VISTA II

DRAFT
Focused Local Mobility Analysis

AUGUST 2024

Prepared For
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Executive Summary

The purpose of this Focused Local Mobility Analysis (LMA) is to evaluate how the proposed Vista II project (the "Project") will affect the surrounding local transportation network, as well as to determine if additional transportation improvements will be needed.

The Project is located at 145 Hannalei Drive, just east of the Stonebrook Church where multiple baseball/sports fields currently exist. The project is a Tentative Map and Major Use Permit to subdivide an 8.93-acre site into three lots. Lot 1 contains an existing church and an existing driveway that will be improved as a secondary access for Lot 2. Lot 2, which is 5.33 acres, will be improved with 37 multi-family condominium units with associated parking and14,800 square feet of private usable open space. The third lot, Lot A, consists of an existing cellular facility and is not approved for any future development. Access to the site will be from Hannalei Drive with a secondary emergency access in the northwestern area of the site connecting to the adjacent church property to the west (on Lot 1).

The project is part of the North County Metro Community Planning Area. Fire service will be provided by the Vista Fire Protection. Sewer will be provided by the Buena Sanitation District and water from the Vista Irrigation District. The site is subject to the General Plan Designation VR-7.3. Zoning for the site is RS. The project includes 111 total parking spaces and 61,462 total square feet of open space. Earthwork will consist of 10,700 cubic yards of cut, 22,500 cubic yards of fill and 11,800 cubic yards of imported material. The site contains a stockpile of approximately 3,500 cubic yards soil spread over a 1-acre area, which is in violation of the County's Grading Ordinance. The stockpile will remain on the site and is considered part of the project.

Final Mapping for the project would occur in phases. The first unit would be to create lots 1 and 2 and lot A for finance and conveyance purposes only, not for development. Once the first unit is recorded, Lot 2 will be transferred to the future developer. Lot 2 will then be developed per the conditions of approval for Tentative Tract Map 5647.

Summary

This section provides a discussion of the findings from the Focused LMA prepared per the County of San Diego Transportation Study Guidelines (County TSG).

Roadway Segment

Table ES.1 displays the roadway segment level of service (LOS) results under Existing and Existing with Project conditions.

Table ES.1 – Roadway Segment LOS Results – Existing with Project Conditions

Roadway	Segment	LOS	
		Existing with Project	Existing
Hannalei Drive	East of Watson Way to Watson Way	Below Capacity	Below Capacity
Hannalei Drive	Watson Way to Project Driveway	Below Capacity	Below Capacity
Hannalei Drive	Project Driveway to Woodland Drive	Below Capacity	Below Capacity

Source: CR Associates (2024)

With the implementation of the Project, all study roadway segments are projected to operate below capacity.

Table ES.2 – Peak Hour Intersection LOS Results – Existing with Project Conditions

Intersection	Peak Hour	LOS	
		Existing	Existing with Project
1. Watson Way & Hannalei Drive	AM	A	A
	PM	A	A
2. Hannalei Drive/Anna Lane & Woodland Drive	AM	A	A
	PM	A	A
3. Project Driveway & Hannalei Drive	AM	A	N/A
	PM	A	N/A

Source: CR Associates (2024)

With the implementation of the Project, all study intersections are projected to operate at acceptable LOS A during both the AM and PM peak hours.

Determination of the Need for Off-Site Improvements

This section identifies the recommended off-site improvements under Existing with Project conditions, consistent with the County of San Diego TSG.

Based upon the LOS analysis results presented above, and the significance criteria presented in Section 2.6, the addition of Project traffic would not have any adverse effect on traffic operations at any of the study facilities under Existing with Project conditions. Therefore, no improvements will be required.

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1.0 Introduction

The purpose of this Local Transportation Analysis (LTA) is to evaluate how the proposed Vista II project (the "Project") will affect the surrounding local transportation network, as well as to determine if additional transportation improvements will be needed.

1.1 Project Description

The Project is located at 145 Hannalei Drive, just east of the Stonebrook Church where multiple baseball/sports fields currently exist. The project is a Tentative Map and Major Use Permit to subdivide an 8.93-acre site into three lots. Lot 1 contains an existing church and an existing driveway that will be improved as a secondary access for Lot 2. Lot 2, which is 5.33 acres, will be improved with 37 multi-family condominium units with associated parking and14,800 square feet of private usable open space. The third lot, Lot A, consists of an existing cellular facility and is not approved for any future development. Access to the site will be from Hannalei Drive with a secondary emergency access in the northwestern area of the site connecting to the adjacent church property to the west (on Lot 1).

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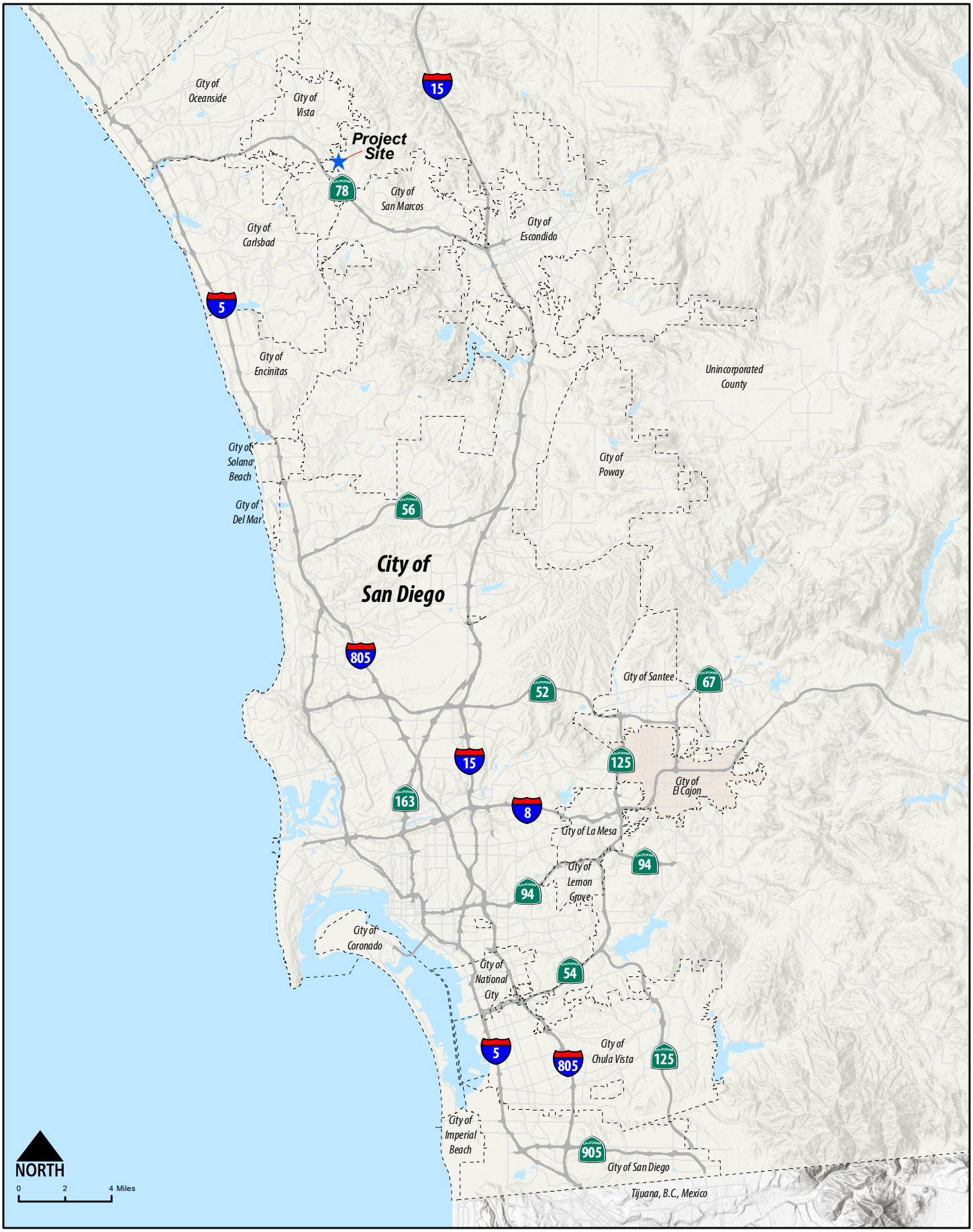
Final Mapping for the project would occur in phases. The first unit would be to create lots 1 and 2 and lot A for finance and conveyance purposes only, not for development. Once the first unit is recorded, Lot 2 will be transferred to the future developer. Lot 2 will then be developed per the conditions of approval for Tentative Tract Map 5647.

Figure 1.1 displays the Project's regional location. **Figure 1.2** displays the project site plan.



Vista II
Focused Local Mobility Analysis

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Figure 1.1
Project Regional Location

Vista II
Focused Local Mobility Analysis

Figure 1.2
Project Site Plan

1.2 Project Trip Generation, Distribution, and Assignment

Project Trip Generation

Project trip generation estimates were derived utilizing the trip generation rates outlined in SANDAG's *(Not So) Brief Guide of Vehicular Traffic Generation Rates for The San Diego Region* (2002). It should be noted that although the Project would replace three (3) existing baseball/sport fields, as a conservative approach no trips from eliminating these uses were credited to the Project. **Table 1.1** displays the anticipated trip generation for the current site plan.

Table 1.1 – Project Trip Generation

Land Use	Units	Trip Rate	ADT	AM Peak Hour					PM Peak Hour				
				%	Trips	Split	In	Out	%	Trips	Split	In	Out
Single-Family Residential	37 Units	10 / DU	370	8%	30	3:7	9	21	10%	37	7:3	26	11

Source: Source: (not so) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (2002)

As shown in Table 1.1, the Project as studied in this LTA would generate a total of 370 daily trips, with 30 occurring in the AM peak Hour (9 inbound, 21 outbound) and 37 occurring in the PM peak hour (26 inbound, 11 outbound).

Project Trip Distribution

The trip distribution for the Project was developed based on the geographical location of the project, as well as the characteristics of the proposed and surrounding land uses. **Figure 1.3** displays the project trip distribution pattern for the Project.

Project Trip Assignment

Based on the project trip distribution pattern, daily and AM/PM peak hour project trips were assigned to the adjacent roadway network. **Figure 1.4** displays the project trip assignment for the Project.

1.3 Project Study Area

Based on the criteria outlined in the County of San Diego *Transportation Study Guidelines* (County TSG) (2022) and the project trip assignment, the following roadway segments and intersections were analyzed in this study:

Roadway Segments

- Hannalei Drive, between West of Watson Way and Watson Way
- Hannalei Drive, between Watson Way and Woodland Drive

Intersections

1. Watson Way & Hannalei Drive (Side-street stop-controlled)
2. Hannalei Drive/Anna Lane & Woodland Drive (All-way stop-controlled)
3. Project Driveway & Hannalei Drive (Side-street stop-controlled)[1]

[1] Intersection provides project access and does not currently exist; therefore, it is only analyzed under the "with Project" scenarios.

Figure 1.5 displays the project study area.

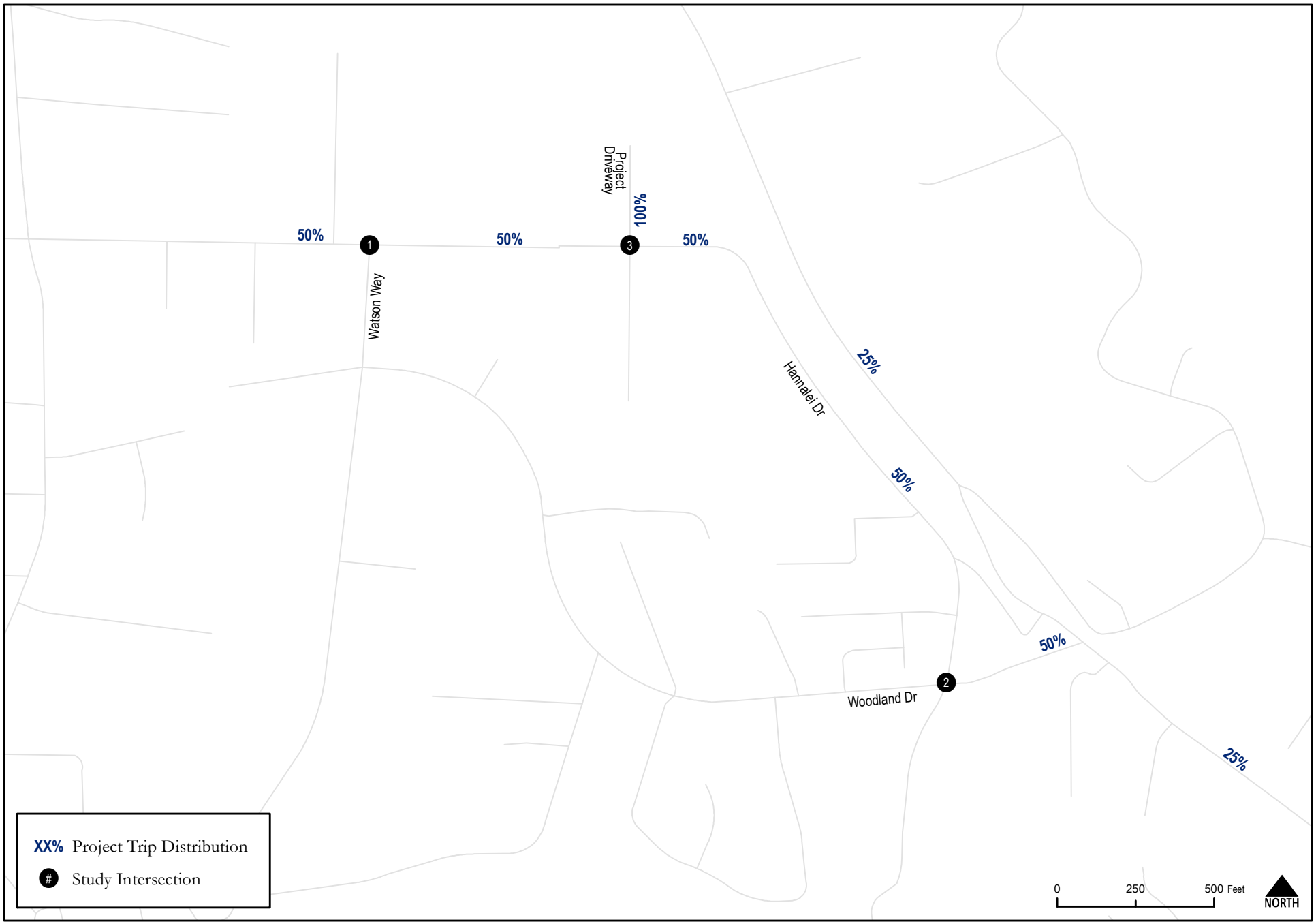

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Figure 1.3
TripDistribution

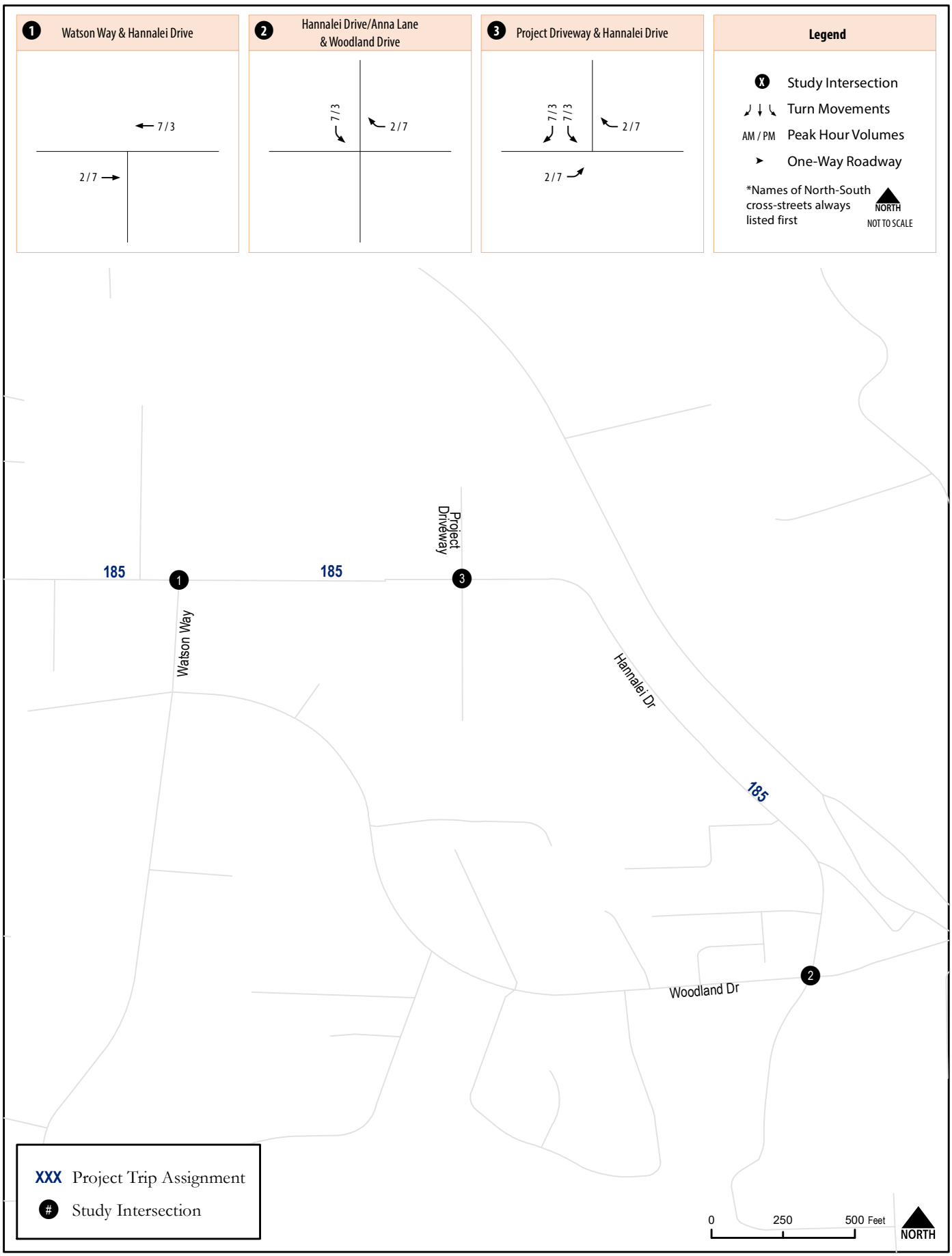

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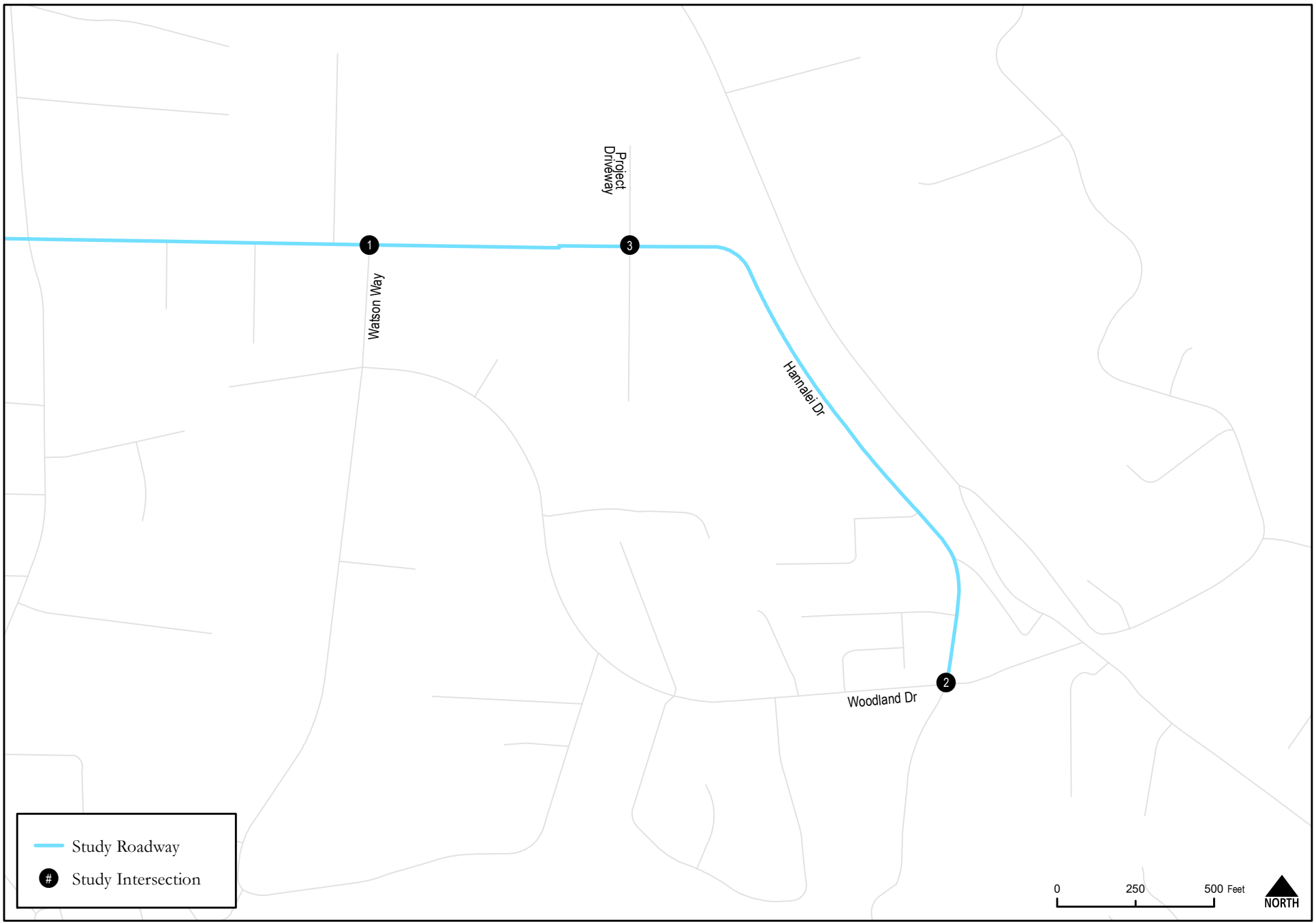
Figure 1.4
Traffic Volumes - Project Trip Assignment



Vista II
Focused Local Mobility Analysis

Figure 1.5
Project Study Area

1.4 Report Organization

Following this introductory chapter, the report is organized into the following chapters:

2.0 **Analysis Methodology** – This chapter reviews the methods utilized to evaluate the Project's effect on the local transportation network, as is required in the County TSG.

3.0 **Project Setting** – This chapter provides a qualitative description of the transportation facilities and services located within the project study area including roadway, active transportation, and transit facilities.

4.0 **Existing Conditions** – This chapter describes and evaluates the existing transportation network. The operations of the vehicular, pedestrian, bicycle, and transit facilities within the study area are evaluated and substandard facilities are identified. LOS analyses and results are provided for both Existing and Existing with Project conditions.

5.0 **Site Access & Parking** – This chapter addresses access to the project site and evaluates the amount of parking that will be provided on-site.

2.0 Analysis Methodology

This Focused LMA was performed in accordance with the standards and requirements identified in the County TSG. The project information form (PIF) is included in **Appendix A**.

2.1 Analysis Guidelines

The County TSG provides standards and thresholds to determine the effect a land development project will have on the local transportation network through a Focused LMA. Although a Focused LMA is not required to satisfy California Environmental Quality Act (CEQA) requirements, the County TSG requires a Focused LMA for projects that generate more than 250 ADT. A Focused LMA helps to provide both the project applicant and the County of San Diego an understanding of how the local transportation network will operate with the implementation of the Project. Additionally, the Focused LMA identifies facilities that may require improvement(s) to address issues related to operations and safety for all transportation modes (vehicle, pedestrian, bicycle, and transit).

2.2 Level of Service (LOS) Definition

LOS is a quantitative measure describing operational conditions within a traffic stream, and the motorist's and/or passengers' perception of operations. A LOS definition generally describes these conditions in terms of such factors as delay, speed, travel time, freedom to maneuver, interruptions in traffic flow, queuing, comfort, and convenience. **Table 2.1** describes generalized definitions of the various LOS categories (A through F) as applied to roadway operations.

Table 2.1 – LOS Definitions

LOS Category	Definition of Operation
A	This LOS represents a completely free-flow condition, where the operation of vehicles is virtually unaffected by the presence of other vehicles and only constrained by the geometric features of the highway and by driver preferences.
B	This LOS represents a relatively free-flow condition, although the presence of other vehicles becomes noticeable. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver.
C	At this LOS, the influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream is clearly affected by other vehicles.
D	At this LOS, the ability to maneuver is notably restricted due to traffic congestion, and only minor disruptions can be absorbed without extensive queues forming and the service deteriorating.
E	This LOS represents operations at or near capacity. LOS E is an unstable level, with vehicles operating with minimum spacing for maintaining uniform flow. At LOS E, disruptions cannot be dissipated readily thus causing deterioration down to LOS F.
F	At this LOS, forced or breakdown of traffic flow occurs, although operations appear to be at capacity, queues form behind these breakdowns. Operations within queues are highly unstable, with vehicles experiencing brief periods of movement followed by stoppages.

Source: Highway Capacity Manual 6th Edition

2.3 Roadway Segment LOS Standards and Thresholds

Roadway segment LOS standards and thresholds provide the basis for analysis of arterial roadway segment performance. The analysis of roadway segment LOS is based on the functional classification of the roadway, the maximum capacity, roadway geometrics, and existing or forecast ADT volumes. **Table 2.2** presents the roadway segment capacity and LOS standards for non-mobility element roads which were utilized to analyze roadways in this report.

Table 2.2 – Roadway Classifications and LOS Standards

Non-Mobility Element Roads	# of Travel Lanes	Level of Service				
		A	B	C	D	E
Residential Collector	2	-	-	< 4,500	-	-
Rural Residential Collector	2	-	-	< 4,500	-	-
Residential Road	2	-	-	< 1,500	-	-
Rural Residential Road	2	-	-	< 1,500	-	-
Residential Cul-de-Sac or Loop Road	2	-	-	< 200	-	-

Source: County of San Diego Transportation Study Guidelines (2022)

These standards are generally used as long-range planning guidelines to determine the functional classification of roadways. The actual capacity of a roadway facility varies according to its physical attributes. Typically, the performance and LOS of a roadway segment is heavily influenced by the ability of its intersections to accommodate peak hour traffic volumes. LOS D is considered acceptable within the County of San Diego.

2.4 Peak Hour Intersection LOS Standards and Thresholds

This section presents the methodologies used to perform peak hour intersection capacity analysis. The following assumptions were utilized in conducting all intersection LOS analyses:

- Peak Hour Factor – PHF was calculated from June 2021 peak hour intersection count data, included in **Appendix B**.
- Saturation Flow Rate – 1,800 vehicles per hour per lane.
- Conflicting Pedestrians and Pedestrian Calls – Based on June 2021 peak hour intersection counts, included in Appendix B.
- Lane Utilization Factor – No unusual lane utilization was observed in the field; therefore, HCM 6th Edition defaults were used for all scenarios.

2.4.1 Unsignalized Intersections

Unsignalized intersections were analyzed using the Highway Capacity 6th Edition side-street stop (Chapter 20), all-way stop (Chapter 21), and roundabout (Chapter 22) intersection analysis methodology. The computerized analysis of intersection operations was performed utilizing the Synchro Version 10 traffic analysis software by Trafficware Ltd.

LOS was determined as follows:

- Side-Street Stop Intersections – Reported for the worst-case approach.

The LOS criteria used for the analysis of unsignalized intersections are described in **Table 2.3**.

Table 2.3 – LOS Criteria for Stop-Controlled Unsignalized Intersections

Average Stopped Delay Per Vehicle (Seconds)	LOS Characteristics
0 – 10	A
> 10 – 15	B
> 15 – 25	C
> 25 – 35	D
> 35 – 50	E
> 50	F

Source: Highway Capacity Manual 6th Edition

2.5 Determination of Project Study Area.

The extents of study for each mode is determined based on the LMA type and travel mode.

Vehicle

The extent of study for vehicle (intersection) analysis is based on the consistency with the General Plan, forecasted daily project trips, and the criteria listed in **Table 2.4**.

Table 2.4 – Extent of Study for Vehicle (Intersection) Analysis

Consistency with General Plan	Focused LMA	Full LMA
Land Use Consistent with General Plan	**250-499 Daily Trips** Site Access Driveways and Intersections that receive 50% or more of the total peak hour project trips (25 trip minimum) or have known operational concerns	**500 or greater Daily Trips** Site Access driveways and intersections where at least 50 project peak hour trips are added or have known operational concerns (if the project does not contribute 50 peak hour trips total to any intersection, then the study intersections will be intersections that receive 50% or more of the total peak hour project generated trips)
Land Use Inconsistent with General Plan	N/A	**250 or greater Daily Trips** Site Access driveways and intersections where at least 25 project peak hour trips are added or have known operational concerns

Source: County of San Diego Transportation Study Guidelines (2022)

Active Transportation

- Pedestrian – Documentation of existing and planned pedestrian facilities and basic deficiencies (missing sidewalk, curb ramps, and major obstructions) within 1/4-mile walking distance measured from each pedestrian access point.
- Bicycle – Documentation of existing and planned bicycle facilities and basic deficiencies (bike lane gaps, obstructions) within one-mile bicycling distance measured from the center of the intersection formed by each project driveway.
- Transit – Identification of the closest transit routes and stops to the project within 1/4-mile walking distance and documentation of amenities at existing transit stops (i.e., shelters, maps, benches, etc.).
- Trails – Documentation of all planned trails and pathways identified in the County's Community Trails Master Plan (CTMP) within 1/4-mile of the project site.

2.6 Determination of the Need for Off-Site Improvements

In general, a project should consider all feasible improvements to accommodate all modes of project traffic, including vehicular, pedestrian, bicycle, and transit. Improvements should be considered both around the Project's frontage and within the study area. The County TSG provides thresholds and recommendations for improvements associated with study intersections. **Table 2.5** displays the County TSG improvement requirements and recommendations for study intersections.

Table 2.5 – Improvement Requirements and Recommendations

Intersection Control	Improvement Required If	Typical Improvements
Signalized	▪ Consistent with County General Plan Policy, any intersection that is operating at an acceptable LOS or better without project traffic in which the addition of project traffic causes the intersection to degrade to an LOS E or F should identify improvements to improve operations to LOS D or better. ▪ Any signalized study intersection that is operating at LOS E or F without project traffic where the project increased delay by 5.0 or more seconds should identify improvements to offset the increase in delay. ▪ If the left turn volume exceeds 100 vehicles per hour, an exclusive left turn lane is recommended. ▪ If the left turn volume exceeds 150 vehicles per hour and posted speed 45 mph or greater, a protected left turn signal phase is recommended. ▪ If the left turn volume exceeds 300 vehicles per hour, a second left turn lane is recommended. ▪ If the right turn volume exceeds 150 vehicles per hour, a dedicated right turn lane is recommended. ▪ The project causes the 95th percentile queue at a turn lane to exceed the existing turn lane length/storage	▪ Addition of left or right turn lanes. ▪ Lengthening a turn lane. ▪ Signal timing/phasing/coordination/equipment improvements or transportation system management (TSM). ▪ ADA signal accessible improvements. ▪ The County may also require upgrades to meet current design standards or better accommodate pedestrian and bicycle mobility consistent with the County Active Transportation Plan

Unsignalized	**All-Way Stop and Roundabout**
	▪ The project causes the average intersection delay to be LOS E or F during the peak hour.
	▪ The project adds 5 or more seconds of delay to an intersection that is currently operating at LOS E or F during the peak hour.
	▪ The intersection meets the peak hour traffic signal warrants after the addition of project traffic per the California Manual on Uniform Traffic Control Devices (CA MUTCD–latest edition). An investigation of the need for a traffic control signal may also include an analysis of factors related to the existing operations and safety at a study intersection and the potential to improve these conditions. A warrant analysis is not required for right turn in/right turn out only intersections or driveways that are physically restricted by raised center median.
	Side-Street Stop
	▪ The project causes the average intersection delay to be LOS E or F during the peak hour.
	▪ If the worst-case movement is currently operating at LOS E or F.
	  ○ The project adds 5 or more seconds of overall intersection.
	  AND
	  ○ The project adds ten (10) or more trips to the worst-case movement OR 50 or more trips to the overall intersection.
	▪ The intersection meets the peak hour traffic signal warrants after the addition of project traffic per the California Manual on Uniform Traffic Control Devices (CA MUTCD–latest edition). An investigation of the need for a traffic control signal may also include an analysis of factors related to the existing operations and safety at a study intersection and the potential to improve these conditions. A warrant analysis is not required for right turn in/right turn out only intersections or driveways that are physically restricted by raised center median.
		▪ Install All-Way Stop Control.
		▪ Install Two-Way Stop Control.
		▪ Provide Left Turn Lane.
		▪ Provide Right Turn Lane.
		▪ Install Bypass Lane.
		▪ Install Center Acceleration Lane.
		▪ Install new traffic control device (Perform intersection control evaluation (ICE), see below).
		▪ The County may also require upgrades to meet current design standards or better accommodate pedestrian and bicycle mobility consistent with the County ATP

Source: County of San Diego Transportation Study Guidelines (2022)

3.0 Project Setting

This chapter provides a qualitative description of the transportation network facilities within the project study area.

3.1 Vehicular Facilities

Descriptions of all study roadway facilities are provided in **Table 3.1**. Existing physical characteristics of roadway segments within the project study area were collected via field work, as well as street-level (Google StreetView) and aerial (Nearmap) imagery.

Table 3.1 – Existing Transportation Network Characteristics

Roadway	Segment	# of Lanes	Median Type	Posted Speed Limit	Parking	Sidewalk?	Bike lanes?	Transit Route
Hannalei Drive	West of Watson Way to Watson Way	1 EB/1 WB	Undivided	No Posted Speed Limit	Parallel	Contiguous / Non-contiguous	None	None
Hannalei Drive	Watson Way to Woodland Drive	1 EB/1 WB	Undivided	25 MPH	Prohibited	Missing	None	None

Source: CR Associates (2024)

3.2 Pedestrian Facilities

Table 3.2 summarizes pedestrian facilities to the extents required per the County TSG, including existing substandard or missing pedestrian facilities (e.g., missing sidewalks and curb ramps, narrow sidewalks, other major obstructions).

Table 3.2 – Pedestrian Facilities and Conditions

Roadway	Segment	North/East Side		South/West Side	
		Type	Conditions	Type	Conditions
Avocado Drive	Mar Vista Drive to Hannalei Drive	Missing	N/A	Missing	N/A
Hannalei Drive	Avocado Drive to Watson Way	Missing	N/A	Missing	N/A
Hannalei Drive	Watson Way to Woodland Drive	Contiguous (Intermittently)	Approximately 275 feet of sidewalk north of Woodland Drive.	Contiguous	Unobstructed
Woodland Drive	Hannalei Drive to Sycamore Avenue	Contiguous	Unobstructed	Contiguous (Intermittently)	Dirt except where vehicle driveways are present

Source: CR Associates (2024)

Note:
N/A = Not Applicable

As shown in Table 3.2, within the project study area there are missing segments of sidewalk along Avocado Drive, Hannalei Drive, and Woodland Drive. Additionally, curb ramps were observed to be missing at the following locations:

- Avocado Drive & Hannalei Drive – Southeast and southwest corners
- Watson Way & Hannalei Drive – Southeast and southwest corners
- Hannalei Drive/Anna Lane & Woodland Drive – Southeast corner

3.3 Bicycle Facilities

Table 3.3 summarizes bicycle facilities to the extents required per the County of San Diego TSG, including existing bicycle facilities and substandard or missing facilities (e.g., bike lane gaps, obstructions). Planned bicycle facilities, per the *County of San Diego Active Transportation Plan* (October 2018), are also identified.

Table 3.3 – Bicycle Facilities and Conditions

Roadway	Segment	Existing		Ultimate Classification
		Facility	Conditions	
Avocado Drive	Mar Vista Drive to Hannalei Drive	None	N/A	No bike facility
Hannalei Drive	Avocado Drive to Watson Way	None	N/A	No bike facility
Hannalei Drive	Watson Way to 1,150 feet east of Watson Way	None	N/A	No bike facility
Hannalei Drive	Watson Way to Woodland Drive	Class I	Separated cycle track runs along the east side.	Class I
Woodland Drive	Hannalei Drive to Sycamore Avenue	None	N/A	No bike facility

Source: CR Associates (2024)

Note:
N/A = Not Applicable.

As shown in Table 3.3, existing bicycle facilities within the project study area are built to their ultimate classification. Therefore, no bicycle facility improvements are required in the study area.

3.4 Transit Facilities

NCTD Bus Routes 305 (described below) operates within a ½ mile radius of the Project. Detailed NCTD Route information is provided in **Appendix C**.

- NCTD Bus Route #305 (Escondido to Vista via Mission Road & South Santa Fe Avenue) – Within the Project vicinity, this route operates primarily on South Santa Fe Avenue and connects both the Vista Transit Center and the Escondido Transit Center. On weekdays, this route operates with a frequency of approximately 30-minute headways between the hours of 4:19 AM and 10:54 PM and followed by one additional service approximately 60 minutes later. During the weekend, this route operates with a frequency of approximately 30-minute headways between the hours of 5:15 AM and 9:54 PM and followed by one additional service approximately 60 minutes later. It should be noted that this route offers services during the holidays.

There are no transit stops located along project frontage. The closest transit stops (within ½ mile radius of the Project) is located at the northwest corner of the intersection of South Santa Fe Avenue & Woodland Drive/York Drive. **Table 3.4** displays the transit amenities at the four (4) transit stops located within ½ mile radius of the Project.

Table 3.4 – Existing Transit Amenities

Segment	Transit Stop			
	South Santa Fe Avenue & Mar Vista Drive Stop No. 21815	South Santa Fe Avenue & Montgomery Drive Stop No. 20494	South Santa Fe Avenue & Woodland Drive Stop No. 20305	South Santa Fe Avenue & York Drive Stop No. 20495
NCTD Route	305	305	305	305
Direction of Travel	Southbound	Northbound	Southbound	Northbound
Boardings				
Alightings				
Bus Stop Sign	X	X	X	X
ADA Accessible Pad	X	X		
Bench		X	X	X
Shelter			X	
Trash Receptacle		X	X	X
Lighting	X	X		
Bike Rack				
System/Route Map				
Wayfinding				
Digital Message Signs				

Source: CR Associates (2024)

4.0 Existing Conditions

This chapter provides an analysis of the existing vehicular operations along roadway segments and intersections in the study area.

4.1 Existing Roadway Network and Traffic Volumes

Figure 4.1 displays the study area roadway functional classifications and intersection geometrics under Existing conditions.

This section presents the existing daily and peak hour traffic volume information. Traffic counts were conducted along the study roadway segments and intersections on June 22, 2021, by Counts Unlimited, Inc. To ensure that current travel patterns reflect traffic conditions prior to the COVID-19 restrictions, a count validation was conducted. Big data information from February 2019 (pre COVID-19) was compared against data collected from June 2021 and current travel patterns were observed to be similar (less than 5% variations) to the pre-COVID-19 conditions. Therefore, it was deemed that June 2021 traffic counts are appropriate to utilize for this LMA.

Existing traffic counts and big data summary are provided in Appendix B. Daily traffic and AM/PM peak hour turning movement volumes for study roadway segments and intersections are displayed in **Figure 4.2**.

4.2 Existing Traffic Conditions

LOS analyses under Existing conditions were conducted using the methodologies described in Chapter 2. Roadway segment and intersection LOS analysis results are discussed below.

4.2.1 Roadway Segment Analysis

Table 4.1 displays the LOS analysis results for the study roadway segments under Existing conditions. As shown in the table, both study roadway segments currently operate below capacity under this scenario.

4.2.2 Intersection Analysis

Table 4.2 displays intersection LOS and average vehicle delay results for the study intersections under Existing conditions. LOS calculation worksheets are provided in **Appendix D**. As shown in the table, all of the study intersections currently operate at acceptable LOS A during both the AM and PM peak hours under this scenario.

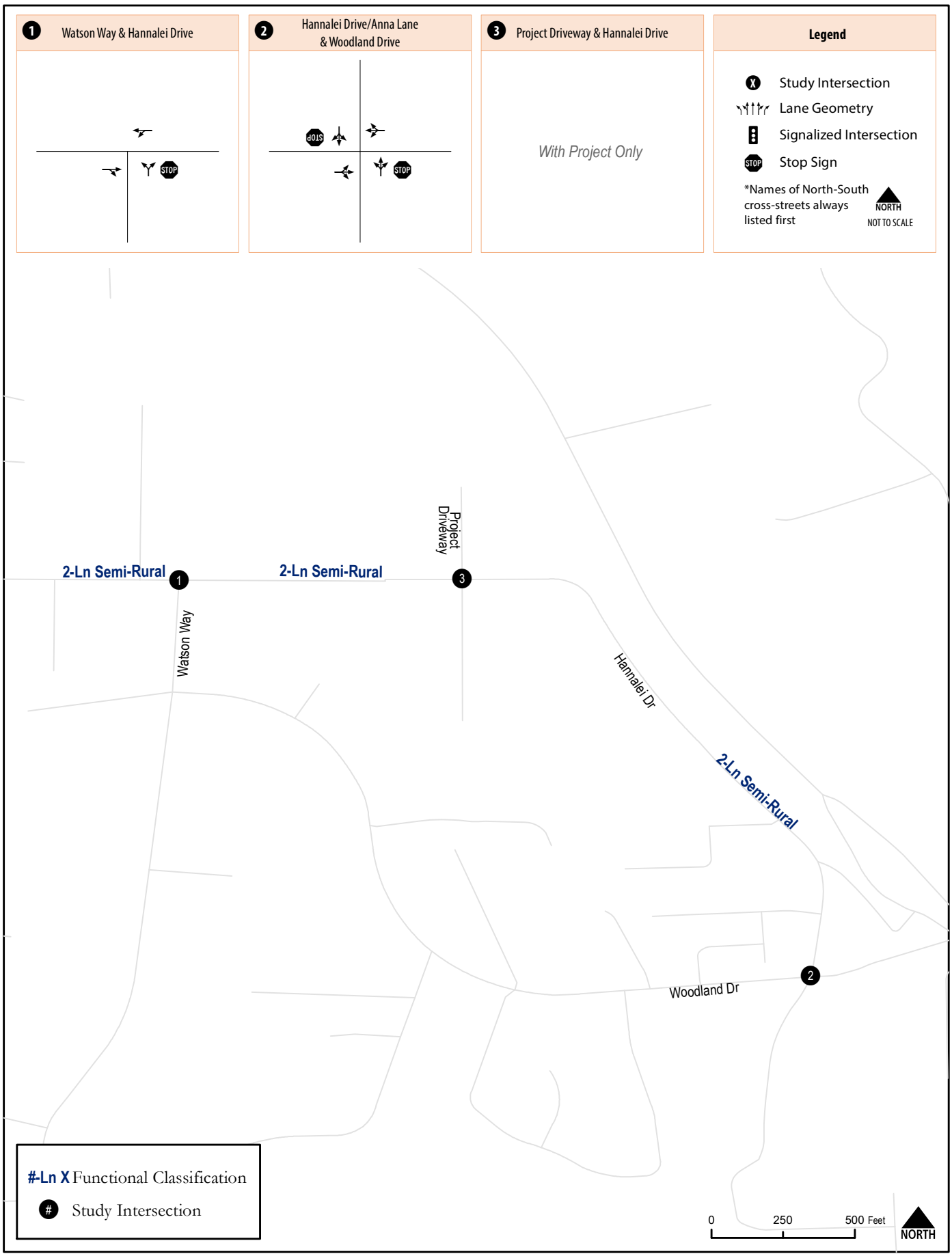


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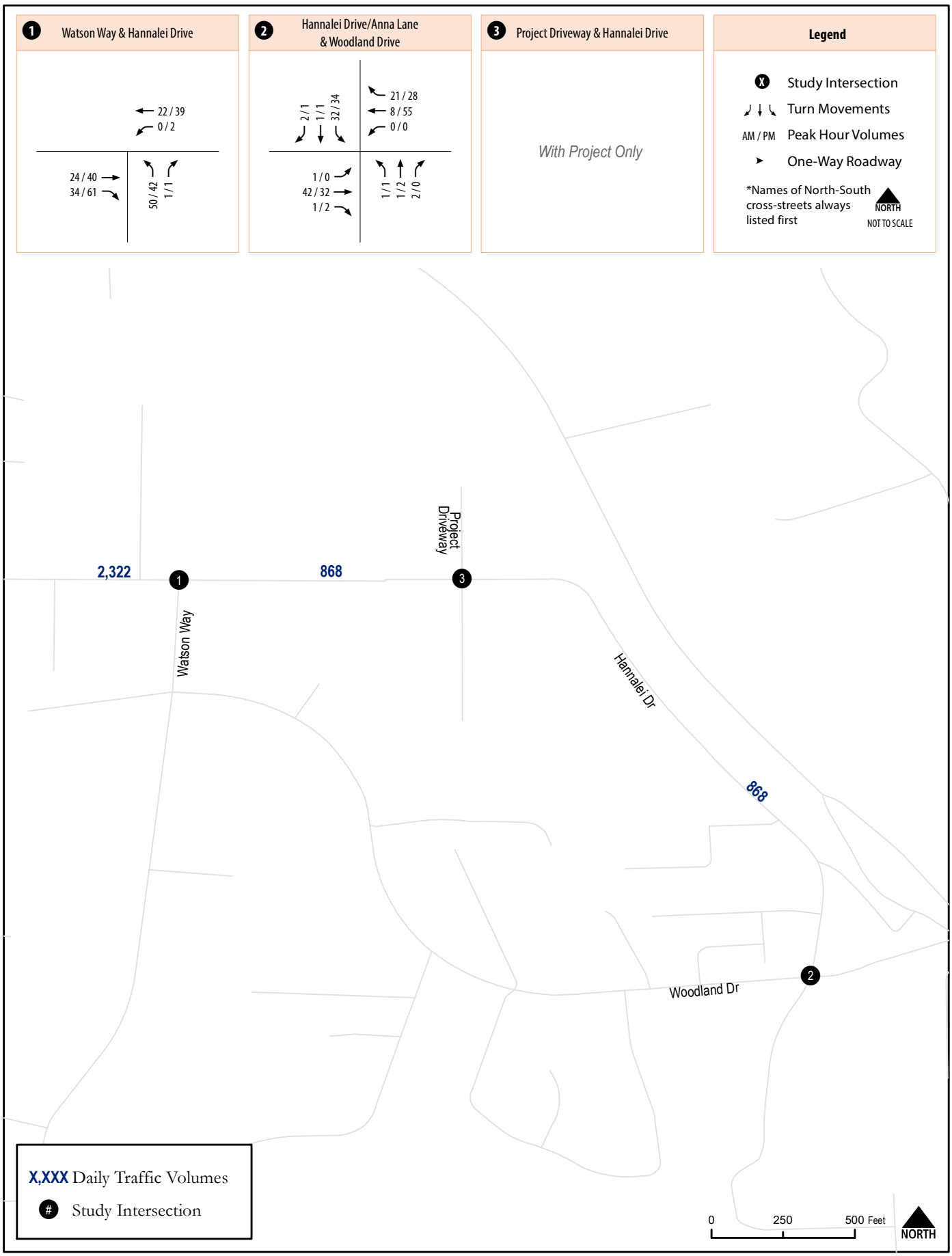
Figure 4.1
Functional Classifications and Geometrics



Vista II
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Figure 4.2
Traffic Volumes - Existing Conditions

Table 4.1 – Roadway Segment LOS Results – Existing Conditions

Roadway	Segment	Functional Classification	Daily Volume	Roadway Capacity (LOS E)	V/C	LOS
Hannalei Drive	West of Watson Way to Watson Way	Residential Collector	2,322	4,500	0.516	Below Capacity
Hannalei Drive	Watson Way to Woodland Drive	Residential Collector	868	4,500	0.193	Below Capacity

Source: CR Associates (2024)

Table 4.2 – Peak Hour Intersection LOS Results – Existing Conditions

Intersection	Peak Hour	Traffic Control	Delay (sec/veh)	LOS
1. Watson Way & Hannalei Drive	AM	SSSC	9.1	A
	PM		9.4	A
2. Hannalei Drive/Anna Lane & Woodland Drive	AM	SSSC	9.1	A
	PM		9.5	A

Source: CR Associates (2024)

Note:
SSSC = Side-street stop-controlled intersection and the delay shown is the worst delay experienced by any of the approaches.

4.3 Existing with Project Roadway Network and Traffic Volumes

Functional classifications and intersection geometrics under Existing with Project conditions were assumed to be identical to Existing conditions (Figure 4.1) with the exception of the new project driveway proposed on the north side of Hannalei Drive approximately 950 feet east of Watson Way. This new driveway will provide full access and will function as a side-street stop-controlled intersection.

Traffic volumes for Existing with Project conditions were derived by adding project trips (Figure 1.4) to the Existing conditions traffic volumes (Figure 4.2). Daily roadway and peak hour intersection volumes for this scenario are displayed in **Figure 4.3**.

4.4 Existing with Project Traffic Conditions

LOS analyses under Existing with Project conditions were conducted using the methodologies described in Chapter 2. Roadway segment and intersection LOS analysis results are discussed separately below.

4.4.1 Roadway Segment Analysis

Table 4.3 displays the LOS analysis results for the study roadway segments under Existing with Project conditions. As shown in the table, both study roadway segments are projected to operate below capacity under this scenario.

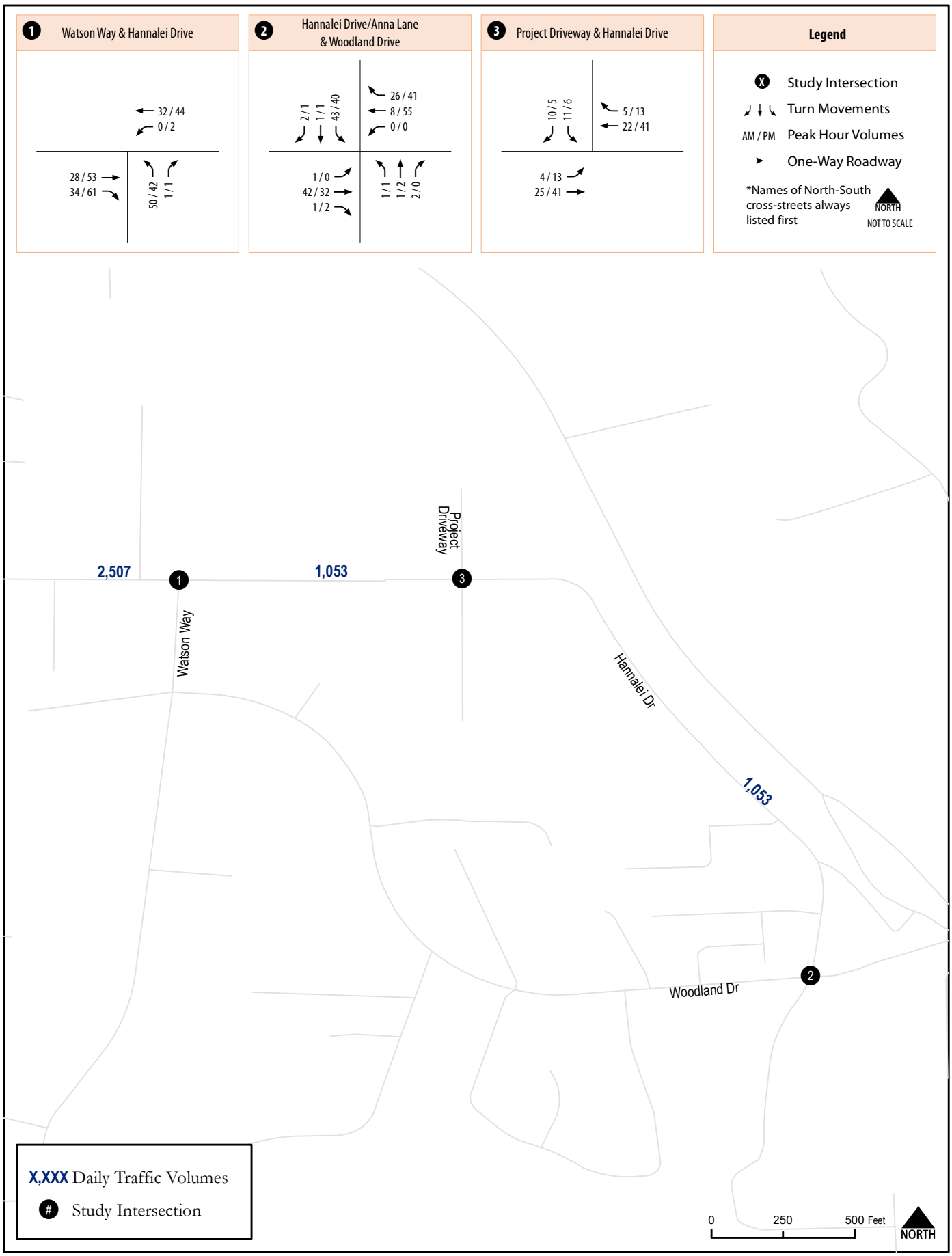
4.4.2 Intersection Analysis

Table 4.4 displays intersection LOS and average vehicle delay results for the study intersections under Existing with Project conditions. LOS calculation worksheets are provided in **Appendix E**. As shown in the table, all of the study intersections are projected to operate at acceptable LOS A during both the AM and PM peak hours under this scenario.

4.5 Determination of the Need for Off-Site Improvements

This section identifies the recommended off-site improvements under Existing with Project conditions, consistent with the County of San Diego TSG.

Based upon the LOS analysis results presented above, and the significance criteria presented in Section 2.6, the addition of Project traffic would not have any adverse effect on traffic operations at any of the study facilities under Existing with Project conditions. Therefore, no improvements will be required.



Vista II
Focused Local Mobility Analysis

Figure 4.3
Traffic Volumes - Existing with Project Conditions

Table 4.3 – Roadway Segment LOS Results – Existing with Project Conditions

Roadway	Segment	Functional Classification	Daily Volume	Roadway Capacity (LOS E)	V/C	LOS		Δ V/C
						Existing with Project	Existing	
Hannalei Drive	East of Watson Way to Watson Way	Residential Collector	2,507	4,500	0.557	Below Capacity	Below Capacity	0.023
Hannalei Drive	Watson Way to Project Driveway	Residential Collector	1,053	4,500	0.234	Below Capacity	Below Capacity	0.023
Hannalei Drive	Project Driveway to Woodland Drive	Residential Collector	1,053	4,500	0.234	Below Capacity	Below Capacity	0.023

Source: CR Associates (2024)

Notes:
E = Existing Conditions; E+P = Existing with Project Conditions

Table 4.4 – Peak Hour Intersection LOS Results – Existing with Project Conditions

Intersection	Peak Hour	Traffic Control	Existing with Project		Existing		Δ Delay
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	
1. Watson Way & Hannalei Drive	AM	SSSC	9.2	A	9.1	A	0.1
	PM		9.5	A	9.4	A	0.1
2. Hannalei Drive/Anna Lane & Woodland Drive	AM	SSSC	9.2	A	9.1	A	0.1
	PM		9.6	A	9.5	A	0.1
3. Project Driveway & Hannalei Drive	AM	SSSC	8.7	A	N/A	N/A	8.7
	PM		8.9	A	N/A	N/A	8.9

Source: CR Associates (2024)

Note:
SSSC = Side-street stop-controlled intersection, and the delay shown is the worst delay experienced by any of the approaches.

5.0 Site Access and Parking

This chapter addresses vehicular access to the project site and parking requirements.

5.1 Vehicular Access

Access to the Project will be provided via a full-access driveway along the north side of Hannalei Drive with one inbound and one outbound lane. Based upon review of the project site plan, the following comments on site access are offered:

- The project should provide and install a stop sign at the project driveway, as well as ensure the driveway meets minimum sight distance requirements.

5.2 Project Parking

Table 5.1 summarizes the Project's required and provided parking, per the County of San Diego Zoning Ordinance Section 6758.

Table 5.1 – Project Parking

Type	Requirement	Requirement Rate	Amount	Minimum Parking Required	Parking Provided
Residential	County of San Diego Zoning Ordinance Section 6758	2/DU	37 DU	74	148

Notes:
DU = Dwelling Unit.

As shown, the Project is required to provide a minimum of 74 parking spaces. The Project proposes a total of 148 parking spaces. Therefore, the Project satisfies the parking requirements. It should be noted that per the County of San Diego Zoning Ordinance Section 6758, bicycle spaces are not required for single-family dwelling units.

Appendix A
Project Information Form

General Project Information and Description

Project Information

Project Name: Vista II

Project PDS Number:

Project Location: 145 Hannalei Drive, Vista, CA

Project Description

Land Uses and Intensities: 37 Single-Family Residential Dwelling Units

Gross and Developable Acreage: 6.01 Acres

Number of Vehicle Parking Spaces: 148

Bicycle Storage Capacity: 0 (Not required for single-family residential)

Motorcycle Spaces: 0 (Not required for single-family residential)

Consultant

Name of Firm: CR Associates

Project Manager: Phuong Nguyen

Address: 3900 Fifth Avenue, Suite #310, San Diego, CA 92103

Telephone: (619) 795-6086

Trip Generation

Source: SANDAG	**Pass-by Trips:** 0
Total Daily Trips: 370	**Diverted Trips:** 0
Internal Capture Rate: 0	**Trip Credit:** 0
Alternative Modes: 0	**Net Daily Trips:** 370

General Plan Consistency

Is this project consistent with the General Plan? ☑ **Yes** ☐ **No**

Site Plan

Attach 11x17 copies of the project location/vicinity map and site plan containing the following:

- Driveway locations and access type
- Pedestrian access, bicycle access, and on-site pedestrian circulation
- Location and distance to closest existing transit stop (measure as walking distance to project entrance or middle of parcel
- Location of any planned trails identified in the Community Trails Master Plan (CTMP) within ¼ mile of the project location

CEQA Transportation Analysis Screening

Project Type Screening

1) Select the Land Uses that apply to your project 2) Answer the questions for each Land Use that applies to your project *(if "Yes" in any land use category below then that land use (or a portion of the land use) is screened from CEQA Transportation Analysis)*	Screened Out Yes	Not Screened Out No
☑ **1. Small Projects:**		
a. Does the project result in 110 daily trips or less?	☐	☑
☐ **2. Small Service/Retail Project:**		
a. Is the project less than 50,000 square feet?	☐	☐
☐ **3. Mixed-Use Project:**		
a. Is the project location screened out based on the SANDAG screening map for VMT/service population?	☐	☐
☐ **4. Locally Serving Retail/Public Facility/Recreational**		
a. Is the project locally serving: Retail OR Public Facility OR Recreational?	☐	☐
☑ **5. Redevelopment Project:**		
a. Does the project result in a net decrease in total Project VMT than the existing use?	☐	☑
b. If the project is to redevelop an affordable housing site, are all proposed units affordable housing units? Mark "No" for projects that replace affordable housing with market rate units	☐	☑

Project Location Screening (if not screened based on project type) – Part 1

Is this project located within a grey area (area with little to no existing land use) on the applicable County screening maps for the project land use type?	☐ **Yes**	☐ **No**

If "yes", the project cannot be screened based on location. If "No", proceed to Part 2.

Project Location Screening (if not screened based on project type) – Part 2

1) Select the Land Uses that apply to your project 2) Answer the questions for each Land Use that applies to your project *(if "Yes" in any land use category below then that land use (or a portion of the land use) is screened from CEQA Transportation Analysis)*	Screened Out Yes	Not Screened Out No
☑ **1. Residential**		
a. Is the project location screened out using the County screening maps for VMT/resident?	☑	☐
☐ **2. Employment**		
a. Is the project location screened out using the County screening maps for VMT/employee or VMT/service population?	☐	☐
☐ **3. Retail/Public Facility/Recreational**		
a. Is the project location screened out using the County screening maps for VMT/service population?	☐	☐
☐ **4. Infill Screening**		
a. Is the project location screened out using the County screening maps for Infill locations?	☐	☐

Local Mobility Analysis

Type of Local Mobility Analysis (LMA)

☐	**Site Access Study**	249 daily trips or less
☑	**Focused LMA**	250 to 499 daily trips and consistent with the General Plan
☐	**Full LMA**	500 or greater daily trips and consistent with the General Plan, or 250 or greater daily trips and inconsistent with the General Plan

Trip Distribution

☐	**Select Zone (Model Series_____)**	Projects that generate greater than 1,000 daily trips
☑	**Manual Estimation**	Site Access Studies, Focused LMAs, or project's that generate less than 1,000 daily trips

Provide exhibit detailing trip distribution and trip assignment for review.

Study Intersections (and Roadway Segments) **(NOTE: Subject to change based of staff review)**

1. Hannalei Drive, west of Watson Way	**6.**
2. Hannalei Drive, between Watson Way and Woodland D	**7.**
3. Watson Way & Hannalei Drive	**8.**
4. Hannalei Drive/Anna Lane & Woodland Drive	**9.**
5. Project Driveway & Hannalei Drive	**10.**

Attach a separate page if the number of study locations exceeds 10.

Other Jurisdictions

Is this project located within one mile of another Local Jurisdiction? ☑ **Yes** ☐ **No**

If so, name of Jurisdiction: City of Vista

Specific Issues to be addressed within the Study

(in addition to requirements described in the Guidelines – to be filled out by County Staff)

1.
2.
3.
4.
5.

Recommended by:

Consultant's Representative	Date
Scoping Agreement Submitted on	Date
Scoping Agreement Re-submitted on	Date

Approved Scoping Agreement:

County of San Diego Transportation Specialist	Date

Vista II
Project Information Form

Project Site Plan

Location and Distance to Closest Transit Stop

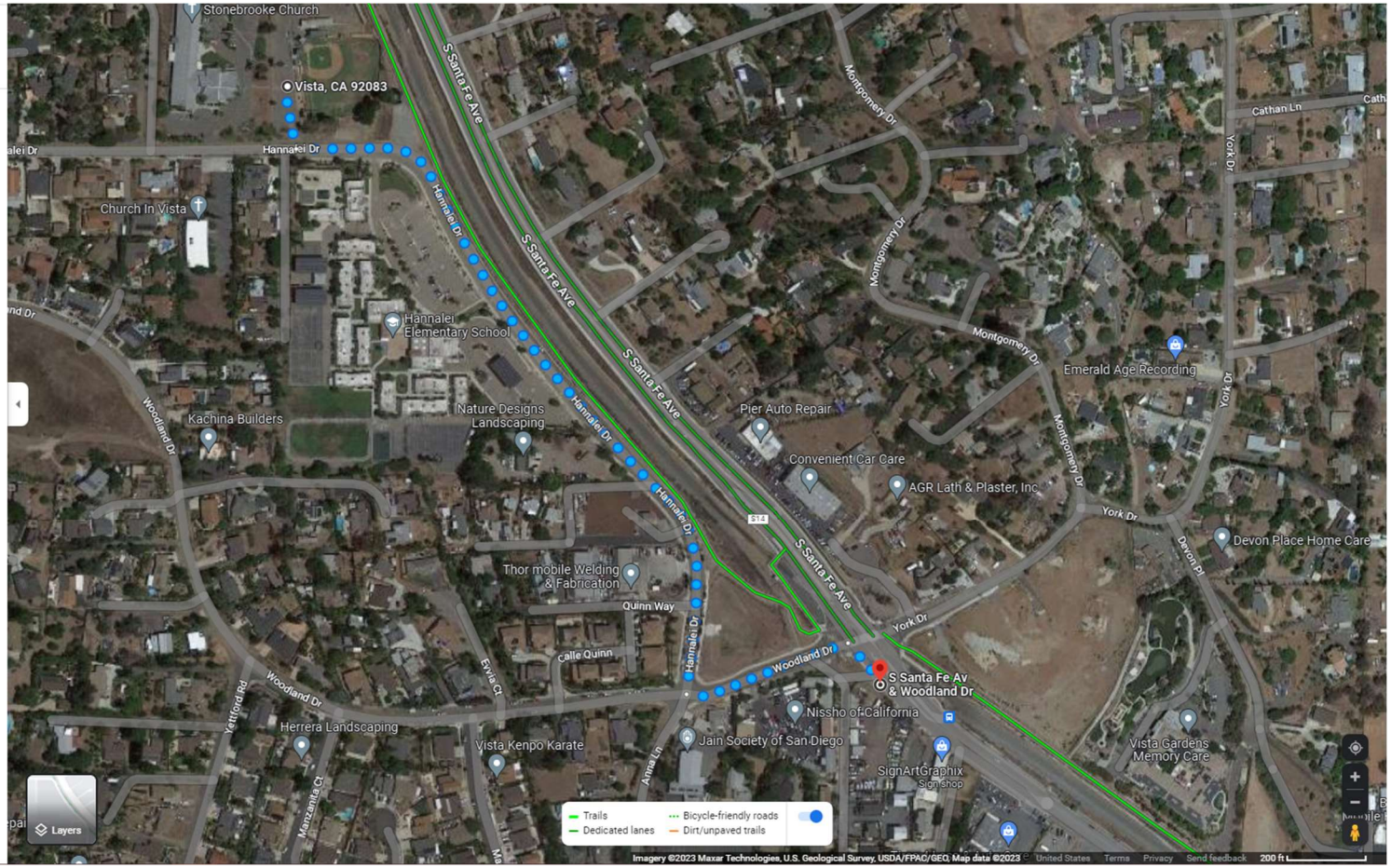
10 min (0.5 mile)
via Hannalei Dr
Mostly flat

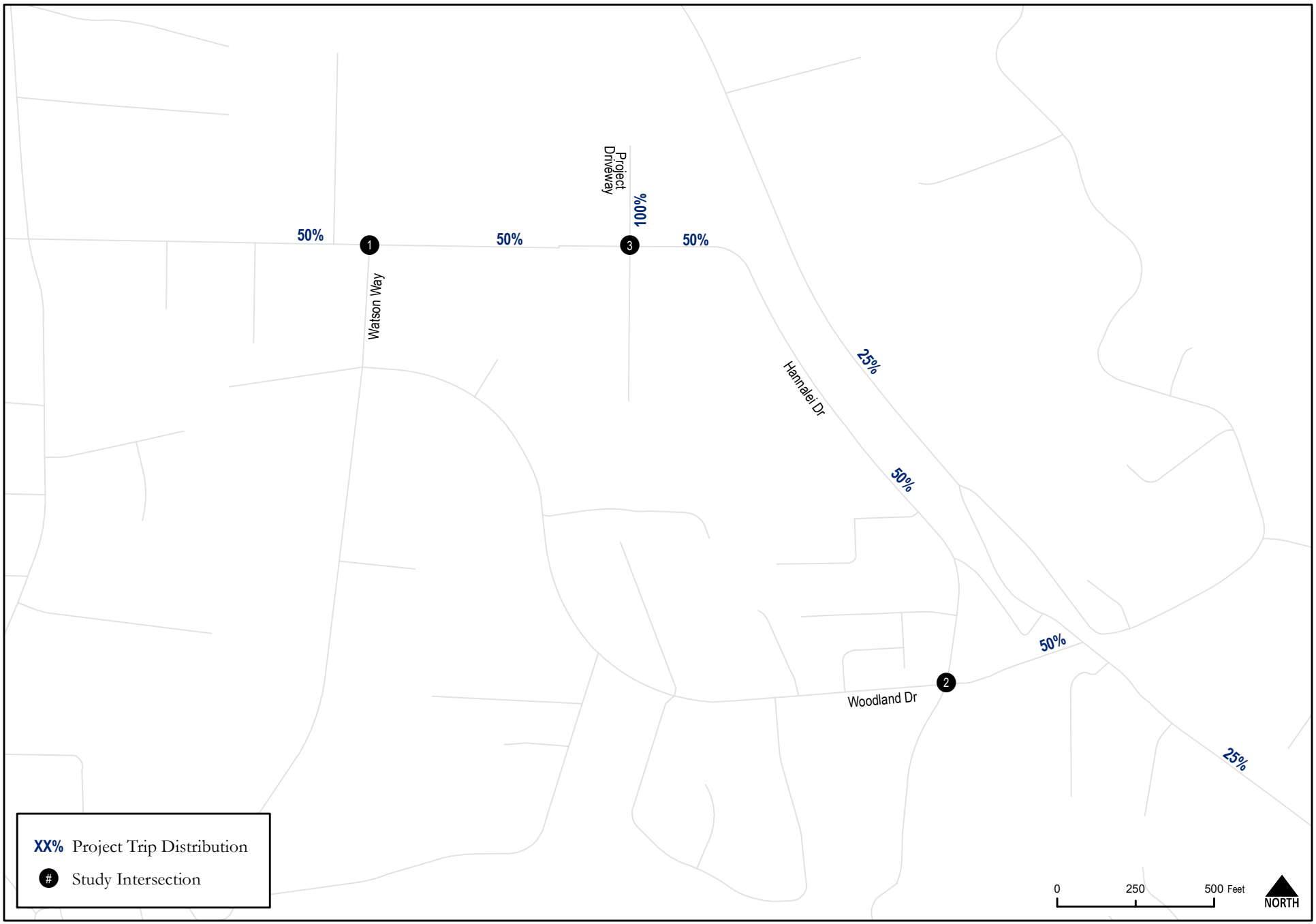
Use caution–walking directions may not always reflect real-world conditions

Vista
California 92083

- Head south toward Hannalei Dr — 161 ft
- Turn left onto Hannalei Dr — 0.4 mi
- Turn left onto Woodland Dr — 449 ft
- Turn right onto S Santa Fe Ave — Destination will be on the right — 128 ft

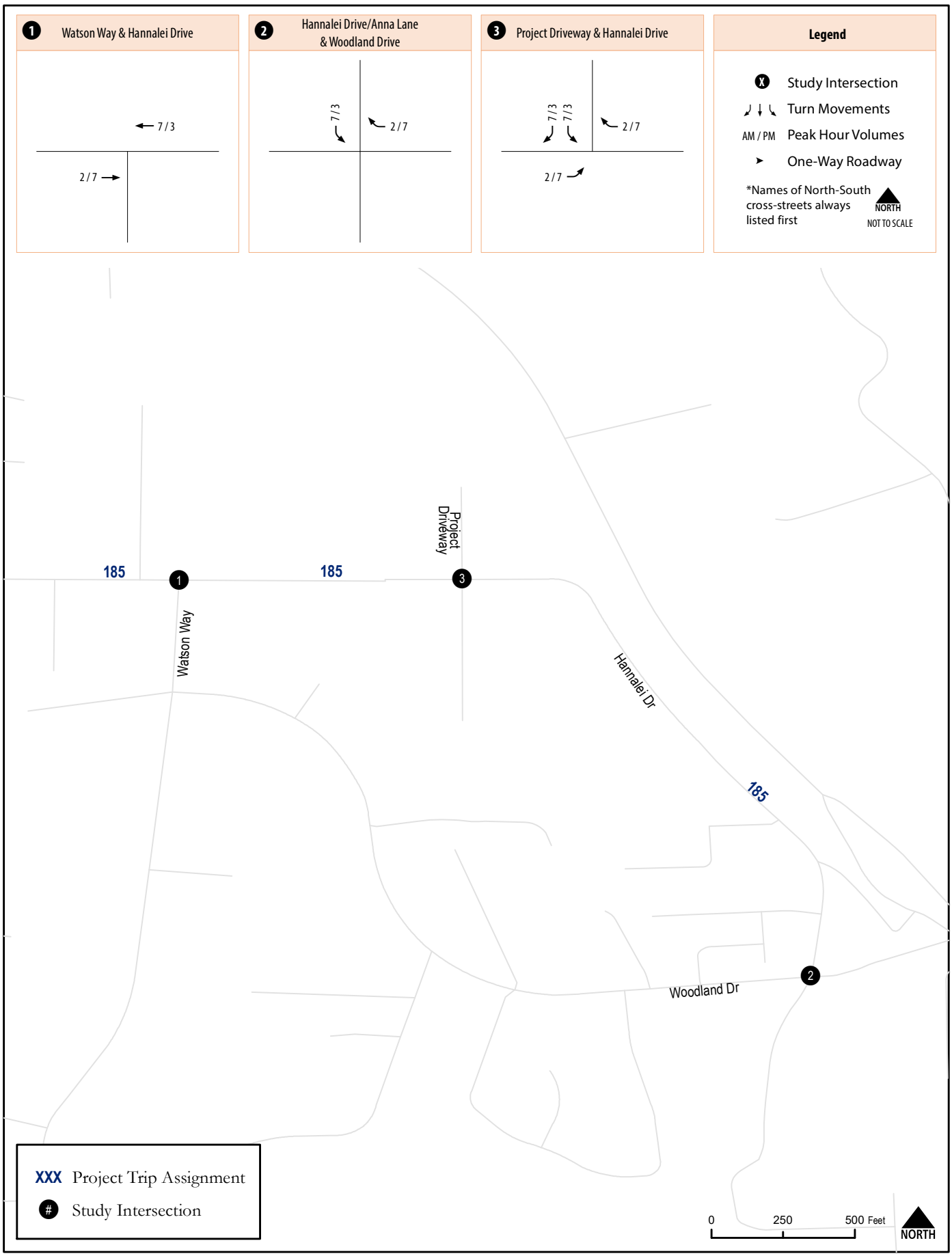
S Santa Fe Av & Woodland Dr
California 92083





Vista 4.8
Project Information Form

Trip Distribution



Vista 4.8
Project Information Form

Project Trip Assignment

Appendix B
Traffic Counts and Count Validation

Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92787
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of Vista
Hannelei Drive
E/ Watson Way
24 Hour Directional Volume Count

VST002
Site Code: 229-21293

Start Time	22-Jun-21 Tue	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		0	4			0	5				
12:15		2	11			0	7				
12:30		1	8			0	3				
12:45		0	8	3	31	0	7	0	22	3	53
01:00		0	5			0	10				
01:15		0	8			0	6				
01:30		2	11			0	8				
01:45		0	5	2	29	0	6	0	30	2	59
02:00		0	8			1	0				
02:15		1	10			0	7				
02:30		0	5			0	**12**				
02:45		0	6	1	29	0	**9**	1	28	2	57
03:00		0	10			0	**9**				
03:15		0	8			0	**10**				
03:30		1	9			0	10				
03:45		0	11	1	38	1	5	1	34	2	72
04:00		2	7			0	3				
04:15		0	8			0	1				
04:30		0	6			1	8				
04:45		1	7	3	28	1	7	2	19	5	47
05:00		3	4			2	12				
05:15		3	8			0	1				
05:30		**11**	5			1	4				
05:45		**18**	12	35	29	1	7	4	24	39	53
06:00		**5**	9			12	3				
06:15		**5**	5			5	1				
06:30		8	**11**			5	2				
06:45		3	**13**	21	38	6	10	28	16	49	54
07:00		4	**9**			**6**	9				
07:15		6	**11**			**8**	8				
07:30		8	6			**8**	7				
07:45		6	4	24	30	**7**	4	29	28	53	58
08:00		7	5			4	4				
08:15		2	8			4	3				
08:30		1	10			6	3				
08:45		8	7	18	30	2	5	16	15	34	45
09:00		5	2			3	3				
09:15		8	2			3	4				
09:30		7	8			3	5				
09:45		7	3	27	15	5	2	14	14	41	29
10:00		5	1			11	4				
10:15		3	3			6	1				
10:30		6	3			4	0				
10:45		4	0	18	7	1	2	22	7	40	14
11:00		5	1			8	1				
11:15		9	3			3	0				
11:30		7	1			6	0				
11:45		8	0	29	5	5	0	22	1	51	6
Total		182	309	182	309	139	238	139	238	321	547
Combined Total		491		491		377		377		868	
AM Peak	-	05:30	-	-	-	07:00	-	-	-	-	-
Vol.	-	39	-	-	-	29	-	-	-	-	-
P.H.F.		0.542				0.906					
PM Peak	-	-	06:30	-	-	-	02:30	-	-	-	-
Vol.	-	-	44	-	-	-	40	-	-	-	-
P.H.F.			0.846				0.833				
Percentage		37.1%	62.9%			36.9%	63.1%				
ADT/AADT		ADT 868		AADT 868							

Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92787
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of Vista
Hannalei Drive
N/ York Drive
24 Hour Directional Volume Count

VST003
Site Code: 229-21293

Start Time	22-Jun-21 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		0	3			0	5				
12:15		0	5			2	8				
12:30		0	7			0	7				
12:45		0	10	0	25	0	11	2	31	2	56
01:00		0	5			0	7				
01:15		0	5			0	3				
01:30		0	5			1	11				
01:45		0	3	0	18	0	3	1	24	1	42
02:00		0	5			0	9				
02:15		0	11			0	**9**				
02:30		0	5			0	**14**				
02:45		0	**6**	0	27	0	**8**	0	40	0	67
03:00		0	**10**			0	**14**				
03:15		0	**6**			0	7				
03:30		0	**11**			1	10				
03:45		1	4	1	31	0	10	1	41	2	72
04:00		0	3			1	8				
04:15		0	1			0	8				
04:30		1	9			0	7				
04:45		1	5	2	18	2	5	3	28	5	46
05:00		2	10			3	3				
05:15		1	3			4	9				
05:30		5	5			5	4				
05:45		2	4	10	22	**9**	10	21	26	31	48
06:00		6	4			**7**	8				
06:15		2	4			**5**	7				
06:30		3	6			**6**	7				
06:45		**9**	3	20	17	4	7	22	29	42	46
07:00		**7**	10			6	9				
07:15		**5**	6			5	9				
07:30		**5**	5			6	3				
07:45		7	2	24	23	6	1	23	22	47	45
08:00		6	3			6	5				
08:15		8	4			2	9				
08:30		2	4			1	8				
08:45		2	5	18	16	8	4	17	26	35	42
09:00		6	3			6	6				
09:15		3	3			8	7				
09:30		3	4			4	7				
09:45		7	2	19	12	5	0	23	20	42	32
10:00		8	1			4	4				
10:15		4	1			2	1				
10:30		2	1			4	3				
10:45		1	3	15	6	3	0	13	8	28	14
11:00		4	1			4	0				
11:15		3	1			3	3				
11:30		1	0			6	2				
11:45		5	0	13	2	6	0	19	5	32	7
Total		122	217	122	217	145	300	145	300	267	517
Combined Total		339		339		445		445		784	
AM Peak	-	06:45	-	-	-	05:45	-	-	-	-	-
Vol.	-	26	-	-	-	27	-	-	-	-	-
P.H.F.		0.722				0.750					
PM Peak	-	-	02:45	-	-	-	02:15	-	-	-	-
Vol.	-	-	33	-	-	-	45	-	-	-	-
P.H.F.			0.750				0.804				
Percentage		36.0%	64.0%			32.6%	67.4%				
ADT/AADT		ADT 784		AADT 784							

Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92787
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of Vista
Hannalei Drive
W/ Watson Way
24 Hour Directional Volume Count

VST001
Site Code: 229-21293

Start Time	22-Jun-21 Tue	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		2	18			0	19				
12:15		3	17			5	12				
12:30		2	23			3	14				
12:45		1	19	8	77	0	20	8	65	16	142
01:00		1	18			0	19				
01:15		1	15			0	13				
01:30		3	23			0	15				
01:45		2	18	7	74	0	14	0	61	7	135
02:00		0	18			2	15				
02:15		1	24			0	19				
02:30		0	15			0	20				
02:45		0	32	1	89	0	**24**	2	78	3	167
03:00		1	22			0	**21**				
03:15		0	24			0	**19**				
03:30		1	26			0	**22**				
03:45		0	**31**	2	103	2	20	2	82	4	185
04:00		3	**26**			1	15				
04:15		1	**25**			3	11				
04:30		0	**28**			8	20				
04:45		1	22	5	101	4	14	16	60	21	161
05:00		3	22			8	27				
05:15		4	27			7	11				
05:30		12	22			5	12				
05:45		28	26	47	97	13	15	33	65	80	162
06:00		7	24			23	13				
06:15		6	17			15	14				
06:30		9	21			14	12				
06:45		6	26	28	88	27	18	79	57	107	145
07:00		9	26			**23**	9				
07:15		14	20			**20**	15				
07:30		11	14			**24**	16				
07:45		14	17	48	77	**31**	10	98	50	146	127
08:00		15	13			13	10				
08:15		15	19			20	9				
08:30		9	22			22	10				
08:45		16	12	55	66	14	9	69	38	124	104
09:00		11	12			15	4				
09:15		12	9			18	9				
09:30		18	16			19	7				
09:45		15	8	56	45	11	1	63	21	119	66
10:00		15	7			20	6				
10:15		7	7			11	2				
10:30		13	5			18	4				
10:45		13	2	48	21	9	2	58	14	106	35
11:00		**21**	3			20	2				
11:15		**16**	5			16	1				
11:30		**13**	5			21	0				
11:45		**22**	1	72	14	14	0	71	3	143	17
Total		377	852	377	852	499	594	499	594	876	1446
Combined Total		1229		1229		1093		1093		2322	
AM Peak	-	11:00	-	-	-	07:00	-	-	-	-	-
Vol.	-	72	-	-	-	98	-	-	-	-	-
P.H.F.		0.818				0.790					
PM Peak	-	-	03:45	-	-	-	02:45	-	-	-	-
Vol.	-	-	110	-	-	-	86	-	-	-	-
P.H.F.			0.887				0.896				
Percentage		30.7%	69.3%			45.7%	54.3%				
ADT/AADT		ADT 2,322		AADT 2,322							

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

County of San Diego
N/S: Watson Way
E/W: Hannalei Drive
Weather: Clear

File Name : 01_CSD_Watson_Hannalei AM
Site Code : 22921293
Start Date : 6/22/2021
Page No : 1

Groups Printed- Total Volume

	Private Driveway Southbound				Hannalei Drive Westbound				Watson Way Northbound				Hannalei Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	7	0	7	13	0	0	13	0	4	7	11	31
07:15 AM	0	0	0	0	0	8	0	8	4	0	0	4	0	4	3	7	19
07:30 AM	0	0	0	0	0	9	0	9	8	0	0	8	1	4	3	8	25
07:45 AM	0	0	0	0	0	8	0	8	16	0	0	16	0	8	3	11	35
Total	0	0	0	0	0	32	0	32	41	0	0	41	1	20	16	37	110
08:00 AM	0	0	0	0	0	3	0	3	18	0	0	18	0	9	8	17	38
08:15 AM	0	0	0	0	0	4	0	4	9	0	1	10	0	4	10	14	28
08:30 AM	0	0	0	0	0	7	0	7	7	0	0	7	0	3	13	16	30
08:45 AM	0	0	0	0	0	9	0	9	8	0	0	8	0	4	5	9	26
Total	0	0	0	0	0	23	0	23	42	0	1	43	0	20	36	56	122
Grand Total	0	0	0	0	0	55	0	55	83	0	1	84	1	40	52	93	232
Apprch %	0	0	0		0	100	0		98.8	0	1.2		1.1	43	55.9		
Total %	0	0	0	0	0	23.7	0	23.7	35.8	0	0.4	36.2	0.4	17.2	22.4	40.1	

	Private Driveway Southbound				Hannalei Drive Westbound				Watson Way Northbound				Hannalei Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	0	**8**	0	**8**	16	0	0	16	0	8	3	11	35
08:00 AM	0	0	0	0	0	3	0	3	**18**	0	0	**18**	0	**9**	8	**17**	**38**
08:15 AM	0	0	0	0	0	4	0	4	9	0	**1**	10	0	4	10	14	28
08:30 AM	0	0	0	0	0	7	0	7	7	0	0	7	0	3	**13**	16	30
Total Volume	0	0	0	0	0	22	0	22	50	0	1	51	0	24	34	58	131
% App. Total	0	0	0		0	100	0		98	0	2		0	41.4	58.6		
PHF	.000	.000	.000	.000	.000	.688	.000	.688	.694	.000	.250	.708	.000	.667	.654	.853	.862

Counts Unlimited, Inc.
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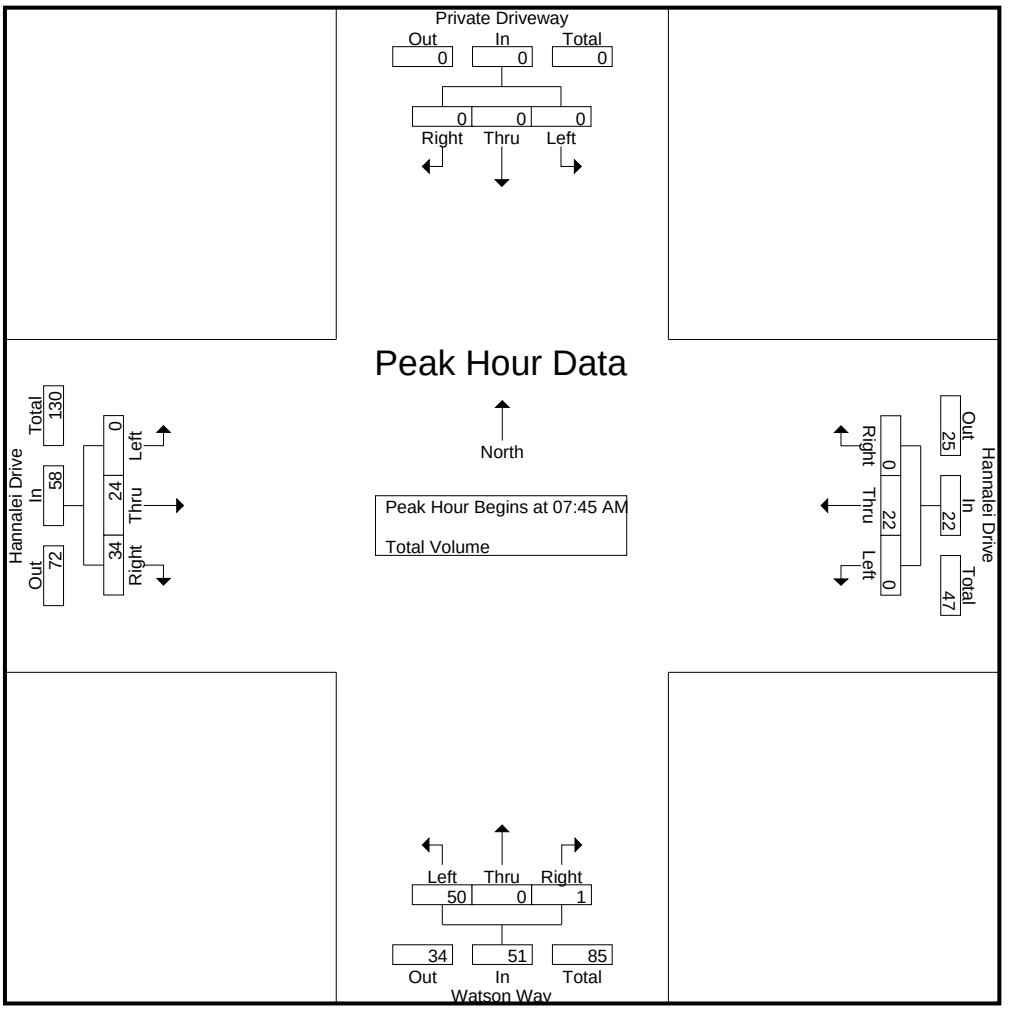
Corona, CA 92878
(951)268-6268

County of San Diego
N/S: Watson Way
E/W: Hannalei Drive
Weather: Clear

File Name : 01_CSD_Watson_Hannalei AM
Site Code : 22921293
Start Date : 6/22/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:30 AM				07:45 AM			
+0 mins.	0	0	0	0	0	7	0	7	8	0	0	8	0	8	3	11
+15 mins.	0	0	0	0	0	8	0	8	16	0	0	16	0	**9**	8	**17**
+30 mins.	0	0	0	0	0	**9**	0	**9**	**18**	0	0	**18**	0	4	10	14
+45 mins.	0	0	0	0	0	8	0	8	9	0	**1**	10	0	3	**13**	16
Total Volume	0	0	0	0	0	32	0	32	51	0	1	52	0	24	34	58
% App. Total	0	0	0		0	100	0		98.1	0	1.9		0	41.4	58.6	
PHF	.000	.000	.000	.000	.000	.889	.000	.889	.708	.000	.250	.722	.000	.667	.654	.853

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Page No : 1

Groups Printed- Total Volume

	Private Driveway Southbound				Hannalei Drive Westbound				Watson Way Northbound				Hannalei Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	0	0	0	0	0	12	0	12	9	0	1	10	0	12	19	31	53
03:15 PM	0	0	0	0	0	9	0	9	10	0	0	10	0	13	12	25	44
03:30 PM	0	0	0	0	0	9	0	9	12	0	0	12	0	5	17	22	43
03:45 PM	0	0	0	0	2	9	0	11	11	0	0	11	0	10	13	23	45
Total	0	0	0	0	2	39	0	41	42	0	1	43	0	40	61	101	185
04:00 PM	0	0	0	0	0	7	1	8	8	0	1	9	1	14	10	25	42
04:15 PM	0	0	0	0	0	7	0	7	14	0	0	14	0	14	13	27	48
04:30 PM	0	0	0	0	0	7	0	7	5	0	0	5	0	7	16	23	35
04:45 PM	0	0	0	0	0	11	0	11	3	0	0	3	0	11	11	22	36
Total	0	0	0	0	0	32	1	33	30	0	1	31	1	46	50	97	161
Grand Total	0	0	0	0	2	71	1	74	72	0	2	74	1	86	111	198	346
Apprch %	0	0	0		2.7	95.9	1.4		97.3	0	2.7		0.5	43.4	56.1		
Total %	0	0	0	0	0.6	20.5	0.3	21.4	20.8	0	0.6	21.4	0.3	24.9	32.1	57.2	

	Private Driveway Southbound				Hannalei Drive Westbound				Watson Way Northbound				Hannalei Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:00 PM																	
03:00 PM	0	0	0	0	0	**12**	0	**12**	9	0	**1**	10	0	12	**19**	**31**	**53**
03:15 PM	0	0	0	0	0	9	0	9	10	0	0	10	0	**13**	12	25	44
03:30 PM	0	0	0	0	0	9	0	9	**12**	0	0	**12**	0	5	17	22	43
03:45 PM	0	0	0	0	**2**	9	0	11	11	0	0	11	0	10	13	23	45
Total Volume	0	0	0	0	2	39	0	41	42	0	1	43	0	40	61	101	185
% App. Total	0	0	0		4.9	95.1	0		97.7	0	2.3		0	39.6	60.4		
PHF	.000	.000	.000	.000	.250	.813	.000	.854	.875	.000	.250	.896	.000	.769	.803	.815	.873

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Site Code : 22921293
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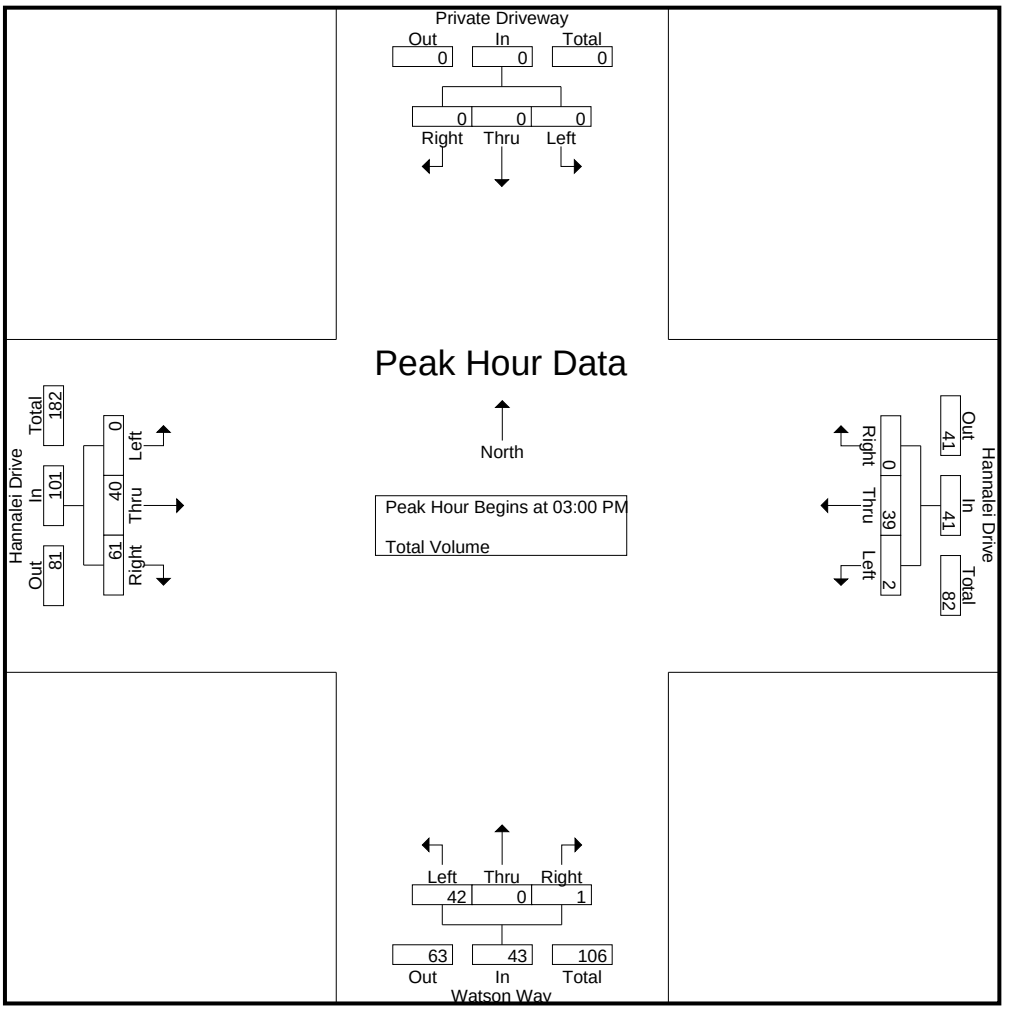

Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	03:00 PM				03:00 PM				03:30 PM				03:00 PM			
+0 mins.	0	0	0	0	0	**12**	0	**12**	12	0	0	12	0	12	**19**	**31**
+15 mins.	0	0	0	0	0	9	0	9	11	0	0	11	0	**13**	12	25
+30 mins.	0	0	0	0	0	9	0	9	8	0	**1**	9	0	5	17	22
+45 mins.	0	0	0	0	**2**	9	0	11	**14**	0	0	**14**	0	10	13	23
Total Volume	0	0	0	0	2	39	0	41	45	0	1	46	0	40	61	101
% App. Total	0	0	0		4.9	95.1	0		97.8	0	2.2		0	39.6	60.4	
PHF	.000	.000	.000	.000	.250	.813	.000	.854	.804	.000	.250	.821	.000	.769	.803	.815

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County of San Diego
N/S: Hannalei Drive/Anna Lane
E/W: Woodland Drive
Weather: Clear

File Name : 02_CSD_Hannalei_Woodland AM
Site Code : 22921293
Start Date : 6/22/2021
Page No : 1

Groups Printed- Total Volume

	Hannalei Drive Southbound				Woodland Drive Westbound				Anna Lane Northbound				Woodland Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	6	0	0	6	2	4	4	10	0	0	1	1	1	3	0	4	21
07:15 AM	5	0	0	5	0	1	6	7	0	1	1	2	0	7	1	8	22
07:30 AM	8	0	1	9	0	1	5	6	0	0	0	0	0	12	1	13	28
07:45 AM	7	0	1	8	0	0	1	1	0	0	0	0	1	9	0	10	19
Total	26	0	2	28	2	6	16	24	0	1	2	3	2	31	2	35	90
08:00 AM	4	1	0	5	0	2	10	12	0	1	2	3	0	9	0	9	29
08:15 AM	4	0	0	4	0	5	5	10	1	0	0	1	0	12	0	12	27
08:30 AM	1	0	0	1	0	7	3	10	0	1	0	1	0	15	0	15	27
08:45 AM	3	0	1	4	0	6	5	11	0	1	0	1	0	4	0	4	20
Total	12	1	1	14	0	20	23	43	1	3	2	6	0	40	0	40	103
Grand Total	38	1	3	42	2	26	39	67	1	4	4	9	2	71	2	75	193
Apprch %	90.5	2.4	7.1		3	38.8	58.2		11.1	44.4	44.4		2.7	94.7	2.7		
Total %	19.7	0.5	1.6	21.8	1	13.5	20.2	34.7	0.5	2.1	2.1	4.7	1	36.8	1	38.9	

	Hannalei Drive Southbound				Woodland Drive Westbound				Anna Lane Northbound				Woodland Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**8**	0	**1**	**9**	0	1	5	6	0	0	0	0	0	**12**	**1**	**13**	28
07:45 AM	7	0	1	8	0	0	1	1	0	0	0	0	**1**	9	0	10	19
08:00 AM	4	**1**	0	5	0	2	**10**	**12**	0	**1**	**2**	**3**	0	9	0	9	**29**
08:15 AM	4	0	0	4	0	**5**	5	10	**1**	0	0	1	0	12	0	12	27
Total Volume	23	1	2	26	0	8	21	29	1	1	2	4	1	42	1	44	103
% App. Total	88.5	3.8	7.7		0	27.6	72.4		25	25	50		2.3	95.5	2.3		
PHF	.719	.250	.500	.722	.000	.400	.525	.604	.250	.250	.250	.333	.250	.875	.250	.846	.888

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County of San Diego
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File Name : 02_CSD_Hannalei_Woodland AM
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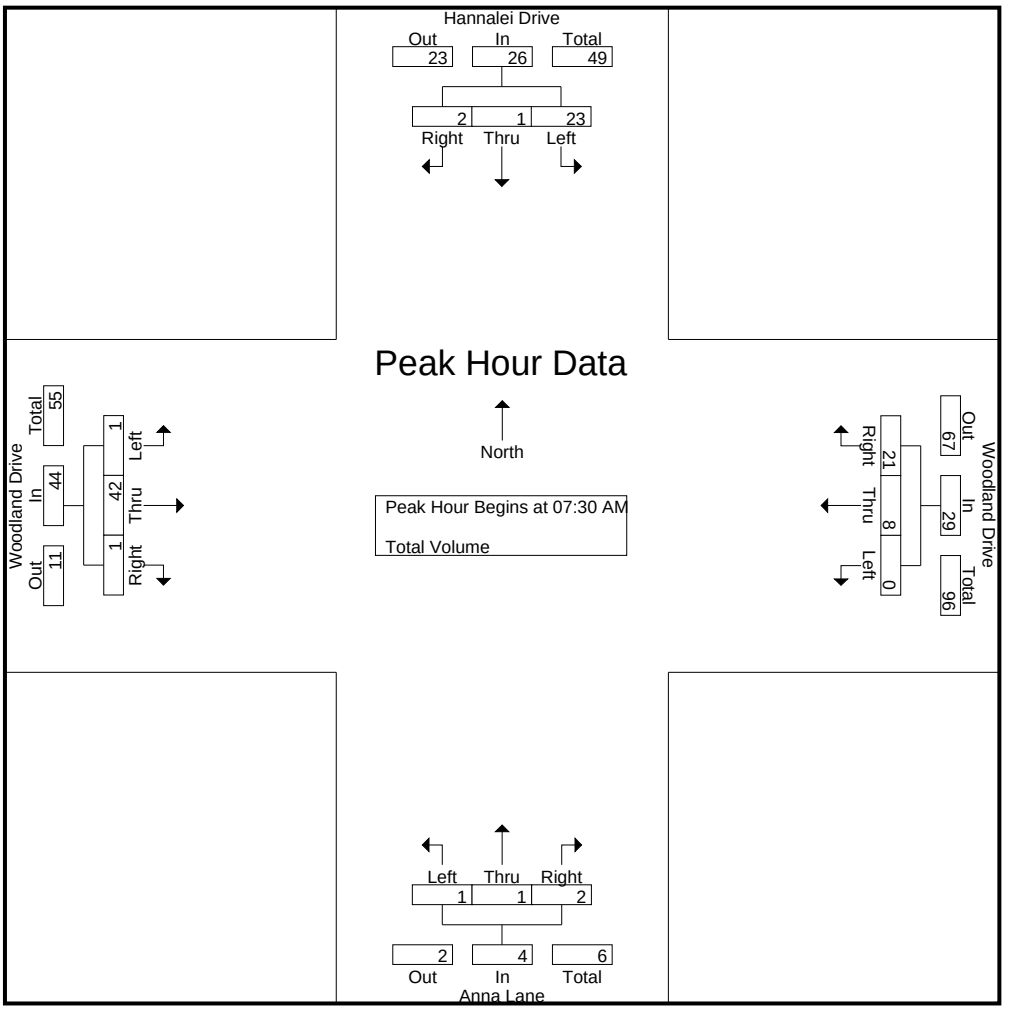

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				08:00 AM				08:00 AM				07:45 AM			
+0 mins.	6	0	0	6	0	2	**10**	**12**	0	**1**	**2**	**3**	**1**	9	0	10
+15 mins.	5	0	0	5	0	5	5	10	**1**	0	0	1	0	9	0	9
+30 mins.	**8**	0	**1**	**9**	0	**7**	3	10	0	1	0	1	0	12	0	12
+45 mins.	7	0	1	8	0	6	5	11	0	1	0	1	0	**15**	0	**15**
Total Volume	26	0	2	28	0	20	23	43	1	3	2	6	1	45	0	46
% App. Total	92.9	0	7.1		0	46.5	53.5		16.7	50	33.3		2.2	97.8	0	
PHF	.813	.000	.500	.778	.000	.714	.575	.896	.250	.750	.250	.500	.250	.750	.000	.767

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County of San Diego
N/S: Hannalei Drive/Anna Lane
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Weather: Clear

File Name : 02_CSD_Hannalei_Woodland PM
Site Code : 22921293
Start Date : 6/22/2021
Page No : 1

Groups Printed- Total Volume

	Hannalei Drive Southbound				Woodland Drive Westbound				Anna Lane Northbound				Woodland Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	5	0	0	5	0	17	10	27	0	1	0	1	0	9	0	9	42
03:15 PM	8	0	0	8	0	18	4	22	1	0	0	1	0	6	1	7	38
03:30 PM	8	0	0	8	0	13	8	21	0	1	0	1	0	8	0	8	38
03:45 PM	13	1	1	15	0	7	6	13	0	0	0	0	0	9	1	10	38
Total	34	1	1	36	0	55	28	83	1	2	0	3	0	32	2	34	156
04:00 PM	4	1	0	5	1	8	7	16	0	0	1	1	0	14	0	14	36
04:15 PM	8	0	0	8	2	8	2	12	0	0	0	0	0	7	0	7	27
04:30 PM	6	1	1	8	0	17	5	22	0	1	0	1	0	9	0	9	40
04:45 PM	4	0	0	4	1	7	6	14	0	0	0	0	1	7	1	9	27
Total	22	2	1	25	4	40	20	64	0	1	1	2	1	37	1	39	130
Grand Total	56	3	2	61	4	95	48	147	1	3	1	5	1	69	3	73	286
Apprch %	91.8	4.9	3.3		2.7	64.6	32.7		20	60	20		1.4	94.5	4.1		
Total %	19.6	1	0.7	21.3	1.4	33.2	16.8	51.4	0.3	1	0.3	1.7	0.3	24.1	1	25.5	

	Hannalei Drive Southbound				Woodland Drive Westbound				Anna Lane Northbound				Woodland Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:00 PM																	
03:00 PM	5	0	0	5	0	17	**10**	**27**	0	**1**	0	**1**	0	**9**	0	9	**42**
03:15 PM	8	0	0	8	0	**18**	4	22	**1**	0	0	1	0	6	**1**	7	38
03:30 PM	8	0	0	8	0	13	8	21	0	1	0	1	0	8	0	8	38
03:45 PM	**13**	**1**	**1**	**15**	0	7	6	13	0	0	0	0	0	9	1	**10**	38
Total Volume	34	1	1	36	0	55	28	83	1	2	0	3	0	32	2	34	156
% App. Total	94.4	2.8	2.8		0	66.3	33.7		33.3	66.7	0		0	94.1	5.9		
PHF	.654	.250	.250	.600	.000	.764	.700	.769	.250	.500	.000	.750	.000	.889	.500	.850	.929

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County of San Diego
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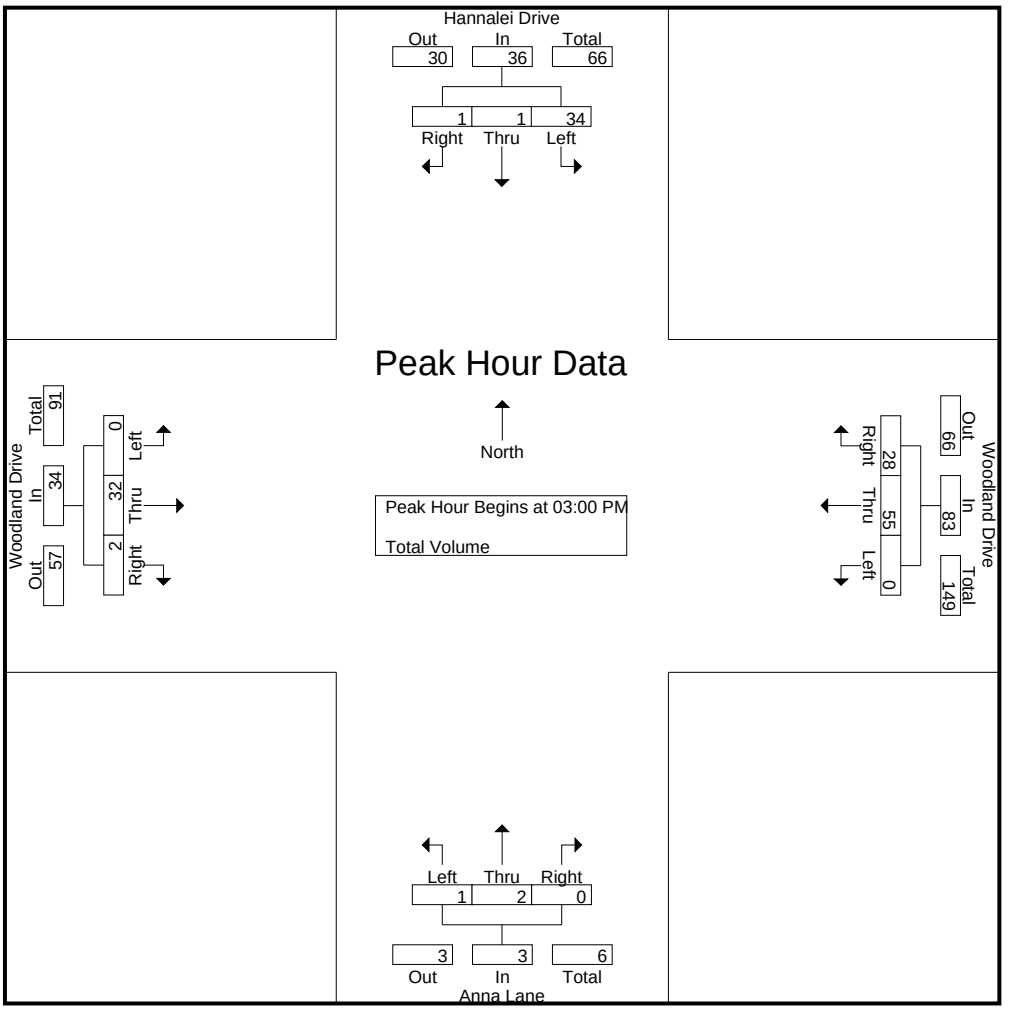


Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	03:00 PM				03:00 PM				03:00 PM				03:45 PM			
+0 mins.	5	0	0	5	0	17	**10**	**27**	0	**1**	0	**1**	0	9	**1**	10
+15 mins.	8	0	0	8	0	**18**	4	22	**1**	0	0	1	0	**14**	0	**14**
+30 mins.	8	0	0	8	0	13	8	21	0	1	0	1	0	7	0	7
+45 mins.	**13**	**1**	**1**	**15**	0	7	6	13	0	0	0	0	0	9	0	9
Total Volume	34	1	1	36	0	55	28	83	1	2	0	3	0	39	1	40
% App. Total	94.4	2.8	2.8		0	66.3	33.7		33.3	66.7	0		0	97.5	2.5	
PHF	.654	.250	.250	.600	.000	.764	.700	.769	.250	.500	.000	.750	.000	.696	.250	.714

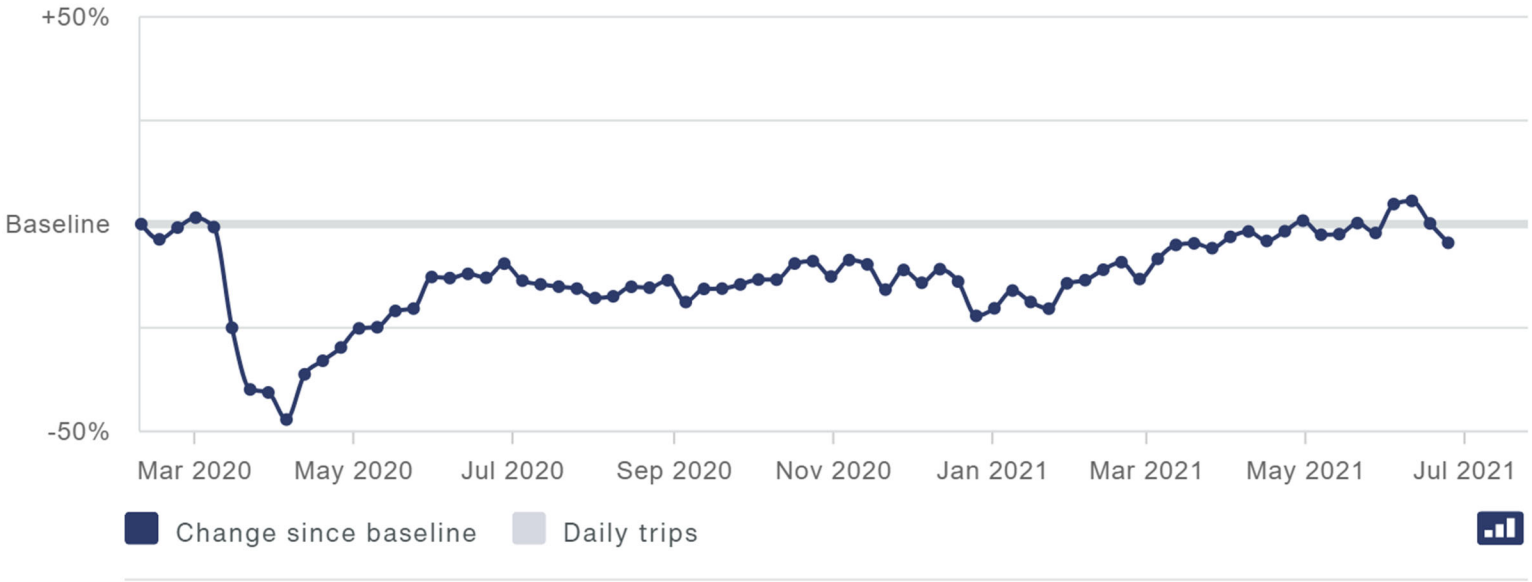
REPLICA

Vista 4.8

Total Trips

Change over time period for trip volume in this geography

Week of **Feb 10, 2020** to the week of **Jun 28, 2021**



Appendix C
NCTD Route Information

NORTH COUNTY TRANSIT DISTRICT

COASTER STATIONS		ZONES
Oceanside Transit Center	195 S. Tremont Street, Oceanside, CA 92054 *(South Tremont Street between Topeka St. and Michigan Ave.)*	North County - Zone 1
Carlsbad Village	2775 State Street, Carlsbad, CA 92008 *(State St. & Grand Ave.)*	
Carlsbad Poinsettia	6511 Avenida Encinas, Carlsbad, CA 92011 *(Avenida Encinas just north of Embarcadero Ln.)*	
Encinitas	25 East "D" Street, Encinitas, CA 92024 *(D Street & S. Vulcan Ave.)*	
Solana Beach	105 N. Cedros Avenue, Solana Beach, CA 92075 *(North Cedros Ave. & Lomas Santa Fe Dr.)*	
Sorrento Valley	11170 Sorrento Valley Road, San Diego,CA 92121 *(Sorrento Valley Rd. between Carmel Mountain Rd. and Sorrento Valley Blvd.)*	Sorrento Valley - Zone 2
Old Town Transit Center	4005 Taylor Street, San Diego, CA 92110 *(Taylor St. & Pacific Hwy.)*	San Diego - Zone 3
Santa Fe Depot	1050 Kettner Boulevard, San Diego, CA 92101 *(West Broadway & Kettner Blvd.)*	

SPRINTER STATIONS	
Oceanside Transit Center	195 S. Tremont Street, Oceanside, CA 92054
Coast Highway Station	1304 ½ S. Tremont Street, Oceanside, CA 92054
Crouch Street Station	609 Crouch Street, Oceanside, CA 92054
El Camino Real Station	1505 El Camino Real, Oceanside, CA 92054
Rancho Del Oro Station	3513 Oceanside Boulevard, Oceanside, CA 92056
College Boulevard Station	4103 ½ Oceanside Boulevard, Oceanside, CA 92056 *No overnight parking.*
Melrose Drive Station	1495 ½ N. Melrose Drive, Oceanside, CA 92056
Vista Transit Center	240 N. Santa Fe Road., Vista, CA 92083
Civic Center-Vista Station	810 Phillips Street, Vista, CA 92083
Buena Creek Station	1923 Buena Creek Road, San Diego, CA 92084
Palomar College Station	1142 W. Armorlite Drive, San Marcos, CA 92069 *Free parking behind the station, accessible from Armorlite Drive, just west of the Bingham Drive intersection.*
San Marcos Civic Center Station	40 W. San Marcos Boulevard, San Marcos, CA 92069 *No parking available.*
Cal State San Marcos Station	410 La Moree Road, San Marcos, CA 92069 *No parking available.*
Nordahl Road Station	2121 Barham Drive, Escondido, CA 92025
Escondido Transit Center	796 W. Valley Parkway, Escondido, CA 92025

NORTH COUNTY TRANSIT DISTRICT
SYSTEM MAP LEGEND

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BREEZE Bus Route Finder

- 101 Oceanside to VA/UCSD/UTC via Hwy. 101
- 302 Oceanside to Vista via Vista Way
- 303 Oceanside to Vista via Town Center North
- 304 Encinitas to San Marcos via Rancho Santa Fe Rd.
- 305 Escondido to Vista via Mission Rd. & S. Santa Fe Ave.
- 306 Fallbrook to Vista via Mission Rd.
- 308 Solana Beach to Escondido via Del Dios Hwy.
- 309 Oceanside to Encinitas via El Camino Real
- 311 San Luis Rey Transit Center to Rancho Del Oro SPRINTER Station via Douglas Dr.
- 313 Oceanside Transit Center to San Luis Rey Transit Center via Mesa Dr.
- 315 Carlsbad Village Station to 14 Area
- 318 Oceanside to Vista via Oceanside Blvd. & Bobier Dr.
- 323 College Blvd. SPRINTER Station to Quarry Creek
- 325 Carlsbad Village to College Blvd. SPRINTER Station
- 332 Vista to Buena Creek SPRINTER Station via Vista Business Park
- 334 Vista Circulator
- 347 Cal State San Marcos to Palomar College
- 350 Escondido to Del Lago Transit Station via Westfield North County Mall
- 351 352 Escondido Circulator
- 353 Escondido Transit Center to Nordahl Marketplace via Citracado Pkwy.
- 354 Orange Glen High School via Mission, Lincoln & Citrus
- 355 357 El Norte Pkwy. & Valley Pkwy.
- 356 Morning View Dr., El Norte Pkwy. & Escondido Blvd.
- 358 359 N. Broadway, Country Club & El Norte Pkwy.
- 388 Escondido to Pala
- 444 Carlsbad Poinsettia COASTER Connection via Faraday Ave. & Rutherford Rd.
- 445 Carlsbad Poinsettia COASTER Connection to Palomar College

FLEX Route Finder

- 371 FLEX FLEX Ramona Commuter
- 372 FLEX FLEX Ramona Midday*
- 392 FLEX Oceanside to 14 Area via Vandergrift
- 395 FLEX Oceanside Transit Center to Camp San Onofre via Naval Hospital

*** Reservation required. Call (855) 844-1454.**
* Se requieren reservaciones. Llame al (855) 844-1454.

Metropolitan Transit System (MTS) Bus Route Finder

- 972 Sorrento Mesa (MTS)
- 973 Carroll Canyon (MTS)
- 974 UC San Diego (MTS)
- 978 Torrey Pines (MTS)
- 979 North University City (MTS)

- COASTER Station
- SPRINTER Station
- Regular Service
- Limited Service (selected trips)
- Points of Interest
- School/Academic Institution
- Medical Facility

Map not to scale
Updated: April 2021

DOWNTOWN ESCONDIDO

Appendix D
Peak Hour Intersection Capacity Worksheets
Existing Conditions

Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	24	34	0	22	50	1
Future Vol, veh/h	24	34	0	22	50	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	40	0	26	58	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	68	0	74	48
Stage 1	-	-	-	-	48	-
Stage 2	-	-	-	-	26	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1533	-	930	1021
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	997	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1533	-	930	1021
Mov Cap-2 Maneuver	-	-	-	-	930	-
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	997	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	932	-	-	1533	-
HCM Lane V/C Ratio	0.064	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	42	1	0	8	21	1	1	2	32	1	2
Future Vol, veh/h	1	42	1	0	8	21	1	1	2	32	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	47	1	0	9	24	1	1	2	36	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	33	0	0	48	0	0	73	83	48	72	71	21
Stage 1	-	-	-	-	-	-	50	50	-	21	21	-
Stage 2	-	-	-	-	-	-	23	33	-	51	50	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1579	-	-	1559	-	-	918	807	1021	919	819	1056
Stage 1	-	-	-	-	-	-	963	853	-	998	878	-
Stage 2	-	-	-	-	-	-	995	868	-	962	853	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1579	-	-	1559	-	-	914	806	1021	915	818	1056
Mov Cap-2 Maneuver	-	-	-	-	-	-	914	806	-	915	818	-
Stage 1	-	-	-	-	-	-	962	852	-	997	878	-
Stage 2	-	-	-	-	-	-	992	868	-	958	852	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	8.9	9.1
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	932	1579	-	-	1559	-	-	919
HCM Lane V/C Ratio	0.005	0.001	-	-	-	-	-	0.043
HCM Control Delay (s)	8.9	7.3	0	-	0	-	-	9.1
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	61	2	39	42	1
Future Vol, veh/h	40	61	2	39	42	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	70	2	45	48	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	116	0	130	81
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	49	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1473	-	864	979
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	973	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1473	-	863	979
Mov Cap-2 Maneuver	-	-	-	-	863	-
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	972	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	865	-	-	1473	-
HCM Lane V/C Ratio	0.057	-	-	0.002	-
HCM Control Delay (s)	9.4	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	32	2	0	55	28	1	2	0	34	1	1
Future Vol, veh/h	0	32	2	0	55	28	1	2	0	34	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	34	2	0	59	30	1	2	0	37	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	89	0	0	36	0	0	110	124	35	110	110	74
Stage 1	-	-	-	-	-	-	35	35	-	74	74	-
Stage 2	-	-	-	-	-	-	75	89	-	36	36	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1506	-	-	1575	-	-	868	766	1038	868	780	988
Stage 1	-	-	-	-	-	-	981	866	-	935	833	-
Stage 2	-	-	-	-	-	-	934	821	-	980	865	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1506	-	-	1575	-	-	866	766	1038	866	780	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	866	766	-	866	780	-
Stage 1	-	-	-	-	-	-	981	866	-	935	833	-
Stage 2	-	-	-	-	-	-	932	821	-	978	865	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	9.5	9.4
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	797	1506	-	-	1575	-	-	866
HCM Lane V/C Ratio	0.004	-	-	-	-	-	-	0.045
HCM Control Delay (s)	9.5	0	-	-	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Appendix E
Peak Hour Intersection Capacity Worksheets
Existing with Project Conditions

Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	28	34	0	32	50	1
Future Vol, veh/h	28	34	0	32	50	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	40	0	37	58	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	73	0	90	53
Stage 1	-	-	-	-	53	-
Stage 2	-	-	-	-	37	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1527	-	910	1014
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	985	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1527	-	910	1014
Mov Cap-2 Maneuver	-	-	-	-	910	-
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	985	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	912	-	-	1527	-
HCM Lane V/C Ratio	0.065	-	-	-	-
HCM Control Delay (s)	9.2	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	42	1	0	8	26	1	1	2	43	1	2
Future Vol, veh/h	1	42	1	0	8	26	1	1	2	43	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	47	1	0	9	29	1	1	2	48	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	38	0	0	48	0	0	75	88	48	75	74	24
Stage 1	-	-	-	-	-	-	50	50	-	24	24	-
Stage 2	-	-	-	-	-	-	25	38	-	51	50	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1572	-	-	1559	-	-	915	802	1021	915	816	1052
Stage 1	-	-	-	-	-	-	963	853	-	994	875	-
Stage 2	-	-	-	-	-	-	993	863	-	962	853	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1572	-	-	1559	-	-	911	801	1021	911	815	1052
Mov Cap-2 Maneuver	-	-	-	-	-	-	911	801	-	911	815	-
Stage 1	-	-	-	-	-	-	962	852	-	993	875	-
Stage 2	-	-	-	-	-	-	990	863	-	958	852	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	8.9	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	929	1572	-	-	1559	-	-	914
HCM Lane V/C Ratio	0.005	0.001	-	-	-	-	-	0.057
HCM Control Delay (s)	8.9	7.3	0	-	0	-	-	9.2
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	25	22	5	11	10
Future Vol, veh/h	4	25	22	5	11	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	26	23	5	12	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	28	0	-	0	60	26
Stage 1	-	-	-	-	26	-
Stage 2	-	-	-	-	34	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1585	-	-	-	947	1050
Stage 1	-	-	-	-	997	-
Stage 2	-	-	-	-	988	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1585	-	-	-	944	1050
Mov Cap-2 Maneuver	-	-	-	-	944	-
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	988	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1585	-	-	-	992
HCM Lane V/C Ratio	0.003	-	-	-	0.022
HCM Control Delay (s)	7.3	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	53	61	2	44	42	1
Future Vol, veh/h	53	61	2	44	42	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	70	2	51	48	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	131	0	151	96
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	55	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1454	-	841	960
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	968	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1454	-	840	960
Mov Cap-2 Maneuver	-	-	-	-	840	-
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	967	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	842	-	-	1454	-
HCM Lane V/C Ratio	0.059	-	-	0.002	-
HCM Control Delay (s)	9.5	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	32	2	0	55	41	1	2	0	40	1	1
Future Vol, veh/h	0	32	2	0	55	41	1	2	0	40	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	34	2	0	59	44	1	2	0	43	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	103	0	0	36	0	0	117	138	35	117	117	81
Stage 1	-	-	-	-	-	-	35	35	-	81	81	-
Stage 2	-	-	-	-	-	-	82	103	-	36	36	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1489	-	-	1575	-	-	859	753	1038	859	773	979
Stage 1	-	-	-	-	-	-	981	866	-	927	828	-
Stage 2	-	-	-	-	-	-	926	810	-	980	865	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1489	-	-	1575	-	-	857	753	1038	857	773	979
Mov Cap-2 Maneuver	-	-	-	-	-	-	857	753	-	857	773	-
Stage 1	-	-	-	-	-	-	981	866	-	927	828	-
Stage 2	-	-	-	-	-	-	924	810	-	978	865	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	9.6	9.4
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	785	1489	-	-	1575	-	-	857
HCM Lane V/C Ratio	0.004	-	-	-	-	-	-	0.053
HCM Control Delay (s)	9.6	0	-	-	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	41	41	13	6	5
Future Vol, veh/h	13	41	41	13	6	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	43	43	14	6	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	57	0	-	0	121	50
Stage 1	-	-	-	-	50	-
Stage 2	-	-	-	-	71	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1547	-	-	-	874	1018
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	952	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1547	-	-	-	866	1018
Mov Cap-2 Maneuver	-	-	-	-	866	-
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	952	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1547	-	-	-	929
HCM Lane V/C Ratio	0.009	-	-	-	0.012
HCM Control Delay (s)	7.3	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0