



County of Santa Cruz

DEPARTMENT OF COMMUNITY DEVELOPMENT AND INFRASTRUCTURE

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June 4, 2025

Subject: Pajaro Dunes GHAD Rock Revetment Maintenance Project Biotic Report Review

APN(s): 052-281-16, 15, 14, 13, 12, 11, 10, 09, 08, 07, 06, 05 (Lots 1-12), 052-281-19 (Lot 15), 052-281-10, 11 (Lots 54 & 55), 052-321-14, 13, 12, 11, 10, 09, 08, 07, 06, 05 (Lots 94-103) and 052-321-18 (Lot 107).

Application #: REV251031; 251183

Attachment 1. Biotic Report
Attachment 2. Focused Special-Status Plant Survey Report

Dear Mr. Dobbins,

The Planning Division received and reviewed a Biotic Report dated November 5, 2024 prepared by Dawn Reis Ecological Studies and a Focused Special-Status Plant Survey Report prepared by MNS Engineers, Incorporated for the Pajaro Dunes GHAD Rock Revetment Maintenance Project (Attachments 1 and 2). A Biotic Report Review was required because of the potential for sensitive habitats and protected species where maintenance and repair of an existing rock revetment along the beach is proposed. The Biotic Report evaluates the habitat conditions in the project impact area for sensitive habitats and special-status species with potential to occur. The Focused Special-Status Plant Survey Report provides additional analysis specific to the botanical resources present in and adjacent to the project impact area in the spring of 2025.

The proposed revetment repair and maintenance work area is located along the beach and residential properties on the ocean side of the Pajaro Dunes residential development between parcels 052-601-08 to the north and 052-321-04 to the south. The existing revetment that protects the Pajaro Dunes development from coastal erosion has undergone repeated damage during severe winter storms. The project will serve two primary goals: necessary repair and maintenance of the existing rock revetment to ensure ongoing protection of existing properties, and removal/relocation of rock placed on State Park property in 2004 under emergency conditions.

The proposed project includes removing and temporarily stockpiling approximately 440 tons of rock from State Parks property located adjacent to the revetment toe and re-distributing the rock into the existing rock revetment along 23 parcels within the Pajaro Dunes development. Vegetation and sand will be removed as required to expose underlying rocks which will then be removed and temporarily stockpiled before being stacked on the existing revetment to infill existing voids. Final slope configuration will include backfilling voids with sand to the established finished grade lines. Construction of the project will also require removal and reconstruction of up to 5 sets of stairs as needed that provide access to the beach from the Pajaro Dunes Community. Construction access will occur through temporary construction easements on State Parks parcels 052-231-35 and 052-161-13. Construction staging is proposed in various previously developed areas in the Pajaro Dunes Community and the parking lot on State Parks parcel 052-161-13.

Baseline Environmental Conditions

The Biotic Report identifies four natural community types in the Study Area: Beach, Foredune, Coastal Dune Scrub, and Non-native Eucalyptus Groves. The exposed portion of the existing rock revetment is located within the historical foredune. The plant communities along this stretch of foredune have been altered/washed away in recent years by high surf during severe weather events. Some vegetation continues to grow amid the exposed portions of the existing rock revetment. Areas along the top of the revetment support substrate suitable for native dune vegetation. Although some native plant species persist in patches, most of the habitat within and along the top of the revetment wall is dominated by non-native ice plant and non-native European beach grass which prevents the establishment and persistence of the native plant structure and species composition that would be found in a healthy coastal dune community.

Analysis

Coastal Dune Scrub, Dune Plant Habitat, and habitat for special-status species are considered sensitive under Santa Cruz County's Sensitive Habitat Protection ordinance (Chapter 16.32). The purpose of Chapter 16.32 is to minimize the disturbance of biotic communities which are rare or especially valuable because of their special nature or role in an ecosystem.

The project site is located on a beach and coastal dune and the entire Study Area is considered sensitive habitat. Additionally, Coastal Dune Scrub, Dune Plant Habitat, and habitat for special-status species are offered special protection under the California Coastal Act as Environmentally Sensitive Habitat Areas (ESHA). Impacts to sensitive habitats must be avoided to the maximum extent possible and unavoidable permanent impacts must be appropriately compensated for. Conditions have been included below to ensure that impacts to sensitive dune habitat are minimized during project implementation and to ensure that permanent impacts are compensated for through native habitat restoration.

Figure 1 in the attached Biotic Report shows the general location of proposed development and anticipated impacts in relation to the habitats identified on site. Tables 1 and 2 and Appendices C and E in the attached Biotic Report give an overview of the plant and animal species that were evaluated as part of this review.

The project impact area has the potential to support several rare plant species protected by local, State, and Federal regulations. Surveys were conducted during the evident and identifiable period for special-status plant species with potential to occur as part of the Biotic Report and the Focused Special-Status Plant Survey Report. Federally Threatened Monterey spineflower and Monterey paintbrush (a locally unique species) were both identified at various locations within the Study Area. Based on the survey and vegetation mapping in the 2025 Focused Special-Status Plant Survey Report, the project anticipates avoidance of direct impacts to Monterey spineflower and Monterey paintbrush through revised project boundaries and fencing for avoidance of mapped individual locations. Conditions have been included below to ensure protection of special-status plant species during construction.

The project site contains suitable habitat for Northern California legless lizard, a State Species of Special Concern. In addition, nesting and refugia habitat for Federally Threatened western snowy plover is available in the Active Dunes and Foredunes within and directly adjacent to the project impact area. This species is known to nest in the on the active dunes and foredunes immediately adjacent to the Pajaro Dunes Community south of the project site. The project site and surrounding areas also contain potential habitat for other nesting birds. Birds of prey and migratory birds are protected under the California Fish and Game Code, as well as the Federal Migratory Bird Treaty Act (MBTA). Under the MBTA, it is unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill" a migratory bird unless and except as permitted by regulations.

Conditions have been included below to ensure protection of special-status species and sensitive dune habitat during project implementation.

Conclusion

There are sensitive habitat constraints on the project site associated with coastal dune scrub habitat, and special-status species that must be considered prior to and during project implementation. Dune habitat occurs throughout the property and cannot be avoided by an alternative project design. The project has been designed to avoid and/or minimize impacts to special-status species and sensitive habitats to the maximum extent possible.

Unavoidable permanent impacts to sensitive habitats must be compensated for through habitat restoration of coastal dune habitat at a minimum 3:1 ratio of restoration to permanent impacts.

Conditions have been included below to ensure that project activities are consistent with County policies for protection of sensitive species and habitats.

If you have any questions regarding this letter, please feel free to contact me by email at Juliette.Robinson@santacruzcounty.us.

Sincerely,



Juliette Robinson
Resource Planner IV, Biologist

CC: Jessica DeGrassi, Area Resource Planner
Matt Johnston, Environmental Coordinator

Conditions of Approval

The Conditions of Approval below shall be incorporated into all phases of development for the Pajaro Dunes GHAD Rock Revetment Maintenance Project (251183). Adherence to these conditions will ensure that proposed development is consistent with County policies and will avoid and minimize impacts to sensitive habitats and special-status species.

1. Prior to any site disturbance, a pre-construction meeting shall be conducted. The purpose of the meeting will be to ensure that the conditions set forth in the proposed project description and Conditions of Approval are communicated to the various parties responsible for constructing the project. The meeting shall involve all relevant parties including the project proponent, construction supervisor, Environmental Planning Staff, and the project biologist.
2. Recommended measures GEN 1 through GEN-3, BOT-1 through BOT-6, and WL-1 through WL-4 in the attached Biotic Report dated November 5, 2024 prepared by Dawn Reis Ecological Studies for the project shall be adhered to.
3. Prior to commencement of construction, high visibility fencing and/or flagging shall be installed with the assistance of a qualified biologist to indicate the designated limits of work and prevent inadvertent grading equipment staging, vehicular access, or other disturbance within the adjacent sensitive habitat areas (see also GEN-1, BOT-1, BOT-4).
 - A. Intact native dune habitat shall be protected as sensitive habitat and avoided during construction to the maximum extent possible.
 - B. No work-related activity including equipment staging, vehicular access, grading and/or vegetation removal shall be allowed outside the designated limits of work.
 - C. Special-status plants located near or within the project impact area shall be identified, protected with high visibility fencing, and avoided during construction.
 - D. The fencing/flagging shall be inspected and maintained daily until project completion.
4. If impacts to special-status plants cannot be completely avoided, the number of plants and aerial extent of the impacts shall be recorded and provided in the impact table of the site-specific Habitat Restoration and Monitoring Plan as outlined in Condition 8A below. Additional seed collection and transplantation strategies to compensate for permanent impacts to these species shall be incorporated into the project-specific Restoration Plan in addition to the reseeding strategies outlined in BOT-6.
5. If a special-status animal is identified at any time prior to or during construction, work shall cease immediately in the vicinity of the individual. The animal shall either be allowed to move out of harm's way on its own or a qualified biologist with the appropriate authorizations shall move the animal out of harm's way to a safe relocation site. All sitings of special-status species shall be reported to the Environmental Coordinator and submitted to the CNDDDB.
6. To comply with the Santa Cruz County General Plan Policy 5.1.12, and Santa Cruz County Code Section 16.32.090, impacts to coastal dune habitat, and habitat for special-status species shall be compensated for through restoration of degraded coastal dune habitat on site, or at an approved offsite location at a 3:1 ratio for permanent impacts and at a 1:1 ratio for temporary impacts (See Also BOT-5).

7. A site-specific Habitat Restoration and Monitoring Plan shall be prepared by a qualified biologist or restoration professional as outlined in BOT-6 in the attached Biotic Report. The following additional elements must also be included in the final Habitat Restoration and Monitoring Plan:
 - A. A table with final permanent and temporary impact calculations and corresponding compensatory mitigation.
 - B. A map identifying all areas on site where temporary disturbance and re-establishment of native habitat shall occur at 1:1 ratio.
 - C. A map or maps identifying additional on-site and off-site habitat restoration areas intended to compensate for permanently impacted dune habitat at 3:1 ratio.
 - D. The location of any existing special-status plant colonies in the project impact area to be protected during and after construction and monitored for success.
 - E. The Habitat Restoration Plan shall include a 5-year Management Plan for maintenance and monitoring of restored areas, including a proposed mechanism for evaluating success.
8. The site-specific Habitat Restoration and Monitoring Plan shall be submitted to Environmental Planning Staff for review and approval within 6 months of project commencement and shall be implemented within 1-year of project completion. Establishment and planting of all restoration areas as outlined in the final approved Habitat Restoration Plan shall be inspected and approved by Environmental Planning staff.
9. Annual reports outlining the progress and success of the restoration and monitoring shall be submitted to the County Restoration Coordinator (restoration.coordinator@santacruzcountyca.gov) by December 31 of each monitoring year.
10. Any seed mix used for erosion control purposes on exposed soils shall be limited to seeds of native species common to the surrounding habitat and/or sterile seeds.



Ecological Studies

*Comprehensive environmental work based on
solid science and a love for wild places.*

**Biological Assessment and Report for the
Pajaro Dunes Seawall Maintenance & Repair Project,
Watsonville, CA.**

Prepared for

**The Haley & Aldrich
785 Ygnacio Valley Road
Walnut Creek, CA 94596**

and

Pajaro Dunes Geologic Hazard Abatement District

for submittal to the

Santa Cruz County Planning Department

November 5, 2024

**Prepared by Dawn Reis Ecological Studies
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And

**Kathleen Lyons, Biotic Resources Group
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- Appendix B. Maps of California Natural Diversity Database Occurrences of Protected Plants and Animals at or within the Watsonville West and Moss Landing Quadrants (CDFWS 2024).
- Appendix C. List of Special Status Plants Evaluated for the Pajaro Dunes Seawall Maintenance and Repair Project, July 2024.
- Appendix D. List of Special Status Wildlife Evaluated for the Pajaro Dunes Seawall Maintenance and Repair Project 2024.
- Appendix E. Map of plant and wildlife locations as reported in the CNDDDB in relation to the Project Area extending from Palm Beach State Parks to the Pajaro River.

Executive Summary

The proposed Pajaro Dunes Seawall Maintenance and Repair Project is located within the Pajaro Dunes Community in Watsonville (Figure 1). The proposed seawall revetment repair work area is located within the Pajaro Dune Community at Lots 1 to 12, Lot 15, Lots 54-55, Lot 107, Lots 93 to 105, as well as removing rocks encroaching on State Parks property fronting Lots 98 to 103 (Figure 2a and 2b). The revetment repair area extends approximately 1,900 linear feet along the ocean side of these properties. The repair will be focused on returning the rock revetment to the original design configuration to reduce the potential for movement resulting from settlement and instability caused by coastal erosion undermining the revetment during large storm events.

Four main environments within the revetment repair Project Area occur: Sandy Beach, Foredune dominated with European dune grass (*Ammophila arenaria*), Coastal Dune Scrub (including stands of European dune grass, ice plant (*Capobrotus* sp.) mats and residential landscaping), and non-native Tree Groves. The majority of the revetment work area is bare sand (sandy beach) or bare rock revetment. The revetment repair work area is sparsely vegetated; where vegetation is present, invasive, non-native plants and European dune grass are prevalent.

Potential impacts to botanical resources within the Tree Groves (e.g., vegetation removal, tree limb removal, tree removal) are considered less than significant. This is due to the non-native status of the trees and lack of native dune scrub vegetation within the understory of the Tree Groves. However, potential significant impacts to wildlife within the non-native Tree Groves include nesting songbirds and raptors (hawks, owls and falcons), as all bird nests are protected under the federal Migratory Bird Treaty Act as well as by California Fish & Wildlife Codes.

Potential impacts could occur to sensitive habitats (Sandy Beach, Foredunes, and Coastal Dune Scrub) and special status species. Monterey spineflower (*Chorizanthes pungens* var. *pungens*), protected under the federal Endangered Species Act (ESA), are known to occur in the Coastal Dune Scrub of the Project Area, as well as a locally unique plant, Monterey paintbrush (*Castilleja latifolia*). Western snowy plover (*Anarhynchus nirvosus nirvosus*, formerly *Chardrius nirvosus nirvosus*), listed as Threatened under the federal ESA, are known to nest and attempt to nest adjacent to the Protected Area; therefore, avoidance measures need to be taken to assure that there are no impacts to this species. Other special status species with the potential to occur, or move through, the sensitive habitats of the Project Area include Monterey shrew (*Sorex ornatus salaries*), Northern California legless lizard (*Anniella pulchra*), bumble bees, Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), and nesting birds. If not either avoided or mitigated for, potential impacts to these species are considered significant. Therefore, protective avoidance and mitigation measures for each of the species listed above are provided within this report.

It is not in the scope of work of this report to provide a revegetation plan or identify proposed additional areas to mitigate for potential permanent impacts to sensitive habitats. However, it is recommended that such a plan is prepared and submitted so that potential temporary, as well as permanent, impacts to Sensitive Habitats (Foredune and Coastal Dune Scrub) can be mitigated to a less than significant level.

1.0 Introduction, Purpose & Project Description

Dawn Reis of Ecological Studies, and Kathleen Lyons of Biotic Resources Group prepared this Biological Assessment for the Pajaro Dunes Seawall Maintenance and Repair Project. The intent of the seawall maintenance and repair will be focused on returning the rock revetment to the original design configuration to reduce the potential for movement resulting from settlement and instability caused by coastal erosion undermining the revetment during large storm events. This seawall maintenance and repair work is essential for the protection of the existing properties and homes within the Pajaro Dunes Geologic Hazard Abatement District (PDGHAD) designated zone 1 area.

This Biological Assessment is prepared for Haley & Aldrich and the PDGHAD for submittal and review by the Santa Cruz Planning Department. The findings presented in this biological report are intended for the sole use of the Haley & Alrich and PDGHAD, their representatives, and the County of Santa Cruz in evaluating the proposed project in the following ways:

- Identification of the rare, endangered, threatened, and unique species on the site.
- Identification of the essential habitats of such species.
- Recommendations to protect species and sensitive habitats.

The findings presented in this report are for information purposes only; they are not intended to represent the interpretation of any State, Federal or County laws or ordinances pertaining to permitting actions within sensitive habitat or endangered species. The interpretation of such laws and/or ordinances is the responsibility of the applicable governing bodies.

2.0 Project Location & Existing Seawall Configuration

2.1 Project Location

The proposed seawall revetment repair and maintenance work area is located within the Pajaro Dunes Community, as well as removing rocks encroaching on State Beach property along the ocean side of the Pajaro Dunes residential development (Figure 1). All of the proposed seawall rock revetment repairs are located along the ocean side (west portion) of the Lots associated with the Pajaro Dunes development parcel numbers APN: 052-601-10 et al., as well as on State Parks Beach APN 052-231-35 in Watsonville. Access and staging are also proposed to occur on State Parks property at APN 052-161-13.

The Pajaro Dunes community includes a variety of private single-family residences, including detached residences, groups of townhouses, and condominiums. These buildings were constructed along a narrow strip of land bounded by the Pacific Ocean on the southwest, the Pajaro River on the southeast, and Watsonville Slough on the northeast. The areas of proposed repairs occur intermittently along the existing seawall, and not the entire length (Figure 1)

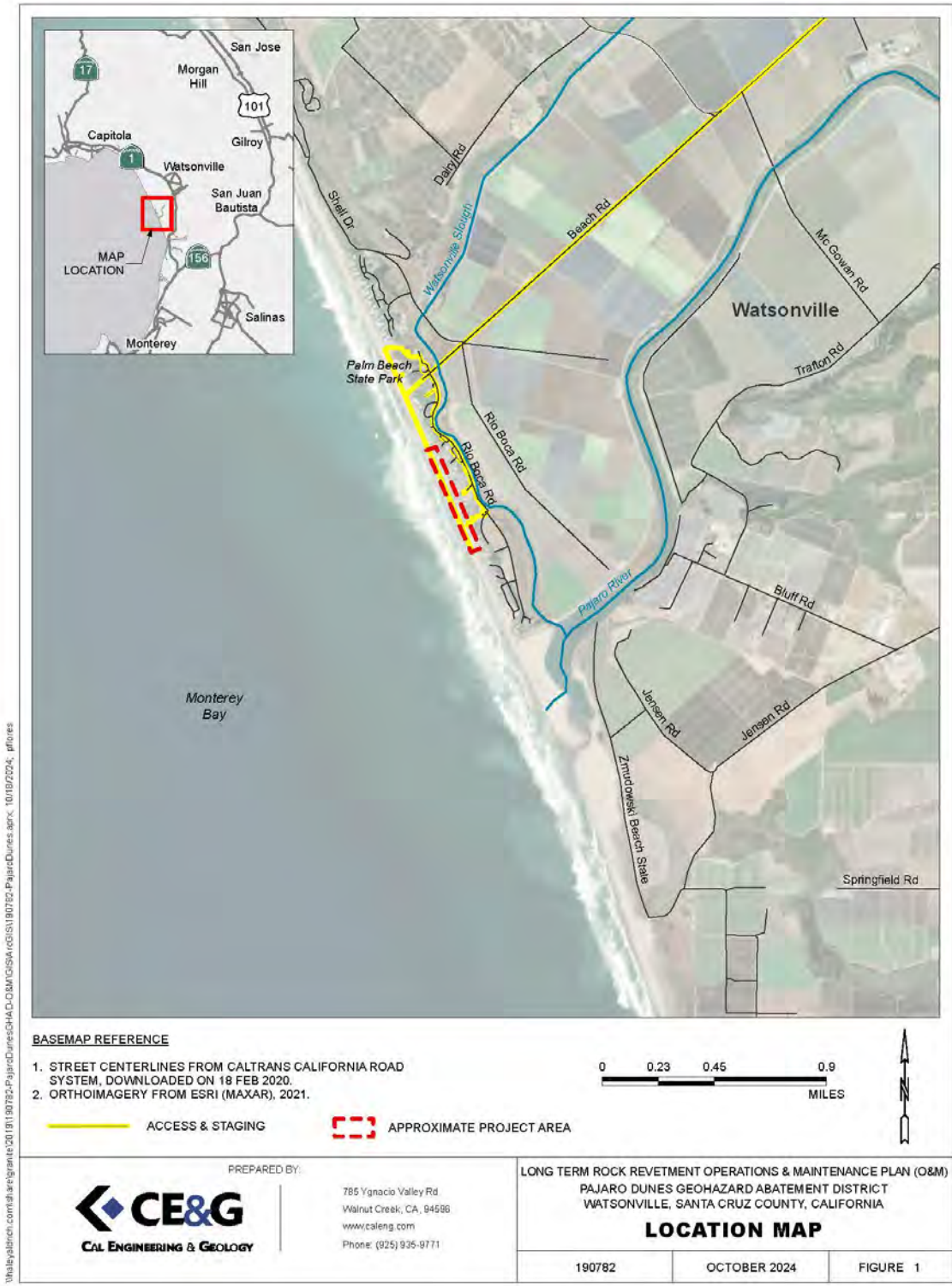


Figure 1. Project location.

The proposed staging and access areas will occur from Palm Beach State Park parking lot, south along State Beach and the portion of the Pajaro Dunes Community located between the gate entrance on 2661 Beach Road and Shearwater Lane before Pelican Point and the Pajaro River (Figures 1 and 2). Palm Beach State Park is located at the end of Beach Road immediately north of the Pajaro Dunes community. Palm Beach State Park kiosk, bathroom facilities and parking lot entrance is located at 2660 Beach Road. Access to the bottom of the existing seawall rock revetment is limited and needs to occur at low tide along the State Parks Beach (Sunset State Beach) in front of the Pajaro Dunes Community. Access to this section of beach will start from Palm Beach State Parks parking lot (APN 052-161-13) or via a Public Coastal Access right of way (APN: 052-231-66) (Figure 2a).

2.2 Existing Seawall Rock Revetment Configuration

The proposed 1,900-foot-long repair work will occur along two sections of the existing rock revetment as shown in Figures 2a and 2b (see area marked as the active construction zone). The existing rock revetment is comprised of approximately 110,000 tons of rock slope protection and is 6,000-feet long in total length. In general, the rocks vary between 1 foot and 3 feet as measured in their longest dimensions. The average rock is estimated to weigh about 8 tons.

However, the rock revetment has been repeatedly damaged by coastal erosion from large winter storms at least three times since its original construction in 2002/2003, 2004, and in 2023.

During the 2004 storm event, substantial portions of the beach became severely eroded, the toe of the revetment became exposed, and portions of the revetment were undermined along these sections. A 400-foot-wide section of the revetment was affected in the vicinity of Lots 98 through 104, and a 135-foot-wide section was affected in the vicinity of Lots 15, 54, and 55 (see Figure 2a and 2b for project features and lot numbers).

The toe (beachside) of the rock revetment was constructed adjacent to the property line, separating the Pajaro Dunes development from the State of California Park Lands. Therefore, in 2004 the California State Parks Department gave permission to the Pajaro Dunes GHAD to temporarily place rock slope protection on State Parks' property fronting Lots 98 to 103 with the understanding that the rocks would be removed as part of a future permanent repair. One of the objectives of this project is to remove the encroaching rock slope protection on State Parks property and utilize it in the revetment repair.

Pedestrian access from Pajaro Dunes properties to the beach within the limits of the project is provided by six timber boardwalks constructed in community areas between Lots 4 and 5, 10 and 11, 14 and 15, 106 and 107, 102 and 103, and 98 and 99 (Figure 2b). The boardwalks lead to timber stairs that descend over the rock slope protection revetment to the beach below.

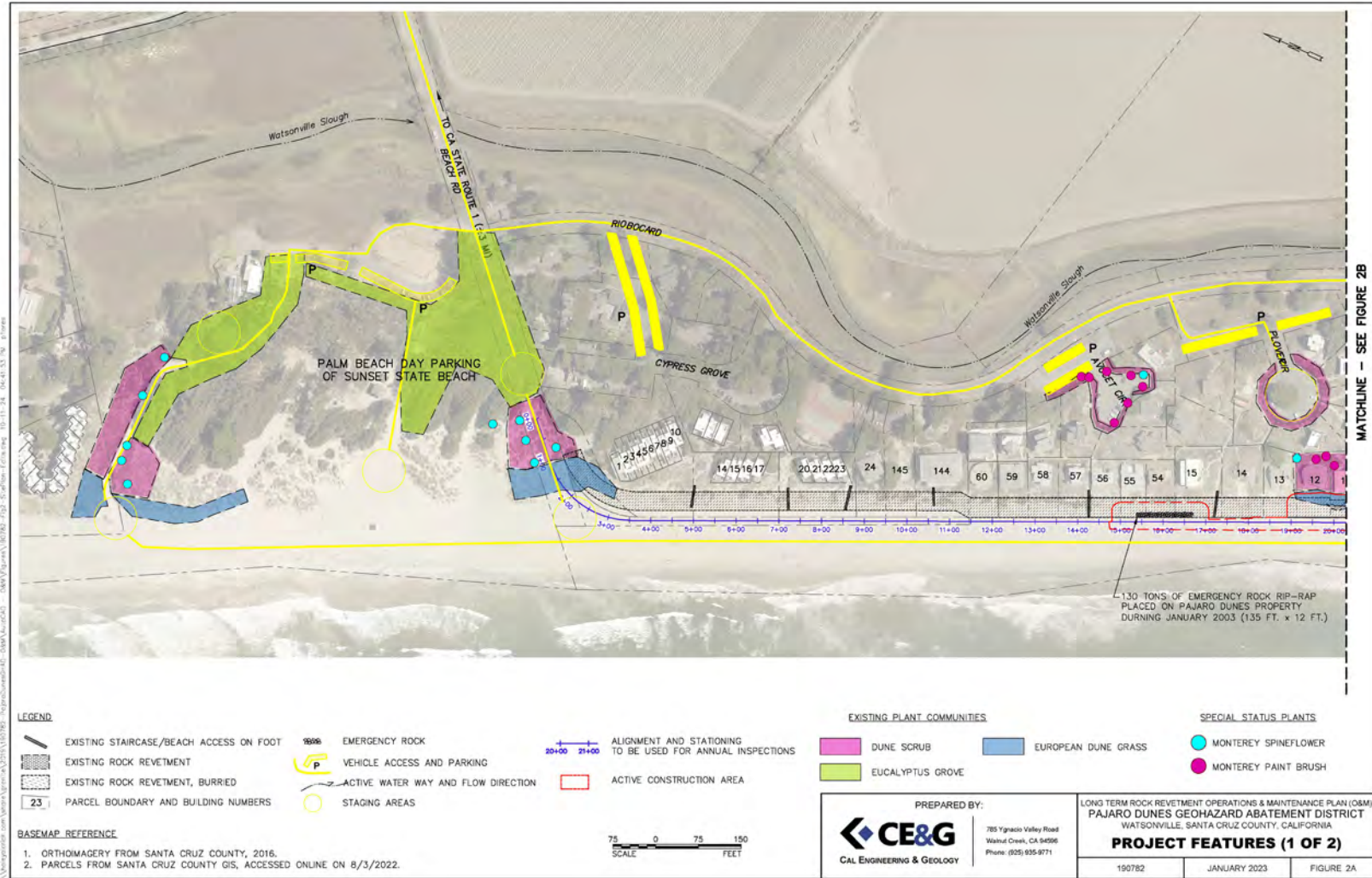


Figure 1a. Project features.

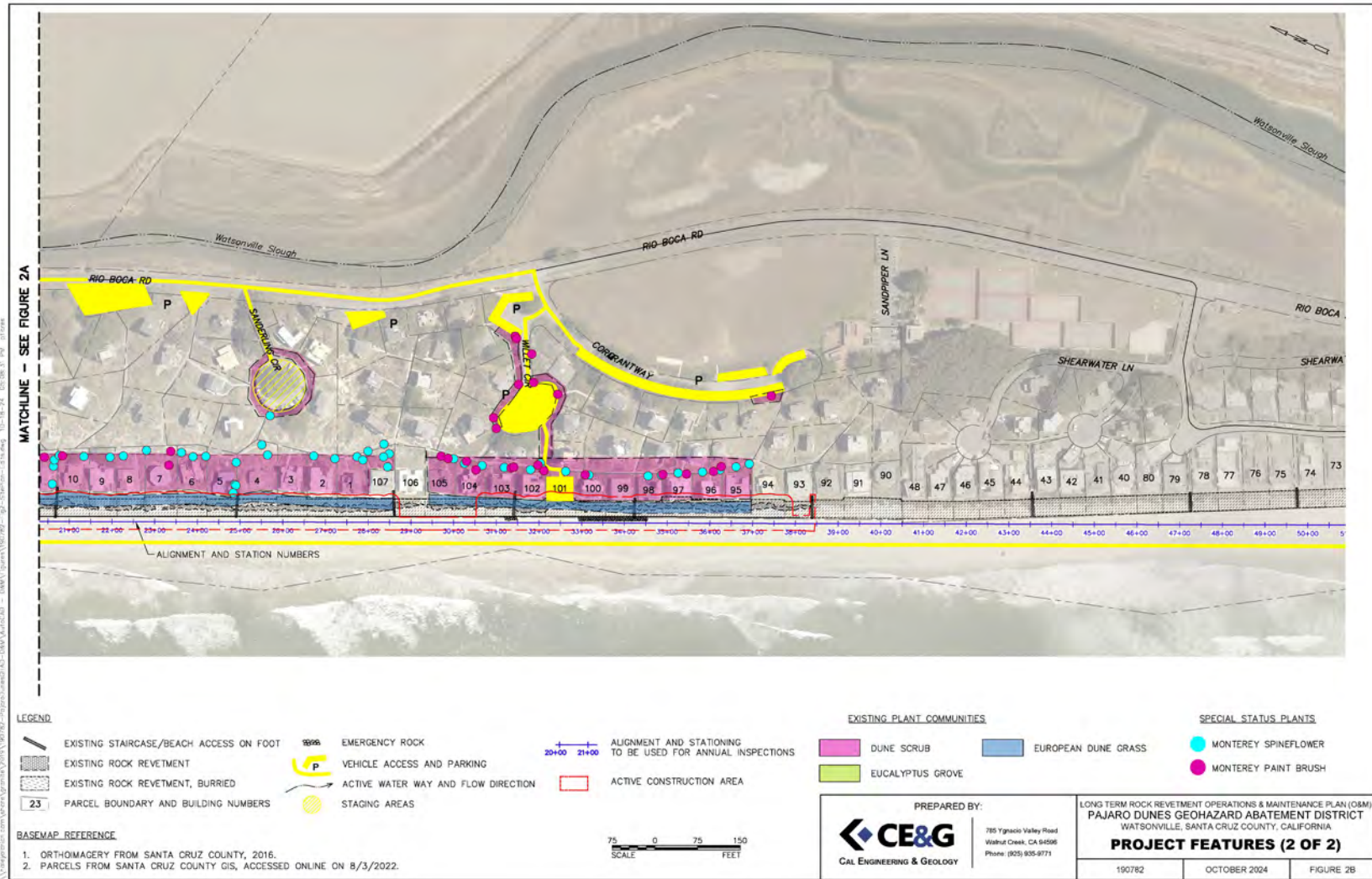


Figure 2b. Project features.

3.0 Project Description

3.1 Seawall Maintenance and Repair

The object of this project is to repair the existing rock riprap revetment back to the original design (including footprint, height, and depth). Rock revetment repairs will be performed along approximately 1,900 linear feet at pre-identified areas where displacement or damage impairs the ability of the revetment to serve its intended function. Repairs include removing debris and/or relocating displaced rock, and restacking rock to re-establishing the original design grades.

A copy of the protect plan sheets 1-16 by CE&G Division of Haley and Aldrich, dated August 29, 2023, are provided in Appendix A. The proposed rock repair is to occur along the western property boundary of the Pajaro Dunes development at Lots 1-12, 15, 54-55, 94-103 and 107 (Appendix A), as well as removing rocks encroaching on State property fronting Lots 98 to 103 as shown on Figure 1a and Figure **2b**. Project features. .

In 2024, the California State Parks Department gave permission to the Pajaro Dunes GHAD to temporarily place rock slope protection on State Parks' property fronting Lots 98 to 103 with the understanding that the rocks would be removed as part of a future permanent repair. One of the objectives of this project is to remove the encroaching rock slope protection and utilize it in the revetment repair. Therefore, to fulfill this pre-existing agreement, the seawall repair work is also proposed to occur on State Parks' property (APN: 052-231-35) fronting Lots 98 to 103.

Originally, the rock revetment consisted of 110,00 tons of large rip-rap rocks. The areas of repair will need an estimated 960 tons of rock. The revetment maintenance will consist of removing and stockpiling approximately 440 tons of rock on California State Parks property located adjacent to the revetment toe in front of Lots 98-100 and Lot 103 and reuse these rocks at needed repair locations.

The project will temporarily impact the beach area up to 30 feet seaward of the toe of the existing revetment (Figure 1a and Figure **2b**. Project features.). Construction is expected to occur in 2025. Construction will need to be timed to occur during the lowest tides to facilitate site access.

3.2 Beach Access Boardwalks and Stairs Within Seawall Repair Areas

Boardwalks and a total of seven stairs that will be removed and replaced during this project will be between Lots 4 and 5, 10 and 11, 14 and 15, 93 and 94, 98 and 99, 102 and 103, and 106-107.

3.3 Road Access Roads

Please see Figure 2a and Figure 2b for the location of all access roads to the beach. Four potential construction access ways to the seawall along the beach have been identified. Two different access alternatives to the beach from West Beach Road through State Park lands, using an existing gravel road or an existing sandy wide pathway. The third potential access to the beach is from West Beach Road along the undeveloped West Beach Road right-of-way. Due to

the nature of the work and location of the beach rock revetment, access will also occur through Palm Beach State Park and along the beach (during low tide only).

A fourth access is located from the end of the turnaround and parking area at Willet Circle, which is along an existing boardwalk and stretches to the seawall via a vacant Lot 101.

3.3 Staging Areas

Staging areas and access to the staging areas occur along existing paved roads and parking lots. These existing roads and paved parking lots are at Palm Beach State Park and at numerous locations with the Pajaro Dune Community (Figures 1 and 2). The following paved parking lots with Pajaro Dunes are to be used as staging areas:

Rio Boca Road	Cypress Gove	Avocet Circle	Cormorant Way
Sanderling Circle	Plover Circle	Willet Circle	

3.4 Additional Agency Communications & Approvals Needed

A grading plan has submitted to Santa Cruz County (SSC) (CE&G Division of Haley and Aldrich. August 29, 2023) and the SSC has drafted a letter of approval, although final signatures may still needed (deGrassis, Santa Cruz Planning Department 2023).

Because vehicle and heavy equipment access and staging areas are required for repair activities, the agencies listed below may require encroachment permits:

- California Coastal Commission (CCC) can claim authority for regions at or below the mean high tide.
- California State Parks (Palm Beach State Park-Sunset State Beach)
- Monterey Bay National Marine Sanctuary (MBNMS)
https://montereybay.noaa.gov/resourcepro/permit/permits_need.html

California State Parks will also need to be consulted regarding any tree trimming or tree removal that may need to occur so that heavy equipment can access the existing gravel road and/or existing sandy access trails to the beach.

4.0 PROJECT HISTORY

4.1 History of the Pajaro Dunes Community and Seawall

Development of the Pajaro Dunes community began in the late 1960s. Following several episodes of severe coastal erosion in the 1970s and 1980s, approximately 6,000 feet of rock revetment was constructed in three segments between 1986 and 1988 along the ocean side of the development. The seawall and properties behind it are known by the PDGHAD as zone 1. The original seawall design in 1986 had a top elevation that varied and was approximately 19.5 to 22 feet over mean sea level (msl) and a bottom key approximately at 2.0 feet msl (CG & E July 7, 2023).

Following each damaging storm event, emergency repairs were implemented in zone 1 by placing rock slope protection (RSP) in selected areas along the seawall revetment. The repaired area in 2003 measured a total length of approximately 420 feet of revetment using approximately 675 tons of RSP. The repaired area in 2004 measured a total length of approximately 55 feet of revetment using approximately 185 tons of RSP. During this time (2004), the California State Parks Department gave permission to the PDGHAD to temporarily place rock slope protection on State Parks' property fronting lots 98 to 103 with the understanding that the rocks would be removed as part of a future permanent repair.

In 2023, a flood event combined with king tides washed huge volumes of beach sand away, removing small foredunes and exposing most of the seawall down to the toe of the slope.

4.2 Relevant Agency Submittals & Communications

In 2023, PDGHAD submitted A Preliminary Grading Plan to Santa Cruz County and to the PDGHAD Board of Directors. The Santa Cruz County Planning Department has drafted A Level 3 Preliminary Grading Approval with Conditions (DeGrassi, Santa Cruz County Planning 2023). Along with the Preliminary Grading Approval and request to the county, the following documents were submitted:

- PDGHAD Engineers Report Issue No. 04, Santa Cruz County dated August 4, 2024, prepared by CE&G Division of Haley and Aldrich.
- PDGHAD Rock Revetment Maintenance at Pajaro Dunes Resort, Project # 190780 Plan sheets 1-16, dated August 29, 2023, prepared by CE&G A Division of Haley and Aldrich.
- *PDGHAD Rock Revetment Maintenance Plans* dated August 29, 2023, prepared by CE&G A Division of Haley and Aldrich.
- *PDGHAD Long-term Operations and Maintenance (O&M) Manual* dated July 7, 2023, prepared by CE&G A Division of Haley and Aldrich.
- *Biotic Report for Pajaro Dunes Seawall Revised Revetment Design Repair Pajaro Dunes, Santa Cruz County*, prepared by Biotic Resources Group dated October 14, 2015.
- The proposed project is clearly within the Coastal Zone and on will need to be reviewed by the CCC and by California State Parks.

5.0 Methods

Plant Ecologist, Kathleen Lyons of Biotic Resource Group and Dawn Reis, Senior Wildlife Ecologist of Ecological Studies, conducted all of the onsite evaluations and data analysis. Specific data searches and field visits are described below.

5.1 Botanical Surveys and Evaluation Methods

The botanical resources of the proposed revetment Project Area were assessed through literature review and field observations. Kathleen Lyons (Plant Ecologist) surveyed the Project Area for rare plants and to evaluate plant community types on July 9, 2024. During this time, Kathleen used the site plans provided which included the revetment repair work area in Lots 1-12 and Lots 94-105 as well as equipment/construction accesses and staging areas. These areas were walked in order to identify both locations of special status plants and plant community types, and to map their distribution onto an aerial photo using a hand-held computer mapping program (Avenza GPS). Avenza GPS was used in the field with project site plans uploaded as visible layers on top of the aerial photo. Plant species were also recorded in a notebook. Modifications were made to the site plans since the July 2024 survey and the following areas were not surveyed: Lots 15, 54, 55, 93, 96, and 106.

Vegetation mapping of the Project Area was conducted from a review of aerial photos and the field survey. The major plant communities within the Project Area, based on the classification system developed by CNDDDB's California Terrestrial Natural Communities (CDFW, 2022) and A Manual of California Vegetation (Sawyer and Keeler-Wolf 1995), as amended to reflect site conditions, were identified during the field survey. Modifications to the classification system's nomenclature were made, as necessary, to accurately describe the sites resources. The plant communities within the proposed work area, surrounding areas, and the potential construction access areas were mapped onto aerial photo base maps using Avenza GPS software. Plant nomenclature follows The Jepson Manual (2012).

To assess the potential occurrence of special status biotic resources, two electronic databases were accessed to determine recorded occurrences of sensitive plant communities and sensitive plant species. Information was obtained from the California Native Plant Society's (CNPS) Electronic Inventory (2024) and California Department of Fish & Wildlife (CDFW) RareFind database (CDFW 2024) for the Watsonville West U.S.G.S. quadrangle and surrounding quadrangles. Data from previous seawall repair projects were also reviewed (i.e., PDA Revetment Repair Biotic Report, Biotic Resources Group 2015).

5.2 Wildlife Habitat Evaluation Methods

On July 9, 2024, Dawn Reis (Wildlife Ecologist) surveyed the Project Area including roads and staging areas to assess the habitat quality and potential for protected wildlife. This habitat evaluation focused on species most likely to occur. This included evaluating the beach and foredune quality for Western snowy plovers (*Charadrius nivosus nivosus*) and California least terns (*Sternula antillarum browni*), the quality of Dune and Coast Shrub areas for nesting

songbirds and California legless lizards (*Anniella pulchra*), and Tree Groves for nesting raptors and bats. She also evaluated the Project Area for coast buckwheat (*Eriogonum latifolium*) and dune buckwheat plants (*Eriogonum parvifolium*), the larval host plant for the federally protected Smith's blue butterfly (*Euphilotes enoptes smithi*). She did not conduct for surveys for these protected species, as these surveys will need to be conducted in spring prior to construction.

As described above, Dawn used the Avenza mapping program with the overlaid Project plans while evaluating the habitat potential. During this time, she made note of any significant incidental observations of wildlife.

Dawn consulted with Christine Fox, United States Fish & Wildlife Service (USFWS) Biologist, for both unpublished records of occurrences of federally protected plants and animals associated with the beach, foredunes, and coastal scrub communities (C. Fox, personal communications July 22, 2024). In addition, Dawn Reis consulted Kriss Newman, Principal Ecologist, Monterey Bay Point Blue Conservation Science (MBPBCS), for unpublished records of Western snowy plovers (*Anarhynchus nirvosus nirvosus*, formerly *Chardrius nirvosus nirvosus*) in and near the Project Area, as well as recommended avoidance measures for Western snowy plovers (WSP) (K. Newman, pers. Com. July 23, 2024). Western snowy plover nest locations near the Project Area in both 2023 and 2024 were provided by Ms. Newman and Mr. Cummins of MBPBCS.

She also conducted database searches and reviewed the following sources:

- The Santa Cruz County (SCC) Planning Department's Geologic Information Systems (GIS) online database for the parcel, and parcel maps.
- The California Natural Diversity Database (CNDDDB) Rarefind records for federal and state protected plants and animals (CFWS 2024) and Biological Information System (BIOS) maps for the Watsonville West and Moss Landing USGS map quadrants, as published on October of 2024 (Appendix B).

6.0 Baseline Environmental

6.1 Existing Conditions

The Pajaro Dunes Project Area lies within the outer Central Coast geographic region (Sawyer and Keeler-Wolf, 1995). Due to the close proximity of the ocean, the Project Area supports a sand-dune dominated ecosystem, comprised of beach, active dunes (without vegetation), foredunes (with low growing and often sparse vegetation), and coastal dune scrub. Active dunes (without vegetation) are currently limited to one proposed beach access at State Parks Beach near the public bathroom. The Project Area also supports groves of non-native eucalyptus (*Eucalyptus* sp.) and cypress trees (*Cupressus macrocarpa*) in the Beach Road area on State Parks and areas around the existing residential development. Within the Pajaro Dunes facility, the open areas between the residential buildings support remnant stands of foredunes, which are degraded with large stands of non-native European dune grass (*Ammophila arenaria*), and mats of ice plant (*Carpobrotus* sp.), some native coastal dune scrub, residential landscaping, groves of non-native trees, and combinations thereof. The distribution of these natural community types are presented on Figures 2a and 2b. Below you will find a description of natural communities within the Project Area: 1) Beach, 2) Foredune dominated with non-native European Dune Grass and/or Ice Plant, 3) Coastal Dune Scrub, and 4) Non-native Eucalyptus Groves.

6.2 Beach and Foredune with Non-native European Dune Grass & Ice plant Mats

The majority of the revetment work area will occur on bare sand (sandy beach) and along the rock revetment which is sparsely vegetated. Most of the construction access routes to the work area are located within the active beach zone. Therefore, the work will be timed to occur during low tides. This beach zone is the expanse of sandy substrate between mean tide and the foredune or, in the absence of a foredune, to the furthest inland reach of storm waves (to the revetment). Little vegetation persists due to the tidal activity which periodically scours away and then re-deposits sand onto the beach; however, patches of vegetation may occur. However, the beach in the tidal zone is important for resting and foraging shorebirds. Due to the amount of human activity along this reach of beach, seabirds and marine mammals (sea otters (*Enhydra lutris*), harbor seals (*Phoca vitulina*) and California sealions (*Zalophus californianus*) do not use it for resting or giving birth, but ill, dying, and dead animals have been known to wash ashore, usually in such poor condition that they do not survive unless there is professional human intervention.

The exposed portion of the existing rock revetment (and nearby residential development) is located within the historical foredune; this area is typically inland of the furthest reach of storm waves. A small amount of Foredunes with pioneering plants and common native foredunes plants were present in 2022 (Dawn Reis, observations and photos), however these foredunes were all swept away during the large 2023 storm events. Currently, small pockets of vegetation were observed amid the exposed portions of the existing revetment, as well as on inland areas along the top of the revetment (adjacent to the residences). Although these areas support native sandy substrate suitable for native coastal dune scrub vegetation, the areas are dominated by non-native dune-adapted plant species, particularly stands of European dune grass (*Ammophila arenaria*), ice plant (*Carpobrotus* spp.), and some residential landscaping. The

general character of the revetment repair work area and the existing exposed revetment and vegetation at the top of slope, immediately adjacent the tidally influenced beach, is depicted in Figure 2.



Figure 3. View northward showing beach and existing revetment with European dune grass/ice plant vegetation, July 2024.

The land between the existing revetment and the ocean is active beach and a thin strip of foredune over the seawall. Active dunes (usually barren) did not occur in 2024 due to storm activity in 2023. This beach area is sparsely vegetated as it is subject to tidal activity, as shown in Figure 4. Plants observed include sea rocket (*Cakile maritima*), pink sand verbena (*Abronia umbellata*), ice plant, and European dune grass.



Figure 4. View southward showing sparsely vegetated beach and foredune, July 2024

Healthy native foredunes need new sand for rejuvenation (Holland 1986) and typically have barren active dunes in front of them. Healthy native foredunes are sparsely vegetated with a thin layer of soil crust, and can be associated with at least three protected species, Monterey spineflower (*Chorizanthe pungens* var. *pungens*), Monterey paintbrush (*Castilleja latifolia*) and nesting Western Snowy Plovers (*Charadrius nivosus nivosus*). However, in 2024, there was very little active dunes (only at State Parks on one access) at the project site and the foredunes were dominated with non-native dense stands of European dune grass, and some pockets of ice plant. Native plant species were limited; however, beach primrose (*Camissonia cheiranthifolia*) and beach bur (*Ambrosia chamissonis*) were observed. Non-native species include sea rocket, hairy cat's ear (*Hypochaeris radicata*), and riggut brome (*Bromus diandrus*). The character of the foredune is depicted in Figure 5. Healthier foredune areas occurred along the proposed beach access on the State Park lands but were lacking in the active work zone on the revetment repair (Figure 2a and 2b).



Figure 5. View westward of State Park beach access way through European dune grass foredune, July 2024

6.3 Coastal Dune Scrub

Coastal Dune scrub (dune scrub) occurs inland of the foredune. With some protection from waves and wind, native plants grow on the partially stabilized dunes. In the northern portion of the Project Area the scrub is comprised of mostly native species such as mock heather (*Ericameria ericoides*), beach sagewort (*Artemisia pycnocephala*), lizard tail (*Eriophyllum staechadifolium*), silver beach lupine (*Lupinus chamissonis*), beach primrose, sea lettuce (*Dudleya* sp.), coyote brush (*Baccharis pilularis*), yellow bush lupine (*Lupinus arboreus*), beach bur, and telegraph weed (*Heterotheca grandiflora*). Non-native plant species are also present, particularly near existing residences; ice plant, European dune grass are prevalent in these areas. The dune scrub was also found to support Monterey spineflower, and Monterey paintbrush, two special status plant species (please see the discussion on these species under Special Status Plants). The character of the Coastal Dune Scrub is depicted in Figure 6. The Coastal Dune Scrub, as well as the interface of Coastal Dune Scrub and Foredunes, can support California leg-less

lizards (*Aniella pulchra*) and nesting Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*) (please see the discussion on these species under Special Status Wildlife). Wildlife observed to occur in the Coastal Dune Scrub of the project site included a foraging Bryant's savannah sparrow (not nesting) and a Northern alligator lizard (*Elgaria coerulea*).



Figure 6. Character of dune scrub in northern portion of project area, July 2024

6.4 Eucalyptus Tree Groves

The Project Area supports several groves of non-native trees, primarily eucalyptus (*Eucalyptus* spp.). A large grove occurs along West Beach Road (within State Park land) and along the West Beach Road right-of way. Intermixed in the grove are some Monterey cypress (*Cupressus macrocarpa*) and myoporum (*Myoporum* sp.) trees. The understory vegetation is sparse due to the dense shade and accumulation of bark peels and leaf litter; however, ice plant, wild oat (*Avena* sp.), ripgut brome, myoporum, curly dock (*Rumex crispus*), and sea rocket were observed. The character of the eucalyptus Tree Grove on State Park property is depicted in Figure 7.



Figure 2. Character of eucalyptus grove in northern portion of Project Area, July 2024.

7.0 Special Status Species Occurrences

7.1 Special Status Plants Considered within the Project Area

Plant species of concern include those listed by either the Federal or State resource agencies as well as those identified as rare (List 1B) by California Native Plant Society (CNPS). The potential for occurrence was based on a search of the CNPS and CNDDDB inventories within the Project Area and in nearby locations that are also associated with the plant community types of the project site. Based on the available plant community types within the Project Area (Beach, Fore dune, Coastal Dune Scrub and Non-Native Tree Groves) there are a number of special status plants with the potential to occur (Table 1) within the project site. The site evaluation and rare plant surveys conducted in July of 2024, resulted in two species known to occur within the Project Area: Monterey spineflower (federally listed as endangered) and Monterey paintbrush, a locally unique species (CNPS List 4, Watch list).

However, as already mentioned, the botanist was updated that a few Lots were missing from the survey map during her July 2024 surveys, after the bloom period for rare plants. Therefore, Lots 14, 14, 54, 55, 93, 96 and 106, need to be surveyed for both known and potential special status plants as listed in Table 1 before construction begins (this is addressed in the avoidance and mitigation measures).

Rare plant species with the potential to occur but were not found on the Fore dunes and/or Coastal Dune Scrub include Monterey gilia, robust spineflower, Sand-loving wallflower (*Erysimum ammophilium*) and Sand gilia (*Gilia tenuiflora ssp. arenaria*). A brief description of the habitat preference and closest known occurrences can be found in Table 1. A summary of the two rare plants found, Monterey Spineflower and Monterey paintbrush, including the numbers found, are included in the discussion below under Special Status Plants Known to Occur.

The distribution of the rare plant species in and adjacent to the Project Area are shown in the CNDDD Maps generated for this project in Appendix B. A brief explanation of the full list of reported rare plants within the greater area, and if potential habitat occurs or does not occur in project site, can be found in Appendix C.

Table 1. List of Special Status Plant Species Associated With Plant Community Environments Within the Pajaro Dunes Seawall Rock Revetment Maintenance and Repair Project.

Species	CNPS Ranking	State Status	Federal Status	Potential for Presence, Habitat Preference; Closest Known Occurrences
Watsonville West Quadrangle				
Monterey paintbrush (<i>Castilleja latifolia</i>)	List 4	None	None	PRESENT. Sandy slopes in dune scrub; hemiparasitic on woody shrubs; numerous patches observed in dune scrub
Monterey spineflower (<i>Chorizanthe pungens</i> var. <i>pungens</i>)	List 1B.2	None	Threatened	PRESENT. Sandy slopes, can be intermixed with oak woodland/maritime chaparral, dune scrub; recorded from Fiesta Way area, Manresa and Sunset State beaches; Day Valley area; Pajaro Dunes; numerous patches observed in dune scrub
Robust spineflower (<i>Chorizanthe robusta</i> var. <i>robusta</i>)	List 1B.1	None	Endangered	NOT PRESENT. Sandy slopes, often intermixed with oak woodland/maritime chaparral; recorded from Manresa State Beach; NE of Ellicott Pond, Aptos HS area; not observed; marginal habitat site
Sand-loving wallflower (<i>Erysimum ammophilium</i>)	List 1B.2	None	None	NOT PRESENT. Coastal dunes; recorded from Sunset State Beach, along Shell Road; not observed
Sand gilia (<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>)	List 1B.2	Threatened	Endangered	NOT PRESENT. Coastal dunes; recorded from Sunset State Beach and Pajaro Dunes North of Palm Beach; not observed; marginal habitat on site

CNPS Status: List 1B: These plants (predominately endemic) are rare through their range and are currently vulnerable or have a high potential for vulnerability due to limited or threatened habitat, few individuals per population, or a limited number of populations. List 1B plants meet the definitions of Section 1901, Chapter 10 of the CDFG Code. **List 4:** CNPS List 4, Watch list.

7.2 Special-Status Plant Species Known to Occur & Updated Distribution

During the July surveys, Kathy Lyons documented both Monterey spineflower and Monterey paintbrush at a number of locations (see figures 2a and 2b).

Monterey spineflower. This species is federally listed as threatened under the federal ESA. This species is also listed as rare (List 1B.1) by CNPS. It is endemic to California, known from the San Francisco Bay Area south along the Central Coast, and is considered rare by the County of Santa Cruz. The species is not listed under the California Endangered Species Act (CESA).

Monterey spineflower is an annual species that grows in sandy soils within areas of open or low growing sparse vegetation within the foredunes and Coastal Dune Scrub, or a mix thereof. The spineflower a low-growing plant characterized by its whitish to pinkish flowers and spiny bracts surrounding the flowers (left photo of Figure 8). The species was observed within the Dune Scrub within the Project Area. Over fifty (50) patches of the species were recorded (Figures 2a and 2b). The character of one patch is shown in right photo of Figure 8.



Figure 8. Monterey spineflower in bloom & Monterey spineflower colony (black arrows), July 2024

Monterey paintbrush (*Castilleja latifolia*). Individuals of Monterey paintbrush, a locally unique species (CNPS List 4), were observed in Dune Scrub within and adjacent to the project site. This hemiparasitic perennial plant (left photo Figure 9) is typically found in healthy foredunes and Coastal Dune Scrub. Over thirty (30) patches of the species were recorded (Figure 2a and 2b). The character of one patch within a patch of non-native ice plant in the degraded Coastal Dune Scrub is shown in the right photo of Figure 8.

Locations of both Monterey paintbrush and Monterey spineflower documented in 2024 are also shown in Figure 10.



Figure 9. Monterey paintbrush within degraded Coastal Dune Scrub, July 2024.

7.3 Identification of Special Status Wildlife to Consider within the Project Area

Special status wildlife species include those listed as threatened or endangered by either the Federal or State Endangered Species Acts (ESA), as well as those identified as State Species of Special Concern (SSC). All bird nests are protected under California Department Fish and Wildlife (CDFW) Codes, and migratory birds are protected by the Migratory Bird Treaty Act (MBTA). Likewise, all bats are protected by CDFW codes. In addition, any environment that supports protected plants or animals are also considered Sensitive Habitat.

Under the federal ESA, it is unlawful to “take” a listed species. Take is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, capture, or collect, or to attempt to engage in any such activity.” The definition of “take” also makes it unlawful to result in habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

A CNDDDB Rarefind (CFWS 2024) search for known occurrences of protected animals within and adjacent to the Project Area was conducted for the Watsonville West and Moss Landing Quadrants. The distribution of the known protected wildlife species in these two quadrants are shown in the CNDDD Maps Appendix B. This is an extensive list, and it includes both animals that are supported, as well as not supported, by the environments within the Project Area. A brief explanation of the full list of reported protected wildlife within the greater area (Watsonville West & Moss Landing Quadrants), and if potential habitat occurs or does not occur in project site, can be found in Appendix D. Appendix E contains a map of wildlife locations as reported in the CNDDDB in relation to the Project Area extending from Palm Beach State Parks to the Pajaro River.

A few general notes regarding amphibians, bats, and nesting birds are worth mentioning.

Amphibians. Special status amphibians are not likely to move through the parcel. The parcel is on a narrow peninsula with salt and/or brackish water on three sides (the Pacific Ocean, the

lower tidally influenced reach of Watsonville Slough, and the lower tidally influence reach of the Pajaro River) and there are no freshwater environments on the peninsula.

Bats. Trees along the access and staging areas were assessed for cavities and peeling bark that bats may roost in, if any tree limbing or removal needs to occur within the State Park Property to access the beach. These features were not found in the trees along the staging area or roads on the State Park Property. However, Hoary bats (*Lasiurus cinereus*) will roost on tree leaves. Therefore, all bats except for Hoary bats were excluded from consideration.

Nesting Birds. As mentioned above, all bird nests and all dependent young (even if mobile) are protected both under the MBTA as well as by CDFW codes. On July 24, Dawn Reis observed a great horned owl adult near a downy great horned owl chick (branching) just south of the public bathrooms at Palm Beach State Parks, indicating that their nest was nearby. Being familiar with this area, she has also observed a wintering pair of great horned owls in this non-native Eucalyptus/Cypress grove for the past three years.

Numerous special status birds seabirds and shorebirds are likely to occur as flyovers but only a few of these birds nest on the ground or in the Coastal Strand communities. Special status birds with the potential to nest at the project site are addressed and presented below.

7.4 Special-Status Wildlife Known or With the Potential to Occur

Figure 10 shows the special status wildlife known to occur within the Project Area and immediately adjacent to the project area using additional data provided by Ms. Neuman (personal communication Ms. Neuman, MBPBCS 2024). A summary of protected wildlife species that are likely to occur within the Project Area, or may have the potential to occur, are summarized in Table 2. A discussion of each protected wildlife species identified in Table 2 that are known, or potential inhabitants of the project area is presented below.

Monarch Butterfly. Monarch Butterflies (*Danaus plexippus plexippus*) are a candidate species for federal listing under the ESA. Overwintering colonies of Monarch butterflies are currently protected in California. The trees along the access and staging areas within State Parks Property have low potential for overwintering Monarch Butterflies. This area is highly wind-blown and offers little protection within the groves needed for Monarchs. Although Monarch Butterflies are known to fly through the grove (personal observation), there is no record of an overwintering colony at this location. They are known to overwinter north of the project site at in Eucalyptus groves adjacent to Manresa State Beach and at Sunset State Beach.

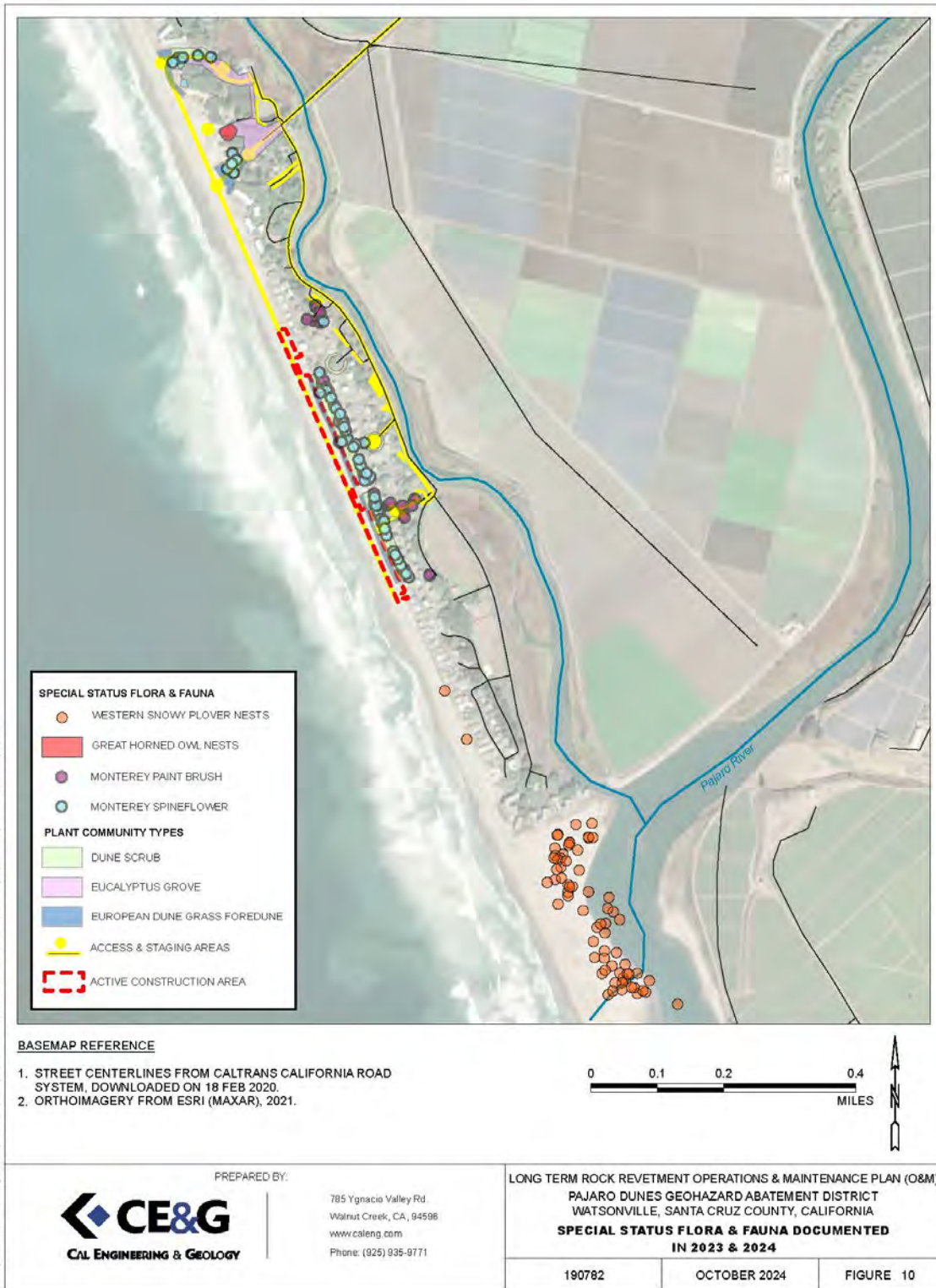


Figure 10. Special Status Flora & Fauna Documented in 2023 & 2024.

Table 2. Known or Potential Occurrence of Protected Wildlife Species Within the Project Area.

Common Name	Scientific Name	Federal Status	State Status	Beach	Foredune	Under Seawall Rock, Stairs & Board Walks	Coastal Dune Scrub	Non-native Tree Groves
California least tern	<i>Sternula antillarum browni</i>	Endangered	Endangered	Potential (but poor)				
Western snowy plover	<i>Charadrius nivosus nivosus</i>	Threatened	None	Potential (but poor)	Potential (but poor)			
Monterey shrew	<i>Sorex ornatus salarius</i>	None	SSC*				Potential (but poor)	
Northern California legless lizard	<i>Anniella pulchra</i>	None	SSC		Potential	Potential (but poor)	Potential	
Bryant's savannah sparrow Nest	<i>Passerculus sandwichensis alaudinus</i>	None	SSC				Potential	
Monterey shrew	<i>Sorex ornatus salarius</i>	None	None				Potential (but poor)	Potential (but poor)
Monarch butterfly	<i>Danaus Plexippus Plesicpuss pop. 1</i>	Candidate Endangered						
Obscure bumble bee Nest	<i>Bombus caliginosus</i>		CDFW Code				Potential nest (poor-unlikely)	
Crotch's Bumble bee Nest	<i>Bombus crotchii</i>	Candidate Endangered	CDFW Code				Potential nest (poor-unlikely)	
Western Bumble bee Nest	<i>Bombus occidentalis</i>	Candidate Endangered	CDFW Code				Potential (poor-unlikely)	
Great Horned Owl	<i>Bubo virginianus</i>	MBTA**	CDFW Code					Known Nest
Hoary Bat	<i>Lasiurus cinereus</i>		CDFW Code					Potential (poor)

*SSC=Species of Special Concern, **MBTA=Migratory Bird Treaty Act

Northern California Legless Lizard. All Legless Lizards (*Anniella pulchra*) are protected as a California Species of Special Concern (Figure 11). Legless Lizards (LL) are mostly fossorial, coming up to the surface only to forage for invertebrates in the leaf litter under bushes and scrubs. They are associated with sandy soils in riparian washes or dunes on all slope aspects and habitat types, except bare sand. LL prefer large woody shrubs such as mock heather and lupines, which provide a shady cover and cool, deep sand that is easily penetrable. LL are also known to use degraded dune areas overrun with ice plant (Dawn Reis, General Jim More Road Project).



Figure 11. Photos of a California Legless Lizards taken by Dawn Reis in Monterey County.

They are rarely observed on the surface and are more likely to be observed during vegetation removal or during excavation within areas that have some invertebrates in the leaf litter. The Coastal Dune Scrub within the Project Area access roads, as well as under existing stairs, boardwalks, and the patches of ice-plant along the top of the rock revetment that contain small invertebrates can provide habitat for LL. LL are known to occur under and in dense patches of ice plant (Dawn Reis personal observation while working in Monterey County). However, due to both lack of cover and prey, they not expected to occur at the top of the revetment within dense cover of European dune grass.

Potential habitat is present along the Foredune associated with the rock revetment, stairs and boardwalks and especially in areas with mats of ice plant and in the Coastal Dune Scrub within the Project Area. No LL have been documented within the Project Area, however multiple LL have been documented in the Foredunes and Coastal Dune Scrub at the Pajaro Dunes Community just north of Palm Beach State Parks. Therefore, LL are likely to occur in the Foredunes of Palm Beach State Parks.

Western Snowy Plover. WSP is a population segment of snowy plover. In 2023, WSP have been proposed for a taxonomic and name change from the genus *Charadrius* to *Anarhynchus*, with the species name change of *Anarhynchus nivosus nivosus*. However, this official change is on hold until published in the federal register.

WSP forage on invertebrates along both inland marshes and intertidal areas of beach and marshes. The breeding season for snowy plovers along the Central California coast extends approximately from early March to mid-September, and there is some overlap of wintering birds from northern areas arriving in mid to late summer. Nests are built in loosely arranged colonies, eggs are laid in a shallow depression scraped in the sand, and chicks hatch after an average 27-day incubation period. Juveniles are able to fly within 31 days of hatching.

WSP nest sites typically occur in flat or hammocked open areas with sandy substrate with sparse or absent vegetation and driftwood. Most plovers have high site fidelity, returning to the same breeding site in subsequent breeding seasons. WSP reproductive successes are known to struggle from human disturbance, urban development, nest predation (fox and ravens), and inclement weather, combined with the loss of nesting habitat to the introduced European beachgrass. WSP nests do best in areas of low level or absent human disturbance, which are also away from developed beach access areas.

For many years, WSP have been known to nest on the active dunes and foredunes immediately adjacent to the Pajaro Dunes Community and the Pajaro River (CNDDDB 2024), and nests in this area have been confirmed in both 2023 and 2024 (data provided by MBPBCS 2024) as shown on Figure 10. The MBPBCS has been monitoring and studying this population of snowy plovers for over a decade. Each spring, the MBPBCS & California State Parks post signs around the nesting colony to deter beach users from entering the nesting colony, and if necessary, individual nests are fenced to exclude predators. This nesting colony is within designated critical habitat for the snowy plover, Unit 1 (Sunset Beach) of Site CA-7 (USFWS 1999).

In addition, in both 2023 and 2024, a WSP attempted to nest on the beach/foredune in front of Puffin Drive (see Figure 10). Unfortunately, this nest failed in both years due to human related disturbances (Neuman personal Communication 2024). The proposed seawall rock revetment repair area is north of this known WSP nest location (Figure 10). In 2023 a large storm event washed away both active (barren) dunes and foredunes to the point that toe of the rock revetment is now exposed (see Figure 3). This area is frequented by beach goers and dog walkers, with no dune buffer, which degrades the potential for successful WSP nest.

Potential, however poor, WSP nesting and refugia habitat is available on the beach/foredune interface below the rock revetment. Numerous WSP nests are known in the Foredunes south of the Project Area between the Pajaro Dunes Community and the Pajaro River, and one nesting attempt in both 2023 and 2024 in front of Puffin Drive on poorly formed active dune/foredune.

California Least Tern. The Foredunes provide for some limited but inferior quality nesting areas for California least terns (CLT). However, this area has been well studied for birds and no CLT are known to nest on the beach in front of the Pajaro Dune community or at the Pajaro River mouth. The nearest known least terns are in Moss Landing (CNDDDB 2024).

Bryant's Savannah Sparrow. Bryant's savannah sparrows are protected as a California Species of Special Concern. Bryant's savannah sparrow is one of four subspecies found in California. It is known to occur along the coast from Humboldt Bay to Morro Bay. Bryant's savannah sparrows' nest in low grass or in shrubs, and are known to use the more densely vegetated areas of

Foredunes and Coastal Dune Scrub. A savannah sparrow was observed foraging in the Coastal Dune Scrub at Palm Beach during the 2024 wildlife habitat evaluation.

Potential nesting habitat for Bryant's savannah sparrow is present in denser patches of the Fore dune and Coastal Dune Scrub, especially in untraveled areas immediately adjacent to both the north and south of Palm Beach State Park. Foraging habitat is present throughout the Fore dunes and Coastal Dune Scrub in areas lacking cover. Some use of these area for foraging seasonally expected. One observation of a foraging Bryant's savannah sparrow in the Coastal Dune Scrub occurred along the most southern proposed beach access.

Monterey Shrew. Monterey shrew (*Sorex ornatus salaries*) are protected as a California Species of Special Concern. Monterey Shrew are known to use a variety of environments including riparian forest, Coastal Dune Scrub, and upland areas of tidal and freshwater wetlands. They are voracious predators, especially to insects, and will eat spiders, worms, and snails. They have a fast metabolism and therefore need an abundance of prey. Potential for foraging and nesting occurs with the more densely vegetated Coastal Dune Scrub, although this potential is poor due to the lack of invertebrates. The closest documented occurrence of a Monterey shrew is at Elkhorn Slough near Moss Landing.

Bumble Bees. All honey and bumble bee nests are protected in California by CDFW, and several species are proposed for federal listing as Endangered, including Western bumble bee (*Bombus occidentalis*) and Crotch's Bumble bee (*Bombus crotchii*). Bumble bees do not dig but do create nests in loamy soils with premade cavities. Soils with too much clay can get waterlogged and sandy soils do not hold their structure. However, they also will nest in rodent burrows, brush piles/compost heaps, cavities in tree holes, or under sheds. Bumble bee nests need some soil moisture, and too much exposure to the sun will dry the nest out. Although Bumble bees may occasionally be seen foraging on plants in the Coastal Dune Scrub, nests are unlikely to occur, as the soil is too sandy. There is a low potential for Bumble bees to use rodent burrows at the edge of the rock revetment, as well as under the stairs or between rocks, if the sand is compacted and mixed (not loose). Most of this area contains loose sand and therefore is unlikely, but a few rodent burrows do occur.

There are multiple records of Western Bumble bees and a few Crotch's Bumble bees along the coast north at Rio Del Mar and Sunset State Beach, as well as in the town of Watsonville, College Lake, and near the Watsonville airport. These records are of observations of queens and worker bees, but there are no records of Bumble nests. In summary, Bumble bees traveling, feeding, and resting on flowers within the Coastal Dune Scrub are likely to occur, whereas nesting is not likely to occur because of the sandy soil.

8. Sensitive Habitats

8.1 Sensitive Habitats Definitions

Sensitive habitats are defined by local, State, or Federal agencies as those habitats that support special-status species, provide important habitat values for wildlife, represent areas of unusual or regionally restricted habitat types, and/or provide high biological diversity.

The Project Area is located within an unincorporated area of Santa Cruz County, within the Coastal Zone. Under Santa Cruz County General Plan, all of the Project Area supporting beach, foredune and Coastal Dune Scrub meet the requirement of sensitive habitat as defined in County Code. County Code (Sensitive Habitat Protection, Section 16.32) recognizes dune plant habitats as sensitive habitat. The purpose of county code 16.32 is to minimize the disturbance of biotic communities which are rare or especially valuable because of their species nature or role in an ecosystem. Under County Code only resource dependent uses are allowed in sensitive habitat. For dune areas, permitted uses include scientific research and education, and wooden boardwalks for trails are required. In granting approval for development, County Code requires the development to mitigate significant impacts, protect undisturbed area, and restore degraded areas commensurate with the scale of the development.

CDFW also identifies sensitive natural communities. Table 3 provides a summary of sensitive habitat type status as determined by Santa Cruz County and by CDFW. Each of these plant/natural community types in Table 1 have been previously described under Existing Environmental Conditions.

Table 3. Sensitive Habitat Ranking of the Natural Community Types within the Project Area.

General Plant Community Type	CDFW Alliance	CDFW Alliance	Sensitive? ¹
Beach	Sea Rocket	21.125.02	N (CDFW) Y (County)
Foredune dominated by European Dune Grass or ice plant	European dune grass – ice plant	42.010.02	N (CDFW) Y (County)
Coastal Dune Scrub	Mock heather – Yellow bush lupine - European dune grass – ice plant	32.160.00	Y (CDFW) Y (County)
Coastal Dune Scrub dominated by Ice Plant Mat	Ice plant – California rose	21.200.01	N (CDFW) Y (County)
Eucalyptus Grove	Blue Gum Eucalyptus – Monterey cypress - Ice plant	None	N (CDFW) N (County)

1-CDFW recognizes plant communities ranked S1-S3 as sensitive.

In addition, the County's Land Use Plan (LUP) Policy 5.1.6 "Development Within Sensitive Habitats" requires sensitive habitats "be protected against any significant disruption of habitat values; and any proposed development within or adjacent to these areas must maintain or enhance the functional capacity of the habitat. Reduce in scale, redesign, or, if no other alternative exists, deny any project which cannot sufficiently mitigate significant adverse impacts on sensitive habitats unless approval of a project is legally necessary to allow a reasonable use of the land." Relatedly, LUP Policy 5.1.7. "Site Design and Use Regulations" requires easements/deed restrictions for any undisturbed portions of the property to minimize future encroachments/habitat impacts and requires native vegetation removal be limited to the least amount necessary. IP Section 16.32.090 includes similar such requirements including: 1) mitigation for the development's environmental impacts; 2) dedication of an open space or conservation easement to protect sensitive habitat; and 3) restoration of any areas where the habitat is degraded by development activities.

Below you will find additional discussions regarding sensitive habitat by each of the Project natural community types: Beach, Foredune, Coastal Dune Scrub, and Tree Groves.

8.2 Beach

The US Army Corp of Engineers (USACE) regulates activities within waters of the United States pursuant to congressional acts: Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (1977, as amended). Section 10 of the Rivers and Harbors Act requires a permit for any work in, over, or under navigable waters of the United States. Navigable waters are defined as those waters subject to the ebb and flow of the tide to the Mean High-Water mark (tidal areas) or below the Ordinary High-Water mark (OHWM) (freshwater areas). Section 404 regulates fill activities to the High Tide Line (tidal waters). The beach areas in the Project Area are considered jurisdictional tidal waters as they are subject to the ebb and flow of the tide to the High Tide Line.

Water quality in California is governed by the Porter-Cologne Water Quality Control Act and certification authority under Section 401 of the Clean Water Act, as administered by the Regional Water Quality Control Board (RWQCB). The Section 401 water quality certification program allows the State to ensure that activities requiring a Federal permit or license comply with State water quality standards. Water quality certification must be based on a finding that the proposed discharge will comply with water quality standards which are in the regional board's basin plans. The Porter-Cologne Act requires any person discharging waste or proposing to discharge waste in any region that could affect the quality of the waters of the state to file a report of waste discharge. The RWQCB issues a permit or waiver that includes implementing water quality control plans that consider the beneficial uses to be protected. Waters of the State subject to RWQCB regulation extend to the top of bank, as well as isolated water/wetland features and saline waters. Should there be no Section 404 nexus (i.e., isolated feature not subject to USACE jurisdiction), a report of waste discharge (ROWD) is filed with the RWQCB. The RWQCB interprets waste to include fill placed into water bodies. The beach areas in the Project Area are considered waters of the State as they are subject to the ebb and flow of the tide to the High Tide Line.

CDFW is a trustee agency that has jurisdiction under Section 1600 et seq. of the Sections 1600-1603 of the California Fish and Game Code. CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel or bank of any river, stream or lake which supports fish or wildlife. CDFW also regulates the deposit of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. CDFW defines a “stream” as a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation.

8.3 Coastal Strand (Beach, Active Dunes, Foredunes and Coastal Dune Scrub)

All forms of Coastal Strand are considered sensitive habitats by Santa Cruz County (Table 3). In addition, the Coastal Strand (Beach, Active Dunes, Foredunes and Coastal Dune Scrub) plant/natural community types within the Project Area provide the potential for a number of state species of special concern as well as species protected under the state and/or the federal ESA. A detailed discussion for each potential and known species with special status (Tables 1 and 2) are provided above under Special Status Species.

In addition to the county, CDFW identifies Coastal Dune Scrub (CaCode 32.160.00) as a sensitive habitat (Table 3).

8.4 Trees-Eucalyptus Grove

Significant trees (all tree species) are regulated within the Coastal Zone. Section 16.34.030 of County Code identifies significant trees as those within the urban services line or rural services line, as any tree which is equal to or greater than 20 inches diameter at breast height (DBH); any sprout clump of five or more stems each of which is greater than 12 inches DBH, or any group consisting of five or more trees on one parcel, each of which is greater than 12 inches DBH. Outside of the urban services line or rural services line, where visible from a scenic road, any beach, or within a designated scenic resource area, a significant tree is any tree which is equal to or greater than 40 inches DBH; any sprout clump of five or more stems each of which is greater than 20 inches DBH, or any group consisting of ten or more trees on one parcel, each of which is greater than 20 inches DBH. A significant tree is also one that is located in a sensitive habitat as defined in Chapter 16.32. A significant tree removal permit is required. The Project Area supports five or more trees and each of the trees are greater than 12 inches DBH; therefore, all trees meet the definition of a significant tree.

Protected wildlife known to occur in this area include nesting birds (great horned owl). Please see Table 2 the discussions above regarding wildlife with the potential to occur within the staging and access areas of the non-native tree groves at Palm Beach State Parks.

9.0 Potential Impacts to Sensitive Habitat Areas & Protected Species

9.1 Impact Criteria

The California Environmental Quality Act (CEQA) thresholds of significance for environmental impacts check list was used as a guideline to evaluate the proposed seawall repair work for potential project impacts to sensitive habitats and protected species. A summary of these significant impacts are those that substantially affect one or more of the requirements below.

- Directly or through habitat modifications, any federally or state protected species listed as endangered, threatened, candidate, sensitive, or a species of special status or species protected by regional plans, policies or regulations, or by the CDFW codes and regulations (see species listed in Tables 1 and 2).
- The movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites (e.g., great horned owl, WSP).
- Conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance.
- Any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS (see Table 3) such as the sandy Beaches, Foredunes, and Coastal Dune Scrub.
- Federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, costal, etc.) through direct removal, filling, hydrological interruption, or other measures.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Potential impacts could occur to sensitive habitats (Sandy Beach, Foredunes and Coastal Dune Scrub), large trees and special status species. Figure 12 provides a map of the total area of potential permanent impacts, along with square footage of sensitive habitats impacted. Likewise, Figure 13 provides a map of the total area of potential temporary impacts, along with square footage of sensitive impacted.

Monterey spineflower, protected under the federal ESA, are known to occur in the Foredune and Coastal Dune Scrub of the Project Area, as well as a locally unique plant, Monterey Paintbrush. Western Snowy Plover, listed as Threatened under the federal ESA, are known to nest and attempt to nest adjacent the Project Area: therefore, avoidance measures need to be taken to assure that there are no impacts to this species.

Other special status species with the potential to occur, or move through, the sensitive habitats of the Project Area include California legless lizard, bumble

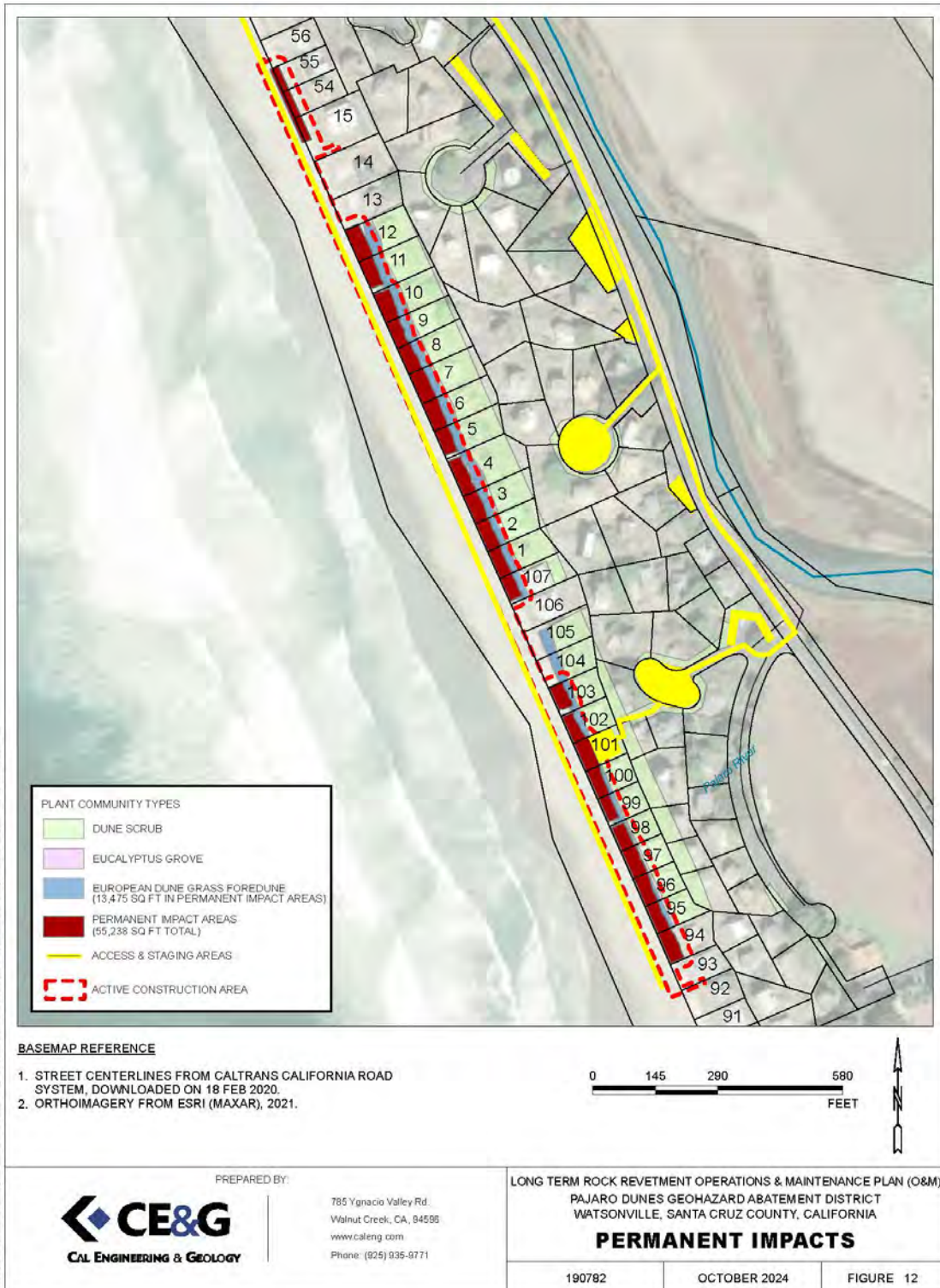


Figure 12. Permanent impact areas.

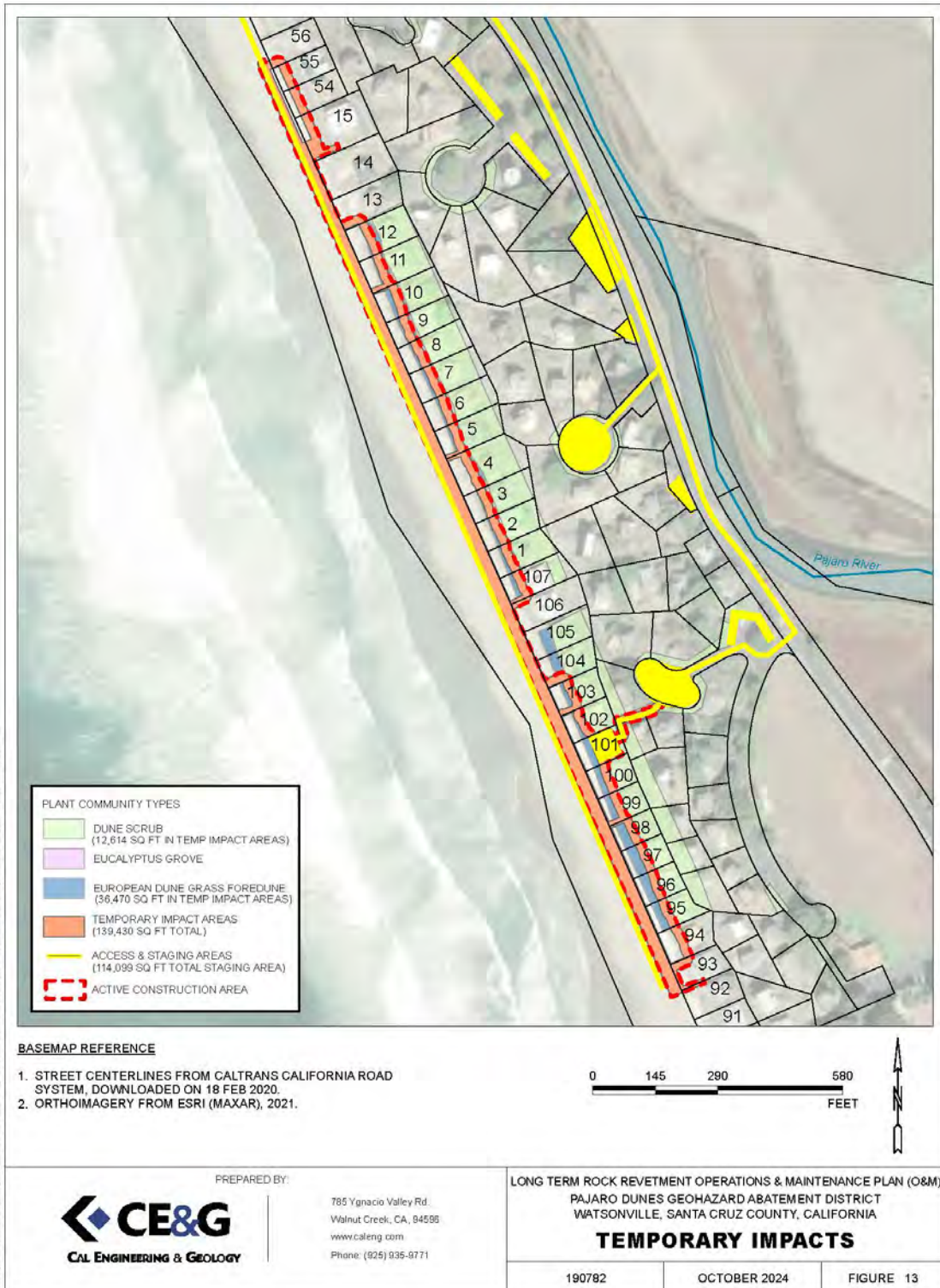


Figure 13. Temporary impact areas.

bees, Monterey shrew, Bryant's savannah sparrow and nesting birds. Potential impacts to these species are also considered significant if not either avoided or mitigated for. A more detailed discussion of potential impacts to each of these sensitive habitats and special status species, as well as guidance to avoid or reduce potential impacts are provided below.

9.2 Sandy Beach, Seabirds & Marine Mammals

The revetment repair work will occur on open, sandy beach areas and existing revetment areas. Santa Cruz County considers sandy beach areas to be sensitive habitat. Because the existing revetment is partially covered with sand, construction work will require removal of sand overlying the existing revetment. Temporary impacts to the sandy beach will also occur during construction. These impacts include construction access and stockpiling of sand and other materials. Due to the lack of vegetation and the temporary nature of the construction, the impact to botanical resources on the sandy beach is less than significant.

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The sandy beach within the Project Area is tidally influenced such that at extreme or high tides the ocean comes to the toe of the rock revetment. In addition, this section of beach is used regularly by people and their dogs. Therefore, it does not provide habitat for nesting birds (such as Pelicans) nor does it provide reliable areas for marine mammals (sea otters, seals, and sea lions) to take refuge. Occasionally, injured or ill marine mammals and seabirds do come ashore. Therefore, to reduce this potential impact, the installation of mitigation measure WL- 1 and Gen-2 will reduce this potential impact to a less than significant level.

9.3 Western Snowy Plover

This project will not adversely modify the designated critical habitat for WSP. No construction activities are proposed to occur within the areas where WSP either successfully nested in past years at the mouth of the Pajaro River, nor is the proposed work to occur in the area immediately adjacent to Puffin Lane where a WSP attempted to nest (but failed) in 2023 and 2024. In addition, this project will not result in any displacement of sandy beach area, nor will the project result in permanent impediments to movement, foraging, or future nesting activities of the plovers.

If construction access occurs within 1,000 feet of a WSP nest, the construction activities have the potential to cause significant impacts to nesting birds from noise and vibration, which may cause adults to abandon eggs or chicks, or interfere with normal adult and chick foraging activities within the colony. Successful implementation of Mitigation

Measures Wild-2, Gen-2 and Gen-3 will assure that WSP are not nesting within 1,000 feet of the construction zone, access or staging areas, and thereby reduce the potential impacts to nesting WSP to a less-than significant level.

9.4 Foredunes and Coastal Dune Scrub

The repair of the rock revetment will result in approximately 55,238 square feet (sq ft) of permanent impacts of area that was the original seawall and stairs to the beach (Figure 11). Figure 11 shows the area of permanent impacts, as well as the Lot numbers and plant community types within or adjacent to the permanent impact areas. Permanent impacts are not expected to occur within any of the plant community types listed other than to 13,475 sq ft of European Dune Grass Foredune (Figure 11).

Figure 12 shows the 139,430 sq ft area of temporary impacts adjacent to the permanent impact area. Figure 12 also shows the Lot numbers and plant community types within or adjacent to the temporary impact areas. Approximately 12,614 sq ft of temporary impacts will occur in Coastal Dune Scrub mainly within the staging areas and along the access road from Willet Circle to Lot 101 as well as to Lot 101 (Figure 12). Other access and staging areas are either on paved streets and paved parking lots, or temporary access over open barren sand.

Figure 12 also shows the 36,470 sq ft of European Dune Grass/Foredune that is likely to be impacted temporarily. However, this sq ft of European Dune Grass/Foredune needs to be recalculated after at Lots 54-55, stairs at Lots 15 and 93, and Lot 94 are officially habitat typed, and rare-plant surveys are conducted. A total 139,430 sq ft of temporary impact area minus 12,614 sq ft of temporary impacts to Coastal Dune Scrub and 36,470 sq feet of known temporary impacts to known European Dune Grass/Foredune, leaves 90,346 sq ft of area that needs to be assessed next spring.

Assuming that the 90,346 sq ft at Lots 55-54, 15, 94 and 93 that has not been assessed is consistent in type with the other Lots along the seawall and stairs, then the total amount of European Dune Grass/Foredune to be temporarily impacted would be 126,816 sq ft (90,34 sq ft plus the confirmed 36,470 sq ft of European Dune Grass/Foredune). Therefore, for purposes of this report, the area of temporary impact to European Dune Grass/Foredune will assume to be 126,816 square ft.

As required by Santa Cruz County, 126,816 sq ft of Foredune that will be temporarily impacted will need to be replaced with a minimum of a 1:1 ratio, as the 13,475 sq ft area of Foredune that will be permanent impacted will need to be restored with a minimum of a 3:1 ratio (therefore a minimum of 40,425 sq ft of Foredune needs to be restored to compensate for permanent impacts). Therefore, to compensate for permanent and temporary impacts to Foredunes, a total of 167,241 sq ft of Foredune will need to be restored. In addition, the 12,614 sq ft of temporary impacted areas to Coastal Dune Scrub will need to be replaced at a 1:1 ratio, within the temporary impact zone.

Without avoidance and mitigation measures, the project could result in significant impacts to the environmentally sensitive habitats of the Foredunes and the Central Dune Scrub.

Implementing mitigation measures BOT-1 through BOT-6, as well as GEN-1 and GEN-2 will lessen this impact to a less than significant level.

9.5 Monterey Spineflower

Construction accesses to the beach and to the rock revetment work area may impact colonies of Monterey spineflower, a special status plant species. Due to the status of this species (federally listed as Threatened), impacts to this species at its habitat are considered significant. The following proposed construction access with both of these special status plants includes: along the Beach Street Road right-of-way, along the State Parks road within the State Parks road from the Palm Beach Parking lot on the north side of side of the parcel to the beach, and through a 20 foot pathway through the Coastal Dune Scrub (the existing boardwalk would be removed and replaced) located at the end of Willet Circle to Lot 101.

Of these three proposed accesses with potential impacts to sensitive habitats, the State Parks beach access road would have the least area of potential impacts to sensitive plants this approximately 10 ft wide road is used daily or twice daily by the State Parks Ranger vehicles to patrol the beach and travels over barren gravel/sand. On the north side of this Ranger access road, it is predominantly European Dune Grass without (or with very little) Monterey spineflower or Monterey paintbrush. On the south side of the Ranger access road the bank is steeper and there are good colonies of Monterey spineflower that would need to be avoided.

Successful implementation of the Mitigation Measure BOT-1 through BOT-6, and Gen-2 will reduce the impacts to both the Coastal Dune Scrub and Monterey spineflower to a less-than significant level.

9.6 Monterey Paintbrush

Monterey paintbrush occurs along the 10-foot pathway through the Coastal Dune Scrub (the existing boardwalk would be removed and replaced) located at the end of Willet Circle to Lot 101. Successful implementation of the Measures BOT-1 through BOT-7, and Gen-2 reduce the impacts this species to a less-than significant level.

9.7 California Legless Lizard

California Legless Lizard, a State species of special concern, may occur within the Coastal Dune Scrub and Foredunes of the work, staging, and access areas. Due to the potential presence of Legless Lizards within sandy soil where there are also invertebrates in the leaf litter of the vegetation, impacts to both Legless Lizards and Coastal Dune Scrub are considered significant. Successful implementation of the Mitigation Measures GEN-1, GEN-2, WL-4 and BOT-1 will reduce the impacts to dune scrub to a less-than significant level.

9.8 Monterey Shrew.

Monterey shrew, a State species of special concern, may travel through the Coastal Dune Scrub and non-native Tree Groves of the Project Area. Successful implementation of the Mitigation Measures GEN-2 and WL-4 will reduce the impacts to dune scrub to a less-than significant level.

9.9 Bryant's Savannah Sparrow, Other Nesting Birds and Bumble Bees Nest.

Any disturbance to nesting birds or their dependent young would be considered a significant impact. Likewise, any displacement or disturbance to a bumble bee nest is considered significant. All bumble bee nest are protected in California, and two species of bumble bees that are known in the area are candidate species for federal protection under the ESA.

A Bryant's savannah sparrow, a California species of special concern, was observed foraging (Dawn Reis July 2024) in the Coastal Dune Scrub. In addition, a great horned owl with a chick was observed within the staging and access areas of the non-native tree groves at Palm Beach State Parks. Successful implementation of the Mitigation Measures GEN-2 and WL-3 will reduce the potential impacts to Bryant's savannah sparrow, bumble bee nests, and nesting birds to a less-than significant level.

9.10 Large Non-native Tree Groves

The Project Area supports five or more trees, and each of the trees are greater than 12 inches DBH, meeting the definition of a significant tree. Therefore, if these trees are to be limbed or removed, a significant tree removal permit is required.

Successful implementation of the Mitigation Measures BOT-7 and WL-3 will reduce the potential impacts to large trees as well as any birds nesting in trees to a less-than significant level.

10. Avoidance and Mitigation Measures

10.1 General Avoidance and Mitigation Measures for both Plants and Animals

Below are some general avoidance and mitigation measures that assist with the protection of sensitive habitats, plants, and animals within the project site. These measures shall be installed:

GEN 1: Signage, Flagging & Biological Monitor. Avoidance measure to assure that there are no impacts to the environmentally sensitive habitat of the Foredune and Coastal Scrub, federally protected plants and wildlife, and rare plants with the potential to occur within the construction zone, as well as in all staging areas and road accesses. These include the following:

- a) Prior to commencement of construction, the Applicant will place bilingual (English and Spanish) signs to delineate closed access to the work areas along the beach, Foredune, and Coastal Dune Scrub.
- b) The Applicant and/or Biological Monitor will inspect the project signage (and flagging) throughout the work period and conduct any needed maintenance.

- c) The Biological Monitor will have authority to stop project activities if adverse effects to the species or habitat are likely to occur.

GEN 2: A Worker's Education Training will be provided to all personnel and Project Managers prior to their start of work at the project site. The meeting shall involve all relevant parties including the project proponent, Construction Supervisor, Environmental Planning Staff, the Biological Monitor, Laborers, and any Subcontractors. If needed, the Worker's Education program will be provided with a Spanish Speaking translator. The Worker's Education will include communication contacts, communication protocols and permit requirements. The Worker's Education will be conducted by a professional Biologist or Ecologist and will include the following:

- a) A brief training session for project personnel that will include a description of the protected plant and wildlife species that are known or could occur, along with pictures and habitat needs.
- b) A list of measures being taken to reduce impacts on these species during project construction and implementation such as the making of project boundaries, seasonal timing, the need for the Biological Monitor to be present during earth disturbance activities, and the need for pre-construction surveys before work begins.
- d) Measures to be followed if special-status species are encountered during construction activities.
- e) That is unlawful to "take" a protected animal or plant, and that it is unlawful to destruct its habitat. The Applicant and all project personnel will be made aware that USFWS, CDFWS or State Park law enforcement can issue citations, at their discretion, to all persons found violating the beach access restrictions.
- f) A fact sheet conveying this information shall be prepared for distribution to the construction crew and anyone else who enters the project site. The Applicant will distribute an educational brochure to all project personnel as needed.
- g) The Biological Monitor shall have the authority to stop work that may result in the "take" of a special-status species (Legless Lizard, Monterey shrew, Western Snowy Plover, bumble bee, any bird still dependent for parental care or marine mammal) and shall be given enough time to ensure that animals have been properly moved out of harm's way to a designated relocation site.

GEN 3: Best Management Practices to avoid potential construction related disturbances including lighting, trash, and predators.

- a) The Applicant will prohibit pets at construction sites (particularly important so that dogs do not run down to the work area at the beach or through the Coastal Dune Scrub and Foredune).
- b) No work shall be performed during nighttime hours. The County limits of work as per the Grading Permit for the project shall be followed: starting no earlier than 7 am and no later than 6 pm.
- c) To eliminate an attraction for the predators of wildlife, all food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in solid, closed

containers (trash cans) and removed at the end of each working day from the entire construction site.

- d) The Applicant will provide animal-proof trash containers on the driveway and or street for worker personnel and will empty and clean the containers as needed to minimize attracting predators.

10. 2 Avoidance and Mitigations for Sensitive Habitats and Special Status Plant Species

Impacts to Monterey spineflower (federally listed as Threatened) and its habitat are also considered significant. Due to the locally unique status of Monterey paintbrush, impacts to this species at its habitat are also considered significant. Construction access to the beach and seawall rock revetment will result in impacts to colonies of Monterey spineflower and/or Monterey paintbrush. Santa Cruz County considers habitat supporting special status species to be sensitive habitat. Therefore, avoidance and mitigations measures are set to compensate for the proposed permanent impact areas in the European Dune Grass Fore dune, as well as for the temporary impact areas within both the European Dune Grass Fore dune and Coastal Dune Scrub as shown in Figures 12 and 13.

Without avoidance and mitigation measures, the project could result in significant impacts to the environmentally sensitive habitats: Fore dunes and the Central Dune Scrub as to Monterey Spineflower and Monterey Paintbrush. Implementing mitigation measures BOT-1 through BOT-6, as well as GEN-1 and GEN-2, will lessen these impacts to a less than significant level.

Mitigation Measure BOT-7 is provided to reduce potential impacts to trees to a less than significant level.

BOT-1: Avoidance of Monterey Spineflower and Monterey Paintbrush with Temporary Fencing.

The proposed project shall be implemented to minimize impacts to native dune scrub to the greatest extent feasible. Prior to construction, temporary construction fencing shall be installed along the limit of the construction access and staging areas to avoid inadvertent equipment access in Coastal Dune Scrub vegetation that will be retained. Areas outside of the construction access areas shall not be disturbed by construction activities. All storage of construction materials, parking of vehicles and related equipment, shall be prohibited within Fore dunes and Coastal Dune Scrub that is to be retained.

BOT-2: Survey Additional Areas. In the spring prior to construction, a plant survey shall be conducted for any areas within the Project Area not previously surveyed; this currently applies to Lots 15, 54, 55, 93, 96, and 106. The survey shall document the presence/absence of special status plant species. If occurrences are located within the proposed active work zone, the extent of the occurrence (square footage) and approximate number of individuals will be mapped. This information will be utilized in developing the revegetation plan wherein colonies of special status plant species will be re-created, as required in Mitigation Measure BOT-6.

BOT-3: Pre-Construction Plant Surveys. In the spring prior to construction, a plant survey shall be conducted for the equipment access and staging areas and active work zones to re-check the location/distribution of Monterey spineflower, an annual special status plant species. As the

distribution of annual plant species can vary from year to year, the survey will document any new occurrences of the species within the work area. The location of new occurrences of Monterey spineflower shall be recorded using GPS such that the occurrences can be added to the project site plans/maps.

BOT-4: Avoidance and Minimization Measures for Occurrences Within or in Close Proximity to the Active Work Zone. If any special status plant species occurrences are located within 20 feet of the equipment access and staging areas and active work zones, temporary construction fencing shall be installed along the limit of the work zone to avoid inadvertent equipment access or other impact to the occurrence.

If occurrences are located within the proposed equipment access and staging areas and active work zones active work zone, the plant species, number of plants and aerial extent of the population will be recorded. This information will be utilized in developing the revegetation plan, as presented in Measure BOT-6.

BOT-5: Development and Implementation of a Revegetation Plan Compensation for the Disturbances to Native Foredune and Coastal Dune Scrub. As compensation for the permanent removal of Fore dune vegetation for construction access, the applicant shall implement a native Fore dune and revegetation within and immediately adjacent to the disturbed areas to meet a 3:1 restoration to impact ratio. As compensation for the temporary removal of native Fore dune and Coastal Dune Scrub vegetation for construction access, the applicant shall implement Fore dune and Coastal Dune Scrub revegetation within the temporarily disturbed areas to meet a 1:1 revegetation to impact ratio. The disturbed area(s) shall be revegetated with locally obtained native plant species typical to central dune scrub.

To compensate for permanent and temporary impacts to Fore dunes, a total of 167,241 sq ft of Fore dune will need to be restored (see the discussion titled 9.2 Impacts to Fore dunes and Coastal Dune Scrub). In addition, the 12,614 sq ft of temporarily impacted areas to Coastal Dune Scrub will need to be replaced at a 1:1 ratio, within the temporary impact zone.

Retain a qualified botanist to monitor the progress of the revegetated areas for a minimum of 3 years, with annual reporting to the County of Santa Cruz.

In conjunction with Mitigation Measure BOT-2 and BOT-6, develop and implement a revegetation plan to re-establish colonies of Monterey spineflower and Monterey paintbrush within revegetated Coastal Dune Scrub and/or Fore dune transitioning to Coastal Dune Scrub. It is not in the scope of work of this report to provide a revegetation plan or identify proposed additional areas to mitigate for potential permanent impacts to sensitive habitats. However, such a plan needs to be prepared and submitted so that potential temporary as well as permanent impacts to Sensitive Habitats (Fore dune and Coastal Dune Scrub) can be mitigated to a less than significant level. Therefore, a qualified botanist needs to be retained to prepare a Plant Restoration Mitigation and Monitoring Plan and to monitor the progress of the species revegetation for a minimum of 3 years, with annual reporting to the County of Santa Cruz.

Implementation of the following mitigation measures (along with BOT-2 and BOT-6) would ensure that project related impacts are adequately compensated for so that impacts would be less than significant:

- 1) A site-specific Plant Restoration Mitigation and Monitoring Plan (PRMMP) shall be developed for compensation of the Foredune and Central Dune Scrub. The PRMMP shall be prepared by a qualified biologist or restoration professional, and shall include the following minimum elements:
 - a) All areas temporarily disturbed because of the project shall be restored to pre-project contours to the maximum extent possible and revegetated with native Central Dune Scrub plant species.
 - b) All areas temporarily or permanently disturbed as a result of the project must be re-vegetated with native dune plant species with the purpose of restoring the native plant structure and species composition of local Foredues and Coastal Dune habitat.
 - c) The identification of on-site restoration areas to compensate for permanently impacted Central Dune Scrub shall be proposed and mapped.
 - d) Any required off-site restoration locations must be located on nearby properties in the Pajaro Dunes. Off-site mitigation areas should be contiguous with and/or as close as possible to the restoration areas occurring on the project site with an effort to identify restoring areas closer to the beach and intact dune habitat. In additions, the restoration team should choose the best locations for maximum restoration and ongoing maintenance.
 - e) The restoration shall occur in such a way that the newly restored area is immediately adjacent to (but not in) the foredues of the parcel so that areas of intact native plant communities (the foredune and the coastal scrub) are linked. By removing the ice plant at the edge of the plant community boundaries, the restoration efforts will also aid in protecting the native Foredune from the future invasion of the existing non-native that displaces the Coastal Dune Scrub.
 - f) A site-specific planting plan intended to inform the re-vegetation efforts. Local plant stock shall be used whenever possible. Native plants that are disturbed, such as Lupines, mock heather, and Monterey paintbrush, can be salvaged, cared for, and included in the replanting. The plant pallet should include native species common to the surrounding native Central Dune Scrub.
 - g) Species, size, and locations of all restoration plantings should be included in the planting plan and this plan must be included in the final project plans.
 - h) Information regarding the methods of irrigation for restoration plantings.

- i) The project proponent shall be responsible for execution of the 3-year management plan for maintenance and monitoring of restored areas. This plan shall include the removal of non-native species and a management strategy to control reestablishment of invasive non-native species within the project impact area.
 - i) A 3-year management plan for maintenance and monitoring of restored areas to maintain 100% survival of installed container stock in year 1, 90% survival in years 2-3, and at least 80% thereafter. Replacement plants shall be installed as needed during the monitoring period to meet survival rates. Annual habitat monitoring reports shall be submitted to the County Planning Department by December 31 of each monitoring year.
 - ii) If responsibility is transferred legally to another entity, County Environmental Planning Staff shall be informed of any such transfer of responsibility.
 - iii) Establishment and planting of all restoration and mitigation area(s) as outlined in the final approved Restoration Planting Plan shall be inspected and approved by Environmental Planning staff prior to final project approval.
- j) To prevent trapping ground nesting birds or other species at the project site, erosion control materials containing plastic, mono-filament netting or similar material shall not be used, even if it is labeled as biodegradable. Acceptable substitutes include coconut coir matting, straw/coconut finer erosion blanket, straw wattles wrapped in burlap, coir logs, and/or tackifier.
- k) Erosion and sediment control measures must be in place, and best management practices adhered to during construction. All disturbed soils shall be stabilized.

BOT-6: Reseeding Monterey Spineflower and Monterey Paintbrush. In conjunction with Mitigation Measure BOT-5, develop and implement a revegetation plan to re-establish colonies of Monterey spineflower and Monterey paintbrush (and other special status plant species, if applicable) within revegetated dune scrub areas. In the summer prior to construction, collect Monterey spineflower seed from the proposed equipment access and staging areas and active work zones. Store this seed and utilize it in the revegetation plan, hand broadcast seed of this annual species into designated open sandy areas. Prior to construction, salvage Monterey paintbrush plants from the equipment access and staging areas and active work zones, hold over in a native plant nursery, then replant into the designated revegetation areas. Retain a qualified botanist to monitor the progress of the species revegetation for a minimum of 3 years, with annual reporting to the County of Santa Cruz.

BOT-7: Pruning or Clearing Non-native Trees. The Project Area supports five or more trees that are greater than 12 inches DBH, meeting the definition of a significant tree. Therefore, if these trees, which are located within the staging areas and access roads at Palm Beach State Parks, are to be limbed or removed, a significant tree removal permit is required by Santa Cruz County and would also need to be approved by State Parks. Trees will be trimmed or removed only enough to allow large equipment through. This work would need to be done in conjunction with mitigation measure WL-3 (surveys for nesting songbirds and raptors within 14 days of the

tree work). Implementing both mitigation measures BOT-8 with the correct timing of WL-3 would lessen this impact to less than significant.

10. 3 Avoidance and Mitigations for Special Status Wildlife Species

WL-1: Protocol for Seabirds and Mammals Taking Refuge on the Beach. If an injured Seabird or marine mammal is observed, 1) Stop all work activities and stay 1,000 ft away from the animal. 2) Contact the Senior Biologist to assist with keeping an observation on the animal as well as directing people away from the animal until the appropriate Wildlife Agency can attend to the animal (Marine Mammal Protection Center or Monterey SPCA Wildlife Center. 3) Do not resume work until either they animal has moved out of the area on its own or has been transported by the appropriate wildlife response team. Conduct a workers education training regarding the protocol as stated above, along with contact numbers of whom to call.

WL-2: Western Snowy Plover. Measures to assure avoidance of disturbance and/or nest displacement to Bryant's savannah sparrow or other nesting birds, if present, including either a) conducting all outside work during the non-nesting season or b) conducting work during the nesting season only if pre-construction surveys for nesting birds establish that there are no birds nesting in or adjacent to the Project Area that will be affected by the work. The nesting season for most WSP in Santa Cruz County extends from March 1 through September 15.

- a) The project Biologist will consult with both Point Blue Conservation Science and USFWS to gain an updated understanding of the current nest locations that have been identified, as well as to get an understand of the age of the nest and possible length for the season (seasonal variations, although not large, do occur). If construction activities are scheduled to take place outside the WSP nest season, all impacts to WSP protected under the MBTA and California Fish and Game Code, would be avoided. This would also avoid impacts to WSP, protected by both the state and federal ESA.
- b) Point Blue Conservation Science (Ms. Kriss Newman personal communication 2024) has stated that due to their workload, they cannot always keep up with nest surveys in the proposed Project Area and requested that the assigned Biologist for the Seawall Repair project conducts a nesting survey to coincide to be current with the construction start. Therefore, nesting WSP surveys will be conducted within 14 days of all project related activities, including staging and vegetation removal, and shall be conducted by a qualified biologist.
- c) If project activities are delayed by more than 14 days or the bird surveys, an additional nesting bird survey shall be performed.
- d) If pre-construction nesting bird surveys result in the location of active nests, no site disturbance nor mobilization of heavy equipment (including but not limited to equipment staging, grading for the retaining wall, clearing, grubbing, vegetation removal, and demolition) shall take place within 1,000 ft of the nest. In addition, the Avian Biologist will inform Point Blue Conservation Science, USFWS and State Parks so that they can assist with fencing, signage, and follow-up data collection. Active nesting is present if a bird is building a nest, sitting on a nest, a nest has eggs or chicks in it, or

adults are observed caring for their young. The results of the surveys shall be documented.

- e) A qualified biologist will need to conduct surveys for nesting birds before the project begins. These surveys should focus on the WSP use of the rock revetment to the ocean, beginning from start of the known WSP protection area and colony and 1,000 ft north of the Palm Beach Access Road.

WL-3: Bryant's Savannah Sparrow, Nesting Songbirds & Nesting Raptors (Hawks, Owls & Falcons). Measures to assure avoidance of disturbance and/or nest displacement to Bryant's savannah sparrow or other nesting birds, if present, including either a) conducting all outside work during the non-nesting season or b) conducting work during the nesting season only if pre-construction surveys for nesting birds establish that there are no birds nesting in or adjacent to the Project Area that will be affected by the work. The nesting season for most songbirds in Santa Cruz County extends from March 1 through September 15. If construction activities are scheduled to take place outside the nesting season, impacts to nesting songbirds protected under the MBTA and California Fish and Game Code, would be likely avoided. However, raptors (such as the great horned owls) are still dependent on parental care into the fall and some birds are also known to have multiple nests in a year (hummingbirds, barn owls, etc.). Implementing the following mitigation measures lessen the potential impacts to nesting birds to less than significant.

1. A qualified biologist will conduct surveys for nesting birds before the project begins. These surveys should focus on the potential for Bryant's savannah sparrows and other songbirds in the Central Dune Scrub along areas of the project. Surveys for nesting raptors (hawks, owls, and falcons) shall be conducted in the trees within and adjacent to the staging areas and road accesses.
2. Nesting bird surveys will be conducted within 14 days of all project related activities, including staging and vegetation removal, and shall be conducted by a qualified biologist.
3. If project activities are delayed by more than 14 days or the bird surveys, an additional nesting bird survey shall be performed.
4. If pre-construction nesting bird surveys result in the location of active nests, no site disturbance nor mobilization of heavy equipment (including but not limited to equipment staging, grading for the retaining wall, clearing, grubbing, vegetation removal, and demolition) shall take place. The Avian Biologist will establish a no work zone buffer based on the needs of the bird species and agreement with the governing agencies (USFWS and CDFW). Active nesting is present if a bird is building a nest, sitting on a nest, a nest has eggs or chicks in it, or adults are observed carrying food to the nest. The results of the surveys shall be documented.

WL-4: Special Status Animals including California Leg-less Lizard, Bumble Bees, and Monterey Shrew. A Biologist with a valid Scientific Collecting Permit (SCP) from CDFW will be present during the initial ground disturbance and during vegetation removal, rock, boardwalk and stair removals to monitor for legless lizards. To protect LL, prior to construction a Biologist with a

SCP should notify the CDFW of the proposed project and obtain specific project approval to capture and relocated LL if encountered.

If a shrew is seen, all work should stop until the animal travels out of the area on its own (which will likely happen fast). In the unlikely event that a bumble bee nest is observed, the area will be flagged off with a 25 ft buffer and no work shall proceed until the fall when the hive is no longer active.

- a) A qualified Biological Monitor shall be onsite during all project initial ground disturbance and vegetation removal, or during other activities that may result in take of any special-status species including LL, bumble bees and Monterey shrews. The Biological Monitor shall have oversight over implementation of all the mitigation measures and shall have the authority and responsibility to stop project activities if they determine any of the measures are not being fulfilled. A Biological Monitor is an individual who shall have academic and professional experience in biological sciences and related resource management activities as it pertains to this project. They should be able to recognize species that may be present within the Project Area and be familiar with the habitats and behavior of those species.
- b) To prevent inadvertent entrapment of LL, bumble bees, Monterey shrews, or other small wildlife, a qualified Biological Monitor and/or construction foreman/manager shall ensure that all excavated, steep-walled holes or trenches more than 1 ft deep are completely covered at the close of each working day by plywood or similar materials or provided with one or more escape ramps constructed of earth fill or wooden planks and inspected by a qualified biologist. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals by a qualified biologist and/or construction foreman/manager.
- c) If at any time an animal is discovered by a qualified biologist or anyone else, all activities are stopped until the animal moves out of the project site on its own or it is captured and relocated out of the way by the Biological Monitor with their SCP.
- d) Daily monitoring by the Project Biologist and/or Construction Supervisor shall occur for the duration of project construction within all areas including checking under all equipment for wildlife before use. If an animal is found, the Biological Monitor is called to properly identify the animal and relocate it out of harm's way as needed.
- e) Ensuring that at the end of each workday, all excavations shall be secured with a cover, or a ramp installed to prevent wildlife entrapment. All trenches, digs for deck footings, and similar structures shall be inspected for animals prior to burying, capping, moving, or filling.

11.0 Conclusion

By implementing the above avoidance and mitigation measures, there are no anticipated or foreseen negative impacts to state, federal or locally protected plants, animals or sensitive habitats.

Mitigation measures BOT-5, BOT-6 and BOT-7 require that a Revegetation Specialist, familiar with Native Foredune and Coastal Dune Scrub be retained to prepare and submit a revegetation plan to address the specific needs in these measures. The Revegetation plan will then need to be submitted to the County of Santa Cruz. This report and scope of work is not responsible for such a plan; it simply states that a revegetation plan is both needed and will be required.

PDGHAD and/or Haley & Aldrich are responsible for obtaining all necessary approvals and permits from the appropriate regulatory agencies including but not limited to the County of Santa Cruz, California State Parks and the California Coastal Commission.

12.0 Literature Cited and Personal Communications

12.1 Literature and Databases Cited

- Barbour & Major, 1988. Terrestrial Vegetation of California. California Native Plant Society, Sacramento, CA.
- Biotic Resources Group. Oct 14, 2015. Biotic Report for Pajaro Dunes Seawall Revised Revetment Design Repair Pajaro Dunes, Santa Cruz County. Prepared for Santa Cruz County Planning Department and for the Arup North America, Ltd.
- California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California. CNPS, Sacramento CA. July 2024.
- California State of Department of Fish & Wildlife. 2022. The Vegetation Classification and Mapping Program, List of California Terrestrial Natural Communities Recognized by the CNDDDB. July 2022.
- California Rare Plant Search Within Coastal Stand Communities. October 2024. www.Calflora.org
- California Department of Fish and Wildlife. "Rarefind Report for Watsonville West and Moss Landing Quadrants." (2024a). California Natural Diversity Database (CNDDDB) –Commercial version dated October 1, 2024. Rarefind version 5.2.14 retrieved October 28, 2024, from <https://apps.wildlife.ca.gov/rarefind/view/RareFind.aspx>
- CE&G A Division of Haley and Aldrich. August 29, 2023. Pajaro Dunes GeoHazard Abatement District (PDGHAD) Rock Revetment Maintenance at Pajaro Dunes Resort, Project # 190780 Plan sheets 1-16. Prepared for PDGHAD and Santa Cruz County.
- CE&G A Division of Haley and Aldrich. July 7, 2023. Pajaro Dunes GeoHazard Abatement District (PDGHAD) Long-term Operations and Maintenance (O&M) Manual. Prepared for PDGHAD.
- deGrassis, Jessica, Santa Cruz County Planning Department. 2023. Staff Report & Preliminary Grading Approval Level 3-Administrative Review for Application # 321411.
- Hickman, J. 1993. The Jepson Manual Higher Plants of California. Berkeley: University of California Press.
- Monterey Bay Point Blue Conservation Science (MBPBCS). 2024. Excel spreadsheets with Western Snowy Plover Nest Locations between Pajaro River Mouth and Palm Beach collected by in 2023 and 2024. Data provided by Ms. Neuman, Principal Ecologist of MBPBCS on request to Dawn Reis with permission to use the data in the report prepared for the PDGHAD with submittal to Santa Cruz County.
- Santa Cruz County Planning Department GIS website. Oct 2024. <https://gis.santacruzcounty.us/gisweb>

12.2 Personal Communications to Dawn Reis

- Christine Fox, USFWS Biologist. July 22, 2024. United States Fish and Wildlife Service. Ventura Fish and Wildlife Office. Christine_fox@fws.gov
- Kriss Neuman, Principal Ecologist. July 23, 2024. Monterey Bay Point Blue Conservation Science. www.pointblue.org
- George Cummins, Coastal Ecologist. July 24, 2024. Monterey Bay Point Blue Conservation Science. www.pointblue.org

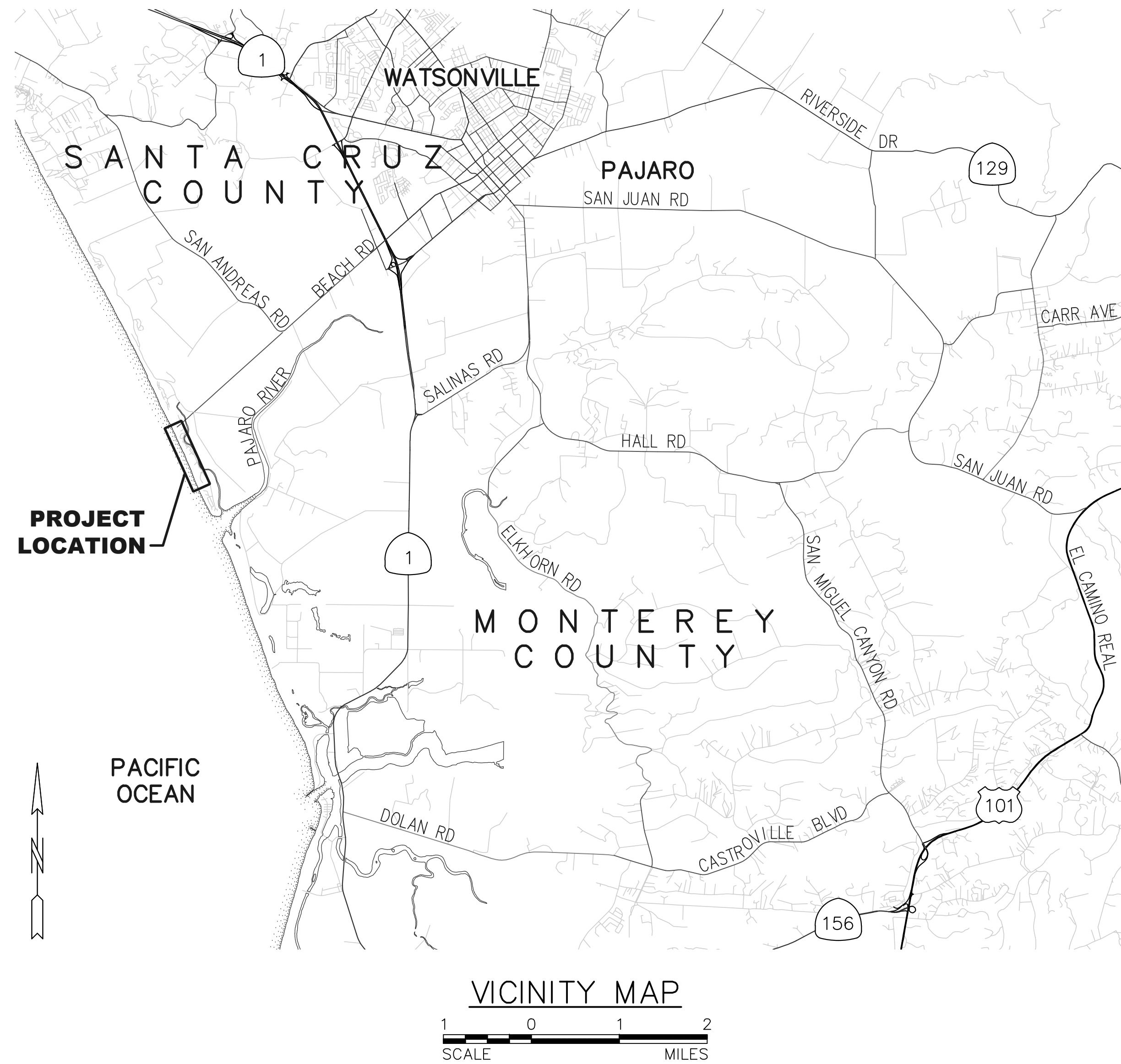
APPENDIX A

APPENDIX A
Rock Revetment Project Plans

PAJARO DUNES GHAD

ROCK REVETMENT MAINTENANCE LOTS 1-12, 15, 54-55, 94-103, AND 107 PAJARO DUNES RESORT WATSONVILLE, CALIFORNIA

AUGUST 2023



GENERAL NOTES

1. STANDARD SPECIFICATIONS

ALL MATERIALS AND CONSTRUCTION METHODS SHALL COMPLY WITH THE REQUIREMENTS OF THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) STANDARD SPECIFICATIONS, 2018 EDITION, UNLESS OTHERWISE NOTED ON THESE PLANS.

2. PERMITS

THE OWNER WILL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS.

3. TRAFFIC CONTROL AND PUBLIC SAFETY

THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FENCING, FLAGGING, AND OTHER DEVICES NECESSARY FOR TRAFFIC CONTROL AND PUBLIC SAFETY.

4. EXISTING FACILITIES

EXISTING SITE IMPROVEMENTS TO REMAIN MAY INTERFERE WITH THE WORK. THESE FACILITIES SHALL BE PROTECTED OR REMOVED AND REPLACED WITH LIKE KIND AND QUALITY AT THE CONTRACTOR'S EXPENSE.

5. SITE INFORMATION

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL ABOVE GROUND AND UNDERGROUND FACILITIES WHICH MAY BE AFFECTED BY HIS OPERATIONS. THE CONTRACTOR SHALL CONTACT OWNERS OF THESE FACILITIES AND SHALL PROTECT FACILITIES AND MAINTAIN SERVICE DURING CONSTRUCTION. THE CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT (USA) AT (800) 642-2444 AT LEAST THREE WORKING DAYS PRIOR TO CONSTRUCTION.

DIMENSIONS AND LIMITS OF WORK SHOWN ON THE PLANS ARE APPROXIMATE AND ARE SUBJECT TO CHANGE BASED ON CONDITIONS ENCOUNTERED. CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND SITE CONDITIONS PRIOR TO THE START OF CONSTRUCTION. DISCREPANCIES BETWEEN ACTUAL CONDITIONS AND THOSE SHOWN ON THE PLANS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.

6. INSPECTIONS

ENGINEERING INSPECTIONS WILL BE CARRIED OUT BY CAL ENGINEERING & GEOLOGY, INC. (925) 935-9771. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER AT LEAST TWO WORKING DAYS PRIOR TO ALL REQUIRED INSPECTIONS.

7. STAGING RESTORATION

STAGING AREAS SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION CONDITION. CONTRACTOR SHALL DOCUMENT THE PRE-CONSTRUCTION CONDITION OF ALL STAGING AREAS AND ACCESS ROUTES PRIOR TO CONSTRUCTION. PAVEMENT AREAS SHALL BE RESTORED BY REMOVING AND REPLACING THE DAMAGED PAVEMENT WITH 3" AC (TYPE A) OVER 6" CLASS 2 AB AS DIRECTED BY THE ENGINEER.

8. TOTAL ROCK

PLANNED TOTAL ROCK MATERIAL TO POTENTIALLY BE MOVED FOR THE PROJECT EQUALS 1,135 TONS OR 841 CUBIC YARDS (ASSUMING 2700 LBS PER CUBIC YARD). SEE SHEET 2 FOR SOURCE DETAILS.

DESCRIPTION OF WORK

THE WORK SHALL CONSIST IN GENERAL OF PROVIDING ALL MATERIAL, LABOR, AND EQUIPMENT NECESSARY TO COMPLETE THE REVETMENT MAINTENANCE PROJECT. WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, MOBILIZATION, WATER POLLUTION CONTROL, TRAFFIC CONTROL, ESTABLISHING SITE ACCESS AND STAGING AREAS, CLEARING AND GRUBBING, EXCAVATION SHORING AS REQUIRED, TEMPORARY EXCAVATION AND BACKFILL IN SAND, AND RELOCATING AND STACKING EXISTING BURIED REVETMENT ROCKS.

CONTRACTOR LICENSE

THE CONTRACTOR SHALL POSSESS A VALID CLASS A LICENSE AT THE TIME THE CONTRACT IS AWARDED.

INDEX OF SHEETS

- 1. TITLE SHEET
- 2. TYPICAL SECTION
- 3. PROJECT CONTROL
- 4. SITE ACCESS AND STAGING AREAS
- 5.-9. SITE PLAN
- 10.-16. SECTIONS

STANDARD PLANS


THE FOLLOWING STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) STANDARD PLANS, 2010 EDITION, APPLY:

- A10A ABBREVIATIONS (SHEET 1 OF 2)
- A10B ABBREVIATIONS (SHEET 2 OF 2)
- A10C LINES AND SYMBOLS (SHEET 1 OF 3)
- A10D LINES AND SYMBOLS (SHEET 2 OF 3)
- A10E LINES AND SYMBOLS (SHEET 3 OF 3)

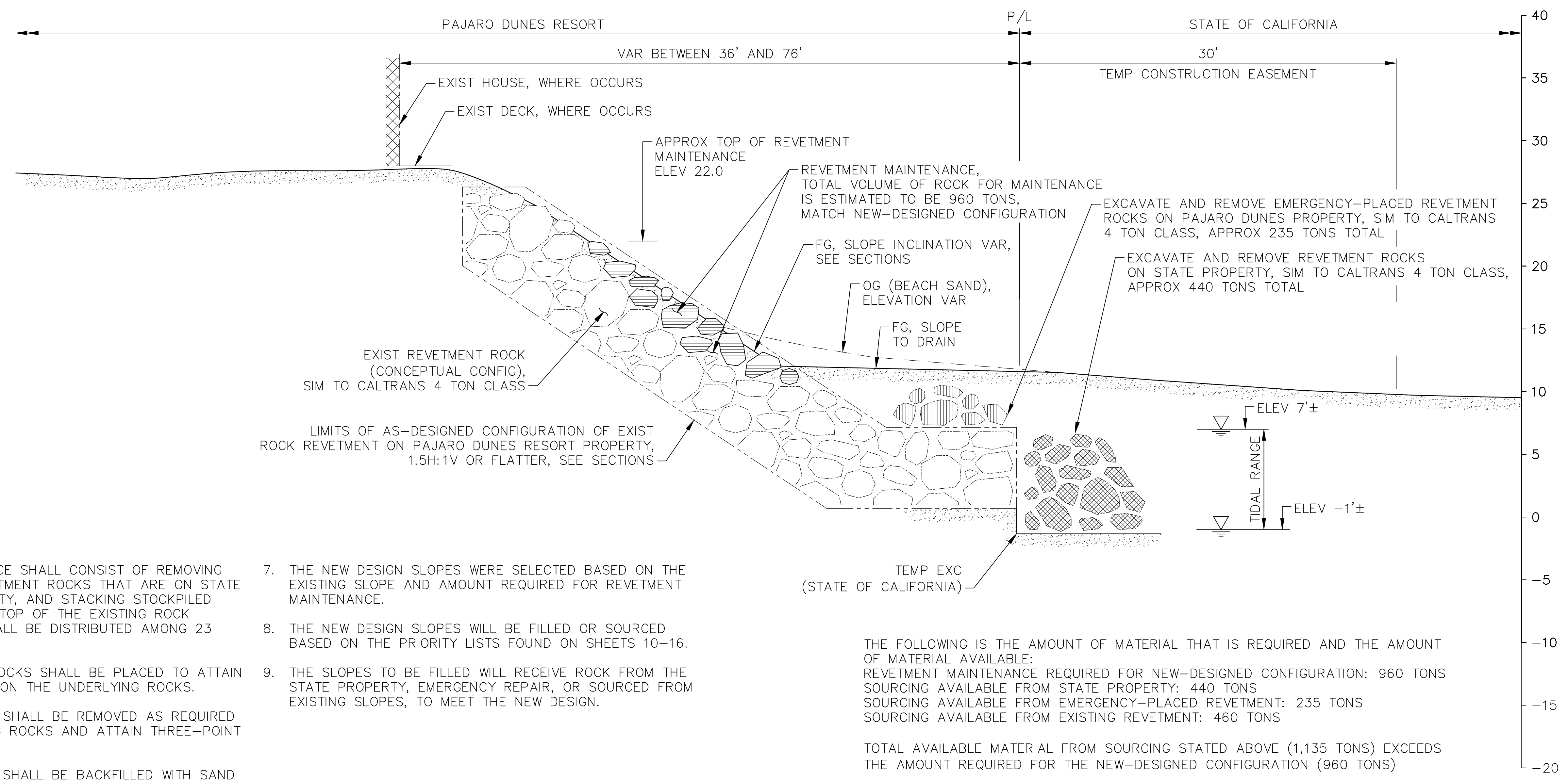


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**100% SUBMITTAL
NOT FOR CONSTRUCTION
AUGUST 2023**

 A division of Haley & Aldrich		785 Ygnacio Valley Road Walnut Creek, CA 94596 Phone: (925) 935-9771		PAJARO DUNES GHAD	
				ROCK REVETMENT MAINTENANCE PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA TITLE SHEET	
DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO	PROJECT NO. 190780	DATE AUGUST 29, 2023	SHEET NO. OF 1 OF 16

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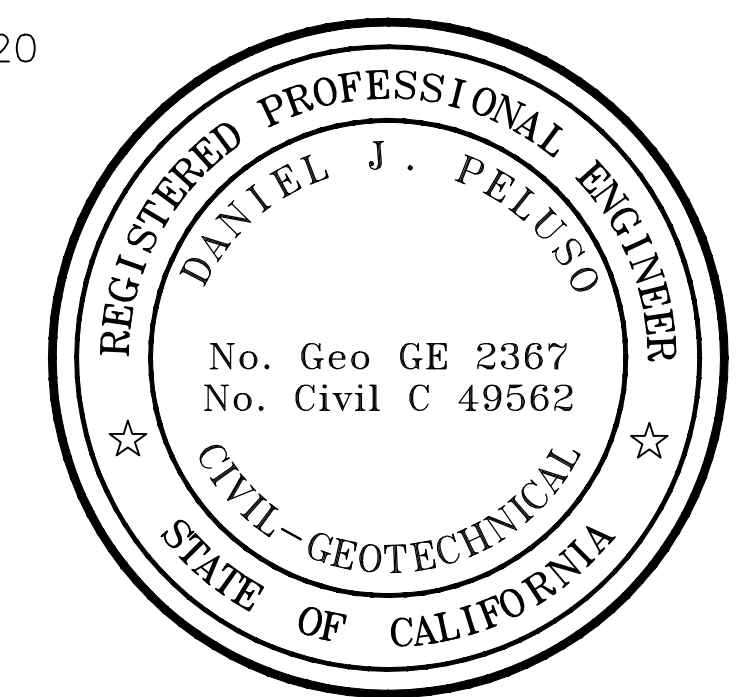
NOTES

1. REVETMENT MAINTENANCE SHALL CONSIST OF REMOVING AND STOCKPILING REVETMENT ROCKS THAT ARE ON STATE OF CALIFORNIA PROPERTY, AND STACKING STOCKPILED REVETMENT ROCKS ON TOP OF THE EXISTING ROCK REVETMENT. ROCKS SHALL BE DISTRIBUTED AMONG 23 PARCELS.
2. STACKED REVETMENT ROCKS SHALL BE PLACED TO ATTAIN THREE-POINT BEARING ON THE UNDERLYING ROCKS.
3. VEGETATION AND SAND SHALL BE REMOVED AS REQUIRED TO EXPOSE UNDERLYING ROCKS AND ATTAIN THREE-POINT BEARING PLACEMENT.
4. VOIDS BETWEEN ROCKS SHALL BE BACKFILLED WITH SAND TO THE FINISHED GRADE LINES SHOWN.
5. SHOP DRAWINGS AND CALCULATIONS FOR CONTRACTOR-DESIGNED SHORING SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW A MINIMUM OF TWO WEEKS IN ADVANCE OF CONSTRUCTION. THE SHOP DRAWINGS AND CALCULATIONS SHALL BE SIGNED AND STAMPED BY A PROFESSIONAL CIVIL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA. THE SHOP DRAWINGS SHOULD DESCRIBE HOW THE SHORING WILL PROTECT THE EXISTING REVETMENT DURING SAND EXCAVATION.
6. NEW REVETMENT DESIGN SLOPES FOUND IN CROSS-SECTIONS (SHEETS 10-16) ARE BASED OFF OF THE ORIGINAL DESIGN BY ROGERS E. JOHNSON & ASSOCIATES (1986) AND THE EMERGENCY REPAIR BY HARO, KASUNICH & ASSOCIATES (2003). SEE ATTACHED DOCUMENTS.
7. THE NEW DESIGN SLOPES WERE SELECTED BASED ON THE EXISTING SLOPE AND AMOUNT REQUIRED FOR REVETMENT MAINTENANCE.
8. THE NEW DESIGN SLOPES WILL BE FILLED OR SOURCED BASED ON THE PRIORITY LISTS FOUND ON SHEETS 10-16.
9. THE SLOPES TO BE FILLED WILL RECEIVE ROCK FROM THE STATE PROPERTY, EMERGENCY REPAIR, OR SOURCED FROM EXISTING SLOPES, TO MEET THE NEW DESIGN.

THE FOLLOWING IS THE AMOUNT OF MATERIAL THAT IS REQUIRED AND THE AMOUNT OF MATERIAL AVAILABLE:
 REVETMENT MAINTENANCE REQUIRED FOR NEW-DESIGNED CONFIGURATION: 960 TONS
 SOURCING AVAILABLE FROM STATE PROPERTY: 440 TONS
 SOURCING AVAILABLE FROM EMERGENCY-PLACED REVETMENT: 235 TONS
 SOURCING AVAILABLE FROM EXISTING REVETMENT: 460 TONS

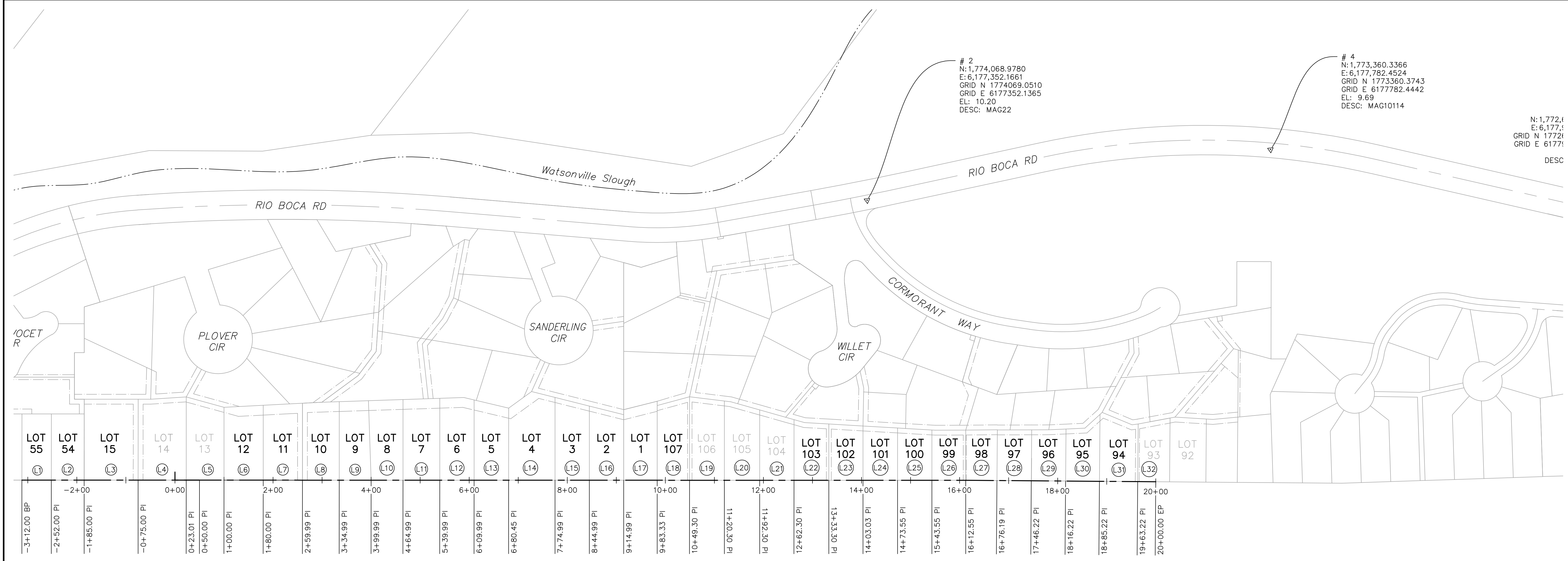
TOTAL AVAILABLE MATERIAL FROM SOURCING STATED ABOVE (1,135 TONS) EXCEEDS THE AMOUNT REQUIRED FOR THE NEW-DESIGNED CONFIGURATION (960 TONS)

**100% SUBMITTAL
NOT FOR CONSTRUCTION
AUGUST 2023**



 A division of Haley & Aldrich		785 Ygnacio Valley Road Walnut Creek, CA 94596 Phone: (925) 935-9771		PAJARO DUNES GHAD ROCK REVETMENT MAINTENANCE PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA TYPICAL SECTION	
		DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO	PROJECT NO. 190780

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2
 N: 1,774,068.9780
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 GRID N 1774069.0510
 GRID E 6177352.1365
 EL: 10.20
 DESC: MAG22

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 GRID N 1773360.3743
 GRID E 6177782.4442
 EL: 9.69
 DESC: MAG10114

N: 1,772,1
 E: 6,177,1
 GRID N 17721
 GRID E 61771
 DESC

- LEGEND**
- △ BENCHMARK
 - PROPERTY LINE
 - - - EASEMENT

- UAV DATA REFERENCE**
- CONTOURS CALCULATED FROM PHOTOGRAMMETRICALLY-DERIVED DIGITAL ELEVATION MODEL, UAV FLIGHT PERFORMED ON 18 NOVEMBER 2019.
 - HIGH RESOLUTION ORTHOIMAGERY CAPTURED BY CE&G ON 18 NOVEMBER 2019.
- HORIZONTAL DATUM: COORDINATES ARE APPROXIMATE TO NAD83 CALIFORNIA ZONE 3 VALUES.
- VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

LAYOUT LINE (LOL)					
SEGMENT	LENGTH	BEARING	START STATION	START NORTHING	START EASTING
L1	60.00'	S24°05'08"E	-3+12.00	1775409.28	6176127.69
L2	67.00'	S24°05'08"E	-2+52.00	1775354.50	6176152.18
L3	110.00'	S24°05'08"E	-1+85.00	1775293.33	6176179.52
L4	98.01'	S24°05'08"E	-0+75.00	1775192.91	6176224.41
L5	50.00'	S24°05'08"E	0+50.00	1775078.79	6176275.42
L6	80.00'	S24°05'08"E	1+00.00	1775033.14	6176295.83
L7	79.99'	S24°05'08"E	1+80.00	1774960.10	6176328.48
L8	75.00'	S24°05'08"E	2+59.99	1774887.08	6176361.12
L9	65.00'	S24°05'08"E	3+34.99	1774818.61	6176391.73
L10	65.00'	S24°05'08"E	3+99.99	1774759.26	6176418.26
L11	75.00'	S24°05'08"E	4+64.99	1774699.92	6176444.78
L12	70.00'	S24°05'08"E	5+39.99	1774631.45	6176475.39
L13	70.46'	S24°05'08"E	6+09.99	1774567.55	6176503.96
L14	94.54'	S24°05'08"E	6+80.45	1774503.22	6176532.71
L15	70.00'	S24°05'08"E	7+74.99	1774416.91	6176571.29
L16	70.00'	S24°05'08"E	8+44.99	1774353.01	6176599.86

LAYOUT LINE (LOL)					
SEGMENT	LENGTH	BEARING	START STATION	START NORTHING	START EASTING
L17	68.34'	S24°05'08"E	9+14.99	1774289.10	6176628.43
L18	65.97'	S24°01'29"E	9+83.33	1774226.71	6176656.32
L19	71.00'	S24°05'59"E	10+49.30	1774166.46	6176683.18
L20	72.00'	S24°07'38"E	11+20.30	1774101.65	6176712.17
L21	70.00'	S24°03'31"E	11+92.30	1774035.94	6176741.60
L22	71.00'	S24°06'43"E	12+62.30	1773972.02	6176770.13
L23	69.73'	S24°05'08"E	13+33.30	1773907.21	6176799.14
L24	70.52'	S24°05'08"E	14+03.03	1773843.55	6176827.60
L25	70.00'	S24°05'08"E	14+73.55	1773779.17	6176856.38
L26	69.00'	S24°05'08"E	15+43.55	1773715.27	6176884.94
L27	63.64'	S23°40'04"E	16+12.55	1773652.27	6176913.10
L28	70.02'	S23°40'04"E	16+76.19	1773593.99	6176938.65
L29	70.00'	S23°39'18"E	17+46.22	1773529.85	6176966.76
L30	69.00'	S23°39'18"E	18+16.22	1773465.74	6176994.84
L31	78.00'	S23°39'18"E	18+85.22	1773402.53	6177022.53
L32	36.78'	S23°39'18"E	19+63.22	1773331.09	6177053.82



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 NOT FOR CONSTRUCTION
 AUGUST 2023**

 A division of Haley & Aldrich	785 Ygnacio Valley Road Walnut Creek, CA 94596 Phone: (925) 935-9771		PAJARO DUNES GHAD ROCK REVETMENT MAINTENANCE PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA PROJECT CONTROL	
	DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO	PROJECT NO. 190780
			SHEET NO. 3	OF 16

\\haleyaldrich\share\granite\2019\190782-PajaroDunesGHAD-0&M\AutoCAD - Plan Set\Sheets\04-SITE-ACCESS-STAGING.dwg 8-29-23 12:27:19 PM crodli



NOTES

1. VEHICULAR ACCESS TO THE BEACH SHALL BE LIMITED TO THE PRIMARY AND SECONDARY VEHICULAR ACCESS ROUTES SHOWN. BEACH ACCESS FROM THE PARKING AREAS ALONG RIO BOCA ROAD SHALL BE LIMITED TO PEDESTRIANS ONLY.

LEGEND

SITE ACCESS
 POTENTIAL STAGING AREA (PARKING LOT), PEDESTRIAN ACCESS ONLY
 POTENTIAL STAGING AREA (UNDEVELOPED)

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 AUGUST 2023**

TEMPORARY CONSTRUCTION EASEMENT

POINT TABLE		
#	NORTHING	EASTING
#1	1773297.39	6177068.58
#2	1773285.36	6177041.10
#3	1775020.90	6176268.44
#4	1775024.98	6176277.57
#5	1777588.94	6175128.90
#6	1777600.92	6175145.45

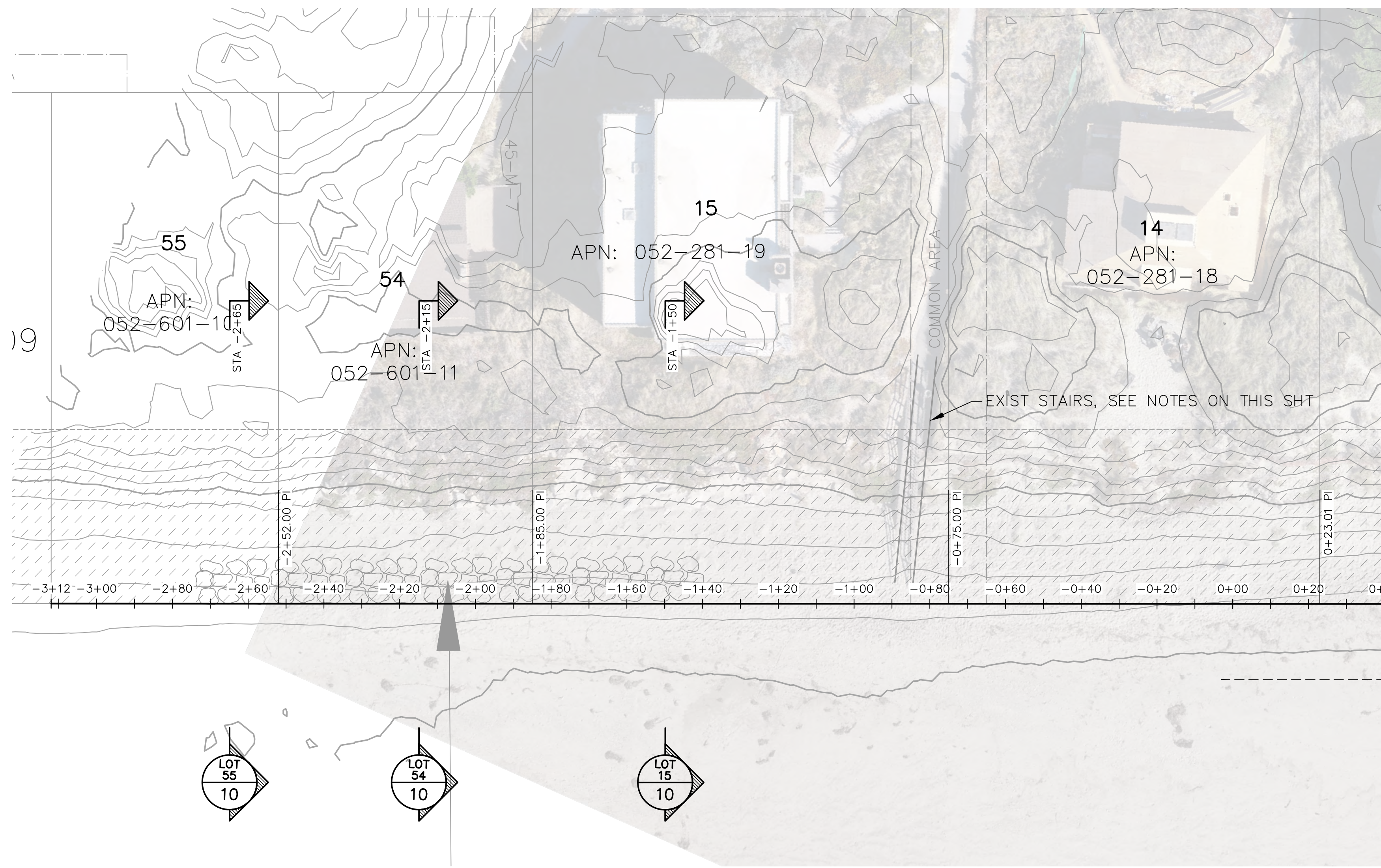
BASEMAP REFERENCE

1. ORTHOIMAGERY FROM SANTA CRUZ COUNTY, 2016.



<p>CE&G A division of Haley & Aldrich</p>	785 Ygnacio Valley Road Walnut Creek, CA 94596 Phone: (925) 935-9771	PAJARO DUNES GHAD			
		ROCK REVETMENT MAINTENANCE PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA SITE ACCESS AND STAGING AREA			
DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO	PROJECT NO. 190780	DATE AUGUST 29, 2023	SHEET NO. OF 4 OF 16

\\haleyaldrich\share\granite\2019\190782-PajaroDunesGHAD-O&M\AutoCAD - Plan Set\Sheets\05-09-SITE-PLAN.dwg 8-29-23 12:27:39 PM crodill



MATCH LINE STA 0+40, SEE SHEET 6

NOTES

1. THE REVETMENT MAINTENANCE SHALL EXTEND BELOW THE EXISTING STAIRS.
2. THE CONTRACTOR MAY ELECT TO REMOVE PORTIONS OF STAIRS BEFORE CONSTRUCTION. STAIRS REMOVED BEFORE CONSTRUCTION OR STAIRS THAT ARE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND WITH NEW MATERIALS AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND CALCULATIONS FOR THE PORTIONS OF THE STAIRS THAT ARE REPAIRED OR REPLACED. THE SHOP DRAWINGS AND CALCULATIONS SHALL BE SIGNED AND STAMPED BY A CIVIL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA.

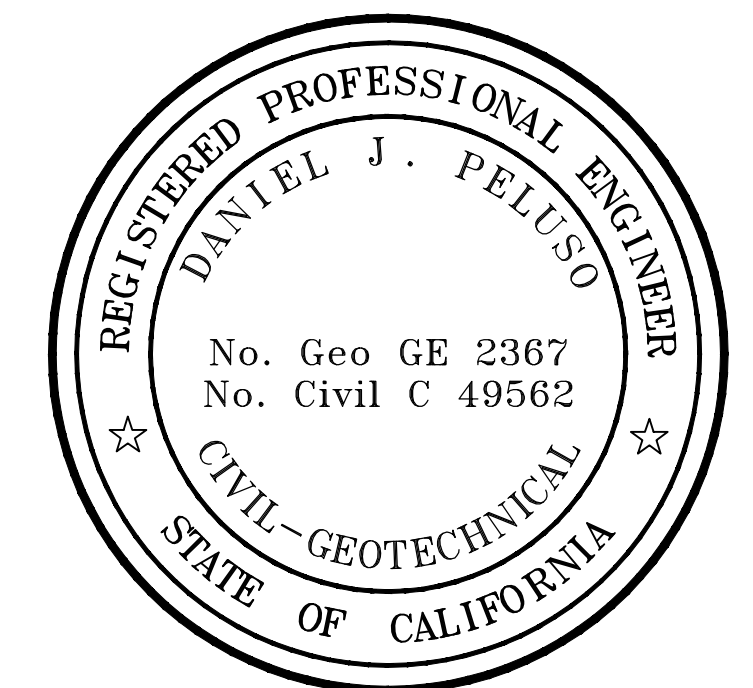
NEW STAIR MATERIALS

1. STRUCTURAL TIMBER AND LUMBER SHALL BE BROWN PRESSURE-TREATED DOUGLAS FIR NO. 1 OR BETTER.
2. BOLTS SHALL BE ASTM A307 GRADE A. NUTS SHALL BE AMERICAN STANDARD HEAVY, SEMI-FINISHED HEXAGON TAPPED, UNC THREAD SERIES, CLASS 2B. WASHERS SHALL BE OVERSIZED. ALL PARTS SHALL BE HOT-DIP GALVANIZED PER ASTM A153 CLASS C.
3. BOLT HOLES SHALL BE AT LEAST A MINIMUM OF 1/32" AND NO MORE THAN A MAXIMUM OF 1/16" LARGER THAN THE BOLT DIAMETER.
4. ALL NAILS SHALL BE 16d HOT-DIP GALVANIZED. PNEUMATIC NAILING SHALL NOT BE PERMITTED.
5. ALL HARDWARE SHALL BE GALVANIZED AND SHALL MEET ASTM A653 BY THE HOT-DIP PROCESS, G-185 COATING.

EMERGENCY-PLACED ROCK

THE KNOWN LOCATIONS OF THE BURIED EMERGENCY-PLACED ROCK ARE IN THE FOLLOWINGS LOCATIONS:

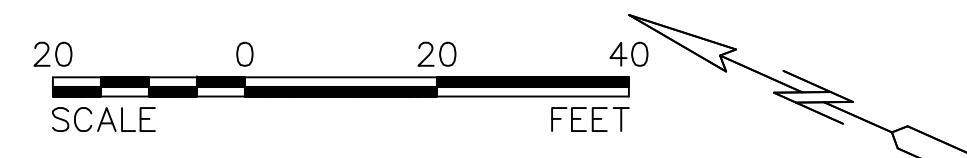
1. ON STATE PARKS PROPERTY IN FRONT OF THE REVETMENT TOE ADJACENT TO LOTS 98, 99, 100, AND 103. TOTAL OF APPROX 440 TONS.
2. ON PAJARO DUNES PROPERTY OVERLYING THE ROCK REVETMENT TOE ON LOTS 15, 54, 55, 103, AND 104. TOTAL OF APPROX 235 TONS.



LEGEND

- REVETMENT MAINTENANCE
- EXISTING RSP
- EXISTING RSP, BURRIED

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AUGUST 2023**



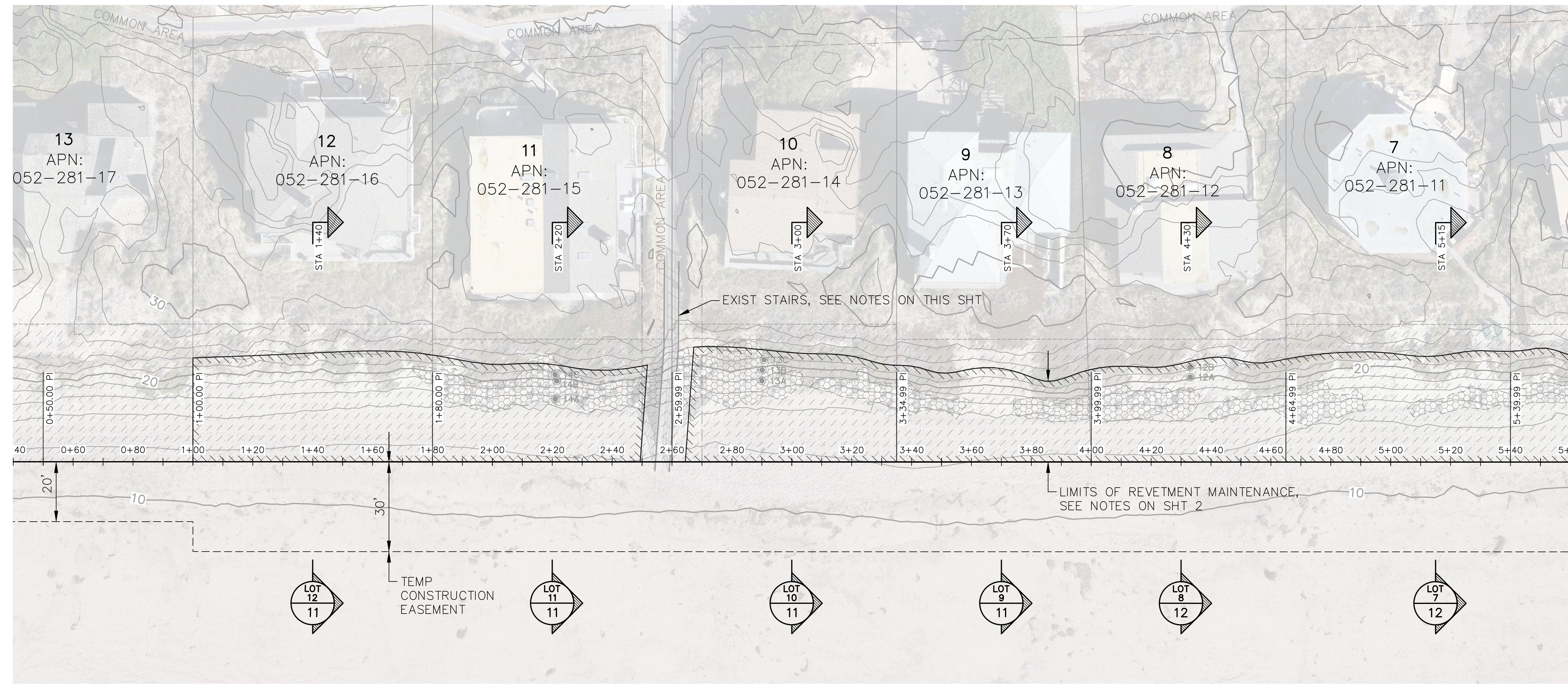
NO.	REVISION DESCRIPTION	INI	M/D/YEAR

785 Ygnacio Valley Road
Walnut Creek, CA 94596
Phone: (925) 935-9771

DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO
------------------------	-----------------------	----------------------

PAJARO DUNES GHAD			
ROCK REVETMENT MAINTENANCE PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA SITE PLAN (1 OF 5)			
PROJECT NO. 190780	DATE AUGUST 29, 2023	SHEET NO. 5	OF 16

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MATCH LINE STA 0+40, SEE SHEET 5

MATCH LINE STA 5+60, SEE SHEET 7

NOTES

1. THE REVETMENT MAINTENANCE SHALL EXTEND BELOW THE EXISTING STAIRS.
2. THE CONTRACTOR MAY ELECT TO REMOVE PORTIONS OF STAIRS BEFORE CONSTRUCTION. STAIRS REMOVED BEFORE CONSTRUCTION OR STAIRS THAT ARE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND WITH NEW MATERIALS AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND CALCULATIONS FOR THE PORTIONS OF THE STAIRS THAT ARE REPAIRED OR REPLACED. THE SHOP DRAWINGS AND CALCULATIONS SHALL BE SIGNED AND STAMPED BY A CIVIL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA.

NEW STAIR MATERIALS

1. STRUCTURAL TIMBER AND LUMBER SHALL BE BROWN PRESSURE-TREATED DOUGLAS FIR NO. 1 OR BETTER.
2. BOLTS SHALL BE ASTM A307 GRADE A. NUTS SHALL BE AMERICAN STANDARD HEAVY, SEMI-FINISHED HEXAGON TAPPED, UNC THREAD SERIES, CLASS 2B. WASHERS SHALL BE OVERSIZED. ALL PARTS SHALL BE HOT-DIP GALVANIZED PER ASTM A153 CLASS C.
3. BOLT HOLES SHALL BE AT LEAST A MINIMUM OF 1/32" AND NO MORE THAN A MAXIMUM OF 1/16" LARGER THAN THE BOLT DIAMETER.
4. ALL NAILS SHALL BE 16d HOT-DIP GALVANIZED. PNEUMATIC NAILING SHALL NOT BE PERMITTED.
5. ALL HARDWARE SHALL BE GALVANIZED AND SHALL MEET ASTM A653 BY THE HOT-DIP PROCESS, G-185 COATING.

EMERGENCY-PLACED ROCK

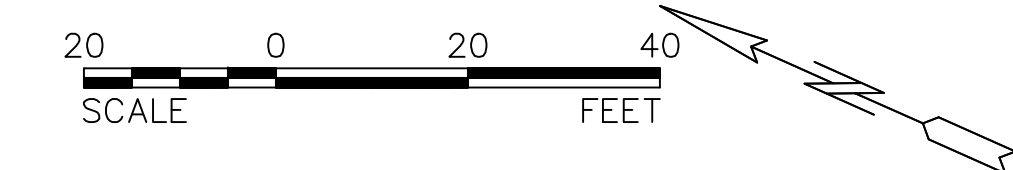
- THE KNOWN LOCATIONS OF THE BURIED EMERGENCY-PLACED ROCK ARE IN THE FOLLOWINGS LOCATIONS:
1. ON STATE PARKS PROPERTY IN FRONT OF THE REVETMENT TOE ADJACENT TO LOTS 98, 99, 100, AND 103. TOTAL OF APPROX 440 TONS.
 2. ON PAJARO DUNES PROPERTY OVERLYING THE ROCK REVETMENT TOE ON LOTS 15, 54, 55, 103, AND 104. TOTAL OF APPROX 235 TONS.



LEGEND

	REVETMENT MAINTENANCE
	EXISTING RSP
	EXISTING RSP, BURRIED

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NO.	REVISION DESCRIPTION	INI	M/D/YEAR

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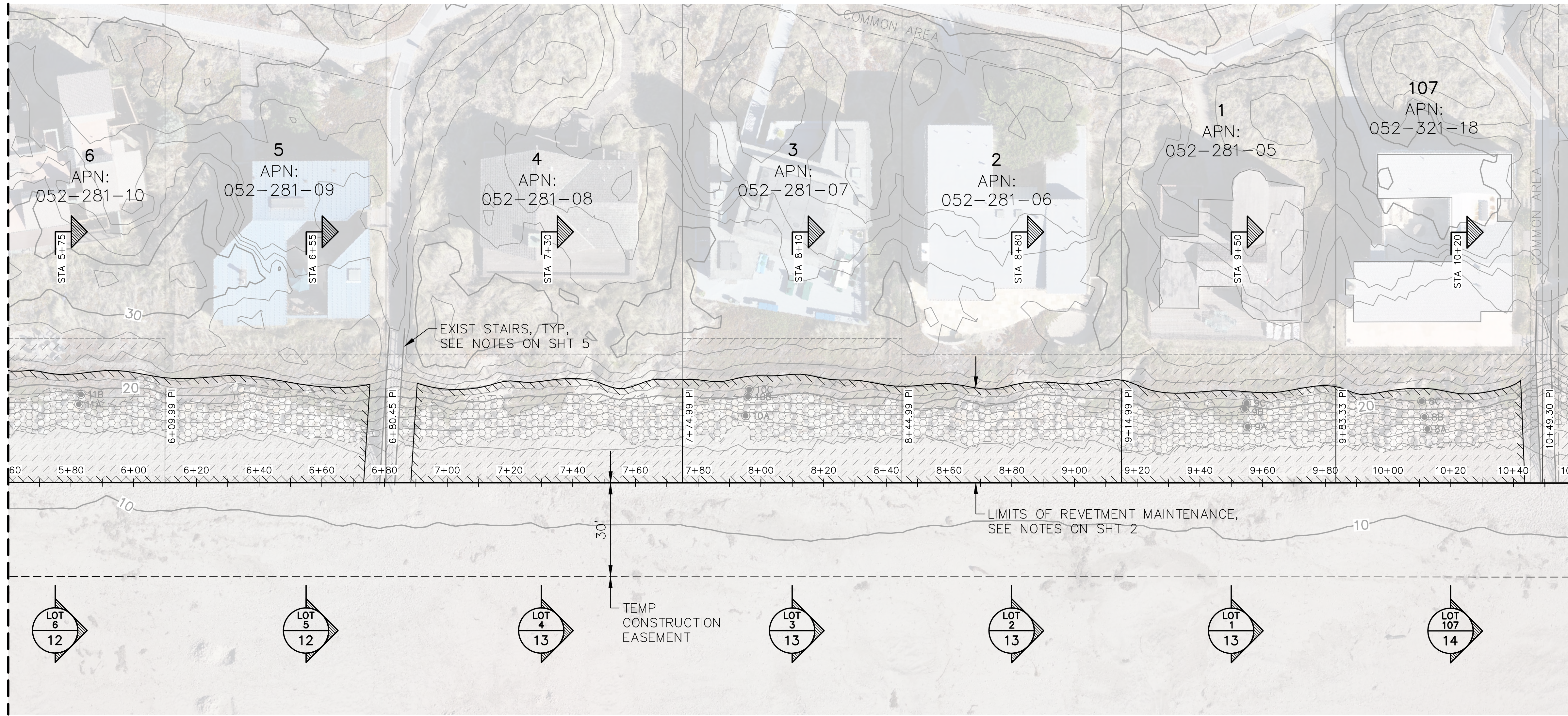
785 Ygnacio Valley Road
 Walnut Creek, CA 94596
 Phone: (925) 935-9771

DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO
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PAJARO DUNES GHAD			
ROCK REVETMENT MAINTENANCE PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA SITE PLAN (2 OF 5)			
PROJECT NO. 190780	DATE AUGUST 29, 2023	SHEET NO. 6	OF 16




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MATCH LINE STA 5+60, SEE SHEET 6

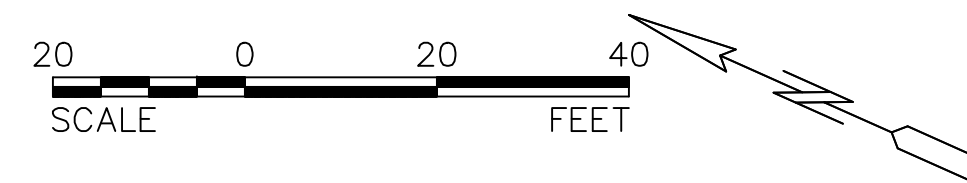


MATCH LINE STA 10+60, SEE SHEET 8

LEGEND

-  REVETMENT MAINTENANCE
-  EXISTING RSP
-  EXISTING RSP, BURRIED

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AUGUST 2023**



NO.	REVISION DESCRIPTION	INI	M/D/YEAR



785 Ygnacio Valley Road
Walnut Creek, CA 94596
Phone: (925) 935-9771

DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO
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PAJARO DUNES GHAD			
ROCK REVETMENT MAINTENANCE PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA SITE PLAN (3 OF 5)			
PROJECT NO. 190780	DATE AUGUST 29, 2023	SHEET NO. 7	OF 16



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MATCH LINE STA 10+60, SEE SHEET 7

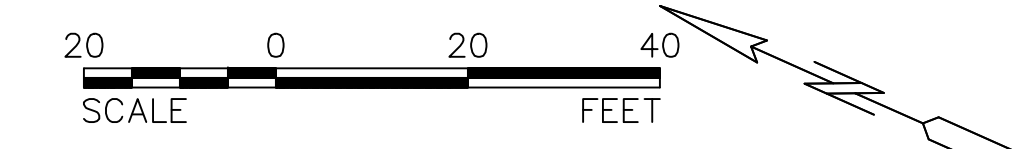
MATCH LINE STA 15+60, SEE SHEET 9



LEGEND

	REVETMENT MAINTENANCE
	EXISTING RSP
	EXISTING RSP, BURRIED

**100% SUBMITTAL
NOT FOR CONSTRUCTION
AUGUST 2023**



NO.	REVISION DESCRIPTION	BY	DATE

CE&G
A division of Haley & Aldrich

785 Ygnacio Valley Road
Walnut Creek, CA 94596
Phone: (925) 935-9771

DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO
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PAJARO DUNES GHAD

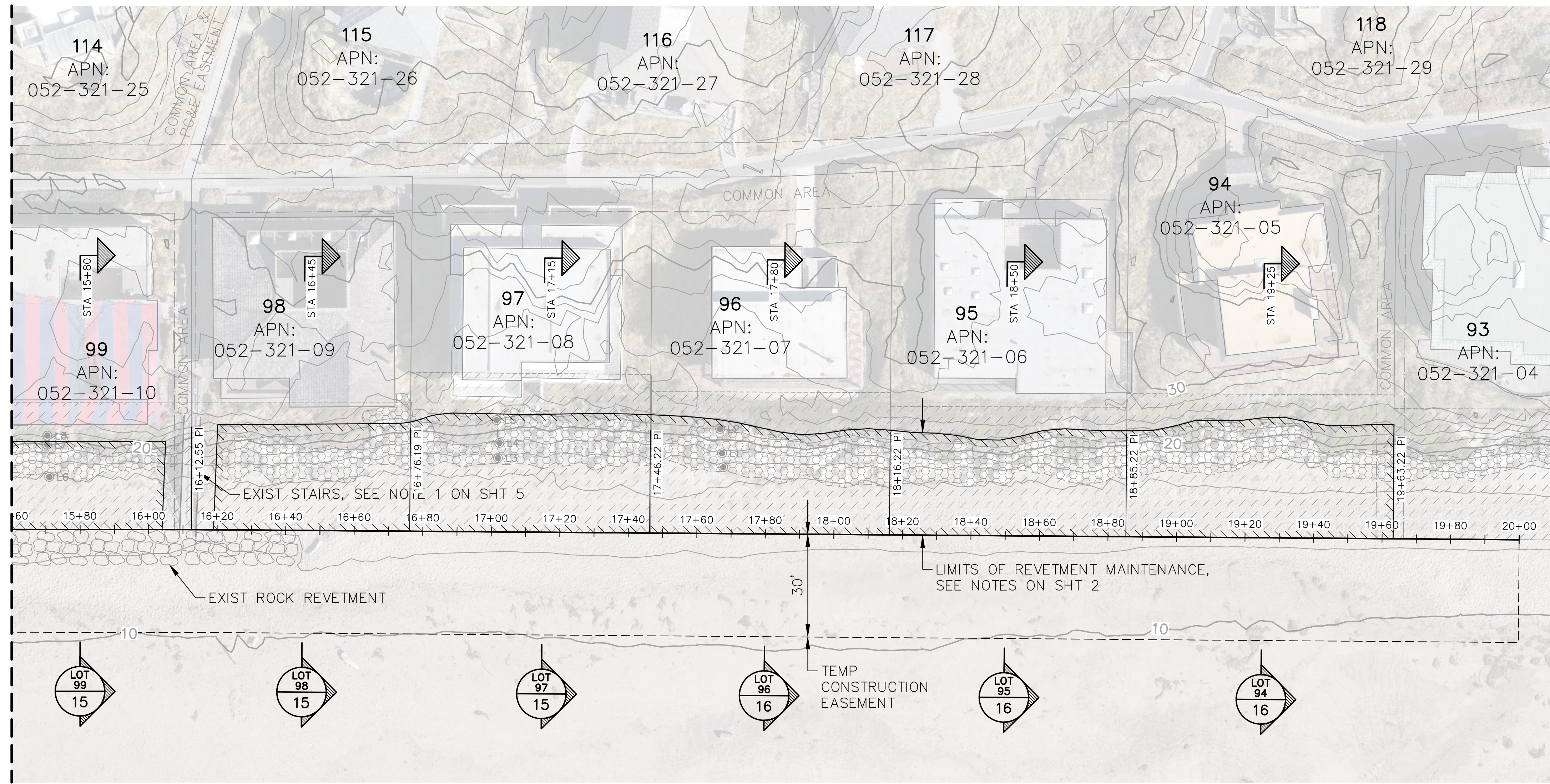
ROCK REVETMENT MAINTENANCE
PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA
SITE PLAN (4 OF 5)

PROJECT NO. 190780	DATE AUGUST 29, 2023	SHEET NO. OF 8 OF 16
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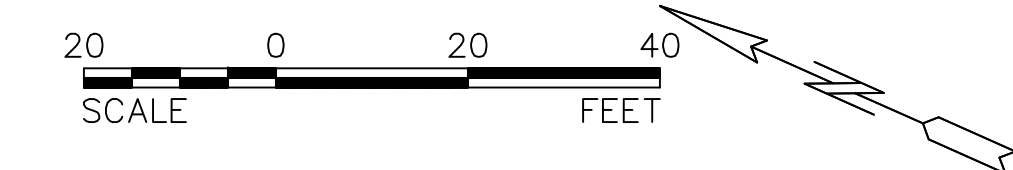
MATCH LINE STA 15+60, SEE SHEET 8



LEGEND

	REVETMENT MAINTENANCE
	EXISTING RSP
	EXISTING RSP, BURRIED

**100% SUBMITTAL
NOT FOR CONSTRUCTION
AUGUST 2023**



NO.	REVISION DESCRIPTION	INI	M/D/YEAR

CE&G
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785 Ygnacio Valley Road
Walnut Creek, CA 94596
Phone: (925) 935-9771

DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO
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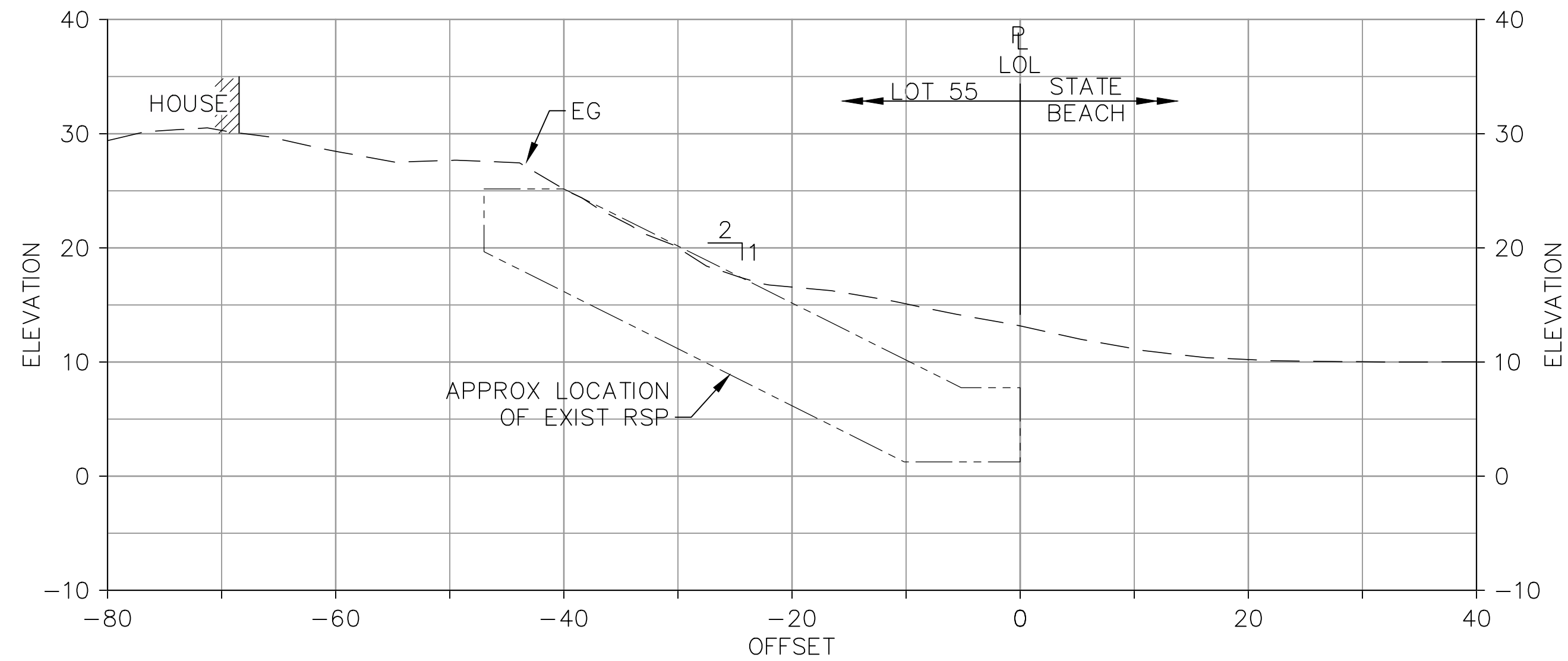
PAJARO DUNES GHAD

ROCK REVETMENT MAINTENANCE
PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA
SITE PLAN (5 OF 5)

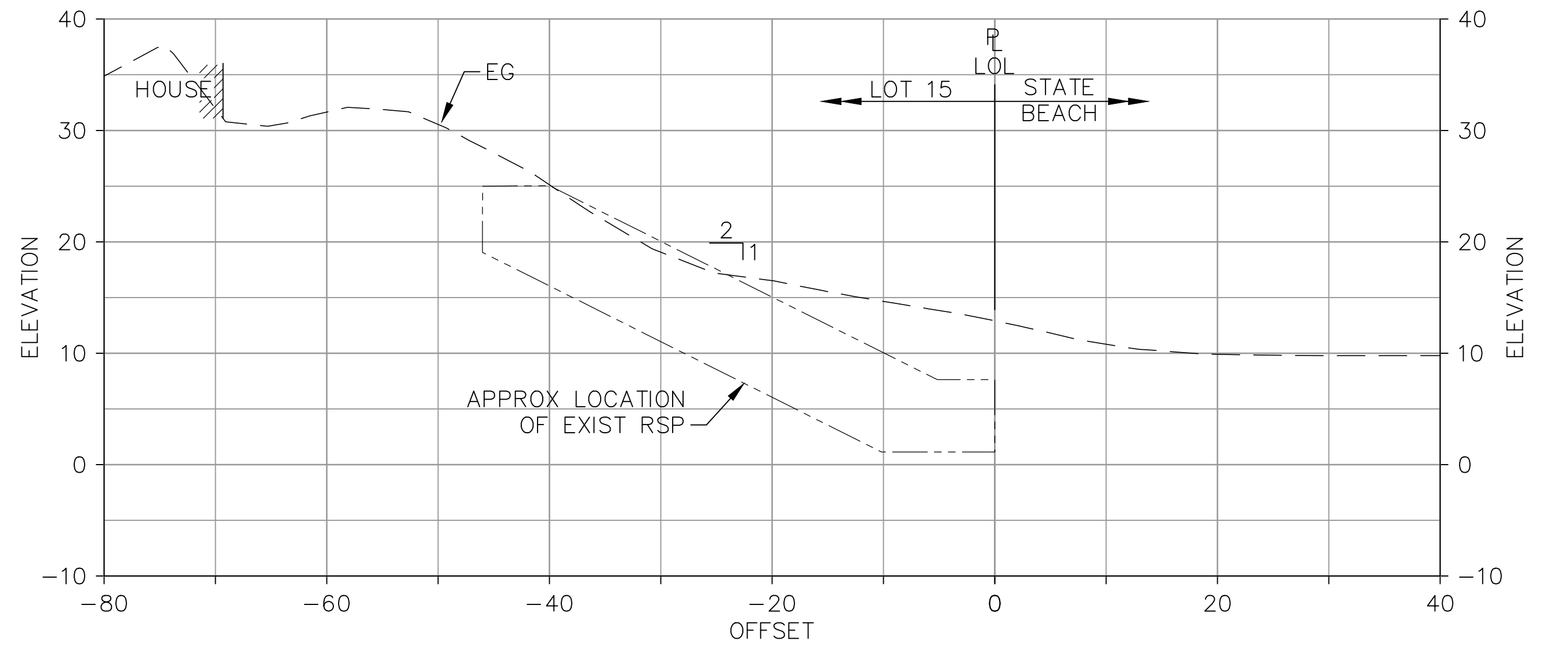
PROJECT NO. 190780	DATE AUGUST 29, 2023	SHEET NO. OF 9 OF 16
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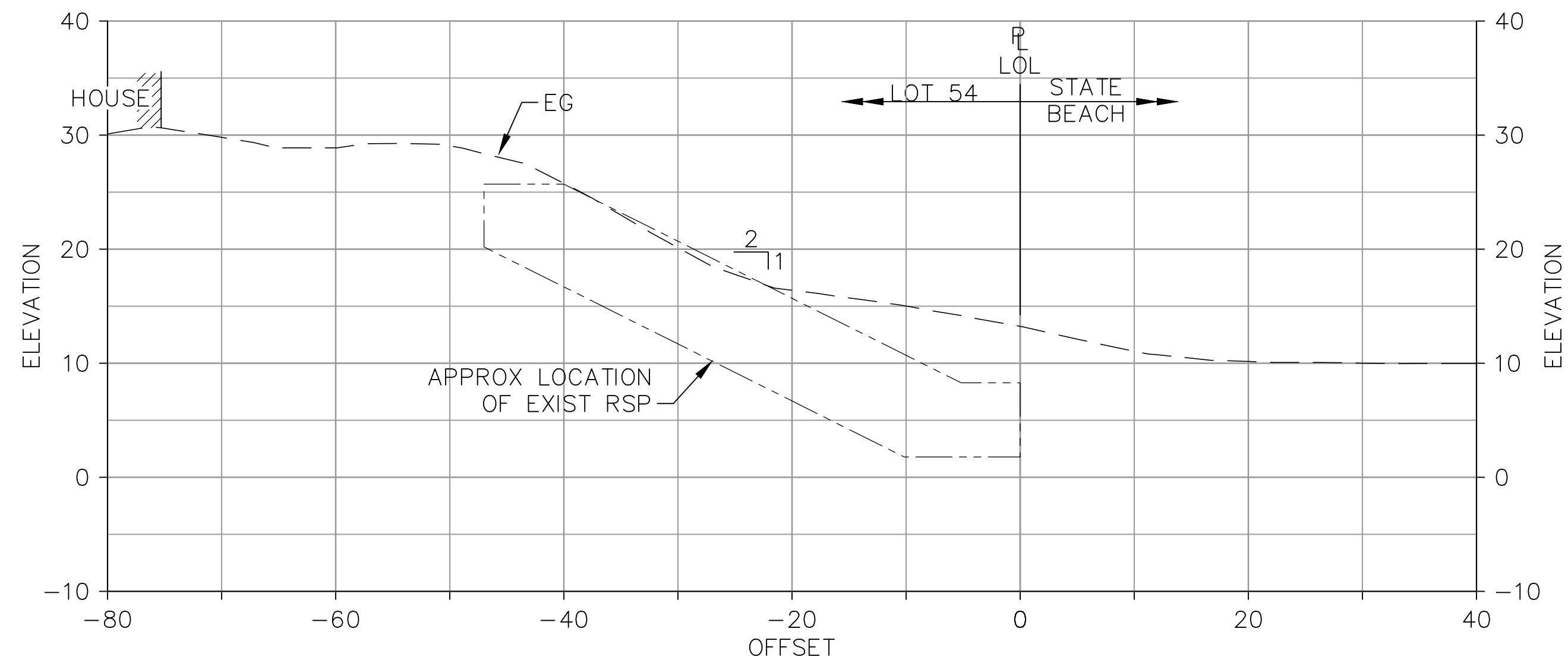
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SECTION LOT 55
STA -2+65 5



SECTION LOT 15
STA -1+50 5



SECTION LOT 54
STA -2+15 5

NOTES

1. PROPOSED REVETMENT DESIGN SLOPE MAY BE LOWERED UP TO 24" (TYP.) BELOW THE ORIGINAL REVETMENT DESIGN SLOPE (TOWARDS LOTS) FOR SELECTED SECTIONS. CONTRACTOR MAY SOURCE THE MATERIAL REMAINING IN FRONT OF THE PROPOSED REVETMENT SLOPE, IF NEEDED. SEE SOURCING PRIORITY LIST BELOW.
2. THERE WILL BE VARIABILITY IN CROSS SECTIONS ACROSS EACH LOT

PLACEMENT PRIORITY

- 1ST: PROPERTIES WITH SLOPES THAT ARE 1.5:1 OR STEEPER
- 2ND: PROPERTIES WITH SLOPES THAT ARE 1.7:1 OR STEEPER
- 3RD: PROPERTIES WITH SLOPES THAT ARE 2.0:1 OR STEEPER

SOURCING PRIORITY

- 1ST: MATERIAL FROM STATE PROPERTY PLACED DURING EMERGENCY REPAIR (2004).
- 2ND: MATERIAL FROM PROPERTIES WITH 2.0:1 SLOPES
- 3RD: MATERIAL FROM PROPERTIES WITH 1.7:1 SLOPES
- 4TH: MATERIAL FROM PROPERTIES WITH 1.5:1 SLOPES

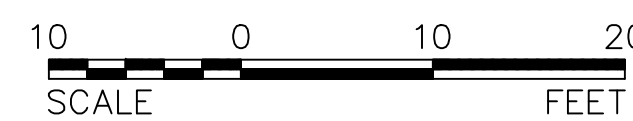
ROCK REVETMENT PLACEMENT AND SOURCING			
LOT	SLOPE	PLACEMENT (TONS)	SOURCING (TONS)
55	2.0:1	0	0
54	2.0:1	0	0
15	2.0:1	0	0

LEGEND

- AREAS REQUIRING ROCK PLACEMENT
- ROCK AVAILABLE FOR SOURCING

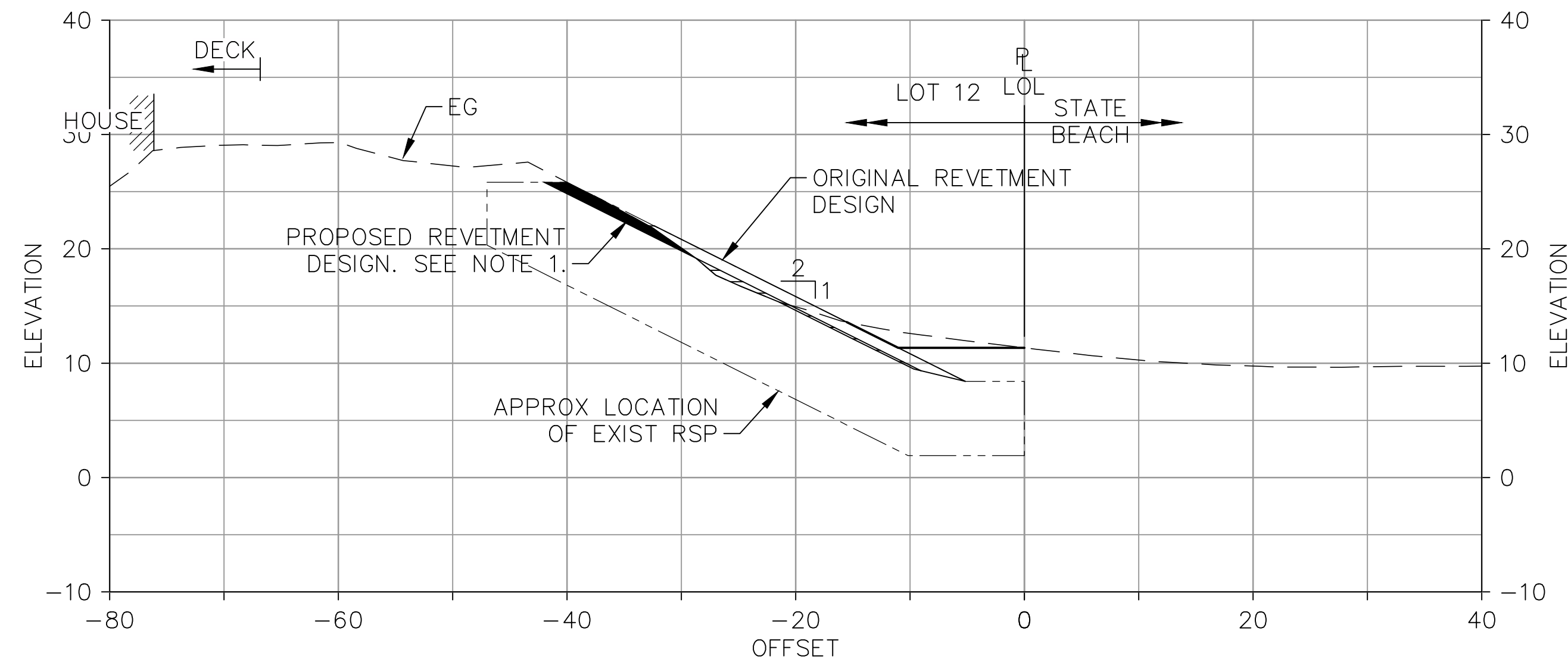


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AUGUST 2023**

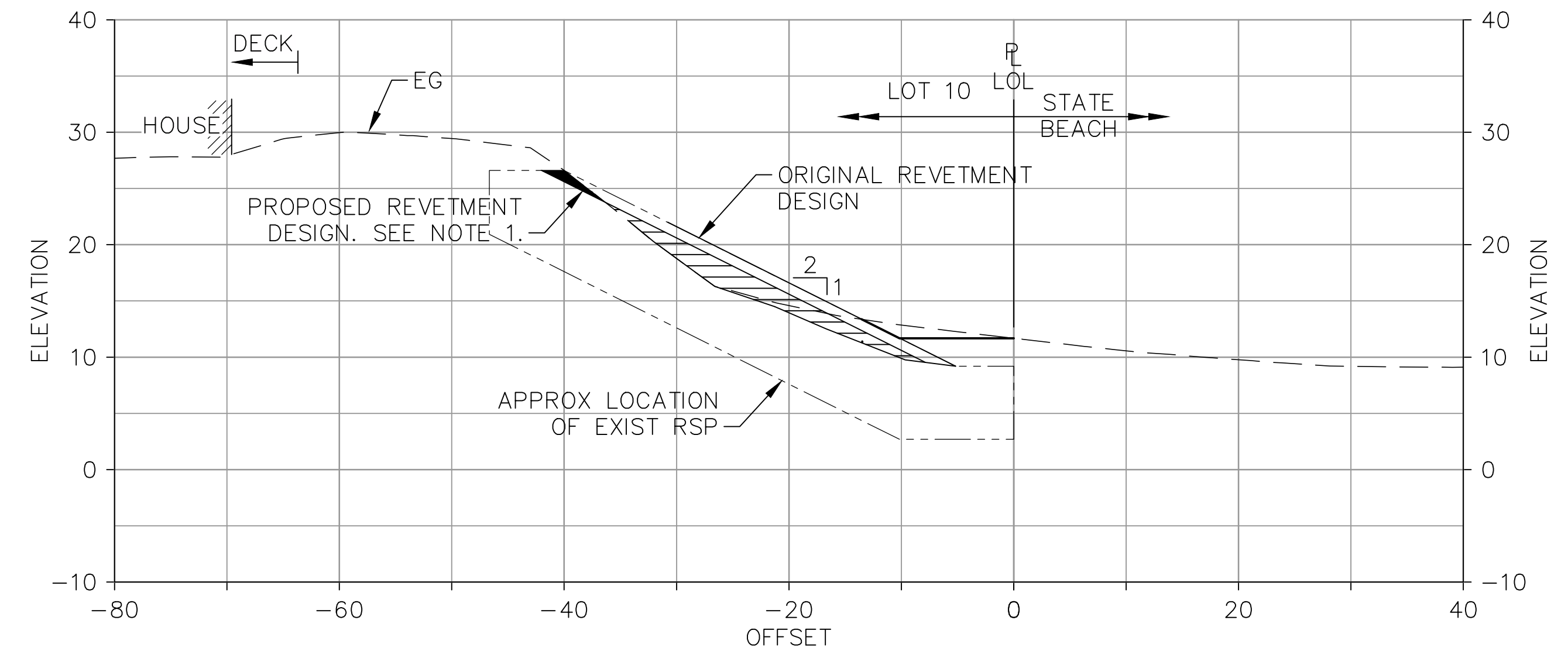


<p>CE&G A division of Haley & Aldrich</p>		785 Ygnacio Valley Road Walnut Creek, CA 94596 Phone: (925) 935-9771		<p>PAJARO DUNES GHAD</p> ROCK REVETMENT MAINTENANCE PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA SECTIONS (1 OF 7)	
		DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO	PROJECT NO. 190780

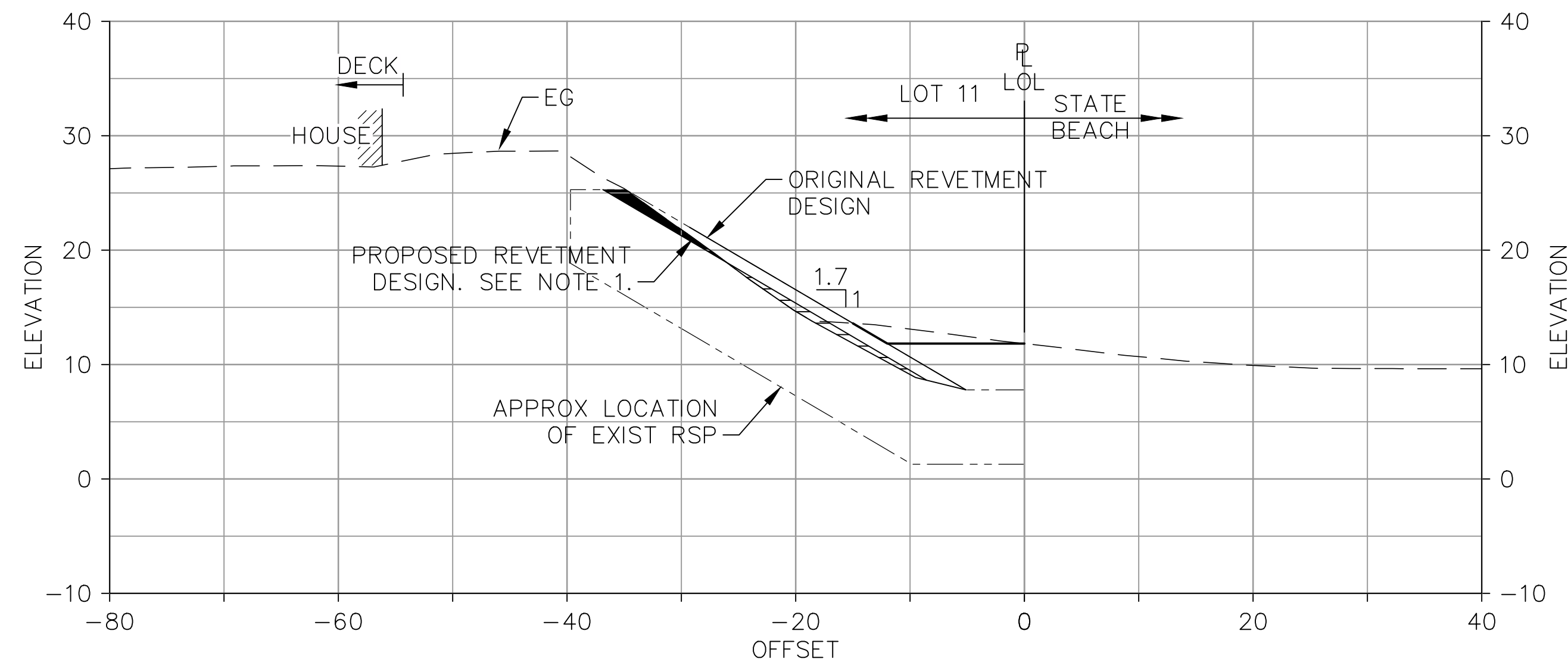
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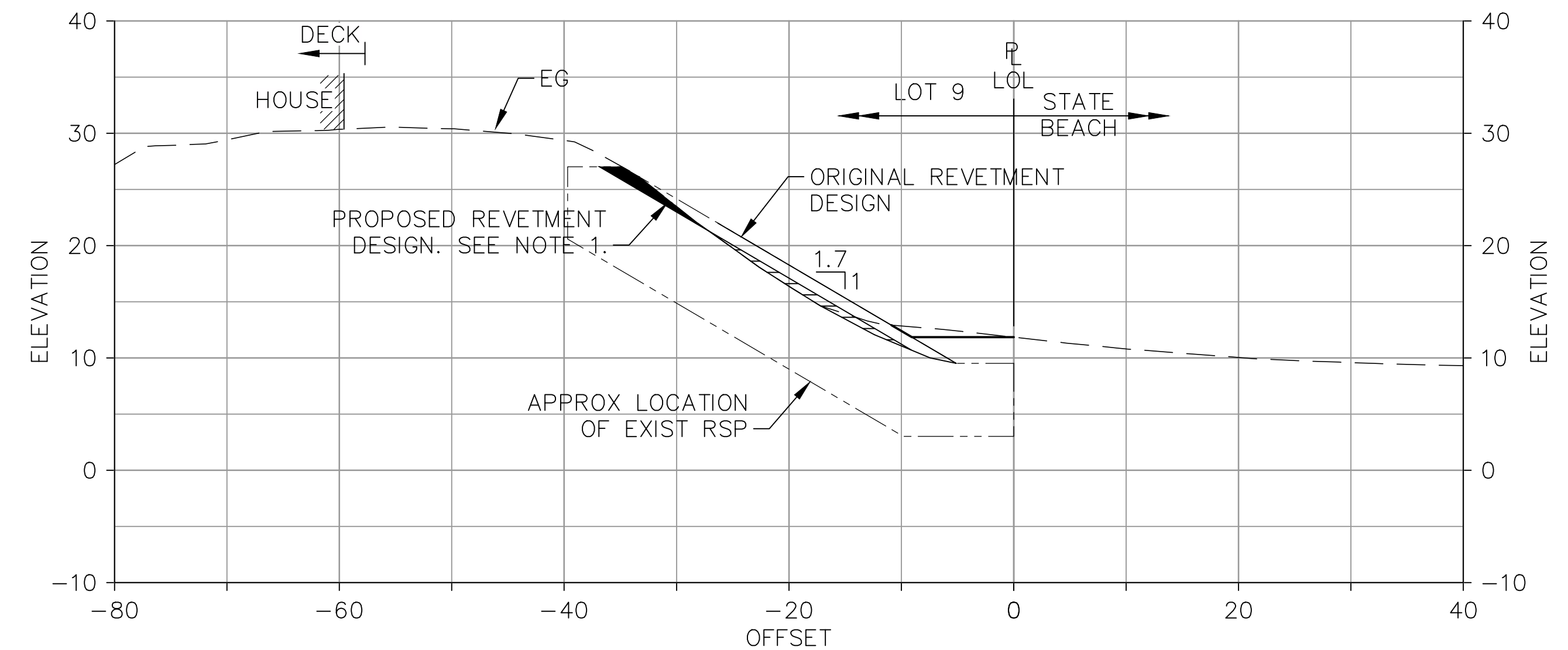
SECTION LOT 12
STA 1+40 6



SECTION LOT 10
STA 3+00 6



SECTION LOT 11
STA 2+20 6



SECTION LOT 9
STA 3+70 6

NOTES

1. PROPOSED REVETMENT DESIGN SLOPE MAY BE LOWERED UP TO 24" (TYP.) BELOW THE ORIGINAL REVETMENT DESIGN SLOPE (TOWARDS LOTS) FOR SELECTED SECTIONS. CONTRACTOR MAY SOURCE THE MATERIAL REMAINING IN FRONT OF THE PROPOSED REVETMENT SLOPE, IF NEEDED. SEE SOURCING PRIORITY LIST BELOW.
2. THERE WILL BE VARIABILITY IN CROSS SECTIONS ACROSS EACH LOT

PLACEMENT PRIORITY

- 1ST: PROPERTIES WITH SLOPES THAT ARE 1.5:1 OR STEEPER
- 2ND: PROPERTIES WITH SLOPES THAT ARE 1.7:1 OR STEEPER
- 3RD: PROPERTIES WITH SLOPES THAT ARE 2.0:1 OR STEEPER

SOURCING PRIORITY

- 1ST: MATERIAL FROM STATE PROPERTY PLACED DURING EMERGENCY REPAIR (2004).
- 2ND: MATERIAL FROM PROPERTIES WITH 2.0:1 SLOPES
- 3RD: MATERIAL FROM PROPERTIES WITH 1.7:1 SLOPES
- 4TH: MATERIAL FROM PROPERTIES WITH 1.5:1 SLOPES

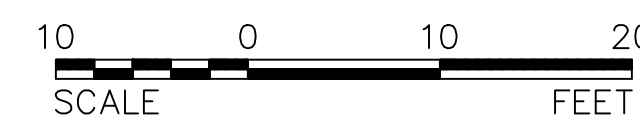
ROCK REVETMENT PLACEMENT AND SOURCING			
LOT	SLOPE	PLACEMENT (TONS)	SOURCING (TONS)
12	2.0:1	22	37
11	1.7:1	34	26
10	2.0:1	152	11
9	1.7:1	31	21

LEGEND

- AREAS REQUIRING ROCK PLACEMENT
- ROCK AVAILABLE FOR SOURCING

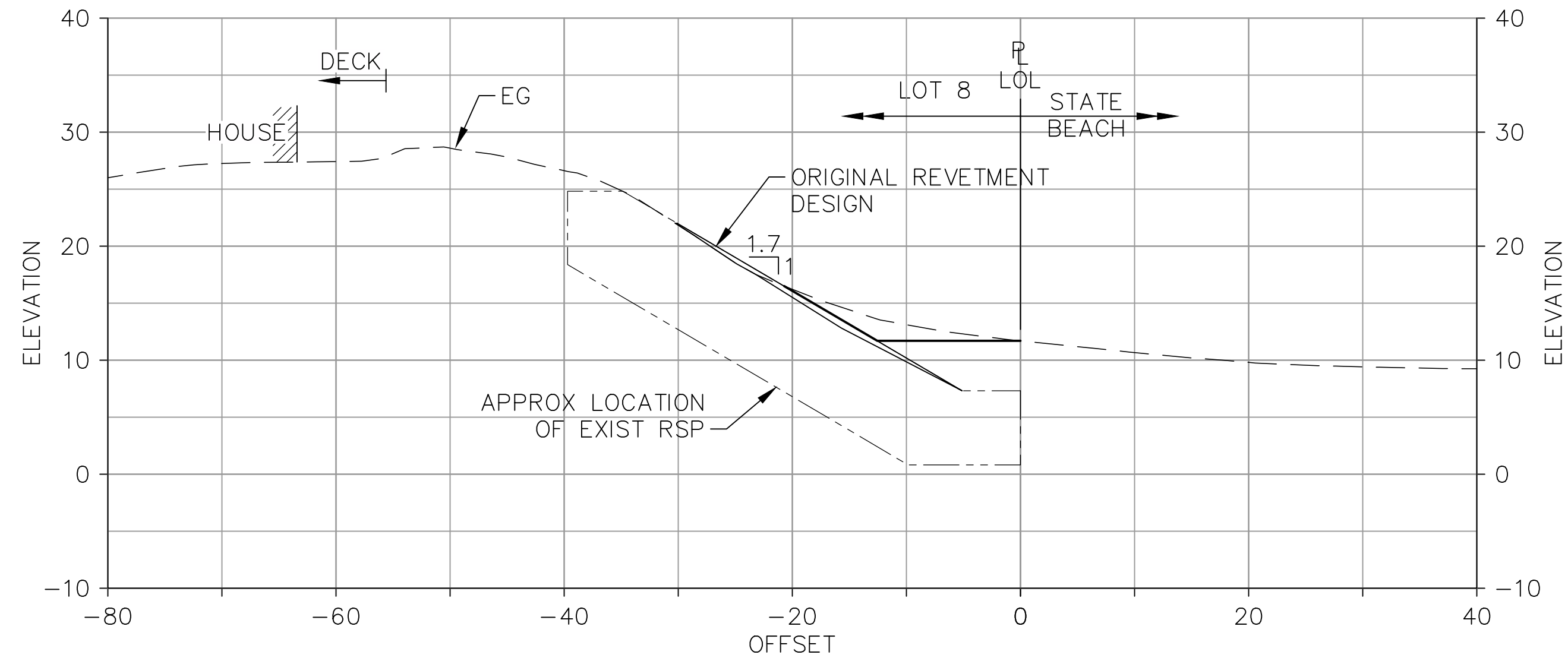


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AUGUST 2023**

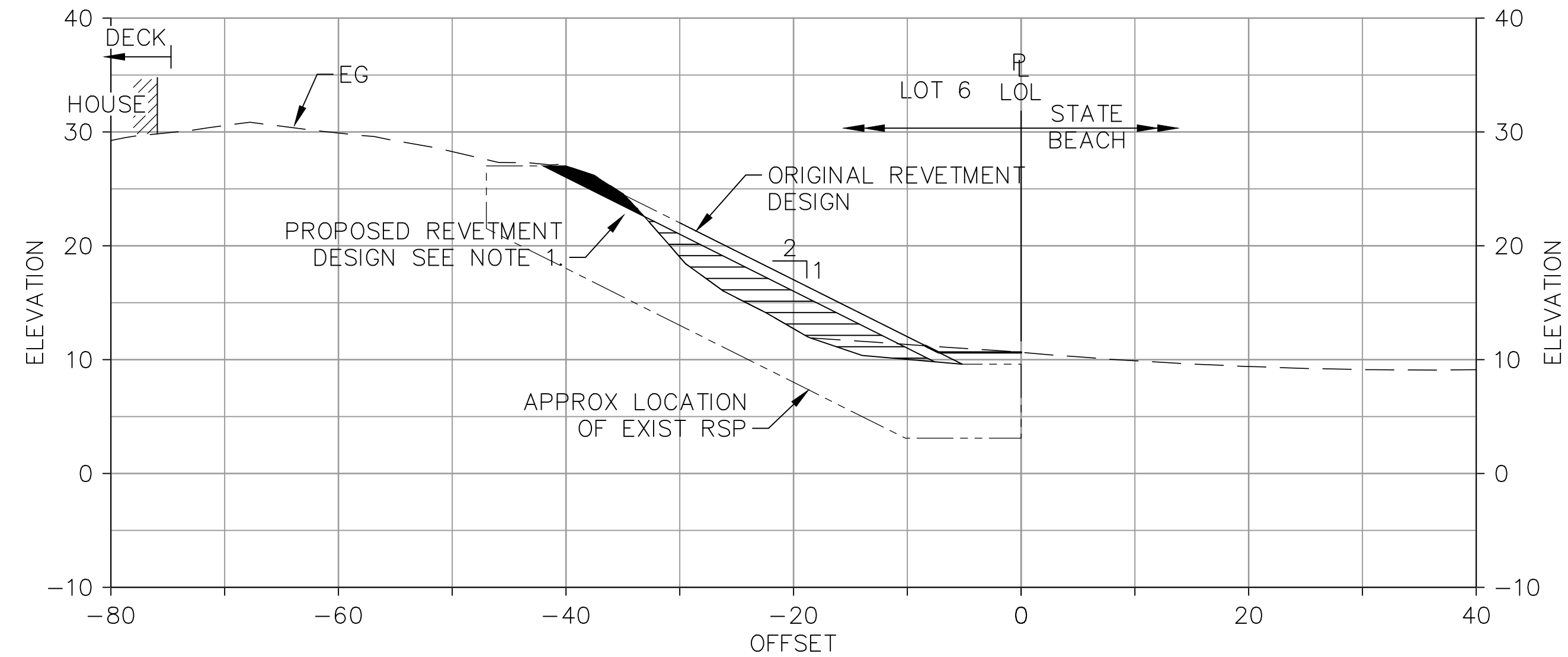


CE&G A division of Haley & Aldrich		785 Ygnacio Valley Road Walnut Creek, CA 94596 Phone: (925) 935-9771		PAJARO DUNES GHAD	
ROCK REVETMENT MAINTENANCE PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA SECTIONS (2 OF 7)		DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO	PROJECT NO. 190780
		DATE AUGUST 29, 2023	SHEET NO. 11	OF 16	

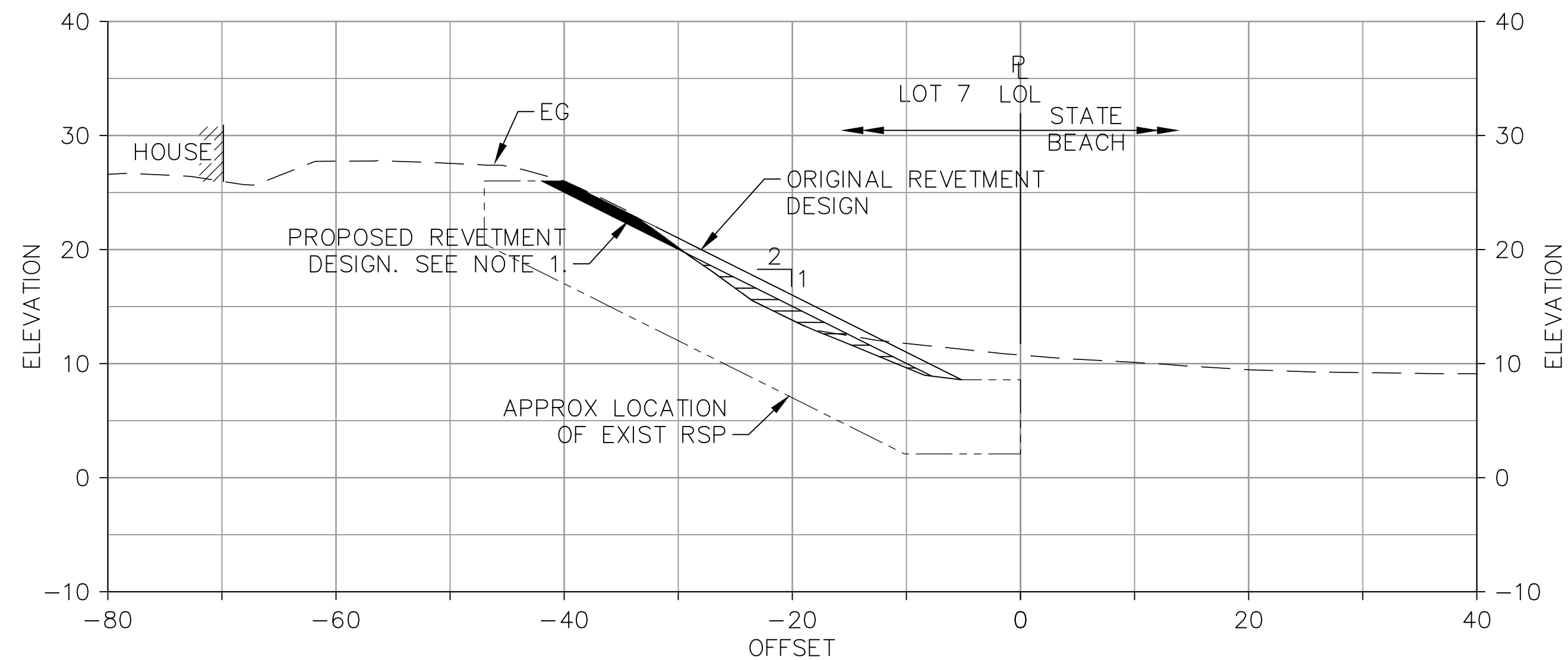
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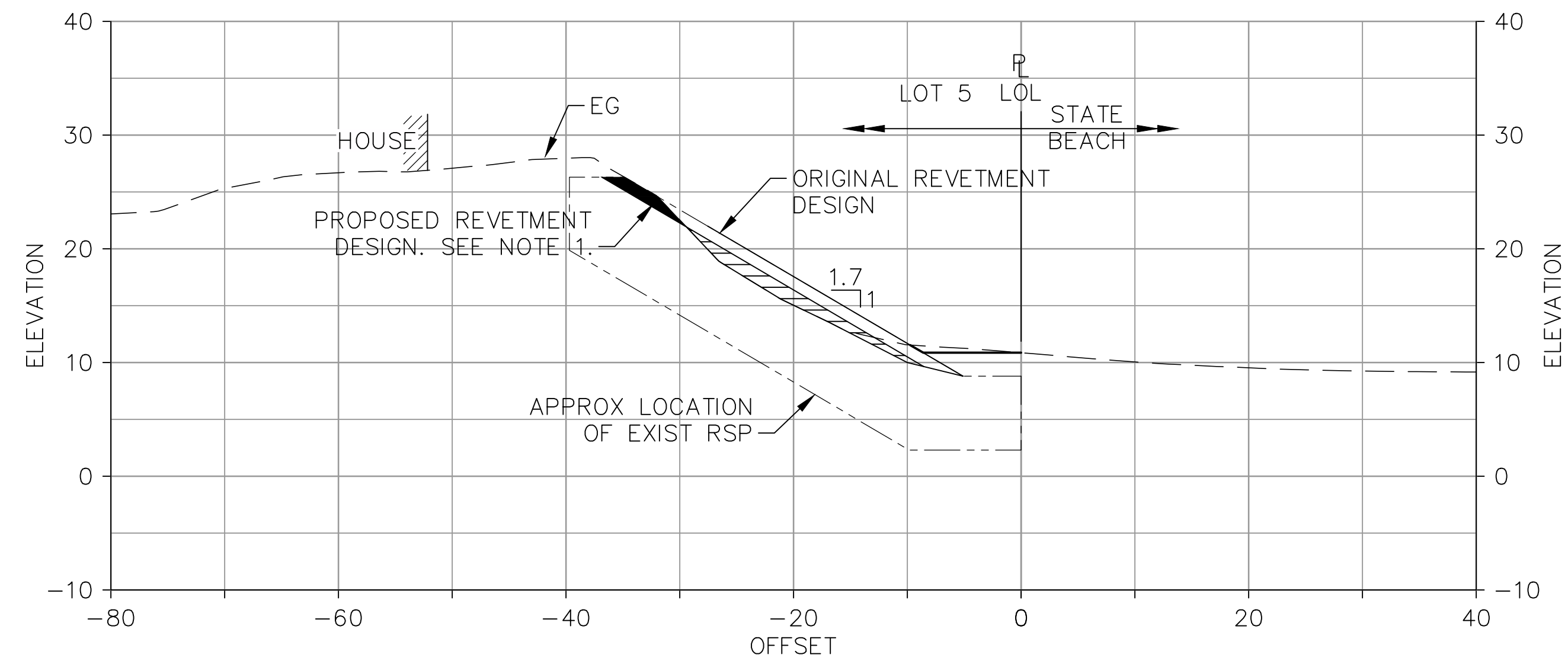
SECTION LOT 8
6
STA 4+30



SECTION LOT 6
7
STA 5+75



SECTION LOT 7
6
STA 5+15



SECTION LOT 5
7
STA 6+55

NOTES

1. PROPOSED REVETMENT DESIGN SLOPE MAY BE LOWERED UP TO 24" (TYP.) BELOW THE ORIGINAL REVETMENT DESIGN SLOPE (TOWARDS LOTS) FOR SELECTED SECTIONS. CONTRACTOR MAY SOURCE THE MATERIAL REMAINING IN FRONT OF THE PROPOSED REVETMENT SLOPE, IF NEEDED. SEE SOURCING PRIORITY LIST BELOW.
2. THERE WILL BE VARIABILITY IN CROSS SECTIONS ACROSS EACH LOT

PLACEMENT PRIORITY

- 1ST: PROPERTIES WITH SLOPES THAT ARE 1.5:1 OR STEEPER
- 2ND: PROPERTIES WITH SLOPES THAT ARE 1.7:1 OR STEEPER
- 3RD: PROPERTIES WITH SLOPES THAT ARE 2.0:1 OR STEEPER

SOURCING PRIORITY

- 1ST: MATERIAL FROM STATE PROPERTY PLACED DURING EMERGENCY REPAIR (2004).
- 2ND: MATERIAL FROM PROPERTIES WITH 2.0:1 SLOPES
- 3RD: MATERIAL FROM PROPERTIES WITH 1.7:1 SLOPES
- 4TH: MATERIAL FROM PROPERTIES WITH 1.5:1 SLOPES

ROCK REVETMENT PLACEMENT AND SOURCING			
LOT	SLOPE	PLACEMENT (TONS)	SOURCING (TONS)
8	1.7:1	0	0
7	2.0:1	63	35
6	2.0:1	208	29
5	1.7:1	72	21

LEGEND

- AREAS REQUIRING ROCK PLACEMENT
- ROCK AVAILABLE FOR SOURCING



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AUGUST 2023**



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785 Ygnacio Valley Road
Walnut Creek, CA 94596
Phone: (925) 935-9771

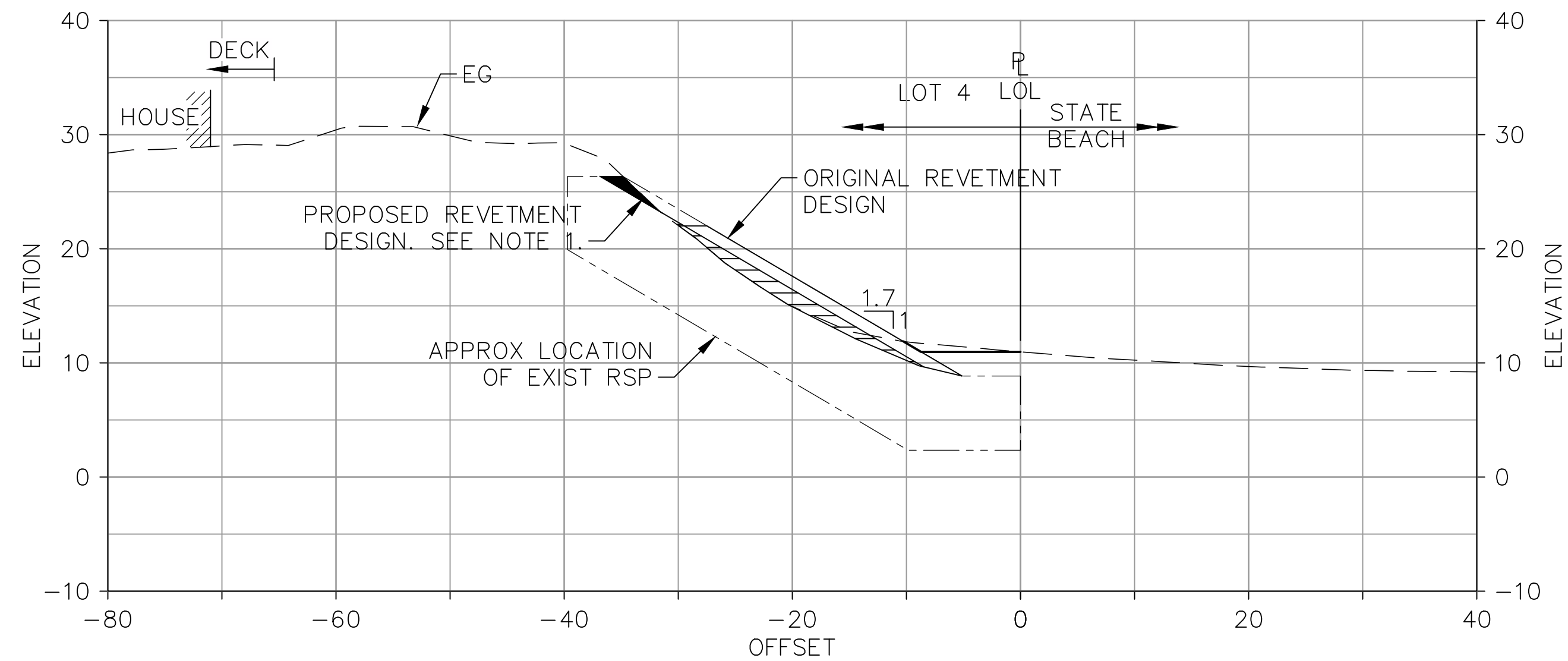
DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO
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PAJARO DUNES GHAD

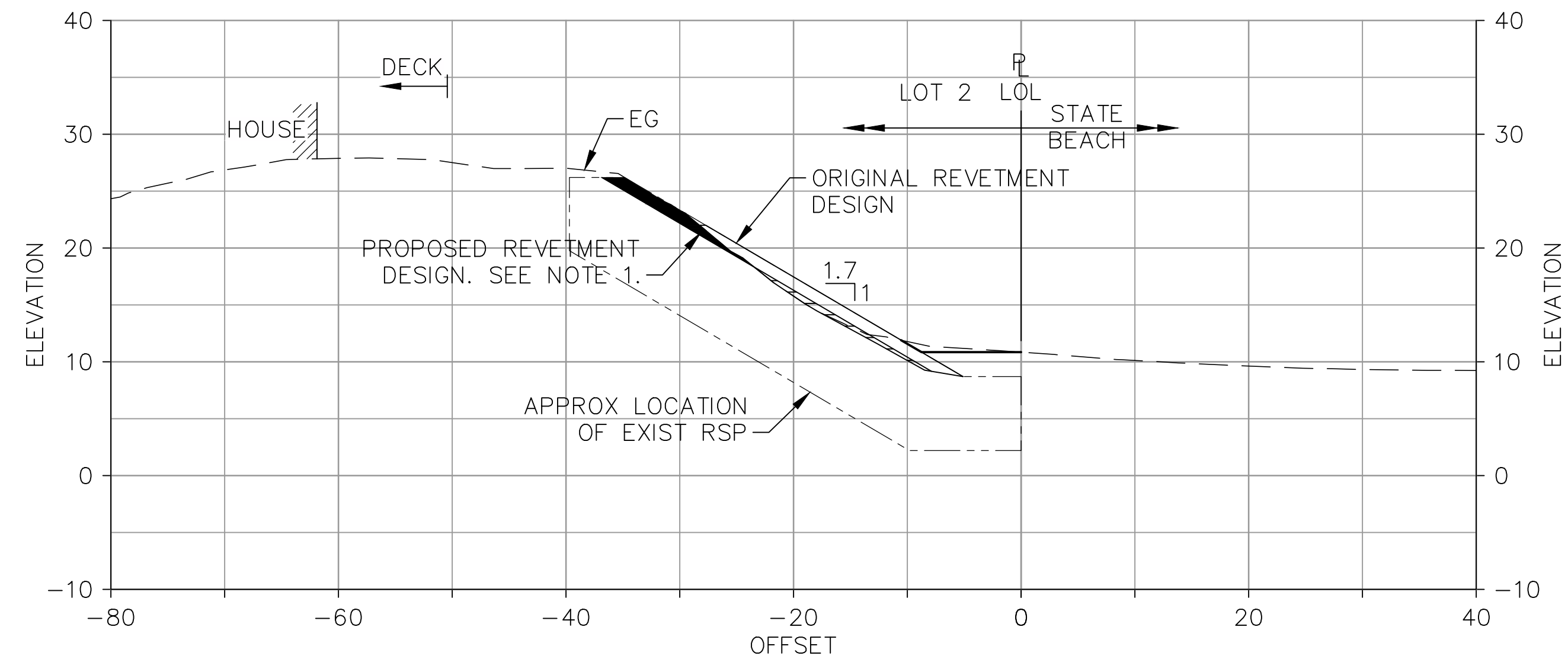
ROCK REVETMENT MAINTENANCE
PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA
SECTIONS (3 OF 7)

PROJECT NO. 190780	DATE AUGUST 29, 2023	SHEET NO. OF 12 OF 16
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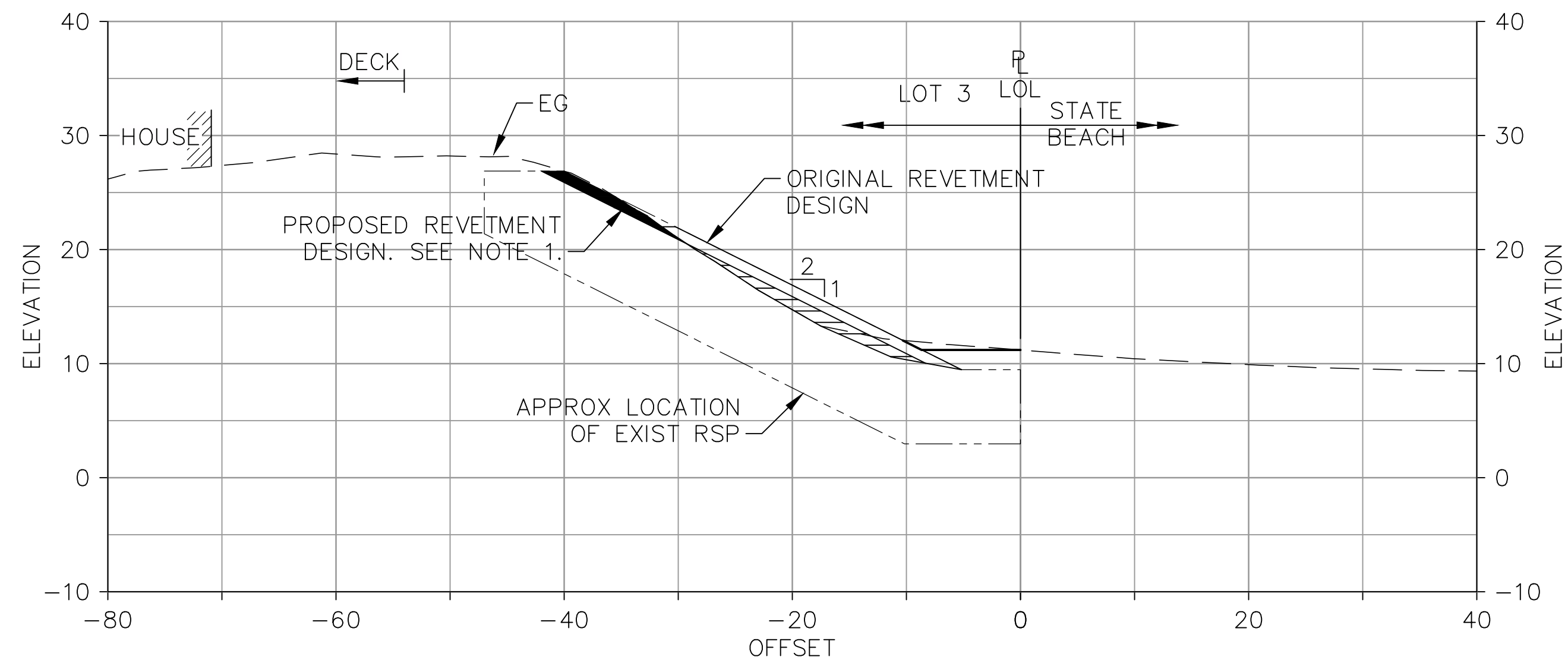
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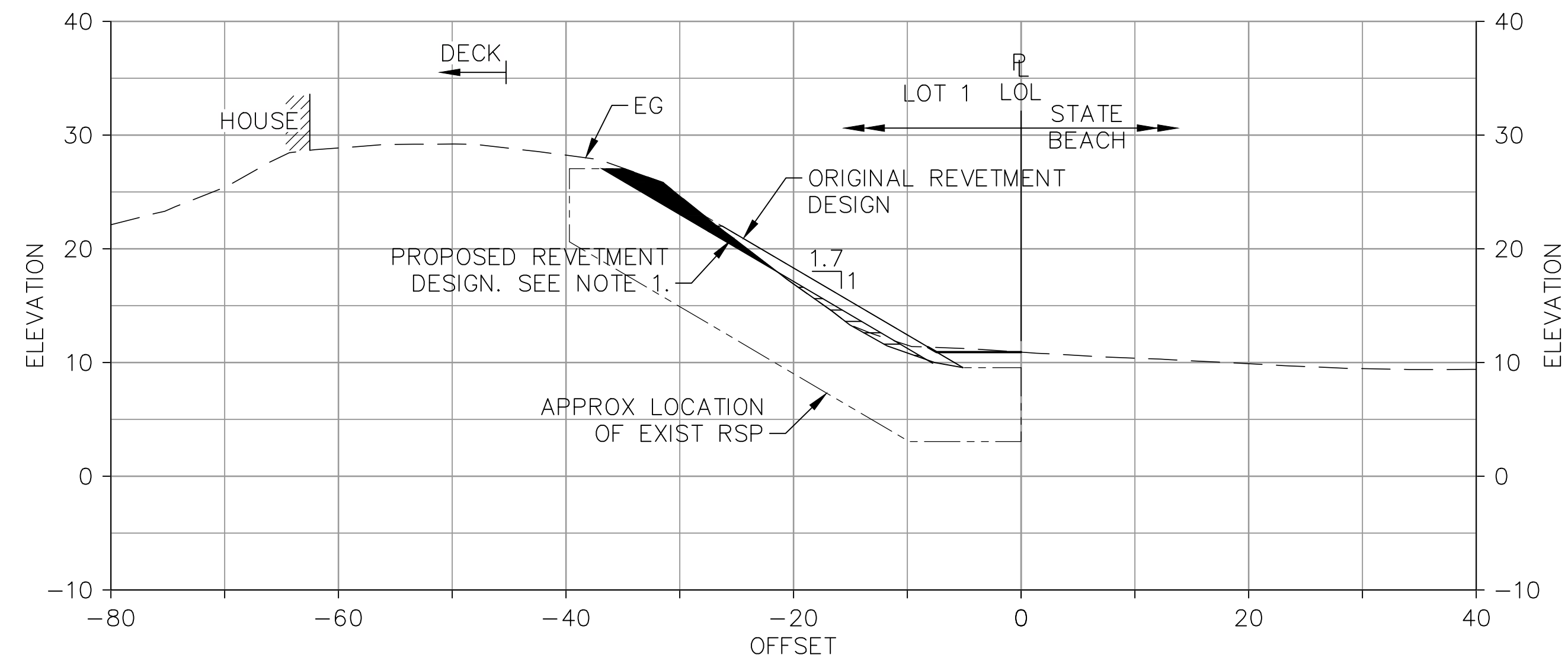
SECTION LOT 4
STA 7+30 7



SECTION LOT 2
STA 8+80 7



SECTION LOT 3
STA 8+10 7



SECTION LOT 1
STA 9+50 7

NOTES

1. PROPOSED REVETMENT DESIGN SLOPE MAY BE LOWERED UP TO 24" (TYP.) BELOW THE ORIGINAL REVETMENT DESIGN SLOPE (TOWARDS LOTS) FOR SELECTED SECTIONS. CONTRACTOR MAY SOURCE THE MATERIAL REMAINING IN FRONT OF THE PROPOSED REVETMENT SLOPE, IF NEEDED. SEE SOURCING PRIORITY LIST BELOW.
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PLACEMENT PRIORITY

- 1ST: PROPERTIES WITH SLOPES THAT ARE 1.5:1 OR STEEPER
- 2ND: PROPERTIES WITH SLOPES THAT ARE 1.7:1 OR STEEPER
- 3RD: PROPERTIES WITH SLOPES THAT ARE 2.0:1 OR STEEPER

SOURCING PRIORITY

- 1ST: MATERIAL FROM STATE PROPERTY PLACED DURING EMERGENCY REPAIR (2004).
- 2ND: MATERIAL FROM PROPERTIES WITH 2.0:1 SLOPES
- 3RD: MATERIAL FROM PROPERTIES WITH 1.7:1 SLOPES
- 4TH: MATERIAL FROM PROPERTIES WITH 1.5:1 SLOPES

ROCK REVETMENT PLACEMENT AND SOURCING			
LOT	SLOPE	PLACEMENT (TONS)	SOURCING (TONS)
4	1.7:1	102	15
3	2.0:1	61	31
2	1.7:1	22	36
1	1.7:1	24	54

LEGEND

- AREAS REQUIRING ROCK PLACEMENT
- ROCK AVAILABLE FOR SOURCING



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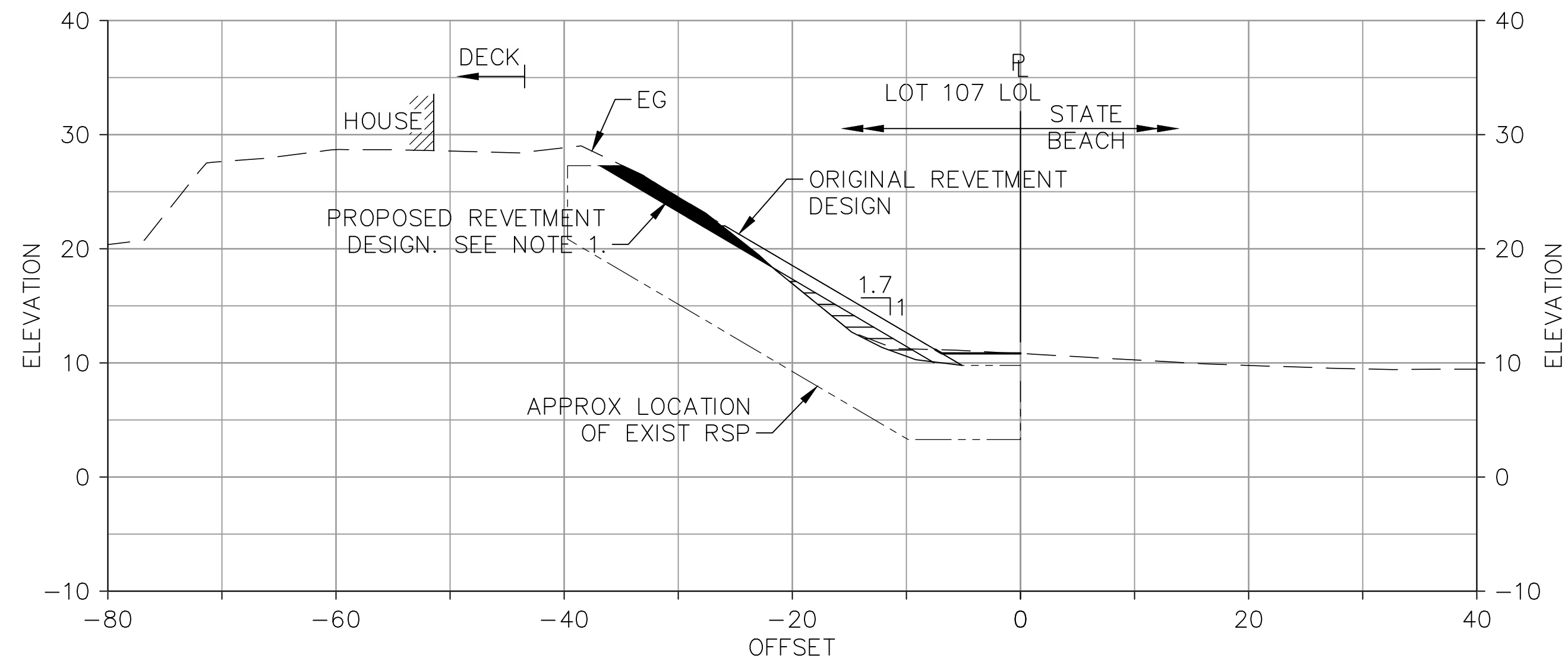
785 Ygnacio Valley Road
Walnut Creek, CA 94596
Phone: (925) 935-9771

PAJARO DUNES GHAD

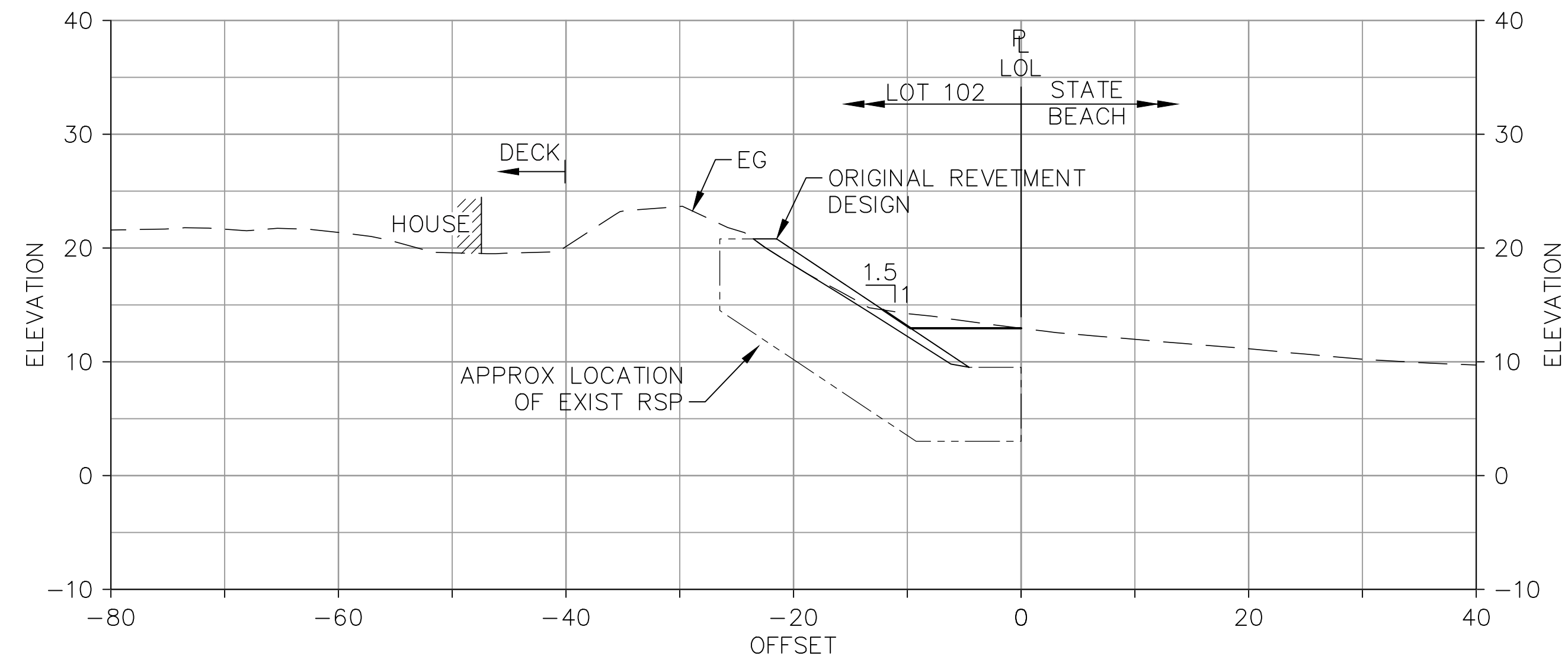
ROCK REVETMENT MAINTENANCE
PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA
SECTIONS (4 OF 7)

DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO	PROJECT NO. 190780	DATE AUGUST 29, 2023	SHEET NO. OF 13 OF 16
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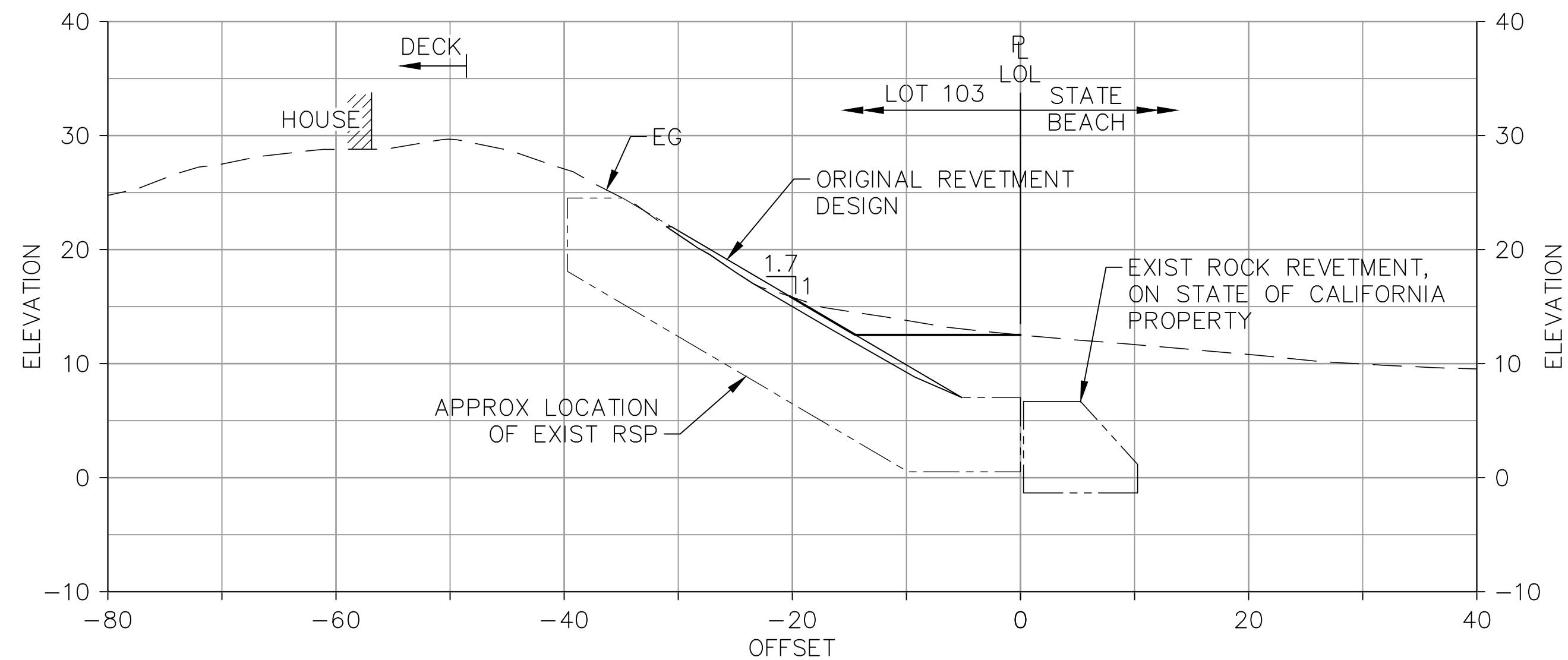
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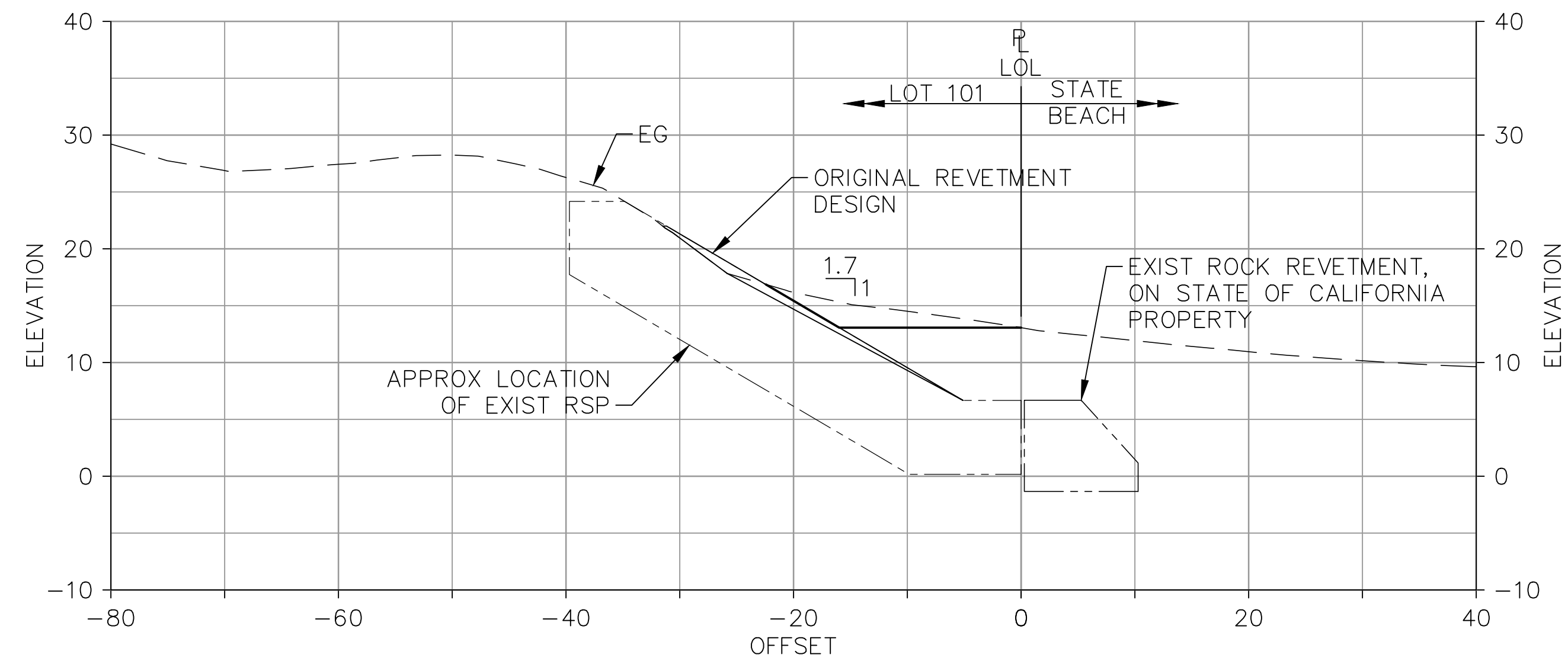
SECTION LOT 107
STA 10+20 7



SECTION LOT 102
STA 13+70 8



SECTION LOT 103
STA 13+00 8



SECTION LOT 101
STA 14+40 8

NOTES

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2. THERE WILL BE VARIABILITY IN CROSS SECTIONS ACROSS EACH LOT

PLACEMENT PRIORITY

- 1ST: PROPERTIES WITH SLOPES THAT ARE 1.5:1 OR STEEPER
- 2ND: PROPERTIES WITH SLOPES THAT ARE 1.7:1 OR STEEPER
- 3RD: PROPERTIES WITH SLOPES THAT ARE 2.0:1 OR STEEPER

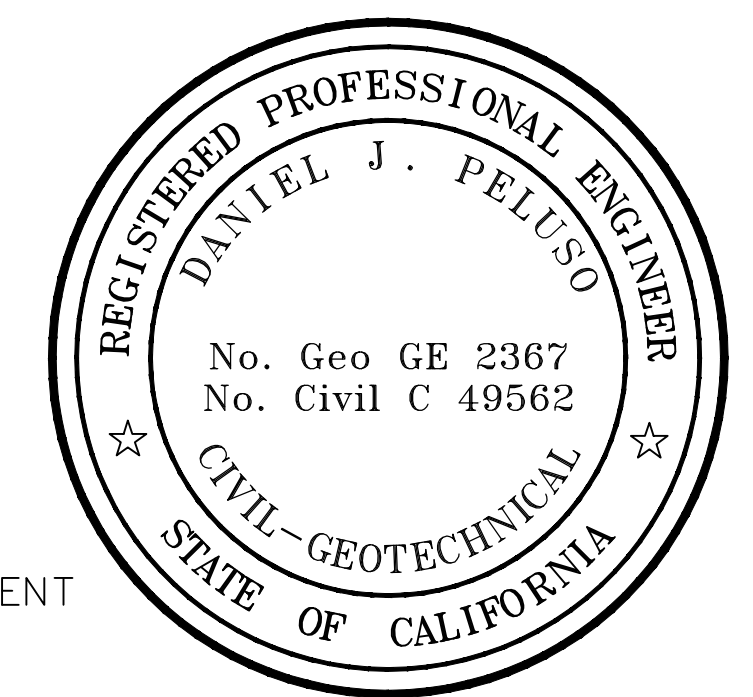
SOURCING PRIORITY

- 1ST: MATERIAL FROM STATE PROPERTY PLACED DURING EMERGENCY REPAIR (2004).
- 2ND: MATERIAL FROM PROPERTIES WITH 2.0:1 SLOPES
- 3RD: MATERIAL FROM PROPERTIES WITH 1.7:1 SLOPES
- 4TH: MATERIAL FROM PROPERTIES WITH 1.5:1 SLOPES

ROCK REVETMENT PLACEMENT AND SOURCING			
LOT	SLOPE	PLACEMENT (TONS)	SOURCING (TONS)
107	1.7:1	42	49
103	1.7:1	0	0
102	1.5:1	0	0
101	1.7:1	0	0

LEGEND

- AREAS REQUIRING ROCK PLACEMENT
- ROCK AVAILABLE FOR SOURCING

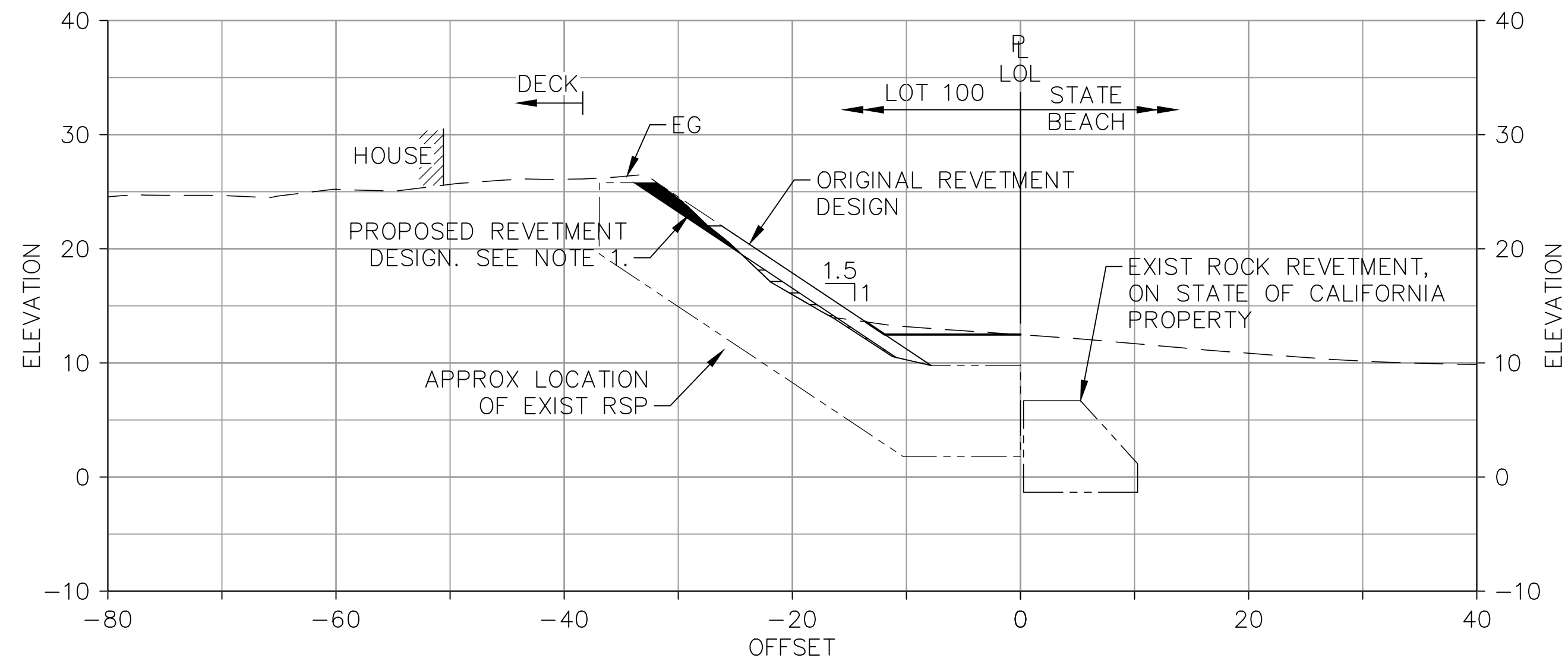


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AUGUST 2023**

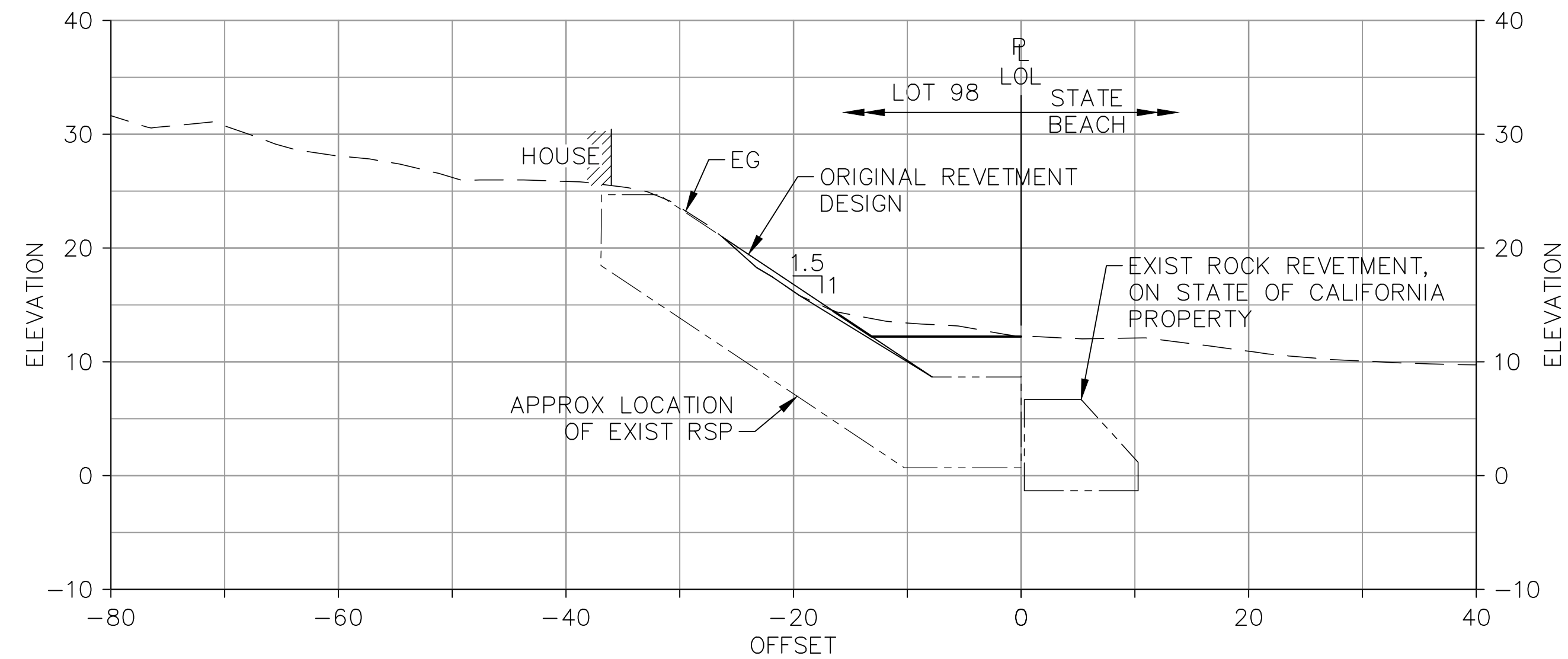


CE&G A division of Haley & Aldrich		785 Ygnacio Valley Road Walnut Creek, CA 94596 Phone: (925) 935-9771		PAJARO DUNES GHAD	
				ROCK REVETMENT MAINTENANCE PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA SECTIONS (5 OF 7)	
DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO	PROJECT NO. 190780	DATE AUGUST 29, 2023	SHEET NO. OF 14 OF 16

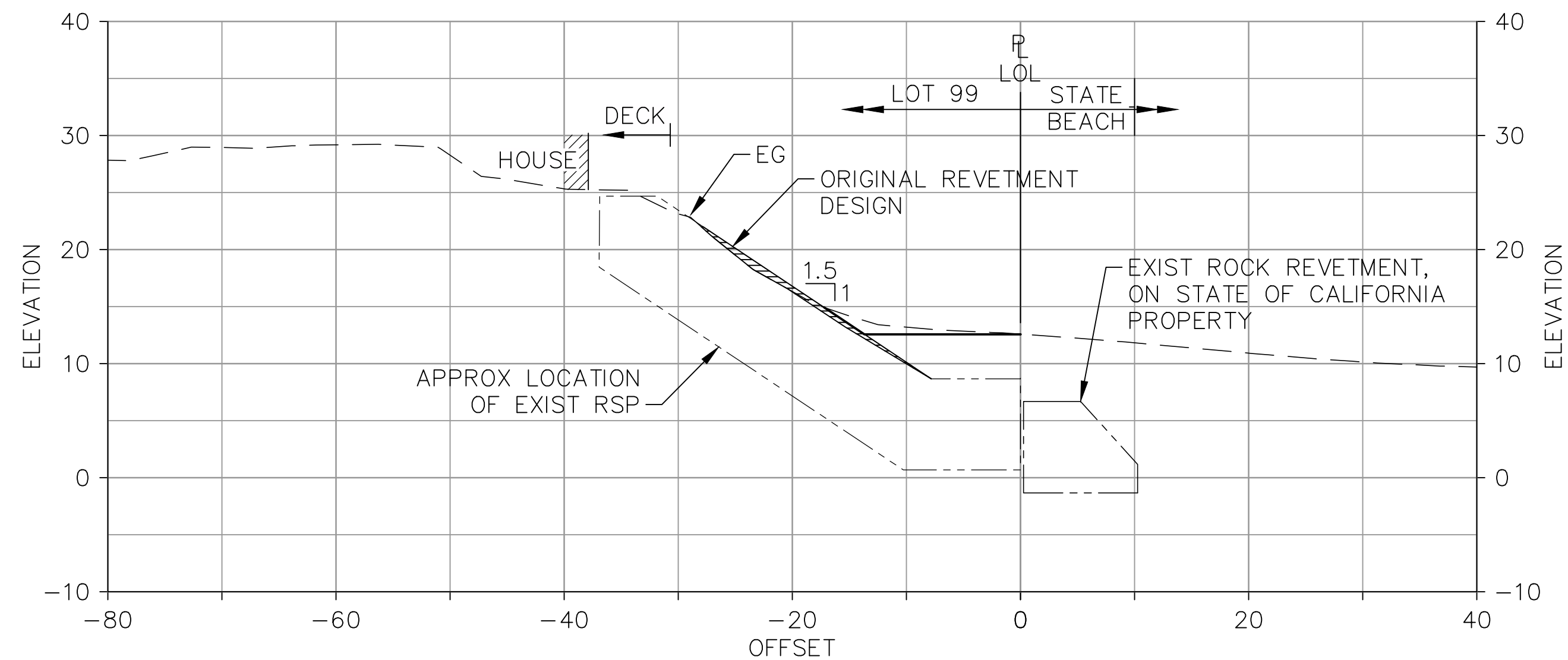
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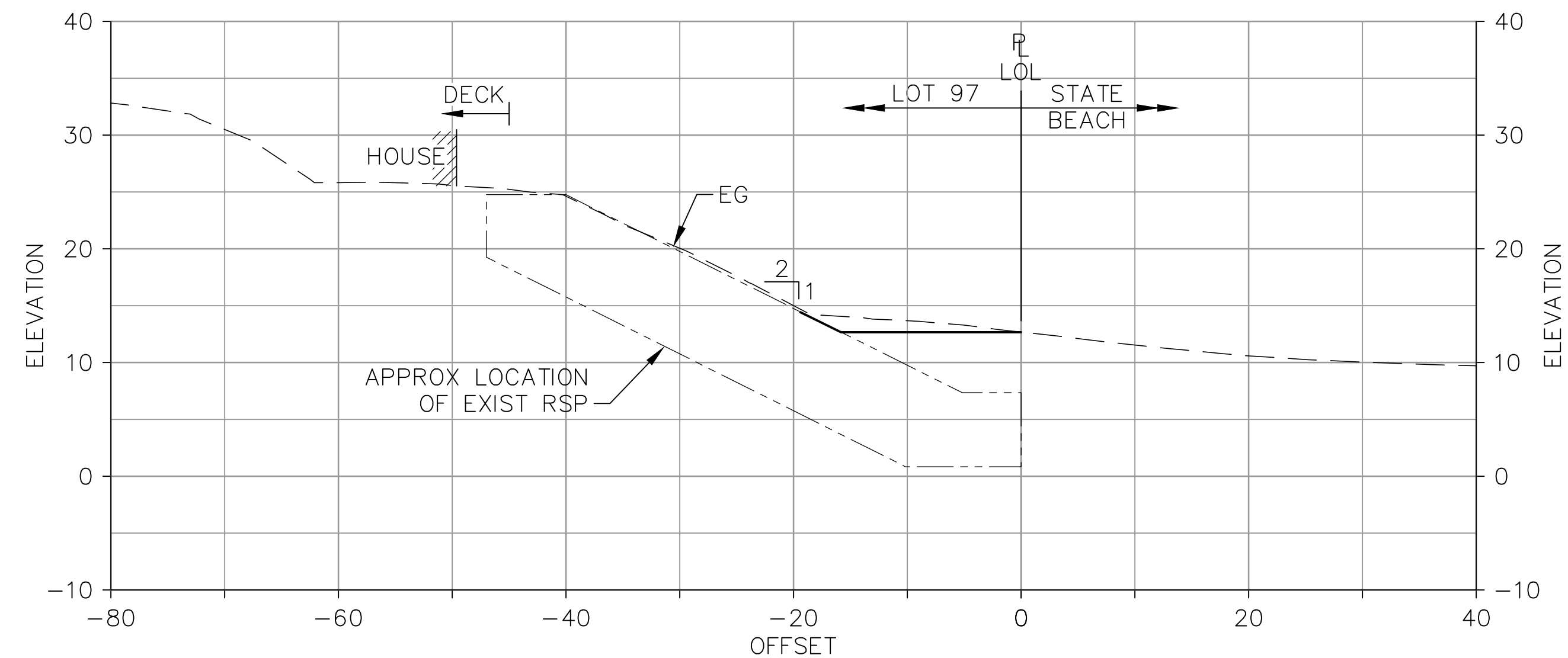
SECTION LOT 100
STA 15+10 8



SECTION LOT 98
STA 16+45 9



SECTION LOT 99
STA 15+80 9



SECTION LOT 97
STA 17+15 9

NOTES

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- 3RD: PROPERTIES WITH SLOPES THAT ARE 2.0:1 OR STEEPER

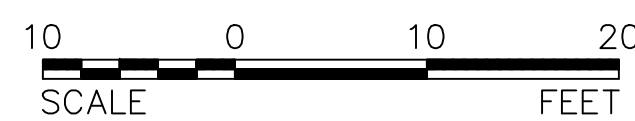
ROCK REVETMENT PLACEMENT AND SOURCING			
LOT	SLOPE	PLACEMENT (TONS)	SOURCING (TONS)
100	1.5:1	16	24
99	1.5:1	30	0
98	1.5:1	0	0
97	2.0:1	0	0

LEGEND

- AREAS REQUIRING ROCK PLACEMENT
- ROCK AVAILABLE FOR SOURCING

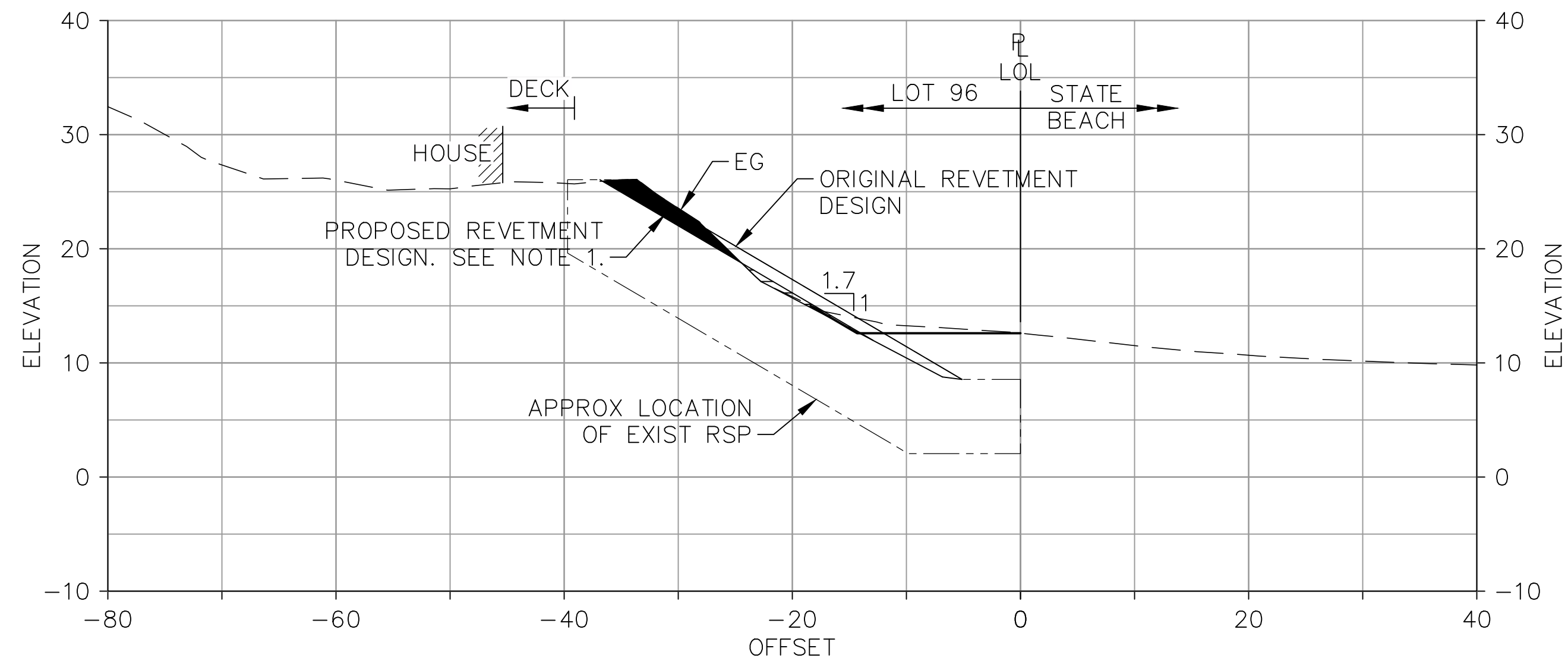


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AUGUST 2023**

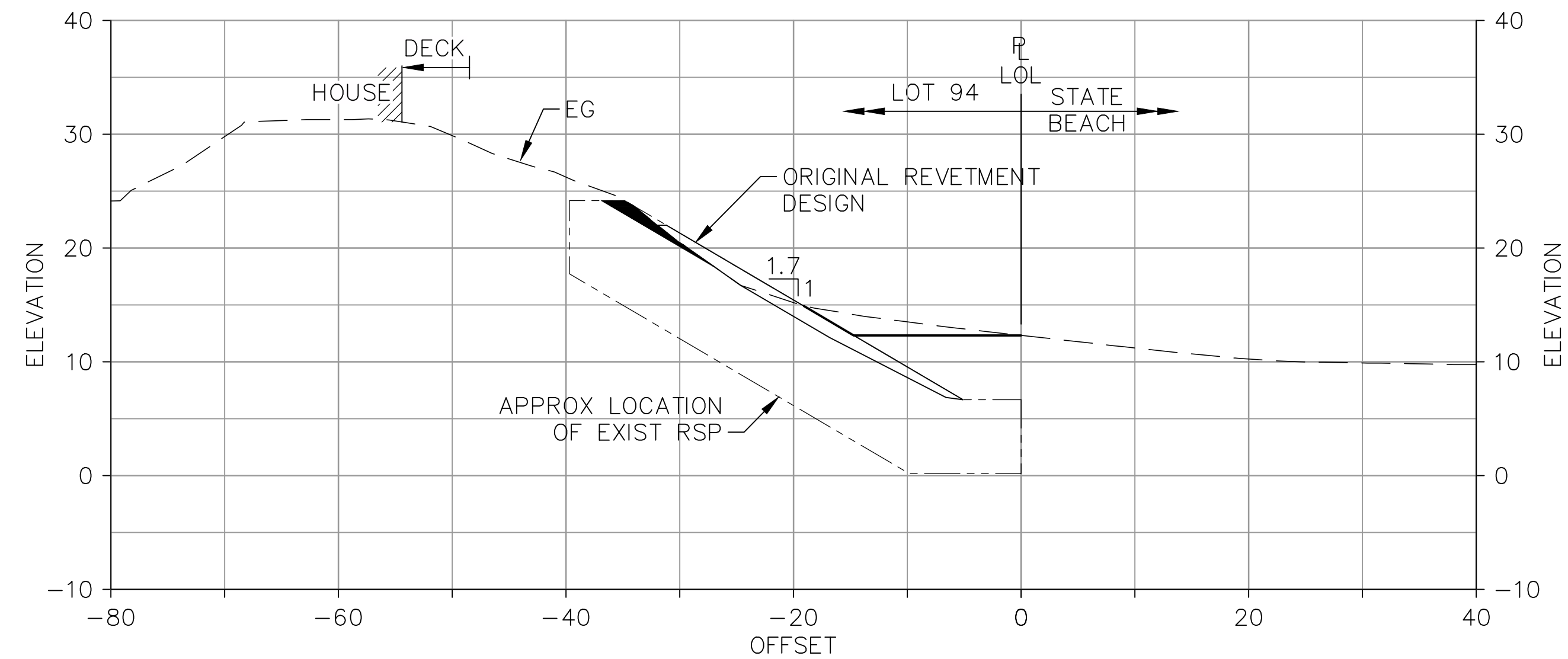


CE&G A division of Haley & Aldrich		785 Ygnacio Valley Road Walnut Creek, CA 94596 Phone: (925) 935-9771		PAJARO DUNES GHAD	
				ROCK REVETMENT MAINTENANCE PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA SECTIONS (6 OF 7)	
DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO	PROJECT NO. 190780	DATE AUGUST 29, 2023	SHEET NO. OF 15 OF 16

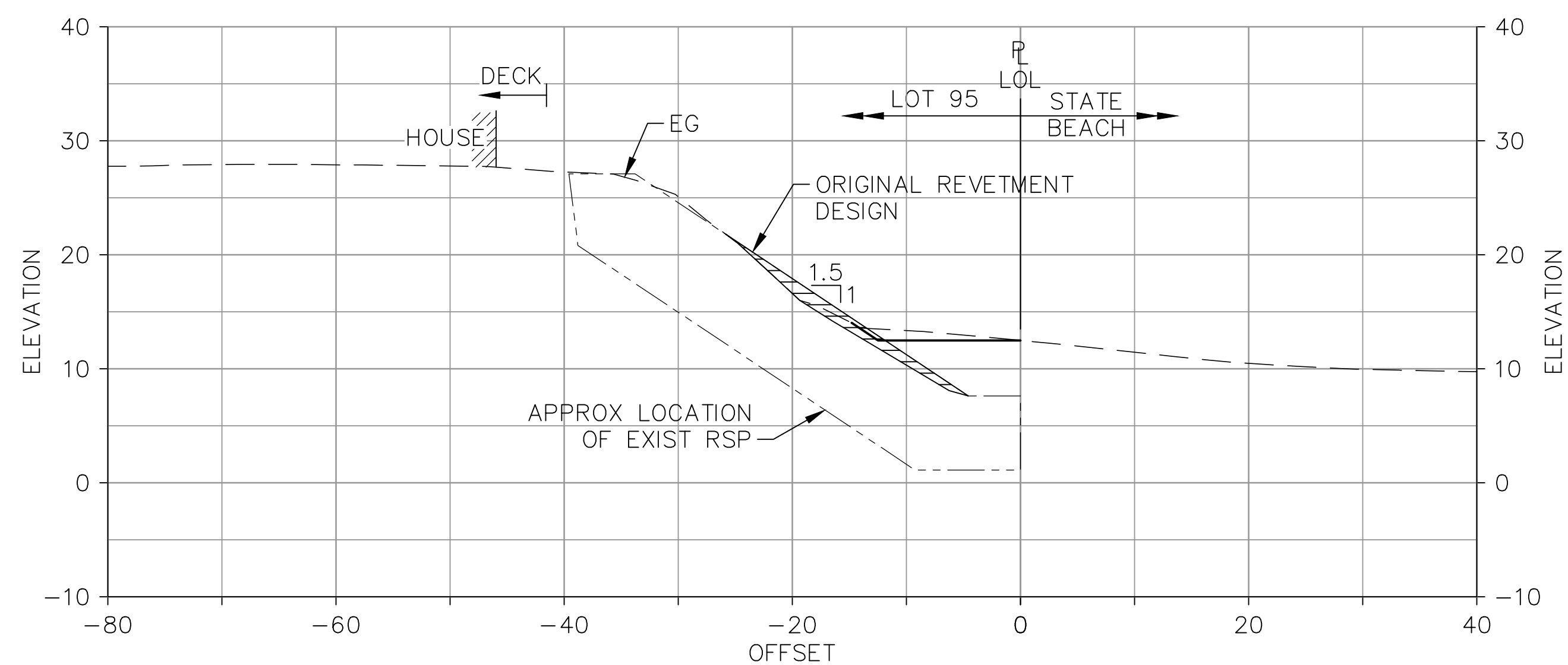
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SECTION **LOT 96**
STA 17+80 **9**



SECTION **LOT 94**
STA 19+25 **9**



SECTION **LOT 95**
STA 18+50 **9**

NOTES

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- 2ND: MATERIAL FROM PROPERTIES WITH 2.0:1 SLOPES
- 3RD: MATERIAL FROM PROPERTIES WITH 1.7:1 SLOPES
- 4TH: MATERIAL FROM PROPERTIES WITH 1.5:1 SLOPES

ROCK REVETMENT PLACEMENT AND SOURCING			
LOT	SLOPE	PLACEMENT (TONS)	SOURCING (TONS)
96	1.7:1	12	51
95	1.5:1	67	0
94	1.7:1	0	22

LEGEND

- AREAS REQUIRING ROCK PLACEMENT
- ROCK AVAILABLE FOR SOURCING



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AUGUST 2023**



 785 Ygnacio Valley Road Walnut Creek, CA 94596 Phone: (925) 935-9771		PAJARO DUNES GHAD			
		ROCK REVETMENT MAINTENANCE PAJARO DUNES RESORT, WATSONVILLE, CALIFORNIA SECTIONS (7 OF 7)			
DESIGNED C. HOCKETT	DRAWN K. DROZYNSKA	CHECKED D. PELUSO	PROJECT NO. 190780	DATE AUGUST 29, 2023	SHEET NO. OF 16 OF 16

APPENDIX B



In cooperation with:
NatureServe
www.natureserve.org

California Native Plant Society
www.cnps.org

California Natural Diversity Database

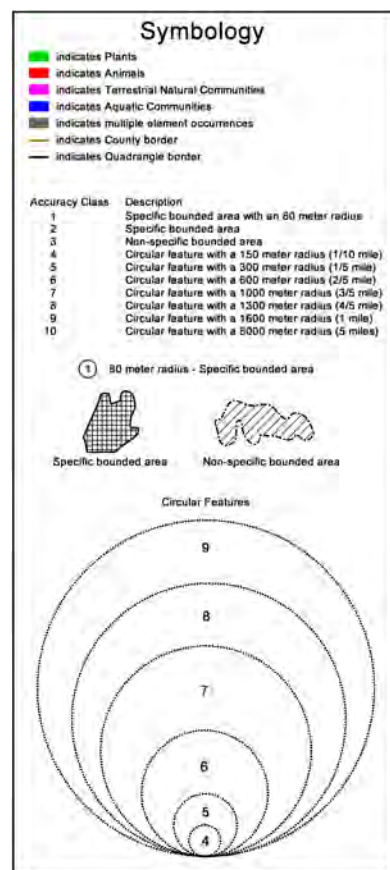
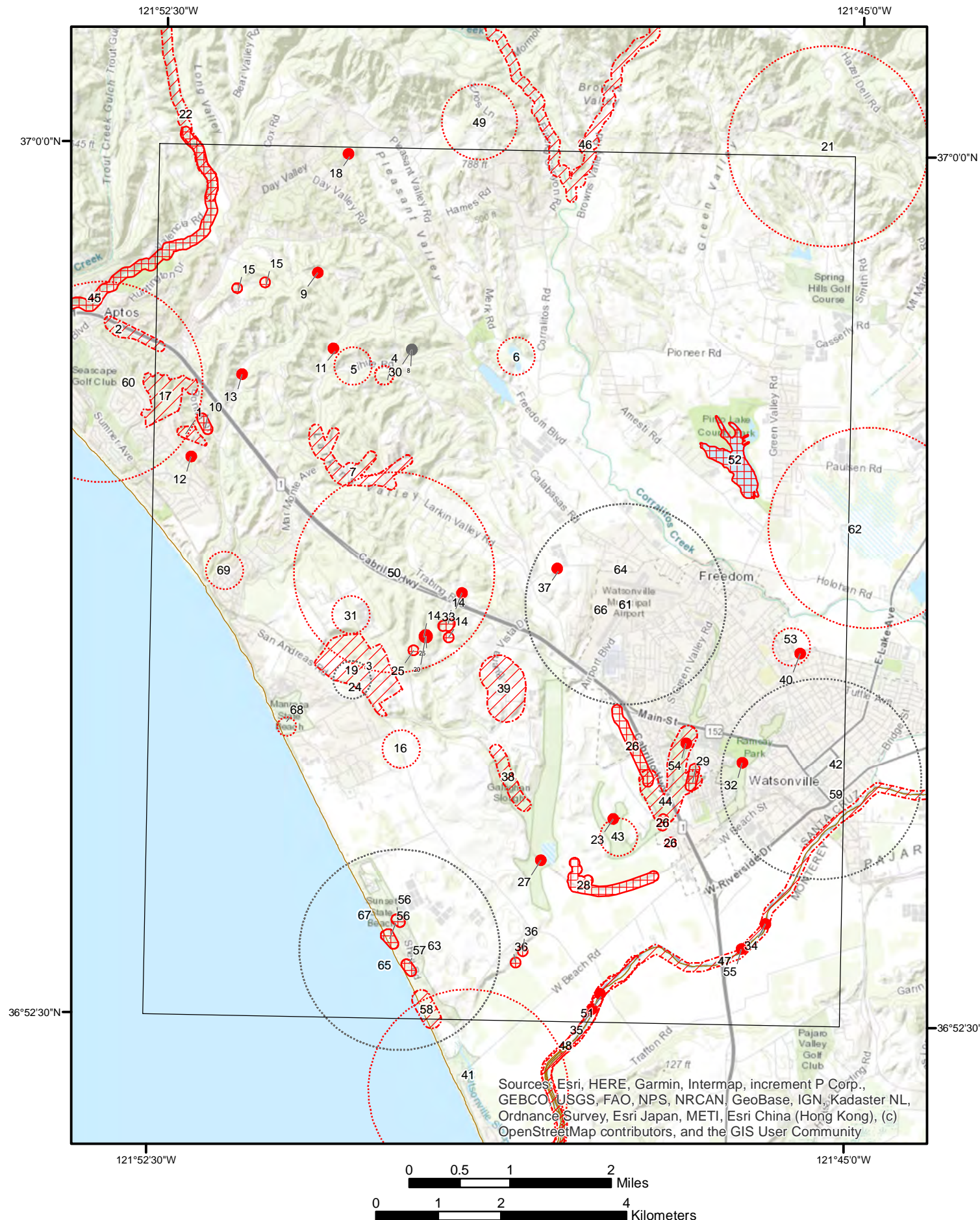
USGS Quadrangle: WATSONVILLE WEST - 36121H7

Prepared for: DAWN REIS ECOLOGICAL STUDIES
9/25/2024

Total Number of Animal Occurrences shown on this map: 69
See separate table for reference to animal E0 features.

DISCLAIMER

The California Natural Diversity Database (CNDDDB) is an ongoing and continuously updated database. While the information is complete and accurate to the best of our knowledge and ability, it does not constitute an official response from any state agency and will not in itself meet the requirements of the California Environmental Quality Act (CEQA). Information supplied is based on the material available at the time of the request and should not be regarded as complete data on the elements or areas being considered. The information must be used in consultation with the appropriate local, State and Federal officials. Absence of data does not constitute the basis for a negative declaration.



California Natural Diversity Database

USGS Quadrangle: WATSONVILLE WEST - 36121H7

Prepared for: DAWN REIS ECOLOGICAL STUDIES
9/25/2024

Ref	ElmCode	Occ #	Accuracy	Scientific Name
1	AAAAA01082	4	3	Ambystoma macrodactylum croceum
2	AAAAA01082	5	3	Ambystoma macrodactylum croceum
3	AAAAA01082	6	3	Ambystoma macrodactylum croceum
4	AAAAA01082	7	4	Ambystoma macrodactylum croceum
5	AAAAA01082	8	5	Ambystoma macrodactylum croceum
6	AAAAA01082	10	5	Ambystoma macrodactylum croceum
7	AAAAA01082	11	3	Ambystoma macrodactylum croceum
8	AAAAA01082	13	1	Ambystoma macrodactylum croceum
9	AAAAA01082	14	1	Ambystoma macrodactylum croceum
10	AAAAA01082	16	2	Ambystoma macrodactylum croceum
11	AAAAA01082	17	1	Ambystoma macrodactylum croceum
12	AAAAA01082	18	1	Ambystoma macrodactylum croceum
13	AAAAA01082	19	1	Ambystoma macrodactylum croceum
14	AAAAA01082	22	2	Ambystoma macrodactylum croceum
15	AAAAA01082	23	2	Ambystoma macrodactylum croceum
16	AAAAA01082	24	5	Ambystoma macrodactylum croceum
17	AAAAA01082	25	3	Ambystoma macrodactylum croceum
18	AAAAA01082	29	1	Ambystoma macrodactylum croceum
19	AAAAA01181	313	5	Ambystoma californiense pop. 1
20	AAAAA01181	457	1	Ambystoma californiense pop. 1
21	AAAAD01070	74	9	Aneides niger
22	AAAAH01020	106	3	Dicamptodon ensatus
23	AAABH01022	31	1	Rana draytonii
24	AAABH01022	207	5	Rana draytonii
25	AAABH01022	253	2	Rana draytonii
26	AAABH01022	287	2	Rana draytonii
27	AAABH01022	326	1	Rana draytonii
28	AAABH01022	327	2	Rana draytonii
29	AAABH01022	437	2	Rana draytonii
30	AAABH01022	521	1	Rana draytonii
31	AAABH01022	550	5	Rana draytonii
32	AAABH01022	749	1	Rana draytonii
33	AAABH01022	1281	1	Rana draytonii
34	AAABH01022	1285	1	Rana draytonii
35	AAABH01022	1433	1	Rana draytonii
36	AAABH01022	1571	2	Rana draytonii
37	AAABH01022	1596	1	Rana draytonii
38	AAABH01022	1740	3	Rana draytonii
39	AAABH01054	123	3	Rana boylei pop. 4
40	ABNKC12040	128	1	Accipiter cooperii
41	ABNNB03031	60	9	Charadrius nivosus nivosus
42	ABPAU08010	176	9	Riparia riparia
43	ABPBXB0020	163	5	Agelaius tricolor
44	ABPBXB0020	164	3	Agelaius tricolor
45	AFCHA0209G	14	2	Oncorhynchus mykiss irideus pop. 8
46	AFCHA0209H	18	3	Oncorhynchus mykiss irideus pop. 9
47	AFCJB19013	2	3	Lavinia exilicauda harengus
48	AFCQN04010	34	3	Eucyclogobius newberryi
49	AMAFD03042	15	6	Dipodomys venustus venustus
50	AMAJF04010	320	9	Taxidea taxus
51	ARAAD02031	490	1	Actinemys marmorata
52	ARAAD02031	491	2	Actinemys marmorata
53	ARAAD02031	537	5	Actinemys marmorata
54	ARAAD02031	729	1	Actinemys marmorata
55	ARAAD02031	730	1	Actinemys marmorata
56	ARACC01020	15	2	Anniella pulchra
57	ARACC01020	16	2	Anniella pulchra
58	ARACC01020	17	3	Anniella pulchra
59	IIHYM24252	267	9	Bombus occidentalis
60	IIHYM24252	299	9	Bombus occidentalis
61	IIHYM24252	300	9	Bombus occidentalis
62	IIHYM24252	304	9	Bombus occidentalis
63	IIHYM24252	306	9	Bombus occidentalis
64	IIHYM24260	112	9	Bombus pensylvanicus
65	IIHYM24380	142	9	Bombus caliginosus
66	IIHYM24480	434	9	Bombus crotchii
67	IIHYM24480	437	9	Bombus crotchii
68	IILEPP2012	93	4	Danaus plexippus plexippus pop. 1
69	IILEPP2012	97	5	Danaus plexippus plexippus pop. 1



In cooperation with:
NatureServe
www.natureserve.org

California Native Plant Society
www.cnps.org

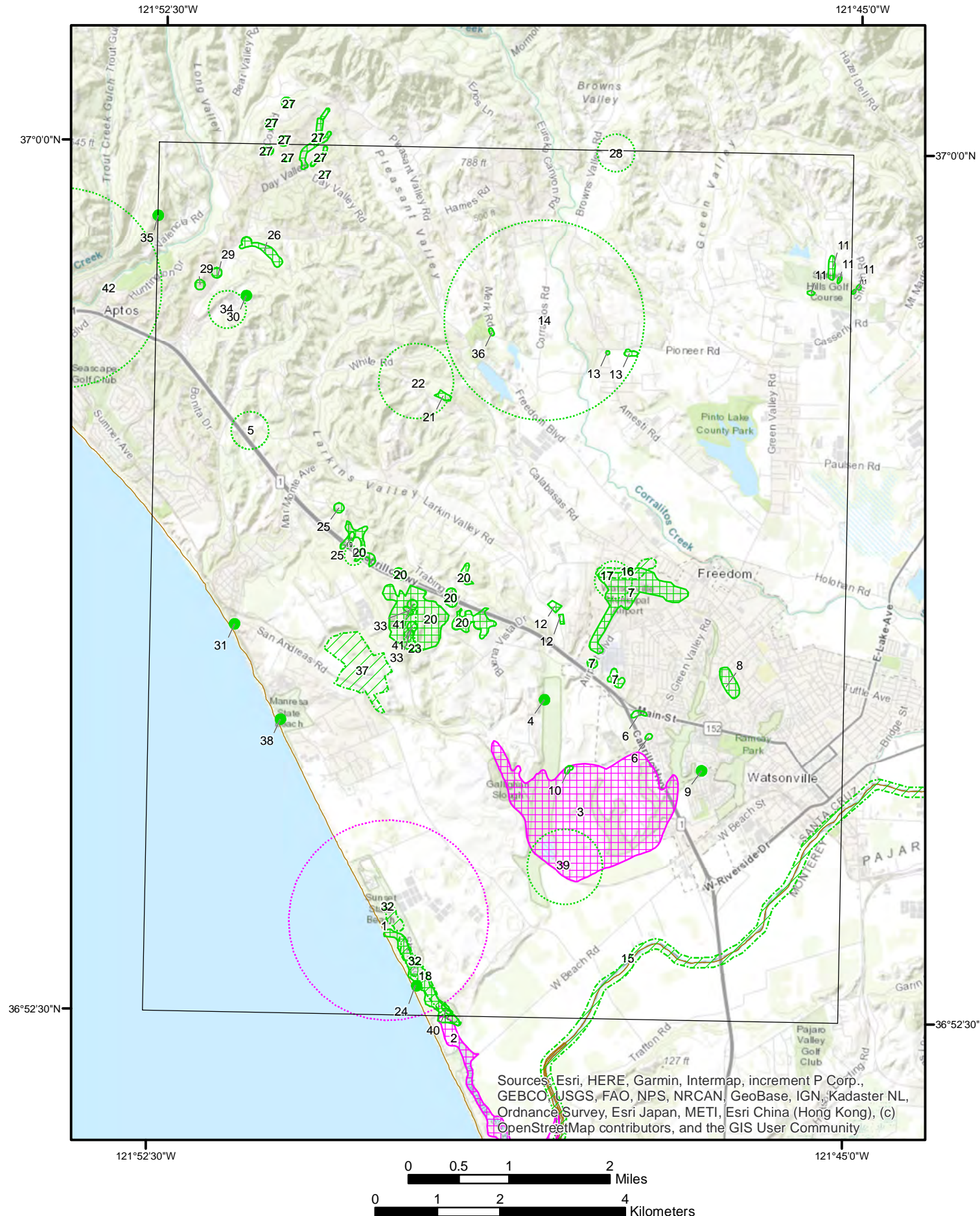
California Natural Diversity Database

USGS Quadrangle: WATSONVILLE WEST - 36121H7

Prepared for: DAWN REIS ECOLOGICAL STUDIES
9/25/2024

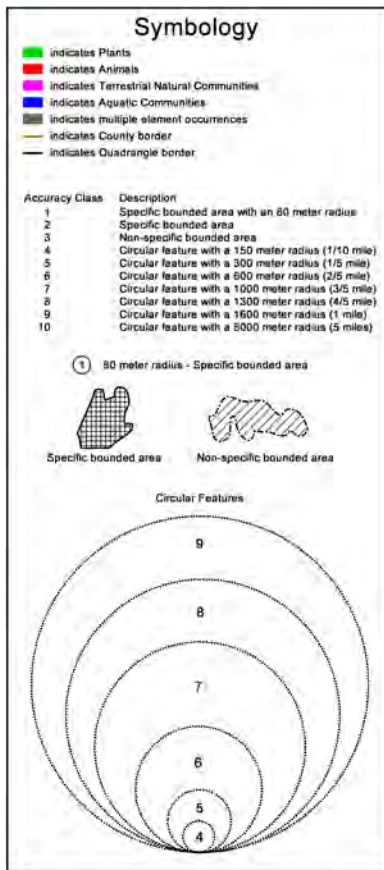
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Total Number of Element Occurrences shown on this map: 42

Ref	ElmCode	Occ #	Accuracy	Scientific Name
1	CTT21320CA	5	9	Central Dune Scrub
2	CTT52110CA	26	2	Northern Coastal Salt Marsh
3	CTT52410CA	43	2	Coastal and Valley Freshwater Marsh
4	PDAST4R0P1	88	1	Centromadia parryi ssp. congdonii
5	PDAST4X020	1	5	Holocarpha macradenia
6	PDAST4X020	5	2	Holocarpha macradenia
7	PDAST4X020	9	2	Holocarpha macradenia
8	PDAST4X020	22	2	Holocarpha macradenia
9	PDAST4X020	34	1	Holocarpha macradenia
10	PDAST4X020	40	2	Holocarpha macradenia
11	PDAST4X020	41	2	Holocarpha macradenia
12	PDAST4X020	46	2	Holocarpha macradenia
13	PDAST4X020	49	2	Holocarpha macradenia
14	PDAST6G010	9	9	Monolopia gracilis
15	PDAST6G010	51	3	Monolopia gracilis
16	PDBOR0V061	1	3	Plagiobothrys chorisianus var. chorisianus
17	PDBOR0V080	17	5	Plagiobothrys diffusus
18	PDBRA16010	13	2	Erysimum amphilum
19	PDERI04030	45	4	Arctostaphylos andersonii
20	PDERI040J1	6	2	Arctostaphylos hookeri ssp. hookeri
21	PDERI040J1	9	2	Arctostaphylos hookeri ssp. hookeri
22	PDERI04100	9	6	Arctostaphylos pajaroensis
23	PDPGN040M2	27	3	Chorizanthe pungens var. pungens
24	PDPGN040M2	29	1	Chorizanthe pungens var. pungens
25	PDPGN040M2	30	2	Chorizanthe pungens var. pungens
26	PDPGN040M2	32	2	Chorizanthe pungens var. pungens
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28	PDPGN040M2	57	5	Chorizanthe pungens var. pungens
29	PDPGN040M2	58	2	Chorizanthe pungens var. pungens
30	PDPGN040M2	65	1	Chorizanthe pungens var. pungens
31	PDPGN040Q2	9	1	Chorizanthe robusta var. robusta
32	PDPGN040Q2	10	3	Chorizanthe robusta var. robusta
33	PDPGN040Q2	15	2	Chorizanthe robusta var. robusta
34	PDPGN040Q2	16	5	Chorizanthe robusta var. robusta
35	PDPGN040Q2	23	1	Chorizanthe robusta var. robusta
36	PDPGN040Q2	30	2	Chorizanthe robusta var. robusta
37	PDPGN040Q2	31	3	Chorizanthe robusta var. robusta
38	PDPGN040Q2	32	1	Chorizanthe robusta var. robusta
39	PDPGN040Q2	33	6	Chorizanthe robusta var. robusta
40	PDPLM041P2	33	2	Gilia tenuiflora ssp. arenaria
41	PDROS0W043	25	2	Horkelia cuneata var. sericea
42	PDSCR1K180	6	9	Pedicularis dudleyi



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

California Natural Diversity Database

USGS Quadrangle: WATSONVILLE WEST - 36121H7

Prepared for: DAWN REIS ECOLOGICAL STUDIES
9/25/2024

Ref	ElmCode	Occ #	Accuracy	Scientific Name
1	CTT21320CA	5	9	Central Dune Scrub
2	CTT52110CA	26	2	Northern Coastal Salt Marsh
3	CTT52410CA	43	2	Coastal and Valley Freshwater Marsh
4	PDAST4R0P1	88	1	Centromadia parryi ssp. congdonii
5	PDAST4X020	1	5	Holocarpha macradenia
6	PDAST4X020	5	2	Holocarpha macradenia
7	PDAST4X020	9	2	Holocarpha macradenia
8	PDAST4X020	22	2	Holocarpha macradenia
9	PDAST4X020	34	1	Holocarpha macradenia
10	PDAST4X020	40	2	Holocarpha macradenia
11	PDAST4X020	41	2	Holocarpha macradenia
12	PDAST4X020	46	2	Holocarpha macradenia
13	PDAST4X020	49	2	Holocarpha macradenia
14	PDAST6G010	9	9	Monolopia gracilens
15	PDAST6G010	51	3	Monolopia gracilens
16	PDBOR0V061	1	3	Plagiobothrys chorisianus var. chorisianus
17	PDBOR0V080	17	5	Plagiobothrys diffusus
18	PDBRA16010	13	2	Erysimum ammophilum
19	PDERI04030	45	4	Arctostaphylos andersonii
20	PDERI040J1	6	2	Arctostaphylos hookeri ssp. hookeri
21	PDERI040J1	9	2	Arctostaphylos hookeri ssp. hookeri
22	PDERI04100	9	6	Arctostaphylos pajaroensis
23	PDPGN040M2	27	3	Chorizanthe pungens var. pungens
24	PDPGN040M2	29	1	Chorizanthe pungens var. pungens
25	PDPGN040M2	30	2	Chorizanthe pungens var. pungens
26	PDPGN040M2	32	2	Chorizanthe pungens var. pungens
27	PDPGN040M2	34	2	Chorizanthe pungens var. pungens
28	PDPGN040M2	57	5	Chorizanthe pungens var. pungens
29	PDPGN040M2	58	2	Chorizanthe pungens var. pungens
30	PDPGN040M2	65	1	Chorizanthe pungens var. pungens
31	PDPGN040Q2	9	1	Chorizanthe robusta var. robusta
32	PDPGN040Q2	10	3	Chorizanthe robusta var. robusta
33	PDPGN040Q2	15	2	Chorizanthe robusta var. robusta
34	PDPGN040Q2	16	5	Chorizanthe robusta var. robusta
35	PDPGN040Q2	23	1	Chorizanthe robusta var. robusta
36	PDPGN040Q2	30	2	Chorizanthe robusta var. robusta
37	PDPGN040Q2	31	3	Chorizanthe robusta var. robusta
38	PDPGN040Q2	32	1	Chorizanthe robusta var. robusta
39	PDPGN040Q2	33	6	Chorizanthe robusta var. robusta
40	PDPLM041P2	33	2	Gilia tenuiflora ssp. arenaria
41	PDROS0W043	25	2	Horkelia cuneata var. sericea
42	PDSCR1K180	6	9	Pedicularis dudleyi



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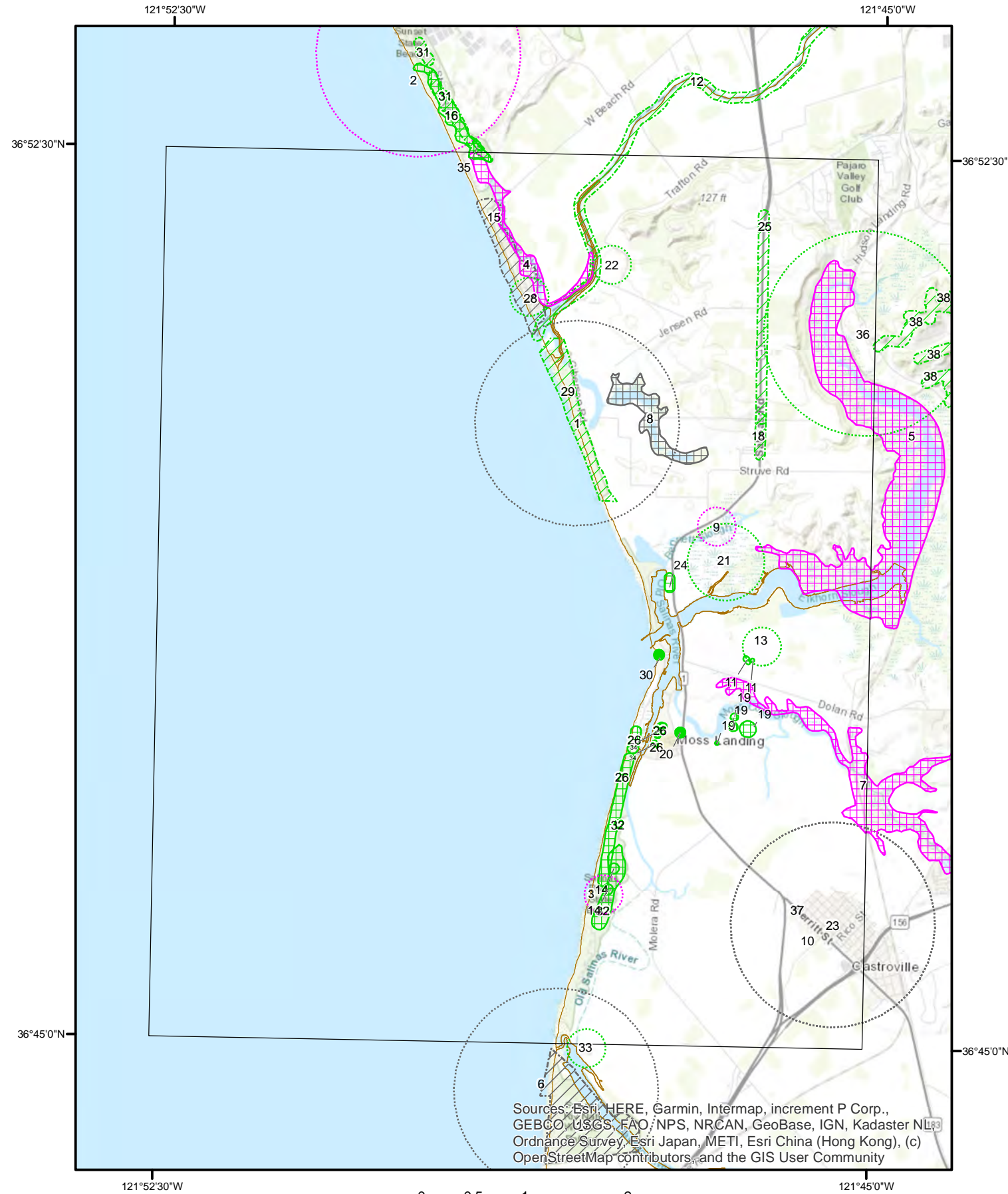
California Natural Diversity Database

USGS Quadrangle: MOSS LANDING - 36121G7

Prepared for: DAWN REIS ECOLOGICAL STUDIES
9/25/2024

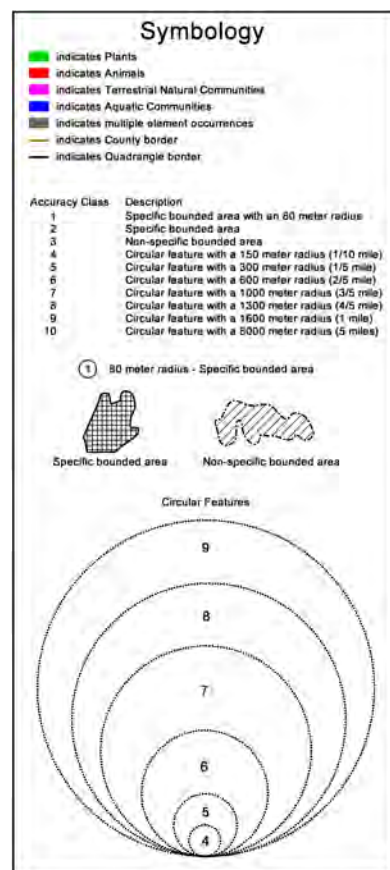
DISCLAIMER

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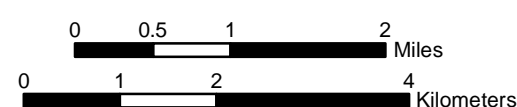


Total Number of Element Occurrences shown on this map: 38

Ref	ElmCode	Occ #	Accuracy	Scientific Name
1	CTT21320CA	4	9	Central Dune Scrub
2	CTT21320CA	5	9	Central Dune Scrub
3	CTT21320CA	13	5	Central Dune Scrub
4	CTT52110CA	26	2	Northern Coastal Salt Marsh
5	CTT52110CA	29	2	Northern Coastal Salt Marsh
6	CTT52110CA	47	9	Northern Coastal Salt Marsh
7	CTT52200CA	26	2	Coastal Brackish Marsh
8	CTT52410CA	17	2	Coastal and Valley Freshwater Marsh
9	CTT52410CA	47	5	Coastal and Valley Freshwater Marsh
10	PDAST4R0P1	39	9	Centromadia parryi ssp. congdonii
11	PDAST4R0P1	87	2	Centromadia parryi ssp. congdonii
12	PDAST6G010	51	3	Monolopia gracilens
13	PDBOR0V061	16	5	Plagiobothrys chorisianus var. chorisianus
14	PDBRA16010	11	2	Erysimum ammophilum
15	PDBRA16010	12	3	Erysimum ammophilum
16	PDBRA16010	13	2	Erysimum ammophilum
17	PDBRA16010	32	3	Erysimum ammophilum
18	PDERI04100	16	3	Arctostaphylos pajaroensis
19	PDFAB400R5	2	2	Trifolium hydrophilum
20	PDFAB400R5	3	1	Trifolium hydrophilum
21	PDFAB400R5	4	6	Trifolium hydrophilum
22	PDPGN040M2	12	5	Chorizanthe pungens var. pungens
23	PDPGN040M2	20	9	Chorizanthe pungens var. pungens
24	PDPGN040M2	21	2	Chorizanthe pungens var. pungens
25	PDPGN040M2	41	3	Chorizanthe pungens var. pungens
26	PDPGN040M2	42	2	Chorizanthe pungens var. pungens
27	PDPGN040M2	47	3	Chorizanthe pungens var. pungens
28	PDPGN040M2	59	5	Chorizanthe pungens var. pungens
29	PDPGN040M2	60	3	Chorizanthe pungens var. pungens
30	PDPGN040M2	63	1	Chorizanthe pungens var. pungens
31	PDPGN040Q2	10	3	Chorizanthe robusta var. robusta
32	PDPLM041P2	5	2	Gilia tenuiflora ssp. arenaria
33	PDPLM041P2	29	5	Gilia tenuiflora ssp. arenaria
34	PDPLM041P2	30	2	Gilia tenuiflora ssp. arenaria
35	PDPLM041P2	33	2	Gilia tenuiflora ssp. arenaria
36	PDSCR0J0P2	8	9	Cordylanthus rigidus ssp. littoralis
37	PDSCR0J0P2	40	9	Cordylanthus rigidus ssp. littoralis
38	PMORC1X070	12	3	Piperia yadonii



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



California Natural Diversity Database

USGS Quadrangle: MOSS LANDING - 36121G7

Prepared for: DAWN REIS ECOLOGICAL STUDIES
9/25/2024

Ref	ElmCode	Occ #	Accuracy	Scientific Name
1	CTT21320CA	4	9	Central Dune Scrub
2	CTT21320CA	5	9	Central Dune Scrub
3	CTT21320CA	13	5	Central Dune Scrub
4	CTT52110CA	26	2	Northern Coastal Salt Marsh
5	CTT52110CA	29	2	Northern Coastal Salt Marsh
6	CTT52110CA	47	9	Northern Coastal Salt Marsh
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10	PDAST4R0P1	39	9	Centromadia parryi ssp. congdonii
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12	PDAST6G010	51	3	Monolopia gracilens
13	PDBOR0V061	16	5	Plagiobothrys chorisianus var. chorisianus
14	PDBRA16010	11	2	Erysimum ammophilum
15	PDBRA16010	12	3	Erysimum ammophilum
16	PDBRA16010	13	2	Erysimum ammophilum
17	PDBRA16010	32	3	Erysimum ammophilum
18	PDERI04100	16	3	Arctostaphylos pajaroensis
19	PDFAB400R5	2	2	Trifolium hydrophilum
20	PDFAB400R5	3	1	Trifolium hydrophilum
21	PDFAB400R5	4	6	Trifolium hydrophilum
22	PDPGN040M2	12	5	Chorizanthe pungens var. pungens
23	PDPGN040M2	20	9	Chorizanthe pungens var. pungens
24	PDPGN040M2	21	2	Chorizanthe pungens var. pungens
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27	PDPGN040M2	47	3	Chorizanthe pungens var. pungens
28	PDPGN040M2	59	5	Chorizanthe pungens var. pungens
29	PDPGN040M2	60	3	Chorizanthe pungens var. pungens
30	PDPGN040M2	63	1	Chorizanthe pungens var. pungens
31	PDPGN040Q2	10	3	Chorizanthe robusta var. robusta
32	PDPLM041P2	5	2	Gilia tenuiflora ssp. arenaria
33	PDPLM041P2	29	5	Gilia tenuiflora ssp. arenaria
34	PDPLM041P2	30	2	Gilia tenuiflora ssp. arenaria
35	PDPLM041P2	33	2	Gilia tenuiflora ssp. arenaria
36	PDSCR0J0P2	8	9	Cordylanthus rigidus ssp. littoralis
37	PDSCR0J0P2	40	9	Cordylanthus rigidus ssp. littoralis
38	PMORC1X070	12	3	Piperia yadonii



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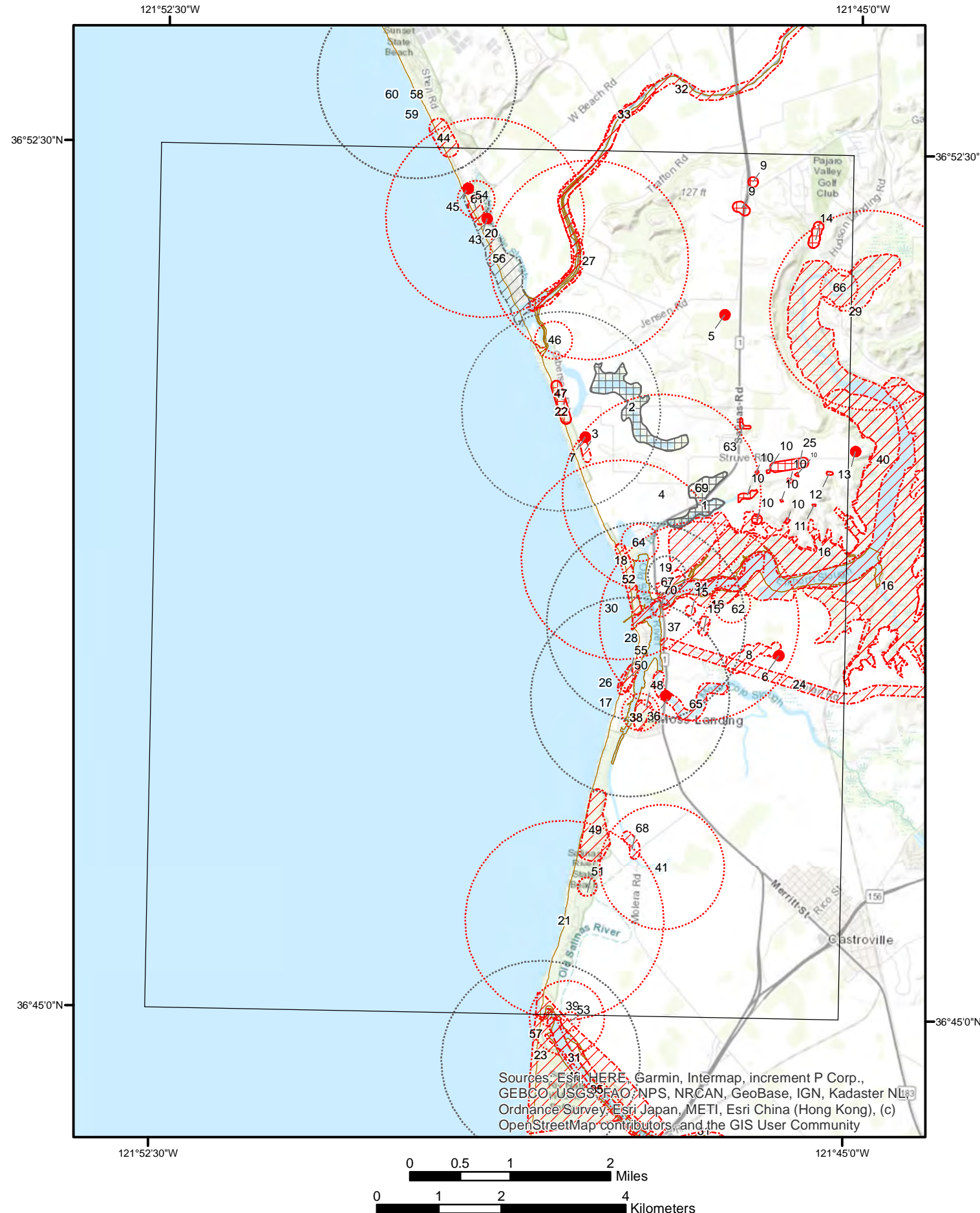
USGS Quadrangle: MOSS LANDING - 36121G7

Prepared for: DAWN REIS ECOLOGICAL STUDIES
9/25/2024

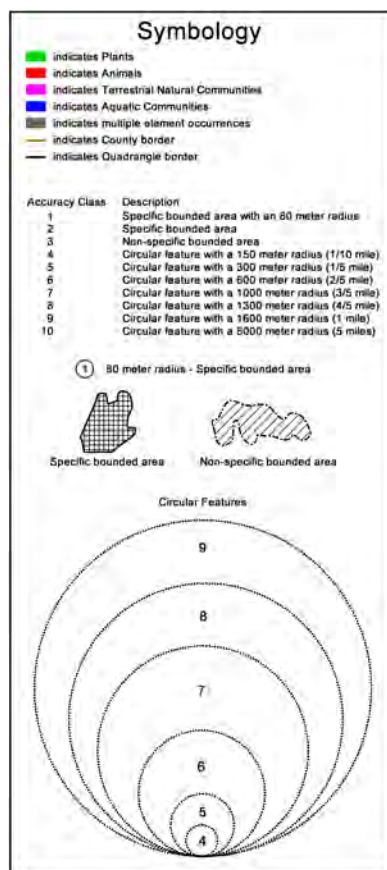
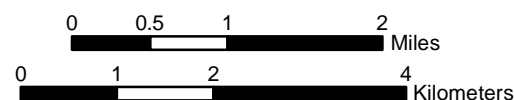
Total Number of Animal Occurrences shown on this map: 72
See separate table for reference to animal E0 features.

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



California Natural Diversity Database

USGS Quadrangle: MOSS LANDING - 36121G7

Prepared for: DAWN REIS ECOLOGICAL STUDIES

9/25/2024

Ref	ElmCode	Occ #	Accuracy	Scientific Name
*	ABNKD06071	49	4	Falco peregrinus anatum
*	AAABH01022	482	1	Rana draytonii
1	AAAAA01082	2	2	Ambystoma macrodactylum croceum
2	AAAAA01082	3	2	Ambystoma macrodactylum croceum
3	AAAAA01082	9	3	Ambystoma macrodactylum croceum
4	AAAAA01181	256	9	Ambystoma californiense pop. 1
5	AAAAA01181	824	1	Ambystoma californiense pop. 1
6	AAAAA01181	1083	1	Ambystoma californiense pop. 1
7	AAABH01022	119	1	Rana draytonii
8	AAABH01022	889	3	Rana draytonii
9	AAABH01022	1034	2	Rana draytonii
10	AAABH01022	1037	2	Rana draytonii
11	AAABH01022	1223	2	Rana draytonii
12	AAABH01022	1224	2	Rana draytonii
13	AAABH01022	1225	1	Rana draytonii
14	AAABH01022	1472	2	Rana draytonii
15	AAABH01022	1597	3	Rana draytonii
16	ABNME05011	53	3	Rallus obsoletus obsoletus
17	ABNNB03031	57	9	Charadrius nivosus nivosus
18	ABNNB03031	58	9	Charadrius nivosus nivosus
19	ABNNB03031	59	5	Charadrius nivosus nivosus
20	ABNNB03031	60	9	Charadrius nivosus nivosus
21	ABNNB03031	111	9	Charadrius nivosus nivosus
22	ABNNB03031	112	9	Charadrius nivosus nivosus
23	ABNNB03031	113	9	Charadrius nivosus nivosus
24	ABNSB10010	69	3	Athene cunicularia
25	ABNSB10010	500	2	Athene cunicularia
26	ABNSB13040	5	9	Asio flammeus
27	ABPAU08010	80	9	Riparia riparia
28	ABPAU08010	160	9	Riparia riparia
29	ABPBXB0020	852	9	Agelaius tricolor
30	AFCHB03010	18	9	Spirinchus thaleichthys
31	AFCJB19013	1	3	Lavinia exilicauda harengus
32	AFCJB19013	2	3	Lavinia exilicauda harengus
33	AFCQN04010	34	3	Eucyclogobius newberryi
34	AFCQN04010	35	3	Eucyclogobius newberryi
35	AFCQN04010	36	3	Eucyclogobius newberryi
36	AFCQN04010	116	1	Eucyclogobius newberryi
37	AMABA01105	2	9	Sorex ornatus salarius
38	AMAFF02032	1	5	Reithrodontomys megalotis distichlis
39	AMAFF02032	2	6	Reithrodontomys megalotis distichlis
40	AMAFF11036	1	3	Microtus californicus halophilus
41	AMAFF11036	2	7	Microtus californicus halophilus
42	AMAFF11036	3	3	Microtus californicus halophilus
43	ARAAD02031	493	1	Actinemys marmorata
44	ARACC01020	17	3	Anniella pulchra
45	ARACC01020	18	1	Anniella pulchra
46	ARACC01020	19	5	Anniella pulchra
47	ARACC01020	20	2	Anniella pulchra
48	ARACC01020	21	3	Anniella pulchra
49	ARACC01020	22	3	Anniella pulchra
50	ARACC01020	23	3	Anniella pulchra
51	ARACC01020	24	4	Anniella pulchra
52	ARACC01020	25	3	Anniella pulchra
53	ARACC01020	26	4	Anniella pulchra
54	IICOL4A010	7	3	Coelus globosus
55	IICOL4A010	8	3	Coelus globosus
56	IICOL4A010	30	3	Coelus globosus
57	IIHYM24252	268	9	Bombus occidentalis
58	IIHYM24252	306	9	Bombus occidentalis
59	IIHYM24380	142	9	Bombus caliginosus
60	IIHYM24480	437	9	Bombus crotchii
61	IILEPP2012	94	5	Danaus plexippus plexippus pop. 1
62	IILEPP2012	95	5	Danaus plexippus plexippus pop. 1
63	IILEPP2012	334	2	Danaus plexippus plexippus pop. 1
64	IMGASJ7040	2	5	Tryonia imitator
65	IMGASJ7040	3	3	Tryonia imitator
66	IMGASJ7040	19	5	Tryonia imitator
67	IMGASJ7040	20	5	Tryonia imitator
68	IMGASJ7040	29	3	Tryonia imitator
69	IMGASJ7040	38	2	Tryonia imitator
70	IMGASJ7040	39	4	Tryonia imitator

* Sensitive element occurrences within this map extent but not shown.
Please call (916) 324-3812 for more information.

APPENDIX C

Appendix C. Evaluated Special Status Plant Species for Pajaro Dunes Seawall Maintenance & Repair Project That Are Reported In the CNDDDB Watsonville West & Adjacent Areas.

Species	CNPS Ranking	State Status	Federal Status	Potential for Presence, Habitat Preference; Closest Known Occurrences
Watsonville West Quadrangle				
Hooker's manzanita (<i>Arctostaphylos hookeri</i> ssp. <i>hookeri</i>)	List 1B.2	None	None	NOT PRESENT. Sandy slopes, often intermixed with oak woodland; known from Buena Vista area; not observed
Pajaro manzanita (<i>Arctostaphylos pajaroensis</i>)	List 1B.1	None	None	NOT PRESENT. Sandy slopes, often intermixed with oak woodland; recorded from NW of Watsonville/ Prunedale area; not observed
Monterey paintbrush (<i>Castilleja latifolia</i>)	List 4	None	None	PRESENT. Sandy slopes in dune scrub; hemiparasitic on woody shrubs; numerous patches observed in dune scrub
Congdon's tarplant (<i>Centromadia parryi</i> ssp. <i>congdonii</i>)	List 1B.2	None	None	NOT PRESENT. Mesic grassland, heavy clay, alkaline; recorded from Ellicott Slough NWR; no suitable habitat
Monterey spineflower (<i>Chorizanthe pungens</i> var. <i>pungens</i>)	List 1B.2	None	Threatened	PRESENT. Sandy slopes, can be intermixed with oak woodland/maritime chaparral, dune scrub; recorded from Fiesta Way area, Manresa and Sunset State beaches; Day Valley area; Pajaro Dunes; numerous patches observed in dune scrub
Robust spineflower (<i>Chorizanthe robusta</i> var. <i>robusta</i>)	List 1B.1	None	Endangered	NOT PRESENT. Sandy slopes, often intermixed with oak woodland/maritime chaparral; recorded from Manresa State Beach; NE of Ellicott Pond, Aptos HS area; not observed; marginal habitat site
Sand-loving wallflower (<i>Erysimum ammophilium</i>)	List 1B.2	None	None	NOT PRESENT. Coastal dunes; recorded from Sunset State Beach, along Shell Road; not observed
Sand gilia (<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>)	List 1B.2	Threatened	Endangered	NOT PRESENT. Coastal dunes; recorded from Sunset State Beach; not observed; marginal habitat on site
Santa Cruz tarplant (<i>Holocarpha macradenia</i>)	List 1B.1	Endangered	Threatened	NOT PRESENT. Grasslands, often on coastal terrace deposits; recorded from Harkins Slough area and Watsonville area; no suitable habitat.
Kellogg's horkelia (<i>Horkelia cuneata</i> ssp. <i>sericea</i>)	List 1B.1	None	None	NOT PRESENT. Oak woodland and edges of grasslands; recorded from NW of Watsonville at Ellicott NWR; no suitable habitat
Woodland woollythreads (<i>Monolopia gracilens</i>)	List 1B.2	None	None	NOT PRESENT. Chaparral; serpentine grassland; sandy/rocky areas; recorded from Corralitos area (1958); no suitable habitat
Dudley's lousewort (<i>Pedicularis dudleyi</i>)	List 1B.2	None	None	NOT PRESENT. Woodlands; historic (1884) occurrence from Aptos; no suitable habitat
Choris's popcorn flower	List 1B.2	None	None	NOT PRESENT. Mesic grasslands, often on

Appendix C. Evaluated Special Status Plant Species for Pajaro Dunes Seawall Maintenance & Repair Project That Are Reported In the CNDDDB Watsonville West & Adjacent Areas.

Species	CNPS Ranking	State Status	Federal Status	Potential for Presence, Habitat Preference; Closest Known Occurrences
<i>(Plagiobothrys chorisianus var. chorisianus)</i>				coastal terrace deposits; recorded from north end of Watsonville Airport; no suitable habitat
Surrounding Quadrangles (Laurel, Loma Prieta, Watsonville East, Prunedale, Mt. Madonna, Soquel and Moss Landing)				
Bent-flowered fiddleneck <i>(Amsinckia lunaris)</i>	List 1B.2	None	None	NOT PRESENT. Grassland; recorded from Scotts Valley and Davenport; no suitable habitat
Anderson’s manzanita <i>(Arctostaphylos andersonii)</i>	List 1B.2	None	None	NOT PRESENT. Chaparral and forests; recorded from UCSC area and Bonny Doon; not observed
King’s Mountain manzanita <i>(Arctostaphylos regismontana)</i>	List 1B.2	None	None	NOT PRESENT. Chaparral and forests; recorded from Skyline area; not observed
Santa Cruz Mtns. pussypaws <i>(Calyptridium parryi var. hesseae)</i>	List 1B.1	None	None	NOT PRESENT. Ponderosa pine and chaparral in Zayante sands; known from Felton and Ben Lomond area; not observed
Deceiving sedge <i>(Carex saliniformis)</i>	List 1B.2	None	None	NOT PRESENT. Mesic areas, marshes; historic record from Scotts Valley; no suitable habitat
Coyote ceanothus <i>(Ceanothus ferrisae)</i>	List 1B.1	None	Endangered	NOT PRESENT. Chaparral, on serpentine; recorded from Anderson Reservoir and Uvas Canyon area; not observed
Ben Lomond spineflower <i>(Chorizanthe pungens var. hartwegiana)</i>	List 1B.1	None	Endangered	NOT PRESENT. Ponderosa pine and chaparral in Zayante sands; recorded from Bonny Doon and Felton areas; not observed; not suitable habitat
Scotts Valley spineflower <i>(Chorizanthe robusta var. hartwegii)</i>	List 1B.1	None	Endangered	NOT PRESENT. Grassland on sandstone outcrops; known only from Scotts Valley area; no suitable habitat
Seaside birds-beak <i>(Cordylanthus rigidus ssp. littoralis)</i>	List 1B.1	Endangered	None	NOT PRESENT. Maritime chaparral and closed cone forests; recorded from Monterey Co.; not observed; not suitable habitat
Santa Clara Valley dudleya <i>(Dudleya abramsii ssp. setchellii)</i>	List 1B.1	None	Endangered	NOT PRESENT. Serpentine chaparral and rock outcrops; no suitable habitat
Eastwood’s goldenbush <i>(Ericameria fasciculata)</i>	List 1B.1	None	None	NOT PRESENT. Chaparral and coastal scrub; recorded from Monterey Co.; not observed; not suitable habitat
Hoover’s button-celery <i>(Eryngium aristulatum var. hooveri)</i>	List 1B.1	None	None	NOT PRESENT. Mesic areas, vernal pools in grassland; no suitable habitat
Ben Lomond wallflower <i>(Erysimum teretifolium)</i>	List 1B.1	Endangered	Endangered	NOT PRESENT. Ponderosa pine and chaparral in Zayante sands; no suitable habitat
Minute pocket moss <i>(Fissidens pauperculus)</i>	List 1B.2	None	None	NOT PRESENT. Sandstone outcrops in grassland and oak woodland; recorded from Scotts Valley region; no suitable

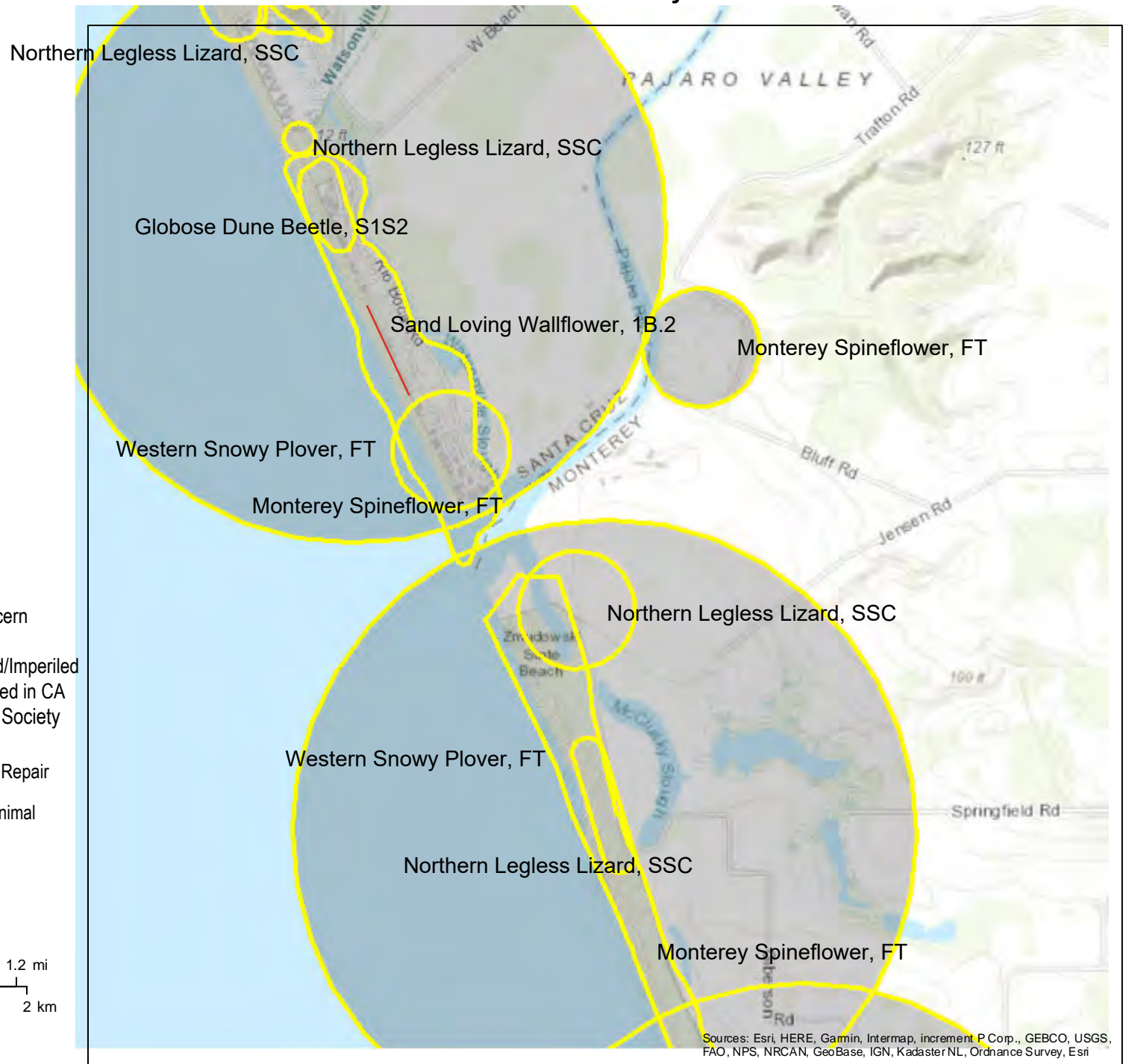
Appendix C. Evaluated Special Status Plant Species for Pajaro Dunes Seawall Maintenance & Repair Project That Are Reported In the CNDDDB Watsonville West & Adjacent Areas.

Species	CNPS Ranking	State Status	Federal Status	Potential for Presence, Habitat Preference; Closest Known Occurrences
				habitat
Fragrant fritillary (<i>Fritillaria liliacea</i>)	List 1B.2	None	None	NOT PRESENT. Moist serpentine areas in grassland; recorded from Santa Clara Co; no suitable habitat
Loma Prieta hoita (<i>Hoita strobilina</i>)	List 1B.1	None	None	NOT PRESENT. Talus in chaparral and woodlands; 1936 herbarium record from Santa Cruz; no suitable habitat
Smooth lessingia (<i>Lessingia micradenia</i> var. <i>glabrata</i>)	List 1B.2	None	None	NOT PRESENT. Serpentine soils in chaparral and grasslands; recorded from Santa Clara Co; no suitable habitat
Arcuate bush-mallow (<i>Malacothamnus arcuatus</i>)	List 1B.2	None	None	NOT PRESENT. Chaparral and cismontane woodland; not observed; not suitable habitat
Hall's bush-mallow (<i>Malacothamnus hallii</i>)	List 1B.2	None	None	NOT PRESENT. Chaparral and coastal scrub; not observed; not suitable habitat
Santa Cruz Mtns. beards tongue (<i>Penstemon rattanii</i> var. <i>kleei</i>)	List 1B.2	None	None	NOT PRESENT. Woodland and chaparral; herbarium collections from Ben Lomond Mtn.; no suitable habitat
White-rayed pentachaeta (<i>Pentachaeta bellidiflora</i>)	List 1B.1	None	None	NOT PRESENT. Cismontane woodland, valley and foothill grassland (often serpentinite); no suitable habitat
Monterey pine (<i>Pinus radiata</i>)	List 1B.1	None	None	NOT PRESENT. Native stands limited to Ano Nuevo and Monterey peninsula; not observed
Yadon's piperia (<i>Piperia yadonii</i>)	List 1B.1	None	Endangered	NOT PRESENT. Coastal scrub and oak woodland, often on talus/rocky areas; not observed; no suitable habitat
San Francisco popcorn flower (<i>Plagiobothrys diffusus</i>)	List 1B.2	Endangered	None	NOT PRESENT. Mesic grasslands, often on coastal terrace deposits; no suitable habitat
Scotts Valley polygonum (<i>Polygonum hickmanii</i>)	List 1B.1	None	Endangered	NOT PRESENT. Grasslands, on coastal terrace deposits; no suitable habitat
Pine rose (<i>Rosa pinetorum</i>)	List 1B.2	None	None	NOT PRESENT. Closed cone pine forests; no suitable habitat
Most-beautiful jewel-flower (<i>Streptanthus albidus</i> ssp. <i>peramoenus</i>)	List 1B.2	None	None	NOT PRESENT. Serpentine grassland; no suitable habitat
Santa Cruz Clover (<i>Trifolium buckwestiorum</i>)	List 1B.1	None	None	NOT PRESENT. Mesic grasslands; no suitable habitat
Saline clover (<i>Trifolium depauperatum</i> var. <i>hydrophilum</i>)	List 1B.2	None	None	NOT PRESENT. Mesic grasslands, alkaline; no suitable habitat

CNPS Status: List 1B: These plants (predominately endemic) are rare through their range and are currently vulnerable or have a high potential for vulnerability due to limited or threatened habitat, few individuals per population, or a limited number of populations. List 1B plants meet the definitions of Section 1901, Chapter 10 of the CDFG Code.

APPENDIX D

CNDDDB Occurrences of Protected Plants and Animals the Project Location

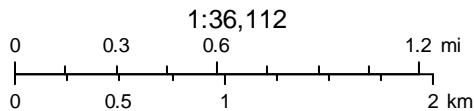


LEGEND

- SSC = CDFW Species of Special Concern
- FT = Threatened under Federal ESA
- S1S2 = NatureServe Critically Imperiled/Imperiled
- 1B.2 = Rare, Threatened, or Endangered in CA as ranked by CA Native Plant Society

— = Approximate Location of Seawall Repair

○ = Approximate Location of Plant or Animal



November 15, 2022

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri

APPENDIX E

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HABITAT AVAILABILITY AT THE PAJARO DUNES SEAWALL MAINTANANCE & REPAIR PROJECT FOR PROTECTED PLANTS & ANIMALS REPORTED IN THE CNDDDB ON THE WATSONVILLE WEST AND/OR MOSS LANDING QUADRANT MAPS

Available Habitat Present On The Parcel	Scientific Name	Common Name	Federal Status	State Status	CDFW Status	CA Rare Plant Rank
No terrestrial, aquatic or likely movement corridor present.	<i>Ambystoma californiense</i>	California tiger salamander	Threatened	Threatened	WL	-
No aquatic or likely movement corridor present.	<i>Ambystoma macrodactylum croceum</i>	Santa Cruz long-toed salamander	Endangered	Endangered	FP	-
No terrestrial, aquatic or likely movement corridor present.	<i>Rana draytonii</i>	California red-legged frog	Threatened	None	SSC	-
No terrestrial, aquatic or likely movement corridor present.	<i>Rana boylei</i>	foothill yellow-legged	Proposed Threatened	Endangered	-	-
No, soil and sand are too dry.	<i>Aneides niger</i>	Santa Cruz black salamander	None	None	SSC	-
No nesting habitat available.	<i>Aquila chrysaetos</i>	golden eagle	None	None	FP , WL	-
No nesting habitat available.	<i>Elanus leucurus</i>	white-tailed kite	None	None	FP	-
No nesting habitat available.	<i>Ptychoramphus aleuticus</i>	Cassin's auklet	None	None	SSC	-
Yes, nesting and refugia habitat is available in the Active Dunes and Foredunes.	<i>Charadrius nivosus nivosus</i>	western snowy plover	Threatened	None	SSC	-
No nesting habitat available.	<i>Riparia riparia</i>	bank swallow	None	Threatened	-	-
No nesting habitat available.	<i>Agelaius tricolor</i>	tricolored blackbird	None	Threatened	SSC	-
Unlikely, not enough cover for this species.	<i>Geothlypis trichas sinuosa</i>	saltmarsh common yellowthroat	None	None	SSC	-
No nesting habitat available.	<i>Nannopterum auritum</i>	double-crested cormorant	None	None	WL	-

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No nesting habitat available.	<i>Athene cunicularia</i>	burrowing owl	None	None	SSC	-
Winter refuge habitat in the Active Dunes and Foredunes only, nesting occurs out of state.	<i>Charadrius montanus</i>	mountain plover	None	None	SSC	-
No nesting habitat available. Will fly over and hunt birds on beach.	<i>Falco peregrinus anatum</i>	American peregrine falcon	Delisted	Delisted	FP	-
No nesting habitat available.	<i>Gavia immer</i>	common loon	None	None	SSC	-
Yes, nesting and refugia habitat is available in the Active Dunes and Foredunes. However, the nearest known nesting occurrences are south of the project site in Moss Landing.	<i>Sternula antillarum browni</i>	California least tern	Endangered	Endangered	FP	-
Yes, potential habitat occurs in both the Foredunes and in the disturbed Central Dune Scrub.	<i>Passerculus sandwichensis alaudinus</i>	Bryant's savannah sparrow	None	None	SSC	-
No nesting habitat available. Will rest on beach.	<i>Pelecanus occidentalis californicus</i>	California brown pelican	Delisted	Delisted	FP	-
No nesting habitat available.	<i>Nannopterum auritum</i>	double-crested cormorant	None	None	WL	-
No habitat available.	<i>Rallus obsoletus obsoletus</i>	California Ridgway's rail	Endangered	Endangered	FP	-
No nesting habitat available.	<i>Numenius americanus</i>	long-billed curlew	None	None	WL	-
No nesting habitat available.	<i>Asio flammeus</i>	short-eared owl	None	None	SSC	-
No nesting habitat available.	<i>Athene cunicularia</i>	burrowing owl	None	None	SSC	-
Yes habitat is available.	<i>Coelus globosus</i>	globose dune beetle	None	None	-	S1S2
No known use of trees groves for roosting, no milkweed present for Monarch butterfly larva.	<i>Danaus plexippus plexippus pop. 1</i>	monarch – California	Candidate	None	-	S2

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			overwintering population				
Some buckwheat plants for larva (caterpillar) development in the Foredune or in the Central Dune Scrub on the parcel. However, wind is likely to eliminate adult butterfly use of area for eggs and larva.	Euphilotes enoptes smithi	Smith's blue butterfly	Endangered	None			S2
Unlikely to use the beach or foredunes due to amount of constant human and dog activities. Known to occur foraging in ocean, and will wash assure if very sick or dead.	Enhydra lutris nereis	southern sea otter	Threatened	None	FP		-
Not likely. Some limited ground squirrels (badger food source) nearby but no grasslands present on the parcel and not in a likely movement corridor.	Taxidea taxus	American badger	None	None	SSC		-
Yes, known to occur in ice-plant and within range.	Sorex ornatus salarius	Monterey shrew	None	None	SSC		-
Unlikely, no woodrat houses observed on the parcel.	Neotoma macrotis luciana	Monterey dusky-footed woodrat	None	None	SSC		-
Yes, known to occur in Coastal Stand Communities with ice-plant and within range.	Anniella pulchra	Northern California legless lizard	None	None	SSC		-
No suitable nearby freshwater ponds or marshes, parcel is not in a movement corridor.	Emys marmorata	western pond turtle	None	None	SSC		-
Unlikely as native ant colonies not present. Known to occur in Coastal Stand Communities with ice-plant and within range if food sources is (native ants) are available.	Phrynosoma blainvillii	coast horned lizard	None	None	SSC		-
No, sandy soils present are too dry. Tarplant typically grows on deep loam and sandy loam soils with a subsurface clay component, which	Holocarpha macradenia	Santa Cruz tarplant	Threatened	Endangered	-		1B.1

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holds moisture for into the growing season compared to sandy soils.						
No suitable habitat at the site, soils are too sandy and dry.	<i>Monolopia gracilens</i>	woodland woollythreads	None	None	-	1B.2
No suitable habitat at the site, soils are too sandy and dry.	<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	Choris' popcornflower	None	None	-	1B.2
No suitable habitat at the site, soils are too sandy and dry.	<i>Plagiobothrys diffusus</i>	San Francisco popcornflower	None	Endangered	-	1B.1
Yes, habitat is present in the Foredunes but not in the degraded Central Dune Scrub dominated by ice plant. None found.	<i>Erysimum ammophilum</i>	Coast wallflower (aka sand-loving wallflower)	None	None	-	1B.2
No manzanita observed on the parcel.	<i>Arctostaphylos andersonii</i>	Anderson's manzanita	None	None	-	1B.2
No manzanita observed on the parcel.	<i>Arctostaphylos hookeri</i> ssp. <i>Hookeri</i>	Hooker's manzanita	None	None	-	1B.2
No manzanita observed on the parcel.	<i>Arctostaphylos pajaroensis</i>	Pajaro manzanita	None	None	-	1B.1
Yes, habitat is present. None found.	<i>Abronia maritima</i>	red sand-verbena	None	None	-	4.2
No habitat is available, soils too sandy and dry.	<i>Piperia michaelii</i>	Michael's rein orchid	None	None	-	4.2
No habitat is available, soils too sandy and dry. This plant typically grows on shallow acidic soils on top of granitic bedrock.	<i>Piperia yadonii</i>	Yadon's rein orchid	Endangered	None	-	1B.1
Yes, habitat is present in the Foredune & Coastal Dune Scrub.	<i>Castilleja latifolia</i>	Monterey Coast paintbrush	None	None	-	4.3

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No habitat available. This plant is associate with open areas in coastal forest, usually with rocky soil.	<i>Pedicularis dudleyi</i>	Dudley's lousewort	None	Rare	-	1B.2
Unlikely although habitat is present. Known occurrences are slightly out of range (north) and it was not observed at the site.	<i>Elymus californicus</i>	California bottle-brush grass (wild rye grass)	None	None	-	4.3
Yes, habitat is present in the Foredunes but not in the degraded Central Dune Scrub dominated by ice plant. None found.	<i>Gilia tenuiflora</i> ssp. <i>Arenaria</i>	Monterey gilia	Endangered	Threatened	-	1B.2
Yes, known to occur. Habitat is present in the Foredunes and in the Central Dune Scrub dominated by ice plant.	<i>Chorizanthe pungens</i> var. <i>pungens</i>	Monterey spineflower	Threatened	None	-	1B.2
Yes, habitat is present in the Foredunes but not in the degraded Central Dune Scrub dominated by ice plant. None found.	<i>Chorizanthe robusta</i> var. <i>robusta</i>	robust spineflower	Endangered	None	-	1B.1
Yes, habitat is present in the Foredunes. None found.	<i>Horkelia cuneata</i> var. <i>sericea</i>	Kellogg's horkelia	None	None	-	1B.1
No habit is present. This species is associated with salt marsh plant communities.	<i>Trifolium hydrophilum</i>	saline clover	None	None	-	1B.2
Unlikely although habitat is present in the Foredunes and in the Central Dune Scrub. Known to occur in Monterey County, but not known to occur in Santa Cruz County.	<i>Cordylanthus rigidus</i> ssp. <i>littoralis</i>	seaside bird's-beak	None	Endangered	-	1B.1
Unlikely although habitat is present in the Foredunes and in the Central Dune Scrub. Known occurrences are slightly out of range (north)	<i>Arostis blasdalei</i>	Blasdale's bent grass				1B.1
Unlikely although habitat is present in the Foredunes and in the Central Dune Scrub.	<i>Hesperevax sparsiflora</i> var. <i>beviflora</i>	Short leaved evax				1B.2

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Known occurrences are slightly out of range (north) Unlikely although habitat is present in the Foredunes and in the Central Dune Scrub. Known to occur north of the project. None found.	Crisp monardella	Monardella undulata ssp. crispa	1B.2
Yes, habitat is present in the Foredunes. None found.	Leptosiphon gradiflorus	Large flowered leptosiphon	4.2
No habitat is available, soils too sandy and dry.	Sanicula hoffmannii	Hoffmann's sanicle	4.3
Unlikely although habitat is present in the Foredunes and in the Central Dune Scrub. Known to occur in Monterey County, but not known to occur in Santa Cruz County.	Astragalus tener var. titi	Coastal dune milk-vetch	1B.1

The United States legal status under the Federal Endangered Species Act (ESA).

Listing Status	Description
Endangered	The classification provided to an animal or plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range.
Threatened	The classification provided to an animal or plant which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range.
Proposed Endangered	The classification provided to an animal or plant that is proposed for federal listing as Endangered in the Federal Register under Section 4 of the Endangered Species Act.
Proposed Threatened	The classification provided to an animal or plant that is proposed for federal listing as Threatened in the Federal Register under Section 4 of the Endangered Species Act.

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Candidate	The classification provided to an animal or plant that has been studied by the United States Fish and Wildlife Service, and the Service has concluded that it should be proposed for addition to the Federal Endangered and Threatened species list.
None	The plant or animal has no federal status.
Delisted	The plant or animal was previously listed as Endangered or Threatened, but is no longer listed on the Federal Endangered and Threatened species list.

California Department of Fish and Wildlife Status

The *California Department of Fish and Wildlife (CDFW) Status* applies to animals only. The possible values for *CDFW Status* are:

Status	Description
FP	Fully Protected: This classification was the State of California’s initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds and mammals. Most of the species on these lists have subsequently been listed under the state and/or federal endangered species acts.
SSC	Species of Special Concern: It is the goal and responsibility of the Department of Fish and Wildlife to maintain viable populations of all native species. To this end, the Department has designated certain vertebrate species as “Species of Special Concern” because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction. The goal of designating species as “Species of Special Concern” is to halt or reverse their decline by calling attention to their plight and addressing the issues of concern early enough to secure their long-term viability.
WL	Watch List: The Department of Fish and Wildlife maintains a list consisting of taxa that were previously designated as “Species of Special Concern” but no longer merit that status, or which do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify status.

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California Rare Plant Rank

The *California Rare Plant Rank* status applies to plants only. The *California Rare Plant Ranks* are a ranking system originally developed by the California Native Plant Society (CNPS) to better define and categorize rarity in California’s flora. These ranks were previously known as the CNPS lists but were renamed to the *California Rare Plant Ranks* to better reflect the joint effort among the CNPS, the CNDDDB, and a wide range of botanical experts, who work together to assign a rarity ranking. All plants tracked by the CNDDDB are assigned to a *California Rare Plant Rank* category. These categories are:

CA Rare Plant Rank	Description
1A	Plants presumed extinct in California and rare/extinct elsewhere
1B.1	Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California
1B.2	Plants rare, threatened, or endangered in California and elsewhere; fairly threatened in California
1B.3	Plants rare, threatened, or endangered in California and elsewhere; not very threatened in California
2A	Plants presumed extirpated in California, but more common elsewhere
2B.1	Plants rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California
2B.2	Plants rare, threatened, or endangered in California, but more common elsewhere; fairly threatened in California
2B.3	Plants rare, threatened, or endangered in California, but more common elsewhere; not very threatened in California
3.1	Plants about which we need more information; seriously threatened in California
3.2	Plants about which we need more information; fairly threatened in California
3.3	Plants about which we need more information; not very threatened in California
4.1	Plants of limited distribution; seriously threatened in California
4.2	Plants of limited distribution; fairly threatened in California
4.3	Plants of limited distribution; not very threatened in California

Pajaro Dunes Association Geologic Hazard Abatement District

Attn: Patrick Dobbins

May 23, 2025

RE: Focused Special-Status Plant Survey Report for Pajaro Dunes Geologic Hazard Abatement District Seawall Repair Project, Santa Cruz County, California

Dear Patrick Dobbins:

MNS Engineers, Inc. conducted a focused special-status plant survey for the Pajaro Dunes Geologic Hazard Abatement District Seawall Repair Project (project) footprint in Santa Cruz County, California. The special-status plant survey effort was to identify and map all Monterey spineflower (*Chorizanthe pungens* var. *pungens*) in the project area. Whereas a previous assessment (Dawn Reis Ecological Studies 2024) identified sensitive habitat and potential impacts to the federally threatened Monterey spineflower, the project has subsequently been modified to fully avoid those impacts. The purpose of this survey effort was to confirm that the revised project footprint would have no impacts to special-status plant species.

The survey was consistent with guidelines provided by the California Native Plant Society (2001), U.S. Fish and Wildlife Service (2000), and California Department of Fish and Wildlife (2018). All plant species encountered were identified to the taxonomic level necessary to determine rarity and listing status. This report includes the methods, results, and conclusion/recommendations for future actions based on the survey results.

1 Project Location

The project area is in Range 1 East, Township 12 South, and Section 1 East on the U.S. Geological Survey (USGS) *Moss Landing* 7.5-minute quadrangle map (USGS 2024). The proposed Pajaro Dunes Seawall Maintenance and Repair Project is within the Pajaro Dunes Community in Watsonville. The proposed seawall revetment repair and maintenance work area is at Lots 1 to 12, Lot 15, Lots 54-55, Lot 107, and Lots 93 to 105. Additionally, the removal of rocks encroaching on State Beach property is on Lots 98 to 103. The revetment repair area extends approximately 1,900 linear feet along the ocean side of these properties. All of the proposed seawall rock revetment repairs are along the ocean side (west portion) of the Lots associated with the Pajaro Dunes development parcel numbers APN: 052-601-10 et al., as well as on State Parks Beach APN 052-231-35 in Watsonville.

2 Project Description

The proposed project involves the maintenance and repair of the existing seawall barrier within the Pajaro Dunes Community in Watsonville and the removal of rocks encroaching on State Beach property along the ocean side of the Pajaro Dunes residential development, spanning approximately 1,900 feet across two sections of the existing rock revetment (Figures 1 and 2, Attachment A). The purpose of the seawall maintenance and repair will be returning the rock revetment to the original design configuration. This repair will reduce the potential for settlement and the resulting instability that is caused by coastal erosion and the undermining of the revetment during large storm events.

3 Existing Conditions

The Pajaro Dunes project area lies within the western Central Coast geographic region (CNPS 2025a). Due to its close proximity to the Pacific Ocean, the project area supports a sand-dune dominated ecosystem consisting of active dunes (without vegetation), foredunes (with low-growing and often sparse vegetation), and coastal dune scrub. Active dunes are currently limited to one proposed beach access point at State Parks Beach near the public restroom. The project area also supports groves of non-native eucalyptus (*Eucalyptus* spp.) in the northern entrance of the project site. The project site is highly disturbed with non-native invasive American beach grass (*Ammophila breviligulata*) growing within the dunes and non-native invasive Hottentot fig (*Carpobrotus edulis*) growing along the sea wall of rocks.

3.1 Vegetation Communities and Land Covers

Vegetation communities and land covers occurring in the survey area were accounted for using alliances defined in A Manual of California Vegetation (MCV; CNPS 2025b). Three vegetation communities were noted in the survey area and their extent within the project area is presented in Table 1 and Figure 3.

Table 1. Vegetation Communities and Land Cover Types

Vegetation Communities and Land Cover	Project Site Acreage
Foredune	0.57 acres
Coastal Dune Scrub	2.2 acres
Rock Seawall	1.29 acres
Developed Areas	0.31 acres

3.1.1 Foredune

Healthy, native foredunes are sparsely vegetated with a thin layer of soil crust. Foredunes can be associated with at least two protected plant species, Monterey spineflower and Monterey paintbrush (*Castilleja latifolia*). The foredune occurs between the shoreline and the dune scrub. The foredune at this project had been disturbed by tidal erosion and large storm events.

3.1.2 Coastal Dune Scrub

Coastal Dune scrub (dune scrub) occurs inland of the foredune. With some protection from waves and wind, native plants can grow on the partially stabilized dunes. Vegetation present in most of the coastal dune scrub throughout the site consisted of the non-native, invasive plant species American beach grass and Hottentot fig.

3.1.3 Non-native Eucalyptus Groves

The project area supports several groves of non-native trees, primarily eucalyptus (*Eucalyptus* spp.). A large grove occurs at the northern entrance of the project site but is not within the project boundaries or impact areas.

3.1.4 Developed Areas

The project boundaries include several walkways and portions of seaward support structures for homes defined here as developed areas. No impacts to areas are anticipated.

3.2 Soils Review

According to the *Santa Cruz County Soil Survey* (USDA 2024), the survey area is underlain by the following soil units: Beaches, 1 to 5 percent slopes, and Dune land.

4 Methods

4.1 Literature and Data Review

MNS conducted a literature and data search of special-status plant species records in a 5-mile buffer of the project site. Sources reviewed included the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database RareFind 5 (CNDDDB; CDFW 2025a), California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS 2025a), and U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Conservation Report (USFWS 2025a). Other sources reviewed included the Jepson Herbarium eFlora database (Jepson Flora Project 2025), and the U.S. Department of Agriculture's (USDA) Web Soil Survey (USDA 2025).

The current conservation status of species was verified through lists and resources provided by the CDFW, specifically the Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2025b) and the State and Federally Listed Endangered, Threatened, and Rare Plants of California (CDFW 2025c). In addition, MNS reviewed previously prepared reports, survey results, and literature, as available, detailing special-status plants previously observed on or within the vicinity of the project site to gain an understanding of existing site conditions.

4.2 Focused Survey

The focused botanical surveys were conducted on April 29, 2025 and April 30, 2025 by MNS Senior Botanist, Brant Primrose. Site characteristics such as soil condition, topography, hydrology, anthropogenic disturbances, indicator species, and condition of on-site vegetation communities and land covers were noted. The surveys were conducted to document the presence and location(s) of individual special-status plants or populations (if present). The special-status plant surveys were conducted consistent with guidelines provided by the California Native Plant Society (2001), U.S. Fish and Wildlife Service (2000), and California Department of Fish and Wildlife (2018). The study area was assessed systematically on foot by walking transects that varied were approximately 33 feet apart depending on plant density and visibility to allow for 100 percent coverage necessary to inventory plant species. All species encountered were identified to the taxonomic level necessary to determine rarity and listing status.

Plant nomenclature used in this memorandum follows the Jepson eFlora (Jepson Flora Project 2025). If present, special-status plant populations were documented by counting the total number of individual occurrences and recording their locations with a GPS unit.

5 Results

Based on an initial biotic report (Dawn Reis Ecological Studies 2024), five special-status plant species had potential to occur within the project area: Monterey paintbrush, Monterey spineflower, Robust spineflower (*Chorizanthe robusta* var. *robusta*), Sand-loving wallflower (*Erysimum ammophilium*), and Sand gilia (*Gilia tenuiflora* ssp. *arenaria*). Table 2 describes known occurrences or potential to occur for each of the five

species given above in the study area based on their general biology (e.g., primary habitat associations, life form, blooming period, and known elevation range). Of these, three species are not expected to occur due to the absence of suitable habitat or because the study area is outside the known range of the species. Two of these species were detected and low-quality habitat was present to support them.

Table 2: Potentially Occurring Narrow Endemic Plant Species

Scientific Name Common Name	State/Federal/CNPS	Habitat Preferences and Distribution Affinities	Potential to Occur
<i>Castilleja latifolia</i> Monterey paintbrush	None/None/4	Sandy slopes in dune scrub; hemi-parasitic on woody shrubs	Present; found during site survey in 2024
<i>Chorizanthe pungens</i> var. <i>pungens</i> Monterey spineflower	None/Threatened/1B.2	Sandy slopes, can be intermixed with oak woodland/maritime chaparral, dune scrub; recorded from Fiesta Way area, Manresa and Sunset State beaches; Day Valley area; Pajaro Dunes	Present; found during focused survey in 2025
<i>Chorizanthe robusta</i> var. <i>robusta</i> Robust spineflower	None/Endangered/1B.1	Sandy slopes, often intermixed with oak/woodland/maritime chaparral; recorded from Manresa State Beach; NE of Ellicott Pond, Aptos HS area; marginal habitat on site	Not likely to occur
<i>Erysimum ammophilium</i> Sand-loving wallflower	None/None/1B.2	Coastal dunes; recorded from Sunset State Beach, along Shell Road	Not likely to occur
<i>Gilia tenuiflora</i> ssp. <i>arenaria</i> Sand gilia	Threatened/Endangered/1B.2	Coastal dunes; recorded from Sunset State Beach and Pajaro Dunes North of Palm Beach; marginal habitat on site	Not likely to occur

Source: CDFW 2025a; CNPS 2025a; USFWS 2025a.

Status Legend Federal FE: Federally listed as endangered FT: Federally listed as threatened State SE: State listed as endangered ST: State listed and threatened CRPR (California Rare Plant Rank) List 1B: Plants rare, threatened, or endangered in California and elsewhere List 2B: Plants rare, threatened, or endangered in California but common elsewhere.

Threat Rank: .1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat) .2 Fairly endangered in California (20% to 80% of occurrences threatened)

The study area is not within any USFWS-designated critical habitat for special-status plant species (USFWS 2025b).

Monterey spineflower was identified in three disturbed areas in the survey area during the focused botanical field surveys, totaling >300 individuals (Figure 2, Attachment A and Photos, Attachment B). A total of thirty-three (33) species of native or naturalized plants were recorded in the survey area (Attachment C). Monterey paintbrush was detected in 2024 and again in 2025, but is not mapped here because it occurred in avoidable areas outside of the revised impact areas, and was not listed as a candidate, threatened, endangered, rare, or CRPR 1 or 2 ranked species. Table 3 summarizes the survey dates, timing, surveyors, and weather conditions for each of the surveys.

Table 3. Summary of Survey Conditions

Date	Survey	Biologist	Time (start/finish)	Conditions (Temp/Cloud Cover/Wind)
04/29/2025	Focused Survey #1	Brant Primrose	0800/1500	52 degrees, partly cloudy with winds 0-3mph
04/30/2025	Focused Survey #2	Brant Primrose	0800/1600	54 degrees, partly cloudy with winds 0-1mph

6 Conclusions and Recommendations

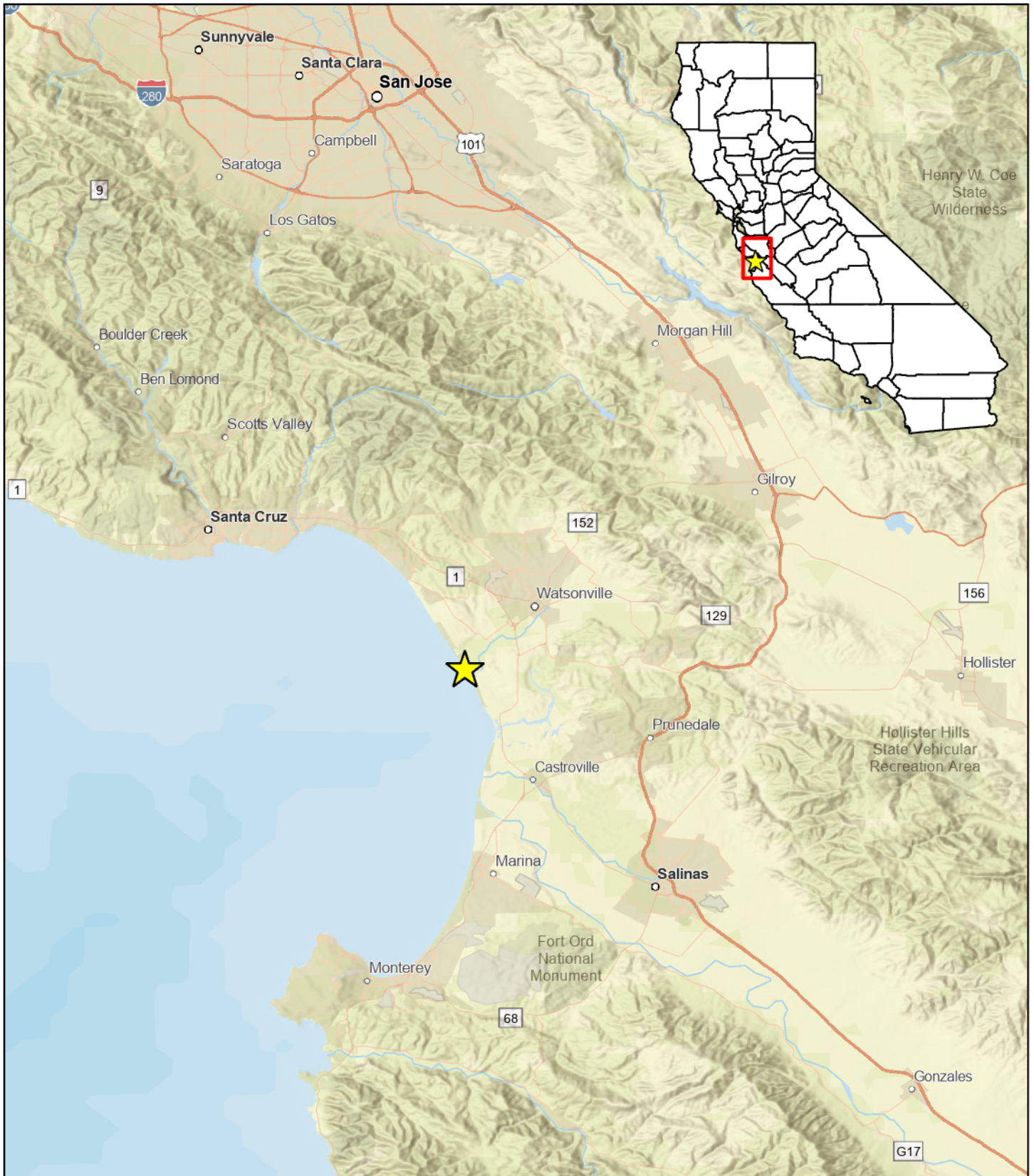
Based on results of the focused botanical surveys, the special-status plant, Monterey spineflower was identified in three disturbed locations within the survey area. The largest population counted >200 individuals in the southernmost dunes of the project site. The other two locations, totaling <150 individuals, were adjacent to walkways leading to stairs that allow beach access in the northern section of the project site.

Due to the presence of the Monterey spineflower, a federally threatened species, it is recommended to avoid direct impacts to the sensitive foredune and coastal dune habitat where they occur. Avoidance can be accomplished through use of signage, temporary fencing along staging areas and construction access, and additional focused pre-construction clearance surveys of work areas. If direct impacts are anticipated, it is recommended to seek an Incidental Take Permit with U.S. Fish and Wildlife Service (USFWS) to help minimize impacts on sensitive habitat within heavy foot-traffic zones and construction sites. Avoidance and minimization measures were provided in an initial Biological Assessment Report (Dawn Reis Ecological Studies 2024) and include BOT-1 through BOT-7. Based on the 2025 survey and vegetation mapping, direct impacts to Monterey spineflower and Monterey paintbrush are avoidable through the revised project boundaries and fencing and avoidance of mapped individual locations. Accordingly, no mitigation measures would be required and full avoidance of impacts to special-status plants is possible.

7 Literature Cited

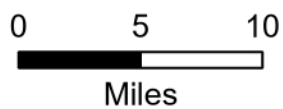
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Attachment A: Figures



 Project Location



Pajaro Dunes Focused Rare Plant Survey



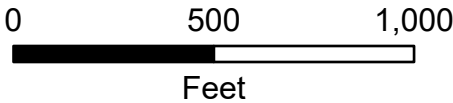
PROJECT LOCATION

Figure 1



-  Location of Monterey spineflower (*Chorizanthe pungens* var. *pungens*) Clusters
-  Project Boundary

Pajaro Dunes Focused Rare Plant Survey



SURVEY AREA

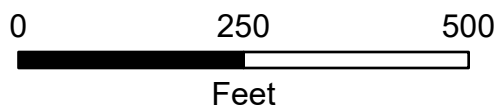
Figure 2



Vegetation Communities

- Foredune (0.57 ac)
- Seawall (1.29 ac)
- Dune (2.20 ac)
- Developed (0.31 ac)
- Project Boundary

Pajaro Dunes Focused Rare Plant Survey



VEGETATION MAP

Figure 3

Attachment B: Site Photographs



Photograph 1: Facing West towards Pajaro Dunes Beach on the northern side of the Project Area.



Photograph 2: Looking South at the northern area of the Project Area with American beach grass.



Photograph 3: Disturbed dunes looking South at the Project Area.



Photograph 4: Looking West at stairway within Project Area boundaries with Monterey spineflowers (*Chorizanthe pungens* var. *pungens*) growing on the sides of walkway.



Photograph 5: Looking West at proposed laydown area with the largest population of Monterey spineflowers (*Chorizanthe pungens* var. *pungens*).



Photograph 6: Monterey spineflowers (*Chorizanthe pungens* var. *pungens*) located in laydown area.



Photograph 7: Looking North from the western portion of the proposed laydown area.

Attachment C: Species Compendium

Pajaro Dunes Plant List	
SCIENTIFIC NAME	COMMON NAME
PLANTS	
<i>Abronia latifolia</i>	Yellow Sand Verbena
<i>Aeonium arboreum</i>	Tree Aeonium
<i>Aeonium haworthii</i>	Haworth's Aeonium
<i>Ambrosia chamissonis</i>	Silver Beachweed
<i>Ammophila breviligulata</i>	American Beach Grass
<i>Artemesia pycnocephala</i>	Coastal Sagewort
<i>Avena barbata</i>	Wild Oat
<i>Amsinkia menziesii</i>	Ranchers Fiddleneck
<i>Baccharis pilularis</i>	Coyote Bush
<i>Cakile maritima</i>	European Searochet
<i>Cammissoniopsis cheiranthifolia</i>	Beach Suncup
<i>Carpobrotus chillensis</i>	Sea Fig
<i>Carpobrotus edulis</i>	Hottentot Fig
<i>Castilleja latifolia</i>	Monterey Indian Paintbrush
<i>Chorizanthe pungens</i> var. <i>pungens</i>	Monterey Spine Flower
<i>Claytonia perfoliate</i>	Miner's Lettuce
<i>Corymbia citriodora</i>	Lemon-scented gum
<i>Crassula connata</i>	Pygmy Stonecrop
<i>Cryptantha</i> sp.	Cryptantha
<i>Cyodon dactylon</i>	Bermuda Grass
<i>Daucus pusillus</i>	Rattlesnake Weed
<i>Dudley caespitosa</i>	Coast Dudleya
<i>Ericameria ericoides</i>	California Goldenbush
<i>Eriophyllum staechadifolium</i>	Seaside Woolly Sunflower

<i>Hesperocyparis macrocarpa</i>	Monterey Cypress
<i>Heterotheca grandiflora</i>	Telegraph Weed
<i>Hordeum murium</i>	Barley
<i>Lathyrus littoralis</i>	Silky Beach Pea
<i>Lupinus arboreus</i>	Coastal Bush Lupine
<i>Malva parviflora</i>	Cheeseweed
<i>Medicago polycarpa</i>	Burr medic
<i>Melilotus indica</i>	Sweet Clover
<i>Pseudognaphalium stramineum</i>	Cottonbatting Plant