

# Early Action Recommendations: Rail Corridor Quiet Zones & Crossing Locations

This report summarizes the early action recommendations for two key issues in the LOSSAN Rail Corridor in Encinitas.

## Quiet Zones

The first section contains an evaluation of the potential improvements near at-grade crossings that would be required to implement an “effective quiet zone” for all trains operating throughout the city. As detailed below, this would require the establishment of three separate quiet zones covering five existing at-grade crossings, plus one additional quiet zone if a proposed new pedestrian crossing is constructed at grade.

## Crossing Locations

The second section contains two separate evaluations of potential crossing locations:

- **Montgomery Avenue vs. Verdi Avenue (Cardiff-by-the-Sea):** A quantitative evaluation of these two potential crossing locations in terms of pedestrian accessibility. Overall, the analysis concludes that Montgomery Avenue will provide slightly higher benefits.
- **El Portal Street (Old Encinitas/Leucadia):** A brief, quantitative evaluation of the proposed crossing location in terms of pedestrian accessibility. Overall, El Portal Street is recommended as a crossing location due to its location in the rail corridor (relative to other crossings) as well as its proximity to important activity centers and homes.

# Quiet Zone Initial Analysis & Recommendations

The City of Encinitas is interested in creating railroad quiet zones along the entire LOSSAN Rail Corridor within its city boundaries, in order to reduce noise around at-grade rail crossings for nearby residents and businesses. This report presents the findings of an initial analysis of the existing and proposed at-grade crossings in Encinitas and identifies potential improvements that could fulfill federal requirements for quiet zones. It finds that citywide implementation would require the establishment of three separate quiet zones covering five existing at-grade crossings, plus one additional quiet zone if a proposed new pedestrian crossing at Montgomery Avenue is constructed at grade.

## What is a Quiet Zone?

A quiet zone is a section of a railroad corridor in which train horns are not routinely sounded as trains approach an at-grade crossing. They must be at least ½ mile long and contain one or more roadway/rail at-grade crossings.

Despite their name, quiet zones may be more accurately described as “reduced noise zones” due to two important caveats:

- Quiet zones do not apply to stationary bells and horns mounted at crossing locations.
- Trains in quiet zones may still sound their horns in emergencies, or at the discretion of the train operator.

## Regulatory Requirements

Federal rules authorize the City of Encinitas to establish quiet zones via its role as the local public agency responsible for traffic control and law enforcement at local at-grade rail crossings. All quiet zones and at-grade crossing improvements must meet federal and state regulatory requirements as noted below.

### Federal Railroad Administration (FRA)

Quiet zones may be established in any crossing area that meets Federal Railroad Administration (FRA) requirements established under its Train Horn Rule ([49 CFR Part 222](#)).

To minimize lengthy approval processes, the FRA allows for an “automatic” approval of quiet zones that meet certain risk-based analysis criteria.<sup>1</sup> Typically this includes measuring the risk of the proposed quiet zone with and without additional safety measures, compared to nationwide risk at crossings where train horns are sounded. The FRA provides a free Quiet Zone Calculator tool to conduct this risk assessment.

In many cases, local agencies may install FRA-approved supplementary safety measures (SSMs) such as quad gates and flashing signals in order to improve proposed quiet zones to this streamlined, “automatic” approval condition. In fewer cases, formal application to and approval from FRA may be required in order to evaluate and resolve special conditions.

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<sup>1</sup> This is known as the “public authority designation” method in the Train Horn Rule.

## California Public Utilities Commission (CPUC)

The California Public Utilities Commission (CPUC) has regulatory authority over all railroad at-grade crossings in the state, including any modifications to them. As such, CPUC will need to approve any proposed improvements to the existing crossings at Leucadia Blvd, Encinitas Station/D Street/E Street, and Chesterfield Drive.

Most importantly, CPUC must also approve any new at-grade crossings, including the potential at-grade crossing at Montgomery Avenue. This will require a lengthier approval process from CPUC compared to the safety improvements recommended at the existing crossing locations.

## Other Agencies & Rail Operators

As the property owner LOSSAN Rail Corridor in Encinitas and one of its primary operators, the North County Transit District (NCTD) will need to be involved in the planning and review process for any crossing improvements. In addition, rail operators Amtrak and BNSF Railway will need to be included in diagnostic reviews and formal notices of intent and establishment.

As with any development project, crossing improvements also must comply with environmental approval and permitting requirements, including public review and consultation with key resource agencies.

## Encinitas Quiet Zone Analysis Areas

This analysis included all existing at-grade crossings in Encinitas, plus one proposed pedestrian crossing. As shown in Figure 1, the existing crossings are grouped into three quiet zone areas for earliest action:

- **Leucadia Boulevard:** Existing roadway crossing
- **Old Encinitas:** As the following crossings are within ¼ mile of each other, a quiet zone would include all three:
  - **Encinitas Station:** Existing pedestrian crossing
  - **D Street:** Existing roadway crossing
  - **E Street:** Existing roadway crossing
- **Chesterfield Drive:** Existing roadway crossing

In addition, the rail corridor includes one proposed crossing that, if constructed at grade, would be an additional quiet zone area:

- **Montgomery Avenue:** Proposed pedestrian crossing

Since train noise can be heard beyond the ½ mile area where train horns are sounded, implementation of a quiet zone would benefit residents and businesses beyond the immediate grade crossing areas.

Figure 1: Quiet Zone Analysis Area



## Initial Quiet Zone Analysis & Findings

This analysis reviewed the existing safety measures at each at-grade crossing to determine whether they are eligible for quiet zone status. If current conditions make a crossing ineligible, the analysis identifies potential FRA-approved supplementary safety measures (SSMs) that may make them eligible.

Table 1 summarizes the recommended improvements at each potential quiet zone location. Notably, the recommendation for the Encinitas Station/D Street/E Street area includes improvements at all three crossing locations. It is possible, based strictly on the FRA’s risk assessment criteria, that improvements at E Street alone could qualify the entire area for a quiet zone. However, to remain conservative at this planning level and ensure consistency between adjacent crossings, this analysis recommends improvements at each of the Encinitas Station, D Street, and E Street crossings.

The three areas containing existing crossings—at Leucadia Blvd, Encinitas Station/D Street/E Street, and Chesterfield Drive—are eligible for the earliest action, and need not wait for construction of the potential crossing at Montgomery Avenue. If a new crossing at Montgomery Avenue is approved and constructed, it should be designed to attain quiet-zone status upon completion.

**Table 1: Summary of Proposed Quiet Zone Improvements**

Location	Recommended Improvements	Estimated Cost
<b>Leucadia Boulevard</b>	Upgrade from 2 to 4 quad crossing gates, plus potential new lights and/or horns	\$ 0.5 million
<b>Encinitas Station / D Street / E Street</b>	Upgrade from 2 to 4 quad crossing gates, plus potential new lights and/or horns	\$ 1.5 million
<b>Chesterfield Drive</b>	Upgrade from 2 to 4 quad crossing gates, plus potential new lights and/or horns	<i>Already funded via rail project</i>
<b>TOTAL FOR EXISTING CROSSINGS (EARLIEST ACTION)</b>		<b>\$ 2.0 million</b>
<b>Montgomery Avenue (Pedestrian, Proposed)</b>	All new facilities for pedestrians such as gates, lights and/or horns	\$ 3.0 million
<b>TOTAL FOR EXISTING AND PROPOSED CROSSINGS</b>		<b>\$ 5.0 million</b>

### Leucadia Boulevard

This roadway-rail at-grade crossing is located approximately 76 feet from the northbound lanes of N. Coast Highway 101 on the west and 63 feet from N. Vulcan Avenue on the east. Existing grade crossing warning equipment consists of two (of a possible four) quad crossing gates and flashers for westbound and eastbound traffic lanes, plus cantilevered overhead flashers.

The initial analysis indicates that the Leucadia Boulevard crossing may not be eligible for quiet zone status under the current conditions. An SSM upgrade to four quad crossing gates—featuring gates on both sides of the crossing for both westbound and eastbound traffic, designed to prevent a motorist from driving around the closed gates—may make this crossing location eligible for a quiet zone. Additionally, the implementation of FRA-approved SSMs should qualify this crossing location for the streamlined “public authority designation” method that avoids a formal application to the FRA.

Table 2 summarizes the estimated cost of proposed improvements at Leucadia Boulevard.

**Table 2: Leucadia Boulevard Improvements Cost Estimate**

Element	Estimated Cost (Thousands)
<b>Design</b>	\$ 150
<b>Construction</b>	\$ 250
<b>Non-Construction (Administration, Safety, etc.)</b>	\$ 50
<b>Contingency (20%)</b>	\$ 80
<b>TOTAL</b>	<b>\$ 530</b>

### Encinitas Station/D Street/E Street

As these three crossings are within ¼ mile of each other, a quiet zone would need to include all of them.

The existing warning equipment at the Encinitas Station pedestrian crossing consists of flashers. The existing grade crossing warning equipment for the D Street roadway crossing, which is located approximately 250 feet from South Coast Highway 101 on the west and 130 feet from North Vulcan Avenue on the east, consists of crossing gates and flashers (the gate arms block both the roadway and sidewalk), and overhead cantilevered flashers. The E Street roadway crossing, which is located approximately 250 feet from South Coast Highway 101 on the west and 130 feet from North Vulcan Avenue on the east, also has existing grade crossing warning equipment consists of crossing gates and flashers (the gate arms block both the roadway and sidewalk), and overhead cantilevered flashers.

Initial analysis indicates that the crossings may not be eligible for quiet zone status under the current conditions. At a minimum, the implementation of SSM upgrades to four quad gates at the E Street crossing may make the entire area eligible for quiet zone status based on the FRA’s risk assessment criteria. However—while improvements at E Street represent the likely *minimum* required to achieve a sufficient risk rating for the area—to remain conservative at this planning level and ensure consistency between adjacent crossings, this analysis recommends improvements at all three crossing locations: full quad gates at D Street and E Street, plus improvements at the Encinitas Station pedestrian crossing that could include signal gates and flashers, channelization fencing, escape exit swing gates, or handrails.

The implementation of FRA-approved SSMs should qualify this crossing location for the streamlined “public authority designation” method that avoids a formal application to the FRA.

Table 3 summarizes the estimated cost of proposed improvements at E Street that may qualify the three crossings in Old Encinitas for quiet zone status.

**Table 3: Encinitas Station/D Street/E Street Improvements Cost Estimate**

Element	Estimated Cost (Thousands)
<b>Design</b>	\$ 350
<b>Construction</b>	\$ 750
<b>Non-Construction (Administration, Safety, etc.)</b>	\$ 150
<b>Contingency (20%)</b>	\$ 220
<b>TOTAL</b>	<b>\$ 1,470</b>

## Chesterfield Drive

This existing roadway-rail grade crossing is located approximately 120 feet from N. Coast Highway 101 on the west and 140 feet from San Elijo Avenue on the east. Existing warning equipment consists of two quad crossing gates (the gate arms block both the roadway and sidewalk) and flashers, and flashers on either side within the center raised medians.

The initial analysis indicates the crossing may not be eligible for quiet zone status under the current conditions. However, with the implementation of an SSM upgrade to four quad crossing gates, the crossing may be eligible. Additionally, the implementation of FRA-approved SSMs should qualify this crossing location for the streamlined “public authority designation” method that avoids a formal application to the FRA.

The San Elijo Double Track Project—set to begin construction in 2017—includes the SSMs required for the Chesterfield Drive crossing to be eligible for a quiet zone designation. These improvements, already funded by the City and the San Diego Association of Governments (SANDAG), will be constructed with the Double Track Project and the City will proceed with the processing of the quiet zone designation.

## Montgomery Avenue

Montgomery Avenue is a proposed future pedestrian crossing. If constructed at grade, this new crossing will require approval from CPUC and should be designed to attain quiet-zone status upon completion. It is expected that an at-grade crossing here would have signal gates and flashers, pedestrian channelization fencing, pedestrian escape exit swing gates, handrails, and detectable warning strips.

According to the current FRA standards, this pedestrian crossing could not be eligible for quiet zone status as it is not within a quarter mile of a roadway-rail at-grade crossing; however, there is some precedent for obtaining waivers from the FRA that would allow the crossing to gain quiet zone status with additional improvements to enhance safety. These improvements could include a pedestrian audible warning system, a wayside horn, or grade separations.

Table 4 summarizes the estimated cost of proposed improvements for a potential at-grade crossing at Montgomery Avenue.

**Table 4: Montgomery Avenue Improvements Cost Estimate**

Element	Estimated Cost (Thousands)
<b>Design</b>	\$ 560
<b>Construction</b>	\$ 1,836
<b>Non-Construction (Administration, Safety, etc.)</b>	\$ 397
<b>Contingency (20%)</b>	\$ 220
<b>TOTAL</b>	<b>\$ 3,013</b>

## Recommended Quiet Zone Process

Once this initial analysis is finalized, the quiet zone areas containing existing crossings—at Leucadia Blvd, Encinitas Station/D Street/E Street, and Chesterfield Drive—are eligible for the earliest action and should follow this general process:

- 1. Diagnostic Meeting with CPUC & Rail Operators:** The City of Encinitas meets with CPUC and rail operators (NCTD, Amtrak, and BNSF Railway) to review the quiet zone analysis and proposed improvements.
- 2. Project Development:** The City of Encinitas leads the typical processes for project development, including planning, design, community review, environmental approvals, etc. This also includes issuing a formal Notice of Intent to create each quiet zone to FRA, CPUC, and all rail operators.
- 3. Construction:** The proposed improvements are constructed, led by the City of Encinitas.
- 4. Establishment of Quiet Zones:** The quiet zones are formally implemented after the City of Encinitas issues a formal Notice of Establishment to the FRA, CPUC and all rail operators.

As noted above, if the proposed new crossing at Montgomery Avenue is constructed at grade, it will require its own quiet zone in order to create an effective quiet zone citywide. Therefore, any new at-grade crossing should include quiet zone-eligible safety features such as gates, lights, and horns as described above.

# Crossing Recommendation: Montgomery Avenue vs. Verdi Avenue

This analysis compares the potential benefits of a new crossing at Verdi Avenue versus one at Montgomery Avenue in the Cardiff-by-the-Sea community.

## Analysis Method

The analysis measured the pedestrian accessibility to and from the potential crossing locations at Verdi Avenue and Montgomery Avenue, as measured by acres served, population density, and the number of key beach destinations or access points. Identifying a pedestrian-accessible area—or “walkshed”—for reaching the crossing point is the key to identifying the number of people who would benefit from each crossing location. The more people coming from a location, or the more destinations within walking distance that are provided by new crossings, is the primary objective of the comparison.

To better model pedestrian behavior, this analysis subtracts areas that are within the walksheds of the two proposed locations but are closer to an existing legal crossing. For example, at some point south of Montgomery Avenue, it will become easier and shorter to walk down to the existing at-grade crossing at Chesterfield Avenue. The same occurs for Verdi Avenue: At a certain point to the north, it will become easier to walk to the existing pedestrian undercrossing at Santa Fe Drive. Therefore, this analysis establishes a “distance breakline” based on the closest existing crossing, and subtracts any areas that would be more likely to use an existing crossing.

The network analysis assumes all existing walkways, sidewalks, and street shoulders, and an average walking speed of 2.5 mph. It also assumes that the LOSSAN Rail Corridor is a barrier that cannot be crossed except at legal at-grade or grade-separated crossings.

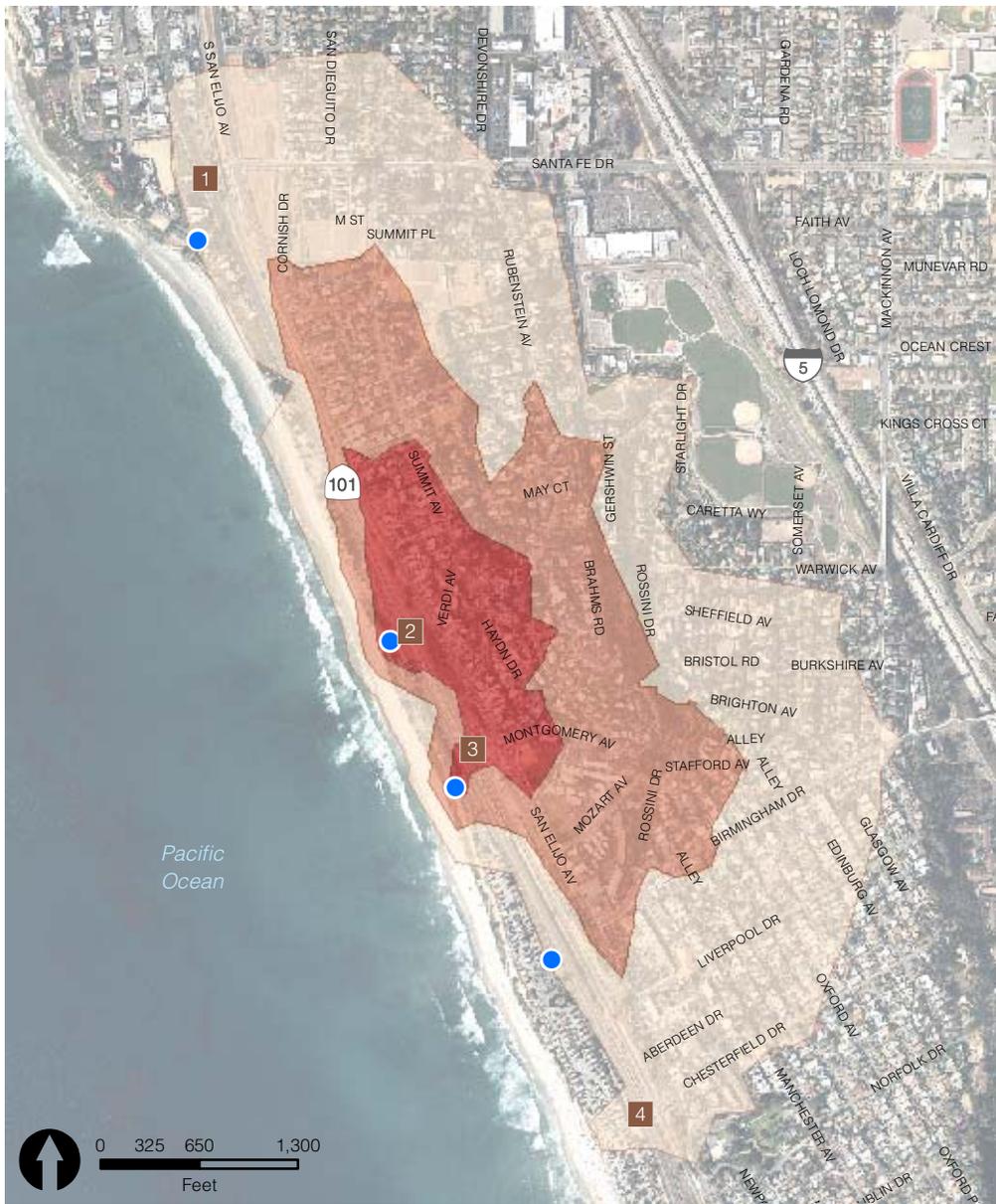
## Analysis Results

Overall, this analysis finds that a crossing at Montgomery Avenue is likely to benefit a slightly higher number of persons than a crossing at Verdi Avenue. The Montgomery Avenue walkshed is higher in density and a crossing here would be accessible to more pedestrians than a crossing at Verdi Avenue.

Table 5 summarizes the pedestrian accessibility of the two potential crossing locations. The attached maps contain more details including the specific geographic areas included in the analysis.

**Table 5: Summary of Pedestrian Accessibility**

Walk Distance →	5-Minute	10-Minute	15-Minute	Total
<b>Verdi Avenue</b>				
Acres	39	91	148	279
Population	443	528	1,307	2,277
Beach Destinations	2	0	1	3
<b>Montgomery Avenue</b>				
Acres	41	107	179	328
Population	225	969	1,589	2,783
Beach Destinations	2	0	0	2

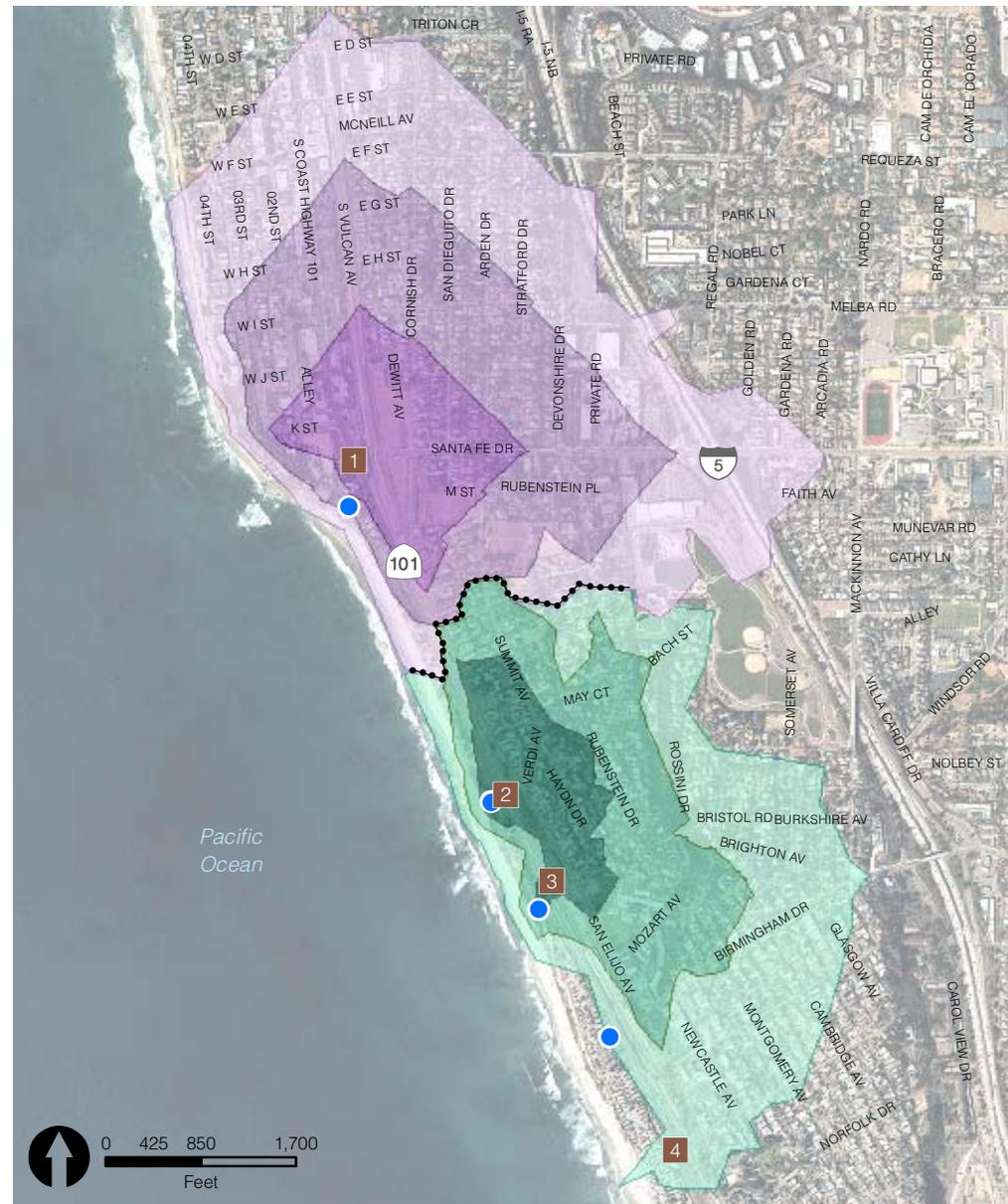


- Crossings**
- 1 Santa Fe (Existing)
  - 2 Verdi (Proposed)
  - 3 Montgomery (Proposed)
  - 4 Chesterfield (Existing)
- Beach Destination

- Verdi Crossing Walk Zones**
- 5-Minutes
  - 10-Minutes
  - 15-Minutes

**Verdi Crossing Results**

	5-Minute	10-Minute	15-Minute	Total
Acres	39	107	235	381
Population	443	763	1,850	3,056
# Destinations	2	0	2	4

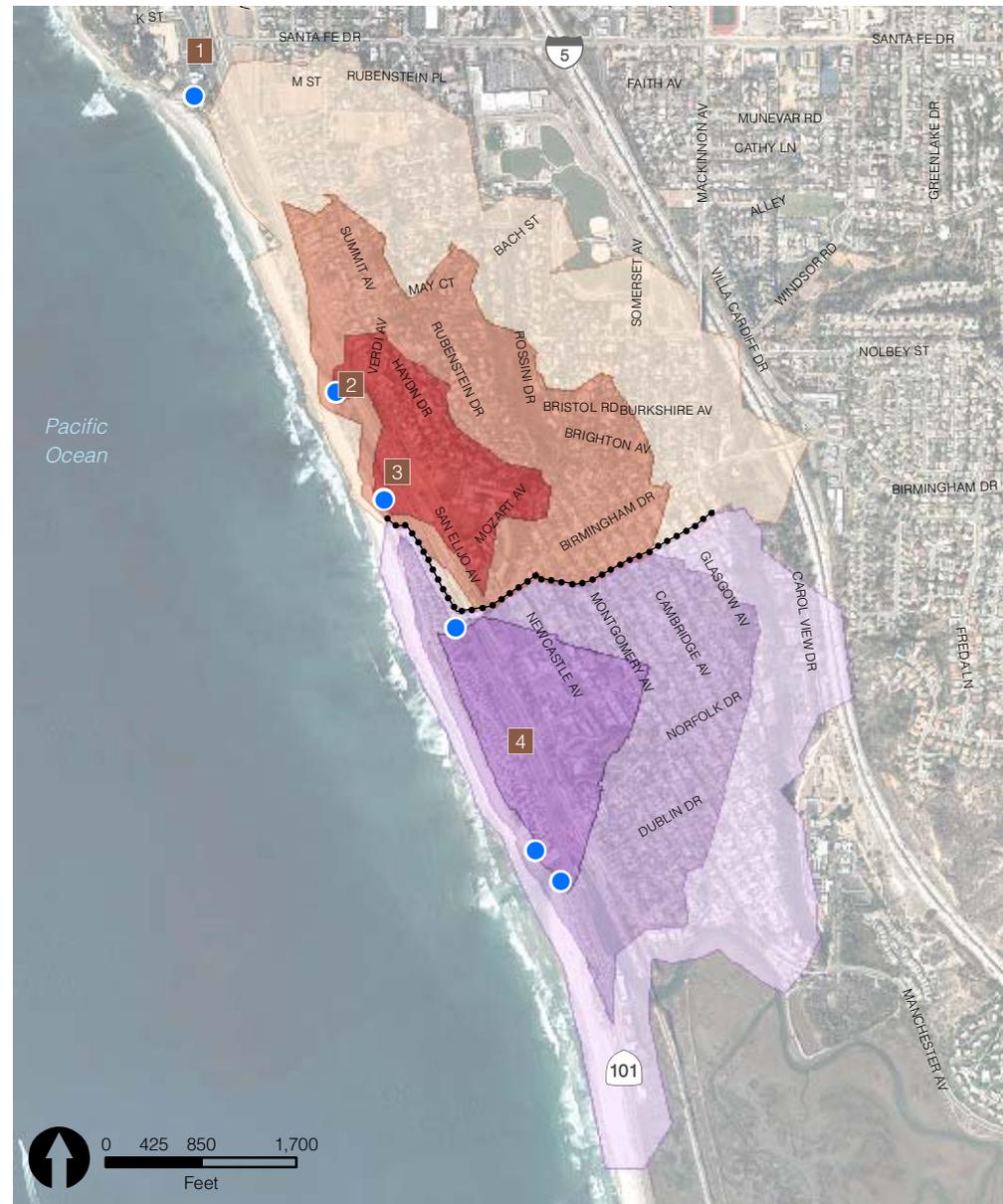
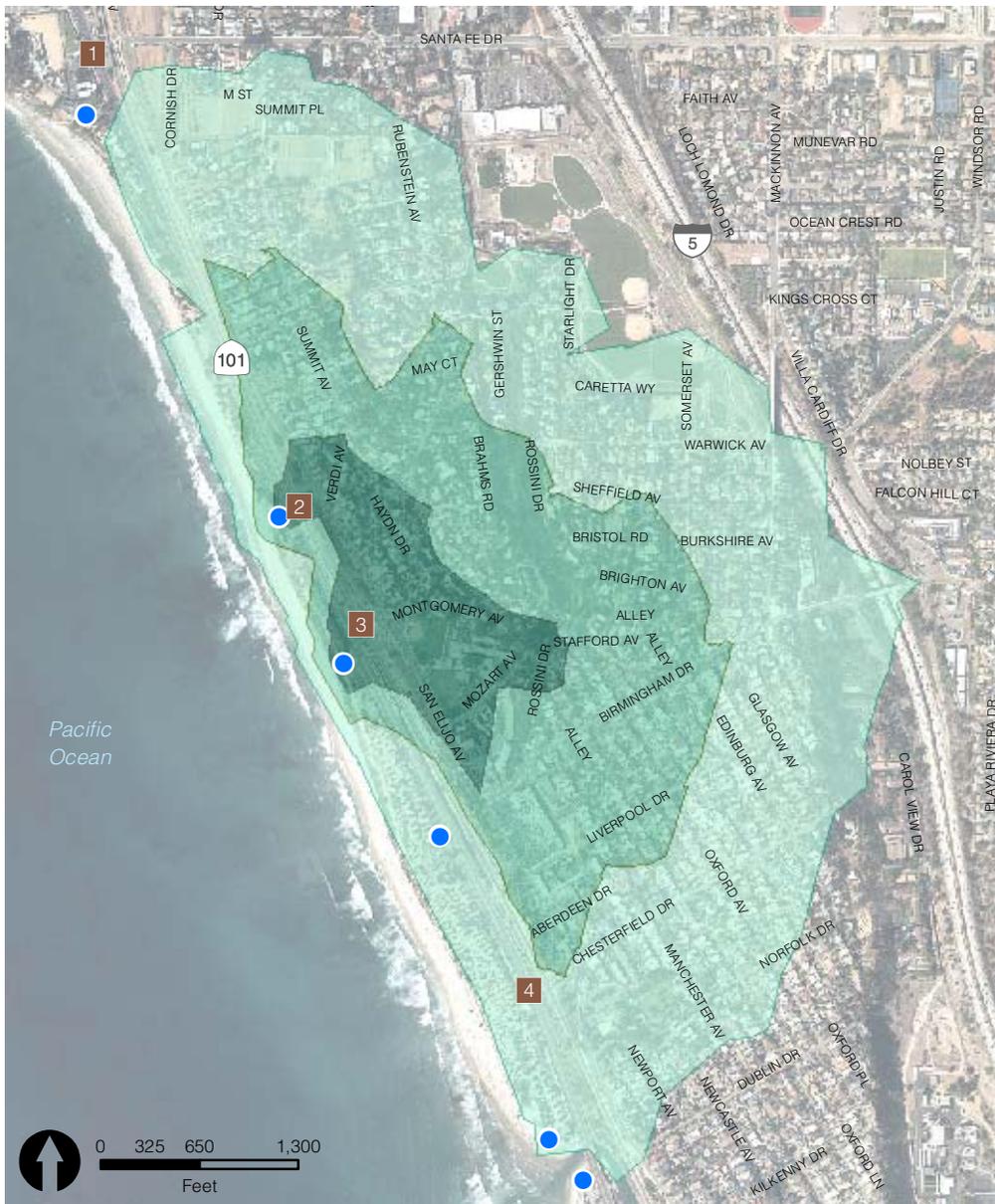


- Adjusted Walk Zones**
- Verdi : 5-Minutes
  - Verdi : 10-Minutes
  - Verdi : 15-Minutes
  - Santa Fe : 5-Minutes
  - Santa Fe : 10-Minutes
  - Santa Fe : 15-Minutes
- Distance Breakline:  
Determines which Crossing Residents are likely to use

**Verdi Adjusted Crossing Results\***

	5-Minute	10-Minute	15-Minute	Total
Acres	39	91	148	279
Population	443	528	1,307	2,277
# Destinations	2	0	1	3

\*Removes residents likely to use existing Santa Fe crossing



- Crossings**
- 1 Santa Fe (Existing)
  - 2 Verdi (Proposed)
  - 3 Montgomery (Proposed)
  - 4 Chesterfield (Existing)
  - Beach Destination

- Montgomery Crossing Walk Zones**
- 5-Minutes
  - 10-Minutes
  - 15-Minutes

**Montgomery Crossing Results**

	5-Minute	10-Minute	15-Minute	Total
Acres	42	133	286	461
Population	229	1,420	2,561	4,210
# Destinations	2	0	2	4

**Adjusted Walk Zones**

- Montgomery : 5-Minute
- Montgomery : 10-Minute
- Montgomery : 15-Minute
- Chesterfield : 5-Minute
- Chesterfield : 10-Minute
- Chesterfield : 15-Minute
- Distance Breakline:  
Determines which  
Crossing Residents  
are likely to use

**Montgomery Adjusted Crossing Results\***

	5-Minute	10-Minute	15-Minute	Total
Acres	41	107	179	328
Population	225	969	1,589	2,783
# Destinations	2	0	0	2

\*Removes residents likely to use existing Chesterfield crossing

# Crossing Recommendation: El Portal Street

This brief analysis qualitatively evaluates the potential benefits of a new pedestrian crossing of the LOSSAN Rail Corridor at El Portal Street, located within the Old Encinitas community and adjacent to the Leucadia community.

Overall, El Portal Street is recommended as a crossing location due to its location in the rail corridor (relative to other crossings), its proximity to important activity centers and homes, and the level of public support for a crossing at this location.

- **North-South Linear Spacing:** El Portal Street is roughly equidistant (0.6 miles) from the existing crossings at Leucadia Boulevard and Encinitas Boulevard, which would create even spacing and maximize accessibility benefits relative to the adjacent crossing locations.
- **Land Uses East of Rail Corridor:** El Portal Street is directly across from Paul Ecke Central Elementary School—which also includes a farmers market each Sunday—and hundreds of single- and multi-family homes. A crossing here would provide excellent connectivity for residents and students to the businesses, homes and recreational opportunities on the west side of the corridor.
- **Land Uses West of Rail Corridor:** West of the rail corridor at El Portal Street are hundreds of homes, access to beaches and coastal bluffs, and a vibrant commercial area along North Coast Highway 101. A crossing in this location would significantly improve connections to all of these places, and provide much-needed pedestrian connectivity to the rest of Encinitas to the east.
- **Public Support:** A crossing at El Portal Street generated considerable public support during the study's initial phase of public engagement, which included workshops, pop-up events and online activities throughout the city.