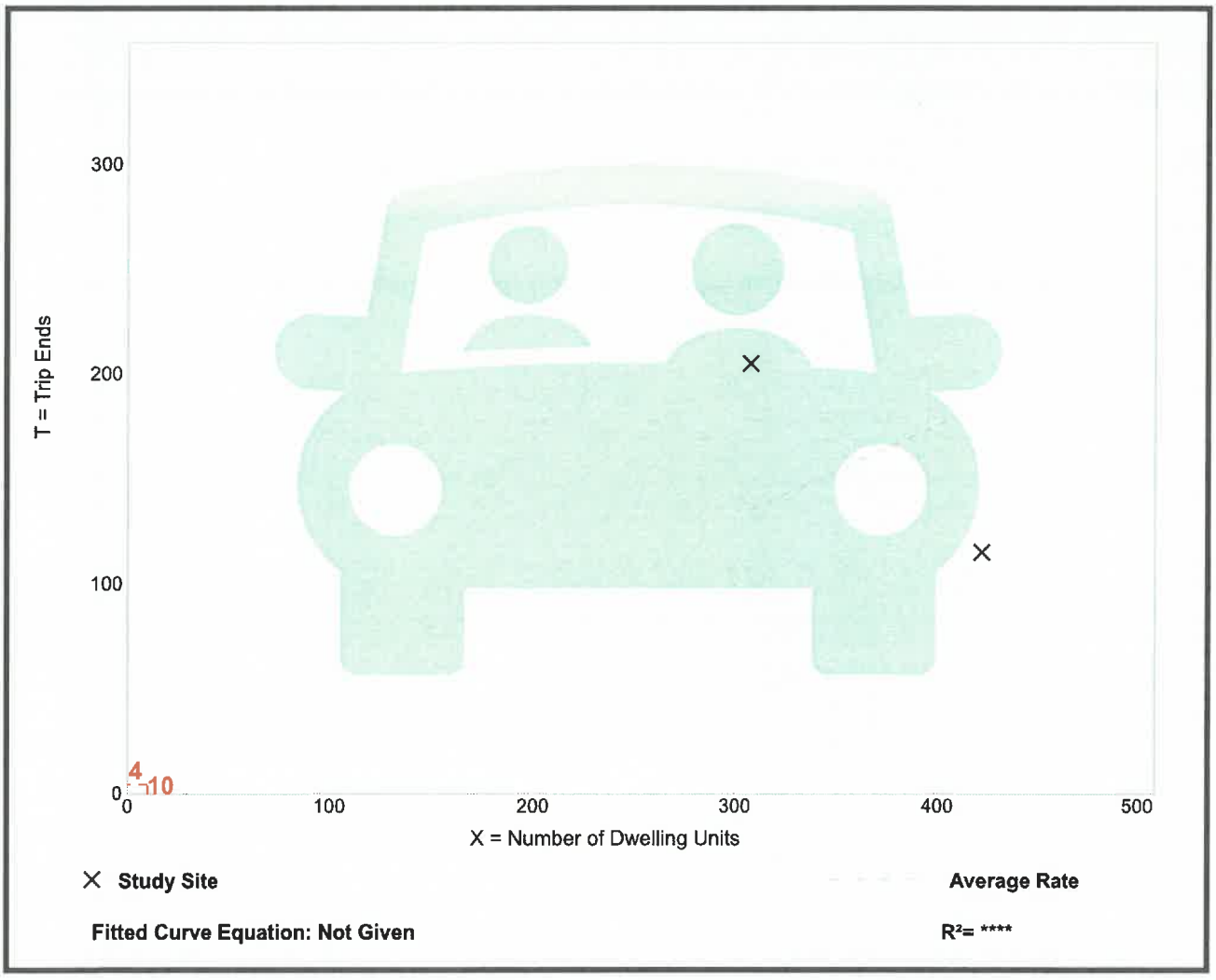
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 2
Avg. Num. of Dwelling Units: 365
Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.27 - 0.67	*

Data Plot and Equation

Caution – Small Sample Size



Low-Rise Residential with Ground-Floor Commercial
GFA (1-25k) (230)

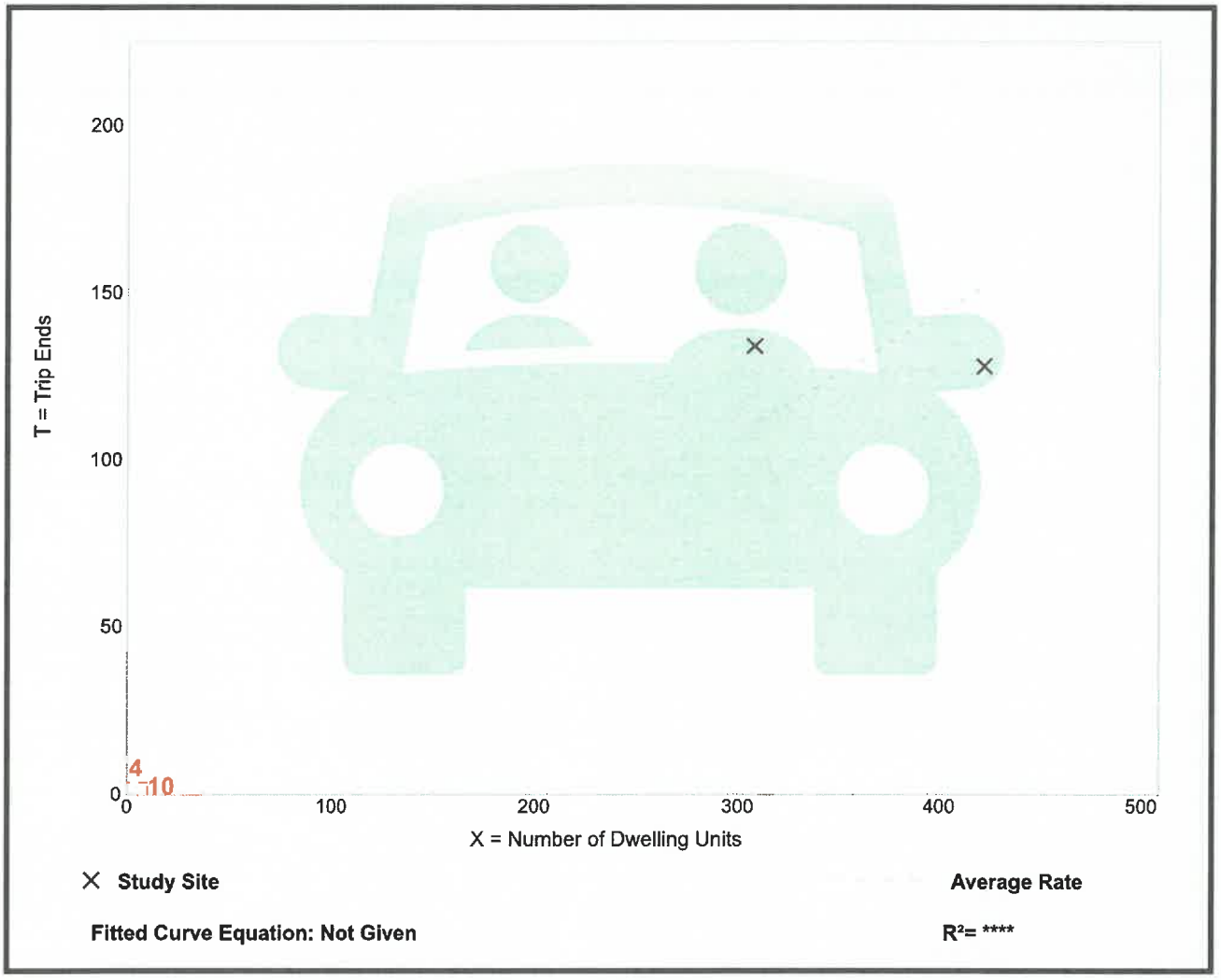
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 2
Avg. Num. of Dwelling Units: 365
Directional Distribution: 71% entering, 29% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.30 - 0.44	*

Data Plot and Equation

Caution – Small Sample Size



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Low-Rise Residential with Ground-Floor Commercial
GFA (1-25k) (230)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
AM Peak Hour of Generator

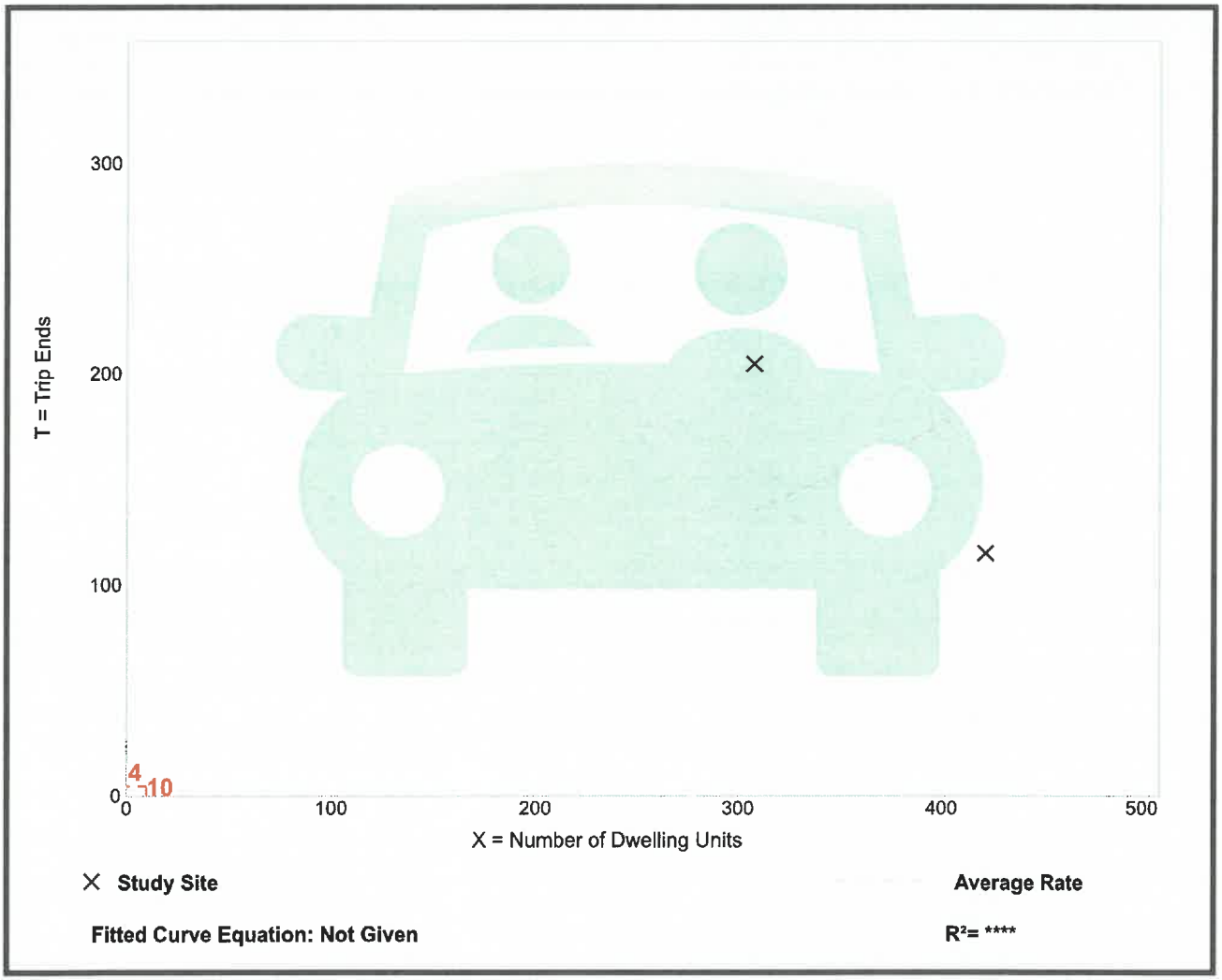
Setting/Location: **General Urban/Suburban**
Number of Studies: 2
Avg. Num. of Dwelling Units: 365
Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.27 - 0.67	*

Data Plot and Equation

Caution – Small Sample Size



× **Study Site** **Average Rate**

Fitted Curve Equation: Not Given **R^2= ****

Low-Rise Residential with Ground-Floor Commercial
GFA (1-25k) (230)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
PM Peak Hour of Generator

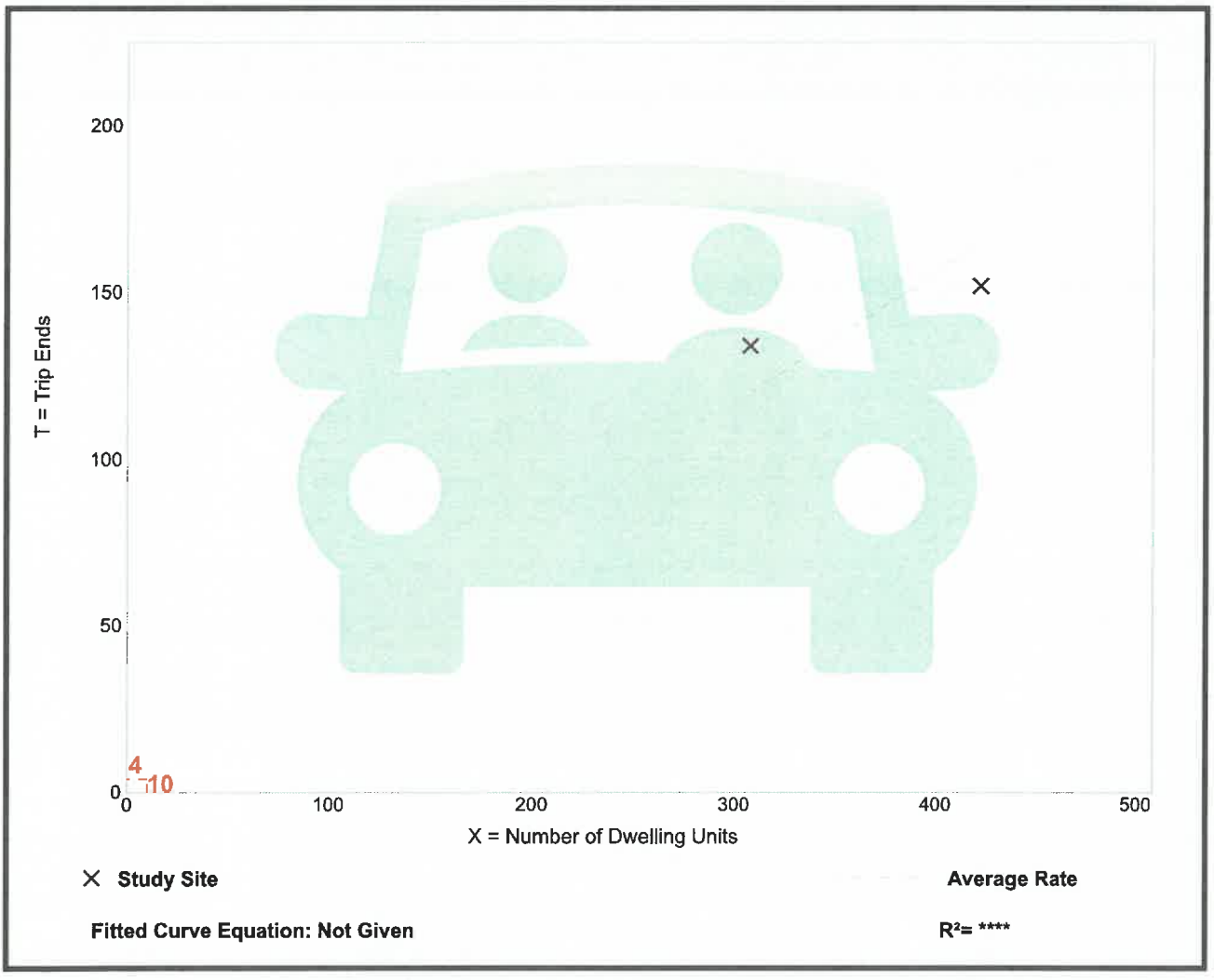
Setting/Location: **General Urban/Suburban**
Number of Studies: 2
Avg. Num. of Dwelling Units: 365
Directional Distribution: 65% entering, 35% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.36 - 0.44	*

Data Plot and Equation

Caution – Small Sample Size



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Maine Department of Transportation
Driveway/Entrance Permit

Permit Number:8679

Owner: **HAMMOND RIDGE DEV. CO. LLC**
Address: **P O BOX 669**
Millinocket, ME 04462

Telephone: **(208)723-3559**

Location:
Route: **C301K**, **Millinocket Lake Rd**
Municipality: **T1 R8 WELS**
County: **Penobscot**
Tax Map: ; Lot Number:
Culvert Size: **18"**
Culvert Type: **metal/plastic**
Culvert Length: **56'**
Date of Permit: **27-OCT-08**
Approved Entrance Width: **24'**

In accordance with rules promulgated under 23 M.R.S.A., Chapter 13, Subchapter I, Section 704, the Maine Department of Transportation (MaineDOT) approves a permit and grants permission to perform the necessary grading to construct, in accordance with sketch or attached plan, a Driveway to [a] **LAND MGT. ROAD** at a point **3530' S** from **T1 R9 town line**, subject to the Chapter 299 Highway Driveway and Entrance Rules, standard conditions and special conditions (if any) listed below.

Conditions of Approval:

This permittee acknowledges and agrees to comply with the Standard Conditions of Approval attached hereto and to any Specific Conditions of Approval shown here.

Approved Special Condition(s):

* The profile of the driveway must comply with details on the enclosed sheet.
* The driveway must be crowned and ditched to prevent runoff. No surface runoff will be allowed onto the State Highway.
* The landowner is required to ditch along the roadway (approx. 75 ft. in each direction from the center of the proposed driveway) to transition from the existing ditch to the drive pipe at its required depth and offset so as not to trap water. The culvert must have a minimum of 1 foot of gravel covering it.
* This permit is to allow access to the property for land management purposes. Any other use would constitute a change in use and require further review and an additional permit.

Approved by: _____ Date: _____

STANDARD CONDITIONS

1. Provide, erect and maintain all necessary barricades, lights, warning signs and other devices as directed by MaineDOT to safeguard traffic properly while the construction is in progress.

2. At no time cause the highway to be closed to traffic.

3. Where the driveway is located within a curb, curb and gutter, and/or sidewalk section, completely remove the existing curb, curb and gutter, and/or sidewalk as may be required to create the driveway and restore drainage. All driveways abutting sidewalk sections shall meet the requirements set forth in the Americans with Disabilities Act of 1990, 42 U.S.C. Sec. 12131 et seq.

4. Obtain, have delivered to the site, and install any culverts and/or drainage structures which may be necessary for drainage, the size, type and length as called for in the permit pursuant to 23 M.R.S.A. Sec. 705. All culverts and/or drainage structures shall be new.

5. Start construction of the proposed driveway within twenty-four (24) months of the date of permit issuance and substantially complete construction of the proposed driveway within twelve months of commencement of construction.

6. Comply with all applicable federal, state and municipal regulations and ordinances.

7. Not alter, without the express written consent of the MaineDOT, any culverts or drainage swales within the MaineDOT right of way.

8. File a copy of the approved driveway permit with the affected municipality or LURC, as appropriate within 5 business days of receiving the MaineDOT approval.

9. Construct and maintain the driveway side slopes to be no steeper than the adjacent roadway side slopes, but in no case to be steeper than 3 horizontal to 1 vertical, unless the side slope is behind existing roadway guardrail, in which case it shall be no steeper than 2 horizontal to 1 vertical.

10. Notify the MaineDOT of a proposed change of use served by the driveway when increase in traffic flow is expected to occur. This does not exempt the need for obtaining a Traffic Movement Permit (TMP) if trip generation meets or exceeds 100 passenger car equivalents (pce) during the peak hour of the day.

11. Construct or implement and maintain erosion & sedimentation measures sufficient to protect MaineDOT's facilities.

12. Driveways shall be designed such that all maneuvering and parking of any vehicles will take place outside the highway right-of-way and where vehicles will exit the premises without backing onto the highway traveled way or shoulders. All driveways will have a turnaround area to accommodate vehicles using the premises.

FURTHER CONDITION OF THE PERMIT:

The owner shall assume the defense of, and pay all damages, fines, and penalties for which he/she shall become liable, and shall indemnify and safe harmless said Department, its representatives, agents and employees from liability, actions against all suits, claims, damages for wrongful death, personal injuries or property damage suffered by any person or association which results from the willful or negligent action or inaction of the owner/applicant/agent and in proceedings of every kind arising out of the construction and maintenance of said entrance(s), including snow removal. Nothing herein shall, nor is intended to, waive any defense, immunity or limitation of liability which may be available to the MaineDOT, their officers, agents or employees under the Maine Tort Claims Act or any other privileges and/or immunities provided by law. It is a further condition that the owner will agree to keep the right of way inviolate for public highway purposes and no signs (other than traffic signs and signals), posters, billboards, roadside stands, culvert end walls or private installations shall be permitted within Right of Way limits.