



February 25, 2022

Ms. Shannon Vaughn
California Coastal Commission, Coastal Program Manager
South Coast District Office
301 E. Ocean Blvd. Suite 300
Long Beach, California 90802

Subject: Resubmittal: Coastal Development Permit Application for Railroad Emergency Stabilization Project – San Clemente Orange Sub MP 206.85

Dear Ms. Vaughn,

On behalf of the Orange County Transportation Agency (OCTA) and Southern California Regional Rail Authority (SCRRA or Metrolink), HDR is resubmitting an application for a Coastal Development Permit (CDP) for the Railroad Emergency Stabilization Project – San Clemente Orange Sub MP 206.85 Project (project) in San Clemente, Orange County, California. The enclosed CDP application includes revisions to the original CDP application based on the Notice of Incomplete letter (December 16, 2021), as well as the additional emergency work conducted under the second emergency permit (described below).

1. The First Emergency Permit (Number G-5-21-0039) was issued to OCTA and Metrolink September 23, 2021 for the project. OCTA and Metrolink submitted a CDP application in response to the conditions of approval for Emergency Permit (Number G-5-21-0039) on November 22, 2021. On December 16, 2021, the California Coastal Commission sent a Notice of Incomplete Application to OCTA and Metrolink.
2. A second Emergency Permit (Number G-5-21-0057) was issued to OCTA and Metrolink December 22, 2021.

Conditions of approval in the Emergency Permit #1 and #2 have been met, including but not limited to minimizing the riprap revetment work to the area described in the permit; implementation of spill prevention measures; prohibiting construction materials and equipment on the beach; obtaining necessary permits or authorizations from other agencies; and submitting a complete follow-up CDP application within 60 days of issuance of the Emergency Permit.

Emergency Permit #1. The initial CDP application was for the emergency work that was required to stabilize the railroad tracks from further shifting due to recent landslide movement originating at the westerly coastal slope and extending below the railroad ROW to daylight west of the tracks. Recent acceleration of the slide resulted in severe cracks and separation in pavement and house foundations at the top of the slope and caused severe deflection in the railroad tracks. Metrolink ceased all passenger rail traffic (Amtrak; Metrolink) through the emergency area due to potential safety concerns from September 16 through October 4, 2021.



The 12,500 tons of riprap that was placed between September 16 and October 2, 2021 was able to slow the deflection and allow OCTA and Metrolink to shift the tracks back in place. Passenger rail service was allowed to resume on October 4, 2021. Ongoing monitoring has occurred since the last placement of riprap and geotechnical surveys have been conducted, including geotechnical boreholes and installation of inclinometers occurred October 16 and 17, 2021.

Emergency Permit #2. The results of the ongoing geotechnical monitoring identified a shallower depth of the shear zone that was previously unknown, and the 12,500 tons of riprap placed was not enough to stabilize the slope and tracks until an intermediate structural improvement can be engineered, permitted, and constructed. The additional data collected from the geotechnical borings and the subsurface ground movement monitoring from the inclinometers identified the need to place an additional 5,000 to 6,000 tons of riprap.

An additional 5,480 tons of riprap was placed between December 18, 2021 and January 30, 2022. The riprap was placed using the same methods and in the same 700 linear foot area as Emergency Permit #1. The riprap has been placed at a 1.5:1 slope to improve the stability of the rock itself.

Future (Near-Term) Interim Solution. While the two phases of riprap revetment placement on the west side of the tracks have improved the marginal stability of the slope and track, an engineered structural improvement is still needed on the east side of the track for the ongoing subsurface movement to achieve an industry-accepted factor of safety. As detailed in the Alternatives Analysis (Attachment M), Metrolink and OCTA are currently reviewing several alternatives for interim engineered structural improvements. The interim engineered structural improvement would be the last phase of the Emergency Railroad Stabilization Project and, in coordination with California Coastal Commission, is anticipated to be implemented in the coming months. While the slope and tracks are marginally stable due to the riprap placement, external forces on the landslide, such as loads from passing trains, higher hydrostatic pressure due to higher ground water elevations, heavy ocean wave action, or earthquake could result in ongoing instability.

Long Term Resiliency Planning. In the previous Coastal Development Permit application submitted, it was indicated that OCTA and Metrolink are actively planning to evaluate long-term, corridor-wide coastal resiliency solution. In early 2022, OCTA and Metrolink are planning to initiate an alternatives analysis of the four potential coastal adaptation options (alternatives) outlined in the OCTA's 2021 *Rail Defense Against Climate Change Plan*, to further reduce risk and improve resiliency throughout the Los Angeles – San Diego – San Luis Obispo Rail coastal railroad corridor (approximately Dana Point to San Clemente), including at the emergency stabilization site. The alternatives analysis will incorporate relevant planning-level resiliency studies, including the California Coastal Commission Sea Level Rise Policy Guidance.

Below you will find a table of contents, which includes a complete list of all attachments and appendices of the resubmitted CDP application. A table is also included that responds to each comment in the Notice of Incomplete Letter and where additional information can be found in the resubmitted CDP application. Please note that based on specific emergency project circumstances, notable deviations from the CDP checklist include:



- Local approval of the project with local staff signature (Appendix B) – this is not required because no approvals from the City of San Clemente are needed
- Filing fee (Appendix E) – public agencies are not required to pay filing fees
- Signature pages of all applicants – each page is submitted twice with each applicant's (OCTA and Metrolink) signatures
- Stamped envelopes were submitted with the original CDP application
- A hard copy of this application has been sent via UPS to the South Coast District Office

The Notice of Pending Permit has been posted in a public area near the project site. If Coastal Commission Staff plan to conduct a site inspection, please coordinate access with Joe McNeely (213-494-8379, McNeelyJ@scrra.net). The project site is an active rail corridor and may not be accessed without an escort.

If you have any questions or need additional information, please contact Joe McNeely at Metrolink or Patrick O'Neill at HDR (619-861-1091, Patrick.Oneill@hdrinc.com).

Sincerely,

Patrick O'Neill

HDR Engineering, Inc.

Enclosures: Coastal Development Permit Application Package

cc: Joe McNeely, Metrolink
Justin Fornelli, Metrolink
Dan Phu, OCTA
Jim Beil, OCTA
Jason Lee, OCTA
Jenny Vick, HDR Engineering, Inc.
Ingrid Eich, HDR Engineering, Inc.



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Coastal Development Permit Application

Appendix A: Declaration of Campaign Contributions – OCTA and Metrolink

Appendix B: Local Agency Review – not applicable

Appendix C: Mailing List – supplemental mailing list provided

Appendix D: Posting on Site

Appendix E: Filing fee – not applicable

Notice of Pending Permit

Attachment A – Proof of Applicant's Interest in Property

Attachment B – Assessor Parcel Map

Attachment C – Vicinity Map

Attachment D – CEQA Notice of Exemption

Attachment E – Geotechnical Memorandum

Attachment F – Biological Resources Memorandum

Attachment G – Verification of Permits (USACE and RWQCB)

Attachment H – Coastal Engineering Memorandum

Attachment I – Rock Mobility Memorandum

Attachment J – Sea Level Rise Analysis and Coastal Hazards Study

Attachment K – SCRRA Maintenance Plan

Attachment L – Technical Memorandum for Slope and Track Monitoring

Attachment M – Alternative Analysis

Attachment N – Coastal Act Consistency Evaluation

Attachment O – As-Built Package

Table 1. Notice of Incomplete Application Requests

Information Requested by Coastal Staff	Location of Information
<p>1. Information on the New Landslide Activity. Staff understands that continued ground movement has been recently identified after the emergency placement of riprap. Please submit the following additional information:</p> <ol style="list-style-type: none"> 1) Description/characterization of recent landslide movement that has occurred since the placement of the emergency riprap; 2) Evaluation of the potential causes of the recent landslide activity, and discussion of why the emergency riprap did not successfully halt the slide, contrary to the expectations of the HDR (Nov 2021) slope stability analysis; 3) Discussion of any loss or movement of rock from the emergency revetment, and discussion of any movement in the context of the previously submitted rock mobility analysis, and 4) Discussion of any modifications/refinements that have (or will be) made to the slope stability model being used to inform the temporary stabilization efforts. 	<p>1) Please see Attachment E: Geotech Memorandum. In summary, after the installation of the inclinometers in mid-October, a cumulative movement of about 0.8 inches was recorded at the track-level inclinometer between October 19 to December 13, 2021. Most of the movement was slow and subsurface during this time. However, a storm event occurred on December 14, 2021 and the cumulative movement passed a 1-inch total, which activated the alert system defined in the Track and Slope Monitoring Report (Attachment L of the CDP application).</p> <p>2) Please see Attachment E: Geotech Memorandum. In summary, refined geotechnical analysis based upon the geotechnical borings conducted in mid-October, updated geometry of the landslide, and a shallower shear zone as identified by the inclinometer, indicated that an additional 5,000 to 6,000 tons of riprap was required to further stabilize the landslide movement until an intermediate structural improvement can be engineered, permitted, and constructed.</p> <p>3) Please see Attachment I: Rock Mobility Memorandum. A comparison of the surface elevations of the rock revetment from 10/7/21 and 12/20/21 indicates a 0.39-foot mean change in surface elevation over the 10-week period, which falls within the +/-0.5-foot error associated with survey data captured using drone technology. While that data suggests there is little if any change in the overall volume of rock within the revetment, it is apparent that rock does move within the revetment, generally rolling to the toe of the revetment where it may become buried in sand during a period of accretion or be pulled in a southwesterly direction by currents and wave action until it sinks below the sand's surface.</p> <p>4) Please see Attachment E: Geotech Memorandum. As indicated above, refinements to the stability model included the shallower shear zone which resulted in a lower factor of safety unless additional rock was added.</p>

Information Requested by Coastal Staff	Location of Information
<p>2. Updated Alternatives Analysis. Staff has reviewed Attachment M (Alternative Analysis) of the application and determined more information is needed. Please submit an updated alternative analysis that assesses a phased approach that proposes to implement less-environmentally damaging alternatives in the medium and longer-term as they become feasible to avoid impacts to coastal resources. Such an alternative would include soft adaptation measures in the medium run and relocation of the railroad off-site in the long run. Please also submit an alternative analysis that involves the stabilization of the landslide at the bluff so that the amount of revetment footprint could be minimized (i.e. A study reassessing the need for and size of the revetment after the caisson work on the bluff is undertaken).</p>	<p>Please See Attachment M: Alternatives Analysis. As clarified during our meeting on site on February 16, 2022, this coastal development permit application is limited to emergency slope stabilization. The emergency measures, which consisted of the phase 1 and phase 2 rock placement, were the only stabilization option that could be implemented in the short timeframe necessary. However, further geotechnical analyses also indicated that although the placement of riprap was a feasible temporary mitigation measure to prevent a complete failure, it does not provide adequate resistance to meet the required industry-accepted criteria for permanent stability conditions. Therefore, an additional stabilization method such as one of those included in Attachment M is expected to be needed soon. The Alternative Analysis was expanded to consider interim and long-term solutions. An interim solution is currently being identified and will be designed and implemented in the near-term. A long-term solution will be a separate coastal development permit process.</p>
<p>3. Efforts to minimize impacts to the beach and mitigate unavoidable impacts. The placement and enhancement of the revetment will impact the beach area, beach access and recreational opportunities, and beach habitat. Any proposed encroachment of structures on the beach should be minimized and what cannot be minimized should be mitigated. Enclosed (attachment A) is a worksheet to quantify impacts from the existing and proposed revetment that covers encroachment onto the beach, beach losses that will result from fixing the back beach and loss of potential beach sediments that would be supplied by natural bluff erosion. Information that is needed for this worksheet includes the dimensions of the structure, the shoreline erosion (or "retreat") rate, the expected life of the structure (normally assumed to be about 20 years, for mitigation purposes), bluff/berm dimensions, and percent sand in the bluff/berm. The provided worksheet provides an option to quantify the volume of nourishment sand to replace the lost beach area and in-lieu mitigation. Rather than undertaking this as part of the worksheet, please instead consider in-kind mitigation that will enhance access opportunities, such as safe access for pedestrians to cross the tracks to access the beach, or a safe access along this structure.</p>	<p>Impacts to beach recreation, access and habitat function are described in Attachment F: Biological Resource Memorandum (results section and Figure 6) and Attachment N: Coastal Act Consistency Evaluation. In summary, the project became necessary as a result of natural coastal processes and has little impact on recreational beach area and no impact on beach access. Due to current sea levels and the existing railroad right-of way, the area of intertidal sandy beach being impacted provides little safe access and recreation opportunities in their current conditions. These constraints, in combination with private property on the bluff top, prevent the enhancement of access in the vicinity of the project. Impacts to intertidal beach habitat function is also minimal given the existing beach lacks a supralittoral and coastal strand zone. Therefore, impacts to species dependent upon beach habitat is limited. Finally, although the additional rock likely interferes with sediment cycling, due to its' location in the dynamic surf zone, over time the rock does move or settle as described in Attachment I: Rock Mobility Assessment. Sediment is then free to move as rock</p>

Information Requested by Coastal Staff	Location of Information
	settles over time and as sediment is cyclically deposited over the rocks. Therefore, the applicant proposes to expand the requested beach width monitoring plan to include a rock mobility assessment component as mitigation for any unavoidable impacts to beach habitat. The combined monitoring results could prove useful for refining coastal rock revetment design parameters for the local coastal region such as most stable rock size, slope face, etc.
4. Beach Width Monitoring Plan. Please submit a monitoring plan that would monitor how beach width will be continued to be affected by the revetment or include it in the existing monitoring plans proposed.	Beach Width Monitoring has been added to Attachment F: Biological Resource Memorandum (Mitigation and Monitoring section).
5. Wave Overtopping Calculations. Please provide additional clarification and discussion about the inputs and assumptions used in the EurOtop 2016 wave overtopping calculations. Observations of overtopping at the site during relatively common swell conditions this past year suggest the overtopping estimates provided may be underestimating wave-related hazards.	Additional detail was provided in the Wave Overtopping Section of Attachment H: Coastal Engineering Memorandum. This includes equations used to calculate the wave overtopping rates as well as assumptions on coefficients used. Wave heights used to calculate wave overtopping were extracted from the MIKE21 SW model at the structure toe, noting that many results were depth limited. Note overtopping was not assumed at zero but is below the critical threshold. For readability of the section, tabulated wave input results (150 model simulations) were not included.

CALIFORNIA COASTAL COMMISSION

South Coast District Office
301 E. Ocean Blvd., Suite 300
Long Beach, CA 90802
(562) 590-5071

**COASTAL DEVELOPMENT PERMIT APPLICATION****INSTRUCTIONS**

Submit an electronic copy of application with all appendices and all required attachments to the general email address for the South Coast District Office, SouthCoast@coastal.ca.gov. In addition, submit a hard copy of the application form, appendices, and attachments, with all required signatures, **the self-addressed stamped envelopes required for noticing**, and permit fee to the South Coast District Office, 301 E. Ocean Blvd., Suite 300, Long Beach, CA 90802. For more information, contact the District Office (see the Commission's [Contact Page](#)). **The application will not be processed until the fee is received.**

Please answer all questions. If a question is not applicable to your project, indicate "Not Applicable." **Incomplete applications will not be accepted for filing.** All exhibits must be legible.

CHECKLIST

The checklist is provided for the convenience of applicants in gathering necessary application materials. It is not a complete statement of filing requirements. See Section IV for the full list of Required Attachments and see Appendices A-E.

- ☒ Proof of applicant's interest in the property.
- ☒ Assessor parcel map(s) showing the proposed development site and all adjacent properties within 100 feet of the property boundary.
- ☒ Vicinity map.
- ☒ Two sets of full-size project plans, including site plan(s) and other applicable plans; and one set of reduced (8 1/2" x 11") project plans.
- ☒ Environmental documents for the project (e.g. Notice of Exemption, Negative Declaration, Draft or Final EIR or EIS). Include all comments and responses to date.
- ☒ Technical reports (e.g. wetlands delineation, geology/ soils report, biological survey).

COASTAL DEVELOPMENT PERMIT APPLICATION

CHECKLIST (cont.)

- ☒ Verification of all other permits, permissions or approvals applied for or granted by other public agencies.
- ☒ Declaration of Campaign Contributions. (Appendix A)
- ☐ Local approval of the project with local staff signature. (Appendix B)
- ☒ Stamped envelopes (no postage metering) addressed to the applicant, the applicant's agent, neighboring property owners and occupants, known interested persons, and government agencies, with a complete list of all names and addresses. (Appendix C)
- ☒ Declaration that the Notice of Pending Permit is posted as required. (Appendix D)
- ☐ Filing fee. (Appendix E)
- ☒ Signatures of all applicants and agents as required by Section VII, Section VIII, Appendix A, and Appendix D.

COASTAL DEVELOPMENT PERMIT APPLICATION

SECTION I. APPLICANT

1. Contact information for all applicants. If an applicant is a business entity, attach proof of the ability to do business in California (e.g., registration with the Secretary of State). Attach additional pages as needed.

Name OCTA/SCRRA (Metrolink), Justin Fornelli
Street Address 2558 Supply Street
City Pomona
State CA Zip Code 91767
Email FornelliJ@scrra.net
Daytime Phone Number, including Area Code (909) 593-4291

Note: All applicants for the development must complete Appendix A, the declaration of campaign contributions.

2. Contact information for all agents representing one or more applicants. Attach additional pages as needed. Please include all representatives who will communicate, for compensation, on behalf of the applicant or the applicant's business partners. It is the applicant's responsibility to update this list, as appropriate, including after the application is accepted for filing. Failure to provide this information prior to communication with staff, Commissioners, or the Commission or may result in denial of the permit or criminal penalties.

Name Patrick O'Neill
Street Address 591 Camino de la Reina, Suite 300
City San Diego
State CA Zip Code 92108
Email patrick.oneill@hdrinc.com
Daytime Phone Number, including Area Code (619) 861-1091

FOR OFFICE USE ONLY

Application Number _____
Received _____
Filed _____
Fee _____
Date Paid _____

SECTION II. PROPOSED DEVELOPMENT

1. Project Location. If there is no street address, state the nearest cross streets and other description such as GPS coordinates.

Number GPS Coordinates: N 33 23'42.00" W 117 35'57.60"

Street Railroad ROW near 3922 Calle Ariana

Zip Code 92672

City San Clemente

County Orange

2. Assessor Parcel Number(s) (APNs) N/A
3. Describe the proposed development and activities in detail. Include improvements such as grading, septic tanks, water wells, roads, driveways, outbuildings, fences, use of pesticides, etc. Attach additional pages as necessary.

Project consists of placing riprap on the west side of the railroad tracks to

arrest/slow landslide movement, which has resulted in shifting of railroad

tracks and led to the halting of passenger rail service for public safety.

Rirprap is 3-5 feet in size placed along approximately 700 feet of the toe of

the slope, where it meets the sandy beach. In September and October 2021,

approximately 12,500 tons of riprap was brought to site in approximately 200

railroad carloads and placed within railroad ROW by excavator operated

from within railroad ROW. In December 2021 and January 2022, an

additional 5,480 tons was brought to site via railroad cars and placed within

the same 700 linear feet. The new riprap is primarily in-kind replacement of

riprap that had washed away due to significant loss of beach and storm

events. Please see attachments for more details.

- a. If multi-family residential, indicate:

Existing units _____
Proposed new units _____
Total units on completion _____
Total bedrooms on completion _____

Type of ownership proposed

☐ Rental ☐ Condominium ☐ Stock Co-op ☐ Timeshare ☐ Other

- b. If land division or lot line adjustment, indicate:

Existing lots _____
Proposed new lots _____
Total lots on completion _____
Size of lots created (indicate net or gross acreage)
Existing _____ Proposed _____

3. Estimated cost of development (not including cost of land): \$ _____

4. Maximum height of structure:

- a. above existing (natural) grade _____ feet
b. above finished grade _____ feet
c. as measured from centerline of frontage road _____ feet

5. Total number of floors in structure, including subterranean floors, lofts, and mezzanines _____

6. Gross floor area

- a. excluding parking _____ sq. ft.
b. including covered parking and accessory buildings _____ sq. ft.

7. Development area

a. Building lot coverage

Existing _____ Proposed _____ Total _____ sq.ft.

b. Paved areas

Existing _____ Proposed _____ Total _____ sq.ft.

c. Landscaped areas

Existing _____ Proposed _____ Total _____ sq.ft.

d. Unimproved areas

Existing _____ Proposed _____ Total _____ sq.ft.

e. Grand Totals (a. - d.)

Existing _____ Proposed _____ Both _____ sq.ft.

8. Is any grading proposed? ☐ YES ☒ NO. If yes, indicate:

a. Cut _____ cubic yards

Maximum height of slope _____ feet

b. Fill _____ cubic yards

Maximum height of slope _____ feet

c. Amount of import _____ cubic yards

Location of borrow site _____

d. Amount of export _____ cubic yards

Location of disposal site _____

Note: Grading, drainage, and erosion control plans must be attached, if applicable. In certain areas, an engineering geology report must be included. See Section IV, No. 11.

9. Parking & Utilities

a. Number of Parking Spaces

Existing Total N/A _____

Regular _____ Compact _____ ADA _____ Tandem _____

To Be Added

Regular _____ Compact _____ ADA _____ Tandem _____

To Be Removed

Regular _____ Compact _____ ADA _____ Tandem _____

After Project Total _____

Regular _____ Compact _____ ADA _____ Tandem _____

b. Utility Extensions Needed (check yes or no for each type)

Water ☐ YES ☒ NO

Gas ☐ YES ☒ NO

Sewer ☐ YES ☒ NO

Electric ☐ YES ☒ NO

Telephone, Cable, Other ☐ YES ☒ NO

Will any extensions be installed above ground? ☐ YES ☒ NO

10. Does the project include removal of trees or vegetation? ☐ YES ☒ NO

If yes:

Number and types of trees.

Types and square feet of other vegetation to be removed.

Any proposed use of herbicides, with product types and methods of application.

SECTION III. ADDITIONAL INFORMATION

The relationship of the development to the applicable items below must be explained fully. Attach additional pages if necessary.

1. Present use of property.

a. Are there existing structures on the property? ☒ YES ☐ NO

If yes, describe:

Property consists of railroad right-of-way and contains railroad tracks and supporting materials (e.g., ballast, ties, and riprap).

b. Will any existing structures be demolished? ☐ YES ☒ NO

If yes, describe which structures and methods/ location of disposal:

c. Will any existing structures be removed? ☐ YES ☒ NO

If yes, describe which structures and relocation site:

2. Agreements. Is the proposed development governed by a Development Agreement? ☐ YES ☒ NO

If yes, describe: _____

3. Previous Permits. Has any application for development on this site including any subdivision been submitted previously to the California Coastal Zone Conservation Commission or the Coastal Commission? ☒ YES ☐ NO

If yes, state all previous application number(s): 5-21-0866

4. Access.

a. Is the development between the first public road and the sea (including lagoons, bays, and other bodies of water connected to the sea)? ☒ YES ☐ NO

If yes, is public access to the shoreline and along the coast currently available on the site or near the site? ☒ YES ☐ NO

If yes, describe the location and nature of the access (e.g. pedestrian, bike paths, trails) with distances from the project site:

Please see Attachments. Limited public access is available along the northern portion of the project site, parallel to the site along the beach/shoreline

b. Will the project have any effect on public access to and along the shoreline, either directly or indirectly (e.g., blocking parking used for access to the beach)? ☐ YES ☒ NO

If yes, describe the effect on access:

5. Waters.

- a. Does the development involve diking, filling, draining, dredging or placing structures in open coastal waters, wetlands, estuaries, or lakes?

Diking ☐ YES ☒ NO

Filling ☒ YES ☐ NO

Amount in cubic yards 771

Dredging ☐ YES ☒ NO

Amount in cubic yards _____

Placement of Structures ☐ YES ☒ NO

- b. Location of dredged material disposal site _____

- c. Is a U.S. Army Corps of Engineers permit required? ☒ YES ☐ NO

6. Jurisdiction.

Will the development extend onto or adjoin any beach, tidelands, submerged lands or public trust lands? ☒ YES ☐ NO

For projects located or partially located on State lands, additional information may be required. See Section IV.10.

7. Recreation.

- a. Will the development protect existing lower-cost visitor and recreational facilities?

☐ YES ☒ NO

- b. Will the development provide public or private recreational opportunities?

☐ YES ☒ NO

If yes, describe the recreational opportunities provided:

8. Agricultural Use. Will the proposed development convert land currently or previously used for agriculture to another use? ☐ YES ☒ NO
- a. If yes, is the land prime land? ☐ YES ☐ NO
- b. How many acres will be converted? _____
9. Is the proposed development in or near:
- a. Sensitive habitat areas ☐ YES ☒ NO If yes, a biological survey may be required.
- b. Areas containing state or federally listed rare, threatened, or endangered species, or candidate species ☐ YES ☒ NO If yes, a biological survey may be required.
- c. 100-year floodplain ☒ YES ☐ NO. If yes, hydrologic mapping may be required.
- d. Park or recreation area ☒ YES ☐ NO
10. Will the proposed development be visible from:
- a. State Highway 1 or other scenic route ☐ YES ☒ NO
- b. Park, beach, or recreation area ☒ YES ☐ NO
- c. Harbor area ☐ YES ☒ NO
11. If the site contains any of the following, attach a description of the resource and any proposed mitigation.
- a. Historic resources ☐ YES ☒ NO
- b. Archaeological resources ☐ YES ☒ NO
- c. Paleontological resources ☐ YES ☒ NO
12. Where a stream or spring is to be diverted, estimate:
- a. Streamflow or spring yield (gpm) _____
- b. Existing and any changed yield of well(s) (gpm) _____
- c. If water source is on adjacent property, attach the Department of Water Resources approval and property owner's approval.

SECTION IV. REQUIRED ATTACHMENTS

The following items must be submitted with this form as part of the application.

1. Proof of the applicant's legal interest in the property. A copy of any of the following will be acceptable: current tax bill, recorded deed, lease, easement, or current policy of title insurance. Preliminary title reports will not be accepted for this purpose. Documentation reflecting intent to purchase such as a signed Offer to Purchase along with a receipt of deposit or signed final escrow document is also acceptable, but in such a case, issuance of the permit may be contingent on submission of evidence satisfactory to the Executive Director that the sale has been completed.

The identity of all persons or entities that have an ownership interest in the property superior to that of the applicant must be provided. Provide proof that all those with ownership interests have been notified in writing of the application and have been invited to join as co-applicants.

2. Assessor parcel map(s) from the County showing the applicant's property and all other properties within 100 feet (excluding roads) of the property lines of the project site.
3. Copies of required local approvals for the proposed project, including zoning variances, use permits, etc., as noted on Local Agency Review Form, Appendix B. Appendix B must be completed and signed by the local government with jurisdiction over the project site. The application will not be accepted without a completed Appendix B.
4. Stamped envelopes addressed to all applicants and agents, all property owners and occupants of property situated within 100 feet of the property lines of the project site (excluding roads), along with a list of all owners and occupants with addresses. The envelopes must be plain (i.e., no return address), and regular business size (9 1/2" x 4 1/8"). Include first class postage on each one. Metered postage is not acceptable. Use Appendix C for the listing of names and addresses.
5. Stamped, addressed envelopes (no metered postage) and a list of names and addresses, and if available, e-mail addresses of all other persons (including other government agencies) known to the applicant to be interested in the proposed development. Use Appendix C for the listing of names and addresses.
6. A vicinity or location map with the project site clearly marked.
7. Two full-size copies of project plans and one set of plans in 8 1/2" by 11" format. Plans must be drawn to scale, including (as applicable): site plans, including any trees to be removed, floor plans, building elevations, grading, drainage, and erosion control plans, landscape plans, and septic system plans.

8. Where septic systems are proposed, evidence of County approval or Regional Water Quality Control Board approval. Where water wells are proposed, evidence of County review and approval.
9. All available environmental review documents for the project, such as a CEQA Notice of Exemption, mitigated negative declaration, or EIR (Environmental Impact Report), NEPA review documents, or others. Include all comments and responses to comments to date.
10. Verification of all other permits, permissions or approvals applied for or granted by other agencies, such as the California Department of Fish and Wildlife, U.S. Fish & Wildlife, U.S. Army Corps of Engineers, U.S. Coast Guard, or the State Lands Commission.

Note: For projects such as seawalls located on or near state tidelands or public trust lands, the Coastal Commission must have a written determination from the State Lands Commission whether the project would encroach onto such lands and if so, whether the State Lands Commission has approved such encroachment.

11. For development on a bluff face, bluff top, or in any area of high geologic risk, a comprehensive, site-specific geology and soils report, including maps, prepared by a qualified specialist.

SECTION V. ADDITIONAL MATERIAL MAY BE REQUIRED

Additional material may be required prior to issuance of a coastal development permit. For example, where offers of access or open space dedication are required, preliminary title reports, land surveys, legal descriptions, subordination agreements, and other outside agreements will be required prior to issuance of the permit.

SECTION VI. COMMUNICATION WITH COMMISSIONERS

Decisions of the Coastal Commission are made on the basis of information in the public record available to all commissioners and the public. Permit applicants, interested persons, and their representatives may contact individual commissioners to discuss permit matters outside the public hearing (an “ex parte” communication). If a commissioner or alternate accepts an ex parte communication, he or she must provide a complete description of the communication either in writing prior to the hearing or orally at the public hearing.

All written material sent to a commissioner, by any method, must also be sent to the Executive Director, California Coastal Commission, 455 Market St., Suite 300, San Francisco, California, 94105, as well as to the appropriate district office, for inclusion in the public record.

SECTION VII. CERTIFICATIONS

1. I hereby certify that I, or my authorized representative, have completed and posted or will post the **Notice of Pending Permit** stock card in a conspicuous place on the property within three days of submitting the application to the Commission office.
2. I hereby certify that I have read this completed application and that, to the best of my knowledge, the information in this application and all attached appendices and exhibits is true, complete, and accurate. I understand that the failure to provide any requested information or any misstatements submitted in support of the application shall be grounds for either refusing to accept this application, for denying the permit, for suspending or revoking a permit issued on the basis of such misrepresentations, or for seeking of such further relief as may seem proper to the Commission.
3. I hereby authorize representatives of the California Coastal Commission to conduct site inspections on my property. Unless arranged otherwise, these site inspections will take place between the hours of 8:00 A.M. and 5:00 P.M.

Justin Fornelli, PE Digitally signed by Justin Fornelli, PE
Date: 2022.02.24 17:22:22 -08'00'

Signature of Applicant or Authorized Agent

AGENT SIGNATURES MUST BE SUPPORTED BY APPLICANT AUTHORIZATION

SECTION VIII. AUTHORIZATION OF AGENT

I hereby authorize Patrick O'Neill to act as my representative and to bind me in all matters concerning this application.

Justin Fornelli, PE Digitally signed by Justin Fornelli, PE
Date: 2022.02.24 17:24:10 -08'00'

Signature of Applicant(s) **Only the applicant(s) may authorize an agent.**

SECTION VI. COMMUNICATION WITH COMMISSIONERS

Decisions of the Coastal Commission are made on the basis of information in the public record available to all commissioners and the public. Permit applicants, interested persons, and their representatives may contact individual commissioners to discuss permit matters outside the public hearing (an “ex parte” communication). If a commissioner or alternate accepts an ex parte communication, he or she must provide a complete description of the communication either in writing prior to the hearing or orally at the public hearing.

All written material sent to a commissioner, by any method, must also be sent to the Executive Director, California Coastal Commission, 455 Market St., Suite 300, San Francisco, California, 94105, as well as to the appropriate district office, for inclusion in the public record.

SECTION VII. CERTIFICATIONS

1. I hereby certify that I, or my authorized representative, have completed and posted or will post the **Notice of Pending Permit** stock card in a conspicuous place on the property within three days of submitting the application to the Commission office.
2. I hereby certify that I have read this completed application and that, to the best of my knowledge, the information in this application and all attached appendices and exhibits is true, complete, and accurate. I understand that the failure to provide any requested information or any misstatements submitted in support of the application shall be grounds for either refusing to accept this application, for denying the permit, for suspending or revoking a permit issued on the basis of such misrepresentations, or for seeking of such further relief as may seem proper to the Commission.
3. I hereby authorize representatives of the California Coastal Commission to conduct site inspections on my property. Unless arranged otherwise, these site inspections will take place between the hours of 8:00 A.M. and 5:00 P.M.

Jim Beil

Digitally signed by Jim Beil
Date: 2022-02-25 09:43:41

Signature of Applicant or Authorized Agent

AGENT SIGNATURES MUST BE SUPPORTED BY APPLICANT AUTHORIZATION

SECTION VIII. AUTHORIZATION OF AGENT

I hereby authorize Patrick O'Neill to act as my representative and to bind me in all matters concerning this application.

Jim Beil

Digitally signed by Jim Beil
Date: 2022-02-25 09:45:37

Signature of Applicant(s) **Only the applicant(s) may authorize an agent.**

APPENDIX A

DECLARATION OF CAMPAIGN CONTRIBUTIONS

Government Code Section 84308 prohibits any Commissioner from voting on a project if he or she has received campaign contributions in excess of \$250 within the past year from project proponents or opponents, their agents, employees or family, or any person with a financial interest in the project. In the event of such contributions, a Commissioner must disqualify himself or herself from voting on the project.

Each applicant must declare below whether any such contributions have been made to any currently serving [Commissioners or Alternates](#).

CHECK ONE

☒ The applicants, their agents, employees, family or any person with a financial interest in the project **have not contributed** over \$250 to any Commissioner(s) or Alternate(s) within the past year.

☐ The applicants, their agents, employees, family, or any person with a financial interest in the project **have contributed** over \$250 to the Commissioner(s) or Alternate(s) listed below within the past year.

Commissioner or Alternate _____

Commissioner or Alternate _____

Commissioner or Alternate _____

Signature required

Name of Applicant or Authorized Agent Justin Fornelli

Signature Justin Fornelli, PE Digitally signed by Justin Fornelli, PE
Date: 2022.02.24 17:24:47 -08'00'

Date February 24, 2022

APPENDIX A

DECLARATION OF CAMPAIGN CONTRIBUTIONS

Government Code Section 84308 prohibits any Commissioner from voting on a project if he or she has received campaign contributions in excess of \$250 within the past year from project proponents or opponents, their agents, employees or family, or any person with a financial interest in the project. In the event of such contributions, a Commissioner must disqualify himself or herself from voting on the project.

Each applicant must declare below whether any such contributions have been made to any currently serving [Commissioners or Alternates](#).

CHECK ONE

☒ The applicants, their agents, employees, family or any person with a financial interest in the project **have not contributed** over \$250 to any Commissioner(s) or Alternate(s) within the past year.

☐ The applicants, their agents, employees, family, or any person with a financial interest in the project **have contributed** over \$250 to the Commissioner(s) or Alternate(s) listed below within the past year.

Commissioner or Alternate _____

Commissioner or Alternate _____

Commissioner or Alternate _____

Signature required

Name of Applicant or Authorized Agent Jim Beil

Signature Jim Beil  Digitally signed by Jim Beil
Date: 2022-02-25 09:44:08

Date 2/25/22

APPENDIX B

LOCAL AGENCY REVIEW

SECTION 1 (TO BE COMPLETED BY APPLICANT OR AGENT)

Applicant _____

Project Description _____

Location _____

Assessor Parcel Number _____

SECTION 2 (TO BE COMPLETED BY LOCAL PLANNING OR BUILDING INSPECTION DEPARTMENT)

Zoning Designation _____ dwelling units/acre

General or Community Plan Designation _____ dwelling units/acre

Local Coastal Program Amendment ☐ Required ☐ Submitted to Coastal Commission

LOCAL DISCRETIONARY APPROVALS

☐ Proposed development meets all zoning requirements. No further permits required other than building permits.

☐ Proposed development requires local discretionary approvals. **CHECK ALL APPLICABLE requirements below. Attach a copy of each approval.**

Design/Architectural

☐ Required ☐ Applicant Submitted ☐ Review Complete

Variance for (describe) _____

☐ Required ☐ Applicant Submitted ☐ Review Complete

Zoning change (describe) _____

☐ Required ☐ Applicant Submitted ☐ Review Complete

Tentative Subdivision/Parcel Map No. _____

☐ Required ☐ Applicant Submitted ☐ Review Complete

Grading/Land Dev. Permit No. _____

☐ Required ☐ Applicant Submitted ☐ Review Complete

Planned Residential/ Commercial Development Approval

☐ Required ☐ Applicant Submitted ☐ Review Complete

Site Plan Review

☐ Required ☐ Applicant Submitted ☐ Review Complete

Condominium Conversion Permit No. _____

☐ Required ☐ Applicant Submitted ☐ Review Complete

Conditional, Special, or Major Use Permit No. _____

☐ Required ☐ Applicant Submitted ☐ Review Complete

Other (describe) _____

☐ Required ☐ Applicant Submitted ☐ Review Complete

CEQA COMPLIANCE

Type (Exempt, Categorically Exempt, Mitigated Negative Declaration, EIR, etc.)

Statutory or Guideline Section Relied On _____

State Clearinghouse or other Document No. _____

Action or Adoption Date _____

CERTIFICATION

Prepared for the City/County of _____

by (print name) _____

Title _____

Signature _____

Date _____

APPENDIX C

MAILING LIST

List the names and addresses for all 1) Applicants, 2) Agents, 3) Property owners and property occupants within 100 feet of the proposed development, excluding roads, 4) Interested persons (e.g. neighborhood groups), and 5) Other government agencies with jurisdiction or interest in the project. Add e-mail addresses as available.

If necessary, attach additional pages using the format below.

Name _____
Title _____
Street Address _____
City _____
State, Zip Code _____
Email address _____

Name _____
Title _____
Street Address _____
City _____
State, Zip Code _____
Email address _____

Name _____
Title _____
Street Address _____
City _____
State, Zip Code _____
Email address _____

Name _____
Title _____
Street Address _____
City _____
State, Zip Code _____
Email address _____

Name _____
Title _____
Street Address _____
City _____
State, Zip Code _____
Email address _____

APPENDIX D

POSTING ON SITE

Prior to or at the time the application is submitted for filing, the applicant or agent must post, at a conspicuous place as close as possible to the site of the proposed development and in a manner easily read by the public, notice that an application for the proposed development has been submitted to the Commission. Such notice shall contain a general description of the nature of the proposed development. Use the NOTICE OF PENDING PERMIT form (last page) and print on yellow stock card. Fill in the application number on the Notice as soon as possible once staff communicates the application number to you. The notice must remain posted until the application is acted on by the Commission. If the applicant fails to post the completed notice form or fails to sign the Declaration of Posting, the Executive Director of the Commission shall refuse to file the application. (See Cal. Code Regs., Title 14, Section 13054(d).) Your application will not be processed without a signed and dated Declaration. **Submit the Declaration to the District Office along with the completed application.**

DECLARATION OF POSTING

I hereby certify on 11/19/21 (date of posting), I or my authorized representative posted the Notice of Pending Permit for the application to obtain a coastal development permit for the development of the Railroad Emergency Stabilization Project, which consists of placement of riprap along the beach side of the railroad right-of-way to slow/halt landslide movement.

(description of development) located at GPS Coordinates: N 33 23'42.00" W 117 35'57.60" (address, APN). The public notice was posted in a conspicuous place, easily seen by the public and as close as possible to the site of the proposed development.

Name (print) Justin Fornelli

Justin
Signature Fornelli, PE Digitally signed by Justin Fornelli, PE
Date: 2021.11.19 15:36:39 -08'00'

Date 11/19/21

APPENDIX E

FILING FEE INSTRUCTIONS

PAYMENT IN FULL AT TIME OF APPLICATION. Applications will not be processed without full payment of all applicable fees. If overpayment occurs, a refund will be issued. Fees are assessed at the time of application, based on the project as initially proposed. If a proposed development changes during the application review process, the fee may change. If an application is withdrawn, a refund will be given only if no significant staff review time has been expended (e.g., the staff report is not drafted). Refunds are not given based on denial of a permit application by the Commission.

TO CALCULATE THE TOTAL AMOUNT DUE, fill in the applicable amounts in each category below. Add all applicable types of development in Section I (residential), Section II (commercial, other), and Section III (e.g. grading, amendments). Note and apply any multipliers, maximums, and requirements to use the greater of two calculations.

SPECIAL SITUATIONS: See Part IV and check as applicable. Submitted fees for applications that include after-the-fact (ATF) development must be five times the total fee that would apply to all the ATF development.

FISCAL YEAR INCREASES: Fees are adjusted each fiscal year (July 1 – June 30) according to the California Consumer Price Index. New fiscal year fees are applied retroactively to July 1, regardless of when the increases are approved or published in the California Code of Regulations. The Commission publishes the new fees on its website and revised applications on or before July 1.

For more information, see Section 13055 of Commission regulations (Division 5.5, Title 14, California Code of Regulations), available via the Commission's [Laws and Regulations](#) page. If you have questions, see the Commission's [Contacts](#) page to contact district staff.

FILING FEE SCHEDULE

I. RESIDENTIAL DEVELOPMENT

De minimis waiver, \$646 \$ _____

Administrative permit, \$3,228 \$ _____

Note: A matter moved from the administrative permit calendar to the regular permit calendar is subject to regular filing fees (residential development, grading, etc.).

A. Detached residential development

Up to 4 detached, single-family residences

1,500 sq. ft. or less, \$ 3,873 per residence	\$ _____
1,501 to 5,000 sq. ft., \$ 5,810 per residence	\$ _____
5,001 to 10,000 sq. ft., \$ 7,746 per residence	\$ _____
10,001 or more square feet, \$ 9,683 per residence	\$ _____

More than 4 detached, single-family residences

1,500 sq. ft. or less, greater of \$19,365 or \$1,291 per residence	\$ _____
1,501 to 5,000 sq. ft., greater of \$29,048 or \$1,937 per residence	\$ _____
5,001 to 10,000 sq. ft., greater of \$38,730 or \$2,582 per residence	\$ _____
10,001 or more sq. ft., greater of \$48,413 or \$3,228 per residence	\$ _____
Maximum, \$129,100	

Note: Calculate the square footage to include the gross internal floor space of main house and attached garage(s), plus all detached structures (e.g., guest houses, detached bedrooms, in-law units, garages, barns, art studios, tool sheds, and other outbuildings).

Note: For development that includes residences of different sizes, calculate the fee using the average square footage of all the residences times the number of residences.

B. Attached residential development

2–4 units, \$9,683	\$ _____
More than 4 units, greater of \$12,910 or \$968 per unit	\$ _____
Maximum, \$64,550	

C. Additions or improvements

If the addition or improvement does not qualify for a waiver or administrative permit, calculate according to Schedule I.A (residential detached) and Schedule III.A (grading). Note total here. \$ _____

For an amendment to an existing permit, see Schedule III.F.

II. OFFICE, COMMERCIAL, CONVENTION, INDUSTRIAL (INCLUDING ENERGY FACILITIES), AND ALL OTHER DEVELOPMENT NOT OTHERWISE IDENTIFIED

Note: The fee for nonresidential development is based on the gross square footage or the development cost, whichever results in the greater fee. “Other development not otherwise identified” includes all types of development not explicitly included in these schedules. Common examples are seawalls, docks, and water wells.

A. Gross Square Footage

1,000 gross sq. ft. or less, \$6,455	
1,001 to 10,000 gross sq. ft., \$12,910	\$ _____
10,001 to 25,000 gross sq. ft., \$19,365	\$ _____
25,001 to 50,000 gross sq. ft., \$25,820	\$ _____
50,001 to 100,000 gross sq. ft., \$38,730	\$ _____
100,001 or more gross sq. ft., \$64,550	\$ _____

B. Development Cost

Note: Development cost includes all expenditures, including the cost for planning, engineering, architectural, and other services, made or to be made for designing the project, plus the estimated cost of construction of all aspects of the project both inside and outside the Commission's jurisdiction.

\$100,000 or less, fee \$3,873	\$ _____
\$100,001 to \$500,000, fee \$7,746	\$ _____
\$500,001 to \$2,000,000, fee \$12,910	\$ _____
\$2,000,001 to \$5,000,000, fee \$25,820	\$ _____
\$5,000,001 to \$10,000,000, fee \$32,275	\$ _____
\$10,000,001 to \$25,000,000, fee \$38,730	\$ _____
\$25,000,001 to \$50,000,000, fee \$64,550	\$ _____
\$50,000,001 to \$100,000,000, fee \$129,100	\$ _____
\$100,000,001 or more, fee \$322,750	\$ _____

Greater of the square footage or development cost fee \$ _____

III. OTHER OR ADDITIONAL FEES

A. Grading – use the total cubic yards of cut and fill.

50 cubic yards or less, No fee	
51 to 100 cubic yards, \$646	
101 to 1,000 cubic yards, \$1,291	\$ _____
1,001 to 10,000 cubic yards, \$2,582	\$ _____
10,000 to 100,000 cubic yards, \$3,873	\$ _____
100,001 to 200,000 cubic yards, \$6,455	\$ _____
200,001 or more cubic yards, \$12,910	\$ _____

B. Lot line adjustment, \$3,873 \$ _____

Note: A lot line adjustment takes land from one parcel and adds the same land to an adjoining parcel, without creating any new parcels.

C. Subdivision

Note: Count the existing lots and each additional lot created by the subdivision.

Up to 4 lots, \$3,873 per lot \$ _____
5 or more lots, \$15,492 plus \$1,291 per lot above 4 \$ _____

D. Administrative permit, \$ 3,228 \$ _____

Note: An application moved from the administrative permit calendar to the regular permit calendar is subject to regular filing fees (residential development, grading, etc.).

E. Emergency permit, \$ 1,291 \$ _____

Note: Emergency application fees are credited toward the follow-up permit application fee.

F. Amendment

Immaterial amendment, \$1,291 \$ _____
Material amendment, 50% of the fee for the original project
according to currently applicable fees. \$ _____

G. Temporary event that requires a permit according to Commission guidelines

If scheduled on administrative calendar, \$1,291 \$ _____
If not scheduled on administrative calendar, \$3,228 \$ _____

H. Extension or Reconsideration

Single-family residence, \$ 646 \$ _____
All other development, \$1,291 \$ _____

Note: If the Commission denies a permit extension, a new application fee at current rates is required to pursue the same development.

I. Request for continuance of a permit matter

First request, No fee
Each subsequent request (if approved), \$ 1,291 \$ _____

Note: Continuances are subject to deadlines under the Permit Streamlining Act (Gov. Code, § 65920 et seq.).

J. De minimis or other waivers, \$ 646 \$ _____

K. Federal Consistency - Calculate according to all applicable categories in Sections I, II, and III. Note total here: \$ _____

L. Appeal of a denial – Calculate according to all applicable categories in Sections I, II, and III. Note total here: \$ _____

Note: Appeals of denials are limited to pre-certification jurisdictions or, in jurisdictions with a fully-certified local coastal program, to major public works and energy projects. (See Pub. Resources Code, §§ 30602, 30603(a)(5); Cal. Code of Regs., tit. 14, § 13012 [definition of major works].) The fee is required before the appeal will be processed.

M. Written Permit Exemption, \$ 323 \$ _____

N. Written Boundary Determination, \$ 323 \$ _____

Multiple Parcels Determination, \$323 each \$ _____

O. Coastal Zone Boundary Adjustment, \$ 6,455 \$ _____

TOTAL FEE DUE \$ _____

IV. SPECIAL SITUATIONS (check as applicable):

☐ After the Fact Development – **Submit 5x the applicable fee.**

☐ Affordable Housing Project – Check if the project includes affordable housing. An eligible project may be entitled to a reduction in fees as determined by the Executive Director. (See Cal. Code of Regs., tit 14, § 13055(h)(2).) **Submit the full fee with the application.**

☐ Additional Costs – Check if additional costs are likely, such as for a large, unusual, or controversial project. The Commission may require reimbursement for additional costs. (Pub. Resources Code, § 30620(c).) A common example requiring reimbursement is when the Commission must notice the public via media sources (newspaper noticing) due to the large number of interested persons.

NOTICE OF PENDING PERMIT

**A PERMIT APPLICATION FOR DEVELOPMENT ON THIS SITE IS
PENDING BEFORE THE CALIFORNIA COASTAL COMMISSION.**

PROPOSED DEVELOPMENT: Railroad Emergency Stabilization
Project consists of placement of riprap along beach side
of railroad right-of-way to halt/slow landslide movement.

LOCATION: GPS Coordinates: N 33 23'24.00" W 117 35'57.60"
Railroad ROW near 3922 Calle Ariana, San Clemente

APPLICANT: OCTA/SCRRA (Metrolink), Justin Fornelli

APPLICATION NUMBER: 5-21-0866

DATE NOTICE POSTED: 11/19/21

**FOR FURTHER INFORMATION, PLEASE CONTACT THE OFFICE LISTED
BELOW BETWEEN 8 A.M. AND 5 P.M. WEEKDAYS.**



Print on Yellow Stock Card

**CALIFORNIA COASTAL COMMISSION
SOUTH COAST DISTRICT OFFICE
301 E. OCEAN BLVD., SUITE 300
LONG BEACH, CA 90802
(562) 590-5071**

Applicants

Jim Beil, OCTA
550 South Main Street
Orange, CA 92863
jbeil@octa.net

Justin Fornelli, Metrolink
2558 Supply St.
Pomona, CA 91767
Fornellij@scrra.net

Agent

Patrick O'Neill, HDR
591 Camino de la Reina, Suite 300
San Diego, CA 92108
Patrick.oneill@hdrinc.com

Property Owners and Occupants

John & Constance Watson
412 Crestglen Rd
Glendora, CA 91741

Occupant
4016 Calle Ariana
San Clemente, CA 92672

Birmingham William T Tr & Birmingham Tr
588 Inverness Trl
Hamilton, MT 59840

Occupant
4008 Calle Ariana
San Clemente, CA 92672

Appendix C – Mailing List

Evelyn Thomsen & Thomsen Trust W

4012 Calle Ariana

San Clemente, CA 92672

Vincent Bianco Jr & Leslie Dame

4014 Calle Ariana

San Clemente, CA 92672

Timothy & Kristine Metcalf

4010 Calle Ariana

San Clemente, CA 92672

Kimiya Leuteritz & Robert F Beauchamp Jr Trust

2454 Alton Pkwy

Irvine, CA 92606

Occupant

4006 Calle Ariana

San Clemente, CA 92672

Beauchamp Robert F Tr

2454 Alton Pkwy

Irvine, CA

92606

Occupant

4004 Calle Ariana

San Clemente, CA 92672

Occupant

4002 Calle Ariana

San Clemente, CA 92672

Donald & Carol Mlodzik

664 Dorothy Ln

Fullerton, CA 92831

Interested Persons

Cyprus Shores Homeowners Association
23046 Avenida De La Carlota Ste 700
Laguna Hills, CA 92653

Cyprus Shore Community Association
3920 Calle Ariana
San Clemente, CA 92672

Government Agencies

Timothy Jackson, US Army Corps of
Engineers

Compliance & Enforcement Lead
951 Wilshire Boulevard, Suite 930
Los Angeles, CA 90017

Timothy.w.jackson@usace.army.mil

Darren Bradford, San Diego Regional Water
Quality Control Board

Environmental Scientist
2375 Northside Drive, Suite 100
San Diego, CA 92108

Darren.bradford@waterboards.ca.gov

Erik Sund, City of San Clemente

910 Calle Negocio
San Clemente, CA 92673

SundE@san-clemente.org



Attachment A. Proof of Applicant's Interest in Property

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51504

RECORDING REQUESTED BY
AND WHEN RECORDED MAIL TO:

Orange County Transportation Authority
1055 North Main Street
Santa Ana, California 92701
Attention: Adrienne Brooks

See Contracts

185411

184933

MAIL TAX STATEMENTS TO:

Orange County Transportation Authority
1055 North Main Street
Santa Ana, California 92701
Attention: Adrienne Brooks

SPACE ABOVE THIS LINE FOR RECORDER'S USE

GRANT DEED

(San Diego Subdivision (Orange County))

This instrument is exempt from
Recording Fees (Govt. Code
§27383) and from Documentary
Transfer Tax (Rev. & Tax Code
§11922)

For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, a Delaware corporation ("Grantor"), hereby sells, transfers, grants and conveys to ORANGE COUNTY TRANSPORTATION AUTHORITY, a governmental agency organized under the laws of the State of California ("Grantee"), all of Grantor's right, title and interest in and to (a) the land located in the County of Orange, State of California, as more particularly described in Exhibit A attached hereto (the "Land"); (b) all structures and other improvements on the Land, including all railroad tracks and related facilities (including rail and fastenings, switches and frogs, bumpers, ties, ballast, signaling devices and roadbed), and all structures and other improvements necessary for the use or support of any such railroad tracks or related facilities (including bridges, tunnels, culverts, grading, embankments, dikes, pavements and drainage facilities) (collectively, the "Improvements"); (c) all fixtures that Grantor owns and uses in the operation and maintenance of the Land and the Improvements; and (d) all appurtenances to the foregoing property (the Land, the Improvements, such fixtures and such

appurtenances being referred to herein collectively as the "Property"), subject only to the following permitted exceptions:

(i) any lien for real property taxes and assessments that are not yet due and payable, or for which collection has been enjoined (and with respect to which Grantor has the right to challenge, and Grantor shall protect, defend, indemnify and hold Grantee harmless from and against any and all liability, loss, damage, cost, expense and liens that have arisen or arise or relate to any such taxes accruing prior to the closing of the sale of the Property);

(ii) liens or encumbrances arising out of any activity of Grantee with respect to the Property;

(iii) the Shared Use Agreement;

(iv) any leases and licenses to the extent that the same do not and will not materially interfere with (A) Grantee's use of the portion of the Property which is used for Agency Rail Service or (B) the use for residential, industrial or commercial property of the portion of the Property which is not used for Agency Rail Service;

(v) with respect to the portion of the Property which is used for Agency Rail Service, any other non-monetary encumbrance, limitation or exception that does not materially interfere with Grantee's use of the Property for Agency Rail Service;

(vi) with respect to the portion of the Property which is not used for Agency Rail Service, any other non-monetary encumbrance, limitation or exception that does not materially interfere with the use of the Property for residential, industrial or commercial property, whichever use the respective purchasing Agency intends to make of the specific property;

(vii) the following permits or agreements to be retained by Grantor: (A) Rail Freight Service contracts and permits, (B) permits and agreements for any environmental remediation to be undertaken by Grantor, (C) rights and obligations under any and all joint facility agreements and other agreements pertaining to the portion of the Property which is used for Agency Rail Service, but only to the extent such rights and obligations relate to Rail Freight Service, and (D) all industry track agreements; provided that such permits and agreements do not and will not materially interfere with (x) Grantee's use of the portion of the Property which is used for Agency Rail Service or (y) the use for residential, industrial or commercial property of the portion of the Property which is not used for Agency Rail Service;

(viii) any covenant, condition or restriction contained in any instrument vesting title to any portion of the Property in Grantor which restricts the use of such portion to railroad purposes;

(ix) any encumbrance, limitation or exception resulting from the Property not having been divided in compliance with the Subdivision Map Act (California Government Code Section 66410 et seq.);

(x) materialmen's, mechanics' repairmen's, employees', contractors', operators', tax and other similar liens and charges arising pursuant to operations or work related to the Property or in the ordinary course of business incidental to the construction, maintenance or operation of the Property, but only to the extent that (A) if filed, they have not yet become due and payable, or payment is being withheld as provided by law, or (B) if their validity is being contested in good faith by appropriate action;

(xi) all applicable laws, rules, regulations or orders of any municipality or other governmental, statutory or public authority; and

(xii) any other exceptions to title approved by Grantee.

This Grant Deed is subject to the following reservations:

1. Reservation of Easement and License.

(a) Grantor hereby excepts from the foregoing conveyance and reserves unto Grantor, its successors and permitted assigns, a permanent (unless abandoned following effective approval or exemption by the ICC) easement over the surface of the portion of the Property described in Section 2 below, solely for the purpose of providing local rail freight service, which easement shall be the exclusive right to provide local rail freight service (the "Reserved Rail Freight Service Easement").

(b) Grantor also excepts from the foregoing conveyance and reserves unto Grantor, its successors and permitted assigns, a license (the "Reserved Rail Freight Service License") that permits in connection with the Reserved Rail Freight Service Easement any of Grantor's employees, agents or contractors or freight shippers or freight receivers (but only in connection with the loading, unloading or inspection of such shippers' or receivers' goods) to ingress and egress the Property.

(c) Grantor, and its successors and permitted assigns, shall have the right to use the Reserved Rail Freight Service Easement and the Reserved Rail Freight Service License without payment of any rental charge or other compensation for ownership interest to the owner of the ownership interest conveyed in the foregoing conveyance.

2. Description of Easement. The Reserved Rail Freight Service Easement shall have (i) a height of 26 feet from the top of the rail located on the Property, (ii) a length coterminous with the Property (except as set forth in Section 3), and (iii) a width consisting of a portion of the Property that encompasses (1) the land ten feet on either side of the centerline of all Tracks currently located on the Property and, upon completion of construction, any new or relocated Tracks on the Property that are mutually designated by Grantor and Grantee to be used for Rail Freight Service (except as set forth in Section 3(a)) and (2) the land covered by, and within three feet of, any Freight Rail Facilities currently located on the Property and, upon completion of construction, any new or relocated Freight Rail Facilities on the Property that are mutually designated by Grantor and Grantee to be used for Rail Freight Service.

3. Expansion and Contraction of Easement.

(a) If and when Grantee conveys to a party other than any other agency signatory to the Purchase Agreement, any real estate that is within 15 feet of the centerline of the Tracks, the width of the Reserved Rail Freight Service Easement shall be expanded automatically to 15 feet on one side of the centerline of Tracks where the expansion is necessary to permit efficient maintenance of that section of the Tracks.

(b) The Reserved Rail Freight Service Easement automatically shall contract upon removal of any Tracks or Freight Rail Facilities pursuant to the Shared Use Agreement or otherwise removed by or with the consent of Grantor, and automatically shall be relocated when any Tracks or Freight Rail Facilities are relocated pursuant to the Shared Use Agreement.

(c) Grantee shall have the right at no charge to construct or authorize new improvements on the Property limiting vertical clearance to below 26 feet, but no lower than 24 feet (measured from the top of the rail at the time such improvements are installed), with Grantor's prior written consent, which shall not be unreasonably withheld or delayed. If such new improvements limit vertical clearance to less than 26 feet (measured from the top of the rail at the time such improvements are installed), and if such clearance subsequently becomes inadequate to permit electrification of the Track, such retro-

fits, incremental catenary construction or such other measures as may be necessary, resulting from such limited vertical clearance, shall be at the cost of Grantee. In no event shall a reduction in vertical clearance caused by resurfacing subsequent to original construction be deemed to constitute a violation of any vertical height limitation. Grantee may install, without charge, below the 26 foot limit (but no lower than 24 feet from the top of the rail at the time such improvements are installed), the overhead electrical apparatus necessary for electrification of a Track, provided that such structures do not more than minimally interfere with Grantor's Quality Rail Freight Service on such Track.

(d) Grantee may construct and use for Agency Rail Service loading platforms at Passenger Station Sites on the portion of the Property burdened by the Reserved Rail Freight Service Easement, on the condition that such facilities comply with all standards of the California Public Utilities Commission and applicable Federal Railroad Administration regulations, and Grantor shall not have the right to require such construction to comply with standards more restrictive than applicable California Public Utilities Commission standards or applicable Federal Railroad Administration regulations.

4. Shared Use Agreement. Grantor and Grantee have entered into the Shared Use Agreement, the terms of which are incorporated by reference as if set forth in their entirety herein, with respect to the Property to govern their respective rights and obligations thereon.

5. No Obligation Regarding Encroachments. Grantee shall have no obligation to clear encroachments into the Reserved Rail Freight Service Easement that exist on the date hereof.

6. Loading and Unloading of Freight Cars. All loading and unloading of freight cars on the Property by Grantor and any Santa Fe Party shall be in compliance with all applicable federal, state, and local safety regulations, and subject only to the following additional restrictions:

(a) As to Tracks existing on the date of this Grant Deed, Grantor and the Santa Fe Parties shall load and unload freight cars only on Terminal Tracks, further provided:

(i) Loading and unloading of any boxcar on any such Track within 20 feet from any Track used for Agency Rail Service shall occur only on the side opposite of any Track used for Agency Rail Service.

(ii) Loading and unloading from any open top car or lumber car on any such Track shall occur only on a

Terminal Track located more than 20 feet from any Track used for Agency Rail Service.

(iii) Loading and unloading of Dangerous Materials Cars shall occur only at (1) any location which has been used to load, unload or store Dangerous Materials Cars between June 18, 1990 and June 18, 1992 (which locations are identified in Exhibit D to the Shared Use Agreement), provided however, that with respect to any such locations that are within 50 feet from any Track used for Agency Rail Service, or within 250 feet from any Passenger Station Site, if Grantee provides an alternative location reasonably acceptable to Grantor, then Grantor shall relocate such loading and unloading of Dangerous Materials Cars to the alternate location, or (2) any other Terminal Track existing on the date of this Grant Deed which is more than 50 feet from any Track used for Agency Rail Service and more than 250 feet from any Passenger Station Site, or (3) on other Tracks as mutually agreed between Grantor and Grantee. All loading and unloading of Dangerous Materials Cars shall be subject to Grantor's indemnification obligations set forth in Article 10 of the Shared Use Agreement.

(iv) Loading and unloading of intermodal cars shall be subject to the restrictions that (1) if side loaders are used for loading or unloading, such loading and unloading shall occur only on the side opposite of any Track used for Agency Rail Service, to the extent necessary to keep such loading or unloading operations at least 20 feet away from any Track used for Agency Rail Service, and (2) if an overhead crane is used for loading and unloading, such crane shall not be operated within 20 feet of any Track used for Agency Rail Service.

(v) Neither loading nor unloading of freight cars shall occur on the Property in a manner contrary to applicable law, or within 250 feet of any grade crossing where such activity would restrict sight distance at that crossing.

(vi) With respect to loading or unloading of any type of freight cars not referenced in subsection (i) through (iv) above, if Grantee discovers safety problems resulting from that loading or unloading, Grantor and Grantee agree to work together to explore resolutions to those problems.

(b) As to Tracks constructed after the date of this Grant Deed, Grantor and the Santa Fe Parties shall load and unload freight cars only on Terminal Tracks, further provided:

(i) Grantor and the Santa Fe Parties may not load or unload any boxcar, open top car or lumber car on any such Track that is located within 20 feet from any Track used for Agency Rail Service.

(ii) Grantor and the Santa Fe Parties may not unload into any pit or conveyor system, or load from any chute or conveyor system.

(iii) Grantor and the Santa Fe Parties shall not load or unload any Dangerous Materials Cars on the Property.

(iv) Grantor and the Santa Fe Parties shall not load or unload within 250 feet of any grade crossing where such activity would restrict sight distance at the crossing.

(v) Loading and unloading of intermodal cars shall be subject to the restrictions that (1) if side loaders are used for loading or unloading, such loading and unloading shall occur only on the side opposite of any Track used for Agency Rail Service, to the extent necessary to keep such loading or unloading operations at least 20 feet away from any Track used for Agency Rail Service, and (2) if an overhead crane is used for loading and unloading, such crane shall not be operated within 20 feet of any Track used for Agency Rail Service.

7. Storage of Freight Cars.

(a) As to Tracks existing on the date of this Grant Deed, storage of loaded and empty freight cars by Grantor and the Santa Fe Parties is restricted as follows:

(i) Storage of Dangerous Materials Cars shall occur only at (1) any location which has been used to load, unload or store Dangerous Materials Cars between June 18, 1990 and June 18, 1992 (which locations are identified in Exhibit D to the Shared Use Agreement), provided however, that with respect to any such locations that are within 50 feet from any Track used for Agency Rail Service, or within 250 feet from any Passenger Station Site, if Grantee provides an alternative location reasonably acceptable to Grantor, then Grantor shall relocate such storage of Dangerous Materials Cars to the alternate location, or (2) any other Track existing on the date of this Grant Deed which is more than 50 feet from any Track used for Agency Rail Service and more than 250 feet from any Passenger Station Site, or (3) on other Tracks as mutually agreed between Grantor and Grantee. All storage of Dangerous Materials Cars shall be subject to Grantor's indemnification obligations set forth in Article 10 of the Shared Use Agreement.

(ii) Grantor and the Santa Fe Parties shall comply, at their sole cost and expense, with all customary and appropriate safety and maintenance procedures (including, without limitation, derails).

(iii) Freight cars shall not be stored on the Property in a manner contrary to applicable law, or within 250 feet of any grade crossing where such activity would restrict sight distance at that crossing.

(b) As to Tracks constructed after the date of this Grant Deed, Grantor's storage of loaded and empty freight cars is restricted as follows:

(i) the restrictions set forth in Section 7 (a)(ii) and (iii) apply.

(ii) Grantor and the Santa Fe Parties may not store any Dangerous Materials Cars on such Tracks.

(c) If Grantee discovers that any storage of freight cars creates a hazard affecting Agency Rail Service, Grantor and Grantee agree to work together to reduce or eliminate such hazard in a manner acceptable to both parties.

8. Assignment By Grantor of Reserved Rail Freight Service Easement.

(a) Grantor shall have the right, without obtaining the consent of Grantee and without remaining liable under the Shared Use Agreement, to transfer or assign all of the Reserved Rail Freight Service Easement, Reserved Rail Freight Service License and all of its rights under this Reserved Rail Freight Service Easement, Reserved Rail Freight Service License and the Shared Use Agreement, to any party in connection with a merger, corporate reorganization or sale of all or substantially all of Grantor's assets, on the condition that the transferee assumes in writing, for the benefit of Grantee, all of Grantor's obligations under this Reserved Rail Freight Service Easement, Reserved Rail Freight Service License and the Shared Use Agreement with respect to the rights and of the Property transferred. Grantor also shall have the right, without obtaining the consent of Grantee and without remaining liable under the Shared Use Agreement, to sell all or a portion of the Reserved Rail Freight Service Easement or Reserved Rail Freight Service License to another Class I railroad on the condition that the transferee assumes in writing for the benefit of Grantee, all of Grantor's obligations under this Reserved Rail Freight Service Easement, Reserved Rail Freight Service License and the Shared Use Agreement. After a sale of all or substantially all of Grantor's assets, or the sale of all or a portion of the Reserved Rail Freight Service Easement or Reserved Rail Freight Service License to another Class I Railroad, Grantor shall be released from all liability under the Purchase Agreement and Shared Use Agreement with respect to the obligations so assumed, except liabilities relating to Sections 6.2, 6.3, 6.4, 7.9, 7.10, 8.1,

10.2, 10.3, 10.4, 10.5, and 10.6 of the Purchase Agreement, and Articles 8 and 10 of the Shared Use Agreement.

(b) (1) Grantor may transfer or assign to any party all or a portion of the Reserved Rail Freight Service Easement, Reserved Rail Freight Service License and/or all or a portion of its rights under the Shared Use Agreement, and may grant trackage rights to one or more other railroads over any portion of the Property which is subject to the Reserved Rail Freight Service Easement or Reserved Rail Freight Service License, except that if the sale or grant of trackage rights involves operating railroad facilities on the Property, such a sale of or grant of trackage rights to a non-railroad or a Class II railroad or Class III railroad shall be subject to the prior written consent of Grantee, which may not be unreasonably withheld or delayed. Such consent shall be based on

(i) Grantee's reasonable judgment concerning the railroad operating experience of the transferee or its employees and the transferee's capability to conduct its freight operations in a manner that will not more than minimally interfere with the Agency Rail Service conducted in accordance with the provisions of the Shared Use Agreement, (ii) Grantee's reasonable judgment concerning the amount of maintenance liability allocated to the transferee and the ability of the transferee to pay for and/or perform such maintenance obligations under the Shared Use Agreement and to conduct rail freight operations in a safe manner, and (iii) Grantee's reasonable judgment concerning the ability of the transferee to obtain and maintain the insurance required to be maintained by Grantor pursuant to the Shared Use Agreement and otherwise to be responsible for any losses or damages for which Grantor would be responsible hereunder and under the Shared Use Agreement with respect to the portion of the Property encumbered by the Reserved Rail Freight Service Easement or Reserved Rail Freight Service License which is transferred or assigned or over which trackage rights were granted.

(2) Any such transfer or grant of trackage rights pursuant to Section 8(b) (1) above shall be on the condition that the transferee or trackage rights tenant assumes in writing, for the benefit of Grantee, all (or in the case of a trackage rights tenant, the applicable portions) of the obligations under this Reserved Rail Freight Service Easement, Reserved Rail Freight Service License and the Shared Use Agreement with respect to the portion of the Property encumbered by the Reserved Rail Freight Service Easement or Reserved Rail Freight Service License which is transferred or assigned or over which trackage rights were granted. After any such transfer (but not grant of trackage rights), Grantor shall be released from all liability under the Purchase Agreement and Shared Use Agreement with respect to the portion of the Property encumbered by the Reserved Rail Freight Service Agreement or rights transferred,

except liabilities relating to Sections 6.2, 6.3, 6.4, 7.9, 7.10, 8.1, 10.2, 10.3, 10.4, 10.5, and 10.6 of the Purchase Agreement, and Articles 8 and 10 of the Shared Use Agreement. Additionally, a grant of trackage rights over any portion of the Tracks shall be subject to the prior written consent of Grantee, which consent may not be unreasonably withheld or delayed, where (I) the trackage rights would add an operating railroad over any significant portion of the Tracks or (II) the trackage rights transferee is a non-railroad or a Class II or Class III railroad. Such consent of Grantee shall be based upon clauses (i), (ii), and (iii) of Subsection 8(b)(1) and, in addition, Grantee's reasonable judgment as to whether a new trackage rights operation likely would materially and adversely affect Agency Rail Service.

(3) Grantee shall have the right to meet with Grantor and such a proposed transferee prior to a transfer to discuss a proposed transfer and operations on the Property. Notwithstanding anything to the contrary herein, should Grantor sell or transfer (including by grant of trackage rights) all or any portion of its freight rights under the Reserved Rail Freight Service Easement or Reserved Rail Freight Service License to a Class II railroad or a Class III railroad or to a non-railroad, then upon the effective date of such sale or transfer, all Rail Freight Service shall be conducted only during the period after the evening Restricted Freight Period and before the morning Restricted Freight Period and all rights to operate or advance Santa Fe Trains during peak hours or during midday shall terminate with respect to such portion of the Property.

(c) To the extent practicable, and consistent with securities laws and regulations, Grantor shall give Grantee at least seven days' prior written notice of any sale or transfer of all or any significant portion of the Reserved Rail Freight Service Easement, Reserved Rail Freight Service License or its rights or obligations under the Shared Use Agreement.

(d) Except as set forth in this Section 8, Grantor shall have no right to assign or transfer its rights reserved under this Reserved Rail Freight Service Easement, this Reserved Rail Freight Service License or its rights under the Shared Use Agreement (including, without limitation, the transfer of trackage rights) without Grantee's prior written consent.

9. Sale of Property By Grantee. Grantee may sell, free of the Reserved Rail Freight Service Easement and Reserved Rail Freight Service License, any portion of the Excess Owned Subdivision Property, provided, however, that if Grantor reasonably believes that at that time or in the near future Grantor will need to expand the Reserved Rail Freight Service Easement, and Grantor delivers written notice thereof to Grantee (which notice describes with specificity the portion of the

Excess Owned Subdivision Property then or in the near future required for the Reserved Rail Freight Service Easement and the proposed use of such Excess Owned Subdivision Property), then Grantee shall not sell the portion of the Excess Owned Subdivision Property described in such notice for a period of six months from the receipt of such notice, unless the portion of the property described in such notice is sold subject to the Reserved Rail Freight Service Easement and Reserved Rail Freight Service License. Grantor may not send such a notice with respect to any given portion of the Excess Owned Subdivision Property more than once in any six month period. Six months after the receipt of such notice, unless another notice has been received, Grantee may sell such portion of the Excess Owned Subdivision Property free of the Reserved Rail Freight Service Easement and Reserved Rail Freight Service License. Grantor shall execute and deliver such quitclaim deeds as are requested by Grantee to evidence that the Excess Owned Subdivision Property is not subject to the Reserved Rail Freight Service Easement and Reserved Rail Freight Service License.

10. Property Taxes. Grantor (as between Grantor and Grantee) shall bear any property taxes or possessory interest taxes which are due and payable with respect to the Reserved Rail Freight Service Easement and/or Reserved Rail Freight Service License. Grantor shall pay any such taxes prior to delinquency and shall protect, defend, indemnify and hold Grantee, its successors and permitted assigns, harmless from and against any and all liability, loss, cost, damage or expense (including, without limitation, reasonable attorney's fees) that Grantee, its successors and permitted assigns, may sustain or incur on account of any such taxes.

11. Abandonment. In the event that the Property or any portion thereof has not been used for Rail Freight Service for a period of five years, at the request of Grantee, in circumstances where there is then no current need for future Rail Freight Service on that portion of the Property, Grantor shall seek promptly and pursue diligently at Grantor's cost and expense all regulatory and administrative approvals which are necessary for the abandonment of that portion of the Property. Immediately upon the effective date of such approvals, the Reserved Rail Freight Service Easement and the Reserved Rail Freight Service License shall terminate as to the Property or portion thereof which has been abandoned. Upon the request of Grantee, Grantor shall promptly execute and deliver to Grantee a quitclaim deed with respect to such portion of the Property in recordable form.

12. Reservation of Fiber Optics Easement. Grantor hereby excepts from the foregoing conveyance and reserves unto Grantor, its successors and permitted assigns, a permanent (unless terminated as provided herein), non-exclusive easement

over the portion of the Property more particularly described in Section 14 below, solely for the purpose of permitting Sprint Communications Company (together with its successors and permitted assigns, "Sprint") and MCI Telecommunications Corporation (together with its successors and permitted assigns, "MCI"), or any of their respective employees, agents, contractors, permitted assignees or permitted transferees to construct, maintain and operate, their respective fiber optics lines and other communication lines and related facilities ("Communications Improvements"), as such rights and interests have been granted to Sprint under the Telecommunications License Agreement dated as of June 25, 1990 (the "Sprint Agreement") and to MCI under the Master Right of Way Agreement dated as of November 17, 1992, (the "MCI Agreement") (such reserved easement herein called the "Reserved Fiber Optics Easement"). Except as provided in the Sprint Agreement and the MCI Agreement, Grantor shall have no right on the Property to (i) grant to Sprint, MCI or any other party any right to add any new or additional fiber optics lines or other communication lines to the existing lines on the Property, or (ii) allow Sprint, MCI or any other party otherwise to increase the capacity of their fiber optics lines or other communication lines on the Property. Grantor and its permitted lessees, licensees, transferees, successors and assignees shall have all rights to use the Reserved Fiber Optics Easement without payment of any rental charge or other compensation to the owner of the interest conveyed in the foregoing conveyance.

13. Reservation of Access License. Grantor further excepts from the foregoing conveyance and reserves unto Grantor, its successors and permitted assigns, a license that permits ingress and egress on, under, over and through the Property for any of its employees, agents or contractors to the extent necessary in connection with the Communication Improvements, and for the other purposes provided in the Sprint Agreement and/or the MCI Agreement (such reserved license herein called the "Easement Access License"). Grantor, Sprint, and MCI, and any of their respective employees, agents, contractors, successors and permitted assigns shall be referred to collectively as the "Easement Access Licensees." The Easement Access License shall be subject to the following conditions: (a) entry onto the Property and all activities conducted by the Easement Access Licensees pursuant to the Easement Access License shall be done at such times and in such manner as not to interfere in any material manner with (i) any portion of the Property which is used for Agency Rail Service, (ii) the Grantee's commercial, industrial or residential use, as the case may be, on any portion of the Property which is not used for Agency Rail Service or (iii) such activities of any person operating under the authority of Grantee, and (b) the Easement Access Licensees shall provide Grantee three (3) business days' prior written notice (except in

an emergency, in which case notice shall be reasonable) before (i) entry upon the Property by any of the Easement Access Licensees or by any necessary or incidental vehicles, work equipment, machinery and other movable structures for purposes related to the Reserved Fiber Optics Easement, or (ii) the commencement of any work on the Property, (c) the Easement Access Licensees shall comply with all reasonable rules and regulations promulgated by Grantee with respect to such entry onto the Property and such activities.

14. Description of Easement. The Reserved Fiber Optics Easement shall be of such length and width over such portions of the Property more particularly described in Exhibit B attached hereto. Grantee shall have the right to approve the location of Communications Improvements installed or relocated after the date hereof, which approval shall not be unreasonably delayed or withheld. All work in connection with such installation or relocation shall not materially interfere with (i) the construction, maintenance or operation on any portion of the Property which is used for Agency Rail Service, (ii) the Grantee's commercial, industrial or residential use, as the case may be, on any portion of the Property which is not used for Agency Rail Service or (iii) such activities of any person operating under the authority of Grantee. Grantee acknowledges, for itself and its successors and assigns, that it accepts title to the Property subject to the Sprint Agreement and/or the MCI Agreement, as the case may be. Grantor acknowledges that the Reserved Fiber Optics Easement pertains only to the rights and interests of Grantor and Sprint under the Sprint Agreement and Grantor and MCI under the MCI Agreement, and that all other rights and interests pertaining to fiber optics in, on or under the Property are transferred, conveyed, and assigned to Grantee by this instrument.

15. Location of Fiber Optics Lines and Communication Improvements. Grantor, Sprint, and/or MCI, as the case may be, shall install and maintain monuments or markers in form and size reasonably approved by Grantee marking the location of the Communications Improvements, changes in direction of such improvements, and on each side of grade crossings, at the sole cost and expense of Grantor, Sprint, and/or MCI, as the case may be.

16. Construction and Maintenance of Communications Improvements. From and after the date hereof, Communications Improvements shall be constructed, operated and maintained in accordance with plans, specifications and procedures approved by Grantee in its reasonable discretion, in advance of such construction, operation and maintenance, and shall be constructed, operated and maintained, at the sole cost and expense of Grantor, Sprint, and/or MCI, as the case may be, in

good and workmanlike manner in accordance with all requirements of any governmental agency having jurisdiction thereof. Grantee shall not unreasonably withhold or delay its approval of any plans, specifications and procedures by Sprint, MCI or Grantor, as the case may be. Any disapproval shall specify the reasons therefor in reasonable detail. All necessary permits for such construction, operation, and maintenance shall be obtained by Grantor, Sprint, or MCI, as the case may be, at such party's sole expense. Prior to exercising any rights to construct additional Communications Improvements, Grantor, Sprint, or MCI, as the case may be, shall obtain or extend at its sole expense general liability insurance or self insurance with comparable protection as general liability insurance naming Grantee as an additional insured with respect to, and to the extent of, such party's such rights, upon such terms and in such amounts as are reasonable and customary, and issued by companies reasonably approved by Grantee. Grantee shall be furnished with a certificate of each policy required to be provided by Grantor, Sprint, and/or MCI, as the case may be prior, to the commencement of any such construction, operation or maintenance.

17. Indemnification of Grantee. Access over, upon, to, from and across the Property pursuant to the Easement Access License and exercise of the Reserved Fiber Optics Easement shall be at the sole risk and expense of Grantor, Sprint and MCI, and their respective contractors, lessees, sublessees, licensees, agents, and employees. Notwithstanding any other agreement between Grantor and Grantee, Grantor shall hold harmless, indemnify and defend Grantee from and against (a) any claims or liability (including, without limitation, attorneys' fees and any claim by or liability to any materialman or contractor) arising out of or in connection with the exercise of the Reserved Fiber Optics Easement and/or the Easement Access License by Grantor, Sprint, and/or MCI, and their respective contractors, lessees, sublessees, licensees, agents, and employees and (b) any loss of or damage to the property of Grantee arising out of or in connection with exercise of the Reserved Fiber Optics Easement and/or the Easement Access License by Grantor, Sprint, and/or MCI, and their respective contractors, lessees, sublessees, licensees, agents, and employees, except for claims, liabilities, loss or damage caused by Grantee's negligence or willful misconduct.

18. Liability of Grantee. Grantee shall have no liability to Grantor, Sprint, and/or MCI, or their respective contractors, lessees, sublessees, licensees, agents, or employees, for (a) any claim by or liability to any such person or entity arising out of or in connection with the use of, or activities upon, the Property by Grantee or its contractors, lessees, sublessees, licensees, agents, or employees (including, without limitation, the construction, maintenance, or operation

of Agency Rail Service), or (b) any loss of or damage to the property of Grantor, Sprint, and/or MCI, or their respective contractors, lessees, sublessees, licensees, agents, or employees, including, without limitation, the Communications Improvements, arising out of or in connection with the use of, or activities upon, the Property by the Grantee or its contractors, lessees, sublessees, licensees, agents, or employees (including, without limitation, the construction, maintenance, or operation of Agency Rail Service), except in each case as such claim, liability, loss or damage is the result of the negligence or willful misconduct of Grantee, or its contractors, lessees, sublessees, licensees, agents, or employees. In no case shall Grantee or its contractors, lessees, sublessees, licensees, agents, or employees be liable to Grantor, Sprint, and/or MCI, or their respective contractors, lessees, sublessees, licensees, agents, or employees, for consequential, special, indirect or incidental damages, even if Grantee, its contractors, lessees, sublessees, licensees, agents, or employees, are or have been advised of the possibility of the same.

19. Relocation of Communications Improvements. At any time after the date hereof, if Grantee reasonably desires to have any Communications Improvements relocated in order to utilize any portion of the Property subject to the Reserved Fiber Optics Easement (the "Fiber Optics Easement Property") for (a) the operation of Agency Rail Service thereon, (b) a passenger terminal, or (c) parking to serve passenger rail customers, Grantee shall notify Grantor, Sprint, and/or MCI, as the case may be, of such desire in writing specifying in reasonable detail (1) the nature and extent of the proposed use, (2) the description of the portion of the Fiber Optics Easement Property on which relocation of Communications Improvements is being requested (which description may consist of a mark-up of an "as-built" map showing the location of the Communication Improvements), and (3) the date upon which Grantee desires the relocation of such Communications Improvements to be completed. Promptly after delivery of such notice, (A) Grantee shall deliver to Grantor, Sprint, and/or MCI, as the case may be, a copy of the latest plans and specifications for the project proposed by such Grantee which requires such relocation and (B) Grantee, Grantor and Sprint and/or MCI, as the case may be, mutually shall agree on the location of the proposed alternative easement (the "Alternative Easement") for the fiber optics lines (which shall provide for the ability to maintain continuous communications and/or utility connections, as applicable, across the Property which are not substantially less convenient than is provided by the existing Reserved Fiber Optics Easement). Grantor shall use commercially reasonable efforts to cause Sprint and/or MCI, as the case may be, to relocate, within four months after receiving the notice specified above, the Communications Improvements located on the specified portion of the Fiber Optics Easement

Property to the Alternative Easement. In connection therewith, Grantee shall grant to Grantor a license over that portion of the Property affected by the Alternative Easement (upon the same terms and conditions as for the existing Easement Access License) and Grantor shall quitclaim to Grantee all of its right, title and interest in the portion of the Reserved Fiber Optics Easement from which such improvements have been relocated. Any such relocation shall be at the cost and expense of Grantee except to the extent such cost shall be borne by Sprint and/or MCI, as the case may be, pursuant to the Sprint Agreement and the MCI Agreement, respectively; provided, however, on a one time basis after the initial installation of MCI's Communication Improvements, any such relocation shall be at the cost and expense of Grantor to the extent that such cost shall not be borne by MCI pursuant to the MCI Agreement.

20. Cooperation. Grantor agrees that upon the written request by Grantee, Grantor shall cooperate with Grantee and exercise Grantor's rights under the Sprint Agreement and/or the MCI Agreement (to the extent they relate to the Property) as requested by Grantee in a manner that reasonably accommodates Grantee's use of the Property for Agency Rail Service. Such exercise of Grantor's rights under the Sprint Agreement and/or the MCI Agreement shall include, without limitation, giving notices (as reasonably requested by Grantee) to Sprint under the Sprint Agreement and/or MCI under the MCI Agreement, including, without limitation, notices of requests to relocate the Reserved Fiber Optics Easement.

21. No Obligation Regarding Encroachments. Grantee shall have no obligation to clear encroachments into the Reserved Fiber Optics Easement that exist on the date hereof.

22. Assignment by Grantor of Reserved Fiber Optics Easement. Grantor shall have the right, without obtaining consent from Grantee and without remaining liable under the Shared Use Agreement, to transfer or assign all of the Reserved Fiber Optics Easement and Easement Access License to any party in connection with (a) a merger, corporate reorganization or sale of all or substantially all of Grantor's assets, provided that in connection with such merger, corporate reorganization or sale Grantor's interest in the Reserved Rail Freight Service Easement is also transferred or assigned to the same party as permitted herein, and/or (b) a permitted transfer of all or a portion of Grantor's Reserved Rail Freight Service Easement. After a sale of all or substantially all of Grantor's assets, Grantor shall be released from all liability under the Purchase Agreement with respect to the obligations so assumed, except liabilities relating to Sections 6.2, 6.3, 6.4, 7.9, 7.10, 8.1, 10.2, 10.3, 10.4, 10.5 and 10.6 of the Purchase Agreement.

23. Property Taxes. Grantor (as between Grantor and Grantee) shall bear any property or possessory interest taxes which are due and payable with respect to the Reserved Fiber Optics Easement and/or the Easement Access License. Grantor shall pay any such taxes prior to delinquency and shall protect, defend, indemnify and hold Grantee, its successors and permitted assigns, harmless from and against any and all liability, loss, cost, damage or expense (including, without limitation, reasonable attorney's fees) that Grantee, its successors and permitted assigns, may sustain or incur on account of any such taxes.

24.e Termination. Upon termination of the Sprint Agreement and the conclusion of all activities on the Property pertaining to the winding-up of the Sprint Agreement, the Reserved Fiber Optics Easement and Easement Access License, insofar as it concerns and affects that portion of the Property burdened by the Sprint Agreement, shall terminate. Upon termination of the MCI Agreement and the conclusion of all activities on the Property pertaining to the winding-up of the MCI Agreement, the Reserved Fiber Optics Easement and Easement Access License, insofar as it concerns and affects that portion of the Property burdened by the MCI Agreement, shall terminate. In either case, Grantor shall request that Sprint or MCI (as the case may be) shall execute, acknowledge and deliver to Grantee a quitclaim of such portion of the Reserved Fiber Optics Easement and Easement Access License.

25. Amendments. Any material amendment to the Sprint Agreement or the MCI Agreement regarding the portion of either the Sprint Agreement or the MCI Agreement affecting the Property shall require the consent of Grantee, and if such consent is granted, such amendment shall be deemed for purposes hereof to be a part of the Sprint Agreement or the MCI Agreement respectively.

26. Definitions. As used herein, the following terms shall have following meanings:

(i) "Agency Party" shall mean Grantee and any other person to the extent that such person as permitted under the Shared Use Agreement is exercising any rights to operate Agency Rail Service (other than Amtrak Trains) over any portion of the Property or maintaining or constructing rail facilities on the Property pursuant to a specific written grant of such rights by Grantee, including, without limitation, any Operator.

(ii) "Agency Rail Service" shall mean the operation of Trains (including light rail service), authorized by Grantee, which are used to provide passenger rail service, or any other related rail passenger service activities; provided,

however, the term "Agency Rail Service" shall exclude the operation of all Amtrak Trains.

(iii) "Agency Train" shall mean any Train operated by or on behalf of any Agency Party but shall not include any Amtrak Train.

(iv) "Amtrak" shall mean the National Railroad Passenger Corporation.

(v) "Amtrak Train" shall mean any Train operated by Amtrak to provide intercity rail passenger service or Section 403(b) Service operated by Amtrak on Amtrak Trains, but shall not include any Agency Train, even if Amtrak is the Operator of such Agency Train.

(vi) "Dangerous Materials Cars" shall mean all freight cars containing flammable or toxic gases or liquids, explosives, radioactive materials, etiologic agents, combustible liquids, oxidizing or corrosive materials, compressed gases or materials that could form toxic gases or liquids.

(vii) "Excess Owned Subdivision Property" shall mean any portion of the Property that is not then subject to the Reserved Rail Freight Service Easement.

(viii) "Freight Rail Facilities" shall mean all rail freight loading or unloading facilities and rail freight weighing scales. Freight Rail Facilities do not include any Tracks.

(ix) "Operator" shall mean the operator or operators, if any, appointed from time to time by Grantee to operate Agency Trains over the Property and/or to exercise some or all of the respective rights and obligations of Grantee under the Shared Use Agreement in connection with such operation over the Property or any portion thereof, but only to the extent such operator or operators are acting in such capacity and not to the extent such operator or operators are acting for their own account or in some other capacity.

(x) "Passenger Station Site" shall mean, collectively, any passenger station owned or leased by, or operated by or on behalf of any Agency Party, any adjacent passenger parking lot owned or leased by, or operated by or on behalf of any Agency Party, and any passenger loading platform owned or leased by, or operated by or on behalf of any Agency Party and any ticket booth or machine or any passenger waiting area owned or leased by, or operated by or on behalf of any Agency Party.

(xi) "Purchase Agreement" shall mean that certain Purchase and Sale Agreement dated as of October 30, 1992 between Grantor and Los Angeles County Transportation Commission, Los Angeles-San Diego Rail Corridor Agency, Orange County Transportation Authority, Riverside County Transportation Commission, San Bernardino Associated Governments, San Diego Metropolitan Transit Development Board, North San Diego County Transit Development Board and the Southern California Regional Rail Authority.

(xii) "Quality Rail Freight Service" shall mean efficient and reliable rail freight service to Grantor's current and future customers, with service and schedules that are competitive with other railroads serving Southern California, including the railhaul portion of intermodal service offered by those other railroads in Southern California, but without reference to cost.

(xiii) "Rail Freight Service" shall mean the operation of Santa Fe Trains, whether loaded or empty, which are used to provide local rail freight service or overhead rail freight service over the Property in the exercise of Grantor's rights retained in its Reserved Rail Freight Service Easement, or any other related freight service activity, such as loading, unloading, inspection or weighing of freight cars, maintenance or rehabilitation of Tracks or any rail equipment or facilities on the Property that are used for Rail Freight Service, which are authorized by the Reserved Rail Freight Service Easement and the Reserved Rail Freight Service License.

(xiv) "Restricted Freight Periods" shall mean three hours in the morning and three hours in the evening as determined by the Grantee, subject to Grantor's reasonable approval.

(xv) "Santa Fe Party" shall mean Grantor and any other person to the extent such person, as permitted under the Shared Use Agreement, the Reserved Rail Freight Service Easement or the Reserved Rail Freight Service License is exercising any rights to operate Rail Freight Service over the Property pursuant to a specific written grant of such rights by Grantor.

(xvi) "Santa Fe Train" shall mean any Train operated by any Santa Fe Party.

(xvii) "Section 403(b) Service" shall mean service provided by Amtrak pursuant to Section 403(b) of the Rail Passenger Service Act of 1970, as amended (45 U.S.C. § 563(b)).

(xviii) "Shared Use Agreement" shall mean that certain Shared Use Agreement (San Diego Subdivision (Orange

County) and Olive Subdivision) dated as of October 30, 1992 between Grantor and Grantee.

(xix) "Terminal Tracks" shall mean (a) industry tracks or team tracks, or (b) sidings or other tracks upon which the parties mutually agree.

(xx) "Tracks" shall mean all tracks, (including, without limitation, passing tracks and sidings), turnouts, crossovers, interlocking devices and plants, and track improvements that are located now or in the future on the Property.

(xxi) "Train" shall mean one or more locomotive units and cars, if any, attached thereto.

IN WITNESS WHEREOF, Grantor has set its hand and seal this 29th day of March, 1993.

GRANTOR:

THE ATCHISON, TOPEKA AND
SANTA FE RAILWAY COMPANY,
a Delaware corporation

ATTEST:

By: 

Name: PETER J. NELSON

Title: ASSISTANT SECRETARY

[SEAL]

By: 

Name: Jeffrey R. Moreland

Title: Vice President - Law

EXHIBIT A
LEGAL DESCRIPTION

SAN DIEGO LINE CORRIDOR/ORANGE COUNTY

DESCRIPTION: THE LAND REFERRED TO HEREIN IS SITUATED IN THE COUNTY OF ORANGE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL 1:

THAT PORTION OF THAT CERTAIN 100 FOOT RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH, LYING WITHIN SECTION 34 IN TOWNSHIP 3 SOUTH, RANGE 10 WEST OF THE SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF, AS DESCRIBED IN THOSE CERTAIN DEEDS TO CALIFORNIA CENTRAL RAILWAY COMPANY RECORDED SEPT. 28, 1888 IN BOOK 497, PAGE 24; JANUARY 3, 1888 IN BOOK 359 PAGE 290; NOVEMBER 9, 1887 IN BOOK 327, PAGE 223 AND IN BOOK 327, PAGE 224, ALL OF DEEDS IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER.

EXCEPT THEREFROM ANY PORTION WITHIN THAT CERTAIN RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN BERNARDINO BRANCH, GRANTED TO RIVERSIDE COUNTY TRANSPORTATION COMMISSION ET AL, RECORDED DECEMBER 15, 1992 AS INSTRUMENT NO. 92-856382 OFFICIAL RECORDS, IN THE OFFICE OF THE SAN DIEGO COUNTY RECORDER.

PARCEL 2:

THAT PORTION OF THAT CERTAIN 100 FOOT RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH, LYING WITHIN SECTION 3 IN TOWNSHIP 4 SOUTH, RANGE 10 WEST OF THE SAN BERNARDINO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF, AS DESCRIBED IN THOSE CERTAIN DEEDS TO CALIFORNIA CENTRAL RAILWAY COMPANY RECORDED NOVEMBER 9, 1887 IN BOOK 327, PAGE 221 AND IN BOOK 327, PAGE 220; MARCH 26, 1888 IN BOOK 407, PAGE 143 AND AUGUST 19, 1889 IN BOOK 593 PAGE 109 OF DEEDS, IN THE OFFICE OF THE COUNTY RECORDER OF LOS ANGELES COUNTY.

PARCEL 3:

THAT PORTION OF THAT CERTAIN 100 FOOT RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH IN THE COUNTY OF ORANGE LYING WITHIN RANCHO SAN JUAN CAJON DE SANTA ANA SITUATED IN SECTION 10 TOWNSHIP 4 SOUTH, RANGE 10 WEST

OF THE SAN BERNARDINO BASE AND MERIDIAN, DESCRIBED IN THAT CERTAIN DEED TO CALIFORNIA CENTRAL RAILWAY CO., A CORPORATION, RECORDED NOVEMBER 9, 1887 IN BOOK 327 PAGE 219 OF DEEDS IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER.

PARCEL 4: (INTENTIONALLY DELETED)

PARCEL 5:

THAT PORTION OF THAT CERTAIN 50 FOOT RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH IN THE COUNTY OF ORANGE, WITHIN RANCHO SAN JUAN CAJON DE SANTA ANA, SITUATED IN SECTION 14, IN TOWNSHIP 4 SOUTH OF RANGE 10 WEST OF THE SAN BERNARDINO BASE AND MERIDIAN, AS DESCRIBED IN THOSE CERTAIN DEEDS TO CALIFORNIA CENTRAL RAILWAY COMPANY RECORDED MARCH 26, 1888 IN BOOK 407 PAGE 135 AND MARCH 30, 1888 IN BOOK 417 PAGE 24, BOTH DEEDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER.

PARCEL 6:

THAT PORTION OF THAT CERTAIN 100 FOOT RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH IN THE COUNTY OF ORANGE, WITHIN RANCHO SAN JUAN CAJON DE SANTA ANA AND RANCHO SANTIAGO DE SANTA ANA, SITUATED IN SECTIONS 14, 23, 24 AND 25 IN TOWNSHIP 4 SOUTH OF RANGE 10 WEST OF THE SAN BERNARDINO BASE AND MERIDIAN, AS DESCRIBED IN THOSE CERTAIN DEEDS TO CALIFORNIA CENTRAL RAILWAY COMPANY, RECORDED MARCH 26, 1888 IN BOOK 407, PAGE 130 AND AUGUST 19, 1889 IN BOOK 593, PAGE 109, BOTH DEEDS IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER.

PARCEL 7:

THAT PORTION OF THAT CERTAIN RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH, LYING WITHIN RANCHO SANTIAGO DE SANTA ANA, SITUATED IN SECTIONS 25 OF TOWNSHIP 4 SOUTH OF RANGE 10 WEST OF SAN BERNARDINO BASE AND MERIDIAN AND SECTION 30 OF TOWNSHIP 4 SOUTH OF RANGE 9 WEST OF SAN BERNARDINO BASE AND MERIDIAN AND LYING WITHIN LOTS 3 THRU 8 INCLUSIVE OF THE GLASSEL AND CHAPMAN TRACT, AS PER MAP RECORDED IN BOOK 5 PAGE 408 OF MISCELLANEOUS RECORDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER, DESCRIBED IN THOSE CERTAIN DEEDS TO CALIFORNIA CENTRAL RAILWAY COMPANY AND ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, RECORDED MARCH 26, 1888 IN BOOK 407 PAGE 132 AND IN BOOK 407 PAGE 137; MAY 21 1888 IN BOOK 448 PAGE 20 AND IN BOOK 448 PAGE 22; OCTOBER 3, 1888 IN BOOK 495 PAGE 113 AND FEBRUARY 6, 1889 IN BOOK 542 PAGE 21, ALL DEEDS IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER, AND RECORDED AUGUST 13, 1889 IN BOOK 2, PAGE 105 DEEDS; NOVEMBER 20, 1942 IN BOOK 1155, PAGE 548, OFFICIAL RECORDS; NOVEMBER 7, 1942 IN BOOK

1154 PAGE 579, OFFICIAL RECORDS; DECEMBER 3, 1942 IN BOOK 1172, PAGE 111, OFFICIAL RECORDS; DECEMBER 28, 1942 IN BOOK 1165, PAGE 458, OFFICIAL RECORDS AND MARCH 12, 1943 IN BOOK 1179, PAGE 524 OFFICIAL RECORDS, IN THE OFFICE OF THE ORANGE COUNTY RECORDER.

EXCEPTING THEREFROM THAT PORTION THEREOF DESCRIBED IN THAT CERTAIN DEED TO GARY J. ALMQUIST, RECORDED JULY 24, 1990 AS INSTRUMENT NO. 90-388814, OFFICIAL RECORDS.

PARCEL 8:

THAT PORTION OF THAT CERTAIN RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH, IN THE COUNTY OF ORANGE, WITHIN LOT 3 OF BLOCK "G" OF THE CHAPMAN TRACT, AS PER MAP RECORDED IN BOOK 1 PAGE 23 OF MISCELLANEOUS RECORDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER DESCRIBED IN THOSE CERTAIN DEEDS TO CALIFORNIA CENTRAL RAILWAY COMPANY, AND ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, RECORDED MARCH 26, 1888 IN BOOK 407, PAGE 136 AND IN BOOK 407 PAGE 140 AND RECORDED DECEMBER 27, 1888 IN BOOK 528, PAGE 164, JULY 5, 1888 IN BOOK 455, PAGE 192, ALL OF DEEDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER AND RECORDED NOVEMBER 7, 1942 IN BOOK 1169 PAGE 417, SEPTEMBER 10, 1941 IN BOOK 1110, PAGE 314; JUNE 26, 1951 IN BOOK 2205, PAGE 483 AND DECEMBER 5, 1942 IN BOOK 1170, PAGE 399, ALL OFFICIAL RECORDS, IN THE OFFICE OF THE ORANGE COUNTY RECORDER.

PARCEL 9:

THAT PORTION OF THAT CERTAIN RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH IN ORANGE COUNTY LYING WITHIN LOTS 19, 20, 23 AND 24 OF RICHLAND FARM LOTS TRACT AS PER MAP RECORDED IN BOOK 5 PAGE 123 OF MISCELLANEOUS RECORDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER, DESCRIBED IN THOSE CERTAIN DEEDS TO LOS ANGELES, RIVERSIDE AND SANTA ANA RAILWAY, SOUTHERN CALIFORNIA RAILWAY COMPANY, CALIFORNIA CENTRAL RAILWAY COMPANY AND ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED NOVEMBER 9, 1887 IN BOOK 327 PAGE 215; AUGUST 4, 1888 IN BOOK 478 PAGE 21; JULY 5, 1888 IN BOOK 435 PAGE 157 ALL OF DEEDS IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER AND RECORDED AUGUST 18, 1905 IN BOOK 121 PAGE 108; FEBRUARY 21, 1907 IN BOOK 155 PAGE 79; NOVEMBER 7, 1905 IN BOOK 122 PAGE 17 ALL OF DEEDS IN THE OFFICE OF THE ORANGE COUNTY RECORDER.

PARCEL 10:

THE EAST 125 FEET OF LOTS 25 AND 26 AND THE WEST 125 FEET OF LOTS 21 AND 22 OF THE RICHLAND FARM LOTS, AS PER MAP RECORDED IN BOOK 5, PAGE 123 OF MISCELLANEOUS RECORDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER.

TOGETHER WITH THE SOUTHERLY HALF OF PALM AVENUE AND THE NORTHERLY HALF OF CHAPMAN AVENUE WHICH WOULD PASS WITH THE LEGAL CONVEYANCE OF SAID LOTS.

EXCEPTING THEREFROM THAT PORTION THEREOF, DESCRIBED IN THAT CERTAIN FINAL ORDER OF CONDEMNATION HAD IN CASE NO. 610492, IN THE SUPERIOR COURT OF STATE OF CALIFORNIA COUNTY OF ORANGE RECORDED FEBRUARY 6, 1990 AS INSTRUMENT NO. 90-66271, OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM THAT PORTION THEREOF, DESCRIBED IN THAT CERTAIN DEED TO ANACONDA WIRE AND CABLE COMPANY, DATED FEBRUARY 15, 1946, FILED AS ATCHISON, TOPEKA AND SANTA FE RAILWAY CO'S SECRETARY'S DEED NO. D4178, DESCRIBED THEREIN AS FOLLOWS:

"BEGINNING AT THE POINT OF INTERSECTION OF THE SOUTH LINE OF PALM AVENUE, 66 FEET IN WIDTH, WITH A LINE 125 FEET EAST OF AND PARALLEL TO THE WEST LINE OF SAID LOT 21; THENCE SOUTH ALONG SAID PARALLEL LINE 594 FEET, MORE OR LESS, TO THE NORTH LINE OF MAPLE AVENUE, 66 FEET IN WIDTH; THENCE WEST ALONG THE WESTERLY PROLONGATION OF SAID NORTH LINE 82.5 FEET, THENCE NORTH ON A LINE 82.5 FEET WEST OF AND PARALLEL TO FIRST DESCRIBED PARALLEL LINE 594 FEET, MORE OR LESS, TO POINT OF INTERSECTION WITH THE WESTERLY PROLONGATION OF SAID SOUTH LINE OF PALM AVENUE; THENCE EAST ALONG SAID PROLONGATED LINE 82.5 FEET TO POINT OF BEGINNING."

ALSO EXCEPTING THEREFROM THAT PORTION THEREOF, DESCRIBED IN THAT FINAL ORDER OF CONDEMNATION HAD IN CASE NO. 591669, IN THE SUPERIOR COURT OF STATE OF CALIFORNIA, COUNTY OF ORANGE.

ALSO EXCEPTING THEREFROM THAT PORTION THEREOF, DESCRIBED IN THAT CERTAIN DEED TO CATELLUS DEVELOPMENT CORPORATION, RECORDED FEBRUARY 5, 1992 AS INSTRUMENT NO. 92-070075, OFFICIAL RECORDS.

PARCEL 11:

THE EAST THIRTY-THREE (33) FEET OF LOT FIFTY-THREE (53) OF RICHLAND FARM LOTS AS PER MAP THEREOF RECORDED IN BOOK 5, PAGE 123, OF MISCELLANEOUS RECORDS OF LOS ANGELES, COUNTY, CALIFORNIA.

ALSO ALL RIGHT, TITLE AND INTEREST OF THE FIRST PARTIES IN AND TO THAT PORTION OF THE SOUTH HALF OF CHAPMAN AVENUE CONTIGUOUS TO SAID LOT FIFTY-THREE (53) ON THE NORTH, INCLUDED BETWEEN THE PROLONGATION NORTHERLY OF THE EAST AND WEST LINES OF SAID EAST THIRTY-THREE (33) FEET OF SAID LOT FIFTY-THREE (53).

PARCEL 12:

ALL THAT CERTAIN PORTION OF LOT 54, OF RICHLAND FARM LOTS, AT

ORANGE, IN THE COUNTY OF ORANGE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 5, PAGE 123, MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY, CALIFORNIA, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID LOT 54; THENCE SOUTHERLY 663.85 FEET, MORE OR LESS, ALONG THE EASTERN LINE OF SAID LOT 54, TO THE SOUTHEAST CORNER OF SAID LOT 54; THENCE WESTERLY 23.80 FEET ALONG THE SOUTHERN LINE OF SAID LOT; THENCE NORTHERLY IN A DIRECT LINE 663.79 FEET, MORE OR LESS, TO A POINT IN THE NORTHERN LINE OF SAID LOT; THENCE EASTERLY ON SAID NORTHERN LINE 27.33 FEET TO THE NORTHEAST CORNER OF SAID LOT; THE POINT OF BEGINNING.

TOGETHER WITH THE NORTH HALF OF PALMYRA AVENUE, WHICH WOULD PASS WITH THE LEGAL CONVEYANCE OF SAID LOT.

PARCEL 13:

THAT PORTION OF THAT CERTAIN RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH LYING WITHIN RANCHO SANTIAGO DE SANTA ANA, SITUATED IN SECTION 31, TOWNSHIP 4 SOUTH OF RANGE 9 WEST OF THE SAN BERNARDINO BASE AND MERIDIAN, AS DESCRIBED IN THOSE CERTAIN DEEDS TO RIVERSIDE, LOS ANGELES AND SANTA ANA RAILWAY, SOUTHERN CALIFORNIA RAILWAY COMPANY, AND ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED JANUARY 4, 1887 IN BOOK 239, PAGE 58; JUNE 4, 1887 IN BOOK 239, PAGE 33; JUNE 18, 1887 IN BOOK 244, PAGE 73 AND NOVEMBER 9, 1887 IN BOOK 327, PAGE 217, ALL DEEDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER AND RECORDED MAY 9, 1893 IN BOOK 81 PAGE 163 AND SEPTEMBER 10, 1895, IN BOOK 99 PAGE 392, BOTH DEEDS IN THE OFFICE OF THE ORANGE COUNTY RECORDER.

EXCEPTING THEREFROM THAT PORTION THEREOF DESCRIBED IN THAT CERTAIN DEED TO THE STATE OF CALIFORNIA, RECORDED NOVEMBER 29, 1965 IN BOOK 7753 PAGE 744 OFFICIAL RECORDS IN THE OFFICE OF THE ORANGE COUNTY RECORDER.

AND EXCEPTING THEREFROM THAT PORTION THEREOF DESCRIBED IN THAT CERTAIN DEED TO THE CITY OF SANTA ANA, RECORDED JANUARY 12, 1977 IN BOOK 12034, PAGE 383, OFFICIAL RECORDS IN THE OFFICE OF THE ORANGE COUNTY RECORDER.

PARCEL 14:

THAT PORTION OF THAT CERTAIN RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH IN THE COUNTY OF ORANGE, LYING WITHIN RANCHO SANTIAGO DE SANTA ANA SITUATED IN TOWNSHIP 5 SOUTH RANGE 9 WEST OF THE SAN BERNARDINO BASE AND MERIDIAN AS DESCRIBED IN THOSE CERTAIN DEEDS TO RIVERSIDE, SANTA ANA AND LOS ANGELES RAILWAY COMPANY AND CALIFORNIA CENTRAL RAILWAY COMPANY, RECORDED JUNE 4, 1887 IN

BOOK 239, PAGE 48; NOVEMBER 9, 1887 IN BOOK 327, PAGE 212, IN BOOK 327 PAGE 213 AND IN BOOK 327 PAGE 210 AND IN BOOK 327 PAGE 216 AND SEPTEMBER 26, 1887 IN BOOK 301 PAGE 187 ALL DEEDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER.

TOGETHER WITH ALL THAT PORTION OF LOT 4, BLOCK "A" OF CHAPMAN TRACT, AS PER MAP RECORDED IN BOOK 102, PAGE 15 OF MISCELLANEOUS MAPS, IN THE OFFICE OF THE ORANGE COUNTY RECORDER, DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED DECEMBER 7, 1964 IN BOOK 7333, PAGE 503, OFFICIAL RECORDS.

ALSO TOGETHER WITH THE SOUTH HALF OF FAIRHAVEN AVENUE WHICH WOULD PASS WITH THE LEGAL CONVEYANCE OF SAID LAND.

EXCEPTING THEREFROM THAT PORTION THEREOF DESCRIBED IN THAT CERTAIN DEED TO WILLIAM CHESTNUT ET AL., RECORDED MAY 2, 1889 IN BOOK 572, PAGE 17 OF DEEDS, RECORD OF LOS ANGELES COUNTY.

PARCEL 15:

THAT PORTION OF THE RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH IN THE COUNTY OF ORANGE, LYING WITHIN LOTS OR BLOCKS 22, 23 AND 24 OF SANTA ANA EAST, AS PER MAP RECORDED IN BOOK 10 PAGES 43 AND 44 OF MISCELLANEOUS RECORDS, DESCRIBED IN THOSE CERTAIN DEEDS TO CALIFORNIA CENTRAL RAILWAY COMPANY AND THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, RECORDED AUGUST 6, 1887 IN BOOK 274, PAGE 168 AND IN BOOK 274, PAGE 175, BOTH DEEDS IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER AND RECORDED JUNE 24, 1929 IN BOOK 287, PAGE 105; SEPTEMBER 14, 1956 IN BOOK 3644 PAGE 47 AND IN BOOK 3644 PAGE 49 AND APRIL 16, 1958 IN BOOK 4258, PAGE 323, ALL OFFICIAL RECORDS, IN THE OFFICE OF THE ORANGE COUNTY RECORDER.

TOGETHER WITH THOSE PORTIONS OF THE RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH, IN THE COUNTY OF ORANGE, LYING WITHIN 17TH STREET AND WASHINGTON AVENUE EACH BEING A 17 FOOT WIDE STRIP, 8.5 FEET ON EACH SIDE, MEASURED AT RIGHT ANGLES FROM THE CENTERLINE OF SAID RIGHT OF WAY'S MAIN TRACK.

ALSO TOGETHER WITH THAT PORTION OF LINCOLN AVENUE, ADJACENT TO BLOCKS 22, 23 AND 24 OF SANTA ANA EAST, AS PER MAP RECORDED IN BOOK 10 PAGES 43 AND 44 OF MISCELLANEOUS RECORDS, WITHIN A 17 FOOT STRIP, 8.5 FEET ON EACH SIDE MEASURED AT RIGHT ANGLES FROM THE CENTERLINE OF SAID RIGHT OF WAY'S MAIN TRACK.

EXCEPTING THEREFROM THAT PORTION THEREOF GRANTED TO THE STATE OF CALIFORNIA, DESCRIBED IN THAT CERTAIN DEEDS, RECORDED JANUARY 30, 1952 IN BOOK 2280, PAGE 336 OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM THAT PORTION THEREOF GRANTED TO RAY HILL LUMBER COMPANY, DESCRIBED IN THAT CERTAIN DEED DATED JULY 16, 1954 AS AT&SF DEED NO. D5226, DESCRIBED THEREIN AS FOLLOWS:

"BEGINNING AT A POINT IN THE SOUTH LINE OF SAID BLOCK 24, DISTANT NORTH 89 DEGREES 39' 52" EAST ALONG SAID SOUTH LINE, 38.80 FEET FROM THE SOUTHWEST CORNER OF SAID BLOCK 24; THENCE NORTH 0 DEGREES 09' 49" WEST 185.69 FEET MORE OR LESS TO A POINT IN THE SOUTHERLY LINE OF THAT CERTAIN 0.41 OF AN ACRE PARCEL OF LAND DESCRIBED IN EASEMENT DATED MARCH 9, 1951, FROM THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY TO THE STATE OF CALIFORNIA, RECORDED JANUARY 9, 1952, IN BOOK 2272, PAGE 268, OFFICIAL RECORDS OF SAID ORANGE COUNTY; THENCE SOUTH 62 DEGREES 32' 50" EAST ALONG LAST SAID SOUTHERLY LINE, AND ALONG THE SOUTHERLY LINE OF THAT CERTAIN 1.50 ACRE PARCEL OF LAND DESCRIBED IN DEED DATED OCTOBER 20, 1950, FROM THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY TO THE STATE OF CALIFORNIA, RECORDED IN BOOK 2280 PAGE 336, OFFICIAL RECORDS OF SAID ORANGE COUNTY, (SAID SOUTHERLY LINES BEING REFERRED TO AS HAVING A BEARING OF NORTH 62 DEGREES 32' 18" WEST IN LAST SAID DEEDS) A DISTANCE OF 356.36 FEET MORE OR LESS TO A POINT IN THE EAST LINE OF SAID BLOCK 24; THENCE SOUTH 1 DEGREES 06' 15" EAST ALONG SAID EAST LINE 19.55 FEET MORE OR LESS TO THE SOUTH LINE OF SAID BLOCK 24; THENCE SOUTH 89 DEGREES 39' 52" WEST ALONG SAID SOUTH LINE 316.09 FEET MORE OR LESS TO POINT OF BEGINNING."

ALSO EXCEPTING THEREFROM THAT PORTION THEREOF GRANTED TO S.A. LINCOLN CORPORATION, DESCRIBED IN THAT CERTAIN DEED DATED APRIL 25, 1956, AS AT&SF DEED NO. D5419 DESCRIBED THEREIN AS FOLLOWS:

"ALL THAT PORTION OF SAID BLOCK 24; WHICH LIES: NORTHERLY OF THE NORTHEASTERLY LINE OF THAT CERTAIN 1.50 ACRE PARCEL OF LAND AS DESCRIBED IN DEED DATED OCTOBER 20, 1950 TO THE STATE OF CALIFORNIA, RECORDED IN BOOK 2280, PAGE 336, OFFICIAL RECORDS OF ORANGE COUNTY; NORTHERLY OF THE NORTHEASTERLY LINE OF THAT CERTAIN 0.41 ACRE PARCEL OF LAND AS DESCRIBED IN EASEMENT DATED MARCH 9, 1951, TO THE STATE OF CALIFORNIA, RECORDED IN BOOK 2272, PAGE 268, OFFICIAL RECORDS OF ORANGE COUNTY; AND EASTERLY OF A LINE WHICH IS PARALLEL WITH AND DISTANT EASTERLY 16.43 FEET AT RIGHT ANGLES FROM THE SOUTHERLY PROLONGATION OF THE WESTERLY LINE OF THAT CERTAIN 2.404 ACRE PARCEL OF LAND SHOWN ON RECORD OF SURVEY MAP FILED IN BOOK 32, PAGE 7, IN THE OFFICE OF THE COUNTY RECORDER OF SAID ORANGE COUNTY."

ALSO EXCEPTING THEREFROM THAT PORTION THEREOF QUITCLAIMED TO ARTHUR K. BRIMLOW, DESCRIBED IN THAT CERTAIN DEED RECORDED DECEMBER 27, 1979 IN BOOK 13448, PAGE 63 OFFICIAL RECORDS.

PARCEL 16:

THAT PORTION OF THAT CERTAIN RIGHT OF WAY OF THE ATCHISON,

TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH IN THE COUNTY OF ORANGE, LYING WITHIN RANCHO SANTIAGO DE SANTA ANA, SITUATED IN SECTION 7, TOWNSHIP 5 SOUTH, RANGE 9 WEST OF THE SAN BERNARDINO BASE AND MERIDIAN, AS DESCRIBED IN THOSE CERTAIN DEEDS TO CALIFORNIA CENTRAL RAILWAY COMPANY AND THE ATCHISON TOPEKA AND SANTA FE RAILWAY CO., RECORDED SEPTEMBER 22, 1887 IN BOOK 311 PAGE 43 OF DEEDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER AND APRIL 21, 1955 IN BOOK 3038 PAGE 332, OFFICIAL RECORDS, IN THE OFFICE OF THE ORANGE COUNTY RECORDER.

TOGETHER WITH THAT PORTION OF THE RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH, IN THE COUNTY OF ORANGE, LYING WITHIN LINCOLN AVENUE AND FRUIT STREET, WITHIN A 17 FOOT WIDE STRIP, 8.5 FEET ON EACH SIDE, MEASURED AT RIGHT ANGLES FROM THE CENTERLINE OF SAID RIGHT OF WAY'S MAIN TRACK.

EXCEPTING THEREFROM ANY PORTION LYING SOUTHERLY OF THE SOUTHERLY LINE OF FRUIT STREET AND NORTHERLY OF THE SOUTHERLY LINE OF WASHINGTON AVENUE.

PARCEL 17:

THAT PORTION OF THE RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH IN THE COUNTY OF ORANGE LYING WITHIN BLOCKS 39 AND 40 OF THE SANTA ANA EAST, AS PER MAP RECORDED IN BOOK 10, PAGES 43 AND 44 OF MISCELLANEOUS RECORDS; DESCRIBED IN THAT CERTAIN DEED TO SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, RECORDED MARCH 9, 1887 IN BOOK 201 PAGE 412 OF DEEDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER.

TOGETHER WITH THAT PORTION OF THE RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH, IN THE CITY OF SANTA ANA, COUNTY OF ORANGE, LYING WITHIN BROWN STREET (VACATED), BEING A 17 FOOT WIDE STRIP, 8.5 FEET ON EACH SIDE, MEASURED AT RIGHT ANGLES FROM THE CENTERLINE OF SAID RIGHT OF WAY'S MAIN TRACK.

EXCEPTING THEREFROM ANY PORTION THEREOF DESCRIBED IN THAT CERTAIN FINAL ORDER OF CONDEMNATION, RECORDED MAY 25, 1984 AS INSTRUMENT NO. 84-2188445, OFFICIAL RECORDS.

PARCEL 18:

THAT PORTION OF THAT CERTAIN RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH, IN THE COUNTY OF ORANGE, LYING WITHIN RANCHO SANTIAGO DE SANTA ANA, SITUATED IN SECTION 7, TOWNSHIP 5 SOUTH, RANGE 9 WEST OF THE SAN BERNARDINO BASE AND MERIDIAN AS DESCRIBED IN THAT CERTAIN DEED TO CALIFORNIA CENTRAL RAILWAY COMPANY RECORDED JANUARY 12, 1888

IN BOOK 371, PAGE 93 OF DEEDS IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER.

TOGETHER WITH THOSE PORTIONS OF THAT CERTAIN RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH IN THE COUNTY OF ORANGE, LYING WITHIN FOURTH STREET AND FIRST STREET, EACH BEING A 17 FOOT WIDE STRIP, 8.5 FEET ON EACH SIDE, MEASURED AT RIGHT ANGLES FROM THE CENTERLINE OF SAID RIGHT OF WAY'S MAIN TRACK.

EXCEPTING THEREFROM THAT PORTION THEREOF DESCRIBED IN THAT CERTAIN FINAL ORDER OF CONDEMNATION RECORDED NOVEMBER 2, 1966 IN BOOK 8094 PAGE 261, OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM THAT PORTION THEREOF DESCRIBED IN THAT CERTAIN DEED TO THE SOUTHERN PACIFIC COMPANY, RECORDED SEPTEMBER 13, 1968 IN BOOK 8721, PAGE 21, OFFICIAL RECORDS.

EXCEPTING THEREFROM THAT PORTION THEREOF DESCRIBED IN THAT CERTAIN DEED TO ERLY JUICE, RECORDED AUGUST 7, 1991 AS INSTRUMENT NO. 91-420040, OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM THAT PORTION THEREOF DESCRIBED IN THAT CERTAIN DEED TO CAFELLUS DEVELOPMENT CORP. RECORDED FEBRUARY 5, 1992 AS INSTRUMENT NO. 92-70533, OFFICIAL RECORDS.

PARCEL 19:

THAT PORTION OF THAT CERTAIN RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH IN THE COUNTY OF ORANGE, LYING WITHIN RANCHO SANTIAGO DE SANTA ANA, SITUATED IN SECTION 18 TOWNSHIP 5 SOUTH RANGE 9 WEST OF THE SAN BERNARDINO BASE AND MERIDIAN, AS DESCRIBED IN THAT CERTAIN DEED TO CALIFORNIA CENTRAL RAILWAY CO. RECORDED AUGUST 6, 1887 IN BOOK 274 PAGE 177 OF DEEDS, LOS ANGELES COUNTY RECORD.

EXCEPTING THEREFROM ANY PORTION THEREOF LYING NORTHEASTERLY OF A LINE PARALLEL WITH AND MEASURED 25 FEET NORTHEASTERLY AT RIGHT ANGLES FROM THE CENTERLINE OF THE MAIN TRACT OF SAID RIGHT OF WAY.

PARCEL 20:

THAT PORTION OF THAT CERTAIN RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY SAN DIEGO BRANCH IN THE COUNTY OF ORANGE, LYING WITHIN RANCHO SANTIAGO DE SANTA ANA, SITUATED IN SECTION 18, TOWNSHIP 5 SOUTH, RANGE 9 WEST OF THE SAN BERNARDINO BASE AND MERIDIAN, AS DESCRIBED IN THAT CERTAIN DEED TO SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, RECORDED JULY 20, 1887 IN BOOK 241, PAGE 197 OF DEEDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER.

PARCEL 21:

THAT PORTION OF THAT CERTAIN 50 FOOT RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH, IN THE COUNTY OF SAN DIEGO, WITHIN RANCHO SANTIAGO DE SANTA ANA, SITUATED IN TOWNSHIP 5 SOUTH RANGE 9 WEST OF THE SAN BERNARDINO BASE AND MERIDIAN, AS DESCRIBED IN THOSE CERTAIN DEEDS TO CALIFORNIA CENTRAL RAILWAY COMPANY, SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, RECORDED JUNE 20, 1887 IN BOOK 241, PAGE 202; IN BOOK 241 PAGE 203, IN BOOK 241, PAGE 200; IN BOOK 241, PAGE 199; JUNE 4, 1887 IN BOOK 239, PAGE 24; JULY 14, 1887 IN BOOK 261, PAGE 38; IN BOOK 261, PAGE 39; IN BOOK 261, PAGE 40; IN BOOK 261, PAGE 42; AND JULY 30, 1887 IN BOOK 271, PAGE 112 ALL OF DEEDS IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER.

TOGETHER WITH THOSE PORTIONS OF MCFADDEN AVENUE, LYON STREET AND NEWPORT AVENUE WHICH WOULD PASS WITH THE LEGAL CONVEYANCE OF SAID LAND.

PARCEL 22:

THAT PORTION OF THAT CERTAIN 50 FOOT RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH IN THE COUNTY OF ORANGE, WITHIN RANCHO SANTIAGO DE SANTA ANA, SITUATED IN SECTION 25, IN TOWNSHIP 4 SOUTH OF RANGE 10 WEST OF THE SAN BERNARDINO BASE AND MERIDIAN, 25 FEET ON EACH SIDE OF AND MEASURED AT RIGHT ANGLES FROM THE CENTERLINE OF SAID RIGHT OF WAY'S MAIN TRACK, BETWEEN STATION 1647+02 AND STATION 1649+05 SHOWN ON THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S RIGHT OF WAY AND TRACT MAP ORIGINAL NO. CECL-230-12303, CA-7, SHEET 8.

PARCEL 23:

THAT PORTION OF THAT CERTAIN 50 FOOT RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH, IN ORANGE COUNTY, 25 FEET ON EACH SIDE OF AND MEASURED AT RIGHT ANGLES FROM THE CENTERLINE OF SAID RIGHT OF WAY'S MAIN TRACK LYING WITHIN LOTS 51, 52, 55 AND 56 OF RICHLAND FARM LOTS, AS PER MAP RECORDED IN BOOK 5, PAGE 123, MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY, AND A 17 FOOT WIDE STRIP, 85 FEET ON EACH SIDE OF AND MEASURED AT RIGHT ANGLES FROM THE CENTERLINE OF SAID RIGHT OF WAY'S MAIN TRACK LYING WITHIN PALMYRA AVENUE AND LA VETA AVENUE.

EXCEPT THEREFROM ANY PORTION LYING NORTHERLY OF THE CENTERLINE OF PALMYRA AVENUE AND SOUTHERLY OF THE CENTERLINE OF LA VETA AVENUE.

PARCEL 24:

ALL THOSE PORTIONS OF VINEYARD LOTS D1, D2, E1 AND E2 SHOWN ON A MAP OF THE TOWN OF ANAHEIM, RECORDED IN BOOK 4, PAGES 629 AND 630 OF DEEDS, IN THE OFFICE OF THE RECORDER OF LOS ANGELES COUNTY, DESCRIBED IN THOSE CERTAIN DEED TO CALIFORNIA CENTRAL RAILWAY COMPANY, RECORDED NOVEMBER 22, 1887, IN BOOK 348, PAGE 156; NOVEMBER 19, 1887, IN BOOK 332, PAGE 247, DECEMBER 13, 1887 IN BOOK 407, PAGE 145; AND JULY 5, 1888 IN BOOK 455, PAGE 154, ALL OF DEEDS, RECORDS OF LOS ANGELES COUNTY.

TOGETHER WITH THAT CERTAIN RIGHT OF WAY OF THE ATCHISON TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO BRANCH, IN ORANGE COUNTY, LYING WITHIN ORANGE STREET, SHOWN ON A MAP OF THE TOWN OF ANAHEIM, RECORDED IN BOOK 4 PAGE 629 AND 630 OF DEEDS, IN THE OFFICE OF THE RECORDER OF LOS ANGELES COUNTY, LYING SOUTHERLY OF THE NORTHERLY, LINE OF NORTH STREET AND NORTHERLY OF THE SOUTHERLY LINE OF SOUTH STREET AS SHOWN ON SAID MAP.

EXCEPTING THEREFROM THAT PORTION DESCRIBED IN THAT CERTAIN DEED TO FRANK BELMONT RECORDED JUNE 17, 1942 IN BOOK 1153 PAGE 40 OF OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM THOSE PORTIONS DESCRIBED IN THOSE CERTAIN DEEDS TO FRANK BELMONT, DATED JANUARY 5, 1944 FILED AS A.T. & S.F. SECRETARY'S NO. D-3781 AND DATED AUGUST 19, 1947 AS A.T. & S.F. SECRETARY'S NO. D-4361, DESCRIBED THEREIN AS FOLLOWS:

"COMMENCING AT A POINT IN THE EAST LINE OF NORTH ATCHISON STREET DISTANT NORTHERLY THEREON 605.7 FEET FROM THE CENTER LINE OF EAST CENTER STREET, SAID POINT BEING THE NORTHWESTERLY CORNER OF LAND CONVEYED TO FRANK BELMONT BY DEED DATED MAY 5, 1942; THENCE EASTERLY AT RIGHT ANGLES TO SAID ATCHISON STREET AND ALONG THE NORTHERLY LINE OF SAID FRANK BELMONT PROPERTY 19.0 FEET TO THE TRUE POINT OF BEGINNING OF THIS DESCRIPTION; THENCE NORTHERLY 19 FEET FROM AND PARALLEL TO SAID EASTERLY LINE OF NORTH ATCHISON STREET 180 FEET, MORE OR LESS, TO A POINT IN A LINE WHICH IS PARALLEL WITH AND DISTANT 10 FEET SOUTHERLY FROM THE EASTERLY PROLONGATION OF THE SOUTHERLY LINE OF EAST CYPRESS STREET; THENCE EASTERLY ALONG SAID PARALLEL LINE 94 FEET TO A POINT IN A LINE WHICH IS PARALLEL WITH AND DISTANT 113.0 FEET EASTERLY FROM THE EASTERLY LINE OF SAID NORTH ATCHISON STREET; THENCE SOUTHERLY ALONG SAID PARALLEL LINE 180 FEET, MORE OR LESS, TO THE NORTHEASTERLY CORNER OF SAID PROPERTY CONVEYED TO FRANK BELMONT BY DEED DATED MAY 23, 1942; THENCE WESTERLY ALONG THE NORTHERLY LINE OF SAID PROPERTY 94 FEET TO THE POINT OF BEGINNING" AND

"BEGINNING AT A POINT IN THE EASTERLY LINE OF NORTH ATCHISON STREET DISTANT NORTHERLY THEREON 605.7 FEET FROM THE CENTER LINE OF EAST CENTER STREET, SAID POINT BEING THE NORTHWESTERLY CORNER OF LAND CONVEYED TO FRANK BELMONT BY DEED DATED MAY 23,

1942; THENCE NORTHERLY ALONG SAID EASTERLY LINE 190 FEET, MORE OR LESS, TO A POINT IN THE EASTERLY PROLONGATION OF THE SOUTHERLY LINE OF EAST CYPRESS STREET; THENCE EASTERLY ALONG SAID EASTERLY PROLONGATION 113.0 FEET; THENCE SOUTHERLY PARALLEL TO AND 113.0 FEET EASTERLY FROM SAID EASTERLY LINE OF NORTH ATCHISON STREET 10.0 FEET; THENCE WESTERLY 10.00 FEET FROM AND PARALLEL TO SAID EASTERLY PROLONGATION OF THE SOUTHERLY LINE OF EAST CYPRESS STREET 94.0 FEET TO A POINT IN A LINE 19.0 FEET EASTERLY FROM AND PARALLEL TO SAID EASTERLY LINE OF NORTH ATCHISON STREET; THENCE SOUTHERLY ALONG SAID PARALLEL LINE 180.0 FEET, MORE OR LESS, TO TO THE NORTHERLY LINE OF LAND CONVEYED TO FRANK BELMONT BY SAID DEED DATED MAY 23, 1942; THENCE WESTERLY ALONG SAID NORTHERLY LINE 19.0 FEET TO POINT OF BEGINNING."

ALSO EXCEPTING THEREFROM THOSE PORTIONS DESCRIBED IN THAT CERTAIN DEED TO E. A. SILZLE CORPORATION, DATED JUNE 6, 1955 FILED AS A.T. & S.F. SECRETARY'S NO. D-5331, DESCRIBED THEREIN AS FOLLOWS:

"BEGINNING AT INTERSECTION OF WESTERLY PROLONGATION OF THE SOUTHERLY LINE OF EAST CENTER STREET (89.5 FEET WIDE) WITH THE WESTERLY LINE OF SOUTH VINE STREET (60 FEET WIDE); THENCE WESTERLY ALONG SAID WESTERLY PROLONGATION OF THE SOUTHERLY LINE OF EAST CENTER STREET 111.26 FEET MORE OR LESS TO A POINT IN A LINE PARALLEL WITH AND DISTANT 38.36 FEET EASTERLY AT RIGHT ANGLES FROM THE CENTER LINE OF ORANGE STREET (49.5 FEET WIDE); THENCE SOUTHERLY ALONG SAID PARALLEL LINE 275.89 FEET; THENCE EASTERLY AT RIGHT ANGLES TO SAID PARALLEL LINE 111.26 FEET TO A POINT IN SAID WESTERLY LINE OF SOUTH VINE STREET; THENCE NORTHERLY ALONG SAID WESTERLY LINE 275.89 FEET MORE OR LESS TO POINT OF BEGINNING" AND

"BEGINNING AT INTERSECTION OF THE NORTHERLY LINE OF EAST BROADWAY (80 FEET WIDE), WITH EASTERLY LINE OF SOUTH ATCHISON STREET (60 FEET WIDE); THENCE NORTHERLY ALONG SAID EASTERLY LINE OF SOUTH ATCHISON STREET 383.75 FEET; THENCE EASTERLY ALONG A LINE PARALLEL WITH SAID NORTHERLY LINE OF EAST BROADWAY 94.42 FEET; THENCE SOUTHEASTERLY ALONG A LINE MAKING A SOUTHEASTERLY DEFLECTION ANGLE OF 77 DEGREES 37' 29" WITH SAID PARALLEL LINE A DISTANCE OF 143.40 FEET TO POINT IN A LINE PARALLEL WITH SAID EASTERLY LINE OF SOUTH ATCHISON STREET THAT EXTENDS NORTHERLY FROM A POINT ON SAID NORTHERLY LINE OF EAST BROADWAY DISTANT EASTERLY ALONG SAID NORTHERLY LINE 125.25 FEET FROM THE POINT OF BEGINNING; THENCE SOUTHERLY ALONG LAST SAID PARALLEL LINE 243.75 FEET TO SAID NORTHERLY LINE OF EAST BROADWAY; THENCE WESTERLY ALONG SAID NORTHERLY LINE 125.25 FEET TO POINT OF BEGINNING."

ALSO EXCEPTING THEREFROM THAT PORTION DESCRIBED IN THAT CERTAIN DEED TO UNION ICE COMPANY, DATED NOVEMBER 17, 1961, FILED AS

A.T. & S.F. SECY'S NO. D-5959, DESCRIBED THEREIN AS FOLLOWS:

"BEGINNING AT A POINT IN THE WESTERLY LINE OF SOUTH VINE STREET (60 FEET WIDE) DISTANT SOUTH 14 DEGREES 33' 01" EAST (BEARING ASSUMED FOR PURPOSE OF THIS DESCRIPTION) THEREON 275.89 FEET FROM THE INTERSECTION OF SAID WESTERLY LINE WITH THE WESTERLY PROLONGATION OF THE SOUTHERLY LINE OF EAST CENTER STREET (80.5 FEET WIDE), SAID POINT OF BEGINNING BEING ALSO THE MOST EASTERLY CORNER OF THAT CERTAIN 0.7046 OF AN ARC PARCEL DESCRIBED AS "PARCEL 1" IN DEED DATED JUNE 6, 1955, FROM THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY TO E. A. SILZLE CORPORATION; THENCE SOUTH 75 DEGREES 25' 14" WEST ALONG THE SOUTHERLY LINE OF SAID 0.7046 OF AN ARC PARCEL 110.00 FEET TO A POINT IN A LINE THAT IS PARALLEL WITH AND DISTANT EASTERLY 40.00 FEET MEASURED AT RIGHT ANGLES FROM THE CENTER LINE OF SAID RAILWAY COMPANY'S MAIN TRACK; THENCE SOUTH 14 DEGREES 33' 01" EAST ALONG SAID PARALLEL LINE 294.96 FEET; THENCE NORTH 75 DEGREES 25' 14" EAST 110.00 FEET TO A POINT IN THE WESTERLY LINE OF SOUTH VINE STREET; THENCE NORTH 14 DEGREES 33' 01" WEST ALONG SAID WESTERLY LINE 294.96 FEET TO THE POINT OF BEGINNING."

ALSO EXCEPTING THEREFROM THAT PORTION DESCRIBED IN THAT CERTAIN DEED TO SILZLE PROPERTIES, INCORPORATED RECORDED JUNE 2, 1972 IN BOOK 10153 PAGE 994, OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM THAT PORTION DESCRIBED IN THAT CERTAIN FINAL ORDER OF CONDEMNATION HAD IN CASE NO. 515980 OF THE SUPERIOR COURT OF CALIFORNIA, FOR THE COUNTY OF ORANGE, CERTIFIED COPY OF WHICH RECORDED OCTOBER 20, 1989 AS INSTRUMENT NO. 89-565943, OFFICIAL RECORDS.

ALSO EXCEPT THEREFROM THAT PORTION, DESCRIBED IN THAT CERTAIN DEED TO ANAHEIM REDEVELOPMENT AGENCY, RECORDED JANUARY 3, 1986 AS INSTRUMENT NO. 86-002338, OFFICIAL RECORDS.

ALSO EXCEPT THEREFROM THAT PORTION DESCRIBED IN THAT CERTAIN DEED TO ORANGE BELT FRUIT DISTRIBUTORS, RECORDED JANUARY 26, 1948 IN BOOK 1614, PAGE 148, OFFICIAL RECORDS.

ALSO EXCEPT THEREFROM THAT PORTION, DESCRIBED IN THAT CERTAIN DEED TO ANAHEIM REDEVELOPMENT AGENCY RECORDED DECEMBER 30, 1983 AS INSTRUMENT NO. 83-590550, OFFICIAL RECORDS.

PARCEL 25:

A STRIP OF LAND OF THE UNIFORM WIDTH OF 100 FEET, 50 FEET ON EACH SIDE OF AND PARALLEL TO THE CENTER LINE OF LOCATION OF THE SAN BERNARDINO AND SAN DIEGO RAILWAY OVER AND THROUGH THE RANCHOS LOMAS DE SANTIAGO, SANTIAGO DE SANTA ANA, AND SAN JOAQUIN AND WHICH CENTER LINE IS DESCRIBED AS FOLLOWS:

COMMENCING AT A POINT KNOWN AS STATION 2481 + 11.5 OF THE CENTER LINE OF LOCATION OF SAID RAILWAY, AT POST "M", IN THE RANCHO SANTIAGO DE SANTA ANA, AND RUNNING THENCE SOUTH 50 DEGREES EAST (TRUE BEARING) THROUGH POST "N.Y.", A DISTANCE OF 47,629.7 FEET TO A POINT KNOWN AS STATION 2004+81.8 OF SAID CENTER LINE OF LOCATION ON THE BOUNDARY LINE BETWEEN THE RANCHOS SAN JOAQUIN AND CANADA DE LOS ALISOS, AS GRANTED TO THE SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, A CORPORATION BY DOCUMENT RECORDED IN BOOK 245 PAGE 223 OF DEEDS, LOS ANGELES COUNTY RECORDS.

EXCEPTING THEREFROM LYING WITHIN THAT PORTION OF A PARCEL OF LAND, 128 FEET IN WIDTH BY 1000 FEET IN LENGTH, LOCATED IN LOT 250 OF BLOCK 22 OF IRVINE'S SUBDIVISION PER MAP RECORDED IN BOOK 1 PAGE 88 OF MISCELLANEOUS MAPS, RECORDS OF ORANGE COUNTY; SAID PARCEL OF LAND IS SHOWN AS PARCEL "C" ON AN EXHIBIT MARKED "D" OF THE DEED FROM THE IRVINE COMPANY, A CORPORATION TO SOUTHERN CALIFORNIA RAILWAY COMPANY, A CORPORATION RECORDED IN BOOK 95 PAGE 246 OF DEEDS, RECORDS OF ORANGE COUNTY.

ALSO EXCEPTING THEREFROM, A RECTANGULAR PARCEL OF LAND 28 FEET IN WIDTH BY 150 FEET IN LENGTH, LOCATED IN LOT 250 OF BLOCK 22 OF IRVINE'S SUBDIVISION PER MAP RECORDED IN BOOK 1 PAGE 88 OF MISCELLANEOUS MAPS, RECORDS OF ORANGE COUNTY, MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN SAID LOT 250 DISTANT 22 FEET NORTHEASTERLY FROM THE CENTERLINE OF THE MAIN TRACK OF THE SOUTHERN CALIFORNIA RAILWAY COMPANY AND 1,000 FEET SOUTHEASTERLY FROM THE NORTHWESTERLY BOUNDARY LINE OF SAID LOT 250; THENCE SOUTHEASTERLY PARALLEL TO SAID CENTER LINE OF THE SOUTHERN CALIFORNIA RAILWAY COMPANY 150 FEET; THENCE AT RIGHT ANGLES NORTHEASTERLY 28 FEET; THENCE AT RIGHT ANGLES NORTHWESTERLY 150 FEET; THENCE AT RIGHT ANGLES SOUTHWESTERLY 28 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPTING THEREFROM: A PARCEL OF LAND IN THE COUNTY OF ORANGE, BEING A PORTION OF THAT CERTAIN 100-FOOT WIDE STRIP OF LAND DESCRIBED IN DEED DATED APRIL 25, 1887 TO SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY (PREDECESSOR IN INTEREST TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY) RECORDED JUNE 14, 1887 IN BOOK 245 OF DEEDS AT PAGE 223, RECORDS OF LOS ANGELES COUNTY, CALIFORNIA, LYING IN LOT 250 OF BLOCK 122 OF IRVINE'S SUBDIVISION, AS SAID LOT AND BLOCK IS SHOWN ON MAP RECORDED IN BOOK 1 OF MISCELLANEOUS MAPS AT PAGE 88, RECORDS OF ORANGE COUNTY, DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE NORTHEASTERLY LINE OF SAID 100-FOOT WIDE STRIP WITH A LINE PARALLEL WITH AND DISTANT SOUTHEASTERLY 1150 FEET, MEASURED AT RIGHT ANGLES FROM THE NORTHWESTERLY LINE OF SAID LOT 250, SAID INTERSECTION BEING THE MOST EASTERLY CORNER OF THAT CERTAIN 150-FOOT BY 28-FOOT PARCEL

CONVEYED TO THE IRVINE COMPANY FROM SOUTHERN CALIFORNIA RAILWAY COMPANY (SUCCESSOR IN INTEREST TO SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY) BY DEED DATED DECEMBER 23, 1899 AND DESIGNATED IN THE RECORDS OF THE ATCHISON TOPEKA AND SANTA FE RAILWAY COMPANY AS SECRETARY'S COAST LINE DEED NO. D-304, RECORDED FEBRUARY 28, 1900 IN BOOK 49 OF DEEDS, PAGE 183, RECORDS OF SAID COUNTY; THENCE SOUTH 49 DEGREES 21' 29" EAST (BEARINGS BASED ON PARCEL MAP 86-402, RECORDED IN BOOK 243 OF PARCEL MAPS, PAGE 16, RECORDS OF SAID COUNTY) ALONG SAID NORTHEASTERLY LINE, 102.93 FEET TO INTERSECTION WITH THE WESTERLY RIGHT-OF-WAY LINE OF THE SANTA ANNA FREEWAY AS DESCRIBED IN PARCEL 3 OF DEED RECORDED IN BOOK 4072, PAGE 65, OFFICIAL RECORDS OF SAID COUNTY, BEING ALSO THE MOST SOUTHERLY CORNER OF PARCEL 8 OF SAID PARCEL MAP; THENCE SOUTHERLY ALONG SAID WESTERLY RIGHT-OF-WAY LINE BEING ALONG THE ARC OF A CURVE CONCAVE WESTERLY AND HAVING A RADIUS OF 1410.00 FEET, THROUGHOUT A CENTRAL ANGLE OF 2 DEGREES 04' 20" AN ARC LENGTH OF 51.00 FEET TO INTERSECTION WITH THE SOUTHEASTERLY PROLONGATION OF THE SOUTHWESTERLY LINE OF SAID 150-FOOT PARCEL; THENCE NORTH 49 DEGREES 21' 29" WEST ALONG SAID PROLONGATION, 145.56 FEET TO THE MOST SOUTHERLY CORNER OF SAID 150-FOOT BY 28-FOOT PARCEL; THENCE NORTH 40 DEGREES 38' 59" EAST ALONG THE SOUTHEASTERLY LINE OF SAID 150-FOOT BY 28-FOOT PARCEL, 28.00 FEET TO POINT OF BEGINNING.

PARCEL 26:

THAT PORTION OF THAT CERTAIN 100 FOOT RIGHT OF-WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO SUBDIVISION, LYING WITHIN LOT 10 OF THE RANCHO KNOWN AS "CANADA DE LOS ALISOS" AS DESCRIBED IN THAT CERTAIN DEED TO THE SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY RECORDED MARCH 11, 1887 IN BOOK 208, PAGE 26 OF DEEDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER, THE SAME BEING 50 FEET ON EACH SIDE OF THE CENTERLINE OF MAIN TRACK OF SAID ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO, SUBDIVISION.

PARCEL 27:

THAT PORTION OF LOT 10 OF RANCHO CANADA DE LOS ALISOS AS PER MAP FILED IN BOOK 3 PAGES 290 AND 291, MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY, AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED MARCH 6, 1943 IN BOOK 1166 PAGE 520 OF OFFICIAL RECORDS, IN THE OFFICE OF THE ORANGE COUNTY RECORDER.

PARCEL 28:

THAT PORTION OF LOT 10 OF RANCHO CANADA DE LOS ALISOS AS PER MAP FILED IN BOOK 3, PAGES 290 AND 291, MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY, AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED DECEMBER

18, 1942 IN BOOK 1172 PAGE 294 OF OFFICIAL RECORDS, IN THE OFFICE OF THE ORANGE COUNTY RECORDER.

PARCEL 29:

THAT PORTION OF THAT CERTAIN 100 FOOT RIGHT-OF-WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO SUBDIVISION, LYING WITHIN LOT 2 OF RANCHO CANADA DE LOS ALISOS AS PER MAP FILED IN BOOK 3, PAGES 290 AND 291, MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY, AS DESCRIBED IN THAT CERTAIN DEED TO THE SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, RECORDED DECEMBER 17, 1886 IN BOOK 187 PAGE 19 OF DEEDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER.

PARCEL 30:

THOSE PORTIONS OF THAT CERTAIN 100 FOOT RIGHT-OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO SUBDIVISION, LYING WITHIN RANCHO DE TRABUCO AND RANCHO MISSION VIEJO AS DESCRIBED IN THAT CERTAIN DEED TO THE SOUTHERN CALIFORNIA RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED OCTOBER 4, 1889 IN BOOK 39 PAGE 277 OF DEEDS, IN THE OFFICE OF THE ORANGE COUNTY RECORDER;

EXCEPTING THEREFROM SAID PORTION OF SAID 100 FOOT WIDE STRIP LYING WITHIN RANCHO DE TRABUCO LYING NORTHEASTERLY OF A LINE 150.00 FEET NORTHEASTERLY FROM AND CONCENTRIC AND PARALLEL TO THE FOLLOWING DESCRIBED LINE.

BEGINNING AT THE POINT OF INTERSECTION OF THE CENTER LINE OF SAID 100.00 FOOT STRIP OF LAND WITH THE NORTHWESTERLY LINE OF SAID RANCHO DE TRABUCO; THENCE SOUTH 42 DEGREES 54' EAST ALONG SAID CENTER LINE 799.88 FEET; THENCE LEAVING SAID CENTER LINE ON A TANGENT CURVE WITH A RADIUS OF 5729.65 FEET CONCAVE SOUTHWESTERLY 1466.67 FEET; THENCE TANGENT TO SAID CURVE SOUTH 28 DEGREES 14' EAST 1884.84 FEET TO POINT OF ENDING IN SAID CENTER LINE OF 100.00 FOOT STRIP OF LAND.

ALSO, EXCEPTING THEREFROM SAID PORTION OF SAID 100-FOOT WIDE STRIP LYING WITHIN THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO SANTA MARGARITA WATER DISTRICT DATED OCTOBER 15, 1979 RECORDED AS DEED NO. 48312 OF THE RECORDS OF SECRETARY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, SAID LAND BEING MORE PARTICULARLY DESCRIBED THEREIN AS FOLLOWS:

"BEGINNING AT THE INTERSECTION OF THE SOUTHEASTERLY LINE OF THAT CERTAIN 70-FOOT WIDE STRIP OF LAND DESCRIBED IN DEED TO ORANGE COUNTY, RECORDED FEBRUARY 21, 1974 IN BOOK 11080, PAGE 42, OFFICIAL RECORDS OF SAID COUNTY, WITH THE SOUTHWESTERLY LINE OF THAT CERTAIN 8.96 ACRE PARCEL OF LAND DESCRIBED IN DEED DATED

AUGUST 11, 1941, FROM THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY TO RANCHO SANTA MARGARITA, SAID SOUTHWESTERLY LINE BEING ALSO THE SOUTHEASTERLY PROLONGATION OF THE SOUTHWESTERLY LINE OF TRACT 7024, AS SAID SOUTHWESTERLY LINE IS SHOWN ON A MAP RECORDED IN BOOK 282 OF MISCELLANEOUS MAPS, PAGE 45, RECORDS OF SAID COUNTY; THENCE SOUTH 27 DEGREES 33' 20" EAST (BEARING BASED ON LAST SAID MAP) ALONG FIRST SAID SOUTHWESTERLY LINE AND SAID SOUTHEASTERLY PROLONGATION, 502.58 FEET TO A POINT IN THE EASTERLY LINE OF SAID 100-FOOT WIDE STRIP; THENCE SOUTHERLY ALONG SAID EASTERLY LINE THE FOLLOWING TWO (2) COURSES: (1) SOUTH 5 DEGREES 19' 20" EAST, 11.97 FEET; THENCE (2) SOUTHERLY ALONG THE ARC OF A CURVE TANGENT TO PRECEDING COURSE, CONCAVE EASTERLY AND HAVING A RADIUS OF 2814.93 FEET; THROUGH A CENTRAL ANGLE OF 2 DEGREES 35' 24", A DISTANCE OF 127.25 FEET TO A POINT IN A LINE PARALLEL WITH AND DISTANT SOUTHWESTERLY 50.00 FEET MEASURED AT RIGHT ANGLES FROM SAID SOUTHEASTERLY PROLONGATION; THENCE NORTH 27 DEGREES 33' 20" WEST ALONG SAID PARALLEL LINE, 631.62 FEET TO A POINT IN SAID SOUTHEASTERLY LINE; THENCE NORTH 61 DEGREES 26' 38" EAST ALONG SAID SOUTHEASTERLY LINE, 50.01 FEET TO POINT OF BEGINNING."

PARCEL 31:

THAT PORTION OF RANCHO DE TRABUCO AS PER MAP FILED IN BOOK 1, PAGES 53 AND 54 OF PATENTS IN THE OFFICE OF THE COUNTY RECORDER OF LOS ANGELES COUNTY, AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED DECEMBER 7, 1940 IN BOOK 1069 PAGE 345 OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY;

EXCEPTING THEREFROM SAID LAND THAT PORTION LYING NORTHEASTERLY OF A LINE 150.00 FEET NORTHEASTERLY FROM AND CONCENTRIC AND PARALLEL TO THE FOLLOWING DESCRIBED LINE:

BEGINNING AT THE POINT OF INTERSECTION OF THE CENTER LINE OF SAID 100.00 FOOT STRIP OF LAND WITH THE NORTHWESTERLY LINE OF SAID RANCHO DE TRABUCO; THENCE SOUTH 42 DEGREES 54' EAST ALONG SAID CENTER LINE 799.88 FEET; THENCE LEAVING SAID CENTER LINE ON A TANGENT CURVE WITH A RADIUS OF 5729.65 FEET CONCAVE SOUTHWESTERLY 1466.67 FEET; THENCE TANGENT TO SAID CURVE SOUTH 28 DEGREES 14' EAST 1884.84 FEET TO POINT OF ENDING IN SAID CENTER LINE OF 100.00 FOOT STRIP OF LAND;

ALSO EXCEPTING THEREFROM ALL OIL, GAS, WATER AND MINERAL SUBSTANCES AND RIGHTS IN, UNDER OR APPERTAINING TO SAID PREMISES, NO RIGHT TO GO UPON SAID PREMISES FOR THE PURPOSE OF DRILLING, DIGGING OR EXCAVATING THEREON OR THEREIN FOR ANY OF SUCH SUBSTANCES, AS RESERVED BY HIRAM WHISLER AND MAYBELL C. WHISLER IN DOCUMENT RECORDED IN BOOK 1069 PAGE 345 OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY.

ALSO EXCEPTING THEREFROM THAT PORTION LYING WITHIN THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO THE SANTA MARGARITA WATER DISTRICT DATED OCTOBER 15, 1979 RECORDED AS DEED NO. 48312 OF THE RECORDS OF THE SECRETARY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, SAID LAND BEING MORE PARTICULARLY DESCRIBED THEREIN AS FOLLOWS:

"BEGINNING AT THE INTERSECTION OF THE SOUTHEASTERLY LINE OF THAT CERTAIN 70-FOOT WIDE STRIP OF LAND DESCRIBED IN DEED TO ORANGE COUNTY, RECORDED FEBRUARY 21, 1974 IN BOOK 11080, PAGE 42, OFFICIAL RECORDS OF SAID COUNTY, WITH THE SOUTHWESTERLY LINE OF THAT CERTAIN 8.96 ACRE PARCEL OF LAND DESCRIBED IN DEED DATED AUGUST 11, 1941, FROM THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY TO RANCHO SANTA MARGARITA, SAID SOUTHWESTERLY LINE BEING ALSO THE SOUTHEASTERLY PROLONGATION OF THE SOUTHWESTERLY LINE OF TRACT 7024, AS SAID SOUTHWESTERLY LINE IS SHOWN ON A MAP RECORDED IN BOOK 282 OF MISCELLANEOUS MAPS, PAGE 45, RECORDS OF SAID COUNTY; THENCE SOUTH 27 DEGREES 33' 20" EAST (BEARING BASED ON LAST SAID MAP) ALONG FIRST SAID SOUTHWESTERLY LINE AND SAID SOUTHEASTERLY PROLONGATION, 502.58 FEET TO A POINT IN THE EASTERLY LINE OF SAID 100-FOOT WIDE STRIP; THENCE SOUTHERLY ALONG SAID EASTERLY LINE THE FOLLOWING TWO (2) COURSES: (1) SOUTH 5 DEGREES 19' 20" EAST, 11.97 FEET; THENCE (2) SOUTHERLY ALONG THE ARC OF A CURVE TANGENT TO PRECEDING COURSE, CONCAVE EASTERLY AND HAVING A RADIUS OF 2814.93 FEET; THROUGH A CENTRAL ANGLE OF 2 DEGREES 35' 24", A DISTANCE OF 127.25 FEET TO A POINT IN A LINE PARALLEL WITH AND DISTANT SOUTHWESTERLY 50.00 FEET MEASURED AT RIGHT ANGLES FROM SAID SOUTHEASTERLY PROLONGATION; THENCE NORTH 27 DEGREES 33' 20" WEST ALONG SAID PARALLEL LINE, 631.62 FEET TO A POINT IN SAID SOUTHEASTERLY LINE; THENCE NORTH 61 DEGREES 26' 38" EAST ALONG SAID SOUTHEASTERLY LINE, 50.01 FEET TO POINT OF BEGINNING."

PARCEL 32:

THAT PORTION OF RANCHO DE TRABUCO AS PER MAP FILED IN BOOK 1, PAGES 53 AND 54 OF PATENTS IN THE OFFICE OF THE COUNTY RECORDER OF LOS ANGELES COUNTY AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, RECORDED DECEMBER 11, 1941 IN BOOK 1284 PAGE 202 OF OFFICIAL RECORDS OF SAN DIEGO COUNTY, SAID LAND BEING MORE PARTICULARLY DESCRIBED THEREIN AS FOLLOWS:

"BEGINNING AT A POINT IN THE SOUTHWESTERLY LINE OF SAID RANCHO DE TRABUCO DISTANT 375.35 FEET NORTH 37 DEGREES 16' 30" WEST ALONG SAID SOUTHWESTERLY LINE FORM TRABUCO RANCHO CORNER NO. 2; THENCE CONTINUING ALONG SAID SOUTHWESTERLY LINE NORTH 37 DEGREES 16' 30" WEST 514.58 FEET TO A 1 1/2 INCH IRON PIPE MARKING THE LINE BETWEEN FRACTIONAL SECTIONS 35 AND 36 TOWNSHIP 6 SOUTH, RANGE 8 WEST, SAN BERNARDINO BASE AND MERIDIAN; THENCE CONTINUING ALONG SAID SOUTHWESTERLY LINE NORTH 37 DEGREES 14'

WEST 387.76 FEET TO POINT OF INTERSECTION WITH THE NORTHEASTERLY LINE OF THE 100.00 FOOT WIDE RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, SUCCESSOR IN INTEREST TO THE SOUTHERN CALIFORNIA RAILWAY COMPANY, AS SAID RIGHT OF WAY IS DESCRIBED IN DEED DATED SEPTEMBER 12, 1898, AND RECORDED OCTOBER 4, 1898, IN BOOK 39, PAGE 277 OF DEEDS, ORANGE COUNTY RECORDS; THENCE NORTHWESTERLY AND NORTHERLY ALONG SAID RIGHT OF WAY LINE THE FOLLOWING COURSES AND DISTANCES, NORTHWESTERLY ON A CURVE CONCAVE TO THE NORTHEAST, HAVING A RADIUS OF 2814.93 FEET, A DISTANCE OF 157.31 FEET; THE RADIUS TO SAID CURVE AT SAID POINT OF INTERSECTION BEARS NORTH 59 DEGREES 13' 53" EAST; THENCE ON A TANGENT TO SAID CURVE NORTH 27 DEGREES 34' WEST 1031.02 FEET; THENCE NORTHERLY ON A CURVE TANGENT TO LAST COURSE, CONCAVE TO THE EAST, HAVING A RADIUS OF 1860.08 FEET, A DISTANCE OF 479.39 FEET; THENCE ON A TANGENT NORTH 12 DEGREES 51' WEST 340.01 FEET; THENCE NORTHERLY ON A CURVE TANGENT TO LAST COURSE, CONCAVE TO THE EAST, HAVING A RADIUS OF 2814.93 FEET, A DISTANCE OF 209.28 FEET TO A POINT THAT IS 100.00 FEET NORTHEASTERLY AT RIGHT ANGLES FROM THE PROPOSED CENTER LINE OF RELOCATION OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S MAIN TRACK; THENCE LEAVING SAID RIGHT OF WAY LINE AND RUNNING SOUTH 28 DEGREES 14' EAST 100 FEET NORTHEASTERLY FROM AND PARALLEL TO SAID CENTER LINE OF PROPOSED RELOCATION, A DISTANCE OF 2079.18 FEET; THENCE SOUTHEASTERLY ON A CURVE TANGENT TO LAST COURSE, CONCAVE TO THE WEST, HAVING A RADIUS OF 5829.65 FEET, A DISTANCE OF 1003.90 FEET TO POINT OF BEGINNING."

PARCEL 33:

THAT PORTION OF RANCHO MISSION VIEJO AS SHOWN ON MAP FILED AS R.S. 8-35, 9-18 AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED DECEMBER 11, 1941 IN BOOK 1284 PAGE 202 OF OFFICIAL RECORDS OF SAN DIEGO COUNTY, SAID LAND BEING MORE PARTICULARLY DESCRIBED THEREIN AS FOLLOWS:

"A STRIP OF LAND OF VARYING WIDTHS IN SAID RANCHO MISSION VIEJO, BEING ALL THAT PORTION OF SAID RANCHO LYING EASTERLY OF THE EASTERLY LINE OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S 100 FOOT RIGHT OF WAY, AS DESCRIBED IN DEED DATED SEPTEMBER 12, 1898, RECORDED OCTOBER 4, 1898 IN DEED BOOK 39, PAGE 277, RECORDS OF ORANGE COUNTY, AND IN DEED DATED NOVEMBER 22, 1886, RECORDED DECEMBER 17, 1886, IN DEED BOOK 187, PAGE 17, RECORDS OF LOS ANGELES COUNTY, AND LYING WESTERLY OF A LINE PARALLEL WITH AND DISTANT 50.0 FEET EASTERLY NORMALLY OR RADially FROM THE FOLLOWING DESCRIBED CENTER LINE:

BEGINNING AT A POINT IN THE CENTER LINE OF SAID RAILWAY COMPANY'S 100 FOOT RIGHT OF WAY DISTANT NORTHERLY ALONG SAID CENTER LINE 95.00 FEET FROM ENGINEER'S STATION 1695+00, SAID POINT OF BEGINNING BEING DISTANT WESTERLY AT RIGHT ANGLES 109.90

FEET FROM A POINT IN THE WESTERLY LINE OF SAID RANCHO DISTANT SOUTHERLY THEREON 3037.51 FEET FROM CORNER NO. 1 OF SAID RANCHO; THENCE NORTHERLY ON A CURVE TANGENT TO SAID CENTER LINE OF RIGHT OF WAY, CONCAVE EASTERLY, HAVING A RADIUS OF 17,188.8 FEET, THROUGH AN ANGLE OF 1 DEGREE 02' 30" A DISTANCE OF 312.50 FEET; THENCE NORTHERLY, TANGENT TO LAST DESCRIBED CURVE 2325.55 FEET; THENCE NORTHERLY ON A TANGENT CURVE CONCAVE WESTERLY, HAVING A RADIUS OF 5729.65 FEET, THROUGH AN ANGLE OF 7 DEGREES 29' A DISTANCE OF 748.33 FEET TO POINT OF TANGENCY WITH THE CENTER LINE OF SAID RAILWAY COMPANY'S MAIN TRACT AT ENGINEER'S STATION 1729+80.12.

EXCEPTING FROM THE ABOVE DESCRIBED PARCEL ANY PORTION THEREOF LYING WITHIN THE 80 FOOT RIGHT OF WAY OF THE STATE HIGHWAY."

PARCEL 34:

THOSE PORTIONS OF THAT CERTAIN 100-FOOT RIGHT-OF-WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO SUBDIVISION LYING WITHIN SECTIONS 35 AND 36, TOWNSHIP 6 SOUTH, RANGE 8 WEST, AND ALSO THOSE PORTIONS LYING WITHIN SECTIONS 1, 12 AND 13, TOWNSHIP 7 SOUTH, RANGE 8 WEST, AS DESCRIBED IN THAT CERTAIN DEED TO THE SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, PREDECESSOR IN INTEREST TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED DECEMBER 17, 1886, IN BOOK 187 PAGE 17 OF DEEDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER.

PARCEL 35:

TWO PARCELS OF LAND, BEING A PORTION OF LOT 6 OF FRACTIONAL SECTION 35, AND PORTIONS OF LOTS 1 AND 2, FRACTIONAL SECTION 36, BOTH IN TOWNSHIP 6 SOUTH, RANGE 8 WEST, SAN BERNARDINO BASE AND MERIDIAN AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED FEBRUARY 28, 1941 IN BOOK 1078 PAGE 484 OF OFFICIAL RECORDS IN THE OFFICE OF THE ORANGE COUNTY RECORDER.

PARCEL 36:

A STRIP OF LAND 50-FEET IN WIDTH, BEING A PORTION OF THE RIGHT-OF-WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO SUBDIVISION, LYING WITHIN LOTS 2, 3, AND 4, OF SECTION 24, TOWNSHIP 7 SOUTH, RANGE 8 WEST, SAN BERNARDINO MERIDIAN AS DESCRIBED IN THAT CERTAIN DEED TO THE SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, RECORDED MARCH 21, 1887, IN BOOK 200 PAGE 593 OF DEEDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER.

PARCEL 37:

A STRIP OF LAND OF THE UNIFORM WIDTH OF 60 FEET, 30 FEET THEREOF, BEING ON EITHER SIDE OF AND PARALLEL TO THE CENTER LINE OF LOCATION OF THE SAN BERNARDINO AND SAN DIEGO DIVISION OF THE CALIFORNIA CENTRAL RAILWAY OVER AND THROUGH IN THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 25, TOWNSHIP 7 SOUTH RANGE 8 WEST OF THE S.B.B.&M.; SAID CENTERLINE, BEING MORE FULLY DESCRIBED AS FOLLOWS:

BEGINNING OF A POINT IN SAID CENTER LINE KNOWN AS STATION 1581 + 29 WHICH POINT IS IN THE SOUTH BOUNDARY LINE OF SAID NORTHWEST 1/4 OF NORTHWEST 1/4 OF SECTION 25; RUNNING THENCE ON A TANGENT NORTH 7 DEGREES 30' W FOR A DISTANCE OF 1386 FEET MORE OR LESS, TO OR ABOUT A POINT IN SAID CENTERLINE KNOWN AS STATION 1595 + 15 WHICH IS IN THE NORTH BOUNDARY LINE OF SAID NORTHWEST 1/4 OF NORTHWEST 1/4 OF SAID SECTION 25, TOWNSHIP 7 SOUTH, RANGE 8 WEST AS CONVEYED TO CALIFORNIA CENTRAL RAILWAY COMPANY BY DEED RECORDED IN BOOK 559 PAGE 260 OF DEEDS OF LOS ANGELES RECORDS.

PARCEL 38:

A STRIP OF LAND, 100 FEET IN WIDTH, 50 FEET ON EACH SIDE OF A CENTERLINE OF THE RAILROAD TRACT OF SAN BERNARDINO AND SAN DIEGO RAILWAY, SAID CENTERLINE BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT 145 FEET EAST OF THE 1/4 SECTION CORNER BETWEEN SECTIONS 25 AND 26 TOWNSHIP 7 SOUTH RANGE 8 WEST S.B.B. & M. AND RUNNING THENCE ALONG THE LOCATION LINE OF SAID RAILROAD COMPANY FROM STATION 1567 + 94 NORTH 7 DEGREES EAST, 1335 FEET TO THE SOUTH BOUNDARY OF A.G. ROSSENBAUM'S LAND.

AS CONVEYED TO SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY BY DEED RECORDED IN BOOK 200 PAGE 583 OF DEEDS OF LOS ANGELES RECORDS.

PARCEL 39:

A STRIP OF LAND 100 FEET IN WIDTH, FIFTY FEET AT EACH SIDE OF THE CENTER LINE OF THE RAILROAD TRACT OF SAN BERNARDINO AND SAN DIEGO RAILWAY, SAID CENTER LINE BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT 145 EAST OF THE 1/4 SECTION CORNER BETWEEN SECTIONS 25 AND 26 TOWNSHIP 7 SOUTH RANGE 8 WEST, S.B.B.M. SAID POINT BEING DESIGNATED ON LOCATION LINE AND ON THE RAILROAD MAP OF SAID COMPANY AS STATION 1567 + 94 AND RUNNING THENCE SOUTHERLY ALONG THE LINE OF SAID LOCATION ALONG A SIX DEGREE CURVE TO THE POINT WHERE LINE OF LOCATION INTERSECTS THE EASTERLY BOUNDARY OF THE LAND OF R. EGAN.

AS CONVEYED TO THE SAN BERNARDINO & SAN DIEGO RAILWAY COMPANY BY

DEED RECORDED IN BOOK 200 PAGE 590 OF DEEDS, RECORDS OF LOS ANGELES COUNTY.

PARCEL 40:

THAT CERTAIN IRREGULARLY SHAPED PARCEL OF LAND IN THE WEST HALF OF SECTION 25, TOWNSHIP 7 SOUTH, RANGE 8 WEST, SAN BERNARDINO BASE AND MERIDIAN AS DESCRIBED IN THAT CERTAIN QUITCLAIM DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, RECORDED SEPTEMBER 10, 1942 IN BOOK 1156 PAGE 524 OF OFFICIAL RECORDS, IN THE OFFICE OF THE ORANGE COUNTY RECORDER.

PARCEL 41:

A STRIP OF LAND OF THE UNIFORM WIDTH OF 60 FEET, 30 FEET THEREOF BEING ON EITHER SIDE OF AND PARALLEL TO THE CENTER LINE OF LOCATION OF THE SAN BERNARDINO & SAN DIEGO DIVISION OF THE CALIFORNIA CENTRAL RAILWAY, SITUATED IN THE NORTHWEST 1/4 OF SECTION 36 AND THE SOUTHWEST 1/4 OF SECTION 25, BOTH IN TOWNSHIP 7 SOUTH, RANGE 8 WEST OF THE S.B.M.&M., SAID CENTER LINE BEING MORE FULLY DESCRIBED AS FOLLOWS:

BEGINNING AT OR ABOUT A POINT IN SAID CENTER LINE KNOWN AS STATION 1512+85, RUNNING THENCE ON A TANGENT 34 DEGREES 28'W FOR A DISTANCE OF 47.4 FEET, MORE OR LESS, TO A POINT IN SAID CENTER LINE KNOWN AS STATION 1513 + 32.4, RUNNING THENCE NORTHWESTERLY ON A 1 DEGREE CURVE TO THE RIGHT FOR A DISTANCE OF 335 FEET TO A POINT IN SAID CENTERLINE KNOWN AS STATION 1516 + 67.4; RUNNING THENCE ON A TANGENT N 31 DEGREES 7'W FOR A DISTANCE OF 3850.6 FEET TO A POINT IN SAID CENTER LINE KNOWN AS STATION 1555 + 18.

AS GRANTED TO CALIFORNIA CENTRAL RAILWAY COMPANY, A CORPORATION BY DOCUMENT RECORDED IN BOOK 504 PAGE 305 OF DEEDS, RECORDS OF LOS ANGELES COUNTY.

PARCEL 42:

A STRIP OF LAND 20 FEET IN WIDTH AND 150 FEET IN LENGTH, IN THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 36, TOWNSHIP 7 SOUTH, RANGE 8 WEST, S.B.M., IN ORANGE COUNTY, CALIFORNIA, LYING CONTIGUOUS TO THE EASTERN LINE OF THE 60 FOOT WIDE RIGHT OF WAY OF SAID RAILWAY COMPANY AND CONTIGUOUS TO THE NORTHERN END OF THAT CERTAIN 20 FOOT STRIP OF LAND CONVEYED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY BY DEED DATED DECEMBER 30, 1916 AND RECORDED IN BOOK 299, PAGE 147 OF DEEDS, ORANGE COUNTY RECORDS, THE NORTHERLY END OF SAID 20 FOOT STRIP BEING ALONG A LINE AT RIGHT ANGLES EASTERLY TO THE CENTER LINE OF THE MAIN TRACK OF SAID RAILWAY COMPANY FROM A POINT 466.19 FEET NORTHERLY ALONG SAID CENTER LINE OF MAIN TRACK FROM ITS INTERSECTION WITH THE SOUTH LINE OF SAID SOUTHEAST QUARTER OF

NORTHWEST QUARTER; AS GRANTED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, A CORPORATION BY DOCUMENT RECORDED IN BOOK 115 PAGE 19 OF OFFICIAL RECORDS, OF ORANGE COUNTY.

PARCEL 43:

STRIPS OF LAND LOCATED IN THE SOUTHEAST 1/4 OF THE NORTHWEST 1/4 OF SECTION 36, AND ALSO WITHIN THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 36, TOWNSHIP 7 SOUTH RANGE 8 WEST, SBB&M, AS MORE PARTICULARLY DESCRIBED IN THAT DOCUMENT GRANTED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, A CORPORATION RECORDED IN BOOK 299 PAGE 147 OF DEEDS, RECORDS OF ORANGE COUNTY.

PARCEL 44:

A STRIP OF LAND, LOCATED IN THE SOUTHEAST 1/4 OF THE NORTHWEST 1/4 OF SECTION 36 TOWNSHIP 7 SOUTH, RANGE 8 WEST, S.B.M., AS MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEING A STRIP OF LAND 20 FEET IN WIDTH IN SAID SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 36, LOCATED ON THE WESTERLY SIDE OF AND ADJACENT TO THE PRESENT 60 FOOT RIGHT OF WAY OF SAID RAILWAY COMPANY, AND EXTENDS FROM THE SOUTH LINE OF SAID SOUTHEAST QUARTER OF SAID NORTHWEST QUARTER ON THE SOUTH TO A LINE NORMAL TO THE CENTER LINE OF SAID 60 FOOT RIGHT OF WAY ON THE NORTH, SAID NORMAL LINE BEING DISTANT 280.85 FEET NORTHERLY ALONG SAID CENTER LINE FROM ITS INTERSECTION WITH SAID SOUTH LINE OF SAID SOUTHEAST QUARTER OF SAID NORTHWEST QUARTER AS GRANTED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, A CORPORATION BY DOCUMENT RECORDED IN BOOK 300 PAGE 268 OF DEEDS, RECORDS OF ORANGE COUNTY.

PARCEL 45:

A STRIP OF LAND, 60 FEET WIDE, BEING A PORTION OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO SUBDIVISION, LYING WITHIN THE NORTH HALF OF SECTION 1, TOWNSHIP 8 SOUTH, RANGE 8 WEST AND THE SOUTH HALF OF SECTION 36, TOWNSHIP 7 SOUTH, RANGE 8 WEST, SAN BERNARDINO MERIDIAN AS DESCRIBED IN THAT CERTAIN DEED TO THE CALIFORNIA CENTRAL RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED APRIL 20, 1889, IN BOOK 559, PAGE 258 OF DEEDS, RECORDS OF LOS ANGELES COUNTY.

EXCEPTING THEREFROM SAID LAND, THAT CERTAIN PARCEL OF LAND, BEING A PORTION OF LOT NO. ONE OF TRACT NO. 103, AS PER MAP FILED IN BOOK 11, PAGE 31 OF MISCELLANEOUS MAPS, RECORDS OF ORANGE COUNTY AS DESCRIBED IN THAT CERTAIN DEED TO EDWARD G. KOPP AND KERSTIN B. KOPP, RECORDED IN BOOK 9595; PAGE 396, OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY.

ALSO, EXCEPTING THEREFROM SAID 60-FOOT STRIP, THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO EL CAMINO PROPERTIES RECORDED NOVEMBER 14, 1975 AS INSTRUMENT NO. 75-17179, IN BOOK 11569 PAGE 541 OF OFFICIAL RECORDS RECORDS OF ORANGE COUNTY, SAME BEING THE WESTERLY FIVE (5) FEET OF LOTS 5 AND 6, AND THE WESTERLY TEN (10) FEET OF LOT 7, ALL OF TRACT NO. 103, AS PER MAP FILED IN BOOK 11, PAGE 31 OF MISCELLANEOUS MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF ORANGE COUNTY.

PARCEL 46:

A STRIP OF LAND 50 FEET WIDE, BEING A PORTION OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO SUBDIVISION, LYING WITHIN LOT 1 OF BLOCK 1 OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3 PAGES 120 AND 121 OF MISCELLANEOUS RECORD OF LOS ANGELES COUNTY AS DESCRIBED IN THAT CERTAIN DEED TO THE CALIFORNIA CENTRAL RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED JULY 30, 1887 IN BOOK 271 PAGE 115 OF DEEDS, RECORDS OF LOS ANGELES COUNTY;

TOGETHER WITH THAT PORTION OF MISSION STREET (FORMERLY SAN FERNANDO STREET) AS SHOWN ON SAID MAP OF THE TOWN OF SAN JUAN CAPISTRANO) THAT WOULD PASS WITH THE CONVEYANCE OF THE ABOVE DESCRIBED LAND.

PARCEL 47:

A PARCEL OF LAND OVER THAT CERTAIN LAND KNOWN AS MISSION TRACT NO. 1 AND LOT 2 OF BLOCK 9 AS SHOWN ON A MAP OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3, PAGES 120 AND 121, OF MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY AS DESCRIBED IN THAT CERTAIN DEED TO THE SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED MARCH 21, 1887, IN BOOK 200 PAGE 614 OF DEEDS RECORDS OF LOS ANGELES COUNTY, EXCEPTING, THEREFROM THAT PORTION OF SAID LAND INCLUDED WITHIN THE LAND DESCRIBED IN THAT CERTAIN DEED RECORDED JUNE 30, 1987 AS INSTRUMENT NO. 87-372385, OF OFFICIAL RECORDS OF ORANGE COUNTY; ALSO EXCEPTING THEREFROM THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED RECORDED NOVEMBER 29, 1989 AS INSTRUMENT NO. 89-648909 OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY;

ALSO, EXCEPTING THEREFROM THAT CERTAIN LAND DESCRIBED IN THAT CERTAIN DEED TO FRANCISCO REDONA RECORDED APRIL 1, 1890 IN BOOK 4 PAGE 368 OF DEEDS, RECORDS OF ORANGE COUNTY.

PARCEL 48:

A STRIP OF LAND 20- FEET WIDE LOCATED IN THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 36, TOWNSHIP 7 SOUTH, RANGE

8 WEST, SAN BERNARDINO MERIDIAN, AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED JANUARY 17, 1917 IN BOOK 299 PAGE 89, OF DEEDS, RECORDS OF ORANGE COUNTY.

PARCEL 49:

A PORTION OF THE RIGHT-OF-WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO SUBDIVISION, LYING WITHIN LOT NO. 6 IN BLOCK NO. 9 OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3 PAGES 120 AND 121 OF MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY AND ALSO LYING WITHIN THE SOUTH ONE ACRE OF MISSION TRACT NO. 1 AS SHOWN ON SAID MAP OF SAID TOWN OF SAN JUAN CAPISTRANO, AS DESCRIBED IN THAT CERTAIN DEED TO THE CALIFORNIA CENTRAL RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED JULY 30, 1887 IN BOOK 271 PAGE 107 OF DEEDS, RECORDS OF LOS ANGELES COUNTY.

EXCEPTING THEREFROM, THOSE PORTIONS LYING WITHIN THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED RECORDED JUNE 30, 1987 AS INSTRUMENT NO. 87-372385, OF OFFICIAL RECORDS, OF ORANGE COUNTY.

PARCEL 50:

PORTION OF THE RIGHT-OF-WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO SUBDIVISION LYING WITHIN LOT 3 OF BLOCK 9 OF THE TOWN OF SAN JUAN CAPISTRANO, AS PER MAP FILED IN BOOK 3 PAGES 120 AND 121 OF MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY, AS DESCRIBED IN THAT CERTAIN DEED TO THE CALIFORNIA CENTRAL RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED JULY 30, 1887 IN BOOK 271, PAGE 108 OF DEEDS, RECORDS OF LOS ANGELES COUNTY.

EXCEPTING, THEREFROM THAT PORTION OF SAID LAND INCLUDED WITHIN THE LAND DESCRIBED IN THAT CERTAIN DEED RECORDED JUNE 30, 1987 AS INSTRUMENT NO. 87-372385 OF OFFICIAL RECORDS OF ORANGE COUNTY.

PARCEL 51:

A PORTION OF THE RIGHT-OF-WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO SUBDIVISION LYING WITHIN THE NORTH HALF OF LOT NO. 4 IN BLOCK NO. 9 OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3 PAGES 120 AND 121 OF MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY, AS DESCRIBED IN THAT CERTAIN DEED TO THE CALIFORNIA CENTRAL RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED JULY 30, 1887 IN BOOK 271 PAGE 111 OF DEEDS, RECORDS OF LOS ANGELES COUNTY;

EXCEPTING, THEREFROM, THAT PORTION OF SAID LAND INCLUDED WITHIN THE LAND DESCRIBED IN THAT CERTAIN DEED RECORDED JUNE 30, 1987 AS INSTRUMENT NO. 87-372385 OF OFFICIAL RECORDS OF ORANGE COUNTY.

PARCEL 52:

A PORTION OF THE RIGHT-OF-WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO SUBDIVISION LYING WITHIN THE SOUTH HALF OF LOT 4 IN PARCEL NO. 9 OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3 PAGES 120 AND 121 OF MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY, AS DESCRIBED IN THAT CERTAIN DEED TO THE CALIFORNIA CENTRAL RAILWAY COMPANY, PREDECESSOR TO ATCHISON TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED JULY 30, 1887, IN BOOK 271 PAGE 110 OF DEEDS, RECORDS OF LOS ANGELES COUNTY;

EXCEPTING THEREFROM THAT PORTION OF SAID LAND INCLUDED WITHIN THE LAND DESCRIBED IN THAT CERTAIN DEED RECORDED JUNE 30, 1987 AS INSTRUMENT NO. 87-372385 OF OFFICIAL RECORDS OF ORANGE COUNTY.

PARCEL 53:

THAT CERTAIN PARCEL OF LAND SITUATED IN LOT 3, BLOCK 8 OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3, PAGES 120 AND 121 OF MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY AS DESCRIBED IN THAT CERTAIN DEED TO THE SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED AUGUST 6, 1887 IN BOOK 274 PAGE 176 OF DEEDS, RECORDS OF LOS ANGELES COUNTY.

PARCEL 54:

THAT CERTAIN PARCEL OF LAND SITUATED IN LOT NO. 2 IN BLOCK 8 OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3, PAGES 120 AND 121 OF MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY, AS DESCRIBED IN THAT DEED TO THE SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA, AND SANTA FE RAILWAY COMPANY RECORDED MARCH 27, 1887, IN BOOK 200 PAGE 611 OF DEEDS, RECORDS OF LOS ANGELES COUNTY.

PARCEL 55:

THE WEST 12 FEET OF LOT 43, AS SHOWN ON LICENSED SURVEYOR'S MAP OF SAN JUAN CAPISTRANO, AS PER MAP FILED IN BOOK 2, PAGES 31 THROUGH 38, INCLUSIVE OF RECORDS OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF ORANGE COUNTY, AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED FEBRUARY 27, 1936 IN BOOK 804 PAGE 466 OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY.

PARCEL 56:

THE WESTERN 15 FEET OF LOT 40 IN TRACT 103, AS PER MAP RECORDED IN BOOK 11, PAGE 29 ET SEQ. OF MISCELLANEOUS MAPS, RECORDS OF ORANGE COUNTY, CALIFORNIA, BEING A STRIP OF LAND 13 FEET WIDE LYING EASTERLY OF AND CONTIGUOUS TO THE RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY ACROSS SAID LOT 40 AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED FEBRUARY 27, 1936 IN BOOK 807 PAGE 286 OF OFFICIAL RECORDS OF ORANGE COUNTY.

PARCEL 57:

THAT CERTAIN PARCEL OF LAND INCLUDED WITHIN A STRIP OF LAND 50-FEET IN WIDTH WITHIN LOT 4 AND LOT 11, IN BLOCK 8 OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3 PAGES 120 AND 121 OF MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY AS DESCRIBED IN THAT CERTAIN DEED TO THE SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED JUNE 4, 1887 IN BOOK 239 PAGE 18 OF DEEDS, RECORDS OF LOS ANGELES COUNTY.

PARCEL 58:

THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN FINAL DECREE OF CONDEMNATION RECORDED JANUARY 7, 1890 IN BOOK 3 PAGE 274 OF DEEDS, RECORD OF ORANGE COUNTY. SAID LAND BEING A PORTION OF BLOCK 8, OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3, PAGE 120 AND 121 OF MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY, TOGETHER WITH THAT PORTION OF VERDUGO STREET (FORMERLY GARDEN STREET, AS SHOWN ON SAID MAP OF THE TOWN OF SAN JUAN CAPISTRANO) THAT WOULD PASS WITH THE CONVEYANCE OF THE ABOVE DESCRIBED LAND.

PARCEL 59:

THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED JUNE 11, 1914 IN BOOK 257 PAGE 220 OF DEEDS, RECORDS OF ORANGE COUNTY, SAID LAND BEING A PORTION OF LOT 1 OF BLOCK 8, OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3 PAGES 120 AND 121 OF MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY.

TOGETHER WITH THAT PORTION OF VERDUGO STREET (FORMERLY GARDEN STREET, AS SHOWN ON SAID MAP OF THE TOWN OF SAN JUAN CAPISTRANO) THAT WOULD PASS WITH THE CONVEYANCE OF THE ABOVE DESCRIBED LAND.

PARCEL 60:

THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO

THE SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED JULY 30, 1887 IN BOOK 271 PAGE 105 OF DEEDS, RECORDS OF LOS ANGELES COUNTY, SAID LAND BEING A PORTION OF LOT NO. 8 IN BLOCK NO. 8, OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3, PAGES 120 AND 121 OF MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY.

PARCEL 61:

THAT CERTAIN PARCEL OF LAND DESCRIBED IN THE CERTAIN DEED TO THE SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, PREDECESSOR OF ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED JULY 30, 1887 IN BOOK 271 PAGE 104 OF DEEDS, RECORDS OF LOS ANGELES COUNTY; SAID LAND BEING A PORTION OF LOT NO. 5 IN BLOCK NO. 3 AND LOT NO. 9 OF BLOCK NO. 8, OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3 PAGES 120 AND 121 OF MISCELLANEOUS RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF LOS ANGELES COUNTY.

PARCEL 62:

THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED APRIL 2, 1934 IN BOOK 666 PAGE 344 OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY, SAID LAND BEING MORE PARTICULARLY DESCRIBED THEREIN AS FOLLOWS:

"BEGINNING AT THE POINT OF INTERSECTION OF THE NORTHERLY LINE OF LOT FIVE (5) IN BLOCK THREE (3) OF THE "TOWNSITE OF SAN JUAN CAPISTRANO", AS SHOWN ON A MAP RECORDED IN BOOK 3, PAGE 120 ET SEQ. OF MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY, CALIFORNIA, EXTENDED EASTERLY WITH A LINE RUNNING PARALLEL TO AND 25 FEET WESTERLY MEASURED AT RIGHT ANGLES FROM THE CENTER LINE OF THE MAIN TRACK OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY; THENCE EASTERLY ALONG SAID EXTENDED NORTH LINE OF SAID LOT FIVE (5) TO ITS INTERSECTION WITH A LINE PARALLEL TO AND 25 FEET EASTERLY AT RIGHT ANGLES FROM THE SAID CENTER LINE OF THE MAIN TRACK OF SAID RAILWAY COMPANY; THENCE SOUTHERLY ALONG SAID LAST DESCRIBED PARALLEL LINE TO ITS INTERSECTION WITH THE SOUTHERLY LINE OF LOT FIVE (5) IN BLOCK THREE (3) OF SAID "TOWNSITE OF SAN JUAN CAPISTRANO"; THENCE WESTERLY ALONG THE SOUTH LINE OF SAID LOT FIVE (5) TO ITS INTERSECTION WITH A LINE RUNNING PARALLEL TO AND 25 FEET WESTERLY MEASURED AT RIGHT ANGLES FROM THE CENTER LINE OF SAID MAIN TRACK OF SAID RAILWAY COMPANY; THENCE NORTHERLY ALONG SAID LAST DESCRIBED PARALLEL LINE TO THE POINT OF BEGINNING."

EXCEPTING THEREFROM, THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED, RECORDED JULY 30, 1887 IN BOOK 271 PAGE 104 OF DEEDS, RECORDS OF LOS ANGELES COUNTY.

PARCEL 63:

THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO THE CALIFORNIA CENTRAL RAILWAY COMPANY, PREDECESSOR OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, DESCRIBED APRIL 20, 1889 IN BOOK 558 PAGE 304 OF DEEDS, RECORDS OF LOS ANGELES COUNTY; SAID LAND BEING A PORTION OF LOTS 7 AND 9 BLOCK 3 OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3 PAGES 120 AND 121 OF MISCELLANEOUS RECORD, IN THE OFFICE OF THE COUNTY RECORDER OF LOS ANGELES COUNTY.

PARCEL 64:

THOSE CERTAIN PARCELS OF LAND DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED NOVEMBER 24, 1917 IN BOOK 316 PAGE 89 OF DEEDS, RECORDS OF ORANGE COUNTY, SAID LAND BEING A PORTION OF LOT 9, BLOCK 3 OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3 PAGES 120 AND 121 OF MISCELLANEOUS RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF LOS ANGELES COUNTY.

PARCEL 65:

THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO THE CALIFORNIA CENTAL RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED JUNE 13, 1889 IN BOOK 570 PAGE 216 OF DEEDS, RECORDS OF L.A. COUNTY; SAID LAND BEING MORE PARTICULARLY DESCRIBED THEREIN AS FOLLOWS:

"BEING A STRIP OF LAND OF THE UNIFORM WIDTH OF FIFTY FT., TWENTY FIVE FT. THEREOF BEING ON EITHER SIDE OF AND PARALLEL TO THE CENTER LINE OF LOCATION OF THE S.B. & S.D. DIVISION OF THE CALIFORNIA CENTRAL RAILWAY, OVER AND THROUGH THE LANDS OF M.A. FORSTER SITUATED IN THE S.E. 1/4 OF SEC. 12, TWP. 8 S., R. 8 W., OF THE S.B. & M., BEING BOUNDED ON THE SOUTH BY LANDS OF J. HICKMOTT, AND ON THE NORTH BY LANDS OF DOMINGO OYHARZABAL; SAID CENTER LINE OF LOCATION BEING MORE FULLY DESCRIBED AS FOLLOWS, VIZ:

COMMENCING AT A POINT IN SAID CENTER LINE KNOWN AS STATION 1388 PLUS 26, WHICH POINT IS IN THE NORTH BOUNDARY LINE OF AFORESAID LANDS OF J. HICKMOTT; RUNNING THENCE ON A TANGENT N. 31 DEG. 55 MIN. E. (MAG.) FOR A DISTANCE OF 353.5 FT. TO A POINT ON SAID CENTERLINE KNOWN AS STATION 1391 PLUS 79.5; RUNNING THENCE NORTHERLY ON A 4 DEG. CURVE TO THE LEFT FOR A DISTANCE OF 829.2 FT. TO A POINT ON SAID CENTERLINE KNOWN AS STATION 1400 PLUS 08.7; RUNNING THENCE ON A TANGENT NORTH 1 DEG. 15 MIN. W. FOR A DISTANCE OF 389.3 FT. TO A POINT IN SAID CENTER LINE KNOWN AS STATION 1403 PLUS 98, WHICH POINT IS IN THE SOUTH BOUNDARY LINE OF AFORESAID LANDS OF DOMINGO OYHARZABAL."

EXCEPTING THEREFROM, THOSE PORTIONS INCLUDED WITHIN THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED FROM THE SOUTHERN CALIFORNIA RAILWAY COMPANY TO MARCOS A. FOSTER DATED OCTOBER 15, 1891, AS FILED IN SECRETARY'S DEED NO. D-5576 OF THE RAILROAD COMPANY'S MISCELLANEOUS RECORDS, SAID LAND BEING MORE PARTICULARLY DESCRIBED THEREIN AS FOLLOWS:

"ALL THAT PORTION OF LAND LYING OUTSIDE OF A 50-FOOT STRIP BEING 25 FEET ON EACH SIDE OF AND PARALLEL TO THE CENTERLINE OF THE SOUTHERN CALIFORNIA RAILWAY COMPANY'S TRACK, AS NOW LOCATED AND CONSTRUCTED OVER THE LAND OF THE GRANTEE, IN SECTION 12, T.8.S., R.8.W., S.B.M., HERETOFORE GRANTED TO GRANTOR BY THE GRANTEE; FOR A MORE PARTICULAR LOCATION OF WHICH LAND, REFERENCE IS HEREBY MADE TO THE PLAT MARKED EXHIBIT "A" ATTACHED HERETO AND MADE A PART OF THIS DEED, SAID LAND GRANTED HEREIN INDICATED BY DIAGONAL LINES ON SAID EXHIBIT.

PARCEL 66:

THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO THE SOUTHERN CALIFORNIA RAILWAY COMPANY, PREDECESSOR TO ATCHISON TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED NOVEMBER 30, 1891 IN BOOK 56 PAGE 309 OF DEEDS, RECORDS OF ORANGE COUNTY; SAID LAND BEING MORE PARTICULARLY DESCRIBED THEREIN AS FOLLOWS:

"A STRIP OF LAND 50 FEET IN WIDTH, 25 FEET THEREOF BEING ON EACH SIDE OF AND PARALLEL TO THE CENTERLINES OF LOCATION OF THE SOUTHERN CALIFORNIA RAILWAY COS. TRACT, AS NOW CONSTRUCTED AND OPERATED OVER THE LANDS OF THE GRANTOR, IN SECTION 12, T.8S., R.8W., S.B.,. THE CENTERLINE OF WHICH STRIP OF LAND, BEING MORE FULLY DESCRIBED AS FOLLOWS, TO WIT - BEGINNING AT A POINT AT THE SOUTHERLY END OF THE TANGENT, BEING THE CENTERLINE OF THE SOUTHERN CALIFORNIA RAILWAY COS. RIGHT OF WAY, HAVING A BEARING OF NORTH 1 DEG. 15 MIN. WEST MAGNETIC, SAID POINT BEING KNOWN AS STA, 1400 PLUS 08.7 THEREOF AND LOCATED IN SECTION 12, T.8S., R.8W., S.B.M. CONTINUING THENCE SOUTH 1 DEG. 15 MIN, EAST MAGNETIC ON SAID TANGENT A DISTANCE OF 500.3 FEET TO A POINT; THENCE IN A SOUTH EASTERLY DIRECTION ON A CURVE TO THE RIGHT, WHOSE RADIUS IS 19101.1 FEET A DISTANCE OF 100 FEET TO A POINT; THENCE ON A CURVE TO THE RIGHT WHOSE RADIUS IS 955.4 FEET; A DISTANCE OF 433 FEET TO THE SOUTHERLY BOUNDARY OF THE LAND OF SAID GRANTOR; EXCEPTING THEREFROM THAT PORTION OF THE RIGHT OF WAY HERETOFORE GRANTED TO THE GRANTEE BY THE GRANTOR."

PARCEL 67:

THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO THE SOUTHERN CALIFORNIA RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED DECEMBER 12, 1893 IN BOOK 905 PAGE 233 OF DEEDS, RECORDS OF LOS ANGELES COUNTY; SAID LAND BEING A PORTION OF THE SOUTH HALF OF SECTION

12, TOWNSHIP 8 SOUTH, RANGE 8 WEST, SAN BERNARDINO MERIDIAN.

PARCEL 68:

THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO THE SOUTHERN CALIFORNIA RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED SEPTEMBER 25, 1891 IN BOOK 63 PAGE 57 OF DEEDS, RECORD OF ORANGE COUNTY; SAID LAND BEING A STRIP OF LAND 50 FEET WIDE SITUATED IN SECTION 12, TOWNSHIP 8 SOUTH, RANGE 8 WEST SAN BERNARDINO MERIDIAN.

EXCEPTING THEREFROM, THAT CERTAIN LAND DESCRIBED IN THAT CERTAIN DEED FROM THE SOUTHERN CALIFORNIA RAILWAY COMPANY TO JOHN HICKMOTT DATED SEPTEMBER 15, 1891, AS FILED IN SECRETARY'S DEED NO. D-5575 OF THE RAILROAD COMPANY'S MISCELLANEOUS RECORDS, SAID LAND BEING MORE PARTICULARLY DESCRIBED THEREIN AS FOLLOWS:

"ALL THAT PORTION OF LAND LYING OUTSIDE OF A 50 FOOT STRIP BEING 25 FEET ON EACH SIDE OF LAND PARALLEL TO THE CENTERLINE OF THE SOUTHERN CALIFORNIA RY. CO. TRACK, AS NOW LOCATED AND CONSTRUCTED ON THE LAND OF THE GRANTEE, IN SECS. 12 AND 13, T.8S, R.8W, S.B.M. HERETOFORE GRANTED TO GRANTOR BY THE GRANTEE; FOR THE MORE PARTICULAR LOCATION OF WHICH LAND, REFERENCE IS HEREBY MADE TO THE PLAT MARKED EXHIBIT A, ATTACHED HERETO AND MADE A PART OF THIS DEED; SAID LAND GRANTED HEREIN INDICATED IN YELLOW COLOR ON SAID EXHIBIT."

PARCEL 69:

THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO THE SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, RECORDED MARCH 21, 1887 IN BOOK 200 PAGE 616 OF DEEDS, RECORDS OF LOS ANGELES COUNTY; SAID LAND BEING A STRIP OF LAND 100 FEET IN WIDTH LYING IN SECTIONS 12 AND 13 IN TOWNSHIP 8 SOUTH, RANGE 8 WEST, SAN BERNARDINO MERIDIAN.

EXCEPTING THEREFROM, THAT CERTAIN LAND DESCRIBED IN THAT CERTAIN DEED FROM THE SOUTHERN CALIFORNIA RAILWAY COMPANY TO JOHN HICKMOTT DATED SEPTEMBER 15, 1891, AS FILED IN SECRETARY'S DEED NO. D-5575 OF THE RAILROAD COMPANY'S MISCELLANEOUS RECORDS, SAID LAND BEING MORE PARTICULARLY DESCRIBED THEREIN AS FOLLOWS:

"ALL THAT PORTION OF LAND LYING OUTSIDE OF A 50 FOOT STRIP BEING 25 FEET ON EACH SIDE OF LAND PARALLEL TO THE CENTERLINE OF THE SOUTHERN CALIFORNIA RY. CO. TRACK, AS NOW LOCATED AND CONSTRUCTED ON THE LAND OF THE GRANTEE, IN SECS. 12 AND 13, T.8S, R.8W, S.B.M. HERETOFORE GRANTED TO GRANTOR BY THE GRANTEE; FOR THE MORE PARTICULAR LOCATION OF WHICH LAND, REFERENCE IS HEREBY MADE TO THE PLAT MARKED EXHIBIT, ATTACHED HERETO AND MADE A PART OF THIS DEED; SAID LAND GRANTED HEREIN INDICATED IN

YELLOW COLOR ON SAID EXHIBIT."

PARCEL 70:

THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO THE SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED MARCH 21, 1887 IN BOOK 200 PAGE 588 OF DEEDS, RECORDS OF LOS ANGELES COUNTY; SAID LAND BEING A STRIP OF LAND 100 FEET IN WIDTH LYING WITHIN THE NORTHWEST PORTION OF THE RANCHO BOCA DE LA PLAYA KNOWN AS THE HOMESTEAD.

PARCEL 71:

A STRIP OF LAND 100 FEET IN WIDTH, BEING A PORTION OF THE RIGHT-OF-WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO SUBDIVISION LYING WITHIN RANCHO BOCA DE LA PLAYA AND LANDS ALONG THE SHORE OF THE PACIFIC OCEAN IN TOWNSHIP 8 SOUTH, RANGE 7 WEST AND TOWNSHIP 9 SOUTH, RANGE 7 WEST, SAN BERNARDINO MERIDIAN AS DESCRIBED IN THAT CERTAIN DEED TO THE SAN BERNARDINO AND SAN DIEGO RAILWAY COMPANY, PREDECESSOR TO ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED DECEMBER 7, 1886 IN BOOK 187 PAGE 18 OF DEEDS, RECORDS OF LOS ANGELES COUNTY.

EXCEPTING THEREFROM, THAT PORTION OF SAID 100-FOOT STRIP, THAT CERTAIN LAND DESCRIBED IN THAT CERTAIN DEED DATED FEBRUARY 14, 1942, FROM THE ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY TO THE STATE OF CALIFORNIA AS RECORDED IN SECRETARY'S DEED NO. D-3556, OF MISCELLANEOUS RECORDS OF SAID RAILWAY COMPANY, BEING MORE PARTICULARLY DESCRIBED THEREIN AS FOLLOWS:

"A PARCEL OF LAND SITUATE IN THE WEST HALF OF SECTION 10, TOWNSHIP 9 SOUTH, RANGE 7 WEST, S.B.B. & M., IN SAID CITY OF SAN CLEMENTE, BEING A PORTION OF THE 100 FOOT RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, AS DESCRIBED IN DEED DATED NOVEMBER 15, 1886, RECORDED IN BOOK 187 OF DEEDS, PAGE 18, RECORDS OF LOS ANGELES COUNTY, SAID PARCEL BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE POINT OF INTERSECTION OF THE SOUTHWESTERLY LINE OF SAID 100 FOOT RAILWAY RIGHT OF WAY WITH THE SOUTHWESTERLY PROLONGATION OF THE NORTHWESTERLY LINE OF LOT B, TRACT NO. 960, SAN CLEMENTE, THE SPANISH VILLAGE, AS PER MAP RECORDED IN BOOK 30 OF MISCELLANEOUS MAPS, PAGES 28 AND 29, RECORDS OF ORANGE COUNTY; THENCE ALONG SAID SOUTHWESTERLY LINE OF RAILWAY RIGHT OF WAY THE FOLLOWING COURSES AND DISTANCES; SOUTH 36 DEGREES 19' 30" EAST 87.76 FEET; THENCE SOUTHEASTERLY ON THE ARC OF A TANGENT CURVE CONCAVE SOUTHWESTERLY, HAVING A RADIUS OF 5679.65 FEET, THROUGH AN ANGLE OF 5 DEGREES 16', A DISTANCE OF 522.08 FEET; THENCE TANGENT TO SAID CURVE SOUTH 31

DEGREES 03' 30" EAST 200.28 FEET TO THE TRUE POINT OF BEGINNING OF THIS DESCRIPTION; THENCE LEAVING SAID SOUTHWESTERLY LINE OF RAILWAY RIGHT OF WAY SOUTH 34 DEGREES 19' 30" EAST ALONG A LINE PARALLEL WITH AND NORMALLY DISTANT 50 FEET SOUTHWESTERLY FROM THE RELOCATED CENTER LINE OF SAID RAILWAY COMPANY'S MAIN TRACK, A DISTANCE OF 438.73 FEET TO A POINT IN A LINE THAT IS PARALLEL AND CONCENTRIC WITH AND NORMALLY AND RADially DISTANT 25 FEET NORTHEASTERLY FROM SAID SOUTHWESTERLY LINE OF RAILWAY RIGHT OF WAY; THENCE ALONG SAID PARALLEL AND CONCENTRIC LINE THE FOLLOWING COURSES AND DISTANCES; SOUTH 31 DEGREES 03' 30" EAST 131.90 FEET; THENCE SOUTHEASTERLY ON THE ARC OF A TANGENT CURVE, CONCAVE NORTHEASTERLY, HAVING A RADIUS OF 2889.93 FEET, THROUGH AN ANGLE OF 8 DEGREES 32' 11" A DISTANCE OF 430.56 FEET TO A POINT IN SAID LINE PARALLEL WITH SAID RELOCATED CENTER LINE OF MAIN TRACK; THENCE ALONG SAID PARALLEL LINE SOUTH 34 DEGREES 19' 30" EAST 271.47 FEET TO A POINT IN SAID SOUTHWESTERLY LINE OF RAILWAY RIGHT OF WAY; THENCE ALONG SAID SOUTHWESTERLY LINE THE FOLLOWING COURSES AND DISTANCES; NORTH 39 DEGREES 36' 30" WEST 269.63 FEET; THENCE NORTHWESTERLY ON THE ARC OF A TANGENT CURVE CONCAVE NORTHEASTERLY, HAVING A RADIUS OF 2914.93 FEET, THROUGH AN ANGLE OF 8 DEGREES 33' A DISTANCE OF 434.98 FEET; THENCE TANGENT TO LAST DESCRIBED CURVE NORTH 31 DEGREES 03' 30" WEST 569.91 FEET TO THE TRUE POINT OF BEGINNING."

PARCEL 72:

THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED APRIL 23, 1942 IN BOOK 1145 PAGE 216 OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY; SAID LAND BEING MORE PARTICULARLY DESCRIBED THEREIN AS FOLLOWS:

"A STRIP OF LAND 30 FEET IN WIDTH SITUATED AT SERRA, IN THE COUNTY OF ORANGE STATE OF CALIFORNIA, BEING A PORTION OF THE 100 FEET RIGHT OF WAY OF THE RAILWAY COMPANY AS DESCRIBED IN DEED DATED NOVEMBER 15, 1886, RECORDED IN BOOK 187 OF DEEDS, PAGE 16, RECORD OF LOS ANGELES COUNTY, CALIFORNIA, SAID STRIP OF LAND LYING BETWEEN THE SOUTHWESTERN LINE OF SAID 100 FEET RIGHT OF WAY AND A LINE DISTANT 30 FEET SOUTHEASTERLY, MEASURED NORMALLY, FROM AND CONCENTRIC WITH SAID RIGHT OF WAY LINE, AND EXTENDING FROM THE NORTHERN PROLONGATION OF THE WESTERN LINE OF BLOCK B, TRACT NO. 797, AS PER MAP RECORDED IN MISCELLANEOUS MAP BOOK 24, PAGES 10 ET SEQ. RECORDS OF SAID ORANGE COUNTY, NORTHWESTERLY TO A LINE DISTANT 25 FEET NORTHEASTERLY, MEASURED AT RIGHT ANGLES, FROM THE SOUTHWESTERN RIGHT OF WAY LINE OF THE STATE HIGHWAY BEARING NORTH 72 DEGREES 04' WEST 705.64 FEET, AND ITS PROLONGATION."

PARCEL 73:

A PARCEL OF LAND AT SAN CLEMENTE, BEING A PORTION OF LOT 21,

BLOCK 7, IN TRACT 794, ACCORDING TO MAP THEREOF RECORDED IN BOOK 24, PAGES 26 AND 27, RECORDS OF SAID COUNTY; SAID PARCEL BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

ALL THAT PORTION OF SAID LOT 21 LYING SOUTHEASTERLY FROM THE SOUTHWESTERLY PROLONGATION OF THE NORTHWESTERLY LINE OF LOT 4 IN SAID TRACT 794, AS GRANTED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, A KANSAS CORPORATION BY DOCUMENT RECORDED IN BOOK 1321 PAGE 96, OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY.

PARCEL 74:

ALL THAT CERTAIN PARCEL OF LAND SITUATE IN THE SOUTHWEST QUARTER OF SECTION 10, TOWNSHIP 9 SOUTH, RANGE 7 WEST, S.B.B.&M., IN THE CITY OF SAN CLEMENTE, BEING A PORTION OF LOT "B" OF "TRACT NO. 960", SAN CLEMENTE," THE SPANISH VILLAGE," AS SHOWN ON A MAP RECORDED IN BOOK 30, PAGES 28 AND 29 OF MISCELLANEOUS MAPS, RECORDS OF SAID COUNTY, SAID PARCEL LYING NORTHEASTERLY OF AND CONTIGUOUS TO THE 100 FOOT RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, AS DESCRIBED IN DEED DATED NOVEMBER 15TH, 1886, RECORDED IN BOOK 187, PAGES 18 OF DEEDS, RECORDS OF LOS ANGELES COUNTY, CALIFORNIA, SAID PARCEL BEING MORE PARTICULARLY DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, A CORPORATION, RECORDED IN BOOK 1070 PAGE 224 OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY.

PARCEL 75:

ALL THAT CERTAIN PARCEL OF LAND SITUATE IN THE SOUTHWEST QUARTER OF SECTION 10, TOWNSHIP 9 SOUTH, RANGE 7 WEST, S.B.B.&M., BEING A PORTION OF LOT "B" OF "TRACT NO. 960, SAN CLEMENTE, THE SPANISH VILLAGE", AS SHOWN ON A MAP RECORDED IN BOOK 30, PAGES 28 AND 29 OF MISCELLANEOUS MAPS, RECORDS OF ORANGE COUNTY, CALIFORNIA, SAID PARCEL LYING NORTHEASTERLY OF AND CONTIGUOUS TO THE 100 FEET RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, AS DESCRIBED IN DEED DATED NOVEMBER 15TH, 1886, RECORDED IN BOOK 187, PAGE 18 OF DEEDS, RECORD OF LOS ANGELES COUNTY, CALIFORNIA, SAID PARCEL OF LAND BEING MORE PARTICULARLY DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON TOPEKA AND SANTA FE RAILWAY COMPANY, A KANSAS CORPORATION, RECORDED IN BOOK 1066 PAGE 455 OFFICIAL RECORDS, RECORDS OF LOS ANGELES COUNTY.

PARCEL 76:

AN IRREGULAR SHAPED PARCEL OF LAND, BEING THAT PORTION OF THE LAND DESCRIBED AS PARCELS 1 AND 2 IN THE DEED TO DAVID V. CARSON AND WIFE, RECORDED AUGUST 5TH, 1937 IN BOOK 905, PAGE 109 OF OFFICIAL RECORDS, LYING BETWEEN THE NORTHWESTERLY LINE OF PARCEL 2 DESCRIBED IN SAID DEED TO DAVID V. CARSON AND WIFE AND THE SOUTHEASTERLY LINE OF ORANGE COUNTY, AND LYING NORTHEASTERLY OF

AND CONTIGUOUS TO THE 100 FOOT RIGHT OF WAY OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY AS DESCRIBED IN THE DEED DATED NOVEMBER 15TH, 1886, RECORDED IN BOOK 187, PAGE 18 OF DEEDS, RECORDS OF LOS ANGELES COUNTY, BEING MORE PARTICULARLY DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, A KANSAS CORPORATION RECORDED IN BOOK 940 PAGE 321, OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY.

PARCEL 77:

ALL THAT CERTAIN LAND SITUATED IN THE CITY OF SAN CLEMENTE, AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, A KANSAS CORPORATION RECORDED IN BOOK 935 PAGE 566 OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY.

PARCEL 78:-

THAT CERTAIN PARCEL OF LAND, SITUATE IN THE SOUTHWEST QUARTER OF SECTION 10, TOWNSHIP 9 SOUTH, RANGE 7 WEST, SAN BERNARDINO MERIDIAN, AS DESCRIBED IN THAT FINAL JUDGMENT OF CONDEMNATION, CASE NO. 39138, SUPERIOR COURT; COUNTY OF ORANGE, A CERTIFIED COPY OF WHICH WAS RECORDED JULY 22, 1942 IN BOOK 1149 PAGE 576 OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY.

PARCEL 79:

THAT CERTAIN PARCEL OF LAND, INCLUDED WITHIN LOT 9, OF BLOCK 3 OF THE TOWNSITE OF SAN JUAN CAPISTRANO NO. 2, AS PER MAP FILED IN BOOK 3, PAGE 122 THROUGH 125, INCLUSIVE OF MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY, AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED NOVEMBER 24, 1917 IN BOOK 316 PAGE 95 OF DEEDS, RECORDS OF SAID COUNTY.

PARCEL 80:

THOSE CERTAIN PARCELS OF LAND, BEING PORTIONS OF SANTA FE AVENUE AND ITS SOUTHEASTERLY CONTINUATION AS SAID AVENUE IS SHOWN ON THE MAP OF THE TOWN OF SAN JUAN BY THE SEA, RECORDED IN BOOK 19 PAGE 27 OF MISCELLANEOUS RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF LOS ANGELES COUNTY AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED JULY 9, 1979 IN BOOK 13220 PAGE 1874 OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY.

PARCEL 81:

THAT CERTAIN PARCEL OF LAND, BEING A PORTION OF LOT 11, BLOCK 8 OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3 PAGE 120 AND 121 OF MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY, AS DESCRIBED IN THAT CERTAIN DEED TO THE SAN BERNARDINO AND SAN

DIEGO RAILWAY COMPANY, PREDECESSOR TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, RECORDED JULY 30, 1887, IN BOOK 271 PAGE 103 OF DEEDS, RECORDS OF LOS ANGELES COUNTY.

PARCEL 82:

THAT CERTAIN STRIP OF LAND 30 FEET IN WIDTH, AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED OCTOBER 18, 1929 IN BOOK 317 PAGE 301 OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY; SAID LAND BEING MORE PARTICULARLY DESCRIBED THEREIN AS FOLLOWS:

"THE WESTERLY ONE-HALF OF SANTA FE AVENUE, AS SHOWN ON A MAP OF SAN JUAN BY THE SEA, RECORDED IN BOOK 19 PAGE 27, MISCELLANEOUS RECORDS OF LOS ANGELES COUNTY, CALIFORNIA EXTENDING SOUTHERLY FROM THE NORTHWESTERLY PROLONGATION OF THE NORTHEASTERLY LINE OF BLOCK FIFTY FOUR (54) OF SAN JUAN BY THE SEA, TO A LINE PARALLEL WITH AND DISTANT NORTHERLY FORTY (40) FEET FROM THE CENTERLINE OF THE CALIFORNIA STATE HIGHWAY AS NOW CONSTRUCTED."

PARCEL 83:

THAT CERTAIN PARCEL OF LAND, LYING IN SECTION 23, TOWNSHIP 8 SOUTH, RANGE 8 WEST, SAN BERNARDINO BASE AND MERIDIAN, AS DESCRIBED IN THAT CERTAIN DEED FROM SANTA FE LAND IMPROVEMENT COMPANY TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED MAY 19, 1932 IN BOOK 550 PAGE 373 OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY.

PARCEL 84:

THAT CERTAIN PARCEL OF LAND, BEING A PORTION OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3 PAGE 120 AND 121 OF MISCELLANEOUS RECORDS, IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER, AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED APRIL 2, 1934 IN BOOK 664 PAGE 461 OF OFFICIAL RECORDS, RECORDS OF ORANGE COUNTY.

EXCEPTING THEREFROM, THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED, RECORDED JULY 30, 1887 IN BOOK 271, PAGE 105, OF DEEDS, RECORDS OF LOS ANGELES COUNTY.

PARCEL 85:

THAT CERTAIN IRREGULAR SHAPED PARCEL OF LAND AT SAN JUAN CAPISTRANO, BEING A PORTION OF LOT 48 OF TRACT NO. 103 AS SAID LOT IS SHOWN ON A MAP OF SAID TRACT RECORDED IN BOOK 11, OF MISCELLANEOUS MAPS, PAGE 29 ET. SEQ., RECORDS OF ORANGE COUNTY, AS DESCRIBED IN THAT CERTAIN DEED TO THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY RECORDED APRIL 26, 1965 IN BOOK 7495 PAGE 650 OF OFFICIAL RECORDS, OF ORANGE COUNTY, SAID LAND BEING

MORE PARTICULARLY DESCRIBED THEREIN AS FOLLOWS:

"BEGINNING AT THE NORTHWESTERLY CORNER OF SAID LOT 48; THENCE NORTH 87 DEGREES 16' 30" EAST (BEARINGS ASSUMED FOR PURPOSE OF THIS DESCRIPTION) ALONG THE NORTHERLY LINE OF SAID LOT 48 A DISTANCE OF 53.00 FEET TO A POINT IN THE EASTERLY LINE OF SAID LOT 48; THENCE SOUTH 06 DEGREES 23' 30" EAST ALONG SAID EASTERLY LINE 60.51 FEET; THENCE SOUTH 87 DEGREES 16' 30" WEST 60.28 FEET TO A POINT IN THE WESTERLY LINE OF SAID LOT 48; THENCE NORTH 00 DEGREES 31' 00" EAST ALONG SAID WESTERLY LINE 60.45 FEET TO THE POINT OF BEGINNING."

EXCEPTING THEREFROM, THAT PORTION INCLUDED WITHIN THAT CERTAIN PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED RECORDED MARCH 21, 1887 IN BOOK 200, PAGE 614 OF DEEDS, RECORDS OF LOS ANGELES COUNTY.

PARCEL 86:

THAT PORTION OF SAN FERNANDO STREET AS SHOWN ON THE MAP OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3 PAGE 120 AND 121 OF MISCELLANEOUS RECORDS OF THE COUNTY OF LOS ANGELES BEING A STRIP OF LAND 17 FEET IN WIDTH, 8.5 FEET ON EACH SIDE OF THE CENTERLINE OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY'S SAN DIEGO SUBDIVISION, SAME BEING BOUNDED ON THE SOUTH BY THE NORTHERLY BOUNDARY OF THAT CERTAIN LAND DESCRIBED IN THAT CERTAIN DEED RECORDED JUNE 11, 1914 IN BOOK 257, PAGE 220 OF DEEDS, RECORDS OF ORANGE COUNTY AND BEING BOUNDED ON THE NORTH BY THE SOUTH LINE OF LOT 1 OF BLOCK 1 OF SAID TOWN OF SAN JUAN CAPISTRANO.

PARCEL 87:

THAT PORTION OF LOT 5, BLOCK 9 OF THE TOWN OF SAN JUAN CAPISTRANO AS PER MAP FILED IN BOOK 3, PAGE 120 AND 121 OF MISCELLANEOUS RECORDS IN THE OFFICE OF THE COUNTY RECORDER OF LOS ANGELES COUNTY, BEING A STRIP OF LAND 17 FEET IN WIDTH LYING 8.5 FEET ON EACH SIDE OF, AND PARALLEL TO THE CENTERLINE OF THE MAIN TRACK OF THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY'S SAN DIEGO SUBDIVISION.

EXHIBIT B

DESCRIPTION OF RESERVED FIBER OPTICS EASEMENT

SAN DIEGO SUBDIVISION
ORANGE COUNTY
FIBER OPTIC EASEMENT

(Sprint)

AN EASEMENT FOR INGRESS AND EGRESS AND FOR RAILROAD FACILITIES, MORE PARTICULARLY BEING A SPRINT FIBER OPTIC CABLE IN CONDUIT, TOGETHER WITH ACCESS RIGHTS FOR CONSTRUCTION, MAINTENANCE AND REPAIR OF THIS COMMUNICATION LINE UPON SAID RAILROAD EASEMENT, IN THE EVENT THESE FACILITIES ARE PERMANENTLY REMOVED, THE HEREIN EASEMENT SHALL ABSOLUTELY REVERT TO GRANTEE, ITS SUCCESSORS AND ASSIGNS; THE HEREIN DESCRIBED EASEMENT LIES IN AND OVER A 10 FOOT WIDE STRIP OF LAND LOCATED WITHIN SAID RAILWAY COMPANY'S SAN DIEGO SUBDIVISION RIGHT-OF-WAY IN THE CITIES OF FULLERTON AND ANAHEIM, ORANGE COUNTY, CALIFORNIA AND CONTAINS AFOREMENTIONED SPRINT FIBER OPTIC CABLE AS IT NOW EXISTS AND IS SHOWN ON THE AS-BUILT PLANS ON FILE WITH THE ATCHISON, TOPEKA, AND SANTA FE RAILWAY COMPANY'S CONTRACT DOCUMENT NUMBER 180662, THE CENTERLINE OF SAID SPRINT FIBER OPTIC CABLE BEING DESCRIBED FROM THESE PLANS AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE CENTERLINE OF THE SPRINT FIBER OPTIC CABLE WITH THE WESTERLY EXTENSION OF THE SOUTH RIGHT-OF-WAY LINE OF THE ATCHISON, TOPEKA, AND SANTA FE RAILWAY COMPANY'S SAN BERNARDINO SUBDIVISION, SAID RIGHT-OF-WAY LINE BEING SOUTH OF AND 43 FEET NORMALLY DISTANT FROM THE CENTERLINE OF THE SOUTH MAIN TRACK OF SAID RAILWAY COMPANY'S SAN BERNARDINO SUBDIVISION AND ALSO BEING THE NORTH RIGHT-OF-WAY LINE OF THE SAN DIEGO SUBDIVISION; SAID INTERSECTION BEING OPPOSITE OF APPROXIMATE RAILWAY MILEPOST 165.5 ON THE SAN DIEGO SUBDIVISION;

THENCE IN A SOUTHWESTERLY DIRECTION 50 FEET, MORE OR LESS, AT WHICH POINT THE FIBER OPTIC CABLE CROSSES THE CENTERLINE OF THE MAIN TRACK OF THE SAN DIEGO SUBDIVISION;

THENCE CONTINUING SOUTHWESTERLY 40 FEET, MORE OR LESS, AT WHICH POINT THE CENTERLINE OF THE FIBER OPTIC CABLE CURVES TO THE LEFT APPROXIMATELY 90 DEGREES AND CONTINUES IN A SOUTHEASTERLY DIRECTION PARALLEL WITH AND 40 FEET NORMALLY DISTANT FROM THE CENTERLINE OF THE MAIN TRACK OF THE SAN DIEGO SUBDIVISION FOR APPROXIMATELY 1000 FEET AT WHICH POINT THE CENTERLINE OF THE FIBER OPTIC CABLE GRADUALLY CURVES TO THE RIGHT AND CONTINUES IN A SOUTHERLY DIRECTION PARALLEL WITH AND 40 FEET NORMALLY DISTANT FROM THE CENTERLINE OF THE MAIN TRACK OF THE SAN DIEGO SUBDIVISION TO A POINT AT WHICH SAID FIBER OPTIC CABLE CENTERLINE ANGLES TO THE RIGHT TO A POINT 45 FEET NORMALLY DISTANT FROM SAID MAIN TRACK CENTERLINE;

THENCE CONTINUING IN A SOUTHERLY DIRECTION PARALLEL WITH AND 45 FEET NORMALLY DISTANT FROM THE CENTERLINE OF THE MAIN TRACK OF THE SAN DIEGO SUBDIVISION FOR 3850 FEET, MORE OR LESS, TO A POINT AT WHICH SAID FIBER OPTIC CABLE CENTERLINE CURVES TO THE LEFT AND CONTINUES IN A SOUTHEASTERLY DIRECTION ALONG AND WITH THE WESTERLY RIGHT-OF-WAY LINE OF THE RAILWAY COMPANY'S SAN DIEGO SUBDIVISION AND VARYING FROM 42 FEET TO 49 FEET

RIGHT(SOUTHWESTERLY) OF THE CENTERLINE OF THE MAIN TRACK OF THE SAN DIEGO SUBDIVISION TO A POINT IN THE RIGHT-OF-WAY OF EAST NORTH STREET, CITY OF ANAHEIM, COUNTY OF ORANGE, STATE OF CALIFORNIA;

THENCE SAID FIBER OPTIC CABLE CENTERLINE TURNS TO THE RIGHT APPROXIMATELY 90 DEGREES AND CONTINUES IN AN EASTERLY DIRECTION FOR 5 FEET, MORE OR LESS, AT WHICH POINT SAID FIBER OPTIC CABLE EXITS THE ATCHISON, TOPEKA, AND SANTA FE RAILWAY COMPANY'S PROPERTY.

DESCRIPTION OF RESERVED FIBER OPTICS EASEMENT (MCI)

(San Diego Subdivision (Orange County))

The Reserved Fiber Optics Easement with respect to MCI fiber optics cables and facilities shall be a ten (10) foot wide strip located over, across, and under the property described in Exhibit A; provided, however, that the Reserved Fiber Optics Easement shall not materially interfere with Grantee's Agency Rail Service on any portion of the Operating Property (as such term is defined in the Purchase and Sale Agreement dated as of October 30, 1992, as amended, among the Grantor, the Grantee and certain other parties (the "Purchase Agreement")) or the Grantee's intended commercial, industrial or residential use, as the case may be, of any portion of the Non-Operating Property (as such term is defined in the Purchase Agreement).

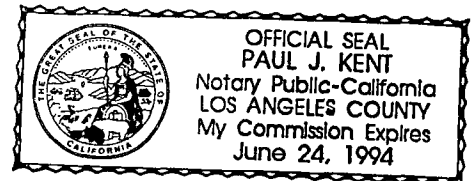
STATE OF CALIFORNIA)
) ss.
COUNTY OF LOS ANGELES)

On March 29, 1993, before me, a Notary Public in and for said County and State, personally appeared Jeffrey R. Moreland, ~~personally known to me~~ (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity on behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Paul J. Kent
Signature

(SEAL)



ORANGE COUNTY TRANSPORTATION AUTHORITY

CERTIFICATE OF ACCEPTANCE

This is to certify that the interests in the real property conveyed by the Grant Deed (San Diego Subdivision (Orange County)) dated March 29, 1993, from THE ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY, a Delaware corporation, to ORANGE COUNTY TRANSPORTATION AUTHORITY, ("OCTA") a governmental agency organized under the laws of the State of California, is hereby accepted by the undersigned officer of OCTA on behalf of OCTA pursuant to authority conferred by the resolution of the Board of Commissioners of OCTA adopted on December 14, 1992, and the Grantee consents to the recordation thereof by its duly authorized officer.

Dated: March 29, 1993

ORANGE COUNTY TRANSPORTATION
AUTHORITY

By: 

Name: Dana W. Reed

Title: Vice-Chairman



Attachment B. Assessor Parcel Map

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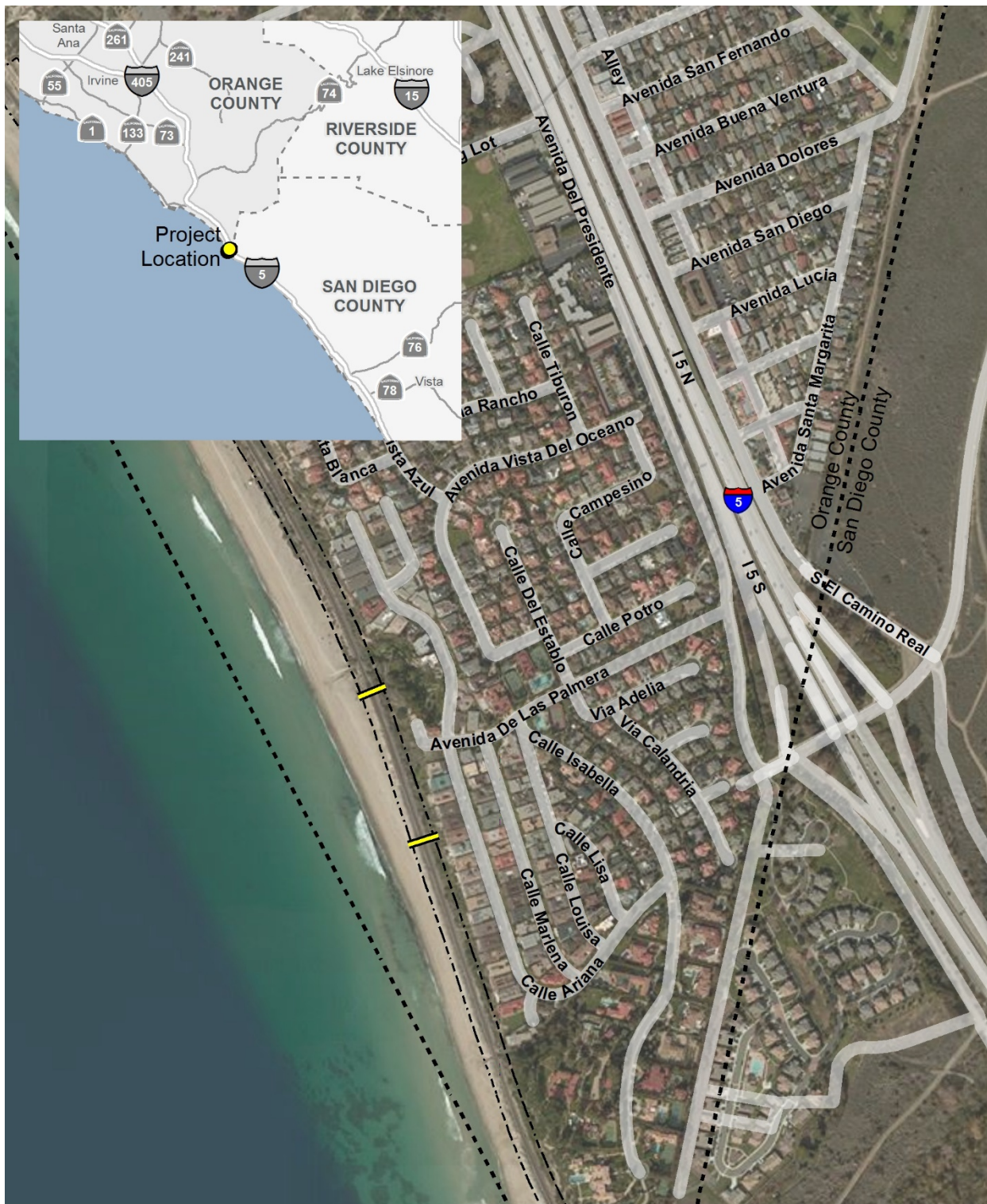
- Emergency Stabilization Limits
- Railroad ROW
- Mile Post
- Adjacent Parcels (within 100 ft)
- San Clemente State Beach





Attachment C. Vicinity Map

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- Approximate Project Limits
- - - Rail Right-of-way
- - - County Boundary



0 Feet 500

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- Emergency Stabilization Limits
- Railroad ROW
- Mile Post
- FEMA 1% Annual Chance Flood Hazard (Zone VE)





Attachment D. CEQA Notice of Exemption

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Notice of Exemption**Appendix E**

To: Office of Planning and Research
P.O. Box 3044, Room 113
Sacramento, CA 95812-3044

County Clerk

County of: _____

From: (Public Agency): _____

(Address)

Project Title: _____

Project Applicant: _____

Project Location - Specific:

Project Location - City: _____ Project Location - County: _____

Description of Nature, Purpose and Beneficiaries of Project:

Name of Public Agency Approving Project: _____

Name of Person or Agency Carrying Out Project: _____

Exempt Status: **(check one):**

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☐ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☐ Categorical Exemption. State type and section number: _____
- ☐ Statutory Exemptions. State code number: _____

Reasons why project is exempt:

Lead Agency _____

Contact Person: _____ Area Code/Telephone/Extension: _____

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? Yes No

Signature: Justin Fornelli Date: _____ Title: _____

Signed by Lead Agency Signed by Applicant

Authority cited: Sections 21083 and 21110, Public Resources Code.
Reference: Sections 21108, 21152, and 21152.1, Public Resources Code.

Date Received for filing at OPR: _____



Attachment E. Geotechnical Memorandum

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**Railroad Emergency Stabilization Project
Orange Sub MP 206.85
Geotechnical Memorandum for
Emergency Mitigation Permits No. 1 & 2
San Clemente, California**

**November 2021
Revised: February 2022**

Prepared for:
Southern California Regional Rail Authority (SCRRA)
2558 Supply St
Pomona, CA 91767

Prepared by:
HDR Engineering, Inc.
3230 El Camino Real, Suite 200
Irvine, CA 91768



HDR Engineering, Inc.

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1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

On September 10, 2021, Southern California Regional Rail Authority (“Metrolink” or “SCRRA”) informed HDR Engineering, Inc. (“Consultant” or “HDR”) of a concerning notification received from GMU Geotechnical, Inc. (GMU), a geotechnical firm working for the Cyprus Shores Community (Community) Homeowners Association in San Clemente, California (CA). The notification indicated that cracks have developed in a parking lot and in several buildings located at the crest of a coastal bluff to the east of the Orange Sub railroad track, near milepost (MP) 206.85. Portions of the Community are located over an ancient landslide and the concern was that the landslide, or a segment of it, may have become active posing a significant hazard to the Community and the railroad located at the toe of the coastal bluff. The railroad is owned by Orange County Transportation Authority (OCTA).

Metrolink requested that HDR review the report prepared by GMU (2021a) and a separate report prepared by OCTA (2021) to confirm their concern and to conduct a site visit to assess their claims. This effort was performed as a separate task under Consultant’s SCORE PM/CM On-Call Contract, E746A-20. Metrolink also approved HDR to conduct a geotechnical investigation and obtain the sub-consultant services of Kleinfelder to provide local engineering geologic support, Rail Surveyors and Engineers, Inc. (RSE) to provide surveying support, Sixense to provide instrumentation and monitoring services and Engineering Solution Services to assist with emergency funding and documentation support.

1.2 REPORT BACKGROUND

This technical memorandum was prepared to support SCRRA to obtain the California Coastal Commission emergency permit No. 1 as part of the Railroad Emergency Stabilization Project (Project) at MP 206.85 of SCRRA Orange Subdivision in the City of San Clemente, California. The Project site location is shown in Appendix A, Figure 1.

The Project includes two phases of riprap placement. The Emergency Permit No. 1 addresses the Phase 1 riprap with an amount of 12,500 tons placed between September 18, 2021 and October 2, 2021. The Emergency Permit No. 2 refers to the Phase 2 riprap placement occurred between December 17, 2021 and January 30, 2022 with an approximate amount of 5,500 tons. Limits of the Phase 1 and 2 ripraps are shown in Appendix A, Figure 2.

As part of the emergency permit No. 2, this memorandum was updated to reflect the new findings from the LiDAR surveys and inclinometer readings. The slope stability analyses were updated with the new findings and additional recommendations were provided to Metrolink.

The memo includes a summary of the relevant existing geotechnical data provided by other consultants as well as findings from the current geotechnical explorations performed by HDR. It also summarizes the temporary mitigation efforts and presents the results of the slope stability analysis prior to and after the temporary mitigation efforts. Responses to California Coastal Commissions’ review comments are provided in Section 11.0.

Although this memo was prepared for a 700-foot stretch of the railroad track within the SCRRA’s right-of-way (ROW) between Stations 5637+00 and 5644+00, it includes relevant information

from the adjacent Community (Cyprus Shores) because the limits of both ancient and recent landslides extend to that property as well. This information was compiled and provided to HDR by GMU (2021a).

2.0 PURPOSE

The purpose of this report is to:

- A) Document existing geologic, geotechnical, and seismic conditions, including a description of the ancient landslide and recent reactivation, subsurface materials, groundwater, regional faults, and seismic concerns relevant to the Project.
- B) Characterize on-going instability including visual observations and inclinometer measurements.
- C) Identify subsurface conditions that could potentially have an adverse impact on the stability of the existing slopes. An early identification of these conditions will provide the opportunity to consider alternatives during the planning, design, and construction phases.
- D) Provide preliminary slope stability analysis to investigate the stability conditions of the existing slopes prior and after temporary mitigation measures.

3.0 APPROACH

To accomplish the purpose of this memo, the following steps were taken:

- Document review
- Slope and track monitoring
- Documentation of temporary mitigation measures
- Subsurface investigation and geotechnical laboratory testing
- Geotechnical evaluations
- Technical memorandum preparation

4.0 REVIEW ENGINEERING STUDIES

This section contains information collected by GMU related to this landslide in this reach of the railroad alignment. References to subsurface information from previous explorations performed by other consultants are provided in the relevant sections of the memo.

4.1 ANCIENT LANDSLIDE

The Project site is located within an area containing an ancient landslide as mapped in the geologic map for the San Clemente Quadrangle (Tan, 1999). This ancient slide is evident by pre-development topography and confirmed during the subsurface investigations by GMU and HDR. This ancient landslide consisted of a depressed bowl-shaped feature encompassing the park, clubhouse, clubhouse parking lot, a sewer lift station within the parking lot, portions of Calle Ariana, all or portions of approximately 18 residential lots with the Community, and the

SCRRA rail track approximately between Stations 5635+00 and 5646+00. Approximate limits of the ancient landslide are shown in Appendix A, Figure 2.

Based on historic aerial photographs, the Community was graded in 1961 and consisted of cuts and fills to create 110 relatively level single-family residential pads, slopes, streets, the Community clubhouse, and a recreational park area. As part of the grading plan, fill was placed on top of the ancient landslide to raise the elevations within the Community. Grading cut/fill limits are shown in Appendix A, Figure 2.

The ancient landslide most likely occurred over 11,000 years ago during times of relatively high precipitation and lower sea levels, and similar landslides are a common occurrence within the Capistrano Formation bedrock. According to GMU, the base of the ancient slide is at about sea level and extends easterly at an angle of about 5 degrees with a relatively steep back scarp. It is our understanding that there have not been reports of deep-seated landslide movement within the Community with lateral displacement prior to the reactivation of a portion of the ancient landslide as first reported to GMU in October of 2020.

4.2 RECENT LANDSLIDE

Cracking within the parking lot of the Community clubhouse, empty lot at 4002 Calle Ariana, and the existing residence at 4004 and 4006 Calle Ariana was first reported to GMU in October of 2020. This cracking is associated with the reactivation of a portion of the ancient landslide as shown in Appendix A, Figure 2. The recent landslide is deemed to be activated due to the significant erosion of sand at the toe of the landslide (washed-out beach) during the past few years. According to GMU (2021a), the beach appears to have recently lost upwards of 15 to 20 vertical feet of sand in locations. The beach erosion is supported by review of historical aerial photos, field observations, and a comparison of topographic maps obtained from the County of Orange.

The recent landslide has been monitored by inclinometers and surveying as discussed in Section 5.0. Temporary mitigation measures to control the movements of the recent landslide, including two phases of riprap placement, are discussed in Section 6.0.

5.0 TRACK AND SLOPE MONITORING

Inclinometers

From November 2020 to June 2021, GMU installed six inclinometer casings at various locations to monitor slope movement and to help determine the reactivated landslide geometry. These inclinometer casings were surveyed periodically with a manual probe by GMU. The location of the inclinometers is shown in Appendix A, Figure 2 and the associated inclinometer charts are presented in Appendix E.

GMU installed one additional inclinometer casing within Boring GMU-01 located at the top of the coastal bluff in October 2021 (see Appendix A, Figure 2). This inclinometer casing was later equipped with an in-place inclinometer (IPI) by HDR. An IPI includes a string of sensors which can measure lateral movements of the inclinometer casing and therefore, provide the lateral deformation profile of subsurface soils at the point of installation. A second IPI string was installed inside the inclinometer casing at Boring R-21-002 recently performed by HDR in October 2021. Both IPI strings are connected to an automatic data acquisition system and being

monitored on a regular basis. Additional information regarding the automatic data acquisition system installed during recent fieldwork by HDR is presented in Section 7.4.

As indicated by the inclinometer graphs in Appendix E, significant movements (up to 3 inches) were recorded between July and September 2021. Due to the recent movements of the active landslide, four inclinometers (SI-1 [20-330-00], SI-3, SI-4, and SI-1 [21-119-00]) were sheared off rendering them useless for future measurements. This reduces the number of usable inclinometers to four, two of which are being monitored automatically by HDR and the other two are surveyed manually by GMU.

The IPI at the track level showed some compression type deformation around October 22, 2021 which was thought to be due to the adjustment of inclinometer casing to the profile of the drilled hole. Instead of re-baselining the inclinometer, HDR modified the threshold profile to keep the history of the movement until more data is collected from the IPI.

After placing Phase 1 riprap (as discussed in Section 6.0), the rate of movement reduced significantly; however, a small creep-type movement was still recorded by the inclinometers with maximum creep occurring between depths of 15 and 20 feet below the track level. Since the installation of the inclinometers in mid-October, a maximum cumulative movement of about 0.8 inches was recorded at the track-level inclinometer between October 19 to December 13, 2021. After an initial jump in the readings on October 23, 2021, most of the movement was relatively slow and subsurface (see Appendix E). However, a storm event occurred on December 14, 2021 and the maximum cumulative movement passed a 1-inch total. This 1-inch movement activated the alert system defined in the Track and Slope Monitoring Report (HDR, 2021). The continued creep was investigated in our slope stability analysis and is discussed in Sections 8.5, 9.0, and 11.0.

Survey

HDR's surveying team (RSE) conducted a survey of the track on September 11, 2021 and found out that the track alignment (at Station 5640+66) has shifted approximately 14 inches toward the ocean since November 2020. An additional movement of about 14 inches (toward the ocean) was recorded at the same location on the track between September 11, 2021 (the initial survey date) and October 2, 2021 (the final day of riprap placement [see Section 6.0]). In total, approximately 28 inches of movement was recorded at the ground surface (at the track level) from November 2020 to October 2, 2021.

On October 3 and 4, 2021, Herzog (a contractor to Metrolink) realigned the track and following surveys were conducted with a new baseline taken on October 5, 2021. Since then, RSE has surveyed the track mostly on a daily basis and recorded a cumulative movement of about 0.7 inches at Station 5640+66. After installation of IPIs and activation of alerting system, the frequency of the surveys was reduced and were limited to special events as defined in Track and Slope Monitoring Report (HDR, 2021).

6.0 TEMPORARY MITIGATION MEASURES

Based on the review of available reports and site condition observations, HDR recommended immediate installation of riprap materials along the west side of the railroad track as a temporary mitigation measure. The recommended location and quantity of the Phase 1 riprap was based on the stability analysis performed by GMU (2021b) as well as the location of the major

movements of the track and slope. It should be noted that due to the emergency nature of this Project, HDR did not perform independent subsurface investigations or independent slope stability analysis at that time to confirm GMU's analysis. The estimation of the riprap tonnage was based on the cross-sectional area of riprap shown on GMU's slope stability analysis (GMU 2021b) plus about 25 percent additional weight. It should also be noted that placing riprap on the beachside of the track was deemed to be the only feasible temporary solution for this Project considering the site conditions. HDR also recommended that additional monitoring of the track and other locations along the slope was required to ensure that the movement of the slope was controlled following the riprap placement. HDR further recommended that a permanent slope stability design should be developed and implemented as soon as possible.

The westerly riprap was proposed to compensate for the weight/shear resistance from the eroded sand (i.e., washed out beach) and to avoid the placement of additional weight on the east side of the track which may lead to instability of the rail track due to the presence of a potential clay seam under the rail track. Furthermore, placing riprap on the west side of the track was deemed appropriate because it would not hinder the permanent stabilization efforts proposed by GMU (2021a) on the east side of the track.

During Phase 1, approximately 12,500 tons of riprap was placed by Herzog along an approximate stretch of 700 feet between Stations 5637+00 and 5644+00 (see Appendix A, Figure 2). The riprap was placed in areas that previously contained riprap, which over the years has been washed away due to the significant loss of beach sand and storm events. Therefore, the riprap was an in-kind replacement that will remain to protect the railroad tracks. Riprap materials brought to the Project site mainly contained rocks with sizes of three (3) to five (5) feet. Placement of the Phase 1 riprap commenced on September 18, 2021 and continued until October 2, 2021.

After obtaining additional information on the geometry of the landslide, pre- and post-riprap placement, and evaluating the inclinometer data (which indicated a shallower shear zone), HDR refined the slope stability analysis and provided additional recommendations for the Phase 2 stabilization of the landslide, as discussed in Section 9.0.

7.0 GEOTECHNICAL INVESTIGATION AND LABORATORY TESTING

In October 2021, HDR conducted a subsurface exploration to evaluate geotechnical subsurface conditions within the SCRRRA ROW between Stations 5637+00 and 5644+00 and to evaluate GMU's proposed temporary mitigation plan.

HDR's scope of work for the fieldwork included the drilling, logging, and sampling of three (3) geotechnical soil borings. In addition, HDR installed one inclinometer casing at the track level and two IPs (one at the track level and another at the top of the coastal bluff) to automate the ground movement measurements.

7.1 PRE-DRILLING ACTIVITIES

Prior to the field exploration, HDR secured required permits for field investigations for the applicable regulatory agencies. Flagging and Roadway Worker-in-Charge (RWIC) was also coordinated with Metrolink for onsite field activities.

A site visit was performed to mark the exploration locations and evaluate access conditions for

drilling equipment and personnel. The exploration locations were marked in the field, using white paint, by measuring from known locations of existing site features using a measuring wheel and/or tape measure. Coordinates of each exploration location were recorded using a GPS device in the field during the investigation. A survey of the boring locations was also performed by an HDR subconsultant (RSE).

Underground Service Alert of Southern California (USA) and SCRRA were notified for clearance of underground utilities at each proposed exploration locations. In addition, a geophysical survey was performed by Atlas (a subconsultant to HDR) to delineate detectable utilities near boring locations. An RWIC was present to provide protection when performing pre-drilling activities within the railroad ROW.

7.2 SUBSURFACE EXPLORATION

Subsurface exploration consisted of advancing three 8-inch diameter hollow stem auger (HSA) borings to a maximum depth of approximately 76 feet below ground surface (bgs). The borings are located at the centerline of the track along an approximately 700-foot stretch of the Orange Subdivision between Stations 5637+00 and 5644+00. The approximate locations of the borings are shown in Appendix A, Figure 2. Approximate boring coordinates, ground surface elevations, and depths explored are summarized in Table 7-1.

Table 7-1. Subsurface Exploration Information

Boring ID	Latitude	Longitude	Ground Surface Elevation (feet)	Exploration Depth (feet)
R-19-001	33.39568	-117.59961	21.2	75.8
R-19-002 ⁽²⁾	33.39505	-117.59935	20.7	75.5
R-19-003	33.39445	-117.59911	20.4	76

Note:

- (1) Information presented in this table is approximate.
- (2) HDR installed an inclinometer casing in Boring R-21-002.

Borings were drilled during the Absolute Work Window (AWW), administered by Metrolink, between October 15 and 17, 2021 using a GTechdrill GT8 drilling rig equipped with an 8-inch diameter HSA. The boring locations were accessed through the existing track. The rig was loaded on a lo-railer at the Basilone Station and transported to the Project site. Drilling activities were performed while the rig was parked on the lo-railer. An RWIC was present to provide protection when performing field activities within the railroad ROW.

Continuous sampling was performed in the upper 20 to 30 feet of the borings using rock coring equipment. The intent was to identify the shear zone and depth to the hair-thin clay layer referred to by GMU (2021a). Additionally, Standard Penetration Tests (SPTs) were performed using a SPT sampler driven for a total penetration of 18 inches (or until practical refusal) into soil. At select depths within the HSA borings, ring samples were collected using a Modified California (MC) sampler. The interval and type of sampling within the HSA borings were selected by a Certified Engineering Geologist (CEG) from Kleinfelder (a subconsultant to HDR). The SPT or MC sampler was driven using a 140-pound automatic hammer falling from a 30-inch height and the blow counts per 6 inches of penetration were recorded in the boring logs. The

total number of hammer blows required to drive the SPT sampler the final 12 inches is termed the SPT blow count. The field sampling procedures were conducted in accordance with ASTM Standard Test Methods D1586 and D3550 for SPT and split-barrel sampling of soil, respectively. In addition to driven samples, bulk samples were also collected from drill cuttings at selected borings.

The test borings were logged in the field by a CEG from Kleinfelder. Each soil sample collected was reviewed and described in general accordance with the Unified Soil Classification System (ASTM D2487). Soil samples were delivered to AP Engineering and Testing for laboratory testing. Soil cuttings from drilling activities were stored in 55-gallon drums and stored onsite temporarily. Environmental samples were collected from the soil cuttings and delivered to Orange Coast Environmental laboratory for screening for hazardous materials. Later, the results of soil screening indicated that soil cuttings were not environmentally impacted, and therefore, the cuttings were thin-spread onsite by Herzog.

After completion of drilling, Borings R-21-001 and R-21-003 were backfilled with cement-bentonite grout and an inclinometer casing was installed in Boring R-21-002.

Geotechnical boring logs from current investigations are included in Appendix B. Note that the blow counts presented on the logs are actual field blow counts and have not been adjusted for the effects of overburden pressure, input driving energy, rod length, sampler correction, boring diameter, or other factors.

7.3 GEOTECHNICAL LABORATORY TESTING

Laboratory tests were performed on selected soil samples to determine the geotechnical engineering properties of subsurface materials. The following laboratory tests were performed:

- In-situ moisture content and density;
- Atterberg limits;
- Grain-size distribution;
- Percent passing No. 200 sieve;
- Direct Shear and five-pass residual;
- Corrosivity (soluble sulfate contents, chloride, pH, and resistivity).

All laboratory tests were performed in general accordance with ASTM procedures, except corrosivity tests, which were performed in accordance with the Caltrans procedures. Results of the laboratory tests are presented in Appendix C and summarized in Table C-1.

7.4 INSTRUMENTATION

During the October 2021 field work, HDR's subconsultant (Sixense) installed two IPIs and connected them to an automatic data acquisition system for instrumentation monitoring purposes. One IPI string was installed inside the inclinometer casing at Boring R-21-002 (at the track level) with a length of 50 feet and the second IPI string with a length of 45 feet was installed inside a borehole recently drilled by GMU at the crest of the coastal bluff (shown as GMU-01 in Appendix A, Figure 2). Sixense also installed other components of the data acquisition system including dataloggers, a gateway, and a solar panel at locations on the side of the track (selected by Metrolink) and at the top of the bluff selected by the representatives of Sixense and Cyprus Shores Community. The gateway establishes the communication between the dataloggers and Sixense's web-based platform Geoscope. Readings from the IPI sensors

are collected in accordance with a pre-determined schedule, developed by HDR and approved by Metrolink, and are sent to the Geoscope website to be processed and displayed on charts. Additionally, deformation thresholds for the inclinometer readings were developed by HDR and Metrolink and an alerting system was set up by Sixense to notify relevant personnel from HDR, Metrolink, and Herzog if the thresholds are exceeded. More information regarding monitoring efforts is provided in HDR (2021).

8.0 GEOTECHNICAL FINDINGS AND EVALUATIONS

8.1 GEOLOGIC SETTING

The Project area is located in the coastal section of the Peninsular Ranges Geomorphic Province. This geomorphic province encompasses an area that extends approximately 900 miles from the Transverse Ranges and the Los Angeles Basin south to the southern tip of Baja California (Norris and Webb, 1990; Harden, 1998). The province varies in width from approximately 30 to 100 miles. In general, the province consists of rugged mountains underlain by Jurassic metavolcanic and metasedimentary rocks, and Cretaceous igneous rocks of the southern California batholith. Generally, in the portion of the Project area, marine and non-marine terrace deposits overlay Tertiary age sedimentary bedrock. A geologic map of the Project area is presented in Appendix A, Figure 3.

The Peninsular Ranges Province is traversed by a group of sub-parallel faults and fault zones trending roughly northwest. Several of these faults are considered active faults. The Elsinore, San Jacinto, and San Andreas faults are active fault systems located northeast of the Project area and the Newport-Inglewood Rose Canyon, Coronado Bank Fault Zone, San Diego Trough, and San Clemente faults are active faults located west of the Project area. Major tectonic activity associated with these and other faults within this regional tectonic framework consists primarily of right-lateral, strike-slip movement.

8.2 SITE GEOLOGY AND SUBSURFACE EARTH MATERIALS

Geologic units encountered during the field investigation or mapped by GMU in the vicinity of the Project site included Artificial Fill (af), Beach Deposits (Qb), Landslide Debris (Qls), Fine-grained Tertiary Deposits (Tsh), and Old Lacustrine (Qol) (see Appendix A, Figure 2).

A geologic cross section was developed depicting subsurface conditions at a critical location of landslide along the rail track (see Cross section A-A' in Appendix A, Figure 6). The location of the cross section was selected after reviewing the results of the slope stability analysis performed by GMU (2021).

Material properties used in our geotechnical evaluations are shown on the slope stability analysis figures in Appendix F. The analysis relied upon the information developed by GMU for the portion of the landslide which is within the Community properties. However, the geological units within the Metrolink ROW were updated using the information obtained during the recent geotechnical investigations. Also, the material properties were refined to better address the recent findings.

Generalized descriptions of the subsurface soils are provided below. More detailed descriptions are provided on the geotechnical boring logs in Appendix B.

Artificial Fill (af)

Within the Metrolink ROW, fill was generally observed along the existing railroad track areas. Fill consisted of silty sand with gravel and up to 3 feet in thickness. Fill may be thicker in other areas along the track alignment and/or other unexplored areas.

Within the Cyprus Shores ROW, artificial fill materials were encountered within the borings performed by GMU to depths of up to 35 feet. These artificial fill materials consisted of silty clay, sandy clay, clayey sand, and silty sand. Where encountered, the artificial fill materials were generally dense/stiff and damp to wet (GMU, 2021a).

Beach Deposits (Qb and Qgc)

Beach Deposits generally consist of unconsolidated late Holocene marine sediments consisting of fine- to coarse-grained poorly graded sand. These are the sands typically associated with Southern California beaches, and are generally limited to within about 100 to 200 feet of the shoreline at the vicinity of the Project. Sandy beach deposits were observed at depths between about 3 and 27 feet bgs in the borings completed for this Project.

A layer of gravelly/cobbly deposits (Qgc) including well rounded, very smooth basalt particles was encountered under the sandy beach deposits at depths between 17 and 24 feet bgs. These materials were identified as trace gravel/cobble in the northern most boring at an approximate depth of 30 feet bgs.

Landslide Debris (Qls)

Generally, this unit is highly fragmented to largely coherent landslide deposits, unconsolidated to moderately well consolidated (California Geologic Survey [CGS], 2007). The landslide deposits encountered within the Metrolink ROW consisted of debris from the Capistrano Formation and generally consisted of soft to hard claystone with interbedded layers of siltstone.

During GMU's subsurface investigation, both recently active landslide materials and ancient landslide materials were observed. The active landslide materials are a reactivation of a portion of the ancient landslide. Where observed, the ancient landslide materials were derived from terrace deposits (Qtr) and bedrock of the Capistrano Formation (Tc). The active landslide materials are also composed of terrace deposits (Qtr) and bedrock materials (Tc) in addition to artificial fill (af) within the active failure. The active landslide materials derived from artificial fill are composed of silty clay, sandy clay, clayey sand, and silty sand. Both recently active and ancient landslide materials derived from terrace deposits consist predominantly of gray to orange brown, damp to wet, stiff to hard, silty sands and sandy silt with some zones of gravel and cobble up to about 6 inches in diameter. According to GMU, landslide derived from Capistrano Formation bedrock consists of an intact block failure and is composed of moderately hard to hard siltstone overlying a discrete, planar, hairline, clay rupture surface (GMU, 2021).

HDR/Kleinfelder did not observe this hairline clay rupture within the Metrolink ROW possibly because the feasible drilling/sampling methods did not allow for such an observation or because the clay seam is thoroughly mixed or modified in the re-activated zone downslope of the area described by GMU. GMU possibly identified this clay rupture during the downhole logging of a large-diameter hole drilled using a bucket auger at the top of the bluff. However, a zone of highly sheared material was identified at a depth of about 34 ft bgs in Boring R-21-002 at the contact between the Capistrano Formation (Tc) and Landslide Debris (Qls) derived from Capistrano Formation.

Fine-Grained Tertiary Deposits (Tsh or Tc) – Capistrano Formation

Generally, Capistrano Formation mapped within the Project area consists of marine sandstone and siltstone, mudstone, and diatomaceous shale (CGS, 2007). However, the Capistrano Formation observed in our borings consists of hard claystone with interbedded layers of weakly cemented siltstone. The Capistrano Formation was observed in our borings, beginning at depths ranging from about 28 to 30 feet bgs and extending to the maximum depth explored (about 76 feet bgs).

Within the Cyprus Shores ROW, bedrock of the Capistrano Formation was encountered within borings performed by GMU to the maximum depth drilled (approximately 71 feet bgs). According to GMU, the bedrock was observed to be moderately hard to hard, gray to dark gray, clayey siltstone. Where observed, the bedrock materials were massive with no discernable bedding or additional potential planes of weakness (GMU, 2021a).

Old Lacustrine, Playa and Estuarine (Paralic) Deposits (Qol)

Old Lacustrine, Playa, and Estuarine (Paralic) deposits generally consist of poorly sorted, moderately permeable, reddish-brown, interfingered strandline, beach, estuarine and colluvial deposits composed of siltstone, sandstone, and conglomerate (CGS, 2007). These materials were not observed during our field investigation but is mapped at the vicinity of the Project site as shown on the geologic map (Appendix A, Figure 2).

8.3 GROUNDWATER

During the subsurface exploration performed by HDR, groundwater was encountered at depths between 16 and 20 feet bgs.

GMU developed an elevation profile of the groundwater levels based on observations during their subsurface investigation, water level measurements taken from perforated inclinometer casings installed at DH-4, DH-5, DH-1 (21-116-00) and DH-1 (21-119-00), and the multi-level grouted-in-place piezometers installed at DH-5. They concluded that a static groundwater level surface should be expected to be encountered at an elevation ranging from about 10 to 23 feet above Mean Sea Level (MSL), which corresponds to a depth of about 35 feet below the parking lot elevation, and about 5 to 10 feet below the toe-of-slope elevation (on the east side of the track). This groundwater level is higher than that observed during the recent subsurface investigation by HDR, and therefore, GMU's groundwater levels were used in the slope stability analysis (see Appendix A, Figure 6).

8.4 SEISMICITY

Our review of California Earthquake Hazards Zone Application (EQ Zapp) available online by California Geological Survey (CGS, 2021) and the USGS Quaternary Fault and Fold Database of the United States (USGS, 2021) indicates that the Project site is not underlain by known active or potentially active faults, nor does the site lie within an Alquist-Priolo Earthquake Fault Zone.

The principal seismic hazard that could affect the site is ground shaking resulting from an earthquake occurring along one of several major active or potentially active faults in Southern California. A regional fault map is provided in Appendix A, Figure 4. Seismic hazard map of the Project area is presented in Appendix A, Figure 5.

Seismic stability of the slopes was evaluated in accordance with the Metrolink criteria (Metrolink,

2021) considering the AREMA Level 2 event (corresponding to a return period of 475 years or a 10 percent in 50 years uniform hazard). A horizontal acceleration equal to one-half of the AREMA Level 2 peak ground acceleration (PGA) was applied to the soil mass. The site-adjusted PGA for 475-year return period using the USGS uniform hazard tool and considering a site class D was equal to 0.32g (g is gravitational acceleration). Therefore, a horizontal acceleration of 0.16g was used in the seismic (pseudo-static) slope stability analysis.

8.5 SLOPE STABILITY

A series of slope stability analyses were performed by GMU to evaluate the stability of the slope and develop permanent mitigation solutions (GMU, 2021). A review of GMU's slope stability analysis results indicated that cross section A-A' (as shown in Appendix, Figure 2) is the most critical cross section at the Project site. Therefore, this cross section was selected for further analysis in this memo.

For Permit No. 1, HDR performed a series of slope stability analysis with a modified geometry (based on LiDAR surveys performed by RSE), and revised subsurface conditions and material properties obtained from the recent geotechnical investigations as well as IPI data. Only portions of the slope stability model within the Metrolink ROW were revised.

Since the hairline clay seam was not observed at the depth inferred by GMU (2021a) within the borings performed at the track level, three scenarios were considered for slope stability analysis:

- Case 1: Sheared zone at depth indicated by inclinometer at Borings R-21-002
- Case 2: Sheared zone as inferred in GMU (2021a)
- Case 3: Sheared zone as identified in recent subsurface explorations by HDR.

Additional monitoring of the inclinometers, installed in October 2021, indicated a shallower slip surface as shown in Case 1. Furthermore, the material properties of the shear zone were revised in the updated analysis to better reflect the landslide response during pre- and post-riprap placement. The results indicated a factor of safety close to unity even after placement of Phase 1 riprap. Therefore, HDR provided additional recommendations for the Phase 2 riprap placement. Results of updated slope stability analyses are presented in Appendix F and discussed in Section 9.0.

9.0 SUMMARY AND CONCLUSIONS

Phase 1 of the emergency riprap placement occurred between September 18, 2021 and October 2, 2021 with an approximate amount of 12,500 tons placed at the Project site. During Phase 2, approximately 5,500 tons of emergency riprap was placed between December 17, 2021 and January 30, 2022.

Phase 1 Riprap Placement

The results of slope stability analysis indicated that a marginal stability condition (factor of safety [FOS] of 1.0) existed prior to the temporary mitigations. All three scenarios listed in Section 8.5 indicated this marginal safety level.

After placing the Phase 1 riprap, the factor of safety increased, however, the stability results indicates that for a shallower shear zone, the safety factor is smaller (i.e., FOS of 1.1 for case 1

versus FOS of 1.2 for Case 3). IPI readings at the track level seem to confirm the slope stability results as it has shown slight movements at depth above 25 ft bgs.

It should be noted that a FOS of 1.5 is recommended in practice for static conditions. Therefore, a FOS of 1.1 indicates that the balance between the driving and resisting forces can be disturbed with external forces much smaller than that for an FOS of 1.5. These external force on the sliding wedge could be due to vibrations from passing trains, higher hydrostatic pressure due to higher groundwater elevations, heavy ocean wave action at the toe, earthquake, etc.

Results of the seismic slope stability analysis indicated a FOS of 0.7 for AREMA level 2 horizontal acceleration (0.16g) after Phase 1 riprap placement. The industry-accepted FOS for seismic conditions is 1.1. Therefore, the slope would be unstable for seismic conditions.

Phase 2 Riprap Placment

Since the results of the Phase 1 riprap placement indicated close to marginal stability conditions and creep-type movements were recorded by the inclinometers, HDR recommended that an additional 5,000 to 6,000 tons of riprap be placed at the toe of the slope and the riprap side slope be regraded to 1.5H:1V (horizontal to vertical) or flatter. These actions were deemed necessary to further stabilize the landslide movements until an intermediate structural improvement can be engineered, permitted, and constructed.

It should be noted that the term “stabilize” in this Project does not mean to achieve an industry-accepted factor of safety for the static and seismic conditions but the factor of safety was increased to a level that the large initial movements of the landslide and the secondary creep-type movements can be controlled. Additionally, the ocean wave action impacting the riprap and other factors such as groundwater variations and possibility of water seeping to the landslide cracks may lead to another phase of riprap placement or other forms of short-term stabilization in the future.

In summary, the slope should be considered temporarily stable in a static condition but does not meet the design requirements for a newly constructed slope in either static or seismic conditions. A permanent solution is urgently recommended in order to establish the FOS required by SCRRA design criteria and industry standards. Additionally, we recommend that the riprap be monitored for any loss of material due to the wave action. This may be performed through a comparison of LiDAR surveys over time.

10.0 LIMITATIONS

This technical memorandum has been prepared to support SCRRA to obtain emergency permit from California Coastal Commissions (CCC). The information provided in this memo are considered preliminary and are limited to subjects requested by CCC. This memo may not be used by others without the written consent of our client and our firm. The conclusions and recommendations presented in this report are based upon the generally accepted principles and practices of geotechnical engineering utilized by other competent engineers at this time and place. No other warranty is either expressed or implied.

Additionally, the preliminary conclusions and recommendations presented in this memo have been based upon the subsurface conditions encountered at discrete and widely spaced locations and at specific intervals below the ground surface. Soil and groundwater conditions were observed and interpreted at the exploration locations only. This information was used as

the basis of analyses and recommendations provided in this memo. Conditions may vary between the exploration locations and seasonal fluctuations in the groundwater level may occur due to variations in rainfall, local groundwater management practices, and tidal effects.

Since a portion of the landslide falls within the Cyprus Shores Community ROW, the analyses results and conclusions provided in this memo heavily relies on the information provided by other consultants (GMU, 2021a).

11.0 RESPONSE TO CCC'S COMMENTS

California Coastal Commissions (CCC) reviewed the first version of this geotechnical memo dated November 2021 and requested additional information. The memo was updated to reflect our most recent understanding of the landslide movements and the slope geometry, pre- and post-riprap placement. Responses to CCC's comments pertinent to the geotechnical memo are provided below.

Comment 1: Description/characterization of recent landslide movement that has occurred since the placement of the emergency riprap.

As mentioned in Section 5.0, the inclinometer at the track level showed some compression type deformation around October 22, 2021 which was thought to be due to the initial adjustment of the inclinometer casing to the profile of the drilled hole. The inclinometer sensors within the top 25 feet continued to exhibit movements at a relatively small rate (less than 0.01 inches per day) until another jump was recorded on December 14, 2021 during a rain event. Updated Inclinometer charts are provided in Appendix E.

Comment 2: Evaluation of the potential causes of the recent landslide activity, and discussion of why the emergency riprap did not successfully halt the slide, contrary to the expectations of the HDR (Nov 2021) slope stability analysis.

It was noted in the previous version of this memo that the placement of riprap only slightly increases the stability of the slope; however, the marginal stability conditions still remains a concern and the factor of safety even after placement of riprap is still below the industry-accepted values for both static and seismic conditions.

Our recommended Phase 1 riprap quantity was based on the assumptions made in GMU's analysis. Further evaluations of the LiDAR data indicated that the slope geometry for the pre-mitigation conditions should be updated from what GMU had assumed. The updated assumptions led to lower strength properties for the shear zone and subsequently impacted the FOS for the post-mitigation cases.

HDR does not guarantee that additional movement will not happen in the future and further mitigations may be necessary in the future. Until the landslide is stabilized with structural elements to the level that the FOS increases to the industry-accepted values, the emergency conditions of the landslide remains unchanged. Our recommendations have been to control the large movements of the landslide, as observed in September and October of 2021.

Comment 3: Discussion of any loss or movement of rock from the emergency revetment, and discussion of any movement in the context of the previously submitted rock mobility analysis.



As observed during the past few months, the landslide has a dynamic condition at the toe due to significant wave action. At some point, we observed up to 5 feet of erosion immediately to the north of the site. During the past few weeks, some of the eroded sand has been deposited back by the wave action. The movements of the sand also leads to the movement of riprap and loss of rock at the toe of the riprap. We have been monitoring the beach erosion by visual observations following significant events such as storms or major high/low tides. We have also been taken LiDAR surveys when necessary. A detailed discussion on rock mobility analysis is provided in Attachment I of Emergency Permit Package.

Comment 4: Discussion of any modifications/refinements that have been (or will be) made to the slope stability model being used to inform the temporary stabilization efforts.

As mentioned in Response Comment No. 2, the refinement of slope geometry for the pre-mitigation conditions led to lower strength properties for the shear zone (see Appendix F). Subsequently, the FOS for the post-mitigation conditions (Phase 1) also reduced. These results and the inclinometer readings indicated that additional resisting force is necessary at the toe. Further evaluations indicated that an additional 5,000 to 6,000 tons of riprap is required to increase the FOS to 1.2 in the static conditions (Phase 2). It should be noted that this FOS value is still below the recommended FOS of 1.5 for the static conditions; however, a safety margin of 20 percent will still contribute to controlling the landslide movements until a final design is developed and implemented by OCTA. Future events may still lead to additional landslide movements and may require placement of additional riprap or other forms of temporary mitigation measures.

12.0 REFERENCES

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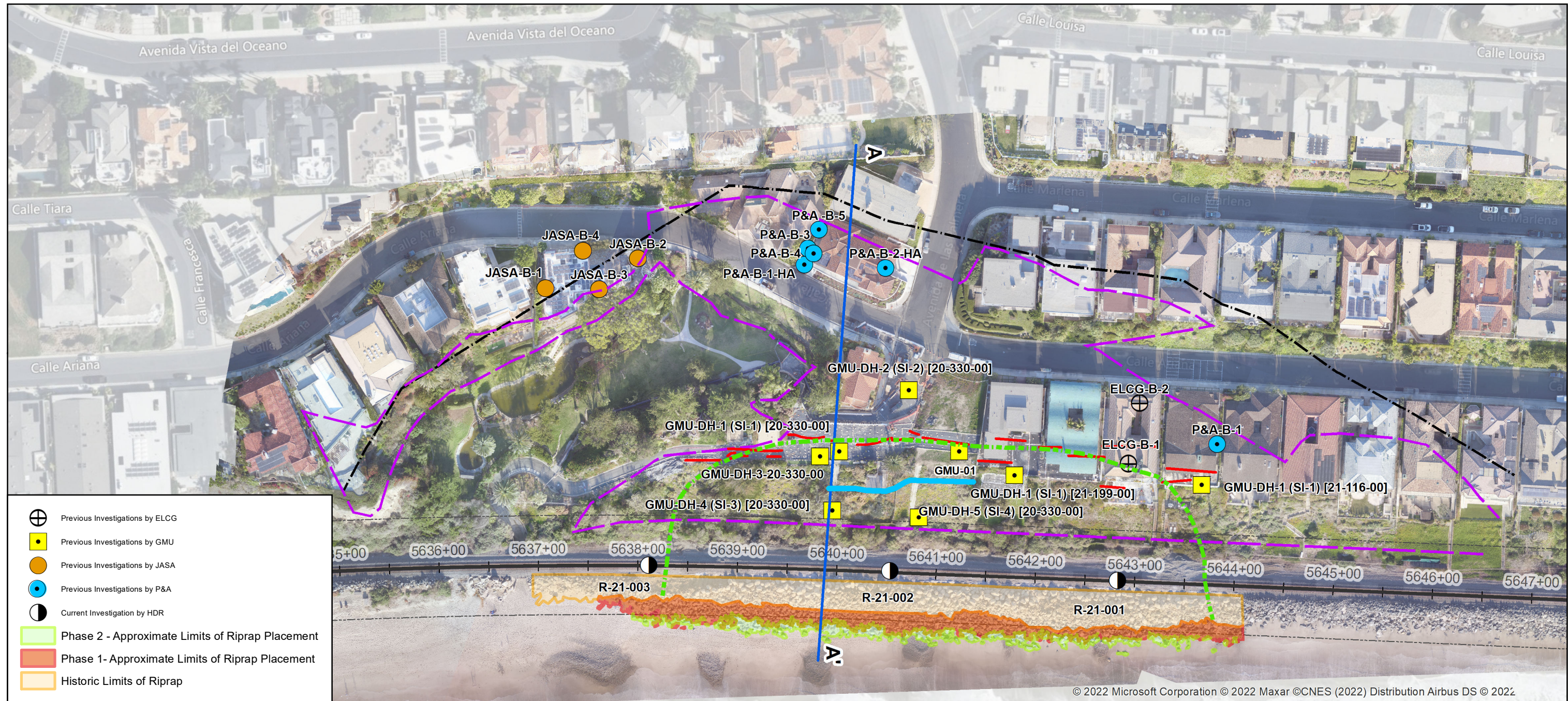
Tan, S.S., 1999, Geologic Map of the San Clemente 7.5' Quadrangle, Orange and San Diego Counties, California: A Digital Database, California Division of Mines and Geology.

Appendix A

Figures



VICINITY MAP
RAILROAD EMERGENCY STABILIZATION PROJECT
SAN CLEMENTE, CALIFORNIA

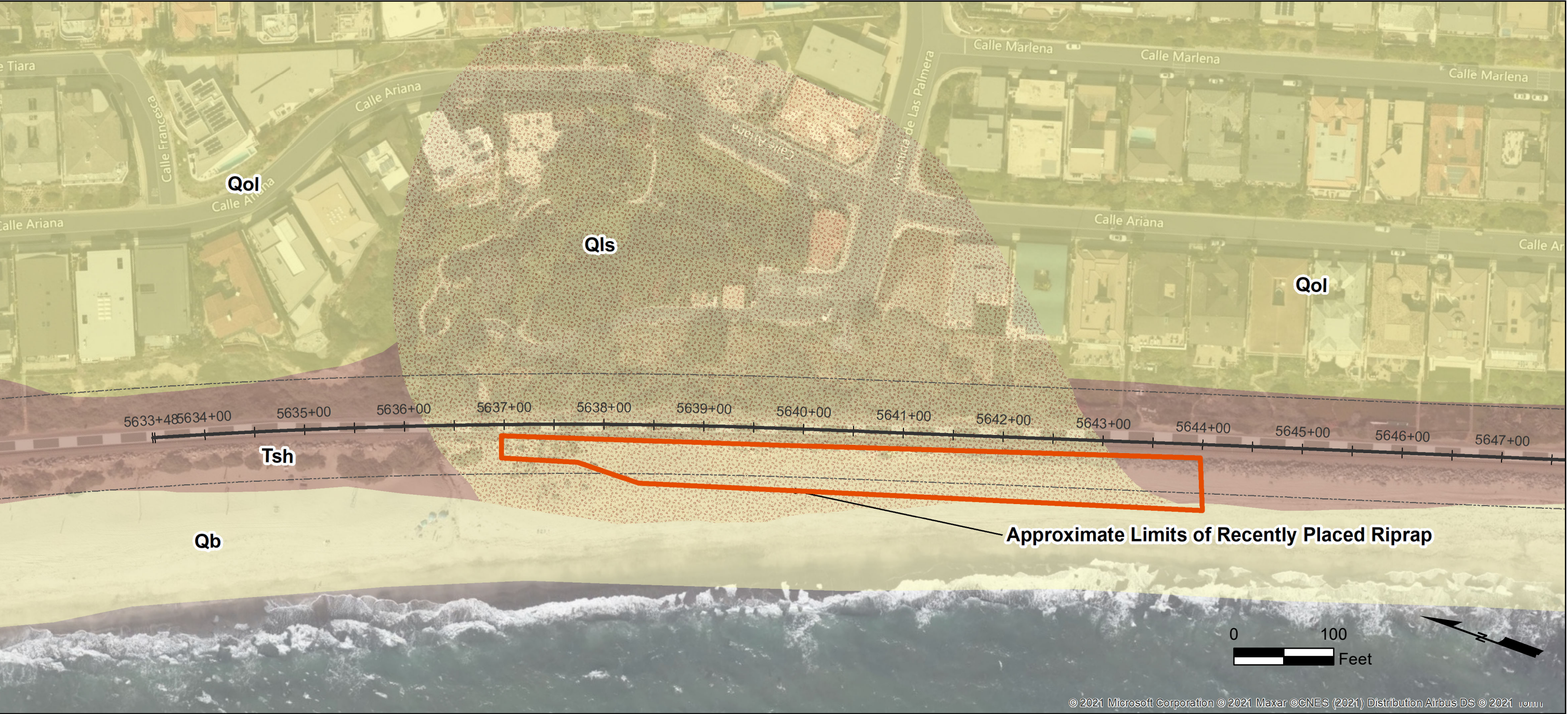


- ORIGINAL GRADING DESIGN CUT/FILL LINE
- CRACKING AND/OR SEPARATION
- LIMITS OF OLD SLIDE. BASED ON ORIGINAL TOPOGRAPHY
- APPROXIMATE LIMITS OF RECENT LANDSLIDE
- APPROXIMATE LIMITS OF MID-SLOPE FISSURE
- SCRRRA ROW

0 100
Feet



**BORING LOCATION MAP
RAILROAD EMERGENCY STABILIZATION PROJECT
SAN CLEMENTE, CALIFORNIA**



© 2021 Microsoft Corporation © 2021 Maxar © CNES (2021) Distribution Airbus DS © 2021

Reference: CGS, 2007

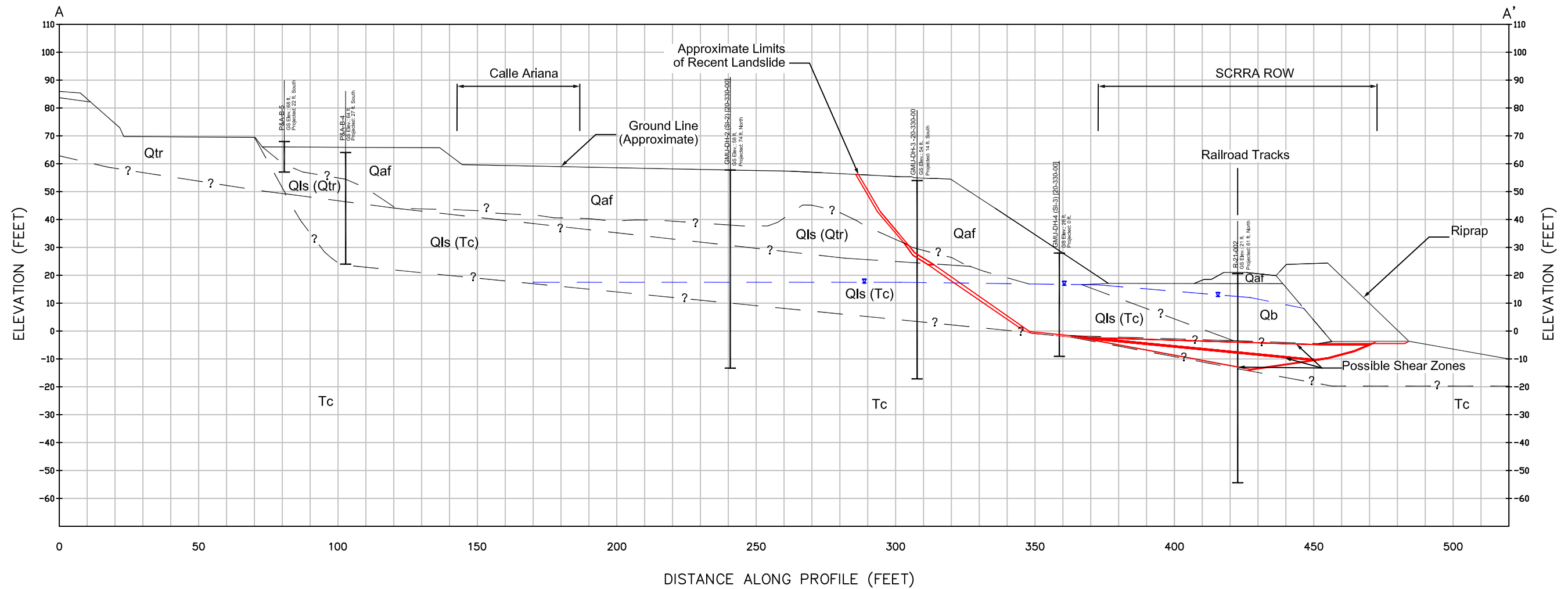
- Qls** **Landslide Deposits** - may include debris flows and older landslides of various earth material and movement types; unconsolidated to moderately well-consolidated
- Qol** **Old Lacustrine, Playa, and Estuarine (Paralic) Deposits** - slightly to moderately consolidated, moderately dissected fine-grained sand, silt, mud, and clay from lake, playa, and estuarine deposits of various types

- Tsh** **Fine-grained Tertiary age formations** - includes fine-grained sandstone, siltstone, mudstone, shale, siliceous and calcareous sediments
- Qb** **Beach Deposits** - unconsolidated marine beach sediments consisting mostly of fine- and medium-grained, well-sorted sand

GEOLOGY MAP
RAILROAD EMERGENCY STABILIZATION PROJECT
SAN CLEMENTE, CALIFORNIA



**SEISMIC HAZARD MAP
RAILROAD EMERGENCY STABILIZATION PROJECT
SAN CLEMENTE, CALIFORNIA**



Legend:

Qaf	Artificial Fill (Qaf)	Qls (Tc)	Landslide Deposits (Qls) Capistrano Formation	Qtr	Terrace Deposits (Qtr)
Qls (Qtr)	Landslide Deposits (Qls) Terrace Deposits	Qb	Marine Beach Deposits	Tc	Capistrano Formation (Tc)
<p>— x — Groundwater (Approximate)</p> <p>— ? — Geologic Contact (Approximate)</p>					

Subsurface Cross Section A-A'

Railroad Emergency Stabilization Project
San Clemente, California

Date
NOV 2021

Figure
6

Appendix B

Boring Logs by HDR



UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

MATERIAL TYPES	CRITERIA FOR ASSIGNING SOIL GROUP NAMES			GROUP SYMBOL	SOIL GROUP NAMES & LEGEND	
COARSE-GRAINED SOILS >50% RETAINED ON NO. 200 SIEVE	GRAVELS >50% OF COARSE FRACTION RETAINED ON NO 4. SIEVE	CLEAN GRAVELS <5% FINES	$C_u \geq 4$ AND $1 \leq C_c \leq 3$	GW	WELL-GRADED GRAVEL	
			$C_u < 4$ AND/OR $1 > C_c > 3$	GP	POORLY-GRADED GRAVEL	
		GRAVELS WITH FINES >12% FINES	FINES CLASSIFY AS ML OR MH	GM	SILTY GRAVEL	
			FINES CLASSIFY AS CL OR CH	GC	CLAYEY GRAVEL	
	SANDS >50% OF COARSE FRACTION PASSES NO 4. SIEVE	CLEAN SANDS <5% FINES	$C_u \geq 6$ AND $1 \leq C_c \leq 3$	SW	WELL-GRADED SAND	
			$C_u < 6$ AND/OR $1 > C_c > 3$	SP	POORLY-GRADED SAND	
		SANDS AND FINES >12% FINES	FINES CLASSIFY AS ML OR MH	SM	SILTY SAND	
			FINES CLASSIFY AS CL OR CH	SC	CLAYEY SAND	
FINE-GRAINED SOILS >50% PASSES NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT <50	INORGANIC	PI>7 AND PLOTS>"A" LINE	CL	LEAN CLAY	
			PI>4 AND PLOTS<"A" LINE	ML	SILT	
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OL	ORGANIC CLAY OR SILT	
	SILTS AND CLAYS LIQUID LIMIT >50	INORGANIC	PI PLOTS >"A" LINE	CH	FAT CLAY	
			PI PLOTS <"A" LINE	MH	ELASTIC SILT	
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OH	ORGANIC CLAY OR SILT	
HIGHLY ORGANIC SOILS		PRIMARILY ORGANIC MATTER, DARK IN COLOR, AND ORGANIC ODOR		PT	PEAT	

OTHER SYMBOLS

MATERIALS	SAMPLERS
Asphalt	SPT (2" OD)
Aggregate Base	Modified California (3" OD)
Boulders & Cobbles	California (2.5" OD)
Fill	Bulk
Topsoil	Shelby Tube
WELL	HQ Core
Concrete Grout/Fill	Sonic Core
Bentonite/Grout Seal	INITIAL WATER LEVEL MEASUREMENT (WITH DATE)
Sand Pack + Solid Pipe	STABILIZED WATER LEVEL MEASUREMENT (WITH DATE)
Sand Pack + Slotted Pipe	

SOIL DESCRIPTION FORMAT/ORDER

Color Secondary Component PRIMARY COMPONENT (ASTM GROUP SYMBOL), gradation/plasticity, with component, trace component, contains component, consistency/relative density, moisture, source.

GRAIN SIZES	
U.S. STANDARD SIEVE	200 40 10 4 3/4" 3" 12"
SILTS AND CLAYS	SAND
	FINE MEDIUM COARSE
	GRAVEL
	FINE COARSE
	COBBLES BOULDERS

PENETRATION RESISTANCE				
SAND & GRAVEL		SILT & CLAY		
RELATIVE DENSITY	BLOWS/FOOT (N_{60})	CONSISTENCY	BLOWS/FOOT*	UNC. COMP. STRENGTH (TSF)
VERY LOOSE	0 - 4	VERY SOFT	0 - 1	0 - 1/4
LOOSE	5 - 10	SOFT	2 - 4	1/4 - 1/2
MEDIUM DENSE	11 - 30	MEDIUM STIFF	5 - 8	1/2 - 1
DENSE	31 - 50	STIFF	9 - 15	1 - 2
VERY DENSE	OVER 50	VERY STIFF	16 - 30	2 - 4
		HARD	OVER 30	OVER 4

* NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1-3/8 INCH I.D.) SPLIT-BARREL SAMPLER THE LAST 12 INCHES OF AN 18-INCH DRIVE (ASTM-1586 STANDARD PENETRATION TEST).

NOTES

bgs BELOW GROUND SURFACE
c COHESION
CD CONSOLIDATED DRAINED TRIAXIAL
CN CONSOLIDATION
CR CORROSION
CU CONSOLIDATED UNDRAINED TRIAXIAL
DS DIRECT SHEAR
EI EXPANSION INDEX
HY HYDROMETER
MD MAX DENSITY (COMPACTION)
 N_{60} BLOW COUNT, Corrected for Hammer Energy Only
PI PLASTICITY INDEX
PR PERMEABILITY
RV R-VALUE
SA SIEVE ANALYSIS
SE SAND EQUIVALENT
TC CYCLIC TRIAXIAL
TR TIME RATE OF CONSOLIDATION
UC UNCONFINED COMPRESSION
UU UNCONSOLIDATED UNDRAINED TRIAXIAL

INCREASING VISUAL
MOISTURE CONTENT

↑
WET
MOIST
DRY

COMPONENT PERCENTAGE

MOSTLY >50%
SOME 30 - 50%
LITTLE 15 - 29%
FEW 5 - 14%
TRACE <5%

Field Boring Legend



Railroad Emergency Stabilization Project
San Clemente, CA

Date

NOV 2021

Figure

LOGGED BY: SHR (KLF) DATE: START 10/16/21 END 10/16/21
 STATION & OFFSET: NA, NA LATITUDE: 33.39445 LONGITUDE: -117.59909 ELEVATION (ft): 20.4
 DRILL RIG: GTechdrill GT8 DRILL METHOD: HSA DRILLING COMPANY: 2R Drilling BOREHOLE DEPTH (ft): 75.8
 CASING TIP DEPTH: NA BIT DIAMETER: 8" GROUNDWATER DATA: DEPTH: 19.0 ft DEPTH:
 HAMMER TYPE: Automatic HAMMER EFFICIENCY: 87% NOT ENCOUNTERED ☐ TIME: TIME:
 CHECKED BY (DATE): MKS EFFICIENCY MEASURED ☐ GW NOT MEASURED ☐ DATE: DATE:

ELEVATION (ft)	DEPTH (ft)	SAMPLER	SAMPLE NO./ CORE RUN	FIELD BLOWS/6 in	POCKET PEN (ksf)	% FINES	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	OTHER TESTS	MATERIAL GRAPHIC	DESCRIPTION	REMARKS
-20	0										Aggregate Base; 3-inch diameter Ballast Rock	
			Run 1								Silty SAND with GRAVEL (SM); yellowish brown; moist; coarse to fine SAND; coarse to fine GRAVEL; [FILL (af)]	
	5		Run 2						CR		Poorly-graded SAND (SP); pale brown; moist; coarse to medium SAND; few fine GRAVEL; uncemented homogeneous SAND; [BEACH DEPOSITS (Qb)]	
	10		Run 3			2			SA CR		medium to fine SAND	
	15		Run 4						CR			
	20			28 29 21				3.8			Poorly-graded SAND with GRAVEL (SP); dense; pale brown; wet; coarse to fine SAND; coarse to fine GRAVEL	
											COBBLES and BOULDERS; [GRAVEL/COBBLE DEPOSITS (Qgc)]	Heavy rig chatter
	25			9 17 23	10.0	89		17.3	SA PI		Lean CLAY (CL); hard; very dark greenish gray; moist; low plasticity; interbedded CLAYSTONE and SILTSTONE; few coarse to fine SAND; [LANDSLIDE DEBRIS (Qls) CAPISTRANO FORMATION]	Described as very soft, no cohesion
				4 5 17	10.0						Clayey SAND with GRAVEL (SC); medium dense; very dark greenish gray; wet	very soft clay to 28' bgs
				9 19 33	10.0						CLAYSTONE; interbedded CLAYSTONE and	
-30												



Boring Log










Railroad Emergency Stabilization Project
San Clemente, CA

Date

NOV 2021

Boring

R-21-001

ELEVATION (ft)	DEPTH (ft)	SAMPLER	SAMPLE NO./ CORE RUN	FIELD BLOWS/6 in	POCKET PEN (ksf)	% FINES	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	OTHER TESTS	MATERIAL GRAPHIC	DESCRIPTION	REMARKS
-10	30			13 24 40	10.0	79			SA PI		SILTSTONE; very dark greenish gray; moist; low plasticity; little medium to fine SAND; micaceous; [UNDISTURBED CAPISTRANO FORMATION (Tcs)]	finely laminated @ 30' bgs
				14 24 40	10.0							
				15 27 43	10.0							
-15	35											
-20	40		1A	27 50/6"	10.0	80	106	19.6	SA PI DS			
-25	45		2A/2B	40 50/5"	10.0							
-30	50											
-35	55		3A	25 50/3"		90			SA PI		high plasticity	Gypsum on bedding surfaces
-40	60											



Boring Log

Railroad Emergency Stabilization Project
San Clemente, CA

Date

NOV 2021

Boring

R-21-001

ELEVATION (ft)	DEPTH (ft)	SAMPLER	SAMPLE NO./ CORE RUN	FIELD BLOWS/6 in	POCKET PEN (ksf)	% FINES	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	OTHER TESTS	MATERIAL GRAPHIC	DESCRIPTION	REMARKS
-45	65	4A	35	50/4"	10.0	90	96	25.7	SA PI DS			
-50	70											
-55	75	5A	26	50/3"	10.0	90			PI			
<p>Boring terminated at 75.8 feet bgs. Groundwater encountered at 19 feet bgs. Borehole backfilled with cement-bentonite grout.</p>												



Boring Log

Railroad Emergency Stabilization Project
San Clemente, CA

Date

NOV 2021

Boring

R-21-001

LOGGED BY: SHR (KLF) DATE: START 10/16/21 END 10/17/21
 STATION & OFFSET: NA, NA LATITUDE: 33.39505 LONGITUDE: -117.59933 ELEVATION (ft): 20.65
 DRILL RIG: GTechdrill GT8 DRILL METHOD: HSA DRILLING COMPANY: 2R Drilling BOREHOLE DEPTH (ft): 75.5
 CASING TIP DEPTH: NA BIT DIAMETER: 8" GROUNDWATER DATA: DEPTH: 16.5 ft DEPTH:
 HAMMER TYPE: Automatic HAMMER EFFICIENCY: 87% NOT ENCOUNTERED ☐ TIME: TIME:
 CHECKED BY (DATE): MKS EFFICIENCY MEASURED ☐ GW NOT MEASURED ☐ DATE: DATE:

ELEVATION (ft)	DEPTH (ft)	SAMPLER	SAMPLE NO./ CORE RUN	FIELD BLOWS/6 in	POCKET PEN (ksf)	% FINES	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	OTHER TESTS	MATERIAL GRAPHIC	DESCRIPTION	REMARKS
20	0										Aggregate Base; 3-inch diameter Ballast Rock	
			Run 1								Silty SAND with GRAVEL (SM); yellowish brown; moist; coarse to fine SAND; coarse to fine GRAVEL; [FILL (af)]	
			Run 2								Poorly-graded SAND (SP); light yellowish brown; moist; coarse to medium SAND; uncemented homogeneous SAND; [BEACH DEPOSITS (Qb)]	
15	5										very pale brown	
			Run 3			1			SA		Well-graded SAND (SW); very pale brown; moist; coarse to fine SAND; uncemented SAND	
											Poorly-graded SAND (SP); very pale brown; moist; coarse to medium SAND; uncemented SAND	
			Run 4								Poorly-graded SAND with SILT (SP-SM); very pale brown; wet; coarse to fine SAND; weakly laminated; few small shell fragments	
											COBBLES and BOULDERS; few coarse GRAVEL clasts (Qgc)	GRAVEL/COBBLE deposits noted by driller from 16.5' to 24'. Well rounded, very smooth basalt
0	20											
			Run 5								Clayey SAND with GRAVEL (SC); [LANDSLIDE DEBRIS (Qls) CAPISTRANO FORMATION]	No recovery; cuttings and drilling conditions indicate washed out sand conditions
-5	25											
											CLAYSTONE; interbedded CLAYSTONE and	
30	30			10	10.0							



Boring Log

Railroad Emergency Stabilization Project
San Clemente, CA

Date

NOV 2021

Boring

R-21-002

ELEVATION (ft)	DEPTH (ft)	SAMPLER	SAMPLE NO./ CORE RUN	FIELD BLOWS/6 in	POCKET PEN (ksf)	% FINES	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	OTHER TESTS	MATERIAL GRAPHIC	DESCRIPTION	REMARKS
-10	30		Run 6	21 38		75	90	31.9	SA PI DS		SILTSTONE; soft; very dark greenish gray; wet; coarse to fine SAND; low plasticity; finely laminated; mostly intact micaceous	mostly intact; some thin sandy laminations
											highly sheared with rotated fragments	
-15	35			15 27 41							CLAYSTONE; interbedded CLAYSTONE and SILTSTONE; very dark greenish gray; moist; [CAPISTRANO FORMATION (Tcs)]	
				14 28 40								
-20	40		1A	41 70	10.0	85	98	21.9	SA PI DS CR			mostly intact; some thin sandy laminations
-25	45		2A	49 50/4"	10.0	85	108 108	19.1 18.8	SA CR PI UC UU		increase in fine SAND; some very weak laminations	mostly intact; some thin sandy laminations
-30	50											mostly intact; some thin sandy laminations
-35	55		3A	35 50/4"	10.0	85			SA CR PI		decrease in SAND	mostly intact; some thin sandy laminations
-40	60											mostly intact; some thin sandy laminations



Boring Log




Railroad Emergency Stabilization Project
San Clemente, CA

Date

NOV 2021

Boring

R-21-002

ELEVATION (ft)	DEPTH (ft)	SAMPLER	SAMPLE NO./ CORE RUN	FIELD BLOWS/6 in	POCKET PEN (ksf)	% FINES	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	OTHER TESTS	MATERIAL GRAPHIC	DESCRIPTION	REMARKS
-45	65			54 50/6"	10.0						increase in fine SAND; some very weak laminations	
-50	70											
-55	75			50/5"	10.0						high plasticity; some weak laminations	
<p>Boring terminated at 75.5 feet bgs. Groundwater encountered at 16.5 feet bgs. A 2.75"-dia. inclinometer was installed inside boring.</p>												



Boring Log

Railroad Emergency Stabilization Project
San Clemente, CA

Date

NOV 2021

Boring

R-21-002

LOGGED BY: SHR/MC (KLF) DATE: START 10/17/21 END 10/17/21
 STATION & OFFSET: NA, NA LATITUDE: 33.39568 LONGITUDE: -117.59959 ELEVATION (ft): 21.17
 DRILL RIG: GTechdrill GT8 DRILL METHOD: HSA DRILLING COMPANY: 2R Drilling BOREHOLE DEPTH (ft): 76
 CASING TIP DEPTH: NA BIT DIAMETER: 8" GROUNDWATER DATA: DEPTH: 16.0 ft DEPTH:
 HAMMER TYPE: Automatic HAMMER EFFICIENCY: 87% NOT ENCOUNTERED ☐ TIME: TIME:
 CHECKED BY (DATE): MKS EFFICIENCY MEASURED ☐ GW NOT MEASURED ☐ DATE: DATE:

ELEVATION (ft)	DEPTH (ft)	SAMPLER	SAMPLE NO./ CORE RUN	FIELD BLOWS/6 in	POCKET PEN (ksf)	% FINES	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	OTHER TESTS	MATERIAL GRAPHIC	DESCRIPTION	REMARKS
0	0										Aggregate Base; 3-inch diameter Ballast Rock	
20	20		Run 1								Silty SAND with GRAVEL (SM); yellowish brown; moist; coarse to fine SAND; coarse to fine GRAVEL; up to 1.5-inch diameter GRAVEL [FILL (af)]	
5	5		Run 2			1	107	8.1	SA DS		Poorly-graded SAND (SP); very pale brown; moist; coarse to medium SAND; uncemented SAND; slightly oxidized; [BEACH DEPOSITS (Qb)]	
15	15		Run 3								pale brown; wet	
10	10		Run 4								wet	Becomes saturated; No recovery
5	5											
0	0			8							Poorly-graded SAND with GRAVEL (SP); medium dense; yellowish brown; wet; coarse to fine SAND; coarse to fine GRAVEL; few GRAVEL loose; trace GRAVEL	
25	25			6							medium dense; few GRAVEL	
-5	-5			8							trace GRAVEL; well-rounded	Possible COBBLES/BOULDER per
30	30			3								
				4								
				5								
				5								
				7								
				7								
				5								
				7								
				7								
				5								



Boring Log

Railroad Emergency Stabilization Project
San Clemente, CA

Date

NOV 2021

Boring

R-21-003

ELEVATION (ft)	DEPTH (ft)	SAMPLER	SAMPLE NO./ CORE RUN	FIELD BLOWS/6 in	POCKET PEN (ksf)	% FINES	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	OTHER TESTS	MATERIAL GRAPHIC	DESCRIPTION	REMARKS
-10	30			8 12 17		68			SA PI		CLAYSTONE; interbedded CLAYSTONE and SILTSTONE; olive gray; wet; [CAPISTRANO FORMATION (Tcs)]	driller. No recovery
				12 25 31								
				4 50/6"								
	35			14 17 23								
-15				12 24 39								
				21 39 50/5"							very dark greenish gray	Sample disturbed
	40											
-20												
	45		2	29 50/5"		79	108	19.2	SA PI DS		thin interbedded layers; micaceous	
-25												
	50			12 50/6"								
-30												
	55			33 50/4"								
-35												
	60			22 50/6"								
-40												



Boring Log






Railroad Emergency Stabilization Project
San Clemente, CA

Date

NOV 2021

Boring

R-21-003

ELEVATION (ft)	DEPTH (ft)	SAMPLER	SAMPLE NO./ CORE RUN	FIELD BLOWS/6 in	POCKET PEN (ksf)	% FINES	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	OTHER TESTS	MATERIAL GRAPHIC	DESCRIPTION	REMARKS
65				33 50/3"							very dark olive gray	
-45												
70				50 50/6"							very dark olive	
-50												
75				12 50/6"								
Boring terminated at 76 feet bgs. Groundwater encountered at 16 feet bgs. Borehole backfilled with cement-bentonite grout.												



Boring Log

Railroad Emergency Stabilization Project
San Clemente, CA

Date

NOV 2021

Boring

R-21-003

Appendix C

Laboratory Test Results



TABLE C-1
SUMMARY OF SOIL LABORATORY DATA
Project: Railroad Emergency Stabilization Project - San Clemente Orange Sub Mp 206.85
Project No.: 10324064



Boring No.	Sample Depth (ft)	Soil Type (USCS)	Sample Elev. (ft)	Moisture Content (%)	Dry Density (pcf)	Gradation			Compaction		Atterberg Lim			Direct Shear Strength				UU Triaxial		Unconfined Compression	Consolidation		R- Value	Corrosion Analyses			
						Gravel (%)	Sand (%)	Fines (%)	Max. Dry Density (pcf)	Optimum Moisture Content (%)	LL	PL	PI	φ' (deg)	c' (psf)	φ' (deg)	c' (psf)	Maximum Deviator Stress (ksf)	Axial Strain (%)		Swell (+) or Collapse (-) (%)	Swell or Collapse Pressure (ksf)		pH	Resistivity (Ω-cm)	Sulfate (ppm)	Chloride (ppm)
R-21-001	5.0-10.0	SP	15																								
R-21-001	10.0-15.0	SP	10																					8.6	1,173	110	528
R-21-001	15.0-20.0	SP	5																								
R-21-001	10.0-20.0	SP	10			6	92	4																			
R-21-001	19.0-20.5	SP	1	3.8																							
R-21-001	25.0-26.5	CL	-5	17.3		0	11	89			44	20	24														
R-21-001	29.5-31.0	CL	-9			0	21	79			42	20	22														
R-21-001	40.0-40.5	CL	-20	19.6	106.1	0	20	80			38	20	18	39	700	32	200										
R-21-001	55.0-55.5	CH	-35			0	10	90			57	19	38														
R-21-001	65.0-65.5	CH	-45	25.7	96.2									27	600	27	450										
R-21-001	75.0-75.5	CH	-55																								
R-21-002	9.0-14.0	SP	12			0	99	1																			
R-21-002	30.5-34.0	CL	-10	31.9	90.2	0	25	75			42	18	24	27	250	27	200										
R-21-002	30.5-34.0	CL	-10											28	300	28	200										
R-21-002	40.0-40.5	CL	-19	21.9	98.4	0	15	85			44	18	26							11.2				8.4	336	2,766	326
R-21-002	45.0-45.5	CL	-24	19.1	107.7																						326
R-21-002	45.5-46.0	CL	-25	18.8	107.5													18.7	13.6								
R-21-002	55.0-55.5	CL	-34			0	15	85			44	18	26											8.4	336	2,766	326
R-21-003	5.0-10.0	SP	16	8.1	106.5	0	99	1						37	200	32	0										
R-21-003	30.0-31.5	CL	-9			4	28	68			43	17	26														
R-21-003	45.0-46.5	CL	-24	19.2	107.7	0	21	79			41	19	22	32	2000	32	250										

Notes:

The laboratory tests were performed in general accordance with the following standards:

Dry Density Test - ASTM Test Method D2937

Moisture Content Test - ASTM Test Method D2216

No. 200 Wash Test - ASTM Test Method D1140

Compaction Test - ASTM Test Method D1557

Resistance R-Value and Expansion Pressure - Cal Test 301

Grain Size Analysis and Hydrometer - ASTM Test Method D422

Direct Shear Test - ASTM Test Method D3080

One-Dimensional Consolidation Test - ASTM Test Method D2435

Atterberg Limits Test - ASTM Test Method D4318

Corrosivity Tests - DOT CA 532/643 - pH, DOT CA 417 - soluble sulfates, DOT CA 422 - chlorides, DOT CA 643 - minimum resistivity

Consolidated Undrained Triaxial Test - ASTM Test Method D4767

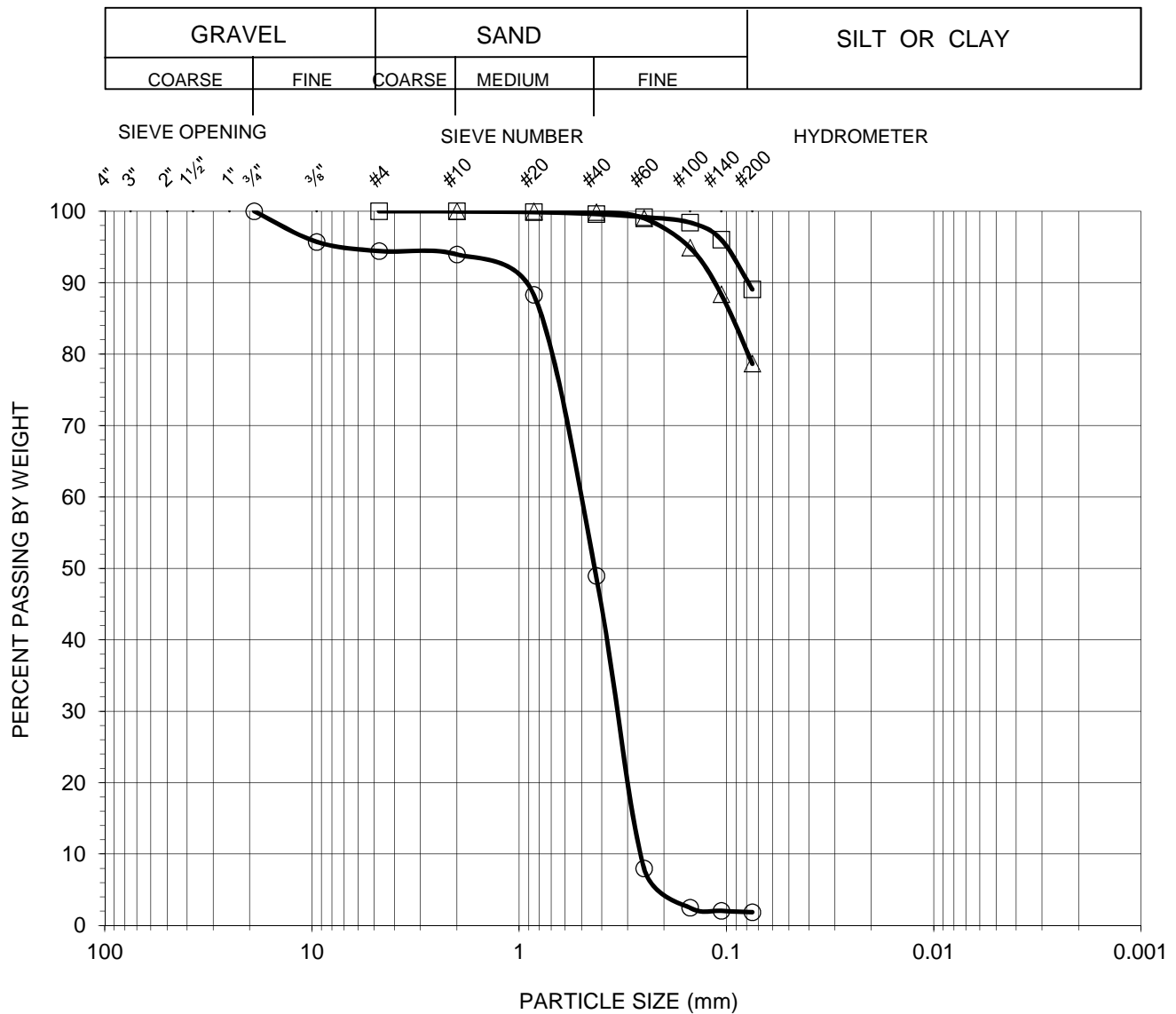
Unconsolidated Undrained Triaxial Test - ASTM Test Method D2850

Unconfined Compression Test - ASTM Test Method D2166



GRAIN SIZE DISTRIBUTION CURVE ASTM D 6913

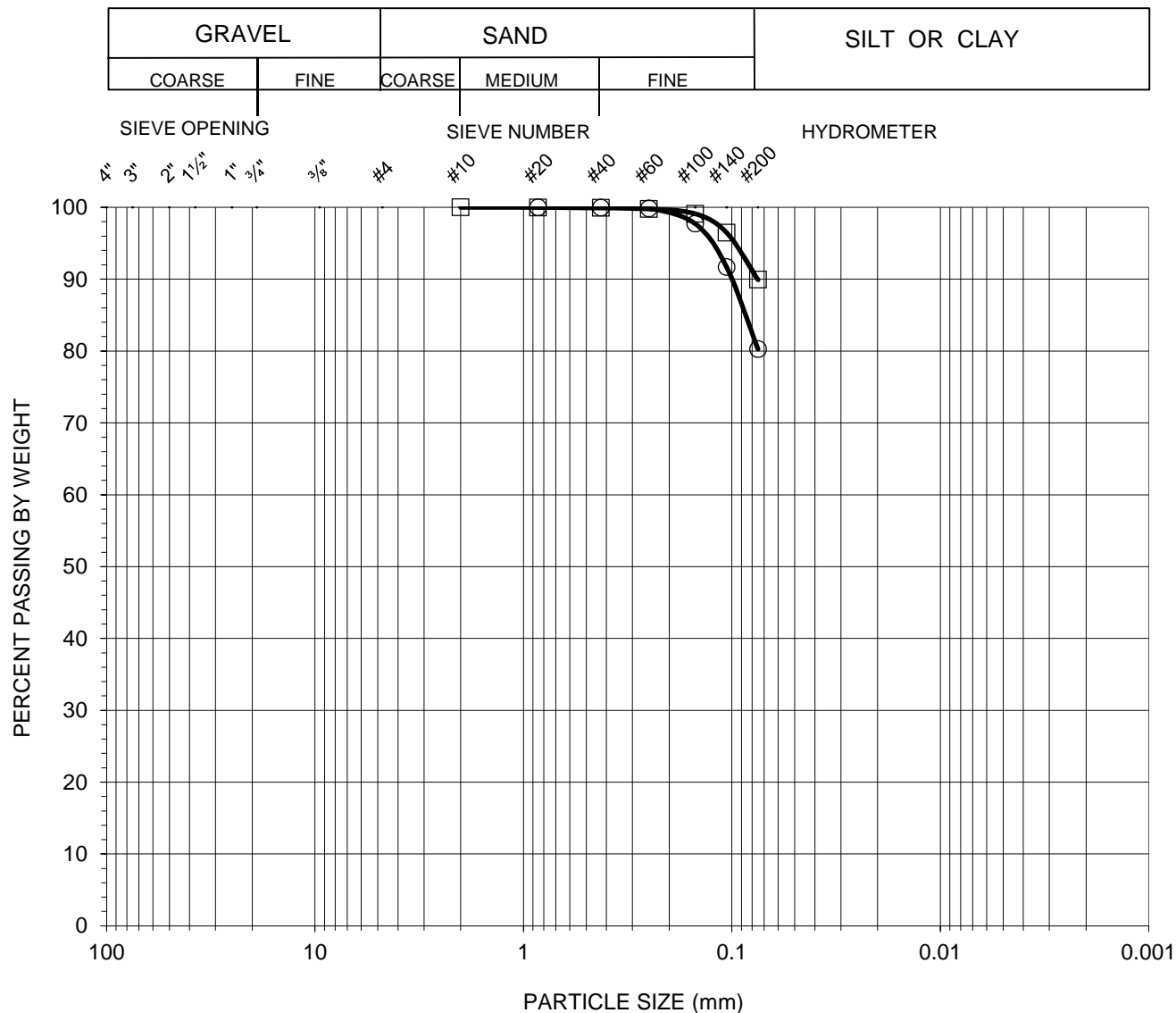
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Project Name: Cyprus Shores Landslide Mitigation Computed by: JP Date: 11/02/21
Project No.: 10235826 Checked by: AP Date: 11/03/21





GRAIN SIZE DISTRIBUTION CURVE ASTM D 6913

Client Name: HDR Tested by: ST Date: 11/02/21
Project Name: Cyprus Shores Landslide Mitigation Computed by: JP Date: 11/02/21
Project No.: 10235826 Checked by: AP Date: 11/03/21

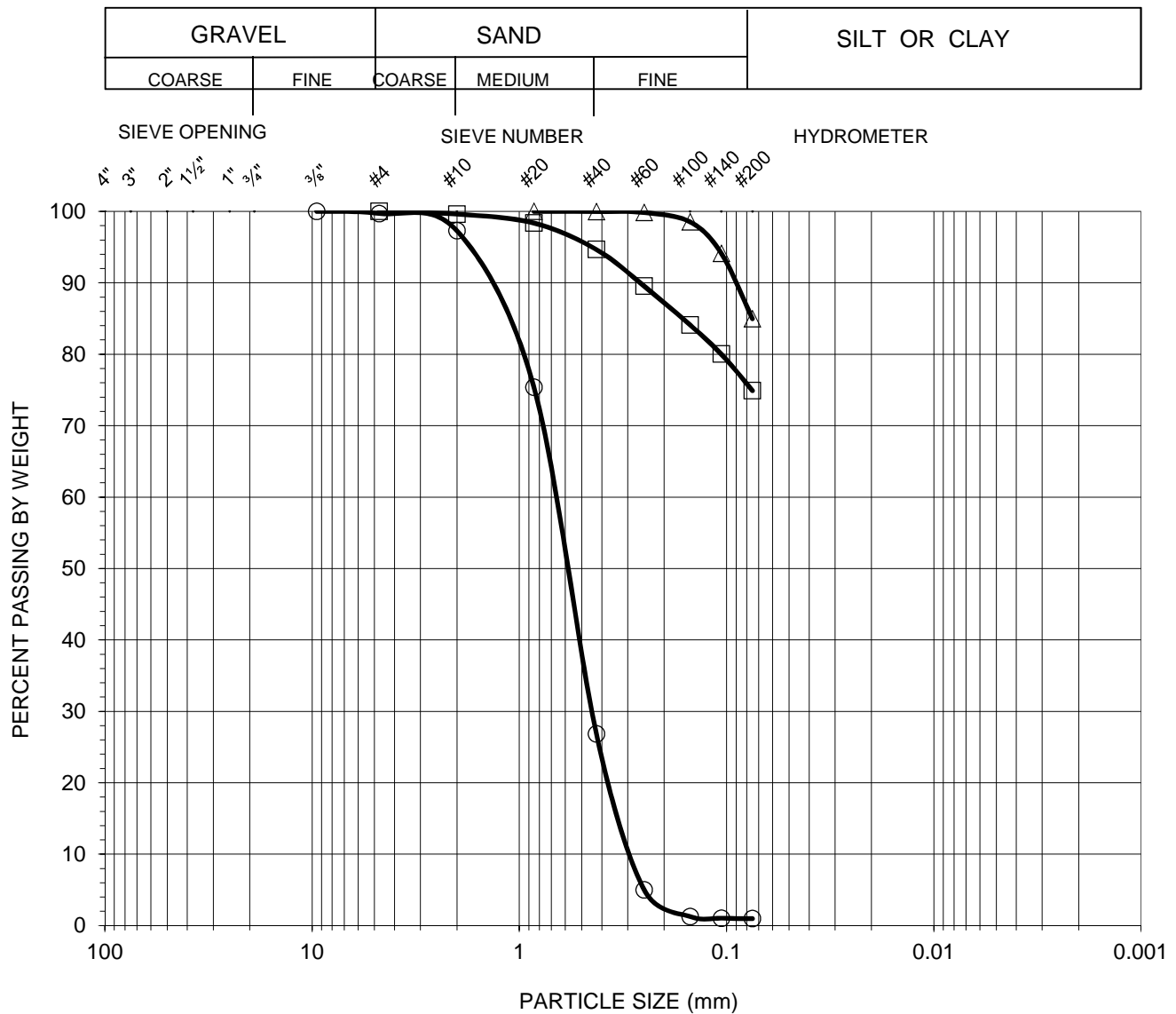


Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	R-21-001	1A	40-40.5	0	20	80	38:20:18	CL
□	R-21-001	3A, 4A & 5A	55-55.5, 65-65.5 & 75-75.5	0	10	90	57:19:38	CH



GRAIN SIZE DISTRIBUTION CURVE ASTM D 6913

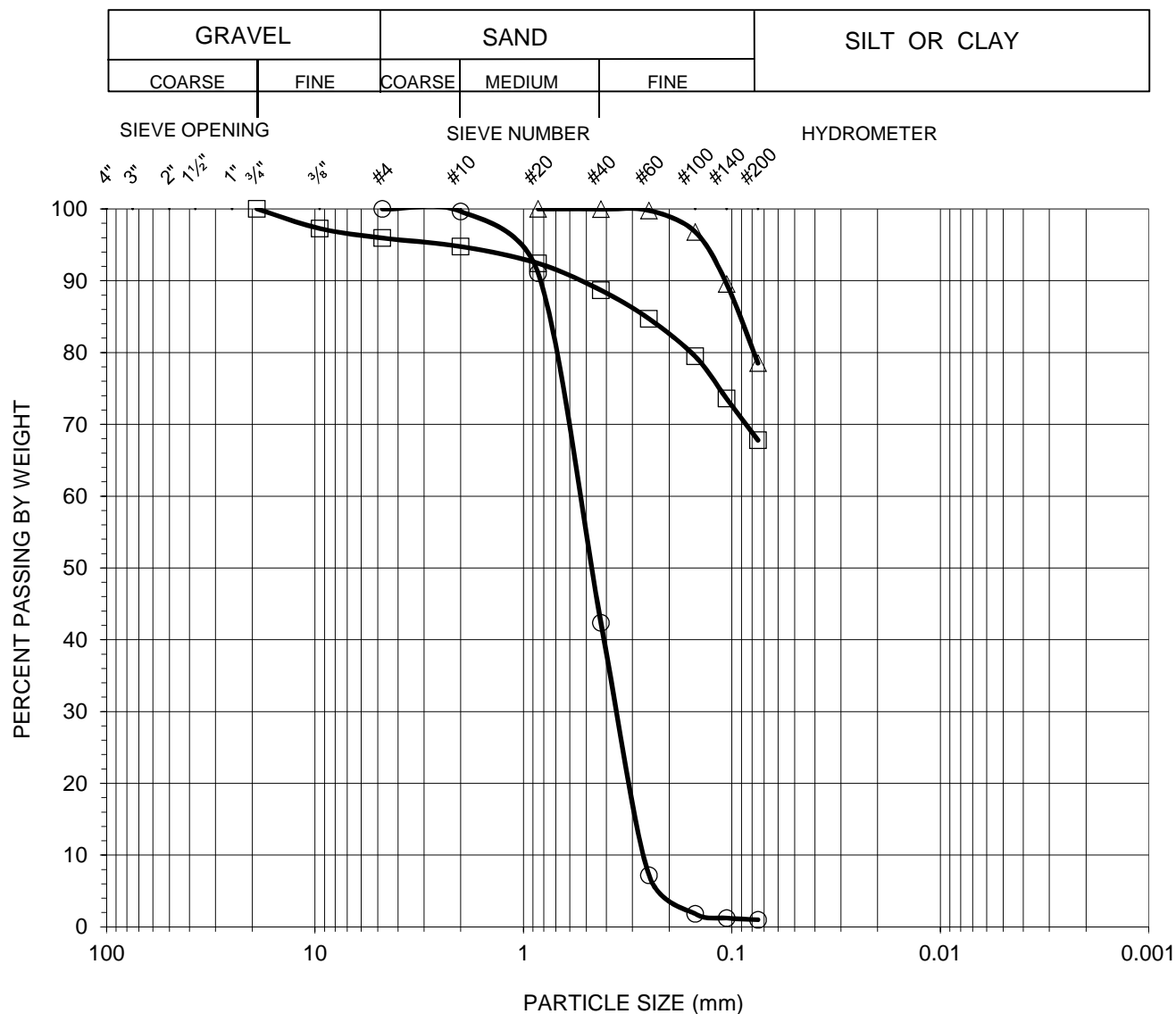
Client Name: HDR Tested by: ST Date: 11/02/21
Project Name: Cyprus Shores Landslide Mitigation Computed by: JP Date: 11/02/21
Project No.: 10235826 Checked by: AP Date: 11/03/21





GRAIN SIZE DISTRIBUTION CURVE ASTM D 6913

Client Name: HDR Tested by: ST Date: 11/02/21
Project Name: Cyprus Shores Landslide Mitigation Computed by: JP Date: 11/02/21
Project No.: 10235826 Checked by: AP Date: 11/02/21

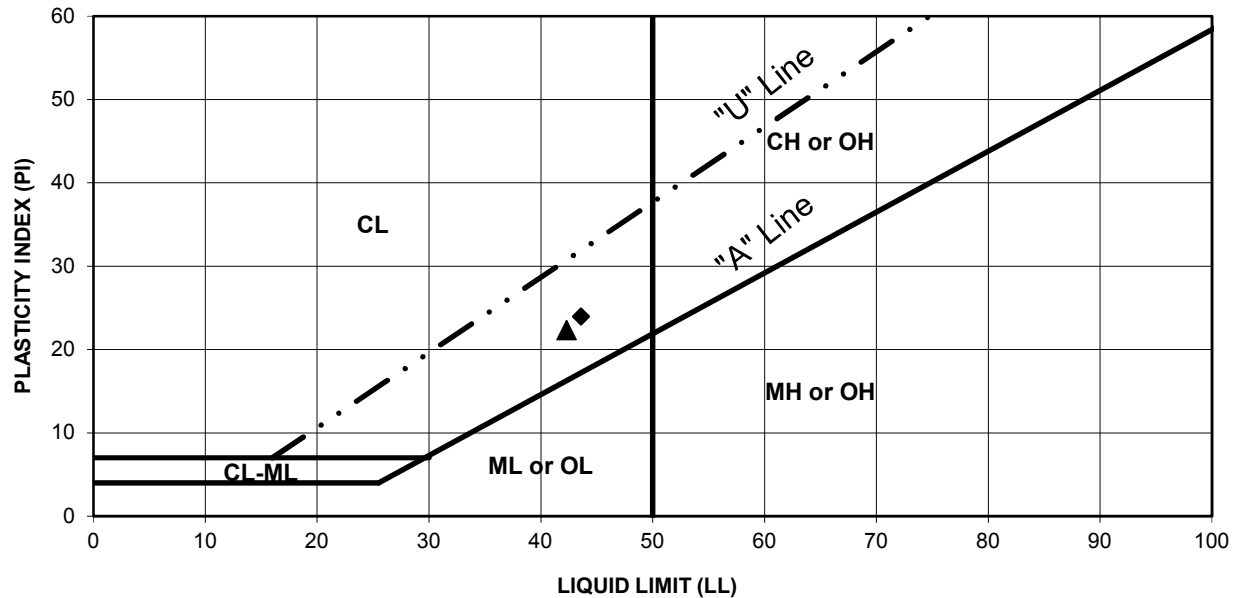
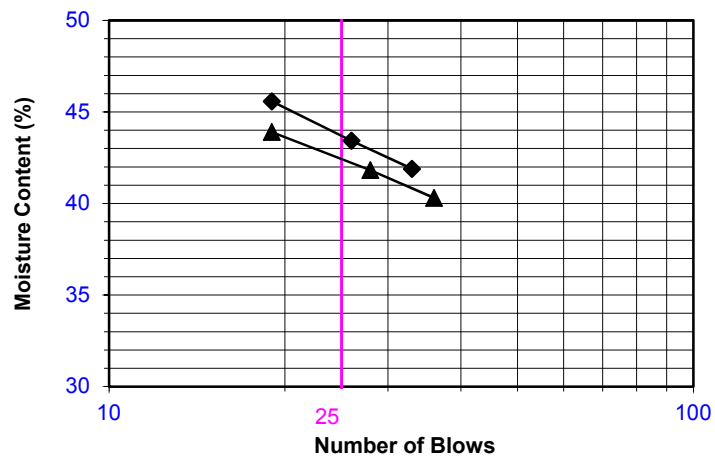


Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	R-21-003	Run-2	5-10	0	99	1	N/A	SP
□	R-21-003	-	30-31.5	4	28	68	43:17:26	CL
△	R-21-003	2	45-46.5	0	21	79	41:19:22	CL

**AP Engineering and Testing, Inc.**

DBE|MBE|SBE

2607 Pomona Boulevard | Pomona, CA 91768

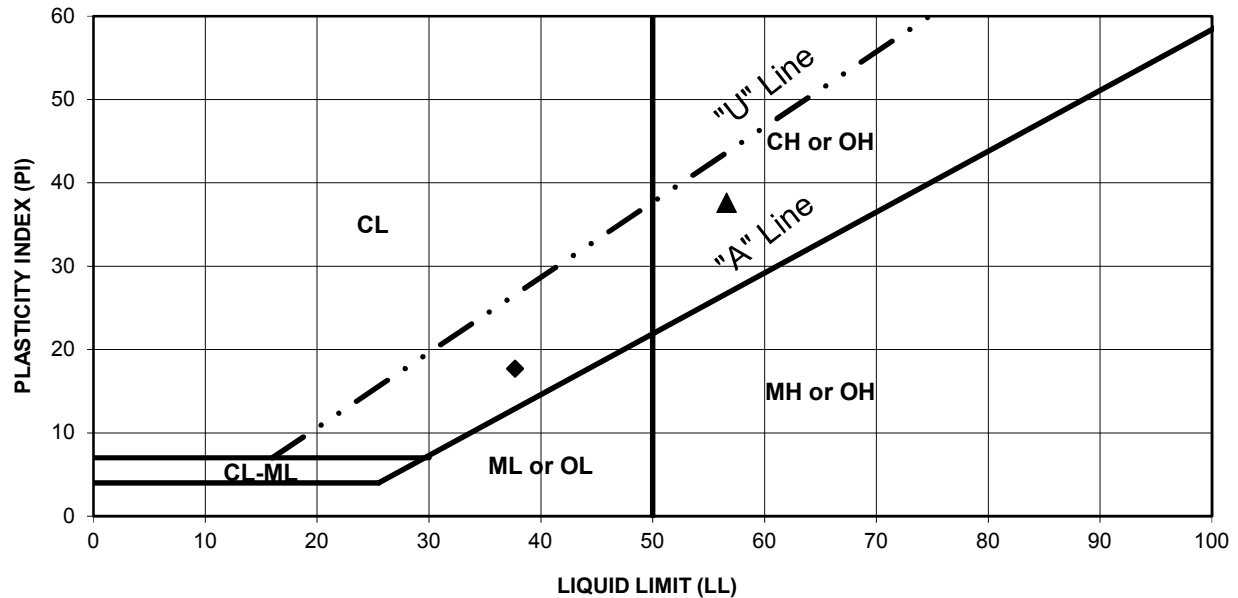
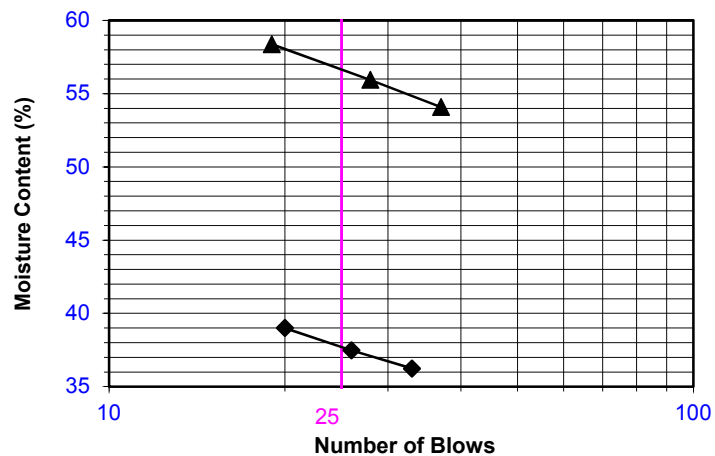
t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com**ATTERBERG LIMITS
ASTM D 4318****Client Name:** HDR**Tested By:** LS**Date:** 10/27/21**Project Name:** Cyprus Shores Landslide Mitigation**Computed By:** JP**Date:** 11/01/21**Project No.:** 10235826**Checked By:** AP**Date:** 11/03/21**PROCEDURE USED**☐ Wet Preparation☒ Dry Preparation☒ Procedure A
Multipoint Test☐ Procedure B
One-point Test

Symbol	Boring Number	Sample Number	Depth (feet)	LL	PL	PI	Plasticity Chart Symbol
◆	R-21-001	-	25-26.5	44	20	24	CL
▲	R-21-001	-	29.5-31	42	20	22	CL

**AP Engineering and Testing, Inc.**

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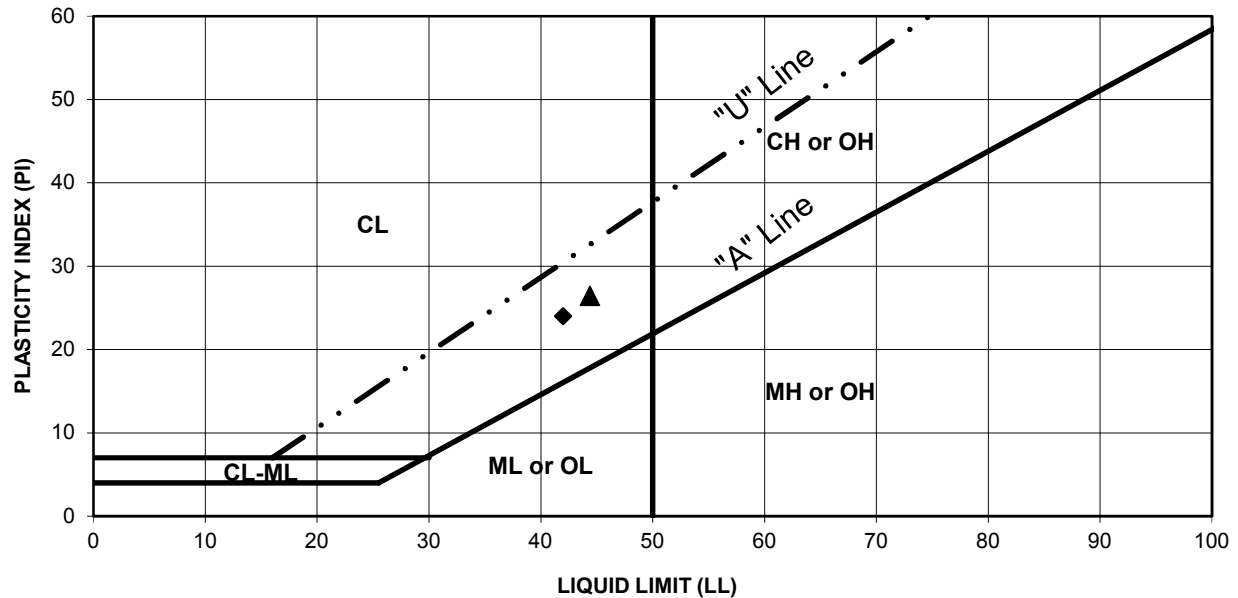
t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com**ATTERBERG LIMITS
ASTM D 4318****Client Name:** HDR**Tested By:** LS**Date:** 10/27/21**Project Name:** Cyprus Shores Landslide Mitigation**Computed By:** JP**Date:** 11/01/21**Project No.:** 10235826**Checked By:** AP**Date:** 11/03/21**PROCEDURE USED**☐ Wet Preparation☒ Dry Preparation☒ Procedure A
Multipoint Test☐ Procedure B
One-point Test

Symbol	Boring Number	Sample Number	Depth (feet)	LL	PL	PI	Plasticity Chart Symbol
◆	R-21-001	1A	40-40.5	38	20	18	CL
▲	R-21-001	3A, 4A & 5A	55-55.5, 65-65.5 & 75-75.5	57	19	38	CH

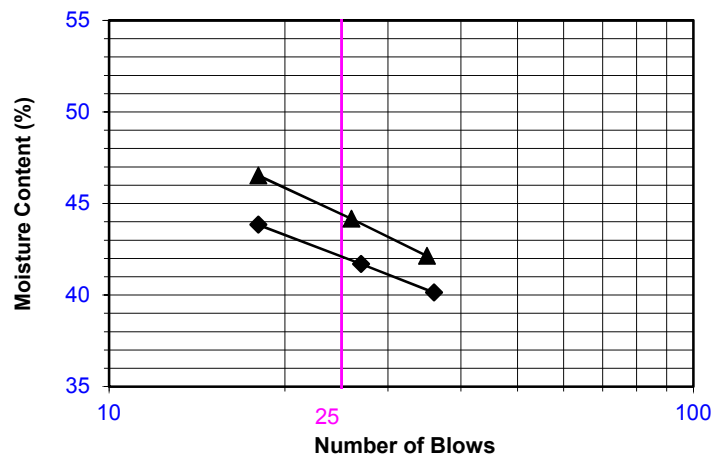
**AP Engineering and Testing, Inc.**

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2607 Pomona Boulevard | Pomona, CA 91768

t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com**ATTERBERG LIMITS
ASTM D 4318****Client Name:** HDR**Tested By:** LS**Date:** 10/27/21**Project Name:** Cyprus Shores Landslide Mitigation**Computed By:** JP**Date:** 11/01/21**Project No.:** 10235826**Checked By:** AP**Date:** 11/03/21**PROCEDURE USED**

- ☐ Wet Preparation
- ☒ Dry Preparation
- ☒ Procedure A
Multipoint Test
- ☐ Procedure B
One-point Test

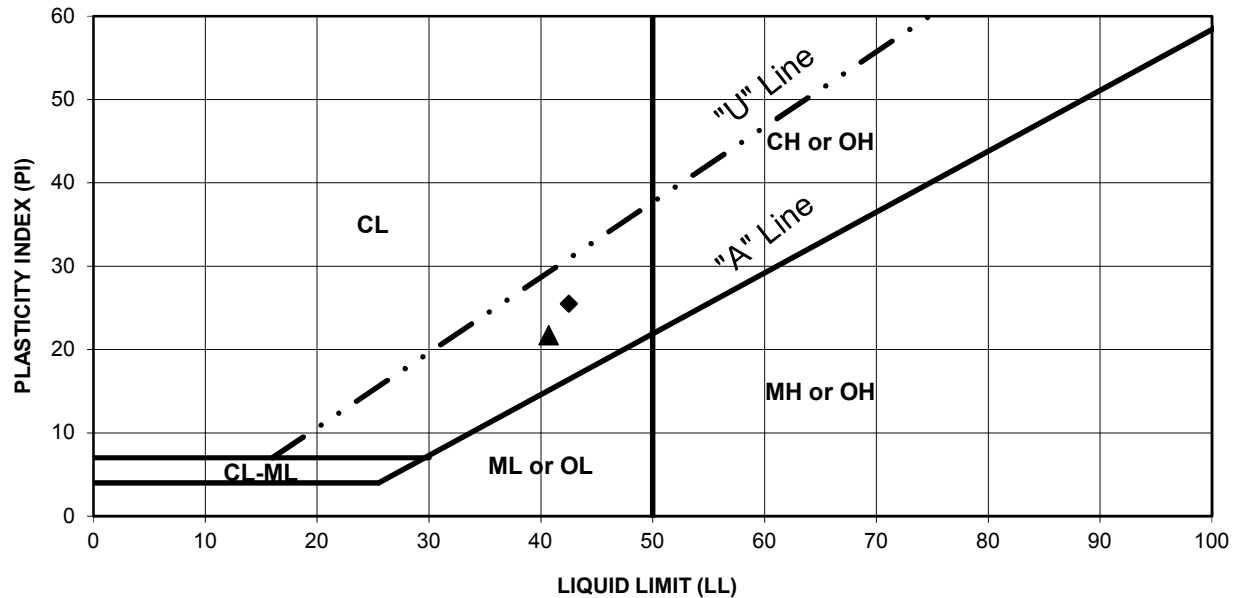
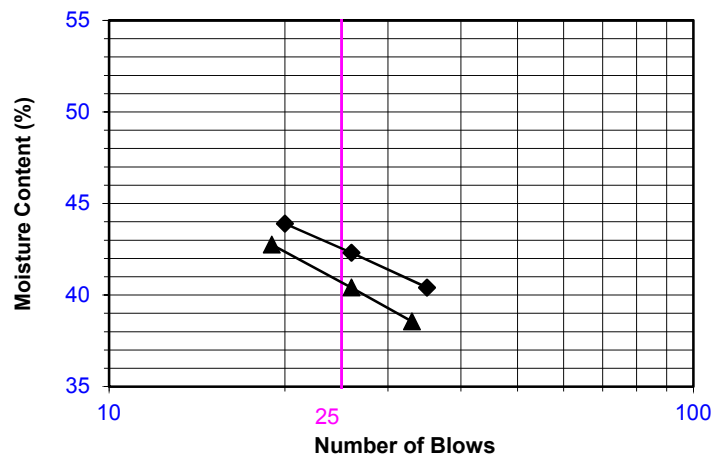


Symbol	Boring Number	Sample Number	Depth (feet)	LL	PL	PI	Plasticity Chart Symbol
◆	R-21-002	Run-6	30.5-34	42	18	24	CL
▲	R-21-002	1A, 2A & 3A	40-40.5, 45-45.5 & 55-55.5	44	18	26	CL

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ASTM D 4318****Client Name:** HDR**Tested By:** LS**Date:** 10/27/21**Project Name:** Cyprus Shores Landslide Mitigation**Computed By:** JP**Date:** 11/01/21**Project No.:** 10235826**Checked By:** AP**Date:** 11/02/21**PROCEDURE USED**☐ Wet Preparation☒ Dry Preparation☒ Procedure A
Multipoint Test☐ Procedure B
One-point Test

Symbol	Boring Number	Sample Number	Depth (feet)	LL	PL	PI	Plasticity Chart Symbol
◆	R-21-003	-	30-31.5	43	17	26	CL
▲	R-21-003	2	45-46.5	41	19	22	CL

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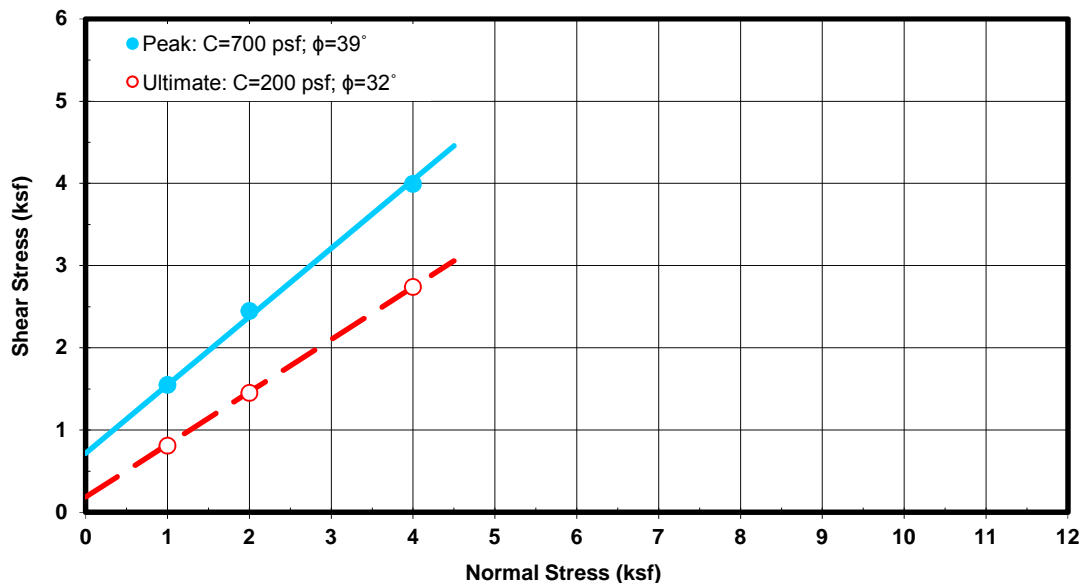
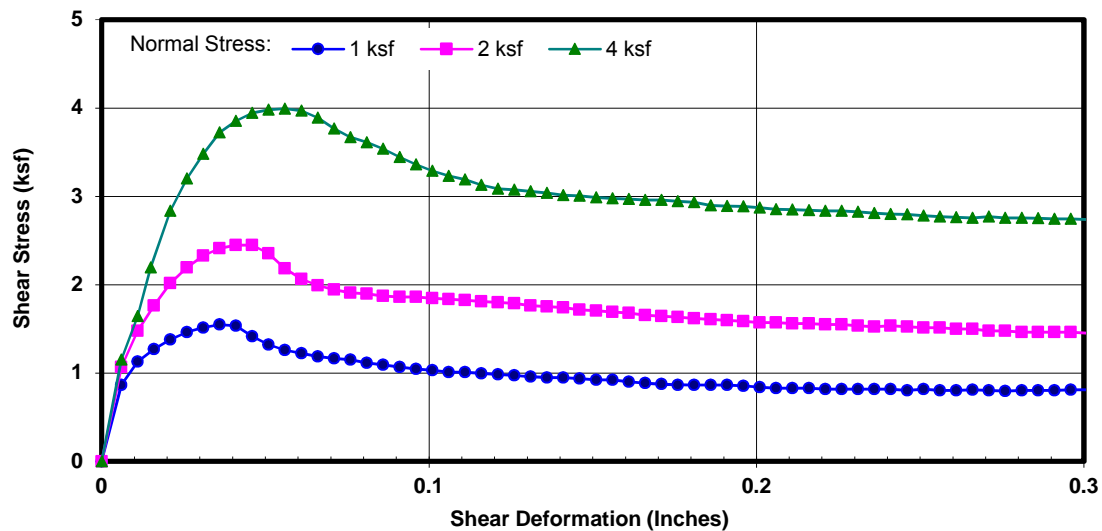
2607 Pomona Boulevard | Pomona, CA 91768

t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com**DIRECT SHEAR TEST RESULTS**
ASTM D 3080

Client: HDR
Project Name: Cyprus Shores Landslide Mitigation
Project No.: 10235826
Boring No.: R-21-001
Sample No.: 1A Depth (ft): 40-40.5
Sample Type: Mod. Cal.
Soil Description: Lean Clay w/sand
Test Condition: Inundated Shear Type: Regular

Tested By: ST Date: 10/28/21
Computed By: JP Date: 10/29/21
Checked by: AP Date: 11/03/21

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
126.9	106.1	19.6	21.6	90	99	1	1.548	0.810
						2	2.448	1.452
						4	3.993	2.739



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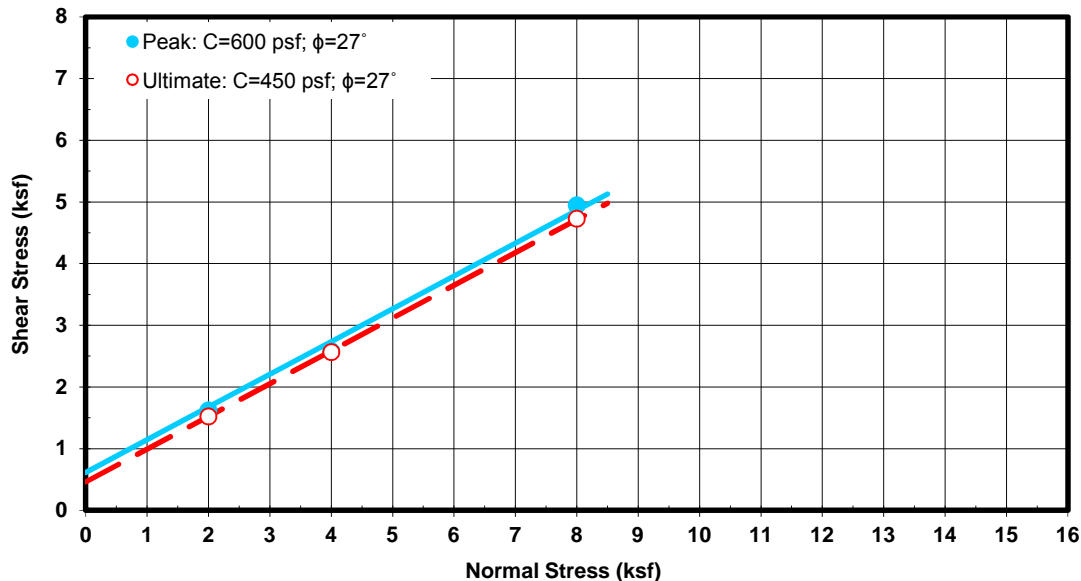
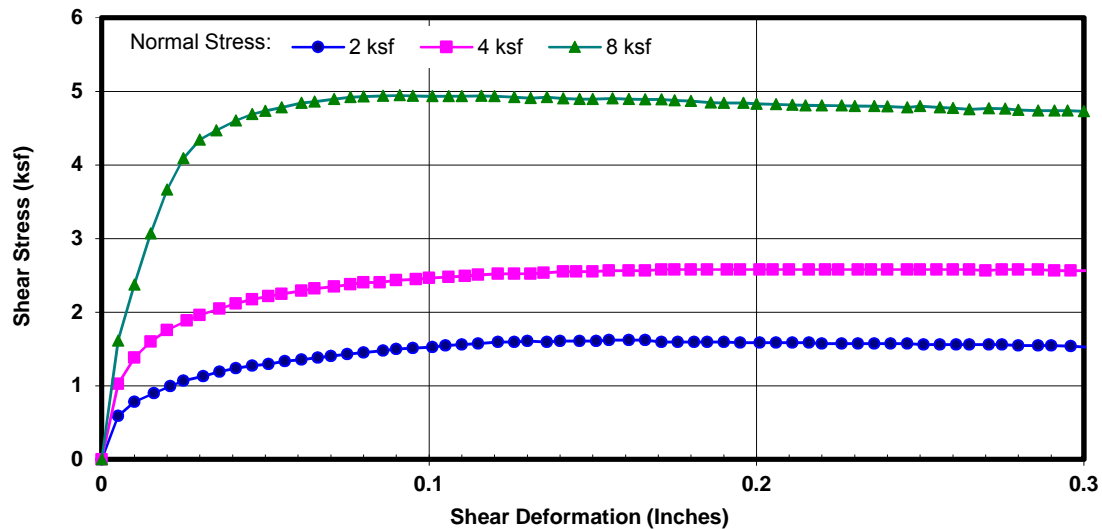
2607 Pomona Boulevard | Pomona, CA 91768

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ASTM D 3080

Client: HDR
Project Name: Cyprus Shores Landslide Mitigation
Project No.: 10235826
Boring No.: R-21-001
Sample No.: 4A Depth (ft): 65-65.5
Sample Type: Mod. Cal.
Soil Description: Fat Clay
Test Condition: Inundated Shear Type: Regular

Tested By: ST Date: 10/28/21
Computed By: JP Date: 10/29/21
Checked by: AP Date: 11/03/21

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
120.9	96.2	25.7	28.0	92	100	2	1.620	1.524
						4	2.578	2.563
						8	4.945	4.728



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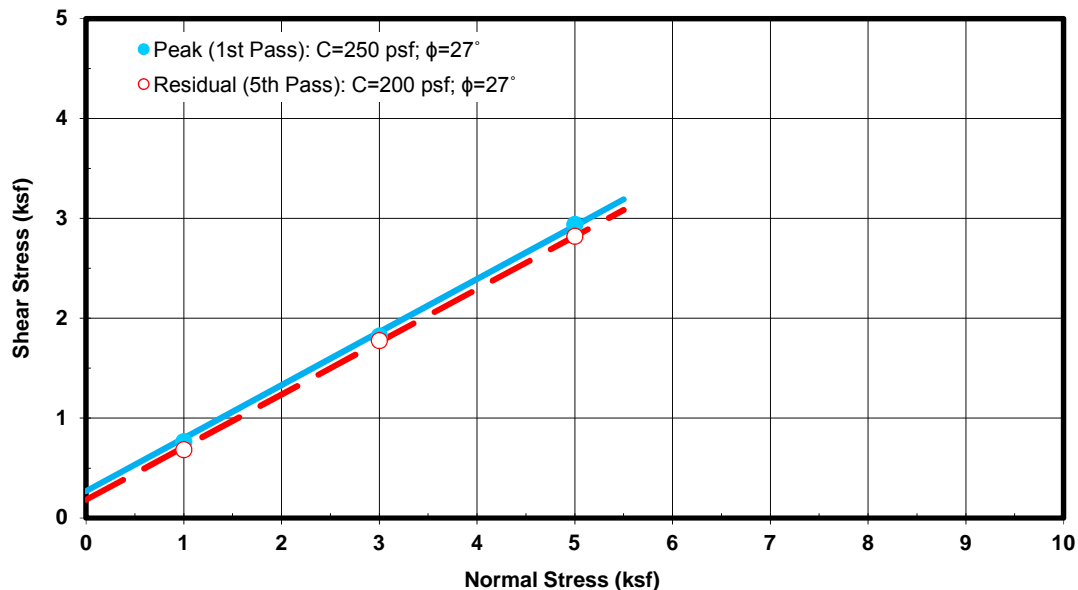
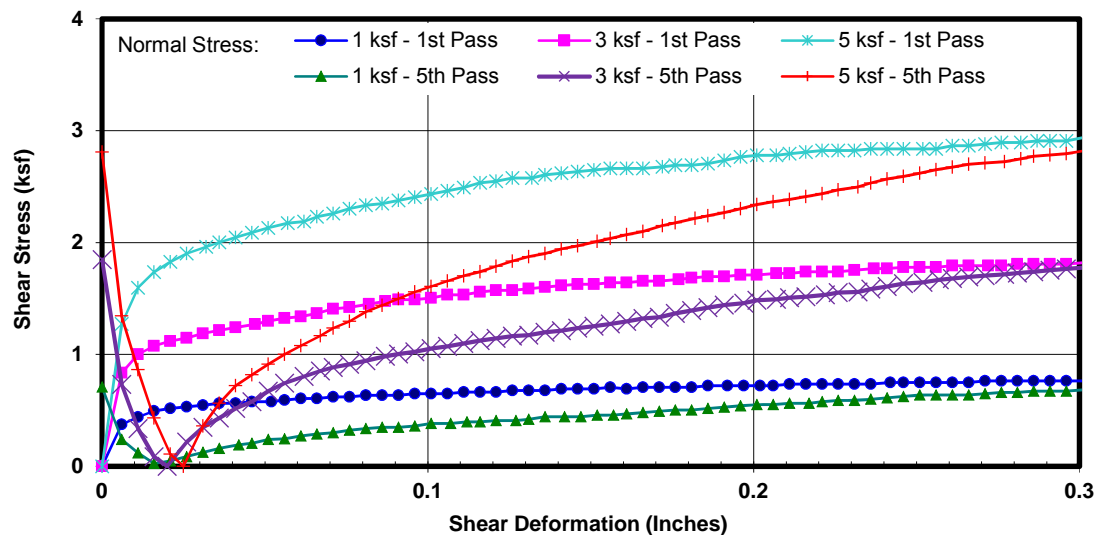
2607 Pomona Boulevard | Pomona, CA 91768

t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com**DIRECT SHEAR TEST RESULTS**
ASTM D 3080

Project Name: Cyprus Shores Landslide
Project No.: 10235826
Boring No.: R-21-002
Sample No.: Run-6 **Depth (ft):** 30.5-34
Remold Cond.: Remolded to total unit weight of 110 pcf at 22% MC
Soil Description: Lean Clay w/sand
Test Condition: Inundated **Shear Type:** 5-Pass Residual

Tested By: LS **Date:** 11/01/21
Computed By: NR **Date:** 11/02/21
Checked by: AP **Date:** 11/02/21

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear (1st Pass) (ksf)	Residual Shear (5th Pass) (ksf)
109.9	90.2	21.9	29.8	68	93	1	0.763	0.684
						3	1.822	1.776
						5	2.938	2.820



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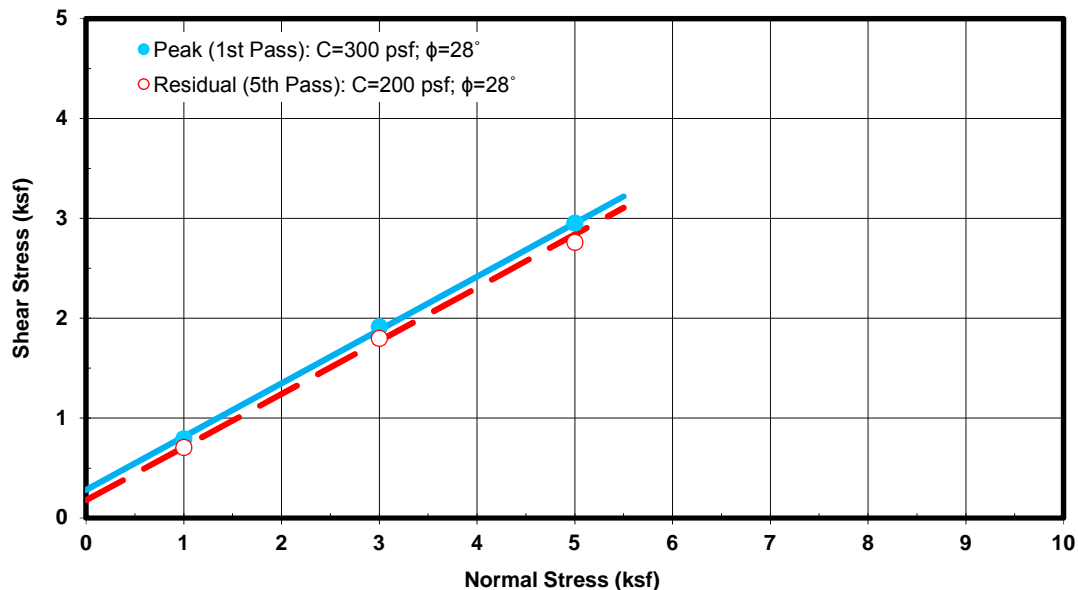
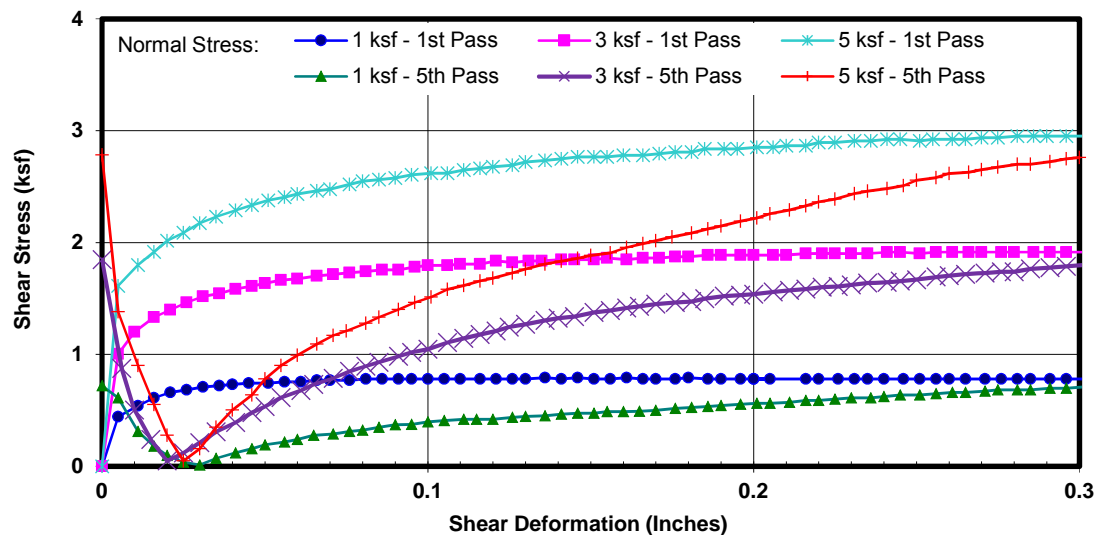
2607 Pomona Boulevard | Pomona, CA 91768

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ASTM D 3080

Project Name: Cyprus Shores Landslide
Project No.: 10235826
Boring No.: R-21-002
Sample No.: Run-6 **Depth (ft):** 30.5-34
Remold Cond.: Remolded to total unit weight of 120 pcf at 22% MC
Soil Description: Lean Clay w/sand
Test Condition: Inundated **Shear Type:** 5-Pass Residual

Tested By: LS **Date:** 11/01/21
Computed By: NR **Date:** 11/02/21
Checked by: AP **Date:** 11/02/21

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear (1st Pass) (ksf)	Residual Shear (5th Pass) (ksf)
119.9	98.4	21.9	25.0	83	95	1	0.792	0.708
						3	1.914	1.800
						5	2.952	2.760



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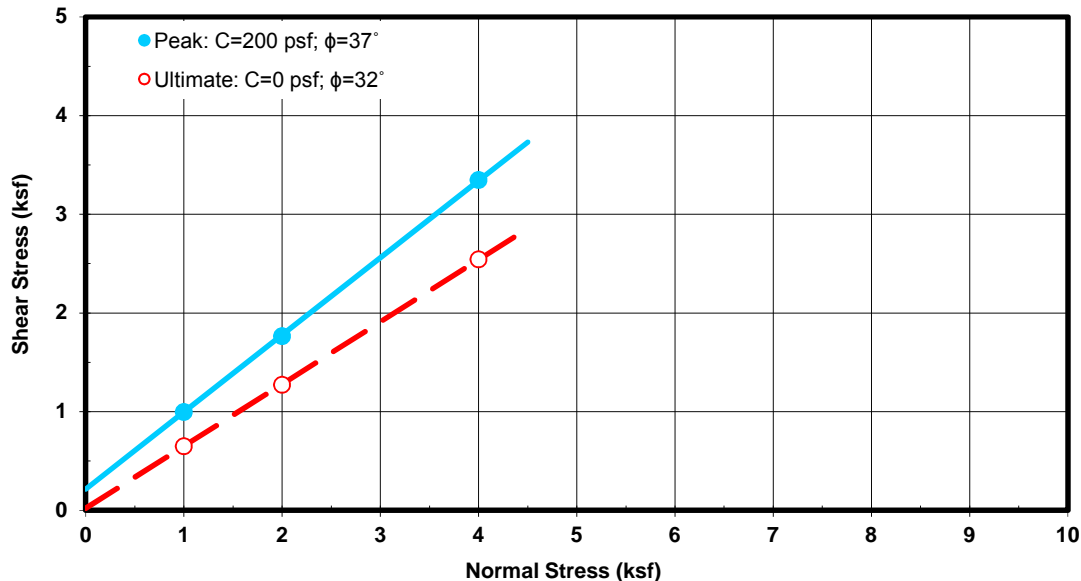
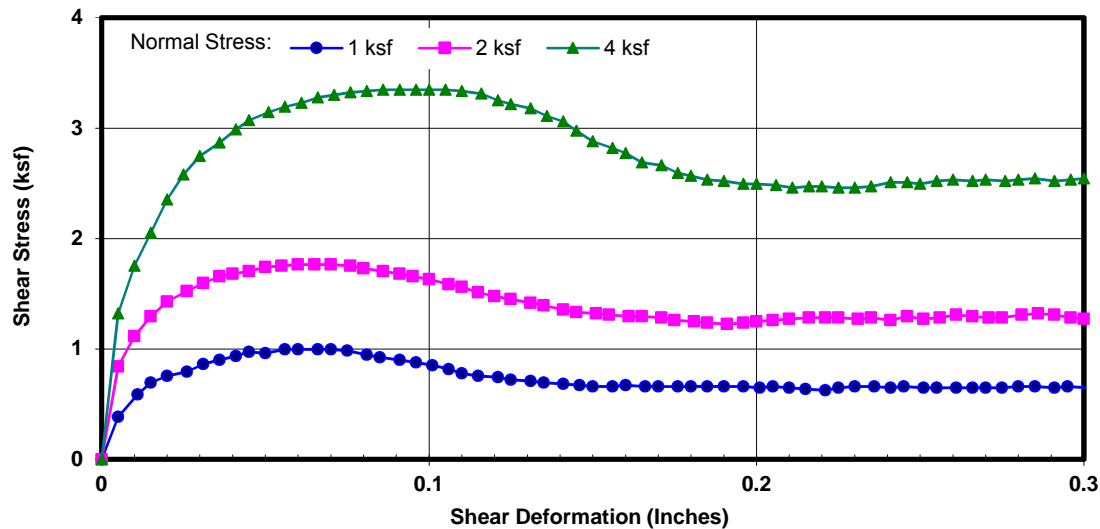
2607 Pomona Boulevard | Pomona, CA 91768

t. 909.869.6316 | f. 909.869.6318 | www.aplaboratory.com**DIRECT SHEAR TEST RESULTS**
ASTM D 3080

Client: HDR
Project Name: Cyprus Shores Landslide Mitigation
Project No.: 10235826
Boring No.: R-21-003
Sample No.: Run-2 **Depth (ft):** 5-10
Remold Cond.: Remolded to total unit weight of 115 pcf at 8% MC
Soil Description: Poorly-Graded Sand
Test Condition: Inundated **Shear Type:** Regular

Tested By: LS **Date:** 11/01/21
Computed By: NR **Date:** 11/01/21
Checked by: AP **Date:** 11/02/21

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
115.0	106.5	8.1	20.8	37	96	1	0.996	0.648
						2	1.764	1.272
						4	3.348	2.544



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ASTM D 3080

Client: HDR

Project Name: Cyprus Shores Landslide Mitigation

Project No.: 10235826

Boring No.: R-21-003

Sample No.: 2 Depth (ft): 45-46.5

Sample Type: Mod. Cal.

Soil Description: Claystone

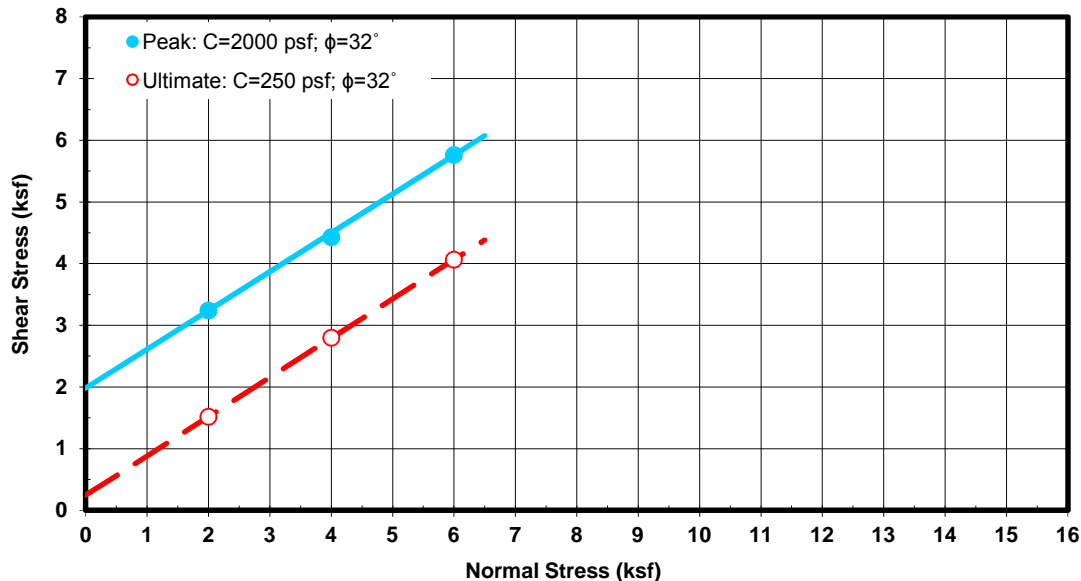
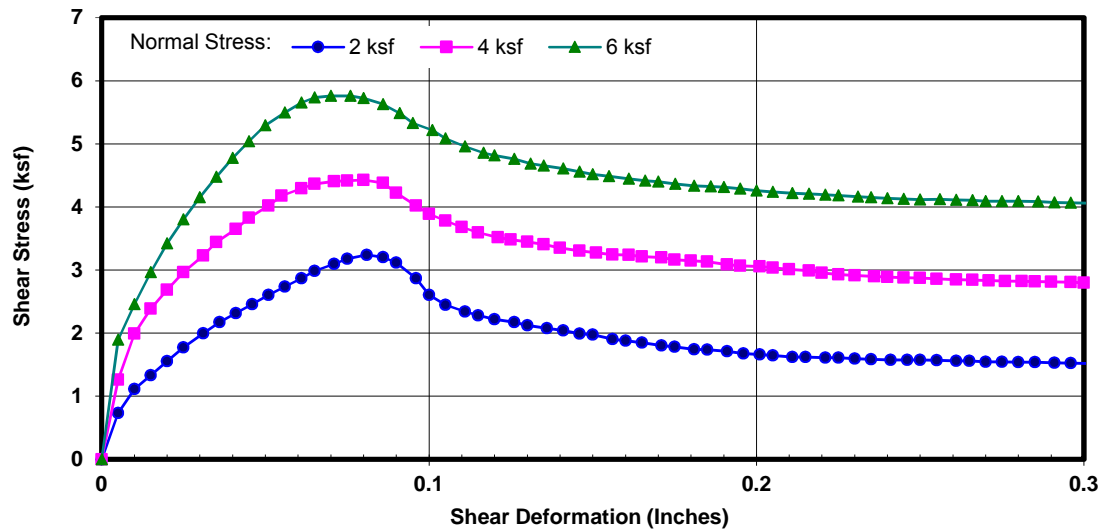
Test Condition: Inundated Shear Type: Regular

Tested By: ST Date: 10/28/21

Computed By: JP Date: 10/29/21

Checked by: AP Date: 11/02/21

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
128.4	107.7	19.2	20.8	92	100	2	3.240	1.518
						4	4.428	2.796
						6	5.760	4.063





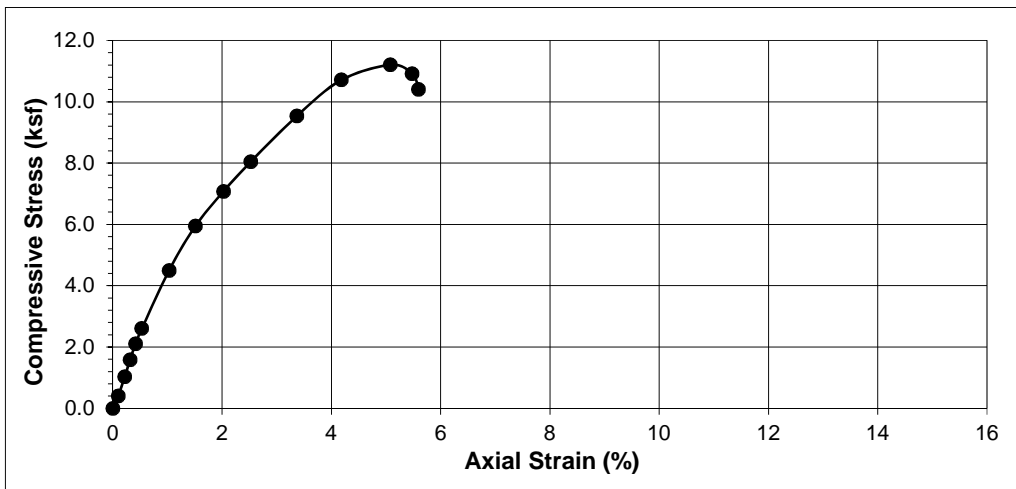
UNCONFINED COMPRESSION TEST RESULTS ASTM D 2166

Project Name: **Cyprus Shores Landslide Mitigation**
Project No.: **10235826**
Boring No.: **R-21-002**
Sample No.: **2A**
Depth (feet): **45-45.5**

Sample Type: **Mod Cal**
Soil Description: **Clay w/sand**
Dry Density (pcf): **107.7**
Moisture Content (%): **19.1**
Test Date: **10/26/21**

Sample Diameter (inch): **2.427**
Sample Height (inch): **6.023**
Sample Weight (gms): **938.22**

Wt. Wet Soil+Container(gms): **568.92**
Wt. Dry Soil+Container(gms): **501.37**
Wt. Container (gms): **147.13**



Load (lbs)	Deformation (inch)	Area (sq.in)	Compressive Stress (ksf)	Axial Strain (%)
0	0.000	4.62	0.00	0.00
13	0.006	4.63	0.40	0.10
33	0.013	4.63	1.03	0.22
51	0.019	4.64	1.58	0.32
68	0.025	4.64	2.11	0.42
84	0.032	4.65	2.60	0.53
146	0.062	4.67	4.50	1.03
194	0.091	4.70	5.95	1.51
232	0.122	4.72	7.08	2.03
265	0.152	4.74	8.04	2.52
317	0.203	4.79	9.54	3.37
359	0.252	4.83	10.71	4.18
379	0.306	4.87	11.20	5.08
371	0.330	4.89	10.92	5.48
354	0.337	4.90	10.41	5.59

Unconfined Compressive Strength (ksf) = **11.20**



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UNCONSOLIDATED UNDRAINED TRIAXIAL TEST (UU,Q) ASTM D 2850

Client Name: HDR
Project Name: Cyprus Shores Landslide Mitigation
Project No.: 10235826
Boring No.: R-21-002
Sample No.: 2B Depth (feet): 45.5-46
Soil Description: Clay w/sand

Tested By: ST Date: 11/02/21
Checked by: AP Date: 11/03/21

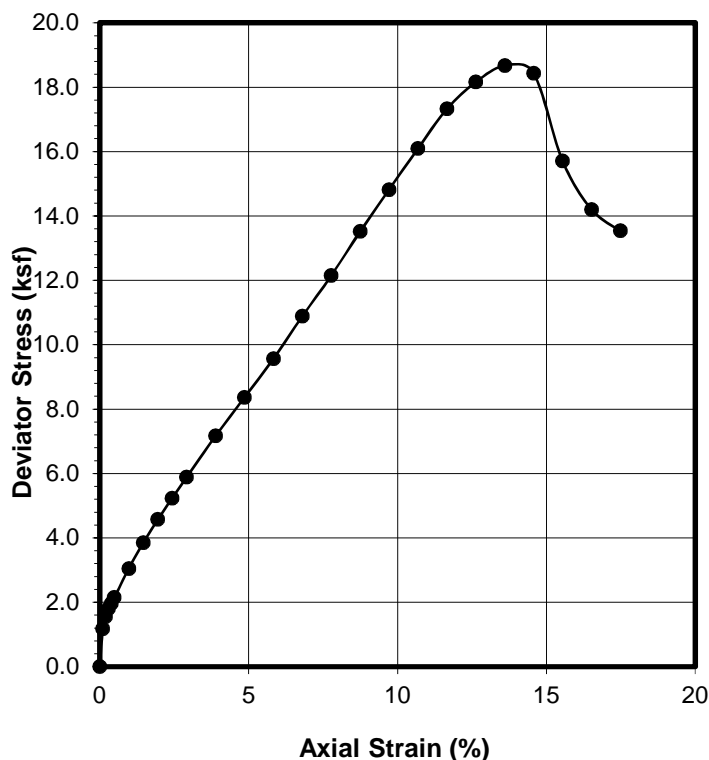
Sample Type: Mod. Cal.

Sample Diameter (inch): 2.404
Sample Height (inch): 5.147
Sample Weight (g): 783.56
Wt. of Wet Soil+Container (g): 924.01
Wt. of Dry Soil+Container (g): 800.15
Wt. of Container (g): 141.47

Wet Unit Weight (pcf): 127.7
Dry Unit Weight (pcf): 107.5
Moisture Content (%): 18.8
Void Ratio for $G_s=2.7$: 0.57
% Saturation: 89.5

TEST DATA

Cell Pressure (ksf): 2.50
Back Pressure (ksf): 0.0
Tested Total Confining Pressure (ksf): 2.50
Shear Rate (%/min): 0.3
Maximum Deviator Stress (ksf): 18.67
Ultimate Deviator Stress (ksf): 13.54
Ultimate Undrained Shear Strength (ksf): 6.77
Axial Strain @ Maximum Stress (%): 13.60



Load (lbs)	Def. (inch)	Area (sq.in)	Deviator Stress (ksf)	Axial Strain (%)
0	0.000	4.54	0.00	0.00
37	0.005	4.54	1.17	0.10
49	0.010	4.55	1.55	0.19
57	0.015	4.55	1.80	0.29
62	0.020	4.56	1.96	0.39
68	0.025	4.56	2.15	0.49
97	0.050	4.58	3.05	0.97
123	0.075	4.60	3.85	1.46
147	0.100	4.63	4.57	1.94
169	0.125	4.65	5.23	2.43
191	0.150	4.67	5.88	2.91
235	0.200	4.72	7.17	3.89
277	0.250	4.77	8.36	4.86
320	0.300	4.82	9.56	5.83
368	0.350	4.87	10.88	6.80
415	0.400	4.92	12.15	7.77
467	0.450	4.97	13.52	8.74
517	0.500	5.03	14.81	9.72
568	0.550	5.08	16.10	10.69
618	0.600	5.14	17.33	11.66
655	0.650	5.19	18.16	12.63
681	0.700	5.25	18.67	13.60
680	0.750	5.31	18.43	14.57
586	0.800	5.37	15.71	15.54
536	0.850	5.44	14.20	16.52
517	0.900	5.50	13.54	17.49

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Boring No.	Sample No.	Depth (feet)	Soil Description	Minimum Resistivity (ohm-cm)	pH	Sulfate Content (ppm)	Chloride Content (ppm)
R-21-001	Run-2, 3 & 4	5-10, 10-15, 15-20	Sand w/silt	1,173	8.6	110	528

NOTES: Resistivity Test and pH: California Test Method 643
Sulfate Content : California Test Method 417
Chloride Content : California Test Method 422
ND = Not Detectable
NA = Not Sufficient Sample
NR = Not Requested

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Boring No.	Sample No.	Depth (feet)	Soil Description	Minimum Resistivity (ohm-cm)	pH	Sulfate Content (ppm)	Chloride Content (ppm)
R-21-002	1A, 2A & 3A	40-40.5, 45-45.5, 55-55.5	Lean Clay w/sand	336	8.4	2766	326

NOTES: Resistivity Test and pH: California Test Method 643
Sulfate Content : California Test Method 417
Chloride Content : California Test Method 422
ND = Not Detectable
NA = Not Sufficient Sample
NR = Not Requested

Appendix D

Boring Logs by Others





MAJOR DIVISIONS		Group Letter	Symbol	TYPICAL NAMES
COARSE-GRAINED SOILS More Than 50% Retained On No.200 Sieve Based on The Material Passing The 3-Inch (75mm) Sieve. Reference: ASTM Standard D2487	GRAVELS 50% or More of Coarse Fraction Retained on No.4 Sieve	Clean Gravels	GW	Well Graded Gravels and Gravel-Sand Mixtures, Little or No Fines.
			GP	Poorly Graded Gravels and Gravel-Sand Mixtures Little or No Fines.
		Gravels With Fines	GM	Silty Gravels, Gravel-Sand-Silt Mixtures.
			GC	Clayey Gravels, Gravel-Sand-Clay Mixtures.
	SANDS More Than 50% of Coarse Fraction Passes No.4 Sieve	Clean Sands	SW	Well Graded Sands and Gravelly Sands, Little or No Fines.
			SP	Poorly Graded Sands and Gravelly Sands, Little or No Fines.
		Sands With Fines	SM	Silty Sands, Sand-Silt Mixtures.
			SC	Clayey Sands, Sand-Clay Mixtures.
FINE-GRAINED SOILS 50% or More Passes The No.200 Sieve Based on The Material Passing The 3-Inch (75mm) Sieve. Reference: ASTM Standard D2487	SILTS AND CLAYS Liquid Limit Less Than 50%		ML	Inorganic Silts, Very Fine Sands, Rock Flour, Silty or Clayey Fine Sands or Clayey Silts With Slight Plasticity.
			CL	Inorganic Clays of Low To Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays.
			OL	Organic Silts and Organic Silty Clays of Low Plasticity
	SILTS AND CLAYS Liquid Limit 50% or Greater		MH	Inorganic Silts, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silts.
			CH	Inorganic Clays of High Plasticity, Fat Clays.
			OH	Organic Clays of Medium To High Plasticity, Organic Silts.
HIGHLY ORGANIC SOILS			PT	Peat and Other Highly Organic Soils.

The descriptive terminology of the logs is modified from current ASTM Standards to suit the purposes of this study






ADDITIONAL TESTS

DS = Direct Shear
 HY = Hydrometer Test
 TC = Triaxial Compression Test
 UC = Unconfined Compression
 CN = Consolidation Test
 (T) = Time Rate
 EX = Expansion Test
 CP = Compaction Test
 PS = Particle Size Distribution
 EI = Expansion Index
 SE = Sand Equivalent Test
 AL = Atterberg Limits
 FC = Chemical Tests
 RV = Resistance Value
 SG = Specific Gravity
 SU = Sulfates
 CH = Chlorides
 MR = Minimum Resistivity
 pH
 (N) = Natural Undisturbed Sample
 (R) = Remolded Sample
 CS = Collapse Test/Swell-Settlement

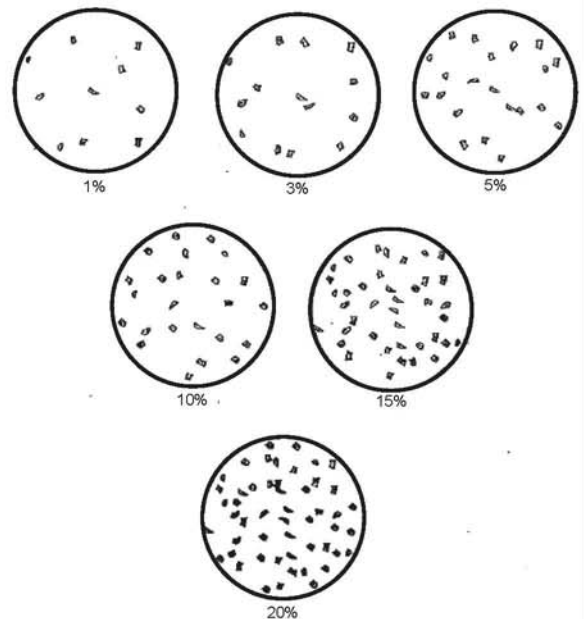
GEOLOGIC NOMENCLATURE

B = Bedding C = Contact J = Joint
 F = Fracture Flt = Fault S = Shear
 RS = Rupture Surface  = Seepage
 = Groundwater

SAMPLE SYMBOLS

 Undisturbed Sample (California Sample)
 Undisturbed Sample (Shelby Tube)
 Bulk Sample
 Unsuccessful Sampling Attempt
 SPT Sample

5
10
15 Blows per 6-Inches Penetration
 10: 10 Blows for 12-Inches Penetration
 6/4": 6 Blows for 4-Inches Penetration
 P: Push
 (13): Uncorrected Blow Counts ("N" Values) for 12-Inches Penetration- Standard Penetration Test (SPT)



LEGEND TO LOGS
 ASTM Designation: D 2487
 (Based on Unified Soil Classification System)

Plate

A-1

SOIL DENSITY/CONSISTENCY			
FINE GRAINED			
Consistency	Field Test	SPT (#blows/foot)	Mod (#blows/foot)
Very Soft	Easily penetrated by thumb, exudes between fingers	<2	<3
Soft	Easily penetrated one inch by thumb, molded by fingers	2-4	3-6
Firm	Penetrated over 1/2 inch by thumb with moderate effort	4-8	6-12
Stiff	Penetrated about 1/2 inch by thumb with great effort	8-15	12-25
Very Stiff	Readily indented by thumbnail	15-30	25-50
Hard	Indented with difficulty by thumbnail	>30	>50
COARSE GRAINED			
Density	Field Test	SPT (#blows/foot)	Mod (#blows/foot)
Very Loose	Easily penetrated with 0.5" rod pushed by hand	<4	<5
Loose	Easily penetrated with 0.5" rod pushed by hand	4-10	5-12
Medium Dense	Easily penetrated 1' with 0.5" rod driven by 5lb hammer	10-30	12-35
Dense	Difficult to penetrate 1' with 0.5" rod driven by 5lb hammer	31-50	35-60
Very Dense	Penetrated few inches with 0.5" rod driven by 5lb hammer	>50	>60

BEDROCK HARDNESS		
Density	Field Test	SPT (#blows/foot)
Soft	Can be crushed by hand, soil like and structureless	1-30
Moderately Hard	Can be grooved with fingernails, crumbles with hammer	30-50
Hard	Can't break by hand, can be grooved with knife	50-100
Very Hard	Scratches with knife, chips with hammer blows	>100

MODIFIERS	
Trace	1%
Few	1-5%
Some	5-12%
Numerous	12-20%
Abundant	>20%

GRAIN SIZE				
Description	Sieve Size	Grain Size	Approximate Size	
Boulders	>12"	>12"	Larger than a basketball	
Cobbles	3-12"	3-12"	Fist-sized to basketball-sized	
Gravel	Coarse	3/4-3"	Thumb-sized to fist-sized	
	Fine	#4-3/4"	Pea-sized to thumb-sized	
Sand	Coarse	#10-#4	Rock-salt-sized to pea-sized	
	Medium	#40-#10	Sugar-sized to rock salt-sized	
	Fine	#200-#40	Flour-sized to sugar-sized	
Fines	passing #200	<0.0029"	Flour-sized and smaller	

MOISTURE CONTENT	
Dry-	Very little or no moisture
Damp-	Some moisture but less than optimum
Moist-	Near optimum
Very Moist-	Above optimum
Wet/Saturated-	Contains free moisture



LEGEND TO LOGS
 ASTM Designation: D 2487
 (Based on Unified Soil Classification System)

Plate
A-2

Project: Cyprus Shore Slope Failure
Project Location: San Clemente, CA
Project Number: 20-330-00

Log of Drill Hole DH-1

Sheet 1 of 3

Date(s) Drilled	11/6/2020	Logged By	BSD	Checked By	KMF
Drilling Method	Hollow Stem Auger	Drilling Contractor	Tri-County Drilling	Total Depth of Drill Hole	60.0 feet
Drill Rig Type	CME 75	Diameter(s) of Hole, inches	8	Approx. Surface Elevation, ft MSL	54.0
Groundwater Depth [Elevation], feet		Sampling Method(s)	Open drive sampler with 6-inch sleeve, SPT, and Bulk	Drill Hole Backfill	Inclinometer Installation
Remarks	Converted to SI-1			Driving Method and Drop	140 lb donut hammer

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			ASPHALT		6" thick AC section						
			ARTIFICIAL FILL (Qafc)		SANDY CLAY (CL); dark brown, moist, firm to stiff, fine to coarse grained sand with trace gravel						
					Increase in sand content						
50	5				SANDY CLAY (CL); dark brown, very moist, firm to stiff, fine to coarse grained sand				15		PS, AL, CP, RV, FC, DS(R)
45	10						3 4 5	140			
40	15				SANDY CLAY to CLAYEY SAND (CL-SC); dark brown, moist to very moist, firm, fine to coarse grained sand		4 3 3	140	13	102	
35											

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Drill Hole DH-1

Project: Cyprus Shore Slope Failure
Project Location: San Clemente, CA
Project Number: 20-330-00

Log of Drill Hole DH-1

Sheet 2 of 3

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Gravel less than 3"		SILTY CLAY (CL); dark gray to olive gray mottled, moist to very moist, stiff, some sand, some fragments of capistrano bedrock, trace gravel		7 6 10	140	16	109	
30	25		<u>LANDSLIDE DEBRIS (Qls)</u> Gravel less than 3" Some caliche		SILTY CLAY (CL); dark gray to olive gray mottled, very moist, stiff, some sand, some fragments of capistrano bedrock, trace gravel Slightly lighter in color, becomes harder, more fine grained sand		3 7 10	140	25	96	AL, DS
25	30		Some jointing		SANDY SILT (ML); brown, moist, hard, some fine grained sand		12 17 42	140	18	107	
20	35				See drill hole log DH-3 for logging below 33'						
15	40										
10											

DH_REV3 20-330-00.GPJ GMULAB.GPJ 8/28/21



Drill Hole DH-1

Project Number: 20-330-00

Sheet 3 of 3

Project: Cyprus Shore Slope Failure
Project Location: San Clemente, CA
Project Number: 20-330-00

Log of Drill Hole DH-2

Sheet 1 of 4

Date(s) Drilled	11/7/2020	Logged By	LA	Checked By	KMF
Drilling Method	Hollow Stem Auger	Drilling Contractor	2R Drilling	Total Depth of Drill Hole	71.3 feet
Drill Rig Type	CME 75	Diameter(s) of Hole, inches	8	Approx. Surface Elevation, ft MSL	58.0
Groundwater Depth [Elevation], feet		Sampling Method(s)	Open drive sampler with 6-inch sleeve	Drill Hole Backfill	Inclinometer Installation
Remarks	Converted to SI-2			Driving Method and Drop	140 lb donut hammer

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			ASPHALT		6" thick AC						
			ARTIFICIAL FILL (Qafc)		CLAYEY SAND (SC); reddish brown, very moist to wet, loose/firm, poorly graded sand						
55											
5							4 4 5	140	16	107	
50											
10					SILTY CLAY (CL); dark brownish gray, moist, stiff, slight organic smell		2 5 14	140	15	106	
45											
15					SANDY CLAY (CL); dark gray, moist to very moist, stiff, slight organic smell		4 5 7	140	24	101	
40											

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Drill Hole DH-2

Project: Cyprus Shore Slope Failure
Project Location: San Clemente, CA
Project Number: 20-330-00

Log of Drill Hole DH-2

Sheet 2 of 4

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA		TEST DATA			
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			<u>LANDSLIDE DEBRIS (Qls)</u> derived from terrace materials		CLAYEY SILT (ML); dark bluish brown, moist, hard		6 9 26	140	21	103	
					SILTY SAND to SANDY SILT (SM-ML); dark gray brown with some orange brown mottles, moist, hard						
35											
25					SILTY SAND to SANDY SILT (SM-ML); orangish brown, moist, hard, very fine sand		16 50/5.5	140	18 17	107	DS, FC CP
30											
30			<u>LANDSLIDE DEBRIS (Qls)</u> derived from Capistrano Formation		SILTY SAND to SANDY SILT (SM-ML); medium brown, very moist, hard, very fine sand		12 28 47	140	20	105	
25											
35					CLAYEY SILT (ML); orangish brown mottled with gray brown, moist to very moist, hard, some fine grained sand		12 36 55	140	21	106	
20											
40					CLAYEY SILT (ML); dark brown, moist to very moist, hard, some fine grained sand		16 50/5.5	140	23	103	
15											

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Drill Hole DH-2

Project: Cyprus Shore Slope Failure
 Project Location: San Clemente, CA
 Project Number: 20-330-00

Log of Drill Hole DH-2

Sheet 3 of 4

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA		TEST DATA			
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			<u>Cont. to be LANDSLIDE DEBRIS (Qls) derived from Capistrano Formation</u>		CLAYEY SILT (ML); gray to dark gray, moist, hard, some fine grained sand		14 40 54	140	20	108	
10											
50			<u>CAPISTRANO FORMATION (Tc)</u>		CLAYEY SILTSTONE (ML); gray to dark gray, moist, hard, some fine grained sand		17 45 54	140	21	101	DS
5											
55					CLAYEY SILTSTONE (ML); gray to dark gray, moist, hard, some fine grained sand		20 50/5.5	140	18	105	
0											
60					CLAYEY SILTSTONE (ML); gray to dark gray, moist, hard		20 50	140	17	107	
-5											
65					CLAYEY SILTSTONE (ML); gray to dark gray, moist, hard		24 56	140	19	100	
-10											

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Drill Hole DH-2

Project: Cyprus Shore Slope Failure
Project Location: San Clemente, CA
Project Number: 20-330-00

Log of Drill Hole DH-2

Sheet 4 of 4

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			<u>cont. to be CAPISTRANO FORMATION</u> <u>(Tc)</u>		CLAYEY SILTSTONE (ML); gray to dark gray, moist, hard		19 35 53/3	140	19	109	
					Total Depth = 71.25' No Standing Water in Drill Hole						

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Drill Hole DH-2

Project: Cyprus Shore Slope Failure
Project Location: San Clemente, CA
Project Number: 20-330-00

Log of Drill Hole DH-3

Sheet 1 of 4

Date(s) Drilled	11/11/2020-11/12/2020	Logged By	DW	Checked By	KMF
Drilling Method	Bucket Auger	Drilling Contractor	Tri-Valley Drilling	Total Depth of Drill Hole	71.0 feet
Drill Rig Type	CALWELL	Diameter(s) of Hole, inches	24	Approx. Surface Elevation, ft MSL	54.0
Groundwater Depth [Elevation], feet		Sampling Method(s)	Open drive sampler with 6-inch sleeve, Bulk	Drill Hole Backfill	Native, tamped
Remarks	Water seeping from 33-71'			Driving Method and Drop	Kelly

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			ASPHALT		6" thick AC						
			ARTIFICIAL FILL (Qafc) Slurry subgrade to 1.5' Pockets of moist clayey sand 1st hole - very moist fill		SILTY SAND (SM-GM) with GRAVEL; brown, damp, very dense, fine to coarse grained sand						
					SILTY SAND (SM) with CLAY; olive, gray, and yellow, damp, dense, fine to medium grained sand						
					CLAYEY SAND (SC); orangish brown with blackish gray, moist to very moist, dense (2nd hole - damp), fine to coarse grained sand, few cobble Becomes moist, decreased gravel						
50	5		1st hole - hand auger exposes 36" storm drain on the western side of the hole; moved ~4 west to start a 2nd hole some fill lifts visible, well blended								
			Pockets of orange well graded sand, well cemented sandstone cobbles Pockets of very moist fat clay ~3"		CLAYEY SAND (SC) with SILT; orangish brown and gray, very moist, dense, fine to coarse grained sand, some gravel, few cobble Becomes moist to very moist						
45	10		Few subangular to subround gravel up to 2.5"				1 1	3390	8	117	
40	15				CLAYEY SAND (SC); orangish brown and gray, moist, dense, fine to medium grained sand, some coarse grained sand						
			1' thick zone with cobble								
35							P 1	3390	21	102	
					SANDY CLAY (CL); brown, very moist,						

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Drill Hole DH-3

Project: Cyprus Shore Slope Failure
Project Location: San Clemente, CA
Project Number: 20-330-00

Log of Drill Hole DH-3

Sheet 2 of 4

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			ARTIFICIAL FILL (Qafc)		stiff, fine to medium grained sand, some gravel						
			Cobble up to 5", granitic clasts		SILTY CLAY (CL); gray and olive, very moist, firm to stiff, fine to medium grained sand, some gravel						
			Bucket coming up empty- rock bucket used - several boulders removed 12-14"		CLAYEY SAND (SC) with pockets of SILTY SAND (SM); olive, gray, and orangish brown, moist to very moist, dense, fine to medium grained sand, some coarse grained sand, numerous gravel, few cobble						
30			LANDSLIDE DEBRIS (Qls) Derived from Terrace Materials		Becomes dominantly olive						
25			Pockets of silty sand, randomly oriented laminated sandy siltstone blocks, some rootlets, small pockets of clay		SANDY SILT (ML) with some CLAY; light brown, damp to moist, firm to stiff, fine grained sand						
			Laminated bedrock blocks highly fractured - moderately healed, pockets and stringers of fine grained sand		SILTY SAND (SM); gray and orangish brown, damp, soft, fine grained sand						
			Randomly oriented bedrock fragments, rare rootlets, pockets and stringers of fine grained sand								
25			Some subvertical jointing with highly oxidized planes								
30					SANDY SILT (ML); grayish brown, damp, stiff, fine grained sand		3 5	2230	22	103	PS, AL
			faint bedding features, highly folded, numerous subvertical jointing								
			Water seeping through laminations in blocks, highly sheared zone, small bag of clay collected	L: N35W 59SW C: N30W 37SW							
20			LANDSLIDE DEBRIS (Qls) Derived from Capistrano Formation		SANDY SILT (ML); olive and gray, very moist, moderately hard, fine grained sand				26		PS, AL
35							3 6	2230	24	105	
15											
40			Partially unoxidized diatomaceous siltstone, subvertical jointing		Becomes blackish gray and grayish brown		5 8	2230	22	104	
			<1/2 inch thick continuous gray sand lens	B: N35E, 4NW							
			Unoxidized, faint near horizontal laminations, subvertical discontinuous clay shear								
10					SILTY SAND (SM); blackish gray, very moist, moderately hard, fine grained sand						

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Drill Hole DH-3

Project: Cyprus Shore Slope Failure
Project Location: San Clemente, CA
Project Number: 20-330-00

Log of Drill Hole DH-3

Sheet 3 of 4

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Cont. to be LANDSLIDE DEBRIS (Qls) Derived from Capistrano Formation Faint near horizontal laminations		SILTY SAND (SM); blackish gray, very moist, moderately hard, fine grained sand		4 8	2230	20	109	
5			Near horizontal clayey laminations		Becomes bluish gray						
50			Wet clay seam in CALMOD spoil rings - sample collected Laminated, color change from bluish gray to lighter gray	C: N15W 5SW	SILTY SAND (SM); bluish gray, very moist, moderately hard, fine grained sand		2 4	2230	22	103	
			Clay lined continuous planar surface the picks out well CAPISTRANO FORMATION (Tc) Driller states that the bedrock feels harder; switches to rock bucket, ~3' concretion in the eastern wall, micaceous fine grained silty sand (ML-SM)		SILTY SANDSTONE (SM); bluish gray to gray, very moist, hard, fine grained sand				29		PS, AL
0			Wet walls, becomes massive		Becomes blackish gray		6 11	1197	19	109	
55											
-5											
60			Wet walls, micaceous Remains massive		SANDY SILTSTONE to SILTY SANDSTONE (ML-SM); blackish gray, very moist, hard, fine grained sand		8 19	1197	20	110	
			Massive to the bottom of the hole								
-10											
65					SILTY SANDSTONE (SM); blackish gray, very moist, hard, fine grained sand		6 13	1197	20	110	
-15											

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Drill Hole DH-3

Project: Cyprus Shore Slope Failure
Project Location: San Clemente, CA
Project Number: 20-330-00

Log of Drill Hole DH-3

Sheet 4 of 4

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			<u>Cont. to be CAPISTRANO FORMATION (Tc)</u>		SILTY SANDSTONE (SM); blackish gray, very moist, hard, fine grained sand		9 16	1197	20	110	
					Total Depth = 71' Water Seeping 33 to 71' No standing water at bottom of hole No Caving						

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Drill Hole DH-3

Project: Cyprus Shore Slope Failure
Project Location: San Clemente, CA
Project Number: 20-330-00

Log of Drill Hole DH-4

Sheet 1 of 2

Date(s) Drilled	2/9/21	Logged By	BSD	Checked By	KMF
Drilling Method	Solid Flight Auger	Drilling Contractor	Pacific Drilling	Total Depth of Drill Hole	37.0 feet
Drill Rig Type	Hillside Track Rig	Diameter(s) of Hole, inches	6	Approx. Surface Elevation, ft MSL	28.0
Groundwater Depth [Elevation], feet		Sampling Method(s)	NA	Drill Hole Backfill	Inclinometer Installation
Remarks	Converted to SI-3				Driving Method and Drop

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA				TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS	
25			<u>ARTIFICIAL FILL (Qaf)</u>		SANDY CLAY (CL); light brownish gray, moist to very moist, fine grained sand							
5			Gravel and cobbles are subrounded. Drill rig began chattering, very hard drilling		Numerous gravel and cobbles 2-4"							
20												
10			<u>LANDSLIDE DEBRIS (Qls)</u>		SANDY CLAY (CL); dark grayish brown, saturated, trace gravel <3"							
15					Becomes very moist							
15												
10												

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Drill Hole DH-4

Project: Cyprus Shore Slope Failure
 Project Location: San Clemente, CA
 Project Number: 20-330-00

Log of Drill Hole DH-4

Sheet 2 of 2

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
5			<u>Cont. to be LANDSLIDE DEBRIS (Qls)</u>		Continues to be SANDY CLAY (CL); dark grayish brown, becomes saturated, trace gravel						
25											
0			Drill rig began chattering, very hard drilling								
			<u>CAPISTRANO FORMATION (Tc)</u>		SANDY CLAYSTONE (CL); dark grayish brown, saturated, trace gravel <3"						
30					Becomes wet						
-5											
35			Practical refusal due to groundwater and hard drilling conditions		Becomes very moist to saturated						
			Holes drilled into bottom 1' of inclinometer casing and wrapped in filter fabric. About 2' of sand backfill at bottom followed by 1.5' of bentonite chips. The remainder of the hole was backfilled around casing with grout.		Total depth = 37' Seepage at about 20' No Caving						

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Drill Hole DH-4

Project: Cyprus Shore Slope Failure
Project Location: San Clemente, CA
Project Number: 20-330-00

Log of Drill Hole DH-5

Sheet 1 of 2

Date(s) Drilled	2/10/21	Logged By	BSD	Checked By	KMF
Drilling Method	Solid Flight Auger	Drilling Contractor	Pacific Drilling	Total Depth of Drill Hole	40.0 feet
Drill Rig Type	Hillside Track Rig	Diameter(s) of Hole, inches	6	Approx. Surface Elevation, ft MSL	28.0
Groundwater Depth [Elevation], feet		Sampling Method(s)	NA	Drill Hole Backfill	Inclinometer Installation
Remarks	Converted to SI-4				Driving Method and Drop

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA				TEST DATA	
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
25			ARTIFICIAL FILL (Qaf)		SANDY CLAY (CL); grayish brown, moist to very moist, fine grained sand, trace gravel <3"						
5											
20											
10			Drill rig broke down for 5 mins from hard drilling		Becomes dark brown to black, very moist, very little sand						
15											
15											
15			LANDSLIDE DEBRIS (Qls) Drill rig began chattering and drilling became very hard. Gravel and cobbles are subrounded Piezometer #2002864 installed at 15'		SANDY CLAY (CL); dark brown, very moist, numerous gravel and cobbles 2-4"						
10											
					Becomes black, no gravel or cobbles, very small amount of sand						

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Drill Hole DH-5

Project: Cyprus Shore Slope Failure
Project Location: San Clemente, CA
Project Number: 20-330-00

Log of Drill Hole DH-5

Sheet 2 of 2

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			<u>Cont. to be LANDSLIDE DEBRIS (Qls)</u>		Continues to be SANDY CLAY (CL); black, very moist, very small amount of sand						
5											
			<u>CAPISTRANO FORMATION (Tc)</u>		SILTY CLAYSTONE (CL); dark bluish gray, moist						
	25		Piezometer #2002863 installed at 25'								
	0		Becomes very hard drilling								
	30										
	-5										
	35										
	-10										
	40		Holes drilled in the bottom 4' of the casing and wrapped in filter fabric. About 5' of sand backfill at the bottom followed by 2' of bentonite chips. Remainder of the hole was grouted outside the casing and 2 piezometers installed.		Total depth = 40' No standing water in the drill hole No Caving						

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Drill Hole DH-5

Project: 4010 Calle Ariana
Project Location: Cyprus Shore, San Clemente
Project Number: 21-116-00

Log of Drill Hole DH-1

Sheet 1 of 3

Date(s) Drilled	6/7/21-6/8/21	Logged By	BSD/RC	Checked By	KMF
Drilling Method	Solid Flight Auger	Drilling Contractor	PACIFIC DRILLING	Total Depth of Drill Hole	60.0 feet
Drill Rig Type	Mini Mole	Diameter(s) of Hole, inches	6"	Approx. Surface Elevation, ft MSL	56.0
Groundwater Depth [Elevation], feet	33.5 [22.5]	Sampling Method(s)	Cal-Mod with 6 inch sleeve and bulk	Drill Hole Backfill	Converted to and Inclinometer
Remarks	Converted to SI-1 (21-116-00)			Driving Method and Drop	140lb hammer, 30in drop

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
55			ARTIFICIAL FILL (Qaf) Matrix supported sandy clay with approximately 5% gravel <3" and 5% cobbles <6". Gravel and cobbles are subrounded.		SANDY CLAY (CL); brown, moist, stiff, fine to coarse grained sand, with some gravel		14 8 9		22	104	FC
5											
50											
10											
45			Woodchips in cuttings		CLAYEY SAND (SC); dark brown with some red clay, moist to very moist, medium dense, fine to coarse grained sand, trace gravel		10 10 10		13	109	
15											
40			Organic smell from cuttings		SANDY CLAY (SC); dark brown with some red and black, very moist, dense, fine to coarse grained sand		10 12 18		14	116	DS

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Drill Hole DH-1

Project: 4010 Calle Ariana
Project Location: Cyprus Shore, San Clemente
Project Number: 21-116-00

Log of Drill Hole DH-1

Sheet 2 of 3

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA		TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf
35			LANDSLIDE DEBRIS (Qls) Matrix supported silty sand with approximately 5% gravel <3" and 5% cobbles <6". Gravel and cobbles are subangular.		SILT (ML); gray and orange brown mottled, moist, dense, and SILTY SAND (SM); light gray with yellow, moist, dense, fine grained sand, some gravel and cobbles, some clay		9 14 25		24	104
25			Gravel becomes subrounded		SANDY CLAY (CL); dark brown, very moist, hard, fine grained sand					
30			Rig is chattering		Becomes black, moist, fine to coarse grained sand, some gravel		17 20 25		14	114 DS
30			Soil contains some structure		SILTY CLAY (CL); dark brown to black, moist, hard, some very fine grained sand		25 50/6"		22	105
25										
35			CAPISTRANO FORMATION (TC)		CLAYEY SILTSTONE (ML); dark brown, moist, hard, some very fine grained sand		28 50/6"		22	101
20										
40							50/6"		22	104
15										

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Drill Hole DH-1

Project: 4010 Calle Ariana
 Project Location: Cyprus Shore, San Clemente
 Project Number: 21-116-00

Log of Drill Hole DH-1

Sheet 3 of 3

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
10			Cont. to be <u>CAPISTRANO FORMATION (Tc)</u>		CLAYEY SILTSTONE (ML); dark gray, moist, hard		50/6"		26	102	
50					CLAYEY SILTSTONE (ML); dark gray, very moist, hard, some very fine grained sand		50/5"		22	107	
55					SILTY CLAYSTONE (CL); dark gray, very moist, hard, some very fine grained sand		50/6"		29	97	DS
0					Total Depth = 60' Groundwater = 33.5' No Caving						
60											

DH_REV3 21-116-00.GPJ GMULAB.GPJ 8/28/21



Drill Hole DH-1

Project: 4004 Calle Ariana
Project Location: Cyprus Shore, San Clemente
Project Number: 21-119-00

Log of Drill Hole DH-1

Sheet 1 of 3

Date(s) Drilled	6/8/21-6/9/21	Logged By	RC	Checked By	KMF
Drilling Method	Solid Flight Auger	Drilling Contractor	PACIFIC DRILLING	Total Depth of Drill Hole	64.8 feet
Drill Rig Type	Mini Mole	Diameter(s) of Hole, inches	6"	Approx. Surface Elevation, ft MSL	57.0
Groundwater Depth [Elevation], feet	24.6 [32.4]	Sampling Method(s)	Cal-Mod with 6 inch sleeve and bulk	Drill Hole Backfill	Converted to an Inclinator
Remarks	Driving Method and Drop 140lb hammer, 30in drop				

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA		TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf
			ARTIFICIAL TURF ARTIFICIAL FILL (Qaf) Numerous subangular gravel up to .75"		Turf and foam fabric				16	FC
55					SILTY SAND (SM); light brown, dry to damp, fine to coarse grained sand					
					SILTY CLAY (CL); brown, moist, soft					
5										
					CLAYEY SAND (SC); gray and yellowish brown mottle, moist, medium dense, medium to coarse grained sand		5 6 10		26	97
50										
			Matrix supported clayey sand with approximately 5% to 12% cobbles 3" to 6". Cobbles are rounded to subrounded							
10							5 9 10		13	113
45										DS
15							7 11 15		16	115
40										

DH_REV3 21-119-00.GPJ GMULAB.GPJ 8/28/21



Drill Hole DH-1

Project: 4004 Calle Ariana
 Project Location: Cyprus Shore, San Clemente
 Project Number: 21-119-00

Log of Drill Hole DH-1

Sheet 2 of 3

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
35					SILTY CLAY (CL); brown, moist, very stiff		8 12 17		19	108	
					CLAYEY SAND (SC); grayish brown, moist, medium dense to dense, fine to medium grained sand, few coarse grained sand						
25			Trace mica and orange staining		Becomes dark brown		23 17 35		17	109	
30					Becomes grayish brown						
30			Organic smell, brick pieces and non-native gravel in sampler		SANDY SILT (ML); black, moist, stiff, trace fine grained sand		18 28 33		19	108	
25			LANDSLIDE DEBRIS (Qls)		CLAYEY SAND (SC); dark brown, moist, dense, fine grained sand						
35			Free water on tip of auger, white veins in sample, some laminated structure		SILTY CLAY (CL); dark olive gray, saturated, stiff, trace fine grained sand		11 25 37		20	105	DS
20					CLAYEY SAND (SC); grayish brown, saturated, dense, fine to coarse grained sand						
40					SANDY SILT (ML); grayish brown with some orange gray mottles, very moist, hard, fine grained sand		25 34 45		26	99	
15											

DH_REV3 21-119-00.GPJ GMULAB.GPJ 8/28/21



Drill Hole DH-1

Project: 4004 Calle Ariana
 Project Location: Cyprus Shore, San Clemente
 Project Number: 21-119-00

Log of Drill Hole DH-1

Sheet 3 of 3

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	GEOLOGICAL CLASSIFICATION AND DESCRIPTION	ORIENTATION DATA	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
						SAMPLE	NUMBER OF BLOWS / 6"	DRIVING WEIGHT, lbs	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
10			Orange staining		SILTY CLAY (CL); dark olive brown, moist, hard		18 24 30		26	97	
50			Some mica				32 34 36		35	88	DS
5			<u>CAPISTRANO FORMATION (Tc)</u>		SILTY CLAYSTONE (CL); dark olive brown, moist, hard						
55											
0											
60											
-5											
					Total Depth = 64.8' Groundwater = 24.6' No Caving						

DH_REV3 21-119-00.GPJ GMULAB.GPJ 8/28/21



Drill Hole DH-1

APPENDIX A-2

Previous Geotechnical Logs by Others



GEOTECHNICAL BORING LOG **BORING NO. 1**

Project Name: Vyas
Project No. 15G15069
Hole Diameter: 4-in.
Elevation:

Drilling Co: P&A
Drive Weight: 40-lbs.
Ref./Datum: Rear Yard

Date: 04/14/15 Sheet: 1 of 1
Type of Rig: Hand Auger
Drop: 18± in.
Depth of Boring: 5-ft. 8-in.

Depth (ft.)	Sample Type & No.	Pocket Penetrometer (sf)	Penetration Resistance*	Dry Density (pcf)	Moisture Content (%)	Soil Classification	Groundwater	Geotechnical Description
1		0.2	22	104.7	10.8	SC		0 - 6": Pea Gravel
2								Brown/grey/tan sandy clay, moist, dense
3			10	95.8	13.1	SC		At 2': Light grey, silty sand with cobbles, 2-3" size, damp/moist
4								At 3': Light grey, silty sand, moist
5			40	113.2	14.7	SC		At 4': Light grey, silty sand with clay, small cobbles, moist
								At 4'8": Dark, silty clay, moist
								At 5': Light tan, gray, silty sand with clay, moist, very dense (sample at 5'2" to 5'8")
								Total Depth: 5'8"
								No Caving
								No Free Standing Groundwater
								Hole Backfilled with Excavated Onsite Soils

S - SPT Sample R - Ring Sample B - Bulk Sample N - Nuclear Gauge Test D - Disturbed Sample

* Penetration resistance readings in blows per six inches of driven depth.



GEOTECHNICAL BORING LOG **BORING NO. 2**

Project Name: Vyas
Project No. 15G15069
Hole Diameter: 4-in.
Elevation:

Drilling Co: P&A
Drive Weight: 40-lbs.
Ref./Datum: Front PA

Date: 04/14/15 Sheet: 1 of 1
Type of Rig: Hand Auger
Drop: 18± in.
Depth of Boring: 5-ft. 6-in.

Depth (ft.)	Sample Type & No.	Pocket Penetrometer (sf)	Penetration Resistance*	Dry Density (pcf)	Moisture Content (%)	Soil Classification	Groundwater	Geotechnical Description
1			50	101.7	8.9	SC		0-1'±: Topsoil/planting soil + dark gray, silty clay with sand and roots At 0 - 1'6": Brown/gray silty clay with sand and cobbles
2								
3			55	104.8	11.5	SC		At 3'5": Dark brown/grey sandy clay with cobbles
4								
5			50	101.5	9.8	SC		Grey sandy clay with small cobbles
								Total Depth: 5'6"
								No Caving
								No Free Standing Groundwater
								Hole Backfilled with Excavated Onsite Soils

S - SPT Sample R - Ring Sample B - Bulk Sample N - Nuclear Gauge Test D - Disturbed Sample

* Penetration resistance readings in blows per six inches of driven depth.

GEOTECHNICAL BORING LOG

BORING NO. 3

Project Name: Vyas
Project No. 16G16034
Hole Diameter: 6-inches
Elevation:

Drilling Co: Pacific Drilling
Drive Weight: 140-lbs.
Ref./Datum:

Date: 02/27/16 **Sheet:** 1 of 1
Type of Rig: Tripod
Drop: 30-inches
Depth of Boring: 2-ft.

[illegible]

GEOTECHNICAL BORING LOG

BORING NO. 4

Project Name: Vyas
Project No. 16G16034
Hole Diameter: 6-inches
Elevation:

Drilling Co: Pacific Drilling
Drive Weight: 140-lbs.
Ref./Datum:

Date: 02/27/16 Sheet: 1 of 2
Type of Rig: Tripod
Drop: 30-inches
Depth of Boring: 40-ft.

Depth (ft.)	Sample Type	Sample Number	Penetration Resistance*	Dry Density (pcf)	Moisture Content (%)	Soil Classification	Geologic Unit	Geotechnical Description
1								0-6-in.: Pea gravel
2						SM	Afc	Compacted Artificial Fill (Afc): Brown/grey, silty sand with cobbles
3								
4						CL		Brown, sandy, silty clay; very moist [due to water line break]
5								
6								
7						CL		At 7-ft.: Brown, sandy, silty clay; moist
8							Qls	Terrace Deposits / Landslide Debris: (Qls/Qt):
9						CL	(Qt)	At 9-ft.: Brown, sandy, silty clay; very moist, some small cobbles
10	R		7			SC		Sand, very fine to fine, clayey, slightly silty, medium olive brown, very moist, with 5±% rounded, small to medium cobbles
11	R		12					
12			15					
13								At 13-ft.: More rounded cobbles and large pebbles.
14								At 14-ft.: Color change to medium gray/brown/brownish grey, wet/saturated
15	R		23			SC/SM		Sand, very fine/fine, slightly silty, clayey with rounded pebbles and cobbles
16	R		25					
17			15			SM/SP		At 16 1/2-ft.: Sand, fine, very pale yellowish brown
18								
19								
20	R		8			Qls		Silt(stone), slightly clayey with occasional to common irregular inclusions of
21	R		9			(Tc)		very fine/fine sand (clean to traces of silt/clay); moderately olive, gray-brown
22			10					and pale yellowish brown, resp.; medium soft to medium stiff, moist to very
23								moist
24								
25	R		10			Qls		Silt(stone), clayey, micromicaceous in-part, moderately dark grey brown/
26	R		16			(Tc)		brownish grey, moist to very moist, medium stiff to stiff.
27			13					
28								[No sampling below 25-26 1/2-ft.]
29								
30								

S - SPT Sample R - Ring Sample B - Bulk Sample N - Nuclear Gauge Test D - Disturbed Sample

* Penetration resistance readings in blows per six inches of driven depth.

GEOTECHNICAL BORING LOG BORING NO. 4

Project Name: Vyas
Project No. 16G16034
Hole Diameter: 6-inches
Elevation:

Drilling Co: Pacific Drilling
Drive Weight: 140-lbs.
Ref./Datum:

Date: 02/27/16 Sheet: 2 of 2
Type of Rig: Tripod
Drop: 30-inches
Depth of Boring: 40-ft.

Depth (ft.)	Sample Type	Sample Number	Penetration Resistance*	Dry Density (pcf)	Moisture Content (%)	Soil Classification	Geologic Unit	Geotechnical Description
31							Qls	
32							(Tc)	
33								
34								Harder at 33 1/2-34-ft. (rock?) then becomes softer
35								
36								
37								
38								
39								
40							Qls (Tc)	Cuttings indicate similar classification as at 25-26 1/2-ft. [silty clay/clayey silt(stone)] (i.e. not undisturbed bedrock)
End of boring at 40-ft. (maximum depth the tripod can drill).								
Total Depth: 40-ft.								
No caving.								
No free standing groundwater.								
Hole backfilled with cuttings.								

S - SPT Sample R - Ring Sample B - Bulk Sample N - Nuclear Gauge Test D - Disturbed Sample
* Penetration resistance readings in blows per six inches of driven depth.



GEOTECHNICAL BORING LOG **BORING NO. 5**

Project Name: Vyas
Project No. 16G16034
Hole Diameter: 6-inches
Elevation:

Drilling Co: Pacific Drilling
Drive Weight: 140-lbs.
Ref./Datum:

Date: 02/27/16 Sheet: 1 of 1
Type of Rig: Tripod
Drop: 30-inches
Depth of Boring: 11-ft.

Depth (ft.)	Sample Type	Sample Number	Penetration Resistance*	Dry Density (pcf)	Moisture Content (%)	Soil Classification	Geologic Unit	Geotechnical Description
								<p>Sampled By: WRM Logged By: SBP</p>
1						SC / CL	Afc	3 1/2-in. concrete flatwork Compacted Artificial Fill (Afc): Sand, very fine to medium, clayey (B/L sandy clay), moderately dark grey-brown/yellowish brown, very moist with scattered subangular subrounded pebbles and occasional rounded small cobbles
2								At 18-in.: Rock
3						SC	Qls (Qtm)	[Landslide Debris / Marine Terrace Deposits (Qls/Qtm):] At 3-ft.: Sand, fine to coarse, very clayey, moderately yellowish brown; moist to very moist, medium dense/soft
4								
5	R		3					
6			3					
7								
8						CL		At 8-ft.: Clay, very fine to fine sandy (BL sandy clay)
9						SM / SC		At 9-ft.: Sand, fine, slightly clayey to silty, moderate dark yellowish brown. very moist with pebble size angular-subrounded clasts (scattered)
10	R		16 50			Tc		At 10'3": Clay seam, 3/8±" thick, dark grey, very stiff - sharp contact In situ siltstone, slightly very fine to fine sand, moderately dark brown/yellowish brown, slightly moist.
11								End of boring at 11-ft. due to refusal on very hard, in-situ bedrock.
<p>Total Depth: 11-ft. No caving. No free standing groundwater. Hole backfilled with cuttings.</p>								
<p>S - SPT Sample R - Ring Sample B - Bulk Sample N - Nuclear Gauge Test D - Disturbed Sample * Penetration resistance readings in blows per six inches of driven depth.</p>								



Log of Exploratory Boring B- 1

Client: Mr. & Mrs. Tom Bengard

Date: 2-20-98

W.O. 791-01

Project: Bengard Residence, 3912 Calle Ariana

Location: Cyprus Shore

Surface Elevation: ~ 67

Total Depth: ~ 40

FIELD				LAB DATA						DESCRIPTION AND REMARKS	
Water	Core	Bulk	Blows*	Depth (ft)	Moisture Content (%)	Dry Density(pcf)	% Relative Compaction (pcf)	USCS	Graphics	Depth (ft)	
								SM			This log is a representation of conditions at the time & place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.
								ML			FILL: Silty Fine Sand, yellow-brown with red oxide, very moist, slightly dense, roots to 2.5 feet
											hit footing from adjacent wall on north side of hole (8-9" thick)
											seep at base of fill NE side
				5						5	CAPISTRANO FORMATION: Fine Sandy Siltstone, dark gray, micaceous, moist, very stiff to hard
											@ 4' - 2" layer Silty Fine Sandstone, medium gray, very micaceous B: N15W8SW
											moderate seep on S55E side of hole @ 6 feet
				10	28.4	104.2				10	@ 9' - Joint Patterns J: N45W67SW, J: N60W67SW
			15/8								J: N25W Vert
											J: N25W Vert
				15	27.5	110.0				15	carbonate deposits along bedding, sample breaks along these, heavy seep on S65W side of hole, bedding appears flat
			32/9								
				20	23.9	114.1		ML		20	6" hard layer, open fractures in hard layer (1-2 mm) J: N40W Vert, heavy seep B: N15W9SW
			32/9								becomes slightly more sandy, minor seepage on all sides of hole
											J: N40W75SW heavy seep from fracture
				25						25	bedding appears flat
											Sandy Siltstone

See Legend for Important Notes

*Driving Weight: 785# to 10', 510# to 21'

John A. Sayers & Associates

GEOTECHNICAL CONSULTANTS

Boring B- 1

Sheet 1 of 2



Log of Exploratory Boring B- 1

Client: Mr. & Mrs. Tom Bengard

Date: 2-20-98

W.O. 791-01

Project: Bengard Residence, 3912 Calle Ariana

Location: Cyprus Shore

Surface Elevation: ~ 67

Total Depth: ~ 40

FIELD				LAB DATA				DESCRIPTION AND REMARKS			
Water	Core	Bulk	Blows*	Moisture Content (%)	Dry Density(pcf)	% Relative Compaction (pcf)	USCS	Graphics	Depth (ft)	This log is a representation of conditions at the time & place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.	
									35	bedding appears flat	
										some seepage from all sides of hole	
									40	Total Depth 40 feet Heavy Seepage @ 15 feet	

See Legend for Important Notes

*Driving Weight: 785# to 10', 510# to 21'

John A. Sayers & Associates

GEOTECHNICAL CONSULTANTS

Boring B- 1

Sheet 2 of 2



Log of Exploratory Boring B- 2

Client: Mr. & Mrs. Tom Bengard

Date: 2-27-98

W.O. 791-01

Project: Bengard Residence, 3912 Calle Ariana

Location: Cyprus Shore

Surface Elevation: ~66

Total Depth: ~26

FIELD				LAB DATA						DESCRIPTION AND REMARKS	
Water	Core	Bulk	Blows*	Depth (ft)	Moisture Content (%)	Dry Density(pcf)	% Relative Compaction (pcf)	USCS	Graphics	Depth (ft)	
								SM			This log is a representation of conditions at the time & place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.
											FILL: Silty Sand, light brown to medium brown, very moist, loose, large roots
			9	5	20.0	97.0		ML SM		5	CAPISTRANO FORMATION: Fine Sandy Siltstone to Silty Sandstone with Clay, medium to dark brown, moist, very stiff to hard
											grades to Sandy Siltstone with Clay, dark brown, moist, very stiff to hard, red fracture staining
											J: N25W60SW
											becomes intensely fractured, moderate gypsum, abundant large roots J: N65W60SW
			5	10	36.4	81.7		MH		10	B: N20W9NE @ 8 feet
											Clayey Siltstone, laminated, moist to very moist, firm to stiff, large roots, root hairs, and much black oxide stain, moderately weathered
											clay seam N20W10SW @ 9.5 feet
											J: N30W80NE B: N10W3NE @ 11 feet
			22	15	23.7	97.7		ML		15	6" hard siltstone layer, orange-brown, minor seepage
											clay seam 1/2" thick B: N75W8S
											Fine Sandy Siltstone, dark gray-brown to medium brown, micaceous, very stiff to hard, moist, massive
											WATER rushing in from east side of hole
											Silty Very Fine Sandstone, medium gray-brown, medium dense @ 17 feet
			34	20	18.4	109.7		ML		20	Sandy Siltstone with Clay, dark gray-brown, very stiff to hard, moist
				25						25	Sandy Siltstone
											Total Depth 26 feet
											Perched Water at 17 feet
											Discontinued drilling because mini rig is not heavy enough to penetrate wet bedrock

See Legend for Important Notes

*Driving Weight: 785# to 10', 510# to 21'

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Boring B- 2

Sheet 1 of 1



Log of Exploratory Boring B- 3

Client: Mr. & Mrs. Tom Bengard

Date: 5-11-98

W.O. 791-01

Project: Bengard Residence, 3912 Calle Arianas

Location: Cyprus Shore

Surface Elevation: ~ 58

Total Depth: ~ 40

FIELD				LAB DATA				DESCRIPTION AND REMARKS			
Water	Core	Bulk	Blows*	Depth (ft)	Moisture Content (%)	Dry Density(pcf)	% Relative Compaction (pcf)	USCS	Graphics	Depth (ft)	
			1					SM			This log is a representation of conditions at the time & place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.
			2	5	26.1	90.9		ML		5	ARTIFICIAL FILL: Sandy Silt, light brown, damp, loose, abundant construction debris (wood, concrete, rebar, refuse).
			2					ML			CAPISTRANO FORMATION: Siltstone, Clayey Silt, light brown, moist to wet, soft, micaceous, weathered, closely fractured
			5	10	28.7	73.1		ML		5	@4.4 clay seam (1/8" thick) B:N/SW; 10W.
			5					ML			@4.5 clay seam (1/16" thick) B: N20W; 10W
			10	15	22.9	100.3	AL EI	ML		15	@4.7-4.8 clay seams B: N30W; 15NW/B:N35W; 15 NW
			12	20	21.8	106.3	DS	ML		20	@4.9 clay seam (1/8" thick) B-N35W; 5-6 NW
			7	25	24.3	104.1				25	Clayey Silt, light brown, moist, soft, micaceous, fractured closely and weathered.
											Silty Clay, light brown, mottled gray, moist to wet, firm, clay infilling fractures, minor gravel, micaceous.
											@8.5-9' concretion, gravel, rock fragments, minor seepage.
											Silty Clay, light brown, wet, firm to stiff, micaceous, closely fractured, weathered, highly fractured below 9.5'.
											@9.8' J: N 70W; 75S
											@9.9' - 10.8' F: N80W; 85S
											@10.8' J: N80W; 85S
											@11' seepage and hard gravel/concretions, highly fractured
											@11.3' B:N30W;5-10 NW
											@11.5' color change to gray. Increase in silt and harder.
											@12' to 15.5' gravelly/concretion zone, sandier, coarse, hard
											@15' heavy seepage SE Quadrant (uphill side)
											End of weathered zone at 16 feet
											Clayey Silt, dark gray, wet, hard, micaceous, minor fine lenticular sand, sporadic fish scales, slight petroliferous odor, massive, minor jarosite stains, less fractured.
											@20' rust and jarosite staining absent, fractures random and widely spaced.
											@25' thin (1mm less), sandy laminae, fish scales, planar, horizontal orientation.

See Legend for Important Notes

*Driving Weight: 2150 lbs. to 30 Ft.; 1350 lbs. to 40 Ft.

John A. Sayers & Associates

GEOTECHNICAL CONSULTANTS

Boring B- 3

Sheet 1 of 2

Log of Exploratory Boring B- 3

Client: Mr. & Mrs. Tom Bengard

Date: 5-11-98

W.O. 791-01

Project: Bengard Residence, 3912 Calle Ariana

Location: Cyprus Shore

Surface Elevation: ~ 58

Total Depth: ~ 40

[illegible]

See Legend for Important Notes

***Driving Weight: 2150 lbs. to 30 Ft.; 1350 lbs. to 40 Ft.**

John A. Sayers & Associates

GEOTECHNICAL CONSULTANTS

Boring B- 3

Sheet 2 of 2



Log of Exploratory Boring B- 4

Client: Mr. & Mrs. Tom Bengard

Date: 5-11-98

W.O. 791-01

Project: Bengard Residence, 3912 Calle Ariana

Location: Cyprus Shore

Surface Elevation: ~ 65

Total Depth: ~ 31

FIELD				LAB DATA							
Water	Core	Bulk	Blows*	Depth (ft)	Moisture Content (%)	Dry Density(pcf)	% Relative Compaction (pcf)	USCS	Graphics	Depth (ft)	DESCRIPTION AND REMARKS
			7					SM			This log is a representation of conditions at the time & place of drilling. With the passage of time or at any other location there may be consequential changes in conditions.
								ML			ARTIFICIAL FILL: Silty Sand, light brown, damp, loose, fine to coarse sand. Abundant construction debris.
								ML			CAPISTRANO FORMATION: Sandy Silt, moist, stiff, weathered, micaceous, fine sand, jarosite, staining.
				5						5	Sandy Siltstone, dark gray, moist, minor fine sand, lenses to 2 mm, trace clay.
			13		21.8	104.9					@5' Undulatory sand lenses (1 mm). @6' minor horizontal clay seams in shoe of 1 sampler.
											@8.5' heavy seepage SE quadrant of hole, uphill sides.
				10						10	@9' B: N-S; 2-5 E @10' B: N5E; 0-10E
			12		25.8	99.0					Seepage at 11' B: N10E; 5E @11.5', fish scales, sandy minor horizontal clay @12' B: N15E; 5E
											Below 12' sand lenses more prevalent. Sand content increases more massive with depth.
			12	15	2.3	103.2				15	@15' B: N25E; 5SW/B: N30E; 8SW. Indistinctly bedded to massive below 15 feet.
											@17-17.5' concretion, horizontal/hard, no seepage above or below.
				20				ML		20	Harder with depth below 20 feet. Fish scales @ 20 feet. Clayey Siltstone, olive gray, wet, hard, minor fine sand, fish scales, massive
			19		19.5	108.6					
				25						25	Sandy Siltstone

See Legend for Important Notes

*Driving Weight: 2150 lbs. to 30 Ft.

John A. Sayers & Associates

GEOTECHNICAL CONSULTANTS

Boring **B- 4**Sheet **1** of **2**

Log of Exploratory Boring B- 4

Client: Mr. & Mrs. Tom Bengard

Date: 5-11-98

W.O. 791-01

Project: Bengard Residence, 3912 Calle Ariana

Location: Cyprus Shore

Surface Elevation: ~ 65

Total Depth: ~ 31

FIELD				Depth (ft)	LAB DATA			Depth (ft)	DESCRIPTION AND REMARKS
Water	Core	Bulk	Blows*		Moisture Content (%)	Dry Density(pcf)	% Relative Compaction (pcf)		
			30		23.0	104.1	DS		
TOTAL DEPTH = 31 FEET Seepage @ 8.5 and 11 feet No Caving									

See Legend for Important Notes

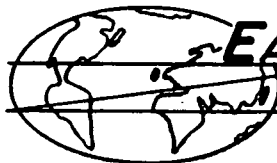
***Driving Weight: 2150 lbs. to 30 Ft.**

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Boring B- 4

Sheet 2 of 2

**EARTHLOGICS**

CONSULTANT GROUP, INC.

Dana Point, California

BORING LOG NO. B-1HSASHEET 1 OF 2PROJECT NAME BERMINGHAM - PROPOSED RESIDENCE DATE SEPT 7, 1988PROJECT NO. 88-117-01 DRILLING COMPANY DATUM DRILL CO.LOCATION REAR PAD - 17' FROM TOP OF SLOPEEQUIPMENT MOBIL DRILL B-61 HOLLOW STEM AUGER DRIVING WEIGHT 140 LBSAVERAGE DROP (IN.) 30 HOLE DIA. (IN.) 8 ELEVATION 55.3± GEOL/ENGR AUDELL, TRG

DEPTH IN FT.	SAMPLE NO.			BLOW COUNT	GROUP SYMBOL	GRAPHIC LOG	GEOLOGIC ATTITUDES	DESCRIPTION	REMARKS
	BULK	CORE	SPT						
0					SM			ARTIFICIAL FILL (AF)	ARRIVE 8 AM
								SILTY SAND w/ tr. GRAVEL: Lt brown, dry, med dense, 15% silt - 80% sand, 5% gravel, v. fine - fine gr. sand, gravel: up to 2" dia, silic silt + ss rocks.	SET UP 820
5	1			7/13	SM			@5' SILTY SAND w/ tr. CLAY: Med brown, moist, med dense, 10% silt - 70% sand - 10% clay - 10% gravel, v. sl. plasticity, mottled w/ drk brown clayey silt, occ. mica flakes, gravel: up to 1/2" dia.	START 825
10	2			11/12	SP			@10' SAND w/ tr. SILT: Reddish brown, moist, v. moist, med dense - dense, 10% silt - 90% sand, fine gr. sand, layered and mottled w/ olive clayey silt, gravel: <5% up to 1" dia, silic silt + ss rocks.	SMOOTH DRILLING RAPID PENETR
15	3			12/18	SC			@15' CLAYEY SAND: Reddish brown, v. moist, dense, 20% clay - 80% sand, med gr. sand, v. sl. plasticity, mottled w/ gray, red brown + drk brown clayey sand, gravel: <5% up to 1" dia, silic silt + ss rocks.	@15' - 837 AM
20	4			7/10	SC			@20' CLAYEY SAND w/ tr. GRAVEL: Med red brown, v. moist, 15% clay - 80% sand - 5% gravel, fine - med gr sand, v. sl. plasticity, layered w/ drk brown clayey silt, gravel: up to 1/2" dia, submed, silic silt + ss rocks.	SMOOTH DRILLING RAPID PENETR
25	5			18/26	SC			@25' CLAYEY SAND w/ tr. GRAVEL: Black, moist - v. moist, dense, 25% clay - 70% sand - 5% gravel, v. fine - fine gr. sand, sl. plasticity, v. mottled w/ green, red brown + gray clayey sand, gravel: up to 1" dia, submed, silic silt + ss rocks.	@25' - 855 AM
30	2			9/17	CL			TERRACE DEPOSITS (Qtn)	SMOOTH DRILL RAPID PENETR
35	5			13/17	SC			@30' CLAYEY SILT w/ tr. GRAVEL: Med dark olive, moist - v. moist, stiff - v. stiff, 30% clay - 65% silt - 5% gravel, v. plastic, occ. dec. organics, v. sl. porous, mottled w/ red brown + med brown clayey silt, trace sand - <5% fine grained, gravel: up to 1" dia.	@35' - 913 AM
40									SAMP. C-5 - dist.urbed, high blow count due to rocks, v. rig chatter

EXPL: B=BEDDING, F=FOLIATION, J=JOINT, FR=FRACTURE, SP=SLIDE PLANE, FP=FAULT PLANE, FA=FOLD AXIS, L=LINEATION

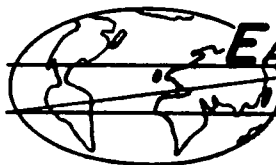
**EARTHLOGICS**

CONSULTANT GROUP, INC.

Dana Point, California

BORING LOG NO. B-1 HSLSHEET 2 OF 2PROJECT NAME BERMINGHAMDATE SEPT 7, 1988PROJECT NO. 88-117-01GEOL/ENGR H. AUDELL

DEPTH IN FT.	SAMPLE NO.			BLOW COUNT	GROUP SYMBOL	GRAPHIC LOG	GEOLOGIC ATTITUDES	DESCRIPTION	REMARKS
	BULK	CORE	SPT						
40			3	19	SC			TERRACE DEPOSITS (Cont)	
				19	SC			@35' CLAYEY SAND w/some GRAVEL: Dark olive gray, v. moist-wet, med dense-dense, 20% clay - 65% sand - 15% gravel, fine-med gr. w/occ. coarse gr. sand, mottled w/gray clayey sand, low-mod plasticity, gravel - up to 4" dia, subrnd, silic silt rocks	@45' - 9 ²⁵ AM
45	6			22	Tc		B30° F90°	@40' groundwater seepage, minor caving* dec. in gravel to 10%, bec. saturated - many sand layers w/ free water, low-mod plasticity, bec. mottled w/ red brn, gray and green sandy clay, gravel up to 7" dia, possible cobbles, silic silt rocks	sl. r. g. chatter
50	7			22	Tc		B30° F90°	@45' inc. in gravel + cobbles.	
55				30	Tc		B28° F90°	BEDROCK - CAPISTRANO FM (Tc) CLAYEY SILTSTONE: Med olive, v. moist-wet to sil' - moist from sil', soft to sil' - med hard from sil', v. thinly bedded to laminated, occ. dark olive clys laminae, diatomaceous on bedding surfs, bec. interbedded w/ ss laminae from ~55'; FRACTS: mod fract, close frac. spac, v. narrow fract to 52' - closed fract from 52', wet fract surfs to 52' - moist fract surfs from 52', many fract. w/ orig. brown iron staining; WEATH: mod weathered to 52' - sil. weathered from 52'. Disturbed to sil' - Competent from sil'	@55' - 9 ²³ AM SMOOTH DRILLING RAPID PENETR
60	8			30	Tc		B28° F90°	@60' SANDY SILTSTONE: Dark olive, moist, hard, v. thinly bedded, interbedded ss. + clys laminae; FRACTS: sl. fract, closed fract sep, wide fract spac, moist fract surfs; WEATH: sil. weath to unoxidized	STOP @ 9 ⁵⁰ AM
								TOTAL DEPTH @ 61' SEEPAGE FROM 40-48' MINOR CAVING FROM 40-48'	
								NOTES * Caving conditions noted after augers were removed from hole Hole back-filled w/ excavated materials	

**EARTHLOGICS****CONSULTANT GROUP, INC.**

Dana Point, California

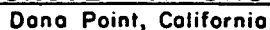
BORING LOG NO. B-2SHEET 1 OF 2PROJECT NAME BERMINGHAMDATE SEPT 7, 1988PROJECT NO. BB-117-01DRILLING COMPANY DATUM DRILL CO.LOCATION FRONT LOT - 20' FROM TOP OF CURBEQUIPMENT MOBIL DRILL B-61 HOLLOW STEM AUGERDRIVING WEIGHT 140 LBSAVERAGE DROP (IN.) 30HOLE DIA. (IN.) 8

ELEVATION

GEOL/ENGR H. AUDELL

DEPTH IN FT.	SAMPLE NO.			BLOW COUNT	GROUP SYMBOL	GRAPHIC LOG	GEOLOGIC ATTITUDES	DESCRIPTION	REMARKS
	BULK	CORE	SPT						
0					SM			ARTIFICIAL FILL (ΔF)	SET-UP 10 ²⁵ AM
								SILTY SAND w/ LITTLE GRAVEL: Med brown, damp-moist, loose-med dense, 25% silt	START 10 ²⁵
5			1	11	NR CL			65% sand-10% gravel, v. fine-fine gr sand, gravel-up to 5" dia, subrnd, silic sfts+ss rocks.	@5'-SPT in v. m. ls NO recovery
								@5'-CLAYEY SILT w/ tr. SAND: Med olive, moist, firm, 30% clay-60% silt-5% sand, <5% gravel, v. high plasticity, mottled w/ dark olive+black silty clay, v. fine-fine gr sand, gravel-up to 2" dia, subrnd, silic sfts.	@10'-10 ⁴⁵ AM
10			1	11	SC			@10'-CLAYEY SAND w/ LITTLE GRAVEL: Med red brown, moist, med dense, 15% clay-75% sand-10% gravel, sl. plasticity, fine-med gr. sand, mottled w/ dark red brown clayey sand, gravel-up to 2" dia, subrnd, silic sfts+ss rocks.	
15			2	8	SC				
								TERRACE DEPOSITS (Q _{tn})	
20			2	11	SC			@15'-CLAYEY SAND w/ LITTLE GRAVEL: Med olive, moist, med dense, 25% clay-65% sand-10% gravel, fine-med gr. sand, mod-high plasticity, mottled w/ med+dark brown clay, silt and org. brn. red brown+green clayey sand, gravel: up to 6" dia, subrnd, silic sfts+ss rocks.	@20'-10 ⁵⁵ AM
								@25' incr in gravel >10%	@22'-v. chatter
25			3	8	SC			@27' sl. incr in moisture - bec v. moist	@25'-SPT: high blow count due to rocks - v. chatter.
30			3	14	CL			@30'-CLAYEY SILT w/ tr. SAND: Med olive, v. moist-wet, stiff, 25% clay-65% silt-5% sand-5% gravel, fine-gr. sand, mod-high plasticity, mottled w/ med+dark olive clayey silt, occ. mica flakes, gravel-up to 4" dia, possible cobbles, silic sfts+rocks	@30'-11 ¹² AM
35			4	14				@32' minor to med seepage, minor cavities	SMOOTH DRILLING RAPID PENETZ
								BEDROCK-CAPSTRAND FM (TC)	
40			4	28			B-25° F-90°	CLAYEY SILTSTONE: Med olive, v. moist-wet to 90'-moist from 40', soft to med hard to 39'-med hard from 39', v. thinly bedded	@40'-11 ⁵² AM

EXPL: B=BEDDING, F=FOLIATION, J=JOINT, FR=FRACTURE, SP=SLIDE PLANE, FP=FAULT PLANE, FA=FOLD AXIS, L=LINEATION



SHEET 2 OF 2

DATE SEPT 7, 1988

GEOL/ENGR *H. AUDELL*

NOTES
* Caving conditions noted after augers were removed from hole.
Hole backfilled w/ excavated materials.

DATE OBSERVED: 5/19/84

METHOD OF DRILLING: 18" bucket auger

LOGGED BY: PWP

GROUND ELEVATION: _____

LOCATION: _____

4010 Ariana, Cypress Shores

BORING NO. 1

DESCRIPTION

DEPTH (FEET)

CLASSIFICATION

BLOWS/FOOT

UNDISTURBED
SAMPLE

BULK SAMPLE

MOISTURE
CONTENT (%)IN PLACE DRY
DENSITY (PCF)GRAPHIC
LOGsam-
ple

Sandy clayey loam, moist, some small cobbles - fill material, 6" cobbles at 2', tan medium grain. Sand w/gray Capo Shale inclusions and gray sandy silts.

4' numerous small cobbles and pebbles w/sandy clayey matrix to clayey sand, dark tan to tan.

5' piece of decomposed granite and numerous cobbles and pebbles.

Cobbles and pebbles in fine to coarse sands w/some clayey sandy silts, tan to gray. Nonmarine terrace source. Granitic pebbles and cobbles and quartzite in matrix of tan to gray sandy, clayey, some layering in fill; 9.25' dark clayey sandy shows some layering, small pieces of wood and small stem or roots.

10' samples lost; dry, sandy material would not stay in tube.

11' good sample. Light gray to tan, sandy, some clay and biotite. Moisture damp to dry moist (optimum +), no cobbles, no pebbles.

Few cobbles, then pretty consistent sands and sandy clay interstitial tan to gray (Capistrano); cobbles again at 18', moist - no water.

Kelly

500#

400#

300#

JOB NO: 84G4059

LOG OF BORING

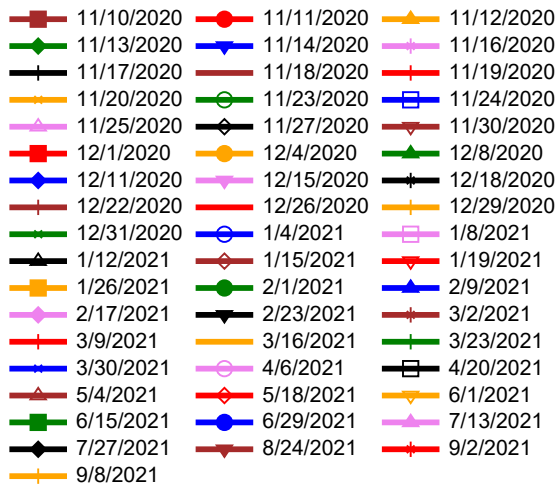
FIGURE: A-1

Appendix E

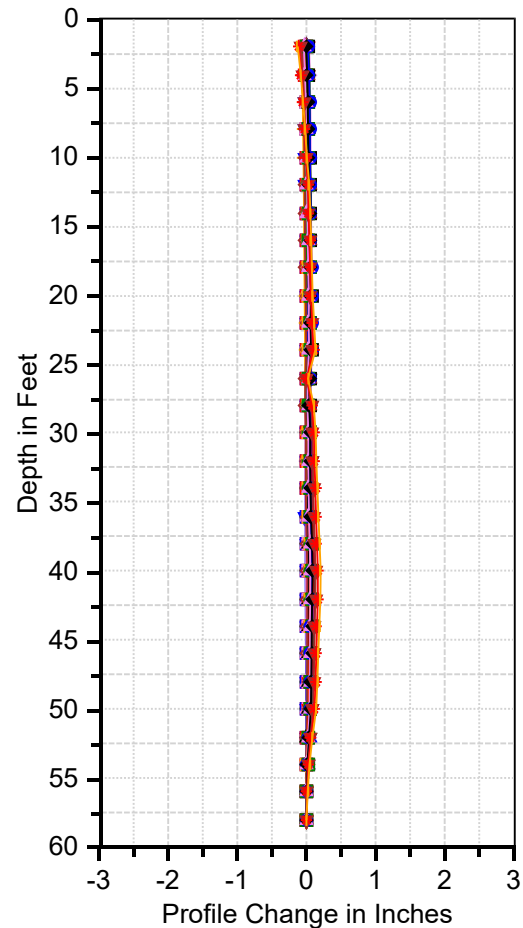
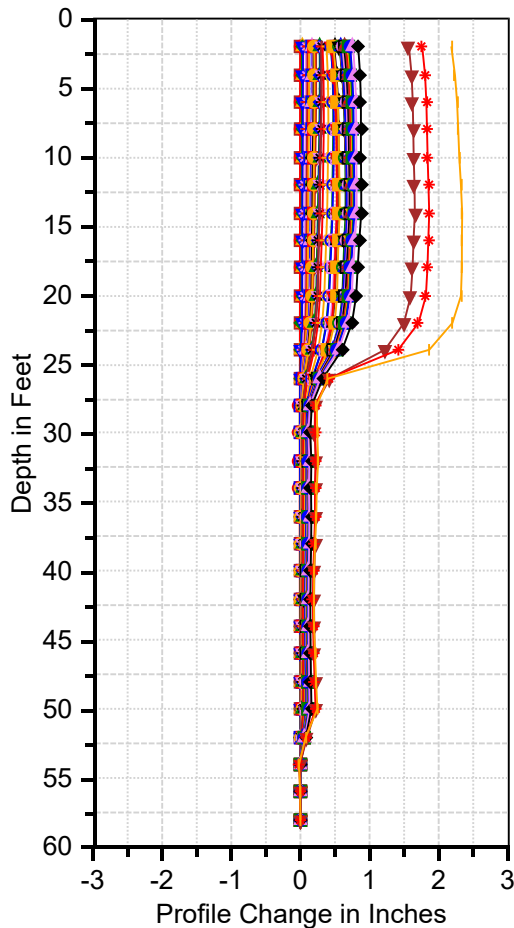
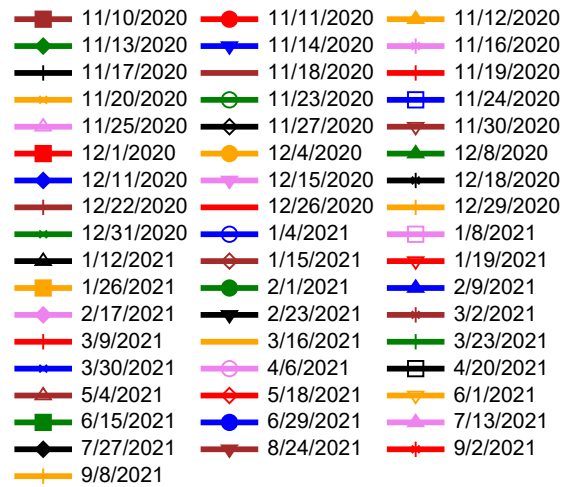
Inclinometer Charts



CyprusShore SI-1 A

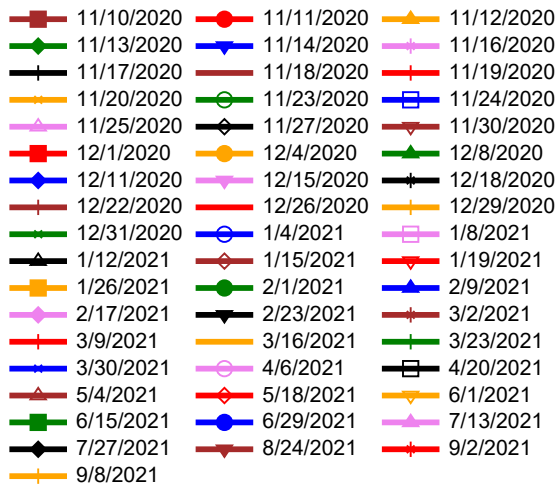


CyprusShore SI-1 B

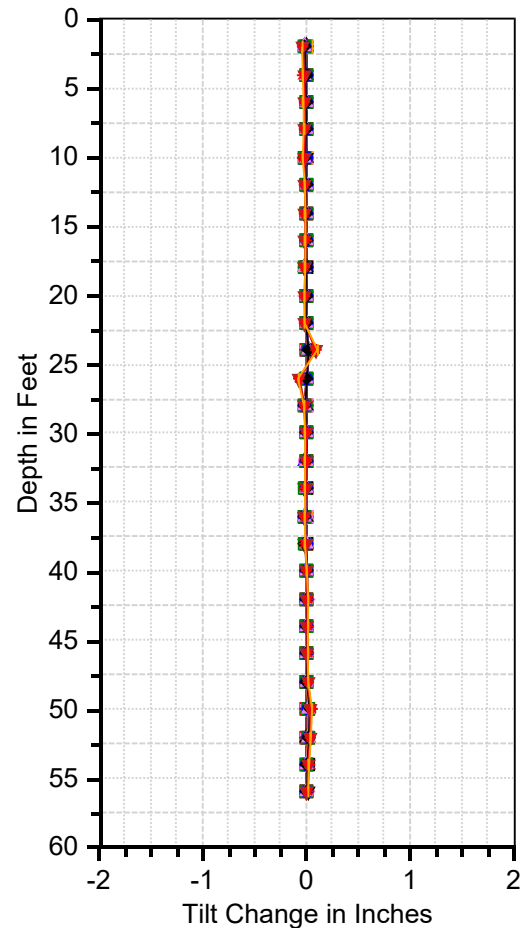
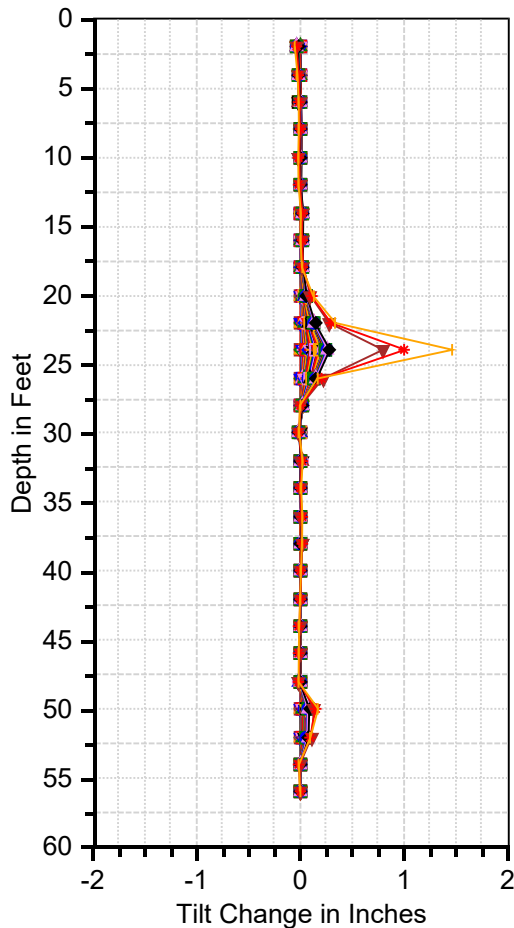
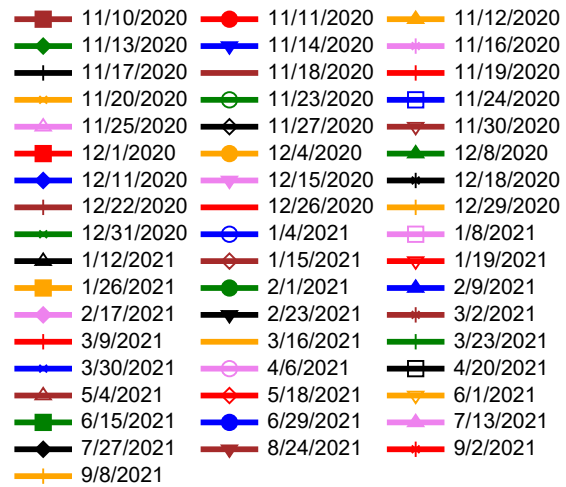


PROJECT NO.: 20-330-00
 PROJECT NAME: CYPRUS SHORES SLOPE FAILURE
 LOCATION: SI-1
 PLOT TYPE: CUMULATIVE DISPLACEMENT

CyprusShore SI-1 A

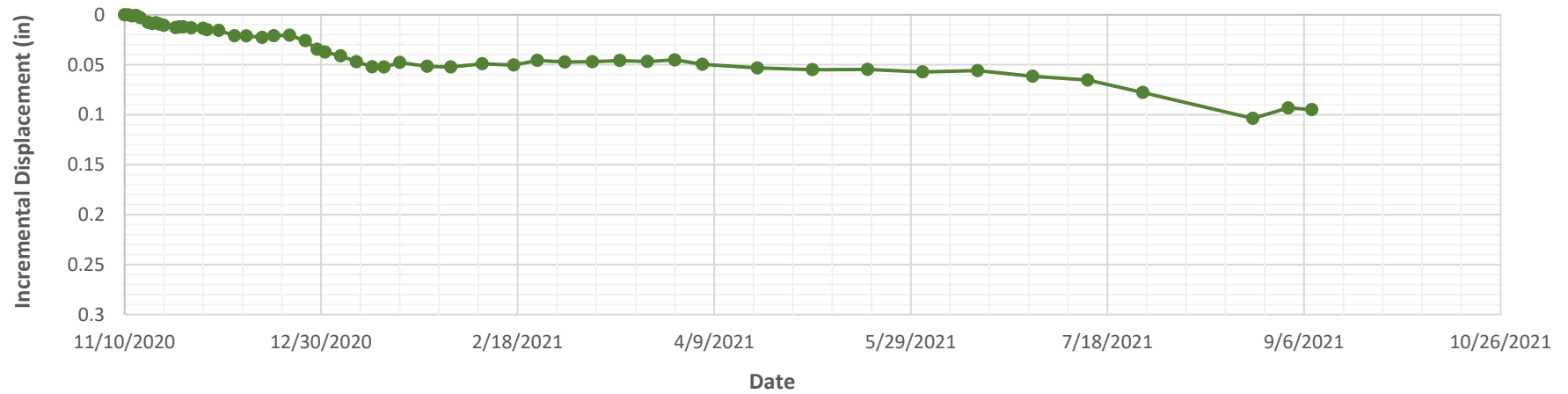


CyprusShore SI-1 B

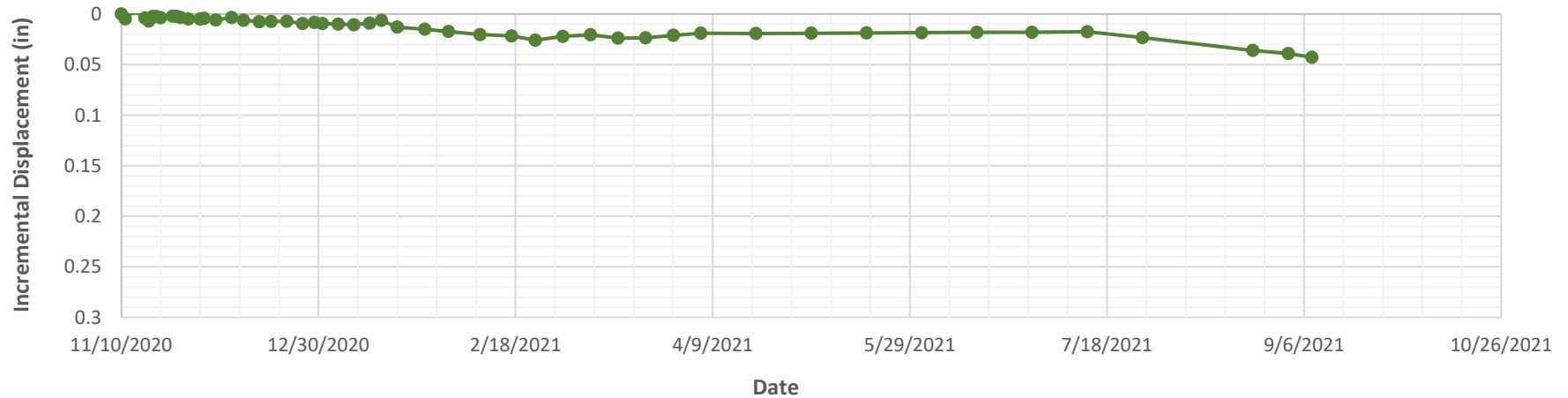


PROJECT NO.: 20-330-00
 PROJECT NAME: CYPRUS SHORES SLOPE FAILURE
 LOCATION: SI-1
 PLOT TYPE: INCREMENTAL DISPLACEMENT

SI-1 A



SI-1 B



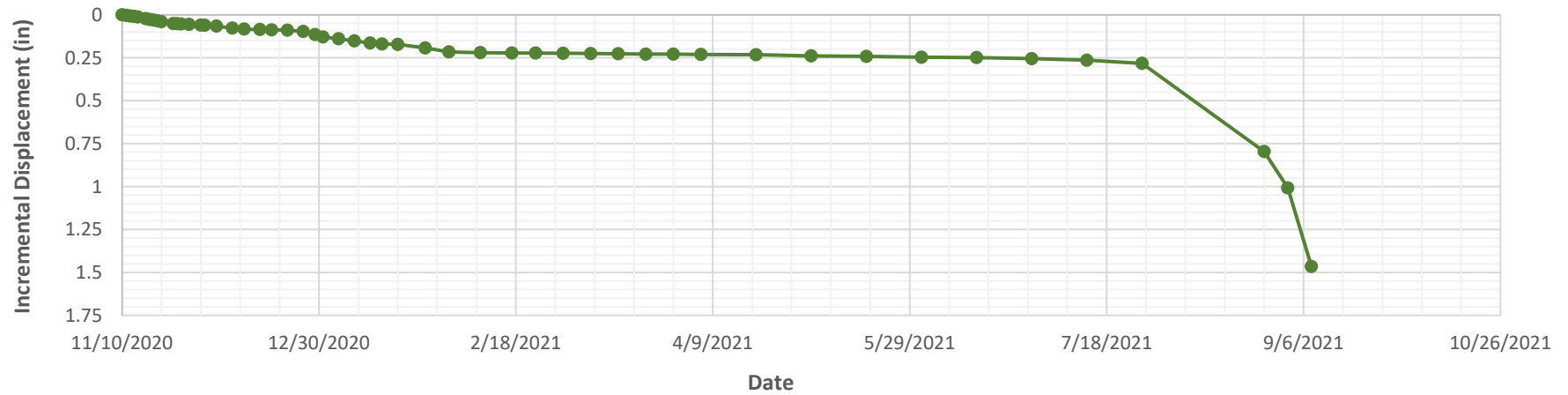
**CYPRUS SHORES SI-1
INCREMENTAL DISPLACEMENT
AT 52 FEET**



Date: September 8, 2021

Project No.: 20-330-00

SI-1 A



SI-1 B



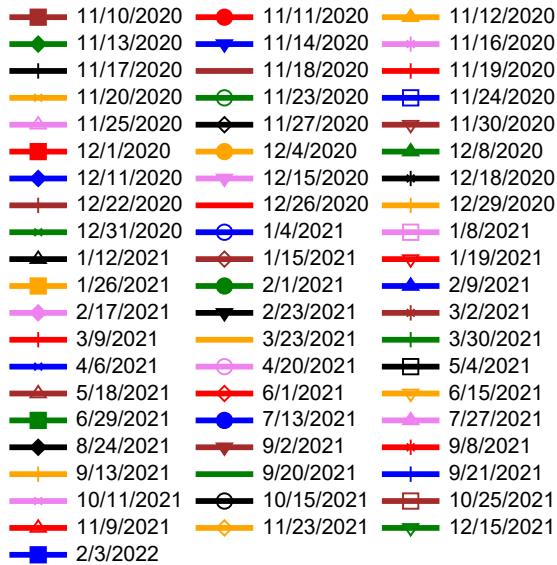
**CYPRUS SHORES SI-1
INCREMENTAL DISPLACEMENT
AT 24 FEET**



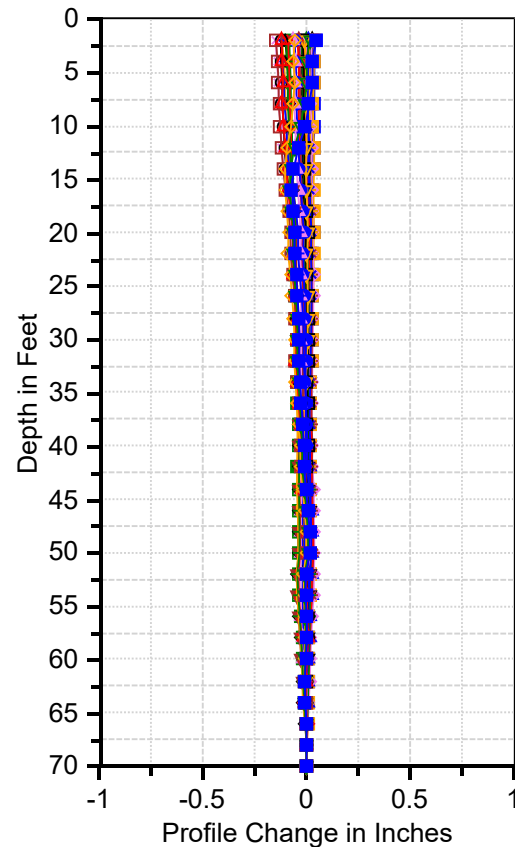
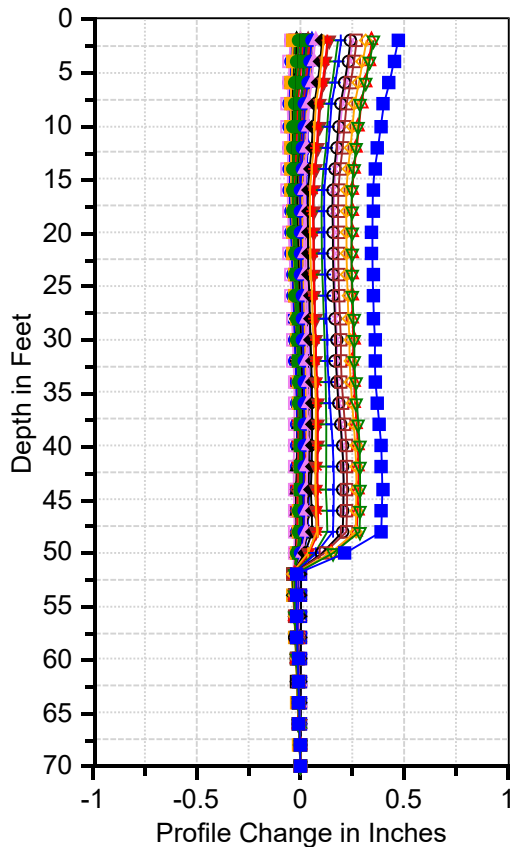
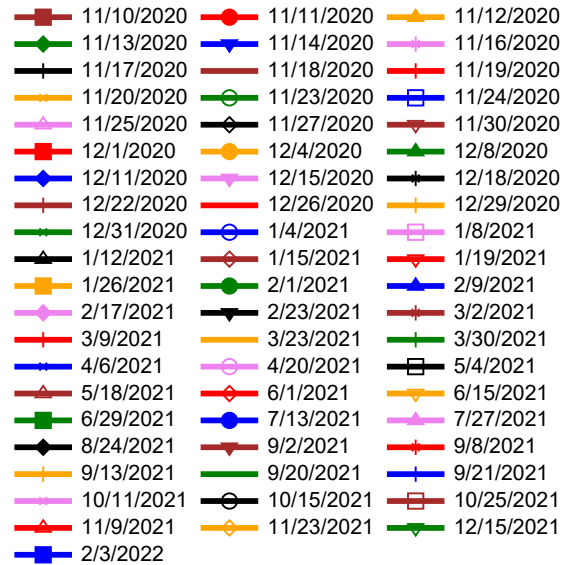
Date: September 8, 2021

Project No.: 20-330-00

CyprusShore SI-2 A

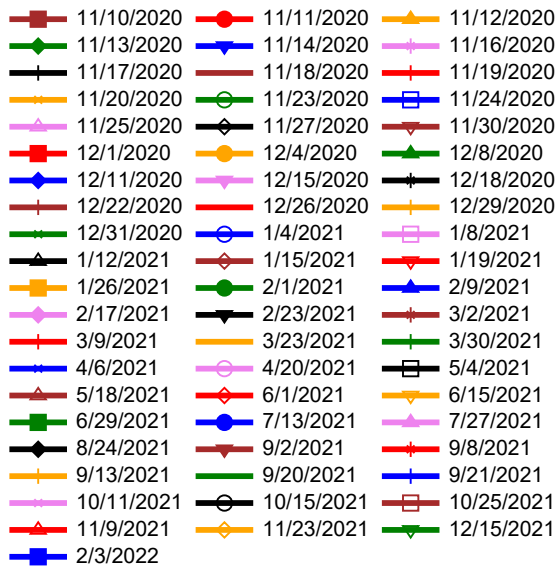


CyprusShore SI-2 B

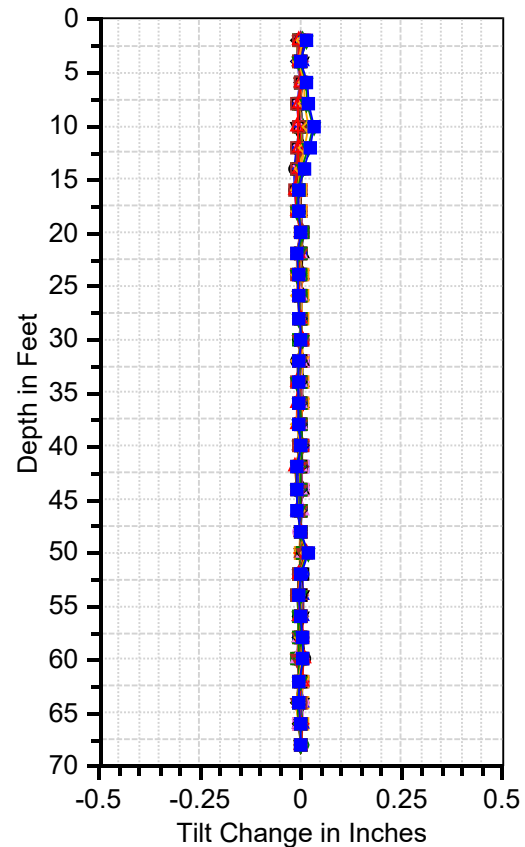
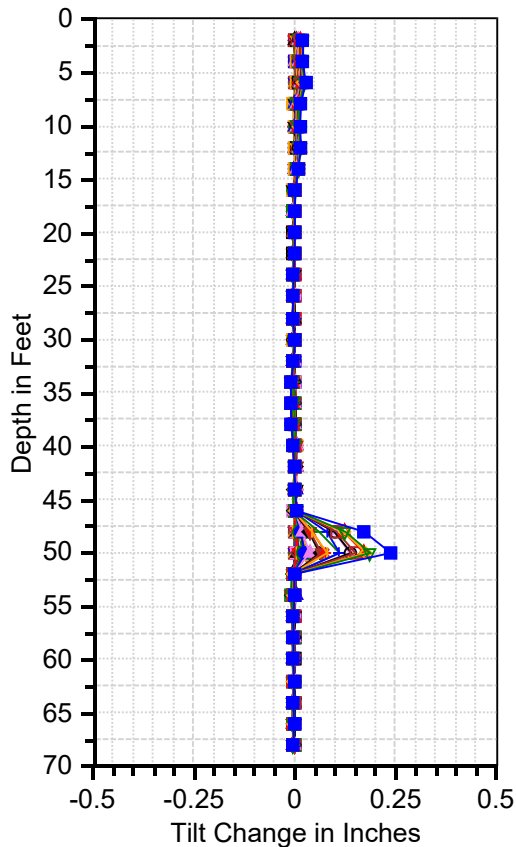
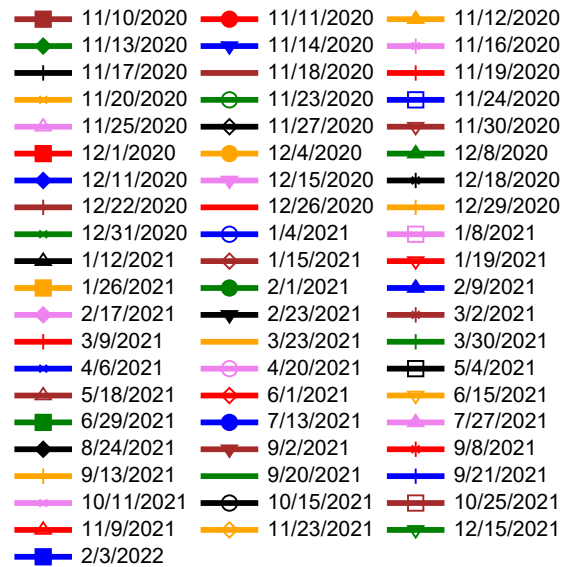


PROJECT NO.: 20-330-00
 PROJECT NAME: CYPRUS SHORES SLOPE FAILURE
 LOCATION: SI-2
 PLOT TYPE: CUMULATIVE DISPLACEMENT

CypressShore SI-2 A

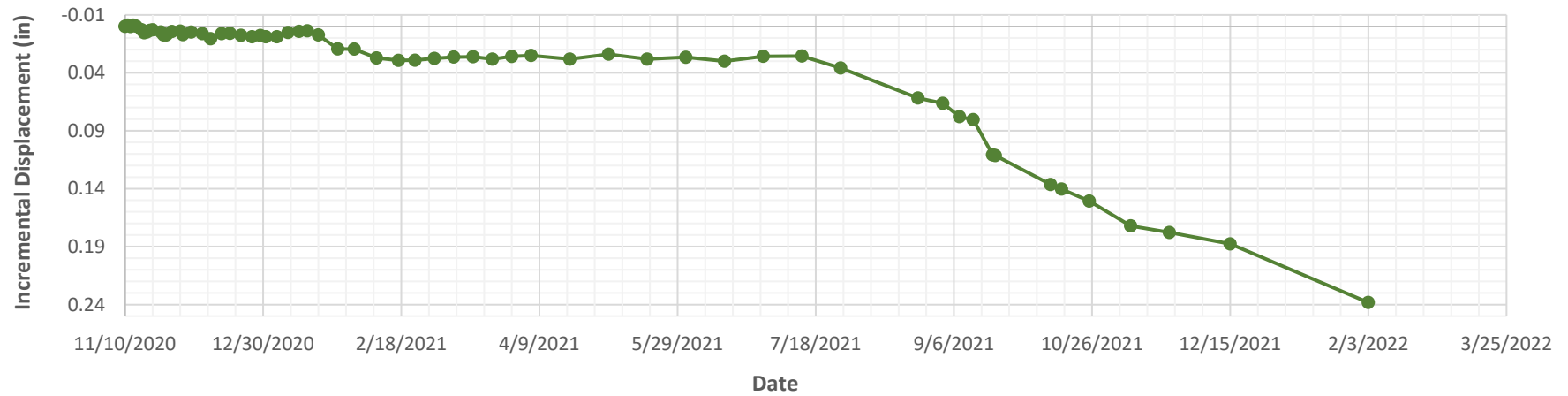


CypressShore SI-2 B

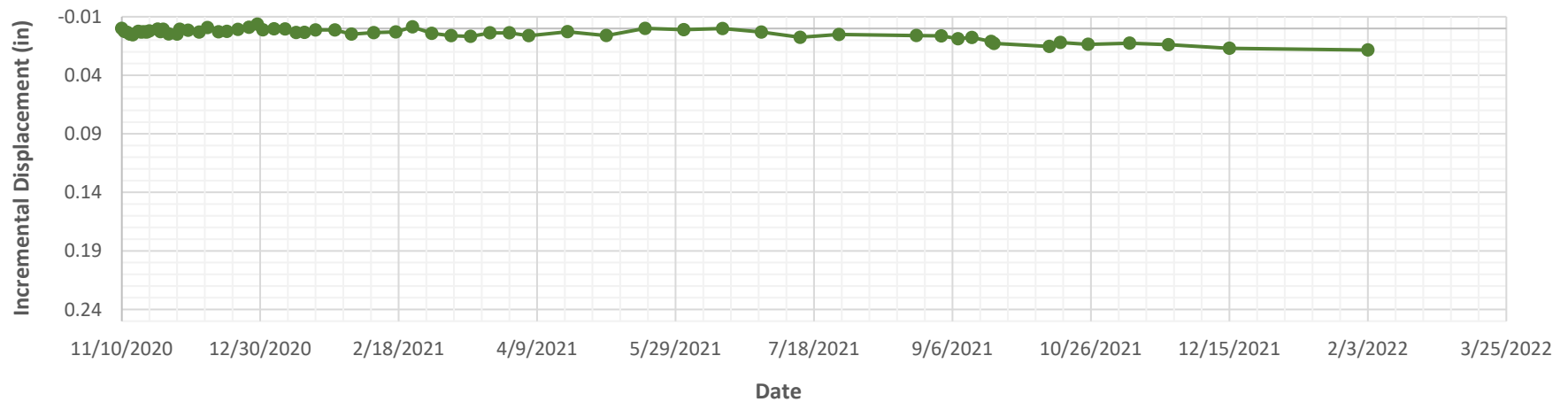


PROJECT NO.: 20-330-00
 PROJECT NAME: CYPRUS SHORES SLOPE FAILURE
 LOCATION: SI-2
 PLOT TYPE: INCREMENTAL DISPLACEMENT

SI-2 A



SI-2 B



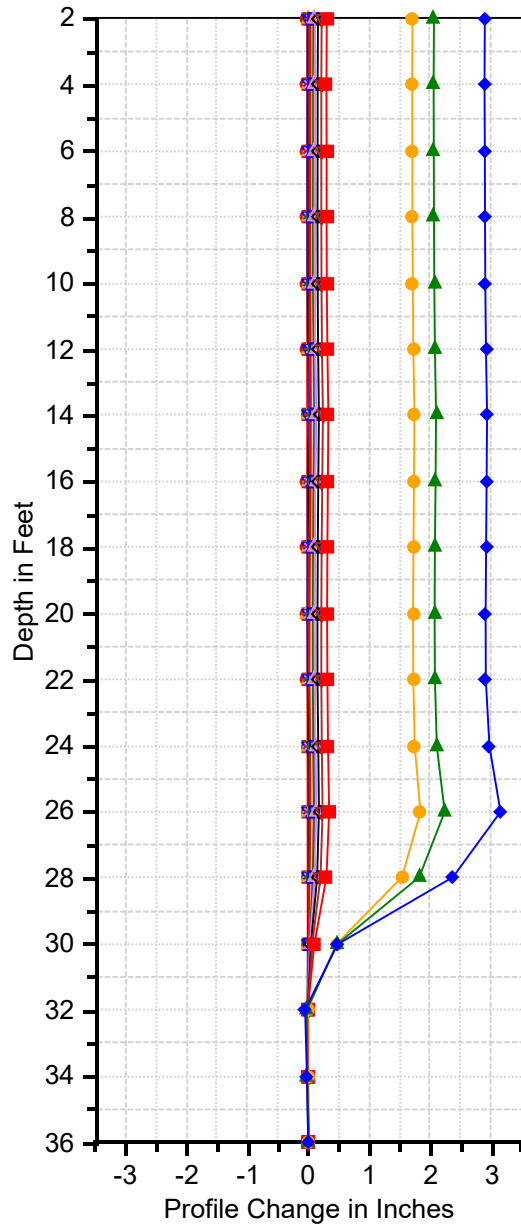
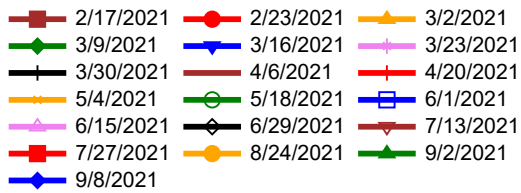
**CYPRUS SHORES SI-2
INCREMENTAL DISPLACEMENT
AT 50 FEET**



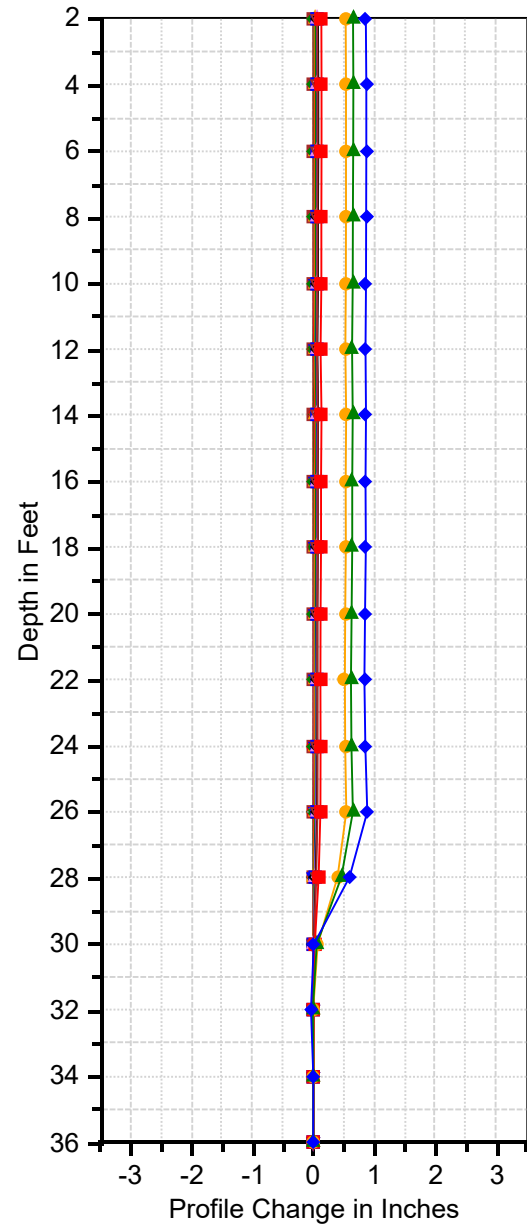
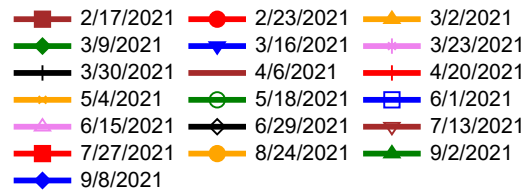
Date: February 03, 2022

Project No.: 20-330-00

CyprusShore SI-3 A

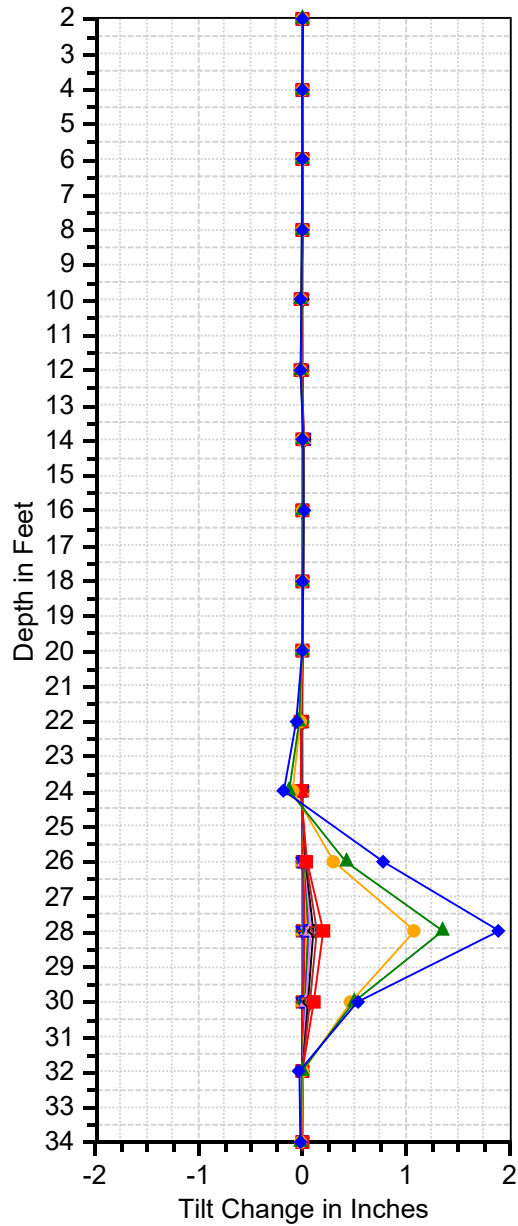
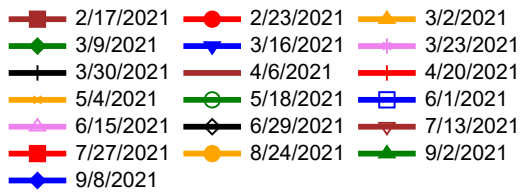


CyprusShore SI-3 B

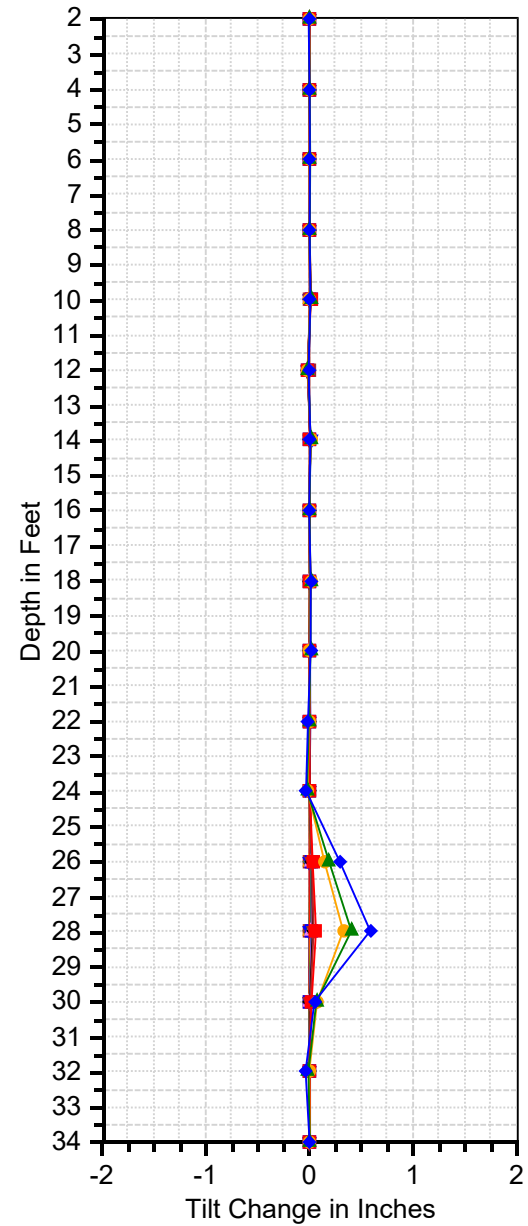
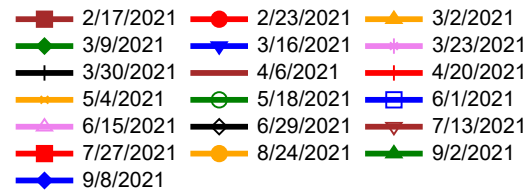


PROJECT NO.: 20-330-00
 PROJECT NAME: CYPRUS SHORES SLOPE FAILURE
 LOCATION: SI-3
 PLOT TYPE: CUMULATIVE DISPLACEMENT

CyprusShore SI-3 A

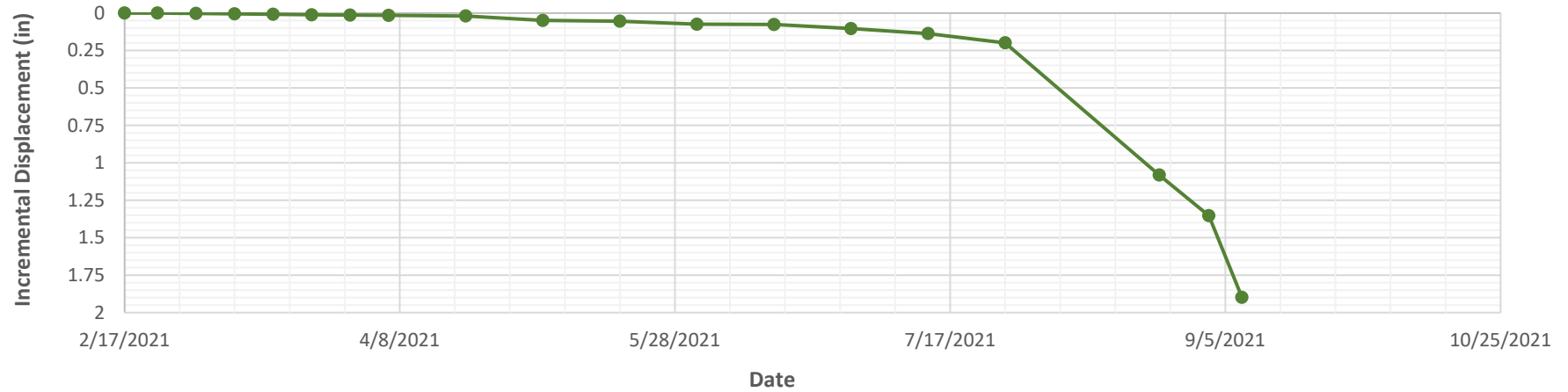


CyprusShore SI-3 B

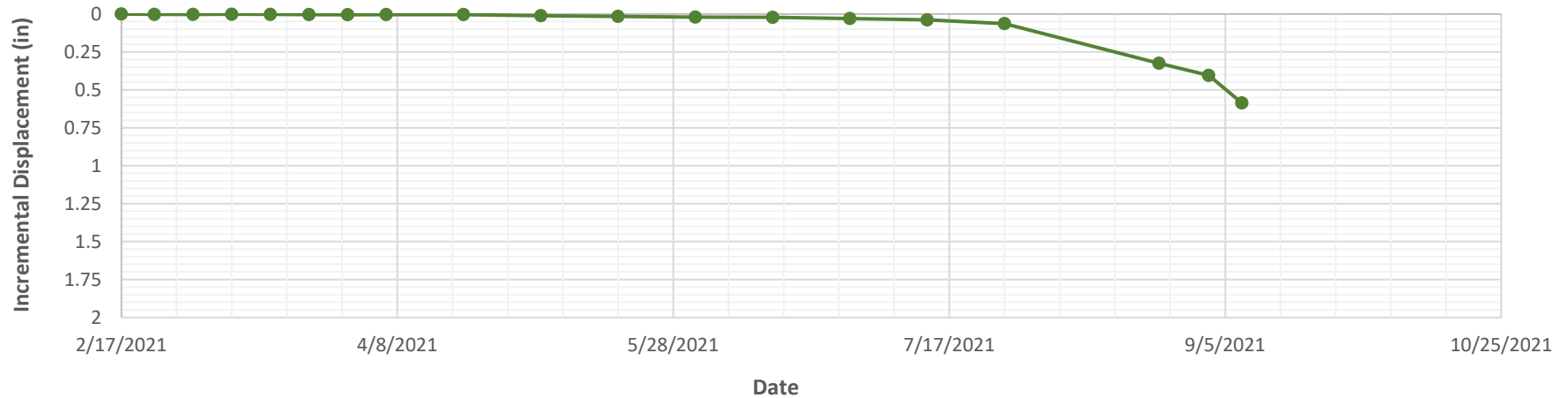


PROJECT NO.: 20-330-00
 PROJECT NAME: CYPRUS SHORES SLOPE FAILURE
 LOCATION: SI-3
 PLOT TYPE: INCREMENTAL DISPLACEMENT

SI-3 A



SI-3 B



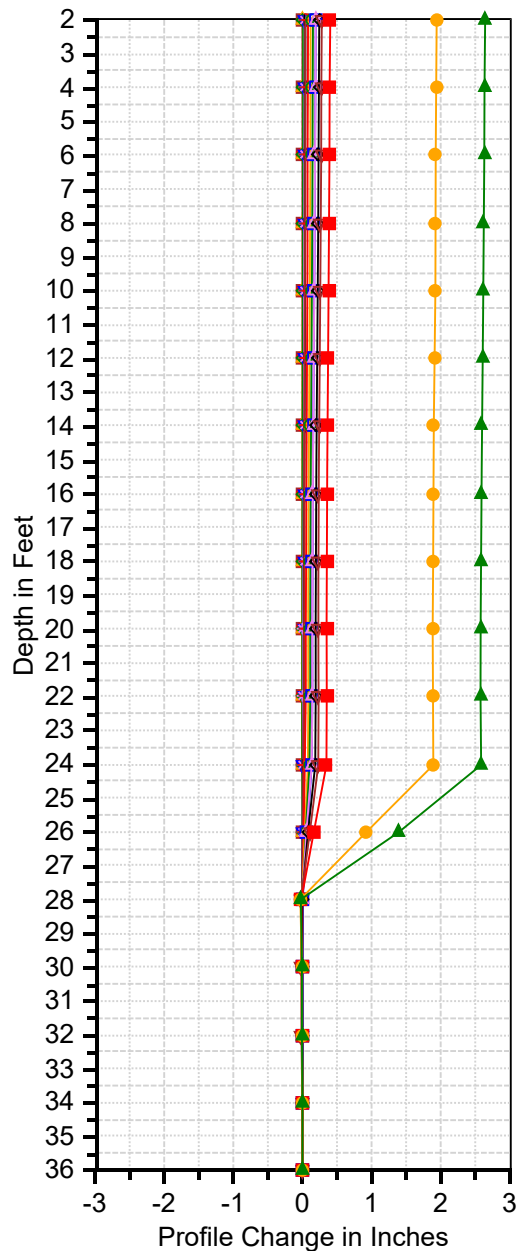
**CYPRUS SHORES SI-3
INCREMENTAL DISPLACEMENT
AT 28 FEET**



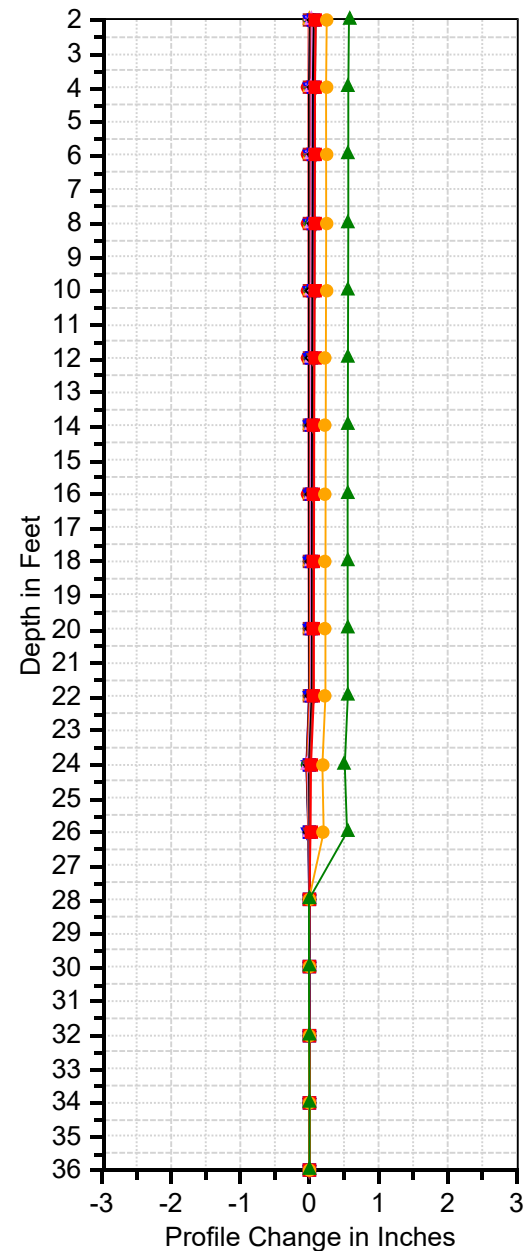
Date: September 8, 2021

Project No.: 20-330-00

CypressShor SI-4 A

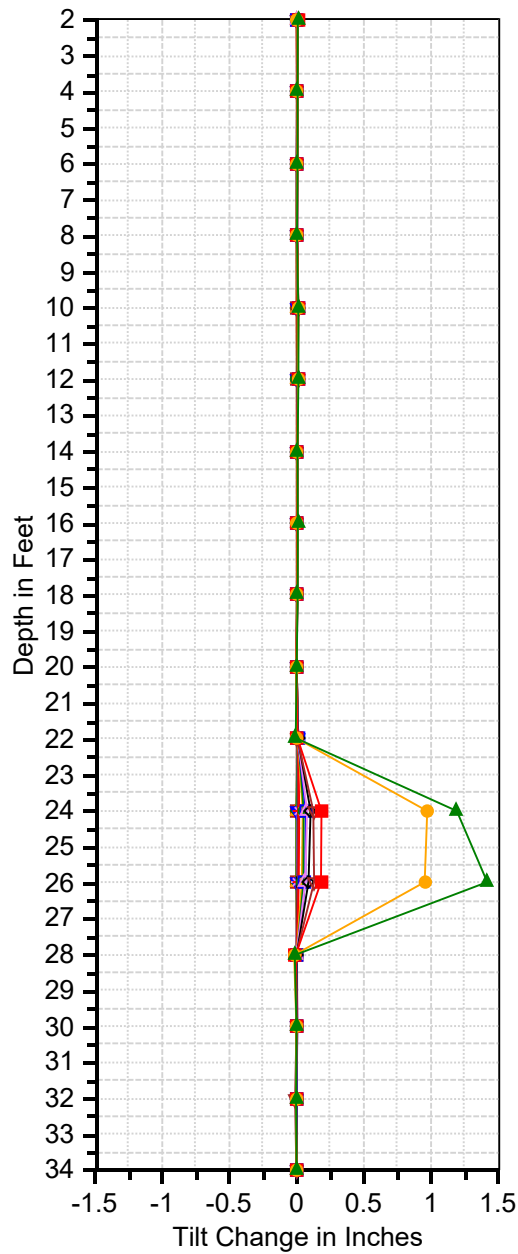


CypressShor SI-4 B

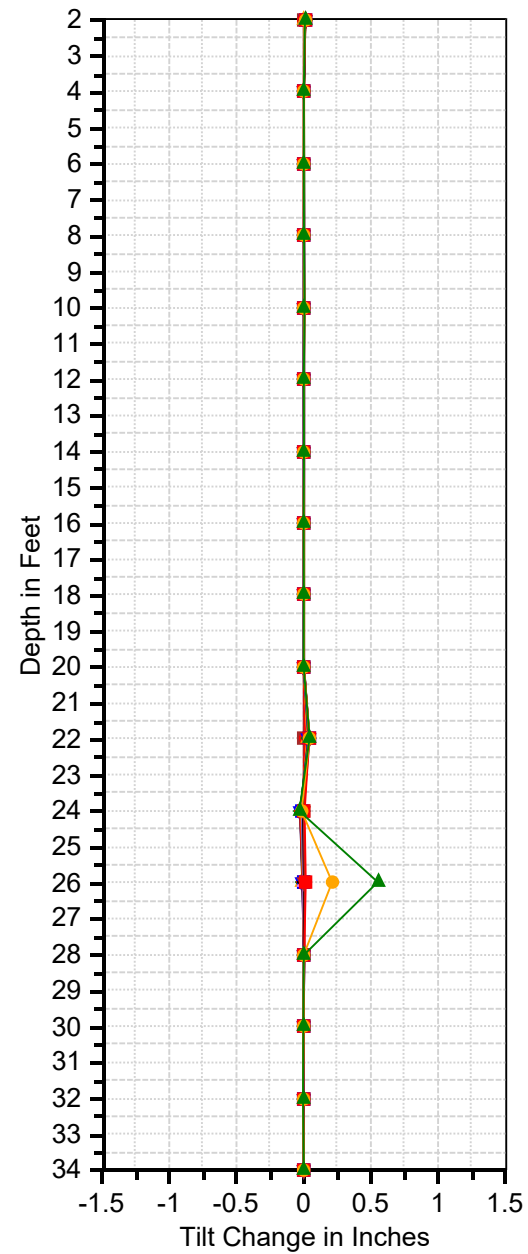


PROJECT NO.: 20-330-00
 PROJECT NAME: CYPRUS SHORES SLOPE FAILURE
 LOCATION: SI-4
 PLOT TYPE: CUMULATIVE DISPLACEMENT

CypressShor SI-4 A

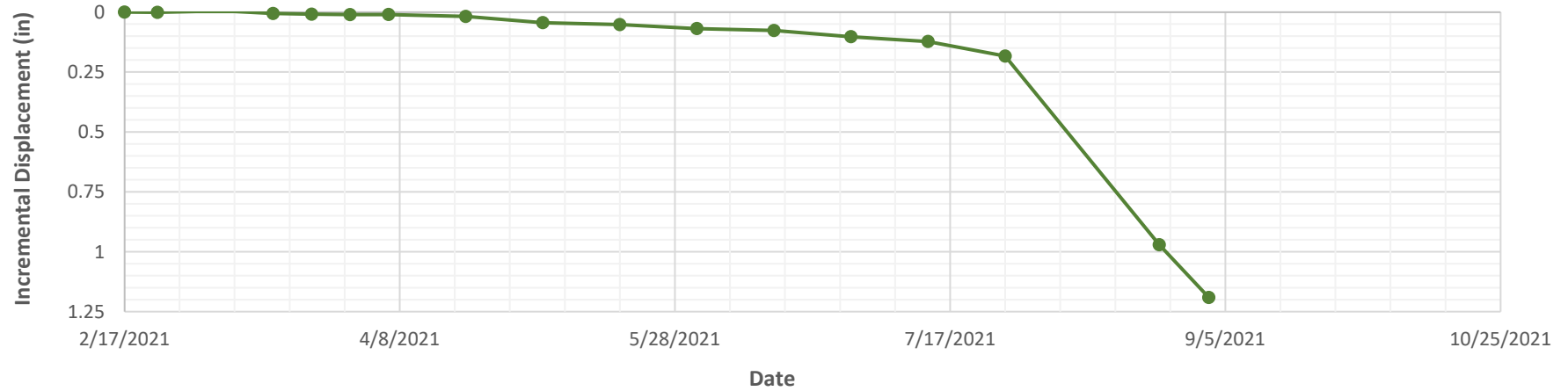


CypressShor SI-4 B



PROJECT NO.: 20-330-00
 PROJECT NAME: CYPRUS SHORES SLOPE FAILURE
 LOCATION: SI-4
 PLOT TYPE: INCREMENTAL DISPLACEMENT

SI-4 A



SI-4 B



**CYPRUS SHORES SI-4
INCREMENTAL DISPLACEMENT
AT 24 FEET**



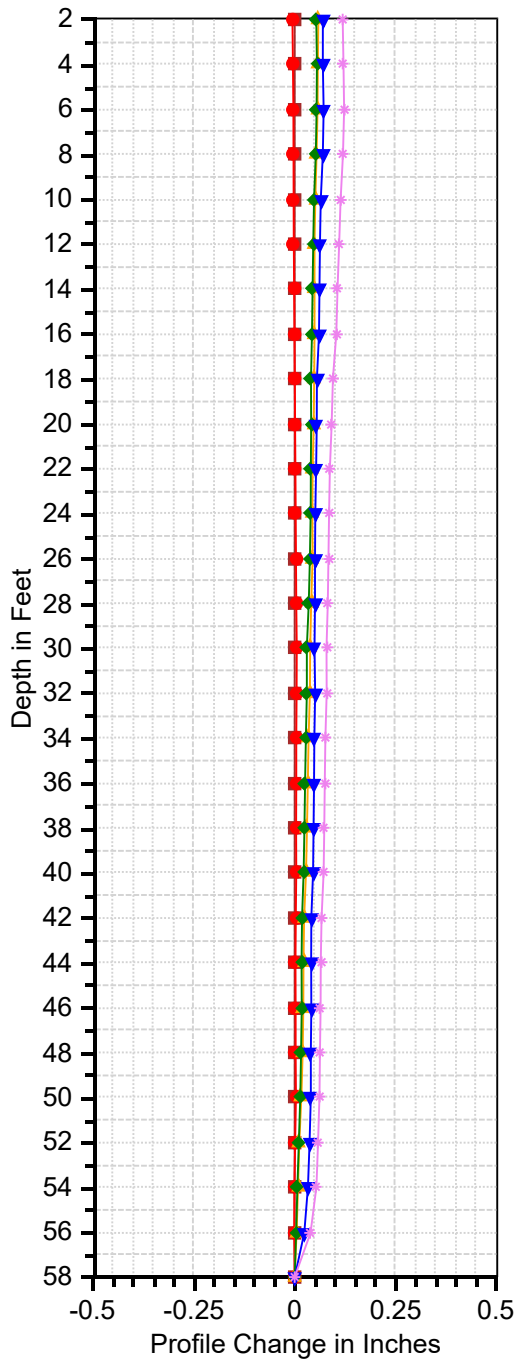
Date: September 2, 2021

Project No.: 20-330-00

GMU-DH-1 (SI-1) [21-116-00]

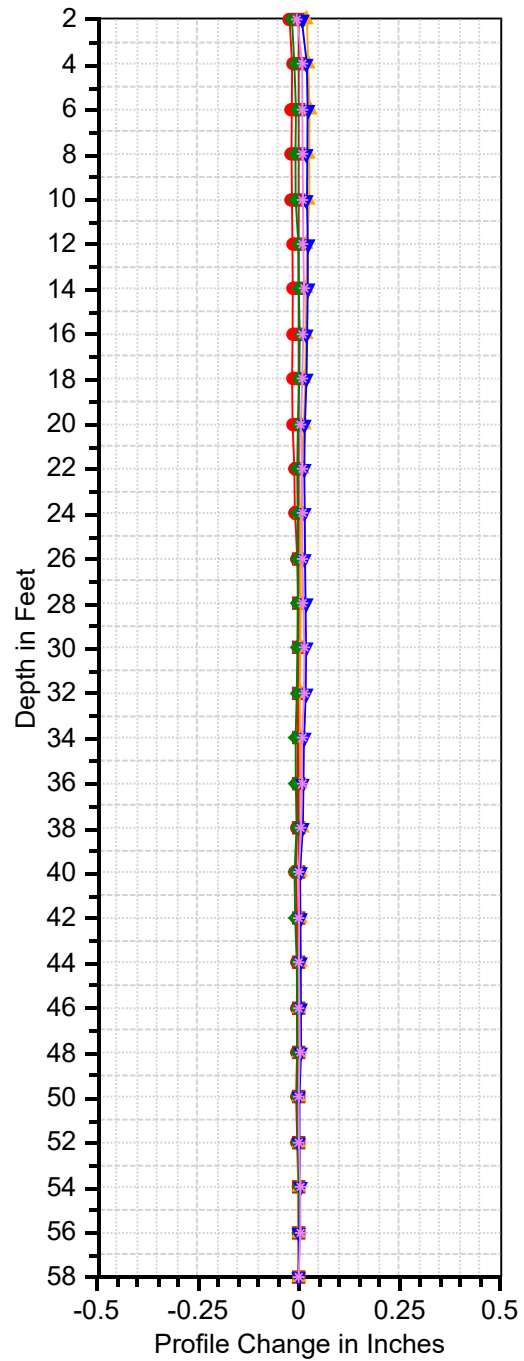
4010Ariana 4010Ariana A

6/15/2021 6/29/2021 7/13/2021
7/27/2021 8/24/2021 9/8/2021



4010Ariana 4010Ariana B

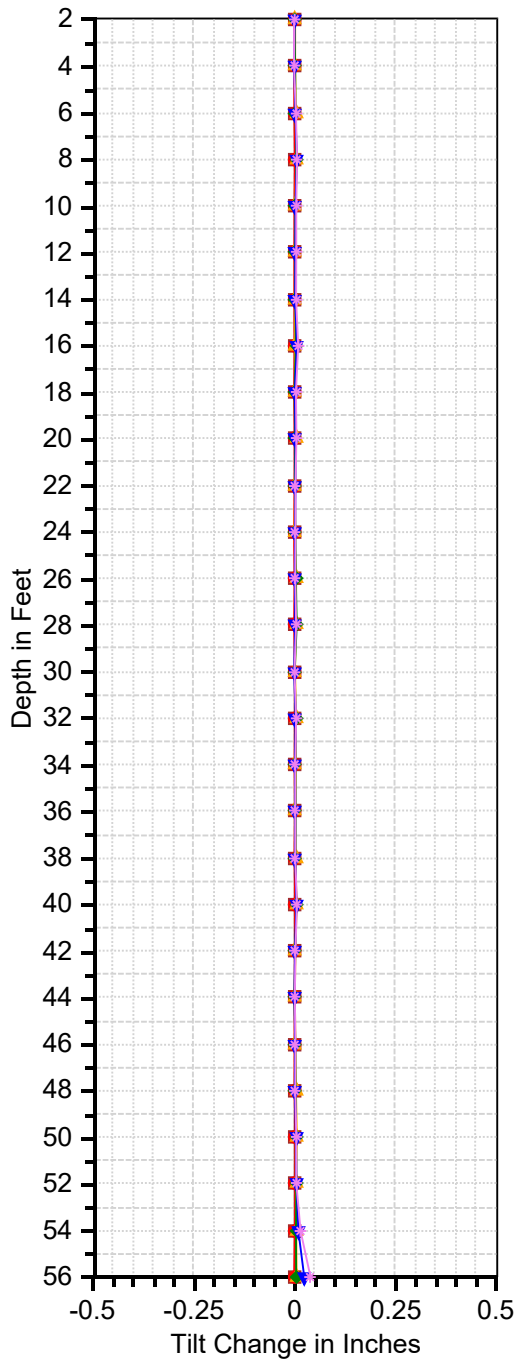
6/15/2021 6/29/2021 7/13/2021
7/27/2021 8/24/2021 9/8/2021



PROJECT NO.: 21-116-00
PROJECT NAME: CYPRUS SHORES SLOPE FAILURE
LOCATION: 4010 Calle Ariana
PLOT TYPE: CUMULATIVE DISPLACEMENT

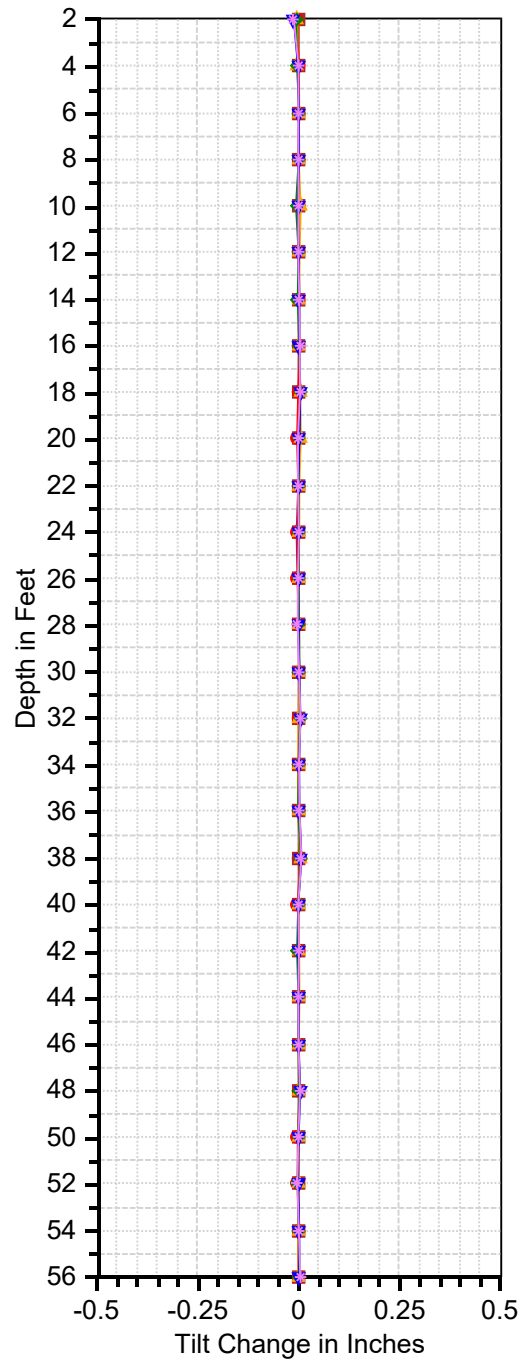
4010Ariana 4010Ariana A

6/15/2021 6/29/2021 7/13/2021
7/27/2021 8/24/2021 9/8/2021



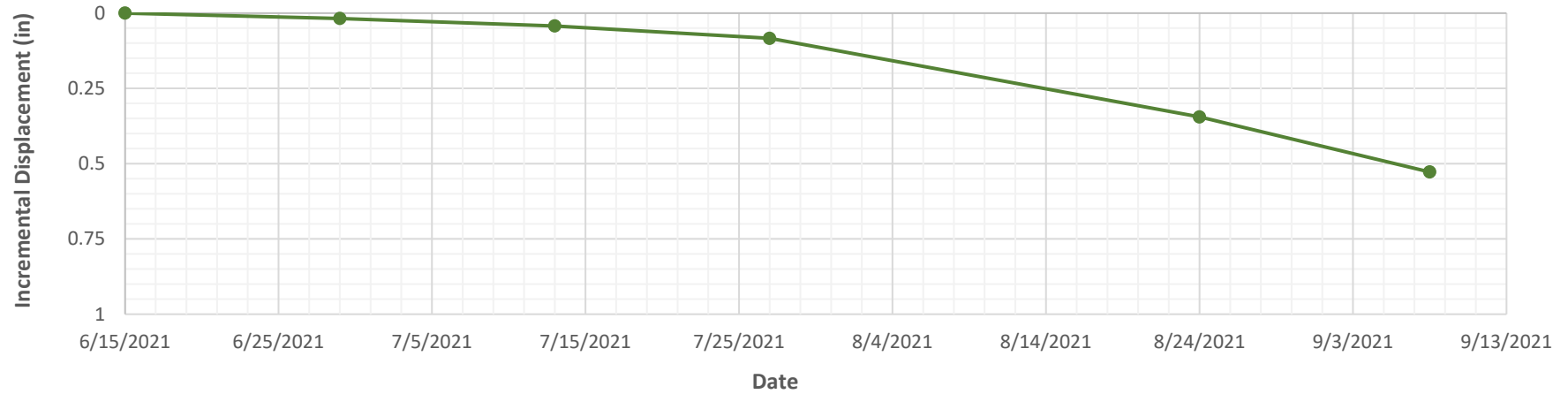
4010Ariana 4010Ariana B

6/15/2021 6/29/2021 7/13/2021
7/27/2021 8/24/2021 9/8/2021

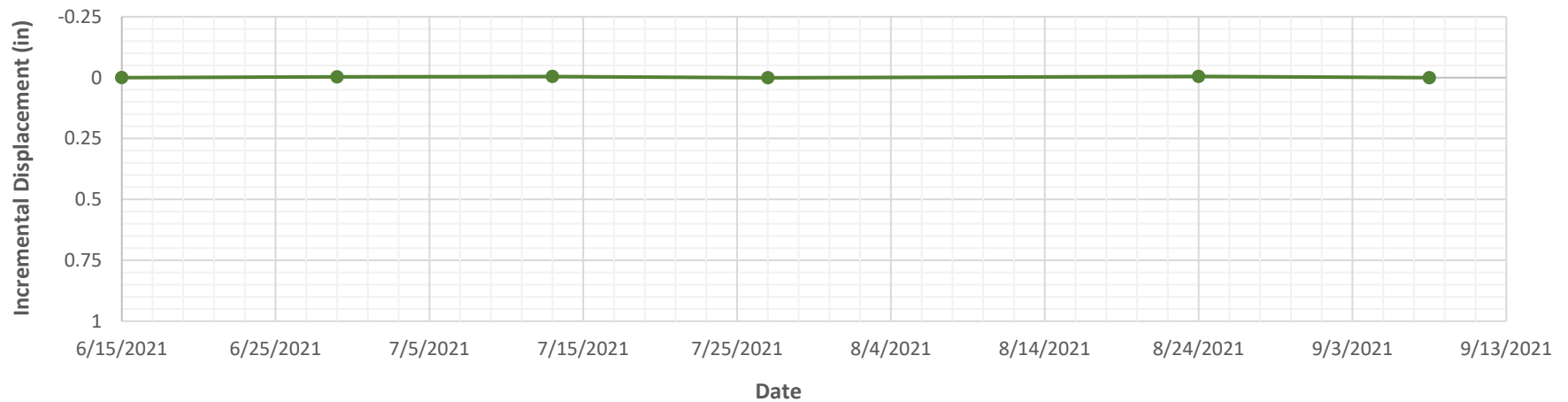


PROJECT NO.: 21-116-00
PROJECT NAME: CYPRUS SHORES SLOPE FAILURE
LOCATION: 4010 Calle Ariana
PLOT TYPE: INCREMENTAL DISPLACEMENT

4004 Calle Ariana A



4004 Calle Ariana B



**CYPRUS SHORES 4004 Calle Ariana
INCREMENTAL DISPLACEMENT
AT 52 FEET**

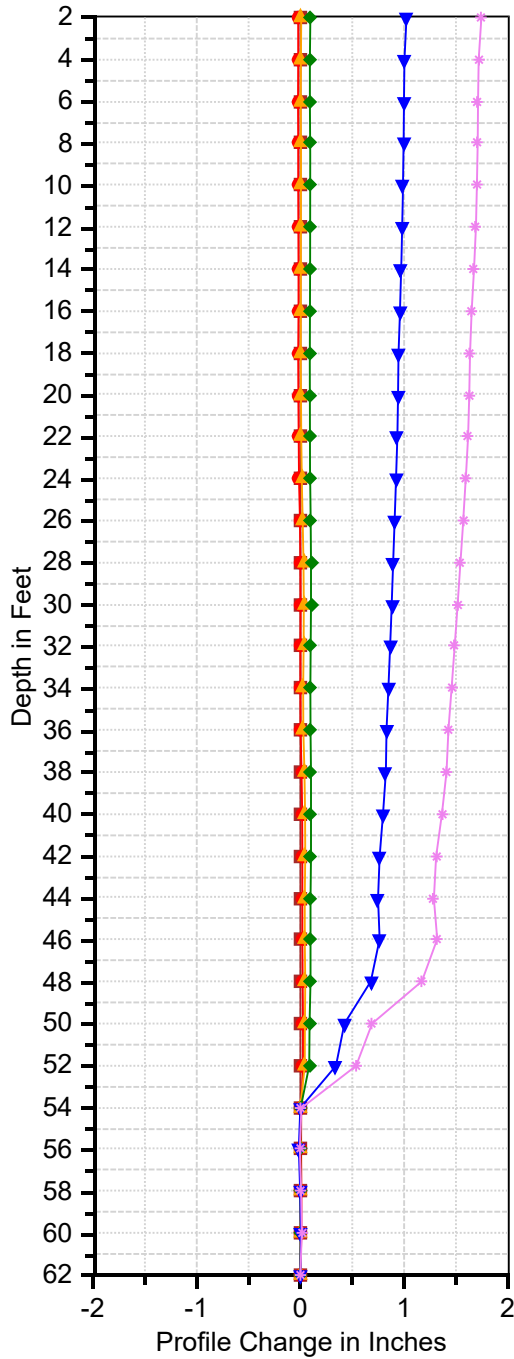


Date: September 8, 2021

Project No.: 20-330-00

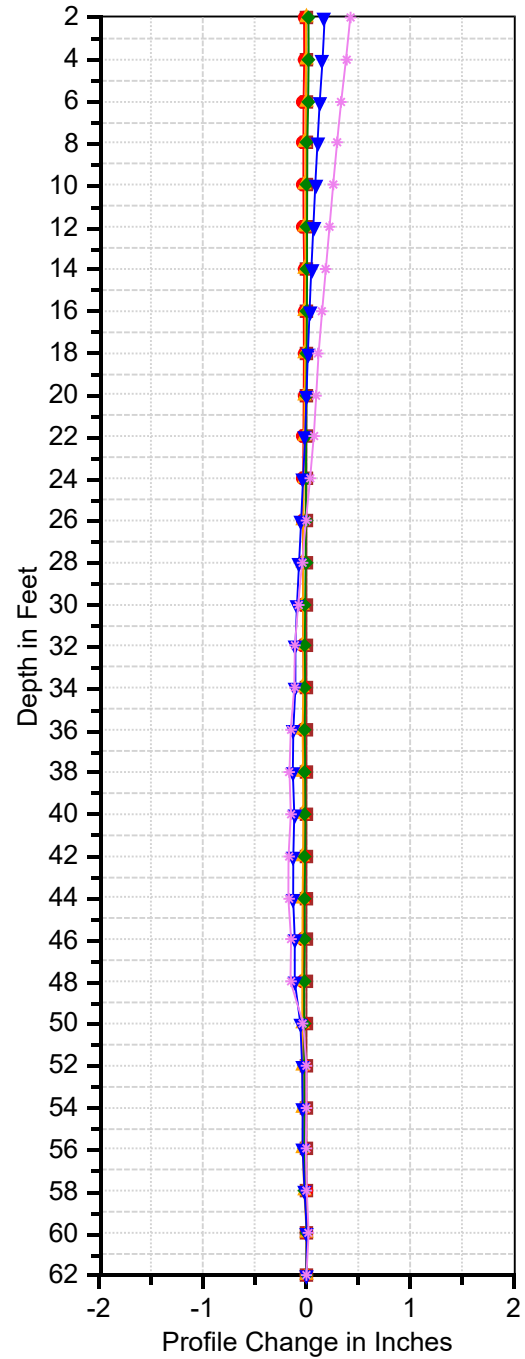
4004Ariana A

6/15/2021 6/29/2021 7/13/2021
7/27/2021 8/24/2021 9/8/2021



4004Ariana B

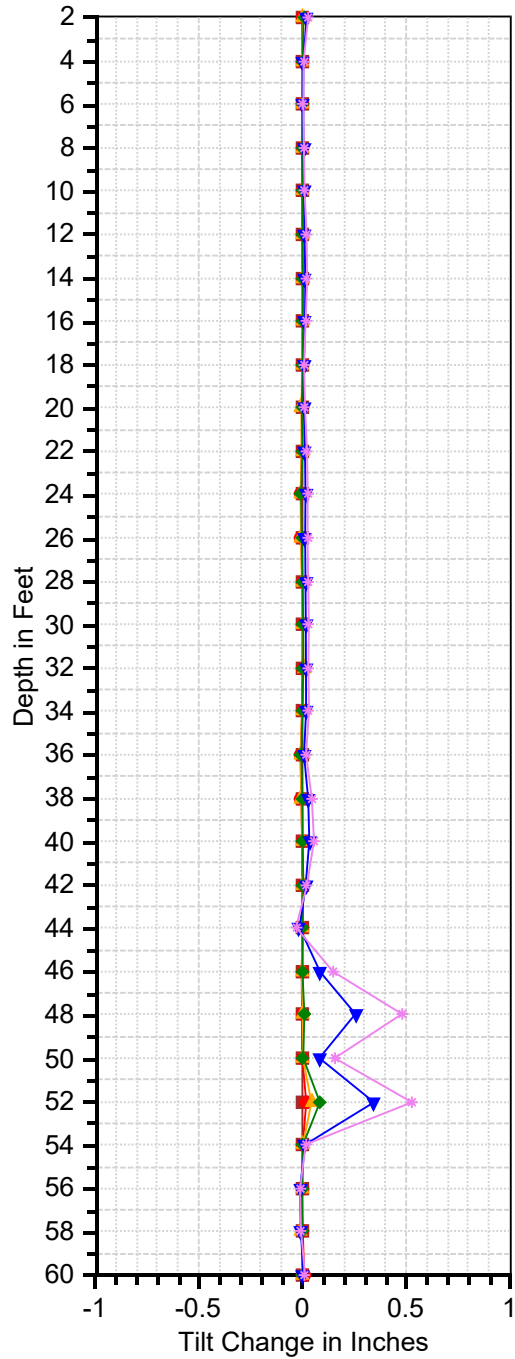
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7/27/2021 8/24/2021 9/8/2021



PROJECT NO.: 21-119-00
PROJECT NAME: CYPRUS SHORES SLOPE FAILURE
LOCATION: 4004 Calle Ariana
PLOT TYPE: CUMULATIVE DISPLACEMENT

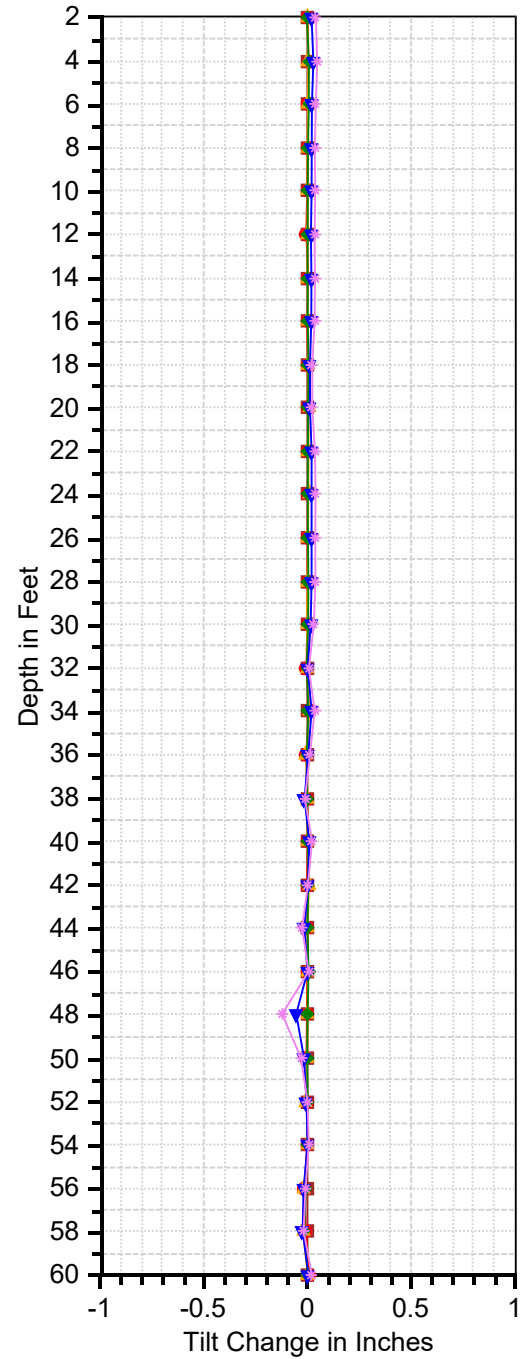
4004Ariana A

6/15/2021 6/29/2021 7/13/2021
 7/27/2021 8/24/2021 9/8/2021



4004Ariana B

6/15/2021 6/29/2021 7/13/2021
 7/27/2021 8/24/2021 9/8/2021



PROJECT NO.: 21-119-00
 PROJECT NAME: CYPRUS SHORES SLOPE FAILURE
 LOCATION: 4004 Calle Ariana
 PLOT TYPE: INCREMENTAL DISPLACEMENT



SanClemente

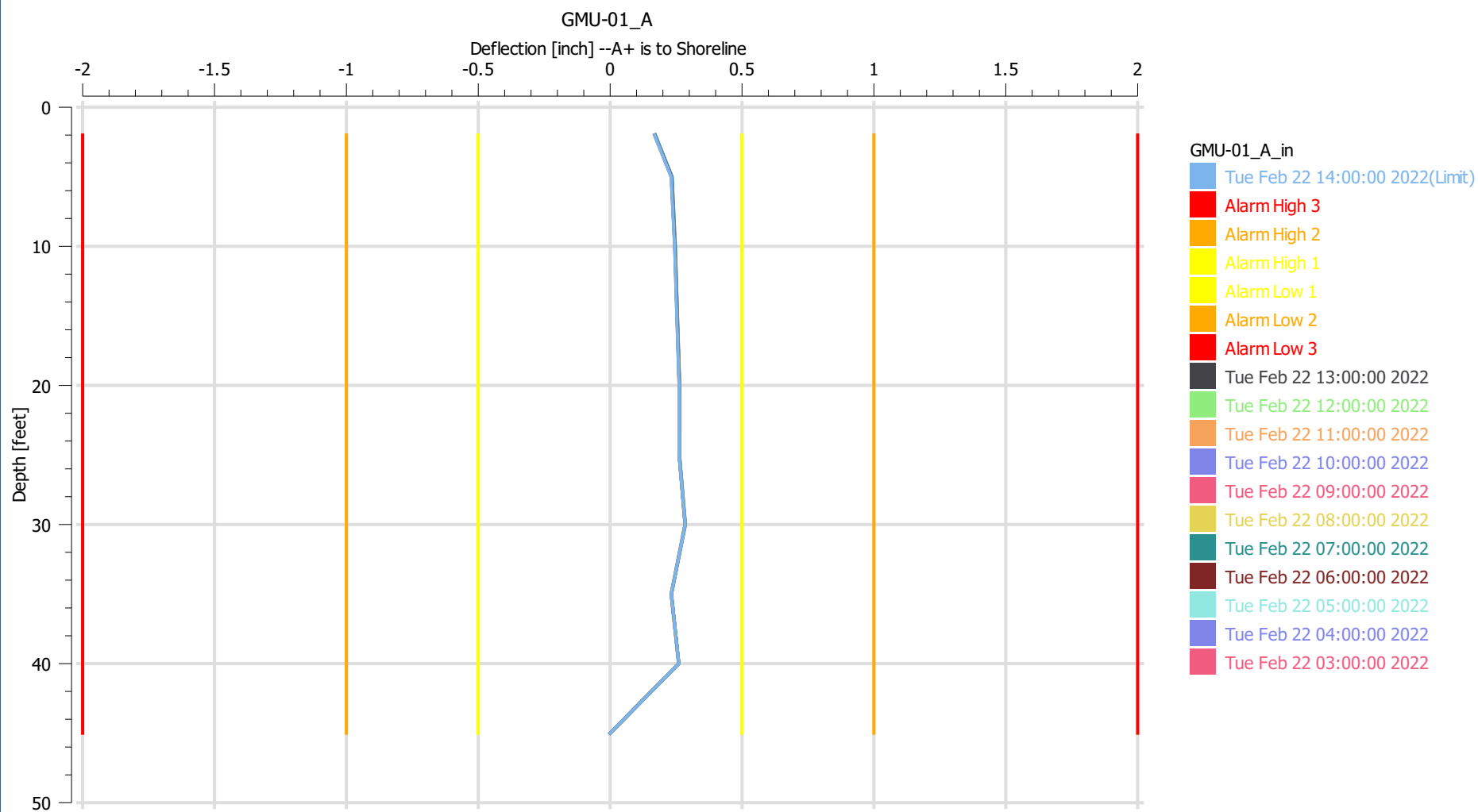
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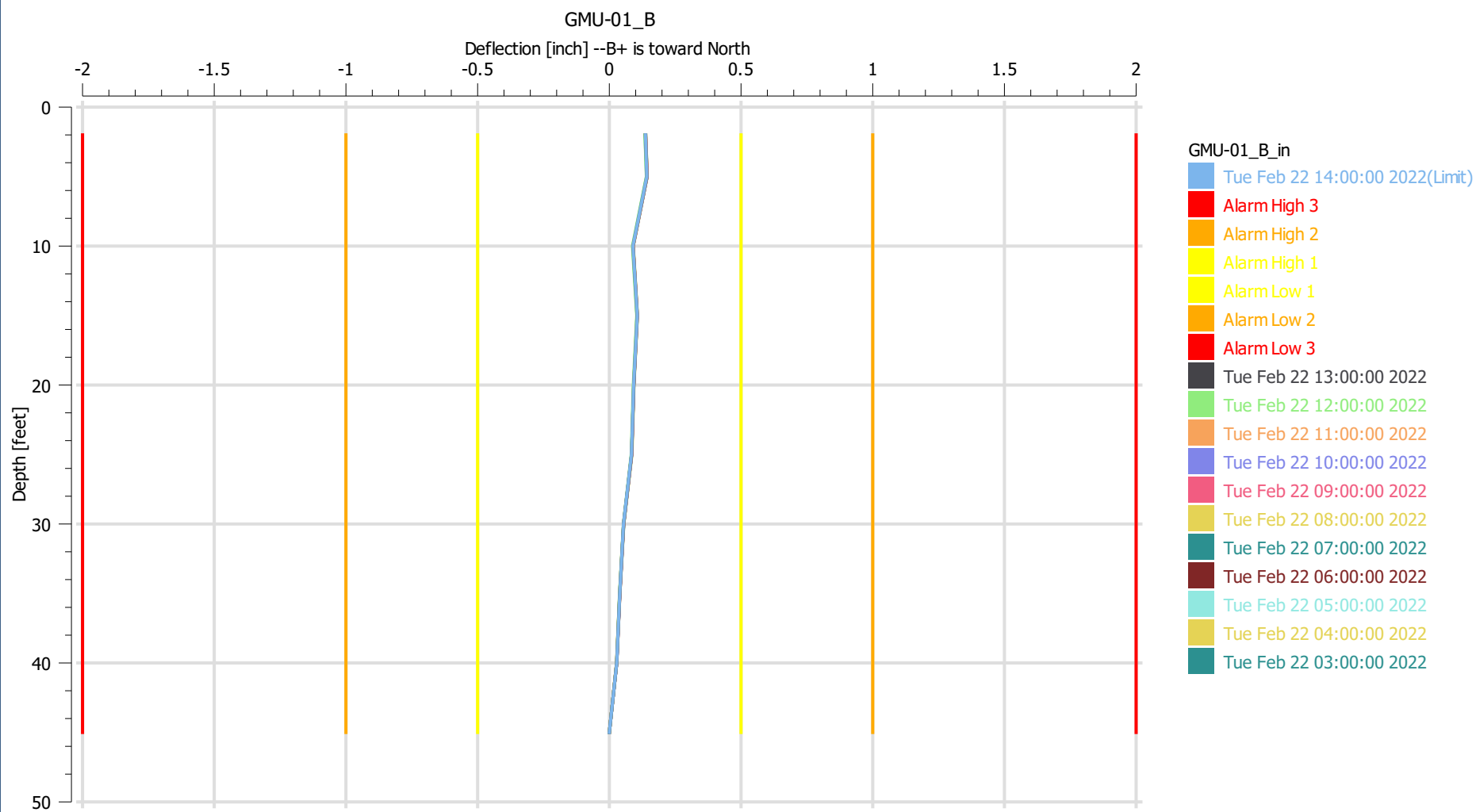


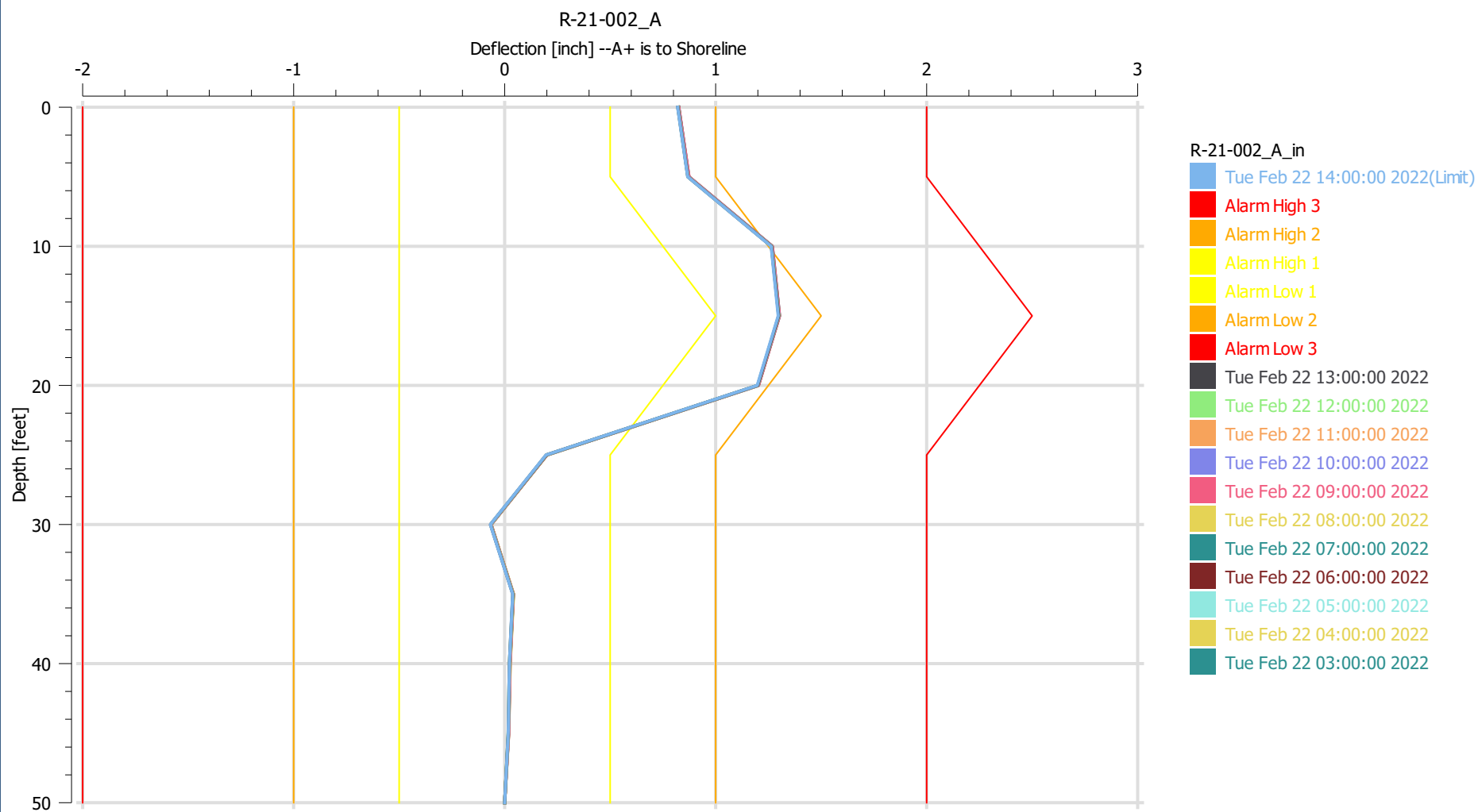
Cyprus Shores

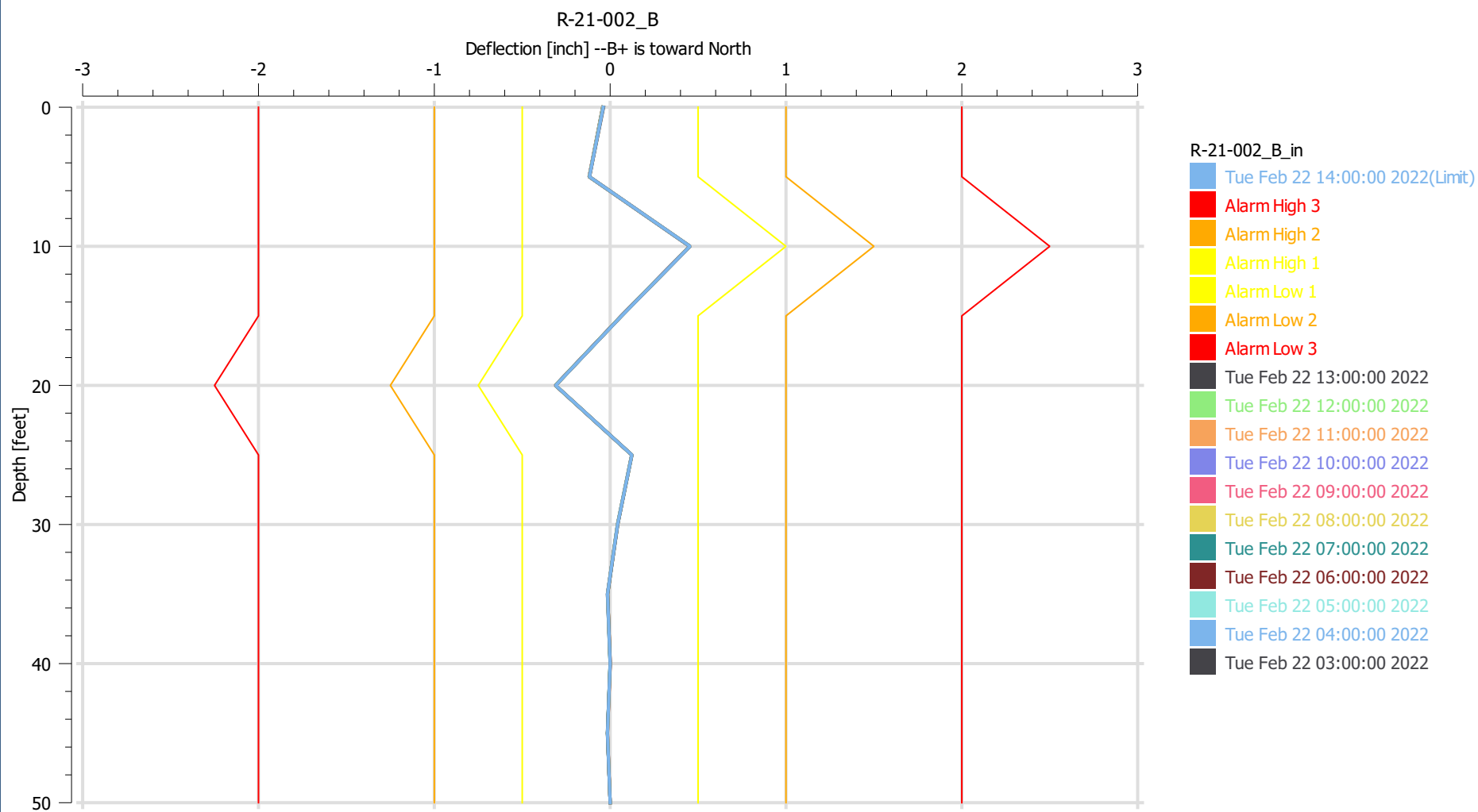


sixense



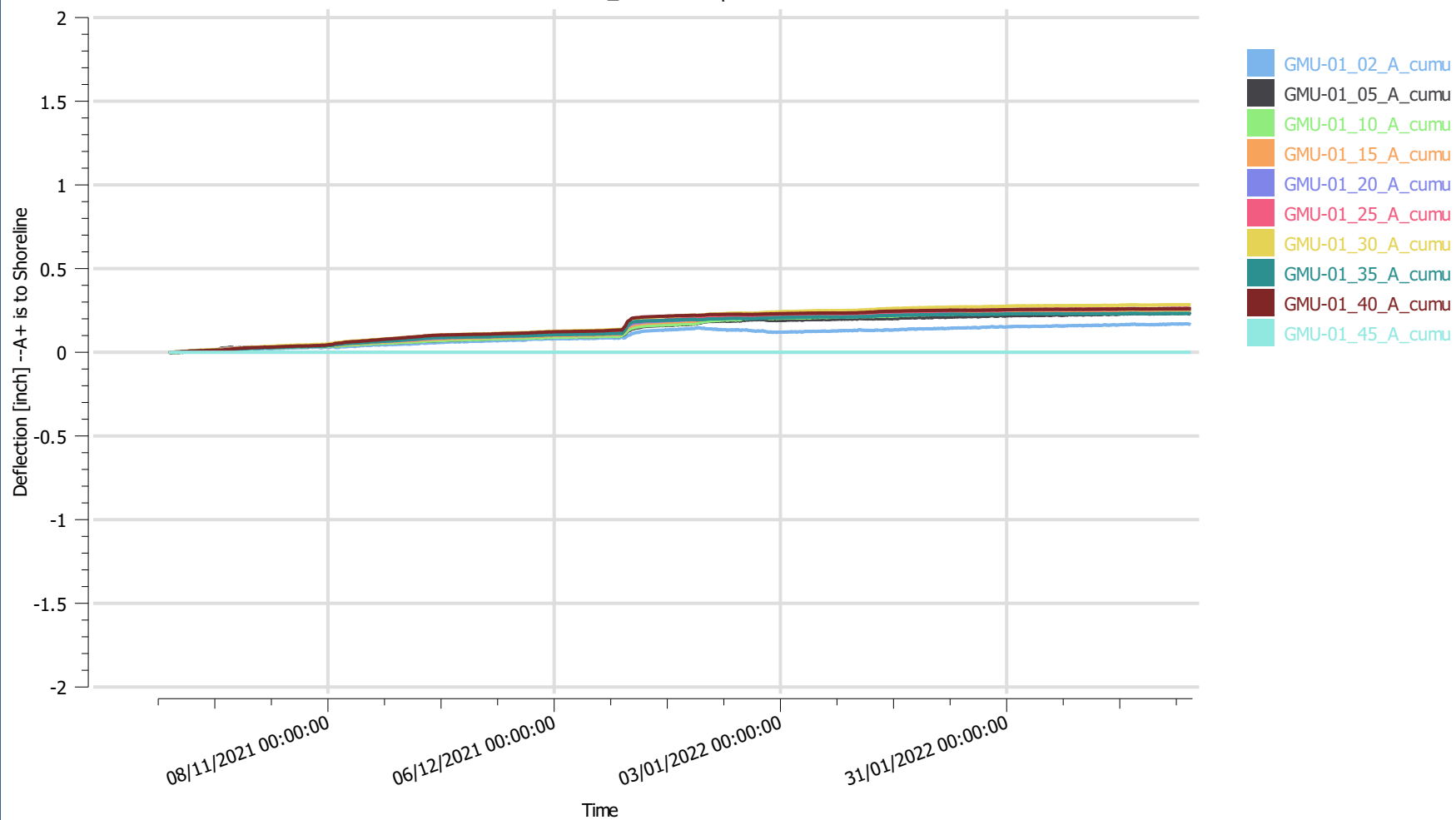


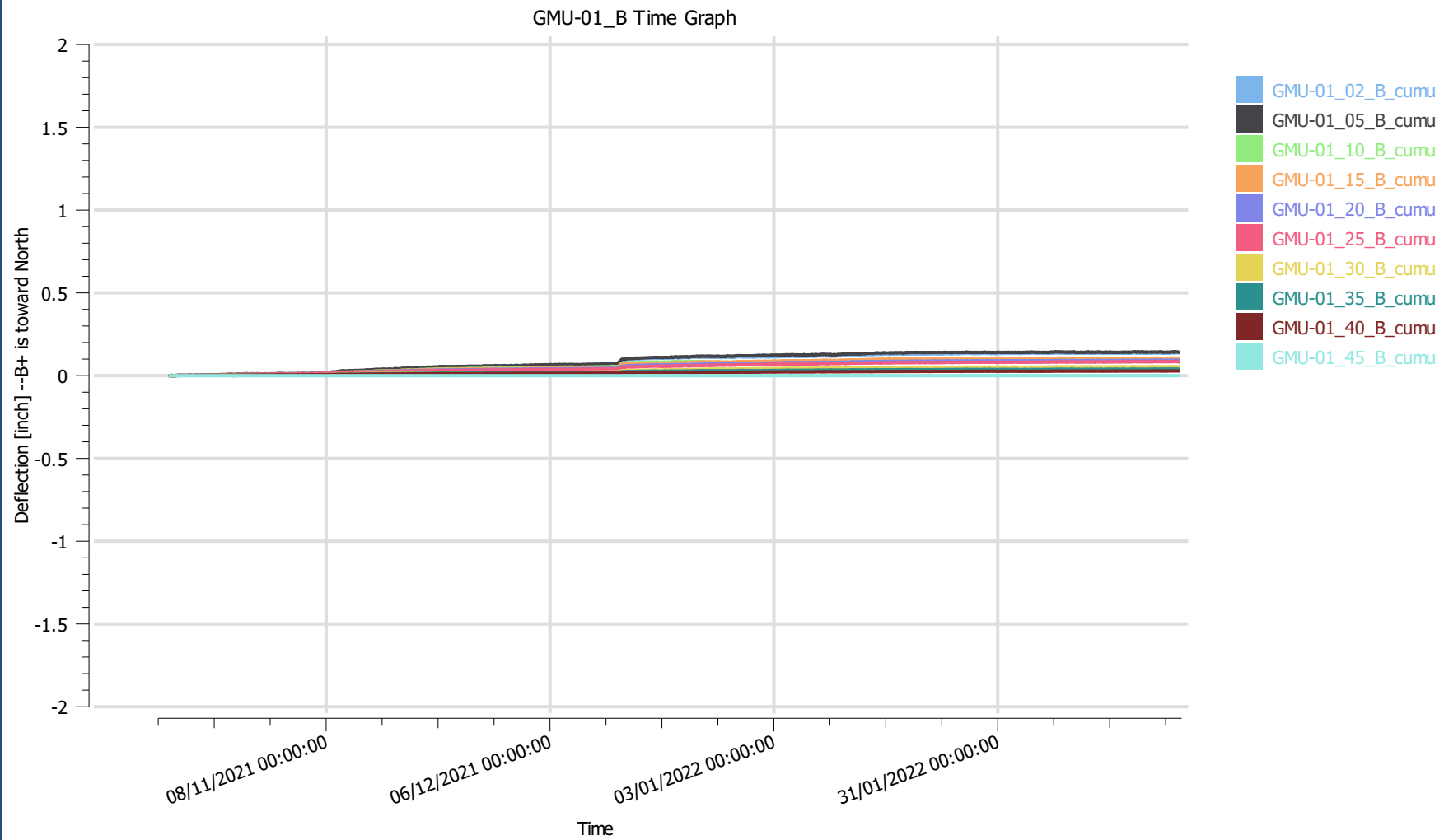






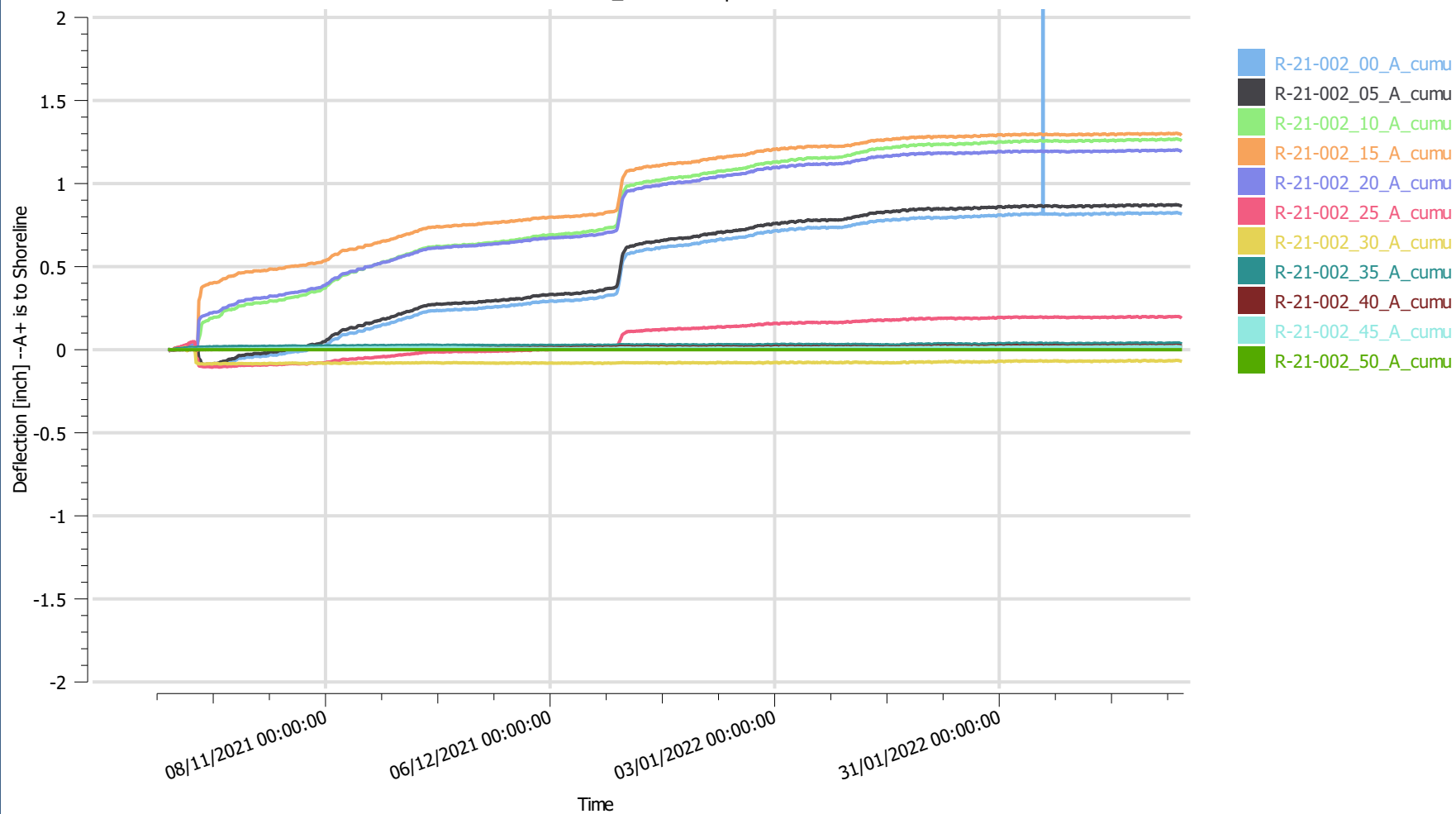
GMU-01_A Time Graph

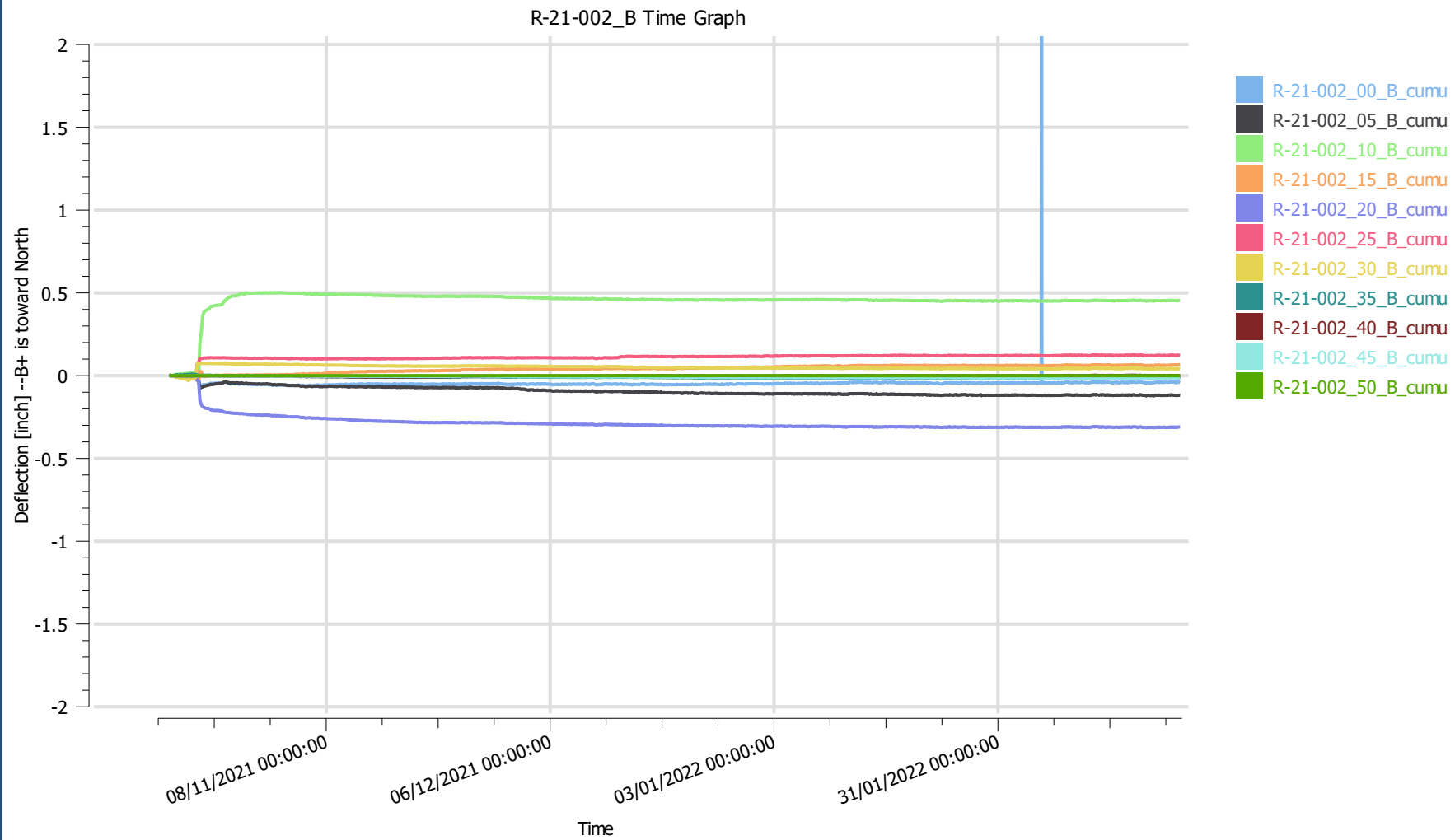






R-21-002_A Time Graph



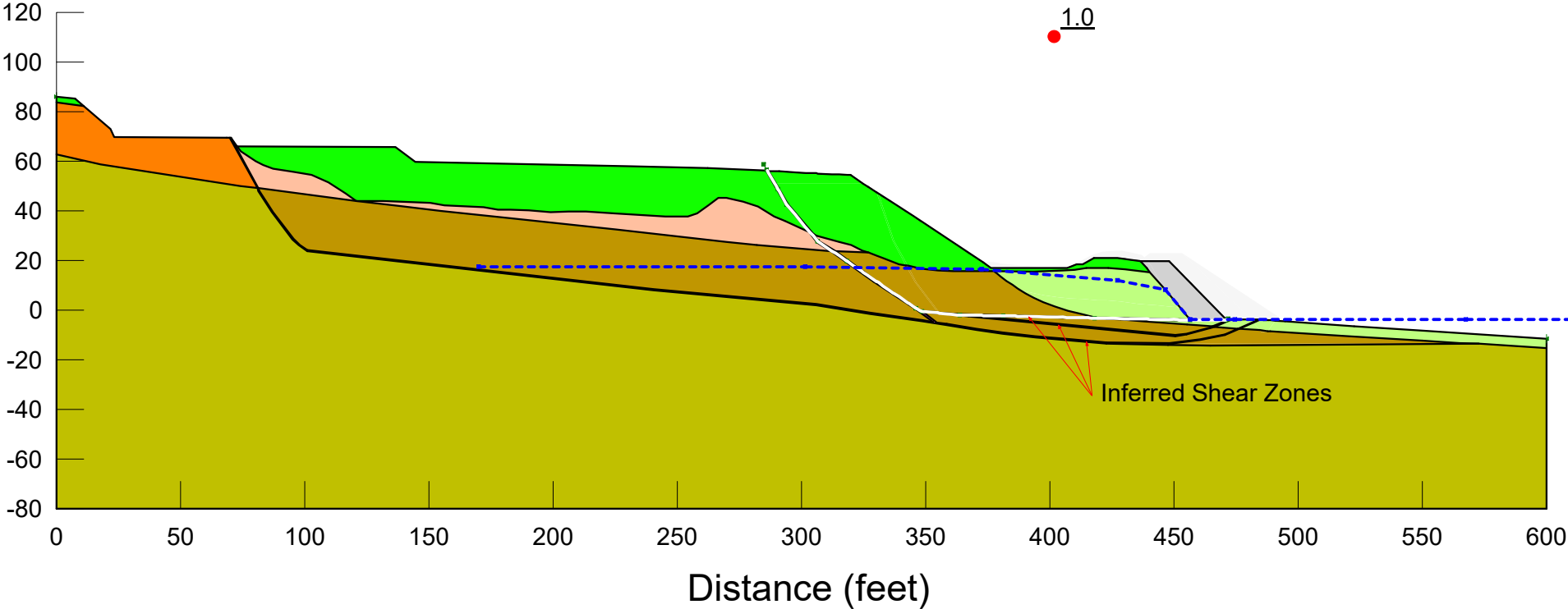


Appendix F

Slope Stability Analysis Results



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle
Green	Qaf	Mohr-Coulomb	120	260	28
Light Green	Qb	Mohr-Coulomb	120	0	32
Light Orange	Qls (Qtr)	Mohr-Coulomb	120	175	29
Brown	Qls (Tc)	Mohr-Coulomb	120	200	27
Orange	Qtr	Mohr-Coulomb	120	175	29
Grey	Rip Rap_Existing	Mohr-Coulomb	150	0	50
Pink	Shear Zone	Mohr-Coulomb	115	0	19
Yellow-Green	Tc	Mohr-Coulomb	125	1,420	21



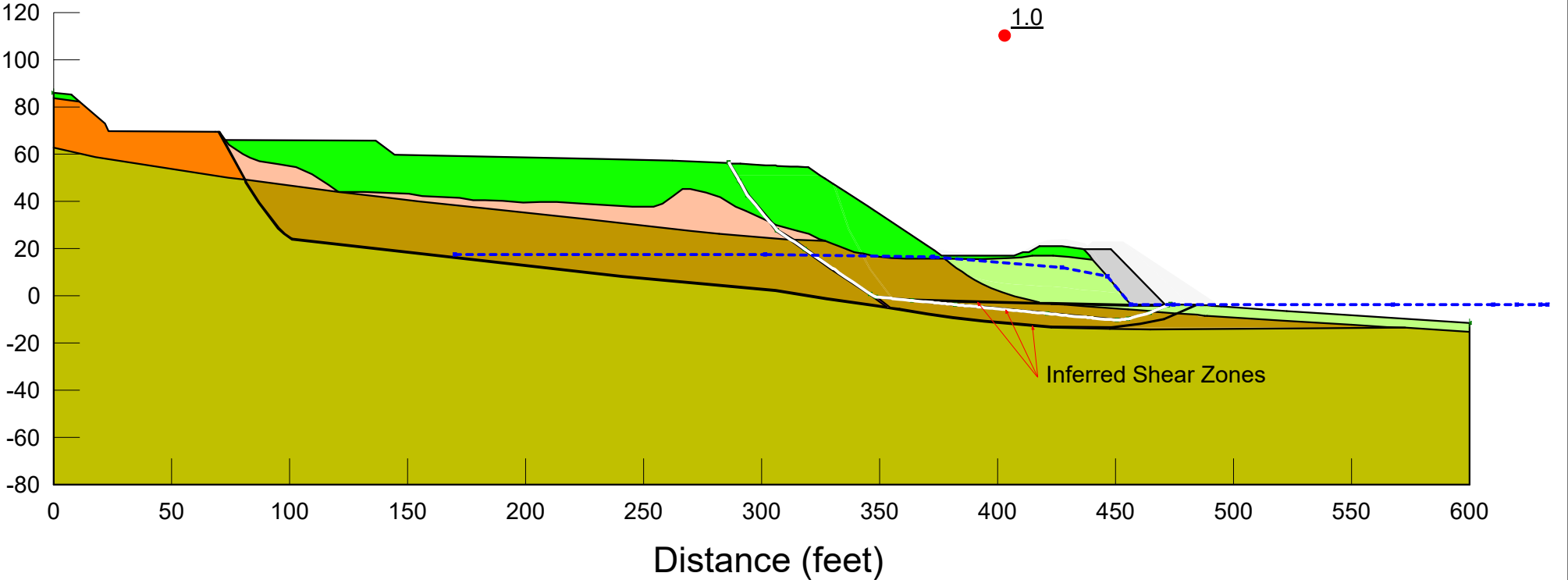
Slope Stability Analysis


Cross Section A-A'
Static Conditions - Shear Zone Indicated by Inclinator
Pre-Mitigation (Old Riprap)
Railroad Emergency Stabilization Project
Orange Sub MP 206.85, San Clemente, California

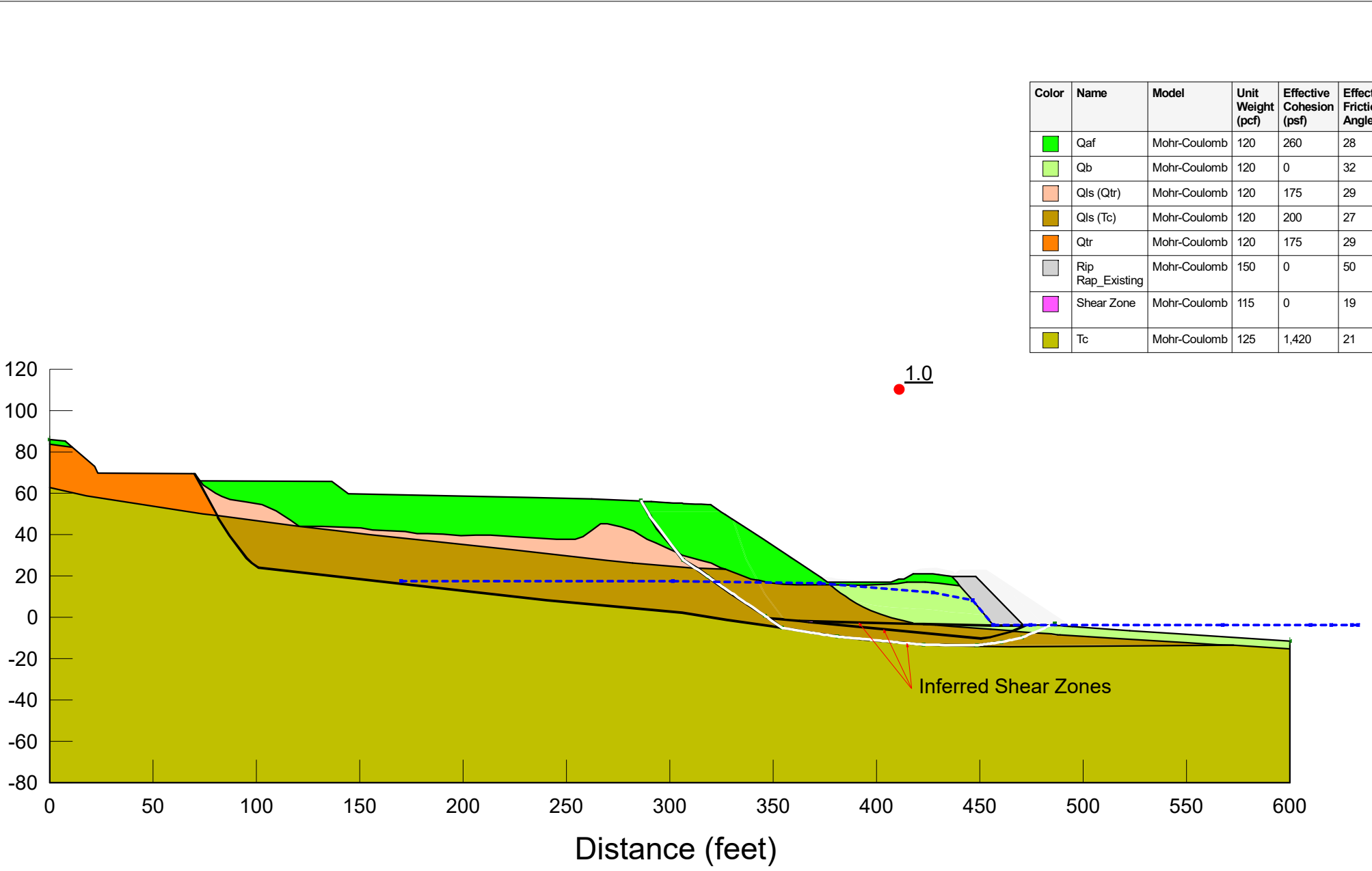
Figure

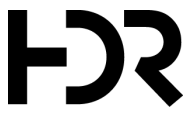
F-1

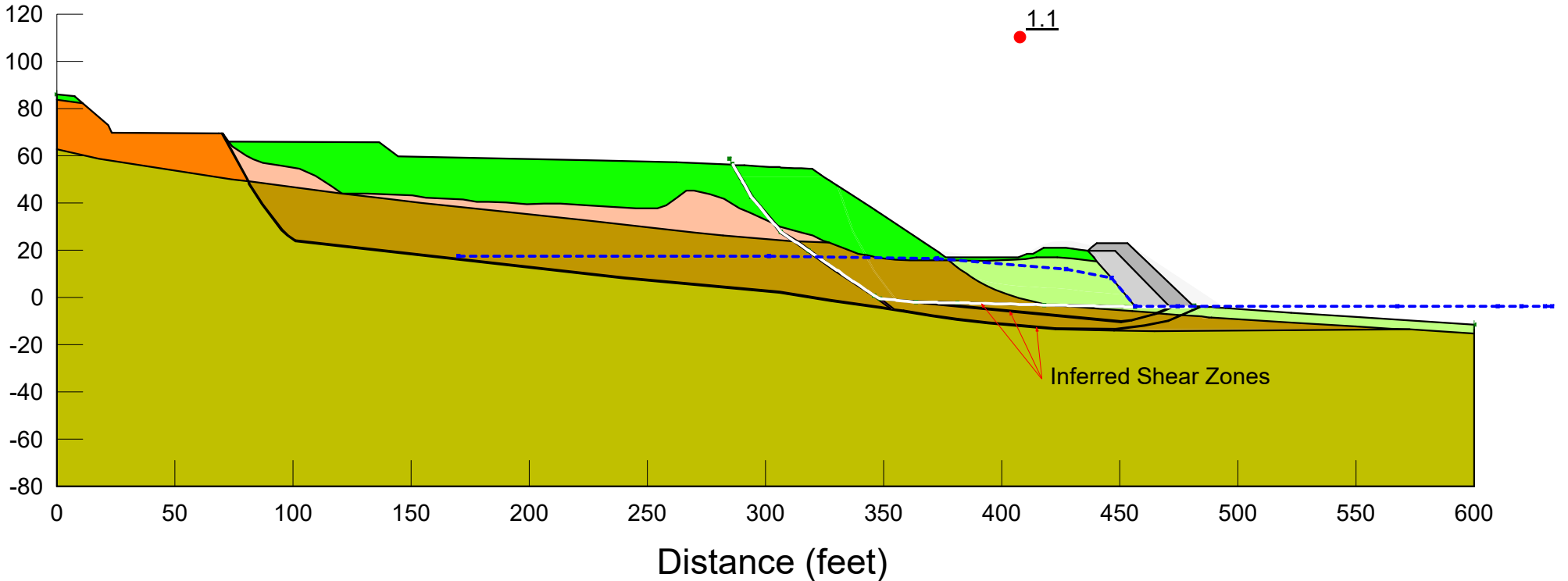
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Green	Qaf	Mohr-Coulomb	120	260	28
Light Green	Qb	Mohr-Coulomb	120	0	32
Light Orange	Qls (Qtr)	Mohr-Coulomb	120	175	29
Brown	Qls (Tc)	Mohr-Coulomb	120	200	27
Orange	Qtr	Mohr-Coulomb	120	175	29
Grey	Rip Rap_Existing	Mohr-Coulomb	150	0	50
Pink	Shear Zone	Mohr-Coulomb	115	0	19
Yellow-Green	Tc	Mohr-Coulomb	125	1,420	21

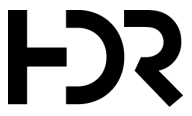


	Slope Stability Analysis Cross Section A-A' Static Conditions - GMU's Inferred Shear Zone Pre-Mitigation (Old Riprap) Railroad Emergency Stabilization Project Orange Sub MP 206.85, San Clemente, California	Figure F-2
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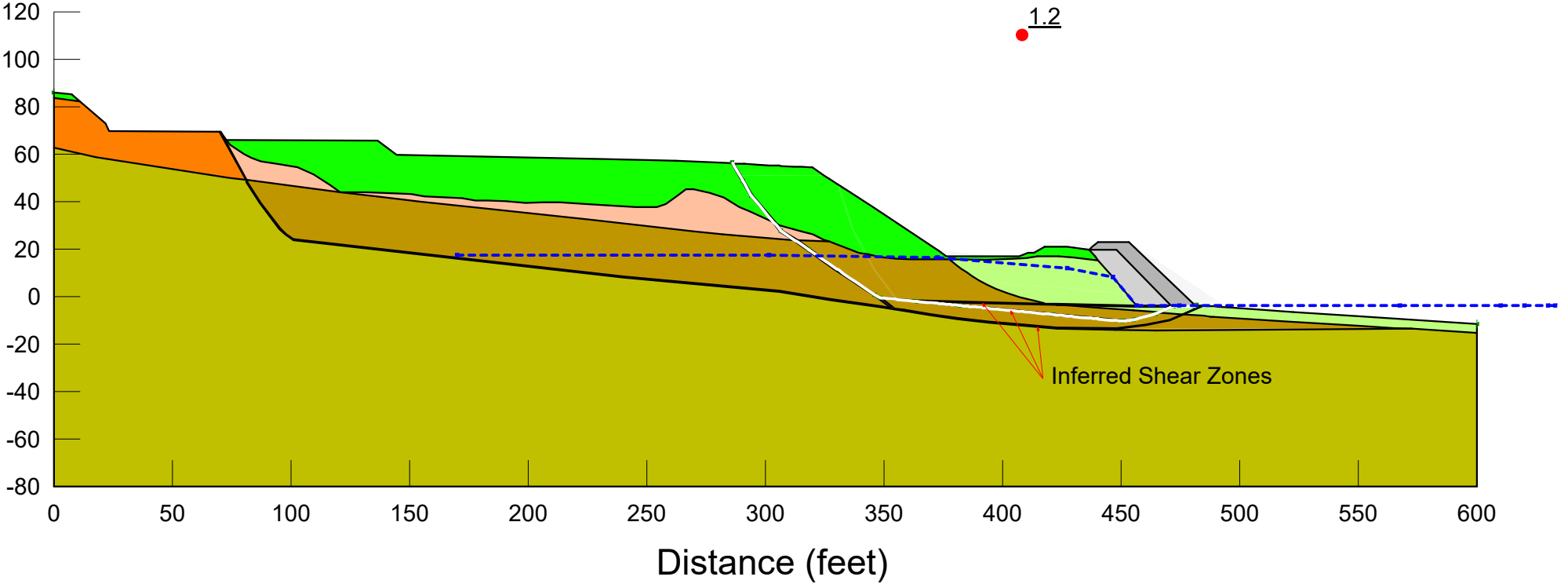


	Slope Stability Analysis Cross Section A-A' Static Conditions - Inferred Shear Zone from Recent Exploration Pre-Mitigation (Old Riprap) Railroad Emergency Stabilization Project Orange Sub MP 206.85, San Clemente, California	Figure F-3
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	Slope Stability Analysis Cross Section A-A' Static Conditions - Shear Zone Indicated by Inclinator Post-Mitigation (Phase 1 Riprap) Railroad Emergency Stabilization Project Orange Sub MP 206.85, San Clemente, California	Figure F-4
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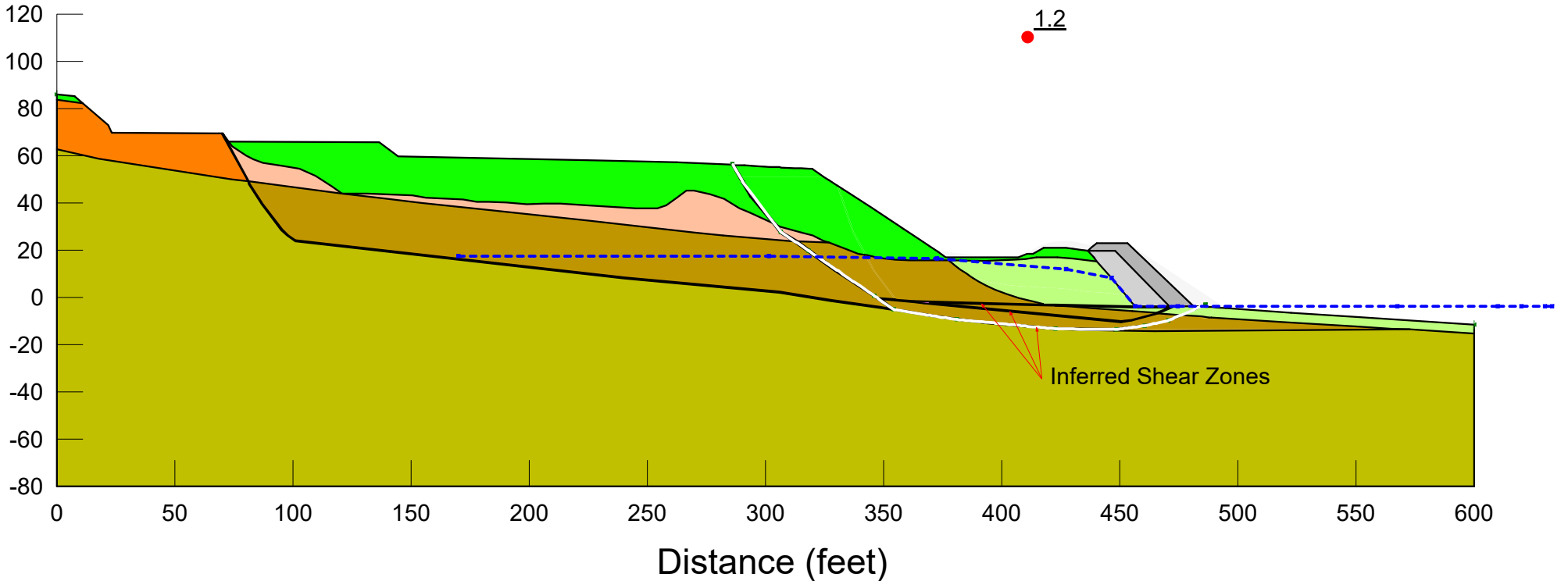
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Light Green	Qb	Mohr-Coulomb	120	0	32
Light Orange	Qls (Qtr)	Mohr-Coulomb	120	175	29
Brown	Qls (Tc)	Mohr-Coulomb	120	200	27
Orange	Qtr	Mohr-Coulomb	120	175	29
Light Gray	Rip Rap_Existing	Mohr-Coulomb	150	0	50
Dark Gray	Rip Rap_Recent	Mohr-Coulomb	150	0	50
Pink	Shear Zone	Mohr-Coulomb	115	0	19
Yellow-Green	Tc	Mohr-Coulomb	125	1,420	21



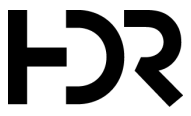
Slope Stability Analysis
Cross Section A-A'
Static Conditions - GMU's Inferred Sheared Zone
Post-Mitigation (Phase 1 Riprap)
Railroad Emergency Stabilization Project
Orange Sub MP 206.85, San Clemente, California

Figure

F-5



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle
Green	Qaf	Mohr-Coulomb	120	260	28
Light Green	Qb	Mohr-Coulomb	120	0	32
Orange	Qls (Qtr)	Mohr-Coulomb	120	175	29
Brown	Qls (Tc)	Mohr-Coulomb	120	200	27
Orange	Qtr	Mohr-Coulomb	120	175	29
Grey	Rip Rap_Existing	Mohr-Coulomb	150	0	50
Grey	Rip Rap_Recent	Mohr-Coulomb	150	0	50
Pink	Shear Zone	Mohr-Coulomb	115	0	19
Olive Green	Tc	Mohr-Coulomb	125	1,420	21

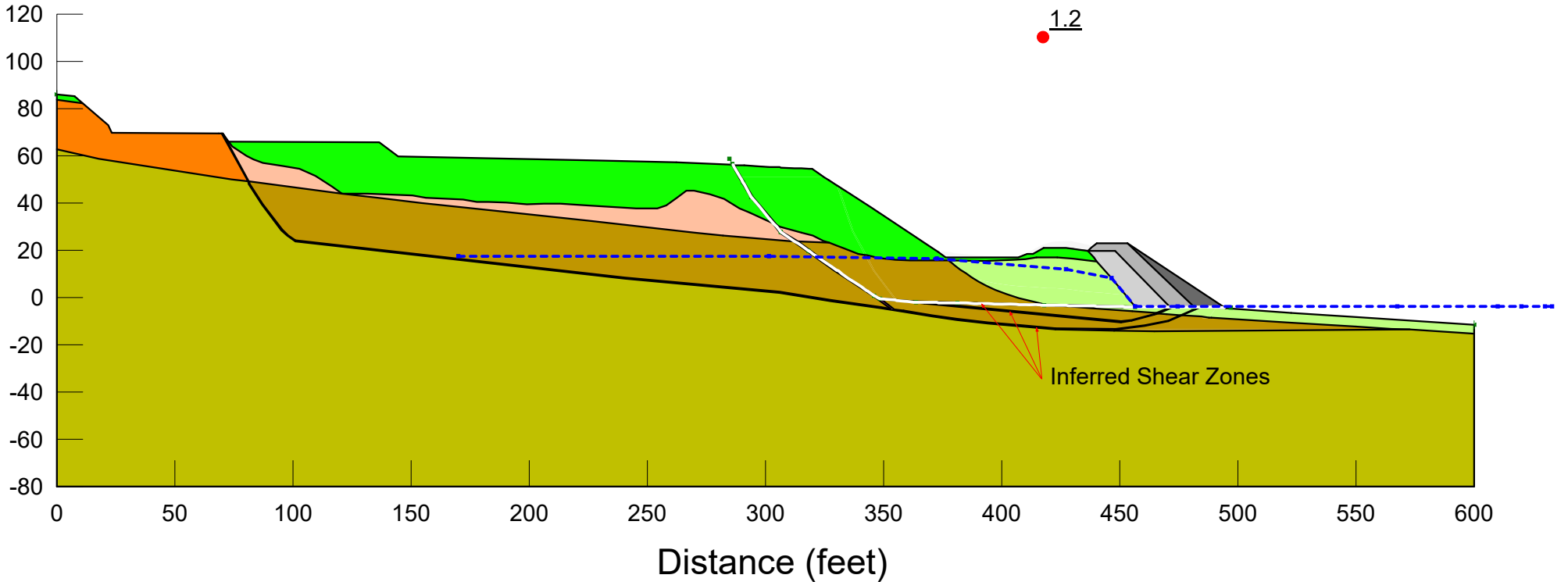


Slope Stability Analysis
 Cross Section A-A'
 Static Conditions - Inferred Shear Zone from Recent Exploration
 Post-Mitigation (Phase 1 Riprap)
Railroad Emergency Stabilization Project
Orange Sub MP 206.85, San Clemente, California

Figure

F-6

Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Frict Angl
■	Qaf	Mohr-Coulomb	120	260	28
■	Qb	Mohr-Coulomb	120	0	32
■	Qls (Qtr)	Mohr-Coulomb	120	175	29
■	Qls (Tc)	Mohr-Coulomb	120	200	27
■	Qtr	Mohr-Coulomb	120	175	29
■	Rip Rap_Additional	Mohr-Coulomb	150	0	50
■	Rip Rap_Existing	Mohr-Coulomb	150	0	50
■	Rip Rap_Recent	Mohr-Coulomb	150	0	50
■	Shear Zone	Mohr-Coulomb	115	0	19
■	Tc	Mohr-Coulomb	125	1,420	21



Slope Stability Analysis

Cross Section A-A'
Static Conditions - Shear Zone Indicated by Inclinator
Post-Mitigation (Phase 2 Riprap)
Railroad Emergency Stabilization Project
Orange Sub MP 206.85, San Clemente, California

Figure

F-7



Attachment F. Biological Resources Memorandum

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Biological Resources Memorandum

Introduction

This biological resource memorandum addresses the Emergency Railroad Stabilization Project - San Clemente Orange Sub MP 206.85 project (Project) located in San Clemente, Orange County, California (Figure 1, Regional Map). The Project site is located within the railroad right-of-way (ROW) within the southernmost section of San Clemente on the Orange Subdivision between approximate mileposts (MP) 206.77 to 206.89 (Figure 1). The Project study area is limited to the railroad ROW adjacent to 3922 Calle Ariana, San Clemente, CA 92672, in the Cyprus Shores private residential community.

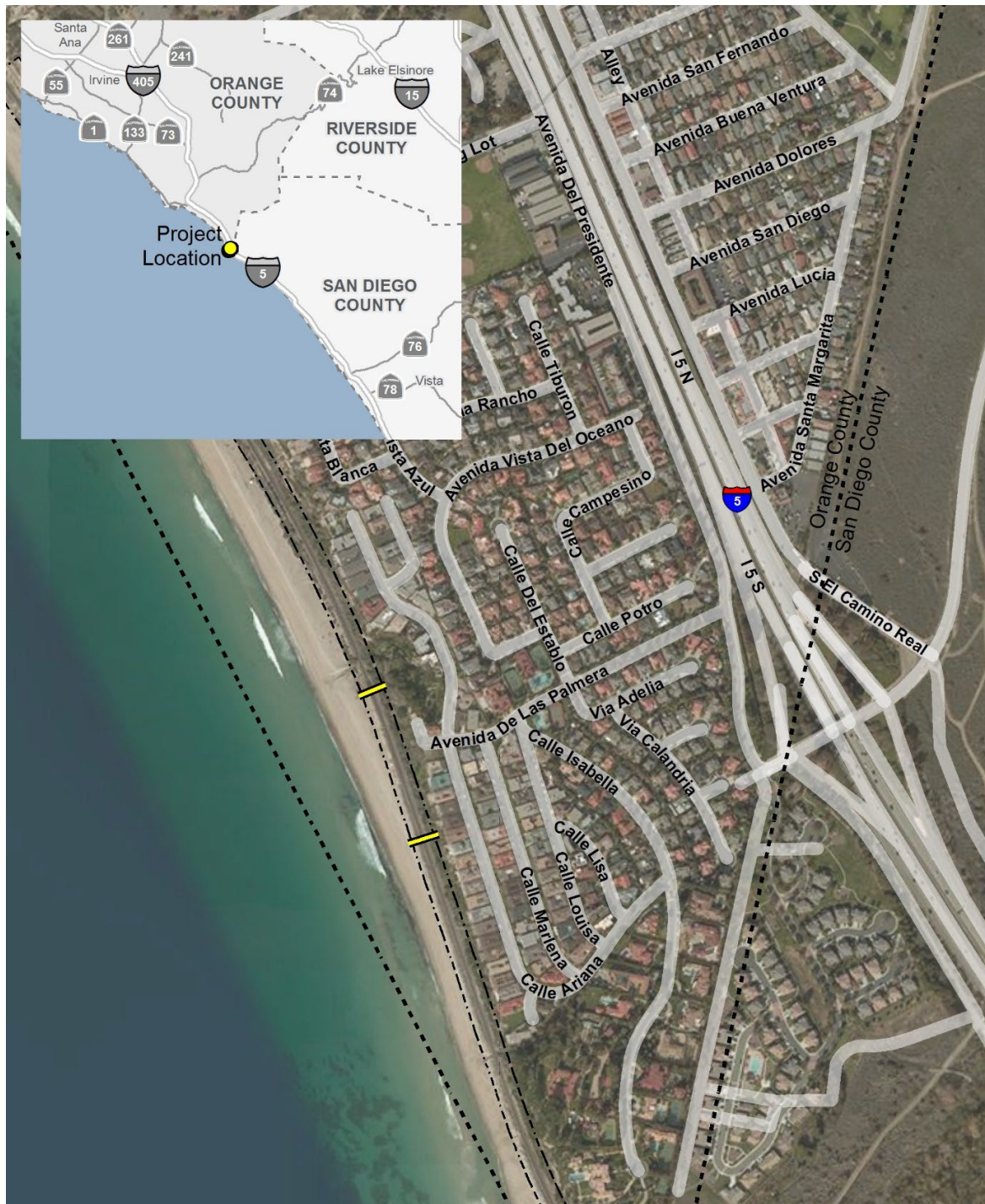
Background

The railroad ROW is located at the base of the coastal bluff west of the Cyprus Shores. This rail line is a main rail corridor for Amtrak, Metrolink, and BNSF which is owned by Orange County Transportation Authority (OCTA) and operated by SCRRA. The OCTA owned railroad ROW infrastructure was built in the late 19th century. The residential community of Cyprus Shores was developed in the early 1960s along the coastal bluffs above the railroad ROW. Several of the private lots located along the west bluff area of the property, including the Cyprus Shores Community Clubhouse, were constructed over an ancient landslide. The site grading in this area consisted of placement of up to 25 feet of fill to develop the relatively level building pads. Indicators of landsliding on top of the west bluff area above the railroad ROW were manifested by cracks within the clubhouse parking lot and three adjacent private lots to the southwest of the intersection of Calle Ariana and Avenida De Las Palmera. The toe of the slide was likely daylighted at or near the current beach elevation. Geotechnical analysis indicated that the relatively recent loss of sand west of the rail embankment that historically buttressed the slope may have led to the current slope failure.

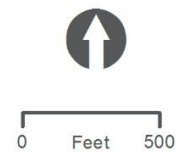
Cyprus Shores homeowner's association contacted Metrolink the week of September 6, 2021 to inform them of the rapidly accelerating landslide and subsequent track surveys indicated westward lateral displacement of the railroad track with the greatest displacement occurring approximately downslope of the latitude of the clubhouse and diminishing north and south of this area. The deflection increased significantly over a short period of time in September 2021 (10.7 inches in 7 days) to over 2 feet, raising the landslide and track stability to an imminent threat to life and property. As a result, Metrolink ceased all passenger rail service (Amtrak, Metrolink) on the railroad from September 16 through October 4, 2021 and freight traffic was reduced to 10 MPH through the affected area.

The purpose of the emergency repair project was to stabilize the railroad tracks from further shifting due to recent landslide movement originating at the westerly coastal slope and extending below the railroad ROW to daylight west of the tracks.

Figure 1. Regional Map



- Approximate Project Limits
- - - Rail Right-of-way
- · · County Boundary





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An evaluation of potential emergency repair strategies indicated that buttressing at the toe with an equivalent mass of riprap material west of the railroad track would be required to reduce and/or arrest movement of the current active portion of the land slide so that passenger rail service could be re-established.

Emergency Project

Based on review of available reports and site conditions, direction from engineering geologists was to immediately install riprap materials along the west side of the railroad track. The recommended location of the riprap was based on the stability analysis performed by GMU (Cyprus Shore's homeowner's association geotechnical consultant) which showed the riprap placed on the west side of the track coincident with the documented location of rail deflection. It should also be noted that placing riprap on the beachside of the track was deemed to be the only feasible temporary solution for this project considering the observed site conditions. Additional monitoring of the track and other locations along the slope was required during and after rock installation to ensure that the movement of the slope had been controlled following the riprap placement. The westerly riprap was proposed to compensate for the weight/shear resistance from the eroded sand (i.e., washed out beach) and to avoid the placement of additional weight on the east side of the track which may lead to instability of the rail track due to the presence of a potential clay seam under the rail track. Furthermore, placing the riprap on the west side of the track would not hinder the permanent stabilization efforts which were proposed by GMU on the east side of the track. The quantity of riprap to be added was selected based on the review of the slope stability analysis by GMU, as well as the location of the major movements of the track recorded recently.

In total, emergency stabilization was required for a 700-foot-long portion of rail embankment already armored with riprap (Figure 2). Much of the riprap was placed in areas that previously contained riprap, which over the years had been lost due to beach erosion. Therefore, a portion of the riprap was an in-kind replacement.

Additionally, when baseline rock limits were surveyed in 2003/2004, the revetment measured up to 30 feet wide at this location. However, due to the net loss of beach over the past 17 years, in the vicinity of the emergency stabilization, the beach has narrowed from approximately 200 feet in width to less than 80 feet and, in the southern extent is absent. The beach has also dropped from 19-feet to 14-feet in elevation at the northern extent of the project and from 18-feet to 3-feet at the southern extent of the Project. Finally, the beach has become steeper, increasing from a 9-percent gradient to as much as an 18-percent gradient. Most of these changes have occurred since 2016. As visible in historic Google Earth aerial photography and as expected, the rock revetment became wider after that time to compensate for the changing elevations. Assuming the SCRRRA was permitted to maintain the revetment at a 1.5:1 slope per the 2015 Maintenance Plan for the Orange Subdivision MP 203.8 to 207.2, the rock revetment would have now measured up to 52.5 feet in width from the track centerline, similar to the final toe of the rock added for stabilization.

Emergency Permit #1 (Phase 1)

From September 16 to October 2, 2021, approximately 12,500 tons (7,812 cubic yards) of 3 to 5-foot diameter riprap was placed along the west side of the railroad track. The riprap was brought in by approximately 200 railcars and was placed from the top of the railroad. An excavator and bulldozer were brought onsite via railroad to clear rock from the rail and move the rock into place. No laydown area was necessary, and no construction equipment access was needed outside of the railroad ROW. Personnel parked on the bluff top and proceeded to the work site on foot as depicted on Figure 3.

Subsequently, geotechnical borings were conducted in mid-October and inclinometers were installed to monitor the landslide and the track. The inclinometers enable monitoring of the earth's movement below the surface, detecting movements approximately 50 feet below the railroad tracks.

The results of the ongoing geotechnical monitoring indicated that the path of the least resistance (i.e., the shear zone) occurs at a shallow depth compared to the findings from the geotechnical investigations and the inferred location of the shear zone by GMU (Cypress Shore Homeowner's association's geological technical consultant). Additionally, the light detection and ranging (LiDAR) survey of the landslide indicated that the assumptions (which were based on GMU's analysis) used to estimate the quantity of the riprap underrepresented the area. Even though the placed riprap was effective to control the landslide's movements, slow and steady movement was still recorded by the inclinometers. Specifically, after the installation of the inclinometers in mid-October, a cumulative movement of about 0.8 inches was recorded at the track-level inclinometer between October 19 to December 13, 2021. After an initial jump in the readings on October 23, most of the movement was slow and subsurface during this time. However, a storm event occurred on December 14, 2021 and the cumulative movement passed a 1-inch total. This 1-inch movement activated the alert system defined in the Track and Slope Monitoring Report (Attachment L).

Emergency Permit #2 (Phase 2)

The refined geotechnical analysis based upon the geotechnical borings conducted in mid-October, updated geometry of the landslide, and a shallower shear zone as identified by the inclinometer, indicated that an additional 5,000 to 6,000 tons of riprap was required to further stabilize¹ the landslide movement until an intermediate structural improvement can be engineered, permitted, and constructed. Additionally, the ocean wave action impacting the riprap and other factors such as groundwater variations and storm water seeping into the landslide cracks on the top of the bluff may lead to another phase of riprap placement or other forms of short-term stabilization in the future.

Placement of additional riprap on the west side of the track where the toe of the landslide occurs was deemed to be the only feasible solution for this project given the imminent threat to life and property. The westerly riprap is proposed to compensate for the weight/shear resistance from the eroded sand (i.e., washed out beach) and to avoid the placement of additional weight on the east side of the track which may lead to instability of the rail track due to the presence of a potential shear zone under the rail track. Furthermore, placing the riprap on the west side of the track will not hinder the long-term structural stabilization efforts that may be proposed by Cyprus Shores Homeowners Association or Metrolink on the east side of the track.

¹ It should be noted that the term "stabilize" in this project does not mean to achieve an industry-accepted factor of safety for the static and seismic conditions, but the factor of safety was increased to a level that the large initial movements of the landslide and the secondary creep-type movements can be controlled.



Between December 18, 2021 to January 30, 2022, 5,480 tons (3,425 cubic yards) of riprap was placed within a 500 linear foot section of the 700 linear foot area described above. Similar to the first round of riprap placement, riprap was brought in by railroad bar and placed from the top of the railroad. An excavator and bulldozer brought onsite via railroad cleared the rock from the rail and moved into place. The material was placed in the approximate cross section configurations as depicted on Figure 4, which was consistent with SCRRA's standard roadbed cross section for segments of rail embankment exposed to ocean wave action. The actual face of the rock revetment varies in slope from approximately 1:1 to 3:1.



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Figure 2. Project Location and Characteristics





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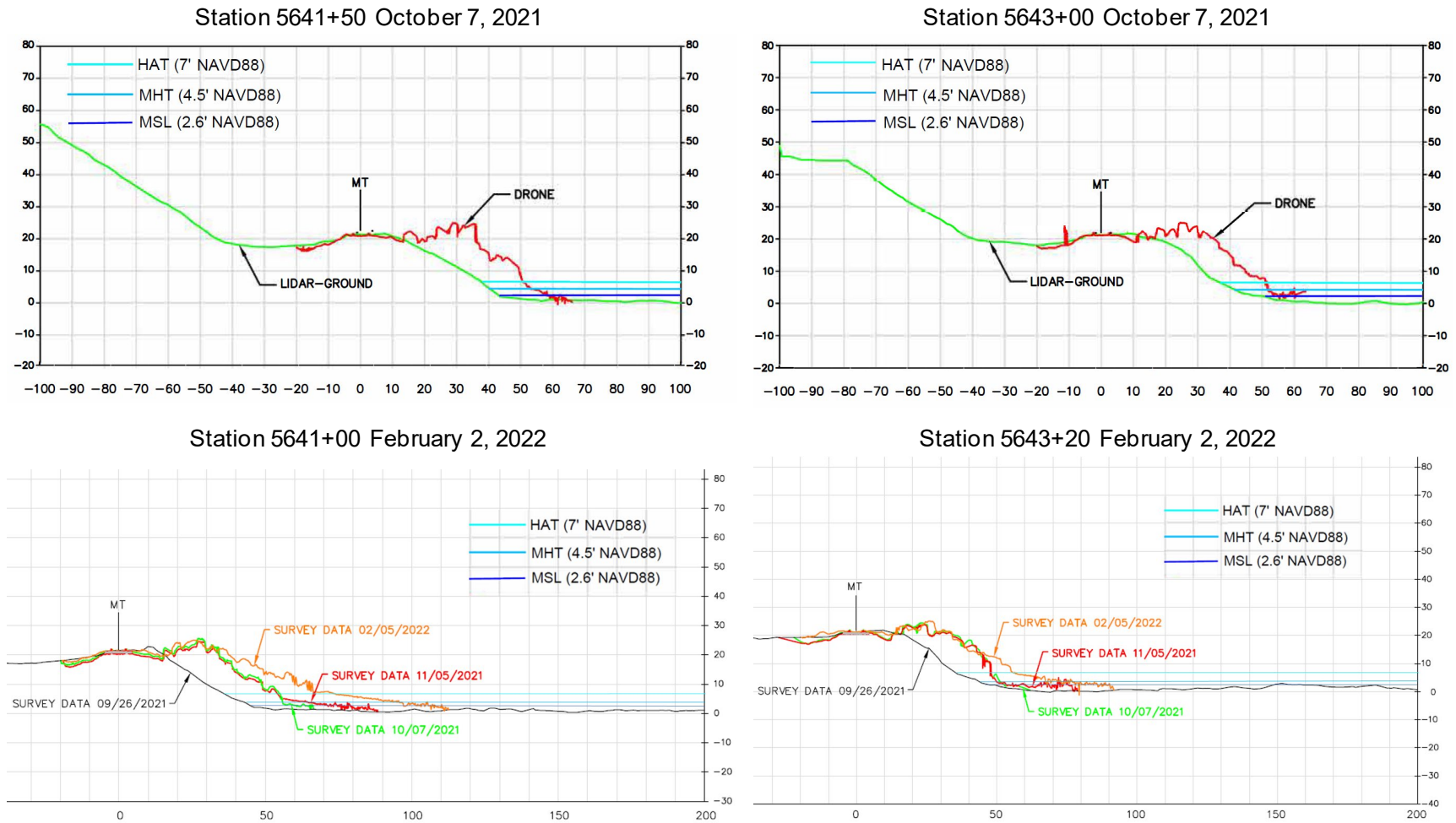
Figure 3. Construction Access



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Figure 4. Selected Cross Sections





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Methods

Literature Review

A list of special-status species that have the potential to occur within the Project study area, and within the vicinity of the Project site, was prepared using information provided by the United States Fish and Wildlife Service (USFWS) species list from the online Information for Planning and Conservation Environmental Conservation Online System (USFWS 2019), the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB) RareFind program (CDFW 2021), National Marine Fisheries Service (NMFS 2021), and the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2019). Attachment A provides the literature review results, as well as special-status species plant and wildlife tables containing assessments of each species' potential to occur and the supporting rationale.

In addition to a review of special-status species databases, aerial photographs, and topographic mapping (1-foot contours) of the Project study area at a scale of 1:2,400 were reviewed prior to and following the field surveys (USGS 2019).

Riprap Limits

To characterize Project-related effects on jurisdictional aquatic resources and coastal resources, the pre-Project riprap limits were developed by consolidating the limits of rock visible on imagery available from Google Earth for 2015-2021 and project specific imagery and LiDAR provided by RSE (subconsultant providing survey services for the Project). Attachment B provides snapshots of the aerial imagery and photographs used to produce the consolidated baseline riprap limits and includes Baseline Rock Footprint Development A that provides snapshots of the relevant Google Earth images and Baseline Rock Footprint Development B that provides copies of the photographs used in concert with the aerial imagery.

Results

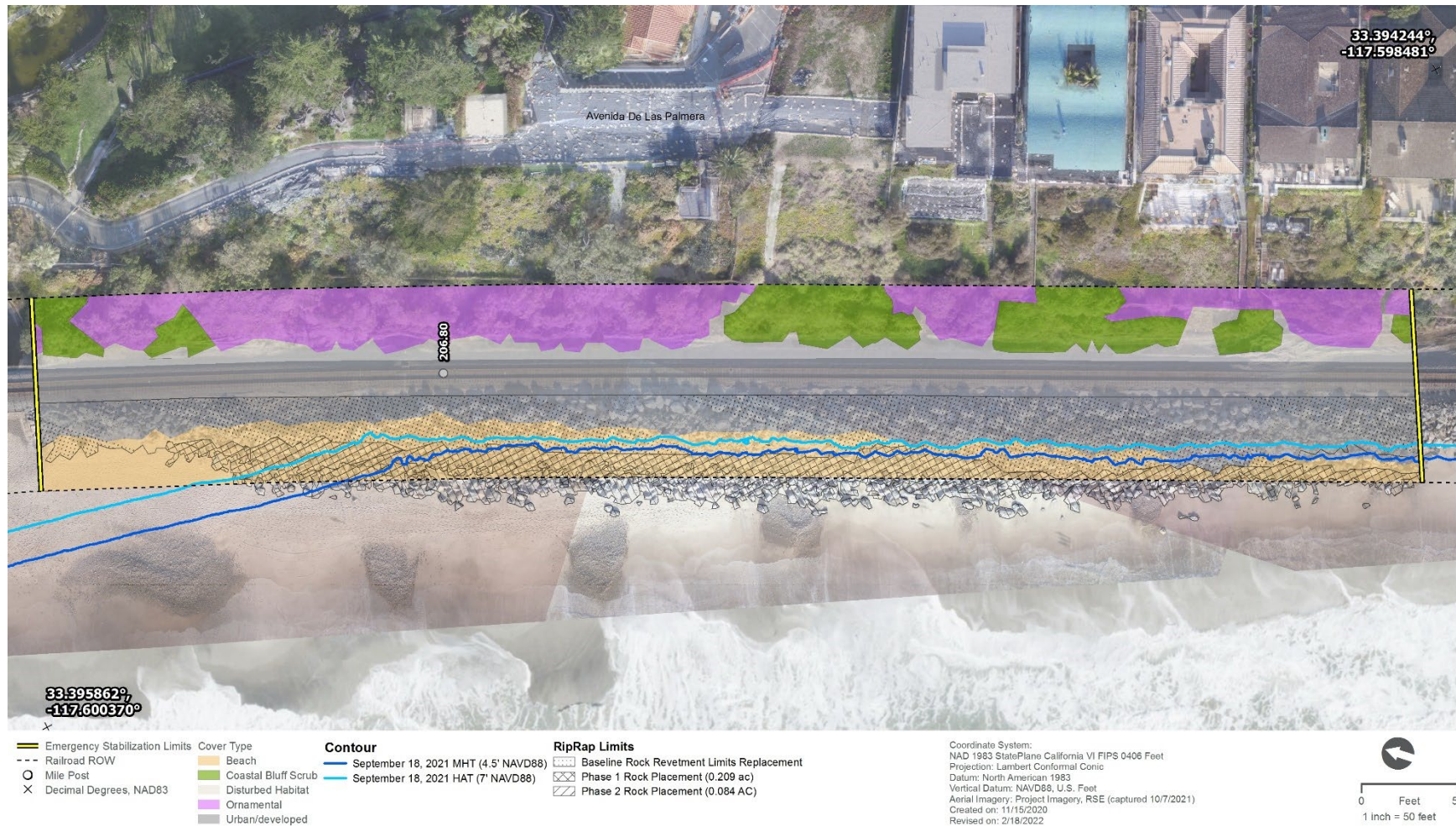
Existing Environmental Conditions and Project Effects

San Clemente has a Mediterranean climate, characterized by warm, dry summers and cool, moist winters. Average annual precipitation for San Clemente is 15.2 inches and most of the annual rainfall occurs November through March (U.S. Climate Data 2020).

Vegetation Communities and other Land Cover Types

Land cover east (landward) of the repair area consists of urban/developed land, landscaped slope dominated by nonnative ornamental species, such as myoporum (*Myoporum* sp.), with scattered salt bush (*Atriplex* sp.) and coyote brush (*Baccharis pilularis*) shrubs (mapped as coastal bluff scrub) (Figure 5). Land cover within the repair area at the toe of slope consists of historically disturbed rail embankment, rock revetment, and intertidal sandy beach. The remainder of the Project study area is mapped as beach. Figure 5 depicts the vegetation communities and land cover types mapped within and adjacent to the Project study area.

Figure 5. Vegetation Communities and Land Cover Types





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No vegetation was disturbed during Project implementation. Approximately 0.2930 acre of new riprap extends onto intertidal beach as of February 5, 2022 (Figure 5). The intertidal beach habitat at this location lacks the supralittoral and coastal strand zones with the exception of the extreme northern end of the Project study area, where this zone may be present when the beach is at its' peak width. Therefore, impacts to species dependent upon beach habitat is limited. The additional rock will interfere with natural sediment movement; however, the beach environment is dynamic. Generally, as with most southern California beaches, high-energy storm waves erode the beach adjacent to the Project making it narrower and steeper in the winter and lower energy waves deposit the sand back on the beach making it wider and more gradual in the summer. As a result, sand deposition is likely to cover the toe of the revetment during portions of the year, which would provide some offset to the loss of beach quantified at this time.

Additionally, although approximately 700 linear feet of beach may appear available for recreation within the Project study area in Figure 5, the southern 510 linear feet of that beach is generally inaccessible for recreational uses due to the high surf zone and proximity to the railroad ROW (Figure 6). The turbulent surf zone is especially hazardous near structures such as the rock revetment protecting the rail embankment. During baseline mapping, the remaining 190 linear feet of beach totaled approximately 0.13 acre. As of February 5, 2022, after implementation of the emergency slope stabilization project, approximately 115 linear feet (0.10 acre) of beach remains accessible for public use (both outside of the railroad ROW and surf/rock interface areas). However, as indicated above, due to the dynamic nature of the beach environment, sand deposition is likely to cover the toe of the revetment during portions of the year, which would provide some offset to the loss of beach quantified at this time.

In summary, although up to 0.293 acre of intertidal beach habitat was covered by rock for emergency slope stabilization, most of the impacted area was not readily accessible or safe for recreational use in the existing condition. Therefore, the Project had minimal to no effect on coastal recreational resources or coastal public access (Figure 6).

Jurisdictional Aquatic Resources

The beach side of the railroad ROW does not support USACE or RWQCB regulated wetland. The area consists of well-drained intertidal sandy beach. The soils east (landward) of the rail embankment are mapped as Myford sandy loam and do not support any wetlands. A portion of the rock slope protection area falls below the 7-foot highest astronomical tide line (NAVD88) and within Clean Water Act Section 404 regulated waters of the United States (U.S.), based on the NOAA Newport Beach Station Tidal Datum highest astronomical tide elevation. The toe of the rock slope protection extends, at least in part, below the 4.5-foot mean high tide elevation, which is within Section 10 regulated waters of the U.S. and California Coastal Act-regulated coastal tidelands. Figure 7 depicts the jurisdictional aquatic resources within and adjacent to the Project study area.

As indicated above, approximately 0.2930 acre of new riprap extends onto intertidal beach as of February 5, 2022. As shown in Table 1 and depicted on Figure 7, of that 0.293 acre, approximately 0.037 acre (205 cubic yards) of riprap was replaced in an area of previously existing revetment and approximately 0.269 acre (1,953 cubic yards) of new riprap was placed within Section 404 waters of the U.S., in which the following Section 10 and coastal tidelands areas are included. Approximately 0.010 acre (15 cubic yards) of riprap was replaced in an area of existing revetment and approximately 0.239 acre (771 cubic yards) of new riprap was placed within Section 10 waters of the U.S. and coastal tidelands.



Table 1. Discharge of Fill Summary¹

Aquatic Resource/Impact Type	Surface Area (Acres)	Volume (Cubic Yards)
<i>Section 404 Waters of the U.S.</i>		
Replaced in kind	0.037	205
New Rock Revetment	0.269	1,953
<i>Section 10 waters of the U.S.</i>		
Replaced in kind	0.010	15
New Rock Revetment	0.239	771
<i>Coastal Tidelands</i>		
Replaced in kind	0.010	15
New Rock Revetment	0.239	771

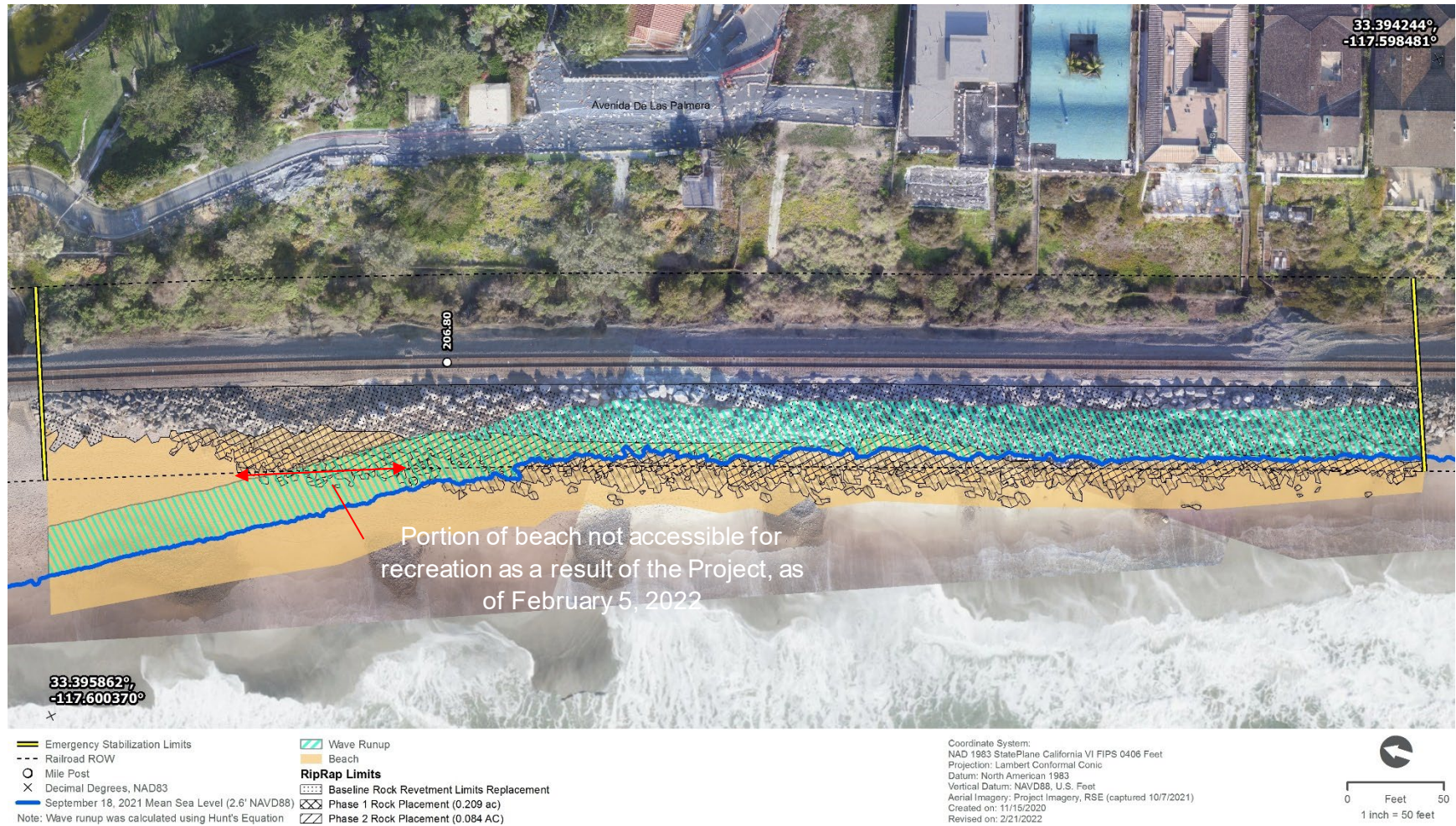
¹Please note that these areas overlap with each other



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Figure 6. Intertidal Beach





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Figure 7. Jurisdictional Aquatic Resources



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Critical Habitat

The USFWS Information for Planning and Consultation and NMFS records search results (Attachment A) indicate that the project falls within the range of several endangered and threatened species, as well as within essential fish habitat and critical habitat for NMFS species, which are detailed below. There is designated critical habitat for one federally listed species approximately 3,500 feet to the south and of the Project, southern California distinct population segment steelhead (*Oncorhynchus mykiss irideus*); however, critical habitat for this species does not occur within the Project study area. Therefore, the Project did not result in an adverse effect on critical habitat for any federally listed or proposed listed plant or wildlife species.

Federally Listed Plant Species

Based on review of the literature search results (Attachment A), no federally listed plant species have potential to occur within the Project study area. Therefore, the Project did not result in an adverse effect to any federally listed or proposed listed plant species.

Special-Status Plant Species

Special-status plant species and their potential to occur in the Project study area are provided in Table 1. Based on the results of the literature review described above and the field reconnaissance survey of the Project study area, no special-status plant species have the potential to occur within the Project limits. Although suitable habitat for several special-status plant species occurs within the Project study area, no suitable habitat occurs within the Project footprint. Therefore, the Project did not result in an adverse effect on any species-status plant species.

Federally Listed Wildlife Species

Based on review of the literature search results (Attachment A), and as described in Table 2, there is suitable foraging habitat for two federally listed wildlife species, coastal California gnatcatcher (*Poliioptila californica californica*) and California least tern (*Sternula antillarum browni*), within the Project study area; however, suitable nesting and roosting habitat does not occur within the Project study area. Further, no federally listed species were observed during biological monitoring of Project implementation. Therefore, the Project did not result in an adverse effect to any federally listed or proposed listed wildlife species.

POTENTIAL EFFECTS ON COASTAL CALIFORNIA GNATCATCHER

The coastal California gnatcatcher was listed as threatened by the USFWS in March 1993 (USFWS 1997). The coastal California gnatcatcher is a resident songbird that typically nests and forages in moderately dense stands of coastal sage scrub below 2,500 ft in elevation in southern California. Coastal California gnatcatchers usually defend breeding territories ranging in size from 2 to 14 acres and occupy home ranges that vary in size from 13 to 39 acres. The breeding season of the coastal California gnatcatcher generally extends from February 15 through August 30. After the chicks have fledged, juveniles remain closely associated with their parents for up to several months and may disperse up to 9 miles from their natal territory. There is potential foraging habitat within the Project study area; however, suitable nesting and/or roosting habitat does not occur within the Project footprint.



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Table 1. Special-Status Plant Species with Potential to Occur Within Project Study Area

Scientific Name	Listing	Habitat Characteristics	Potential to Occur	Potential effects
Catalina mariposa lily <i>Calochortus catalinae</i>	USFWS: None CDFW: None CRPR: 4.2	Coastal sage scrub, foothill woodland, chaparral, and valley grassland. Elevation: 0-6265 feet. Blooming period: March-June	Low	No Effect. Although suitable habitat may be present in the vicinity of the Project, all work east of the rail line was limited to previously disturbed areas.
Robinson's pepper-grass <i>Lepidium virginicum</i> var. <i>robinsonii</i>	USFWS: None CDFW: None CRPR: 4.3	Openings in chaparral and sage scrub. Elevation: below 2,900 feet. Blooming period: January–July	Low	No Effect. Although suitable habitat may be present in the vicinity of the Project, all work east of the rail line was limited to previously disturbed areas.
Chaparral ragwort <i>Senecio aphanactis</i>	USFWS: None CDFW: None CRPR: 2B.2	Chaparral, cismontane woodland, coastal scrub, and alkaline flats. Elevation: 49–2,624 feet. Blooming period: January–April	Low	No Effect. Although suitable habitat may be present in the vicinity of the Project, all work east of the rail line was limited to previously disturbed areas.

Notes:

Sensitivity Status

California Rare Plant Ranking (CPRP):

1B: Plants Rare, Threatened, or Endangered in California and Elsewhere

The plants of Rank 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. California Rare Plant Rank 1B plants constitute the majority of plant taxa tracked by the CNDDB, with more than 1,000 plants assigned to this category of rarity.

2B: Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere

The plants of Rank 2B are rare, threatened or endangered in California, but more common elsewhere. Plants common in other states or countries are not eligible for consideration under the provisions of the Federal Endangered Species Act; however, they are eligible for consideration under the California Endangered Species Act. This rank is meant to highlight the importance of protecting the geographic range and genetic diversity of more widespread species by protecting those species whose ranges just extend into California. Note: Plants of both Rank 1B and 2B are rare, threatened or endangered in California; the only difference is the status of the plants outside of the state.

3: Need more information

4: Limited Distribution (Watch List)

Threat Ranks: The CRPR use a decimal-style threat rank. The threat rank is an extension added onto the CRPR and designates the level of threats by a 1 to 3 ranking with 1 being the most threatened and 3 being the least threatened. Most CRPRs read as 1B.1, 1B.2, 1B.3, etc. Note that some Rank 3 plants do not have a threat code extension due to difficulty in ascertaining threats. Rank 1A and 2A plants also do not have threat code extensions since there are no known extant populations in California.

Table 2. Special-Status Wildlife Species With Potential to Occur within the Project Study Area

Scientific Name	Listing	Habitat and Distribution	Citation	Potential to Occur	Potential Effects
Reptiles					
Southern California legless lizard <i>Anniella stebbinsi</i>	USFWS: None CDFW: SSC	Little is known about this species. Information is based on <i>Anniella pulchra</i> before it was split into five species. Current known range is cismontane southern California and the Mojave Desert portion of Kern County (CDFW 2019). Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodland, desert scrub, sandy washes, and stream terraces (Nafis 2017). Originally known to occur throughout Southern California south of the Transverse Ranges into northern Baja California, Mexico (Papenfuss and Parham, 2013).	Papenfuss, T.J., and J.F. Parham. 2013. Four New Species of California Legless Lizards (<i>Anniella</i>). <i>Breviora</i> . 10.3099/mCZ10.1. AND California Department of Fish and Wildlife (CDFW). 2019. California Natural Diversity Database. Rarefind 5. All Records of Oc	Low	<i>No Effect.</i> Although suitable habitat may be present, the Project study area is disturbed and there is very low potential for this species to occur within the Project study area.
Blainville's horned lizard <i>Phrynosoma blainvillii</i>	USFWS: None CDFW: SSC	Ranges in the southern half of California outside of the desert and along the foothills of the Sierra Nevada Mountains to Butte County and along the central coast ranges up to Contra Costa County. Generally occurs in sage scrub, dunes, alluvial scrub, annual grassland, chaparral, oak, riparian, and Joshua tree woodland, coniferous forest, and saltbush scrub. Needs loose, fine soils for burrowing, open areas for basking, and dense foliage for cover. Negatively associated with Argentine ants (<i>Linepithema humi</i>) (Thomson et al. 2016)	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	Low	<i>No Effect.</i> Although suitable habitat may be present, the Project study area is disturbed and there is very low potential for this species to occur within the Project study area.



Table 2. Special-Status Wildlife Species With Potential to Occur within the Project Study Area

Scientific Name	Listing	Habitat and Distribution	Citation	Potential to Occur	Potential Effects
Birds					
Coastal California gnatcatcher <i>Poliioptila californica californica</i>	USFWS: FT CDFW: SSC	Scrub dominated plant communities, strongly associated with coastal scrub, sage scrub, and coastal succulent scrub communities. Distribution ranges from southern Ventura County down through Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties (USFWS 2010).	USFWS. 2010. Coastal California Gnatcatcher (<i>Poliioptila californica californica</i>) 5-year Review: Summary and Evaluation. USFWS; Carlsbad, CA.	Low	<i>No Effect.</i> Although suitable foraging habitat may be present, the Project study area is disturbed and there is very low potential for this species to occur within the Project study area.
Bank swallow <i>Riparia riparia</i>	USFWS: None CDFW: ST	Riparian, lacustrine, and coastal areas with vertical banks, bluffs, or cliffs with fine-textured or sandy soils, into which it digs nesting holes. Also nests in earthen banks as well as sand and gravel pits (CWHR 1999).	CWHR. 1999. California Wildlife Habitat Relationships (CHWR) System. Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updated by CWHR Program Staff, September 1999.	Low	<i>No Effect.</i> Although this species may forage over the Project study area, no suitable nesting habitat is present.
California least tern <i>Sternula antillarum browni</i>	USFWS: FE CDFW: SE, FP	Nest and roost in colonies on open beaches, forage over near shore ocean waters and in shallow estuaries and lagoons (USFWS 2006).	USFWS. 2006. California Least Tern 5-Year Review. USFWS; Carlsbad, CA.	Low	<i>No Effect.</i> Although suitable foraging habitat may be present adjacent to the Project study area, there is no nesting/roosting habitat within the Project study area. Therefore, there is very low potential for this species to occur within the Project study area.

Table 2. Special-Status Wildlife Species With Potential to Occur within the Project Study Area

Scientific Name	Listing	Habitat and Distribution	Citation	Potential to Occur	Potential Effects
Mammals					
Pallid bat <i>Antrozous pallidus</i>	USFWS: None CDFW: SSC	Ranges across all of California except for high elevation portions of the Sierra Nevada Mountains and Del Norte, western Siskiyou, Humboldt, and northern Mendocino Counties. Generally found in a wide variety of habitats but with some preference for drier areas. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings (CDFW 2018).	CDFW. 2018. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: < https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range >. CDFW Biogeographic Data Branch; Sacramento, CA.	Low	<i>No Effect.</i> Although this species may forage over the Project study area, no suitable roosting habitat is present.
Pacific pocket mouse <i>Perognathus longimembris pacificus</i>	USFWS: FE CDFW: SSC	Historically occurred on fine, sandy soil within about 12 miles of the Pacific coast of southern California from Los Angeles County south to Mexico. Associates with open coastal scrub and grassland communities (Spencer 2005).	Bolster, B.C., editor. 1998. Terrestrial Mammal Species of Special Concern in California. Draft Final Report prepared by P.V. Brylski, P.W. Collins, E.D. Pierson, W.E. Rainey and T.E. Kucera. Report submitted to California Department of Fish and Game Wildlife Management Division.	Low	<i>No Effect.</i> Although marginally suitable habitat may be present, the Project study area is highly disturbed and there is very low potential for this species to occur within the Project study area.

Source: California Department of Fish and Wildlife (CDFW) 2018, 2019; California Wildlife Habitat Relationships (CWHR) 1999, 2008; Nafis 2019; National Oceanic and Atmospheric Administration (NOAA) 2019; Shuford and Gardali 2008; Thompson, R. et al 2016

Notes:

Special status ranking:

FE=Federally Endangered, FT=Federally Threatened; SE= State Endangered; ST= State Threatened; SSC= CDFW Species of Special Concern; FP= Fully Protected (CDFW)

The emergency Project work was performed and completed outside of the breeding season for this species. Additionally, no coastal California gnatcatchers were observed by monitoring biologists during site surveys. Therefore, the Project did not result in an adverse effect on coastal California gnatcatcher.

Critical habitat

There is no designated critical habitat for the coastal California gnatcatcher within the study area. Therefore, the Project did not result in an adverse effect on critical habitat for the species.

POTENTIAL EFFECTS ON CALIFORNIA LEAST TERN

The California least tern was listed as endangered by the U.S. Fish and Wildlife Service in October 1970 (USFWS 2006). The California least tern is a small shorebird that typically nests and rests in colonies on open beaches and forages over near shore ocean waters and in shallow estuaries and lagoons (USFWS 2006). The breeding season for California least tern is generally April through August. There is potential foraging habitat adjacent to the Project study area; however, there is low potential for this species to occur within the Project footprint as there is no suitable roosting or nest habitat present. Therefore, the Project did not result in an adverse effect on California least tern.

Critical habitat

There is no designated critical habitat for the California least tern within the study area. Therefore, the Project did not result in an adverse effect on critical habitat for the species.

National Marine Fisheries Service Species

There is suitable habitat for black abalone (*Haliotis cracherodii*), white abalone (*Haliotis sorensensi*), east Pacific green sea turtle (*Chelonia mydas*), olive Ridley sea turtle (*Lepidochelys olivacea*), leatherback sea turtle (*Dermochelys coriacea*), north Pacific loggerhead sea turtle (*Caretta caretta*), blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), southern resident killer whale (*Orcinus orca*), north Pacific right whale (*Eubalaena japonica*), sei whale (*Balaenoptera borealis*), sperm whale (*Physeter macrocephalus*), and Guadalupe fur seal (*Arctocephalus townsendi*) offshore of the Project study area, however, no suitable habitat occurs within the Project footprint. Therefore, the Project did not result in an adverse effect to any NMFS managed species.

Essential Fish Habitat

The Magnuson-Stevens Act of 1996 mandated the identification of essential fish habitat (EFH) for federally managed fish species. EFH includes those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purpose of interpreting the definition of EFH, “waters” include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; “substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities; “necessary” means the habitat required to support a sustainable fishery and the managed species contribution to a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species’ full life cycle. EFH is described by Fishery Management Councils in amendments to Fishery Management Plans and is approved by the Secretary of Commerce acting through the NMFS (50 CFR 600.10) (NMFS 2004). The importance of EFH is not necessarily the

presence of federally listed species, but what the habitat contributes to the surrounding environment (e.g., wetlands or near-shore ecosystems).

A NMFS EFH Assessment was completed (Attachment C) and determined that the Project study area includes a small amount of intertidal beach habitat that has potential to provide EFH for groundfish, coastal pelagic, and four highly migratory species. The highly migratory species EFH is offshore and not within the Project study area.

For groundfish EFH, the potential adverse effects from shoreline protection and bank stabilization include loss and alteration of habitat, altered hydrology and geomorphology, and release of contaminants (PFMC 2019b). The Project study area is in the surf zone. During low tide, waves reach the outer edge of the revetment area and during high tide, waves break upon the revetment. Of the groundfish that occur within the Project study area, only a few utilize the surf line. The Project study area does not support habitat for spawning, foraging, nursery, or shelter. Direct adverse effects on groundfish from the Project are not anticipated.

The Project resulted in the loss of approximately 0.29 acre of Intertidal sandy beach. However, this change is within the normal season variation for this beach.

For coastal pelagic species EFH, the potential adverse effects from coastal development include converting natural landscape to impervious surfaces resulting in increased runoff and redistribution of surface freshwater that can affect salinity regimes (PFMC 1998).

The Project did not convert natural landscapes to impervious surfaces. Riprap has been placed in an existing revetment area and did not result in an increase in impervious surfaces. The Project did not redistribute surface freshwater. The Project study area drainage remains the same. The EFH Assessment determined that the Project had no adverse effect on EFH.

Special-Status Wildlife Species

Special-status wildlife species and their potential to occur in the Project study area are provided in Table 2. Based on the results of the literature review search described above and the field reconnaissance survey of the Project study area, no special-status wildlife species were observed. Although suitable habitat for several special-status wildlife species occurs in the vicinity of the Project, no suitable habitat occurs within the rock revetment limits or disturbed habitat that were impacted for construction. Therefore, the Project did not result in an adverse effect to any species-status wildlife species.

Mitigation and Monitoring

As previously described, the Project became necessary as a result of natural coastal processes and has little impact on recreational beach area and no impact on beach access. Due to current sea levels and the existing railroad ROW, the area of intertidal sandy beach being impacted provides little safe access and recreation opportunities in their current conditions. These constraints, in combination with private property on the bluff top, prevent the enhancement of access in the vicinity of the project.

Impacts to intertidal beach habitat function is also minimal given the existing beach lacks a supralittoral and coastal strand zone. Therefore, impacts to species dependent upon beach habitat is limited. Finally, although the additional rock interferes with sediment input, due to its' location in the dynamic surf zone, over time the rock does move or settle as described in Attachment I Rock Mobility



Memorandum. Sediment is free to move as rock settles over time and as sediment is cyclically deposited over the rocks,

Therefore, the applicant proposes to expand the requested beach width monitoring plan to include a rock mobility assessment component as mitigation for any unavoidable impacts to beach habitat. The combined monitoring results could prove useful for refining coastal rock revetment design parameters for the local coastal region such as most stable rock size, slope face or geometry, best time of year for conducting maintenance or construction of similar erosion protection features, etc.

Post-Project Monitoring Program

The post-project monitoring program would include beach width monitoring that would consist of measuring beach width from a permanent marker on the back beach to the water's edge when predicted tide heights fall between 1 and 3 feet above Mean Lower Low Water. Measurements would be taken at five transects spaced 300 feet apart on a monthly basis for two years. The center transect will be placed at the center of the Project study area. Measurements may be made using a measuring wheel, meter tape, or ESRI field collector application on a phone or IPAD utilizing its internal GPS.

During this same period, rock mobility would be assessed within the Project study area. The assessment may utilize several different methods of analysis including marking particular rocks for GPS tracking before and after predicted storm events and during monthly beach width monitoring and/or comparison of periodic LiDAR and/or aerial photography collected during the monitoring period. Assessment would include regularly spaced monitoring in addition to monitoring before and after significant storm events and during any rock replacement that becomes necessary as a result of seasonal or storm-related changes in beach profiles.

Monitoring results would be submitted annually to the resource agencies. The second annual report would include a review of published local shoreline erosion rates for comparison with the rates measured at the Project and recommendations for rock revetment design, construction and maintenance parameters that may improve stability and minimize impacts to coastal resources, if any discovered.

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Attachment A. Literature Review Results and Special-Status Species Tables



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United States Department of the Interior

FISH AND WILDLIFE SERVICE

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In Reply Refer To:

November 17, 2021

Consultation Code: 08ECAR00-2022-SLI-0176

Event Code: 08ECAR00-2022-E-00454

Project Name: Cyprus Shores Emergency Repairs Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:

<http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>;

<http://www.towerkill.com>; and

[http://](http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html)

www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office

2177 Salk Avenue - Suite 250

Carlsbad, CA 92008-7385

(760) 431-9440

Project Summary

Consultation Code: 08ECAR00-2022-SLI-0176

Event Code: Some(08ECAR00-2022-E-00454)

Project Name: Cyprus Shores Emergency Repairs Project

Project Type: TRANSPORTATION

Project Description: Emergency bank stabilization and track support in San Clemente, CA.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@33.395049,-117.59936032219483,14z>



Counties: Orange County, California

Endangered Species Act Species

There is a total of 15 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Pacific Pocket Mouse <i>Perognathus longimembris pacificus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8080	Endangered
Stephens' Kangaroo Rat <i>Dipodomys stephensi</i> (incl. <i>D. cactus</i>) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3495	Endangered

Birds

NAME	STATUS
California Least Tern <i>Sterna antillarum browni</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Coastal California Gnatcatcher <i>Polioptila californica californica</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8178	Threatened
Least Bell's Vireo <i>Vireo bellii pusillus</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Light-footed Clapper Rail <i>Rallus longirostris levipes</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6035	Endangered
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered

Amphibians

NAME	STATUS
Arroyo (=arroyo Southwestern) Toad <i>Anaxyrus californicus</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3762	Endangered

Fishes

NAME	STATUS
Tidewater Goby <i>Eucyclogobius newberryi</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/57	Endangered

Crustaceans

NAME	STATUS
Riverside Fairy Shrimp <i>Streptocephalus woottoni</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8148	Endangered
San Diego Fairy Shrimp <i>Branchinecta sandiegonensis</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6945	Endangered

Flowering Plants

NAME	STATUS
San Diego Ambrosia <i>Ambrosia pumila</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8287	Endangered
San Diego Button-celery <i>Eryngium aristulatum</i> var. <i>parishii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5937	Endangered
San Diego Thornmint <i>Acanthomintha ilicifolia</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/351	Threatened
Thread-leaved Brodiaea <i>Brodiaea filifolia</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6087	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad< IS (San Clemente (3311745) OR San Onofre Bluff (3311735) OR Las Pulgas Canyon (3311734) OR Margarita Peak (3311744) OR Canada Gobernadora (3311755) OR Dana Point (3311746) OR Sitton Peak (3311754) OR San Juan Capistrano (3311756))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Accipiter cooperii</i> Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
<i>Agelaius tricolor</i> tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
<i>Aimophila ruficeps canescens</i> southern California rufous-crowned sparrow	ABPBX91091	None	None	G5T3	S3	WL
<i>Allium marvinii</i> Yucaipa onion	PMLIL02330	None	None	G1	S1	1B.2
<i>Ammodramus savannarum</i> grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
<i>Anaxyrus californicus</i> arroyo toad	AAABB01230	Endangered	None	G2G3	S2S3	SSC
<i>Anniella stebbinsi</i> Southern California legless lizard	ARACC01060	None	None	G3	S3	SSC
<i>Antrozous pallidus</i> pallid bat	AMACC10010	None	None	G4	S3	SSC
<i>Aphanisma blitoides</i> aphanisma	PDCHE02010	None	None	G3G4	S2	1B.2
<i>Aquila chrysaetos</i> golden eagle	ABNKC22010	None	None	G5	S3	FP
<i>Arctostaphylos rainbowensis</i> Rainbow manzanita	PDERI042T0	None	None	G2	S2	1B.1
<i>Arizona elegans occidentalis</i> California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
<i>Asio otus</i> long-eared owl	ABNSB13010	None	None	G5	S3?	SSC
<i>Aspidoscelis hyperythra</i> orange-throated whiptail	ARACJ02060	None	None	G5	S2S3	WL
<i>Aspidoscelis tigris stejnegeri</i> coastal whiptail	ARACJ02143	None	None	G5T5	S3	SSC
<i>Athene cunicularia</i> burrowing owl	ABNSB10010	None	None	G4	S3	SSC
<i>Atriplex coulteri</i> Coulter's saltbush	PDCHE040E0	None	None	G3	S1S2	1B.2
<i>Atriplex pacifica</i> south coast saltscale	PDCHE041C0	None	None	G4	S2	1B.2
<i>Baccharis vanessae</i> Encinitas baccharis	PDAST0W0P0	Threatened	Endangered	G1	S1	1B.1



Selected Elements by Scientific Name

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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Bombus crotchii</i> Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
<i>Branchinecta sandiegonensis</i> San Diego fairy shrimp	ICBRA03060	Endangered	None	G2	S2	
<i>Brodiaea filifolia</i> thread-leaved brodiaea	PMLIL0C050	Threatened	Endangered	G2	S2	1B.1
<i>Brodiaea orcuttii</i> Orcutt's brodiaea	PMLIL0C0B0	None	None	G2	S2	1B.1
<i>Brodiaea santarosae</i> Santa Rosa Basalt brodiaea	PMLIL0C0G0	None	None	G1	S1	1B.2
<i>Buteo swainsoni</i> Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
<i>Calochortus weedii</i> var. <i>intermedius</i> intermediate mariposa-lily	PMLIL0D1J1	None	None	G3G4T2	S3	1B.2
<i>Campylorhynchus brunneicapillus sandiegensis</i> coastal cactus wren	ABPBG02095	None	None	G5T3Q	S3	SSC
<i>Ceanothus pendletonensis</i> Pendleton ceanothus	PDRHA04450	None	None	G1	S1	1B.2
<i>Centromadia parryi</i> ssp. <i>australis</i> southern tarplant	PDAST4R0P4	None	None	G3T2	S2	1B.1
<i>Centromadia pungens</i> ssp. <i>laevis</i> smooth tarplant	PDAST4R0R4	None	None	G3G4T2	S2	1B.1
<i>Chaenactis glabriuscula</i> var. <i>orcuttiana</i> Orcutt's pincushion	PDAST20095	None	None	G5T1T2	S1	1B.1
<i>Chaetodipus californicus femoralis</i> Dulzura pocket mouse	AMAFD05021	None	None	G5T3	S3	SSC
<i>Chaetodipus fallax fallax</i> northwestern San Diego pocket mouse	AMAFD05031	None	None	G5T3T4	S3S4	SSC
<i>Charadrius nivosus nivosus</i> western snowy plover	ABNNB03031	Threatened	None	G3T3	S2	SSC
<i>Choeronycteris mexicana</i> Mexican long-tongued bat	AMACB02010	None	None	G3G4	S1	SSC
<i>Chorizanthe polygonoides</i> var. <i>longispina</i> long-spined spineflower	PDPGN040K1	None	None	G5T3	S3	1B.2
<i>Circus hudsonius</i> northern harrier	ABNKC11011	None	None	G5	S3	SSC
<i>Clinopodium chandleri</i> San Miguel savory	PDLAM08030	None	None	G3	S2	1B.2
<i>Coelus globosus</i> globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
<i>Coleonyx variegatus abbotti</i> San Diego banded gecko	ARACD01031	None	None	G5T5	S1S2	SSC



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i> summer holly	PDERI0B011	None	None	G3T2	S2	1B.2
<i>Crotalus ruber</i> red-diamond rattlesnake	ARADE02090	None	None	G4	S3	SSC
<i>Danaus plexippus</i> pop. 1 monarch - California overwintering population	IILEPP2012	Candidate	None	G4T2T3	S2S3	
<i>Diadophis punctatus similis</i> San Diego ringneck snake	ARADB1001A	None	None	G5T4Q	S2?	
<i>Dipodomys stephensi</i> Stephens' kangaroo rat	AMAFD03100	Endangered	Threatened	G2	S2	
<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i> Blochman's dudleya	PDCRA04051	None	None	G3T2	S2	1B.1
<i>Dudleya multicaulis</i> many-stemmed dudleya	PDCRA040H0	None	None	G2	S2	1B.2
<i>Dudleya stolonifera</i> Laguna Beach dudleya	PDCRA040P0	Threatened	Threatened	G1	S1	1B.1
<i>Dudleya viscida</i> sticky dudleya	PDCRA040T0	None	None	G2	S2	1B.2
<i>Elanus leucurus</i> white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
<i>Epidonax traillii extimus</i> southwestern willow flycatcher	ABPAE33043	Endangered	Endangered	G5T2	S1	
<i>Emys marmorata</i> western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
<i>Eremophila alpestris actia</i> California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
<i>Eryngium aristulatum</i> var. <i>parishii</i> San Diego button-celery	PDAP10Z042	Endangered	Endangered	G5T1	S1	1B.1
<i>Eryngium pendletonense</i> Pendleton button-celery	PDAP10Z120	None	None	G1	S1	1B.1
<i>Erysimum ammophilum</i> sand-loving wallflower	PDBRA16010	None	None	G2	S2	1B.2
<i>Eucyclogobius newberryi</i> tidewater goby	AFCQN04010	Endangered	None	G3	S3	
<i>Eumops perotis californicus</i> western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC
<i>Euphorbia misera</i> cliff spurge	PDEUP0Q1B0	None	None	G5	S2	2B.2
<i>Ferocactus viridescens</i> San Diego barrel cactus	PDCAC08060	None	None	G3?	S2S3	2B.1
<i>Gila orcuttii</i> arroyo chub	AFCJB13120	None	None	G2	S2	SSC



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Harpagonella palmeri</i> Palmer's grapplinghook	PDBOR0H010	None	None	G4	S3	4.2
<i>Horkelia cuneata</i> var. <i>puberula</i> mesa horkelia	PDROS0W045	None	None	G4T1	S1	1B.1
<i>Horkelia truncata</i> Ramona horkelia	PDROS0W0G0	None	None	G3	S3	1B.3
<i>Icteria virens</i> yellow-breasted chat	ABPBX24010	None	None	G5	S3	SSC
<i>Imperata brevifolia</i> California satintail	PMPOA3D020	None	None	G4	S3	2B.1
<i>Isocoma menziesii</i> var. <i>decumbens</i> decumbent goldenbush	PDAST57091	None	None	G3G5T2T3	S2	1B.2
<i>Lasiurus blossevillei</i> western red bat	AMACC05060	None	None	G4	S3	SSC
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i> Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
<i>Lepidium virginicum</i> var. <i>robinsonii</i> Robinson's pepper-grass	PDBRA1M114	None	None	G5T3	S3	4.3
<i>Leptosyne maritima</i> sea dahlia	PDAST2L0L0	None	None	G2	S1S2	2B.2
<i>Lilium parryi</i> lemon lily	PMLIL1A0J0	None	None	G3	S3	1B.2
<i>Lycium brevipes</i> var. <i>hassei</i> Santa Catalina Island desert-thorn	PDSOL0G0N0	None	None	G5T1Q	S1	3.1
<i>Monardella hypoleuca</i> ssp. <i>intermedia</i> intermediate monardella	PDLAM180A4	None	None	G4T2?	S2?	1B.3
<i>Monardella macrantha</i> ssp. <i>hallii</i> Hall's monardella	PDLAM180E1	None	None	G5T3	S3	1B.3
<i>Myosurus minimus</i> ssp. <i>apus</i> little mousetail	PDRAN0H031	None	None	G5T2Q	S2	3.1
<i>Myotis yumanensis</i> Yuma myotis	AMACC01020	None	None	G5	S4	
<i>Nama stenocarpa</i> mud nama	PDHYD0A0H0	None	None	G4G5	S1S2	2B.2
<i>Navarretia fossalis</i> spreading navarretia	PDPLM0C080	Threatened	None	G2	S2	1B.1
<i>Navarretia prostrata</i> prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.2
<i>Nemacaulis denudata</i> var. <i>denudata</i> coast woolly-heads	PDPGN0G011	None	None	G3G4T2	S2	1B.2
<i>Neotoma lepida</i> <i>intermedia</i> San Diego desert woodrat	AMAFF08041	None	None	G5T3T4	S3S4	SSC



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Nolina cismontana</i> chaparral nolina	PMAGA080E0	None	None	G3	S3	1B.2
<i>Nyctinomops femorosaccus</i> pocketed free-tailed bat	AMACD04010	None	None	G5	S3	SSC
<i>Oncorhynchus mykiss irideus pop. 10</i> steelhead - southern California DPS	AFCHA0209J	Endangered	None	G5T1Q	S1	
<i>Passerculus sandwichensis beldingi</i> Belding's savannah sparrow	ABPBX99015	None	Endangered	G5T3	S3	
<i>Pentachaeta aurea ssp. allenii</i> Allen's pentachaeta	PDAST6X021	None	None	G4T1	S1	1B.1
<i>Perognathus longimembris pacificus</i> Pacific pocket mouse	AMAFD01042	Endangered	None	G5T1	S1	SSC
<i>Phrynosoma blainvillii</i> coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
<i>Plestiodon skiltonianus interparietalis</i> Coronado skink	ARACH01114	None	None	G5T5	S2S3	WL
<i>Poliophtila californica californica</i> coastal California gnatcatcher	ABPBJ08081	Threatened	None	G4G5T3Q	S2	SSC
<i>Pseudognaphalium leucocephalum</i> white rabbit-tobacco	PDAST440C0	None	None	G4	S2	2B.2
<i>Quercus dumosa</i> Nuttall's scrub oak	PDFAG050D0	None	None	G3	S3	1B.1
<i>Rallus obsoletus levipes</i> light-footed Ridgway's rail	ABNME05014	Endangered	Endangered	G3T1T2	S1	FP
<i>Riparia riparia</i> bank swallow	ABPAU08010	None	Threatened	G5	S2	
<i>San Diego Mesa Hardpan Vernal Pool</i> San Diego Mesa Hardpan Vernal Pool	CTT44321CA	None	None	G2	S2.1	
<i>Scutellaria bolanderi ssp. austromontana</i> southern mountains skullcap	PDLAM1U0A1	None	None	G4T3	S3	1B.2
<i>Senecio aphanactis</i> chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
<i>Sidalcea neomexicana</i> salt spring checkerbloom	PDMAL110J0	None	None	G4	S2	2B.2
<i>Southern Coast Live Oak Riparian Forest</i> Southern Coast Live Oak Riparian Forest	CTT61310CA	None	None	G4	S4	
<i>Southern Coastal Salt Marsh</i> Southern Coastal Salt Marsh	CTT52120CA	None	None	G2	S2.1	
<i>Southern Cottonwood Willow Riparian Forest</i> Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	
<i>Southern Dune Scrub</i> Southern Dune Scrub	CTT21330CA	None	None	G1	S1.1	



Selected Elements by Scientific Name
California Department of Fish and Wildlife
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Southern Foredunes</i> Southern Foredunes	CTT21230CA	None	None	G2	S2.1	
<i>Southern Mixed Riparian Forest</i> Southern Mixed Riparian Forest	CTT61340CA	None	None	G2	S2.1	
<i>Southern Sycamore Alder Riparian Woodland</i> Southern Sycamore Alder Riparian Woodland	CTT62400CA	None	None	G4	S4	
<i>Spea hammondi</i> western spadefoot	AAABF02020	None	None	G2G3	S3	SSC
<i>Sternula antillarum browni</i> California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
<i>Streptocephalus woottoni</i> Riverside fairy shrimp	ICBRA07010	Endangered	None	G1G2	S1S2	
<i>Suaeda esteroa</i> estuary seablite	PDCHE0P0D0	None	None	G3	S2	1B.2
<i>Taricha torosa</i> Coast Range newt	AAAAF02032	None	None	G4	S4	SSC
<i>Taxidea taxus</i> American badger	AMAJF04010	None	None	G5	S3	SSC
<i>Tetracoccus dioicus</i> Parry's tetracoccus	PDEUP1C010	None	None	G2G3	S2	1B.2
<i>Thamnophis hammondi</i> two-striped gartersnake	ARADB36160	None	None	G4	S3S4	SSC
<i>Tortula californica</i> California screw moss	NBMUS7L090	None	None	G2G3	S2?	1B.2
<i>Valley Needlegrass Grassland</i> Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
<i>Verbesina dissita</i> big-leaved crownbeard	PDAST9R050	Threatened	Threatened	G1G2	S1	1B.1
<i>Viguiera purissima</i> La Purisima viguiera	PDAST9T0S0	None	None	G4	S1	2B.3
<i>Vireo bellii pusillus</i> least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	

Record Count: 119

Inventory of Rare and Endangered Plants of California





Search Results

87 matches found. Click on scientific name for details

Search Criteria: 9-Quad include [3311745:3311735:3311734:3311744:3311755:3311746:3311754:3311756]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Abronia maritima	red sand-verbena	Nyctaginaceae	perennial herb	Feb-Nov	None	None	G4	S3?	4.2	 ©2003 Christopher L. Christie
Allium marvinii	Yucaipa onion	Alliaceae	perennial bulbiferous herb	Apr-May	None	None	G1	S1	1B.2	No Photo Available
Aphanisma blitoides	aphanisma	Chenopodiaceae	annual herb	Feb-Jun	None	None	G3G4	S2	1B.2	No Photo Available
Arctostaphylos rainbowensis	Rainbow manzanita	Ericaceae	perennial evergreen shrub	Dec-Mar	None	None	G2	S2	1B.1	No Photo Available
Artemisia palmeri	San Diego sagewort	Asteraceae	perennial deciduous shrub	(Feb)May-Sep	None	None	G3?	S3?	4.2	No Photo Available
Asplenium vespertinum	western spleenwort	Aspleniaceae	perennial rhizomatous herb	Feb-Jun	None	None	G4	S4	4.2	No Photo Available
Atriplex coulteri	Coulter's saltbush	Chenopodiaceae	perennial herb	Mar-Oct	None	None	G3	S1S2	1B.2	No Photo Available
Atriplex pacifica	south coast saltscale	Chenopodiaceae	annual herb	Mar-Oct	None	None	G4	S2	1B.2	No Photo Available
Baccharis vanessae	Encinitas baccharis	Asteraceae	perennial deciduous shrub	Aug-Nov	FT	CE	G1	S1	1B.1	No Photo Available
Brodiaea filifolia	thread-leaved brodiaea	Themidaceae	perennial bulbiferous herb	Mar-Jun	FT	CE	G2	S2	1B.1	No Photo Available
Brodiaea orcuttii	Orcutt's brodiaea	Themidaceae	perennial bulbiferous herb	May-Jul	None	None	G2	S2	1B.1	No Photo Available
Brodiaea santarosae	Santa Rosa Basalt brodiaea	Themidaceae	perennial bulbiferous herb	May-Jun	None	None	G1	S1	1B.2	No Photo Available
Calochortus	Catalina	Liliaceae	perennial	(Feb)Mar-	None	None	G3G4	S3S4	4.2	

<u>catalinae</u>	mariposa lily		bulbiferous herb	Jun							No Photo Available
<u>Calochortus weedii</u> <u>var. intermedius</u>	intermediate mariposa-lily	Liliaceae	perennial bulbiferous herb	May-Jul	None	None	G3G4T2	S3	1B.2		No Photo Available
<u>Caulanthus simulans</u>	Payson's jewelflower	Brassicaceae	annual herb	(Feb)Mar-May(Jun)	None	None	G4	S4	4.2		No Photo Available
<u>Ceanothus pendletonensis</u>	Pendleton ceanothus	Rhamnaceae	perennial shrub	Mar-Jun	None	None	G1	S1	1B.2		No Photo Available
<u>Centromadia parryi</u> <u>ssp. australis</u>	southern tarplant	Asteraceae	annual herb	May-Nov	None	None	G3T2	S2	1B.1		No Photo Available
<u>Centromadia pungens</u> <u>ssp. laevis</u>	smooth tarplant	Asteraceae	annual herb	Apr-Sep	None	None	G3G4T2	S2	1B.1		No Photo Available
<u>Chaenactis glabriuscula</u> <u>var. orcuttiana</u>	Orcutt's pincushion	Asteraceae	annual herb	Jan-Aug	None	None	G5T1T2	S1	1B.1		No Photo Available
<u>Chamaebatia australis</u>	southern mountain misery	Rosaceae	perennial evergreen shrub	Nov-May	None	None	G4	S4	4.2		No Photo Available
<u>Chorizanthe leptotheca</u>	Peninsular spineflower	Polygonaceae	annual herb	May-Aug	None	None	G3	S3	4.2		No Photo Available
<u>Chorizanthe polygonoides</u> <u>var. longispina</u>	long-spined spineflower	Polygonaceae	annual herb	Apr-Jul	None	None	G5T3	S3	1B.2		No Photo Available
<u>Cistanthe maritima</u>	seaside cistanthe	Montiaceae	annual herb	(Feb)Mar-Jun(Aug)	None	None	G3G4	S3	4.2		No Photo Available
<u>Clinopodium chandleri</u>	San Miguel savory	Lamiaceae	perennial shrub	Mar-Jul	None	None	G3	S2	1B.2		No Photo Available
<u>Collomia diversifolia</u>	serpentine collomia	Polemoniaceae	annual herb	May-Jun	None	None	G4	S4	4.3		©2019 Zoya Akulova
<u>Comarostaphylis diversifolia</u> <u>ssp. diversifolia</u>	summer holly	Ericaceae	perennial evergreen shrub	Apr-Jun	None	None	G3T2	S2	1B.2		No Photo Available
<u>Convolvulus simulans</u>	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	None	None	G4	S4	4.2		No Photo Available
<u>Deinandra paniculata</u>	paniculate tarplant	Asteraceae	annual herb	(Mar)Apr-Nov	None	None	G4	S4	4.2		No Photo Available
<u>Dichondra</u>	western	Convolvulaceae	perennial	(Jan)Mar-	None	None	G3G4	S3S4	4.2		

<u>occidentalis</u>	dichondra		rhizomatous herb	Jul							No Photo Available
<u>Dudleya blochmaniae ssp. blochmaniae</u>	Blochman's dudleya	Crassulaceae	perennial herb	Apr-Jun	None	None	G3T2	S2	1B.1		No Photo Available
<u>Dudleya multicaulis</u>	many-stemmed dudleya	Crassulaceae	perennial herb	Apr-Jul	None	None	G2	S2	1B.2		No Photo Available
<u>Dudleya stolonifera</u>	Laguna Beach dudleya	Crassulaceae	perennial stoloniferous herb	May-Jul	FT	CT	G1	S1	1B.1		No Photo Available
<u>Dudleya viscida</u>	sticky dudleya	Crassulaceae	perennial herb	May-Jun	None	None	G2	S2	1B.2		No Photo Available
<u>Eryngium aristulatum</u> var. <u>parishii</u>	San Diego button-celery	Apiaceae	annual/perennial herb	Apr-Jun	FE	CE	G5T1	S1	1B.1		No Photo Available
<u>Eryngium pendletonense</u>	Pendleton button-celery	Apiaceae	perennial herb	Apr-Jun(Jul)	None	None	G1	S1	1B.1		No Photo Available
<u>Erysimum ammophilum</u>	sand-loving wallflower	Brassicaceae	perennial herb	Feb-Jun(Jul-Aug)	None	None	G2	S2	1B.2		No Photo Available
<u>Erythranthe diffusa</u>	Palomar monkeyflower	Phrymaceae	annual herb	Apr-Jun	None	None	G4	S3	4.3		Ron Vanderhoff, 2019
<u>Euphorbia misera</u>	cliff spurge	Euphorbiaceae	perennial shrub	(Oct)Dec-Aug	None	None	G5	S2	2B.2		No Photo Available
<u>Ferocactus viridescens</u>	San Diego barrel cactus	Cactaceae	perennial stem	May-Jun	None	None	G3?	S2S3	2B.1		No Photo Available
<u>Harpagonella palmeri</u>	Palmer's grapplinghook	Boraginaceae	annual herb	Mar-May	None	None	G4	S3	4.2		No Photo Available
<u>Holocarpha virgata</u> ssp. <u>elongata</u>	graceful tarplant	Asteraceae	annual herb	May-Nov	None	None	G5T3	S3	4.2		No Photo Available
<u>Hordeum intercedens</u>	vernal barley	Poaceae	annual herb	Mar-Jun	None	None	G3G4	S3S4	3.2		No Photo Available
<u>Horkelia cuneata</u> var. <u>puberula</u>	mesa horkelia	Rosaceae	perennial herb	Feb-Jul(Sep)	None	None	G4T1	S1	1B.1		No Photo Available
<u>Horkelia truncata</u>	Ramona horkelia	Rosaceae	perennial herb	May-Jun	None	None	G3	S3	1B.3		No Photo Available

<i>Imperata brevifolia</i>	California satintail	Poaceae	perennial rhizomatous herb	Sep-May	None	None	G4	S3	2B.1	No Photo Available
<i>Isocoma menziesii</i> var. <i>decumbens</i>	decumbent goldenbush	Asteraceae	perennial shrub	Apr-Nov	None	None	G3G5T2T3	S2	1B.2	No Photo Available
<i>Juglans californica</i>	Southern California black walnut	Juglandaceae	perennial deciduous tree	Mar-Aug	None	None	G4	S4	4.2	No Photo Available
<i>Juncus acutus</i> ssp. <i>leopoldii</i>	southwestern spiny rush	Juncaceae	perennial rhizomatous herb	(Mar)May- Jun	None	None	G5T5	S4	4.2	No Photo Available
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	Coulter's goldfields	Asteraceae	annual herb	Feb-Jun	None	None	G4T2	S2	1B.1	No Photo Available
<i>Lepidium virginicum</i> var. <i>robinsonii</i>	Robinson's pepper-grass	Brassicaceae	annual herb	Jan-Jul	None	None	G5T3	S3	4.3	No Photo Available
<i>Leptosyne maritima</i>	sea dahlia	Asteraceae	perennial herb	Mar-May	None	None	G2	S1S2	2B.2	No Photo Available
<i>Lessingia hololeuca</i>	woolly-headed lessingia	Asteraceae	annual herb	Jun-Oct	None	None	G2G3	S2S3	3	No Photo Available
<i>Lilium humboldtii</i> ssp. <i>ocellatum</i>	ocellated Humboldt lily	Liliaceae	perennial bulbiferous herb	Mar- Jul(Aug)	None	None	G4T4?	S4?	4.2	No Photo Available
<i>Lilium parryi</i>	lemon lily	Liliaceae	perennial bulbiferous herb	Jul-Aug	None	None	G3	S3	1B.2	No Photo Available
<i>Lycium brevipes</i> var. <i>hassei</i>	Santa Catalina Island desert- thorn	Solanaceae	perennial deciduous shrub	Jun(Aug)	None	None	G5T1Q	S1	3.1	No Photo Available
<i>Lycium californicum</i>	California box- thorn	Solanaceae	perennial shrub	Mar- Aug(Dec)	None	None	G4	S4	4.2	No Photo Available
<i>Malacothrix saxatilis</i> var. <i>saxatilis</i>	cliff malacothrix	Asteraceae	perennial rhizomatous herb	Mar-Sep	None	None	G5T4	S4	4.2	No Photo Available
<i>Microseris douglasii</i> ssp. <i>platycarpha</i>	small-flowered microseris	Asteraceae	annual herb	Mar-May	None	None	G4T4	S4	4.2	No Photo Available
<i>Monardella</i> <i>hypoleuca</i> ssp. <i>intermedia</i>	intermediate monardella	Lamiaceae	perennial rhizomatous herb	Apr-Sep	None	None	G4T2?	S2?	1B.3	No Photo Available
<i>Monardella</i> <i>macrantha</i> ssp. <i>hallii</i>	Hall's monardella	Lamiaceae	perennial rhizomatous herb	Jun-Oct	None	None	G5T3	S3	1B.3	No Photo Available
<i>Myosurus minimus</i> ssp. <i>apus</i>	little mousetail	Ranunculaceae	annual herb	Mar-Jun	None	None	G5T2Q	S2	3.1	No Photo

											Available
<i>Nama stenocarpa</i>	mud nama	Namaceae	annual/perennial herb	Jan-Jul	None	None	G4G5	S1S2	2B.2	No Photo Available	
<i>Navarretia fossalis</i>	spreading navarretia	Polemoniaceae	annual herb	Apr-Jun	FT	None	G2	S2	1B.1	No Photo Available	
<i>Navarretia prostrata</i>	prostrate vernal pool navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	G2	S2	1B.2	No Photo Available	
<i>Nemacaulis denudata</i> var. <i>denudata</i>	coast woolly-heads	Polygonaceae	annual herb	Apr-Sep	None	None	G3G4T2	S2	1B.2	No Photo Available	
<i>Nolina cismontana</i>	chaparral nolina	Ruscaceae	perennial evergreen shrub	(Mar)May-Jul	None	None	G3	S3	1B.2	No Photo Available	
<i>Orcuttia californica</i>	California Orcutt grass	Poaceae	annual herb	Apr-Aug	FE	CE	G1	S1	1B.1	No Photo Available	
<i>Pentachaeta aurea</i> ssp. <i>allenii</i>	Allen's pentachaeta	Asteraceae	annual herb	Mar-Jun	None	None	G4T1	S1	1B.1	<div></div> <div>©2008 Bob Allen</div>	
<i>Pentachaeta aurea</i> ssp. <i>aurea</i>	golden-rayed pentachaeta	Asteraceae	annual herb	Mar-Jul	None	None	G4T3	S3	4.2	No Photo Available	
<i>Phacelia ramosissima</i> var. <i>austrolitoralis</i>	south coast branching phacelia	Hydrophyllaceae	perennial herb	Mar-Aug	None	None	G5?T3Q	S3	3.2	No Photo Available	
<i>Piperia cooperi</i>	chaparral rein orchid	Orchidaceae	perennial herb	Mar-Jun	None	None	G3G4	S3S4	4.2	No Photo Available	
<i>Polygala cornuta</i> var. <i>fishiae</i>	Fish's milkwort	Polygalaceae	perennial deciduous shrub	May-Aug	None	None	G5T4	S4	4.3	No Photo Available	
<i>Pseudognaphalium leucocephalum</i>	white rabbit-tobacco	Asteraceae	perennial herb	(Jul)Aug-Nov(Dec)	None	None	G4	S2	2B.2	No Photo Available	
<i>Quercus dumosa</i>	Nuttall's scrub oak	Fagaceae	perennial evergreen shrub	Feb-Apr(May-Aug)	None	None	G3	S3	1B.1	No Photo Available	
<i>Quercus engelmannii</i>	Engelmann oak	Fagaceae	perennial deciduous tree	Mar-Jun	None	None	G3	S3	4.2	No Photo Available	
<i>Romneya coulteri</i>	Coulter's matilija poppy	Papaveraceae	perennial rhizomatous herb	Mar-Jul(Aug)	None	None	G4	S4	4.2	No Photo Available	

Saltugilia caruifolia	caraway-leaved woodland-gilia	Polemoniaceae	annual herb	May-Aug	None	None	G4	S4	4.3	No Photo Available
Scutellaria bolanderi ssp. austromontana	southern mountains skullcap	Lamiaceae	perennial rhizomatous herb	Jun-Aug	None	None	G4T3	S3	1B.2	No Photo Available
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	Jan- Apr(May)	None	None	G3	S2	2B.2	No Photo Available
Sidalcea neomexicana	salt spring checkerbloom	Malvaceae	perennial herb	Mar-Jun	None	None	G4	S2	2B.2	No Photo Available
Suaeda esteroa	estuary seablite	Chenopodiaceae	perennial herb	(Jan- May)Jul- Oct	None	None	G3	S2	1B.2	No Photo Available
Suaeda taxifolia	woolly seablite	Chenopodiaceae	perennial evergreen shrub	Jan-Dec	None	None	G4	S4	4.2	No Photo Available
Tetracoccus dioicus	Parry's tetracoccus	Picrodendraceae	perennial deciduous shrub	Apr-May	None	None	G2G3	S2	1B.2	No Photo Available
Tortula californica	California screw moss	Pottiaceae	moss		None	None	G2G3	S2?	1B.2	No Photo Available
Verbesina dissita	big-leaved crownbeard	Asteraceae	perennial herb	(Mar)Apr- Jul	FT	CT	G1G2	S1	1B.1	No Photo Available
Viguiera laciniata	San Diego County viguiera	Asteraceae	perennial shrub	Feb- Jun(Aug)	None	None	G4	S4	4.3	No Photo Available
Viguiera purisimae	La Purisima viguiera	Asteraceae	shrub	Apr-Sep	None	None	G4	S1	2B.3	No Photo Available

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Special-Status Wildlife Species Evaluated for Potential to Occur within the Study Area

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Invertebrates					
San Diego fairy shrimp <i>Branchinecta sandiegonensis</i>	USFWS: FE CDFW: None	Vernal pool complexes primarily near the coast in Orange and San Diego Counties, but currently known from as far north as Long Beach and south to northwestern Baja California. Restricted to dilute vernal pools, having relatively low sodium concentrations (below 60 milli-moles per liter), low alkalinity (below 1000 milligrams per liter), and neutral pH (USFWS 2008).	USFWS. 2008. San Diego Fairy Shrimp (<i>Branchinecta sandiegonensis</i>) 5-Year Review: Summary and Evaluation. USFWS; Carlsbad, CA.	No	Vernal pools are absent.
Monarch (California overwintering population) <i>Danaus plexippus pop. 1</i>	USFWS: FC CDFW: None	Typically overwinter in groves of eucalyptus (<i>Eucalyptus</i> sp.), Monterey pine (<i>Pinus radiata</i>), or Monterey cypress (<i>Hesperocyparis macrocarpa</i>) along the California coast (IELP 2012).	IELP. 2012. The Legal Status of Monarch Butterflies in California. International Environmental Law Project; Portland, OR.	No	Suitable habitat absent.
Black abalone <i>Haliotis cracherodii</i>	USFWS: FE CDFW: None	Rocky substrates in intertidal and shallow subtidal reefs (to about 18 feet deep) along the coast from Monterey County south through Baja California. Typically occur in habitats with complex surfaces and deep crevices that provide shelter (NOAA 2019).	NOAA. 2019. NOAA Fisheries ESA Threatened & Endangered Species Directory. https://www.fisheries.noaa.gov/species/black-abalone	Low	Suitable habitat within the Project study area, but not within the Project footprint.
White abalone <i>Haliotis sorensensi</i>	USFWS: FE CDFW: None	Rocky substrates alongside sand channels usually at depths of 50 to 180 feet, from Santa Barbara County south through Baja California (NOAA 2019).	NOAA. 2019. NOAA Fisheries ESA Threatened & Endangered Species Directory. https://www.fisheries.noaa.gov/species/white-abalone	Low	Suitable habitat within the Project study area, but not within the Project footprint.
Riverside fairy shrimp <i>Streptocephalus woottoni</i>	USFWS: FE CDFW: None	Restricted to vernal pools and non-vegetated ephemeral pools deeper than 12 inches. Inland areas of Riverside, Orange, and San Diego counties. Coastal areas of San Diego County and northwestern Baja California (USFWS 2008).	USFWS. 2008. Riverside Fairy Shrimp (<i>Streptocephalus woottoni</i>) 5-year Review: Summary and Evaluation. USFWS; Carlsbad, CA.	No	Vernal and non-vegetated pools are absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Fish					
Green sturgeon (southern DPS) <i>Acipenser medirostris</i>	USFWS: FT CDFW: SSC	Spawning occurs primarily in the Sacramento River, but those that spawn in the Feather and Yuba Rivers are also part of the southern DPS. Oceanic waters, bays, and estuaries during non-spawning season. Enters San Francisco Bay late winter through early spring, and spawn occurs from April through early July. Spawn in cool sections of river mainstems in deep pools containing small to medium-sized gravel, cobble, or boulder substrate (NMFS 2015).	NMFS. 2015. Southern Distinct Population Segment of the North American Green Sturgeon (<i>Acipenser medirostris</i>) 5-Year Review: Summary and Evaluation. NMFS; Long Beach, CA.	No	Deep pools containing small to medium-sized gravel, cobble, or boulder substrate are absent.
Tidewater goby <i>Eucyclogobius newberryi</i>	USFWS: FE CDFW: SSC	Shallow coastal lagoons and the uppermost brackish zone of larger estuaries. Rarely found in marine or freshwater environments. Typically associated with still water, less than 1 meter deep, with salinities of less than 12 parts per thousand (USFWS 2007).	USFWS. 2007. Tidewater Goby (<i>Eucyclogobius newberryi</i>) 5-Year Review: Summary and Evaluation. USFWS; Ventura, CA.	No	Wetlands are absent.
Arroyo chub ^{7/4} <i>Gila orcuttii</i>	USFWS: None CDFW: SSC	Native to Los Angeles, San Gabriel, San Luis Rey, Santa Ana, and Santa Margarita Rivers, as well as Malibu and San Juan Creeks. Has been extirpated from much of the native range but introduced to streams along the coast and the Mojave River system, where they have eliminated the Mohave Tui Chub (UC Davis 2013). Southern coastal streams in habitats characterized by slow-moving water, mud or sand substrate, and depths greater than 40 cm. Have also been found in pool habitats with gravel, cobble and boulder substrates. Adapted to survive in low oxygen waters and wide temperature fluctuations (Moyle et al 2015).	Moyle, P.B., R. M. Quiriones, J. V. Katz and J. Weaver. 2015. Fish Species of Special Concern in California. Sacramento: California Department of Fish and Wildlife. www.wildlife.ca.gov	No	No streams or rivers present.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Steelhead (southern California DPS) <i>Oncorhynchus mykiss irideus</i>	USFWS: FE CDFW: None	Counties in range = San Luis Obispo, Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, Orange, and San Diego. Spawning habitat = gravel-bottomed, fast-flowing, well-oxygenated rivers and streams. Non-spawning = estuarine, marine waters (NMFS 2016).	National Marine Fisheries Service. 2016. 5-Year Review: Summary and Evaluation of Southern California Coast Steelhead Distinct Population Segment. National Marine Fisheries Service. West Coast Region. California Coastal Office. Long Beach, California.	No	No gravel-bottomed flowing water present.
Amphibians					
Arroyo toad <i>Anaxyrus californicus</i>	USFWS: FE CDFW: SSC	Breeding habitat = slow moving streams with shallow pools, nearby sandbars and adjacent stream terraces. Often breed in shallow, sandy pools bordered by sand/gravel flood terraces. Inhabit upland habitats when not breeding, such as sycamore-cottonwood woodlands, oak woodlands, coastal sage scrub, chaparral and grassland (USFWS 2009).	USFWS. 2009. Arroyo Toad (<i>Bufo californicus</i> (=microscaphus)) 5-Year Review: Summary and Evaluation. USFWS; Ventura, CA.	No	No slow-moving streams or shallow pools present.
Coast Range newt <i>Taricha torosa</i>	USFWS: None CDFW: SSC	Ranges along the coast from Monterey to Ventura County and Los Angeles to San Diego County with some occurrences in south western Riverside County. The population north of Ventura generally occurs in mesic forests on hilly or mountainous terrain. Populations around and south of Ventura generally occur in drier oak, chaparral, and grassland habitats. Specifically, the southern population use permanent streams for breeding, and occasionally seasonal streams free of non-native fish (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Mesic forests and mountains are absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Reptiles					
Southern California legless lizard <i>Anniella stebbinsi</i>	USFWS: None CDFW: SSC	Little is known about this species. Information is based on <i>Anniella pulchra</i> before it was split into five species. Current known range is cismontane southern California and the Mojave Desert portion of Kern County (CDFW 2019). Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodland, desert scrub, sandy washes, and stream terraces (Nafis 2017). Originally known to occur throughout Southern California south of the Transverse Ranges into northern Baja California, Mexico (Papenfuss and Parham, 2013).	Papenfuss, T.J., and J.F. Parham. 2013. Four New Species of California Legless Lizards (<i>Anniella</i>). <i>Breviora</i> . 10.3099/mCZ10.1. AND California Department of Fish and Wildlife (CDFW). 2019. California Natural Diversity Database. Rarefind 5. All Records of Oc	Low	Potentially suitable habitat present but highly disturbed
California glossy snake <i>Arizona elegans occidentalis</i>	USFWS: None CDFW: SSC	Ranges in the cismontane portion of southern California, the southern portion of the central coast ranges, and in isolated pockets up to the Alameda and San Joaquin County border. Generally found in open desert, grasslands, shrublands, chaparral, and woodlands. Some evidence of open and sandy habitat preference exists, but specific habitat requirements for this species aren't known (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Suitable vegetation communities are absent.
Coastal whiptail <i>Aspidoscelis tigris stejnegeri</i>	USFWS: None CDFW: SSC	Ranges in cismontane southern California. Generally found in a wide range of habitats including coastal sage scrub, chaparral, riparian areas, woodlands, and rocky areas. Specifically, this species prefers sand or gravel bottomed habitats with decent shrub cover and is not often found near development (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Area too disturbed for suitability.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
North Pacific loggerhead sea turtle <i>Caretta caretta</i>	USFWS: FE CDFW: None	Found primarily in subtropical and temperate regions of the Atlantic, Pacific, and Indian Oceans, and in the Mediterranean Sea.	https://www.fisheries.noaa.gov/species/loggerhead-turtle	Low	Potential habitat within the Project study area, but outside of the Project footprint.
East Pacific green sea turtle <i>Chelonia mydas</i>	USFWS: FT CDFW: None	Primarily feeds on sea grasses, including eelgrass, and marine algae. Often found during summer months in waters off the coast of CA, OR, and sometimes as far north as Alaska.	https://www.fws.gov/refuge/seal_beach/Green_Sea_Turtle.html	Low	Potential habitat within the Project study area, but outside of the Project footprint.
San Diego banded gecko <i>Coleonyx variegatus abbotti</i>	USFWS: None CDFW: SSC	Ranges in central San Diego, western Riverside, and southwestern San Bernardino Counties. Generally found in rocky coastal sage and chaparral habitat between 500 feet and 2,950 feet in elevation. Specifically, this species prefers areas of granite outcrops and dry rocky riverbeds, and in particular large cap rocks. It is not often found under small rock flakes and completely avoids areas with high intensity artificial night lighting (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Project location outside of elevation range.
Red-diamond rattlesnake <i>Crotalus ruber</i>	USFWS: None CDFW: SSC	Ranges in San Diego and Orange Counties and western Riverside and south western San Bernardino Counties. Generally found in dense chaparral and rocky outcrops. Specifically inhabits coastal sage scrub, chamise and red shank chaparral, desert slope scrub and washes, grassy fields, orchards, cactus scrub, and rocky areas. Tends to avoid developed areas (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Area too disturbed for suitability.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Leatherback sea turtle <i>Dermochelys coriacea</i>	USFWS: FE CDFW: None	Nests mainly on tropical or subtropical beaches. Highly migratory.	https://www.fisheries.noaa.gov/species/leatherback-turtle	Low	Potential habitat within the Project study area, but outside of the Project footprint.
Western pond turtle <i>Emys marmorata</i>	USFWS: None CDFW: SSC	Ranges throughout California except for Inyo and Mono Counties. Generally occurs in various water bodies including permanent and ephemeral systems either natural or artificial. Upland habitat that is at least moderately undisturbed is required for nesting and overwintering, in soils that are loose enough for excavation (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Suitable freshwater habitat absent.
Olive Ridley sea turtle <i>Lepidochelys olivacea</i>	USFWS: FE CDFW: None	Found primarily in the tropical regions of the Pacific, Indian, and Atlantic Oceans.	https://www.fisheries.noaa.gov/species/olive-ridley-turtle	Low	Potential habitat within the Project study area, but outside of the Project footprint.
Blainville's horned lizard <i>Phrynosoma blainvillii</i>	USFWS: None CDFW: SSC	Ranges in the southern half of California outside of the desert and along the foothills of the Sierra Nevada Mountains to Butte County and along the central coast ranges up to Contra Costa County. Generally, occurs in sage scrub, dunes, alluvial scrub, annual grassland, chaparral, oak, riparian, and Joshua tree woodland, coniferous forest, and saltbush scrub. Needs loose, fine soils for burrowing, open areas for basking, and dense foliage for cover. Negatively associated with Argentine ants (<i>Linepithema humi</i>) (Thomson et al. 2016)	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	Low	Potentially suitable habitat present but highly disturbed

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Two-striped gartersnake <i>Thamnophis hammondi</i>	USFWS: None CDFW: SSC	Ranges in cismontane Southern California with some occurrences in Monterey and San Luis Obispo Counties and southern San Benito County. Generally found in or near permanent and intermittent freshwater streams, creeks, and pools, as well as stock ponds and other artificial aquatic habitats bordered by dense vegetation. Associated habitat include willow, oak woodlands, chaparral, brushland and coniferous forest from sea level to 8,000 feet elevation (Thomson et al. 2016).	Thomson, Robert C., Wright, Amber N., and Shaffer H. Bradley. 2016. California Amphibian and Reptile Species of Special Concern. University of California Press Berkeley, CA.	No	Suitable aquatic habitat with dense vegetation absent.
Birds					
Tricolored blackbird <i>Agelaius tricolor</i>	USFWS: None CDFW: SCT, SSC	Preferred nesting habitat includes cattails (<i>Typha</i> spp.), bulrushes (<i>Typha</i> spp.), Himalayan blackberry (<i>Rubus armeniacus</i>), and agricultural silage. Dense vegetation is preferred but heavily lodged cattails not burned in recent years may preclude settlement. Need access to open water. Strips of emergent vegetation along canals are avoided as nest sites unless they are about 10 or more meters wide but in some ponds, especially where associated with Himalayan blackberries and deep water, settlement may be in narrower fetches of cattails. (Hamilton 2004). Mostly a year-round resident in California. Common locally throughout Central Valley and in coastal districts from Sonoma County south. Breeds locally in northeastern California. In winter, becomes more widespread along central coast and San Francisco Bay area, and can be found in portions of the Colorado Desert (CDFW 2019).	Hamilton, W. J. 2004. Tricolored Blackbird (<i>Agelaius tricolor</i>). In The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. CDFW. 2019. California Wildlife Habita	No	Suitable vegetation communities are absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Grasshopper sparrow <i>Ammodramus savannarum</i>	USFWS: None CDFW: SSC	Known to breed in grassland habitats throughout the northeastern and mid-Atlantic U.S., southeastern Canada, coastal and Central Valley of California, and a few other areas of Canada and northern Mexico (Shuford and Gardali 2008). In the east and midwest tallgrass and mixed grass prairie is preferred, whereas in the west and southwest the species typically utilizes shortgrass and semidesert grasslands. Additionally, individuals can sometimes be found in corn (<i>Zea mays</i>) and oat (<i>Avena sativa</i>) fields and avoid areas with high shrub cover (Shuford and Gardali 2008).	Ruth, J.M. 2015. Status Assessment and Conservation Plan for the Grasshopper Sparrow (<i>Ammodramus savannarum</i>). Version 1.0 U.S. Fish and Wildlife Service, Lakewood, Colorado. 109 pp.	No	Suitable vegetation communities are absent.
Golden eagle <i>Aquila chrysaetos</i>	USFWS: BGEPA CDFW: FP	Habitat includes rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, and cliffs and rock outcrops. Uncommon resident in hills and mountains throughout California, and an uncommon migrant and winter resident in the Central Valley and Mojave Desert (Zeiner et. al. 1988-1990).	Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Department of Fish and Game, Sacramento, California.	No	Suitable mountainous terrain and rock outcrops are absent.
Long-eared owl <i>Asio otus</i>	USFWS: None CDFW: SSC	Species known to be widespread and a winter migrant of the Central Valley, the western Sierra Nevada foothills, and along the California coastline. Requires dense stands of vegetation including various grasses and brush, as well as ditches, and wetlands for resting and roosting (Zeiner et. al. 1988-1990). Species known to nest on dry ground concealed in vegetation (Zeiner et. al. 1988-1990).	Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Department of Fish and Game, Sacramento, California.	No	Suitable vegetation communities and wetlands are absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Burrowing owl <i>Athene cunicularia</i>	USFWS: None CDFW: SSC	Species known to be a yearlong resident of open, dry grasslands and varying desert habitats (CWHR 1999). Nesting habitat includes open areas with mammal burrows, including rolling hills, grasslands, fallow fields, sparsely vegetated desert scrub, vacant lots and human disturbed lands. Soils must be friable for burrows (Bates 2006).	CWHR. 1999. Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updated by CWHR Program staff, September 1999 / Bates, C. 2006. Burr	No	There are no continuous areas larger than 4 acres with suitable habitat to support this species within the Project study area
Swainson's hawk <i>Buteo swainsoni</i>	USFWS: None CDFW: ST	Nests in stands with few trees in riparian areas, juniper-sage flats, and oak savannah. Forages in adjacent grasslands, agricultural fields and pastures. Breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen Co., and Mojave Desert. Very limited breeding reported from Lanfair Valley, Owens Valley, Fish Lake Valley, and Antelope Valley (CWHR 2006).	CWHR. 2006. Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updated by CWHR Program staff, January 2006.	No	Riparian areas, juniper-sage flats, and oak savannah are absent.
San Diego cactus wren <i>Campylorhynchus brunneicapillus sandiegensis</i>	USFWS: None CDFW: SSC	Taxonomically intermediate between more widespread subspecies in southern U.S. and Baja California, Mexico. C.b. sandiegensis thought to only occur in coastal sage scrub community in southern Orange and San Diego Counties. Key habitat element is thickets of cholla or prickly-pear tall enough to support nests (Shuford 2008).	Shuford, W.D. and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation in California. Studies of Western Birds 1. Western Field Orni	No	Thickets of cholla and prickly-pear are absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Western snowy plover <i>Charadrius nivosus nivosus</i>	USFWS: FT CDFW: SSC	Coastal populations nest on sandy or gravelly dune-backed beaches, sand spits, and on estuarine salt pans and lagoons (USFWS 2005). Inland populations nest along barren to sparsely vegetated flats and along shores of alkaline and saline lakes, reservoirs, ponds, braided river channels, agricultural wastewater ponds, and salt evaporation ponds (Shuford and Gardali 2008). Inland nesting occurs at Salton Sea, Mono Lake, and isolated sites on the shores of alkali lakes in northeastern California, the Central Valley, and southeastern deserts (CWHR 2008).	USFWS. 2005. Designation of Critical Habitat for the Pacific Coast Population of the Western Snowy Plover (<i>Charadrius alexandrinus nivosus</i>). Federal Register Vol. 70 (188): 56969-57018 Shuford, W.D. and Gardali, T., editors. 2008. California Bird Species of Special Concern CWHR. 2008. California Wildlife Habitat Relationships (CWHR) System. Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updated by CWHR Program Staff, February 2005 and August 2008.	No	Densely vegetated marshes absent.
Northern harrier <i>Circus hudsoninus</i>	USFWS: None CDFW: SSC	Nest on the ground in patches of dense, tall vegetation in undisturbed areas. Breed and forage in variety of open habitats such as marshes, wet meadows, weedy borders of lakes, rivers and streams, grasslands, pastures, croplands, sagebrush flats and desert sinks (Shuford 2008).	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.	No	Permanent/semi-permanent waterfalls absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
White-tailed kite <i>Elanus leucurus</i>	USFWS: None CDFW: FP	Occurs in herbaceous and open stages of valley lowland habitats, usually near agricultural land. Forages in undisturbed, open grasslands, meadows, farmlands and emergent wetlands (CWHR 2005). Typically nest in the upper third of trees that may be 10–160 ft. (33-525 m.) tall. These can be open-country trees growing in isolation, or at the edge of or within a forest (Cornell 2017).	CWHR. 2005. Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updated by CWHR Program staff, July 2005. Cornell University. 2017	No	Undisturbed grasslands, meadows, farmlands, and emergent wetlands are absent.
Southwestern willow flycatcher <i>Empidonax traillii extimus</i>	USFWS: FE CDFW: SE	Dense riparian forest and scrub habitats associated with rivers, swamps, wetlands, lakes and reservoirs (USFWS 2002).	USFWS. 2002. Final Recovery Plan Southwestern Willow Flycatcher (<i>Empidonax traillii extimus</i>). USFWS; Albuquerque, NM.	No	Riparian forest and scrub habitat absent.
Yellow-breasted chat <i>Icteria virens</i>	USFWS: None CDFW: SSC	Nest in early-successional riparian habitats with a well-developed shrub layer and an open canopy. Restricted to narrow border of streams, creeks, sloughs and rivers. Often nest in dense thicket plants such as blackberry and willow (Shuford 2008).	Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western	No	Riparian habitats absent.
Belding's savannah sparrow <i>Passerculus sandwichensis beldingi</i>	USFWS: None CDFW: SE	Coastal salt marshes. Associated with dense pickleweed, particularly <i>Salicornia pacifica</i> , for nesting (Zambal and Hoffman 2010).	Zambal, R. and S. m. Hoffman. 2010. A Survey of the Belding's Savannah Sparrow (<i>Passerculus sandwichensis beldingi</i>) in California 2010. Clapper Rail Recovery Fund; Huntington Beach, CA.	No	Coastal salt marshes are absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Coastal California gnatcatcher <i>Polioptila californica californica</i>	USFWS: FT CDFW: SSC	Scrub dominated plant communities, strongly associated with coastal scrub, sage scrub, and coastal succulent scrub communities. Distribution ranges from southern Ventura County down through Los Angeles, Orange, Riverside, San Bernardino and San Diego counties (USFWS 2010).	USFWS. 2010. Coastal California Gnatcatcher (<i>Polioptila californica californica</i>) 5-year Review: Summary and Evaluation. USFWS; Carlsbad, CA.	Yes	Potential for foraging habitat within Project area, but species will not be impacted by Project activities.
Light-footed Ridgeway's rail <i>Rallus obsoletus levipes</i>	USFWS: FE CDFW: SE, FP	Coastal salt marshes, lagoons, and their maritime environs from Santa Barbara County south past San Diego into Baja California. Require shallow water and mudflats for foraging, with adjacent higher vegetation for cover during high tide (USFWS 2019).	USFWS. 2019. San Diego Bay National Wildlife Refuge, Facts About Light-footed Ridgway's Rail https://www.fws.gov/refuge/san_diego_bay/wildlife_and_habitat/Light-footed_Ridgways_Rail.html	No	Suitable maritime environments absent.
Bank swallow <i>Riparia riparia</i>	USFWS: None CDFW: ST	Riparian, lacustrine, and coastal areas with vertical banks, bluffs or cliffs with fine-textured or sandy soils, into which it digs nesting holes. Also nests in earthen banks as well as sand and gravel pits (CWHR 1999).	CWHR. 1999. California Wildlife Habitat Relationships (CHWR) System. Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updated by CWHR Program Staff, September 1999.	Low	Potential for foraging over the Project area but no suitable nesting habitat present.
California least tern <i>Sternula antillarum browni</i>	USFWS: FE CDFW: SE, FP	Nest and roost in colonies on open beaches, forage over near shore ocean waters and in shallow estuaries and lagoons (USFWS 2006).	USFWS. 2006. California Least Tern 5-Year Review. USFWS; Carlsbad, CA.	Yes	Potential for foraging habitat within Project area, but species will not be impacted by Project activities.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Least Bell's vireo <i>Vireo bellii pusillus</i>	USFWS: FE CDFW: SE	Obligate riparian breeder. Cottonwood, willow, oak woodlands, and mulefat scrub along watercourses (USFWS 1998).	USFWS. 1998. Draft recovery plan for least Bell's vireo. U.S. Fish and Wildlife Service, Portland, Oregon	No	Riparian habitat absent.
Mammals					
Pallid bat <i>Antrozous pallidus</i>	USFWS: None CDFW: SSC	Ranges across all of California except for high elevation portions of the Sierra Nevada Mountains and Del Norte, western Siskiyou, Humboldt, and northern Mendocino Counties. Generally found in a wide variety of habitats but with some preference for drier areas. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings (CDFW 2018).	CDFW. 2018. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: < https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range >. CDFW Biogeographic Data Branch; Sacramento, CA.	Low	May forage over the Project area but no suitable roosting habitat present.
Guadalupe fur seal <i>Arctocephalus townsendi</i>	USFWS: FT CDFW: None	Breeding grounds are almost entirely on Guadalupe Island, off the Pacific coast of Mexico. A small number have been reported on the northern Channel Islands off California.	https://www.fisheries.noaa.gov/species/guadalupe-fur-seal	Low	Potential habitat within the Project study area, but outside of the Project footprint.
Sei whale <i>Balaenoptera borealis</i>	USFWS: FE CDFW: None	Restricted to oceans. Sei whales have a wide distribution and live in subtropical, temperate, and subpolar waters around the world.	https://www.fisheries.noaa.gov/species/sei-whale	Low	Potential habitat within the Project study area, but outside of the Project footprint.
Blue whale <i>Balaenoptera musculus</i>	USFWS: FE CDFW: None	Marine mammal restricted to oceans. Nearby populations live off the California coast and migrate to Mexico and Costa Rica	https://www.fisheries.noaa.gov/species/blue-whale	Low	Potential habitat within the Project study area, but outside of the Project footprint.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Fin whale <i>Balaenoptera physalus</i>	USFWS: FE CDFW: None	Found in deep, offshore waters of all major oceans, primarily in temperate to polar latitudes.	https://www.fisheries.noaa.gov/species/fin-whale	Low	Potential habitat within the Project study area, but outside of the Project footprint.
Dulzura pocket mouse <i>Chaetodipus californicus femoralis</i>	USFWS: None CDFW: SSC	Occurs in brushy areas but probably is attracted to grass-chaparral edge. Grazing of grassland by domestic stock eliminates cover necessary for predator avoidance. (CDFW 2019).	CDFW. 2019. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: < https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range >. CDFW Biogeographic Data Branch; Sacramento, CA.	No	Suitable vegetation communities are absent.
Northwestern San Diego pocket mouse <i>Chaetodipus fallax fallax</i>	USFWS: None CDFW: SSC	Ranges in San Diego, western and central Riverside, south western San Bernardino, and eastern Orange Counties. Generally found in sandy areas with herbaceous cover and rocks or coarse gravel in a wide mixture of vegetation communities. Specifically, this species prefers rocky and gravelly areas with a yucca overstory and desert scrub communities near or in pine-juniper woodland (CDFW 2018).	CDFW. 2018. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: < https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range >. CDFW Biogeographic Data Branch; Sacramento, CA.	No	Suitable vegetation communities are absent.
Mexican long-tongued bat <i>Choeronycteris mxicana</i>	USFWS: None CDFW: SSC	Occurs in a wide variety of habitats, from arid thorn scrub to tropical deciduous forest and mixed oak-conifer forest. Preferred roosting sites include mines, caves, and rock fissures. Found primarily in moist desert canyons (Bolster 1998).	Bolster, B.C., editor. 1998. Terrestrial Mammal Species of Special Concern in California. Draft Final Report prepared by P.V. Brylski, P.W. Collins, E.D. Pierson, W.E. Rainey and T.E. Kucera. Report submitted to California	No	Suitable vegetation communities are absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
			Department of Fish and Game Wild		
Stephen's kangaroo rat <i>Dipodomys stephensi</i>	USFWS: FE CDFW: SCE	Often found in transition areas between grassland and coastal sage scrub habitat where perennial vegetation is covering less than 50% of the ground, including disturbed areas. Deep, friable soil is needed for burrowing. Plants commonly associated with suitable habitat are chamise (<i>Adenostomma fasciculatum</i>), buckwheat (<i>Eriogonum</i> spp.), bromes (<i>Bromus</i> spp.) and filaree (<i>Erodium</i> spp.) (Western Riverside County MSHCP 2003).	WRC MSHCP. 2003. Riverside County Integrated Project. Western Riverside County Final MSHCP. Volume II-B. Species Accounts. Mammals. Stephens' kangaroo rat (<i>Dipodomys stephensi</i>). M-197 - M-220.	No	Suitable combination of perennial vegetation and friable soils absent.
North Pacific right whale <i>Eubalaena japonica</i>	USFWS: FE CDFW: None	Restricted to oceans. Sightings have been reported as far south as central Baja California in the eastern North Pacific, as far south as Hawaii in the central North Pacific, and as far north as the sub-Arctic waters of the Bering Sea and sea of Okhotsk in the summer.	https://www.fisheries.noaa.gov/species/north-pacific-right-whale	Low	Potential habitat within the Project study area, but outside of the Project footprint.
Western mastiff bat <i>Eumops perotis californicus</i>	USFWS: None CDFW: SSC	Ranges throughout all of Southern California, the central coast, and the Sierra Nevada Mountain Range. Generally occurs in open, arid, or semi-arid habitats. Specifically this species roosts in rock crevices and buildings. (CDFW 2018).	CDFW. 2018. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: < https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range >. CDFW Biogeographic Data Branch; Sacramento, CA.	No	No suitable roosting habitat.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Western red bat <i>Lasiurus blossevillei</i>	USFWS: None CDFW: SSC	Ranges in the western half of California except for Del Norte and Humboldt Counties. Generally occurs in most habitats except for the desert. Roosts in trees, sometimes shrubs, and typically at the margins of habitats (CDFW 2018).	CDFW. 2018. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: < https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range >. CDFW Biogeographic Data Branch; Sacramento, CA.	Low	Potential to occur but will not be impacted by project.
Humpback whale <i>Megaptera novaeangliae</i>	USFWS: FE CDFW: None	Live throughout the world's major oceans. While calving, they prefer shallow, warm waters commonly near offshore reef systems or shores. Feeding grounds are generally in cold, productive waters.	https://www.fisheries.noaa.gov/species/humpback-whale	Low	Potential habitat within the Project study area, but outside of the Project footprint.
San Diego desertwoodrat <i>Neotoma lepida intermedia</i>	USFWS: None CDFW: SSC	This species prefers Joshua tree, pinyon-juniper, mixed and chamise-redshank chaparral, sagebrush, and most desert habitats, but is also found in a variety of other habitats. Moderate to dense canopies are preferred. Particularly abundant in rock outcrops and rocky cliffs and slopes, especially those with Joshua trees. Elevational range from sea level to 8,500 feet (CWHR 2008).	CWHR. 2008. Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updated by CWHR program staff February 2008.	No	Suitable vegetation communities absent.
Pocketed free-tailed bat <i>Nyctinomops femorosaccus</i>	USFWS: None CDFW: SSC	Associated with creosote scrub or chaparral, and large rock features such as boulder jumbles or rocky canyons (Bolster 1998). Colonial and roosts primarily in crevices of rugged cliffs, high rocky outcrops and slopes. It has been found in a variety of plant associations, including desert shrub and pine-oak forests. The species may also roost in buildings, caves, and under roof tiles (WBWG 2016).	WBWG (Western Bat Working Group). 2016. Western Bat Species Accounts. http://wbwg.org/western-bat-species/	No	Rocky barrens, meadows, and brushlands are absent.

Scientific Name	Listing	Habitat and Distribution	Citation	Potential	Rationale
Southern resident killer whale <i>Orcinus orca</i>	USFWS: FE CDFW: None	Found in all oceans. They can adapt to almost any conditions, and are found in open seas and coastal waters.	https://www.fisheries.noaa.gov/species/killer-whale	Low	Potential habitat within the Project study area, but outside of the Project footprint.
Pacific pocket mouse <i>Perognathus longimembris pacificus</i>	USFWS: FE CDFW: SSC	Historically occurred on fine, sandy soil within about 12 miles of the Pacific coast of southern California from Los Angeles County south to Mexico. Associates with open coastal scrub and grassland communities (Spencer 2005).	Bolster, B.C., editor. 1998. Terrestrial Mammal Species of Special Concern in California. Draft Final Report prepared by P.V. Brylski, P.W. Collins, E.D. Pierson, W.E. Rainey and T.E. Kucera. Report submitted to California Department of Fish and Game Wildlife Management Division.	Low	<i>No Effect.</i> Although marginally suitable habitat may be present, the Project site is highly disturbed and there is very low potential for this species to occur within the Project site.
Sperm whale <i>Physeter macrocephalus</i>	USFWS: FE CDFW: None	Inhabit all of the world's oceans. Their distribution is dependent on their food source and suitable conditions for breeding, and varies with the sex and age composition of the group.	https://www.fisheries.noaa.gov/species/sperm-whale	Low	Potential habitat within the Project study area, but outside of the Project footprint.
American badger <i>Taxidea taxus</i>	USFWS: None CDFW: SSC	Ranges in all of California except the extreme north west corner. Generally found in drier open areas of habitats with friable soils (CDFW 2018).	CDFW. 2018. California Wildlife Habitat Relationships System Life History Accounts and Range Maps. Available online: < https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range >. CDFW Biogeographic Data Branch; Sacramento, CA.	No	Suitable soils absent.

Source: California Department of Fish and Wildlife (CDFW) 2018, 2019; California Wildlife Habitat Relationships (CWHR) 1999, 2008; Nafis 2019; National Oceanic and Atmospheric Administration (NOAA) 2019; Shuford and Gardali 2008; Thompson, R. et al 2016

Notes:

Special status ranking:

FE= Federally Endangered; FT= Federally Threatened; SE= State Endangered; ST= State Threatened; SSC= CDFW Species of Special Concern; SCE= State Candidate Endangered; SCT= State Candidate Threatened; FP= Fully Protected (CDFW); BGEPA= Bald and Golden Eagle Protection Act

Special-Status Plant Species Evaluated for Potential to Occur within the Study Area

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Red sand-verbena <i>Abronia maritima</i>	USFWS: None CDFW: None CRPR: 4.2	Coastal dunes. Elevation: 0–328 feet. Blooming period: February–November	No	Coastal dunes absent.
San Diego thornmint <i>Acanthomintha ilicifolia</i>	USFWS: FT CDFW: SE CRPR: 1B.1	Vernal pools; freshwater wetlands, coastal sage scrub, chaparral, valley grassland, and wetland riparian. Elevation: 165-2920 feet. Blooming period: April-June	No	Suitable clay substrates are absent.
Yucaipa onion <i>Allium marvinii</i>	USFWS: None CDFW: None CRPR: 1B.2	Openings in chaparral in clay soils. Elevation: 2,493–3,444 feet. Blooming period: April–May	No	Project location is outside of elevation range.
San Diego ambrosia <i>Ambrosia pumila</i>	USFWS: FE CDFW: None CRPR: 1B.1	Vernal pools, disturbed; freshwater wetlands, coastal sage scrub, chaparral, valley grassland. Elevation: 245-7480 feet. Blooming period: April-October	No	Project location is outside of known range.
Aphanisma <i>Aphanisma blitoides</i>	USFWS: None CDFW: None CRPR: 1B.2	Sandy soils in coastal bluff scrub, coastal dunes, and coastal scrub. Elevation: 3–1,000 feet. Blooming period: March–June	No	Fill within ROW is not well drained, so although suitable vegetation is present suitable substrate is not.
Rainbow manzanita <i>Arctostaphylos rainbowensis</i>	USFWS: FE CDFW: None CRPR: 1B.1	Chaparral. Elevation: 672–2,198 feet. Blooming period: December–March	No	Project location is outside of elevation range.
San Diego sagewort <i>Artemisia palmeri</i>	USFWS: None CDFW: None CRPR: 4.2	Sandy soils in mesic areas in chaparral, coastal scrub, riparian forest, riparian scrub, riparian woodland. Elevation: 49–3,002 feet. Blooming period: February–September	No	Mesic areas absent.
Western spleenwort <i>Asplenium vespertinum</i>	USFWS: None CDFW: None CRPR: 4.2	Rocky areas in chaparral, cismontane woodland, and coastal scrub. Elevation: 590–3,281 feet. Blooming period: February–June	No	Project location is outside of elevation range.
Coulter's saltbush <i>Atriplex coulteri</i>	USFWS: None CDFW: None CRPR: 1B.2	Alkaline or clay soils in coastal bluff scrub, coastal dunes, coastal scrub, and grassland.	No	Suitable soils absent.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
		Elevation: 9–1,509 feet. Blooming period: March–October		
South Coast saltscale <i>Atriplex pacifica</i>	USFWS: None CDFW: None CRPR: 1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, playas. Elevation: 0–459 feet. Blooming period: March–October	No	Suitable vegetation present however not observed during field survey.
Encinitas baccharis <i>Baccharis vanessae</i>	USFWS: FT CDFW: SE CRPR: 1B.1	Sandstone in Maritime chaparral and Cismontane woodland. Elevation: 196–2,362 feet. Blooming period: August–November	No	Project location is outside of elevation range.
Thread-leaved brodiaea <i>Brodiaea filifolia</i>	USFWS: FT CDFW: SE CRPR: 1B.1	Mesic or clay soils in chaparral, cismontane woodland, closed-cone coniferous forest, coastal scrub, meadows and seeps, grassland, and vernal pools. Elevation: 82–3,673 feet. Blooming period: March–June	No	Suitable clay substrates are absent.
Orcutt's brodiaea <i>Brodiaea orcutti</i>	USFWS: None CDFW: None CRPR: 1B.1	Found on mesic, clay, sometimes serpentinite soils in closed-cone coniferous forest, chaparral, cismontane woodland, meadows and seeps, grassland, and vernal pools. Elevation: 98–5,550 feet. Blooming period: May–July	No	Project location is outside of elevation range.
Santa Rosa Basalt brodiaea <i>Brodiaea santarosae</i>	USFWS: None CDFW: None CRPR: 1B.2	Basaltic grassland. Elevation: 1,902–3,427 feet. Blooming period: May–June	No	Project location is outside of elevation range.
Catalina mariposa lily <i>Calochortus catalinae</i>	USFWS: None CDFW: None CRPR: 4.2	Coastal sage scrub, foothill woodland, chaparral, and valley grassland. Elevation: 0–6265 feet. Blooming period: March–June	Low	Suitable habitat present but highly disturbed.
Intermediate mariposa lily <i>Calochortus weedii</i> var. <i>intermedius</i>	USFWS: None CDFW: None CRPR: 1B.2	Rocky and calcareous areas in chaparral, coastal scrub, and grassland. Elevation: 345–2,804 feet. Blooming period: May–July	No	Project location is outside of elevation range.
Payson's jewel-flower <i>Caulanthus simulans</i>	USFWS: None CDFW: None CRPR: 4.2	Sandy and granitic soils in chaparral and coastal scrub. Elevation: 295–7,218 feet. Blooming period: February–June	No	Project location is outside of elevation range.
Pendleton ceanothus <i>Ceanothus pendletonensis</i>	USFWS: None CDFW: None CRPR: 1B.2	Granitic soils in chaparral and cismontane woodland. Elevation: 360–2,850 feet. Blooming period: March–June	No	Project location is outside of elevation range.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Southern tarplant <i>Centromadia parryi</i> ssp. <i>australis</i>	USFWS: None CDFW: None CRPR: 1B.1	Found within the margin of marshes and swamps, vernal mesic soils in grassland, and vernal pools. Elevation: 0–1,574 feet. Blooming period: May–November	No	Suitable vegetation communities absent.
Smooth tarplant <i>Centromadia pungens</i> ssp. <i>laevis</i>	USFWS: None CDFW: None CRPR: 1B.1	Alkaline soils in chenopod scrub, meadows and seeps, playas, riparian woodland, and grassland. Elevation: 0–100 feet. Blooming period: April–September	No	Suitable vegetation communities absent.
Orcutt's pincushion <i>Chaenactis glabriuscula</i> var. <i>orcuttiana</i>	USFWS: None CDFW: None CRPR: 1B.1	Sandy soils in coastal bluff scrub and coastal dunes. Elevation: 0–328 feet. Blooming period: January–August	No	Fill within ROW is not well drained, so although suitable vegetation is present suitable substrate is not.
Southern mountain misery <i>Chamaebatia australis</i>	USFWS: None CDFW: None CRPR: 4.2	Gabbroic or metavolcanic chaparral. Elevation: 984–3,345 feet. Blooming period: November–May	No	Project location is outside of elevation range.
Peninsular spineflower <i>Chorizanthe leptotheca</i>	USFWS: None CDFW: None CRPR: 4.2	Alluvial fans or granitic areas in chaparral, coastal scrub, and lower montane coniferous forest. Elevation: 984–6,232 feet. Blooming period: May–August	No	Project location is outside of elevation range.
Long-spined spineflower <i>Chorizanthe polygonoides</i> var. <i>longispina</i>	USFWS: None CDFW: None CRPR: 1B.2	Clay lenses, largely devoid of shrubs in chaparral, coastal scrub, meadows and seeps, grassland, and vernal pools. Elevation: 98–5,018 feet. Blooming period: April–July	No	Project location is outside of elevation range.
Seaside cistanthe <i>Cistanthe maritima</i>	USFWS: None CDFW: None CRPR: 4.2	Sandy soils in coastal bluff scrub, coastal scrub, and grassland. Elevation: 16–984 feet. Blooming period: February–August	No	Fill within ROW is not well drained, so although suitable vegetation is present suitable substrate is not.
San Miguel savory <i>Clinopodium chandleri</i>	USFWS: None CDFW: None CRPR: 1B.2	Rocky gabbroic, or metavolcanic areas in chaparral, cismontane woodland, coastal scrub, riparian scrub, and grassland. Elevation: 393–3,526 feet. Blooming period: March–July (synonym of <i>Satureja chandleri</i>)	No	Project location is outside of elevation range.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Serpentine collomia <i>Collomia diversifolia</i>	USFWS: None CDFW: None CRPR: 4.3	Serpentine, rocky, and gravelly soils in chaparral and cismontane woodland. Elevation: 655–1,970 feet. Blooming period: May–June	No	Project location is outside of elevation range.
Summer holly <i>Comarostaphylis diversifolia</i> <i>ssp. diversifolia</i>	USFWS: None CDFW: None CRPR: 1B.2	Chaparral and Cismontane woodland. Elevation: 98–2,591 feet. Blooming period: April–June	No	Project location is outside of elevation range.
Small-flowered morning-glory <i>Convolvulus simulans</i>	USFWS: None CDFW: None CRPR: 4.2	Friable clay soils or serpentine seeps in chaparral openings, coastal scrub, and grassland. Elevation: 98–2,297 feet. Blooming period: March–July	No	Project location is outside of elevation range.
Paniculate tarplant <i>Deinandra paniculate</i>	USFWS: None CDFW: None CRPR: 4.2	Usually found in vernal mesic soils in coastal scrub, grassland, and vernal pools. Elevation: 82–3,084 feet. Blooming period: April–November	No	Project location is outside of elevation range.
Western dichondra <i>Dichondra occidentalis</i>	USFWS: None CDFW: None CRPR: 4.2	Chaparral, cismontane woodland, coastal scrub, grassland. Elevation: 164–1,640 feet. Blooming period: January–July	No	Project location is outside of elevation range.
Blochman's dudleya <i>Dudleya blochmaniae</i> <i>ssp. blochmaniae</i>	USFWS: None CDFW: None CRPR: 1B.1	Rocky, often clay or serpentine soils in coastal bluff scrub, chaparral, coastal scrub, and grassland. Elevation: 16–1,476 feet. Blooming period: April–June	No	Suitable soils absent.
Many-stemmed dudleya <i>Dudleya multicaulis</i>	USFWS: None CDFW: None CRPR: 1B.2	Often in clay soils in chaparral, coastal scrub, and grassland. Elevation: 49–2,591 feet. Blooming period: April–July	No	Suitable soils absent.
Laguna Beach dudleya <i>Dudleya astolonifera</i>	USFWS: FT CDFW: ST CRPR: 1B.1	Rocky soil in chaparral, coastal scrub, cismontane woodland, and grassland. Elevation: 32–853 feet. Blooming period: May–July	No	Suitable soils absent.
Sticky dudleya <i>Dudleya viscida</i>	USFWS: None CDFW: None CRPR: 1B.2	Rocky soils in coastal bluff scrub, chaparral, cismontane woodland, and coastal scrub. Elevation: 32–1,804 feet. Blooming period: May–June	No	Suitable soils absent.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
San Diego button-celery <i>Eryngium aristulatum</i> var. <i>parishii</i>	USFWS: FE CDFW: SE CRPR: 1B.1	Vernal pools; freshwater wetlands, coastal sage scrub, valley grassland, and wetland-riparian. Elevation: 230-2065 feet. Blooming period: April-June	No	Project location is outside of elevation range.
Pendleton button-celery <i>Eryngium pendletonense</i>	USFWS: None CDFW: None CRPR: 1B.1	Clay soils or vernal mesic areas in coastal bluff scrub, grassland, and vernal pools. Elevation: 49-360 feet. Blooming period: April-July	No	Vernally mesic areas absent.
Sand-loving wallflower <i>Erysimum amophilum</i>	USFWS: None CDFW: None CRPR: 1B.2	Sandy, openings in Maritime chaparral, coastal dunes, coastal scrub. Elevation: 0-197 feet. Blooming period: February-June	No	Fill within ROW is not well drained, so although suitable vegetation is present suitable substrate is not.
Palomar monkeyflower <i>Erythranthe diffusa</i>	USFWS: None CDFW: None CRPR: 4.3	Yellow pine forest and chaparral. Elevation: 1740-7515 feet. Blooming period: April-June	No	Project location is outside of elevation range.
Cliff spurge <i>Euphorbia misera</i>	USFWS: None CDFW: None CRPR: 2B.2	Rocky areas in coastal bluff scrub, coastal scrub, and Mojavean desert scrub. Elevation: 32-1,640 feet. Blooming period: December-October	No	Although suitable vegetation is present suitable substrate is not.
San Diego barrel cactus <i>Ferocactus viridescens</i>	USFWS: None CDFW: None CRPR: 2B.1	Sandy to rocky areas of chaparral, coastal scrub, grassland, and vernal pools. Elevation: 9-1,476 feet. Blooming period: May-June	No	Although suitable vegetation is present suitable substrate is not.
Palmer's grapplinghook <i>Harpagonella palmeri</i>	USFWS: None CDFW: None CRPR: 4.2	Clay soils in chaparral, grassland, coastal sage scrub. Elevation: 65-3,132 feet. Blooming period: March-May	No	Project location is outside of elevation range.
Graceful tarplant <i>Holocarpha virgata</i> ssp. <i>elongata</i>	USFWS: None CDFW: None CRPR: 4.2	Chaparral, cismontane woodland, coastal scrub, and grassland. Elevation: 196-3,600 feet. Blooming period: May-November	No	Project location is outside of elevation range.
Vernal barley <i>Hordeum intercedens</i>	USFWS: None CDFW: None CRPR: 3.2	Coastal dunes, coastal scrub, saline flats and depressions in grassland, and vernal pools. Elevation: 16-3,280 feet. Blooming period: March-June	No	Suitable habitat present but not observed.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Mesa horkelia <i>Horkelia cuneata</i> var. <i>puberla</i>	USFWS: None CDFW: None CRPR: 1B.1	Sandy and gravelly soils within Maritime chaparral, cismontane woodland, and coastal scrub. Elevation: 229–2,657 feet. Blooming period: February–July (September)	No	Project location is outside of elevation range.
Ramona horkelia <i>Horkelia truncata</i>	USFWS: None CDFW: None CRPR: 1B.3	Clay and gabbroic soils in chaparral and Cismontane woodland. Elevation: 1,312–4,265 feet. Blooming period: May–June	No	Project location is outside of elevation range.
California satintail <i>Imperata brevifolia</i>	USFWS: None CDFW: None CRPR: 2B.1	Mesic soils in chaparral, coastal scrub, Mojavean desert scrub, riparian scrub, meadows and seeps (often alkali). Elevation: 0–3,985 feet. Blooming period: September–May	No	Suitable soils absent.
Decumbent goldenbush <i>Isocoma menziesii</i> var. <i>decumbens</i>	USFWS: None CDFW: None CRPR: 1B.2	Chaparral and in sandy coastal scrub, often in sandy disturbed areas. Elevation: 33–443 feet. Blooming period: April–November	No	Fill within ROW is not well drained, so although suitable vegetation is present suitable substrate is not.
Southern California black walnut <i>Juglans californica</i>	USFWS: None CDFW: None CRPR: 4.2	Alluvial areas in chaparral, cismontane woodland, and coastal scrub. Elevation: 164–2,952 feet. Blooming period: March–August	No	Project location is outside of elevation range.
Southwestern spiny rush <i>Juncus acutus</i> ssp. <i>leopoldii</i>	USFWS: None CDFW: None CRPR: 4.2	Mesic soils in coastal dunes, alkaline seeps in meadows and seeps, and coastal salt marshes and swamps. Elevation: 9–2,953 feet. Blooming period: (March) May–June	No	Suitable vegetation communities absent
Coulter's goldfields <i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	USFWS: None CDFW: None CRPR: 1B.1	Coastal salt marsh, coastal salt swamps, playas, vernal pools. Elevation: 3–4,001 feet. Blooming period: February–June	No	Suitable vegetation communities absent
Robinson's pepper-grass <i>Lepidium virginicum</i> var. <i>robinsonii</i>	USFWS: None CDFW: None CRPR: 4.3	Openings in chaparral and sage scrub. Elevation: below 2,900 feet. Blooming period: January–July	Low	Suitable habitat present but highly disturbed.
Sea dahlia <i>Leptosyne maritima</i>	USFWS: None CDFW: None CRPR: 2B.2	Coastal bluff scrub and coastal scrub. Elevation: 16–492 feet. Blooming period: March–May	No	Suitable vegetation present however not observed during field survey.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Woolly-headed lessingia <i>Lessingia hololeuca</i>	USFWS: None CDFW: None CRPR: 3	Clay or serpentine soils in grassland, coastal scrub, lower montane coniferous and broadleafed upland forests. Elevation: 45–1,000 feet. Blooming period: June–October	No	Suitable soils absent.
Ocellated Humboldt lily <i>Lilium humboldtii</i> ssp. <i>ocellatum</i>	USFWS: None CDFW: None CRPR: 4.2	Openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland. Elevation: 98–5,904 feet. Blooming period: March–August	No	Project location is outside of elevation range.
Lemon lily <i>Lilium parryi</i>	USFWS: None CDFW: None CRPR: 1B.2	Mesic areas in upper and lower montane coniferous forest, meadows and seeps, and riparian forest. Elevation: 4,001–9,003 feet. Blooming period: July	No	Project location is outside of elevation range.
Santa Catalina Island desert-thorn <i>Lycium brevipes</i> var. <i>hassei</i>	USFWS: None CDFW: None CRPR: 3.1	Coastal bluff scrub and coastal scrub. Elevation: 213–984 feet. Blooming period: June–August	No	Project location is outside of elevation range.
California box-thorn <i>Lycium californicum</i>	USFWS: None CDFW: None CRPR: 4.2	Coastal bluff scrub and coastal scrub. Elevation: 16–492 feet. Blooming period: December–August	No	Suitable vegetation present however not observed during field survey.
Cliff malacothrix <i>Malacothrix saxatilis</i> var. <i>saxatilis</i>	USFWS: None CDFW: None CRPR: 4.2	Coastal scrub and coastal bluff scrub. Elevation: 9–656 feet. Blooming period: March–September	No	Suitable vegetation present however not observed during field survey.
Small-flowered microseris <i>Microseris douglasii</i> ssp. <i>platycarpha</i>	USFWS: None CDFW: None CRPR: 4.2	Clay soils in cismontane woodland, coastal scrub, grassland, and vernal pools. Elevation: 49–3,510 feet. Blooming period: March–May	No	Suitable soils absent.
Intermediate monardella <i>Monardella hypoleuca</i> ssp. <i>intermedia</i>	USFWS: None CDFW: None CRPR: 1B.3	Usually in the understory in chaparral, cismontane woodland, and sometimes in lower montane coniferous forest. Elevation: 1,312–4,100 feet. Blooming period: April–September	No	Project location is outside of elevation range.
Hall's monardella <i>Monardella macrantha</i> ssp. <i>hallii</i>	USFWS: None CDFW: None CRPR: 1B.3	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, grassland. Elevation: 2,394–7,199 feet. Blooming period: June–October	No	Project location is outside of elevation range.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Little mouseltaile <i>Myosurus minimus ssp. apus</i>	USFWS: None CDFW: None CRPR: 3.1	Grassland and alkaline vernal pools. Elevation: 65–2,100 feet. Blooming period: March–June	No	Project location is outside of elevation range.
Mud nama <i>Nama stenocarpa</i>	USFWS: None CDFW: None CRPR: 2B.2	Marshes and swamps, also riverbanks and lake margins. Elevation: 16–1,640 feet. Blooming period: January–July	No	Suitable vegetation communities absent
Spreading navarretia <i>Navarretia fossalis</i>	USFWS: FT CDFW: None CRPR: 1B.1	Chenopod scrub, assorted freshwater marshes and swamps, playas, and vernal pools. Elevation: 98–2,149 feet. Blooming period: April–June	No	Project location is outside of elevation range.
Prostrate vernal pool navarretia <i>Navarretia prostrata</i>	USFWS: None CDFW: None CRPR: 1B.1	Mesic coastal scrub, meadows and seeps, alkaline grassland, and vernal pools. Elevation: 49–3,968 feet. Blooming period: April–July	No	Meadows, seeps, vernal pools, grasslands, and mesic coastal scrub absent.
Coast woolly-heads <i>Nemacaulis denudate var. denudata</i>	USFWS: None CDFW: None CRPR: 1B.2	Coastal dunes. Elevation: 0–328 feet. Blooming period: April–September	No	Coastal dunes absent.
Chaparral nolina <i>Nolina cismontana</i>	USFWS: None CDFW: None CRPR: 1B.2	Sandstone and gabbro soils in chaparral, and coastal scrub. Elevation: 459–4,183 feet. Blooming period: May–July	No	Project location is outside of elevation range.
California Orcutt grass <i>Ocruttia californica</i>	USFWS: FE CDFW: SE CRPR: 1B.1	Vernal pools. Elevation: 49–2,165 feet. Blooming period: April–August	No	Vernal pools absent.
Allen's pentachaeta <i>Pentachaeta aurea ssp. allenii</i>	USFWS: None CDFW: None CRPR: 1B.1	Openings of coastal scrub and grassland. Elevation: 246–1,706 feet. Blooming period: March–June	No	Project location is outside of elevation range.
Golden-rayed pentachaeta <i>Pentachaeta aurea ssp. aurea</i>	USFWS: None CDFW: None CRPR: 4.2	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland, and grassland. Elevation: 262–6,068 feet. Blooming period: March–July	No	Project location is outside of elevation range.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
South coast branching phacelia <i>Phacelia ramosissima</i> var. <i>australitoralis</i>	USFWS: None CDFW: None CRPR: 3.2	Sandy and rocky soils in chaparral, coastal dunes, coastal scrub, coastal salt marshes and swamps. Elevation: 16–984 feet. Blooming period: March–August	No	Fill within ROW is not well drained, so although suitable vegetation is present suitable substrate is not.
Chaparral rein orchid <i>Piperia cooperi</i>	USFWS: None CDFW: None CRPR: 4.2	Chaparral, cismontane woodland, and grassland. Elevation: 49–5,200 feet. Blooming period: March–June	No	Suitable vegetation communities absent
Fish's milkwort <i>Polygala cornuta</i> var. <i>fishiae</i>	USFWS: None CDFW: None CRPR: 4.3	Chaparral, cismontane woodland, and riparian woodland. Elevation: 328–3280 feet. Blooming period: May–August	No	Project location is outside of elevation range.
White rabbit-tobacco <i>Pseudognaphalium leucocephalum</i>	USFWS: None CDFW: None CRPR: 2B.2	Sandy or gravelly soils in chaparral, cismontane woodland, coastal scrub, and riparian woodland. Elevation: 0–6,888 feet. Blooming period: July–December	No	Fill within ROW is not well drained, so although suitable vegetation is present suitable substrate is not.
Nuttall's scrub oak <i>Quercus dumosa</i>	USFWS: None CDFW: None CRPR: 1B.1	Sandy or clay loam in closed-cone coniferous forest, chaparral, and coastal scrub. Elevation: 49–1,312 feet. Blooming period: February–August	No	Suitable vegetation present however not observed during field survey.
Engelmann oak <i>Quercus engelmannii</i>	USFWS: None CDFW: None CRPR: 4.2	Cismontane woodland, chaparral, riparian woodland, and grassland. Elevation: 164–4,265 feet. Blooming period: March–June	No	Project location is outside of elevation range.
Coulter's matilija poppy <i>Romneya coulteri</i>	USFWS: None CDFW: None CRPR: 4.2	Chaparral and coastal scrub, often in burned areas. Elevation: 65–3,936 feet. Blooming period: March–July	No	Project location is outside of elevation range.
Caraway-leaved woodland-gilia <i>Saltugilia caruifolia</i>	USFWS: None CDFW: None CRPR: 4.3	Sandy openings in chaparral and lower montane coniferous forest. Elevation: 2,755–7,544 feet. Blooming period: May–August	No	Project location is outside of elevation range.
Southern mountains skullcap <i>Scutellaria bolanderi</i> ssp. <i>austromontana</i>	USFWS: None CDFW: None CRPR: 1B.2	Moist embankments of montane creeks, mesic chaparral, mesic Cismontane woodland, and mesic lower montane coniferous forest. Elevation: 1,394–6,562 feet. Blooming period: June–August	No	Project location is outside of elevation range.

Scientific Name	Listing	Habitat Characteristics	Potential	Rationale
Chaparral ragwort <i>Senecio aphanactis</i>	USFWS: None CDFW: None CRPR: 2B.2	Chaparral, cismontane woodland, coastal scrub, and alkaline flats. Elevation: 49–2,624 feet. Blooming period: January–April	Low	Suitable habitat present but highly disturbed
Salt spring checkerbloom <i>Sidalcea neomexicana</i>	USFWS: None CDFW: None CRPR: 2B.2	Alkaline and mesic soils within chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playas. Elevation: 49–5,020 feet. Blooming period: March–June	No	Suitable soils absent.
Estuary seablite <i>Suaeda esteroa</i>	USFWS: None CDFW: None CRPR: 1B.2	Salt marsh, coastal; coastal salt marsh and wetland-riparian. Elevation: 0-15 feet. Blooming period: May-October	No	Salt marshes, wetland, and riparian areas are absent.
Woolly seablite <i>Suaeda taxifolia</i>	USFWS: None CDFW: None CRPR: 4.2	Coastal bluff scrub, coastal dunes, and the margins of coastal salt marshes and swamps. Elevation: 0–164 feet. Blooming period: January–December	No	Suitable vegetation present however not observed during field survey.
Parry's tetracoccus <i>Tetracoccus dioicus</i>	USFWS: None CDFW: None CRPR: 1B.2	Chaparral and coastal sage scrub. Elevation: 541–3,280 feet. Blooming period: April–May	No	Project location is outside of elevation range.
California screw moss <i>Tortula californica</i>	USFWS: None CDFW: None CRPR: 1B.2	Sandy soils, chenopod scrub, valley and foothill grasslands. Elevation: 30-5340 feet.	No	Suitable vegetation communities absent
Big-leaved crownbeard <i>Verbesina dissita</i>	USFWS: FT CDFW: ST CRPR: 1B.1	Maritime chaparral and coastal scrub. Elevation: 147–672 feet. Blooming period: April–July	No	Project location is outside of elevation range.
San Diego County viguiera <i>Viguiera laciniata</i>	USFWS: None CDFW: None CRPR: 4.3	Coastal sage scrub and chaparral. Elevation: 245-7480 feet. Blooming period: February-June	No	Project location is outside of elevation range.
La Purisima viguiera <i>Viguiera purisimae</i>	USFWS: None CDFW: None CRPR: 2B.3	Coastal bluff scrub and chaparral. Elevation: 1,197–1,394 feet. Blooming period: April–September	No	Project location is outside of elevation range.

Sensitivity Status

United States Fish and Wildlife Service (USFWS): FC=Federal Candidate for Listing; FE=Federally Listed Endangered; FT=Federally Listed Threatened

California Department of Fish and Wildlife (CDFW): SE=State Listed Endangered

California Rare Plant Ranking (CRPR):

1B: Plants Rare, Threatened, or Endangered in California and Elsewhere

The plants of Rank 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. California Rare Plant Rank 1B plants constitute the majority of plant taxa tracked by the CNDDDB, with more than 1,000 plants assigned to this category of rarity.

2B: Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere

The plants of Rank 2B are rare, threatened or endangered in California, but more common elsewhere. Plants common in other states or countries are not eligible for consideration under the provisions of the Federal Endangered Species Act; however, they are eligible for consideration under the California Endangered Species Act. This rank is meant to highlight the importance of protecting the geographic range and genetic diversity of more widespread species by protecting those species whose ranges just extend into California. Note: Plants of both Rank 1B and 2B are rare, threatened or endangered in California; the only difference is the status of the plants outside of the state.

3: Need more information

4: Limited Distribution (Watch List)

Threat Ranks:

The CRPR use a decimal-style threat rank. The threat rank is an extension added onto the CRPR and designates the level of threats by a 1 to 3 ranking with 1 being the most threatened and 3 being the least threatened. Most CRPRs read as 1B.1, 1B.2, 1B.3, etc. Note that some Rank 3 plants do not have a threat code extension due to difficulty in ascertaining threats. Rank 1A and 2A plants also do not have threat code extensions since there are no known extant populations in California

Quad Name **San Clemente**

Quad Number **33117-D5**

ESA Anadromous Fish

SONCC Coho ESU (T) -

CCC Coho ESU (E) -

CC Chinook Salmon ESU (T) -

CVSR Chinook Salmon ESU (T) -

SRWR Chinook Salmon ESU (E) -

NC Steelhead DPS (T) -

CCC Steelhead DPS (T) -

SCCC Steelhead DPS (T) -

SC Steelhead DPS (E) - **X**

CCV Steelhead DPS (T) -

Eulachon (T) -

sDPS Green Sturgeon (T) - **X**

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -

CCC Coho Critical Habitat -

CC Chinook Salmon Critical Habitat -

CVSR Chinook Salmon Critical Habitat -

SRWR Chinook Salmon Critical Habitat -

NC Steelhead Critical Habitat -

CCC Steelhead Critical Habitat -

SCCC Steelhead Critical Habitat -

SC Steelhead Critical Habitat - **X**

CCV Steelhead Critical Habitat -

Eulachon Critical Habitat -

sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) - **X**

Range White Abalone (E) - **X**

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) - X
Olive Ridley Sea Turtle (T/E) - X
Leatherback Sea Turtle (E) - X
North Pacific Loggerhead Sea Turtle (E) - X

ESA Whales

Blue Whale (E) - X
Fin Whale (E) - X
Humpback Whale (E) - X
Southern Resident Killer Whale (E) - X
North Pacific Right Whale (E) - X
Sei Whale (E) - X
Sperm Whale (E) - X

ESA Pinnipeds

Guadalupe Fur Seal (T) - X
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH -
Groundfish EFH - X
Coastal Pelagics EFH - X
Highly Migratory Species EFH - X

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans - **X**

MMPA Pinnipeds - **X**



Attachment B. Baseline Rock Footprint Developments A and B

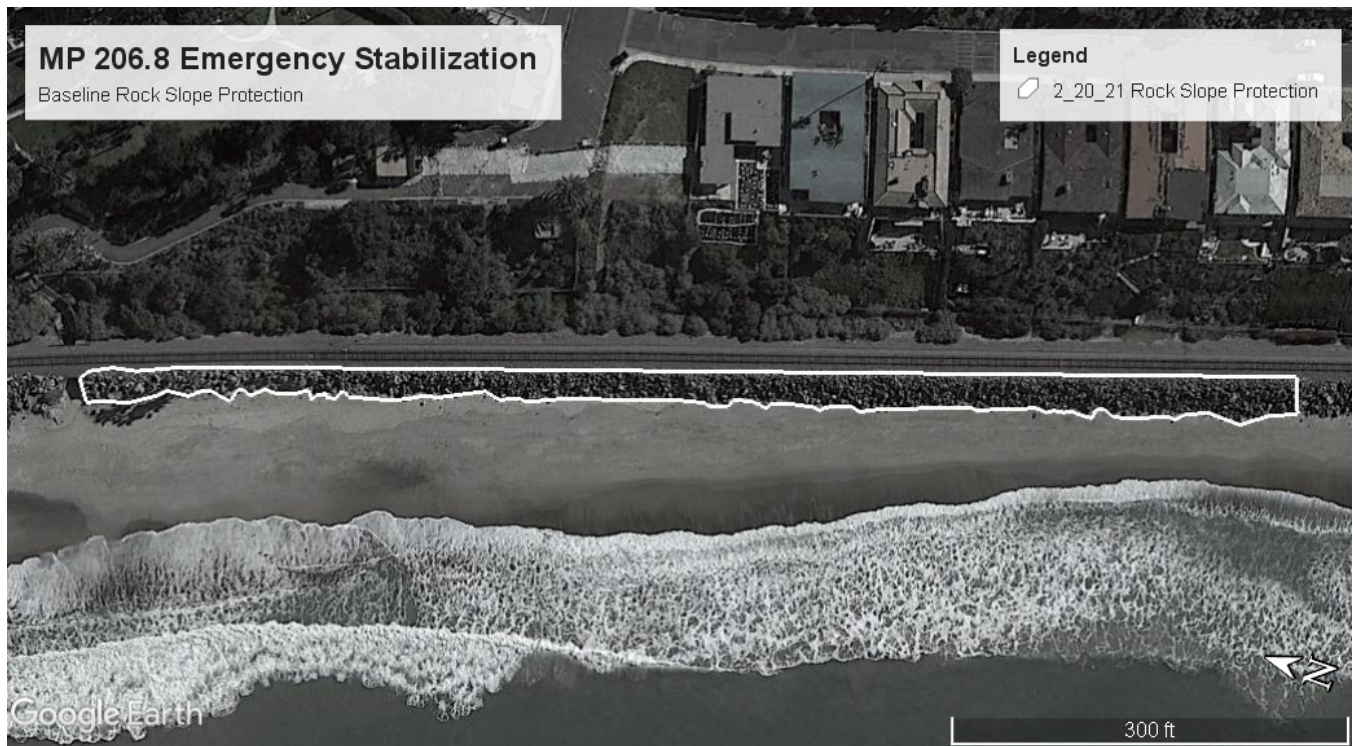


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ATTACHMENT B: GOOGLE EARTH IMAGES USED TO ESTABLISH BASELINE ROCK SLOPE PROTECTION



ATTACHMENT B: GOOGLE EARTH IMAGES USED TO ESTABLISH BASELINE ROCK SLOPE PROTECTION



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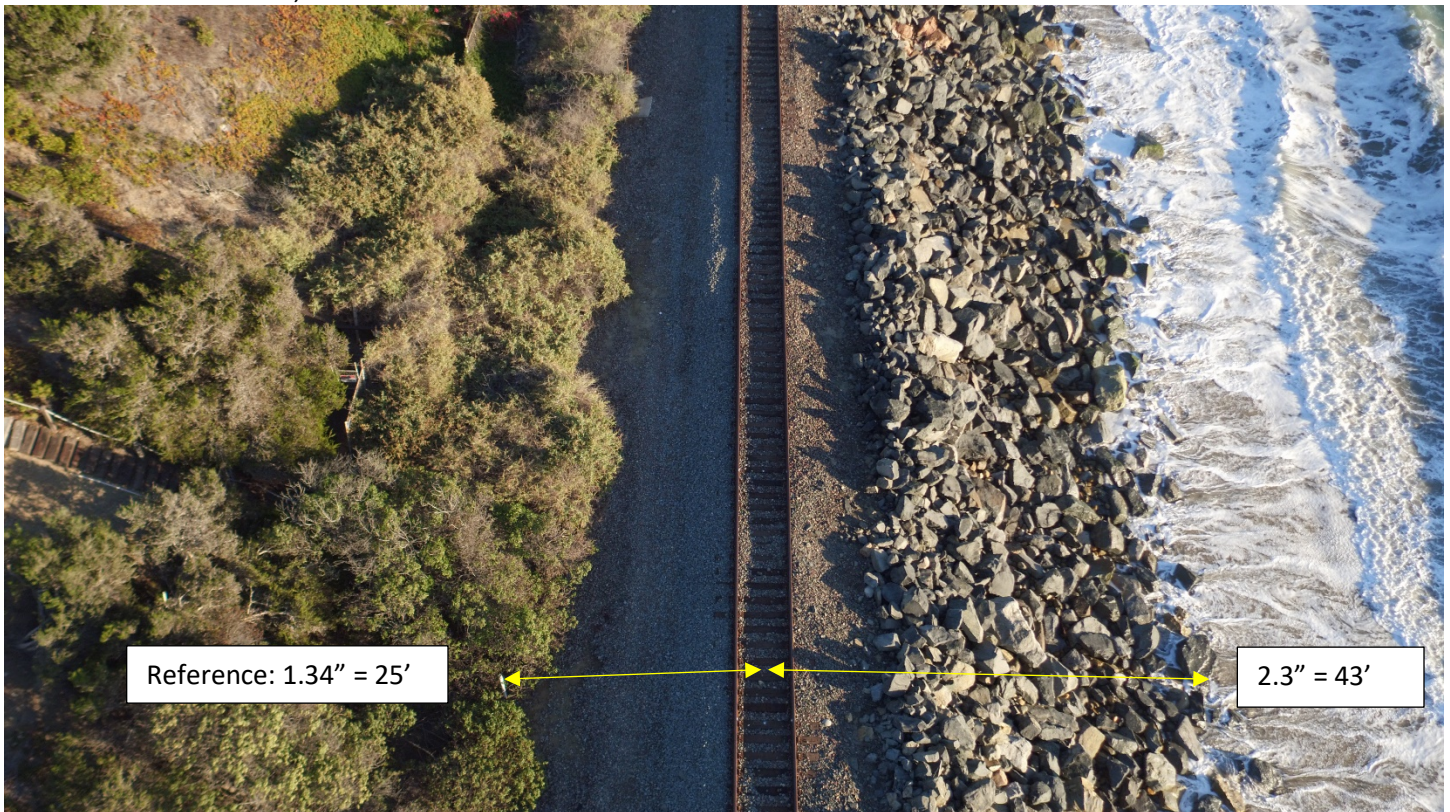
ATTACHMENT B: GOOGLE EARTH IMAGES USED TO ESTABLISH BASELINE ROCK SLOPE PROTECTION



SEPTEMBER 11, 2021 DRONE PHOTOGRAPHS USED TO ESTABLISH BASELINE ROCK SLOPE PROTECTION



SEPTEMBER 11, 2021 DRONE PHOTOGRAPHS USED TO ESTABLISH BASELINE ROCK SLOPE PROTECTION





Attachment C

Essential Fish Habitat Assessment



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**NOAA NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST REGIONAL OFFICE
EFH ASSESSMENT WORKSHEET FOR
CORPS OF ENGINEERS SOUTH PACIFIC DIVISION**

Introduction:

The Magnuson-Stevens Fishery Conservation and Management Act mandates that federal agencies conduct an EFH consultation with NOAA's National Marine Fisheries Service (NMFS) regarding any of their actions authorized, funded, or undertaken that may adversely effect essential fish habitat (EFH). An adverse effect means any impact that reduces the quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

This worksheet has been designed to assist the U.S. Army Corps of Engineers (Corps) in determining whether an EFH consultation is necessary, and developing the needed information should a consultation be required. This worksheet will lead you through a series of questions that will provide an initial screening to determine if an EFH consultation is necessary, and help you assemble the needed information for determining the extent of the consultation required. The information provided in this worksheet may also be used to develop the required EFH Assessment.

Consultation through NMFS regarding other NOAA-trust resources (e.g. recreational fish species and their habitats, important estuarine and/or marine ecosystem components) may also be necessary if a proposed action results in adverse impacts. In addition, consultation with NMFS may be required if a proposed action impacts marine mammals or threatened and endangered species for which we are responsible. Staff from our Southwest Regional Office, Protected Resources Division should be contacted regarding potential impacts to marine mammals or threatened and endangered species.

Instructions for Use:

An EFH Assessment must be submitted by the Corps to NMFS as part of the EFH consultation. An EFH Assessment must include the following information:

- 1) A description of the proposed action.
- 2) An analysis of the potential adverse effects of the action on EFH, and the managed species.
- 3) The Corps' conclusions regarding the effects of the action on EFH.
- 4) Proposed mitigation if applicable.

In some cases, this worksheet can be used as an EFH Assessment. If the Corps determines that the action will not cause substantial impacts to EFH, then this worksheet may suffice. However, there may be some instances in which impacts are less than substantial, but still require additional analysis. In those instances, NMFS will request in writing the specific information necessary to complete the

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consultation. If the action may cause substantial adverse effects on EFH, then a more thorough discussion of the action and its impacts in a separate EFH Assessment will be necessary. The completed worksheet should be forwarded to the NMFS Southwest Regional Office, Habitat Conservation Division (HCD) for review.

The information contained on the HCD website

(http://swr.nmfs.noaa.gov/hcd/HCD_webContent/EFH/index_EFH.htm) will assist you in completing this worksheet.

EFH ASSESSMENT WORKSHEET FOR CORPS OF ENGINEERS

PROJECT NAME: Railroad Emergency Stabilization Project – San Clemente Orange Sub MP 206.85

DATE: February 25, 2022

PROJECT/FILE NO.: SPL-2021-00516

LOCATION: City of San Clemente, CA

PREPARER: Ingrid Eich, HDR Inc.

CONTACT INFO: Ingrid.Eich@hdrinc.com / 714.730.2389

Step 1. Use the Habitat Conservation Division EFH webpage to evaluate whether the proposed action is in or adjacent to EFH for those species that may occur in the vicinity of the proposed action.

1. INITIAL CONSIDERATIONS		
EFH Designations	Yes	No
Is the action located in or adjacent to Coastal Pelagic Species EFH?	X	
Is the action located in or adjacent to Pacific Coast Groundfish EFH?	X	
Is the action located in or adjacent to Pacific Coast Salmon EFH?		X
Is the action located in or adjacent to Highly Migratory Species EFH?	X	
If you answered no to all questions above, then EFH consultation is not required - go to Step 5. If you answered yes to any of the above questions proceed to Step 2 and complete remainder of the worksheet.		

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Step 2. In order to assess impacts, it is critical to know the habitat characteristics of the site before the activity is undertaken. Use existing information, to the extent possible, in answering these questions. Please note that, there may be circumstances in which new information must be collected to appropriately characterize the site and assess impacts.

2. SITE CHARACTERISTICS	
Site Characteristics	Description
Is the site intertidal, subtidal, or water column?	Sandy intertidal beach habitat occurs within the limits of the Emergency Stabilization.
What are the sediment characteristics?	Sediment within the limits of the Project footprint include coarse sand.
Is Habitat Area of Particular Concern (HAPC) designated at or near the site? If so what type, size, characteristics?	No. Within the Project footprint the only habitat is sandy intertidal. There is no HAPC within the Project footprint (NOAA 2006, PFMC 2014).
Is there submerged aquatic vegetation (SAV) at or adjacent to project site? If so describe the spatial extent.	No submerged aquatic vegetation occurs within the limits of the Project footprint.
What is typical salinity and temperature regime/range?	Surface water temperature along the coast of San Clemente varies seasonally with solar heating, upwelling, and climatic conditions, ranging from approximately 58.5 degrees Fahrenheit (°F) in February to 68.7°F in August.
What is the normal frequency of site disturbance, both natural and man-made?	<p>The Emergency Stabilization is primarily within the disturbed railroad right-of-way (ROW). The western side of the railroad tracks has historically been stabilized by riprap and the railroad ROW is regularly maintained. The riprap and sandy intertidal habitat on the western side of the railroad track are subject to the ebb and flow of tides and storm surge.</p> <p>The beach environment is dynamic. As with most southern California beaches, high-energy storm waves erode the beach adjacent to the project making it narrower and steeper in the winter and lower energy waves deposit the sand back on the beach making it wider and more gradual in the summer. Additionally, when baseline rock limits were surveyed in 2003/2004, the revetment measured up to 30 feet wide at this location. However, due to the loss of beach over the past 17 years, in the vicinity of the emergency stabilization, the beach has narrowed from approximately 200 feet in width to less than 80 feet and, in the southern extent is absent. The beach has also dropped from 19-feet to 14-feet in elevation at the northern extent of the project and from 18-feet to 3-feet at the southern extent of the Project. Finally, the beach has become steeper, increasing from a 9-percent gradient to as much as an 18-percent gradient.</p>

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<p>What is the area of proposed impact (work footprint & far afield)?</p>	<p>See <i>Biological Resources Memorandum</i> (HDR, November 2021), Figures 1 through 6, for the work footprint in and adjacent to potential EFH areas. The emergency stabilization replaced 0.29 acre of intertidal sandy beach with loose rock revetment.</p>
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Step 3. This section is used to describe the anticipated impacts from the proposed action on the physical/chemical/biological environment at the project site and areas adjacent to the site that may be affected.

3. DESCRIPTION OF IMPACTS			
Impacts	Y	N	Description
Nature and duration of activity(s)	X		<p>The purpose of the emergency repair project was to stabilize the railroad tracks from further shifting due to recent landslide movement originating at the westerly coastal slope and extending below the railroad ROW to daylight west of the tracks. An evaluation of potential emergency repair strategies indicated that buttressing at the toe with an equivalent mass of riprap material west of the railroad track would be required to reduce and/or arrest movement of the current active portion of the land slide so that passenger rail service could be re-established.</p> <p>In total, emergency stabilization was required for a 700-foot-long portion of rail embankment already armored with riprap. Much of the riprap was placed in areas that previously contained riprap, Therefore, a portion of the riprap was an in-kind replacement.</p> <p>In total, approximately 17,980 tons of 3 to 5-foot diameter riprap was placed along the west side of the railroad track. The face of the rock revetment upon completion varies in slope from approximately 1:1 to 3:1. The riprap was brought in by railcars and was placed from the top of the railroad. From September 16 to October 2, 2021, 12,500 tons were placed and between December 18, 2021 and January 30, 2022 an additional 5,480 tons were placed. An excavator and bulldozer were brought onsite via railroad to clear rock from the rail and move the rock into place. No laydown area was necessary, and no construction equipment access was needed outside of the railroad right-of-way. Personnel parked on the bluff top and proceeded to the work site on foot.</p>
Will benthic community be disturbed?	X		Emergency Stabilization resulted in the loss of approximately 0.29 acre of Intertidal sandy beach. However, this change is within the normal season variation for this beach.
Will SAV be impacted?		X	There is no submerged aquatic vegetation within the Project footprint.
Will sediments be altered and/or sedimentation rates change?		X	Changes in sedimentation rates are not anticipated. Clean riprap was placed within areas that historically contained riprap.
Will turbidity increase?		X	Turbidity will not be altered. Clean riprap was placed within areas that historically contained riprap.
Will water depth change?		X	Water depths will not be altered. Water depth in the study area naturally varies with tides and storm surge.

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Will contaminants be released into sediments or water column?		X	Standard best management practices (BMP) were implemented during construction, including no equipment fueling occurred onsite or along the revetment, all equipment used during construction was free of oil and fuel leaks at all times, oil absorbent booms or pads were onsite at all times during construction to be deployed if necessary in the event of a spill, and all spills would have been reported immediately to the appropriate public emergency services response agencies.
Will tidal flow, currents or wave patterns be altered?		X	No permanent changes to tide flow, currents or wave patterns are anticipated. Riprap was placed on and existing rock revetment parallel to the beach.
Will ambient salinity or temperature regime change?		X	The Project does not include components that would alter ambient salinity or temperature regime change.
Will water quality be altered?		X	Implementation of BMPs outlined above minimized and avoided impacts to water quality during construction.
Will ambient noise levels be altered?		X	Following construction, ambient noise levels are not expected to increase as a result of the Project. However, ambient noise levels were increased temporarily during construction. Construction included placing riprap from railcars; however, the riprap would not result in acoustic vibration and therefore would not affect fish or cause injury to aquatic species.

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Step 4. This section is used to evaluate the consequences of the proposed action on the functions and values of EFH as well as the vulnerability of the EFH species and their life stages. Assessment of EFH impacts should be based upon the site characteristics identified in Step 2 and the nature of the impacts described within Step 3. The [EFH](#) descriptions on our website should be used during this assessment to determine the ecological parameters/preferences associated with each species listed and the potential impact to those parameters.

4. EFH ASSESSMENT			
Functions and Values	Y	N	Describe habitat type, species and life stages to be adversely impacted
Will functions and values of EFH be impacted for:	X		<p>The Project site is within the San Clemente Quad (number 33117-D5). Within that quad there is EFH for groundfish, coastal pelagic, and highly migratory species. The highly migratory species EFH is offshore and not within the project site.</p> <p>For groundfish EFH, the potential adverse effects from shoreline protection and bank stabilization include loss and alteration of habitat, altered hydrology and geomorphology, and release of contaminants (PFMC 2019b).</p> <p>The Project area is in the surf zone. During low tide, waves reach the outer edge of the revetment area and during high tide, waves break upon the revetment. Of the groundfish that occur within the project area, only a few utilize the surf line. Direct adverse effects on groundfish from the Project are not anticipated.</p> <p>Emergency Stabilization resulted in the loss of approximately 0.29 acre of Intertidal sandy beach. However, this change is within the normal season variation for this beach.</p> <p>For coastal pelagic species EFH, the potential adverse effects from coastal development include converting natural landscape to impervious surfaces resulting in increased runoff and redistribution of surface freshwater that can affect salinity regimes (PFMC 1998).</p> <p>The Project does not convert natural landscapes to impervious surfaces. Riprap has been placed in an existing revetment area and did not result in an increase in impervious surfaces. The Project did not redistribute surface freshwater. The Project area drainage remains the same.</p>
Spawning		X	Groundfish and coastal pelagic species do not utilize the Project area for spawning (PFMC 2019b).
Nursery		X	Groundfish and coastal pelagic species do not utilize the Project area as nursery habitat (PFMC 2019b).
Forage		X	Coastal pelagic species do not use the surf line for foraging. Groundfish species are not typically found in the surf line. Only young-of-the-year of one species, shortbelly rockfish, have been observed in the surf line off California; however, foraging in the area is unlikely (PFMC 2019a).
Shelter		X	The Project area does not offer shelter for groundfish or coastal pelagic species.
Will impacts be temporary or permanent?	X		The total quantity of riprap placed was 17,980 tons. The majority of this was placed within areas that had historically had rock

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			revetment, but riprap had been dislodged over time due to natural fluctuations in beach topography that occurs seasonally, as well as loss of beach due to high-energy storm waves. The total net loss of intertidal sandy beach is 0.29 acres. Riprap will remain in place until an alternative long-term solution is identified, developed, permitted and implemented.
Will minimization measures be used?	X		The placement of the rock is an erosion and sediment control measure. Rock and equipment needed to implement the project were brought in by railcar, thereby eliminating the potential tracking of sediment onto public streets and into the storm drain system. Ground disturbance did not occur, which limits sediment sources. Clean riprap was used that did not contain contaminants.
Will compensatory mitigation be used?		A	The Project results in discharge of approximately 1,953 CY of large rock to 0.269 acre of Section 404 waters of the U.S., including 0.239 acre of Section 10 waters and coastal tidelands. However, the Project had no adverse effect on EFH. Therefore, compensatory mitigation for impacts to EFH is not proposed.

Step 5. This section provides the Corps' determination on the degree of impact to EFH from the proposed action. The EFH determination also dictates the type of EFH consultation that will be required with NMFS.

5. DETERMINATION OF IMPACT		
		Federal Agency's EFH Determination
Overall degree of adverse effects on EFH (not including compensatory mitigation) will be: (check the appropriate statement)	X	There is no adverse effect on EFH EFH Consultation is not required
		The adverse effect on EFH is not substantial. This is a request for an abbreviated EFH consultation. This worksheet is being submitted to NMFS to satisfy the EFH Assessment requirement.
		The adverse effect on EFH is substantial. This is a request for an expanded EFH consultation. A detailed written EFH assessment will be submitted to NMFS expanding upon the impacts revealed in this worksheet.

National Oceanic and Atmospheric Administration (NOAA). 2006. Map of Groundfish Habitat Area of Particular Concern. Available at:
https://archive.fisheries.noaa.gov/wcr/publications/gis_maps/maps/groundfish/map-gfish-hapc.pdf. Accessed November 4, 2021

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- Pacific Fishery Management Council (PFMC). 1998. Coastal Pelagic Species Fisheries Management Plan Appendix D. Available at: <https://www.pcouncil.org/documents/2019/06/cps-efh-appendix-d.pdf/>. Accessed on November 4, 2021
- Pacific Fishery Management Council. 2014. Appendix A to the Pacific Coast Salmon Fishery Management Plan. Available at: <https://www.pcouncil.org/documents/2019/08/salmon-efh-appendix-a.pdf/>. Accessed November 4, 2021
- Pacific Fishery Management Council. 2018. Coastal Pelagic Species Fisheries Management Plan. Available at: <https://www.pcouncil.org/documents/2019/08/cps-fmp-efh-section.pdf/>. Accessed on November 4, 2021
- Pacific Fishery Management Council. 2019a. Pacific Coast Groundfish Fisheries Management Plan, Appendix B Part 2. Available at: <https://www.pcouncil.org/documents/2019/06/groundfish-fmp-appendix-b-part-2.pdf/>. Accessed on November 4, 2021
- Pacific Fishery Management Council. 2019b. Pacific Coast Groundfish Fisheries Management Plan, Appendix D. Available at: <https://www.pcouncil.org/documents/2019/06/groundfish-fmp-appendix-d.pdf/>. Accessed on November 4, 2021

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Attachment G. Verification of Permits

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RWQCB Verification September 2021

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From: [Bradford, Darren@Waterboards](mailto:Bradford.Darren@Waterboards.ca.gov)
To: [McNeely, Joseph](mailto:McNeely.Joseph@Waterboards.ca.gov)
Cc: [Vick, Jenny](mailto:Vick.Jenny@Waterboards.ca.gov); Timothy.W.Jackson@usace.army.mil; [Becker, Eric@Waterboards](mailto:Becker.Eric@Waterboards.ca.gov)
Subject: Enrollment Notice for RGP 63 Emergency Permit; Cyprus Shores Emergency Repair Project: R9-2021-0209: 876490:dbradford
Date: Thursday, September 23, 2021 2:45:14 PM

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Mr. Joe McNeely...The San Diego Water Board received your Notice of Intent on September 21, 2021, for enrollment under the Clean Water Act Section 401 Water Quality Certification and Order for the U.S. Army Corps of Engineers Reauthorization of Regional General Permit 63 for Repair and Protection Activities in Emergency Situations (General Certification) for the Cyprus Shores Emergency Repair Project.

The railroad tracks in the vicinity of milepost 206.8 are exhibiting severe deflection as a result of accelerating land sliding of the adjacent slope toward and beneath the rail embankment. Passenger rail traffic has been halted and large (3-5 foot) rock is being installed at the toe of the slope (approx. 700 linear feet) to replace rock that has been washed out by wave action along the western (beach) side of the rail embankment. The intent is to place only enough rock to arrest or significantly slow progression of the slide or restore the rock slope protection to rail safety standards, whichever is greater. Approximately 11,500 tons of riprap will be placed in the Pacific Ocean to stabilize the railroad tracks and prevent further deflection. The riprap will be placed in areas that previously contained riprap, which over the years has been washed away due to the significant loss of beach sand and storm events. Therefore, the majority of riprap is an in-kind replacement that will remain to protect the railroad tracks.

The area of discharge of riprap is estimated to be approximately 0.32 acres based on the length (700 feet) and width (maximum 20 feet) of the proposed riprap. Based on a preliminary review of historical aerial imagery, approximately half (0.16 acre) is expected to consist of in-kind replacement while the remainder (0.16 acre) will be placed beyond the toe of historical riprap areas. Final calculations will be made once the slope and tracks are stabilized.

The NOI is complete and the project is hereby enrolled under the General Certification. OCTA/SCRRA (Metrolink) is responsible for meeting all of the requirements of the General Certification, including submittal of the Notice of Completion Form (Attachment E of the General Certification), within 45 calendar days of completion of the actions conducted under the General Certification. The General Certification can be found at: https://www.waterboards.ca.gov/water_issues/programs/cwa401/generalorders.html

Any reports required under the General Certification shall be sent in electronic format via e-mail to sandiego@waterboards.ca.gov. Documents over 50 megabytes will not be accepted via e-mail and must be placed on a disc and delivered to:

California Regional Water Quality Control Board
San Diego Region

Attn: 401 Certification: R9-2021-0209:876490:dbradford
2375 Northside Drive, Suite 100
San Diego, California 92108

All correspondence should reference: R9-2021-0209:876490:dbradford within the cover page.

Respectfully,

Darren Bradford
Environmental Scientist
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108
(619) 521-3356



USACE Verification October 2021

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DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT
915 WILSHIRE BOULEVARD, SUITE 930
LOS ANGELES, CA 90017-3401

October 1, 2021

SUBJECT: Regional General Permit Verification

Southern California Regional Rail Authority (Metrolink)
Attn.: Mr. Justin Fornelli, Chief of Program Delivery
900 Wilshire Blvd. Suite 1500
Los Angeles, CA 90017

Orange County Transportation Authority
Attn.: Mr. Jim Beil, Executive Director of Capital Programs
550 South Main Street
Orange, California 92863

Dear Mr. Fornelli and Mr. Beil:

I am responding to your request for a Department of the Army (DA) permit for your emergency project, Railroad Emergency Stabilization - San Clemente Orange Sub MP 206.85 (File No. SPL-2021-00516). The emergency work area is located at San Clemente Orange Sub MP 206.85 within the City of San Clemente, Orange County, CA (Latitude: 33.395715°N, Longitude: -117.599684°W).

Under the provisions of Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 USC 1344; 33 CFR parts 323 and 330) you are hereby authorized to conduct the work described below within waters of the United States.

We have determined implementation of the emergency activities, if constructed as described in your application, comply with Regional General Permit (RGP) No. 63. Specifically, and as shown in the enclosed figure(s), you are authorized to:

1. Permanently discharge approximately 5,000 CY of riprap (3-5 foot diameter rock) into approximately 0.32 acre of waters of the United States. This discharge area comprises an approximate 700 linear foot section of railroad embankment extending into the Pacific Ocean (see enclosed Landslide and Repair Zones Map).

For this RGP verification letter to be valid, you must comply with all of the terms and conditions stated in the enclosed copy of the RGP. Furthermore, you must comply with the following non-discretionary Special Conditions:

1. **IMPLEMENTATION TIMELINE:** All work authorized by this RGP must be completed no later than October 16, 2021. If the Permittee is unable to complete the authorized work by this date, the Permittee must request, in writing, an extension from the Corps Regulatory Division prior to the deadline.
2. **BIOLOGICAL RESOURCES AND ESSENTIAL FISH HABITAT:** Within 45 calendar days of completion of authorized work in waters of the U.S., the Permittee shall submit to the Corps Regulatory Division via email (Timothy.W.Jackson@usace.army.mil) a biological resources technical memorandum including an Essential Fish Habitat Assessment using guidance developed by the National Marine Fisheries Service (50 C.F.R. §600.920(e)(3)).
3. **NATIONAL HISTORIC PRESERVATION ACT:** Pursuant to 36 C.F.R. section 800.13, in the event of any discoveries during construction of either human remains, archeological deposits, or any other type of historic property, the Permittee shall notify the Corps' Archeology Staff within 24 hours (Danielle Storey at 213-452-3855 OR Meg McDonald at 213-452-3849). The Permittee shall immediately suspend all work in any area(s) where potential cultural resources are discovered. The Permittee shall not resume construction in the area surrounding the potential cultural resources until the Corps Regulatory Division re-authorizes project construction, per 36 C.F.R. section 800.13.
4. **ENDANGERED SPECIES ACT:** This Corps permit does not authorize you to take any threatened or endangered species, in particular the Southern California steelhead (*Oncorhynchus mykiss*) (Distinct Population Segment [DPS]), green sturgeon (*Acipenser medirostris*) (southern DPS), black abalone (*Haliotis cracherodii*), white abalone (*Haliotis sorenseni*), green sea turtle (*Chelonia mydas*), olive Ridley sea turtle (*Lepidochelys olivacea*), leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), southern resident killer whale (*Orcinus orca*), North Pacific right whale (*Eubalaena japonica*), sei whale (*Balaenoptera borealis*), sperm whale (*Physeter macrocephalus*), and Guadalupe fur seal (*Arctocephalus townsendi*). In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (ESA) (e.g. ESA Section 10 permit, or a Biological Opinion (BO) under ESA Section 7, with "incidental take" provisions with which you must comply). Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit.
5. **ENDANGERED SPECIES AND MARINE MAMMALS:** Incidents where any individuals of Southern California steelhead, green sturgeon, black abalone, white abalone, green sea turtle, olive Ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, blue whale, fin whale, humpback whale, southern resident killer whale, North Pacific right whale, sei whale, sperm whale, and Guadalupe fur seal listed by NOAA Fisheries under the Marine Mammal

Protection Act and/or the Endangered Species Act appear to be injured or killed as a result of discharges of dredged or fill material into waters of the United States or structures or work in navigable waters of the United States authorized by this General Permit shall be reported to NOAA Fisheries, Office of Protected Resources at (301) 713-1401 and the Regulatory Office of the Los Angeles District of the U.S. Army Corps of Engineers at (760) 602-4832. The finder should leave the animal alone, make note of any circumstances likely causing the death or injury, note the location and number of individuals involved and, if possible, take photographs. Adult animals should not be disturbed unless circumstances arise where they are obviously injured or killed by discharge exposure, or some unnatural cause. The finder may be asked to carry out instructions provided by NOAA Fisheries, Office of Protected Resources, to collect specimens or take other measures to ensure that evidence intrinsic to the specimen is preserved.

6. COASTAL ZONE MANAGEMENT ACT (CZMA) CONSISTENCY: This RGP 63 verification is contingent upon the issuance of a CZMA consistency certification by the California Coastal Commission. The Permittee shall abide by the terms and conditions of the CZMA consistency certification. The Permittee shall submit the CZMA consistency certification to the Corps Regulatory Division via email (Timothy.W.Jackson@usace.army.mil) within two weeks of receipt from the issuing state agency. If the California Coastal Commission fails to act on a request for concurrence with your certification within six months after receipt, please notify the Corps so we may consider whether to presume a concurrence pursuant to 33 CFR 325.2(b)(2)(ii).
7. INTERFERENCE WITH NAVIGATION: The permitted activity shall not interfere with the right of the public to free navigation on all navigable waters of the United States as defined by 33 C.F.R. Part 329.
8. DISCHARGES: No earthwork is authorized by this permit.
9. LIMITATIONS: No other modifications or work shall occur to the riprap discharge area permitted herein.
10. CLEAN CONSTRUCTION PRACTICES: The Permittee shall discharge only clean construction materials suitable for use in the oceanic environment. The Permittee shall ensure no debris, soil, silt, sand, sawdust, rubbish, cement or concrete washings thereof, oil or petroleum products, hazardous/toxic/radioactive/munitions from construction or dredging or disposal shall be allowed to enter into or placed where it may be washed by rainfall or runoff into waters of the United States. Upon completion of the project authorized herein, any and all excess material or debris shall be completely removed from the work area and disposed of in an appropriate upland site.

11. OBSTRUCTIONS: The Permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the Permittee will be required, upon due notice from the Corps of Engineers Regulatory Division, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.
12. POST-IMPLEMENTATION REPORT: As directed in RGP No. 63, you shall provide a written report to this office (within 45 days of completing the project) after completion of any action conducted under this RGP. PROVIDING THIS REPORT IS MANDATORY. At a minimum the Report shall include the following:
 - A) The name, address, and telephone number of the applicant and the applicant's agent (if appropriate)
 - B) Full description of the emergency activity including:
 - i) Description of the emergency and the potential for loss of life or property
 - ii) Purpose of the activity
 - iii) Final goal of the entire activity
 - iv) Location (e.g., latitude/longitude)
 - v) Size and description of project area (include maps or drawings showing the areal and lineal extent of the project, and pre- and post-construction photographs)
 - vi) Quantities (volume and area) of materials used
 - C) Information on receiving waterbody impacted including:
 - i) Name of waterbody
 - ii) Type of receiving waterbody (i.e., Pacific Ocean)
 - iii) Temporary/permanent adverse impact(s) in acres/cubic yards/linear feet
 - D) Information on federally listed or proposed endangered species or designated or proposed critical habitat (notification must be provided to FWS and/or NMFS as appropriate) including:
 - i) Temporary/permanent adverse impacts
 - ii) Compensatory mitigation
 - iii) Other mitigation steps (to avoid, minimize, compensate)

A general permit does not grant any property rights or exclusive privileges. Also, it does not authorize any injury to the property or rights of others or authorize interference with any existing or proposed Federal project. Furthermore, it does not obviate the need to obtain other Federal, State, or local authorizations required by law.

Thank you for participating in the regulatory program. If you have any questions, contact Timothy Jackson at (760) 602-4843 or via email at Timothy.W.Jackson@usace.army.mil. Please

help me to evaluate and improve the regulatory experience for others by completing the customer survey form at <https://regulatory.ops.usace.army.mil/customer-service-survey/>.

Sincerely,

Timothy W. Jackson

Timothy W. Jackson
Regulatory Project Manager
Transportation & Special Projects Branch

Enclosure(s)

[illegible]

September 24, 2021

Figure 2. Project Site Plan



LANDSLIDE AND REPAIR ZONES MAP
 CYPRUS SHORES
 SAN CLEMENTE, CALIFORNIA

[illegible]

**DEPARTMENT OF THE ARMY REGIONAL GENERAL PERMIT
NUMBER 63 FOR
REPAIR AND PROTECTION ACTIVITIES IN EMERGENCY SITUATIONS**

SPONSOR AND ISSUING OFFICE: U.S. Army Corps of Engineers, Los Angeles District

PERMIT NUMBER: Regional General Permit (RGP) No. 63 (File No. SPL-2018-00038-CLH)

ISSUANCE DATE: NOVEMBER 19, 2018

PERMITTEE: Public agencies, businesses, or private parties (i.e., the public in general)

Note: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: This permit authorizes discharges of dredged or fill material into Waters of the United States, including wetlands, and/or work or structures in Navigable Waters of the United States for necessary repair and protection measures associated with an emergency situation. An "emergency situation" is present where there is a clear, sudden, unexpected, and imminent threat to life or property demanding immediate action to prevent or mitigate loss of, or damage to, life, health, property or essential public services (i.e., a situation that could potentially result in an unacceptable hazard to life or a significant loss of property if corrective action requiring a permit is not undertaken immediately).

Project Location: Within those parts of the State of California subject to regulatory review by this office, including the coastal slopes of San Luis Obispo County, all of Santa Barbara County except for the Carrizo Plain, Ventura, Los Angeles, San Bernardino, Riverside, Orange, San Diego, Imperial and Inyo counties, Mono County to the Conway Summit above Mono Lake, the southern slopes of the Tehachapi Mountains in Kern County, and all of the State of Arizona. In the event of future modifications to District boundaries, this permit would also apply in any areas so revised.

General conditions of this RGP:

1. **Time Period Covered:** This RGP shall expire on November 19, 2023. Authorized activities which have commenced or are under contract to commence prior to this date shall remain authorized provided work within waters of the U.S. is completed within 60 days following expiration of this RGP.

2. **Notification/Communication:**

- a. Timing:** The applicant must notify the District Engineer (DE) as early as possible and shall not begin the activity until notified by the DE that the activity may proceed under this RGP with any site-specific special conditions imposed by the District or Division Engineer. The Corps recognizes there may be situations where imminent threats to life or property occur and the applicant has not received a notice to proceed from the DE. It is not the intention of this office to imply that one allows such threat to life or property result in actual loss. If one proceeds without such notice from the DE, one must ensure that prior notice of such a unilateral decision to proceed is made to this office by telephone, facsimile, e-mail, delivered written notice or other alternative means.
- b. Contents of Notification:** The notification should be in writing and include the following information:
- (1) The name, address, e-mail address and telephone number of the applicant and the designated point of contact and their address, e-mail address and telephone number;
 - (2) The location of the proposed project, including the identification of the waterbody(ies) (this should include a copy of a U.S. Geologic Survey [USGS] topographic map, electronic map images, annotated photographs, Thomas Guide map, or hand-drawn location map with suitable landmarks; the map should have sufficient detail to clearly indicate the location and extent of the project, as well as detailed directions to the site);
 - (3) A brief, but clear, description of the imminent threat to life or property and the proposed project's purpose and need;
 - (4) A description of methods anticipated to be used to rectify the situation ("field engineering" is not an adequate description. It is presumed if one mobilizes material and a particular piece of equipment to a site, then one probably has a fairly well-defined intention for that material and equipment. Photographs, visual renderings of the project, plans, drawings or sketches showing the area to be impacted, cross sections showing details of construction, if appropriate, and a short narrative describing how the work is to be completed should be provided as a minimum); and
 - (5) A brief description of the project area's existing conditions and anticipated environmental impacts resulting from the proposed work (amount of dredge or fill material, acreage of disturbance, removal of significant vegetation, loss of habitat, etc.).
- c. Form of Notification:** The standard Application for Department of the Army Permit (Form ENG 4345), available from the District's website at https://www.spl.usace.army.mil/Portals/17/docs/regulatory/Permit_Process/engform_4345_2017sept.pdf?ver=2017-10-03-165521-953 may be used as the notification and must include all of the information required in General Condition 2.b. Items (1)-(5) above. A letter, facsimile transmission or electronic mail may also be used. In certain situations where there is an imminent threat to life or property and the applicant is unable to make direct contact with this office, a message shall be left on voice mail or an e-mail message shall be sent.

- d. Agency Coordination:** Upon receipt of a notification, the DE will immediately provide (i.e., by facsimile transmission, overnight mail, electronic mail or other expeditious manner) a copy to the offices of the Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS), the Monterey Bay National Marine Sanctuary, the California Department of Fish and Wildlife (CDFW), the California State Water Resources Control Board (SWRCB), the Arizona Department of Environmental Quality (ADEQ), the Arizona Game and Fish Department, the Navajo Nation, the Hopi Tribe, the Hualapai Tribe, the White Mountain Apache Tribe; the Big Pine Paiute Tribe of Owens Valley, the Bishop Paiute Tribe, and the Twenty-Nine Palms Band of Mission Indians (collectively, “Tribes”), the California Regional Water Quality Control Boards (RWQCB), the California Coastal Commission (CCC), and the State and Tribal Historic Preservation Offices of California or Arizona (SHPO/THPO), as appropriate. These agencies will be requested to provide a response to the Corps Regulatory Branch Project Manager as expeditiously as possible by telephone, facsimile transmission (fax) or e-mail, indicating whether they intend to provide substantive, site-specific comments regarding the proposed project. If notified that comments will be provided by an agency or tribal representative, the DE will allow them to provide their comments in a short timeframe determined by the DE on a case-by-case basis to not likely result in loss of life or property before making a decision on the proposed project.

The DE will fully consider any comments received within the specified timeframe concerning the proposed activity’s compliance with the conditions of the agency’s authority, the need to impose terms and conditions to avoid and minimize adverse effects on aquatic resources, and the need for mitigation to reduce the project’s adverse environmental effects to a minimal level. The DE will indicate the results of that consideration in the administrative record associated with the notification and will provide an informal response to the commenting agency by electronic mail, facsimile transmission or other means.

- e. Mitigation:** Discharges of dredged or fill material into Waters of the United States must be avoided or minimized to the maximum extent practicable at the project site. Compensation for unavoidable discharge of fill materials may require appropriate mitigation measures. Factors that the DE will consider when determining the suitability of appropriate and practicable mitigation will include, but are not limited to:
- (1) The approximate functions and values of the aquatic resource being impacted, such as habitat value, aquifer recharge, sediment conveyance or retention, flood storage, etc;
 - (2) The permanence of the project's impacts on the resource; and
 - (3) The potential long-term effects of the action on remaining functions and values of the impacted aquatic resource.

To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing wetland or upland

buffer zones to protect aquatic resource values; replacing the loss of aquatic resource values by creating, restoring, or enhancing similar functions and values; or using bioremediation techniques in conjunction with other methods to offset project impacts. To the extent appropriate, applicants should consider mitigation banking and other forms of mitigation, including contributions to wetland trust funds or in-lieu fees to organizations such as State, county or other governmental or non-governmental natural resource management organizations, where such fees contribute to the restoration, creation, replacement, enhancement, or preservation of aquatic resources.

- f. District Engineer's Decision:** In reviewing the notification for the proposed activity, the DE will determine whether the activity would likely result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public's interest. The applicant may, as an option, submit a proposed mitigation plan with the notification to expedite the process and the DE will consider any mitigation (See General Condition 2.e. above.) the applicant has included in the proposal in determining whether the net adverse environmental effects for the proposed work are minimal. If the DE determines the activity complies with the terms and conditions of this RGP and the adverse effects are minimal, this office will notify the applicant and include any situation-specific conditions deemed necessary.

If the applicant elects to submit a mitigation plan as part of the proposed project, the DE will expeditiously review the proposed plan also. However, the DE may approve the mitigation proposal after the work is approved and project work has commenced.

If the DE determines the adverse effects of the proposed work are more than minimal, the DE will notify the applicant either:

- (1) That the project does not qualify for authorization under this RGP and instruct the applicant on the procedures to seek authorization under an individual permit or other general permit, or
- (2) That the project is authorized under this RGP subject to the applicant submitting a mitigation proposal that would reduce the adverse effects to the minimal level.

3. **Authorized Work:** Any work authorized by this RGP must be the minimum necessary to alleviate the immediate emergency, unless complete reconstruction only results in very minor additional impact to aquatic resources and logistical concerns indicate such reconstruction is as expedient considering the condition of the project site and is limited to in-kind replacement or refurbishment. Moderate upgrading would be considered if the applicant wishes to use bioremediation or other environmentally sensitive solutions. The RGP may NOT be used to upgrade an existing structure to current standards when that activity would result in additional adverse effects on aquatic resources, except in very limited circumstances. Such upgrade projects shall be considered separate activities for which other forms of authorization will be required.

Work not described in permit application documentation but deemed necessary after a field assessment is not authorized unless coordinated with the Regulatory project manager and acknowledged by appropriate means (i.e., e-mail or facsimile transmission,

memo to the record, etc.). These coordinated permit modifications must also be described in sufficient detail in the post-project report (see RGP 63 General Condition 26).

4. **Start Work Date:** Any projects authorized under this RGP must be initiated within fourteen (14) days of receiving authorization to proceed. If the project start time can be delayed for more than two weeks, the imminent threat of impending loss may have diminished in magnitude, as well as immediacy, and generally would not meet the definition of an “emergency.” However, there may be limited circumstances where, after notice to and input by the agencies, logistical considerations necessitate an extension beyond 14 days. Further, this RGP cannot be used to authorize long-planned-for projects, nor shall it be used for projects that are likely to have been known to the applicant but for which an application was not submitted in a timely manner. That is, the Corps and other agencies are not obligated to authorize work for a self-described emergency situation unless we agree that the situation qualifies as an emergency as defined on page 1.
5. **Access to Site:** You must allow representatives from this office and other agencies to inspect the authorized activity at any time deemed necessary to ensure the project is being or has been accomplished in accordance with the terms and conditions of this RGP.
6. **Tribal Rights:** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.
7. **Water Quality Certification:** Within Los Angeles District, water quality certifications pursuant to Section 401 of the Clean Water Act are administered by the California State Water Resources Control Board (SWRCB) and the Arizona Department of Environmental Quality (ADEQ) for non-tribal land, the U.S. Environmental Protection Agency for tribal lands of Tribes not treated as States, and seven Native American Tribes that are treated as States for Section 401 water quality certification. Section 401 water quality certification from the USEPA is pending as of the date of this permit. Permittees working on tribal land in Los Angeles District must receive individual Section 401 water quality certification from the EPA or one of the seven Tribes identified on page 3 as appropriate. Conditions of the pending water quality certification from the EPA will be incorporated when issued and the permit modified appropriately.

ARIZONA

The ADEQ issued its certification (401 cert reading file SWGP18:0126) on July 26, 2018. No additional conditions were added.

CALIFORNIA

The SWRCB issued its conditional certification (Water Quality Order No. 2018-0029) on November 8, 2018. As with previous reissuances of the RGP, conditions within issued Section 401 certifications are included within the body of the RGP to facilitate dissemination of information to permittees regarding water quality certifications for work authorized under

RGP 63. The SWRCB's water quality conditions are adopted within this permit as RGP 63 General Conditions.

For California Permittees on Non-tribal Land: The State Water Resources Control Board (SWRCB) issued a conditional Section 401 water quality certification for RGP 63 dated November 08, 2018 for all waters of the United States on non-tribal lands Los Angeles District in the State of California, with the following exception:

The State's certification does not apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent Certification application was filed pursuant to title 23 of the California Code of Regulations subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

The SWRCB's certification for Regional General Permit No. 63 for Emergency Situations, No. 2018-0029, is contingent on all of the conditions listed below being met, and any discharge from an authorized project being in compliance with applicable provisions of Clean Water Act sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards).

Discharges covered under this certification are also regulated pursuant to State Water Board Water Quality Order No. 2003-0017-DWQ which authorizes the State's certification to serve as Waste Discharge Requirements pursuant to the Porter-Cologne Water Quality Control Act. (Wat. Code, § 13000 et seq.)

Except as modified by any of the certification conditions below, all certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the conditions of the certification and the attachments to the certification, and (b) compliance with all applicable requirements of Statewide Water Quality Control Plans and Policies and the Regional Water Boards' Water Quality Control Plans and Policies.

Regional Water Quality Control Plan Information

Individual projects authorized under this Order may be located within the jurisdiction of Central Valley, Colorado River Basin, Lahontan, Los Angeles, San Diego and Santa Ana Regional Water Quality Control Boards (collectively Regional Water Boards). Receiving waters and groundwater potentially impacted by individual projects authorized under this Order are protected in accordance with the applicable water quality control plans (Basin Plan) for the regions and other plans and policies which may be accessed online at: http://www.waterboards.ca.gov/plans_policies/. The Basin Plans include water quality standards, which consist of existing and potential beneficial uses of waters of the state, water quality objectives to protect those uses, and the state and federal antidegradation policies.

Dischargers must identify the receiving waters, as listed in the applicable Basin Plan, that would be impacted by a proposed project. This information must be included in the Notice of Intent (NOI; Attachment D).

A. Standard Conditions

- 1. This Certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to section 13330 of the California Water Code and section 3867 of title 23 of the California Code of Regulations.*
- 2. This Certification action is not intended and must not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent Certification application was filed pursuant to title 23 of the California Code of Regulations subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.*
- 3. This Certification is conditioned upon full payment of any fee required under California Code of Regulations, chapter 28, title 23, and owed by the Applicant.*
- 4. In the event of any violation or threatened violation of the conditions of this order, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under state and federal law. For purposes of Clean Water Act, section 401 (d), the applicability of any state law authorizing remedies, penalties, processes, or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this order.*

B. General Conditions

- 1. This Certification is limited to emergency actions that meet the California Environmental Quality Act (CEQA) (Public Resources Code, § 21000 et seq.) definition of an “emergency,” which is defined as follows:*

A sudden, unexpected occurrence, involving a clear and imminent danger, demanding immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services. Emergency includes such occurrences as fire, flood, earthquake, or other soil or geologic movement, as well as such occurrences as riot, accident, or sabotage. (Pub. Resources Code, § 21060.3.)

Emergency actions must meet the above definition of “emergency” and demonstrate an imminent threat to qualify for this Certification. For actions that do not qualify for enrollment under this Certification, the discharger (i.e. the person or entity proposing to conduct actions which may result in a discharge to a water of the state) must contact either the State Water Board or the applicable Regional Water Board to apply for an individual water quality certification.

2. *This Certification is limited to emergency actions that satisfy one or more of the following exemption criteria as defined by the CEQA Guidelines (Cal. Code Regs., tit. 14, § 15269.):*
 - a. *Projects to maintain, repair, restore, demolish, or replace property or facilities damaged or destroyed as a result of a disaster in a disaster stricken area in which a state of emergency has been proclaimed by the Governor pursuant to the California Emergency Services Act, commencing with section 8550 of the Government Code.*
 - b. *Emergency repairs to publicly or privately owned service facilities necessary to maintain service essential to the public health, safety, or welfare.*
 - c. *Specific actions necessary to prevent or mitigate an emergency. This does not include long-term projects undertaken for the purpose of preventing or mitigating a situation that has a low probability of occurrence in the short-term.*
 - d. *Projects undertaken, carried out, or approved by a public agency to maintain, repair, or restore an existing highway damaged by fire, flood, storm, earthquake, land subsidence, gradual earth movement, or landslide, provided that the project is within the existing right of way of that highway and is initiated within one year of the damage occurring. This does not apply to highways designated as official State scenic highways, nor any project undertaken, carried out, or approved by a public agency to expand or widen a highway damaged by fire, flood, storm, earthquake, land subsidence, gradual earth movement, or landslide.*
 - e. *Seismic work on highways and bridges pursuant to section 180.2 of the Streets and Highways Code, section 180 et seq.*
3. *This Certification is limited only to sudden, unexpected emergency situations defined in General Conditions 1 and 2 above that: (1) have occurred, or (2) have a high probability of occurring in the short term as a result of recently discovered factors or events not related to known or expected conditions. Additionally, the sudden, unexpected emergency situation must have the potential to result in an unacceptable hazard to life or a significant loss of property if corrective action is not undertaken within a time period less than the normal time needed to process an application under standard procedures.*
4. *Emergency repairs and reconstruction must begin within fourteen (14) calendar days of receiving authorization unless an extension is granted by the Corps and agreed to, in writing, by the appropriate Regional Water Board.*
5. *Authorized work in waters of the state shall be completed within 180 days of the enrollment date. If it is anticipated that work will not be completed prior to the expiration of enrollment, the Applicant shall request an extension at least thirty (30) days prior to the expiration date. The request shall include justification for the extension.*

6. *All repairs and construction shall be kept to the minimum necessary to alleviate the immediate emergency and limited to in-kind replacement or refurbishment of on-site features. Minor upgrading may be considered if the Enrollee uses bioremediation or other environmentally sensitive solutions. Permanent restoration work other than that performed as an associated part of the emergency operations, including any minor upgrades, shall not be performed without prior approval and authorization by the Water Boards.*
7. Failure to comply with any condition of this Certification shall constitute a violation of the Porter-Cologne Water Quality Control Act and the Clean Water Act. The Enrollee and/or discharger may then be subject to administrative and/or civil liability pursuant to Water Code section 13385.
8. *Permitted actions must not cause a violation of any applicable water quality standards, including impairment of designated beneficial uses for receiving waters as adopted in the Basin Plans by any applicable Regional Water Board or any applicable State Water Board (collectively Water Boards) water quality control plan or policy. The source of any such discharge must be eliminated as soon as practicable.*
9. *In response to a suspected violation of any condition of this Order, the State Water Board may require the holder of this Order to furnish, under penalty of perjury, any technical or monitoring reports the Water Boards deem appropriate, provide that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. The additional monitoring requirements ensure that permitted discharges and activities comport with any applicable effluent limitations, water quality standards, and/or other appropriate requirement of state law.*
10. *The Applicant must, at all times, fully comply with engineering plans, specifications, and technical reports submitted to support this Certification; and all subsequent submittals required as part of this Order. The conditions within this Certification and Attachments supersede conflicting provisions within Enrollee submittals.*
11. *This Certification and all of its conditions contained herein continue to have full force and effect regardless of the expiration or revocation of any federal license or permit issued for the Project. For purposes of Clean Water Act, section 401(d), this condition constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements of state law.*

C. Administrative Conditions

1. *Signatory requirements for all document submittals required by this Certification are presented in Attachment B of the Certification.*

2. *This Certification does not authorize any act which results in the taking of a threatened, endangered or candidate species or any act, which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code, §§ 2050-2097) or the federal Endangered Species Act (16 U.S.C. §§ 1531-1544). If a “take” will result from any act authorized under this Order held by the Corps, the Corps and/or the Enrollee must obtain authorization for the take prior to any construction or operation of the portion of the Project that may result in a take. The Corps is responsible for meeting all requirements of the applicable endangered species act for the Project authorized under this Order.*
3. *Water Boards staff, or an authorized representative, upon presentation of credentials and other documents as may be required by law, shall be granted permission to enter the dischargers’ site(s) at reasonable times, to ensure compliance with the terms and conditions of this Certification and/or to determine the impacts the discharge may have on waters of the state.*
4. *A copy of this Certification shall be provided to any consultants, contractors, and subcontractors working on the Project. Copies of this Certification shall remain at the Project site for the duration of this Certification. The Applicant shall be responsible for work conducted by its consultants, contractors, and any subcontractors.*
5. *A copy of this Certification shall be available at the Project site(s) during construction for review by site personnel and agencies. All personnel performing work on the Project shall be familiar with the content of this Certification and its posted location at the Project site.*

D. Construction

1. *At all times, appropriate types and sufficient quantities of materials shall be maintained on site to contain and clean up any spill or inadvertent release of materials that may cause a condition of pollution or nuisance if the materials reach waters of the state. Construction personnel must know how to use appropriate containment and clean up materials.*
2. *Fueling, lubrication, maintenance, storage, and staging of vehicles and equipment must not result in a discharge to any waters of the state, and shall be located outside of waters of the state in areas where accidental spills will not enter or affect such waters.*
3. *If construction related materials reach surface waters, appropriate spill response procedures must be initiated as soon as the incident is discovered. In addition, the State Water Board staff contact identified in this Order must be notified via email and telephone within twenty-four (24) hours of occurrence.*

4. *Construction materials and debris from all construction work areas shall be removed from the site and disposed of properly following completion of individual projects enrolled under this Order.*
5. *Water diversion activities must not result in the degradation of beneficial uses or exceedances of water quality objectives of any of the receiving waters. Any temporary dam or other constructed obstruction must only be built from materials which will cause little or no siltation (e.g. clean gravel). Normal flows must be restored to the affected water immediately upon completion of work at that location.*
6. *Effective best management practices (BMPs) must be implemented to control erosion and runoff from areas associated with the emergency project, this includes access roads. All areas of temporary impacts and all other areas of temporary disturbance which could result in a discharge or a threatened discharge to waters of the U.S. and/or state must be restored. Restoration must include grading of disturbed areas to pre-project contours and revegetation with native species.*
7. *All repairs and reconstruction shall be kept to the minimum necessary to alleviate the immediate emergency and limited to in-kind replacement or refurbishment of on-site features. Minor upgrading may be considered if the Enrollee uses bioremediation or other environmentally sensitive solutions. Permanent restoration work other than that performed as an associated part of the emergency operations, including any minor upgrades, shall not be performed without prior approval and authorization by the Water Boards.*

E. Mitigation: *Permitted activities shall be the minimum necessary to alleviate the immediate emergency and a sequence of actions must be taken to avoid and then to minimize adverse impacts to aquatic resources. Compensatory mitigation may be required to offset any remaining unavoidable adverse impacts to aquatic resources.*

F. Emergency Notification and Fee Requirements

1. The State Water Board and the applicable Regional Water Board must receive notification by the discharger at least 48 hours prior to initiating emergency actions. This notification must be followed within three (3) business days by submission of all of the information in the Emergency Notification Form (**Attachment D**).
 - a. Notification may be via telephone, e-mail, written notice, or other verifiable means.
 - A staff directory that includes contact information for State and Regional Program Managers is found at: https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/staffdirectory.pdf.
 - A map of Regional Board boundaries is found at: https://www.waterboards.ca.gov/waterboards_map.html

Electronic Submittal:

1. Address e-mail to the “State Program Manager” and the appropriate “Region Program Manager” from the staff directory linked above.
2. Include “Attention – RGP 63 Notice of Intent” in the subject line.

Hardcopy Submittal Addresses:

*ATTN: Program Manager
Wetlands Permitting and Planning
Division of Water Quality
State Water Resources Control Board
1001 “I” St. 15th Floor
Sacramento, CA 95814*

AND

*ATTN: Program Manager
CWA Section 401 WQC Program
Insert mailing address of appropriate Regional Water Board from the staff directory linked above*

2. *The Water Boards recognize there may be situations where imminent threats to life or property occur and the discharger has not received a notice to proceed. If immediate, specific actions, as defined in the California Code of Regulations, title 14, section 15269(c), are required by a discharger and prior notice to the State Water Board and the applicable Regional Water Board is not possible, then the discharger must contact the State Water Board and the applicable Regional Water Board within one (1) business day of the emergency action. This notification must be followed within three (3) business days by submission of all of the information in the Emergency Notification Form (**Attachment D**).*
3. *The Applicant must provide the appropriate fee to the Regional Water Board in accordance with California Code of Regulations, title 23, section 2200 within forty-eight (48) hours of project initiation. Failure to promptly pay the correct fee amount may result in a disqualification for enrollment pursuant to this Certification.*
4. *Once the appropriate Regional Water Board receives a completed Notice of Intent (NOI) and the correct fee from the Enrollee, the Water Board will transmit a Notice of Applicability (NOA) to the Enrollee verifying enrollment in this Certification.*

G. Project Status Notifications

1. *The discharger must provide the State Water Board and the applicable Regional Water Board copies of all correspondence and reports that are submitted to the Corps to satisfy*

the requirements of RGP 63. In addition, the discharger must fill in and submit the form provided in Attachment E.

2. *A completed Notice of Completion (NOC) must be submitted to the appropriate Regional Water Board and State Water Board within 45 calendar days of completion of any action conducted under RGP 63.*
3. *Failure to submit **Attachment E** within 45 calendar days of completion of any emergency actions conducted under this Certification may result in the imposition of administrative and/or civil liability pursuant to Water Code section 13385.*

H. Project Reporting: *If required by the NOA, the Applicant shall submit an Annual Report each year on the anniversary of the date that the individual project is authorized under this Order. Annual reporting shall continue until a Notice of Project Complete Letter is issued to the Applicant.*

I. Conditional Notification and Reporting: *The following notifications and reports are required as appropriate. Reporting requirements are found in Attachment C of the authorization.*

1. Accidental Discharges of Hazardous Materials: *Following an accidental discharge of a reportable quantity of a hazardous material, sewage, or an unknown material, the following applies (Wat. Code, § 13271):*

- a. *As soon as (A) Enrollee has knowledge of the discharge or noncompliance, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures then:*
 - *first call – 911 (to notify local response agency)*
 - *then call – Office of Emergency Services (OES) State Warning Center at: (800) 852-7550 or (916) 845-8911*
 - *Lastly follow the required OES procedures as set forth in: <http://occupainfo.com/civicax/filebank/blobdload.aspx?BlobID=26396>
http://www.caloes.ca.gov/FireRescueSite/Documents/CalOES-Spill_Booklet_Feb2014_FINAL_BW_Acc.pdf*
 - b. *Following notification to OES, the Enrollee shall notify State Water Board, as soon as practicable (ideally within 24 hours). Notification may be via telephone, e-mail, delivered written notice, or other verifiable means.*
 - c. *Within five (5) working days of notification to the State Water Board, the Enrollee must submit an Accidental Discharge of Hazardous Material Report.*
- 2. Violation of Compliance with Water Quality Standards:** *The Enrollee shall notify the State Water Board of any event causing a violation of compliance with water quality standards. Notification may be via telephone, e-mail, delivered written notice, or other verifiable means.*

- a. *Examples of noncompliance events include: lack of storm water treatment following a rain event, discharges causing a visible plume in a water of the state, and water contact with uncured concrete.*
 - b. *This notification must be followed within three (3) working days by submission of a Violation of Compliance with Water Quality Standards Report.*
- 3. ***Transfer of Property Ownership:*** *This Certification is not transferable in its entirety or in part to any person or organization except after notice to the State Water Board in accordance with the following terms:*
 - a. *The Applicant must notify the Water Board of any change in ownership or interest in ownership of the Project area by submitting a Transfer of Property Ownership Report. The Applicant and purchaser must sign and date the notification and provide such notification to the Water Board at least 10 days prior to the transfer of ownership. The purchaser must also submit a written request to the State Water Board to be named as the applicant in a revised order.*
- 4. ***Transfer of Long-Term BMP Maintenance:*** *If maintenance responsibility for post-construction BMPs is legally transferred, the Enrollee must submit to the appropriate Regional Water Board a copy of such documentation and must provide the transferee with a copy of a long-term BMP maintenance plan that complies with manufacturer or designer specifications. The Enrollee must provide such notification to the Water Board with a Transfer of Long-Term BMP Maintenance Report at least 10 days prior to the transfer of BMP maintenance responsibility.*

J. Water Quality Monitoring

- a. *General: If surface water is present, continuous visual surface water monitoring shall be conducted to detect accidental discharge of construction related pollutants (e.g. oil and grease, turbidity plume, or uncured concrete).*
- b. *Accidental Discharges/Noncompliance: Upon occurrence of an accidental discharge of hazardous materials or a violation of compliance with a water quality standard, State Water Board staff may require water quality monitoring based on the discharge constituents and/or related water quality objectives and beneficial uses.*

END OF SWRCB SECTION 401 WATER QUALITY CERTIFICATION CONDITIONS

8. Coastal Zone Management: For those projects affecting uses or resources of the coastal zone, the Federal Coastal Zone Management Act (CZMA) requires that the Permittee obtain concurrence from the California Coastal Commission that the project is consistent with the State's certified Coastal Management Program. For activities within the coastal zone that require a coastal development permit from the commission, the Permittees should contact the Commission office to request an emergency permit, and no additional federal consistency review is necessary. For activities within the coastal zone that require a coastal

development permit from a local government with a certified local coastal program, the Permittee should contact the appropriate local government. Because a coastal permit issued by a local agency does not satisfy the federal consistency requirements of the CZMA, the Permittee should also contact Larry Simon, Federal Consistency Coordinator for the Commission, at 415-904-5400 to determine the appropriate emergency procedures. For any activity outside the coastal zone, but with the potential to affect coastal uses or resources, or for any activity conducted by a federal agency, the Permittee should contact Larry Simon, Federal Consistency Coordinator for the Commission at 415-904-5400 to determine the appropriate emergency procedures.

Due to the often limited time constraints with emergency actions, the Corps would not require the Permittee to provide proof of review by the Commission, if such an action would result in undue harm to life or property. However, the Corps will require the Permittee to provide evidence of consistency upon completion of the project unless the Corps is already aware that a particular project, class of projects, or projects in a particular area described by the Commission, have received such determinations or waivers. Disposal of flood-delivered sediments into the marine environment is not authorized under RGP 63 due to potential adverse effects to the habitat and water quality. If such activity is proposed, it shall be addressed through other permitting procedures.

9. Endangered Species: No activity is authorized under this RGP which is likely to jeopardize the continued existence of a threatened or endangered species or destroy or adversely modify designated critical habitat as identified under the Federal Endangered Species Act (ESA). Authorization of an activity by the RGP does NOT authorize the "take" of a listed threatened or endangered species, as defined under the Federal ESA. The U.S. Fish and Wildlife Service and/or National Marine Fisheries Service may provide project-specific recommendations to avoid or minimize potential take of listed species or adverse modification of designated critical habitat. The Corps would determine which recommendations would be incorporated into the emergency authorization.

Information on the location of listed or proposed threatened or endangered species and their designated or proposed critical habitat can be obtained directly from the FWS or NMFS or from their websites at:

USFWS – <http://www.fws.gov/endangered>

NMFS – <http://www.nmfs.noaa.gov/pr/species/>

10. Historic Properties: Impacts to historic properties listed, proposed for listing, or potentially eligible for listing in the National Register of Historic Places will be avoided to the maximum extent practicable. If such resources are impacted because of actions authorized under this RGP, the permittee shall provide a full report of the action and the impacts incurred by the resource to this office within 45 days after completion of the action. The Corps, the State and Tribal Historic Preservation Officers, and/or the Advisory Council for Historic Preservation will then jointly make a determination as to appropriate procedures and/or mitigation to be addressed.

If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this RGP, you must immediately notify the Corps Regulatory Division who will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

11. Regional and Case-by-Case Conditions: The activity must comply with any regional conditions added by the Division Engineer (see CFR Part 330.4(e)) and with any case-specific conditions added by the District Engineer.

12. Erosion and Siltation Controls: Every effort must be made to ensure any material dredged or excavated from Waters of the United States is not likely to be washed back into any Waters of the United States. When feasible, erosion and siltation controls, such as siltation or turbidity curtains, sedimentation basins, and/or straw bales or other means designed to minimize turbidity in the watercourse above background levels existing at the time of construction, shall be used and maintained in effective operating condition during construction unless conditions preclude their use, or if conditions are such that the proposed work would not increase turbidity levels above the background level existing at the time of the work. All exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be stabilized at the earliest practicable date to preclude additional damage to the project area through erosion or siltation.

13. Equipment: When feasible, and if personnel would not be put into any additional potential hazard, heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance, such as use of wide-treaded equipment or floatation devices.

14. Suitable Material: No discharge of dredged or fill material may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material discharged must be free from toxic pollutants in toxic amounts. (See Section 307 of the Clean Water Act).

15. Wild and Scenic Rivers: No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while that river is in an official study status, unless the appropriate Federal agency with direct management responsibility for that river has determined in writing that the proposed activity would not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., FWS, National Park Service, USDA Forest Service, Bureau of Land Management). Currently the only designated Wild and Scenic River systems in the Los Angeles District are the main stem of Sespe Creek from its confluence with Rock Creek and Howard Creek downstream to where it leaves Section 26, T5N, R20W; the Sisquoc River from its origin to the Los Padres National Forest boundary in California; and the Verde River from the section line between Sections 26 and 27, T13N, R5E, Gila-Salt River meridian to the confluence of

Red Creek with the Verde River within Section 34, T9 1/2N, R6E.

16. Aquatic Life Movements: No activity may substantially disrupt the movement of those species of aquatic life indigenous to the water body, including those species that normally migrate through the area. Culverts placed in streams must be installed to maintain low flow conditions.

17. Shellfish Production: No discharge of dredged or fill material may occur in areas of concentrated natural or commercial shellfish production, unless the discharge is directly related to a shellfish harvesting activity authorized by the Corps' Nationwide Permit (NWP) 4.

18. Spawning Areas: Discharges in spawning areas during spawning seasons must be avoided to the maximum extent practicable.

19. Waterfowl Breeding Areas: Discharges into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

20. Navigation: No activity may cause more than a minimal adverse effect on the course or capacity of a navigable water. The permittee shall agree that, if future operations by the United States require the removal, relocation, or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expenses to the United States. No claim shall be made against the United States on account of any such removal or alteration.

21. Water Supply Intakes: No discharge of dredged or fill material may occur in the proximity of a public water supply intake except where the discharge is for repair of the public water supply intake structures or adjacent bank stabilization.

22. Obstruction of High Flows: To the maximum extent practicable, discharges must not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of the water except within the existing river plain unless the primary purpose of the fill is to impound waters.

23. Adverse Effects from Impoundments: If the discharge creates an impoundment of water, adverse effects on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow shall be minimized to the maximum extent practicable.

24. Proper Maintenance: Any structure or fill authorized by this RGP shall be maintained, including maintenance to ensure public safety, unless it is later determined that the structure is further contributing to other adverse conditions to private or public property. In such

situations, corrective measures will be taken to rectify these adverse conditions, including removal and/or redesign of the original emergency corrective action, or appropriate mitigation as determined through coordination with you and the appropriate Federal and State agencies. Temporary levees constructed to control flows shall not be maintained beyond the current storm season (i.e., maintenance of temporary levees is not authorized after the storm season in which the need arose).

25. Removal of Temporary Fills: Temporary fills shall be removed in their entirety and the affected areas returned to pre-existing elevations and revegetated with appropriate native riparian or wetland vegetation common to the area. If an area impacted by such a temporary fill is considered likely to naturally re-establish native riparian or wetland vegetation to a level similar to pre-project or pre-event conditions within two years, you will not be required to do so.

26. Reports: You shall provide a concise written report to this office as soon as practicable (within 45 days of completing the project) after completion of any action conducted under this RGP. **PROVIDING THIS REPORT IS MANDATORY.** This office has additional responsibilities pursuant to consultation with the FWS and NMFS under Section 7 of the ESA. Further, these reports enable us to track the use of this RGP to verify that the minimal effects determination is being met as required by Section 404(e) of the CWA. Failure to provide timely reports following responses to emergencies is non-compliance with the General Conditions of this RGP and would be considered a violation (33 CFR Part 326.4(d)).

At a minimum the Report shall include the following:

I. The name, address, e-mail address and telephone number of:

- a. the applicant, and
- b. the applicant's agent (if appropriate)

II. Full description of the activity including:

- a. description of the emergency and the potential for loss of life or property;
- b. purpose of the activity;
- c. final goal of the entire activity;
- d. location (e.g., latitude/longitude or UTM coordinates; section/township/range on appropriate USGS topo map; electronic map images; Thomas Guide map; or other source to accurately portray project location);
- e. size and description of project area (include maps or drawings showing the areal and lineal extent of the project, and pre- and post-construction photographs);
- f. quantities of materials used;
- g. information on receiving waterbody impacted including:
 - (1) name of waterbody
 - (2) type of receiving waterbody (e.g., river/streambed, lake/reservoir, ocean/estuary/bay, riparian area, wetland type, etc.)
 - (3) temporary/permanent adverse impact(s) in acres/cubic yards/linear feet

- (4) compensatory mitigation in acres/cubic yards/linear feet
- (5) other mitigation steps (to avoid, minimize, compensate); and
- h. information on an activity that required permission from the Corps pursuant to 33 U.S.C. 408 because the project altered, temporarily or permanently occupied use of a U.S. Army Corps of Engineers federally authorized civil works project.
- i. information on federally listed or proposed endangered species or designated or proposed critical habitat (notification must be provided to FWS and/or NMFS as appropriate) including:
 - (1) temporary/permanent adverse impacts
 - (2) compensatory mitigation
 - (3) other mitigation steps (to avoid, minimize, compensate).
 - (4) Federal agencies should follow their own procedures for complying with requirements with the Endangered Species Act (ESA) and the National Historic Preservation Act (NHPA). The Federal permittee must provide to the district engineer (DE) the appropriate documentation to demonstrate compliance with these requirements. The DE will verify that the appropriate documentation was submitted. If any documentation is not submitted, and additional ESA and/or NHPA consultation may be necessary for the activity the respective federal agency would be responsible for fulfilling its obligation.”

If there are a substantial number of projects and this requirement would consume large quantities of staff resources, the permittee may, as an option, submit a comprehensive report providing all of the information required in the notification condition (Item 2.b.) above. If a project was conducted in an area known to harbor Federally listed or proposed endangered species or designated or proposed critical habitat, a list of measures taken to minimize harm to the species and/or habitat and provide a copy of the report to the FWS and/or the NMFS, as appropriate, must also be included. If mitigation was determined to be appropriate for a specific project or group of projects, a mitigation proposal must be submitted to this office for review and approval. We will forward the report to the appropriate agencies for their review and comment.

Further Information:

1. Congressional Authorities. You have been authorized to undertake the activity described above pursuant to:
 - (X) Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403).
 - (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
 - () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).
2. Limits of this authorization.
 - a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
 - b. This permit does not grant any property rights or exclusive privileges.
 - c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

- a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
- b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
- c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
- d. Design or construction deficiencies associated with the permitted work.
- e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

- a. You fail to comply with the terms and conditions of this permit.
- b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
- c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measure ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give you favorable consideration to a request for an extension of this time limit.

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army has signed below.



David J. Castanon
Chief, Regulatory Division

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DN: c=US, o=U.S. Government, ou=DoD, ou=PKI,
ou=USA, cn=CASTANON.DAVID.J.1231966150
Date: 2018.11.19 14:00:04 -08'00'

DATE

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RWQCB Verification

December 2021

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From: [Bradford, Darren@Waterboards](mailto:Bradford.Darren@Waterboards)
To: [Fornelli, Justin P.E.](mailto:Fornelli.Justin.P.E)
Cc: [Vick, Jenny](mailto:Vick.Jenny); Timothy.W.Jackson@usace.army.mil; [Becker, Eric@Waterboards](mailto:Becker.Eric@Waterboards); [Delaplaine, Mark@Coastal](mailto:Delaplaine.Mark@Coastal)
Subject: Enrollment Notice for RGP 63 Emergency Permit; Railroad Emergency Stabilization Project - San Clemente Orange Sub 206.85: R9-2021-0230: 878217:dbradford
Date: Wednesday, December 22, 2021 10:28:26 AM

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Justin Fornelli...The San Diego Water Board received your Notice of Intent on December 20, 2021, for enrollment under the Clean Water Act Section 401 Water Quality Certification and Order for the U.S. Army Corps of Engineers Reauthorization of Regional General Permit 63 (RGP 63) for Repair and Protection Activities in Emergency Situations (General Certification) for the Railroad Emergency Stabilization Project - San Clemente Orange Sub 206.85.

The railroad tracks in the vicinity of milepost 206.8 are exhibiting severe deflection as a result of accelerating land sliding of the adjacent slope toward and beneath the rail embankment. Following the realignment of the railroad track under a previous RGP 63 enrollment (R9-2021-0209:876490), ongoing monitoring of the slope and track shows an additional cumulative movement of more than 1 inch and has activated the alert system defined in the Track and Slope Monitoring Report. Approximately 5,000 to 6,000 tons of additional riprap is required to slow landslide movement and prevent further track deflection. The riprap will be placed in the same area identified in the previous RGP 63 enrollment and in areas that previously contained riprap. The first load of additional riprap was placed on December 18, 2021.

Project construction will permanently impact 0.10 acre (500 linear feet) of ocean waters of the United States and/or State. The Applicant reports that the Project purpose cannot be practically accomplished in a manner which would avoid or result in less adverse impacts to aquatic resources considering all potential practicable alternatives, such as the potential for alternate available locations, designs, reductions in size, configuration or density.

The NOI is complete and the project is hereby enrolled under the General Certification. OCTA/SCRRA (Metrolink) is responsible for meeting all of the requirements of the General Certification, including submittal of the Notice of Completion Form (Attachment E of the General Certification), within 45 calendar days of completion of the actions conducted under the General Certification. The General Certification can be found at: https://www.waterboards.ca.gov/water_issues/programs/cwa401/generalorders.html

Any reports required under the General Certification shall be sent in electronic format via e-mail to sandiego@waterboards.ca.gov. Documents over 50 megabytes will not be accepted via e-mail and must be placed on a disc and delivered to:

California Regional Water Quality Control Board
San Diego Region
Attn: 401 Certification: R9-2021-0230: 878217:dbradford
2375 Northside Drive, Suite 100

San Diego, California 92108

All correspondence should reference: R9-2021-0230: 878217:dbradford within the cover page.

Respectfully,

Darren Bradford
Environmental Scientist
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108
(619) 521-3356



USACE Verification December 2021

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DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT
915 WILSHIRE BOULEVARD, SUITE 930
LOS ANGELES, CA 90017-3401

December 23, 2021

SUBJECT: Regional General Permit Verification

Southern California Regional Rail Authority (Metrolink)
Attn.: Mr. Justin Fornelli, Chief of Program Delivery
900 Wilshire Blvd. Suite 1500
Los Angeles, CA 90017

Orange County Transportation Authority
Attn.: Mr. Jim Beil, Executive Director of Capital Programs
550 South Main Street
Orange, California 92863

Dear Mr. Fornelli and Mr. Beil:

I am responding to your request for a Department of the Army (DA) permit for your emergency project, Railroad Emergency Stabilization - San Clemente Orange Sub MP 206.85 (File No. SPL-2021-00516). The emergency work area is located at San Clemente Orange Sub MP 206.85 within the City of San Clemente, Orange County, CA (Latitude: 33.395715°N, Longitude: -117.599684°W).

Under the provisions of Section 10 of the Rivers and Harbors Act of 1899 (Section 10) (33 U.S.C. 403) and Section 404 of the Clean Water Act (Section 404) (33 USC 1344; 33 CFR parts 323 and 330) you are hereby authorized to conduct the work described below within waters of the United States.

We have determined implementation of the emergency activities, if constructed as described in your application, comply with Regional General Permit (RGP) No. 63. Specifically, and as shown in the enclosed figure(s), you are authorized to:

Section 404

1. Permanently discharge approximately 3,125 cubic yards of riprap (3-5 foot diameter) into approximately 0.1 acre of waters of the United States. This discharge area comprises an approximate 500 linear foot section of railroad embankment extending into the Pacific Ocean.

Section 10

1. Permanently discharge approximately 2,300 cubic yards of 3-5 foot-diameter riprap below the mean high water mark of the Pacific Ocean. This work will occur in approximately 0.075 acre of navigable waters of the U.S.

For this RGP verification letter to be valid, you must comply with all of the terms and conditions stated in the enclosed copy of the RGP. Furthermore, you must comply with the following non-discretionary Special Conditions:

Special Conditions:

1. **IMPLEMENTATION TIMELINE:** All work authorized by this RGP must be completed no later than **January 17, 2022**. If the Permittees are unable to complete the authorized work by this date, the Permittees must request, in writing, an extension from the Corps Regulatory Division prior to the deadline.
2. **BIOLOGICAL RESOURCES AND ESSENTIAL FISH HABITAT:** Within 45 calendar days of completion of authorized work in waters of the U.S., the Permittee shall submit to the Corps Regulatory Division via email (Timothy.W.Jackson@usace.army.mil) a biological resources technical memorandum including an Essential Fish Habitat Assessment using guidance developed by the National Marine Fisheries Service (50 C.F.R. §600.920(e)(3)).
3. **NATIONAL HISTORIC PRESERVATION ACT:** Pursuant to 36 C.F.R. section 800.13, in the event of any discoveries during construction of either human remains, archeological deposits, or any other type of historic property, the Permittee shall notify the Corps' Archeology Staff within 24 hours (Danielle Storey at 213-452-3855 OR Meg McDonald at 213-452-3849). The Permittee shall immediately suspend all work in any area(s) where potential cultural resources are discovered. The Permittee shall not resume construction in the area surrounding the potential cultural resources until the Corps Regulatory Division re-authorizes project construction, per 36 C.F.R. section 800.13.
4. **ENDANGERED SPECIES ACT:** This Corps permit verification does not authorize you to take any threatened or endangered species, in particular the Southern California steelhead (*Oncorhynchus mykiss*) (Distinct Population Segment [DPS]), green sturgeon (*Acipenser medirostris*) (southern DPS), black abalone (*Haliotis cracherodii*), white abalone (*Haliotis sorenseni*), green sea turtle (*Chelonia mydas*), olive Ridley sea turtle (*Lepidochelys olivacea*), leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), southern resident killer whale (*Orcinus orca*), North Pacific right whale (*Eubalaena japonica*), sei whale (*Balaenoptera borealis*), sperm whale (*Physeter macrocephalus*), and Guadalupe fur seal (*Arctocephalus townsendi*). In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (ESA) (e.g. ESA Section 10 permit, or a Biological Opinion (BO) under ESA Section 7, with "incidental take" provisions with which you must comply). Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit.

5. **ENDANGERED SPECIES AND MARINE MAMMALS:** Incidents where any individuals of Southern California steelhead, green sturgeon, black abalone, white abalone, green sea turtle, olive Ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, blue whale, fin whale, humpback whale, southern resident killer whale, North Pacific right whale, sei whale, sperm whale, and Guadalupe fur seal listed by NOAA Fisheries under the Marine Mammal Protection Act and/or the Endangered Species Act appear to be injured or killed as a result of discharges of dredged or fill material into waters of the United States or structures or work in navigable waters of the United States authorized by this General Permit shall be reported to NOAA Fisheries, Office of Protected Resources at (301) 713-1401 and the Regulatory Office of the Los Angeles District of the U.S. Army Corps of Engineers at (760) 602-4832. The finder should leave the animal alone, make note of any circumstances likely causing the death or injury, note the location and number of individuals involved and, if possible, take photographs. Adult animals should not be disturbed unless circumstances arise where they are obviously injured or killed by discharge exposure, or some unnatural cause. The finder may be asked to carry out instructions provided by NOAA Fisheries, Office of Protected Resources, to collect specimens or take other measures to ensure that evidence intrinsic to the specimen is preserved.
6. **INTERFERENCE WITH NAVIGATION:** The permitted activity shall not interfere with the right of the public to free navigation on all navigable waters of the United States as defined by 33 C.F.R. Part 329.
7. **DISCHARGES:** No earthwork is authorized by this permit verification.
8. **LIMITATIONS:** No other modifications or work shall occur within the riprap discharge area specified herein.
9. **CLEAN CONSTRUCTION PRACTICES:** The Permittees shall discharge only clean construction materials suitable for use in the oceanic environment. The Permittee shall ensure no debris, soil, silt, sand, sawdust, rubbish, cement or concrete washings thereof, oil or petroleum products, hazardous/toxic/radioactive/munitions from construction or dredging or disposal shall be allowed to enter into or placed where it may be washed by rainfall or runoff into waters of the United States. Upon completion of the project authorized herein, any and all excess material or debris shall be completely removed from the work area and disposed of in an appropriate upland site.
10. **OBSTRUCTIONS:** The Permittees understand and agree that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the Permittees will be required, upon due notice from the Corps of Engineers Regulatory Division, to remove, relocate, or alter the structural work or

obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

11. CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION: The Permittees shall comply with all requirements specified in the *Clean Water Act Section 401 Water Quality Certification and Order for the U.S. Army Corps of Engineers Reauthorization of Regional General Permit 63 for Repair and Protection Activities in Emergency Situations*.
12. POST-IMPLEMENTATION REPORT: As directed in RGP No. 63, the Permittees shall provide a written report to this office (within 45 days of completing the project) after completion of any action conducted under this RGP. PROVIDING THIS REPORT IS MANDATORY. At a minimum the Report shall include the following:
 - A) The name, address, and telephone number of the applicant and the applicant's agent (if appropriate)
 - B) Full description of the emergency activity including:
 - i) Description of the emergency and the potential for loss of life or property
 - ii) Purpose of the activity
 - iii) Final goal of the entire activity
 - iv) Location (e.g., latitude/longitude)
 - v) Size and description of project area (include maps or drawings showing the areal and lineal extent of the project, and pre- and post-construction photographs)
 - vi) Quantities (volume and area) of materials used
 - C) Information on receiving waterbody impacted including:
 - i) Name of waterbody
 - ii) Type of receiving waterbody (i.e., Pacific Ocean)
 - iii) Temporary/permanent adverse impact(s) in acres/cubic yards/linear feet
 - D) Information on federally listed or proposed endangered species or designated or proposed critical habitat (notification must be provided to FWS and/or NMFS as appropriate) including:
 - i) Temporary/permanent adverse impacts
 - ii) Compensatory mitigation
 - iii) Other mitigation steps (to avoid, minimize, compensate)

A general permit does not grant any property rights or exclusive privileges. Also, it does not authorize any injury to the property or rights of others or authorize interference with any existing or proposed Federal project. Furthermore, it does not obviate the need to obtain other Federal, State, or local authorizations required by law.

Thank you for participating in the regulatory program. If you have any questions, contact Timothy Jackson at (760) 602-4843 or via email at Timothy.W.Jackson@usace.army.mil. Please

help me to evaluate and improve the regulatory experience for others by completing the customer survey form at <https://regulatory.ops.usace.army.mil/customer-service-survey/>.

Sincerely,

Kyle J. Dahl
Acting Chief, South Coast Branch
Regulatory Division

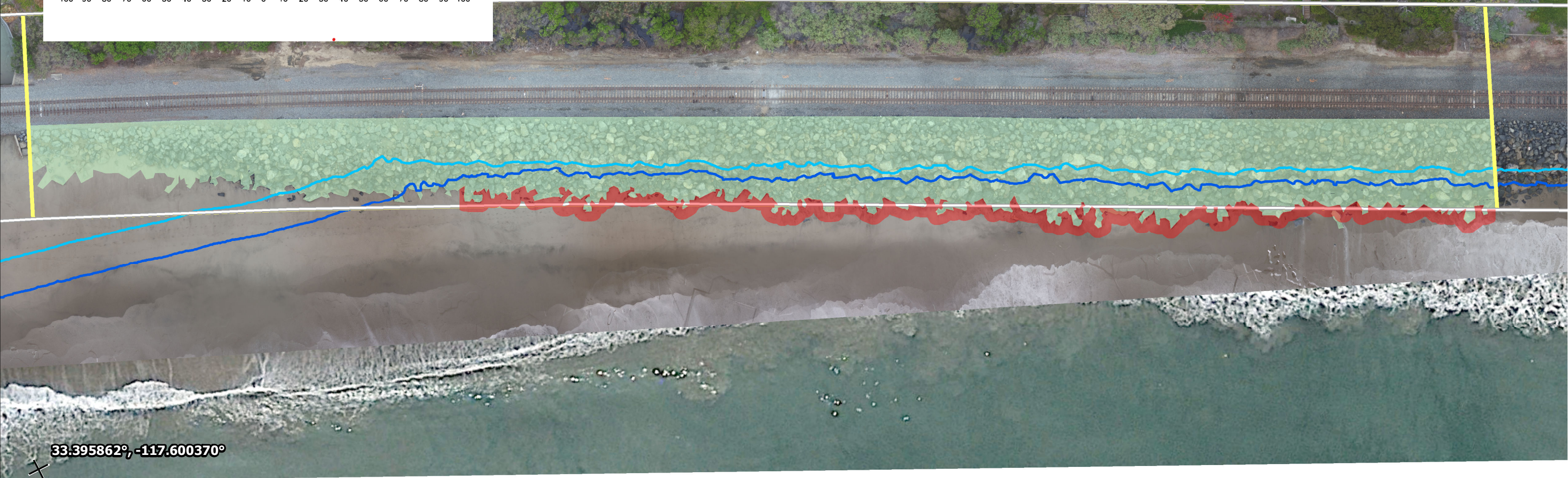
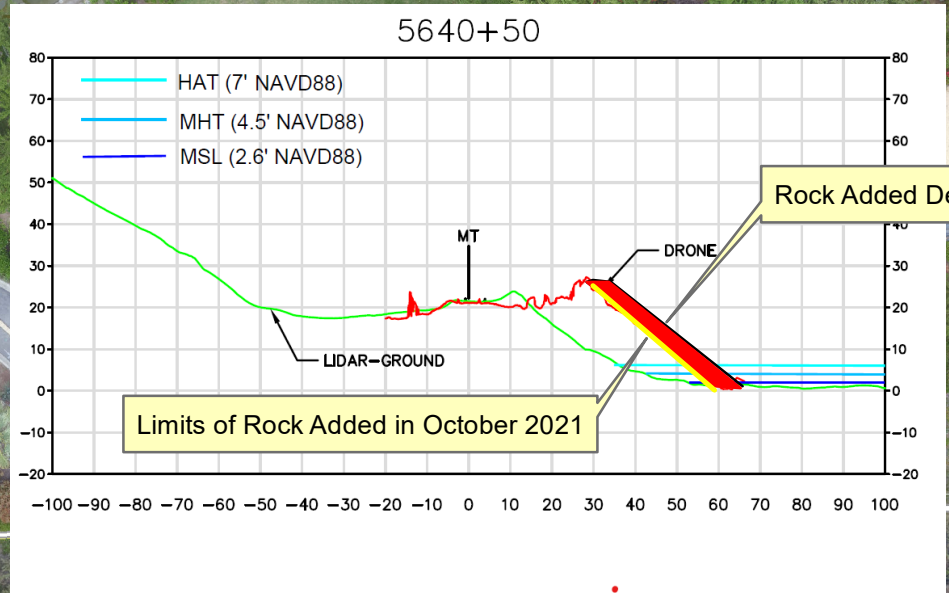
Enclosure(s)

Figure 2. Project Site Plan



- ORIGINAL GRADING DESIGN CUT/FILL LINE
- CRACKING AND/OR SEPARATION
- LIMITS OF OLD LANDSLIDE, BASED ON ORIGINAL TOPOGRAPHY
- APPROXIMATE LIMITS OF RECENT LANDSLIDE
- APPROXIMATE LIMITS OF MID-SLOPE FISSURE
- SCRRA ROW

BORING LOCATION MAP
RAILROAD EMERGENCY STABILIZATION PROJECT
SAN CLEMENTE, CALIFORNIA



- X Decimal Degrees, NAD83
- Railroad ROW
- Emergency Repair Limits
- MHT (4.5' NAVD88)
- HAT (7' NAVD88)
- Revetment Limits Following Rock Placement in October 2021
- Rock Added December 2021

Aerial Date and Source: November 5, 2021, RSE

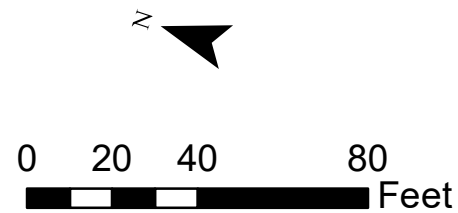
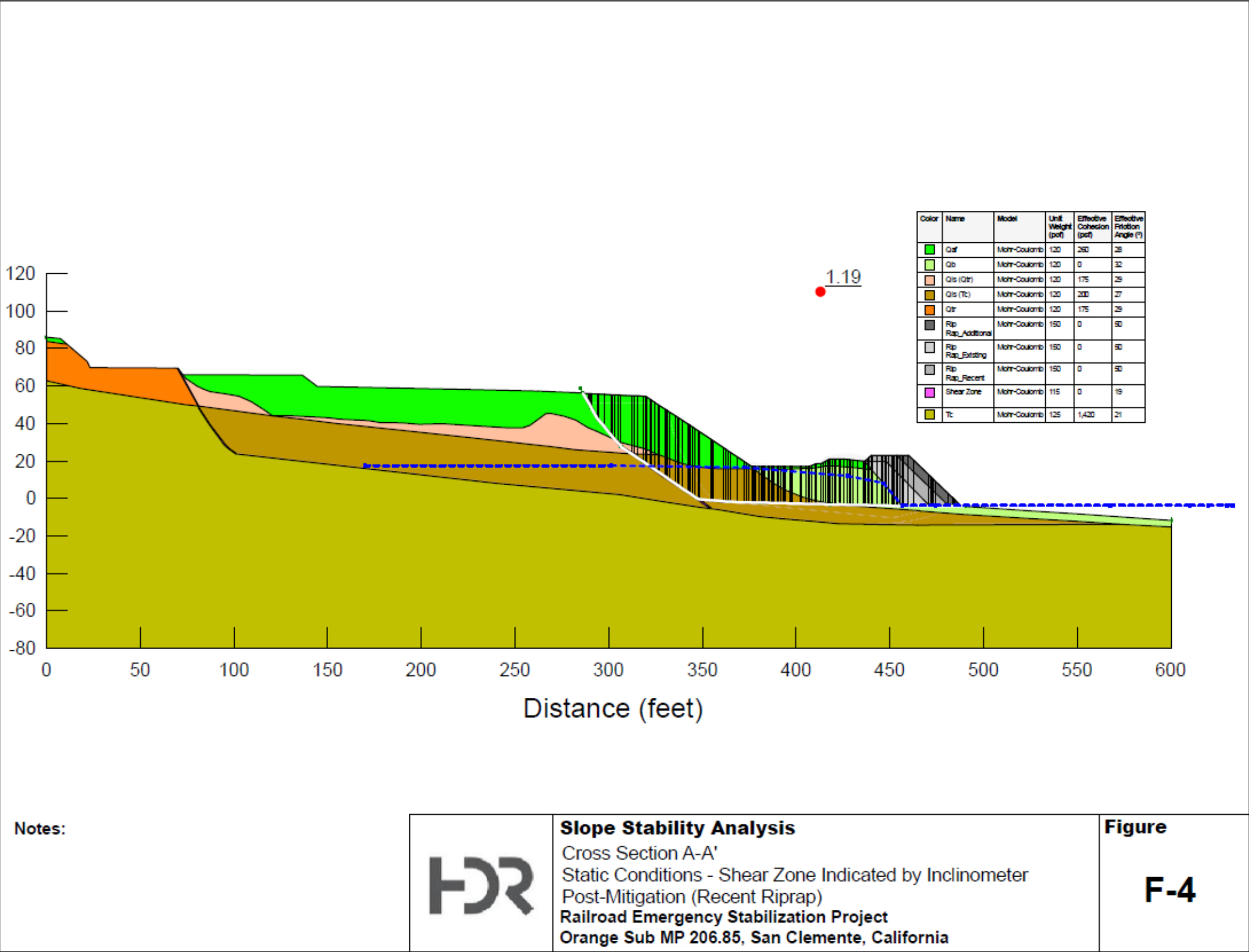


Figure 4. Jurisdictional Aquatic Resources



Figure 3. Cross section of the proposed work



**DEPARTMENT OF THE ARMY REGIONAL GENERAL PERMIT
NUMBER 63 FOR
REPAIR AND PROTECTION ACTIVITIES IN EMERGENCY SITUATIONS**

SPONSOR AND ISSUING OFFICE: U.S. Army Corps of Engineers, Los Angeles District

PERMIT NUMBER: Regional General Permit (RGP) No. 63 (File No. SPL-2018-00038-CLH)

ISSUANCE DATE: NOVEMBER 19, 2018

PERMITTEE: Public agencies, businesses, or private parties (i.e., the public in general)

Note: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: This permit authorizes discharges of dredged or fill material into Waters of the United States, including wetlands, and/or work or structures in Navigable Waters of the United States for necessary repair and protection measures associated with an emergency situation. An "emergency situation" is present where there is a clear, sudden, unexpected, and imminent threat to life or property demanding immediate action to prevent or mitigate loss of, or damage to, life, health, property or essential public services (i.e., a situation that could potentially result in an unacceptable hazard to life or a significant loss of property if corrective action requiring a permit is not undertaken immediately).

Project Location: Within those parts of the State of California subject to regulatory review by this office, including the coastal slopes of San Luis Obispo County, all of Santa Barbara County except for the Carrizo Plain, Ventura, Los Angeles, San Bernardino, Riverside, Orange, San Diego, Imperial and Inyo counties, Mono County to the Conway Summit above Mono Lake, the southern slopes of the Tehachapi Mountains in Kern County, and all of the State of Arizona. In the event of future modifications to District boundaries, this permit would also apply in any areas so revised.

General conditions of this RGP:

1. **Time Period Covered:** This RGP shall expire on November 19, 2023. Authorized activities which have commenced or are under contract to commence prior to this date shall remain authorized provided work within waters of the U.S. is completed within 60 days following expiration of this RGP.

2. **Notification/Communication:**

- a. Timing:** The applicant must notify the District Engineer (DE) as early as possible and shall not begin the activity until notified by the DE that the activity may proceed under this RGP with any site-specific special conditions imposed by the District or Division Engineer. The Corps recognizes there may be situations where imminent threats to life or property occur and the applicant has not received a notice to proceed from the DE. It is not the intention of this office to imply that one allows such threat to life or property result in actual loss. If one proceeds without such notice from the DE, one must ensure that prior notice of such a unilateral decision to proceed is made to this office by telephone, facsimile, e-mail, delivered written notice or other alternative means.
- b. Contents of Notification:** The notification should be in writing and include the following information:
- (1) The name, address, e-mail address and telephone number of the applicant and the designated point of contact and their address, e-mail address and telephone number;
 - (2) The location of the proposed project, including the identification of the waterbody(ies) (this should include a copy of a U.S. Geologic Survey [USGS] topographic map, electronic map images, annotated photographs, Thomas Guide map, or hand-drawn location map with suitable landmarks; the map should have sufficient detail to clearly indicate the location and extent of the project, as well as detailed directions to the site);
 - (3) A brief, but clear, description of the imminent threat to life or property and the proposed project's purpose and need;
 - (4) A description of methods anticipated to be used to rectify the situation ("field engineering" is not an adequate description. It is presumed if one mobilizes material and a particular piece of equipment to a site, then one probably has a fairly well-defined intention for that material and equipment. Photographs, visual renderings of the project, plans, drawings or sketches showing the area to be impacted, cross sections showing details of construction, if appropriate, and a short narrative describing how the work is to be completed should be provided as a minimum); and
 - (5) A brief description of the project area's existing conditions and anticipated environmental impacts resulting from the proposed work (amount of dredge or fill material, acreage of disturbance, removal of significant vegetation, loss of habitat, etc.).
- c. Form of Notification:** The standard Application for Department of the Army Permit (Form ENG 4345), available from the District's website at https://www.spl.usace.army.mil/Portals/17/docs/regulatory/Permit_Process/engform_4345_2017sept.pdf?ver=2017-10-03-165521-953 may be used as the notification and must include all of the information required in General Condition 2.b. Items (1)-(5) above. A letter, facsimile transmission or electronic mail may also be used. In certain situations where there is an imminent threat to life or property and the applicant is unable to make direct contact with this office, a message shall be left on voice mail or an e-mail message shall be sent.

- d. Agency Coordination:** Upon receipt of a notification, the DE will immediately provide (i.e., by facsimile transmission, overnight mail, electronic mail or other expeditious manner) a copy to the offices of the Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS), the Monterey Bay National Marine Sanctuary, the California Department of Fish and Wildlife (CDFW), the California State Water Resources Control Board (SWRCB), the Arizona Department of Environmental Quality (ADEQ), the Arizona Game and Fish Department, the Navajo Nation, the Hopi Tribe, the Hualapai Tribe, the White Mountain Apache Tribe; the Big Pine Paiute Tribe of Owens Valley, the Bishop Paiute Tribe, and the Twenty-Nine Palms Band of Mission Indians (collectively, “Tribes”), the California Regional Water Quality Control Boards (RWQCB), the California Coastal Commission (CCC), and the State and Tribal Historic Preservation Offices of California or Arizona (SHPO/THPO), as appropriate. These agencies will be requested to provide a response to the Corps Regulatory Branch Project Manager as expeditiously as possible by telephone, facsimile transmission (fax) or e-mail, indicating whether they intend to provide substantive, site-specific comments regarding the proposed project. If notified that comments will be provided by an agency or tribal representative, the DE will allow them to provide their comments in a short timeframe determined by the DE on a case-by-case basis to not likely result in loss of life or property before making a decision on the proposed project.

The DE will fully consider any comments received within the specified timeframe concerning the proposed activity’s compliance with the conditions of the agency’s authority, the need to impose terms and conditions to avoid and minimize adverse effects on aquatic resources, and the need for mitigation to reduce the project’s adverse environmental effects to a minimal level. The DE will indicate the results of that consideration in the administrative record associated with the notification and will provide an informal response to the commenting agency by electronic mail, facsimile transmission or other means.

- e. Mitigation:** Discharges of dredged or fill material into Waters of the United States must be avoided or minimized to the maximum extent practicable at the project site. Compensation for unavoidable discharge of fill materials may require appropriate mitigation measures. Factors that the DE will consider when determining the suitability of appropriate and practicable mitigation will include, but are not limited to:
- (1) The approximate functions and values of the aquatic resource being impacted, such as habitat value, aquifer recharge, sediment conveyance or retention, flood storage, etc;
 - (2) The permanence of the project's impacts on the resource; and
 - (3) The potential long-term effects of the action on remaining functions and values of the impacted aquatic resource.

To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing wetland or upland

buffer zones to protect aquatic resource values; replacing the loss of aquatic resource values by creating, restoring, or enhancing similar functions and values; or using bioremediation techniques in conjunction with other methods to offset project impacts. To the extent appropriate, applicants should consider mitigation banking and other forms of mitigation, including contributions to wetland trust funds or in-lieu fees to organizations such as State, county or other governmental or non-governmental natural resource management organizations, where such fees contribute to the restoration, creation, replacement, enhancement, or preservation of aquatic resources.

- f. District Engineer's Decision:** In reviewing the notification for the proposed activity, the DE will determine whether the activity would likely result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public's interest. The applicant may, as an option, submit a proposed mitigation plan with the notification to expedite the process and the DE will consider any mitigation (See General Condition 2.e. above.) the applicant has included in the proposal in determining whether the net adverse environmental effects for the proposed work are minimal. If the DE determines the activity complies with the terms and conditions of this RGP and the adverse effects are minimal, this office will notify the applicant and include any situation-specific conditions deemed necessary.

If the applicant elects to submit a mitigation plan as part of the proposed project, the DE will expeditiously review the proposed plan also. However, the DE may approve the mitigation proposal after the work is approved and project work has commenced.

If the DE determines the adverse effects of the proposed work are more than minimal, the DE will notify the applicant either:

- (1) That the project does not qualify for authorization under this RGP and instruct the applicant on the procedures to seek authorization under an individual permit or other general permit, or
- (2) That the project is authorized under this RGP subject to the applicant submitting a mitigation proposal that would reduce the adverse effects to the minimal level.

3. **Authorized Work:** Any work authorized by this RGP must be the minimum necessary to alleviate the immediate emergency, unless complete reconstruction only results in very minor additional impact to aquatic resources and logistical concerns indicate such reconstruction is as expedient considering the condition of the project site and is limited to in-kind replacement or refurbishment. Moderate upgrading would be considered if the applicant wishes to use bioremediation or other environmentally sensitive solutions. The RGP may NOT be used to upgrade an existing structure to current standards when that activity would result in additional adverse effects on aquatic resources, except in very limited circumstances. Such upgrade projects shall be considered separate activities for which other forms of authorization will be required.

Work not described in permit application documentation but deemed necessary after a field assessment is not authorized unless coordinated with the Regulatory project manager and acknowledged by appropriate means (i.e., e-mail or facsimile transmission,

memo to the record, etc.). These coordinated permit modifications must also be described in sufficient detail in the post-project report (see RGP 63 General Condition 26).

4. **Start Work Date:** Any projects authorized under this RGP must be initiated within fourteen (14) days of receiving authorization to proceed. If the project start time can be delayed for more than two weeks, the imminent threat of impending loss may have diminished in magnitude, as well as immediacy, and generally would not meet the definition of an “emergency.” However, there may be limited circumstances where, after notice to and input by the agencies, logistical considerations necessitate an extension beyond 14 days. Further, this RGP cannot be used to authorize long-planned-for projects, nor shall it be used for projects that are likely to have been known to the applicant but for which an application was not submitted in a timely manner. That is, the Corps and other agencies are not obligated to authorize work for a self-described emergency situation unless we agree that the situation qualifies as an emergency as defined on page 1.
5. **Access to Site:** You must allow representatives from this office and other agencies to inspect the authorized activity at any time deemed necessary to ensure the project is being or has been accomplished in accordance with the terms and conditions of this RGP.
6. **Tribal Rights:** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.
7. **Water Quality Certification:** Within Los Angeles District, water quality certifications pursuant to Section 401 of the Clean Water Act are administered by the California State Water Resources Control Board (SWRCB) and the Arizona Department of Environmental Quality (ADEQ) for non-tribal land, the U.S. Environmental Protection Agency for tribal lands of Tribes not treated as States, and seven Native American Tribes that are treated as States for Section 401 water quality certification. Section 401 water quality certification from the USEPA is pending as of the date of this permit. Permittees working on tribal land in Los Angeles District must receive individual Section 401 water quality certification from the EPA or one of the seven Tribes identified on page 3 as appropriate. Conditions of the pending water quality certification from the EPA will be incorporated when issued and the permit modified appropriately.

ARIZONA

The ADEQ issued its certification (401 cert reading file SWGP18:0126) on July 26, 2018. No additional conditions were added.

CALIFORNIA

The SWRCB issued its conditional certification (Water Quality Order No. 2018-0029) on November 8, 2018. As with previous reissuances of the RGP, conditions within issued Section 401 certifications are included within the body of the RGP to facilitate dissemination of information to permittees regarding water quality certifications for work authorized under

RGP 63. The SWRCB's water quality conditions are adopted within this permit as RGP 63 General Conditions.

For California Permittees on Non-tribal Land: The State Water Resources Control Board (SWRCB) issued a conditional Section 401 water quality certification for RGP 63 dated November 08, 2018 for all waters of the United States on non-tribal lands Los Angeles District in the State of California, with the following exception:

The State's certification does not apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent Certification application was filed pursuant to title 23 of the California Code of Regulations subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

The SWRCB's certification for Regional General Permit No. 63 for Emergency Situations, No. 2018-0029, is contingent on all of the conditions listed below being met, and any discharge from an authorized project being in compliance with applicable provisions of Clean Water Act sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards). Discharges covered under this certification are also regulated pursuant to State Water Board Water Quality Order No. 2003-0017-DWQ which authorizes the State's certification to serve as Waste Discharge Requirements pursuant to the Porter-Cologne Water Quality Control Act. (Wat. Code, § 13000 et seq.)

Except as modified by any of the certification conditions below, all certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the conditions of the certification and the attachments to the certification, and (b) compliance with all applicable requirements of Statewide Water Quality Control Plans and Policies and the Regional Water Boards' Water Quality Control Plans and Policies.

Regional Water Quality Control Plan Information

Individual projects authorized under this Order may be located within the jurisdiction of Central Valley, Colorado River Basin, Lahontan, Los Angeles, San Diego and Santa Ana Regional Water Quality Control Boards (collectively Regional Water Boards). Receiving waters and groundwater potentially impacted by individual projects authorized under this Order are protected in accordance with the applicable water quality control plans (Basin Plan) for the regions and other plans and policies which may be accessed online at: http://www.waterboards.ca.gov/plans_policies/. The Basin Plans include water quality standards, which consist of existing and potential beneficial uses of waters of the state, water quality objectives to protect those uses, and the state and federal antidegradation policies.

Dischargers must identify the receiving waters, as listed in the applicable Basin Plan, that would be impacted by a proposed project. This information must be included in the Notice of Intent (NOI; Attachment D).

A. Standard Conditions

- 1. This Certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to section 13330 of the California Water Code and section 3867 of title 23 of the California Code of Regulations.*
- 2. This Certification action is not intended and must not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent Certification application was filed pursuant to title 23 of the California Code of Regulations subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.*
- 3. This Certification is conditioned upon full payment of any fee required under California Code of Regulations, chapter 28, title 23, and owed by the Applicant.*
- 4. In the event of any violation or threatened violation of the conditions of this order, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under state and federal law. For purposes of Clean Water Act, section 401 (d), the applicability of any state law authorizing remedies, penalties, processes, or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this order.*

B. General Conditions

- 1. This Certification is limited to emergency actions that meet the California Environmental Quality Act (CEQA) (Public Resources Code, § 21000 et seq.) definition of an “emergency,” which is defined as follows:*

A sudden, unexpected occurrence, involving a clear and imminent danger, demanding immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services. Emergency includes such occurrences as fire, flood, earthquake, or other soil or geologic movement, as well as such occurrences as riot, accident, or sabotage. (Pub. Resources Code, § 21060.3.)

Emergency actions must meet the above definition of “emergency” and demonstrate an imminent threat to qualify for this Certification. For actions that do not qualify for enrollment under this Certification, the discharger (i.e. the person or entity proposing to conduct actions which may result in a discharge to a water of the state) must contact either the State Water Board or the applicable Regional Water Board to apply for an individual water quality certification.

2. *This Certification is limited to emergency actions that satisfy one or more of the following exemption criteria as defined by the CEQA Guidelines (Cal. Code Regs., tit. 14, § 15269.):*
 - a. *Projects to maintain, repair, restore, demolish, or replace property or facilities damaged or destroyed as a result of a disaster in a disaster stricken area in which a state of emergency has been proclaimed by the Governor pursuant to the California Emergency Services Act, commencing with section 8550 of the Government Code.*
 - b. *Emergency repairs to publicly or privately owned service facilities necessary to maintain service essential to the public health, safety, or welfare.*
 - c. *Specific actions necessary to prevent or mitigate an emergency. This does not include long-term projects undertaken for the purpose of preventing or mitigating a situation that has a low probability of occurrence in the short-term.*
 - d. *Projects undertaken, carried out, or approved by a public agency to maintain, repair, or restore an existing highway damaged by fire, flood, storm, earthquake, land subsidence, gradual earth movement, or landslide, provided that the project is within the existing right of way of that highway and is initiated within one year of the damage occurring. This does not apply to highways designated as official State scenic highways, nor any project undertaken, carried out, or approved by a public agency to expand or widen a highway damaged by fire, flood, storm, earthquake, land subsidence, gradual earth movement, or landslide.*
 - e. *Seismic work on highways and bridges pursuant to section 180.2 of the Streets and Highways Code, section 180 et seq.*
3. *This Certification is limited only to sudden, unexpected emergency situations defined in General Conditions 1 and 2 above that: (1) have occurred, or (2) have a high probability of occurring in the short term as a result of recently discovered factors or events not related to known or expected conditions. Additionally, the sudden, unexpected emergency situation must have the potential to result in an unacceptable hazard to life or a significant loss of property if corrective action is not undertaken within a time period less than the normal time needed to process an application under standard procedures.*
4. *Emergency repairs and reconstruction must begin within fourteen (14) calendar days of receiving authorization unless an extension is granted by the Corps and agreed to, in writing, by the appropriate Regional Water Board.*
5. *Authorized work in waters of the state shall be completed within 180 days of the enrollment date. If it is anticipated that work will not be completed prior to the expiration of enrollment, the Applicant shall request an extension at least thirty (30) days prior to the expiration date. The request shall include justification for the extension.*

6. *All repairs and construction shall be kept to the minimum necessary to alleviate the immediate emergency and limited to in-kind replacement or refurbishment of on-site features. Minor upgrading may be considered if the Enrollee uses bioremediation or other environmentally sensitive solutions. Permanent restoration work other than that performed as an associated part of the emergency operations, including any minor upgrades, shall not be performed without prior approval and authorization by the Water Boards.*
7. Failure to comply with any condition of this Certification shall constitute a violation of the Porter-Cologne Water Quality Control Act and the Clean Water Act. The Enrollee and/or discharger may then be subject to administrative and/or civil liability pursuant to Water Code section 13385.
8. *Permitted actions must not cause a violation of any applicable water quality standards, including impairment of designated beneficial uses for receiving waters as adopted in the Basin Plans by any applicable Regional Water Board or any applicable State Water Board (collectively Water Boards) water quality control plan or policy. The source of any such discharge must be eliminated as soon as practicable.*
9. *In response to a suspected violation of any condition of this Order, the State Water Board may require the holder of this Order to furnish, under penalty of perjury, any technical or monitoring reports the Water Boards deem appropriate, provide that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. The additional monitoring requirements ensure that permitted discharges and activities comport with any applicable effluent limitations, water quality standards, and/or other appropriate requirement of state law.*
10. *The Applicant must, at all times, fully comply with engineering plans, specifications, and technical reports submitted to support this Certification; and all subsequent submittals required as part of this Order. The conditions within this Certification and Attachments supersede conflicting provisions within Enrollee submittals.*
11. *This Certification and all of its conditions contained herein continue to have full force and effect regardless of the expiration or revocation of any federal license or permit issued for the Project. For purposes of Clean Water Act, section 401(d), this condition constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements of state law.*

C. Administrative Conditions

1. *Signatory requirements for all document submittals required by this Certification are presented in Attachment B of the Certification.*

2. *This Certification does not authorize any act which results in the taking of a threatened, endangered or candidate species or any act, which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code, §§ 2050-2097) or the federal Endangered Species Act (16 U.S.C. §§ 1531-1544). If a “take” will result from any act authorized under this Order held by the Corps, the Corps and/or the Enrollee must obtain authorization for the take prior to any construction or operation of the portion of the Project that may result in a take. The Corps is responsible for meeting all requirements of the applicable endangered species act for the Project authorized under this Order.*
3. *Water Boards staff, or an authorized representative, upon presentation of credentials and other documents as may be required by law, shall be granted permission to enter the dischargers’ site(s) at reasonable times, to ensure compliance with the terms and conditions of this Certification and/or to determine the impacts the discharge may have on waters of the state.*
4. *A copy of this Certification shall be provided to any consultants, contractors, and subcontractors working on the Project. Copies of this Certification shall remain at the Project site for the duration of this Certification. The Applicant shall be responsible for work conducted by its consultants, contractors, and any subcontractors.*
5. *A copy of this Certification shall be available at the Project site(s) during construction for review by site personnel and agencies. All personnel performing work on the Project shall be familiar with the content of this Certification and its posted location at the Project site.*

D. Construction

1. *At all times, appropriate types and sufficient quantities of materials shall be maintained on site to contain and clean up any spill or inadvertent release of materials that may cause a condition of pollution or nuisance if the materials reach waters of the state. Construction personnel must know how to use appropriate containment and clean up materials.*
2. *Fueling, lubrication, maintenance, storage, and staging of vehicles and equipment must not result in a discharge to any waters of the state, and shall be located outside of waters of the state in areas where accidental spills will not enter or affect such waters.*
3. *If construction related materials reach surface waters, appropriate spill response procedures must be initiated as soon as the incident is discovered. In addition, the State Water Board staff contact identified in this Order must be notified via email and telephone within twenty-four (24) hours of occurrence.*

4. *Construction materials and debris from all construction work areas shall be removed from the site and disposed of properly following completion of individual projects enrolled under this Order.*
5. *Water diversion activities must not result in the degradation of beneficial uses or exceedances of water quality objectives of any of the receiving waters. Any temporary dam or other constructed obstruction must only be built from materials which will cause little or no siltation (e.g. clean gravel). Normal flows must be restored to the affected water immediately upon completion of work at that location.*
6. *Effective best management practices (BMPs) must be implemented to control erosion and runoff from areas associated with the emergency project, this includes access roads. All areas of temporary impacts and all other areas of temporary disturbance which could result in a discharge or a threatened discharge to waters of the U.S. and/or state must be restored. Restoration must include grading of disturbed areas to pre-project contours and revegetation with native species.*
7. *All repairs and reconstruction shall be kept to the minimum necessary to alleviate the immediate emergency and limited to in-kind replacement or refurbishment of on-site features. Minor upgrading may be considered if the Enrollee uses bioremediation or other environmentally sensitive solutions. Permanent restoration work other than that performed as an associated part of the emergency operations, including any minor upgrades, shall not be performed without prior approval and authorization by the Water Boards.*

E. Mitigation: *Permitted activities shall be the minimum necessary to alleviate the immediate emergency and a sequence of actions must be taken to avoid and then to minimize adverse impacts to aquatic resources. Compensatory mitigation may be required to offset any remaining unavoidable adverse impacts to aquatic resources.*

F. Emergency Notification and Fee Requirements

1. The State Water Board and the applicable Regional Water Board must receive notification by the discharger at least 48 hours prior to initiating emergency actions. This notification must be followed within three (3) business days by submission of all of the information in the Emergency Notification Form (**Attachment D**).
 - a. Notification may be via telephone, e-mail, written notice, or other verifiable means.
 - A staff directory that includes contact information for State and Regional Program Managers is found at: https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/staffdirectory.pdf.
 - A map of Regional Board boundaries is found at: https://www.waterboards.ca.gov/waterboards_map.html

Electronic Submittal:

1. Address e-mail to the “State Program Manager” and the appropriate “Region Program Manager” from the staff directory linked above.
2. Include “Attention – RGP 63 Notice of Intent” in the subject line.

Hardcopy Submittal Addresses:

*ATTN: Program Manager
Wetlands Permitting and Planning
Division of Water Quality
State Water Resources Control Board
1001 “I” St. 15th Floor
Sacramento, CA 95814*

AND

*ATTN: Program Manager
CWA Section 401 WQC Program
Insert mailing address of appropriate Regional Water Board from the staff directory linked above*

2. The Water Boards recognize there may be situations where imminent threats to life or property occur and the discharger has not received a notice to proceed. If immediate, specific actions, as defined in the California Code of Regulations, title 14, section 15269(c), are required by a discharger and prior notice to the State Water Board and the applicable Regional Water Board is not possible, then the discharger must contact the State Water Board and the applicable Regional Water Board within one (1) business day of the emergency action. This notification must be followed within three (3) business days by submission of all of the information in the Emergency Notification Form (***Attachment D***).
3. The Applicant must provide the appropriate fee to the Regional Water Board in accordance with California Code of Regulations, title 23, section 2200 within forty-eight (48) hours of project initiation. Failure to promptly pay the correct fee amount may result in a disqualification for enrollment pursuant to this Certification.
4. Once the appropriate Regional Water Board receives a completed Notice of Intent (NOI) and the correct fee from the Enrollee, the Water Board will transmit a Notice of Applicability (NOA) to the Enrollee verifying enrollment in this Certification.

G. Project Status Notifications

1. The discharger must provide the State Water Board and the applicable Regional Water Board copies of all correspondence and reports that are submitted to the Corps to satisfy

the requirements of RGP 63. In addition, the discharger must fill in and submit the form provided in Attachment E.

2. *A completed Notice of Completion (NOC) must be submitted to the appropriate Regional Water Board and State Water Board within 45 calendar days of completion of any action conducted under RGP 63.*
3. *Failure to submit **Attachment E** within 45 calendar days of completion of any emergency actions conducted under this Certification may result in the imposition of administrative and/or civil liability pursuant to Water Code section 13385.*

H. Project Reporting: *If required by the NOA, the Applicant shall submit an Annual Report each year on the anniversary of the date that the individual project is authorized under this Order. Annual reporting shall continue until a Notice of Project Complete Letter is issued to the Applicant.*

I. Conditional Notification and Reporting: *The following notifications and reports are required as appropriate. Reporting requirements are found in Attachment C of the authorization.*

1. Accidental Discharges of Hazardous Materials: *Following an accidental discharge of a reportable quantity of a hazardous material, sewage, or an unknown material, the following applies (Wat. Code, § 13271):*

- a. *As soon as (A) Enrollee has knowledge of the discharge or noncompliance, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures then:*
 - *first call – 911 (to notify local response agency)*
 - *then call – Office of Emergency Services (OES) State Warning Center at: (800) 852-7550 or (916) 845-8911*
 - *Lastly follow the required OES procedures as set forth in: <http://occupainfo.com/civicax/filebank/blobdload.aspx?BlobID=26396>
http://www.caloes.ca.gov/FireRescueSite/Documents/CalOES-Spill_Booklet_Feb2014_FINAL_BW_Acc.pdf*
 - b. *Following notification to OES, the Enrollee shall notify State Water Board, as soon as practicable (ideally within 24 hours). Notification may be via telephone, e-mail, delivered written notice, or other verifiable means.*
 - c. *Within five (5) working days of notification to the State Water Board, the Enrollee must submit an Accidental Discharge of Hazardous Material Report.*
- 2. Violation of Compliance with Water Quality Standards:** *The Enrollee shall notify the State Water Board of any event causing a violation of compliance with water quality standards. Notification may be via telephone, e-mail, delivered written notice, or other verifiable means.*

- a. *Examples of noncompliance events include: lack of storm water treatment following a rain event, discharges causing a visible plume in a water of the state, and water contact with uncured concrete.*
 - b. *This notification must be followed within three (3) working days by submission of a Violation of Compliance with Water Quality Standards Report.*
- 3. ***Transfer of Property Ownership:*** *This Certification is not transferable in its entirety or in part to any person or organization except after notice to the State Water Board in accordance with the following terms:*
 - a. *The Applicant must notify the Water Board of any change in ownership or interest in ownership of the Project area by submitting a Transfer of Property Ownership Report. The Applicant and purchaser must sign and date the notification and provide such notification to the Water Board at least 10 days prior to the transfer of ownership. The purchaser must also submit a written request to the State Water Board to be named as the applicant in a revised order.*
- 4. ***Transfer of Long-Term BMP Maintenance:*** *If maintenance responsibility for post-construction BMPs is legally transferred, the Enrollee must submit to the appropriate Regional Water Board a copy of such documentation and must provide the transferee with a copy of a long-term BMP maintenance plan that complies with manufacturer or designer specifications. The Enrollee must provide such notification to the Water Board with a Transfer of Long-Term BMP Maintenance Report at least 10 days prior to the transfer of BMP maintenance responsibility.*

J. Water Quality Monitoring

- a. *General: If surface water is present, continuous visual surface water monitoring shall be conducted to detect accidental discharge of construction related pollutants (e.g. oil and grease, turbidity plume, or uncured concrete).*
- b. *Accidental Discharges/Noncompliance: Upon occurrence of an accidental discharge of hazardous materials or a violation of compliance with a water quality standard, State Water Board staff may require water quality monitoring based on the discharge constituents and/or related water quality objectives and beneficial uses.*

END OF SWRCB SECTION 401 WATER QUALITY CERTIFICATION CONDITIONS

8. Coastal Zone Management: For those projects affecting uses or resources of the coastal zone, the Federal Coastal Zone Management Act (CZMA) requires that the Permittee obtain concurrence from the California Coastal Commission that the project is consistent with the State's certified Coastal Management Program. For activities within the coastal zone that require a coastal development permit from the commission, the Permittees should contact the Commission office to request an emergency permit, and no additional federal consistency review is necessary. For activities within the coastal zone that require a coastal

development permit from a local government with a certified local coastal program, the Permittee should contact the appropriate local government. Because a coastal permit issued by a local agency does not satisfy the federal consistency requirements of the CZMA, the Permittee should also contact Larry Simon, Federal Consistency Coordinator for the Commission, at 415-904-5400 to determine the appropriate emergency procedures. For any activity outside the coastal zone, but with the potential to affect coastal uses or resources, or for any activity conducted by a federal agency, the Permittee should contact Larry Simon, Federal Consistency Coordinator for the Commission at 415-904-5400 to determine the appropriate emergency procedures.

Due to the often limited time constraints with emergency actions, the Corps would not require the Permittee to provide proof of review by the Commission, if such an action would result in undue harm to life or property. However, the Corps will require the Permittee to provide evidence of consistency upon completion of the project unless the Corps is already aware that a particular project, class of projects, or projects in a particular area described by the Commission, have received such determinations or waivers. Disposal of flood-delivered sediments into the marine environment is not authorized under RGP 63 due to potential adverse effects to the habitat and water quality. If such activity is proposed, it shall be addressed through other permitting procedures.

9. Endangered Species: No activity is authorized under this RGP which is likely to jeopardize the continued existence of a threatened or endangered species or destroy or adversely modify designated critical habitat as identified under the Federal Endangered Species Act (ESA). Authorization of an activity by the RGP does NOT authorize the "take" of a listed threatened or endangered species, as defined under the Federal ESA. The U.S. Fish and Wildlife Service and/or National Marine Fisheries Service may provide project-specific recommendations to avoid or minimize potential take of listed species or adverse modification of designated critical habitat. The Corps would determine which recommendations would be incorporated into the emergency authorization.

Information on the location of listed or proposed threatened or endangered species and their designated or proposed critical habitat can be obtained directly from the FWS or NMFS or from their websites at:

USFWS – <http://www.fws.gov/endangered>

NMFS – <http://www.nmfs.noaa.gov/pr/species/>

10. Historic Properties: Impacts to historic properties listed, proposed for listing, or potentially eligible for listing in the National Register of Historic Places will be avoided to the maximum extent practicable. If such resources are impacted because of actions authorized under this RGP, the permittee shall provide a full report of the action and the impacts incurred by the resource to this office within 45 days after completion of the action. The Corps, the State and Tribal Historic Preservation Officers, and/or the Advisory Council for Historic Preservation will then jointly make a determination as to appropriate procedures and/or mitigation to be addressed.

If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this RGP, you must immediately notify the Corps Regulatory Division who will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

11. Regional and Case-by-Case Conditions: The activity must comply with any regional conditions added by the Division Engineer (see CFR Part 330.4(e)) and with any case-specific conditions added by the District Engineer.

12. Erosion and Siltation Controls: Every effort must be made to ensure any material dredged or excavated from Waters of the United States is not likely to be washed back into any Waters of the United States. When feasible, erosion and siltation controls, such as siltation or turbidity curtains, sedimentation basins, and/or straw bales or other means designed to minimize turbidity in the watercourse above background levels existing at the time of construction, shall be used and maintained in effective operating condition during construction unless conditions preclude their use, or if conditions are such that the proposed work would not increase turbidity levels above the background level existing at the time of the work. All exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be stabilized at the earliest practicable date to preclude additional damage to the project area through erosion or siltation.

13. Equipment: When feasible, and if personnel would not be put into any additional potential hazard, heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance, such as use of wide-treaded equipment or floatation devices.

14. Suitable Material: No discharge of dredged or fill material may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material discharged must be free from toxic pollutants in toxic amounts. (See Section 307 of the Clean Water Act).

15. Wild and Scenic Rivers: No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while that river is in an official study status, unless the appropriate Federal agency with direct management responsibility for that river has determined in writing that the proposed activity would not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., FWS, National Park Service, USDA Forest Service, Bureau of Land Management). Currently the only designated Wild and Scenic River systems in the Los Angeles District are the main stem of Sespe Creek from its confluence with Rock Creek and Howard Creek downstream to where it leaves Section 26, T5N, R20W; the Sisquoc River from its origin to the Los Padres National Forest boundary in California; and the Verde River from the section line between Sections 26 and 27, T13N, R5E, Gila-Salt River meridian to the confluence of

Red Creek with the Verde River within Section 34, T9 1/2N, R6E.

16. Aquatic Life Movements: No activity may substantially disrupt the movement of those species of aquatic life indigenous to the water body, including those species that normally migrate through the area. Culverts placed in streams must be installed to maintain low flow conditions.

17. Shellfish Production: No discharge of dredged or fill material may occur in areas of concentrated natural or commercial shellfish production, unless the discharge is directly related to a shellfish harvesting activity authorized by the Corps' Nationwide Permit (NWP) 4.

18. Spawning Areas: Discharges in spawning areas during spawning seasons must be avoided to the maximum extent practicable.

19. Waterfowl Breeding Areas: Discharges into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

20. Navigation: No activity may cause more than a minimal adverse effect on the course or capacity of a navigable water. The permittee shall agree that, if future operations by the United States require the removal, relocation, or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expenses to the United States. No claim shall be made against the United States on account of any such removal or alteration.

21. Water Supply Intakes: No discharge of dredged or fill material may occur in the proximity of a public water supply intake except where the discharge is for repair of the public water supply intake structures or adjacent bank stabilization.

22. Obstruction of High Flows: To the maximum extent practicable, discharges must not permanently restrict or impede the passage of normal or expected high flows or cause the relocation of the water except within the existing river plain unless the primary purpose of the fill is to impound waters.

23. Adverse Effects from Impoundments: If the discharge creates an impoundment of water, adverse effects on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow shall be minimized to the maximum extent practicable.

24. Proper Maintenance: Any structure or fill authorized by this RGP shall be maintained, including maintenance to ensure public safety, unless it is later determined that the structure is further contributing to other adverse conditions to private or public property. In such

situations, corrective measures will be taken to rectify these adverse conditions, including removal and/or redesign of the original emergency corrective action, or appropriate mitigation as determined through coordination with you and the appropriate Federal and State agencies. Temporary levees constructed to control flows shall not be maintained beyond the current storm season (i.e., maintenance of temporary levees is not authorized after the storm season in which the need arose).

25. Removal of Temporary Fills: Temporary fills shall be removed in their entirety and the affected areas returned to pre-existing elevations and revegetated with appropriate native riparian or wetland vegetation common to the area. If an area impacted by such a temporary fill is considered likely to naturally re-establish native riparian or wetland vegetation to a level similar to pre-project or pre-event conditions within two years, you will not be required to do so.

26. Reports: You shall provide a concise written report to this office as soon as practicable (within 45 days of completing the project) after completion of any action conducted under this RGP. **PROVIDING THIS REPORT IS MANDATORY.** This office has additional responsibilities pursuant to consultation with the FWS and NMFS under Section 7 of the ESA. Further, these reports enable us to track the use of this RGP to verify that the minimal effects determination is being met as required by Section 404(e) of the CWA. Failure to provide timely reports following responses to emergencies is non-compliance with the General Conditions of this RGP and would be considered a violation (33 CFR Part 326.4(d)).

At a minimum the Report shall include the following:

I. The name, address, e-mail address and telephone number of:

- a. the applicant, and
- b. the applicant's agent (if appropriate)

II. Full description of the activity including:

- a. description of the emergency and the potential for loss of life or property;
- b. purpose of the activity;
- c. final goal of the entire activity;
- d. location (e.g., latitude/longitude or UTM coordinates; section/township/range on appropriate USGS topo map; electronic map images; Thomas Guide map; or other source to accurately portray project location);
- e. size and description of project area (include maps or drawings showing the areal and lineal extent of the project, and pre- and post-construction photographs);
- f. quantities of materials used;
- g. information on receiving waterbody impacted including:
 - (1) name of waterbody
 - (2) type of receiving waterbody (e.g., river/streambed, lake/reservoir, ocean/estuary/bay, riparian area, wetland type, etc.)
 - (3) temporary/permanent adverse impact(s) in acres/cubic yards/linear feet

- (4) compensatory mitigation in acres/cubic yards/linear feet
- (5) other mitigation steps (to avoid, minimize, compensate); and
- h. information on an activity that required permission from the Corps pursuant to 33 U.S.C. 408 because the project altered, temporarily or permanently occupied use of a U.S. Army Corps of Engineers federally authorized civil works project.
- i. information on federally listed or proposed endangered species or designated or proposed critical habitat (notification must be provided to FWS and/or NMFS as appropriate) including:
 - (1) temporary/permanent adverse impacts
 - (2) compensatory mitigation
 - (3) other mitigation steps (to avoid, minimize, compensate).
 - (4) Federal agencies should follow their own procedures for complying with requirements with the Endangered Species Act (ESA) and the National Historic Preservation Act (NHPA). The Federal permittee must provide to the district engineer (DE) the appropriate documentation to demonstrate compliance with these requirements. The DE will verify that the appropriate documentation was submitted. If any documentation is not submitted, and additional ESA and/or NHPA consultation may be necessary for the activity the respective federal agency would be responsible for fulfilling its obligation.”

If there are a substantial number of projects and this requirement would consume large quantities of staff resources, the permittee may, as an option, submit a comprehensive report providing all of the information required in the notification condition (Item 2.b.) above. If a project was conducted in an area known to harbor Federally listed or proposed endangered species or designated or proposed critical habitat, a list of measures taken to minimize harm to the species and/or habitat and provide a copy of the report to the FWS and/or the NMFS, as appropriate, must also be included. If mitigation was determined to be appropriate for a specific project or group of projects, a mitigation proposal must be submitted to this office for review and approval. We will forward the report to the appropriate agencies for their review and comment.

Further Information:

1. Congressional Authorities. You have been authorized to undertake the activity described above pursuant to:
 - (X) Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403).
 - (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
 - () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).
2. Limits of this authorization.
 - a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
 - b. This permit does not grant any property rights or exclusive privileges.
 - c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

- a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
- b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
- c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
- d. Design or construction deficiencies associated with the permitted work.
- e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

- a. You fail to comply with the terms and conditions of this permit.
- b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
- c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measure ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give you favorable consideration to a request for an extension of this time limit.

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army has signed below.



David J. Castanon
Chief, Regulatory Division

Digitally signed by
CASTANON.DAVID.J.1231966150
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI,
ou=USA, cn=CASTANON.DAVID.J.1231966150
Date: 2018.11.19 14:00:04 -08'00'

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Attachment H. Coastal Engineering Memorandum

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Memorandum

Date: Tuesday, November 16, 2021

Project: Railroad Emergency Stabilization Project Orange Sub MP 206.85

To: Jenny Vick (HDR) and Ingrid Eich (HDR)

From: Ronny McPherson, PE (HDR)
Kacy Grundhauser (HDR)

Subject: Coastal Engineering Support for Emergency Stabilization

Introduction

This memorandum is intended to address various components of the Coastal Development Permit related to the coastal design of the Emergency Railroad Stabilization Project. On September 10, 2021, Southern California Regional Rail Authority ("Metrolink" or "SCRRA") notified HDR Engineering, Inc. of a concerning notification of an active landslide movement that could potentially impact their track or derail a train. Subsequently, HDR worked with Metrolink to implement temporary mitigation measures that included placement of riprap on the west side of the railroad track in the attempt to stop track movement. The riprap revetment was designed and placed in an emergency response situation and as such was not designed to specifically address coastal conditions (i.e., waves, tides, sea-level rise [SLR]). A long-term solution will be implemented in the future to provide adequate coastal protection and meet stakeholder and agency requirements.

Since the structure is already constructed and did not go through a typical design process due to the emergency nature of the project, this document attempts to provide comparable design criteria that the constructed revetment would meet.

The following list provides the coastal specific aspects needed for the permit and associated discussion within this memorandum.

- Cross-section of proposed revetment sections (approximately one every 200 to 250 feet) showing proposed revetment crest elevation, toe elevation, slope, and seaward extent
 - A typical section of the structure is provided in Section 2.1 providing approximate dimensions
 - Actual cross-sections of the structure are provided in Section 2.2.
- Engineering details of the revetment end points
 - Discussion on revetment terminals is provided in Section 2.3.
- Design wave and water level conditions if applicable
 - Multiple combinations of statistical wave and water level conditions were evaluated and compared to the existing armor rock stone stability. Design criteria is discussed in Section 3.

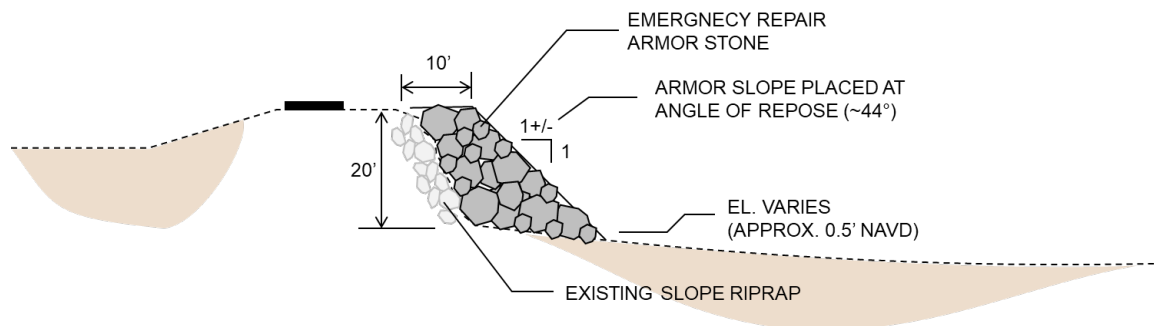
- Proposed quality control for construction and assurance of 3-point contact for rock stability
 - Discussion on placement of armor stone and how that is factored into determination of the stability of the emergency repair armor stone is provided in Section 4.1.
- Range of acceptable rip-rap rock size, and basis for acceptable rock size, such as wave and water level conditions
 - Gradation of the emergency repair armor stone is discussed in Section 2.4. The relation to the various statistical design criteria scenarios is provided in Section 4.2 and 4.3.
- Discussion of riprap mobility, presence of dislodged rock in the surf zone, frequency, and magnitude of overtopping, etc.
 - Results and discussion on wave overtopping is provided in Section 3.4. Riprap mobility and presence of dislodging is assumed to be covered by others periodically observing the site.

Emergency Response Revetment Structure

Revetment Typical Section

A schematic typical section of the emergency repair revetment is provided in Figure 1. The structure is an additional layer of armor stone ranging in size from 3 to 5 feet in diameter placed adjacent to the existing railway ballast/riprap. The additional structure crest generally extends 10 feet from the existing riprap. The seaward slope is the angle of repose of the armor stone. Based on survey cross-sections, the seaward slope was found to be approximately 1H to 1V (~44°).

Figure 1. Emergency Repair Revetment Typical Section



Cross-Sections

Six cross-sections of the repair were obtained from LiDAR (light detection and ranging) data collected on October 15, 2021 by RSE (Figure 2). The location of the six cross-sections are shown in plan-view in Figure 3. The northern three cross-sections are provided in Figure 4 and the southern three cross-sections are shown in Figure 5.

Figure 2. Visualization of LiDAR data for emergency repair revetment

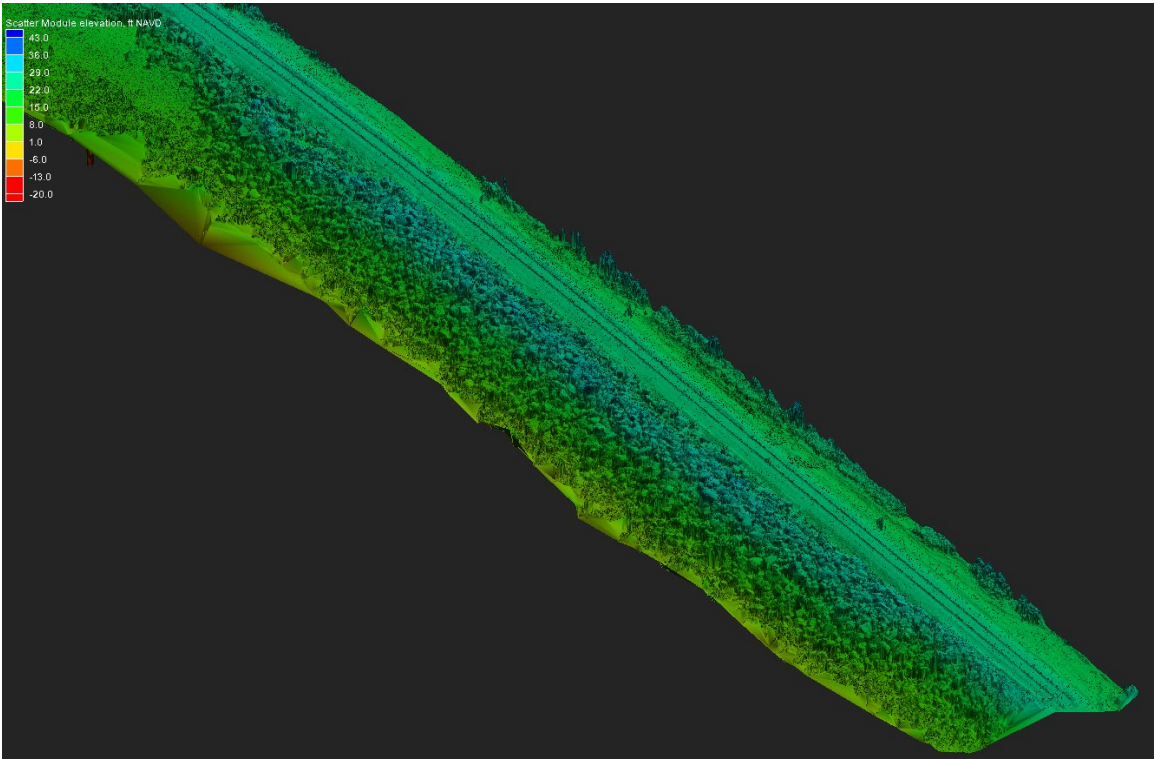
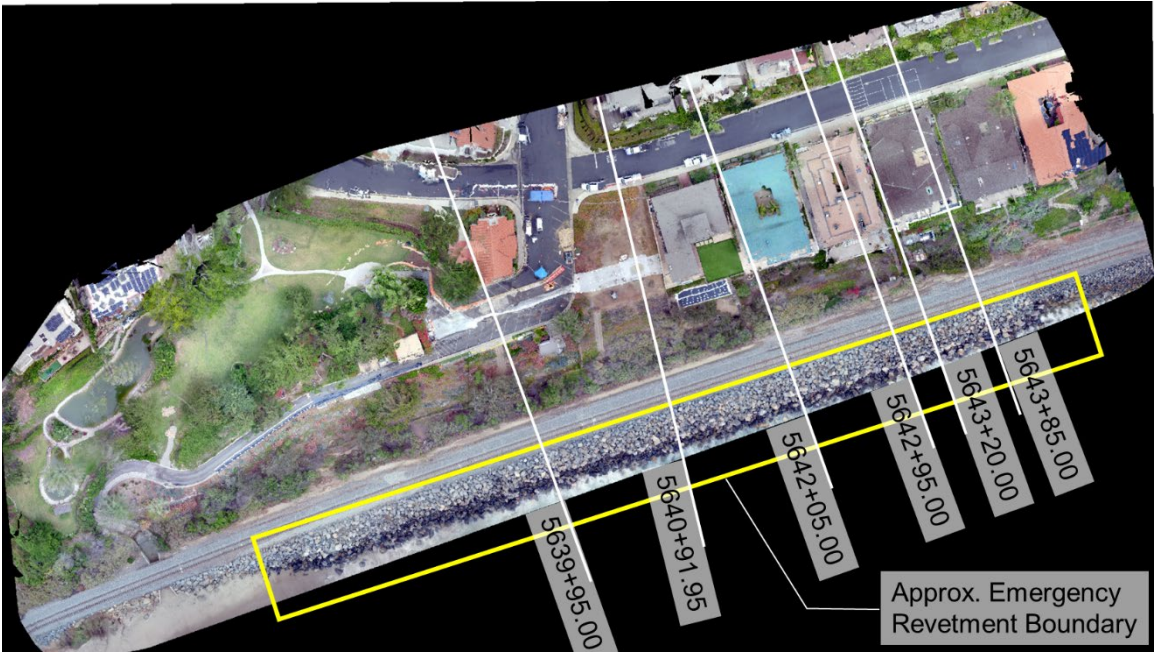


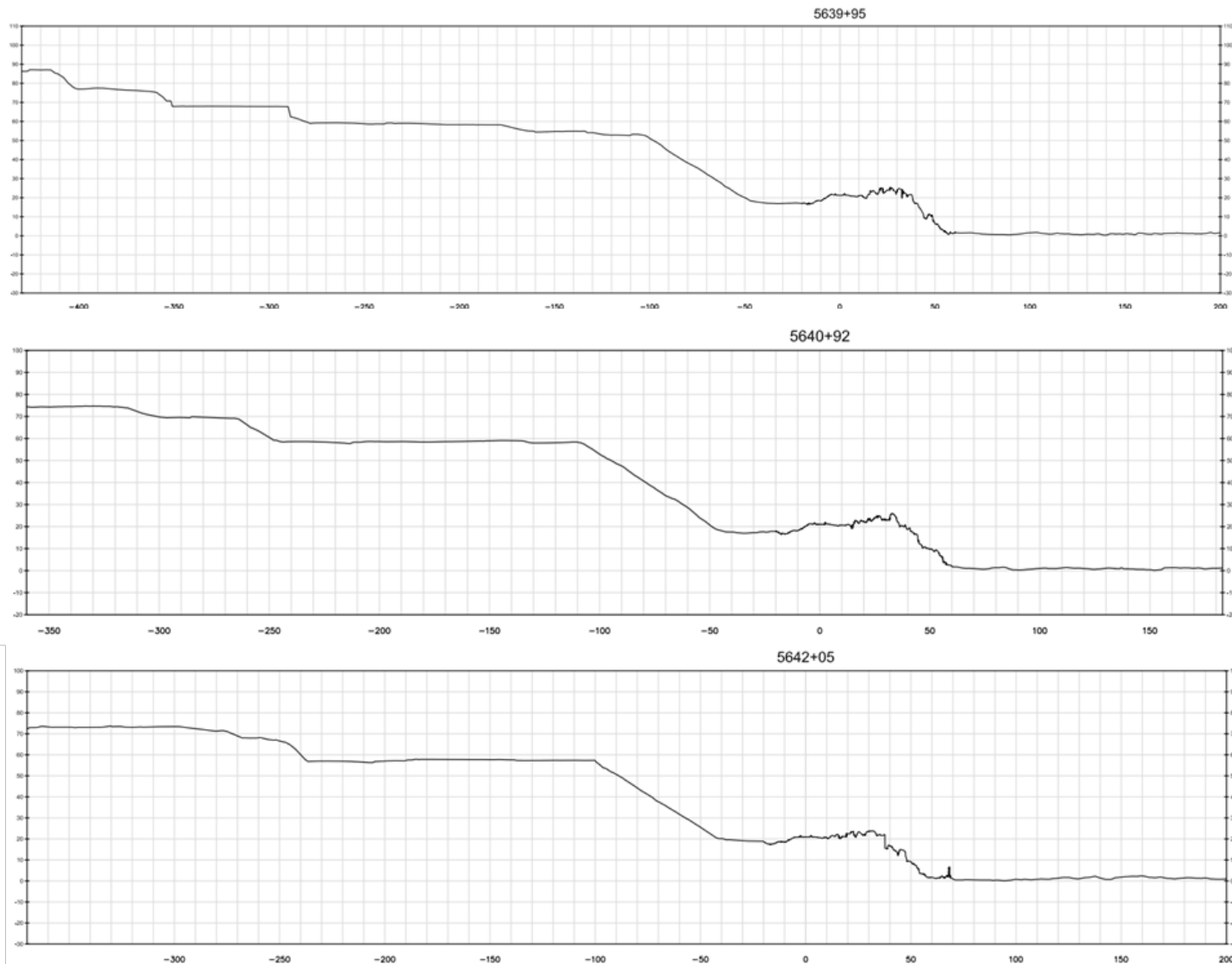
Figure 3. Cross-section locations (plan view)





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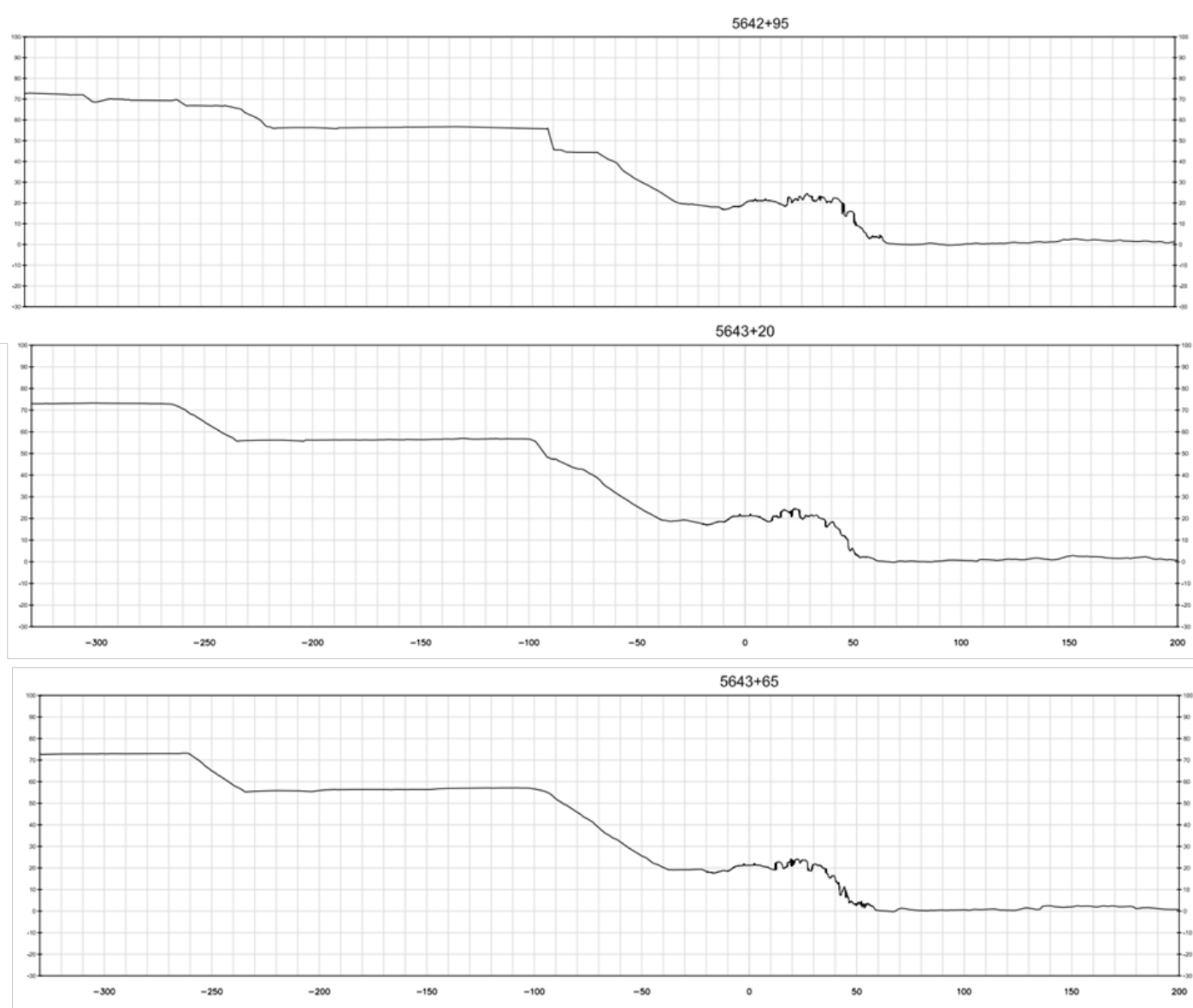
Figure 4. Norther cross-sections (Stations 5639+95, 5640+92, and 5642+05)





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Figure 5. Southern cross-sections (Stations 5642+95, 5643+20, and 5643+65)



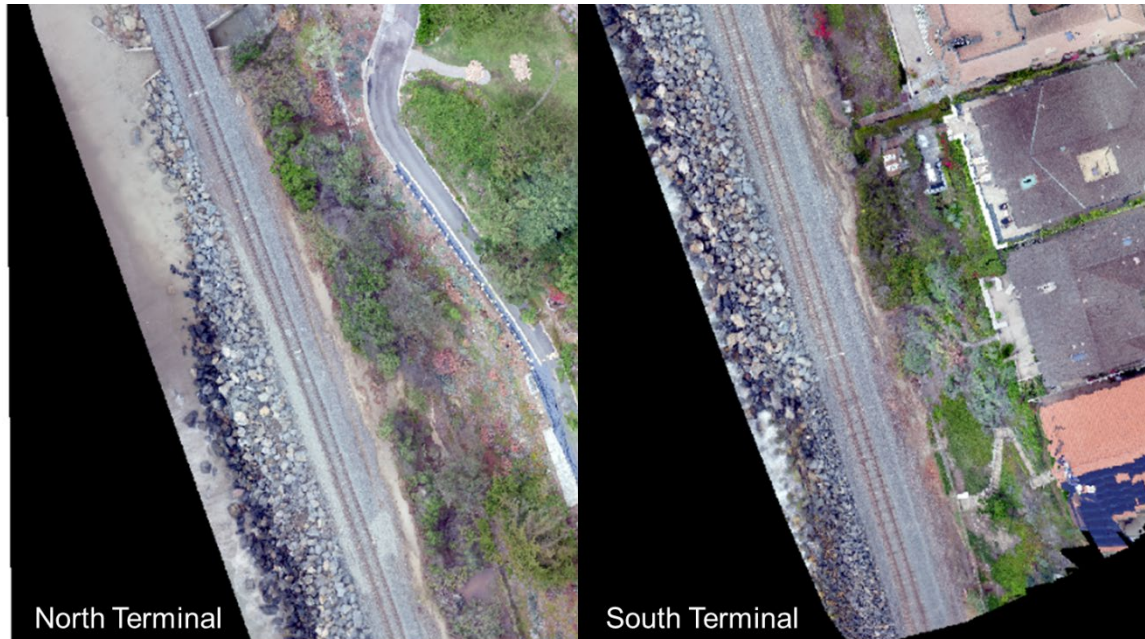


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Revetment Terminals

Aerials of the structure terminal of the emergency repair revetment are provided in Figure 6. Generally, the terminals smoothly taper into the existing railway ballast/riprap. The transition of the terminal spans approximately 60 to 70 feet.

Figure 6. Aerial imagery showing emergency repair revetment terminals



Armor Stone Gradation

Figure 7 and Figure 8, respectively.



Figure 7. Percent lighter by weight (stone gradation) of all 6 sample areas.

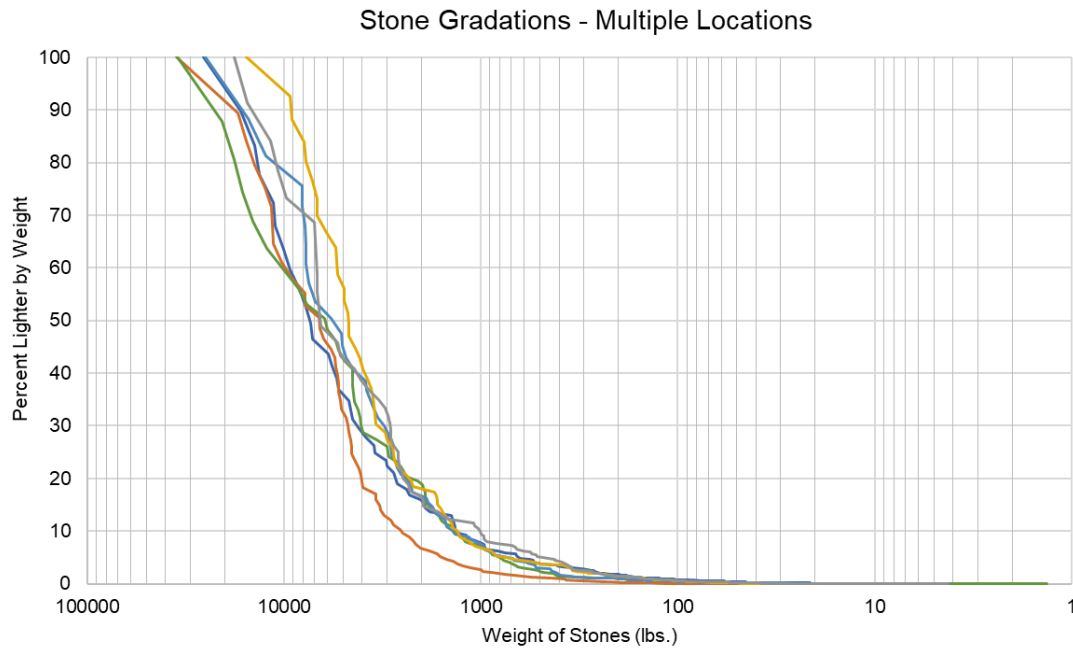
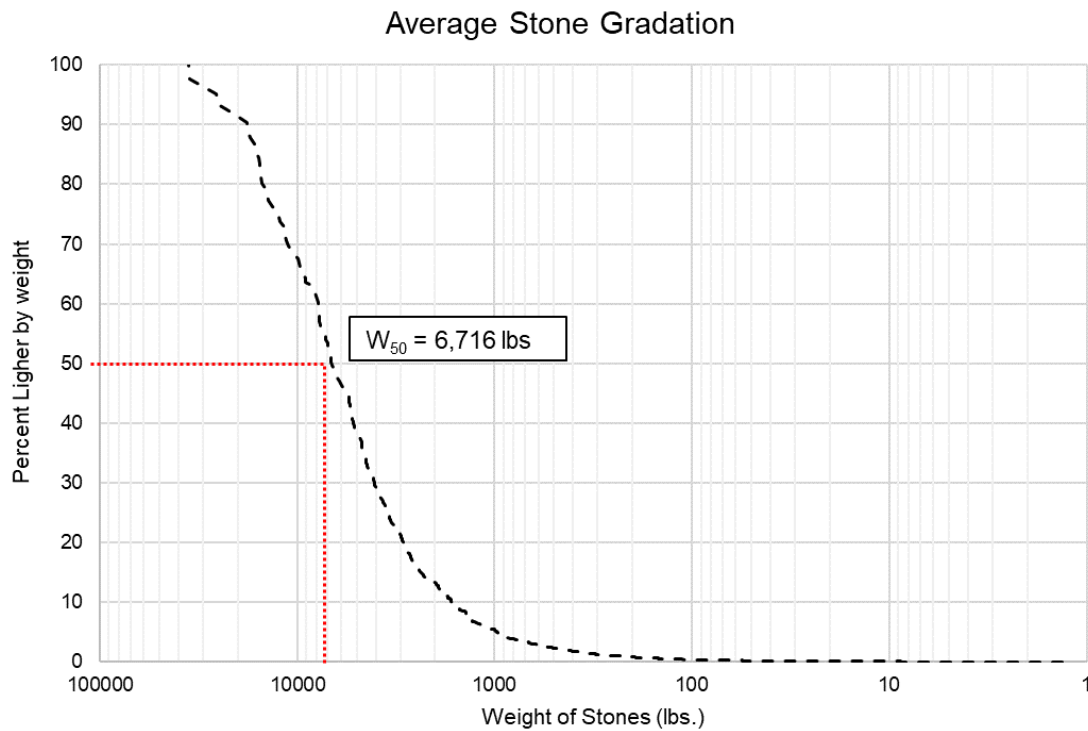


Figure 8 Average percent lighter by weight (stone gradation) of all areas analyzed.



Metocean Conditions

Due to the nature of the emergency repair, the revetment structure was not designed to a particular wave or water level condition. A reverse design analysis was performed to provide an indication of design criteria the emergency repair could withstand. Thus, there is no single design wave or design water level for the structure. Meteorological and oceanographic (metocean) conditions, including statistical conditions, are provided below to support an assessment of conditions the emergency repair is stable to.

Water Level

Multiple design water levels were considered in the reverse design analysis. Design water levels considered combining the following components for a total of 30 different water level scenarios:

- Mean higher-high water (MHHW)
- Extreme water levels (5-, 10-, 25-, 50-, and 100-year water level)
- Sea level rise (Present, 2030, 2040, 2050, 2060, 2070)

Typical Tides

The project location is located nearly halfway between two NOAA stations at Los Angeles and La Jolla. The NOAA Los Angeles tide station was chosen as it was slightly closer to the project site. Table 1 provides the tidal datums at NOAA Station 9410660 Los Angeles.

Table 1. Tidal Datums – NOAA Station 9410660, Los Angeles, CA (NOAA 2021)

	Elevation (feet MLLW)	Elevation (feet NAVD88)
MHHW	5.49	5.29
MHW	4.75	4.55
MSL	2.84	2.64
MLW	0.94	0.74
MLLW	0.00	-0.20
NAVD88	0.20	0.00

Notes:

MHHW: Mean Higher High Water

MHW: Mean High Water

MSL: Mean Sea Level

MLW: Mean Low Water

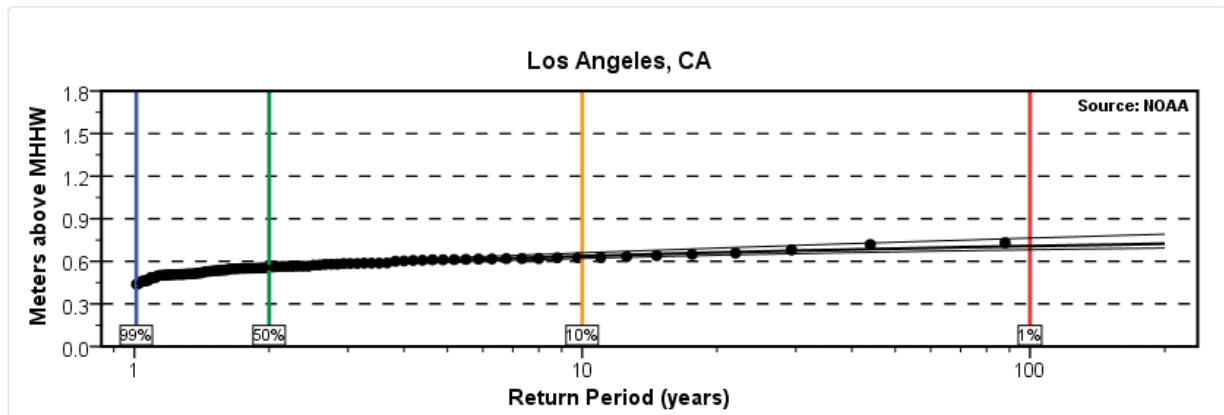
MLLW: Mean Lower-Low Water

NAVD88: North American Vertical Datum of 1988

Extreme Water Levels

Extreme water level values were gathered from the NOAA Station 9410660, Los Angeles, CA. NOAA provides statistical return period water levels above MHHW. A graph showing the extreme water levels is provided in Figure 9

Figure 9. Statistical extreme water levels above MHHW for NOAA Station 6410660 Los Angeles, CA (NOAA 2021)



Sea Level Rise

Sea level rise trends were taken from California Coastal Commission Sea Level Rise Policy Guidance for the Los Angeles tide gauge (Table 2) (California Coastal Commission, 2018). Design water levels considered in this analysis use the medium-high risk aversion (Table 2). The Extreme Risk Aversion (also known as the H++) Scenario does not have an associated likelihood of occurrence. This scenario will need to be used for an adaptability assessment of the future long-term solution.

Table 2. Project Sea Level Rise: Los Angeles (California Coastal Commission, 2018)

Year	Low Risk Aversion	Medium-High Risk Aversion	Extreme Risk Aversion (H++ Scenario)
2030	0.5	0.7	1.0
2040	0.7	1.2	1.7
2050	1.0	1.8	2.6
2060	1.3	2.5	3.7
2070	1.7	3.3	5.0

Offshore Wave Conditions

Offshore wave conditions were obtained from NOAA Wave Watch III which provides hindcast wave data from 1978 to 2009 offshore of the project area. An extreme value analysis of the historical wave heights was conducted. The analysis identified the largest 200 events and using a Weibull distribution with a best fit $K=1$, determined statistical offshore significant wave heights (Table 3). An analysis of typical wave periods for extreme wave heights at the offshore extraction location was performed to determine an associated peak wave period for each statistical wave height.

Table 3. Statistical Offshore Wave Heights

Return Period (years)	Significant Wave Height, Hs (feet)
5	11.2
10	12.1
25	13.4
50	14.3
100	15.3

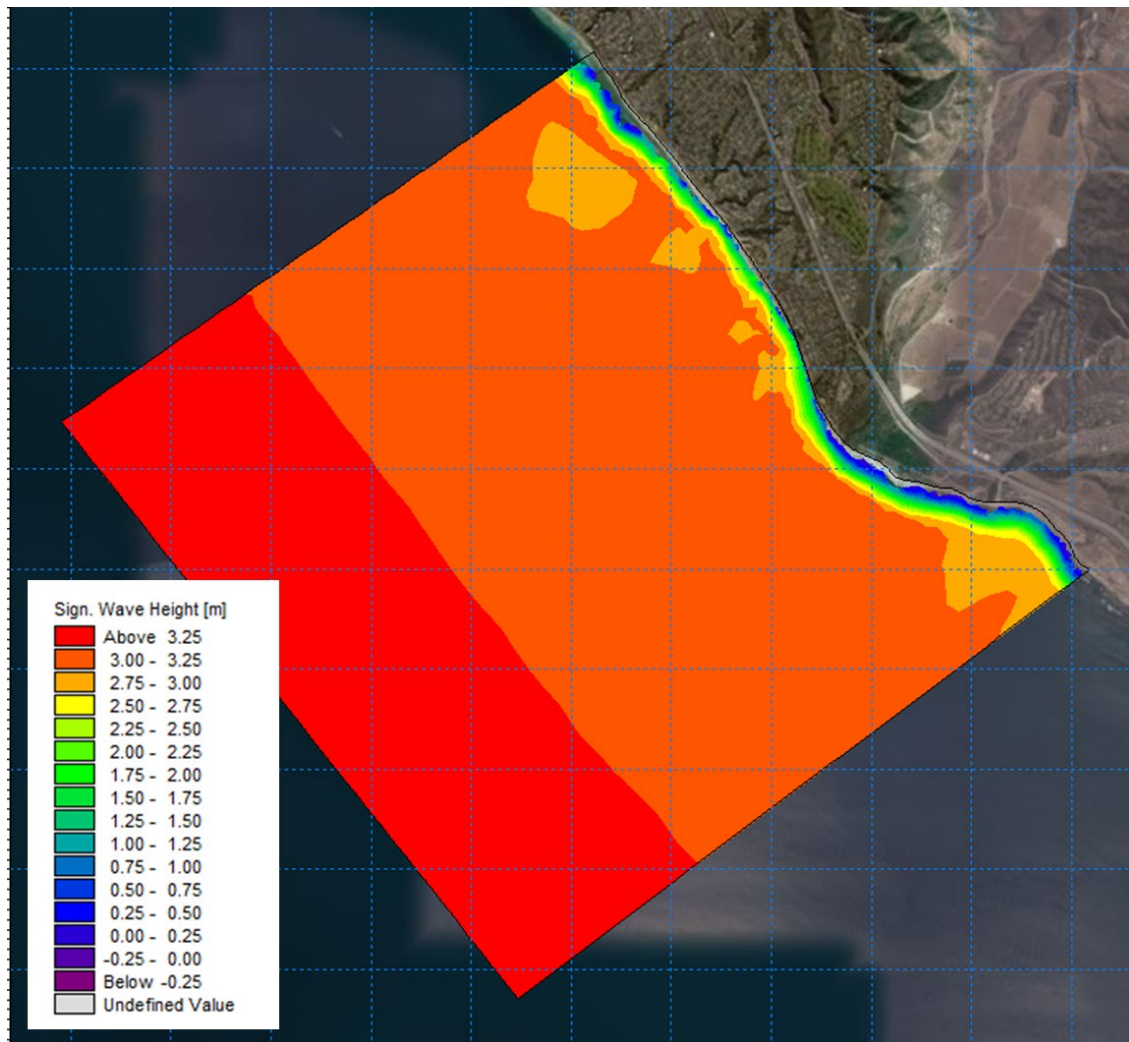
Notes:

Uses Weibull Distribution $k = 1.00$. Return periods > 93 may not be meaningful based on dataset length.

Nearshore Wave Conditions

To determine wave conditions at the emergency repair structure toe, coastal numerical modeling was performed to propagate the design offshore wave conditions to the structure. DHI's MIKE21 Spectral Wave (SW) software was used to perform this analysis. Readily available offshore bathymetry, regional LiDAR data, and project-specific LiDAR data (October 15, 2021 dataset) were combined to provide the elevation data for the model mesh. The model simulated the design offshore waves traveling perpendicular to the coast. Wind was not included in the MIKE21 SW model. The 30 waterlevel conditions (discussed in Section 3.1) were used for 5 extreme wave conditions (5-, 10-, 25-, 50-, and 100-year return periods) for a total of 150 model simulations. An example of the MIKE21 SW model, showing wave height output, is provided in Figure 10. Nearshore wave conditions were extracted at a representative location at the toe of the structure. These wave conditions were used to inform wave overtopping and stone stability calculations.

Figure 10. Example MIKE21 SW output, colors represent significant wave height.



Wave Overtopping

Wave overtopping was calculated for each of the nearshore wave conditions modeled (total of 150 scenarios). Wave overtopping rates calculated utilized guidance from EurOtop, 2016. EurOtop also provides guidance for critical overtopping of coastal structures adjacent to railways and is provided in Table 4. These critical overtopping rates are separated into nearshore wave heights.

Table 4. Limits for overtopping for railway close behind crest (EurOtop 2016)

Nearshore Wave Height	Critical Overtopping Rate (liters per second per meter)
$H_{m0}=3$ meters (10 feet)	<5
$H_{m0}=2$ meters (6 feet)	10-20
$H_{m0}=1$ meter (3 feet)	<75

The following equations were used for calculation of overtopping rates:

$$\frac{q}{\sqrt{g \cdot H_{m0}^3}} = \frac{0.026}{\sqrt{\tan \alpha}} \gamma_b \cdot \xi_{m-1,0} \cdot \exp \left(- \left(2.5 \frac{R_c}{\xi_{m-1,0} \cdot H_{m0} \cdot \gamma_b \cdot \gamma_f \cdot \gamma_\beta \cdot \gamma_v} \right)^{1.3} \right)$$

with a maximum of:

$$\frac{q}{\sqrt{g \cdot H_{m0}^3}} = 0.1035 \cdot \exp \left(- \left(1.35 \frac{R_c}{H_{m0} \cdot \gamma_f \cdot \gamma_\beta \cdot \gamma^*} \right)^{1.3} \right)$$

where:

- q = rate of overtopping per linear foot of structure
- H_{m0} = significant wave height at the structure toe (taken from MIKE21 SW model)
- R_c = structure freeboard
- α = structure slope angle from horizontal
- g = acceleration due to gravity
- $\xi_{m-1,0}$ = surf similarity, breaker parameter, or Irbarren number calculated using the spectral wave period and is defined as:

$$\xi_{m-1,0} = \frac{\tan \alpha}{\sqrt{H_s / L_{m-1,0}}}$$

$$\text{where: } L_{m-1,0} = g \cdot \frac{T_{m-1,0}^2}{2\pi}$$

$T_{m-1,0}$ = spectral wave period

- γ_b = influence factor for a berm
- γ_f = influence factor for roughness elements
- γ_β = influence factor for oblique wave attack
- γ_v = influence factor for a wall at the end of a slope
- γ^* = combined influence factor for a storm wall on a slope

Influence factors, γ , are used to represent the effects of various geometries and conditions on overtopping.

Additional reduction in overtopping rates is accounted for by considering crest width. The equation representing overtopping reduction over the structure crest is:

$$C_r = 3.06 \cdot \exp \left(- \frac{1.5 G_c}{H_{m0}} \right) \text{ with a maximum } C_r = 1$$

where:

- C_r = crest reduction factor
- G_c = structure crest width (assumed to be 10 feet)

The following assumptions are made when using the wave overtopping equations defined in *EurOtop* for a reverted shoreline:

- The influence factor for roughness elements, γ_f , is taken as 0.55, correlating to two layers of rock with an impermeable core (see Table 5). Though the core is not truly impermeable, this approach provides conservative results. Overtopping is expected to be less compared with the pre-landslide condition.
- The influence factor for oblique waves, γ_β , is taken as 1 (no oblique wave attack). Because waves have the potential to interact with the structure at a variety of approach angles depending on conditions, no reduction from oblique wave attack is accounted for.
- The influence factors for berms, γ_b , and storm walls, γ_v and γ^* , are taken as 1 (not accounted for) as they are not relevant to the project.

Table 5. Roughness Influence Factor Values

Material	γ_f
Concrete	1.00
Asphalt	1.00
Closed Concrete Blocks	1.00
Grass	1.00
Basalt	0.90
Placed Revetment Blocks	0.90
Rocks (1 layer, impermeable core)	0.60
Rocks (1 layer, permeable core)	0.45
Rocks (2 layers, impermeable core)	0.55
Rock (2 layers, permeable core)	0.40

Source: EurOtop 2016

Wave overtopping results are provided for present day, 2030 sea level rise, and 2040 sea level rise in Figure 11 through Figure 13, respectively. Wave overtopping results from 2050 and on are not shown as they are mostly above the recommended critical overtopping rates (Table 4). For each figure, all three critical overtopping rates are provided for the varying nearshore wave heights per the EurOtop guidance with the most applicable rate shown as a red dashed line (non-applicable critical rates are shown as gray dashed lines).

Figure 11. Wave overtopping results – Present Day

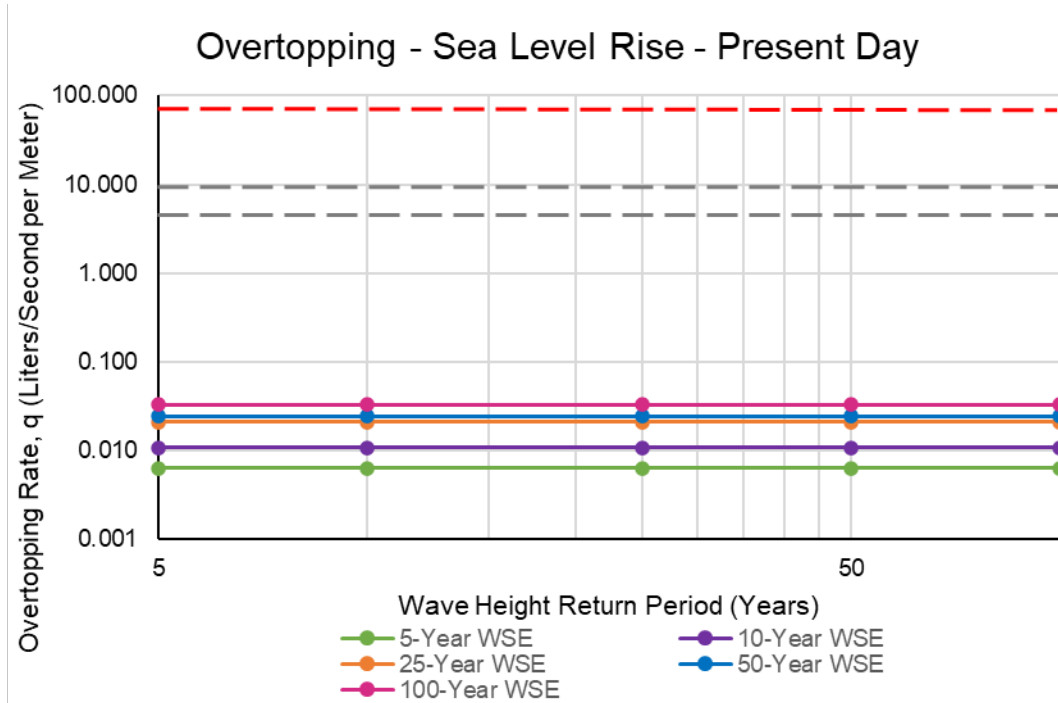


Figure 12. Wave overtopping results – 2030

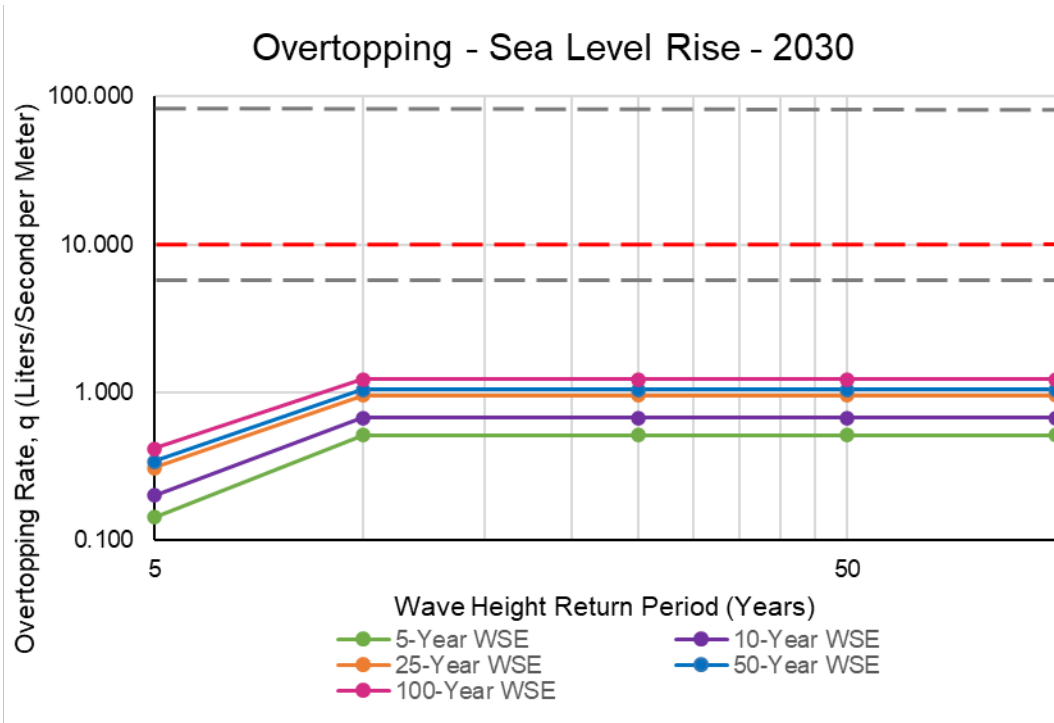
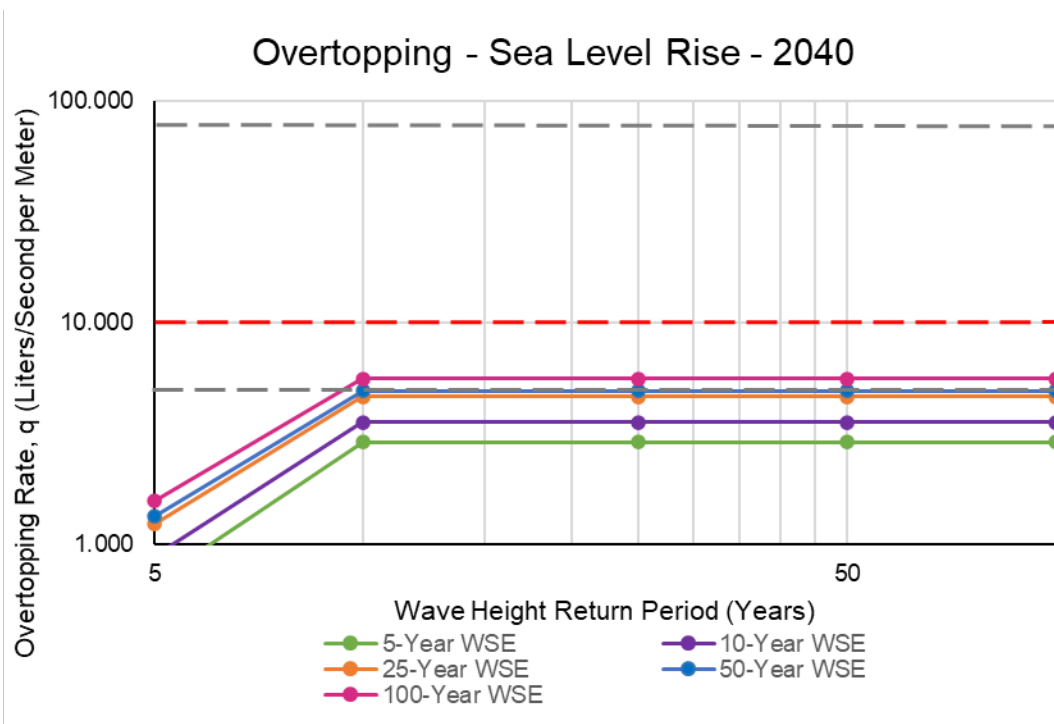


Figure 13. Wave overtopping results – 2040



Stone Stability Analysis

A stone stability analysis was performed for all nearshore wave conditions modeled (150 scenarios). The intent is to compare the placed emergency repair revetment stone size to the various nearshore wave conditions to generally assess what the existing structure is stable to. For example, a 5-year wave event during a 5-year water surface elevation considering no sea level rise (present day) yields a median required stone size of 1,066 lbs. This is less than the calculated in-situ median stone size of 6,716 lbs. meaning the structure should be stable for this condition. Conversely, a 100-year wave event occurring during a 100-year water surface elevation considering sea level rise in 2040 is 13,210 lbs. This is greater than the calculated in-situ median stone size of 6,716 lbs. meaning the structure may experience damage with this scenario.

Stone Placement

Armor stone was placed from the landward side of the structure to its natural angle of repose. Due to the time-sensitive nature of the emergency repair, the armor stone was not meticulously chinked assuring three-points of contact with every stone. To account for this in the stone stability analysis, the surging wave and plunging wave coefficients, C_s and C_{pl} , in the van der Meer (VDM) methodology were assigned values to account for a low armor layer porosity (commonly denoted as n_v) per design guidance from The Rock Manual (CIRIA 2007).

Stability Results

The VDM methodology was used to determine the minimum required armor stone stability for the various wave and water level conditions (150 scenarios). Graphical results from the stone stability calculations are provided for present day, 2030 sea level rise, and 2040 sea level rise in Figure 14 through Figure 16, respectively. Each graph provides the emergency repair in-situ armor stone median stone weight for reference shown as a red dashed line. Results for 2050 sea level rise and on are not provided as these are well above existing armor stone median weight.



Figure 14. Minimum stone stability results – Present Day

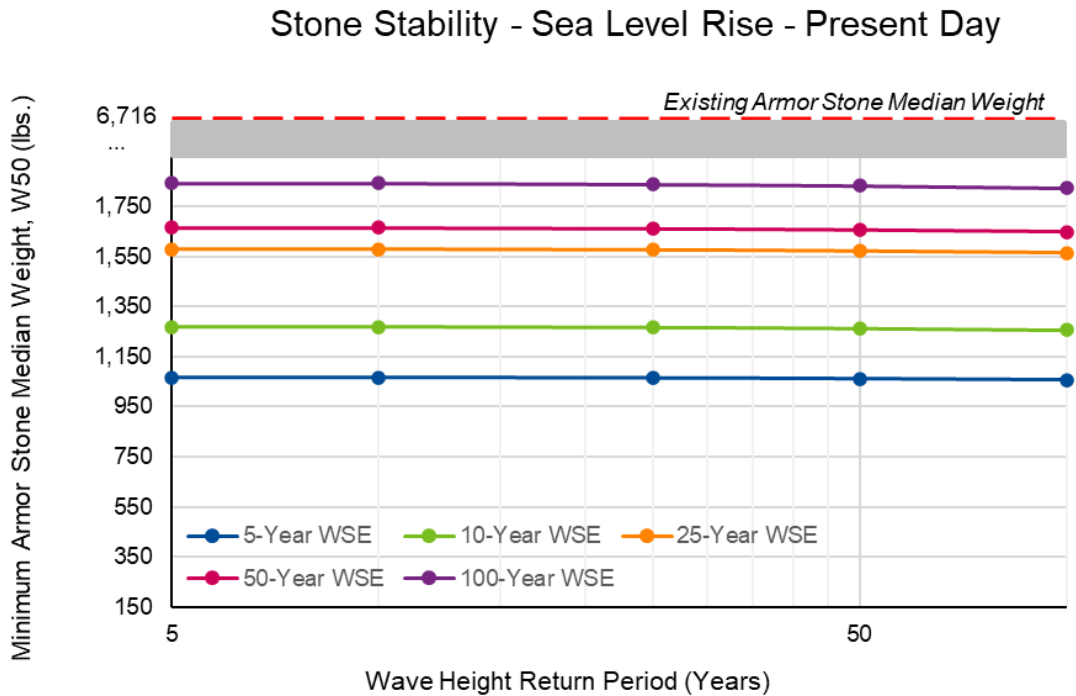


Figure 15. Minimum stone stability results – Sea level rise 2030

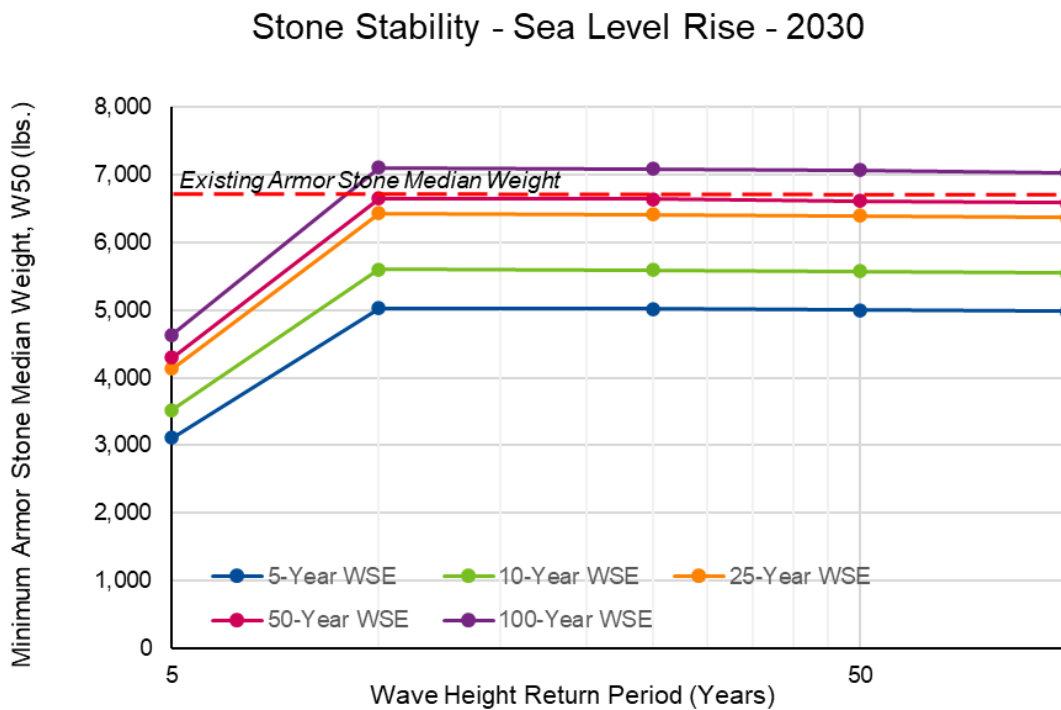
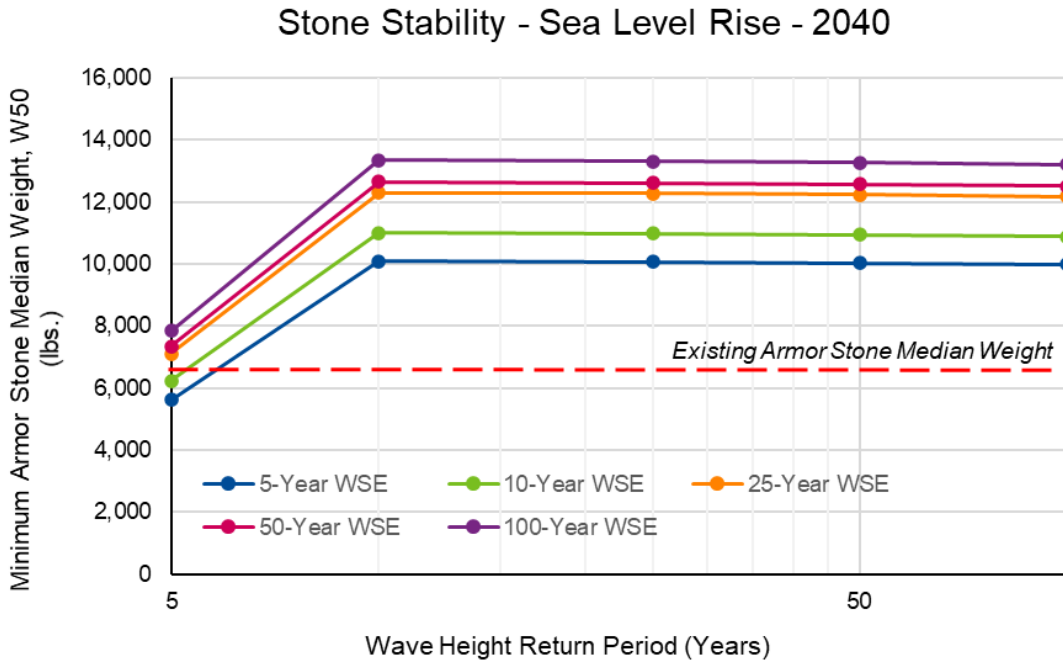


Figure 16. Minimum stone stability results – Sea level rise 2040



Discussion

Based on the stone stability analysis, the structure is stable against any combination of statistical extreme water levels (5-, 10-, 25-, 50-, 100-year return period) and wave conditions (5-, 10-, 25-, 50-, and 100-return period) assessed for the present-day scenarios. Extreme water level and wave conditions are not necessarily dependent on each other (e.g., a 100-year wave condition could occur without a storm surge or a 100-year storm surge could be accompanied with moderate waves).

When considering increased water surface elevations due to sea level rise in 2030, all of the combinations of statistical wave and water levels considered with exception of the 100-year water surface elevation show to be stable.

When considering sea level rise in 2040, only 5- and 10-year water surface elevations for the 5-year wave condition show to be stable. When considering sea level rise predictions for 2050 and on, all combinations of water surface elevations and wave conditions result in a required minimum median stone size larger than the in-situ emergency repair revetment median stone size.



Conclusions

An emergency riprap revetment was placed adjacent to the Metrolink railway to mitigate an active landslide. The revetment was designed in an emergency response situation specifically to mitigate the landslide. Coastal conditions (i.e., waves, tides, sea level rise) were not considered. This document reviews the existing emergency repair structure and assesses the coastal conditions in which the structure is stable. From this stone stability assessment, it was found that the structure is generally stable for all present day (no sea level rise) wave and water surface elevations considered. When considering sea level rise by the year 2030, most statistical wave and water surface elevations considered were found to be unstable. When considering sea level rise by the year 2040 and on, the structure is generally not stable for most, if not all, wave and water surface elevation combinations considered.

In early 2022, the Orange County Transportation Authority (OCTA) and Metrolink are planning to initiate an alternatives analysis of the four potential coastal adaptation options (alternatives) outlined in OCTA's *Rail Defense Against Climate Change Plan*, to further reduce risk and improve resiliency throughout the coastal alignment, including at the emergency stabilization site.

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<https://tidesandcurrents.noaa.gov/map/index.html?id=9410660>



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Attachment I. Rock Mobility Memorandum

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Rock Mobility Assessment

Introduction

Per California Coastal Commission request, please find below a discussion of loose riprap mobility on sandy intertidal beaches. The Commission's concern is related to the potential cumulative impact to local sand supply of rock spreading laterally across the beach or washing offshore (CCC 2003). For a cumulative impact to result from rock placed on the seaward face of the rail embankment, individual rocks would have to inhibit or prohibit sand movement (littoral transport) in some way that accumulates over time resulting in increasingly greater loss of sand that would have otherwise continued moving through the ecosystem.

Background

The emergency railroad stabilization occurred in the vicinity of Mile Post 206.8 in the City of San Clemente approximately one-half mile from the Orange County border. At the location of emergency stabilization, the railroad is located within the Oceanside Littoral Cell between the foot of a graded slope and the Pacific Ocean, protected by a narrow beach and rock revetment. Where additional rock was added to the existing west-facing revetment, depth to bedrock is 28-34 feet.

As with most southern California beaches, high-energy storm waves erode the beach adjacent to the rail embankment at this location making it narrower and steeper in the winter and lower energy waves deposit the sand back on the beach making it wider and more gradual in the summer (Yates et. al., 2009). Additionally, sea level rise has generally resulting in narrower beaches over time. These seasonal fluctuations and long-term trends result in constantly changing topography in beach environments. In the vicinity of the emergency stabilization, for example, the beach has narrowed from approximately 200 feet in width in 2003 to less than 80 feet and, in the southern extent is absent, in 2021. As might also be expected, the beach has also become steeper, increasing from a 9-percent gradient to as much as an 18-percent gradient.

Figure 1 depicts a snapshot of beach conditions at the time stabilization efforts were initiated. Given that the emergency stabilization occurred at the transition from dry summer conditions to wetter winter conditions, the beach conditions observed at this time are likely to represent the high end of the range when describing the width of the beach. While approximately 0.67 acre of beach was visible when baseline conditions were mapped, approximately 80 percent of that beach occurred within the surf zone based on Mean Sea Level. During winter, the entire beach may occur within this turbulent zone.

Rock Mobility

Based on direct observation and aerial photography, it is apparent that riprap does, at times, roll off the revetment or get washed off the revetment by the force of oncoming waves. However, in reviewing the historic aerals, the beach is not becoming progressively more rock-covered over time. The fate of these rocks can be best described as ultimately settling below the sand's surface over time.

Per Rip Rap Revetments and Seawalls and Their Effectiveness Along the Central California Coast (Griggs and Bennett 1988), riprap may experience some lateral spread caused by sand removal at the toe of a rock structure but can also sink into a fluidized layer within the upper six feet of sand. Their



observations indicate that rip rap settlement is not always caused by sand removal at the toe but can result from toe stones sinking into a fluidized layer within the upper six feet of sand. Unless the rock is placed on a bedrock platform, rock will continue to settle when successive storms fluidizes the sand to a greater depth until the revetment become relatively stable. However, in most locations, riprap settlement appears to be reactivated each time a major storm arrives. Riprap has moved 5 to 10 feet vertically downward, and 10 to 30 feet horizontally seaward, during single storms. As a result, most rip rap revetments observed required additional rock after almost every moderate (5- to 10-year recurrence interval) storm season.

Historic Data Analysis

Historic Google Earth aerial photographs were reviewed in combination with USGS LIDAR data when available. The absence of erratic rock on the beach is consistent with erratic rock settling in the sand over time, with wetter sand in the surf zone 'consuming' rock more quickly than dry sand and rock settling below the surface of the sand more quickly when the beach exhibits a higher gradient.

Figure 2 includes a series of aerial photographs over time that suggest the rock revetment was relatively stable until 2015. Between 2009 and 2015, rock at the toe of the revetment appear to appear and reappear due to the beach raising and lowering in response to storm events. Similarly, recently placed rock has already been buried by sand as visible in the aerial photograph series provided as Figure 2d and Figure 2e.

However, as visible in Figures 3 and 4, rock does also move over the surface of the sand until presumably reaching viscous sand in which it settles below the surface or until a larger storm event liquifies the sand in the vicinity of the rock, also allowing it to settle below the surface.

Figure 1. Baseline Beach Conditions





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Figure 2. Time Series Depicting Apparent Settlement or Burying of Erratic Rock.

Each series depicts a rock that is relatively stationary but drops below the surface presumably due to a combination of settling and sand accretion.

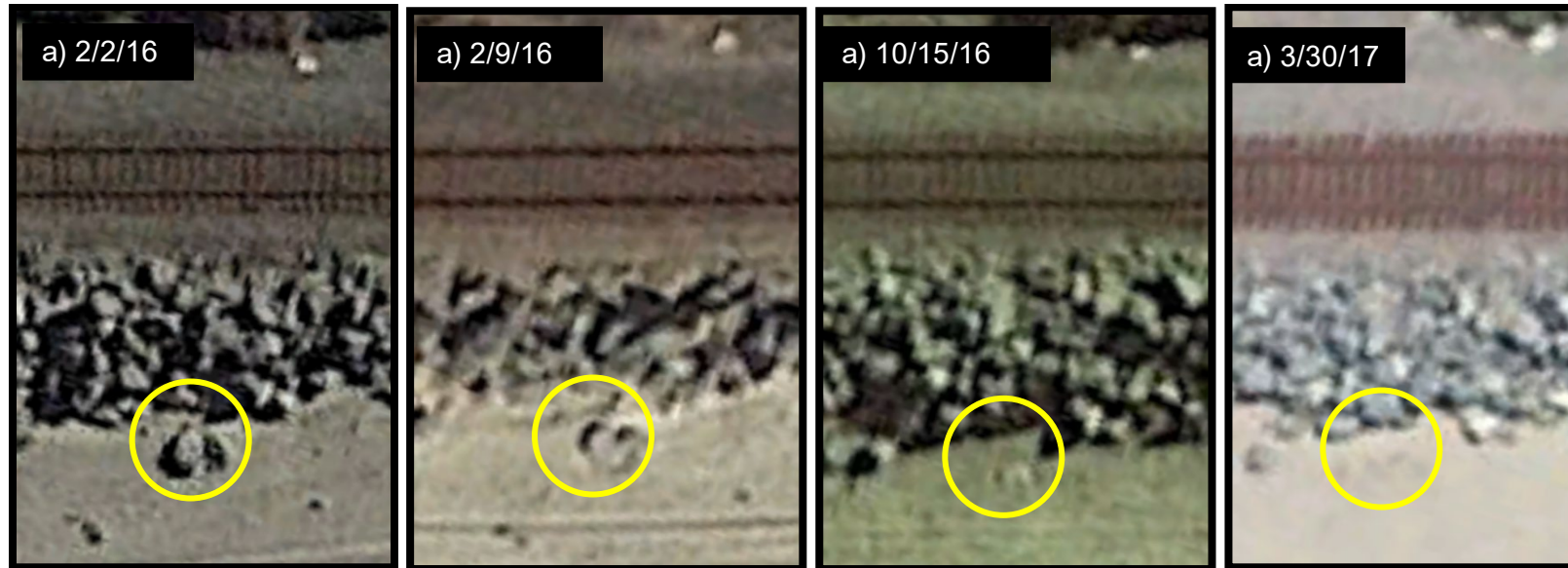


Figure 2 continued. Time Series Depicting Apparent Settlement or Burying of Erratic Rock

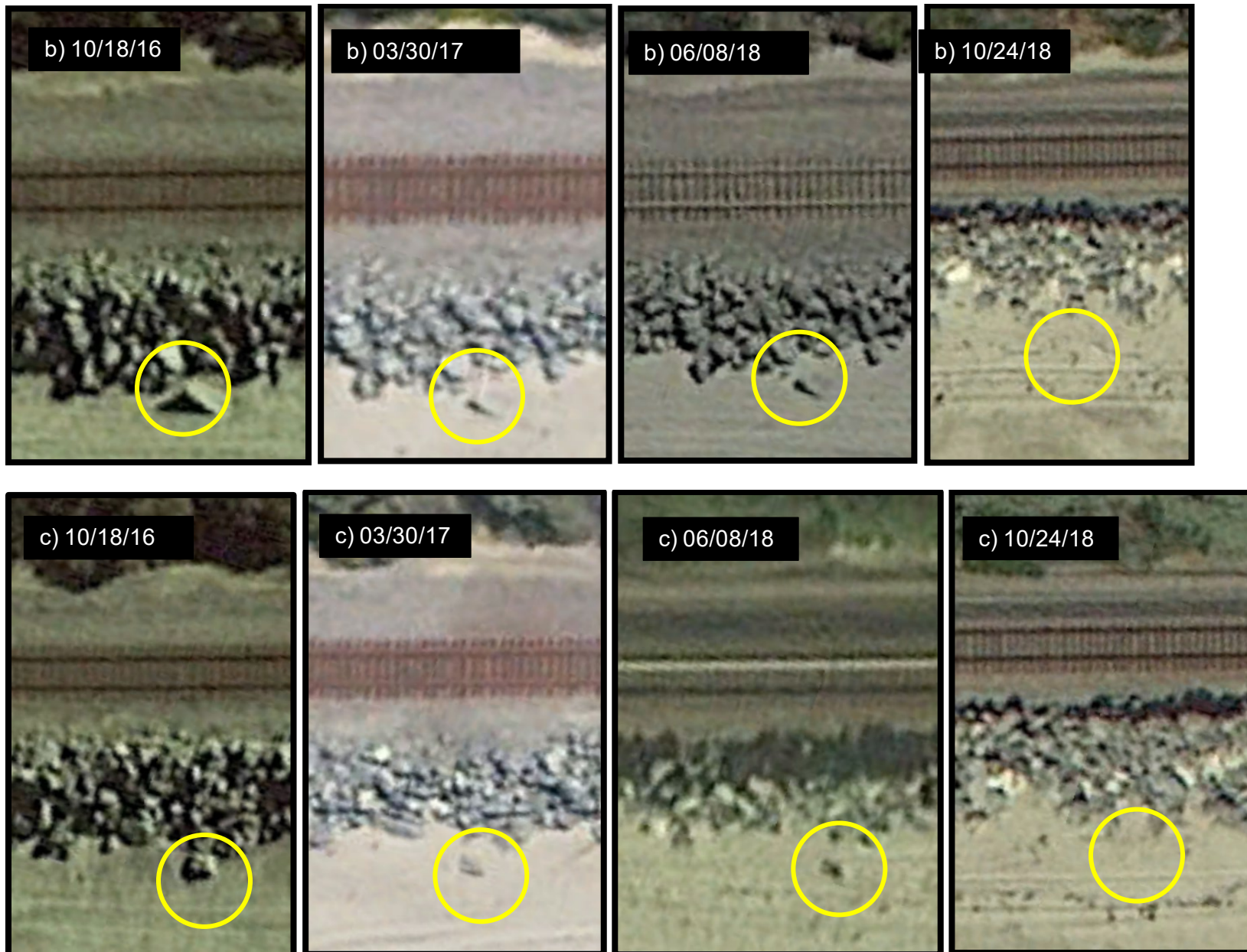


Figure 2 continued. Time Series Depicting Apparent Settlement or Burying of Erratic Rock



Figure 2 continued. Time Series Depicting Apparent Settlement or Burying of Erratic Rock



Figure 2 continued. Time Series Depicting Apparent Settlement or Burying of Erratic Rock





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Figure 3. Time Series Depicting Apparent Movement of Erratic Rock Followed by Accretion or Settlement Below the Sand's Surface.

The rock identified at the left of the 2011, 2014 and 2015 images appear relatively stable. Then between March 2015 and October 2016, the rock appears to have rolled approximately 80 feet to the south. Between October 2016 and June 2018 it remains approximately 30 feet west of the nearest rail. The rock is no longer visible in May 2019.

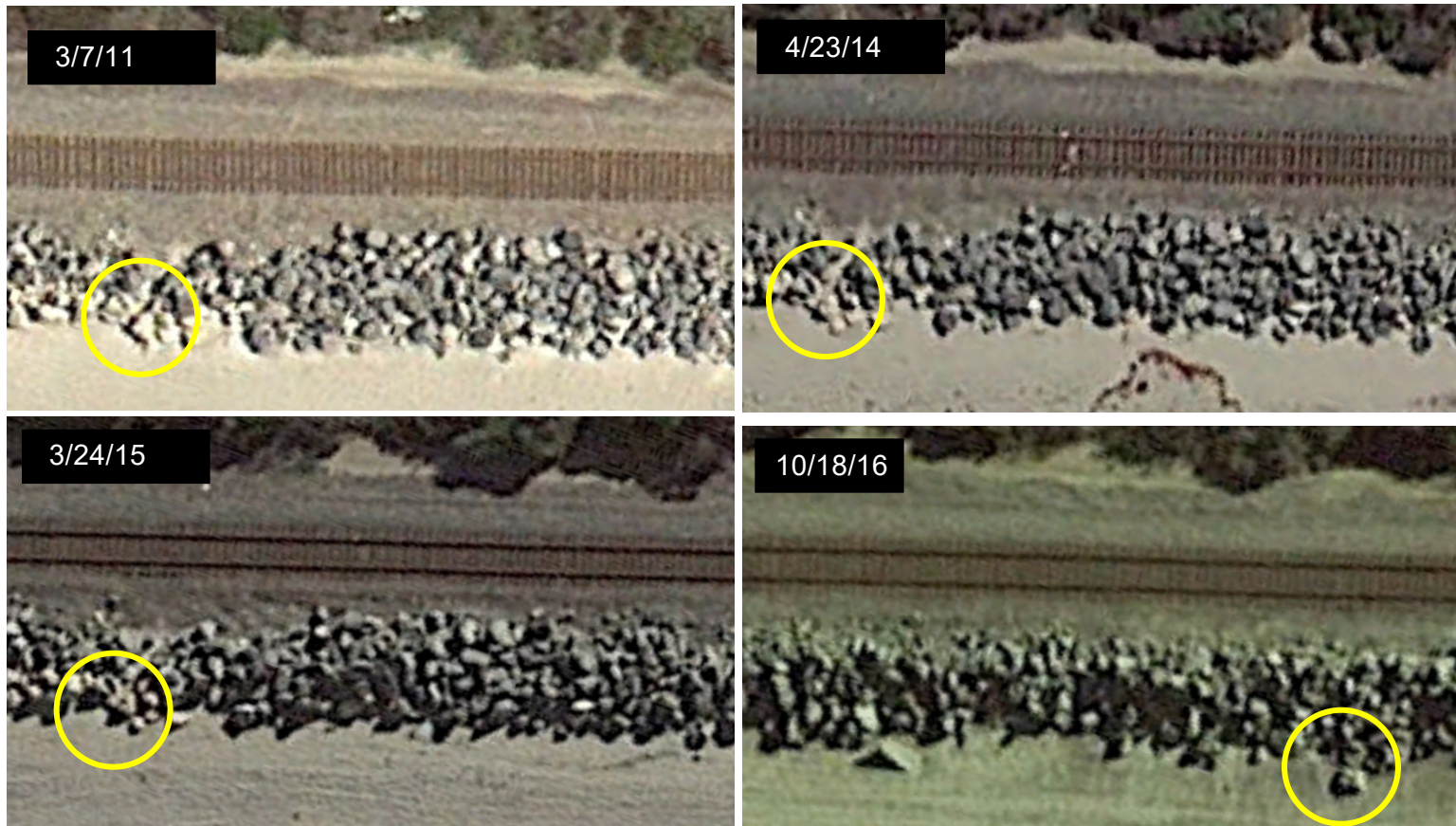


Figure 3 continued. Time Series Depicting Apparent Movement of Erratic Rock Followed by Accretion or Settlement Below the Sand's Surface

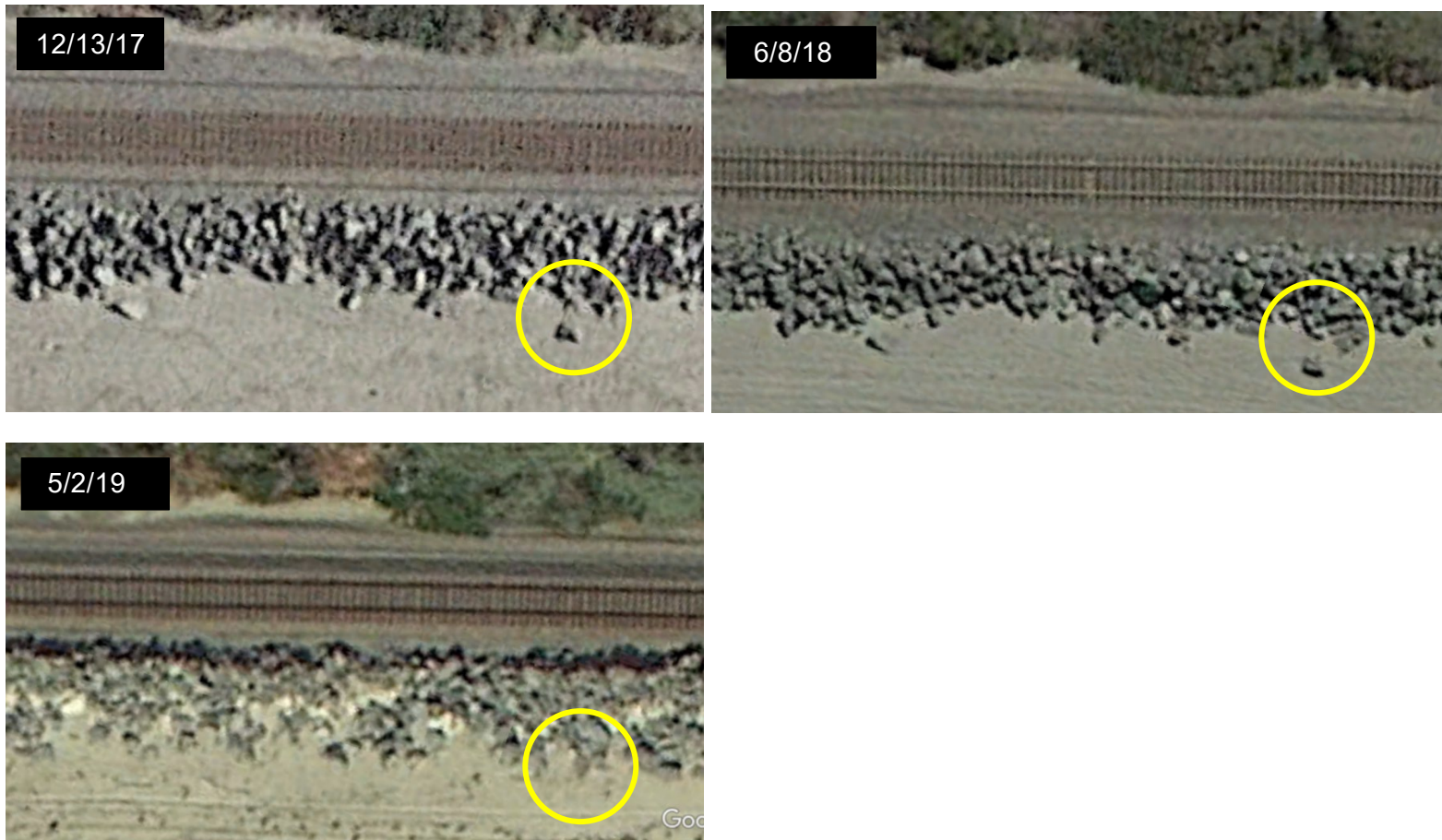


Figure 4. Rock Settlement

Documented between September 11, 2021 (upper photo) and November 5, 2021 (lower photo)





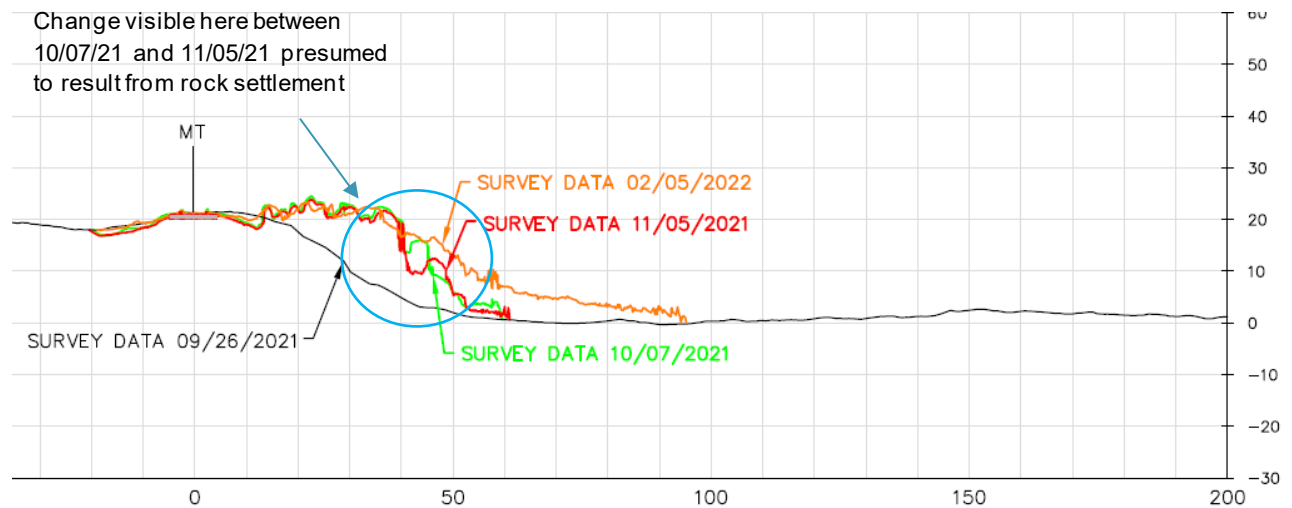
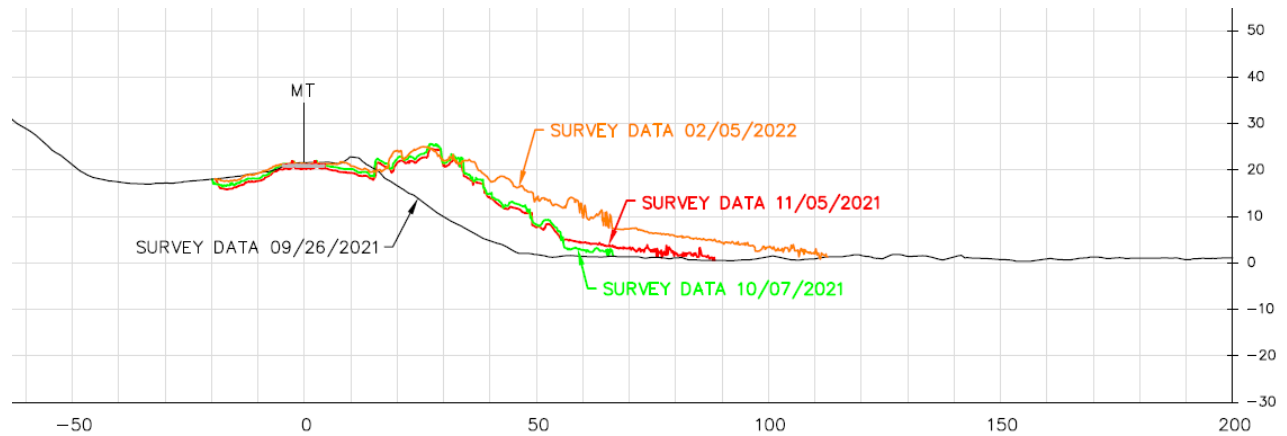
Analysis of Current Data

A comparison of the surface elevations of the rock revetment from 10/7/21 and 12/20/21 indicates a 0.39-foot mean change in surface elevation over the 10-week period, which falls within the +/-0.5-foot error associated with survey data captured using drone technology. While that data suggests there is little if any change in the overall volume of rock within the revetment, it is apparent that rock does move within the revetment, rolling to the toe of the revetment where it may become buried in sand during a period of accretion or be pulled in a southwesterly direction by currents and wave action until it sinks below the sand's surface as described above.

Evidence of Localized Rock Movement

Localized rock movement is visible in several of the cross sections prepared for the project and provide in Attachment O – As-Builts Package. Those cross-sections, two of which have been excerpted below, include the topography captured by LiDAR using drones. Note that the 10/7/21 and 11/5/21 profiles are very consistent with occasional exceptions as identified in the bottom snapshot below.

Figure 5: Retevment Profiles from Final LiDAR Scan on 02/05/22.



Source: RSE (See Attachment O – As Built Package)

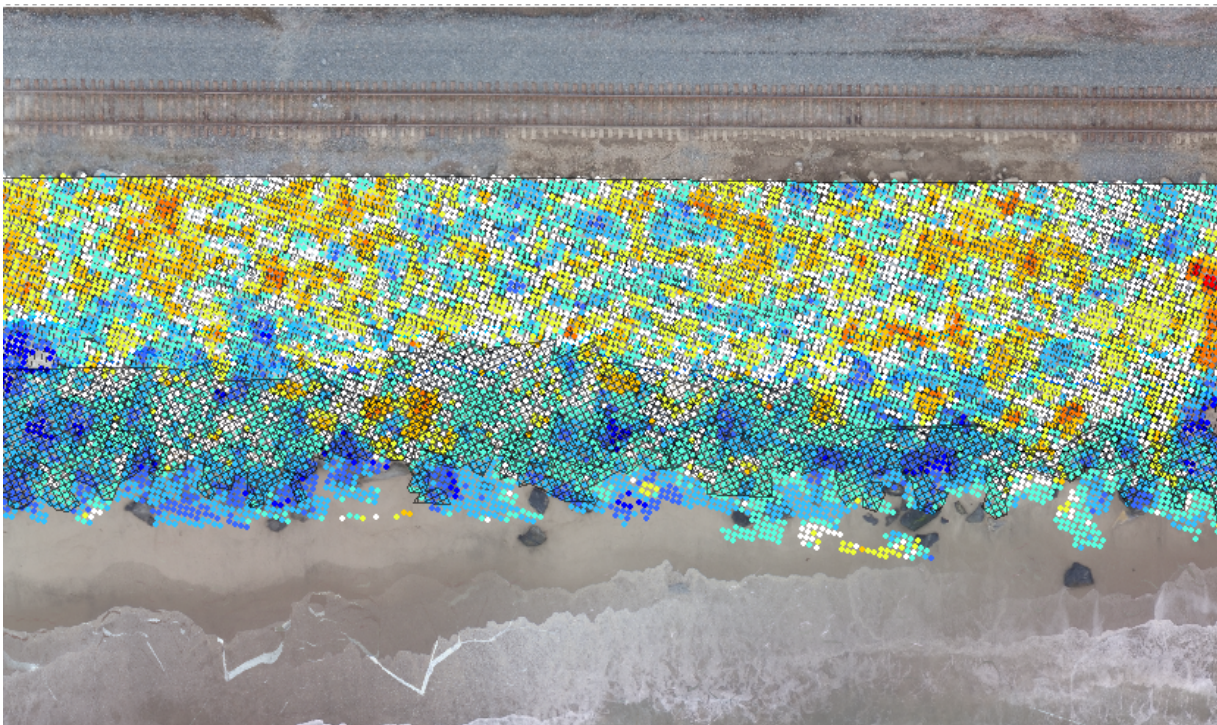


Profiles from 09/26/21, 10/07/21 and 11/05/21 are included for reference. The profile from 9/25/21 represents baseline conditions prior to Phase 1 Emergency Rock Placement. The profile from 10/07/21 represents conditions following Phase 1 Emergency Rock Placement. The profile from 11/05/21 represents conditions during which no work occurred. The profile from 2/05/22 represents conditions following Phase 2 Emergency Rock Placement. Note the similarity between the 10/07/21 and 11/05/21 profiles in the upper snapshot (Station 5641+00) suggesting that little rock movement occurred during the four intervening weeks at that location while the lower snapshot (5642+95) suggests that at least one of the large rocks rolled into a slightly lower position on the revetment face during that same time interval.

Rock Loss Over Time

As indicated above, a comparison of the surface elevations of the rock revetment obtained using drone-mounted LiDAR 10/7/21 and 12/20/21 indicates a 0.39-foot mean change in surface elevation over that 60-day period, which falls within the ± 0.5 -foot error associated with survey data captured using drone technology. That data suggests there was little change in the overall volume of rock within the revetment during that time, but as visible in the snapshot below, rock does appear to have moved from the upper half of the revetment (yellows and oranges reflect a loss in surface elevation) to the lower half of the revetment (greens and blues indicate an increase in surface elevation). Rolling to the toe of the revetment where it may become buried in sand during a period of accretion or be pulled in a southwesterly direction by currents and wave action until it sinks below the sand's surface as described above.

Figure 6: Difference in Surface Elevation between 10/07/21 and 12/05/21.



ArcGIS was used to compute the difference in elevation at over 30,000 points representing the surface of the rock revetment on these two dates. Data was collected by RSE using drone-mounted LiDAR. Yellows and oranges reflect a loss in surface elevation between the two dates. Greens and blue indicate an increase in surface elevation between the two dates. White indicates no significant change in elevation between the two dates. The average change for the revetment face within the study area was 0.39 ft. The loss of elevation on the revetment face is presumed to result from a loss of rock. The gain of elevation on the revetment face is presumed to result from a gain in rock. Please note that based on the cross-sections in Figure 1, sand deposition appears to have occurred between 10/07/21 and 12/05/21. Increases of elevation at the toe of the slope may also result from the build-up of sediment.



Conclusion

Individual rocks have been observed to pluck out over time due to wave action, but systemwide lateral spreading of the stone has not been observed and is not anticipated as a result of the emergency stabilization. Additionally, the erratic rock plucked from the revetment by waves or rolling off the revetment, does not accumulate in great numbers but rather settles below the surface of the sand so that there is not a cumulative cover of rock being created that would prevent or inhibit littoral transport.

References

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Attachment J. Sea Level Rise Analysis and Coastal Hazards Study

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Sea Level Rise Analysis and Coastal Hazard Study

Executive Summary

The Railroad Emergency Stabilization Project - San Clemente Orange Sub MP 206.85 Project (emergency project) is located at MP 206.8 within the railroad right-of-way (ROW) owned by Orange County Transportation Authority (OCTA). This portion of the railroad ROW extends through the City of San Clemente, within the California Coastal Zone. Within this general area, several sea level rise (SLR) studies have been prepared by different entities that form the basis for this qualitative SLR analysis to support the emergency stabilization work that was required. For this analysis, a summary of the applicable findings from the SLR studies is provided to convey the scenario-based SLR projections at the emergency stabilization location and demonstrate how the emergency stabilization work aligns with the preferred coastal adaptation planning approaches for this portion of the railroad corridor.

- California Ocean Protection Council – *State of California Sea Level Rise Guidance 2018 Update* (OPC 2018). OPC's Guidance document describes how SLR impacts would change over time and how the rates of SLR will accelerate in the future depending on emissions trajectories (low, medium, high, and extreme), and their associated probabilities¹.
- City of San Clemente – *Sea Level Rise Vulnerability Assessment* (City of San Clemente 2019). The City's vulnerability assessment describes potential impacts resulting from SLR relative to beach loss, damage to city resources, and rail operations. The plan includes an assessment of different sections of the city and estimated the SLR expected to occur within the city.
- OCTA – *Rail Defense Against Climate Change Plan* (OCTA 2021). OCTA's plan describes potential coastal impacts including erosion and flood risk and the projected rise in water elevations through 2100 for the 7-mile section of OCTA's coastal alignment, which includes the project location at MP 206.8. The OCTA plan identifies four potential coastal adaptation options (alternatives) to reduce risk and improve resiliency throughout the coastal alignment. The first three options are considered "flexible" as they could be adjusted and implemented depending on how SLR occurs.
 1. Baseline revetment option
 2. Improving the revetment
 3. Improving and adding a seawall on top of the revetment, and
 4. Relocating the rail farther inland.

The flexible adaption options (1 through 3 above) were assessed against a set of performance criteria under each SLR scenario considered to determine when adaptation may be needed.

- California Coastal Commission – *Critical Infrastructure at Risk: Sea Level Rise Planning Guidance for California's Coastal Zone* (CCC 2021). Recommendations from the California

¹ The extreme scenario does not have an associated probability due to recent studies regarding potential rapid loss of Antarctic ice sheets.

Coastal Commission (CCC) Planning Guidance suggest agencies plan for a minimum of 3.5 feet of SLR in the next 30 years. The report also includes recommendations for agency coordination, consideration of Environmental Justice impacts, and phased adaptation strategies.

The emergency stabilization at MP 206.8 most closely aligns with Adaption Option No. 1 above (baseline revetment to repair damages from storm events). Although implementation of revetment as one of three flexible adaption options was not planned until 2040, due to the nature of the emergency conditions present at MP 206.8, OCTA was required to implement the revetment adaption option as a safety measure to protect the rail infrastructure from physical damage and rail service from disruption, consistent with the Coastal Act, as it would be:

“necessary to protect a coastal dependent use or existing structures in danger from erosion, represents the least damaging alternative for protecting this use, and is designed to eliminate or mitigate adverse impacts on local shoreline sand supply.”

In early 2022, OCTA and SCRRA are planning to initiate an alternatives analysis of the four potential coastal adaptation options (alternatives) outlined in the OCTA plan in addition to other site-specific engineering solutions, as applicable, to further reduce risk and improve resiliency throughout the coastal alignment, including at the emergency stabilization site.

Ocean Protection Council – State of California Sea Level Rise Guidance

The OPC Guidance outlines five steps to provide a decision framework to evaluate the consequences and risk tolerance of various planning decisions and guide selection of appropriate SLR projections to use for resiliency planning and implementation of appropriate site-specific adaptive measures. These five steps include:

1. Identify the nearest tide gauge
2. Evaluate project lifespan
3. For the nearest tide gauge and project lifespan, identify range of SLR projections
4. Evaluate potential impacts and adaptive capacity across a range of SLR projections and emissions scenarios
5. Select SLR projections based on risk tolerance and, if necessary, develop adaption pathways the increase resiliency to SLR and include contingency plans if projections are exceeded

For the purposes of this emergency project, the OPC Guidance was utilized to identify the nearest tide gauge and range of SLR projections. Adaptive strategies are discussed below under the OCTA Plan.

The emergency project is located between the Los Angeles and the La Jolla tide gauges, with the La Jolla gauge having slightly higher SLR projections compared to the Los Angeles gauge. For the purposes of this analysis, the projected SLR using the La Jolla gauge is summarized below, as these projections were also used in the OCTA plan.

- Estimates using the Extreme Risk Aversion scenario for La Jolla gauge show a rise of 1.8 feet in 2040, 5.2 feet in 2070, and 10.2 feet in 2100.

- Estimates using the Medium High Risk Aversion scenario for La Jolla gauge show a rise of 1.3 feet in 2040, 3.6 feet in 2070, and 7.1 feet in 2100.

City of San Clemente – Sea Level Rise Vulnerability Assessment

The City's vulnerability assessment identifies areas and resources in the city that may be vulnerable to SLR in the future. The assessment identifies shoreline erosion as the most significant hazard impacting coastal resources due to "coastal squeeze." Coastal squeeze is the process by which sea level dependent resources are pushed landward with SLR but are prevented from natural landward migration due to a non-erodible structure, such as railroad revetment. Coastal squeeze is already occurring in the south reach (and at the emergency project location – MP 206.8) and loss of beach area has been occurring in recent years.

The study includes an assessment of vulnerability based on three factors:

- Exposure
- Sensitivity
- Adaptive Capacity

The assessment relies on the OPC Guidance for SLR projections and utilized the CoSMoS 3.0 data available at the time of study. The SLR scenarios evaluated in the study include:

- 0.8 feet – 2030 to 2040
- 3.3 feet – 2060 to 2100
- 4.9 feet – 2070 to 2130

The railroad corridor through the City is a resource that was evaluated in the study. The emergency project site is within the south reach of the study area. Exposures in the south reach include high exposure to wave attack and erosion, as the area is highly sensitive to erosion with low adaptive capacity. Short-term consequences include damage to the railroad and potential loss of railroad service in the coastal area during storm events. Long-term consequences include the potential need for relocation, chronic erosion or need for additional protection, and more frequent railroad service interruptions in the coastal area.

Adaptive Strategies

The range of adaptive strategies identified in the City's vulnerability assessment include a "hold the line" approach, a "managed retreat" approach, and beach nourishment. Due to the nature of the emergency conditions present at MP 206.8 and the low adaptive capacity in the area, as it relates to the City's vulnerability assessment, the emergency project at MP 206.8 most closely aligns with the "hold the line" adaptive strategy.

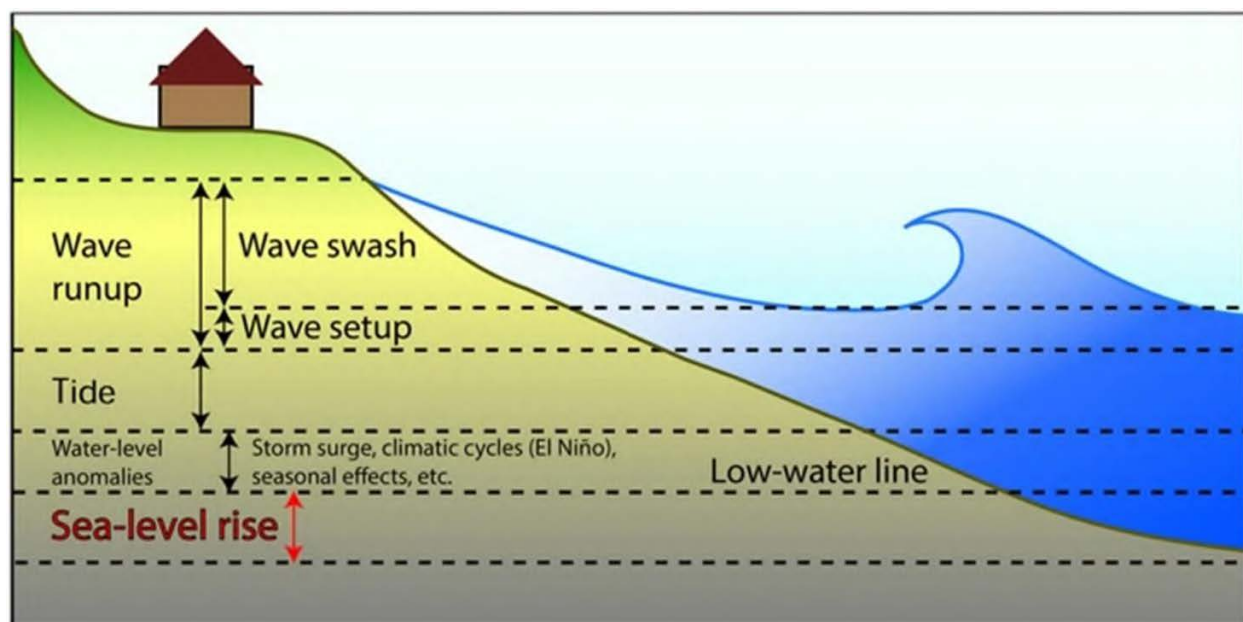
Orange County Transportation Authority - Rail Defense Against Climate Change Plan

OCTA prepared this plan to study how future climate change affects the 7-mile portion of the OCTA-owned railroad right-of-way and associated rail infrastructure that follows along the Pacific Ocean shoreline through the Cities of Dana Point and San Clemente (coastal alignment).

Water Level Elevations

Based on the quantitative analysis of coastal impacts and SLR performed by OCTA, the emergency project at MP 206.8 would face varying degrees of coastal impacts due to the direct exposure to the Pacific Ocean and the various components that contribute to the total water levels (Figure 1).

Figure 1. Components of Total Water Level



Source: OCTA 2021 (Page 38)

The OCTA plan indicates that wave setup combined with extreme water levels and wave runup lead to 100-year total water levels at the project site that range from +13 feet (NAVD88) to +22 feet (OCTA 2021, Page 37).

Based on the SLR projections provided in the OPC Guidance, OCTA modeled total water levels in the Year 2100 for different storm events using three risk aversion/climate scenarios (low, medium, and high). Using the high scenario (also labeled the “medium-high risk aversion” in the OPC Guidance), projected SLR in 2040, 2070, and 2100 as disclosed in OCTAs plan is summarized below (OCTA 2021, Page 35, 52, and 56).

- 2040: 1.3 feet rise in sea level
- 2070: 3.6 feet rise in sea level
- 2100: 7.1 feet rise in sea level

The extreme SLR projection that was evaluated qualitatively is 2.8 feet for 2050 and 10.2 feet for 2100.

Existing and Future Water Level Elevations

For this analysis, existing figures presented in the OCTA plan were used to depict the location of MP 206.8 relative to the full-extent of the 7-mile coastal alignment considered in OCTA's plan (see yellow bar added to Figure 2 through Figure 5). For each rail tenth milepost, Figure 2 through Figure 5 depict the existing rail infrastructure including the rail and ballast, any revetment that is present (top of crest and visible bottom), buildings that may be present in front of the rail, and the existing and future water level elevations with corresponding chance events that are equivalent to storm events as follows:

- 0.2 percent chance event: 500-year event
- 1 percent chance event: 100-year event
- 2 percent chance event: 50-year event
- 4 percent chance event: 25-year event
- 10 percent chance event: 10-year event
- 50 percent chance event: 2-year event
- 99 percent chance event: 1-year event

Coastal Adaptation Options and Consideration of Applicable Performance Criteria

As noted in the OCTA plan, four potential coastal adaptation options (alternatives) were considered to reduce risk and improve resiliency throughout the coastal alignment.

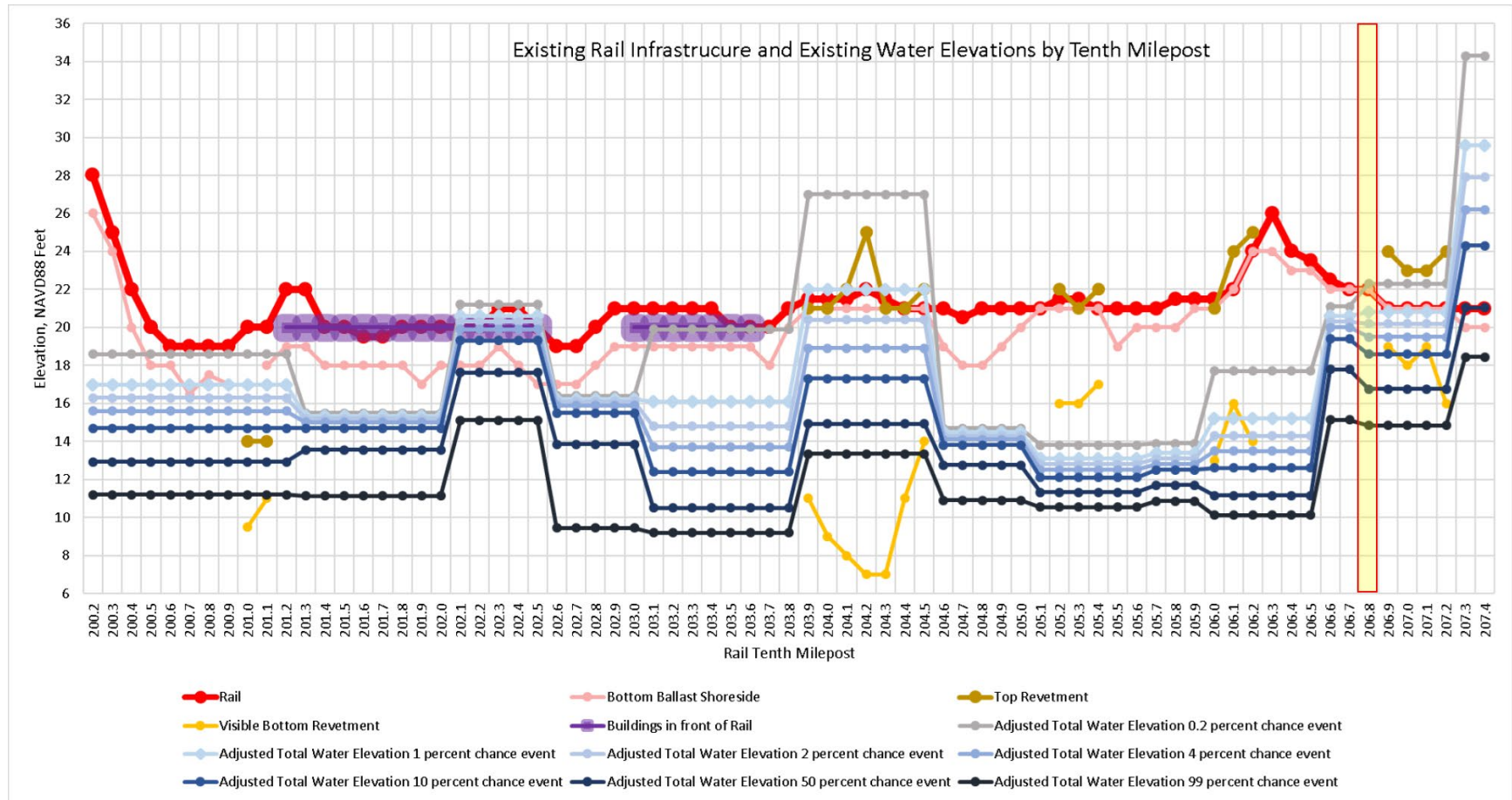
- Baseline revetment option
- Improving the revetment
- Improving and adding a seawall on top of the revetment, and
- Relocating the rail farther inland.

The emergency project at MP 206.8 most closely aligns with Option No. 1 above (baseline revetment to repair damages from storm events), which was also assessed against a set of performance criteria under the different SLR scenarios considered. For the baseline revetment option, the criteria included ensuring that the revetment crest exceeds the 100-year wave runup and that the armor rock withstands total and partial damage under the 100- and 50-year events. Therefore, the analysis below for the project location (MP 206.8) also discusses the minimum elevation for revetment for the 50-year, 100-year, and 500-year events that would prevent significant overtopping of the railroad consistent with the application of performance criteria in the OCTA plan.

Figure 2 depicts the existing railroad infrastructure elevations and the existing FEMA total water levels. As depicted in Figure 2, at MP 206.8 (yellow bar), the railroad elevation (red line) exceeds the existing water levels for all scenarios considered, with exception of the 500-year event elevation (grey line).

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Figure 2. Existing Rail and FEMA Total Water Elevations (Existing Conditions)



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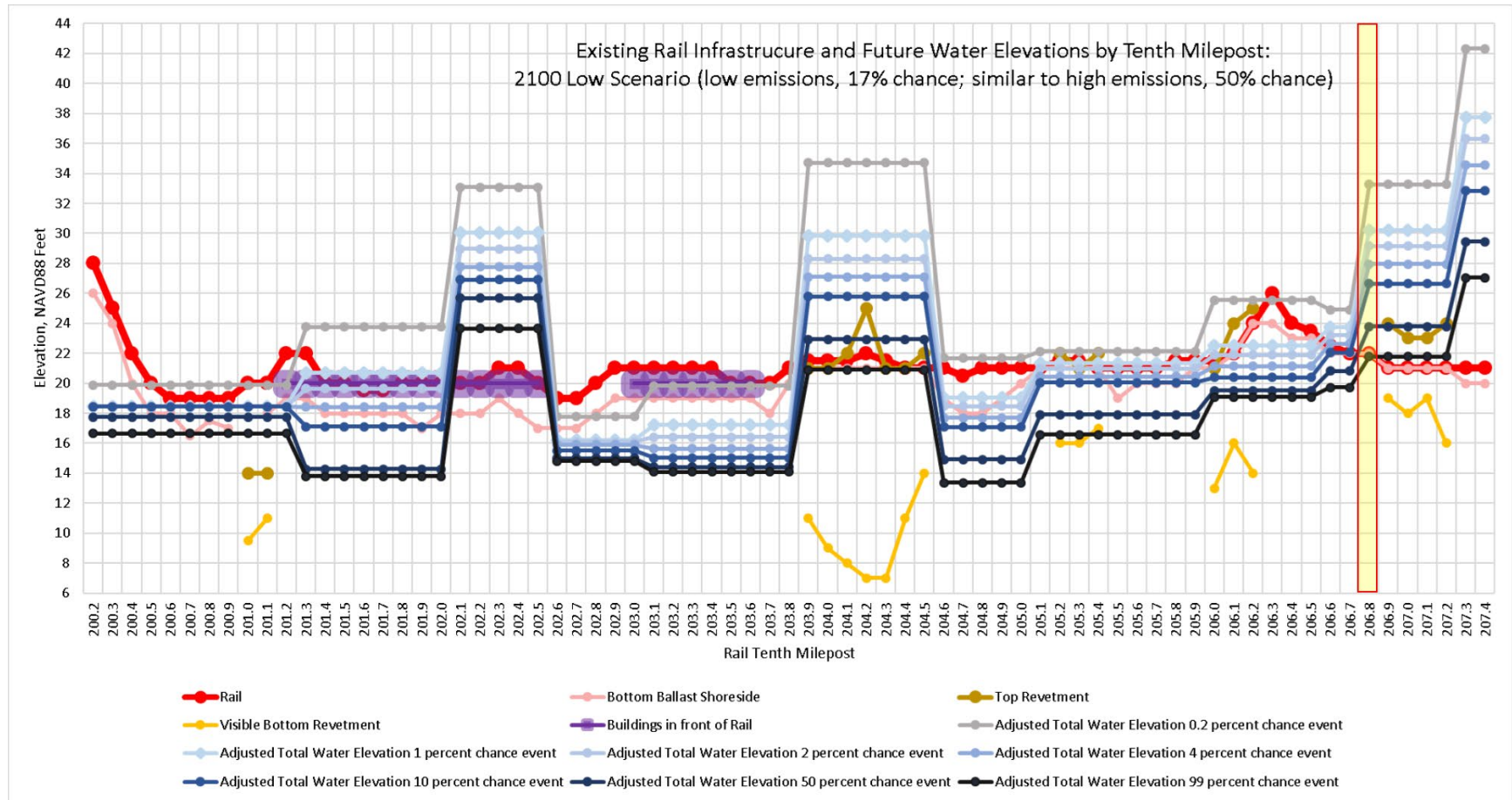
Figure 3 depicts the existing railroad infrastructure and future water elevations under the low emissions scenario in 2100. As depicted on Figure 3, at MP 206.8 (yellow bar) the total water elevation for the 1-year event (black line) is at the same elevation of the railroad (red line), and the total elevations for all other events considered are projected to exceed the elevation of the railroad.

Figure 3 also indicates revetment at the following minimum elevations would prevent significant overtopping of the railroad during the 50-year, 100-year, and 500-year events:

- 29 feet NAVD 88 during a 50-year event
- 31 feet NAVD 88 during a 100-year event, and
- 33 feet NAVD 88 during a 500-year event.

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Figure 3. Existing Rail and Total Water Elevations – Year 2100 Low Emissions Scenario



Source: OCTA 2021 (Page 42)

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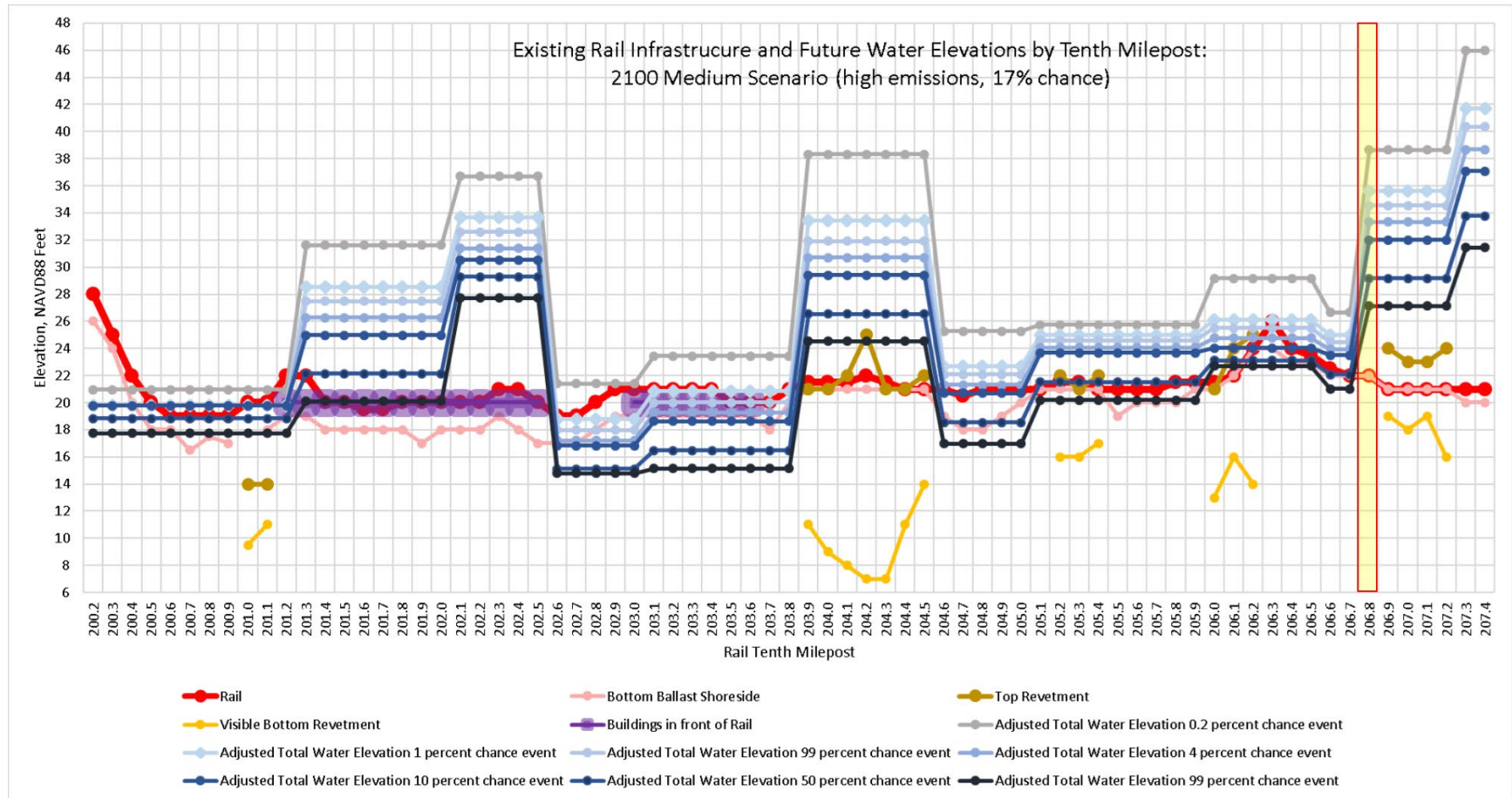
Figure 4 depicts the existing railroad infrastructure and future water elevations under the medium emissions scenario in 2100. As depicted in Figure 4, at MP 206.8 (yellow bar), the total elevations for all events considered are projected to exceed the elevation of the railroad.

Figure 4 also indicates revetment at the following minimum elevations would prevent significant overtopping of the railroad during the 50-year, 100-year, and 500-year events:

- 35 feet NAVD 88 during a 50-year event,
- 36 feet NAVD 88 during a 100-year event, and
- 39 feet NAVD 88 during a 500-year event.

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Figure 4. Existing Rail and Total Water Elevations – Year 2100 Medium Emissions Scenario



Source: OCTA 2021 (Page 43)

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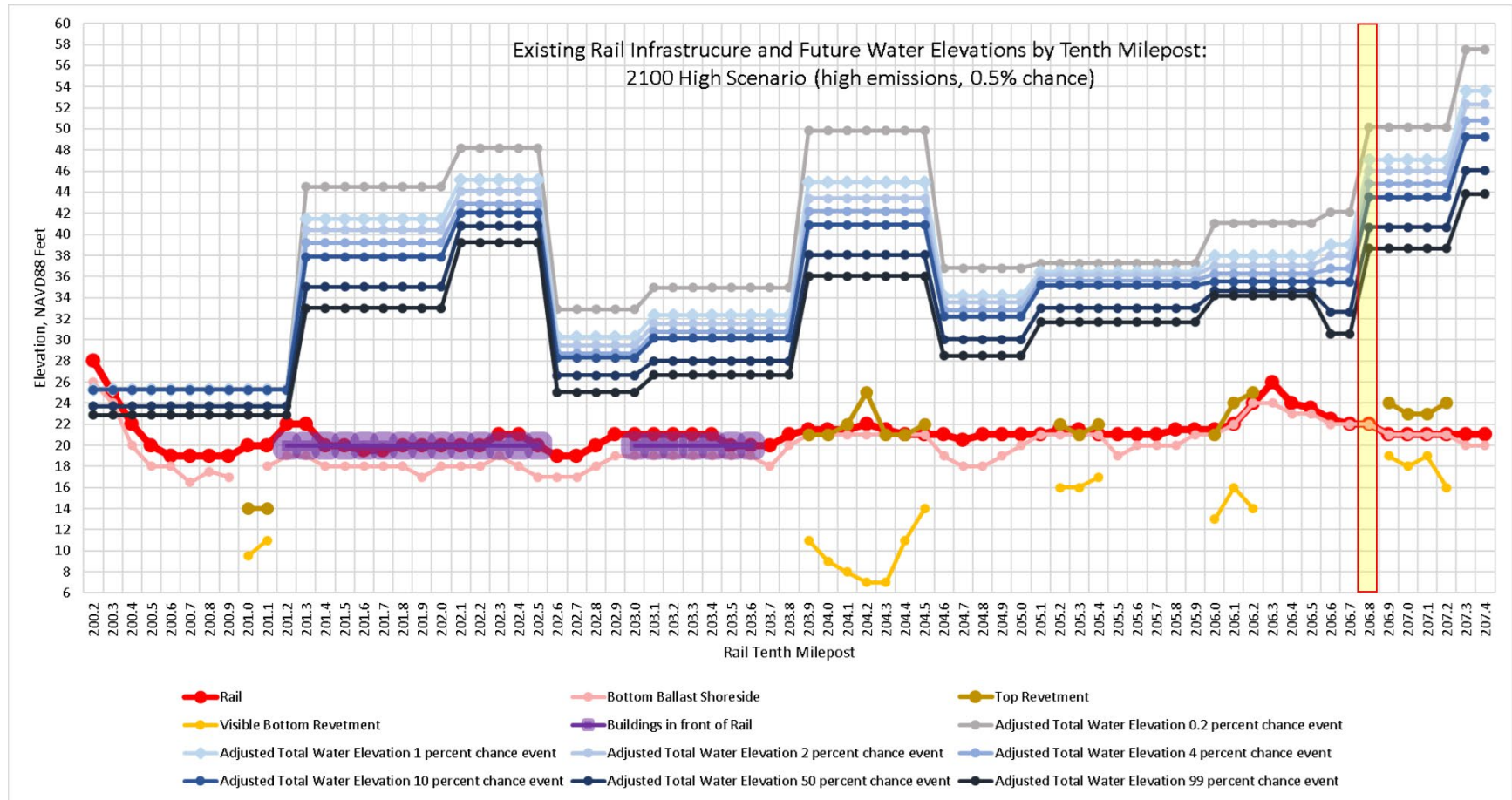
Figure 5 depicts the existing railroad infrastructure and future water elevations under the high emissions scenario in 2100. As depicted in Figure 5, at MP 206.8 (yellow bar), the total elevations for all events considered are projected to exceed the elevation of the railroad.

Figure 5 also indicates revetment at the following minimum elevations would prevent significant overtopping of the railroad during the 50-year, 100-year, and 500-year events:

- 46 feet NAVD 88 during a 50-year event,
- 47 feet NAVD 88 during a 100-year event, and
- 50 feet NAVD 88 during a 500-year event.

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Figure 5. Existing Rail and Total Water Elevations – Year 2100 High Emissions Scenario



Source: OCTA 2021 (Page 44)

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Implementation of Adaptation Options

Figure 6 depicts the OCTA plan for when adaptive measures may be needed for each SLR increment studied, with exception of the extreme scenario.

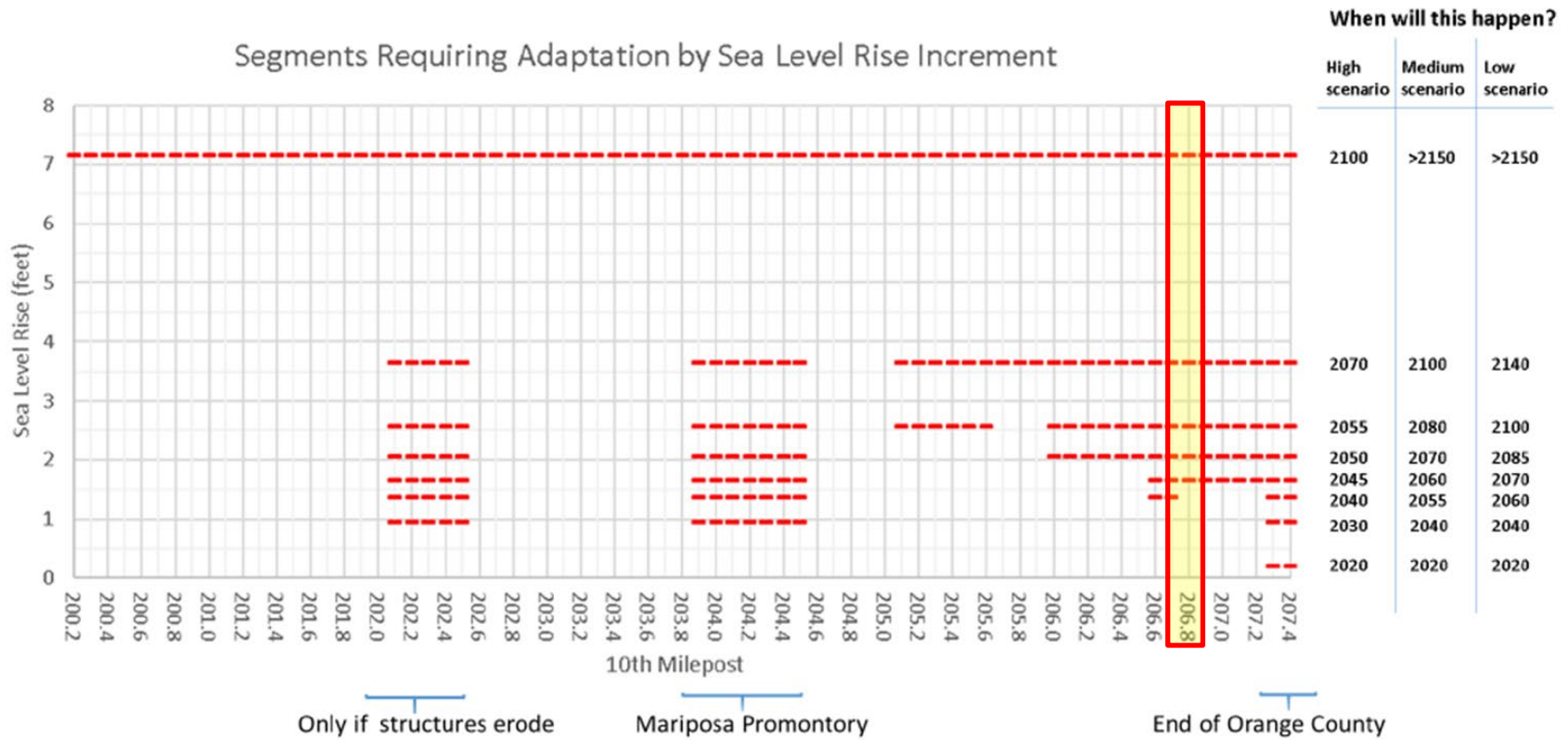
Although implementation of revetment as one of three flexible adaption options was not planned until 2040, due to the nature of the emergency conditions present at MP 206.8, OCTA was required to implement the revetment adaption option as a safety measure to protect the rail infrastructure from physical damage and rail service from disruption, consistent with the Coastal Act, as it would be:

“necessary to protect a coastal dependent use or existing structures in danger from erosion, represents the least damaging alternative for protecting this use, and is designed to eliminate or mitigate adverse impacts on local shoreline sand supply”.

In early 2022, OCTA and SCRRA are planning to initiate an alternatives analysis of the four potential coastal adaptation options (alternatives) outlined in the OCTA plan, to reduce risk and improve resiliency throughout the coastal alignment.

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Figure 6. Segments Requiring Adaptation



Source: OCTA 2021 (Page 52)

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California Coastal Commission – Critical Infrastructure at Risk: Sea Level Rise Planning Guidance for California’s Coastal Zone

The CCC Planning Guidance recognizes that approximately 70 miles of rail track or abutments within the California Coastal Zone are currently vulnerable, or are projected to become vulnerable, due to coastal hazards and up to 6.6 feet of projected SLR (CCC 2021, Page 84). CCC Planning Guidance recommends that current planning address longer-term SLR vulnerability through 2100, and acknowledges that nature-based adaptation strategies, including beach replenishment, could face difficulties in areas with high-energy wave environments (CCC 2021, Page 97).

The CCC Planning Guidance includes recommendations for agency coordination, consideration of Environmental Justice impacts, and phased adaptation strategies. CCC’s Planning Guidance also outlines adaptation cost and funding, and consideration of nature-based adaptation strategies.

The emergency project is being implemented consistent with these recommendations and in alignment with California Coastal Act policies. Coordination occurred with the City of San Clemente and other agencies requiring approval of the project. There are no Environmental Justice communities within 5 miles of the project site. Due to the emergency nature of the project, phased adaptation, including cost and funding, could not be considered. Nature-based alternatives were not considered due to the high wave-energy present along the rail corridor.

Per Coastal Act Section 30235, protective devices, such as those associated with the emergency project, are permitted. Specifically, protective devices that:

“...alter[] natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structure or public beaches in danger from erosion and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply.”

This emergency response does not address future planning projects. Any future projects that may be required at MP 206.8 would be completed in compliance with the CCC Planning Guidance. In early 2022, OCTA and SCRRA are planning to initiate an alternatives analysis of the four potential coastal adaptation options (alternatives) outlined in the OCTA plan, to reduce risk and improve resiliency throughout the coastal alignment.

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References

- California Coastal Commission (CCC). 2021. Critical Infrastructure at Risk Sea Level Rise Planning Guidance for California's Coastal Zone, Final, November. Available at: https://documents.coastal.ca.gov/assets/slr/guidance/SLR%20Guidance_Critical%20Infrastructure_11.3.2021_FINAL_FullPDF.pdf. Accessed November 11, 2021
- City of San Clemente. 2019. Sea Level Rise Vulnerability Assessment. Available at: <https://www.san-clemente.org/home/showdocument?id=54174>. Accessed November 10, 2021
- Ocean Protection Council (OPC). 2018. State of California Sea Level Rise Guidance 2018 Update. Available at: https://opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf. Accessed November 10, 2021
- Orange County Transportation Agency (OCTA). 2021. Rail Defense Against Climate Change Plan, January. Available at: https://www.octa.net/pdf/OCTA_RailDefAgainstCC_FinalReport_wAppendix.pdf. Accessed November 10, 2021

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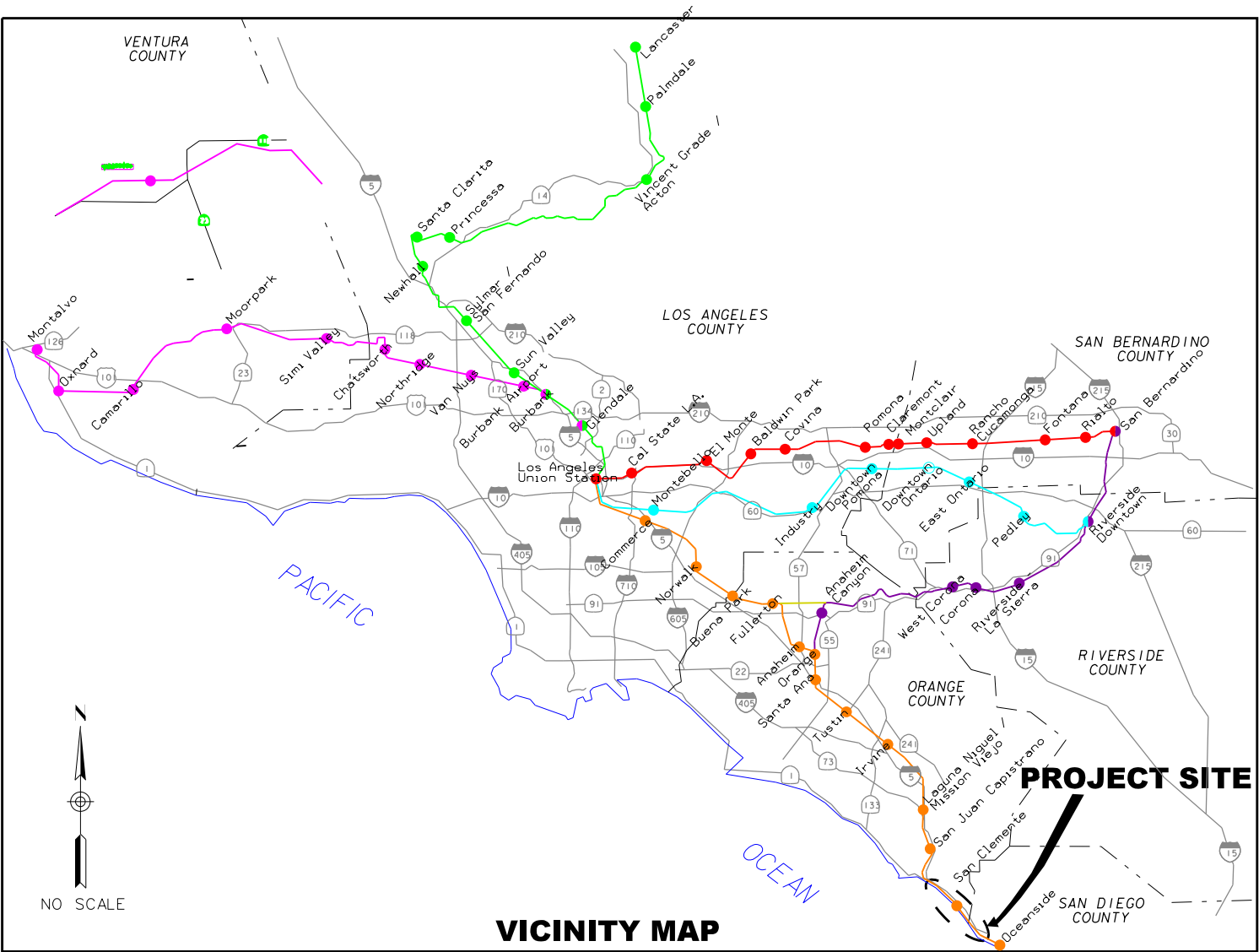
Attachment K. SCRRA Maintenance Plan

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SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

MAINTENANCE OF EXISTING ROCK REVETMENT PROTECTING RAILROAD TRACK

ORANGE SUBDIVISION MP 203.8 TO MP 207.3



SHEET INDEX	SHEET NUMBER
TYPICAL CROSS SECTIONS	EX-01
SCRRA STANDARD ES-2003	EX-02
RIP-RAP-EXHIBIT	EX-03
RIP-RAP-EXHIBIT	EX-04
RIP-RAP-EXHIBIT	EX-05
RIP-RAP-EXHIBIT	EX-06
RIP-RAP-EXHIBIT	EX-07
RIP-RAP-EXHIBIT	EX-08
RIP-RAP-EXHIBIT	EX-09
RIP-RAP-EXHIBIT	EX-10
RIP-RAP-EXHIBIT	EX-11
RIP-RAP-EXHIBIT	EX-12
RIP-RAP-EXHIBIT	EX-13
RIP-RAP-EXHIBIT	EX-14
RIP-RAP-EXHIBIT	EX-15

NOVEMBER 17, 2015

PERMIT APPLICATION

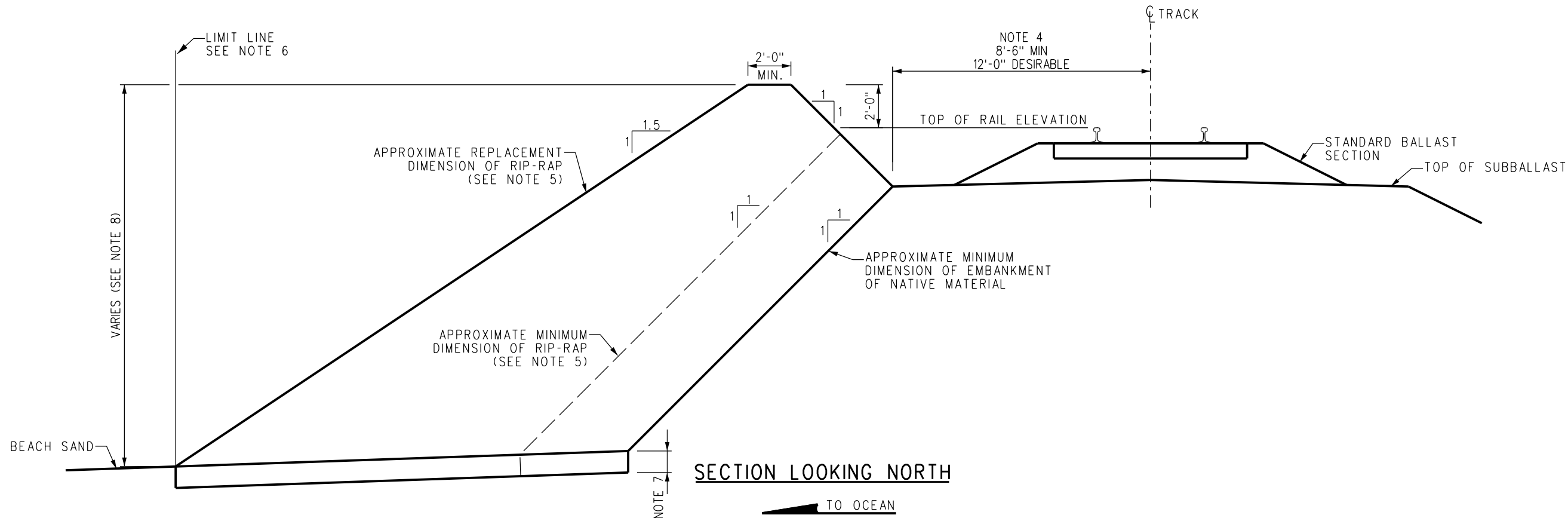
CONTRACT No. E7398-12/CTO-04





TYPICAL CROSS SECTIONS

CONTRACT NO. E7398-12/CTO-04	
DRAWING NO. EX-01	
REVISION	SHEET NO. 1
SCALE AS-SHOWN	



NOTES:

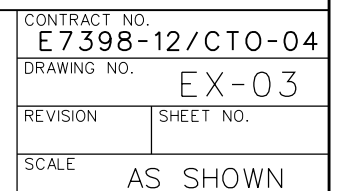
1. APPLICATION: THIS STANDARD SHALL BE USED FOR RAILROAD EMBANKMENTS EXPOSED TO OCEAN WAVES. THE RIP-RAP IS USED TO SECURE THE TRACK BALLAST FROM EROSION DUE TO WAVES, AS REQUIRED BY FEDERAL RAILROAD ADMINISTRATION TRACK SAFETY STANDARDS PART 213.103, PROTECTION OF THE BALLAST AND EMBANKMENT BEING FUNDAMENTAL IN SUPPORTING THE TRACK STRUCTURE.
2. DIMENSION LINES: DIMENSIONS FOR STONE RIP-RAP ARE THE AVERAGE OF THE EXPOSED SURFACE OF ROCK. DUE TO THE IRREGULAR SIZE AND SHAPE OF NATURALLY BROKEN ROCK, ANY SPECIFIC POINT MAY VARY TWO FEET FROM THE AVERAGE DIMENSION SHOWN.
3. RIP-RAP MATERIAL: GRANITE, BASALT OR SIMILAR IGNEOUS OR METAMORPHIC ROCK NATIVE TO ORANGE OR RIVERSIDE COUNTIES, BROKEN INTO SIZE DISTRIBUTION MEETING ASTM D5519 GRADATION WILL BE USED TO REPLACE ERODED RIP-RAP AREAS, HOWEVER EXISTING INVENTORIES OF LARGER ROCK MAY BE USED UNTIL EXHAUSTED. CONCRETE, ASPHALT, TIMBER OR METAL IS NOT PERMITTED IN THE RIP-RAP.
4. A WALKWAY GENERALLY CONFORMING TO SCRRRA ES2001 AND ES2002 WILL BE PROVIDED ON THE OCEAN SIDE OF THE TRACKS. THE MINIMUM WIDTH OF THE WALKWAY IN SURF AREAS IS EIGHT FEET AND SIX INCHES (8'-6") FROM THE CENTERLINE OF THE TRACK, WITH TWELVE FEET (12'-0") TO BE PROVIDED WHERE FIELD CONDITIONS PERMIT. WALKWAY SURFACE SHALL BE SUBBALLAST.
5. MINIMUM AND MAXIMUM REPLACEMENT DIMENSIONS: THE GENERAL CRITERIA FOR INITIATING REPLACEMENT OF RIP-RAP IS WHEN EROSION OR SETTLEMENT HAS DEGRADED THE RIP-RAP SUCH THAT THE TOP OF THE RIP-RAP HAS BECOME LOWER THAN THE TOP OF RAIL ELEVATION (AND THEREFORE DOES NOT SHIELD THE TRACK FROM WAVES), WHEN THE THICKNESS OF THE RIP-RAP HAS DETERIORATED SUCH THAT THE NATURAL EMBANKMENT IS EXPOSED TO WAVE ACTION, OR WHEN THE LOWER PORTIONS OF THE RIP-RAP HAVE BECOME ERODED LEAVING AN UNSTABLE (STEEPER THAN 1:1) SLOPE RATIO. RIP-RAP WILL BE REPLENISHED TO THE "REPLACEMENT LINE" SHOWN, GENERALLY TO A 1.5:1 SLOPE RATIO. (AT LOCATIONS WITH WELL-ESTABLISHED LARGE DIMENSION RIP-RAP AT A STEEPER SLOPE, LOCALIZED SEGMENTS OF NEW RIP-RAP MAY BE INSTALLED AT 1:1 SLOPE RATIO). THE NORMAL STATE OF MAINTENANCE WILL BE GRADUALLY ERODING COVER OF RIP-RAP BETWEEN THE "MINIMUM" AND "REPLACEMENT" DIMENSION LINES.
6. THE SCRRRA AND LOCAL AGENCIES HAVE ESTABLISHED A "LIMIT LINE" TO DEFINE THE MAXIMUM WIDTH OF THE RIP-RAP. THIS LINE IS LOCATED BY REFERENCE TO GPS MEASURED COORDINATES, TO OFFSETS FROM TRACK CENTERLINE, OR BOTH. PLACEMENT OF RIP-RAP SHALL CONFORM TO THE LIMIT LINE UNLESS UNPRECEDENTED EROSION OF THE BEACH LOWERS THE LEVEL OF THE SAND, IN WHICH CASE THE LIMIT LINE WILL BE ADJUSTED SEAWARD AT A 1.5:1 (OR 1:1 AT LOCALIZED SITES) SLOPE RATIO FOR THE ADDED HEIGHT OF THE EMBANKMENT. AFTER RIP-RAP REPLACEMENT OPERATIONS ARE COMPLETE SCRRRA WILL MAKE A SURVEY OF THE LIMIT LINE TO DETECT ANY DEVIATIONS FROM THE LIMIT LINE.

NOTES: (continued)

7. THE BOTTOM OF THE RIP-RAP SHALL BE KEYED INTO THE BEACH SAND BY APPROXIMATELY THE SIZE OF THE RIP-RAP ROCK NOMINAL DIMENSION. EXISTING RIP-RAP OR NATIVE ROCK SHALL NOT BE EXCAVATED TO ESTABLISH A NEW KEY UNLESS REQUIRED TO ACHIEVE A STABLE STRUCTURE.
8. THE ELEVATION OF THE TRACK SHALL BE MAINTAINED TO WHAT EXISTED UPON PURCHASE OF THE TRACK, HOWEVER TRACK RAISE NOT EXCEEDING 3 INCHES AT TIME OF THE REPLACEMENT MAY BE PERFORMED. THE ELEVATION OF THE RIP-RAP SHALL REMAIN AS DIMENSIONED ON THIS STANDARD. IF THE ELEVATION OF THE BEACH SAND RISES OR FALLS, THE EFFECTIVE HEIGHT OF THE RIP-RAP SHALL BE ADJUSTED AT THE 1.5:1 OR 1:1 SLOPE RATIO SHOWN.
9. RIP-RAP WILL BE PLACED BY GRAVITY DUMP FROM RAILROAD EQUIPMENT, FOLLOWED BY RE-STACKING WITH EQUIPMENT WORKING FROM THE BEACH THAT IS CAPABLE OF MOVING THE LARGEST ROCKS BEING USED. THE RE-STACKING IS TO PLACE ALL ROCKS IN A STABLE MATRIX, TO RECOVER ANY ROCKS BEYOND THE LIMIT LINE, AND TO FILL VOIDS BETWEEN LARGE ROCKS WITH SMALLER ROCK ELEMENTS. EXISTING RIP-RAP MAY BE MOVED PRIOR TO ADDITION OF REPLENISHMENT ROCK IN ORDER TO FACILITATE DUMPING.
10. FOR EMBANKMENT DETAILS NOT SHOWN, REFER TO SCRRRA ES2001 AND ES2002.
11. AT LOCATIONS WHERE SAND MOVES TO COVER UP THE RIP-RAP, RIP-RAP SHALL BE LEFT IN PLACE.
12. SCRRRA MAINTENANCE MANAGER WILL INFORM THE GOVERNING AGENCIES ONE MONTH IN ADVANCE OF PLANNED PLACEMENT OF REPLENISHMENT RIP-RAP. IF RAPID EROSION REQUIRES PLACEMENT IN LESS THAN THE FULL MONTH NOTIFICATION PERIOD, NOTICE WILL BE GIVEN AS PROMPTLY AS PRACTICABLE.
13. INSTALLATION AND RE-STACKING OF ROCK SHALL CONFORM TO PERMIT GUIDELINES AND SHALL BE PERFORMED ONLY AFTER PROVIDING PROTECTION FOR MEMBERS OF THE PUBLIC WHO MAY BE USING THE BEACH.
14. ROUTINE REPLENISHMENT AND MAINTENANCE OF THE RIP-RAP SHALL BE SCHEDULED TO AVOID PEAK BEACH RECREATIONAL USE TIMES.
15. LOCALIZED EXCEPTIONS TO THIS STANDARD SHALL BE MADE IN ORDER TO FIT RIP-RAP TO CONFORM TO DRAINAGE STRUCTURES, PUBLIC CROSSINGS, SIGNAL FACILITIES AND OTHER STRUCTURES.

EX-02

				DRAWN BY: A. CARLOS		DATE: 03/31/2011		<div>SCRRRA ENGINEERING STANDARDS ARE INTENDED FOR SCRRRA APPROVED USES ONLY. FOR NON-SCRRRA APPROVED USES, SCRRRA SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THE DATA OR INFORMATION CONTAINED HEREIN. THE SELECTION AND USE OF THESE STANDARDS IS THE SOLE RESPONSIBILITY OF THE USER AND SHOULD NOT BE USED WITHOUT CONSULTING A REGISTERED PROFESSIONAL ENGINEER. ALL WARRANTIES AND REPRESENTATIONS OF ANY KIND ARE DISCLAIMED. ANYONE MAKING USE OF THIS INFORMATION AGREES THAT IT ASSUMES ALL LIABILITY ARISING FROM SUCH USE. NO PART OF THESE STANDARDS SHOULD BE REPRODUCED OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF SCRRRA. ALL RIGHTS RESERVED.</div>	<div>METROLINK[®]</div> <div>SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY ONE GATEWAY PLAZA, 12TH FLOOR, L. A., CA. 90012</div>	ENGINEERING STANDARDS		STANDARD	2003
										SCALE:	NTS		
										REVISION	SHEET		
										-	1 OF 1		
												CADD FILE:	ES2003



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REV	DATE	DESCRIPTION	BY	SUB	APP	

DESIGNED BY	M CANAS
DRAWN BY	J FELIX
CHECKED BY	C ADAMS
APPROVED BY	M GHANDEHARI
DATE	NOVEMBER 17, 2015



725 TOWN & COUNTRY RD
SUITE 300
ORANGE, CA 92868

RIP RAP EXHIBIT

CONTRACT NO. E 7398-12/CTO-04	
DRAWING NO. EX-03	
REVISION	SHEET NO.
SCALE AS SHOWN	

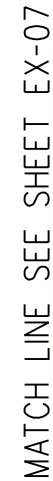


MATCH LINE SEE SHEET EX-06



MATCH LINE SEE SHEET EX-08





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DESIGNED BY	M CANAS
DRAWN BY	J FELIX
CHECKED BY	C ADAMS
APPROVED BY	M GHANDEHARI
DATE	NOVEMBER 17, 2015



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ORANGE, CA 92868

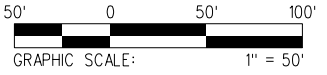
RIP RAP EXHIBIT



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DRAWING NO. EX-08	
REVISION	SHEET NO.
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MATCH LINE SEE SHEET EX-09





MATCH LINE SEE SHEET EX-11



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				DRAWN BY J FELIX			DRAWING NO. EX-11
				CHECKED BY C ADAMS			REVISION SHEET NO.
				APPROVED BY M GHANDEHARI			RIP RAP EXHIBIT
				DATE NOVEMBER 17, 2015			 PATTERSON & ASSOCIATES, INC. 725 TOWN & COUNTRY RD SUITE 300 ORANGE, CA 92868
REV	DATE	DESCRIPTION	BY SUB	APP			



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						DRAWN BY J FELIX	DRAWING NO. EX-12					
						CHECKED BY C ADAMS	REVISION				SHEET NO.	
						APPROVED BY M GHANDEHARI						
REV	DATE	DESCRIPTION	BY	SUB	APP	DATE NOVEMBER 17, 2015			SCALE AS SHOWN			

MATCH LINE SEE SHEET EX-12



0 50' 100'
GRAPHIC SCALE: 1" = 50'



CONTRACT NO. E 7398-12/CTO-04	
DRAWING NO. EX-14	
REVISION	SHEET NO.
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Attachment L. Technical Memorandum for Slope and Track Monitoring

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**Railroad Emergency Stabilization Project
Orange Sub MP 206.85
Technical Memorandum for Slope and Track Monitoring
San Clemente, California**

October 2021

Prepared for:
Southern California Regional Rail Authority (SCRRA)

Prepared by:
HDR Engineering, Inc.



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1.0 INTRODUCTION

1.1 PROJECT BACKGROUND AND EMERGENCY RESPONSE

On September 10, 2021, Southern California Regional Rail Authority (“Metrolink” or “SCRRA”) notified HDR Engineering, Inc. (“Consultant” or “HDR”) of a concerning notification that was received from a geotechnical firm working for a Homeowners Association (HOA) for the Cyprus Shores Development in San Clemente, California (CA). Metrolink was notified of an active landslide movement that could potentially impact their track or derail a train. Subsequently, HDR worked with Metrolink to implement temporary mitigation measures that included placement of riprap on the west side of the railroad track in the attempt to stop track movement. The HDR team has conducted geological slope and track survey monitoring generally on a daily basis from the time of initial notification. The HDR team also worked with Metrolink to re-align the track back to its original location.

The purpose of this report is to provide short- and long-term recommendations for the track and geologic/site slope monitoring near milepost (MP) 206.85 on the Orange Subdivision until a permanent solution has been implemented.

2.0 REVIEW ENGINEERING STUDIES

Provide write up for review.

3.0 PRELIMINARY RESPONSE

This section will present a summary of the temporary monitoring efforts performed as part of the emergency response and provide preliminary monitoring results from the surveyed track alignments and initial readings of the inclinometers installed during the emergency response.

3.1 INITIAL SLOPE AND TRACK MONITORING

The initial response to the observed slope movement was to mobilize geologists, geotechnical engineers, and surveyors to inspect the site conditions, and establish slope- and track- related benchmarks that can be both visually observed and surveyed daily to monitor additional movement of the slope and track structure.

The landslide displacement monitoring within the Cyprus Shore subdivision was initiated on September 18, 2021 by HDR’s subconsultant, Kleinfelder. The certified engineering geologist from Kleinfelder has continued daily landslide displacement monitoring up to the date of this report. The purpose of this daily geological landslide monitoring was to gauge the rate and amount of movement to ensure the safety of the workers, railroad, and other assets within the Metrolink right of way (ROW). Additionally, the approximate quantity of the riprap placed as part of the temporary mitigation efforts was observed by HDR and/or Kleinfelder staff during placement. Engineering and/or geologic personnel were onsite whenever work was being performed within the ROW and during placement of riprap.

Initially, seventeen monitoring points were established by Kleinfelder at locations described below. Others were added or lost over the monitoring interval for a total of twenty-four (24) points covering a lateral stretch of approximately 500 feet. Several monitoring points have been lost from various repair measures and the recent establishment of a temporary water drainage control plan. Currently, only three (3) locations are still being monitored.



The monitoring points consist of both vertical and horizontal displacement measuring across the landslide headscarp and separations and cracks along construction joints including within pavement surfaces. The monitoring continues along an approximate 250-foot-long stretch from the sewer pump station to the vacant lot (i.e., the 4002 lot) on the south.

During the initial timeframe of movement, September 18, 2021 to September 22, 2021, displacement was noted on the order of several inches at several locations. The largest amount was up to 3 inches within the dirt lot on the south. This timeframe covered the initial installation of the riprap at the toe of the slide area to the west of the track mainline

After September 22, 2021, the amount of displacement measured at the monitoring points decreased significantly due to the installation of riprap, and over the last several weeks, limited displacement (mostly on the order of several tenths of an inch) has been measured at a few locations.

On October 5, 2021, the track was shifted into a temporary alignment to remove the kinks caused by the landslide. This modified alignment has been used as the baseline for monitoring the track movement since then.

Twenty-eight (28) “PK” nails (hardened steel survey marker nails) were set in the wood ties at approximately 25-foot intervals to monitor the track movement. These points are surveyed daily, and the movements have been recorded and plotted against the October 5 baseline alignment.

3.2 PRELIMINARY RECOMMENDATIONS

There is no guarantee that the HOA will install their permanent slope repair mitigation measures due to the increasing costs; however, until the final decision is made by the HOA, the fissures that have opened up at the top of slope can be filled with a low-density cellular concrete (LDCC) at a relatively low cost. HDR recommends this task to be performed at the earliest time possible to prevent the potential of surface runoff seeping into the fissures and further destabilizing the slope. The HOA should consult with their geotechnical engineer regarding this temporary mitigation measure. Filling the cracks with LDCC may be performed in multiple stages depending on the depth of the fissures. In addition, we recommend that the HOA investigate other ways to divert surface flow away from the top of slope as another way to keep water from destabilizing the slope.

4.0 LONG-TERM MONITORING

4.1 LONG-TERM SLOPE MONITORING

Two inclinometers were recently installed to monitor the movement/displacements of the slope and track structure. One in-place inclinometer (IPI) was installed at the top of the slope within the Cyprus Shores Development (within the 4002 Calle Ariana dirt lot), and one was installed at the centerline of the track alignment approximately at Station 5640+60. These inclinometers were installed during an Absolute Work Window (AWW) during the weekend of October 15 – 17, 2021.

An IPI includes a series of sensors installed inside an inclinometer casing to measure the profile of lateral deformations at a single location. The inclinometer casing is a PVC casing with biaxial grooves to accommodate the inclinometer sensor wheels. This casing is grouted inside a near-vertical borehole (see Figure 4-1: PVC Casing and Figure 4-2: Inclinometer Sensor).

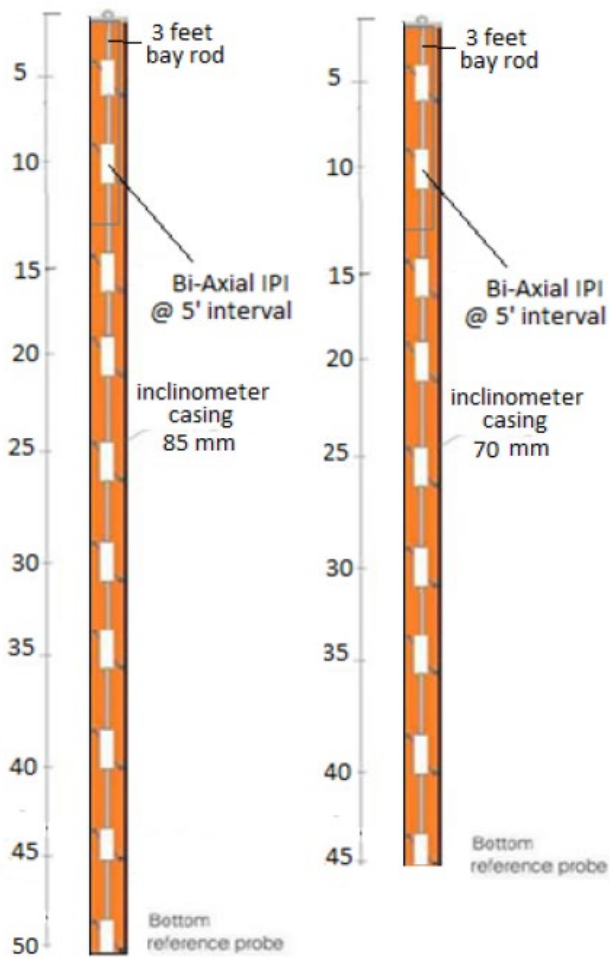


Figure 4-1: PVC Casing

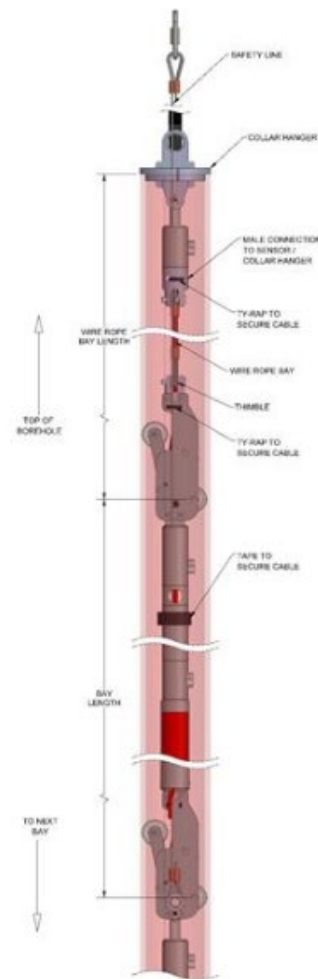


Figure 4-2: Inclinometer Sensor

Each IPI is connected to a data logger which collects sensor readings at a specified frequency and transfers them to a gateway through which the data is transmitted to a web-based platform called Geoscope Web (GW), see Figure 4-3: Data Logger Installation. On this web platform the data can be analyzed, plotted, and then viewed by the users (Metrolink, HDR, etc.) at any time. The system can be programmed to collect data on a daily or hourly basis and thresholds can be set that will trigger an alarm in which text messages or emails are sent alerting Metrolink/HDR personnel. GW can also be programmed to generate an automated report or export the data in Microsoft Excel format to allow the user to create its own graphs or analysis.

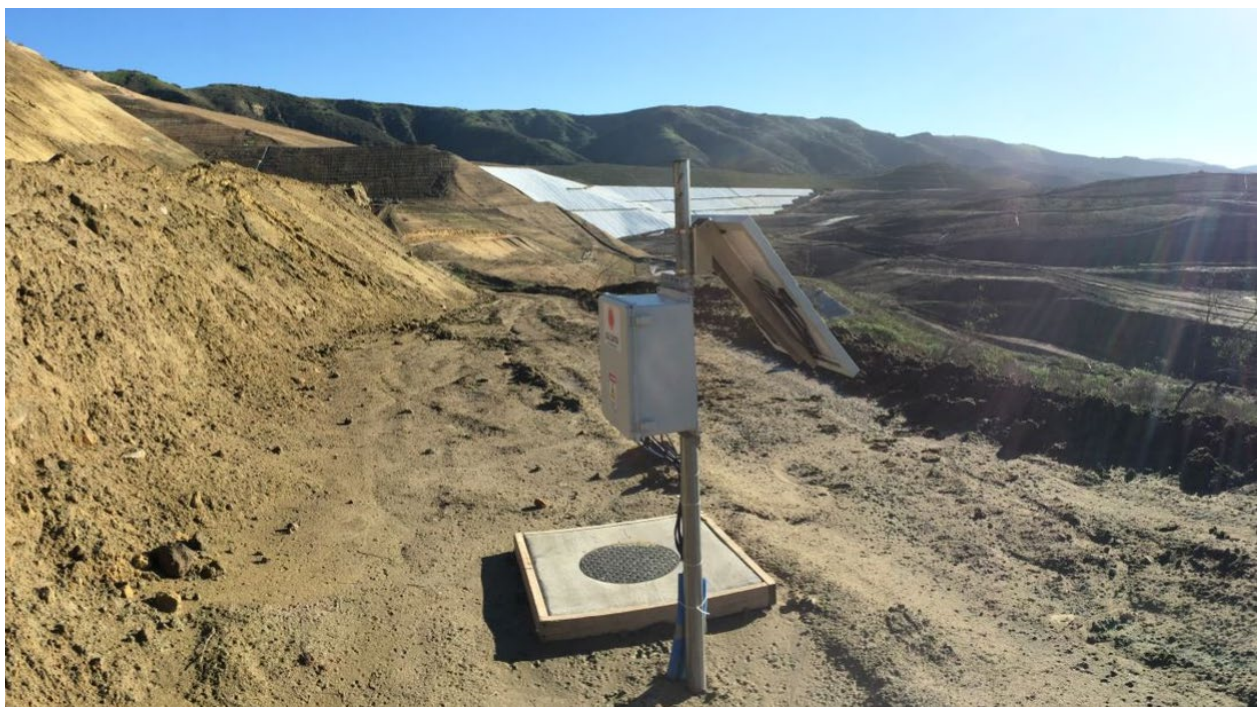


Figure 4-3: Data Logger Installation

As witnessed during the initial landslide monitoring, inclinometers are susceptible to large movements and can be sheared off making them inoperable after a large displacement event.

4.2 LONG-TERM TRACK MONITORING

RSE (a surveying firm and a subcontractor to HDR) has set five permanent survey monuments along the track and two survey markers at the top of the slope that can be surveyed to detect displacement. The five track-side monuments are placed outside the track structure between Stations 5637+00 and 5644+00. The two survey monuments are set at the top of the slope and away from the sliding plane. These two monuments will be used as control points to survey other critical locations at the top of the slope within the sliding plane.

If Metrolink/HDR is alerted to movement from the inclinometers, these points will allow the engineering team to collect a supplementary set of measurements to verify the IPI data and make timely assessment and analysis of the track conditions to determine corrective actions for maintaining the safety of rail operations.

4.2.1 Class I Railroad Practices

The Class I's have installed inclinometers to monitor slide movements and they also rely upon visual inspections to detect movement of the track structure or the adjacent slopes. Once alerted to either a developing or complete failure of a slope or section of track, response teams are deployed to assess the conditions and determine appropriate mitigation measures.

Visual inspection practices have been in place for decades; however, they rely on human observation, and may not provide a significant amount of response time.

As new monitoring technologies become available, we expect that the Class I's will install these monitoring devices at critical locations along their mainlines.

4.2.2 Monitoring Technologies

There are also automated systems that can monitor both slope and track movement. Tilt

sensors can be installed on slopes or the trackbed to record embankment slippage, and track heave/settlement. These sensors can also be connected to a web-based platform that will alert Metrolink of any movement. In addition, wireless cameras can also be installed and activated based on movement such as falling debris, or by the sensors.

The main reason for installing new monitoring technologies is to reduce the response time to an event and provide real-time information regarding slope movement without having personnel on site. Response time is critical to preventing a complete failure and saving the lives of train crews and passengers. The inclinometers will provide the real-time data that will allow Metrolink to implement the response procedures quicker and reduce the response time. In addition, if tilt sensors and/or cameras are installed in this or other areas, they can provide Metrolink the critical information much faster than conventional methods. These technologies can also be connected to the existing railroad signal system and instantly set the signals to red in the event of track movement and/or a slope failure; however, robust baseline testing is recommended to establish the correct trigger thresholds prior to adaptation into the signal system.

4.3 LONG-TERM ROCK REVETMENT MONITORING

4.3.1 Class I Railroad Practices

Visual inspection of the track and embankment will occur a minimum of three times a week with at least 1 calendar day interval between inspections. Track inspections are performed on foot or by riding in a vehicle that allows visual inspection of the track. During those visual inspections, which include extreme weather inspections, indicators that rip rap protection may need to be replaced include:

- 1) the loss of ballast,
- 2) visible signs of erosion affecting the rail embankment, and
- 3) changes in alignment, cross level and profile of track.

Should it be necessary, the track inspector has the authority and responsibility to place track speed restrictions or remove track from service as conditions warrant.

Track inspectors complete and file inspection reports after each inspection.

4.4 LONG-TERM RECOMMENDATIONS

4.4.1 Slope Monitoring

The long-term recommendations of the HDR Team are to use the inclinometers as the first alert notification to an event at Cyprus Shores. Because the inclinometers can detect movement of the ground that may not be visible at the ground surface, they will provide Metrolink with the knowledge that track movement and/or slope failure is occurring and allow for a quicker response.

Upon notification of movement, the survey markers can be monitored for movement, as well as additional action taken to determine the cause of the movement potentially preventing a major slope failure.

The inclinometer placed at the top of the hillside should indicate movement if the hillside becomes unstable in the future. However, for this specific landslide, the inclinometer installed within the track structure is expected to be more sensitive to potential landslide movements.

4.4.2 Rock Revetment Monitoring

The long-term recommendations of the HDR team are to use the ongoing inspection results in combination with annual orthorectified aerial photographs of the rail segment under study to assess the effects of erosive coastal forces on the rip rap revetment. Should a loss of rip rap be coupled with loss of ballast, signs of erosion or changes in track geometry, then rip rap would be replaced within the current rock revetment footprint.

5.0 LIMITATIONS

The inclinometers and survey monuments are the initial data gathering step to protecting the SCRRA track and the community at the top of the coastal bluffs. They do not physically prevent the slope from moving or guarantee that Metrolink will be alerted prior to a slope failure. Slope failures can occur instantly for many different reasons, but these installations and procedures can alert Metrolink that a failure is beginning and potentially provide the time needed to take action prior to a major slope failure, or possibly alert Metrolink prior to the track alignment being affected.

Inclinometers sensors are subject to malfunction similar to any other electronic devices, especially when they are installed in harsh environments. Therefore, there is possibility of false alarms. Additionally, the metallic inclinometer sensors may be impacted by the corrosivity of the soil and groundwater due to the proximity to the ocean.

It should be noted that inclinometers are linear elements installed vertically within a soil/slope section and their effectiveness is limited to the area and depth where the sensors are installed.

6.0 RECOMMENDED RESPONSES

6.1 ESTABLISHING THRESHOLDS

The recommended response to an alert from the slope monitoring equipment will be based upon the threshold limits established for the monitoring equipment. It is recommended that Metrolink consider multiple threshold levels to allow for a varying level of response. The response will range from sending someone out to perform visual inspections, to conducting a survey of the track monuments, or a full closure of the railroad.

The threshold limits recommended below are our initial recommendations. These limits should be reviewed and updated with Metrolink staff and the HDR & Kleinfelder geotechnical engineers and geologists once the data from the geotechnical explorations is available and analyzed.

6.2 INCLINOMETER DATA

Data collected by the inclinometers will be shown as incremental and cumulative movements. Incremental data is movement measured at a single sensor over a certain time period, while cumulative data is the total movement measured from the baseline. It is recommended that the incremental threshold limits be assigned to all sensors on an IPI string and adjusted based on the alert level.

6.3 THRESHOLDS AND RESPONSES

Table 6-1 below depicts our recommendations for the initial thresholds and their associated responses. These alert levels should be initialized if either the incremental or the accumulative thresholds are reached.

Table 6-1: Recommended Threshold Limits and Responses

Alert Level	Threshold Limits		Frequency	Response
	Incremental	Cumulative		
1 Yellow (Caution)	0.25-inches over 24 hrs	0.5-inches	Every 4 hours	<ul style="list-style-type: none">Regularly scheduled Track inspections should focus on the area.Surveyor to record movements the track side monuments (once).
2 Orange (Alert)	0.50-inches over 72 hrs	1-inch	Every 2 hours	<ul style="list-style-type: none">Daily Track inspections should focus on the area.Survey track monuments 3-times per week until advised to stop.
3 Red (Critical)	1-inch over 24 hrs	2-inches	Every 1 hours	<ul style="list-style-type: none">Track inspector sent immediately to site for visual inspection.On-route trains should be warned to reduce speed or stop until visual inspections can determine the condition of the track.Survey track monuments daily until advised to stop.

For the incremental movements in the Table, Alert 1 shows the landslide is active, Alert 2 shows there is continuous movement, and Alert 3 shows there is a sudden, big movement. The cumulative movement criterion should be triggered only once, while incremental movement criterion should be triggered any time the criterion is met.

If the response to an event results in the repair, rehabilitation, or modification of the existing slope and/or track, then Metrolink staff and the HDR & Kleinfelder geotechnical engineers and geologists will make a determination whether to reset the baseline for measurement of the Cumulative Movement Threshold. This will only be reset if the slope protection and track structure have been restored to remove previous cumulative impacts and there is no measurable ongoing movement of the slope.

6.4 ADDITIONAL CRITERION FOR SEISMIC ACTIVITY AND RAIN EVENTS

There are other external events that can trigger movement of the hillside such as heavy rainfall and seismic activity. Rainfall can saturate the soil adding weight while decreasing the shear strength of the soil, and shaking or movement of the earth can add to the driving forces on the sliding soil wedge causing the slope to become unstable. The recommendations for monitoring and responses in the event of seismic activity and rain events are;

- **Static Conditions:** Frequencies as mentioned shown in Table 6-1.
- **Earthquake of Magnitude 4 or higher (per SCRRA Seismic Response Standards):**
 - Increase frequencies to one reading per 1-hr until a decision is made to reduce frequencies.
 - Surveyors to mobilize to the site to survey only ground monuments (once or as advised by HDR/Metrolink).
- **Rain event with a potential for surface runoff:**
 - Increase frequencies to one reading per 2-hrs until a decision is made to reduce frequencies
 - Surveyors to mobilize to the site on the following day to survey only ground monuments until advised to stop by HDR/Metrolink.

6.5 SURVEY MONUMENT MOVEMENT THRESHOLDS

As indicated by Table 6-1, for each alert level, the surveyor will perform survey to determine the movements of the track side monuments and the track center markers. If the movements are one inch or more, the track alignment shall be inspected “to ensure compliance with required SCRRA maintenance standards” following the requirements of Section 3.0 – Track Geometry of the SCRRA Track Maintenance Manual. See Table 3-1 of the Metrolink Track Maintenance Manual for minimum track condition requirements.

6.6 ALERT NOTIFICATIONS

Once one of the threshold limits are reached, alert notifications can be sent to specific individuals based on the alert level.

- Alert Level 1
 - HDR/Kleinfelder Geotechnical staff
 - Rob Klovsky (HDR)
 - Gary Goldman (HDR)
 - Scott Rugg (Kleinfelder)
 - Metrolink Engineering Staff
 - Joe McNeely (SCRRA)
 - Metrolink Track/Structures
 - Timothy Morehead (SCRRA)

-
- Fia AhSue (SCRRA)
 - DD Jones (Herzog)
 - Rick McIntosh (Herzog)
 - Mike Chavez (Herzog)
 - Rick Vicario (Herzog)
 - Tony Strong (Herzog)
 - Alert Level 2
 - HDR/Kleinfelder Geotechnical staff
 - Metrolink Engineering Staff
 - Metrolink Track/Structures
 - Metrolink Management
 - Don Filippi (SCRRA)
 - Justin Fornelli (SCRRA)
 - Luis Carrasquero (SCRRA)
 - Rod Bailey (SCRRA)
 - Alert Level 3
 - HDR/Kleinfelder Geotechnical staff
 - Metrolink Engineering Staff
 - Metrolink Track/Structures
 - Metrolink Management
 - Metrolink Dispatching
 - Sergio Marquez (SCRRA)
 - Eric Crisler (SCRRA)
 - Shamonda Jones (SCRRA)
 - Eric Smith (SCRRA)
 - James Davis (SCRRA)
 - ChiefDispatchers@scrra.net
 - Metrolink Safety and Compliance
 - Darrell Fizer (SCRRA)
 - David Johnson (SCRRA)

6.7 MONITORING PERSONNEL

It is recommended that the data from both inclinometers be monitored daily by a qualified geotechnical engineer or someone trained to recognize patterns within the data that indicate a failure is imminent. Patterns within the data may show very slow incremental displacement that should be closely watched to a sudden relatively large displacement.

APPENDIX A
PERSONNEL CONTACT INFORMATION



Attachment M. Alternative Analysis

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Alternatives Analysis

Introduction

The Orange County Transportation Agency (OCTA) and Southern California Regional Rail Authority (SCRRA or Metrolink) are the applicants for the Coastal Development Permit (CDP) associated with the Railroad Emergency Stabilization Project – San Clemente Orange Sub MP 206.85 (Project) in south San Clemente, CA. Emergency permit #1 was issued by the California Coastal Commission (CCC) to OCTA and Metrolink September 23, 2021 for the Project and emergency permit #2 was issued on December 22, 2021. Initial project construction activities associated with the emergency stabilization occurred from September 16 through October 2, 2021 with ongoing monitoring efforts continuing. The ongoing monitoring efforts identified the need for additional riprap, which was placed from December 22, 2021 through January 30, 2022.

This alternatives analysis includes an evaluation of alternatives to the proposed emergency slope stabilization at the Project site to determine the least environmentally damaging practicable alternative based on guidance received from CCC staff. As detailed below, this evaluation is specifically addressing the emergency slope stabilization and is not meant to provide an exhaustive analysis of other adaptive options and/or site-specific engineering solutions to address projected sea level rise at the Project site. In early 2022, OCTA and SCRRA are planning to initiate an alternatives analysis of the four potential coastal adaptation options (alternatives) outlined in the *OCTA Rail Defense Against Climate Change Plan* in addition to other site-specific engineering solutions, as applicable, to further reduce risk and improve resiliency throughout the coastal alignment, including at the emergency stabilization site. OCTA and SCRRA may ultimately select a long-term stabilization solution for the Project site and the future alternatives analysis will consider all relevant guidance, site-specific characteristics, and the results of this alternatives analysis for the proposed emergency slope stabilization at the Project site.

Purpose and Need

The purpose of the Project is to stabilize the railroad tracks from further shifting due to recent landslide movement originating at the adjacent coastal slope and extending below the railroad ROW in the shortest feasible duration due to imminent threat to life and property. Recent acceleration of the landslide resulted in severe cracks and separation in pavement and house foundations at the top of the slope and caused severe deflection in the railroad tracks. Metrolink ceased all passenger rail traffic, including Amtrak and Metrolink services, through the Project area from September 16 through October 4, 2021 due to safety concerns. The Project is needed to slow the landslide, restore rail traffic, and protect coastal-dependent uses and existing structures in danger from a potential large-scale landslide that would render the railroad line out of service for many months. The purpose and need for the Project is focused on the immediate emergency and not long-term stabilization of the railroad corridor.



Criteria

The following criteria were used in determining the least environmentally damaging practicable alternative that could be implemented in the shortest timeframe to address the emergency at the Project site. The Project, as the selected alternative, meets all three criteria.

1. Meets purpose and need.
2. Practicable. Practicability depends on cost, technical, and logistic factors. To be practicable, an alternative must be available and capable of being done after taking into consideration cost, existing technology, and logistics associated with the overall purpose. If it is otherwise a practicable alternative, an area not presently owned by the applicant that could reasonably be obtained, utilized, expanded, or managed in order to fulfill the overall purpose of the proposed activity should be considered. Technical and logistical factors that should be considered include, but are not limited to: access, transportation needs, utilities, topography, and available construction techniques.
3. Least environmentally damaging.

Project Description

After notifying California Coastal Commission, U.S. Army Corps of Engineers, and Regional Water Quality Control Board, approximately 12,500 tons of 3 to 5-foot diameter rip rap (7,810 CY) was placed on a 700 linear foot section of existing rock revetment on the west side of the railroad facing the sea at MP 206.8 between September 16 and October 2, 2021. The quantity of rock placed was calculated to compensate for the weight/shear resistance that was historically provided by beach sand that has since been lost. The riprap was brought in by approximately 200 railcars via railroad. An excavator and bulldozer were brought onsite via railroad to clear rock from the rail and move the rock carefully into place. The excavator and bulldozer were limited to the disturbed areas along the east side of the railroad ROW. There was no staging of equipment or materials and no construction access outside of the railroad ROW. Construction and monitoring personnel reached the site by foot. Subsequently, geotechnical borings were conducted in mid-October and inclinometers were installed to monitor the landslide and the track. The inclinometers enable monitoring of the earth's movement below the surface, detecting movements approximately 50 feet below the railroad tracks.

The results of the ongoing geotechnical monitoring indicated that the path of the least resistance (i.e., the shear zone) occurs at a shallow depth compared to the findings from the geotechnical investigations and the inferred location of the shear zone by GMU (Cyprus Shore Homeowner's association's geological technical consultant). Additionally, the LiDAR survey of the landslide indicated that the assumptions (which were based on GMU's analysis) used to estimate the quantity of the riprap underrepresented the area. Even though the placed riprap was effective to control the landslide's movements, slow and steady movement was still recorded by the inclinometers. Specifically, after the installation of the inclinometers in mid-October, a cumulative movement of about 0.8 inches was recorded at the track-level inclinometer between October 19 to December 13, 2021. After an initial jump in the readings on October 23, most of the movement was slow and subsurface during this time. However, a storm event occurred on December 14, 2021 and the cumulative movement passed a 1-inch total. This 1-inch movement activated the alert system defined in the Track and Slope Monitoring Report (Attachment L of the CDP Application).

The refined geotechnical analysis based upon the geotechnical borings conducted in mid-October, updated geometry of the landslide, and a shallower shear zone as identified by the inclinometer, that an additional 5,000 to 6,000 tons of riprap was required to further stabilize¹ the landslide movement until an intermediate structural improvement can be engineered, permitted, and constructed. Additionally, the ocean wave action impacting the riprap and other factors such as groundwater variations and water seeping to the landslide cracks may lead to another phase of riprap placement or other forms of short-term stabilization in the future.

Placement of additional riprap on the west side of the track where the toe of the landslide occurs was deemed to be the only feasible solution for this project given the imminent threat to life and property. The westerly riprap is proposed to compensate for the weight/shear resistance from the eroded sand (i.e., washed out beach) and to avoid the placement of additional weight on the east side of the track which may lead to instability of the rail track due to the presence of a potential shear zone under the rail track. Furthermore, placing the riprap on the west side of the track will not hinder the long-term structural stabilization efforts proposed by Cyprus Shores Homeowners Association or Metrolink on the east side of the track.

From December 18, 2021 to January 30, 2022, 5,480 tons of riprap was placed within the same 700 linear feet described above. Similar to the first round of riprap placement, riprap was brought in by railroad bar and placed from the top of the railroad. An excavator and bulldozer brought onsite via railroad cleared the rock from the rail and moved into place. The revetment varies in slope from approximately 1:1 to 3:1, consistent with SCRRA standard roadbed cross section for segments of rail embankment exposed to ocean surf.

The impacts of the Project were minimized to the extent feasible by delivering rock and equipment by rail rather than through the state park to the north, which would have disrupted beach access and use during project construction as well as resulting in temporary impacts to supralittoral and coastal strand zones of the beach. Additionally, the equipment and staging areas were limited to previously disturbed areas, thus avoiding impacts to vegetated habitat. Finally, the work limits were carefully identified based upon track deflection data so that the rock placement could be placed precisely where needed, thus limiting the length of shoreline impacted to 700 linear feet. The quantity of rock placed was calculated based on best available information and limited to that necessary to achieve acceptable control of the landslide's movement. The success of the first rock placement was monitored for effectiveness while additional data that had become available was analyzed. This iterative process resulted in the need for second phase of rock placement, but again the quantity of rock was limited to that estimated to achieve acceptable control of the landslide's movement. Track monitoring will continue while a longer-term interim stabilization method is developed and implemented.

¹ It should be noted that the term "stabilize" in this project does not mean to achieve an industry-accepted factor of safety for the static and seismic conditions, but the factor of safety was increased to a level that the large initial movements of the landslide and the secondary creep-type movements can be controlled.



Evaluation

On-Site Alternatives

For this evaluation, four on-site alternatives were considered in this emergency, including one soft-solution alternative, consistent with the guidance from CCC staff. Table 1 summarizes the on-site alternatives considered.

As shown in Table 1 below, only the proposed slope stabilization method meets all three criteria.

Table 1. Summary of On-Site Alternatives Evaluated

Alternative	Meets Purpose	Practicable	Impacts to Coastal Resources
No Action Alternative – Assumes Landslide Progresses to Point of Failure	No	No	Damage/destruction of public railroad infrastructure and private property, such as blufftop homes causing disruption to rail service due to slope collapse. No Action may also lead to accelerated shoreline erosion and cliff retreat on the landward side of the rail.
Beach Nourishment Alternative	No	Yes	Temporary impacts to beach and recreation for equipment access and sand import. Impacts could be offset by providing additional recreation opportunities and ecological benefits of creating additional beach habitat and returning sand to the sea for littoral transport.
Riprap Armoring Variation Alternative	No	Yes	Eliminates impacts to beach habitat tidal Waters of the U.S., Section 10 Waters of the U.S., and CCC Tideland. Would permanently remove disturbed coastal bluff scrub.
Groin Field Alternative	No	Yes	Greater permanent impacts to beach habitat, tidal Waters of the U.S., Section 10 Waters of the U.S., and CCC Tideland than the proposed project as well as possible impacts to recreational access and activities.
Proposed Slope Stabilization (Proposed Project)	Yes	Yes	Permanent loss of approximately 0.13 acre of sandy beach with limited recreational value and loss of approximately 0.26 acre of tidal Waters of the U.S. including 0.17 acre of Section 10 Waters of the U.S. and CCC Tideland

No Action Alternative

Description

The No Action Alternative would not include slope stabilization measures of any kind and the active landslide would progress until the rail embankment collapsed.

Meets Purpose and Need? Why or Why Not?

No, the rail would continue to deflect or fail resulting in the disruption to rail service along this existing railroad corridor that provides for movement of people and goods through the Project site.

Practicable? Why or Why Not?

No. Railroad is critical infrastructure.

Coastal Resource Impacts?

Allowing a more significant landslide to occur would result in greater impacts to coastal resources. The landslide would itself create a hazard for the public. In addition, equipment necessary to clean-up or repair the rail after a landslide would have to access the site via the beach creating an additional hazard to the public as well as to wildlife and would introduce potential pollutants to the beach ecosystem. The duration of impacts would also be far greater than for the proposed stabilization.

Conclusion

The No Action Alternative does not meet any of the three criteria to be selected as the least environmentally damaging practicable alternative.

Beach Nourishment Alternative

Description

Beach nourishment is considered a 'soft' armoring solution that consists of importing sand to replace lost sand typically from dredging offshore. To be effective, imported sand must be compatible with native sand and be free of contaminants and chemical hazards. Therefore, a beach nourishment program would need to be developed to include sampling and analysis of potential sand source material. The applicable permits including but not limited to a coastal development permit, Clean Water Act Section 404 permit and 401 certification and Section 10 permit (if applicable) would likely include seasonal restrictions and restrictions on volume of sand to be placed. Extraction or dredging activities may also require separate regulatory permits for this type of activity.

Meets Purpose and Need? Why or Why Not?

Beach nourishment could provide the shear resistance to reduce or arrest slope movement. However, it is likely that locating and importing sand that met the required criteria could not be accomplished in the urgent timeframe required to prevent further damage to the railroad. Even if authorized under emergency conditions, finding, testing, and importing compatible sand, if available, would significantly delay addressing the slope failure at the Project site during which time further damage to the railroad would occur because of slope movement.

Practicable? Why or Why Not?

Beach nourishment is not a practical emergency solution due to the time that it takes to conduct all necessary technical studies including sand investigation studies to confirm that the sand being placed is of appropriate quality to be placed on the beach. Additionally, given normal seasonal littoral transport, sand would need to be continuously imported to maintain the required shear resistance and



as indicated above, would not be implemented as quickly as necessary to prevent further damage to the railroad.

Coastal Resource Impacts?

Beach nourishment would result in periodic temporary impacts to intertidal beach habitat and recreation for equipment access and sand import. However, by mimicking natural processes, impacts to the coastal environment would likely be offset by restoration of intertidal beach habitat and littoral transport.

Conclusion

This alternative does not result in permanent loss of beach habitat, Section 404 Waters of the U.S., or Section 10 Waters of the U.S./California Coastal Commission tidelands. However, this alternative would not meet the project purpose and is not practicable given the emergency nature of the project.

Riprap Armoring Variation

Description

Under this alternative, the riprap would be placed within the railroad right-of-way to the east of the rail line (landward side) at the base of the slope. Staging, access, materials, and schedule would all be the same as the proposed project.

Meets Purpose and Need? Why or Why Not?

Because the toe of the landslide likely daylighted at or near the current beach elevation west of the rail line, placing the rock east of the rail would not stabilize the slope. The additional weight at this location could accelerate the slide and increase deflection of the rail toward the ocean.

Practicable? Why or Why Not?

Placing riprap within the right-of-way east of the rail alignment is practicable although it does not meet the purpose of stabilizing the slope and rail embankment.

Coastal Resource Impacts?

This alternative would eliminate impacts to beach habitat tidal Waters of the U.S., Section 10 Waters of the U.S., and CCC Tideland. However, it would permanently remove disturbed coastal bluff scrub and almost certainly lead to greater landslide damage to the railroad and the adjacent beach including discharge of fill to Waters of the U.S. and CCC tidelands.

Conclusion

This alternative would accelerate the slide and increase deflection of the rail toward the ocean; therefore, it does not meet the Project purpose.

Groin Field Alternative

Description

Groins are sand retainment structures aligned perpendicular to the shoreline. These structures are used to create littoral cells along the beach by restricting longshore sediment transport. By design, these structures are meant to capture sand transported by the longshore current; this depletes the sand supply to the beach area immediately down-drift of the structure. Generally, the most common type of material used for terminal groin structures is rock. Rock (or rubble mound) groins usually have a core of smaller, graded stone with an armor layer of larger stones overlying the core. Construction of groin fields are often combined with a beach nourishment to establish a beach. This would be required in this instance to provide the shear resistance needed to mitigate the landslide.

Meets Purpose and Need? Why or Why Not?

After sufficient sediment was trapped, (assuming a beach nourishment is not combined with this alternative) this alternative could provide the shear resistance to reduce or arrest slope movement. However, it would require more extensive coastal engineering to design. Even if authorized under emergency conditions, there would be a significant delay between initiating design and capture of sufficient sediment to provide the necessary shear resistance during which time additional damage would be expected because of slope movement.

Practicable? Why or Why Not?

Groin construction uses common construction methods although additional engineering and environmental assessment would be required to determine if groins would be effective at the Project site.

Coastal Resource Impacts?

Groins have a potential to diminish horizontal access along the beach and result in both temporary and permanent impacts to deep water and intertidal habitat, tidal Waters of the U.S. and CCC tidelands.

Conclusion

This alternative is practicable but would require additional engineering and environmental studies that would significantly delay implementation after which additional time is needed for retention of sand to occur. Therefore, the Groin Field Alternative does not meet the Project purpose.

Off-Site Alternatives

The only off-site alternative for this project would be to relocate the railroad alignment inland. Relocating the railroad off-site would eliminate the need to protect the Project site from sliding. However, the environmental process alone, combined with the necessary land acquisitions and construction timeframe could take decades making inland relocation not practicable. This off-site alternative does not meet the Project purpose.

Interim and Long-Term Alternatives

As discussed above, the purpose and need for the Project was to address the immediate emergency, which included stabilization of the recent landslide and restoring rail service through the Project area. The Project, and subsequently, this alternatives analysis was focused on placement of riprap on the western side of the railroad tracks which was deemed the only feasible solution to arrest the landslide enough to allow the tracks to be realigned and resume rail service. While the two phases of riprap placement on the west side of the tracks have improved the marginal stability of the slope and track, a structural improvement is still needed on the east side of the track for the ongoing subsurface movement to achieve an industry-accepted factor of safety. This section includes potential alternatives that could be implemented in an interim and long-term phase.

Interim Solutions

The interim solution would need result in an acceptable factor of safety and have a life span of a minimum of 10 years. The interim solution would also need to be implemented in a short duration because the slope and track are still vulnerable to external forces.

As summarized below, several alternatives have been identified and will be evaluated further by Metrolink and OCTA. These solutions would require a separate CDP or emergency permit before moving ahead with installation of any interim improvement.

Seawall Alternative

The Seawall Alternative includes construction of a seawall on the western side of the railroad tracks. Construction of the seawall would require temporary rail closure, temporary relocation of the rail, and removal of some riprap. Removal of the existing riprap would render the landslide unstable. The seawall would be installed approximately 40 feet below the surface to stabilize the shear zone. Riprap would still be required on the western side of the railroad tracks. This alternative would result in permanent impacts on beach habitat tidal Waters of the U.S., Section 10 Waters of the U.S., and CCC Tideland.

Slope Flattening Alternative

The Slope Flattening Alternative includes removal of part of the slope and bluff above the railroad tracks. The slope would be cut to the mid-slope fissure. This alternative would require demolishing existing buildings and City of San Clemente facilities and partial to complete loss of property for the owners. It would also require complete removal of slope vegetation. This alternative would eliminate impacts to beach habitat tidal Waters of the U.S., Section 10 Waters of the U.S., and CCC Tideland; however, it would permanently remove disturbed coastal bluff scrub.

Ground Improvement Alternative

The Ground Improvement Alternative includes deep soil mixing or jet grout methods where cement is mixed or injected into existing soils to create a stabilized zone (i.e., relatively high shear strength) which acts as a buttress or wall element to arrest slope motion. This alternative would be located on the eastern side of the railroad tracks along the base of the slope. The soil profile at the site includes a layer of cobble/gravel materials that will preclude most deep soil mix options but could be feasible using jet grout. Preliminary analyses indicate that a well-constructed block of 25 feet in width may

meet the factor of safety requirements. Modifications of the rock revetment would likely still be necessary to stabilize the railroad embankment west of the ground improvements. Penetration into the Capistrano Formation would be difficult, and such installations include the following prominent disadvantages: i) major disruption to the subsurface soil, ii) temporary reduction of stability due to the liquefied state of the mix prior to solidifying the cementitious binder, iii) requiring a large operation that develops major spoils, and iv) potentially disrupting subterranean groundwater flows. Construction costs would be on the order of 15 to 25 million dollars and would take several months to complete. This alternative would permanently remove disturbed coastal bluff scrub east of the tracks and impact beach habitat, tidal Waters of the U.S., Section 10 Waters of the U.S., and CCC Tideland west of the tracks.

Pile Solutions Alternative

Several pile solutions were evaluated, including driven, drilled, and micropiles, all of which have relative advantages and disadvantages. Piles would be installed on the eastern side of the railroad tracks along the base of the slope. In general, piles have the advantage of being potentially contained within the railroad ROW. However, all pile solutions rely on a common method of slope stabilization which is pinning the sheared mass to the relatively intact rock (i.e., high strength zone) beneath the slide. In relative terms, the large lateral load of the landslide, in this alternative, should be resisted by the low shear strength and lateral stiffness (bending) of the slender vertical piles. Therefore, several rows of piles may be required to resist the landslide lateral pressure at the shear surface. Modifications of the rock revetment would likely still be necessary to stabilize the railroad embankment west of the railroad tracks. The analyses showed that lateral deflections on the order of one to three inches are required to develop the design lateral loads within the vertical piles. These pile deflections will lead to additional movements upslope of the piles. Installation of driven piles will induce considerable vibration which may cause more unstable conditions during construction. If large diameter shafts are constructed, the excavation may lead to temporary weak spots within the landslide resisting zone. This alternative would require 75 to 150 piles and would cost about 15 to 25 million dollars in material costs and 8 to 15 million dollars in construction costs. This alternative would permanently remove disturbed coastal bluff scrub east of the tracks and impact beach habitat, tidal Waters of the U.S., Section 10 Waters of the U.S., and CCC Tideland west of the tracks.

Tiebacks/Ground Anchors Alternative

The Tiebacks/Ground Anchors Alternative includes installing tiebacks on the eastern side of the railroad tracks. Tiebacks would be installed at approximately 45-degree angle and would be approximately 20 feet below the surface below the shear zone. Tiebacks do not require major excavations and would minimize the temporary reduction of strength of the slope during construction. Tiebacks achieve their load through applying tension forces to the tendons and locking off the load at the ground surface through a system of bearing plates or anchor blocks. Therefore, tiebacks apply stabilizing force into the slope immediately after construction without a need for further slope movement to develop loading.

Tieback loads in the range of 60 to 80 kips per linear foot of slope (along the track alignment) are required to meet the required factor of safety values. These loads are achievable with various tieback sizes and layouts. As tieback diameters and lengths are relatively small (around 10 inches in diameter and 75 feet in length), multiple tiebacks can be installed in a single day. Modifications of the rock revetment would likely still be necessary to stabilize the railroad embankment west of the railroad



tracks. This alternative is practicable because it would not result in temporary closure of the railroad, construction is feasible and would not result in unstable temporary conditions, and has minimal site constraints for construction. Construction time could be one to two months, depending on the contractor and would cost around 5 million dollars for materials and construction.

Long-Term Solutions

OCTA and Metrolink are actively planning for a long-term, corridor-wide solution. In early 2022, OCTA and Metrolink are planning to initiate an alternatives analysis of the four potential coastal adaptation options (alternatives) outlined in the OCTA's 2021 *Rail Defense Against Climate Change Plan* (OCTA 2021), to further reduce risk and improve resiliency throughout the Los Angeles – San Diego – San Luis Obispo Rail coastal railroad corridor (approximately Dana Point to San Clemente), including at the emergency stabilization site. The alternatives analysis will incorporate relevant planning-level resiliency studies, including the California Coastal Commission Sea Level Rise Policy Guidance. One of these alternatives includes relocating the rail away from the coastline.

References

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- ESA. 2018. City of Del Mar Sea Level Rise Adaptation Plan. Final Adopted by City Council on October 1, 2018 by Resolution No. 2018-67. Accessed electronically via <https://www.delmar.ca.us/DocumentCenter/View/3580/Revised-Adaptation-Plan-?bidId=> on November 15, 2021
- Griggs, Gary. 2005. The impacts of coastal armoring. *Shore and Beach*. 73. 13-22. Accessed electronically via https://www.researchgate.net/publication/285969581_The_impacts_of_coastal_armoring/link/568fe4b708aee91f69a13733/download on November 15, 2021
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- Orange County Transportation Authority (OCTA). 2021. OCTA Rail Defense Against Climate Change Plan. Accessed electronically via https://www.octa.net/pdf/OCTA_RailDefAgainstCC_FinalReport_wAppendix.pdf?n=202103 on February 15, 2021



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Attachment N. Coastal Act Consistency Evaluation

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Coastal Act Consistency Evaluation

The Orange County Transportation Agency (OCTA) and Southern California Regional Rail Authority (SCRRA or Metrolink) are the applicants for the Coastal Development Permit (CDP) associated with the Railroad Emergency Stabilization Project – San Clemente Orange Sub MP 206.85 (Project) in south San Clemente, CA. The Project is located in the Coastal Zone, and this evaluation demonstrates how the Project is consistent with Chapter 3 of the California Coastal Act (CCA), Chapter 3, “Coastal Resources Planning and Management Policies” as amended.

Project Description

The Project is located in south Orange County, California within the railroad right-of-way (ROW) in the southernmost section of the City of San Clemente on SCRRA’s Orange Subdivision between mileposts (MP) 206.77 to 206.89. The Project site is limited to the railroad ROW and is not directly accessible by vehicle. The purpose of the Project was to stabilize the railroad tracks after significant deflection of the rail was detected over a short period of time (10.7 inches in 7 days) due to recent landslide movement originating at the westerly coastal slope and extending below the railroad ROW to daylight west of the tracks.

An emergency permit was issued to OCTA and Metrolink September 23, 2021 for the Project. Project construction activities associated with the emergency stabilization occurred from September 16 through October 2, 2021 with ongoing monitoring efforts continuing. Geotechnical surveys, including geotechnical boreholes and installation of inclinometers occurred October 16 and 17, 2021. A second emergency permit was issued to OCTA and Metrolink on December 22, 2021 when the inclinometers detected movement of the soil mass 50 feet below the railroad track.

Emergency Permit #1

As indicated above, the purpose of the Project is to stabilize the railroad tracks from further shifting due to recent landslide movement originating at the adjacent coastal slope and extending below the railroad ROW in the shortest feasible duration. Acceleration of the landslide in mid-September resulted in severe cracks and separation in pavement and house foundations at the top of the slope and caused severe deflection in the railroad tracks. Metrolink ceased all passenger rail traffic, including Amtrak and Metrolink services, through the Project area from September 16 through October 4, 2021 due to safety concerns.

In total, emergency stabilization was required for a 700-foot-long portion of the existing railroad embankment already armored with riprap. Much of the riprap was placed in areas that previously contained riprap, which over the years had been lost due to the beach erosion. Therefore, a portion of the riprap was an in-kind replacement. Baseline rock limits were surveyed in 2003/2004 in this area and the revetment measured up to 30 feet wide at this location. Over the last 17 years in the Project vicinity, the beach has narrowed from approximately 200 feet in width to less than 80 feet and is absent in the southern portion of the Project site. The beach has also dropped from 19 feet to 14 feet in elevation at the northern extent of the Project and from 18 feet to 3 feet at the southern extent of the Project. The beach has become steeper, increasing from a 9-percent gradient to as much as an 18-percent gradient. Most of these changes have occurred since 2016.

Approximately 12,500 tons of 3 to 5-foot diameter rip rap was placed on the west side of the railroad track. The rock revetment varies in slope from 1:1 to 1.5:1. The riprap was brought in by approximately 200 railcars and placed from the top of the railroad beginning on September 16 and ended October 2, 2021. An excavator and bulldozer were brought onsite via railroad to clear rock from the rail and move the rock carefully into place. The excavator and bulldozer were limited to the disturbed areas along the east side of the railroad ROW. There was no staging of equipment or materials and no construction access outside of the railroad ROW. Construction personnel entered the ROW by foot.

Emergency Permit #2

The placement of the riprap as detailed above minimized further track deflection so that OCTA and Metrolink were able to realign the track back to its original alignment, and passenger rail service resumed on October 4, 2021. Subsequently, geotechnical borings were conducted in mid-October and inclinometers were installed to monitor the landslide and the track. The inclinometers enable monitoring of the earth's movement below the surface, detecting movements approximately 50 feet below the railroad tracks.

The results of the ongoing geotechnical monitoring indicated that the path of the least resistance (i.e. the shear zone) occurs at a shallow depth compared to the findings from the geotechnical investigations and the inferred location of the shear zone by GMU (Cypress Shore Home Owner's association's geological technical consultant). Additionally, the LiDAR survey of the landslide indicated that the assumptions (which were based on GMU's analysis) used to estimate the quantity of the riprap were unconservative. Even though the placed riprap was effective to control the landslide's movements, a small creep-type movement was still recorded by the inclinometers.

A cumulative movement of about 0.8 inches was recorded at the track-level inclinometer between October 19 to December 13, 2021. After an initial jump in the readings on October 23, most of the movement was slow and subsurface during this time. However, a storm event occurred on December 14, 2021 and the cumulative movement passed a 1-inch total. This 1-inch movement activated the alert system defined in the Track and Slope Monitoring Report (Attachment L of the CDP Application).

The refined geotechnical analysis based upon the geotechnical borings conducted in mid-October, updated geometry of the landslide, and a shallower shear zone as identified by the inclinometer, indicated that an additional 5,000 to 6,000 tons of riprap was required to further stabilize the landslide movement until an intermediate structural improvement can be engineered, permitted, and constructed. It should be noted that the term "stabilize" in this project does not mean to achieve an industry-accepted factor of safety for the static and seismic conditions, but the factor of safety was increased to a level that the large initial movements of the landslide and the secondary creep-type movements can be controlled. Additionally, the ocean wave action impacting the riprap and other factors such as groundwater variations and water seeping to the landslide cracks may lead to another phase of riprap placement or other forms of short-term stabilization in the future.

Between December 18, 2021 and January 30, 2022, 5,480 tons of riprap was placed in the same footprint as Emergency Permit #1. Similar to Emergency Permit #1, the riprap was 3 to 5 feet in diameter, was brought in by railcar, was placed on the west side of the tracks, and an excavator and bulldozer were brought onsite via railroad to clear rock from the rail and move the rock carefully into place. The excavator and bulldozer were limited to the disturbed areas along the east side of the railroad ROW. There was no staging of equipment or materials and no construction access outside of

the railroad ROW. Construction personnel entered the ROW by foot. The final slope ratio varies between 1:1 and 3:1.

Coastal Act Consistency Analysis

An evaluation of the Project with respect to the policies provided in Chapter 3 of the CCA is provided below. As discussed below, the Project does not conflict with any of the policies contained in Chapter 3 of the CCA.

- **Article 2 – Public Access (Sections 30210-30214 and 30220-30224):** The Project site is located within the railroad ROW adjacent to a private beach owned by the Cyprus Shores Community Homeowners Association. As identified in the City of San Clemente's Local Coastal Program (LCP) Land Use Plan (San Clemente 2018), the visible portion of beach along the Project site is identified as the Cyprus Shores Private Beach Parcel (see Attachment A). There are no nonmotorized transportation facilities or trails in the Project area.

The City's LCP Land Use Plan also describes the two types of coastal public access, vertical access (access to the shoreline) and lateral access (access along the shoreline) relative to the portion of visible beach at the time for the Project site. Near the Project area two private vertical access points located within the gated Cyprus Shores community (Attachment A) were identified in 2018 and are still currently present. Lateral public access was available in 2018 in the Project area seaward of the mean high tide line to public tidelands located beyond the private parcels; however, no visible beach is currently present at the Project site, except during extreme low-tide events.

The beach environment is dynamic. Generally, as with most southern California beaches, high-energy storm waves erode the beach adjacent to the Project site making it narrower and steeper in the winter, and lower energy waves deposit the sand back on the beach making it wider and more gradually sloped in the summer. Additionally, sea level rise and lack of natural replenishment has generally resulted in a loss of beach at the Project site, resulting in a narrower beach since the time the City prepared the LCP Land Use Plan.

As indicated above, although approximately 700 linear feet of beach may appear available for recreation within the Project area, the southern 510 linear feet of that beach is generally inaccessible for recreational uses due to the high surf zone and proximity to the railroad Right-of-Way. The turbulent surf zone is especially hazardous near structures such as the rock revetment protecting the rail embankment. During baseline mapping, the remaining 190 linear feet of beach totaled approximately 0.13 acre. After implementation of the emergency slope stabilization project, approximately 115 linear feet (0.10 acre) of beach remains accessible for public use.

In summary, the portion of beach adjacent to the railroad ROW at the Project site is not readily accessible or safe for recreational use. Therefore, the emergency stabilization did not affect recreational access to coastal resources.

Based on these considerations, the Project did not have an adverse effect on recreational resources or public access to coastal areas. The existing railroad and the Project as a means of public transportation support coastal-dependent developments, uses, access, and facilities in the region.

- **Article 3 – Recreation (Sections 30220-30224):** Please refer to discussion above. The Project occurred within an existing railroad ROW, and no authorized public recreational facilities were affected by the Project.
- **Article 4 – Marine Environment (Section 30230-30237):** The Project footprint is located along the railroad ROW between MP 206.77 to 206.89, which is adjacent to the beach and Pacific Ocean. A total of 17,980 tons of 3 to 5-foot diameter riprap was placed along the west side of the railroad track. Approximately 0.290 acre of new riprap extends onto intertidal beach of which 0.269 acre is subject to Section 404 waters of the U.S. including 0.239 acre which is also within Section 10 waters of the U.S. and coastal tidelands.

The Project construction occurred outside of bird breeding season; therefore, no adverse effects (direct or indirect) occurred to federally listed species. There were no impacts, temporary or permanent, to sensitive vegetation communities. The Project had no impact on commercial or recreational fishing or water supply.

The activities associated with the Project are consistent with the CCA Chapter 3 policies regarding water quality. Standard best management practices (BMPs) were implemented to minimize the potential for the discharge of pollutants into waters and no adverse water quality effects occurred.

The Project included construction that altered natural shoreline processes; however, this is permitted when necessary to protect coastal-dependent uses and existing structures in danger from erosion. The emergency actions taken under the Project were to protect the existing railroad tracks and additionally served as a short-term solution to stabilize the bluffs from collapse.

- **Article 5 – Land Resources (Sections 30240-30244):** The Project is located in a designated transportation corridor and no change or conflict with existing or planned land uses, including agriculture, occurred as a result of the Project. The Project did not affect agricultural lands, timberlands, or production in any manner.

Based on a review of archival records and archaeological site data in HDR's possession from previous projects in the vicinity, there are no known significant cultural resources within or in the immediate vicinity of the Area of Potential Effect (APE). The railroad itself is recorded as P-30-176663 (Burlington Northern Santa Fe Railway, formerly Atchison, Topeka, and Santa Fe Railway) and has been previously evaluated as not eligible for listing in the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR). The APE is within the boundary of P-30-150035, the locally designated Spanish Colonial Revival Thematic Historical District; however, none of the district's contributing properties are in or near the APE.

On September 16, 2021, HDR archaeologist Beniamino Volta conducted a site visit, which included a pedestrian survey of the APE. No new cultural resources were identified during the site visit, and the rail line was found to be as previously described. The tracks in the APE were observed to have a 2017 date stamp, which is consistent with previous observations that the rail line and its associated features have been replaced by modern materials during ongoing maintenance and therefore do not retain sufficient historical integrity to relate to the resource's period of significance (late 19th to early 20th century). No significant cultural resources are

present in the APE; therefore, the emergency work performed as part of the Project had no impact on historic properties/historical resources.

- **Article 6 – Development (Sections 30250-30255):** The Project is located within an existing, developed railroad ROW that has been previously disturbed. Disruption to rail service along this existing railroad corridor results in regionally significant adverse effects and inadequate coastal protection at the Project site may lead to accelerated shoreline erosion and cliff retreat on the landward side of the rail, including both the damage/destruction of public railroad infrastructure and private property, such as blufftop homes. The Project did not increase use of public services or adversely affect the scenic or visual quality within the study area. There were no residual changes to the visual character of the railroad corridor. The emergency Project was conducted in accordance with all applicable codes and accepted engineering practices that prevent damage from geologic, flood, or fire events. As discussed above, the Project did not affect public access in the Project area.
- **Article 7 – Industrial Development (Sections 30260-30265.5):** This article of the CCA is not applicable to the Project.

Conclusion

This coastal consistency analysis concludes that the Project is consistent with Chapter 3 of the CCA because the emergency Project actions were limited to the railroad ROW and included emergency stabilization of an existing structure (railroad tracks), which supports public transportation for people and freight within the Coastal Zone. In addition, the Project did not result in an adverse effect on public access, recreation, the marine environment, land resources, development, industrial development, biological resources, or historic, archaeological, or paleontological resources within the Coastal Zone. Based on these considerations, the Project was conducted in a manner consistent with the approved CCMP.

Attachment A. City of San Clemente Local Coastal Program Land Use Plan Figures

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Figure 3-5 from the City of San Clemente Local Coastal Program Land Use Plan identifies the Project area as a private beach within the City.

Figure 3-5 Cyprus Shores Private Beach Area

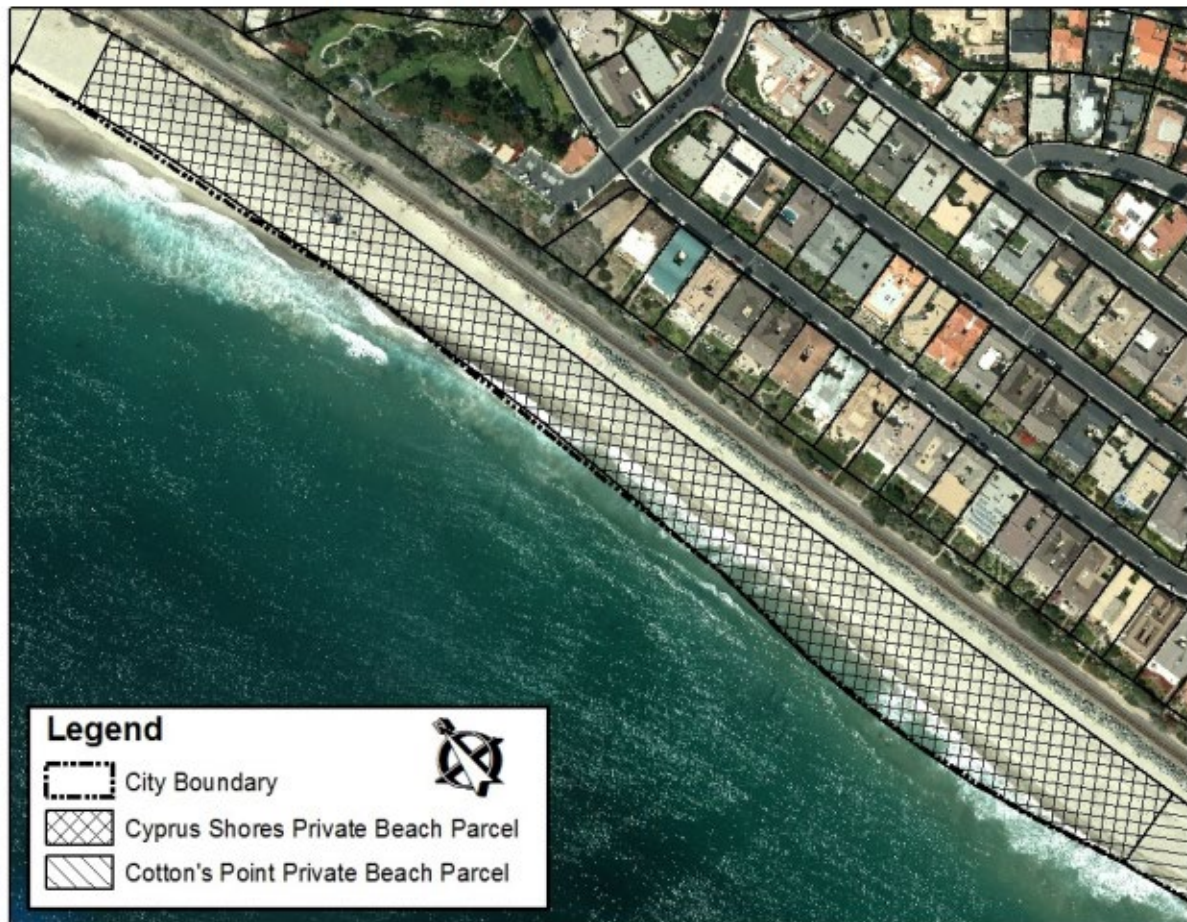


Figure 3-25 from the City of San Clemente Local Coastal Program Land Use Plan depicts the private access from the gated Cyprus Shores Community. This is not a public access point.

Figure 3-25 Avenida de las Palmeras



Figure 3-26 from the City of San Clemente Local Coastal Program Land Use Plan depicts the private access from the gated Cyprus Shores Community. This is not a public access point .

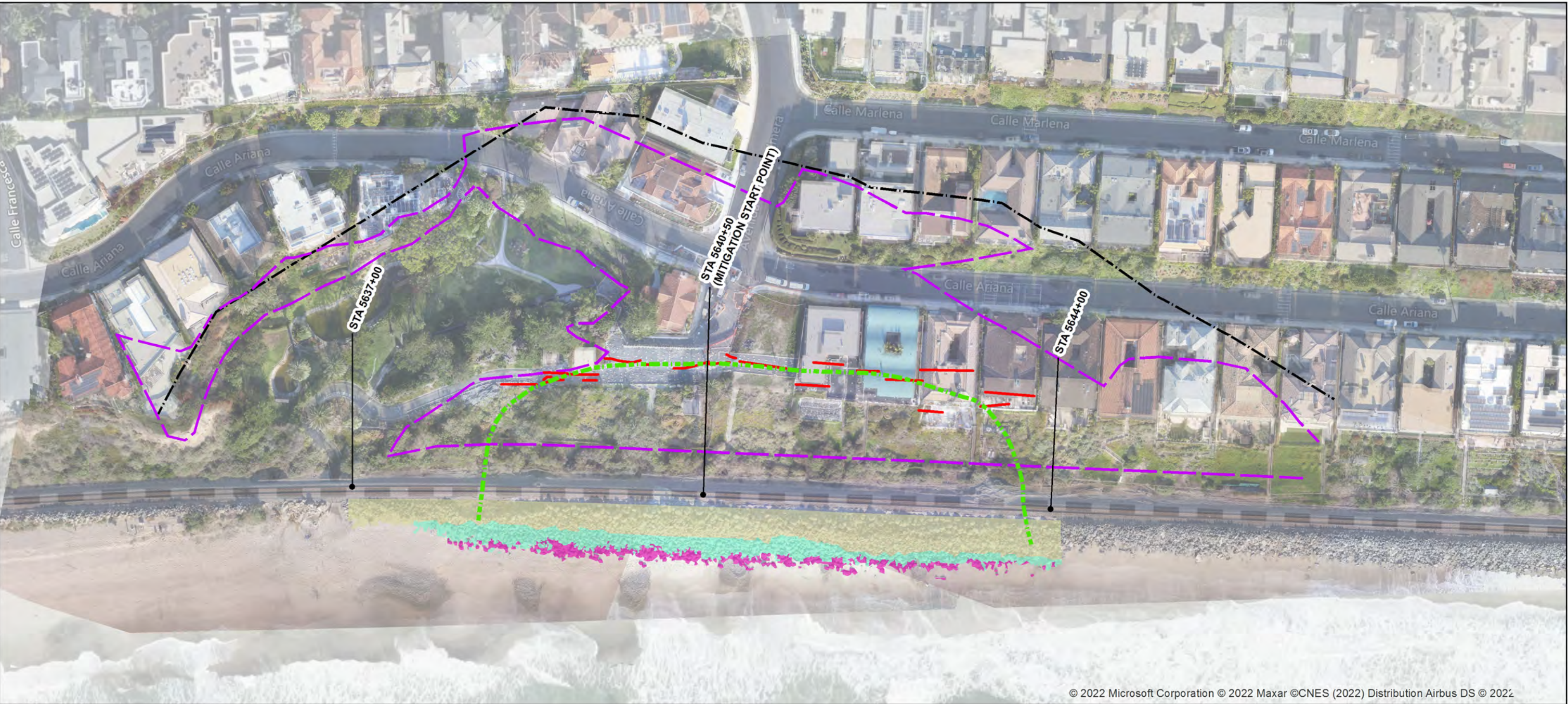
Figure 3-26 Calle Ariana





Attachment O. As-Built Package

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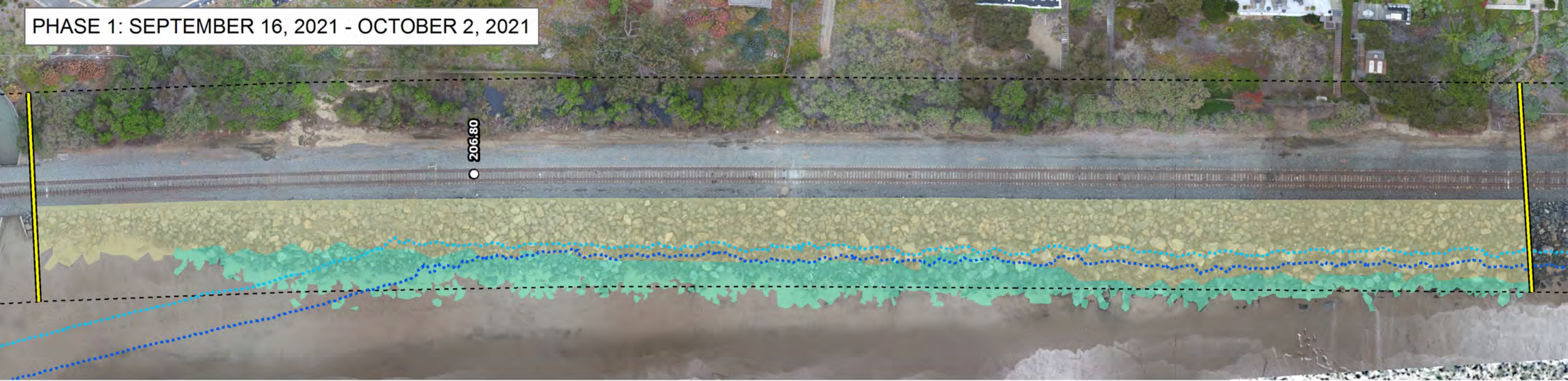
- ORIGINAL GRADING DESIGN CUT/FILL LINE
- CRACKING AND/OR SEPARATION
- LIMITS OF OLD SLIDE. BASED ON ORIGINAL TOPOGRAPHY
- APPROXIMATE LIMITS OF RECENT LANDSLIDE
- SCRR ROW

RipRap Limits

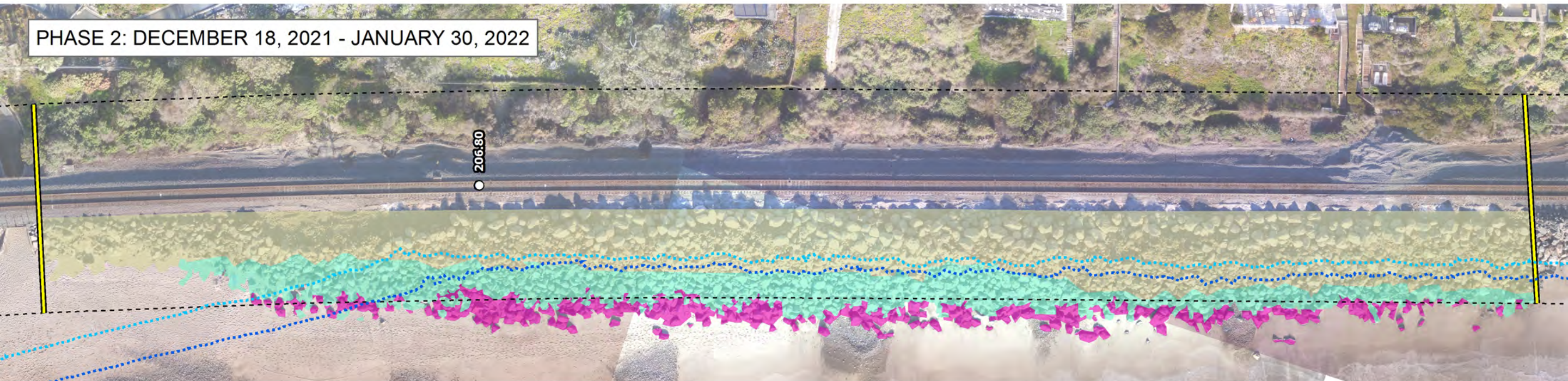
- Baseline Rock Revetment Limits Replacement
- Phase 1 Rock Placement (0.209 ac)
- Phase 2 Rock Placement (0.084 AC)

RIRAP PLACEMENT LIMITS AS OF JANUARY 30, 2022
RAILROAD EMERGENCY STABILIZATION PROJECT
SAN CLEMENTE, CALIFORNIA

PHASE 1: SEPTEMBER 16, 2021 - OCTOBER 2, 2021



PHASE 2: DECEMBER 18, 2021 - JANUARY 30, 2022



Legend

- Railroad ROW
- Mile Post
- Emergency Stabilization Limits

- RipRap Limits**
- Baseline Rock Revetment Limits Replacement
 - Phase 1 Rock Placement (0.209 ac)
 - Phase 2 Rock Placement (0.084 AC)

Section 10 WOUS/CCC Wetland
Expansion of Rock Revetment totals 0.239 AC/771 CY
Replacement of Rock Revetment totals 0.010 AC/15 CY

Section 404 Other WOUS (includes Section 10 WOUS/CCC Wetland)
Expansion of Rock Revetment totals 0.269 AC/ 1,953 CY
Replacement of Rock Revetment totals 0.037 AC/205 CY

Coordinate System:
NAD 1983 StatePlane California VI FIPS 0406 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Vertical Datum: NAVD88, U.S. Feet
Aerial Imagery: Project Imagery, RSE (captured 10/7/2021)
Created on: 11/15/2020
Revised on: 2/18/2022





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5640+00.00

5640+90.00

5641+00.00

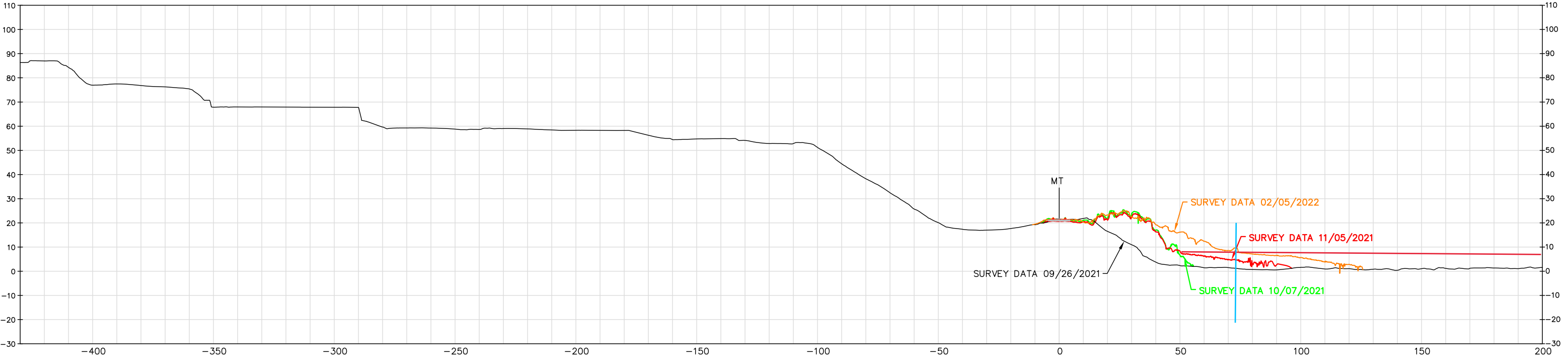
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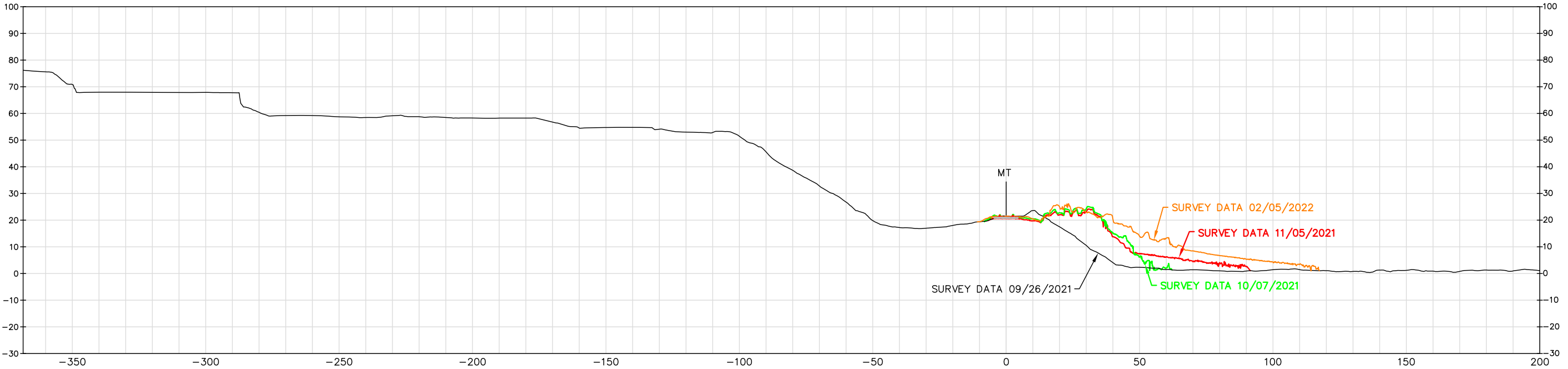
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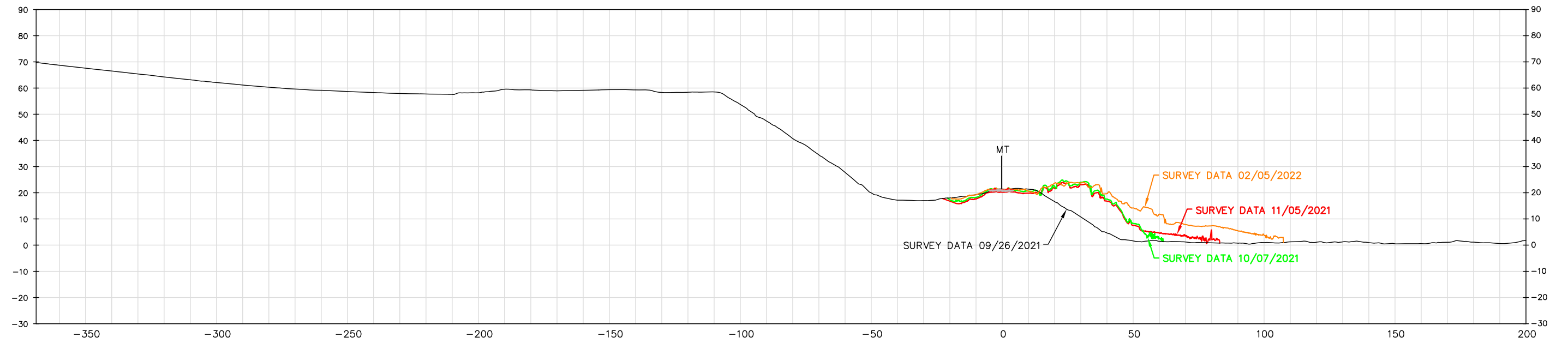
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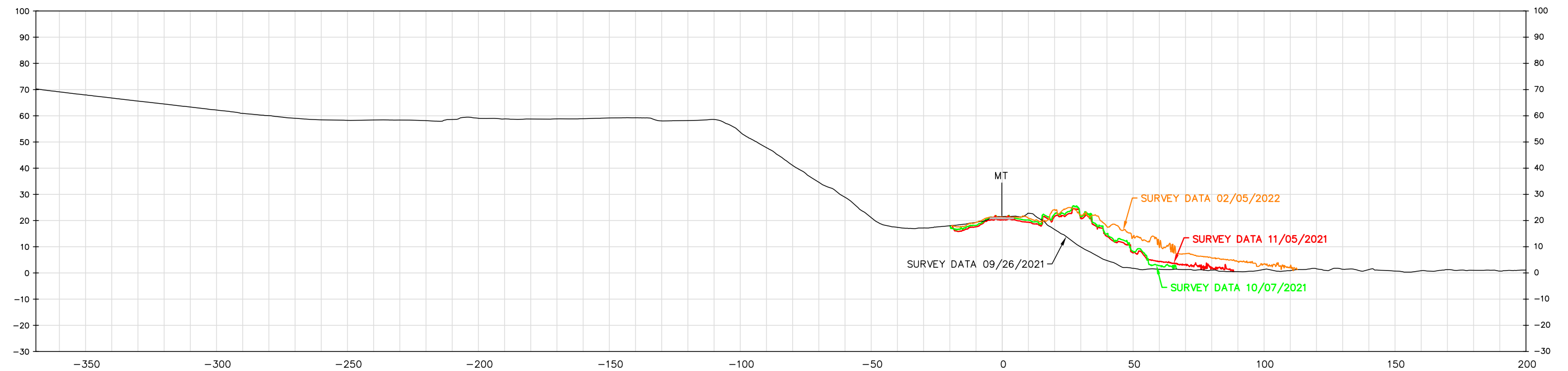
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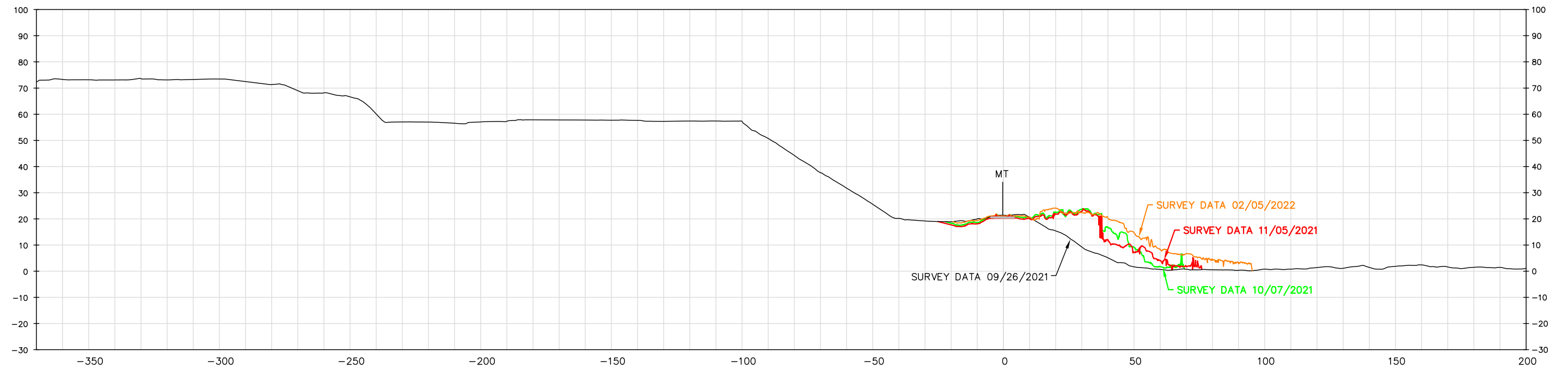
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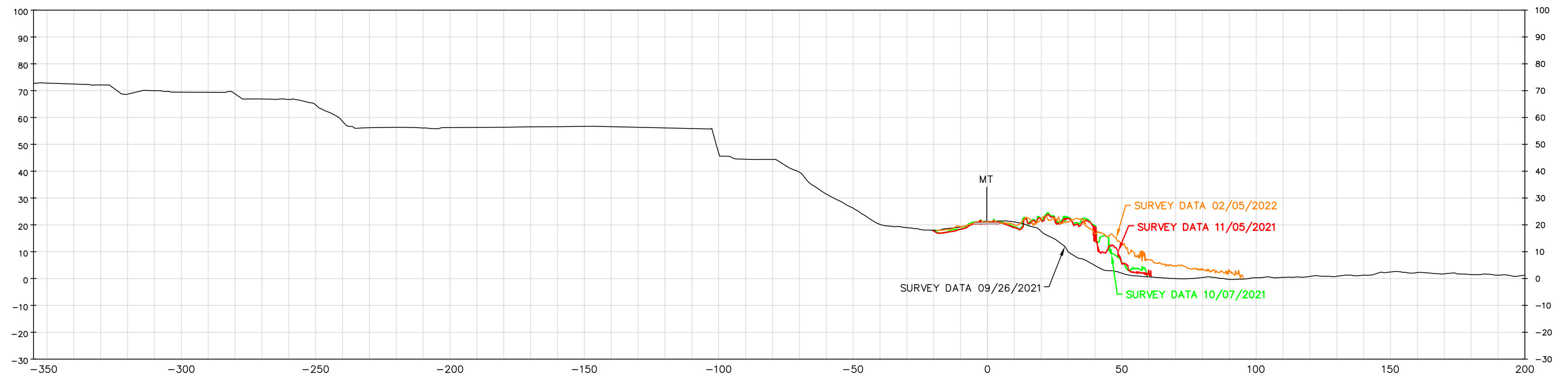
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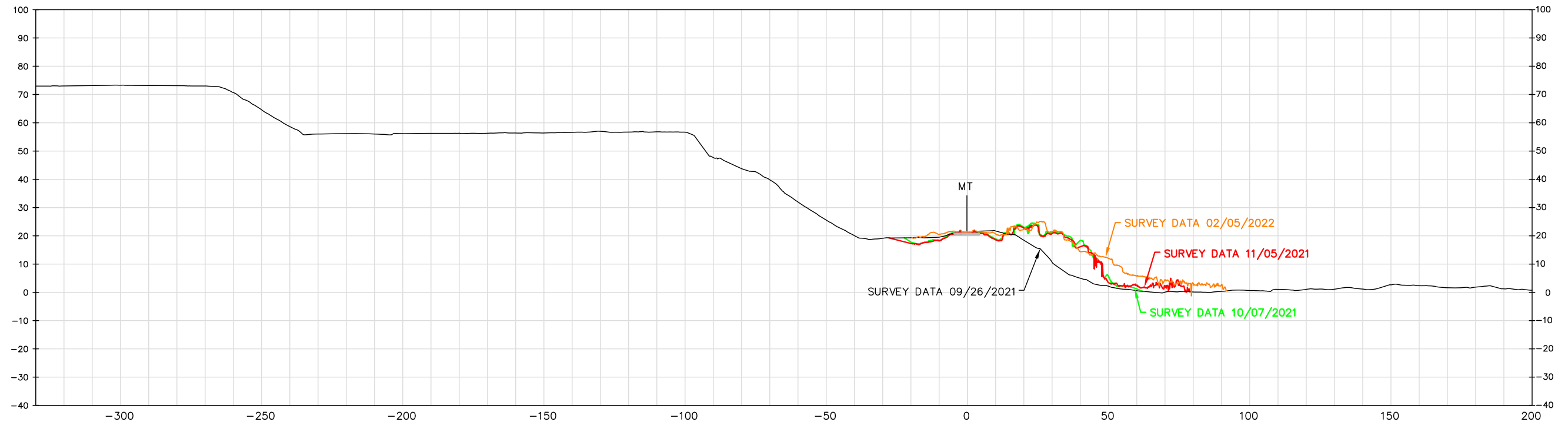
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5642+95



5643+20



5643+65

