

# Del Mar Bluffs Risk Analysis

---

UPDATE TO THE NCTD 2020 TRESPASSER RISK  
REDUCTION STUDY



Prepared by



**NORTH COUNTY  
TRANSIT DISTRICT**



WSP | 401 B STREET, SUITE 1650, SAN DIEGO CA 92101

11/16/2021

# CONTENTS

**1 INTRODUCTION ..... 1**  
 Goals & Methodology ..... 1  
 Key Definitions ..... 2

**2 UPDATED RISK ANALYSIS FOR DEL MAR BLUFFS STUDY AREA..... 3**  
 Prior Recommendations ..... 3  
 Key Findings ..... 3

**3 EVALUATION OF DEL MAR BLUFFS STUDY AREA AS EVACUATION ROUTE . 6**  
 Approach ..... 6  
 Key Findings ..... 6

**APPENDIX A: DETAILED RISK ASSESSMENT TABLE ..... 11**

**APPENDIX B: RESOURCES USED IN EVALUATION OF EVACUATION ROUTE.... 14**

## FIGURES

Figure 1: Del Mar Bluffs Study Area ..... 1  
 Figure 2: Tsunami Evacuation Map for City of Del Mar ..... 9  
 Figure 3: Example of Blind Corner at Del Mar Bluffs Study Area ..... 10  
 Figure 4: Example of Unimproved Pathway at Del Mar Bluffs Study Area ..... 10  
 Figure 5: Example of Erosion Activity at Del Mar Bluffs Study Area ..... 10  
 Figure 6: Example of Lack of Evacuation Facilities at Del Mar Bluffs Study Area & Beach ..... 10

## TABLES

Table 1: Updated Security Risk Analysis, Del Mar Bluffs ..... 5  
 Table 2: Feasibility of Del Mar Bluffs Study Area as Evacuation Route ..... 8

# 1 INTRODUCTION

This section presents the goals, methodology, and key definitions of this *Del Mar Bluffs Risk Analysis*, which is an update to the 2020 *NCTD Trespasser Risk Reduction Study*.

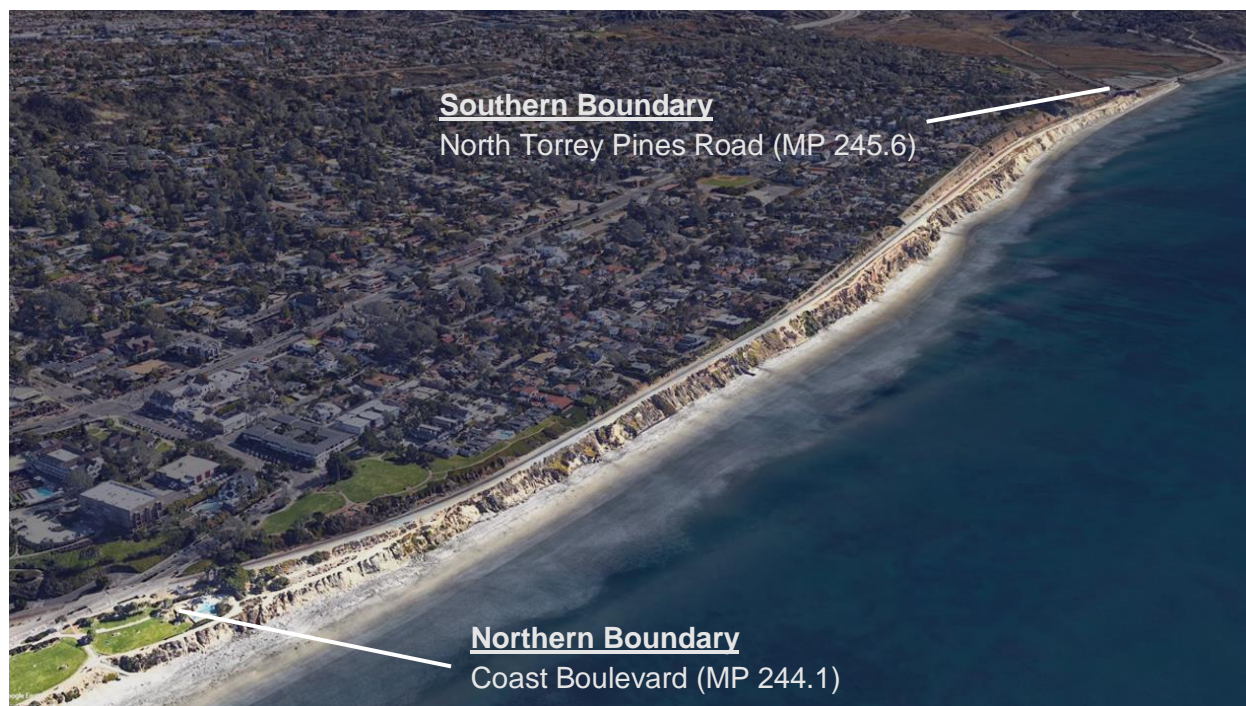
## GOALS & METHODOLOGY

The primary goal of the *Del Mar Bluffs Risk Analysis* is to reduce the risk and occurrence of trespasser incidents and associated impacts in a 1.5-mile segment of the San Diego Subdivision railroad corridor in Del Mar, California. As shown in Figure 1:, the Del Mar Bluffs Study Area is the railroad right-of-way (ROW) between Coast Boulevard (Mile Post [MP] 244.1) and North Torrey Pines Road (MP 245.6).

This supplement to the 2020 *NCTD Trespasser Risk Reduction Study* considers NCTD's October 2021 fencing plan ([website link](#)) in two separate analyses:

- **Updated Risk Analysis for Del Mar Bluffs Study Area (Section 2):** The project team applied the same industry-standard risk assessment methodology from the 2020 study—based on the Federal Transit Administration *Hazard Analysis Guidelines for Transit Projects* and the United States Department of Defense *Standard Practice for System Safety (MIL-STD-882E)*—to re-assess the risk of trespassing to the Del Mar Bluffs Study Area with and without implementation of the October 2021 fencing plan.
- **Evaluation of Del Mar Bluffs Study Area as Evacuation Route (Section 3):** The project team researched local, county, state, and federal plans and policies to determine whether the Del Mar Bluffs Study Area is currently designated as an evacuation route for natural disasters or other incidents. The project team also evaluated the feasibility of using the Del Mar Bluffs Study Area as a potential evacuation route, employing data from Google Earth and other corridor maps.

**Figure 1: Del Mar Bluffs Study Area**



Consistent with the 2020 study, this analysis considers all reasons for trespassing in its evaluation of risk. Trespassing in railroad ROWs generally occurs for one of three reasons:

- **Harm to Self:** Intentional trespassing to commit harm to oneself (e.g., suicide)
- **Harm to System:** Intentional trespassing to damage or endanger railroad assets, operations, or the safety of persons in the railroad corridor (e.g., sabotage)
- **“Incidental” Trespass:** Trespassing in the railroad corridor to reach other destinations, such as the beach or a business district. This is the most frequent type of trespassing observed in the study area

All forms of trespassing are evaluated as security incidents because they involve human intent to enter the ROW. Incidental trespassing, though not intended to do harm to self or the system, is still considered a security incident because the person still intentionally enters the railroad corridor. Therefore, this report uses the security risk assessment process for all three forms of trespassing evaluation, as detailed in the 2020 study risk assessment methodology section.

## KEY DEFINITIONS

This report uses several key terms:

- **Safe:** Freedom from *unintentional* harm to people, equipment, reputation
- **Secure:** Freedom from *intentional* harm to people, equipment, reputation
- **Hazard:** Real or potential condition that can cause injury, illness, death, damage
- **Threat:** Any intentional action with the potential to cause harm in the form of death, injury, destruction, disclosure, interruption of operations, or denial of services
- **Vulnerability:** Condition that allows for successful realization of a potential threat
- **Risk:** The probability (frequency) or likelihood of a threat or hazard measured against the outcome or consequence (severity) of the threat or hazard
- **Acceptable Risk:** When further risk reduction measures will not result in significant reduction of risk

## 2 UPDATED RISK ANALYSIS FOR DEL MAR BLUFFS STUDY AREA

In this updated analysis, the project team evaluated the risk of trespassing in the Del Mar Bluffs Study Area with and without implementation of NCTD's October 2021 fencing plan ([website link](#)).

### PRIOR RECOMMENDATIONS

Given the demonstrated effectiveness of physical barriers in reducing trespassing, the 2020 *NCTD Trespasser Risk Reduction Study* recommended physical barriers such as fencing and surface treatments as the highest priority risk-reduction measure for all study areas, including the Del Mar Bluffs Study Area. In conjunction with physical barriers, the 2020 study recommended stronger signage at frequent intervals along the corridor including all potential access points. The combination of physical barriers and signage can be effective in reducing both security risk and liability. Refer to Section 8 of the 2020 study for additional details on these recommendations.

### KEY FINDINGS

The analysis found that NCTD's October 2021 fencing plan would provide physical barriers where trespassing most often occurs. Combined with appropriate signage at frequent intervals along the corridor and continued reporting of suspicious behavior by NCTD operations personnel, the fencing plan would achieve a reduction of security risk and a substantial reduction of liability risk.

The updated risk assessment in Table 1 shows the analysis results for each type of trespassing, which are the same residual (mitigated) risk ratings envisioned in the 2020 *NCTD Trespasser Risk Reduction Study*. Appendix A contains a larger table detailing the risk assessment for each segment of the proposed fence plan.

### RESIDUAL RISK

While trespassing risk will remain even with fencing installed, the proposed fencing plan, signage, and continued reporting of suspicious behavior by NCTD operations personnel will combine to substantially reduce the number of incidental trespassers. The primary sources of remaining trespassers will be those who are determined to enter in a difficult way, such as by climbing fences or steep bluffs. When trespassing does occur, the fencing and signage will substantially reduce liability by clearly communicating and establishing NCTD's ownership of the ROW and the potential consequences of trespassing.

### FENCE TYPES

Though fencing both sides of the railroad corridor would provide the most reduction of risk, the Del Mar Bluffs Study Area is highly constrained, and therefore NCTD's draft fencing proposal includes a mix of chain-link fencing on the inland side and coastal side, including at key access points, combined with single-strand wood post-and-cable fencing and post-and-cable fall protection in other locations. The project team's evaluation did not find this difference to significantly increase risk because chain-link fencing is provided in the areas where trespassing and strike incidents are most concentrated. The single-strand wood post-and-cable and post-and-cable fall protection are provided where the bluffs are more difficult to traverse and there are no indications of frequent trespassing in those areas.

### SECONDARY HAZARD EVALUATION

Because determined trespassers may still access the railroad ROW via at-grade crossings, via steep bluffs, or over post-and-cable barriers, the project team also evaluated the potential secondary hazard that new fencing may create by limiting exit routes to trespassers who do enter the ROW. The fencing

plan shows that the proposed barriers are far enough from the railroad tracks to allow trespassers to avoid oncoming trains, reducing this secondary hazard to an acceptable level.

### SIGNAGE

Due to the different reasons people may trespass onto the ROW—harm to self, harm to system, and incidental, as described in Section 1—the *2020 NCTD Trespasser Risk Reduction Study* recommended that signage should provide the information listed below. This updated risk assessment assumes the warning signage shown on the proposed fencing plan meets this recommendation.

- **Wayfinding:** Identifying the best routes to nearest legal crossings
- **Operation Lifesaver:** Highlighting the safety risks of trespassing
- **Security Awareness:** Urging users if they see something, say something
- **Suicide Hotline:** Encouraging users to seek help from a 24/7 call center

### ONGOING MONITORING

Once installed, it will be important for NCTD to monitor the effectiveness of the fencing and signage—to track trespassing and strike incidents and whether the locations of these incidents shift in response to the installed fencing. If concentrations of trespassing occur in new locations, NCTD should evaluate additional barriers at those locations and continue monitoring.

**Table 1: Updated Security Risk Analysis, Del Mar Bluffs**

Threat Type/ Event	Potential Effects	Initial Risk Rating	Mitigations Under Proposed Fencing Plan	Residual Risk Rating
<b>Trespassing Harm to Self</b>	<ul style="list-style-type: none"> <li>– Potential deaths and/or serious injury to trespassers</li> <li>– Potential loss of equipment</li> <li>– Significant system interruption</li> <li>– Negative media coverage</li> </ul>	<b>2A: Very High – Mitigate and Monitor</b>	<ul style="list-style-type: none"> <li>– Provides physical security barriers (fences) for segments along corridor, focused on areas of the corridor most vulnerable to trespassing</li> <li>– Minimizes access to railroad right-of-way from legal crossings</li> <li>– Provides warning signage at key points along the corridor where current trespassing activity is concentrated</li> </ul> <p><b>Implementation Recommendations:</b></p> <ul style="list-style-type: none"> <li>– On proposed warning signage, include the following information related to trespassing:                             <ul style="list-style-type: none"> <li>• Suicide hotline</li> <li>• See something/Say something</li> </ul> </li> <li>– When installing fencing, confirm compliance with CPTED principles</li> </ul> <p><i>* Assumes railroad operations personnel currently report suspicious activity.</i></p>	<b>2B: High – Treat and Monitor</b>
<b>Trespassing Harm to System</b>	<ul style="list-style-type: none"> <li>– Several deaths and/or numerous serious injuries</li> <li>– Significant loss of equipment</li> <li>– Significant system interruption</li> <li>– Negative media coverage</li> <li>– Loss of observational capability</li> </ul>	<b>1B: Very High – Mitigate and Monitor</b>	<ul style="list-style-type: none"> <li>– Provides physical security barriers (fences) for segments along corridor, focused on areas of the corridor most vulnerable to trespassing</li> <li>– Minimizes access to railroad right-of-way from legal crossings</li> <li>– Provides warning signage at key points along the corridor where current trespassing activity is concentrated</li> </ul> <p><b>Implementation Recommendations:</b></p> <ul style="list-style-type: none"> <li>– On proposed warning signage, include the following information related to trespassing:                             <ul style="list-style-type: none"> <li>• Operation Lifesaver</li> <li>• See something/Say something</li> </ul> </li> <li>– When installing fencing, confirm compliance with CPTED principles</li> <li>– Ensure key assets are tamper-resistant</li> </ul> <p><i>* Assumes railroad operations personnel currently report suspicious activity.</i></p>	<b>1C: High – Treat and Monitor</b>
<b>Trespassing Incidental</b>	<ul style="list-style-type: none"> <li>– Potential deaths and/or serious injury to trespassers</li> <li>– Potential loss of equipment</li> <li>– Significant system interruption</li> <li>– Negative media coverage</li> </ul>	<b>2A: Very High – Mitigate and Monitor</b>	<ul style="list-style-type: none"> <li>– Provides physical security barriers (fences) for segments along corridor, focused on areas of the corridor most vulnerable to trespassing</li> <li>– Minimizes access to railroad right-of-way from legal crossings</li> <li>– Provides warning signage at key points along the corridor where current trespassing activity is concentrated</li> </ul> <p><b>Implementation Recommendations:</b></p> <ul style="list-style-type: none"> <li>– On proposed warning signage, include the following information related to trespassing:                             <ul style="list-style-type: none"> <li>• Operation Lifesaver</li> <li>• Wayfinding to safe crossing</li> <li>• Legal consequences</li> </ul> </li> <li>– When installing fencing, confirm compliance with CPTED principles</li> </ul> <p><i>* Assumes railroad operations personnel currently report suspicious activity.</i></p>	<b>2B: High – Treat and Monitor</b>

### 3 EVALUATION OF DEL MAR BLUFFS STUDY AREA AS EVACUATION ROUTE

For the second analysis in this update to the 2020 *NCTD Trespasser Risk Reduction Study*, the project team evaluated the feasibility of utilizing the Del Mar bluffs as a potential evacuation route due to natural disasters, such as a wildfire.

#### APPROACH

The project team applied a two-pronged approach to evaluating the Del Mar bluffs as a potential evacuation route. First, the team reviewed open-source documents available on the official websites of the affected jurisdictions and any documents received through direct requests for information. Appendix B lists these sources. Second, the team interviewed emergency management representatives from affected jurisdictions. Interviews were virtual and conducted over the phone, by video call, or via email.

The City of Del Mar and the California Office of Emergency Services (CalOES) participated in interviews. FEMA Region 9 and the San Diego County Sheriff's Office were contacted via email and phone but did not respond. The representative for CalOES also provided insight into plans for San Diego County, as this person is the CalOES Emergency Preparedness Coordinator assigned to cover San Diego County. The list below summarizes information gathering efforts by jurisdiction.

- **CalOES:** Cruz Ponce represented CalOES in an email conversation on October 6, 2021, and provided several links to relevant documents for further review.
- **City of Del Mar:** Clem Brown represented the City of Del Mar in a virtual interview on October 6, 2021, and via email provided documents and relevant links for further review.
- **FEMA Region 9:** Johanna Johnson was contacted on October 6, 2021, via email and phone along with multiple phone call attempts over the following few days. No response has been received as of the date of this report. In lieu of a response, the project team searched for relevant documents on the FEMA Region 9 website and via a Google search for any FEMA documents relevant to the City of Del Mar, San Diego County, or the affected section of track along the Del Mar bluffs.
- **San Diego County:** Cruz Ponce of CalOES provided links to relevant documents from San Diego County for further review. Cruz is a CalOES Emergency Preparedness Coordinator assigned to San Diego County.
- **San Diego County Sheriff's Office:** an email and phone call on October 6, 2021, to the office's general email and business phone number were not answered. The office's website does not contain relevant information. In lieu of a response, the project team incorporated information from the City of Del Mar about the Sheriff's role in emergency evacuation for the city.

#### KEY FINDINGS

The analysis found that the Del Mar bluffs is not currently listed as part of an evacuation plan for the City of Del Mar, the State of California, or any other Federal, State, County, or Local entity. Further, the analysis concluded that the Del Mar bluffs are not feasible for use as a potential evacuation route.

This section presents observations of existing evacuation plans and their use of the Del Mar bluffs made from the interviews, provided documents, and open sources. The section then presents an assessment of the bluffs as an evacuation route based on the observations and in concert with relevant emergency management practices.



## EXISTING EVACUATION PLANS & USE

Based on information from the City of Del Mar and San Diego County, the top natural hazards identified for the City of Del Mar, including the area of tracks along the Del Mar bluffs, are:

- **Coastal Storm/Erosion:** This hazard is listed due to its constant and historical occurrence, but it would not likely be cause for an emergency evacuation toward the Del Mar bluffs.
- **Wildfire:** This hazard is listed due to periodic Santa Ana winds and abundance of fuel in the area. This hazard might necessitate an emergency evacuation toward the Del Mar bluffs, but it is unlikely because it has not been identified in any plans and would not be consistent with emergency management best practices.
- **Landslide:** When coupled with coastal storm/erosion or wildfire and an earthquake or tsunami, this hazard becomes very serious but would not likely necessitate an emergency evacuation toward the Del Mar bluffs.
- **Earthquake:** This hazard is listed due to the City of Del Mar's proximity to local seismic faults. It is not likely that this hazard would necessitate an emergency evacuation toward the Del Mar bluffs.
- **Tsunami:** This hazard is listed as result of the City of Del Mar's proximity to the Pacific Ocean. It is not likely that this hazard would necessitate an emergency evacuation toward the Del Mar bluffs.
- **Drought:** This hazard is listed due to a significant decrease in total annual rainfall in recent years. It is not likely that this hazard would necessitate an emergency evacuation toward the Del Mar bluffs.

Current plans for the area of track along the Del Mar bluffs do not indicate any emergency evacuation routes leading people across the tracks or down the bluffs to the beach. Instead, evacuation plans direct people away from the direction of the tracks and the Del Mar bluffs. The City of Del Mar noted that the only reason they might tell people to evacuate across the rail tracks toward the Del Mar bluffs would be if there was a wildfire moving from east to west affecting the safety of residents and structures in the city.

The City of Del Mar noted that the San Diego County Sheriff's Office is the lead agency with authority to order and manage emergency evacuations within the City of Del Mar. In practice, a decision to issue an emergency evacuation would be made in collaboration with the Emergency Operations Center (EOC) of the City of Del Mar.

The tracks along the Del Mar Bluffs Study Area (between Coast Boulevard and North Torrey Pines Road) does not have protected crossings suitable for pedestrian movement, including for those with mobility concerns such as wheelchair users. Furthermore, there is currently no improved pathway in the study area down to the beach from the top of the bluffs, which would be needed for an emergency evacuation of people with and without mobility concerns.

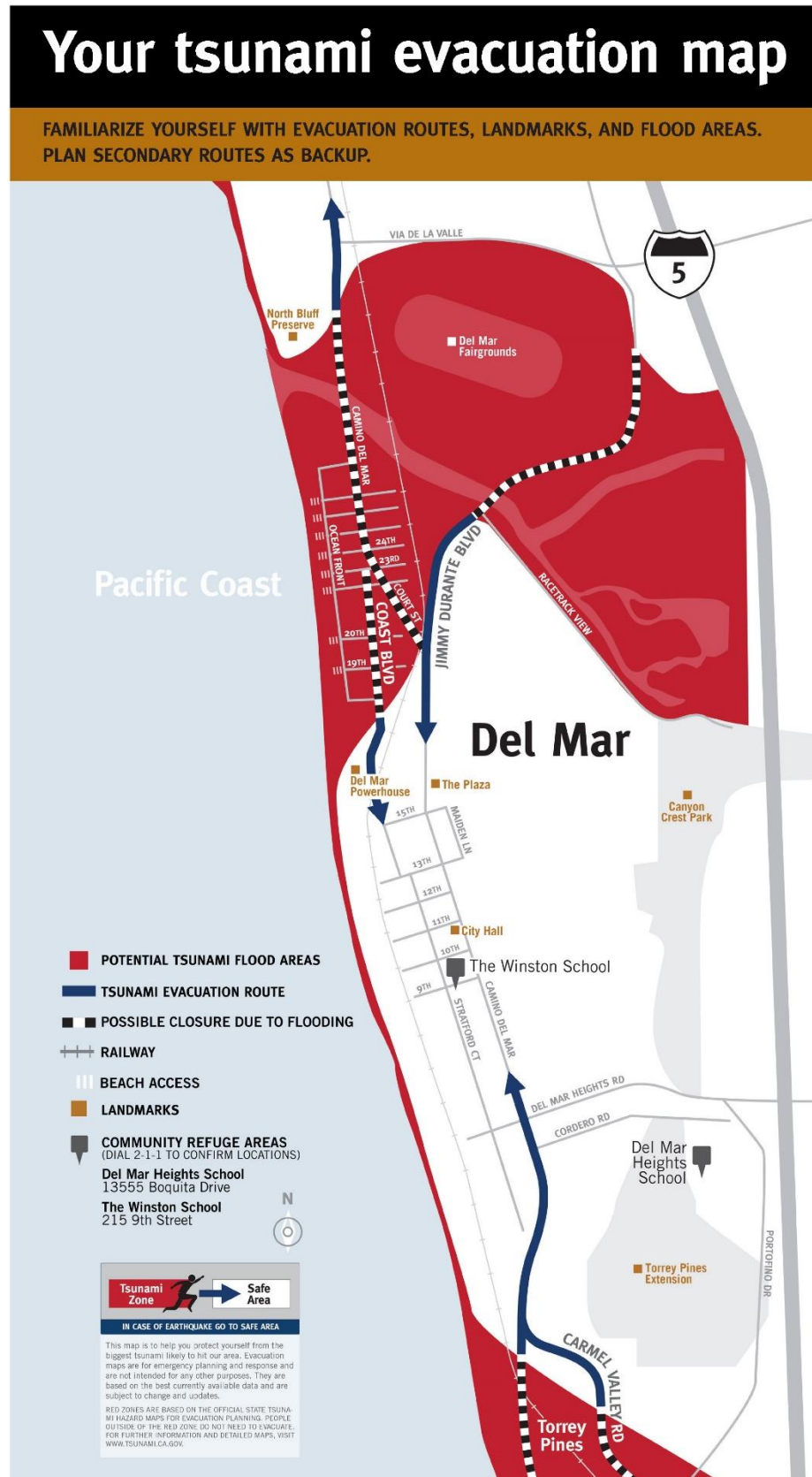
**FEASIBILITY AS EVACUATION ROUTE**

Emergency evacuation directed toward the section of tracks along the Del Mar bluffs is not feasible for a number of reasons, as outlined in Table 2.

**Table 2: Feasibility of Del Mar Bluffs Study Area as Evacuation Route**

Reason	Description	Visual Ref.
Del Mar bluffs are not designated for use during emergency evacuation	Current plans for the City of Del Mar, County of San Diego, and CalOES do not specifically call for using the Del Mar bluffs for emergency evacuation. Neither do any of these jurisdictions, nor FEMA Region 9 or the San Diego County Sheriff’s Office, advertise using the Del Mar bluffs for emergency evacuation on their websites intended for public information. Current plans and public information specifically direct people to evacuate away from the shoreline in general. This is also consistent with Emergency Management best practices for evacuations where the common guidance is for emergency evacuations to be directed upwind, uphill, or upstream. Evacuating toward the tracks and bluffs is counter to this best practice.	Figure 2
Current conditions do not provide for the safe use of the Del Mar bluffs as an emergency evacuation route	Lack of a direct means of communication with railroad controllers to immediately control train movement around blind corners and through the Del Mar Bluffs Study Area places evacuees in danger if they were to evacuate across the tracks toward the Del Mar bluffs while a train was simultaneously traveling through the area.	Figure 3
	Lack of improved pathways down the hillsides from the streets and properties, across the tracks, along the bluffs, or down the bluffs to the beach creates slip, trip, or fall hazards for people with and without mobility concerns, including but not limited to wheelchair use, visual impairment, limb prosthetics, etc. Lack of safe and accessible alternative routes off the beach below the Del Mar bluffs also creates an entrapment hazard for any evacuees who do make it down the bluffs, further underscoring why the Del Mar bluffs are not feasible for emergency evacuation.	Figure 4
	Active soil/coastal erosion issues on the bluffs make any existing informal pathways to the beach questionable to the degree that they could safely support a mass evacuation of people and/or their belongings.	Figure 5
	Isolated location and volatile tide conditions along the bluffs and beach limit the safety and effectiveness of potential evacuation and rescue operations. Lack of facilities on the beach that could accommodate sheltering, sanitation, or other disaster services needs would leave evacuees stranded until rescuers could reach them. High tides, seasonal king tides, and sneaker waves often flood the beach, sometimes without warning, rendering it impassable and potentially dangerous for both rescuers and evacuees.	Figure 6

Figure 2: Tsunami Evacuation Map for City of Del Mar



**Figure 3: Example of Blind Corner at Del Mar Bluffs Study Area**



**Figure 4: Example of Unimproved Pathway at Del Mar Bluffs Study Area**



**Figure 5: Example of Erosion Activity at Del Mar Bluffs Study Area**



**Figure 6: Example of Lack of Evacuation Facilities at Del Mar Bluffs Study Area & Beach**



# APPENDIX A: DETAILED RISK ASSESSMENT TABLE

Fencing Plan Map #	Trespasser Activities & # of Strikes	Fencing in 2020 Risk Assessment	Proposed Fencing in NCTD's Draft Fencing Plan Proposal	Risk Implications of Proposed Fencing Plan vs. Fencing in 2020 Risk Assessment
1, 2	North-south East-west 11 strikes between Coast Blvd and Sea Orbit Ln	16' access gate at sidewalk at Coast Blvd W-side 4' chain link parallel to tracks for 150' before transitioning to 6' chain link	4' chain link at sidewalk at Coast Blvd with warning signs W-side 4' chain link parallel to tracks for 150' before transitioning to 6' chain link with warning sign where existing trails access tracks Option 1: Single strand wood post and cable below bluffs separates access trails with warning signage at end of existing trail before it moves up onto the bluff parallel to tracks Option 2: 6' chain link crops below bluff to cut off access trails	Replaces 16' access gate with 4' chain link fence plus warning signs: does not change assessed risk because both redirect incidental trespassing and deter other forms of trespassing 6' fence remains inland Emergency egress maintained E-side using existing access trails Does not fence off access to E-W trespassing along tracks accessed from the E-side Option 1,2: Further reduces incidental trespass from W-side Does not change assessed risk
3	North-south East-west 11 strikes btw Coast Blvd and Sea Orbit Ln	6' chain link E-side on top of bluff	Future phase 6' chain link fence E-side mid-bluff with warning signs where existing trails access tracks	6' fence remains, moves from top of bluff to mid-bluff Does not change assessed risk except that it's marked "future phase": would need to be installed to achieve assessed level of risk reduction
4	North-south East-west 11 strikes btw Coast Blvd and Sea Orbit Ln	6' chain link E-side on top of bluff with 16' access gates at 13 <sup>th</sup> St	Future phase 6' chain link fence E-side mid-bluff with 6' chain link fence and metal gate below 13 <sup>th</sup> St, post and cable fall protection at 13 <sup>th</sup> St on top of bluff, and warning signs at both gate and post and cable fall protection	6' fence and gate remain, moves from top of bluff to mid-bluff but adds post and cable and signage at end of 13 <sup>th</sup> St Does not change assessed risk except that on either side of 13 <sup>th</sup> St the chain link fence is marked "future phase": would need to be installed to achieve assessed level of risk reduction
5	North-south East-west 11 strikes btw Coast Blvd and Sea Orbit Ln	6' chain link E-side on top of bluff with 16' access gates at 12 <sup>th</sup> St	Future phase 6' chain link fence E-side mid-bluff with 6' chain link fence and metal gate below 12 <sup>th</sup> St and warning sign below 12 <sup>th</sup> and existing access trail	6' fence and gate remain, moves from top of bluff to mid-bluff Does not change assessed risk except that the chain link fence is marked "future phase": would need to be installed to achieve assessed level of risk reduction

Fencing Plan Map #	Trespasser Activities & # of Strikes	Fencing in 2020 Risk Assessment	Proposed Fencing in NCTD's Draft Fencing Plan Proposal	Risk Implications of Proposed Fencing Plan vs. Fencing in 2020 Risk Assessment
6	North-south East-west	6' chain link E-side on top of bluff with 16' access gates at 11 <sup>th</sup> St and Penny Ln 6' chain link W-side below tracks	Future phase 6' chain link fence E-side mid-bluff with 6' chain link fence and warning sign below 11 <sup>th</sup> /existing access trail  Single strand wood post and cable W-side below bluffs between tracks and existing trails with warning sign where existing trail moves up onto track	E-side 6' fence and gate remain, moves from top of bluff to mid-bluff W-side 6' fence replaced with single strand wood post and cable Redirects incidental trespassing and deters other forms of trespassing Does not change assessed risk even though W-side is not chain link because no recorded strikes in this area The chain link fence is marked "future phase": would need to be installed to achieve assessed level of risk reduction
7, 8	North-south East-west	6' chain link E-side on top of bluff with 16' access gates at 10 <sup>th</sup> St and 9 <sup>th</sup> St 6' chain link W-side below tracks	Future phase 6' chain link fence E-side mid-bluff  Single strand wood post and cable W-side below bluffs between tracks and existing trail Starting just S of 9 <sup>th</sup> St, post and cable fall protection top of bluff between existing trail and bluff	E-side 6' fence remains, moves from top of bluff to mid-bluff Adds E-side post and cable fall protection and warning signage W-side 6' fence replaced with single strand wood post and cable Redirects incidental trespassing and deters other forms of trespassing Does not change assessed risk even though W-side is not chain link because no recorded strikes in this area The chain link fence is marked "future phase": would need to be installed to achieve assessed level of risk reduction
9, 10	North-south 1 strike	6' chain link E-side on top of bluff with 16' access gates at 8 <sup>th</sup> St and 7 <sup>th</sup> St 6' chain link W-side below tracks	Future phase 6' chain link fence E-side mid-bluff until terminating just south of 7 <sup>th</sup> St with warning sign  Single strand wood post and cable W-side below bluffs between tracks and existing trail Post and cable fall protection top of bluff between existing trail and bluff with warning sign just south of 7 <sup>th</sup> St	E-side 6' fence remains, moves from top of bluff to mid-bluff, but terminates just south of 7 <sup>th</sup> St Adds E-side post and cable fall protection and warning signage W-side 6' fence replaced with single strand wood post and cable Deters incidental trespass Does not change assessed risk even though W-side is not chain link and E-side terminates just south of 7 <sup>th</sup> St because there are no visible access trails across that part of bluffs, which appear not to be used to access the ROW/beach, and there are no recorded strikes in this area

Fencing Plan Map #	Trespasser Activities & # of Strikes	Fencing in 2020 Risk Assessment	Proposed Fencing in NCTD's Draft Fencing Plan Proposal	Risk Implications of Proposed Fencing Plan vs. Fencing in 2020 Risk Assessment
				The chain link fence is marked "future phase": would need to be installed to achieve assessed level of risk reduction
11, 12, 13, 14	North-south	6' chain link E-side on top of bluff with 16' access gate at 4 <sup>th</sup> and terminating after subdivision south of 4 <sup>th</sup> St when existing trail turns east  6' chain link W-side below tracks with periodic 16-ft access gates starting just north of 6 <sup>th</sup> St	Single strand wood post and cable W-side below bluffs between tracks and existing trail with warning sign between Alley and 4 <sup>th</sup> St  Post and cable fall protection top of bluff between existing trail and bluff until terminating after subdivision south of 4 <sup>th</sup> St with warning sign when existing trail turns east	E-side 6' fence replaced with post and cable fall protection and warning signage W-side 6' fence replaced with single strand wood post and cable Deters incidental trespass Does not change assessed risk even though W-side is not chain link and E-side is replaced with post and cable fall protection because there are no visible access trails across that part of bluffs, which appear not to be used to access the ROW/beach, and there are no recorded strikes in this area
15	North-south	6' chain link W-side below tracks with periodic 16-ft access gates, extending up to existing fence south of N Torrey Pines Rd with a short stretch of 6' chain link E-side just north of N Torrey Pines Rd	Single strand wood post and cable W-side below bluffs between tracks and existing trail	W-side 6' fence replaced with single strand wood post and cable Deters incidental trespass Does not change assessed risk even though W-side is not chain link because no recorded strikes in this area

## APPENDIX B: RESOURCES USED IN EVALUATION OF EVACUATION ROUTE

Resource Title	Source
CalOES Website: <a href="https://www.caloes.ca.gov/">https://www.caloes.ca.gov/</a>	CalOES
City of Del Mar Community Emergency Response Team Website: <a href="https://www.delmar.ca.us/527/Community-Emergency-Response-Team-CERT">https://www.delmar.ca.us/527/Community-Emergency-Response-Team-CERT</a>	City of Del Mar
City of Del Mar Emergency Preparedness Website: <a href="https://www.delmar.ca.us/281/Emergency-Preparedness">https://www.delmar.ca.us/281/Emergency-Preparedness</a>	City of Del Mar
City of Del Mar Emergency Operations Center Website: <a href="https://www.delmar.ca.us/768/Emergency-Operations-Center-EOC">https://www.delmar.ca.us/768/Emergency-Operations-Center-EOC</a>	City of Del Mar
City of Del Mar Hazard Mitigation Plan	City of Del Mar
FEMA Region 9 Website: <a href="https://www.fema.gov/about/organization/region-9">https://www.fema.gov/about/organization/region-9</a>	Federal Emergency Management Agency
FEMA RiskMAP Products Website: <a href="https://www.fema.gov/flood-maps/tools-resources/risk-map/products">https://www.fema.gov/flood-maps/tools-resources/risk-map/products</a>	Federal Emergency Management Agency
San Diego County Emergency Operations Plan	San Diego County
San Diego County Hazard Mitigation Plan	San Diego County
San Diego County Office of Emergency Services Website: <a href="https://www.sandiegocounty.gov/oes/">https://www.sandiegocounty.gov/oes/</a>	San Diego County
San Diego County Operational Area Recovery Plan	San Diego County
Very High Fire Hazard Severity Zones	CalOES
Your Tsunami Evacuation Map	City of Del Mar