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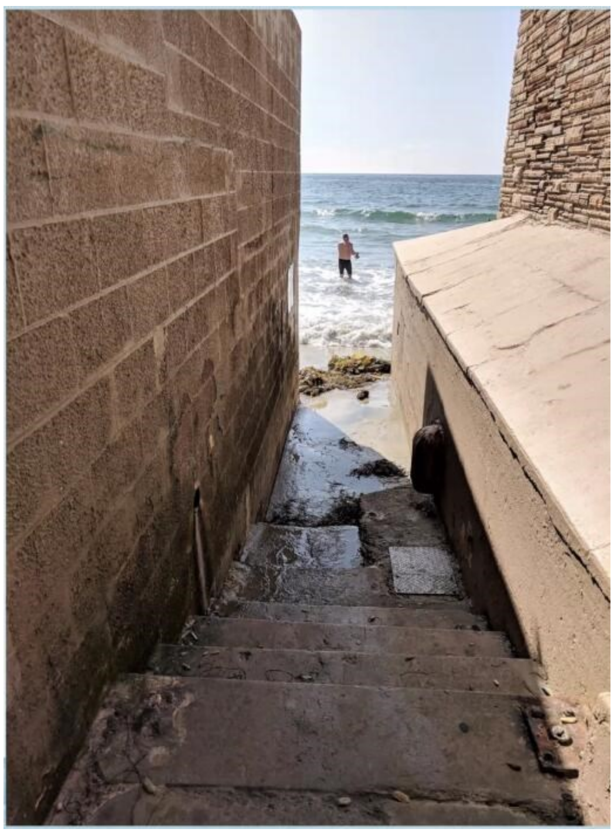
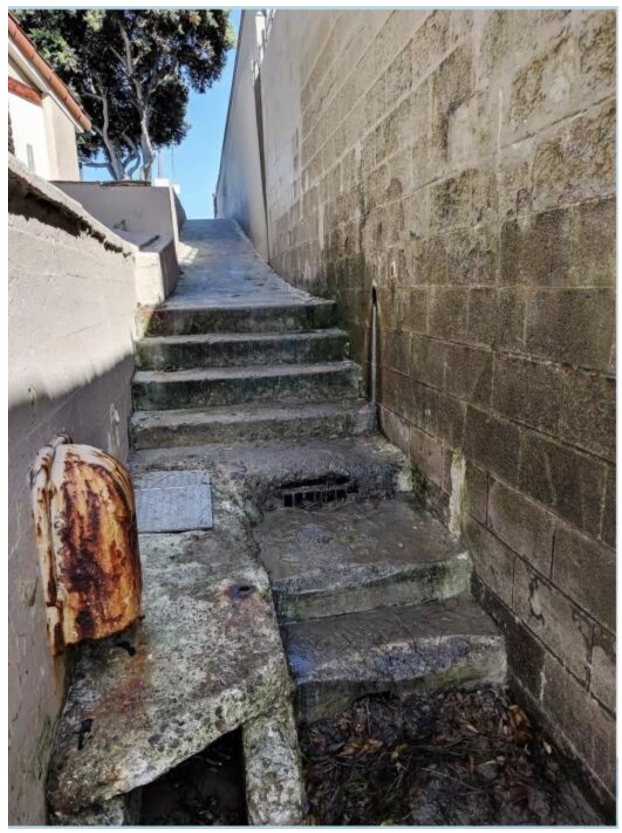
moffatt & nichol

FEASIBILITY STUDY

Spindrift Drive Beach Access Walkway Alternatives Evaluation





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Glossary

yr	Year
ft	Feet
MHHW	Mean Higher-High Water
MHW	Mean High Water
NAVD	North American Vertical Datum of 1988
NGVD	National Geodetic Vertical Datum 1929
OPC	Ocean Protection Council
SLR	Sea Level Rise
SWL	Still Water Level
WL	Water Level
CCTV	Closed-Circuit Television
RCP	Reinforced Concrete Pipe
PVC	Polyvinyl chloride
ADA	Americans with Disability Act
CBC	California Building Code
USACE	United States Army Corps of Engineers
RWQCB	Regional Water Quality Control Board (San Diego)
CCC	California Coastal Commission
CSLC	California State Lands Commission
NPDES	National Pollutant Discharge Elimination System
CDP	Coastal Development Permit
CEQA	California Environmental Quality Act
MS4	Municipal Separate Storm Sewer System
BMP	Best Management Practices
CGP	Construction General Plan
WPCP	Water Pollution Control Plan
SWPP	Storm Water Prevention Plan
ASBS	Area of Special Biological Significance

1. Introduction

The Spindrift Drive beach access walkway, also known as Spindrift Access, is an important public amenity located in the La Jolla Shores community, approximately 13 miles north of downtown San Diego. This access point serves as a gateway to the scenic La Jolla Shores Beach and is nestled within a historic seaside community that traces its roots back to the late 19th century. Renowned for its coastal proximity and panoramic views of the Pacific Ocean, Spindrift Drive is home to iconic landmarks such as the Marine Room restaurant, established in 1941. These features enrich the cultural and scenic experience for both residents and visitors.

The walkway itself is part of the California Coastal Trail and provides public access to significant natural areas, including the San Diego-La Jolla Underwater Park. This access point also connects to nearby beach access locations such as those at Avenida De La Playa, slightly over half a mile to the north, and La Jolla Cove, about one mile to the south. The Spindrift Access stairway links the La Jolla Community Beach with the La Jolla Vista Subdivision and supports the Coastal Trail south towards Point La Jolla.

The original walkway construction date is not known; however, a 1937 plat of survey depicts the walkway as a public lane with a flight of stairs leading down to the beach. Available as-built drawings of improvements made to the lower walkway stairs and storm drain outlet are dated from 1961. The existing structure is a 4' wide walkway and staircase, approximately 150' in length, with a vertical elevation drop of roughly 17'. It passes between the retaining walls of adjacent private properties, connecting Spindrift Drive to the beach. In addition, the access serves as an easement for an 18" storm drain pipe which runs underneath the walkway from street level to the beach. Over the years, the structure has faced deterioration due to exposure to the marine environment as well as stormwater runoff. Pictures of the existing walkway are provided in Figure 1.

FIGURE 1: PICTURES OF THE EXISTING SPINDRIFT DRIVE BEACH ACCESS WALKWAY

Given the ongoing deterioration of the walkway, the city of San Diego (City) is planning to make enhancements with the aim of improving accessibility while maintaining existing storm drain functionality. This study investigates the feasibility of several improvement options, including making structural repairs with added handrails, replacing the lower portion of the walkway with a less steep stair configuration, and providing an ADA-compliant ramp-only alternative. The following sections describe the current condition of the walkway, outline design and implementation considerations, present four conceptual alternatives for improvement, and ultimately provide a comparative feasibility evaluation of these options.

2. Site Assessment

2.1. Existing Conditions

The 150’ long walkway is composed of a 115’ upper ramp section that begins at Spindrift Drive, followed by a short flight of eight steps, and finally an 18’ landing at beach level. The existing storm drain transitions from an 18” reinforced concrete pipe to a box culvert that is 18” high and 10” wide at the second step up from the lower landing. As-built drawings from storm drain improvements made in 1961 (Figure 3) show this box culvert extending to the end of the adjacent retaining wall, however, the top appears to have since been removed over most of its length, creating a sill below the lower landing which was likely cast above it after removal of the culvert lid. A structural inspection was conducted which included the above walkway elements as well as external storm drain outlets and the privately owned retaining walls adjacent to the stairs (Appendix B). A closed-circuit television (CCTV) inspection of the storm drain was separately conducted to investigate its internal condition (Appendix F). A summary of the structural and CCTV inspection findings follows with key features identified in Figure 2:

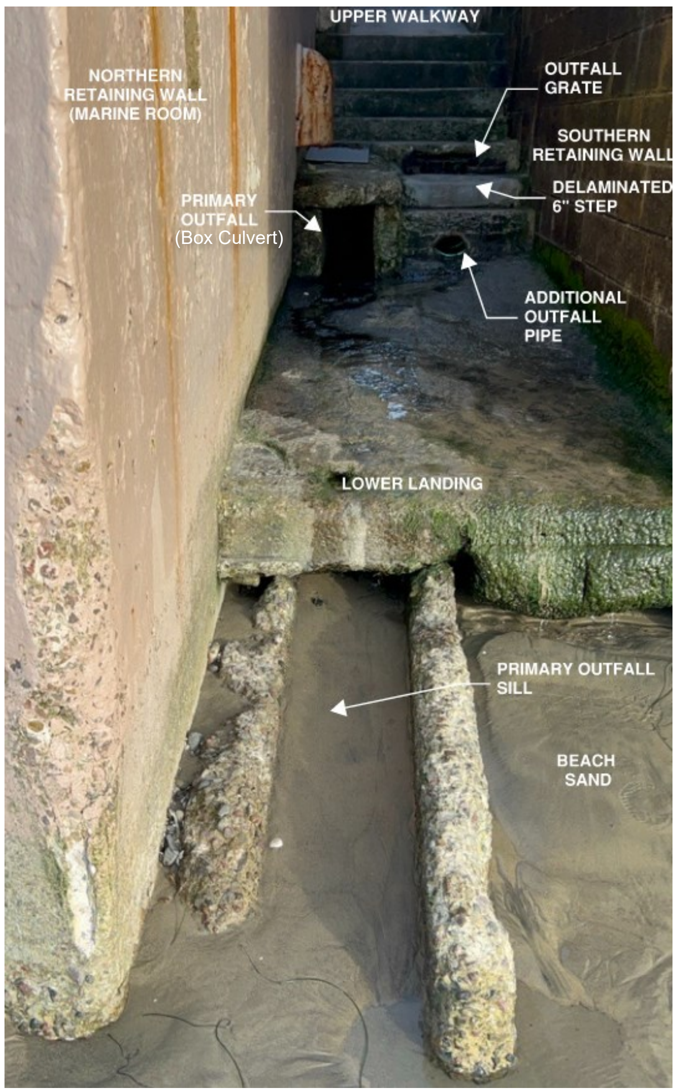


FIGURE 2: EXISTING WALKWAY PHOTO WITH KEY FEATURES IDENTIFIED

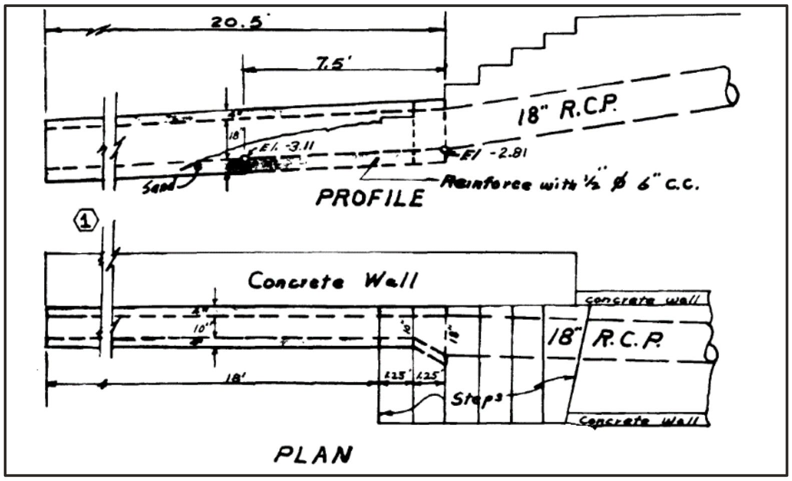


FIGURE 3: 1961 LOWER WALKWAY STORM DRAIN IMPROVEMENT AS-BUILT DRAWINGS

- **Upper Ramp:** The 115’ ramp is in fair condition, showing no signs of delamination or significant defects, only normal pedestrian wear.
- **Staircase:** The concrete steps vary in condition with the lower steps in particularly poor condition, showing excessive deterioration due to their regular exposure to the marine environment along with pedestrian traffic. Full delamination of the 6th stair was noted, with the recommendation that it be demolished and replaced.
- **Lower Landing:** The 18’ beach level landing is in fair condition but shows signs of significant wear along its length due to exposure to the marine environment, pedestrian traffic, and runoff from the storm drain outlets. Although not present during the investigation, scour issues at the end of the landing have been documented by the community.
- **Retaining Walls:** The adjacent retaining walls, although not owned by the City of San Diego, were inspected for overall assessment purposes. The walls are constructed of concrete masonry blocks and show some signs of corrosion spalling, but overall, they are in fair condition with no immediate repair needs.
- **Storm Drain Outfalls (External):** There are four storm drain openings of concern. The primary storm drain box culvert, located adjacent to the bottom stairs, is in poor condition, with significant erosion observed around the outlet. The storm drain outfall under the 7th step is in fair condition, while the storm drain grate embedded in the 5th step is severely corroded and in poor condition. While the primary outfall sill appears to be functional, it is severly eroded and its hydraulic capacity is greatly reduced by sand infill.
- **Storm Drain (Internal):** The existing 18” RCP was found to be in fair condition, with several fractures noted throughout the pipe length. Two previously unknown laterals, a 10” PVC pipe approximately 95’ from the street level catch basin and a 6” PVC pipe approximately 104’ from the upper catch basin, were identified taping into the storm drain line from the north**.** Sand infiltration obstructing 30-50% of the storm drain was noted beginning approximately 102’ from the street level catch basin extending to the bottom outfall.

3. Design Considerations

Design considerations used to guide the development of alternatives in this study are presented in the following sections. Alternatives were not developed with a hard requirement of achieving all considerations simultaneously; Instead, alternatives were developed to provide a range of options with different benefits given the listed considerations. Selection of a preferred option should ultimately be made based on the alternative that provides the greatest overall benefit to the City and community, weighing all design considerations.

3.1. Structural

The proposed design alternatives should maintain their structural integrity over a 50-yr design life. Key structural considerations developed by M&N engineers are listed below:

- Slab on grade walkway surfaces should have a minimum thickness of 6" with at least 2.5" of rebar cover to accommodate pedestrian loads and marine environment corrosion/erosion.
- Seaward terminating walkway elements on the beach should be anchored with a minimum 2' thick foundation that is embedded 1' into stable formational material.
- Walkway wall/surface elements extending onto the beach should have a minimum thickness of 10", with at least 3" of rebar cover to resist wave forces and marine environment corrosion.
- A marine concrete mix should be used.
- Handrails cannot be fixed to adjacent retaining walls.

3.2. Civil (Storm Drain/Drainage)

Proposed modifications to the existing storm drain system, as depicted in the as-built drawings provided in Appendix J, must comply with the City of San Diego Drainage Design Manual (City of San Diego, 2017). Considering the unique outfall conditions, the outfall conduits may not meet minimum cover nor dimensional requirements in accordance with the manual. Detailed hydraulic analysis is warranted during final design to justify the unique drainage features and to confirm sizes. Key considerations are listed below:

- Modification should maintain a capacity that is at least equal to the existing 18" RCP capacity and outlet configurations that provide comparable flood protection levels.
- Modifications should minimize sand filling the storm drain outfalls to the extent possible based on a high summer sand level of roughly +3' NGVD.
- Modifications should consider maintenance access.
- A future hydraulics analysis should dictate the final configuration of storm drain system.
- Obstruction of drainage features (*i.e.* weep holes) on adjacent retaining walls should be avoided.
- Overall site and adjacent area disturbances should be minimized.
- Hydraulic discharge onto walking surfaces and pedestrian safety.

3.3. Accessibility

Given the site's unique characteristics and public usage, the design must comply with applicable accessibility standards to the *maximum extent possible*. Existing walkway accessibility deficiencies as detailed in Appendix C include excessive slopes, inconsistent tread and riser dimensions, as well as a lack of handrails, contrast striping, and signage. Cross-slope deficiencies to the initial upper 6' section of walkway were not considered as this was outside of the Spindrift Beach Access right of way and transitions to the sidewalk which has a 4% grade. Detailed considerations are provided in Appendix C with a summary of key considerations for design provided below:

- Federal and state regulations include the Americans with Disabilities Act (ADA) and the California Building Code (CBC). Limiting CBC design considerations and section numbers are referenced below.
    - Railings are required for ramp slopes over 5% (11B-402.2)
    - A 1:12 (8.33%) ramp slope should not be exceeded (11B-405.2)
    - Public stairs require handrails on both sides regardless of number of risers (11B-504.6, 11B-505.1, 11B-505.2)
    - A minimum 48" width should be maintained (11B-405.5)
    - A ramp run should not exceed a rise of 30" (11B-405.6)
    - Top and intermediate ramp landings should measure at least 48" in width and 60" in length (11B-405.7.3). Ramp bottom landings should measure at least 72" in length. Stair landings should maintain a minimum 48" length.
    - Intermediate landings at changes in direction (such as switchbacks) must be 60" x 72" minimum (11B-405.7.4)
    - Cross slopes and slopes along direction of travel should not exceed 1:48 (2%) for landings and treads (11B-302, 1011.7,1 and 11B-504.4)
    - Riser heights should be within the range of 4" to 7". Tread depths should be within the range of 9-1/2" to 26 -1/2" (1011.5.4 11B-504.3). Riser and tread dimensions should be uniform throughout the walkway (1011.5.4 11B-504.3).
    - A 2" to 4" clear visual contrast stripe should be provided on each step (11B-504.4.1)
    - The curvature at the leading edge of a tread should not exceed a 1/2" radius (11B-504.5)
    - Stair treads and landings subject to wet conditions shall be designed to prevent the accumulation of water (11B-504.7).
    - Signage to the nearest ADA compliant beach access should be provided at the street level walkway entrance
- Local Regulations: City of San Diego Standard Details for handrails.
- Site-specific limitations including adjacent property boundaries, existing storm drain/drainage infrastructure, and coastal hazards.
- Beach access in its entirety, include nearby ADA access points at Kellog Park approximately 1 mile to the north via sidewalk or car.

3.4. Coastal and Geologic

When evaluating walkway alternative design option feasibility, several coastal and geologic criteria must be considered to ensure the structure's resilience and long-term functionality. Alternatives should be developed not only to meet current conditions but with consideration for future coastal changes. A more detailed coastal hazard assessment and geotechnical report are available in Appendix D and Appendix E, with key considerations listed in the following subsections.

3.4.1. Wave Dynamics

The site is subject to a variety of wave conditions, including long-period swell waves from the Pacific Ocean and local wind-generated waves. The proximity of La Jolla Point offers some protection, but broken waves, particularly from large northwesterly swell, can still reach the walkway, particularly during higher tide levels (Figure 4). The design must account for these wave forces, ensuring that the structure can withstand the most extreme wave conditions anticipated.

FIGURE 4: WAVE IMPACT DURING HIGH WATER LEVELS AT SPINDRIFT ACCESS

3.4.2. Sea Level Rise (SLR) Projections

A 50-yr SLR projection of up to 3.1' is recommended for consideration per Appendix D. This rise will exacerbate the frequency and intensity of existing coastal hazards such as shoreline erosion, wave runup, and still water flooding during high-tide events. The design should incorporate adaptive strategies to address SLR to the extent possible, ensuring that the stairs remain functional and safe under future conditions.

3.4.3. Shoreline Erosion/Scour

The shoreline near the Spindrift Access is currently experiencing a slow rate of erosion, which is expected to continue and potentially accelerate with SLR. Localized scours have also been seasonally observed at the toe of the existing walkway beach landing as illustrated in Figure 5. Scour could undermine the structural integrity of the stairs and cause a large drop-off from the bottom landing to the sandy beach. The design should accommodate for a minimum upper beach sand level of +1 to +2' NGVD (based on historical survey data per Appendix D Section 5) to the extent possible through control measures or anchoring into solid foundational material. A future beach level eroded to the underlying formational layer should be considered as a worst-case scenario with SLR.

FIGURE 5: EXAMPLE OF SEASONAL SCOUR AT EXISTING WALKWAY BOTTOM LANDING

3.4.4. Flooding Hazards

The site is prone to both still water flooding and wave-induced runup flooding, particularly during high tides and storm events. As sea levels rise, the frequency and intensity of these flooding events will increase, further complicating access to the beach. The walkway design should be elevated or otherwise engineered to the maximum extent possible to mitigate these hazards. Table 1 provides various still water levels for consideration, both with and without future SLR, as determined in Appendix D.

TABLE 1: DAILY (MHHW), ANNUAL (1-YR) AND EXTREME (100-YR) STILL WATER SURFACE ELEVATIONS FOR PRESENT-DAY AND FUTURE SEA LEVELS

	Water Level (ft, NGVD)		
	No SLR (Present)	+1.6’ SLR (2060)	+3.1’ SLR (2080)
MHHW	3.0	4.6	6.1
1-yr WL	4.3	5.9	7.4
100-yr WL	5.3	6.9	8.4

3.4.5. Geologic and Geotechnical Considerations

The site's underlying geology consists of marine beach deposits underlain by the Cretaceous-age Point Loma Formation, a well-indurated sedimentary unit providing a stable but challenging foundation. Groundwater levels influenced by tidal functions, as well as wave forces necessitate careful consideration of foundation stability. A minimum 1’ embedment into formational layer, which ranges from +1’ to -2’ NGVD at the project site, is recommended for structure elements on the beach per Appendix E with considerations for structural stability.

4. Design Alternatives

Constraints imposed by the Spindrift walkway location, storm drain, accessibility, and permitting requirements limit the possible alternatives. Four alternatives were investigated, including 1) a repair of the existing staircase, 2) a replacement stair configuration within the existing footprint, 3) a replacement stair configuration extending slightly beyond the existing footprint, and 4) a replacement of the walkway with an ADA-compliant ramp. The following sections discuss each alternative with context of the design considerations presented in Section 3. A complete set of concept drawings is provided in Appendix A.

4.1. Alternative 1: Repair of the Existing Staircase and Addition of Handrails

Structural and Accessibility:

Alternative 1 proposes replacing structurally compromised components of the existing walkway, including the bottom three steps, storm drain grate, and box culvert, as shown in Figure 6 and Appendix A. The in-kind repairs will enhance structural integrity and extend the service life of the walkway; however, this alternative does not address future degradation of other sections of the walkway that are currently in fair condition and may not remain functional for the desired design life.

In addition, post-mounted handrails will be installed on the bottom landing, stairs, and sections of the upper walkway that exceed a 1:12 (8.33%) ramp slope. While the handrails improve accessibility, the effective width of the walkway would be correspondingly reduced, and many ADA deficiencies would remain unaddressed. Replaced stairs would be made compliant with ADA 1:48 (2%) slope requirements, but their dimensions and non-uniformity would remain in violation of code. Signage to the nearest ADA compliant beach access could be posted with visual striping added to stairs.

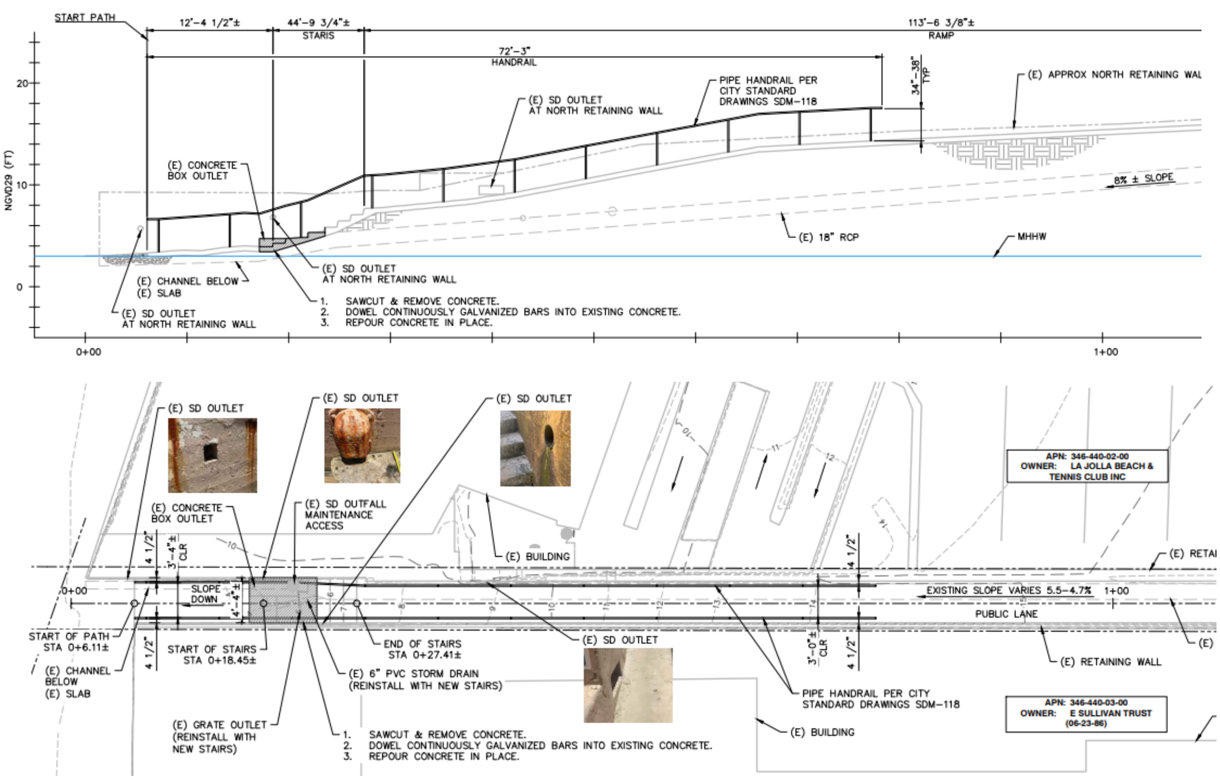


FIGURE 6: ALTERNATIVE 1 DESIGN

Drainage Considerations:

The replacement in-kind of the concrete storm drain box outlet, storm drain grate, and lower steps would maintain existing drainage efficiency within the lower section of the stairway. These replacements would ensure structural integrity without altering the existing layout of the drainage system. Periodic storm drain cleaning will be required to keep the outlet open, especially during coastal conditions that result in higher sand levels.

Coastal Considerations:

The existing walkway is prone to both still water flooding and wave-induced runup which will increase in frequency and intensity due to future SLR. Proposed Alternative 1 repairs would do nothing to mitigate existing coastal hazards or anticipated impacts of climate change. The proposed repairs would not account for ongoing scour issues at the bottom landing, leaving the area vulnerable to future coastal erosion and weathering.

4.2. Alternative 2: Replacement Stairs Within the Existing Footprint

Structural and Accessibility:

Alternative 2, shown in Figure 7 and Appendix A, involves replacing the lower portion of the existing walkway with several sets of stairs and landings, allowing for greater integration of accessibility standards and ensuring a functionally viable walkway with a 50-yr design life. The steps have been provided in sets of three to improve safety (rhythmic step pattern) and enhance accessibility (landings provide a respite). The new stairs and landings would be constructed to conform to all ADA dimensional, slope, and uniformity requirements.

The new configuration of stairs and landings replace steep sections of the lower and mid walkway that exceed 6% grade and approach 19% in some areas. The upper walkway that extends from the proposed improvements to the Spindrift sidewalk will remain in place. The existing slope of this upper walkway section varies between 5.6% and 4.8% exceeding the threshold for ADA permitted running slope. The cross slope is less than the 2% ADA threshold for all areas within the Public Lane right of way but transitions to 4% over the last 6’ of the walkway (within Spindrift right of way adjacent to the Spindrift Drive Sidewalk) to match the existing street grade. The elevation difference from the right of way to the proposed improvements is approximately 3.5’, exceeding ADA-permitted 1:12 (8.33%) slope for every 30” drop.

With this alternative, achieving ADA compliance for the upper portion of the walkway would require significant modifications. To meet ADA standards there would need to be an adjustment to the stair elevation and reconstruction of the entire pathway to the existing sidewalk. Since the walkway leads to stairs in this alternative, the cost-benefit to improve the upper walkway to either meet the ramp requirements or 5% maximum running slope appears to be limited.

Improvements to the lower walkway follow the existing grade, within +/- 2' vertically, minimizing impacts to the adjacent retaining walls and horizontally remaining within the footprint of the existing walkway. The number of total steps has been increased from 8 to 21, with a bottom landing keyed into the underlying formational material. Possible handrail exemptions for stairs with a limited number of risers were investigated, however, these exemptions cannot be applied to public use stairs and post-mounted handrails will therefore be installed on the lower walkway. While the handrails improve accessibility, the effective width of the walkway would be correspondingly reduced. Design phase considerations must ensure the bottom handrails, spanning from the beach landing to the catch basin, are constructed to withstand regular exposure to the marine environment over the structure's design life. Signage to the nearest ADA compliant beach access could be posted with visual striping added to stairs.

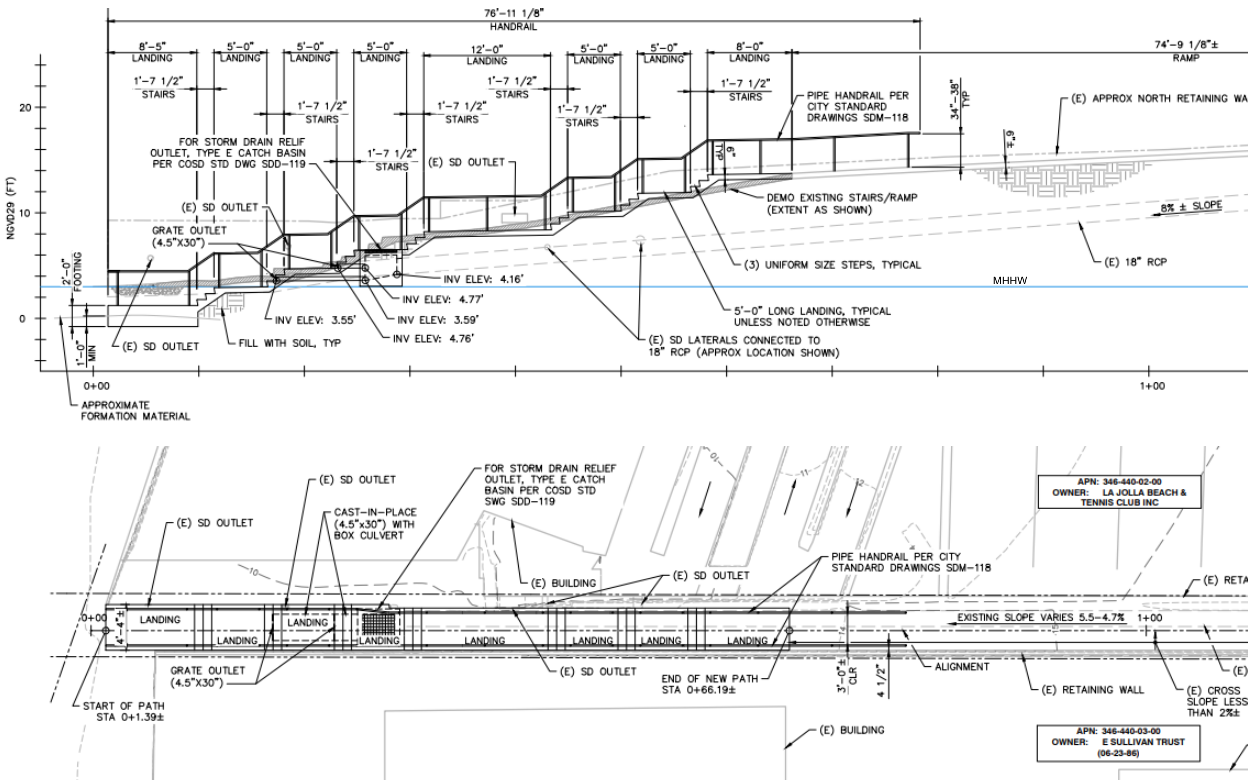


FIGURE 7: ALTERNATIVE 2 DESIGN

Drainage Considerations:

This design facilitates upgrades to the last roughly 30' of the existing storm drain configuration. The transition will incorporate a catch basin with a top elevation above 6' NGVD, accommodating the 18" reinforced concrete inlet pipe and dividing the outflow into several smaller box culverts while maintaining the same square footage of flow potential. This transition will provide two elevations of outlet flow, allowing drainage even if the lower outlet is plugged due to summer sand or surf conditions. A storm drain grate will be horizontally located on the top of the box, enabling easy access for cleaning as well as allowing for emergency drainage. The catch basin and outlet pipes will need periodic cleaning to remove sand accumulation. Due to the stair configuration, stormwater can only discharge onto the treads/landings, raising potential safety concerns. To address these concerns, treads/landings would be sloped downward (within allowable ADA specifications) to prevent ponding and would be finished with a heavy brush texture.

Coastal Considerations:

The replacement of the lower walkway would enhance the structure's resilience to marine environment degradation. It does not, however, significantly alter the walkway's existing vertical configuration and would not affect existing or future still-water flooding hazards. The introduction of more stairs, as well as the storm drain grate, would provide a minor reduction in wave runup potential. The last three steps bring the bottom landing to a lower elevation of +1' NGVD, ensuring beach access during low sand winter conditions. The first three to six steps may be covered with sand during higher summer sand profiles. Scour issues are further addressed by keying the bottom landing into the formational layer.

4.3. Alternative 3: Replacement Stairs with a Footprint Extension

Structural and Accessibility:

Alternative 3 (Figure 8 and Appendix A) involves replacement of the lower portion of the existing walkway with several sets of stairs and landings, similar to Alternative 2, allowing for accessibility and functional design life improvements. This alternative differs from Alternative 2 in that it extends slightly past the existing walkway footprint, maintaining a higher bottom landing elevation and descending to the beach via a final set of south facing stairs that run parallel to the adjacent property seawall.

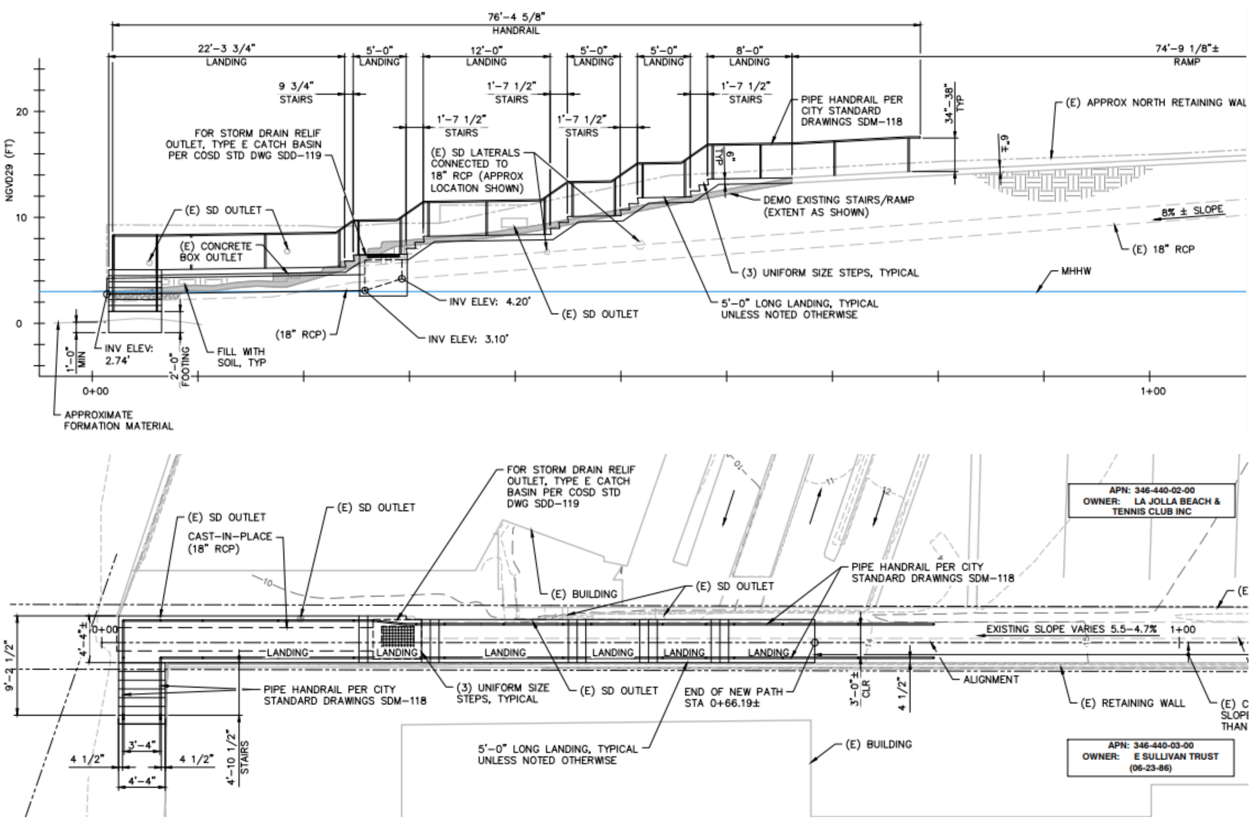


FIGURE 8: ALTERNATIVE 3 DESIGN

The new configuration of stairs and landings replace steep sections of the lower and mid walkway that exceed 6% grade and approach 19% in some areas. The upper walkway that extends from the proposed improvements to the Spindrift sidewalk will remain in place. The existing slope of this upper walkway section varies between 5.6% and 4.8% exceeding the threshold for ADA permitted running slope. The cross slope is less than the 2% ADA threshold for all areas within the Public Lane right of way but transitions to 4% over the last 6' of the walkway (within Spindrift right of way adjacent to the Spindrift Drive Sidewalk) to match the existing street grade.

With this alternative, achieving ADA compliance for the upper portion of the walkway would require significant modifications. To meet ADA standards there would need to be an adjustment to the stair elevation and reconstruction of the entire pathway to the existing sidewalk. Since the walkway leads to stairs in this alternative, the cost-benefit to improve the upper walkway to either meet the ramp requirements or 5% maximum running slope appears to be limited.

Alternative 3 follows the existing lower walkway grade, within +/- 2' vertically, minimizing impacts to the adjacent retaining walls. The raised bottom landing, however, would extend 4.5' seaward of the existing structure with the final flight of stairs extending and an additional 6' south. This final set of seven steps has a bottom step elevation at approximately +1' NGVD and would be a solid cast in place structure further keyed into formation material to protect it from greater exposure to waves.

Possible handrail exemptions for stairs with a limited number of risers were investigated, however, these exemptions cannot be applied to public use stairs and post-mounted handrails will therefore be installed on the lower walkway. While the handrails improve accessibility, the effective width of the walkway would be correspondingly reduced. Design phase considerations must ensure the bottom handrails, including on the final flight of stairs to the beach and on the lower landing, are constructed to withstand regular exposure to the marine environment over the structure's design life. Signage to the nearest ADA compliant beach access could be posted with visual striping added to stairs.

Drainage Considerations:

This alternative involves replacing approximately 30' of the existing storm drain and connecting it to a newly installed catch basin with a top elevation above 6' NGVD. The catch basin will serve as an emergency overflow and provide maintenance access. Stormwater will flow from the catch basin through an 18" pipe onto the beach. The raised walkway elevation allows for proper drainage at the structure's end, unlike Alternatives 1 and 2, where outflow impacts the walkway. To prevent sand infill during high tides and storm surges, a flap can be installed at the outlet to reduce wave impact.

Coastal Considerations:

The extended lower landing, raised to an elevation of roughly 5' NGVD, will help protect the walkway from inundation during all but extreme (100-yr) high water events under present conditions (see Table 1 for high water event elevations). This alternative will continue to protect the lower landing during daily high tides through roughly 2060 but will begin to experience inundation under annual high water level events. By 2080, the lower walkway is likely to experience inundation under daily high tides with projected SLR. The additional stairs, storm drain grate, and raised lower landing would also provide obstruction to incoming waves helping to reduce the extents of flooding due to wave runup. At an elevation of +1' NGVD, the bottom step of the final flight of stairs is low enough to ensure beach access during low sand winter conditions, while the first four to five steps may be covered during higher summer sand profiles. Scour issues are further addressed by keying the bottom landing and final flight of stairs into the formational layer.

4.4. Alternative 4: Replacement with an ADA Compatible access

Structural and Accessibility:

Alternative 4, shown in Figure 9 and Appendix A, provides a ramp option that follows ADA compliance, including requirements that the ramp slope cannot exceed a 1:12 slope and must have a 5' landing every

30’. Due to the required elevation drop of roughly 17’ from street level, as well as constraints from adjacent properties, this alternative would require replacement of the entire existing walkway with a ramp that extends further onto the beach. To minimize obstruction to neighboring vistas (south patio and north restaurant outlook), the proposed ramp incorporates several switchbacks. In total, the proposed ramp would protrude an additional 28’ onto the beach and into the surf zone. Ensuring such a structure’s integrity over a 50-yr design life poses major engineering challenges given its location in a dynamic coastal environment exposed to significant wave forces.

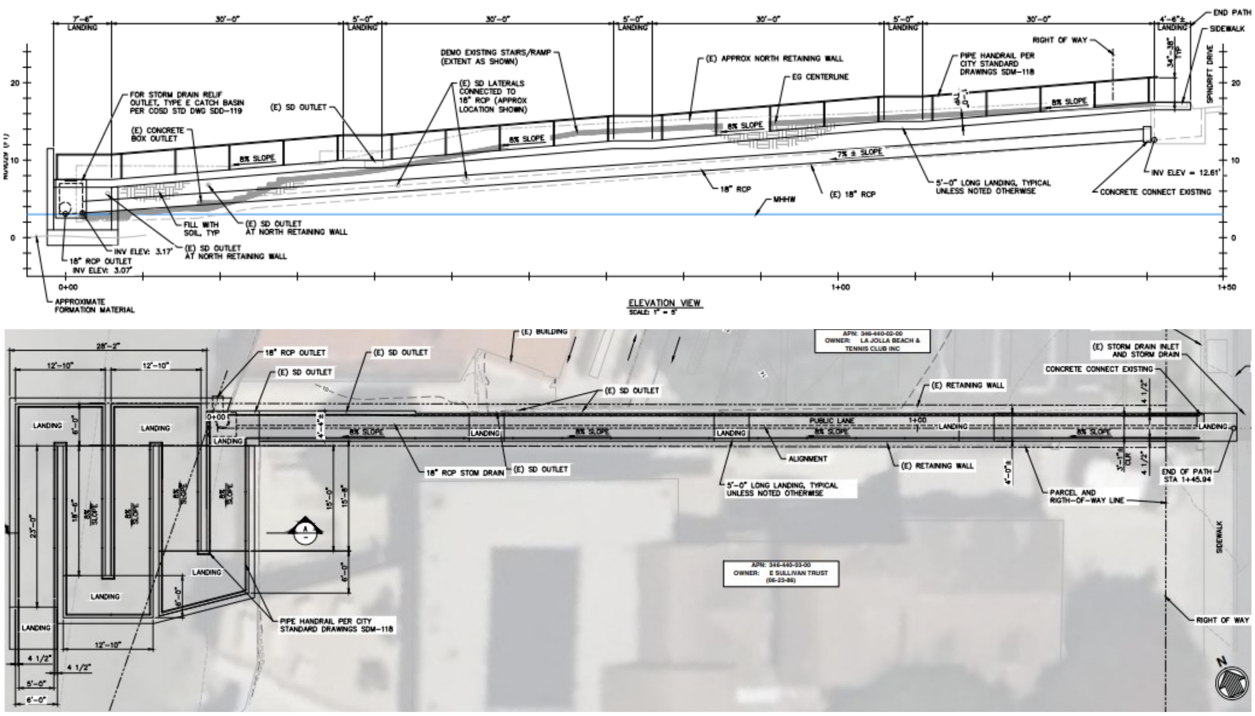


FIGURE 9: ALTERNATIVE 4 DESIGN

Drainage Considerations:

Given that the existing walkway will be entirely demolished, the existing storm drain pipe will also be replaced. The new 18” RCP pipe will connect to the streel-level storm drain box via a concrete collar and descend to a catch basin at the end of the retaining wall. The new catch basin will provide maintenance access, as well as emergency overflow capacity. Discharge will ultimately exit to the north through a short 18” outfall. To mitigate sand infill during seasonal accretion, the slope of the newly installed pipe can be adjusted to raise the outfall elevation.

In addition, the raised walkway profile will necessitate the closure of several existing drainage outlets along the adjacent property retaining walls. These previously exposed features will need to be connected to the main storm drain line or otherwise modified to accommodate the change in walkway grade.

Coastal Considerations:

The elevated ramp at the end of the Marine Room Restaurant retaining wall reduces the incidence of high-water intrusion at the access location. The ramp would also block incoming ocean waves and reduce the likelihood of wave runup reaching Spindrift Drive. The more significant consideration, however, is that if made of concrete the large protruding structure will act as a stub groin and alter alongshore sediment transport in this area.

5. Implementation Considerations

5.1. Constructability

The improvement of the narrow walkway between two privately owned retaining walls, with a functional storm drain running just beneath the stair surface, presents significant constructability constraints due to the unique site conditions. One major challenge is proximity to the beach, limiting the available work window to low tide periods as well as requiring construction equipment to be moved off the beach as tides rise. The confined space between the retaining walls demands careful coordination to prevent structural damage and restricts site access, complicating the removal, delivery, placement, and storage of materials. This location may also necessitate the use of specialized equipment and construction techniques to ensure the project's success, while respecting the surrounding environment and private property boundaries. Environmental considerations, such as avoiding impacts to the sandy beach and ocean waters, must also be carefully integrated into the construction planning.

Constructability and scheduling considerations are discussed below for each alternative:

Alternative 1: Work would include demolition of the deficient section of existing stairs, forming and pouring new concrete stairs, and installing post-mounted handrails. Due to the small project size and challenging site access, manual labor would likely be employed, since larger equipment would significantly increase costs.

Alternative 2: Work would include demolition of the existing lower/mid walkway, as well as forming and pouring new stairs and installing post-mounted handrails. Demolition and removal would likely require mechanized equipment. Formwork would be installed manually, with concrete delivered either by buggies or pump. The new storm drain box culverts would likely be cast in place due to their non-standard sizing and difficulty of accessing the location. A precast catch-basin would be installed via small equipment, with the use of lighter material such as Fiberglass Reinforced Plastic (FRP) as a possible alternative. Construction of a temporary dam on the beach at the entrance to the stairs would be required during formwork and curing.

Alternative 3: Work would include demolition of the existing lower/mid walkway, as well as forming and pouring new stairs and installing post-mounted handrails. Demolition and removal would likely require mechanized equipment. Formwork would be installed manually, with concrete delivered either by buggies or pump. A precast catch-basin and 18” RCP pipe, delivered in 8’ sections, would be installed via small equipment, with the use of lighter material such as FRP as a possible alternative. Additional work on the beach will necessitate a schedule that accommodates the tides with a more extensive temporary dam required during formwork and curing.

Alternative 4: This alternative poses a significant logistical challenge for construction due to the location of the ramp on the beach. Factors such as equipment accessibility during fluctuating tides, water intrusion, and an extensive temporary dam system would need to be carefully considered. Pouring concrete for the ramp will require a large boom pump to transfer ready-mix material from the parking lot to the site. Additionally, the elevation change between the existing and proposed walkways may impact the integrity of adjacent retaining walls and storm drain outlets. While these challenges can be addressed, they will significantly increase costs and construction time.

5.2. Cost and Schedule

An itemized cost estimate, construction means/methods summary, and schedule for each alternative are provided in Appendix I. This assessment was conducted using standard practices, including the development of quantity/material take-offs and the determination of project crews, including labor and equipment components, with current 2024 rates from Southern California and San Diego Unions. Quantity and material take-offs were developed to determine the required permanent and construction materials for the project, and these were cross-checked against and aligned with current market prices to ensure accuracy. Estimates were prepared using the HeavyBid software, a leading tool used in the heavy construction industry worldwide.

A high-level comparison of each alternative's fully burdened cost estimate and construction duration is provided in Table 2.

TABLE 2: ALTERNATIVE COST AND SCHEDULE DURATION COMPARISON

Alternative	Cost Estimate[1]	Construction Duration (Workdays)
Alternative 1	*$410,000*	*21*
Alternative 2	*$665,000*	*25*
Alternative 3	*$960,000*	*33*
Alternative 4	*$4,775,000*	*103*

Notes: [1] Includes overhead, profit, insurance, and indirect costs. Construction engineering and admin support have been assumed at 25% of total construction cost. City design administration, engineering, and environmental costs have been assumed at 30% of total construction costs. Incorporates permitting costs inclusive of labor and approximate final design fees. An additional 20% project contingency was assumed. Further details are provided in Appendix I.

5.3. Cultural

The Spindrift Drive Beach Access project is located in an area of significant cultural importance to the Kumeyaay people, recognized as the ancestral inhabitants of this region. The area is near Mut-Lah-Hoy-Yah/Mut-Kula-Xu'y, a large Kumeyaay village site, indicating a moderate-to-high likelihood of encountering cultural artifacts in the vicinity. While monitors present during an initial geotechnical investigation for the project did not encounter any cultural artifacts, it is recommended that a qualified archaeologist and local Native American representative be consulted prior to any future ground-disturbing activities. Cultural monitoring ensures that any potential artifacts, remains, or features of historical importance are identified and preserved in accordance with California Environmental Quality Act (CEQA) regulations. See Appendix G for more detailed insights into the project site's cultural significance.

5.4. Regulatory Permitting

The project involves design and construction within the coastal zone, which necessitates compliance with various regulatory and permitting requirements. Before moving forward with a design alternative, key regulatory considerations need to be addressed including compliance with the CEQA. It is likely that Alternatives 1-3 will be deemed categorically exempt from CEQA, either under Class 1 Section 15301 (Existing Facilities) or Class 2 Section 15302 (Replacement or Reconstruction). Alternative 4 on the other hand, will likely be required to undergo a full CEQA review process (Mitigated Negative Declaration) due to its impact on the beach.

Design alternatives must also consider the need for additional Federal and State regulatory permits/approvals as outlined in Table 3. The cost and timeline to obtain these permits will vary with each alternative (e.g. Alternative 1 will take the least cost and time to obtain and may not require USACE or RWQCB approvals), which is reflected by the ranges provided in Table 3 for each permit. It should be noted, however, that it is difficult to estimate the amount of effort to iterate with the various regulatory agencies. Upon the submittal of applications, the Federal and State regulatory permitting process is likely to take 8-12 months. Additional information on regulatory permitting can be found in Appendix H.

TABLE 3: REGULATORY AND PERMITTING CONSIDERATIONS

Permit / Certification	Involvement	Process	Approximate Cost Range[1]	Approximate Time Range[2]
USACE Section 10/404 Permit	* Section 404 (fill of waters of the US) covers temporary and permanent work seaward of the highest tide line (+4.9' NGVD29). * Section 10 (work in navigable waters) covers temporary and permanent work seaward of the MHW line (+2.3' NGVD29).	Standard individual permit is typical but smaller projects may utilize a Nationwide Permit (NWP) #3 for maintenance/repair of existing structures (quicker process).	$0 - $20,000	7-9 months
RWQCB Water Quality Act Section 401 Certification	*Ensures water quality compliance for projects requiring USACE Section 404 approval and follows the USACE jurisdiction. *Issuance of the 401 certification is required prior to USACE permit issuance.	*If the project qualifies for pre-certification under USACE NWP #3, only notification and fee submittal to the RWQCB is required. *If project requires a standalone 401 Certification, both an application and fee submission are required.	$0- $20,000	6-8 months
CCC Coastal Development Permit (CDP)	* Required for projects within the California Coastal Zone. * City of San Diego needs to provide "Local Approval in Concept" before the permit is issued by the CCC.	* It is assumed the City's existing Local Coastal Program (LCP) does not allow for the City to issue the CDP, i.e. the CDP is to be issued by the State/CCC. *CDP application package should include various alternatives, including "Local Approval in Concept", that meet current coastal engineering standards and a CEQA determination. * CCC may determine whether ADA access is required.	$20,000 - $50,000	8-12 months
CSLC Lease of State Lands	May be required if the project footprint extends seaward of the mean high water (MHW) line.	* Determination of jurisdiction needs to be submitted to CSLC first. * If required, the lease may be rent-free due to public use.	$0 – $30,000	6-8 months
City of San Diego Permits[3]	Required for construction activities within city limits. Ensures compliance with city regulations.	Generation and submission of standard construction plans for city approval	$100,000 – $375,000	4-8 months
NPDES Permits (RWQCB/MS4/CGP)[4]	* Required for stormwater discharges to comply with water quality regulations. * Disturbed area less than 2500ft^2 within ASBS	* The existing MS4 permit may need to be revised and submitted to the RWQCB for alternatives which modify the storm drain discharge location * WPCP required for construction. No SWPPP required.	$0 – $8,000	4-8 months

Notes: Costs and duration provided are Rough Order of Magnitude (ROM). It is difficult to estimate the number of iterations which may be required by agencies.

[1] Includes labor and application fee but does not include any compensatory mitigation costs. A cost range including $0 indicates that the permit may not be required for all cases.
[2] Following application submission.

[3] Includes engineering design labor costs. Building and Safety Permit. Right of Way Permit.

[4] Per City correspondence, it is assumed that the outfall is covered under an existing RWQCB MS4 permit.

For all design alternatives, the following key considerations should be taken into account to maximize permitability with the agencies listed in Table 3.

- Footprint size seaward of the mean high water (MHW) and highest tide lines, which are concerns for the USACE, RWQCB, and CSLC.
- Footprint size on sandy beach and the associated loss of public recreation area, which is a concern for the CCC.
- Potential need for rock protection at the base of the stairs.
- Resiliency to current and future coastal hazards.
- Ability to adapt to future sea level rise, including future beach scour conditions.
- Construction best management practices (BMPs) to protect water quality, such as working during low tide hours.
- Public safety considerations.
- Footprint size on culturally sensitive land.
- Modifications to the storm drain configuration requiring revision of the existing MS4 permit.

Specific regulatory considerations are discussed below for each alternative:

Alternative 1: CEQA review will likely be deemed categorically exempt as this alternative only proposes rehabilitation to the existing facility, and the project will seek to meet current public health and safety standards within the limited extent possible with this option. If construction equipment can avoid work within the water area, it is possible to avoid the USACE Section 10/404 permit, and RWQCB Section 401 Certification. A CCC Coastal Development Permit (CDP), City of San Diego Building and Safety Permit, and City of San Diego Right of Way Permit would likely be required. It is likely that neither a State Lands lease nor NPDES permitting will be required given the existing footprint is maintained and no changes will be made to the existing storm drain configuration. Permitting for this alternative will cost roughly $120,000 and take approximately 8-10 months.

Alternative 2: CEQA review will likely be deemed categorically exempt as this alternative is contained within the existing facility footprint and serves the same purpose as the existing walkway. It is assumed that construction equipment will not be able to avoid work within the water area and thus permitting will include the USACE Section 10/404 permit and RWQCB Section 401 Certification, as well as the CCC CDP, City of San Diego Building and Safety Permit, and City of San Diego Right of Way Permit. Although the bottom landing elevation is lowered for this alternative in comparison existing conditions, it is unlikely that CSLC approval will be required since the project footprint would not extend past the beach MHW intersection line based on recent survey profiles. The new configuration of the storm drain will likely require submission of a NPDES permit modification, however annual fees should not be significantly affected. Permitting for this alternative will cost roughly $175,000 and take approximately 8-10 months.

Alternative 3: CEQA and regulatory requirements would be similar to Alternative 2. However, the extension of the footprint further onto the beach will likely add more difficulty in obtaining permits. Permitting will include the USACE Section 10/404 permit, RWQCB Section 401 Certification, CCC CDP, City of San Diego Building and Safety Permit, and City of San Diego Right of Way Permit. CLSC approval may be required since the project footprint would likely extend past the beach MHW intersection line based on recent survey profiles, but a jurisdiction determination would need to be completed to determine if a Lease of State Lands is required. The new configuration of the storm drain will likely require submission of a NPDES permit modification, however annual fees should not be significantly affected. Permitting for this alternative will cost roughly $245,000 and take approximately 10-12 months.

Alternative 4: A CEQA review will be required as this alternative will have an impact on the environment due to the expansion of use onto the beach (*i.e.* the CEQA lead agency may determine that this alternative cannot be deemed exempt from CEQA review). Demonstrating that this alternative is viable and that environmental impacts can be avoided/mitigated will be challenging for the federal and state permitting process. Permitting will include the USACE Section 10/404 permit, RWQCB Section 401 Certification, CCC

CDP, CSLC lease of State Lands, City of San Diego Building and Safety Permit, and City of San Diego Right of Way Permit. The new configuration of the storm drain will likely require submission of a NPDES permit modification, however annual fees should not be significantly affected. Regulatory agencies may require compensatory mitigation for the footprint impact on the sandy beach. Mitigation could possibly be in the form of improving public access elsewhere. Permitting for this alternative will cost roughly $850,000 (includes significant costs for CEQA review process and mitigation) and take 12 months or longer.

6. Alternatives Evaluation

To facilitate the selection of a preferred alternative, each option was evaluated based on how successfully it fulfilled design (structural, civil, accessibility, coastal/geologic) and implementation (constructability, cost, schedule, and regulatory) considerations. The evaluation was conducted using a weighted scoring system, with a weighting factor assigned to each criterion based on its relative importance with input from the City. Alternatives were scored for each consideration on a scale of 0 – 5, with a 5 being the most positive. A complete evaluation matrix with total weighted scores for each alternative is provided in Table 4.

TABLE 4: WEIGHTED SCORING ALTERNATIVES EVALUATION MATRIX

Criterion	Weight	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Structural	0.2	1	4	4	2
Accessibility	0.2	1	3	3	5
Coastal	0.15	0	1	3	1
Civil	0.15	1	2	3	4
Constructability, Schedule, and Cost	0.2	5	4	3	0
Regulatory	0.1	5	4	2	0
Total Score	-	2.05	3.05	3.1	2.15

Based on this evaluation, Alternative 3 obtains the highest total score and is recommended as the preferred option followed very closely by Alternative 2. These two options similarly address structural and accessibility considerations with Alternative 3 providing more benefit to coastal and civil considerations. Should Alternative 3 be selected, further design refinements could be investigated to reduce regulatory risks. Alternative 2 provides a viable option should it ultimately be selected due to cost or regulatory considerations. While Alternative 1 would be the least expensive and easily permitted option, it provides little benefit and is therefore not recommended. Alternative 4 is likely not feasible from a regulatory or cost perspective.

As the owner, the City of San Diego bears the responsibility for decisions regarding the best public access alternative based on design criteria deemed most important.

7. Summary and Conclusions

The existing Spindrift Drive beach access is a 4’ wide walkway and staircase approximately 150’ long, with a vertical drop of about 17’. It connects Spindrift Drive to the beach, passing between retaining walls on adjacent private properties. Additionally, the access serves as an easement for an 18” storm drain that runs beneath the walkway from the street to the beach. Due to the walkway's deteriorating condition, the City of San Diego is planning improvements to enhance accessibility while preserving the storm drain's functionality. The study evaluated feasibility of the four following walkway improvement options:

Alternative 1: The structurally damaged bottom three steps and integrated storm drain components will be replaced in-kind. Post-mounted handrails will be installed on both sides of the lower/mid walkway.

Alternative 2: A roughly 65’ segment of the existing lower walkway will be replaced with seven short sets of stairs and eight landings. Post-mounted handrails will be installed on both sides of the lower/mid walkway. Storm drain modifications will include the addition of a lower catch basin and raised box culvert outfalls underneath the stairs that do not obstruct the walkway but do drain onto it.

Alternative 3: A roughly 65’ segment of the existing lower walkway will be replaced with five short sets of stairs and six landings, allowing a higher landing at the access entry, but requiring an additional set of stairs rounding the south retaining wall. Post-mounted handrails will be installed on both sides of the lower/mid walkway. This modification extends outside the existing stairs footprint, leading from the bottom landing to the beach. Storm drain modifications include the addition of a lower catch basin and outfall underneath the structure that does not obstruct the walkway.

Alternative 4: The entire existing walkway would be replaced with a ramp, extending beyond the current structure footprint onto the beach. To meet ADA requirements, the extended portion of the ramp would incorporate five north/south oriented switchbacks. Post-mounted handrails will be installed over the length of the existing walkway, while wall-mounted handrails will be installed on the new beach ramp. Storm drain modifications include replacement of the existing 18” RCP, the addition of a lower catch basin, and a slight extension to allow a north facing outfall location past the Marine Room seawall.

Each alternative was evaluated in terms of design (structural, civil, accessibility, coastal/geologic) and implementation (constructability/cost and regulatory) considerations as outlined in Section 3 and Section 5. Alternatives were then scored with a weighting factor assigned to each criterion based on its relative importance. Based on this evaluation, Alternative 3 obtains the highest total score and is recommended as the preferred option followed closely by Alternative 2. Table 5 presents a high-level comparison matrix that can be used to evaluate the overall feasibility of each proposed option.

TABLE 5: SPINDRIFT DRIVE DESIGN ALTERNATIVES FEASIBILITY COMPARISON MATRIX

	Alternative 1 (Repair with Handrails)	Alternative 2 (Stair Replacement)	Alternative 3 (Stair Replacement with Turn)	Alternative 4 (ADA)
Structural	Un-repaired sections may not last for the duration of a 50-yr design life. (Score: 1)	Expected to remain structurally functional for a 50-yr design life (Score 4)	Expected to remain structurally functional for a 50-yr design life (Score 4)	A significant amount of engineering is required to ensure the structure remains functional for a 50-yr design life with consideration for wave loading and a corrosive marine environment (Score 2)
Accessibility	Handrails provide improvement to accessibility; however, a significant number of deficiencies would remain. (Score 1)	Accessibility is improved from the sidewalk to the beach by eliminating non-compliant ADA grades and providing handrails. New stair tread/riser dimensions achieve ADA compliance. (Score 3)	Accessibility is improved from the sidewalk to the beach by eliminating non-compliant ADA grades and providing handrails. New stair tread/riser dimensions achieve ADA compliance. (Score 3)	This alternative would achieve full ADA compliance from the sidewalk to the beach. (Score 5)
Coastal	No impact to coastal resiliency considerations. Scour at the walkway bottom landing would continue to be an issue. (Score 0)	Minimal impact to coastal resiliency considerations. Scour at the end of the access is resolved by dropping the bottom landing elevation and embedding the foundation. (Score 1)	An elevated lower landing will provide some benefit in reducing regularity of coastal hazard flooding. Scour at the end of the access is resolved by dropping the elevation of the final set of stairs and embedding the foundation. (Score 3)	The ramp would provide some benefit in reducing coastal hazard flooding up the access. The structure's size and location in the surf zone, however, are likely to cause impacts to local sediment transport. (Score 1)
Civil	Proposed structural improvements to a small section of the storm drain system will have minimal impact. (Score 1)	An added catch basin will provide storm drain maintenance access and emergency overflow. The storm drain is diverted to multiple smaller box culvert outlets underneath the stairs avoiding encroachment on the walkway. The diameter of passable debris is reduced, and safety concerns are raised due to discharge onto the stairs. A hydraulic analysis is required to finalize design details. (Score 2)	An added catch basin will provide storm drain maintenance access and emergency overflow. An 18" storm drain outlet running underneath the structure to the beach access end will allow stormwater conveyance without physically encroaching on the access path or impacting it with discharge. (Score 3)	Replaces the existing 18" diameter storm drain. An added catch basin will provide storm drain maintenance access and emergency overflow. Reduces erosive velocities onto beach with horizontal bend at catch basin before discharging to the north via an 18" outlet. Allows stormwater conveyance without physically encroaching on the access path or impacting it with outflow. (Score 4)
Permitting	Permitting path is the least challenging. Avoiding modifications to the storm drain could avoid need for RWQCB/NPDES permits (Score 5)	Permitting path is slightly more difficult than Alternative 1, however, success is likely. (Score 4)	Permitting path is more challenging as it extends past the existing walkway footprint, however, success is feasible. (Score 2)	A permitting path is likely infeasible (at a minimum challenging) for such a large structure extending onto the beach. (Score 0)
Constructability/ Cost[1]	Fully burdened cost of approximately $410,000. Minimum construction duration of 21 workdays including mobilization/demobilization. (Score 5)	Fully burdened cost of approximately $665,000 Minimum construction duration of 25 workdays including mobilization/demobilization. (Score 4)	Fully burdened cost of approximately $960,000. Minimum construction duration of 33 workdays including mobilization/demobilization. (Score 3)	Fully burdened cost of approximately $4,775,000. Minimum construction duration of 103 workdays including mobilization/demobilization. (Score 0)
	Total Weighted Score 2.05	Total Weighted Score 3.05	Total Weighted Score 3.1	Total Weighted Score 2.15

Notes: Scores assigned from 0-5, with 5 being the most positive. Total weighted scores were computed using a weighting factor of 0.2 for structural, accessibility, and cost/constructability considerations, a weighting factor of 0.15 for coastal and civil considerations, and a weighting factor of 0.1 assigned to regulatory considerations.

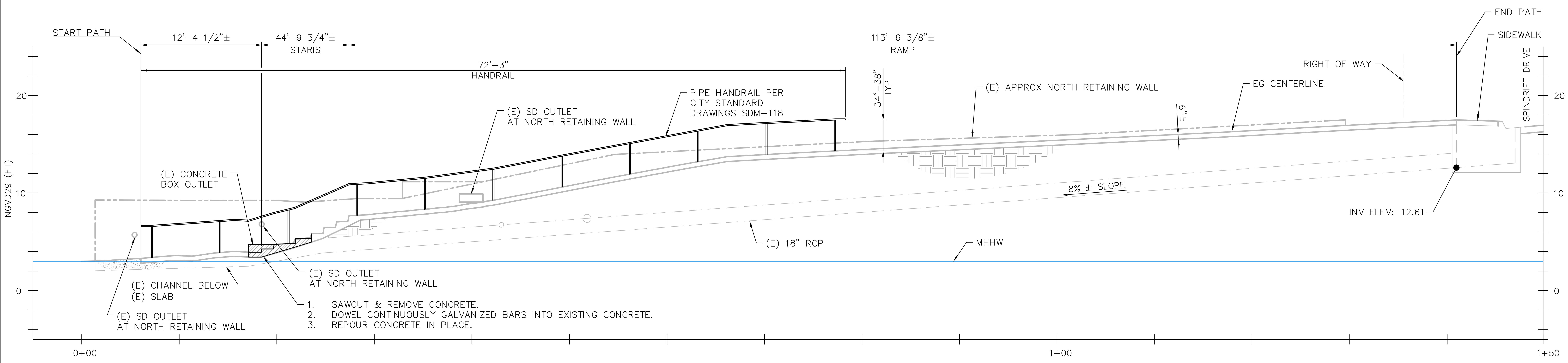
[1] Includes overhead, profit, insurance, and indirect costs. Construction engineering and admin support have been assumed at 25% of total construction cost. City design administration, engineering, and environmental costs have been assumed at 30% of total construction costs. Incorporates permitting costs inclusive of labor and approximate final design fees. An additional 20% project contingency was assumed. Further details are provided in Appendix I.

8. References

City of San Diego, 2017. 2024. The City of San Diego Transportation & Storm Water Design Manuals: Drainage Design Manual, January 2017 ed. Accessed online at https://www.sandiego.gov/sites/default/files/drainage_design_manual_jan2017.pdf.

California Building Code (CBC). 2022. Title 24, Part 2.1.

Appendix A – Alternatives Concept Drawings



ELEVATION VIEW
SCALE: 1" = 5'

PLAN VIEW
SCALE: 1" = 5'

OPTION 01 - STRUCTURAL REPAIRS AND ADDED HANDRAILS

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REVISIONS

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SPINDRIFT DRIVE BEACH ACCESS WALKWAY

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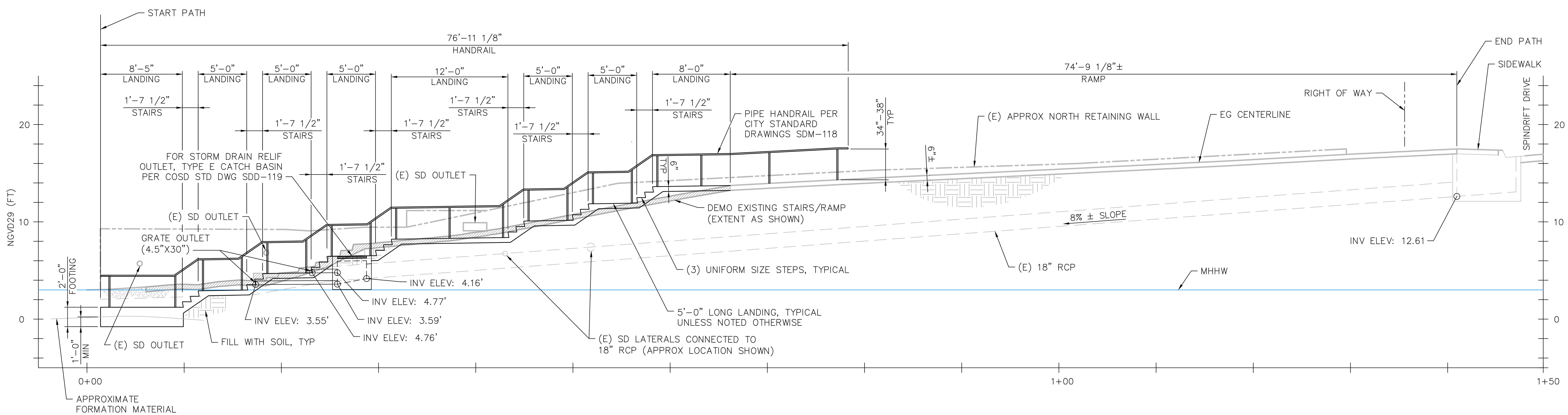
APPROVED BY: DATE: XXX
CAD NO.: PLOT SCALE:



ELEVATION VIEW
SCALE: 1" = 5'

PLAN VIEW
SCALE: 1" = 5'

OPTION 02 - STAIR REPLACEMENT WITHIN EXISTING FOOTPRINT

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SPINDRIFT DRIVE BEACH ACCESS WALKWAY

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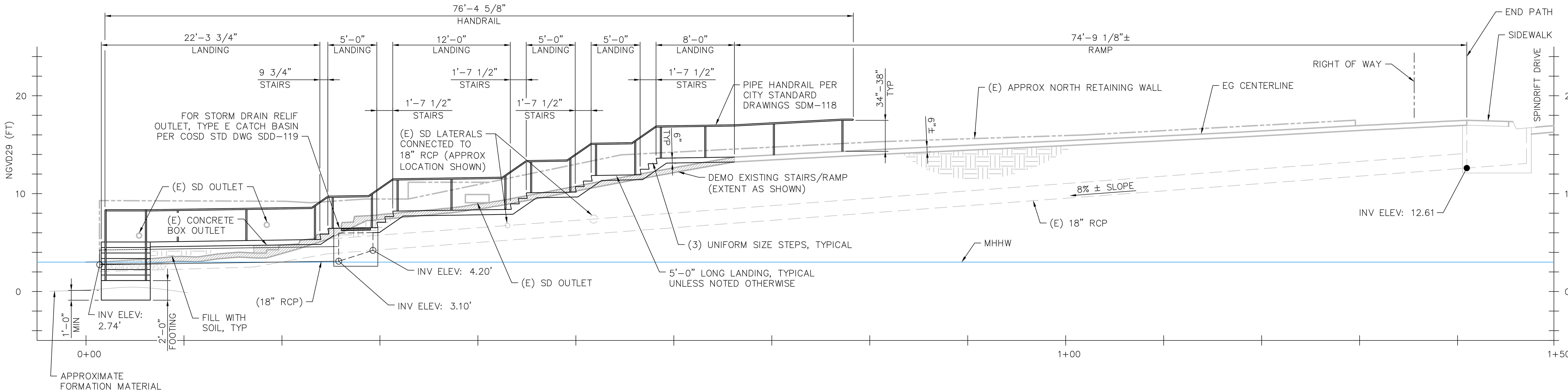

ELEVATION VIEW
SCALE: 1" = 5'

PLAN VIEW
SCALE: 1" = 5'

OPTION 03 - STAIR REPLACEMENT WITH TURN EXTENDING OUTSIDE EXISTING FOOTPRINT

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REVISIONS

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SPINDRIFT DRIVE BEACH ACCESS WALKWAY

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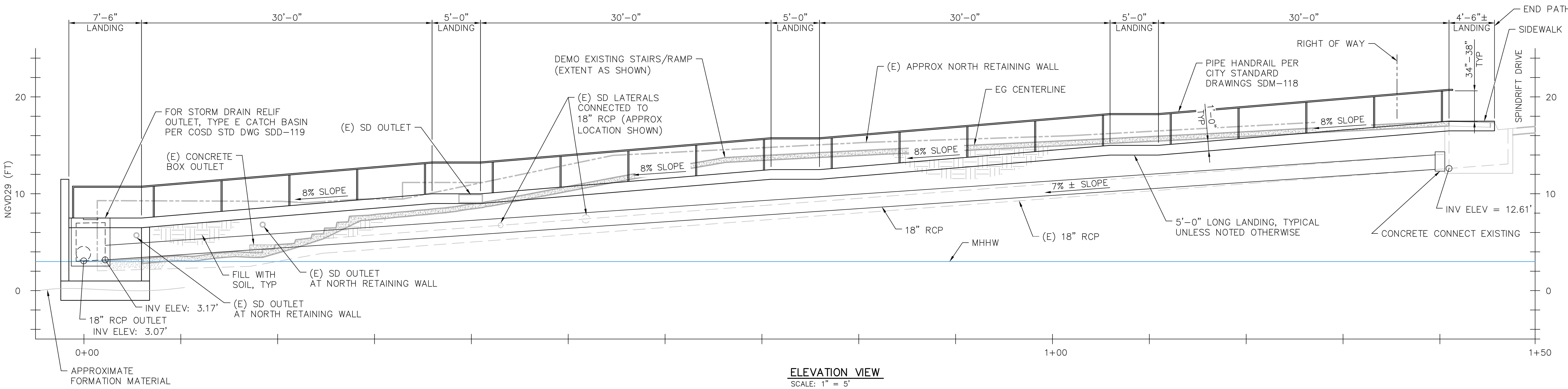

ELEVATION VIEW
SCALE: 1" = 5'

1" = 5' 0 5' 10'

OPTION 04 -ADA COMPLIANT RAMP

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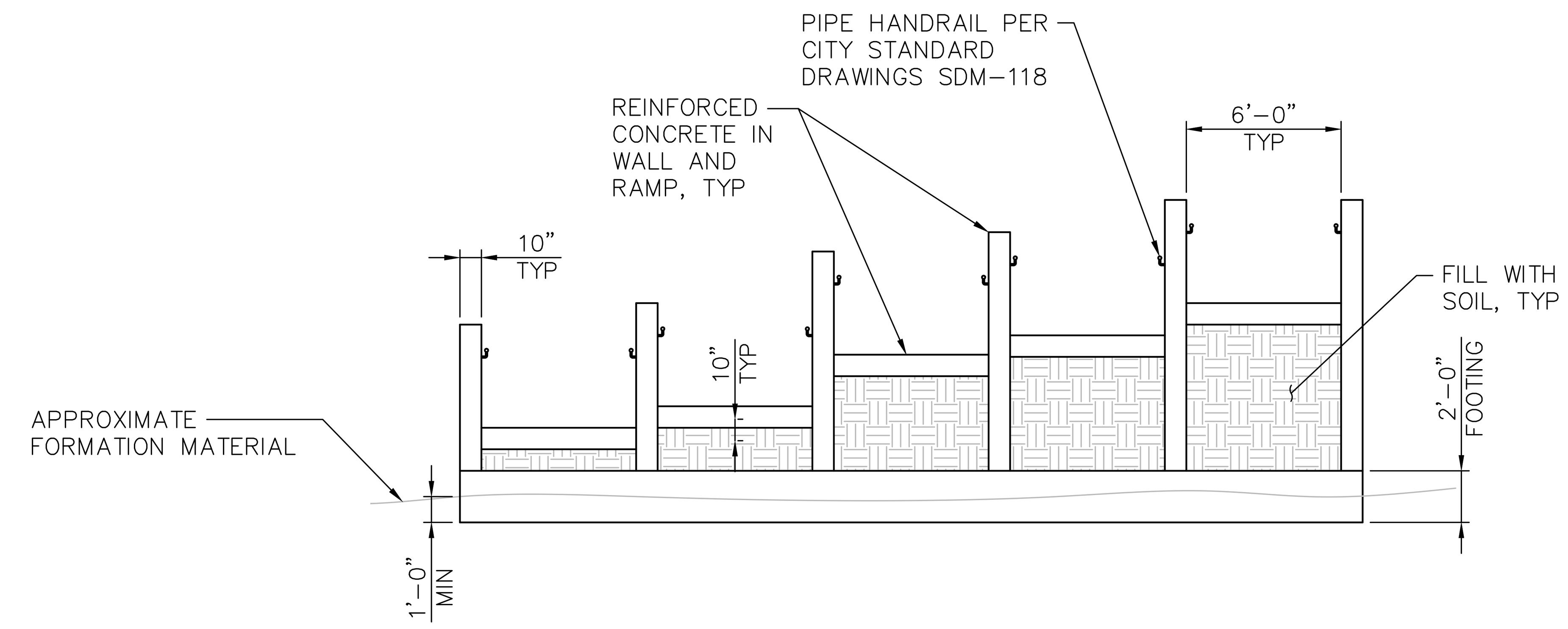

SECTION VIEW
SCALE: 1" = 5'

PLAN VIEW
SCALE: 3/16" = 1'-0"

OPTION 04 - ADA COMPLIANT RAMP

REVISIONS

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SPINDRIFT DRIVE BEACH ACCESS WALKWAY

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Appendix B – Structural Inspection Report

MEMORANDUM

To:	City of San Diego
From:	*Chad Monfort, P.E. and Audrey Cross, EIT*
Date:	December 6th, 2024
Subject:	Spindrift Drive Beach Access Walkway – Structural Inspection Memo

Moffatt & Nichol (M&N) performed a comprehensive visual inspection of the Spindrift Drive Beach Access Walkway as part of an ongoing accessibility compliance feasibility study for the City of San Diego. The inspection was conducted on July 1st, 2024, around midday when tide levels were low enough to permit investigation of the entire structure. The investigation team was led by a professional engineer, registered in the State of California. This memorandum documents the general condition of the walkway, including defects, photographs, and repair recommendations.

DESCRIPTION OF FACILITIES

The Spindrift Drive Beach Access Walkway is located close to the intersection of Spindrift Drive and Roseland Drive in La Jolla California shown by Figure 1Figure 1. The walkway was constructed between a private residence retaining wall on the south and the Marine Room restaurant to the north. The walkway is comprised of several ramp sections and a flight of stairs, as shown in Photo 1. There are existing storm drain pipes under the walkway that extend to an outfall adjacent to the beach.

Figure 1: Project Location

Photo 1: Beach Access Walkway

INSPECTION FINDINGS

The existing beach access walkway is a 150’ long structure composed of three sections. It begins with a 115’ ramp, followed by a short flight of eight steps, and concludes with an 18’ landing at beach level. Available walkway drawings are shown in Figure 2. The visual inspection was conducted for the entire walkway, including the stairs, ramps, and exposed storm drain outlets. While the adjacent retaining walls are not owned by the City of San Diego, they were also inspected for completeness of the overall feasibility assessment.

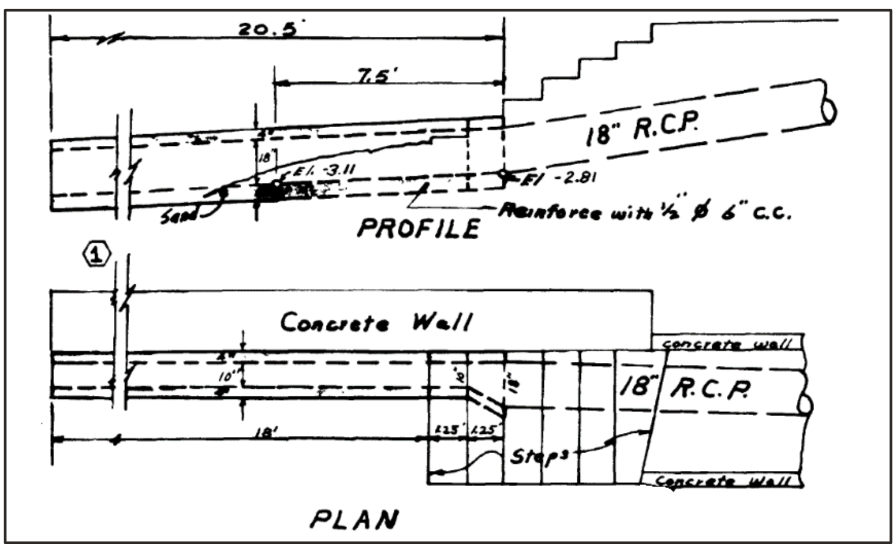

Figure 2: Walkway Profile and Plan View

Walkway

The concrete walkway was sounded with an inspection hammer to check for delamination. The 115' concrete ramp section is in fair condition and showed no signs of delamination or defects other than normal pedestrian wear.

The concrete steps were sounded and the 6th step showed signs of full delamination. The delaminated section is 30" wide x 28" long x 6" deep and is shown by **Error! Reference source not found.**. There are signs of excessive wear on the 7th step, as shown in Photo 3, likely due to regular pedestrian traffic and exposure to the harsh marine environment. During high tides, surf regularly impacts the walkway, scouring out a hole under the 8th step and washing sand onto the steps as is shown by Photo 4. Additional considerations for scour are assessed in a separate coastal hazard investigation study.

The 18' concrete landing section is in fair condition with no signs of delamination; however, it does exhibit signs of excessive wear as shown by Photo 5. This section is periodically submerged during times of high tide. Increased damage on the bottom landing is likely due to regular pedestrian traffic, exposure to the harsh marine environment, and runoff from the connected storm drain outlets. There is additional erosion located at the west end of the landing that is 24" wide x 18" long x 4" deep and is shown by Photo 6.

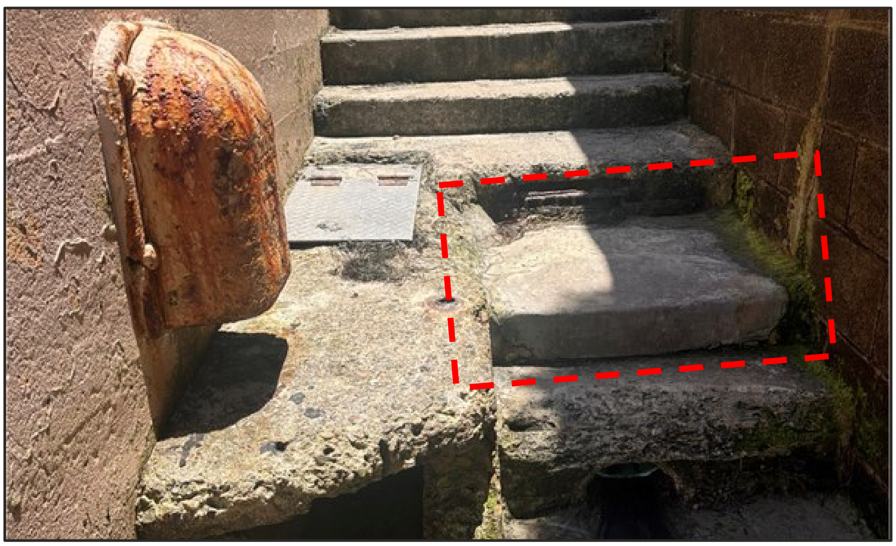

Photo 2: Delamination of Step 6

Photo 3: Erosion of Step 7

Photo 4: Soil Scour

Photo 5: Typical Landing Erosion

Photo 6: Additional Erosion at West End of Landing

Storm Drain Outfalls

The exposed storm drain outfall components connected to the walkway were visually inspected. The primary outfall, shown in **Error! Reference source not found.** 7, is in poor condition with erosion along the outlet. The storm drain outfall underneath the 7th step, shown by Photo 8, is in fair condition with normal wear. The storm drain grate embedded in the 5th step is in poor condition and is severely corroded as shown in Photo 9. As part of the overall accessibility compliance feasibility study, a separate video inspection was conducted to investigate the internal integrity of the storm drain line running underneath the walkway.

Photo 7: Box Culvert

Photo 8: Storm Drain Outfall

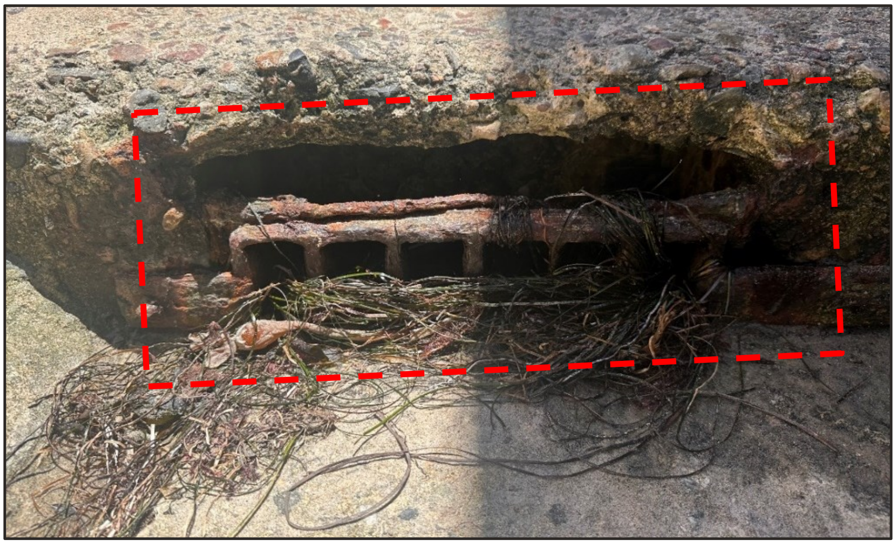

Photo 9: Storm Drain Grate

Retaining Wall

The adjacent retaining walls are constructed of concrete masonry blocks and are privately owned. The retaining walls were sounded, and two closed corrosion spalls (CCS) were located. One CCS was located on the northeast wall and is 30" long x 20" wide and is shown in Photo 10. The second CCS was located along the front wall of the northeast retaining wall and is 32" long x 32" wide and is shown in Photo 11. A retaining wall drainage outlet was in fair condition and shows no defects as shown in Photo 10.

Photo 10: Closed Corrosion Spalls along the Northeast Retaining Wall

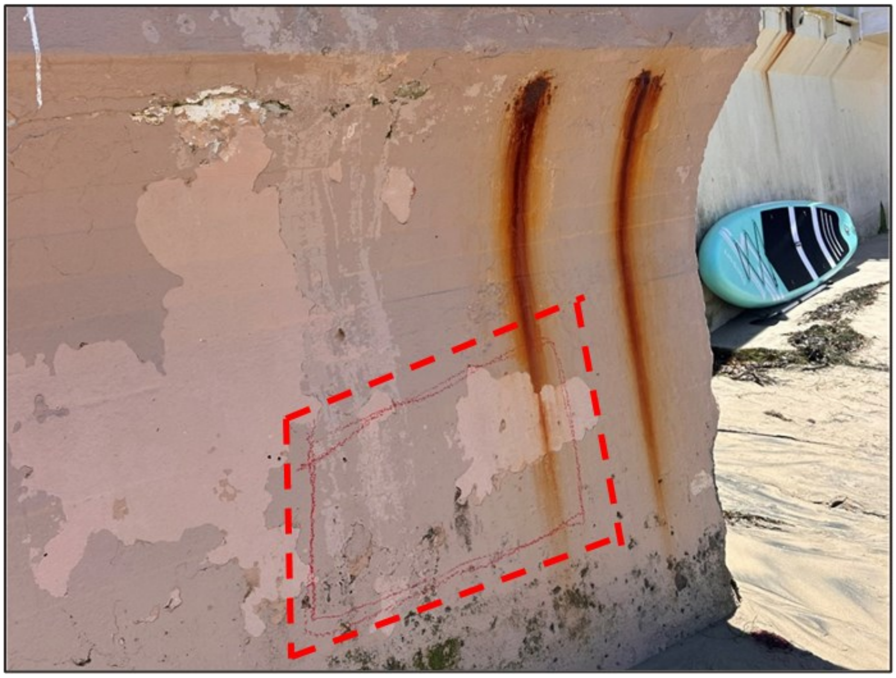

Photo 11: Closed Corrosion Spalls along the Front Face of the Northeast Retaining Wall

Photo 12: Retaining Wall Outfall

RECOMMENDATIONS

The Spindrift Drive Beach Access walkway exhibits varied conditions along its length. The 115' upper-level concrete ramp section of the walkway is in fair condition with no repair recommendations required. The flight of eight stairs is generally in poor condition, particularly the bottom few steps. It is recommended that the 6th step be demolished and replaced in kind. The lower 18' beach landing is heavily worn but in overall fair condition.

The primary outfall box culvert is in poor condition due to erosion, and while replacement is recommended, it is not required. The storm drainpipe outfall (under the 7th step) is in fair condition with no repair recommendations required. The storm drain grate (embedded in the 5th step) is severely corroded and should be replaced.

The adjacent retaining walls and associated drainage features are in fair condition. While these retaining walls are not owned by the City of San Diego, it is recommended that they be inspected periodically to monitor their condition.

To improve safety along the beach access walkway, it is recommended that a handrail be installed along the ramp and stair walkway that meet American with Disabilities Act (ADA) standards.

M&N recommends that a cost analysis be completed to compare the repair costs to fix the elements described above and the full replacement of the Spindrift Drive Beach Access walkway.

Appendix C – ADA Basis of Design Report

ACCESSIBILITY ASSESSMENT FOR SPINDRIFT STAIRS – BEACH ACCESS FEASIBILITY REPORT

December 5, 2024

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TABLE OF CONTENTS

1 Intent of Report

Accessibility Specialists was contacted as a consulting expert to examine accessibility issues at the Spindrift Stairs Beach Access located in La Jolla, CA. This report provides a discussion of the regulatory requirements to provide access for visitors with disabilities, applicable technical codes, and a summary analysis based on existing conditions. The report includes an assessment of the existing stairs and associated paths of travel and an analysis of the impact of making this site accessible.

2 PROJECT UNDERSTANDING

Accessibility Specialists was asked to evaluate whether the City of San Diego is meeting its obligations under the Americans with Disabilities Act (ADA) based on the site conditions at this location.

Figure 1: Spindrift Stair Coast Access Vicinity Map

As a Title II agency, the City of San Diego is responsible for providing accessible programs and facilities that are available without discrimination toward people with disabilities. A fundamental tenet of Title II of the ADA is *"the principle that individuals with disabilities must be provided an equally effective opportunity to participate in or benefit from a public entity's aids, benefits, and services"*[1] As such, in addition to applying the codes and regulations outlined in this report, the City has an obligation to consult with people with disabilities when setting priorities for achieving program access.

[1] *28 CFR § 35.130-35.135.* II-3.3000 Equality in participation/ benefits

Title 24 of the California Code of Regulations requires accessible buildings and facilities at the statewide level via the 2022 California Building Code (CBC). Section 11B-246.3 of the 2022 CBC provides scoping requirements for outdoor developed areas; beaches are required to be accessible as well as day use of areas, vista points and similar areas shall be accessible. For technical provisions we have referenced the federal requirements referenced in The Accessibility Standards for Federal Outdoor Developed Areas in this document under Section 3. Applicable Codes and Standards.

The City of San Diego must also comply with its Administrative Regulation No. 96.20, which calls for each program, service, or activity to be *"operated so as to be readily accessible to and usable by qualified individuals with a disability,"* in coordination with ADA requirements and City Council Policies issued by the City.

This is consistent with what is outlined by the Department of Justice at 28 CFR 35.149-35.150 where Title II entities are required to provide program accessibility.

*"**II-5.1000 General**. A public entity may not deny the benefits of its programs, activities, and services to individuals with disabilities because its facilities are inaccessible. A public entity's services, programs, or activities, when viewed in their entirety, must be readily accessible to and usable by individuals with disabilities. This standard, known as "program accessibility," applies to all existing facilities of a public entity. Public entities, however, are not necessarily required to make each of their existing facilities accessible."*[2]

The goal of this study is to evaluate the site and make a recommendation for altering the route to La Jolla Beach to make it accessible to individuals with disabilities. This study provides a discussion of the regulatory requirements to provide access for individuals with disabilities, applicable technical codes, an analysis of the feasibility of making this site accessible, and a summary conclusion with recommendations for compliance based on the conditions at this site.

[2] Title II Technical Assistance Manual, II-5.1000 Program Accessibility

3 EXISTING CONDITIONS

The site is located at La Jolla Shores. The Spindrift Stairway is made up of seven (7) risers. The parcel of land a drainage easement to the City of San Diego and is 6-feet wide by approximately 140-feet long and with private property located on either side. 122' of 18" R.C.P. is located under the stairs with outlet structure at the base of the stairs and connects to a Type B-2 curb inlet at Spindrift Drive. The elevation at Spindrift Drive is 17.77 with an elevation of 4± at outlet structure resulting in a total elevation change of approximately 13.75 feet. The last riser provides a landing approximately 3' in width due to an existing outlet structure. (Figure 2)

Figure 2 Existing Conditions at Stairs

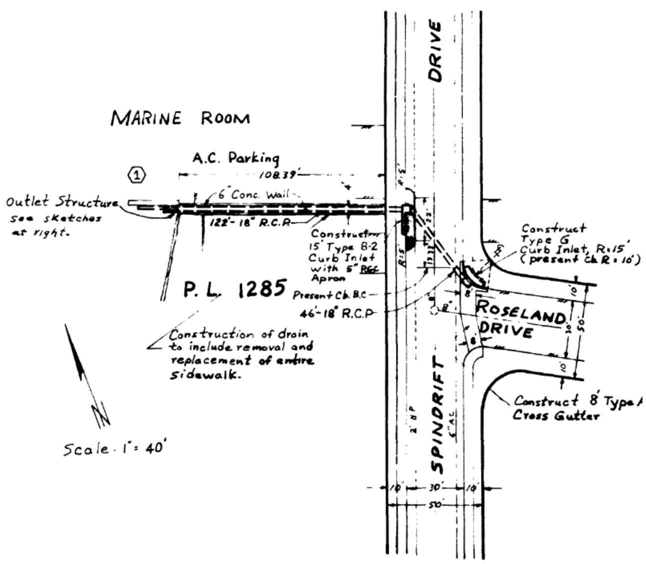

Figure 3 Detail of Existing Storm Drain (Sheet 9943-D)

During high tides the entire beach is exposed to heavy surf. High Tide is experienced April through September and the adjacent restaurant, the Marine Room (built 1941), is known for having the waves crash against the window during dining (Figure 4). Existing stairway and seawall have been present at this site since at least 1961, predating the ADA.[3] The existing stairway, which consists of concrete treads, has deteriorated due to erosion and the salt water from the ocean over the years. The stairway and the lower flight do not provide a level landing and lead directly to the sandy beach below and the outlet as noted previously.

Figure 4 Marine Room at High Tide credit: San Diego Magazine

The steps were originally constructed in 1961. Based on as-builts and site assessment the stairs do not meet current code compliance.

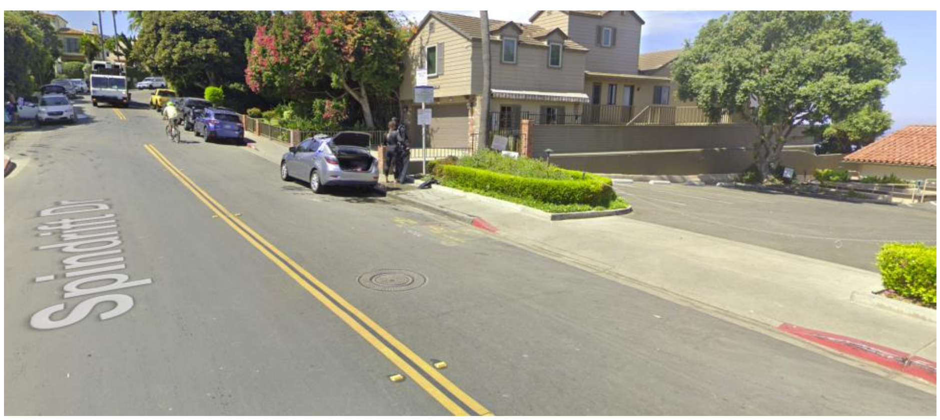

Figure 5 On-street Access

There is limited off-street parking provided at this location, and no accessible on-street parking along Spindrift Drive. The existing Spindrift Coastal Access stairway does not provide access for wheelchair users. (Figure 4). Nearby Facilities

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[3] As-Built Drawing Sheet 9943-D Plans for the improvement of Avenida de la Playa from Camino del Sol to L Vereda; and Storm Drain, Roseland Drive and Spindrift Drive.

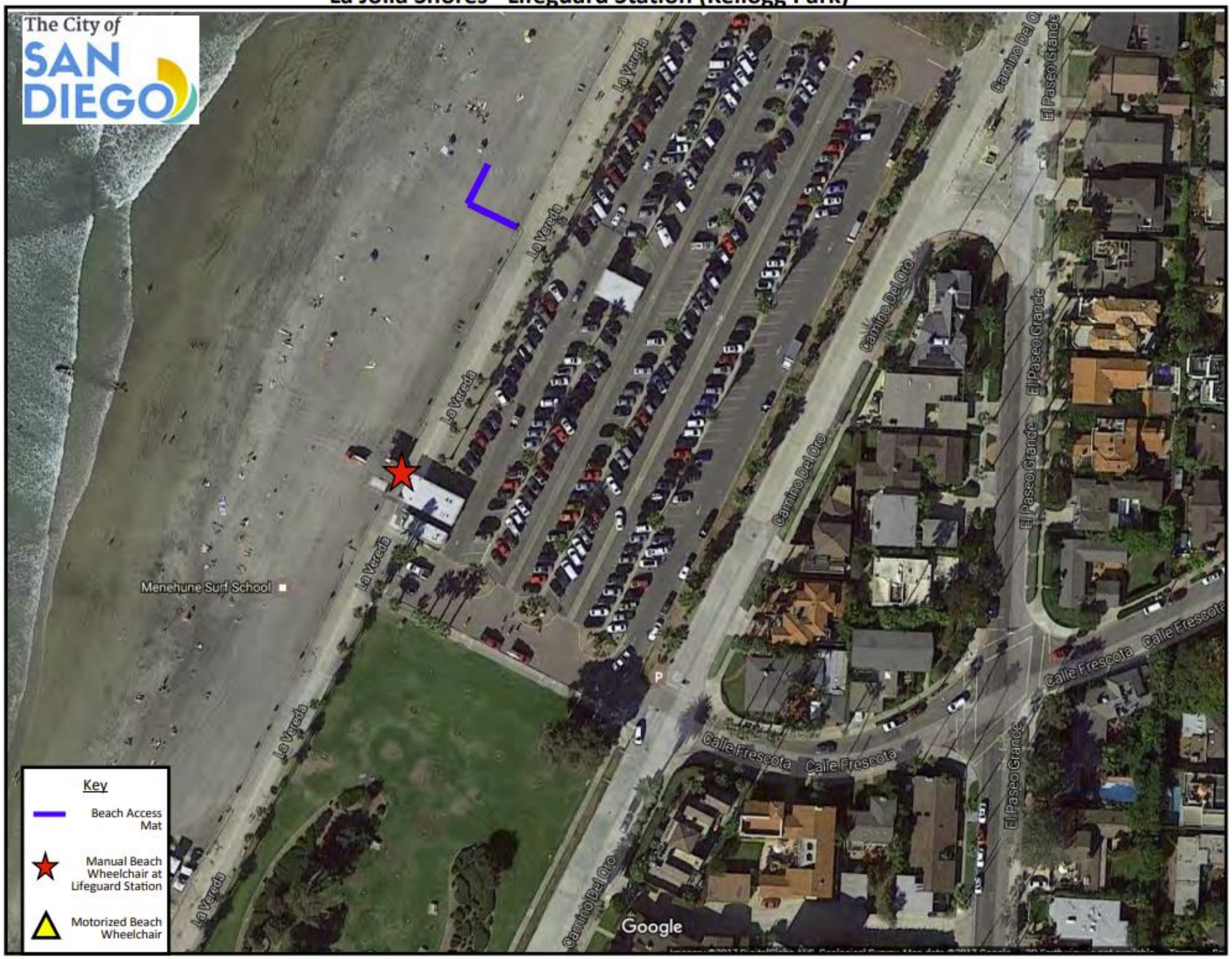
3.1 NEARBY FACILITIES

The closest wheelchair-accessible beach access point is located 1.1 miles north of Spindrift Stairs south of La Jolla Shores Lifeguard Station located at Kellogg Park[4] (Exhibit 2). The Kellogg Park location provides accessible parking, restrooms, a manual beach chair, and beach access mats. The mats are available from May through September. The mats are not used in the winter, early spring and fall due to tidal action, high surf and blowing sand conditions prevalent in those times, making them unsafe to use and likely to be damaged. The La Jolla Shores Lifeguard Station provides a manual beach wheelchair free of charge. The beach wheelchairs can be checked out at any time from the lifeguards on duty.

[4] https://www.sandiego.gov/sites/default/files/beachaccesslocations.pdf

4 EXHIBIT 1 – ACCESSIBLE BEACH LOCATION

La Jolla Shores– Lifeguard Station (Kellogg Park)



5 EXHIBIT 2 – NEAREST ACCESSIBLE BEACH ENTRANCE

NEAREST ACCESSIBLE BEACH ENTRANCES

Exhibit No: 2

6 Program Access

6.1 American with Disabilities Act

The ADA is a comprehensive civil rights law that ensures programs, activities, and services of state and local public entities (Title II agencies) do not discriminate on the basis of disability. As a Title II agency, the City of San Diego, is responsible for the provision of accessible programs and facilities. This includes facilities it owns and leases to others. The following subsections outline the applicable regulations that apply to evaluating the programmatic access to Spindrift Stairs beach access.

A. § 35.149

Section 35.149 of the Code of Federal Regulations, *Discrimination prohibited*, states:

> *Except as otherwise provided in § 35.150, no qualified individual with a disability shall, because a public entity's facilities are inaccessible to or unusable by individuals with disabilities, be excluded from participation in, or be denied the benefits of the services, programs, or activities of a public entity, or be subjected to discrimination by any public entity.*

A public entity may not deny the benefits of its programs to individuals with disabilities because its facilities are inaccessible. This standard, known as program accessibility, applies to all existing facilities of a public entity. It is the City’s Parks and Recreation Department’s responsibility to not exclude individuals with disabilities from participation in programs at the City's programs, services, and activities in its facilities.

Program accessibility can be achieved by several methods:

- Structural methods such as altering an existing facility;
- Acquisition or redesign of equipment;
- Assignment of aids; and/or
- Providing services at alternate accessible sites.

When choosing a method of providing program access, public entities are required to prioritize the method that results in the most integrated setting appropriate to encourage interaction among all users, including individuals with disabilities. Compliance with these requirements provides equality of opportunity.

The ADA also provides guidance on alterations to existing facilities. Alterations that affect or could affect the usability of the facility should be undertaken in such a manner that accessibility is ensured to the maximum extent feasible (MEF). The phrase “to the maximum extent feasible” applies where the nature of an existing facility makes it virtually impossible for a planned alteration to comply fully with applicable accessibility standards. These specific alterations should aim to provide the maximum physical accessibility feasible.

B. CFR § 35.150 Existing Facilities

A key concept is that public programs and services, when viewed in their entirety, must be accessible to individuals with disabilities, but not all facilities must necessarily be made accessible. For example, if a city has multiple public swimming pools and limited resources, it can decide which pools to make accessible based on factors such as the geographic distribution of the sites, the availability of public transportation, the hours of operation, and the particular programs offered at each site so that the swimming program as a whole is accessible to and usable by individuals with disabilities.

Another key concept is that public entities have an ongoing obligation to make programs and services accessible to individuals with disabilities. This means that if many access improvements are needed, and there are insufficient resources to accomplish them in a single year, they can be spread out over time. It also means that rising or falling revenues can affect whether or not an access improvement can be completed in a given year. What might have been seen as an undue burden during an economic downturn could become possible when the economy improves and revenues increase. Thus, public entities should periodically reassess what steps they can take to make their programs and services accessible. Public entities should also consult with individuals with disabilities in setting priorities for achieving program access.

The ADA makes provisions limiting a public entity's program access obligations. CFR § 35.150 Existing Facilities states the following:

(a) General. *A public entity shall operate each service, program, or activity so that the service, program, or activity, when viewed in its entirety, is readily accessible to and usable by individuals with disabilities.*

C. § 35.151 NEW CONSTRUCTION AND ALTERATIONS

- (a) *Design and construction.*
    - (1) Each facility or part of a facility constructed by, on behalf of, or for the use of a public entity shall be designed and constructed in such manner that the facility or part of the facility is readily accessible to and usable by individuals with disabilities, if the construction was commenced after January 26, 1992.
    - (2) ***Exception for structural impracticability.***
        - (i) Full compliance with the requirements of this section is not required where a public entity can demonstrate that it is structurally impracticable to meet the requirements. **Full compliance will be considered structurally impracticable only in those rare circumstances when the unique characteristics of terrain prevent the incorporation of accessibility features.**
        - (ii) If full compliance with this section would be structurally impracticable, compliance with this section is required to the extent that it is not structurally impracticable. In that case, any portion of the facility that can be made accessible shall be made accessible to the extent that it is not structurally impracticable.
        - (iii) If providing accessibility in conformance with this section to individuals with certain disabilities (*e.g.*, those who use wheelchairs) would be structurally impracticable, accessibility shall nonetheless be ensured to persons with other types of disabilities, (*e.g.*, those who use crutches or who have sight, hearing, or mental impairments) in accordance with this section.

There are limits to a public entity's program access obligations. Entities are not required to take any action that would result in undue financial and administrative burdens. The decision that an action would result in an undue burden must be made by a high-level official, no lower than a Department head, having budgetary authority and responsibility for making spending decisions, after considering all resources available for use in the funding and operation of the service, program, or activity, and must be accompanied by a written statement of the reasons for reaching that conclusion. If an action would result in an undue burden, a public entity must take any other action that would not result in an undue burden but would nevertheless ensure that individuals with disabilities receive the benefits or services provided by the public entity.

Another key concept is that public entities have an ongoing obligation to make programs and services accessible to people with disabilities. This means that if many access improvements are needed, and there are insufficient resources to accomplish them in a single year, they can be spread out over time. It also means that rising or falling revenues can affect whether or not an access improvement can be completed in a given year. What might have been seen as an undue burden during an economic downturn could become possible when the economy improves, and revenues increase. Thus, public entities should periodically reassess what steps they can take to make their programs and services accessible. Public entities should also consult with people with disabilities in setting priorities for achieving program access.

In situations where strict compliance with the Standards is technically infeasible, **the entity must comply to the maximum extent feasible**. "Technically infeasible" is defined as something that has little likelihood of being accomplished because existing structural conditions would require removing or altering a load-bearing member that is an essential part of the structural frame; or **because other existing physical or site constraints prohibit modifications or additions that comply fully with the Standards**. The 2010 Standards also contain an exemption for certain alterations that would threaten or destroy the historic significance of an historic property.

6.2 California Code of Regulations Title 24

Title 24 of the California Code of Regulations encompasses all standards for buildings and facilities within the State of California. Its referenced accessibility standard as of the time of this study is Chapter 11B of the 2022 California Building Code (CBC), including the supplement effective July 1, 2021. While 2022 CBC 11B-246.3 provides scoping that beaches shall be accessible, it does not provide specific technical provisions for making a beach accessible. Instead, a technical advisory provided at 11B-246.1 directs to the California State Parks Accessibility Guidelines (CSPAG) and the Outdoor Developed Areas: A Summary of Accessibility Standards for Federal Outdoor Developed Areas from the U.S. Access Board as sources for accessibility best practices. Neither of these technical standards are formally incorporated into California's Title 24 requirements, nor do they apply independently to the Spindrift Stair – Beach Access, which is not a State Park; nevertheless, they serve as guiding documents for compliance with the general requirements of the 2022 CBC for providing beach access. A description of the technical requirements contained in each set of Guidelines is provided in the next section.

Like the ADA, when existing conditions make full compliance with accessibility standards infeasible, the CBC allows for compliance to the maximum extent feasible. CBC 11B-202.3 states:

> "*In alterations, where the enforcing authority determines compliance with applicable requirements is **technically infeasible**, the alteration shall provide equivalent facilitation or comply with the requirements **to the maximum extent feasible.** The details of the findings that full compliance with the requirements is technically infeasible shall be recorded and entered into the files of the enforcing agency*." (emphasis added)

For something to be considered "technically infeasible" it needs to meet the following requirements as defined in Title 24, Section 2:

> *"An alteration of a building or a facility, that has little likelihood of being accomplished because the existing structural conditions require the removal or alteration of a load-bearing member that is an essential part of the structural frame, or because other existing physical or site constraints prohibit modification or addition of elements, spaces or features that are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility."*

This language mirrors the ADA's scoping as identified under the 2010 ADAS Section 106.5 Defined Terms for similar situations, acknowledging that structural, physical, and environmental constraints may make some elements of the detailed technical requirements impossible to fully incorporate into the site. However, as with the ADA, the overall intent to provide access must be met to the greatest extent feasible.

7 DETAILED TECHNICAL REQUIREMENTS

7.1 SITE ACCESS

The standards that mandate accessibility for the City of San Diego are the Americans with Disabilities Accessibility Standards (ADAS) and the California Building Code (CBC). Both the 2010 ADA and the 2022 CBC apply to facilities and sites.

Both the ADAS and the CBC require an accessible route on site.

11B-206.2.1 Site Arrival Points: *"At least one accessible route shall be provided within a site from accessible parking spaces and accessible passenger drop-off and loading zones; public streets and sidewalks; and public transportation stops to the accessible building or facility entrance they serve…"*

11B-206.2.2 Within a Site: *"At least one accessible route shall connect accessible buildings, accessible facilities, accessible elements, and accessible spaces that are on the same site."*

While there is an allowance under for program access for 'structural impracticality' in the ADAS. The CBC provides a similar exception for construction related elements in alterations.

11B-202.3 *"In alterations, where the enforcing authority determines compliance with applicable requirements is technically infeasible, the alteration shall provide equivalent facilitation or comply with the requirements to the maximum extent feasible.* ***The details of the findings that full compliance with the requirements is technically infeasible shall be recorded and entered into the files of the enforcing agency****."*

For something to be considered "technically infeasibility" it needs to meet the following definition:

"An alteration of a building or a facility, that has little likelihood of being accomplished because the existing structural conditions require the removal or alteration of a load-bearing member that is an essential part of the structural frame, or because other existing physical or site constraints prohibit modification or addition of elements, spaces or features that are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility."

7.2 BEACH ACCESS

Both the 2010 ADAS and the 2022 CBC offer minimal details on specific requirements for beach access.

7.2.1 2010 ADAS

The ADAS is silent on beach accessibility, however, specific beach accessibility standards have been adopted by the Access Board under the Architectural Barriers Act (ABA) Standards[5]. The ABA Standards provide scoping and technical requirements for accessibility to sites, facilities, buildings, and elements by individuals with disabilities. The requirements are to be applied during the design, construction, addition to, alteration, and lease of sites, facilities,

[5] Architectural Barriers Act: Outdoor Developed Areas: A Summary of Accessibility Standards for Federal Outdoor Developed Areas

buildings, and elements to the extent required by regulations issued by Federal agencies under the Architectural Barriers Act of 1968. While the ABA is not directly applicable to the Spindrift Stairs – Beach Access, The Accessibility Standards for Federal Outdoor Developed Areas. The City has used these as best practices since they provide technical guidance as a standard that has been accepted by the US Access Board for making beaches accessible. Section CFR § 35.177 of the Title II Regulations specifically states that a public entity is not excused from compliance with accessibility requirements "because of any failure to receive technical assistance, including any failure in the development or dissemination of any technical assistance manual."

Section F248.1 of the ABA addresses the scoping requirements noting that "beach access routes" are required when an entity that administers or manages a beach constructs or alters any circulation path, parking facilities, toilet facilities, or bathing facilities that serve the beach.

Section 1018 of the ABA addresses the technical requirements. It notes that where beach access routes are required under the ABA, **at least one beach access route shall be provided for each 1/2 mile of beach shoreline administered or managed by the entity**. There is an exception that the number of beach access routes shall not be required to exceed the number of pedestrian access points provided by the entity to a beach.

Beach access routes shall coincide with or be located in the same area as pedestrian access points to the beach.

Beach access routes shall connect an entry point to the beach to the:

- **High tide level at tidal beaches**;
- Mean high water level at river beaches; or
- Normal recreation water level at lake, pond, and reservoir beaches

In addition:

- The surface of beach access routes and resting intervals shall be firm and stable
- The clear width of beach access routes shall be 60 inches minimum
- Obstacles on beach access routes and resting intervals shall not exceed 1/2 inch (13 mm) in height measured vertically to the highest point
- Openings in the surface of beach access routes and resting intervals shall not allow the passage of a sphere more than 1/2 inch in diameter.

The ABA does provide exceptions for beach access routes including when compliance is not practical due to terrain. Compliance is required "to the extent practicable" when an exception is used. When extreme or numerous conditions for exceptions make it impractical to construct a trail or beach access route that complies with the technical requirements, such as the Spindrift Stair – Beach Access project, the ABA Standards provide an exemption for the entire trail or beach access route. The exemption for an entire trail or beach access route can only be used after applying the conditions for exceptions to portions of the trail or beach access route. When determining whether to exempt an entire trail or beach access route, designers must consider the portions of the trail or beach access route that can and cannot comply with the specific provisions in the technical requirements, and the extent of compliance feasible where full compliance cannot be achieved.

7.2.2 2022 CBC

CBC 11B-246.3 Beaches. "Beaches shall be accessible."

The CBC is silent on details for complying with beach accessibility, but the 2022 California Access Compliance Advisory Reference Manual issued by the Division of the State Architect points to two external sources for best practices on accessible outdoor developed areas as outlined in the DSA Advisory 11B-246.1.

1. 2013 Outdoor Developed Areas: A Summary of Accessibility Standards for Federal Outdoor Developed Areas via the U.S. Access Board, which are the basis of the ABA standards as discussed above, and,

2. 2015 California State Parks Accessibility Guidelines (CSPAG)

Section 5 of the CSPAG addresses beaches and shores, with a focus on routes to traverse loose, sandy soils to reach the water's edge.

CSPAG 5.II.A Beach Access Routes: "The beach access route shall be located in the same area as the general circulation path, and shall extend to the high tide level, mean riverbed level, or the normal recreation pool level."

The detailed standards that follow this section extensively reference the ABA, and include:

- 60" minimum clear width,
- Firm and stable surfaces,
- Maximum opening dimensions of ½" perpendicular or diagonal to the route, and ¼" maximum parallel to the route,
- Warning curbs where there is a vertical drop exceeding 4" adjacent to the route,
- Prohibition of objects protruding into the route, commensurate with ADAS 307;
- Maximum lengths of path segments based on running slopes, up to 30' of pathway at 10% slope;
- 60" x 60" rest areas provided at intervals based on pathway running slope,
- Level 60" x 60" maneuvering space at the end of the beach access route
- All obstacles in the beach access route to be less than ½" high.

These standards are typically achieved via permanent boardwalks, removable beach mats, or beach wheelchairs stored and supervised by park staff. Access to the beach access route from accessible parking spaces, common use areas and support facilities are to be consistent with requirements for general accessible routes of travel (CSPAG 5.I.B.1).

7.3 STAIR ACCESS

7.3.1 ADA Standards

The 2010 ADA Standards (ADAS 210) only require interior and exterior stairs that are part of a required means of egress must meet the Standards. Compliance is required for all stairs on required egress routes, including those comprised of a single riser. The Standards do not apply to stairways that are not part of a required means of egress nor to alternating tread devices and "ship's ladders." The Standards exempt aisle stairs in assembly areas, stairs in non-public areas of detention and correctional facilities, and stairs of play components.

While stairs are exempt, these stairs are serving the purpose for beach access and ADA does require that Title II programs be accessible. The City of San Diego will want to review their beach access in its entirety and verify they are providing overall compliance to the ADA program requirements.

7.3.2 California Building Code

In contrast with the ADA Standards, the California Building Code (CBC 210) does not limit compliance to stairs that are part of the required means of egress. All interior and exterior stairs would be required to be accessible and meet the requirement found in Section 11B-504.

At times of alterations items need to be made compliant with the current code as required at 11B-202.3. See Appendix A: Deficiency Report for specific items that do not meet current code.

8 POTENTIAL SOLUTIONS

Several options have been considered for providing access to Spindrift Stairs - Beach Access for individuals with disabilities.

8.1 RAMP

The elevation change between the upper pedestrian surfaces and the beach level is about a 13.75' change of elevation. The ADA and CBC both include minimum dimensional standards for accessible ramps, but the CBC is more restrictive, and includes the following, among other requirements:

- Maximum 1:12 slope of ramp runs (11B-405.2)
- Minimum 48" clear width of ramp runs (11B-405.5)
- Maximum rise of 30" per run (11B-405.6)
- Landings at the top, bottom, and intermediate intervals measuring at least 48" in width and 60" in length (11B-405.7.3); a length of 72" minimum is required at the bottom landing.
- Intermediate landings at changes in direction (such as switchbacks) must be 60" x 72" minimum (11B-405.7.4)

Compliance with these minimum standards requires a ramp length of no less than 252 linear feet in length and as much as 1,260 sf in area. The construction of a ramp this length will significantly encroach the shoreline and ocean, which would also need to be approved by the California Coastal Commission due to environmental impacts. In addition to the limited footprint of the access to the beach, it was noticed during the site assessment that drainage as well as existing walls from the adjacent properties would be affected by installing a ramp which as noted in Exhibit 3 also raises the grades and may be deemed structurally impracticable under section 35.151 in those rare circumstances when the unique characteristics of terrain prevent the incorporation of accessibility features.

It was also noted in a posted sign that the actual beach is private property which does not appear to allow the installation of a ramp within this area.

8.2 ELEVATOR

There are several limiting barriers to the use of an elevator at the Spindrift Stair – Beach Access point. The marine environment necessitates the use of a specialty elevator such as those designed for ships, oil rigs, windmills, offshore stations, and other special applications. An elevator pit would fill with water during high tides, so a traction elevator would have to support the cab from above. Based on the limited width of the existing easement, adjacent properties, and privately owned beach an elevator is not an option at this location.

8.3 New Stairway

In the case of the Spindrift Stairs – Beach Access, it is recommended to provide a stairway conforming to accessible standards considering that an elevator, platform lift, or a ramp to serve wheelchair users does not appear to be technically feasible due to the reasons explained in Sections 8.1 and 8.2. There are a couple of alternatives that will be outlined in the engineers report for how this can be achieved. While the stairs do not provide full accessibility, a code compliant stair does allow those with limited mobility (i.e. cane, crutches, elderly, etc) to make their way down to view the ocean. An accessible beach with accessible parking is also located nearby and can be reached by either walking, wheeling, or driving to this location. It is the same beach area and connects to this same beach location.

At the beginning of the stair where it connects to the public sidewalk a directional & informational sign is recommended to be installed to inform/direct pedestrians to the closest accessible beach locations.

8.3.1 2010 ADAS

The 2010 ADAS only requires interior and exterior stairs that are part of a required means of egress to comply with the technical requirements for accessible stairs. Compliance is required for all stairs on required egress routes, including those comprised of a single riser. The ADAS does not apply to stairways that are not part of a required means of egress nor to alternating tread devices and "ship's ladders." Also exempt are aisle stairs in assembly areas, stairs in non-public areas of detention and correctional facilities, and stairs of play components.

While stairs are exempt from federal requirements for accessibility since these would not be classified egress stairs, these stairs are serving the purpose for beach access and ADA does require that Title II programs be accessible. Stairs can be used by individuals with disabilities that are not using wheelchairs allowing a design that is providing the maximum accessibility allowed due to the terrain at this location. The City of San Diego will want to review their beach access in its entirety and verify they are providing overall compliance to the ADA program requirements.

8.3.2 2022 CBC

In contrast with the 2010 ADAS as noted in section 210.1 that the only stairs that need to comply for stairs that are a part of egress, the 2022 CBC does not limit compliance to stairs that are part of the required means of egress. All interior and exterior stairs would be required to be fully accessible and meet the requirement found in Section 11B-504 as identified in 11B-210.1.

New stairways are required to comply with the 2022 CBC and any applicable amendments and supplements in effect at the time of construction

8.3.3 City of San Diego Standard Details

In addition to federal and state requirements, the Spindrift Stairs – Beach Access staircase project is required to be designed for compliance with the City of San Diego Standard Drawings for Capital Improvement Projects.

9 CONCLUSION

The existing site conditions create a change of elevation over 13-feet. Site constraints occur at this location with properties butting up to both sides of the walk / stairs, existing drainage from adjacent properties, and wall elevations that would be lower in some areas than the required elevations for a new accessible ramp. A parcel width of 6’ limits the required clearances.

These conditions appear to be covered in a technical infeasibility as noted below.

“An alteration of a building or a facility, that has little likelihood of being accomplished because the existing structural conditions require the removal or alteration of a load-bearing member that is an essential part of the structural frame, or because ***other existing physical or site constraints prohibit modification or addition of elements, spaces or features that are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility****.”*

Additionally, the minimum 60” width required by the ABA as identified in the CSPAG 5.II.A Beach Access Routes is not able to be achieved at this location for the above noted reasons.

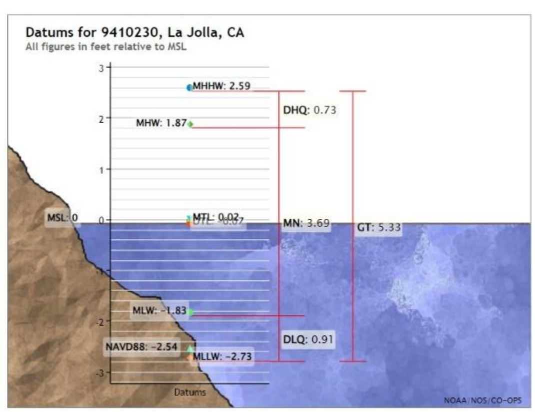
As noted previously in the report, the ABA does provide exceptions for beach access routes including when compliance is not practical due to terrain. Compliance is required “to the extent practicable” when an exception is used. Beach access routes shall connect an entry point to the beach to the **High tide level at tidal beaches**. Existing survey elevations appear to provide the bottom of the stairs close to that location.

The beach access Tidal elevations as defined below:

Datum: NGVD29
Mean Higher-High Water Elevation: 2.59 (MS)
Mean High Water Elevation: 1.87 (MSL)

Elevations on Mean Sea Level
Station: 9410230, La Jolla, CA — **T.M.:** 0
Status: Accepted (Sep 20 2017) — **Epoch:** 1983-2001
Units: Feet — **Datum:** MSL
Control Station:

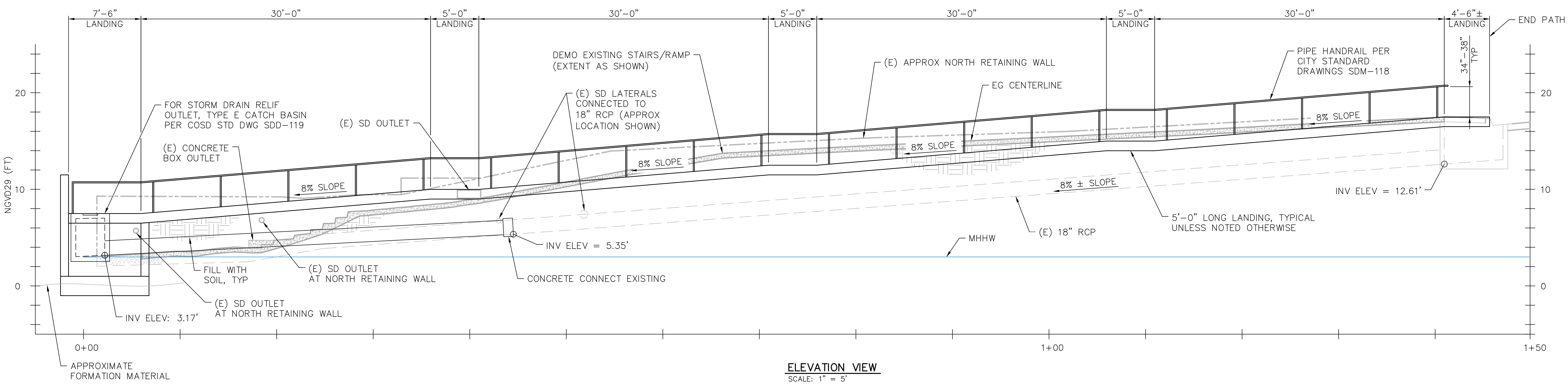
Datum	Value	Description
MHHW	2.59	Mean Higher-High Water
MHW	1.87	Mean High Water
MTL	0.02	Mean Tide Level
MSL	0.00	Mean Sea Level
DTL	-0.07	Mean Diurnal Tide Level
MLW	-1.83	Mean Low Water
MLLW	-2.73	Mean Lower-Low Water
NAVD88	-2.54	North American Vertical Datum of 1988
STND	-7.10	Station Datum
GT	5.33	Great Diurnal Range
MN	3.69	Mean Range of Tide



In addition to the site compliance, signage to the nearest accessible beach location to the north and south of the site is recommended to be provided at the connection to the public-right-of-way at the top of the stairs and landings.

The closest accessible beach access is located north of Spindrift Stairs at Kellogg Park approximately 0.7 miles to the north of Spindrift Stair Beach Access location. (Exhibit 2) Kellogg Park is located at 8277 Camino Del Oro La Jolla, California. The paved parking lot has six accessible parking spaces. It is next to the beach, separated only by a concrete walkway. A beach wheelchair is available to borrow. Ask at the lifeguard stand. Accessible restrooms are single-occupancy, three of which are accessible stalls and a family sized restroom.

10 EXHIBIT 3 – PROPOSED RAMP LAYOUT



ELEVATION VIEW
SCALE: 1" = 5'

1" = 5' 0 5' 10'

OPTION 04 - NEW ADA RAMP AND HANDRAIL

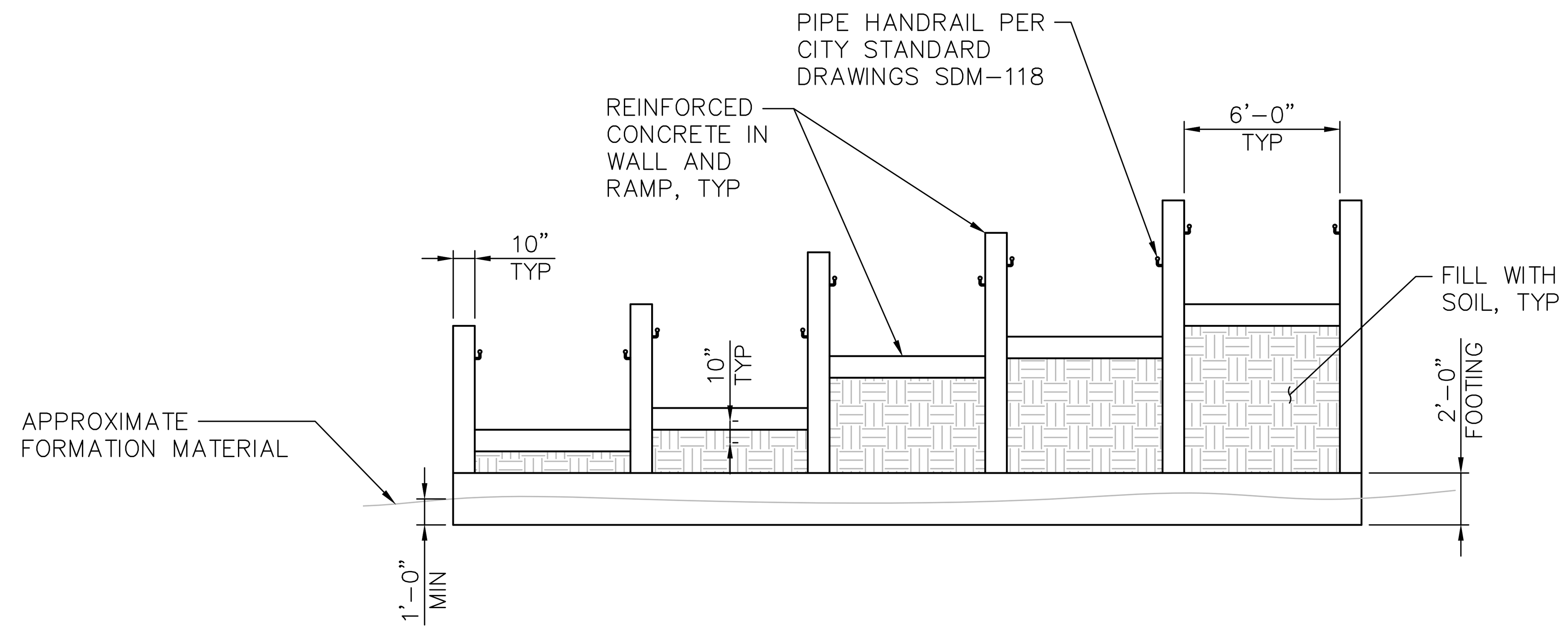
moffatt & nichol
1660 HOTEL CIRCLE NORTH, SUITE 500
SAN DIEGO, CALIFORNIA 92108
PH (619) 220-6050 FAX (619) 220-6055

REVISIONS

NO.	WORK DONE	DATE	BY:	APP'D:
0	NEW DRAWING			

SPINDRIFT DRIVE BEACH ACCESS WALKWAY

DRAWN BY:	DATE: XXX	SCALE:	W.O. REV.
CHECKED BY:	DATE: XXX		
APPROVED BY:	DATE: XXX		
CAD NO.:	PLOT SCALE:		



SECTION VIEW
SCALE: 1" = 5'

PLAN VIEW
SCALE: 3/16" = 1'-0"

OPTION 04 - NEW ADA RAMP AND HANDRAIL

moffatt & nichol
1660 HOTEL CIRCLE NORTH, SUITE 500
SAN DIEGO, CALIFORNIA 92108
PH (619) 220-6050 FAX (619) 220-6055

REVISIONS

WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:
									0	NEW DRAWING			

SPINDRIFT DRIVE BEACH ACCESS WALKWAY

DRAWN BY:	DATE: XXX	SCALE:	W.O.	REV.
CHECKED BY:	DATE: XXX			
APPROVED BY:	DATE: XXX			
CAD NO.:	PLOT SCALE:			

11 APPENDIX A: DEFECIENCY REPORT

1 - EXTERIOR

1.1

Area of Noncompliance

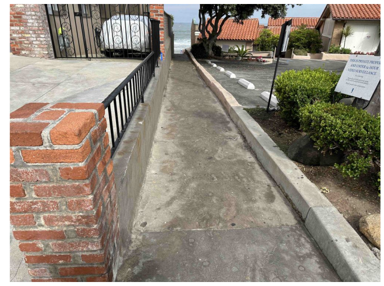
Accessible Route - Slopes - Cross Slope
The cross slope of accessible routes exceeds 1:48 (2.0 %). Cross slope of 3.0%.

Recommended Remediation

Remove and replace walk. Install walk that provides cross slopes at circulation route of 1:48 maximum.

2010 ADAS
405.2
N

2022 CBC
11B-406.5.7
N



1.2

Area of Noncompliance

Accessible Route - Slopes - Running Slope
The slope in the direction of travel exceeds the allowable 5%. Excessive running slopes range from 5.2% to 19.4%.

Recommended Remediation

Accessible routes shall consist of one or more of the following components: walking surfaces with a running slope not steeper than 1:20, doorways, ramps, curb ramps excluding the flared sides, elevators, and platform lifts.

2010 ADAS
402.2
N

2022 CBC
11B-402.2
N

Measurement:
19.4 % grade

1.3

Area of Noncompliance

Stairs - Top Landing - Slope
Running slope at landing and treads exceeds 2% maximum. Excessive slopes range from 5.2%to 7.0% and has an uneven surface.

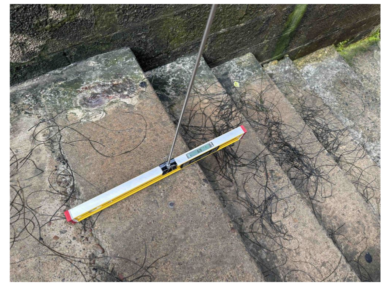
Recommended Remediation

The walking surface of treads and landings of a stairway shall not be sloped steeper than one unit vertical in 48 units horizontal (2-percent slope) in any direction. Stair treads shall comply with Section 11B-302. Changes in level, slopes exceeding 1:48, and detectable warnings shall not be permitted.

2010 ADAS
504.4
N

2022 CBC
1011.71
11B-504.4
N

Measurement:
7.0 % grade



1.4

Area of Noncompliance

Stairs - Treads - Slope
Running slope at treads exceeds 2% maximum. Running slopes range from 2.3% to 15.9%.

Recommended Remediation

Stair treads shall comply with Section 11B -302. Changes in level, slopes exceeding 1:48, and detectable warnings shall not be permitted.

2010 ADAS
504.4
N

2022 CBC
11B-504.4
N

Measurement:
15.9 % grade

1.5

Area of Noncompliance

Stairs - Bottom Landing - Slope
Running slope at landing and treads exceeds 2% maximum. Excessive slope at bottom landing is 10.4% and has an uneven surface.

Recommended Remediation

The walking surface of treads and landings of a stairway shall not be sloped steeper than one unit vertical in 48 units horizontal (2-percent slope) in any direction. Stair treads shall comply with Section 11B-302. Changes in level, slopes exceeding 1:48, and detectable warnings shall not be permitted.

2010 ADAS
504.4
N

2022 CBC
1011.71
11B-504.4
N

Measurement:
10.4 % grade

1.6

Area of Noncompliance

Stairs - Risers - Uniformity
All steps on a flight of stairs do not provide uniform riser heights and/or uniform tread depths. Heights range fron 5-3/4" to 9-1/2".

Recommended Remediation

Replace steps to provide uniform riser heights. The tolerance between the largest and smallest riser height or between the largest and smallest tread depth shall not exceed 3/8 inch in any flight of stairs.

2010 ADAS
504.3
N

2022 CBC
11B-504.3
N

Measurement:
7 count

1.7

Area of Noncompliance

Stairs - Risers - Height
Riser height is not within the range of 4 inches high minimum and 7 inches high maximum. Riser heigth is 7-1/8" at top two risers to 9-1/2" at bottom riser.

Recommended Remediation

All steps on a flight of stairs shall have uniform riser heights and uniform tread depths. Risers shall be 4 inches high minimum and 7 inches high maximum.

2010 ADAS
504.2
N

2022 CBC
11B-504.2
N

Measurement:
3 count

1.8

Area of Noncompliance

Stairs - Treads - Uniformity
Depths on risers vary in depth. 9-1/2" to 26 -1/2"

Recommended Remediation

Replace steps to provide uniform tread depths on the flight of stairs. Stair treads and risers shall be of uniform size and shape. The tolerance between the largest and smallest riser height or between the largest and smallest tread depth shall not exceed 3/8 inch in any flight of stairs.

2010 ADAS
504.3
N

2022 CBC
1011.5.4
11B-504.3
N

Measurement:
7 count

1.9

Area of Noncompliance

Stairs - Landing - Slope
Running slope at landing and treads exceeds 2% maximum. Excessive slopes is 6.8% with bottom landing being sand.

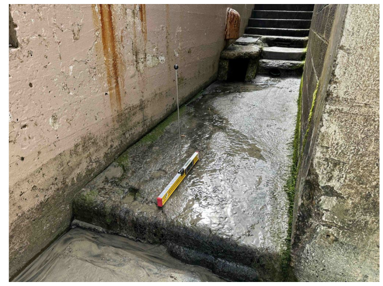
Recommended Remediation

The walking surface of treads and landings of a stairway shall not be sloped steeper than one unit vertical in 48 units horizontal (2-percent slope) in any direction. Stair treads shall comply with Section 11B-302. Changes in level, slopes exceeding 1:48, and detectable warnings shall not be permitted.

2010 ADAS
504.4
N

2022 CBC
1011.71
11B-504.4
N

Measurement:
6.8 % grade



1.10

Area of Noncompliance

Accessible Route - Clear Width - General
Accessible route widths do not provide minimum 48-inches clear consistently at stairs due to drainage.

Recommended Remediation

Replace walks to provide a clear width of 48 inches (1219 mm) minimum. When, because of right-of-way restrictions, natural barriers or other existing conditions, the enforcing agency determines that compliance with the 48-inch (1219 mm) clear sidewalk width would create an unreasonable hardship, the clear width may be reduced to 36 inches (914 mm).

2010 ADAS
403.5.1
Y

2022 CBC
11B-403.5.1
(Ex 3-Exterior)
N

1.11	***Area of Noncompliance*** **Stairs - Handrails - Both Sides** Handrails are not provided on both sides of the staircase. ***Recommended Remediation*** Install missing handrails so they are provided on both sides of stairs and ramps.	**2010 ADAS** 505.2 N **2022 CBC** 11B-505.2 N **Measurement:** 2 count	
1.12	***Area of Noncompliance*** **Stairs - Contrast Striping - Exterior Stair** A 2-inch minimum to 4-inch maximum clear visual contrast stripe is not provided on each step. ***Recommended Remediation*** Provide clear visual contrast striping at the upper approach and all treads . The stripe shall be a minimum of 2 inches wide to a maximum of 4 inches wide. A painted stripe shall be acceptable. Grooves shall not be used to satisfy this requirement.	**2010 ADAS** N/A N/A **2022 CBC** 11B-504.4.1 N **Measurement:** 8 count	

1.13

Area of Noncompliance

Stairs - Nosing - Radius
The curvature at the leading edge of the tread exceeds the maximum of ½ inch radius.
Risers are not uniform in the nosing.

Recommended Remediation

Adjust risers to provide a radius of curvature at the leading edge of the tread to ½ inch (12.7 mm) maximum.

2010 ADAS
504.5
N

2022 CBC
11B-504.5
N

Measurement:
8 count

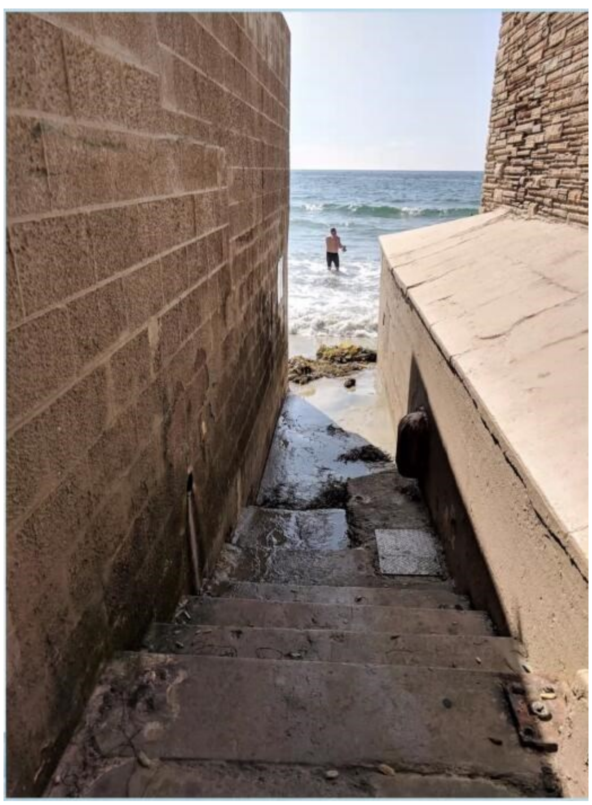
Appendix D – Coastal Hazards Study

REPORT
Produced For City of San Diego
Dec 6, 2024

moffatt & nichol

COASTAL HAZARDS ANALYSIS

Replacement of Beach Staircase at Spindrift Drive Beach Access Walkway



Document Verification

Client	City of San Diego
Project name	Coastal Hazards Analysis for Beach Staircase at Spindrift Drive, La Jolla, CA
Document title	Report
Document sub-title	–
Status	Final
Date	December 6, 2024
Project number	213159-03
File reference	Q:\SD\213159-03 Spindrift Drive\40 Production\Reports

Revision	Description	Issued by	Date	Checked
00	Initial Draft Report	CE	07/24/24	
01	Modifications (Chad Monfort review)	CE	08/13/2024	
02	Address comments (Carol E, Chris O, Mason G)	CE	08/15/2024	
03	Final Report	CM	12/06/2024	

Produced by:

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This study is qualified in its entirety by, and should be considered in light of, these limitations, conditions and considerations.

Glossary

CoSMoS	Coastal Storm Modeling System
CCC	California Coastal Commission
CoNED	Coastal National Elevation Database
CoSMoS	Coastal Storm Modeling System
DEM	Digital Elevation Model
DPR	California Department of Parks and Recreation
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
ft	Feet
LiDAR	Light Detection and Ranging
m	Meter
MHHW	Mean Higher-High Water
MHW	Mean High Water
NAVD	North American Vertical Datum of 1988
NDBC	National Data Buoy Center
NOAA	National Oceanic and Atmospheric Administration
OPC	Ocean Protection Council
RBSP	Regional Beach Sand Project
RCP	Representative Concentration Pathway
s	Second
SLR	Sea Level Rise
SWL	Still Water Level
TWL	Total Water Level
USGS	United States Geological Survey's
WL	Water Level
yr	Year

1. Project Area and Scope

The Spindrift Drive beach access walkway, (Spindrift Access), is a key beach access point situated along the San Diego coastline in the La Jolla Shores community, approximately 13 miles north of downtown San Diego. This walkway is nestled between the Marine Room Restaurant at 2000 Spindrift Drive to the north, a private residence at 1920 Spindrift Drive to the south, Spindrift Drive to the east, and La Jolla Shores Beach to the west. The adjacent beach is home to protected habitats and species, providing opportunities for wildlife viewing, swimming, surfing, snorkeling, and general beach access (refer to Figure 1).

FIGURE 1: SPINDRIFT DRIVE BEACH ACCESS WALKWAY AND INSET PROJECT SITE MAP

Spindrift Drive is a notable seaside community in La Jolla, with roots dating back to the late 19th century. Renowned for its coastal proximity, it offers residents direct beach access and stunning views of the Pacific Ocean. The beach access stairway, situated near the Marine Room restaurant—an iconic dining destination since 1941—and the adjacent Spindrift Lounge, built in 1948, enriches the scenic experience for visitors. Spindrift Access is part of the California Coastal Trail and provides public access to the San Diego-La Jolla Underwater Park and the La Jolla community beach.

Nearby beach access points include those at the end of Avenida De La Playa, slightly over half a mile to the north, and La Jolla Cove, about one mile to the south. The stairs connect the La Jolla Community Beach with the La Jolla Vista Subdivision and Spindrift Drive, which supports the Coastal Trail south towards Point La Jolla. Although the exact construction date of the stairs is not well documented, the Marine Room and surrounding infrastructure, including the staircase, have undergone various renovations and improvements due to the harsh coastal conditions within the tidal zone. Given the site's vulnerability to erosion, stormwater runoff, and wave-runup, the current staircase is at risk and will soon no longer provide safe beach access. Consequently, a safer and more sustainable accessway is required to maintain this important public amenity. Figure 2 illustrates the general location of Spindrift Access.

FIGURE 2: SPINDRIFT BEACH TRAIL STAIRCASE

1.1. Project Scope

The City of San Diego is seeking to repair or replace the existing Spindrift Access, located close to the intersection of Spindrift Drive and Roseland Drive, in La Jolla, California. The walkway was constructed between a private residence retaining wall on the south and the Marine Room restaurant retaining wall to the north and is approximately 150 linear feet long. The walkway varies in elevation from flat near the street to a moderate slope as it continues west and ends with eight steps to reach beach level. Existing storm drainpipes under the walkway extend to an outfall adjacent to the beach. During high tides, surf regularly impacts the west end of the walkway, scouring out a hole under the last step and washing sand up over the other steps. Many parts of the accessway are in a state of advanced decay/disrepair from years of use and exposure to the elements, resulting in a threat to public safety, necessitating safer and more sustainable beach access to support this important public amenity.

Replacement of this beach trail staircase will require a coastal hazards assessment as part of the permitting process. This assessment will include: 1) descriptions of the geologic and coastal setting; 2) review of the historic shorelines as well as beach and bluff erosion data; 3) analysis of wave runup; and 4) development of coastal hazards maps for current and future sea level rise (SLR) scenarios for the existing site condition. The coastal hazard maps shall be based on the compilation of existing Coastal Storm Modeling System (CoSMoS) results and FEMA Flood Insurance Rate Maps (FIRM).

Figure 3 shows a Google Earth image of the walkway along with accompanying pictures taken at the site. This figure highlights two of the main features of the staircase: the upper staircase and walkway, with upper drainpipe (left) and the lower step and lower drainage onto the beach.

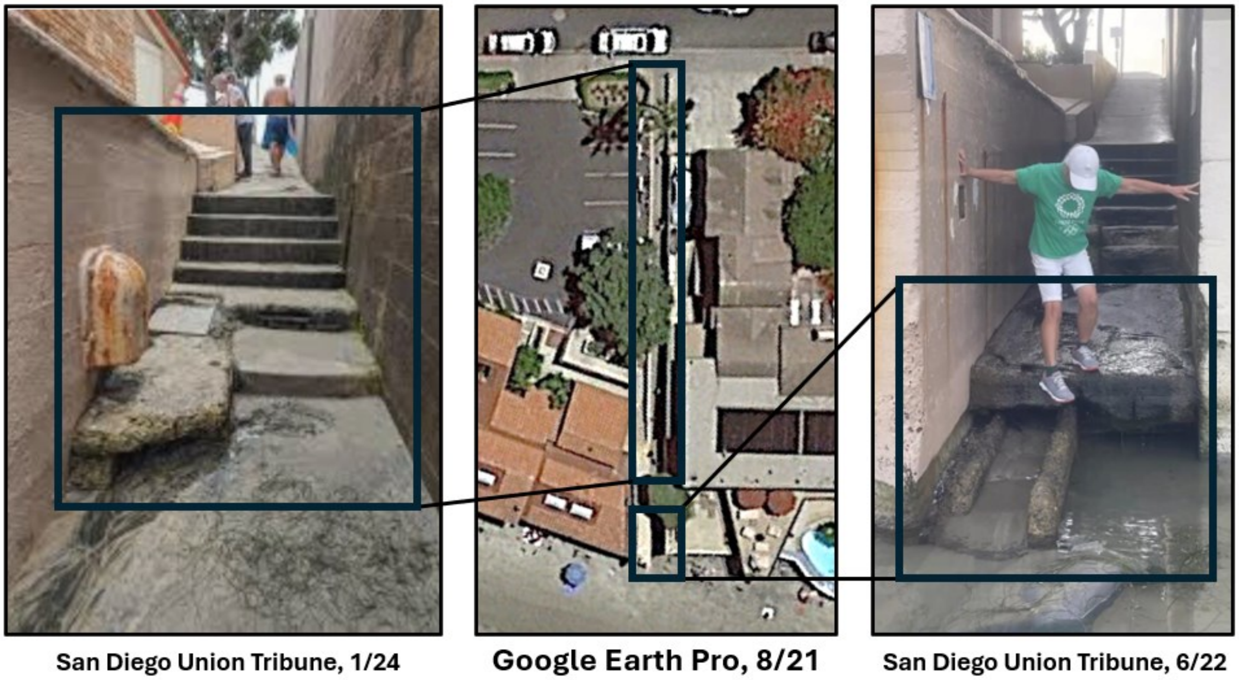


FIGURE 3: CURRENT BEACH ACCESS WALKWAY CONDITION

As the Spindrift Access is located within the Coastal Zone, the rehabilitation or replacement of the walkway will require a coastal development permit and a coastal hazards analysis that addresses tidal and storm flooding, wave runup, and erosion, each as influenced by SLR**. This report fulfills the requirements of a Coastal Hazards Analysis for the Spindrift Drive beach access walkway and has been organized to address specific aspects required by the California Coastal Commission (CCC 2018, CCC 2019).** Coastal hazards associated with shoreline erosion and flooding due to SLR, are assessed below.

1.2. Existing Structure and Shore Protection at Beach Accessway

The existing Beach Access Walkway is a 4'-wide walkway and staircase, approximately 150' long, with a vertical elevation drop of approximately 17', passing between adjacent private property retaining walls, connecting Spindrift Drive with the beach. It was constructed in the mid-20th century and has undergone several maintenance and reconstruction efforts to improve safety and accessibility over the years.

The Marine Room restaurant was constructed in 1948. The windows were replaced with bullet proof glass to withstand the powerful ocean forces soon thereafter. The 1982 El Nino Storm caused significant damage leading to reinforced steel renovations and the curved shape seawall to reflect the incoming waves in an effort to utilize the wave energy to counteract further impacts. In September 2023, further structural resiliency measures were undertaken.

The private property at 1920 Spindrift Drive was constructed in 1955, also with retaining walls. These walls, however, terminate about 5' landward of the Marine Room seawall. Figure 4 illustrates the vertical seawalls along this reach of beach.

FIGURE 4: VERTICAL SEAWALLS ON EITHER SIDE OF SPINDRIFT ACCESSWAY

The Spindrift Access is located at the southernmost end of La Jolla Shores Beach facing the northwest. The shore to the southwest of the beach access is rugged with a rocky shoreline, that includes cliffs, caves, and tide pools. Near the walkway, the shoreline has been armored by seawalls to prevent cliff erosion and protect blufftop homes. The shoreline wraps around to the southwest and then northwest, forming a cove, with La Jolla Point as the headland at the western end of the cove. Directly to the north is the head of La Jolla Submarine Canyon which quickly drops to a 400-foot depth, less than 3000' offshore. To the northeast is the La Jolla Shores beach.

1.3. Proposed Development at Beach Trail Staircase

The City of San Diego has determined that it is necessary to repair/replace the Spindrift Access because of accessibility concerns, problematic walkway toe scour, and generally deteriorating conditions. The walkway and staircase play an important role in providing day-use beach access for swimming, snorkeling, and diving, and serving as part of the California Coastal Trail, making their replacement essential. The replacement staircase will be in the same location as the existing one and aims to increase accessibility and safety. The Spindrift Access is located on the City of San Diego property.

Four concept alternatives will be detailed in a separate feasibility study report. These alternatives will include 1) a repair of the existing staircase, 2) a replacement stair configuration within the existing footprint, 3) a replacement stair configuration extending slightly beyond the existing footprint, and 4) a replacement of the walkway with an ADA-compliant ramp. Handrail details will be provided, where required by relevant building codes. Storm drain improvements will also be incorporated into each alternative with consideration for sand infilling.

The new staircase, as with the existing one, will be subjected to potential wave runup. Note that the present-day 100-yr wave runup elevation at the site is **20.9 ft NGVD (23 ft NAVD)**, per the regional Base Flood Elevation, shown on FEMA FIRM 06073C1043 (effective Dec. 20, 2019).

Due to the proposed project's location, the beach access walkway has the potential to be impacted by a variety of coastal hazards, including wave runup and erosion, as influenced by sea level rise over time. This report characterizes those potential hazards.

2. Geologic Setting

The Spindrift Access is a narrow concrete beach access path located at the southern end of the La Jolla Shores. The staircase, at its seaward exit, is flanked by seawalls on both sides. To the south of the project site, the large coastal bluffs of La Jolla begin and extend toward Pacific Beach. The location and surroundings of the project site are shown in Figure 5.

FIGURE 5: PROJECT SITE LOCATION AND SURROUNDING SHORELINE

According to (Kennedy, 2008), three geologic units are present within the site area: marine beach deposits, young alluvial floodplain deposits, and quaternary old paralic deposits. Marine beach deposits consist of unconsolidated sediment made up of fine- to medium-grained sand. Young alluvial floodplain deposits are found where floodplains channel permeable sandy and silty alluvium. Quaternary old paralic deposits, situated east of the beach deposits, comprise colluvial materials made up of fossiliferous marine sandstone. These geologic units are illustrated in Figure 6.

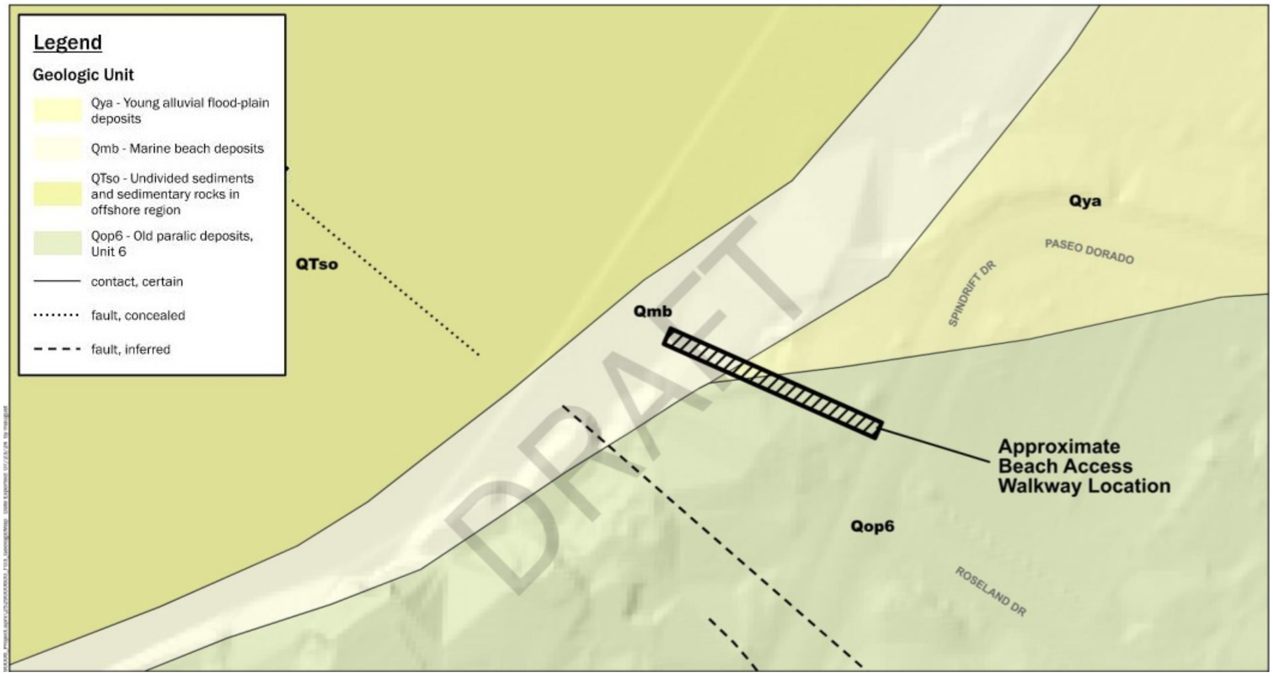


FIGURE 6: GEOLOGIC UNITS MAP (KENNEDY 2008). EDITED BY GEOENGINEERS (2024)

The project geotechnical report (GeoEngineers, 2024) indicates that the project site consists of marine beach deposits underlain by the Cretaceous-age Point Loma Formation. This formation is a large sedimentary unit consisting of well-indurated marine sediments. It forms the lower portions of coastal bluffs from the Point Loma Peninsula up to La Jolla, as well as a shore platform extending into the open ocean. The report states, "Exposures of the Point Loma Formation generally consist of subunits of massive medium-grained sandstone, siltstone, and partially cemented siltstone interbeds" (GeoEngineers, 2024). An on-site boring consisted of a top layer of poorly graded sand (beach deposits) and a deeper layer (2 to 4' below ground surface) where practical refusal was noted. The geotechnical report suggests that this deeper layer, found at elevations between -2 and 1' NGVD29, represents the Point Loma Formation.

The project site is located within an Earthquake Fault Zone, as mapped by the California Geological Survey. The Rose Canyon Fault runs through the La Jolla Bluffs approximately 2000' south of the project site. According to the San Diego Seismic Safety Study (City of San Diego, 2008), the area is generally stable; however, if the Rose Canyon Fault becomes active, seismic hazards could impact the project site.

During the project survey, groundwater was seen at a depth of 1 to 3', or elevation -1/2 to 2' NGVD 29. Given the site's proximity to the shoreline, the geotechnical report suggests that this groundwater is likely influenced by local tidal functions, trapped between the upper layer of marine deposits and lower layer formed by the Point Loma Formation.

3. Coastal Setting

The Spindrift Staircase is located within the Oceanside littoral cell, which extends from Dana Point headland to La Jolla, with sediment generally moving from north to south. Despite this overall direction, the seasonality of ocean swells in Southern California causes bidirectional sediment transport. In the summer, when the dominant wave direction comes from the south, the sediment transport direction generally reverses, moving from south to north.

Sediment sources in the area include bluff erosion, rivers, gully erosion, terrace degradation, and beach nourishment (Griggs and Patsch 2007; Young and Ashford 2006). The Oceanside Harbor north jetty serves as a sediment sink north (upcoast) of the project, while the Scripps and La Jolla Submarine Canyons act as a sink at the southern end of the littoral cell (Griggs and Patsch 2007). Bluff erosion contributes approximately two-thirds of beach-sized sediment to the Oceanside littoral cell (Young and Ashford 2006). Due to the high urbanization of the area and relatively low rainfall, many streams contribute less sediment to the system compared to more natural areas with higher rainfall.

3.1. Waves

There are three primary sources of waves for the Oceanside littoral cell: **Pacific Ocean swell from the north and south, regional wind waves generated within the Channel Islands, and local sea breeze chop generated nearshore** (Kalansky et al. 2018). Among these sources, swell waves from the open Pacific Ocean typically produce the largest wave heights and the longest periods due to the greater potential fetch and the higher intensity of storms generating these swells.

The Spindrift Access is relatively sheltered from most swell directions due to its proximity to La Jolla Point and its orientation relative to the Channel Islands. Figure 7 shows the dominant swell window for the project site. La Jolla Point protrudes into the Pacific and acts as a barrier, shielding the Spindrift Access from most southerly swells. Nonetheless, a southerly swell with sufficient energy can still refract or diffract around La Jolla Point and reach the project site, although with significantly dampened energy. The Channel Islands (mainly Santa Catalina and San Clemente) also block swells from affecting the project site.

Waves associated with the more severe northern hemisphere extratropical storms (Japanese-Aleutian and Hawaiian storms) enter between azimuths 280° and 295°. Large west and northwest swell with long wave periods and high energy may still propagate around the islands and reach the project site. These wave exposure windows are largely similar for the nearest wave measurement buoys to the site (National Data Buoy Center (NDBC) buoys 46254 & LJPC1), which are further discussed in Section 3.1.1.

FIGURE 7: WAVE EXPOSURE WINDOWS AT SPINDRIFT ACCESS

Northern hemisphere swells are predominantly from the northwest. These swells typically occur between November and April. Swells from the northwest are attributed to Aleutian extratropical storms, which have deep-water significant wave heights of up to 27' and wave periods of 12 to 18 seconds (USACE 1993). The largest swells from the west are attributed to Hawaiian storms, which have deep-water significant wave heights of up to 25' and wave periods of 10-15 seconds. Spindrift Access is largely shielded by Santa Catalina and the Channel Islands from more northerly swells attributed to Aleutian extratropical storms but is fully exposed to swells from Hawaiian storms.

Southern Hemisphere swells typically have small wave heights and long wave periods. These swells typically occur between April and October. Small swells from the south and southwest are attributed to extratropical storms in the Southern Hemisphere, which have deep-water significant wave heights of 2-5' and periods of up to 24 seconds (USACE 1993). Larger swells from the south are attributed to tropical storms. These swells have deep-water significant wave heights of 20-28' and periods of 10-16 seconds (USACE 1993). Swells attributed to tropical storms typically occur between June and November. Spindrift Access is largely sheltered from these swells by La Jolla Point.

There are also many regionally and locally generated wind waves at the site. These waves are typically shorter period and much smaller and do not govern extreme runup, flooding, or erosional analyses. These waves do, however, play a key role in seasonal beach width change. During longer periods of less energetic wave climate (typically spring and summer), local wind waves will push sand back onto the subaerial beach face, allowing the beach to accrete in the summer.

3.1.1. Nearby Wave Buoys

The longest duration continuous wave observations near the project site are measured at two key locations: the NDBC wave buoy 46254 and the Scripps pressure sensor LJPC1 (Figure 8). These sensors are located approximately 1-mile northeast of Spindrift Access. NDBC buoy 46254, deployed approximately 0.6 miles offshore of the Scripps Pier in 150’ of water depth on March 27, 2013, measures wave height, period, and direction at 30-minute intervals. The Scripps sensor LJPC1, mounted on a piling at the end of Scripps Pier, has been taking measurements in 25’ of water since 2005. It measures wave height and period in the nearshore environment but does not have the capability to measure wave direction.

The Coastal Data Information Program (CDIP) also provides nearshore Monitoring and Prediction (MOP) points at 330’ alongshore spacing in 33’ of water depth along the entire Southern California coastline. The modeling points use information from nearby wave buoys and other global atmospheric models to predict nearshore wave energy from 2000 to the present. The closest MOP point (D0496) to Spindrift Access was analyzed to understand the nearshore wave environment directly offshore from the staircase.

FIGURE 8: NEARBY WAVE BUOYS AND DATA SOURCES

Swell wave observations at NDBC buoy 46254 (wave periods greater than 10 seconds) indicate that most deep-water waves near Spindrift Access originate from either the west or west-northwest (Figure 9). This data aligns with the swell window shown in Figure 7, where swell from this direction is generally associated with wave periods ranging from 10 to 16 seconds. Swell from the southwest is largely absent from the NDBC record due to shielding from Santa Catalina Island, and because swell from the south is blocked by La Jolla Point and San Clement Island. These observations confirm the expected wave patterns and provide further insight into the sheltering effect of La Jolla Point. However, the dataset only spans 10 years, which may not fully capture the historic wave environment at the project site.

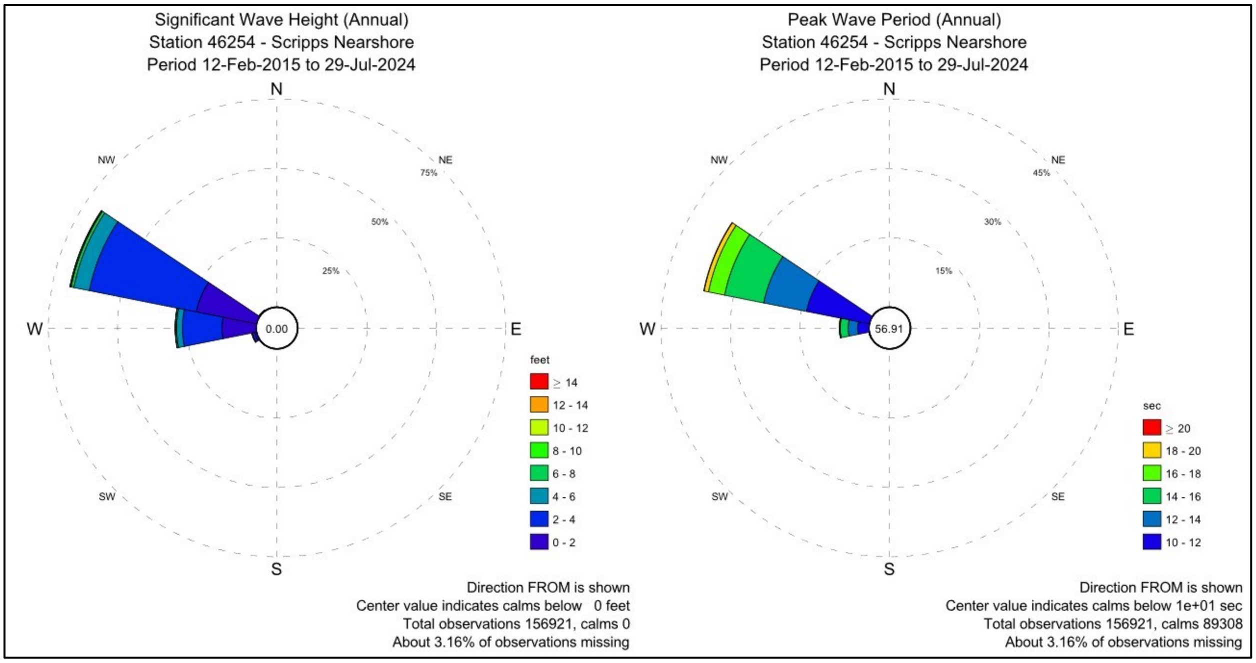


FIGURE 9: DIRECTIONAL DISTRIBUTION OF SIGNIFICANT WAVE HEIGHT AND PERIOD FOR SWELL WAVES OBSERVED AT NDBC BUOY 46254 (2015-2024)

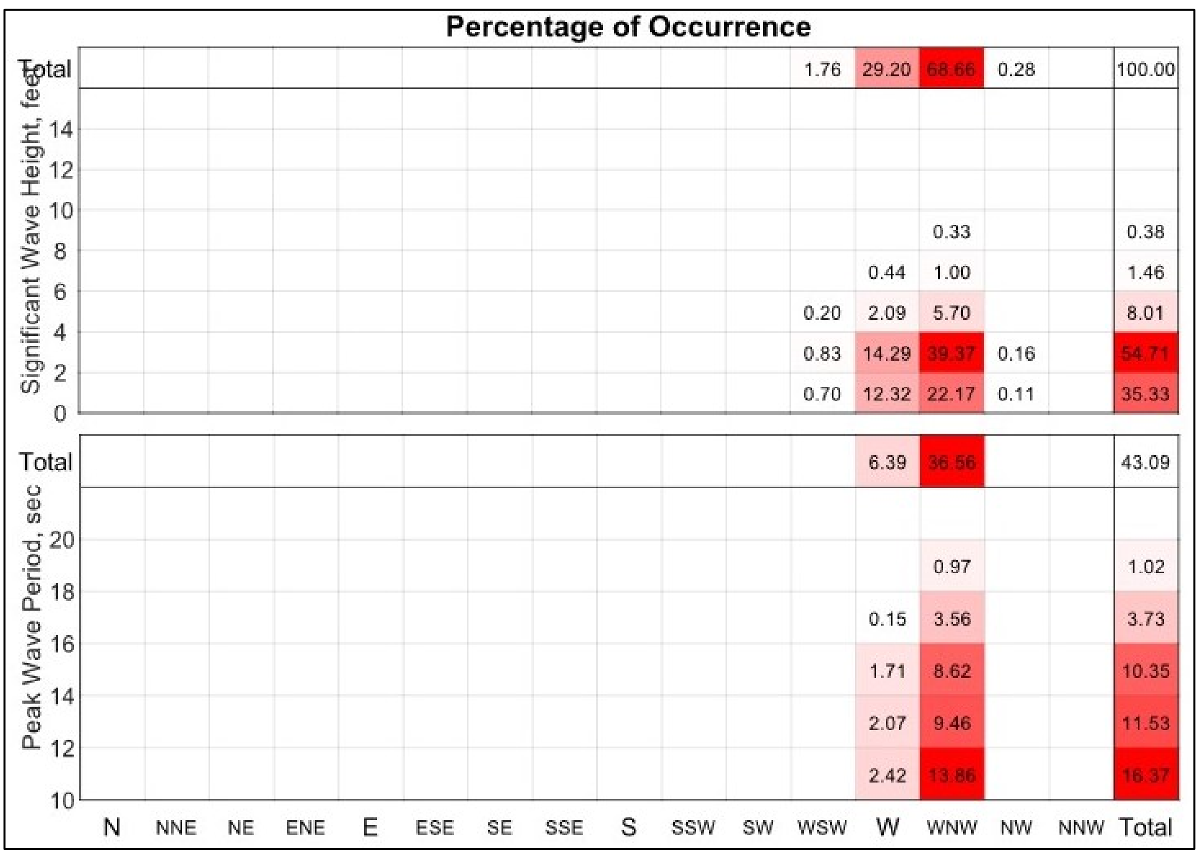


FIGURE 10: DIRECTIONAL PERCENTAGE OF OCCURRENCE OF SIGNIFICANT WAVE HEIGHTS AND PEAK WAVE PERIODS FOR SWELL WAVES AT NDBC BUOY 46254 (2015-2024)

Additionally, MOP point D0496 provides nearshore wave measurements directly offshore from the project site, offering further insight into the degree of sheltering at the staircase when compared to the NDBC 46254 buoy. The wave height and period roses shown in Figure 11 indicate that all long period (greater than 10 second) swell events come directly from the west-northwest as suggested by the swell window determined. The nearshore MOP wave heights are greatly reduced compared to the NDBC buoy and typically range between 1 and 6'.

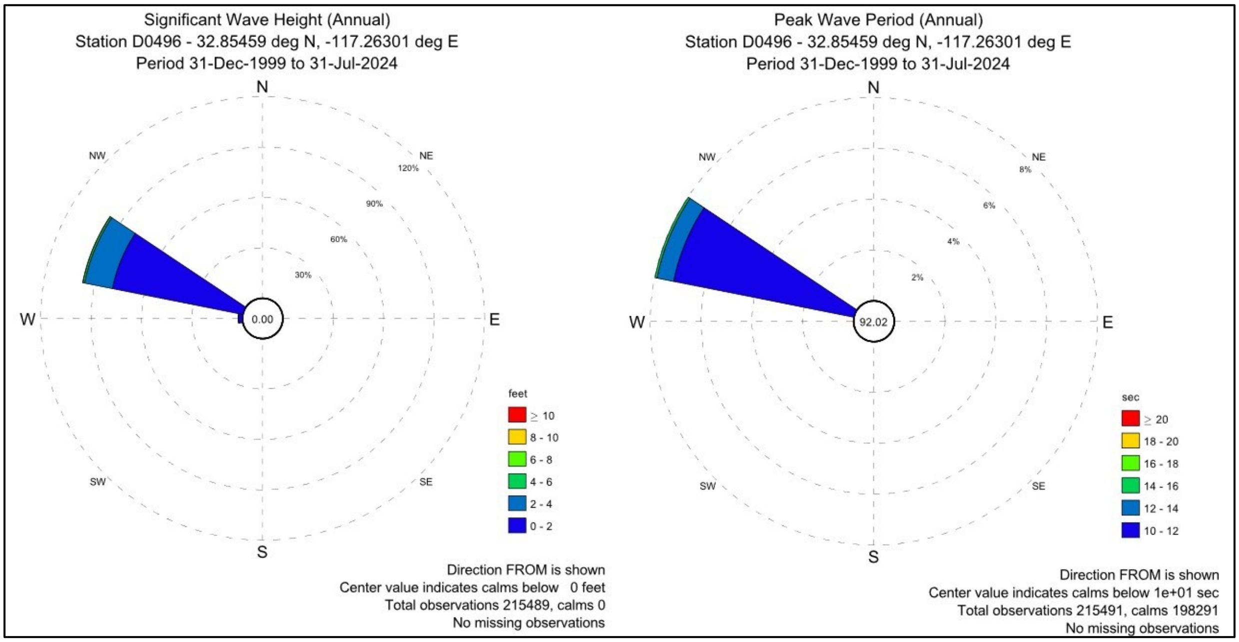


FIGURE 11: DIRECTIONAL DISTRIBUTION OF NEARSHORE SIGNIFICANT WAVE HEIGHT AND PERIOD FOR SWELL WAVES OBSERVED AT MOP POINT D0496 (2000-2024)

3.1.2. Extreme Wave Conditions

An extreme value analysis was performed to determine site-specific return period wave heights following Goda (1984) and using available wave data. An example extreme value curve for swell wave heights at NDBC buoy 46254 is shown in Figure 12, which projects **a 100-yr return period wave height of 22.4'** at this location**.** Extreme wave analysis was conducted on all three nearby wave data sources to gain a more comprehensive understanding of the expected 100-yr wave heights at the project site as summarized in Table 1. As can be seen in this table, nearshore wave data sources have a significantly smaller extreme wave height than the deeper water NDBC buoy. Additionally, the MOP point has a smaller extreme wave height than the LJPC1 sensor due to its orientation relative to La Jolla Point. This analysis uses the longest data set duration to provide a good estimate of extreme offshore wave heights at the project site. It should be noted that estimate uncertainty increases for higher return periods as dataset duration decreases. For example, it is difficult to estimate the 100-yr extreme wave height for the NDBC buoy with a dataset that is less than 10 years in length. However, it still provides a valuable estimate of extreme offshore wave heights for the project site. Finally, as wave periods are largely independent of wave height, a range of typical swell periods, from 10-18 seconds, were considered in further runup analysis.

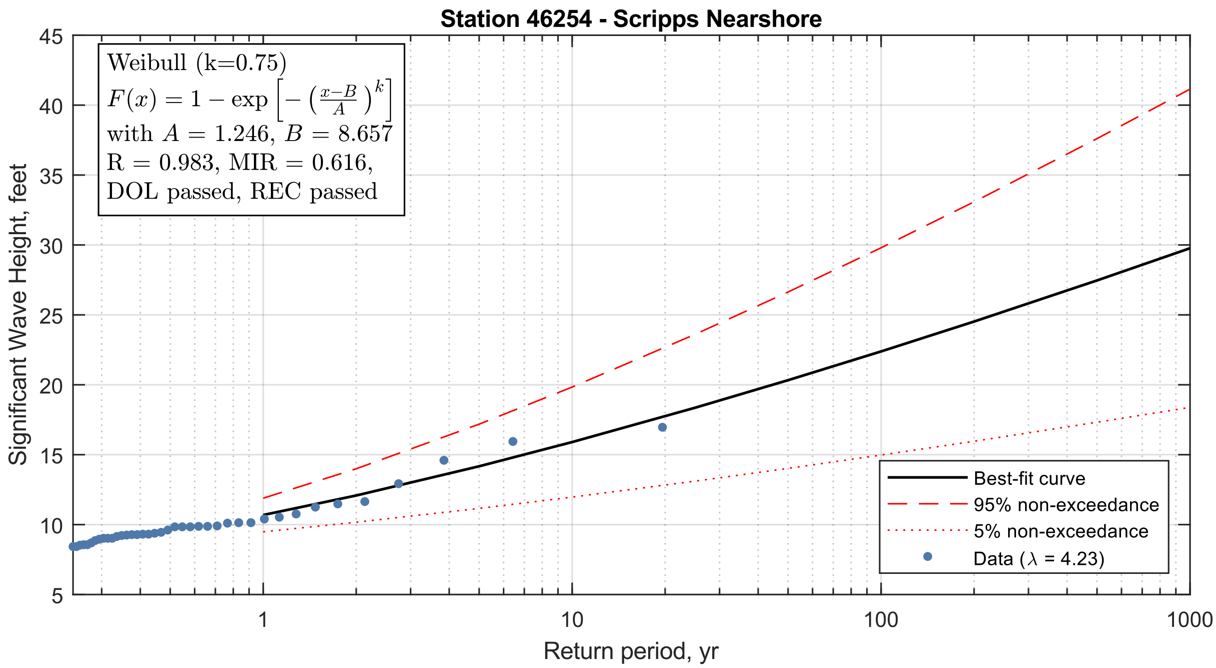


FIGURE 12: EXTREME VALUE CURVE FOR SWELL WAVE HEIGHTS AT NDBC BUOY 46254

TABLE 1: EXTREME WAVE HEIGHTS FOR NEARBY WAVE DATA SOURCES

Wave Data Source	Source Type	Data Availability	Water Depth *(ft)*	100-yr Significant Wave Height *(ft)*
NDBC Buoy 46254	Wave Buoy	2015 – 2024	150	22.4
Scripps LJPC1	Nearshore Wave Sensor	2005 – 2024	25	15.2
MOP D0496	Nearshore Wave Model Point	2000 - 2024	33	8.0

3.2. Tides

Tidal water levels at Spindrift Access are approximated by water levels recorded by the National Oceanic and Atmospheric Administration (NOAA) at the nearest active tidal station, which is located at La Jolla, CA (CO-OPS Station 9410230). This tide station is located directly next to the LJPC1 wave data source described in the previous section. Tidal datums at this site for the current tidal epoch (1983-2001) are provided in Table 2. All elevations are given relative to the National Geodetic Vertical Datum of 1929 (NGVD). The highest observed water level over the period of record is highlighted in the table.

TABLE 2: TIDAL DATUMS AT NOAA CO-OPS STATION 9410230: LA JOLLA, CA (1983-2001)

Tidal Datum		Elevation (*ft NGVD*)
Highest Observed Water Level *Nov. 25, 2015 15:42*	HOWL	5.50
Highest Astronomical Tide[1] *Jul. 24, 2040 04:12*	HAT	4.89
Mean Higher High Water	MHHW	3.01
Mean High Water	MHW	2.29
Mean Sea Level	MSL	0.42
Mean Low Water	MLW	-1.41
North American Vertical Datum of 1988	NAVD88	-2.12
Mean Lower Low Water	MLLW	-2.31
Lowest Astronomical Tide[3] *Jan. 10, 2005*	LAT	-4.32
Lowest Observed Water Level *Dec. 17, 1933*	LOWL	-5.18

3.3. Extreme Water Levels

High water levels are caused by extreme astronomical tides, natural climate fluctuations such as El Niño, and storms. The co-occurrence of these phenomena will trigger the highest amount of flooding and coastal erosion. Figure 13 shows extreme high-water levels at NOAA CO-OPS Station 9410230 relative to Mean Higher High Water (MHHW). Table 3 provides the extreme high water level elevations relative to NGVD for the current tidal epoch (1983-2001), with the 100-yr return period water level highlighted.

[1] Per NOAA, the HAT and LAT reflect the predicted astronomical tide elevation extremes over a 40-year time period (2000-2040) rather than the observed water level record. See *https://tidesandcurrents.noaa.gov/datum_options.html* for additional details.

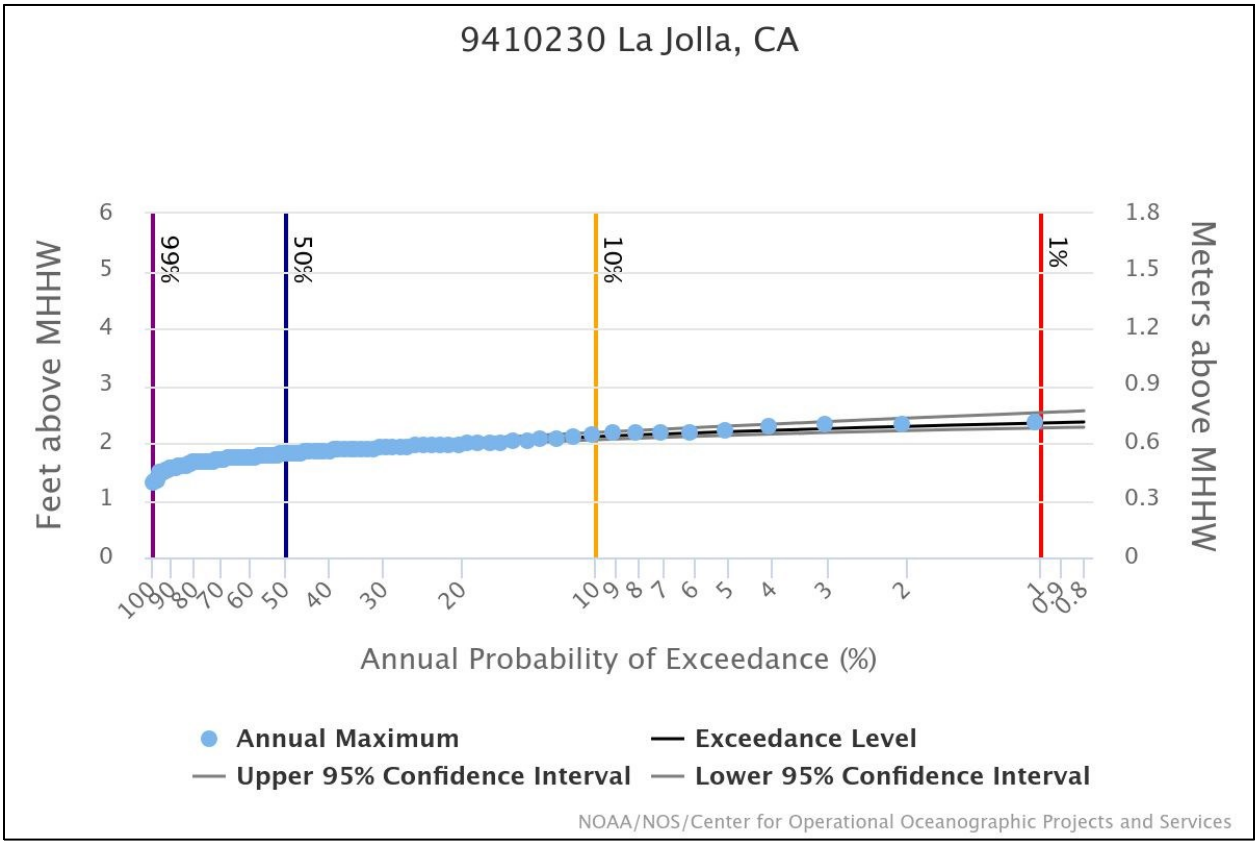


FIGURE 13: EXTREME WATER LEVELS AT NOAA CO-OPS STATION 9410230: LA JOLLA, CA (1924-2022)

TABLE 3: EXTREME WATER LEVELS AT NOAA CO-OPS STATION 9410230: LA JOLLA, CA

Return Period	Elevation *(ft NGVD)*
1 year	4.32
2 years	4.82
50 years	5.12
100 years	5.32

Note that the 100-yr water level is comparable to the highest water level measured at the NOAA tide gauge, which occurred on November 25, 2015, due to the combination of a king tide, storm surge, and El Nino (Kalansky et al. 2018)[2]. Therefore**, the 100-yr water level is appropriately representative of extreme conditions associated with astronomical tides, large-scale climate oscillations, and storms.**

[2] The 100-yr water level at NOAA CO-OPS Station 9410230 is within 0.2’ of the highest observed water level at the CO-OPS station.

4. Appropriate Sea Level Rise Projections

Sea level rise science involves both global and local physical processes. **Future** sea level rise projections are created based on the current best scientific understanding of these processes using advanced global, regional, and local modeling techniques. These projections are periodically updated to reflect scientific advancements. At the state level, sea level rise projections published in the 2018 Ocean Protection Council (OPC) report: *State of California Sea Level Rise Guidance* (California Ocean Protection Council, 2018) represent the current best-available science on potential sea level rise. However, this report was recently updated with up-to-date sea level rise scenarios and guidance, and as of June 2024, adopted by the OPC. It is expected to be adopted by the California Coastal Commission (CCC) within the year, but it was accepted when this report was prepared. Therefore, values from both the 2018 OPC Sea Level Rise Guidance and the 2024 OPC Draft Sea Level Rise Guidance update are cited for this report.

2018 OPC Sea Level Rise Guidance

The 2018 OPC report includes sea level rise projections for multiple emissions scenarios and uses a probabilistic approach to generate a range of projections at a given time horizon for 12 tide gauges along the California coast (Kopp, et al., 2014). The report recommends using the projections from the closest tide gauge to the project site. **For this proposed project, the closest tide gauge is at La Jolla, CA.** Projections for the La Jolla tide gauge under a high-emissions scenario are referenced in this section per CCC Sea Level Rise Guidance.

OPC Sea Level Rise guidance from 2018 defines the likely range of sea level rise at a given time horizon as the central 66% of projections, or all projections bounded by the 17th and 83rd percentiles. At the 2080-time horizon (approximately 50 years), the likely range of sea level rise is 1.3 to 2.5’ for La Jolla. The CCC conservatively recommends using the upper end of the likely range for use in low-risk aversion situations, when considering resources where the consequences of sea level rise are limited in scale and scope, with minimum disruption and low impact on communities, infrastructure, or natural systems.

For medium-high risk aversion situations, the use of more conservative, or lower probability sea level rise projections is recommended by OPC Sea Level Rise Guidance. At a given time horizon, there is a 0.5% chance that sea level rise meets or exceeds these medium-high risk aversion projections, making them appropriate for use on projects where damage from coastal hazards would carry a high consequence or in cases where the ability to adapt is limited. For these lower probability cases, sea level rise of 4.6’ is projected at the 2080-time horizon for La Jolla.

OPC 2018 Sea Level Rise guidance also provides an ultra-conservative single extreme scenario called H++ (Sweet, et al., 2017). Because the H++ scenario is not a result of probabilistic modeling, the likelihood of this scenario cannot be determined. This scenario was eliminated from the 2024 OPC Sea Level Rise Guidance because it results in higher sea levels than the best available science now supports (California Ocean Protection Council, 2024).

2024 OPC Draft Sea Level Rise Guidance update

The 2024 OPC Sea Level Rise Guidance update takes a slightly different approach to projecting sea level rise values for the tide gauges in California. Rather than offering several sets of probabilistic projections for each emissions pathway, the 2024 OPC update provides sea level rise scenarios spanning a range of emissions pathways which more closely aligns with the methodology of the Intergovernmental Panel on Climate Change (IPCC) reports (IPCC, 2019). This methodology predicts less acceleration of sea level projected before 2050 and has overall greater certainty in the amount anticipated in the next 30 years. Sea level scenarios are offered in five categories: Low, Intermediate Low, Intermediate, Intermediate High, and High. The determination of which scenario to select is dependent on the level of risk aversion the project is willing to accept. For most planning projects, the recommendation is to evaluate Intermediate, Intermediate-High, and High scenarios. These scenarios project sea levels to rise between 1.8 and 4’ in La Jolla by 2080.

4.1. Spindrift Access Sea Level Rise Projections

The year 2080 is used as an approximate time horizon for sea level rise hazard analyses based on an anticipated 50-yr design life of the structure. Sea level rise guidance documents provide projections every 10 years, so the nearest decade (2080) was selected instead of interpolating an exact value for the anticipated project completion date. **The following analysis uses projected sea levels at 30-yr, 50-yr, and 70-yr time horizons (approximately years 2060, 2080, and 2100, respectively) to represent conditions between the present day and well past the projected end of design life.** The 100-yr planning horizon was not included because state guidance advises using caution with projections beyond 2100 due to the higher levels of uncertainty in sea level rise projections. Table 4 shows a range of sea level rise values at the selected time horizons from both the 2018 and 2024 Guidance documents. **SLR scenarios from the 2024 guidance document were considered in this report** as there is more confidence in the newer projections for the desired time horizons. **The intermediate-high risk aversion scenario was selected** per guidance document recommendation for long lifespan projects (2075 and beyond) involving "multi-use paths that provide public access and/or are part of a transportation network" (California Ocean Protection Council, 2024). Therefore, **SLR values considered for this report are: +1.6' (2060), +3.1' (2080) and +4.8' (2100)** and are highlighted in Table 4 below.

TABLE 4: SEA LEVEL RISE SCENARIOS FOR SELECTED TIMELINES FOR THE LA JOLLA TIDE GAUGE

Guidance	*Risk Aversion Scenario*	*2060*	*2080*	*2100*
2018	Low	+1.6ft	+2.5ft	+3.6ft
	Medium-High	+2.7ft	+4.6ft	+7.1ft
2024	Intermediate	+1.1ft	+1.8ft	+3.1ft
	Intermediate-High	**+1.6ft**	**+3.1ft**	**+4.8ft**
	High	+2.0ft	+4.1ft	+6.6ft

4.2. Coastal Flooding Hazard Projections

The United States Geological Survey's (USGS) Coastal Storm Modeling System (CoSMoS) (Barnard, Ormondt, Erickson, & Eshleman, 2014) provides coastal flooding hazard projections using models that simulate waves, storm surge, anomalous variations in water levels, river discharge, tides, and sea level rise (O'Neill, et al., 2018). It also provides shoreline change (Vitousek, Barnard, Limber, Erickson, & Cole, 2017) and cliff retreat data (Limber, Barnard, Vitousek, & Erickson, 2018) for Southern California. Flood projections are computed at discrete sea level rise increments for various return period storm events. The CoSMoS sea level rise increments that are closest to the selected OPC sea level rise projections (Table 4) are shown in Table 5. All but the first CoSMoS increment (+1.6') must be rounded to the nearest selected sea level rise scenarios to match them. These values are used in the coastal hazard flood mapping and shoreline erosion projection, as they rely on results from CoSMoS models.

TABLE 5: COSMOS SEA LEVEL RISE INCREMENTS AND THE CORRESPONDING CLOSEST ANALYZED SEA LEVEL RISE SCENARIO

CoSMoS SLR Increment	Closest Analyzed SLR Scenario from Table 5
+1.6' (+0.5 m)	Medium-High 2050 Condition
+3.3' (+1.0 m)	Medium-High 2070 Condition
+4.9' (+1.5 m)	Medium-High 2100 Condition

5. Shoreline Erosion Hazards

5.1. Historic Erosion Rates

Much of the shoreline in the region is characterized by narrow beaches backed by coastal bluffs (Flick 1993). From 1954 to 1988, approximately 34 million cubic yards of sand were placed on beaches within the Oceanside littoral cell (USACE 1991). Consequently, the historical long-term trend for beaches in the Oceanside region has been accretional, with an average accretion of 6.6’ per decade (Hapke et al. 2006). However, over the past 50 years, beaches in the Oceanside region have been eroding at a rate of 3.3’ per decade, a trend similar to other Southern Californian regions (Hapke et al. 2006).

Advances in satellite imagery have enabled the review of site-specific shoreline change along La Jolla Shores via CoastSat (Vos, et al., 2019). Satellite-based estimates of shoreline locations every 330’ along the coast are available roughly every 6 months from 1984-2000, and every 2-4 weeks after 2000. CoastSat provides data for 17 transects ranging from the Spindrift Access to the Scripps Pier. The transects in front of the La Jolla Tennis Club and the Spindrift Access were analyzed as subgroups, using the remaining La Jolla Shores transects, and as a larger group. These groupings and individual transects can be seen in Figure 14.

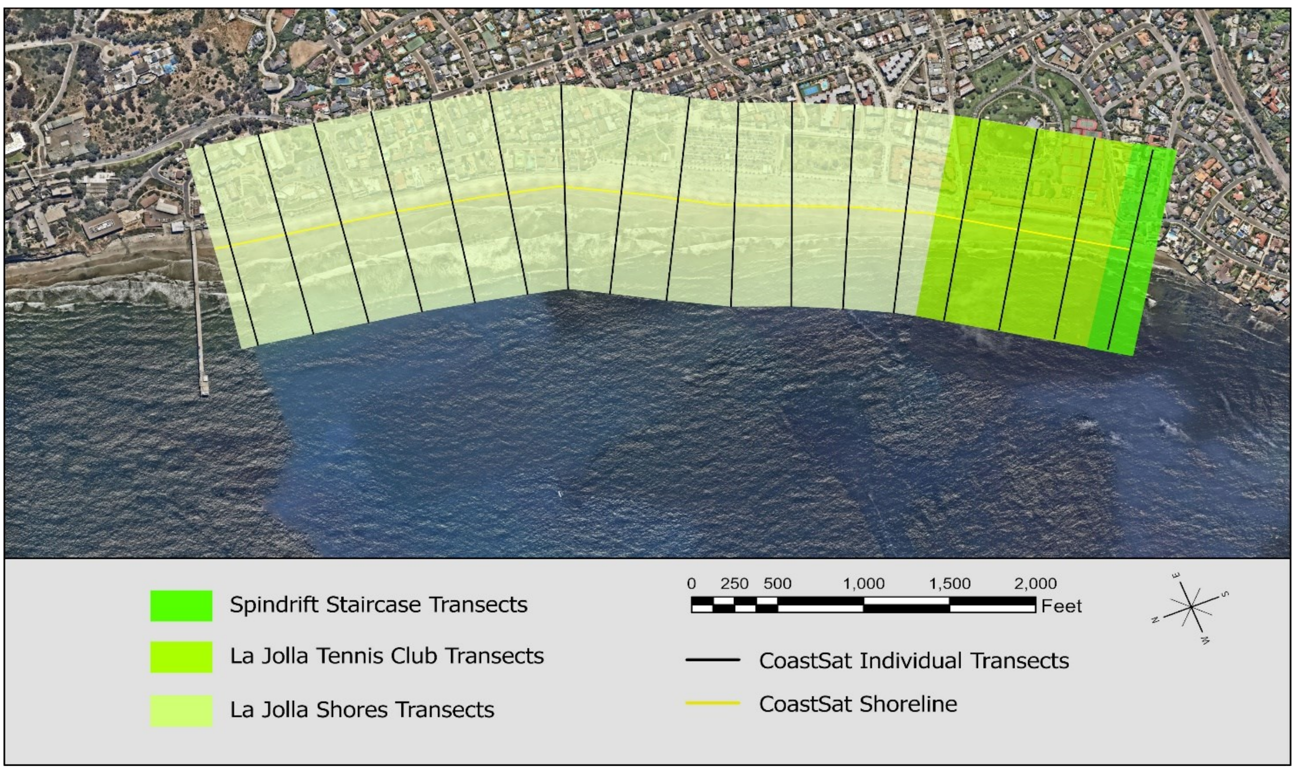


FIGURE 14: COASTSAT SHORELINE ANALYSIS LOCATIONS WITH REGIONAL SITE GROUPINGS

The satellite-based shoreline record at the Spindrift Access shows a horizontal shift of ±8’ over the past 40 years. From 1984 to 2000, the shoreline experienced seasonal erosion and accretion with horizontal fluctuations of up to 100’, showing a slight overall trend of erosion. This slight erosion trend continued for another decade with similar seasonal variability. Since 2019, the shoreline at the site has been eroding at an average rate of approximately -0.2’ per year (2.0’ per decade). The CoastSat transect data closest to the Spindrift Access can be seen in Figure 15. Data from the CoastSat transects within the region from Spindrift Drive beach access walkway to Avenida De la Playa were compiled and analyzed for “La Jolla Tennis Club” and data from Spindrift Drive beach access walkway to the Scripps Piers were taken for “La

Jolla Shores." Figures for these datasets can be seen in Appendix A – CoastSat Historic Shoreline Analysis. Shoreline trends over the past 40 years suggest high variability with an average trend of slight annual erosion. Recent data from the past five years indicates the shoreline in the region is eroding at a rate of -0.9' per year.

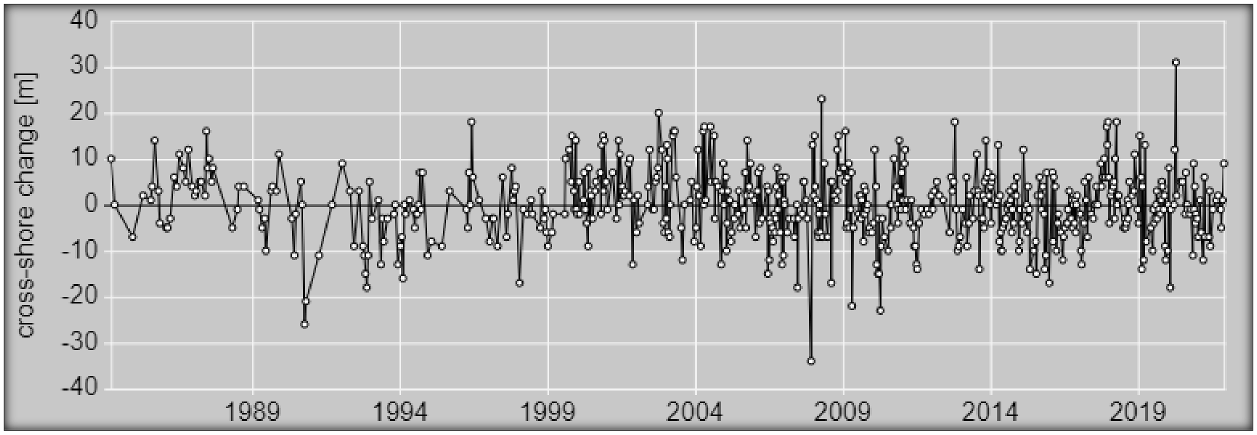


FIGURE 15: HISTORICAL SHORELINE LOCATIONS IN FRONT OF SPINDRIFT ACCESS RELATIVE TO THE LONG-TERM AVERAGE LOCATION (VOS ET AL. 2019)

Recent and long-term shoreline trends at the Spindrift Access and surrounding regions are provided in Table 6. Overall, the sites within La Jolla Shores have similar long and short-term shoreline trends to those of San Diego County (Hapke and Reid 2006). Over the past 50 years, the shoreline along the entirety of La Jolla Shores has accreted at a rate of +1.1' per year based on available CoastSat data. Over the past 5 years, however, the La Jolla shoreline has changed at rates from -2.1' to +3.3' per year depending on the analyzed expanse. The shoreline data closest to the Spindrift Access shows a short-term erosion rate of -0.2' per year since 2019, according to CoastSat data.

TABLE 6: ESTIMATED REGIONAL AND SITE-SPECIFIC HISTORIC EROSION RATES

Source	Observation Coverage	Approximate Time Period	Shoreline Change (*ft/year*)	Site
Hapke and Reid (2006)	1800s-2001	100 years	+0.7	San Diego County
	1950s-2000	50 years	-0.3	San Diego County
CoastSat (Vos et al. 2019)	1984-2024	50 years	+1.1	La Jolla Shores
	1984-2024	50 years	+0.0	La Jolla Tennis Club
	1984-2024	50 years	-0.1	Spindrift Access
	2019-2024	5 years	+3.3	La Jolla Shores
	2019-2024	5 years	-2.1	La Jolla Tennis Club
	2019-2024	5 years	-.0.2	Spindrift Access

5.2. CoSMoS Shoreline Projections

CoSMoS provides shoreline change data for Southern California at discrete future SLR increments with various storm and beach nourishment scenarios for two conditions: "hold the line" and "retreat." The "present-day" MHW shoreline in CoSMoS was delineated from a digital elevation model based on coastal elevation measurements collected from 2009-2011. The "hold the line" shoreline condition assumes that the existing bluffs and infrastructure will limit the landward extent of shoreline retreat. The “retreat” condition allows shorelines to erode into existing bluffs and infrastructure.

CoSMoS provides shoreline projections with sea level rise for scenarios with and without continued beach nourishment. CoSMoS bases the future (continued) beach nourishment on local historic rates of nourishment. Since La Jolla Shores is a marine protected area, beach nourishment is not permitted along its coastline. A comparison of the CoSMoS shoreline with and without continued nourishment indicates that nourishment, with the “retreat” condition active, provides an approximately 25-foot wider beach along the Spindrift project site. It is possible that this increase in the CoSMoS model could be accounting for nourishment at another San Diego nourishment site indirectly feeding sand into La Jolla Shores.

In CoSMoS, with “hold the line” active, the shoreline near the staircase stays consistently projected to meet the erosion boundary line. The “hold the line” tool marks the sea walls and bluffs surrounding the staircase as a boundary line that erosion cannot surpass. The present-day Mean High Water (MHW) line is close to or at this boundary. Under the “hold the line” condition, CoSMoS predicts that the shoreline will not erode beyond this line despite an increase in sea level rise (SLR).

With the “Retreat” condition active, the predicted shoreline shows erosion that pushes 270’ past the erosion boundary line at +1.6’ of SLR. At +3.3’ of SLR the shoreline is predicted to erode 300’, and at +4.9’ of SLR, this erosion distance increases to 360’. Due to the current MHW line being very close to the staircase location, the projected shoreline erosion immediately extends past the landward side of the project staircase, which may not be realistic.

Shoreline erosion will be nearly stopped by the hardened shoreline created by the sea walls surrounding the staircase and the staircase itself. As a result, erosion rates utilized by CoSMoS with “retreat” are not applicable. For the purposes of this project, it can be assumed that shoreline at the Spindrift Access will have a maximum erosion distance consistent with the “hold the line” boundary seen in Figure 16.

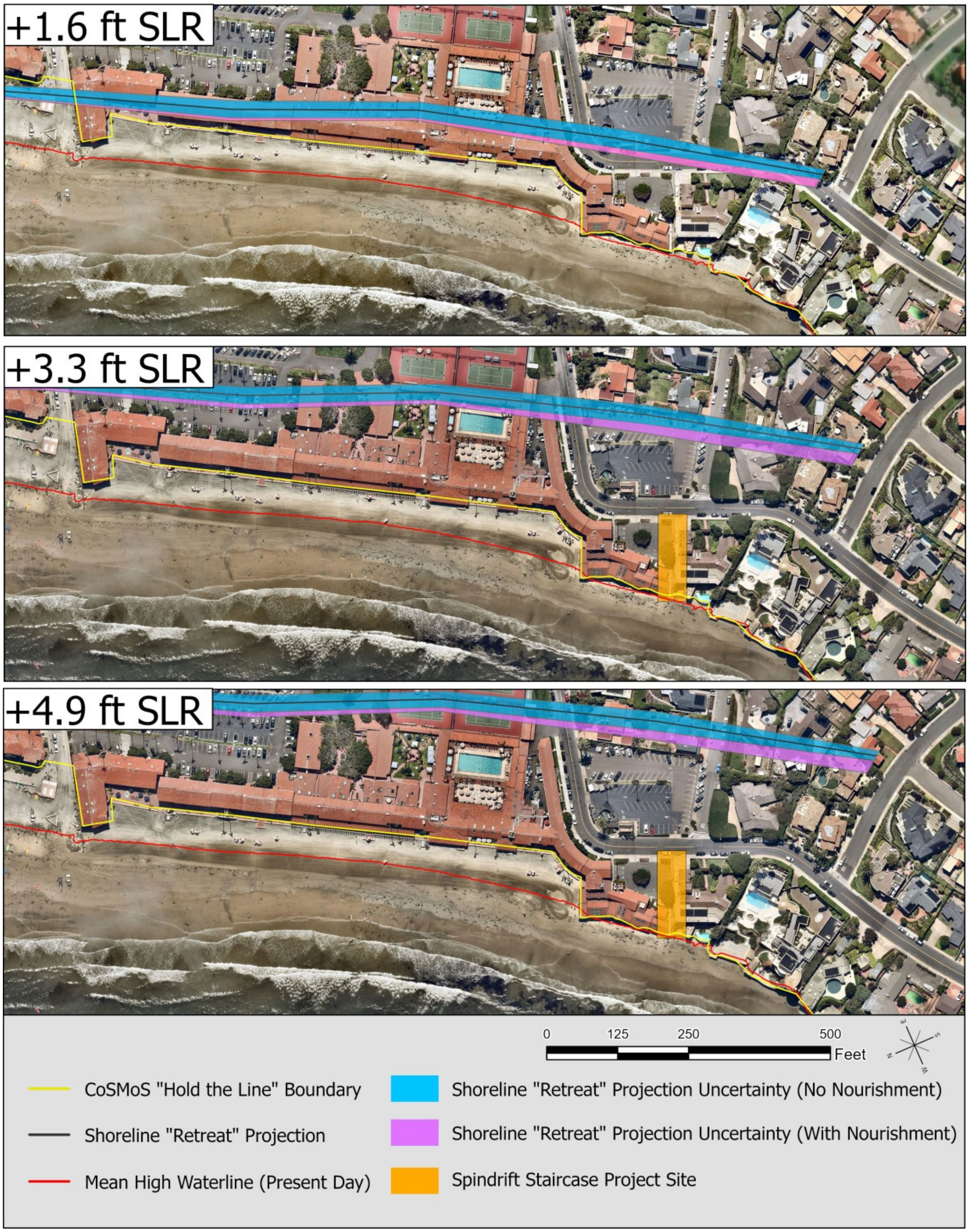


FIGURE 16:COSMOS PROJECTED SHORELINE EROSION FOR SELECTED SEA LEVEL RISE SCENARIOS WITH (PINK) AND WITHOUT (BLUE) CONTINUED REGIONAL BEACH NOURISHMENT

5.3. Project Site Scour

Elevation lidar scans for the California Coastline are accessible through the NOAA Data Access Viewer website. To understand the magnitude of beach scour that may occur in front of the Spindrift Access, a range of lidar sets from 2003 to 2024 were analyzed. A 200-foot transect line was drawn from the start of the Marine Room seawall to the ocean. Elevation data from each lidar dataset was then extracted along the transect. This data is graphed in Figure 17 and represents a cross-section of the shoreline in front of the Spindrift Access.

The spatial resolution of each lidar dataset varies, but the majority of them had too coarse of a resolution to capture the elevation of the Spindrift staircase, as it is located in a narrow alleyway. For consistency in the shoreline profile, the data elevation profiles were trimmed 6.5’ seaward of the Marine Room seawall to avoid incorrect staircase elevations. The 2024 profile (Black) represents the site survey taken for this project, showing current elevations within the narrow Spindrift Access and present-day beach scour conditions.

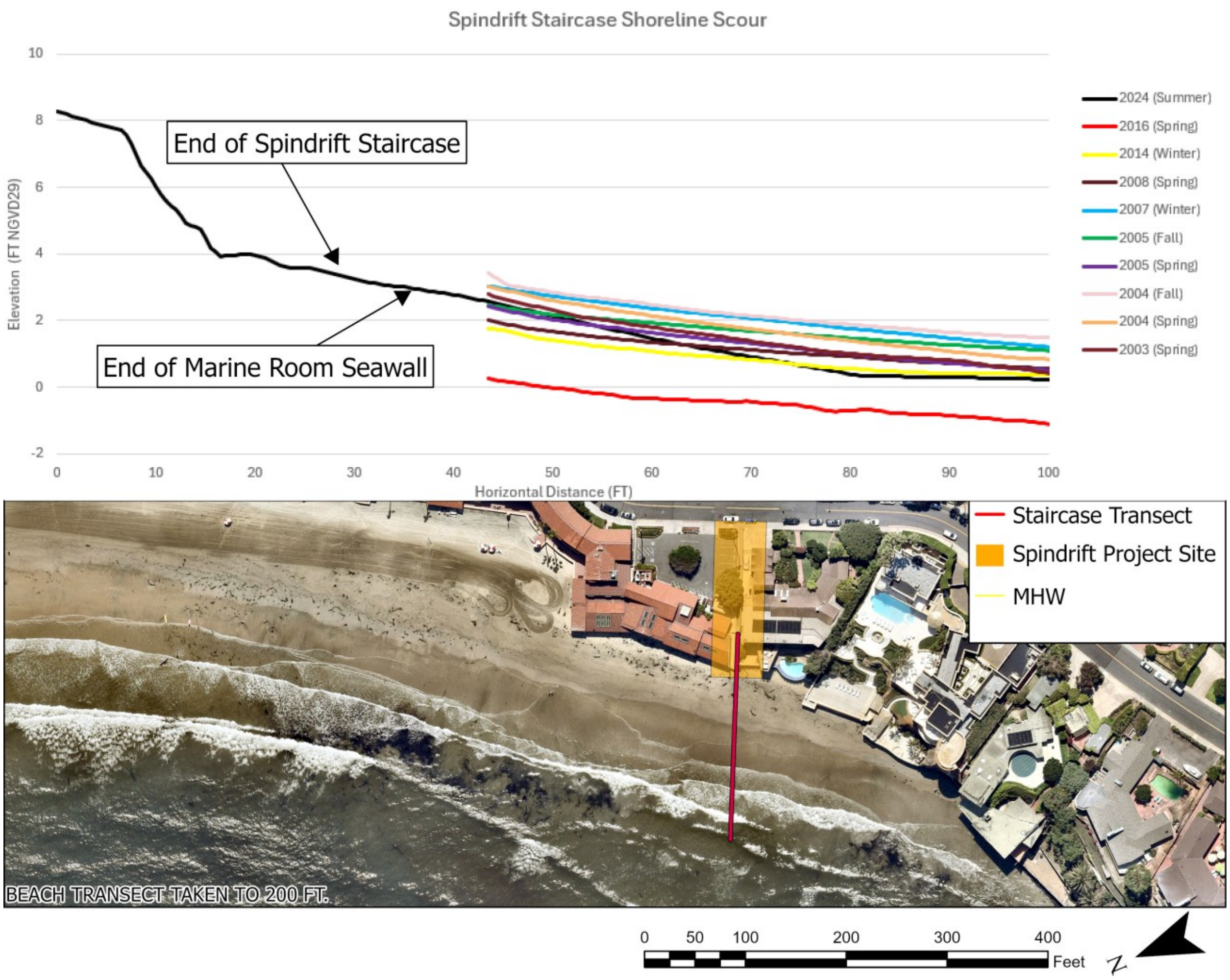


FIGURE 17: EXISTING AND HISTORIC BEACH PROFILES AT SPINDRIFT DRIVE BEACH ACCESS WALKWAY (TOP) AND BEACH PROFILE TRANSECT (BOTTOM)

Between 2003 and 2024 the shoreline in front of the Spindrift Access exhibited a maximum vertical variability between 3 – 4’. Data sets from 2003 to 2014 indicate winter erosion and summer accretion with an overall slight erosional trend. The 2016 Spring lidar set (Red) reflects the impact of an El Niño event, showing a significantly lower shoreline profile. This shows that large El Niño events will likely cause the lowest beach elevations, or highest scour, in front of the staircase. The 2024 elevation survey taken for this project demonstrates that the beach has since recovered from these low elevations. It is important to understand the maximum potential scour at the Project site so that the toe elevation of the structure can be designed properly. The beach elevation at the toe of the Spindrift staircase for the 2016 lidar data set was approximately 1' NGVD29, therefore the toe of any alternative design should be below this elevation so that it will not be damaged during times of extreme scour.

6. Flood Hazards

Flood hazards at the site may be caused by still water levels and wave runup (Figure 18). Still water levels fluctuate with storm surges, changes in mean sea level, and tidal variability. Elevated still water levels typically cause inundation over the course of hours or longer. Wave runup, on the other hand, is generated by waves at the still water level acting on coastal structures, and typically causes intermittent flooding over the course of minutes. Note that wave runup typically reaches much higher elevations than the still water level as the forward momentum associated with the wave propels water up the face of a beach or bluff. Still Water Level flooding is discussed in Section 6.1 and wave runup flooding is described in Section 6.2 below.

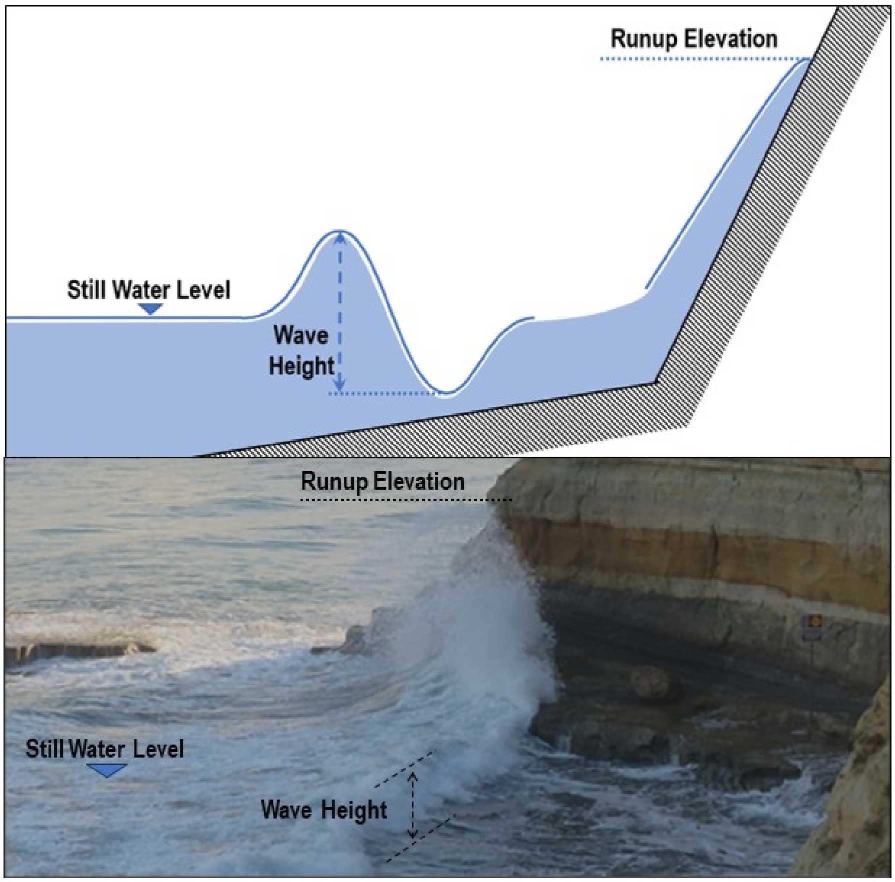


FIGURE 18: FLOOD HAZARD SOURCE DEFINITIONS. PICTURE FROM CALIFORNIA STATE PARKS

6.1. Still Water Flooding

To determine the extent of present-day and future flood hazards due to still water levels at the project site, on-site and aerial photographs were reviewed to acquire a qualitative understanding of the typical flooding extents (Figure 19 and Figure 20). To achieve a more quantitative understanding, the elevations associated with MHHW (mean of daily maximum water levels), the annual maximum water level, and the 100-yr extreme water level for present-day and future sea level conditions (see Figure 21 for survey extent) were mapped (Figure 22 and Figure 23) based on a recent site-specific survey conducted as part of the project on June, 13th & 14th, 2024. Anecdotal evidence indicates that water levels frequently reach the base of the staircase during high tides and have even surged towards the street during significant storm events. Analysis of on-site and aerial imagery of the Spindrift Access reveals that flooding is a common occurrence during high tides, particularly in the winter months when storms and high wave events are more frequent. Figure 19 illustrates high tide water levels (3.4' NGVD) during an El Niño winter and Figure 20 depicts high tide water levels (4.7’ NGVD) during a king tide. The 3.4’ NGVD water level corresponds approximately to the Mean High Water (MHW) datum, representing the average high tide elevation. At this elevation, water levels are seen reaching the base of the staircase. The 4.7’ NGVD level corresponds roughly to a 2-yr extreme water level, and results in water surging up the staircase. While some of the higher water levels may be influenced by wave runup, the wave conditions in the imagery do not appear excessively large, suggesting that the observed water elevations are primarily affected by tidal fluctuations.

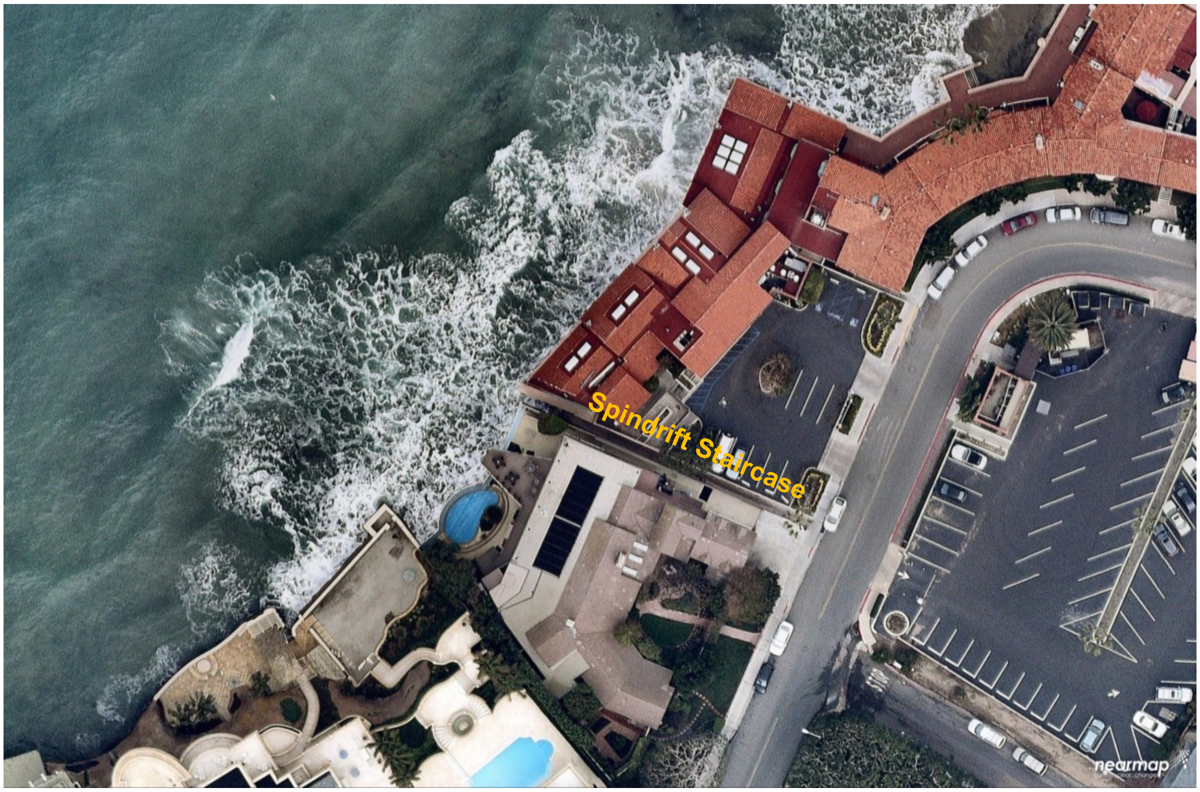


FIGURE 19: EVIDENCE OF WAVE IMPACT AND HIGH-WATER LEVELS AT THE BASE OF THE SPINDRIFT ACCESS STAIRCASE DURING 3.4’ NGVD TIDE. PICTURE FROM NEARMAP (TAKEN ON JANUARY 23, 2023)

FIGURE 20: EVIDENCE OF WAVE IMPACT AND HIGH-WATER LEVELS AT THE BASE OF THE SPINDRIFT ACCESS STAIRCASE DURING 4.7' NGVD 29 TIDE. PICTURES FROM GOOGLE IMAGES (TAKEN ON JANUARY 16, 2016)

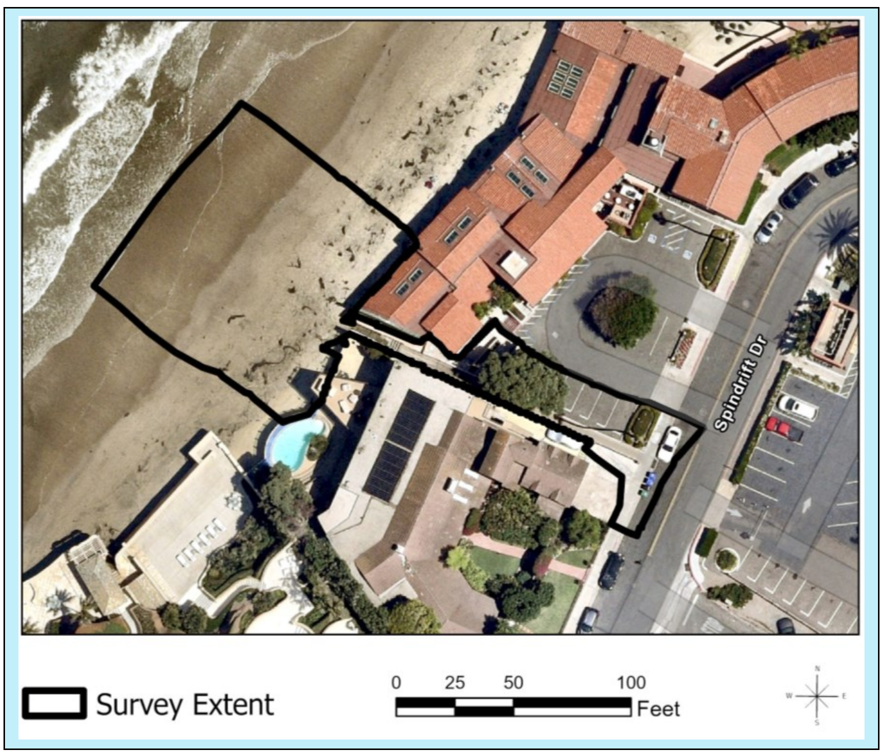


FIGURE 21: TOPOGRAPHIC SURVEY EXTENT CONDUCTED ON JUNE 13TH AND 14TH, 2024

Figure 21 and Figure 22 illustrate various still water levels along the beach, for present-day and future sea level rise, based on the beach topography in June 2024. The beach is typically wider in the summer months due to calmer wave conditions and fewer high-energy storm events compared to the winter months. Consequently, the same elevation measured in the summer may be further landward if surveyed in the winter. However, back beach structures such as the staircase do not fluctuate seasonally and thus remain unchanged regardless of the survey timing. It should also be noted that the still water levels in Figure 21 and Figure 22 do not include wave runup inundation (discussed in Section 6.2).

Even at its widest seasonal extent, the high tides under present-day conditions reach the back beach, nearly touching the Marine Room's seawall just north of the staircase. During extreme water levels, they advance even further landward, reaching the base of the staircase.

The staircase is projected to flood more frequently with sea level rise. With +1.6’ of SLR, daily high tides are predicted to reach the base of the staircase, and 100-yr extreme water levels would reach the top of the staircase. With +3.1’ SLR, high tides would consistently surge up the staircase with the 1-yr extreme water level submerging it completely. The 100-yr extreme water level would travel up beyond the staircase along the gradually sloping ramp. With +4.8’ SLR, daily high tides would consistently submerge the entirety of the staircase with 1-yr extreme water levels surging landward along the ramp. The 100-yr water level would overtop portions of the northward wall and flood low-lying regions of the Marine Room Patio.

TABLE 7: DAILY (MHHW), ANNUAL (1-YR), AND EXTREME (100-YR) STILL WATER SURFACE ELEVATIONS (FT NGVD 29) FOR PRESENT-DAY AND FUTURE SEA LEVELS

	Present-day	**Future with Sea Level Rise**		
		+1.6 ft	*+3.1 ft*	*+4.8ft*
MHHW	3.0 ft	4.6 ft	6.1 ft	7.8 ft
1-yr WL	4.3 ft	5.9 ft	7.4 ft	9.1 ft
100-yr WL	5.3 ft	6.9 ft	8.4 ft	10.1 ft

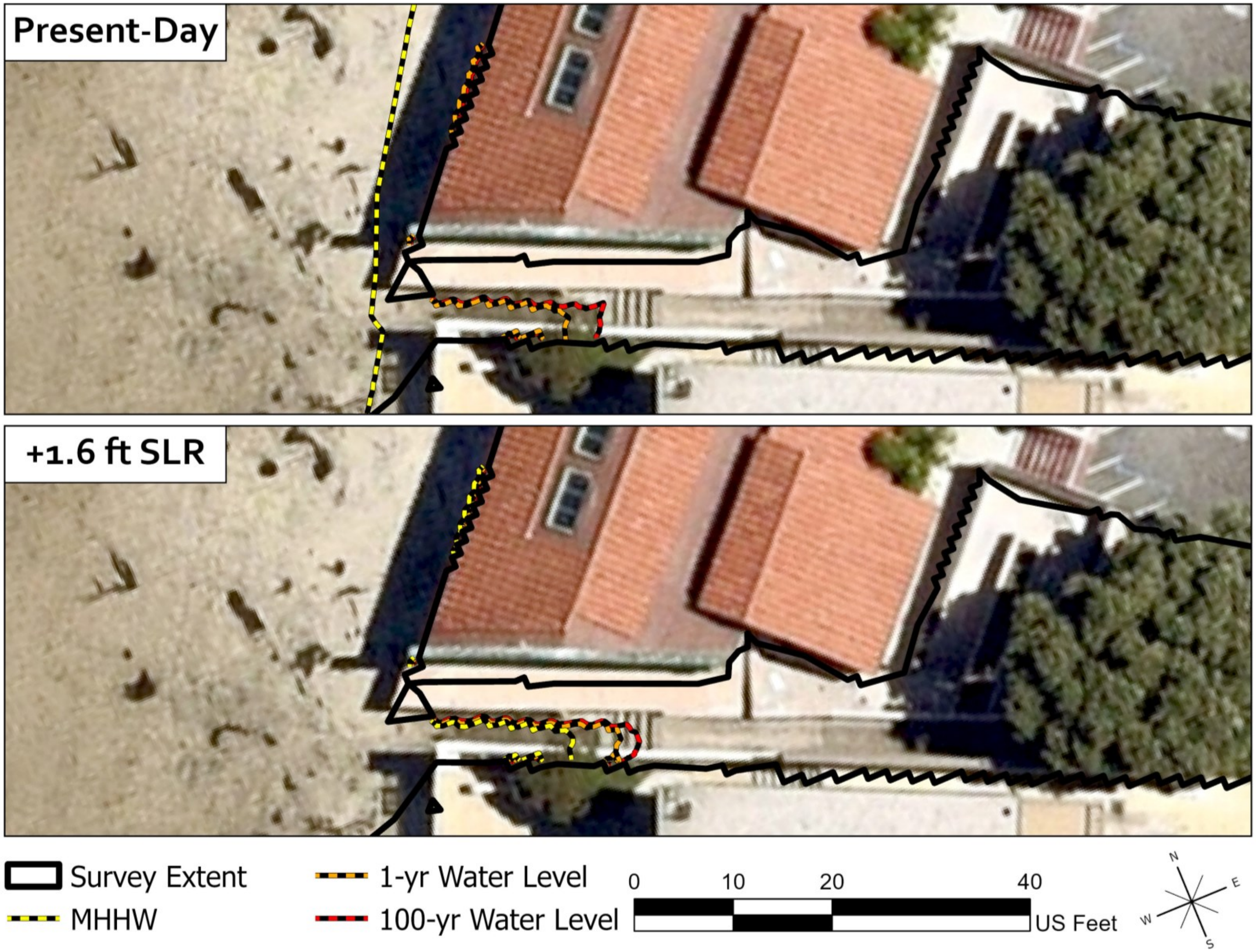


FIGURE 22: LOCATIONS OF DAILY (MHHW), ANNUAL (1-YR), AND EXTREME (100-YR) STILL WATER LEVELS IN THE VICINITY OF THE PROJECT SITE FOR PRESENT-DAY, +2.0', +3.6', AND +7.1' OF SLR.), BASED ON 2016 BEACH TOPOGRAPHY

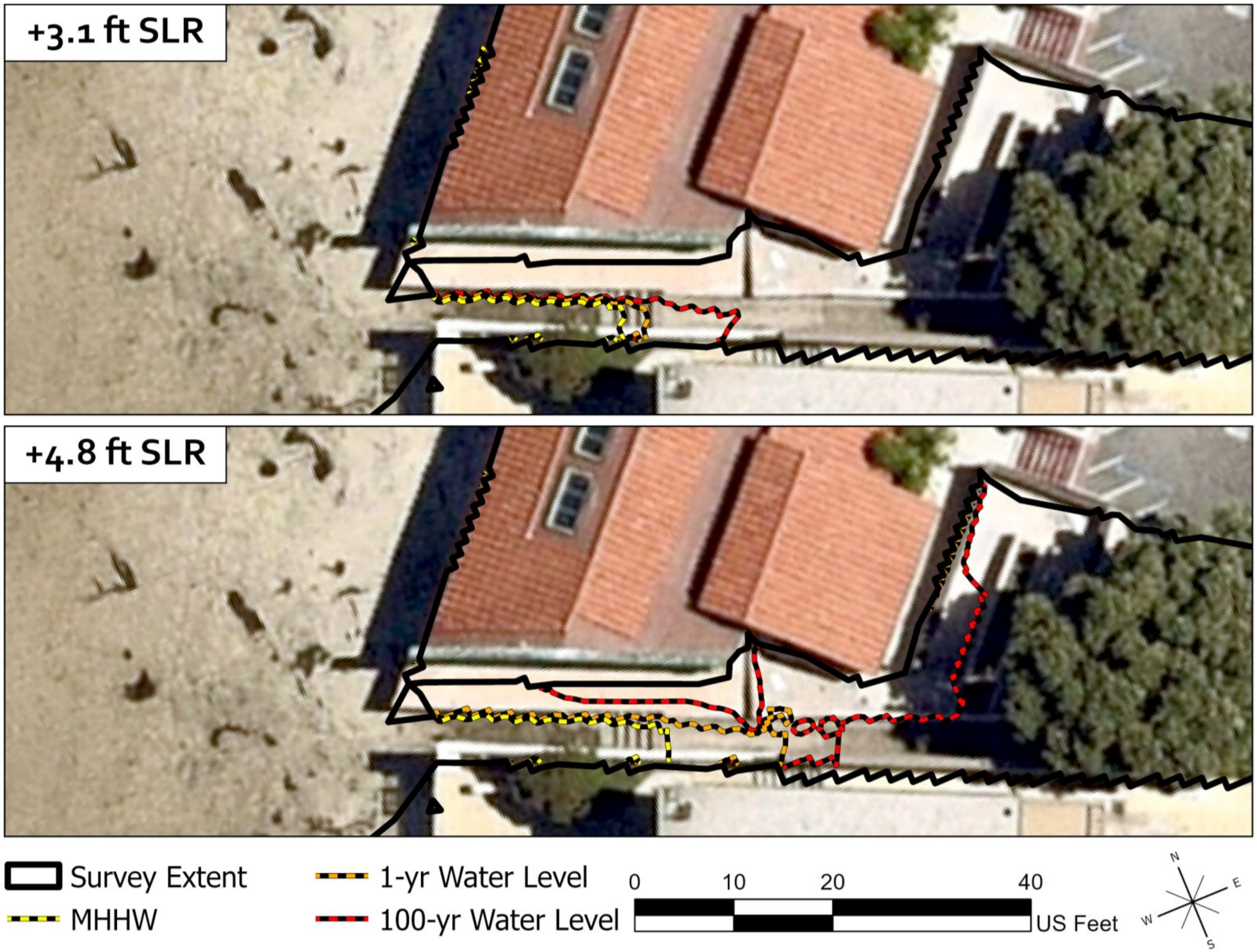


FIGURE 23: LOCATIONS OF DAILY (MHHW), ANNUAL (1-YR), AND EXTREME (100-YR) STILL WATER LEVELS IN THE VICINITY OF THE PROJECT SITE FOR PRESENT-DAY, +2.0', +3.6 ', AND +7.1' OF SLR.), BASED ON 2016 BEACH TOPOGRAPHY

6.2. Wave Runup at Spindrift Access

FEMA FIRMs depict 100-yr wave runup elevations at coastal locations based on calculations at discrete analysis transects. **The FEMA analysis transect nearest to Spindrift Access shows the 100-yr wave runup at this location is estimated to be 20.9' NGVD (23 ft NAVD; Figure 24).** The FEMA transect to the north and south of the project site shows a 100-yr wave runup elevation of 7.9' NGVD (10' NAVD). As the transects are not co-located with the staircase at Spindrift Access, the shape and elevations of the back beach features at the project site may be different from that of the FEMA analysis transect. Thus, the 100-yr wave runup elevation provided by FEMA may be used as guidance for ground-truthing runup estimates at the site but may not accurately reflect site-specific conditions at the staircase location. The wave runup analysis herein uses site-specific calculations to estimate wave runup at the project site with scoured beach elevations for present-day conditions and with sea level rise.

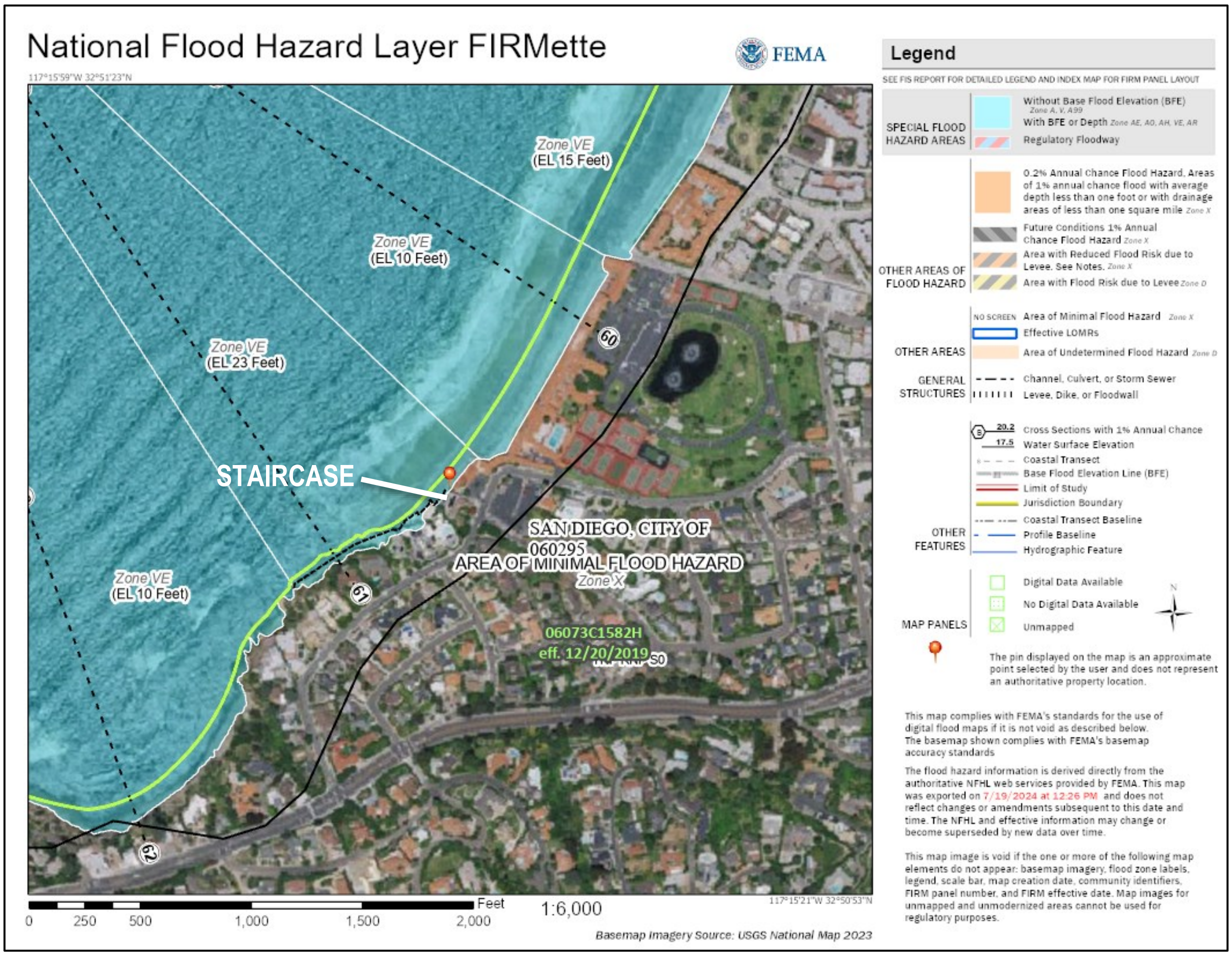


FIGURE 24: EXCERPT FROM FEMA NATIONAL FLOOD HAZARD LAYER VIEWER SHOWING FIRM 06073C1582H; THE 100-YR WAVE RUNUP ELEVATION IS DEPICTED AS THE ZONE VE ELEVATION. NOTE THAT ELEVATIONS SHOWN IN THIS IMAGE ARE IN NAVD88, NOT NGVD29 (SUBTRACT 2.12' TO GET NGVD 29)

Wave runup at the project site was calculated following EurOtop (Van der Meer, 2018) guidance for a variety of storm scenarios for present-day and future still water levels (SWLs). Due to the complexity of the project site, many assumptions had to be made to simplify the cross-section of the staircase so that parameters could be input into the chosen empirical wave runup calculation methodology. To more accurately calculate wave runup along the staircase, a computational fluid dynamics (CFD) model could be used but this is out of scope for this report.

Figure 25 shows the existing survey for the Spindrift Access with each slope component labeled. The present-day MHHW, 1-yr, and 100-yr water levels are shown for comparison. From Spindrift Drive to the end of the pavement, there are four different sections of the staircase: the upper paved walkway, the steeper lower paved walkway, the stairs, and the walkway below the stairs that ends at the beach. Each cross-section component has a different length and slope, making runup difficult to calculate using an empirical method. What makes the calculations more difficult is that this coastal infrastructure lies behind a relatively gently sloping beach, which acts to dissipate wave energy and decrease wave runup. To simplify the existing cross-section, the average slope of the paved section (10:1 horizontal:vertical) and nearshore profile (40:1) were taken and used to calculate runup. This theoretical runup transect is shown in Figure 25.

The EurOtop methodology for calculating runup on coastal dikes and embankments with composite slopes was used for all calculations. For further reference, detailed wave runup calculation sheets have been attached as *Appendix D – Wave Runup Calculations.*

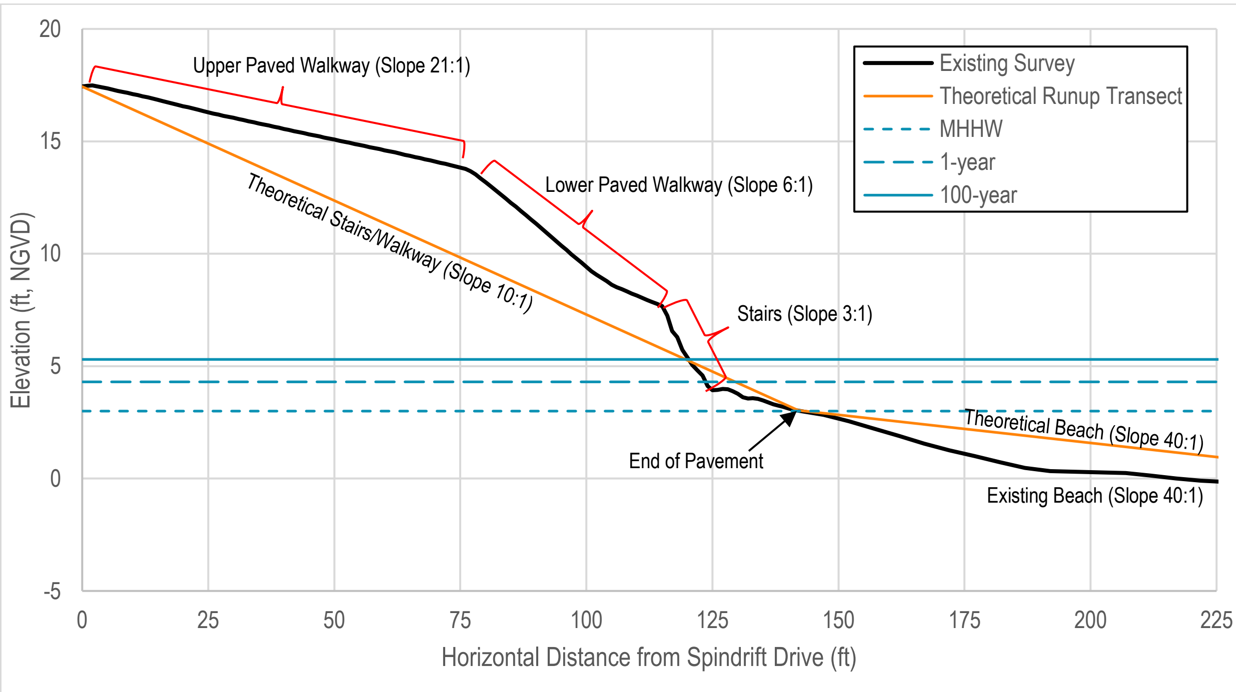


FIGURE 25: EXISTING SURVEY CROSS-SECTION AND THEORETICAL RUNUP TRANSECT COMPARED TO PRESENT-DAY STILL WATER LEVELS

6.2.1. Wave Runup Inputs and Assumptions

The following assumptions and inputs were used for wave runup calculations of the existing stair structure:

- A constant slope of 10:1 was used for the staircase and 40:1 for the beach based on slope averages of the existing survey.
- A surface roughness coefficient of 1 was conservatively chosen corresponding to concrete based on the assumption that waves will be propagating up the paved, impervious walkway.
- An irregular offshore significant wave height of 8' was used for all calculations based on the 100-yr wave height calculated from the nearest CDIP MOP nearshore point (see Section 3.1.2).
- A perpendicular wave approach angle was conservatively assumed for runup calculations.
- An 18 second peak wave period, corresponding to a very long period swell, as well as a 10 second shorter period northwesterly swell were assessed.
- Calculations were performed for a range of water levels including MHHW, 1-yr, and the 100-yr design SWL.

- Calculations for present-day and future sea level (+1.6', +3.1', and +4.8' of SLR) scenarios were performed.

6.2.2. Wave Runup Result Summary

The 2% wave runup elevation calculations, conducted for a range of scenarios as described in the section above, are provided for context in Table 8.

TABLE 8: WAVE RUNUP RESULTS

SLR *(ft)*	**Storm Scenario**	**SWL *(ft, NGVD29)***	**Wave Period *(s)***	**2% Wave Runup Elevation *(ft, NGVD29)***
0	MHHW	3	10	6.1
			18	9.4
	1-year	4.3	10	7.7
			18	11.3
	100-year	5.3	10	9
			18	12.8
1.6	MHHW	4.6	10	8.1
			18	11.8
	1-year	5.9	10	9.8
			18	13.8
	100-year	6.9	10	11.1
			18	15.4
3.1	MHHW	6.1	10	10
			18	14.1
	1-year	7.4	10	11.8
			18	16.3
	100-year	8.4	10	13.2
			18	18.1
4.8	MHHW	7.8	10	12.3
			18	17
	1-year	9.1	10	14.2
			18	19.4
	100-year	10.1	10	15.7
			18	21.4

According to the survey of the existing infrastructure, the top of the paved walkway just before Spindrift Drive has an elevation of 17.6' NGVD29. Theoretically, if wave runup reaches a higher elevation than this, Spindrift Drive will be affected by wave runup. These calculated wave runup values are highlighted in orange in Table 8. There is a small retaining wall that separates the upper paved walkway from the adjacent parking lot that has an elevation of 14.2' NGVD29. Wave runup values that exceed 14.2' NGVD29 are highlighted in yellow in Table 8. These values are the 2% wave runup results meaning that only the highest 2% of waves are expected to reach this elevation out of an irregular wave field. If wave runup is projected to be just above these elevations, some flooding may occur, but it will likely not be damaging.

Wave runup results show that wave period and SWLs play a critical role in how extreme the runup is projected to be. Runup increases with both wave period and SWL. Flooding of the adjacent parking lot is projected to occur during the 100-yr storm with +1.6’ of SLR. With +3.1’ of SLR, flooding of the parking lot is projected to occur during King tides (1-yr storm), and Spindrift Drive is projected to flood during the 100-yr storm. With +4.8’ of SLR, runup will likely reach the parking lot during large wave events on an average high tide and Spindrift Drive is projected to flood.

6.3. Spindrift Access Flooding Hazard Analysis

Project site flooding can be predicted using data from the CoSMoS coastal flooding model. CoSMoS is a regional model, meaning that in some instances the flood model may not be as precise as needed for certain sites. Due to the narrow width of the Spindrift Access, the resolution of the elevation data used by CoSMoS may not be able to accurately predict flood depths across the staircase. Because the CoSMoS model’s predicted flood depths are not accurate enough to account for features like the Spindrift Access, the flood extents were used instead for the flood risk assessment of this site. Flood extents focus on the overall area affected by the flood, but do not convey detailed results such as flood depth. These flood extents for the Spindrift project site are shown in Figure 26.

At +1.6’ of SLR, CoSMoS flood extent model results show that flood exposure is present on the Spindrift Access for both no-storm and 100-yr storm conditions. At +3.3’ SLR with no-storm, CoSMoS flood model results show that flood exposure rises to the extent seen in +1.6’ 100-yr storm. With a 100-yr storm, under the same SLR, flood extents move another 20’ up the staircase. This trend is consistent for +4.9’ of SLR where a no-storm condition pushes the flooding extent to the distance seen in +3.3’ 100-yr, and with a 100-yr storm, the flood extent pushes landward another 10’. It is worth noting that the CoSMoS model does not account for coastal structures such as The Marine Room, in practice, flooding will not overtake these structures from the seaward side. However, it can be confidently predicted that the Spindrift Access will experience some level of flooding with +1.6’ SLR, which the California Ocean Protection Council (2024) forecasts to occur around the year 2080 (California Ocean Protection Council, 2024).

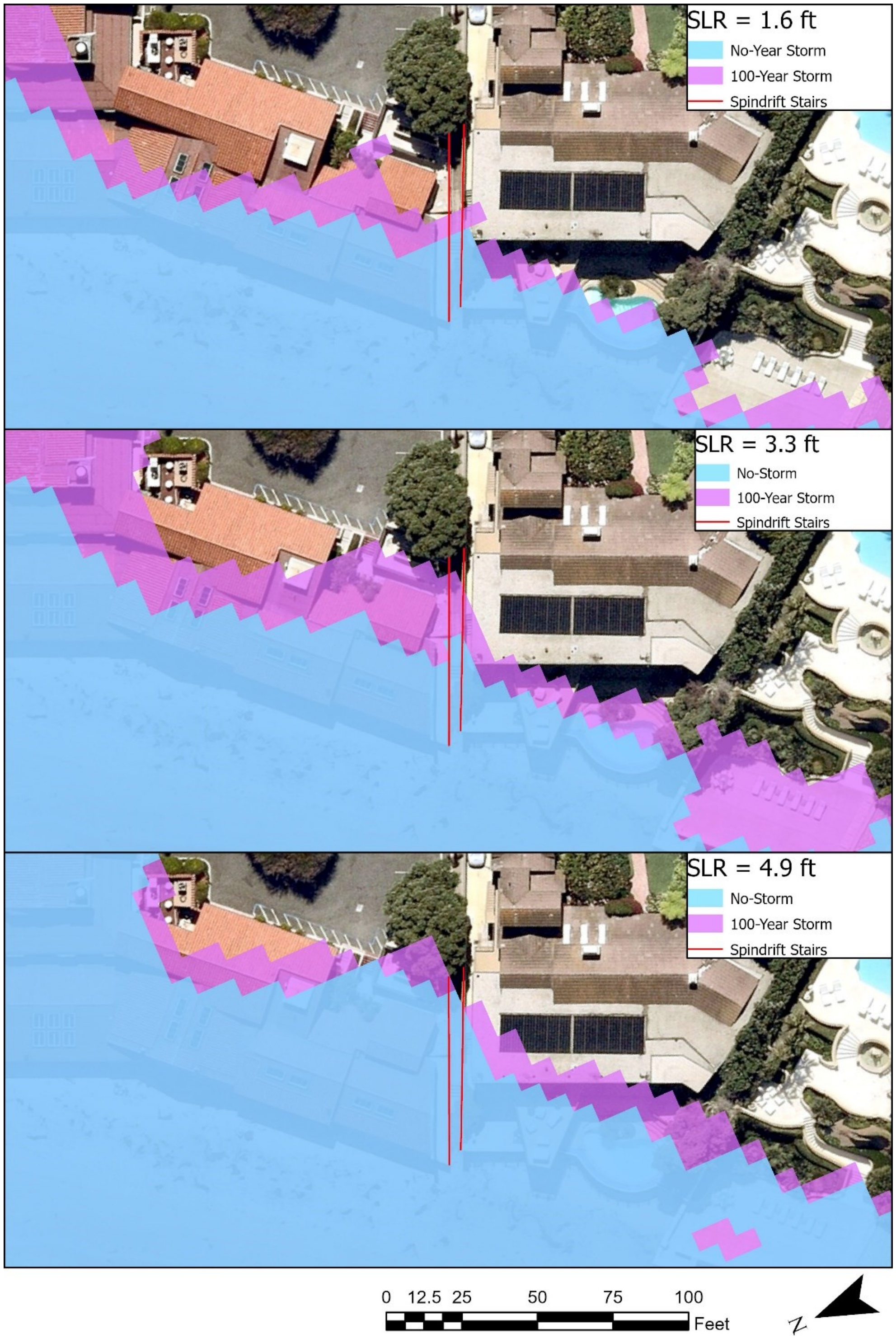


FIGURE 26: COSMOS PROJECTED FLOOD EXTENTS AT SPINDRIFT ACCESS FOR SELECTED STORM AND SEA LEVEL RISE SCENARIOS

7. Summary

The Spindrift Access, located in La Jolla Shores, San Diego, serves as a crucial public access point to the beach and is part of the California Coastal Trail. The site is exposed to wave energy from Pacific Ocean swells, regional wind waves, and local sea breezes, with the largest waves typically generated by open ocean swells. The shoreline near the Spindrift Access shows evidence of both seasonal erosion and accretion, influenced by storm events and natural sediment processes. The current structure, positioned between the Marine Room restaurant and a private residence, has deteriorated significantly due to prolonged exposure to these coastal conditions, necessitating its repair or replacement. The City of San Diego aims to construct a safer and more sustainable staircase to maintain public safety and accessibility. The new staircase will need to withstand future coastal hazards, exacerbated by sea level rise.

Shoreline Erosion Hazards: The shoreline erosion hazard analysis for the Spindrift Access examines the historical and projected erosion trends affecting the site. Between 2003 and 2024, the shoreline in front of the Spindrift Access exhibited a maximum vertical variability of 3 to 4', with the lowest elevation recorded at 0.23' (NGVD 29) during the 2016 El Niño event. The data indicates that the shoreline tends to erode in the winter and accrete in the summer, with a general trend of slight erosion over the years. Recent satellite-based analyses using CoastSat data show that since 2019, the shoreline has been eroding at an average rate of approximately 0.2' per year. Projections from the Coastal Storm Modeling System (CoSMoS) suggest significant erosion with sea level rise, although the presence of seawalls and the staircase itself will limit the extent of shoreline retreat.

Flood Hazards: The flood hazard analysis for the Spindrift Access at the Spindrift Staircase highlights significant risks from still water levels. Currently, the site experiences frequent flooding during high tides, especially in winter when storm events are more prevalent. Present-day high tides (3.4' NGVD) regularly reach the base of the staircase, and extreme high tides (4.7' NGVD) can cause water to surge up the staircase. These conditions indicate the site's vulnerability to tidal fluctuations and storm surges.

Future conditions with projected sea level rise (SLR) exacerbate these flooding risks. With a +1.6' SLR, daily high tides are expected to reach the base of the staircase, while 100-yr extreme water levels would reach the top. At +3.1' SLR, high tides would consistently surge up the staircase, and the 1-yr extreme water level would submerge it completely. The 100-yr extreme water level would extend beyond the staircase along the sloping ramp. With +4.8' SLR, daily high tides would submerge the entire staircase, and the 1-yr extreme water level would surge further landward along the ramp, overtopping portions of the northern wall and flooding low-lying areas of the Marine Room Patio.

Wave Runup Hazards: Wave runup calculations further indicate significant risks. Currently, the base of the staircase is susceptible to wave-driven scour, evidenced by visible wave impacts during high tides. The FEMA analysis shows a 100-yr wave runup elevation at 20.9' NGVD (23' NAVD), indicating potential for significant wave runup at the site. Future scenarios with higher sea levels project increased wave runup levels, exacerbating flooding hazards at the staircase location.

The combined effects of shoreline erosion, still water flooding, and wave runup highlight the importance of a resilient design for Spindrift Access. An improved staircase design (proposed project) is necessary to provide continued safe access to the beach while accommodating coastal hazards over the design life. Ongoing maintenance will be required to ensure the safety of the stairs after an extreme event, with the frequency and extent of this upkeep likely increasing due to future sea level rise.

8. References

Barnard, P., et al. 2018. *Coastal Storm Modeling System (CoSMoS) for Southern California, v3.0, Phase 2* (Ver. 1g, May 2018). U.S. Geological Survey data release. Available at https://doi.org/https://doi.org/10.5066/F7T151Q4

Benumof, B. T. et al. 2000. *The Relationship Between Incident Wave Energy and Seacliff Erosion Rates: San Diego County, California*, Journal of Coastal Research: 16 (4).

California Coastal Commission (CCC). 2018. *California Coastal Commission Sea Level Rise Policy Guidance: Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits*.

CCC. 2019. *Example language for identifying sea level rise and coastal hazards information necessary for a complete CDP application*. Technical Memorandum. Available at https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/ccc-example-language-slr-complete-cdp-a11y.pdf

California Department of Parks and Recreation (DPR). 2020A. *Coastal Hazard Vulnerability Assessment and Adaptation Plan for Public Accessways at San Elijo State Beach*. Draft Report.

California Earthquake Authority (CEA). 2020. *Reducing The Risk of Residential Earthquake Loss in San Diego and Statewide 2020.* Fact Sheet. Available at https://www.earthquakeauthority.com/Press-Room/Media-Resources/Background/CEA-FactSheet-NEC-2020-FINAL

Coastal Frontiers. 2023. *2022 Regional Beach Monitoring Program Annual Report*. Technical Report. Prepared for San Diego Association of Government.

Dean, R.G., and R.A. Dalrymple. 2002. *Coastal Processes with Engineering Implications*. Cambridge, UK: Cambridge University Press. Online at https://doi.org/10.1017/CBO9780511754500

Dewberry. 2016. *West Coast El Nino 2016 B16 LiDAR Report*. Technical Report produced for U.S. Geological Survey. Available at https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/6259/supplemental/west_coast_2016_el_nino_m6259_lidar_report.pdf

DPR. 2023. *Torrey Pines State Beach*. Park Website. Available at https://www.parks.ca.gov/?page_id=658

DPR. 2020B. *San Elijo State Beach: Replace or Refurbish Coastal Access Stairways*. Technical Plans depicting Concept Plan, Existing Conditions, and Concrete Caisson Alternative.

Erikson, L.H., et al. 2015. *Projected Wave Conditions in the Eastern North Pacific under the Influence of two CMIP5 Climate Scenarios*. Ocean Modelling: 96, 171-185. Available at http://dx.doi.org/10.1016/j.ocemod.2015.07.004

EurOtop. 2018. *Manual on wave overtopping of sea defenses and related structures: An overtopping manual largely based on European research, but for worldwide application*. Van der Meer, J.W., N.W.H. Allsop, T. Bruce, J. De Rouck, A. Kortenhaus, T. Pullen, H. Schüttrumpf, P. Troch, and B.Zanuttigh. Available at www.overtopping-manual.com

FEMA. 2005. *Final Draft Guidelines for Coastal Flood Hazard Analysis and Mapping for the Pacific Coast of the United States*, Washington, DC. January 2005.

FEMA. 2021. *Guidance for Flood Risk Analysis and Mapping: Coastal Wave Runup and Overtopping*, Washington, DC. November 2021.

Flick, R.E. 1993. *The myth and reality of Southern California beaches*. Shore and Beach: 61 (3), 3-13.

Geocon Consultants, Inc (Geocon). 2020. *Geotechnical Investigation for Stair #6 Replacement, San Elijo State Beach, San Diego County, CA.* Geotechnical Report prepared for California State Parks – Southern Service Center.

Geocon. 2023. *Limited Geotechnical Investigation Torrey Pines State Natural Reserve and State Beach Beach Trail Stairway Improvements, San Diego, CA.* Geotechnical Report prepared for California State Parks – Southern Service Center.

Griggs, G., and K. Patsch. 2007. *Development of Sand Budgets for California's Major Littoral Cells*. Institute of Marine Sciences, University of California Santa Cruz, California Department of Boating and Waterways, California Coastal Sediment Management WorkGroup, no. January: 1–115.

Griggs, G., et al. 2005. *Living with the Changing California Coast*. University of California Press, pp. 551.

Hapke, C.J., et al. 2006. *National Assessment of Shoreline Change Part 3: Historical Shoreline Change and Associated Coastal Land Loss Along Sandy Shorelines of the California Coast*. U.S. Geological Survey Open-File Report 2006-1219.

Hapke, C.J, and D. Reid. 2007. *National Assessment of Shoreline Change , Part 4 : Historical Coastal Cliff Retreat along the California Coast*. U.S. Geological Survey Open-File Report 2007-1133.

Hubbs, C.L., et al. 1991. *Torrey Pines State Reserve.* Published by The Torrey Pines Association, pp 71.

Kalansky, J., et al. 2018. *San Diego Summary Report*. California's Fourth Climate Change Assessment. Publication Number: SUM-CCCA4-2018-009*.*

Limber, P.W., et al. 2018. *A model ensemble for projecting multidecadal coastal cliff retreat during the 21st century*. Journal of Geophysical Researquach: Earth Surface, 123, pp. 1566–1589. Available at https://doi.org/10.102/2017JF004401

Meldahl, K. 2019. *Geologic Evolution of San Diego County's Coasts and Lagoons: Mira Costa Community College (fieldtrip report):* http://h-m-herms.net/My%20Web/SELC-D/Geology/San_Diego_Coast%20(SEL%20docent%20version).pdf.

Moffat & Nichol (M&N). 2020. *Wave Uprush Study: Thousand Steps Beach Stairway.* Final Report. Technical Report prepared for the California Department of Parks and Recreation City of Santa Barbara. More info available at https://documents.coastal.ca.gov/reports/2021/9/W12b/W12b-9-2021-exhibits.pdf

M&N. 2022. *Coastal Hazards Analysis: Replacement of Beach Staircase at San Elijo State Beach Northern Day Use Area.* Final Report. Technical Report prepared for the California Department of Parks and Recreation San Diego Coast District.

OCM Partners. 2023. *1885 - 2021 USGS CoNED Topobathy DEM (Compiled 2022): Northern Gulf of Mexico.* https://www.fisheries.noaa.gov/inport/item/67613.

Ocean Protection Council (OPC). 2018. *State of California Sea-Level Rise Guidance: 2018 Update*.

O'Neill, A.C., et al. 2018. *Projected 21st Century Coastal Flooding in the Southern California Bight. Part 1: Development of the Third Generation CoSMoS Model*. Journal of Marine Science and Engineering: 6 (2). Available at https://doi.org/10.3390/jmse6020059

Stockdon, H.F., et al. (2006). *Empirical parameterization of setup, swash, and runup*. Coastal Engineering: 53, 573-588.

Styles, S. (2023. Jan. 23). Black's Beach in Torrey Pines Split in Two After Dramatic Bluff Collapse. *CBS8 News San Diego.*

Swirad, Z.M. and A.P. Young. 2021. *Automating coastal cliff erosion measurements from large-area LiDAR datasets in California, USA*. Geomorphology: 389.

United States Army Corps of Engineers (USACE). 1991. *State of the Coast Report, San Diego Region: Coast of California Storm and Tidal Wave Study*. Prepared by the U.S. Army Corps of Engineers, Los Angeles District, Planning Division, Coastal Resources Branch.

USACE. 1993. *Existing state of Orange County Coast: Final Report*. Prepared by the U.S. Army Corps of Engineers, Los Angeles District, Planning Division, Coastal Resources Branch. Report No. 93-1. Available at https://hdl.handle.net/2027/uc1.31210020520738

van der Meer, J.W. 2002. *Wave Run-up and Overtopping at Dikes*. Technical Report, Technical Advisory Committee for Water Retaining Structures (TAW), Delft, the Netherlands

Vitousek, S., at al. (2017), A model integrating longshore and cross-shore processes for predicting long-term shoreline response to climate change. J. Geophys. Res. Earth Surf., 122, 782–806, Available at https://doi.org/10.1002/2016JF004065

Vos, K., et al. 2019. *CoastSat: A Google Earth Engine-enabled Python toolkit to extract shorelines from publicly available satellite imagery*. Environmental Modelling & Software, 122, 104528.

Young, A.P. 2018. *Decadal-scale coastal cliff retreat in southern and central California*. Geomorphology: 300, pp.164-175.

Young, A.P. 2022. Personal Communication. July 25, 2023.

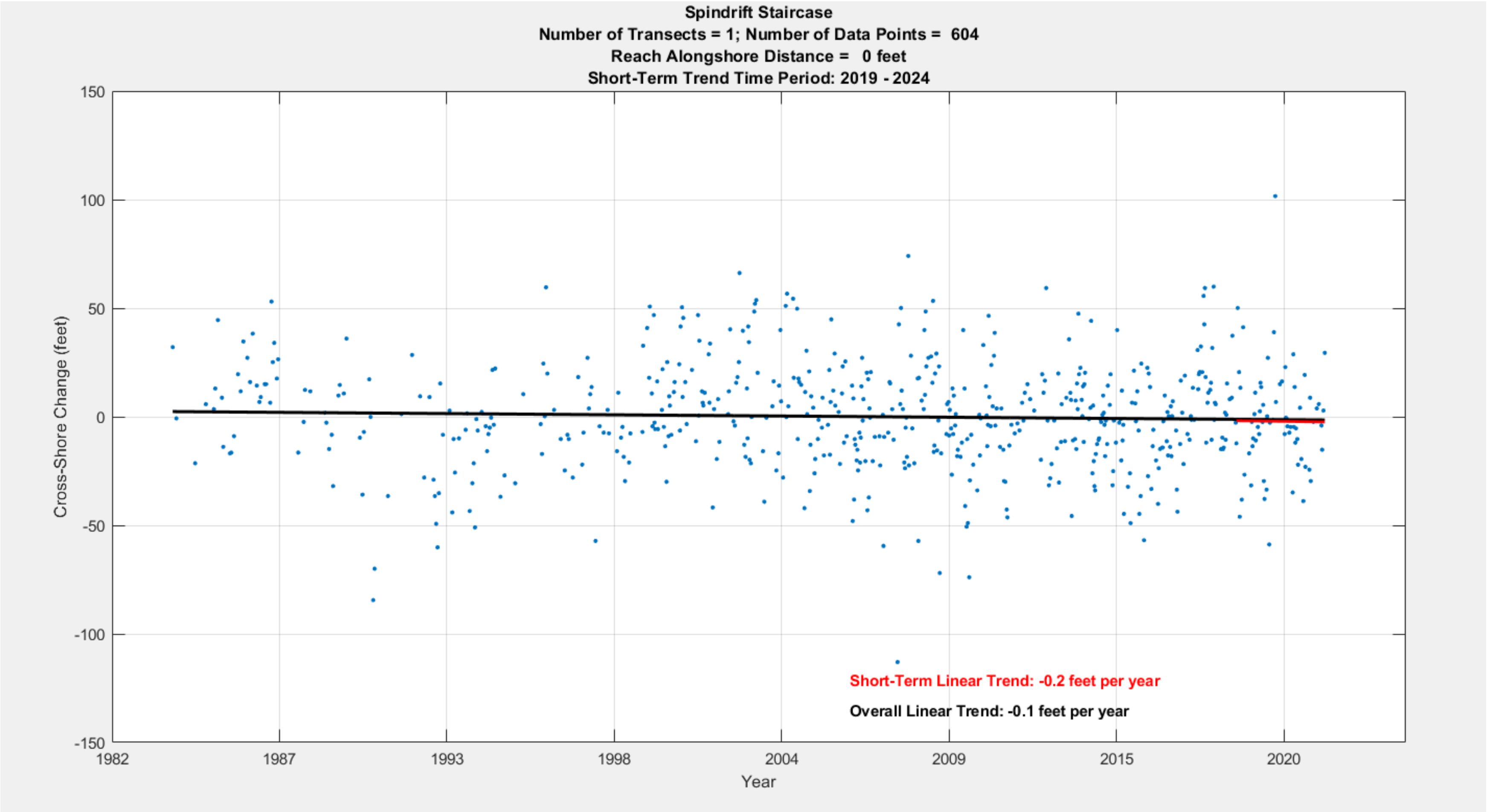
Young, A.P., and S.A. Ashford. 2006. *Application of Airborne LIDAR for Seacliff Volumetric Change and Beach-Sediment Budget Contributions*. Journal of Coastal Research: 22 (2), pp. 307–18. Available at https://doi.org/10.2112/05

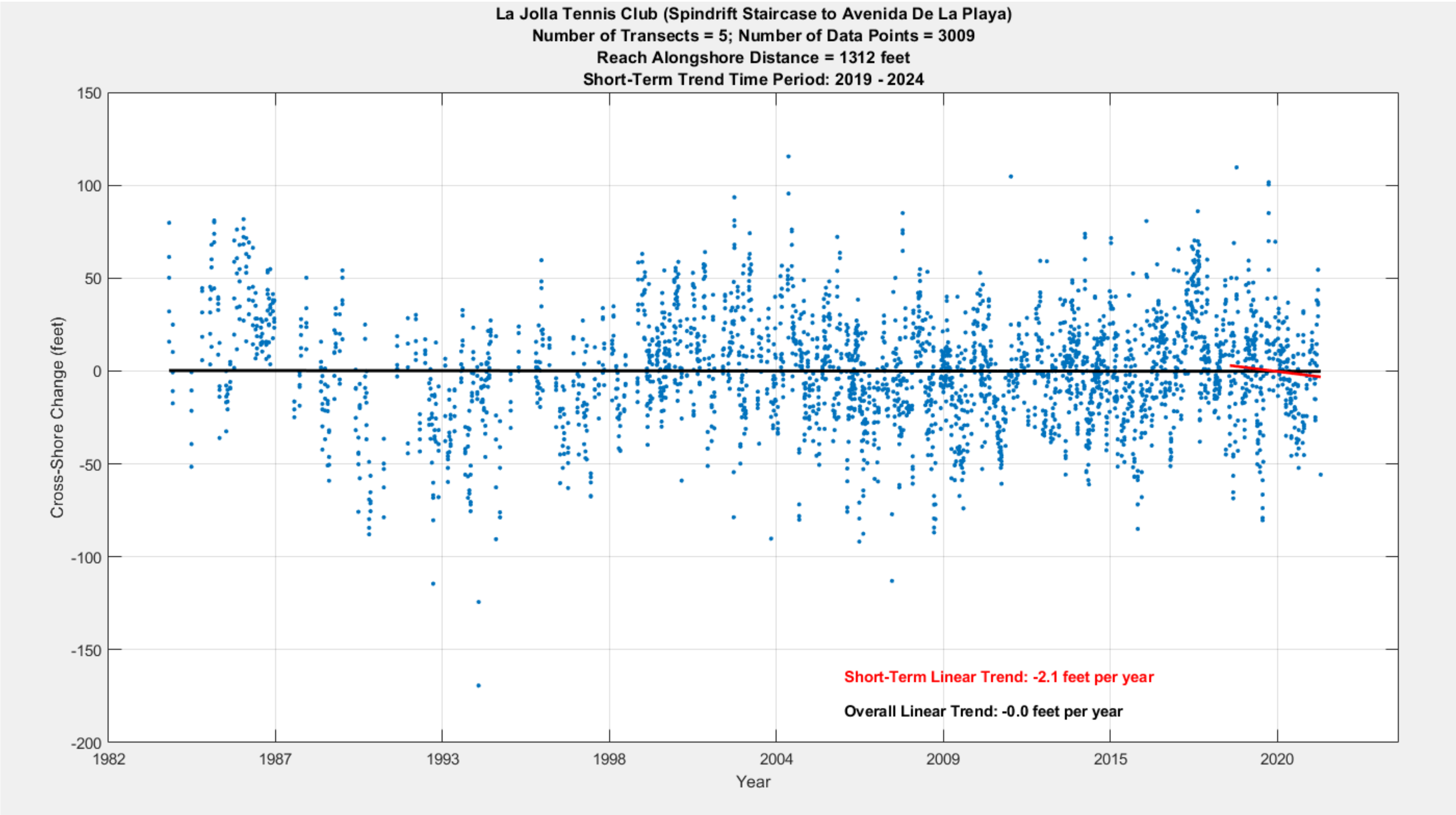
Kennedy, M. a. (2008). *Geologic map of the San Diego 30' x 60' quadrangle.* California Geological Survey, Regional Geologic Map RGM-3, scale 1:100,000.

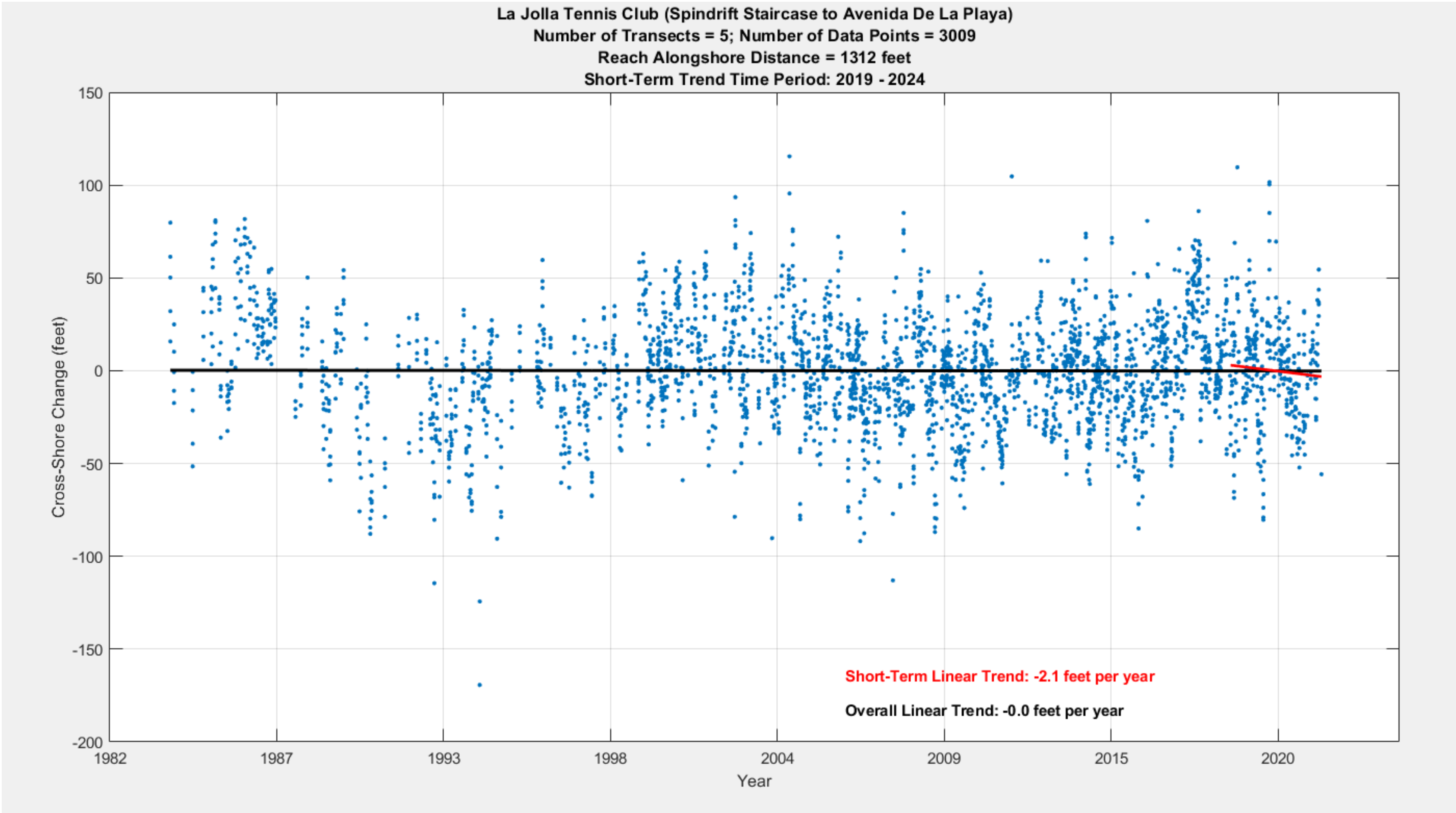
City of San Diego. (2008). *San Diego Seismic Safety Study.* San Diego.

GeoEngineers. (2024). *Spindrift Drive Beach Access Walkway GT Letter Report.* San Diego: GeoEngineers.

Appendix A – CoastSat Historic Shoreline Analysis




La Jolla Tennis Club (Spindrift Staircase to Avenida De La Playa)
Number of Transects = 5; Number of Data Points = 3009
Reach Alongshore Distance = 1312 feet
Short-Term Trend Time Period: 2019 - 2024
Cross-Shore Change (feet)
150
100
50
0
-50
-100
-150
-200
1982
1987
1993
1998
2004
2009
2015
2020
Year
Short-Term Linear Trend: -2.1 feet per year
Overall Linear Trend: -0.0 feet per year


La Jolla Tennis Club (Spindrift Staircase to Avenida De La Playa)
Number of Transects = 5; Number of Data Points = 3009
Reach Alongshore Distance = 1312 feet
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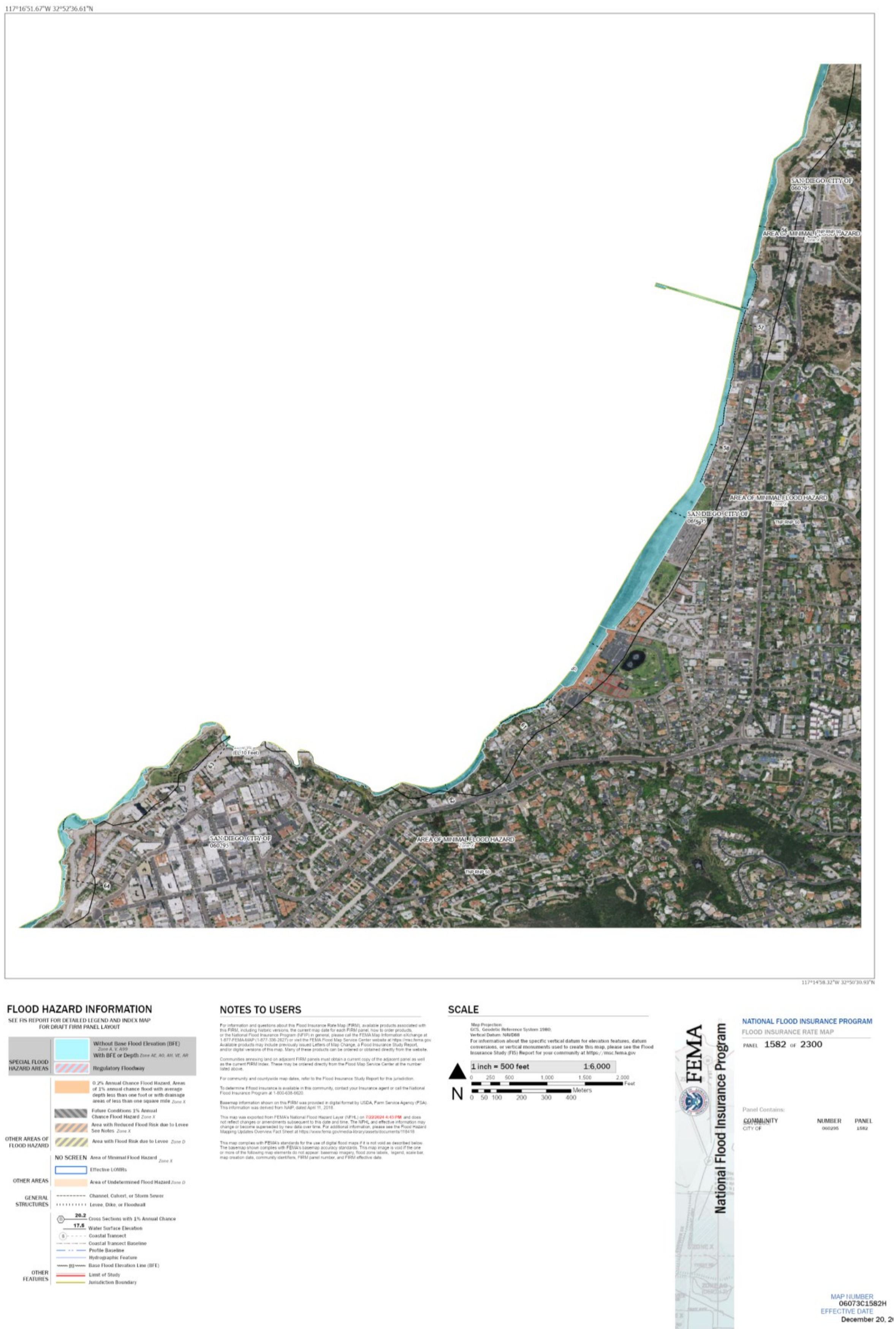
-100
-150
-200
1982
1987
1993
1998
2004
2009
2015
2020
Year
Short-Term Linear Trend: -2.1 feet per year
Overall Linear Trend: -0.0 feet per year

Appendix B – FEMA FIRM Map



Appendix C – Staircase Survey

Appendix D – Wave Runup Calculations

Project	Spindrift Stairs		
Prepared for			
Project No.	213159-03		
Revision	A		
Design	C O'Day	Date	Aug 2, 2024
Checked		Date	
Subject	2% Wave Runup on Dikes with Design of Composite Slopes		

moffatt & nichol
2185 N. California Blvd., Suite 500
Walnut Creek, CA 94596
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Reference: EurOtop, 2018 Manual

Application: The procedure below is valid for a composite slope, berm present or not, without much wave breaking.

General Properties

$SLR := 0ft = 0$

$SWL := 5.3ft + SLR = 5.3 \cdot ft$ — Design still water elevation in project datum, can include SLR allowance

$H_{m0} := 8ft$ — Offshore significant wave height

$T_p := 18s$ — Offshore peak wave period

$B := 0ft$ — Berm width

$Berm\_elev := 3 \cdot ft$ — Design berm elevation in project datum

$Bot\_slope := 40$ — Design slope (xH:1V) below the berm

$Upp\_slope := 10$ — Design slope (xH:1V) above the berm

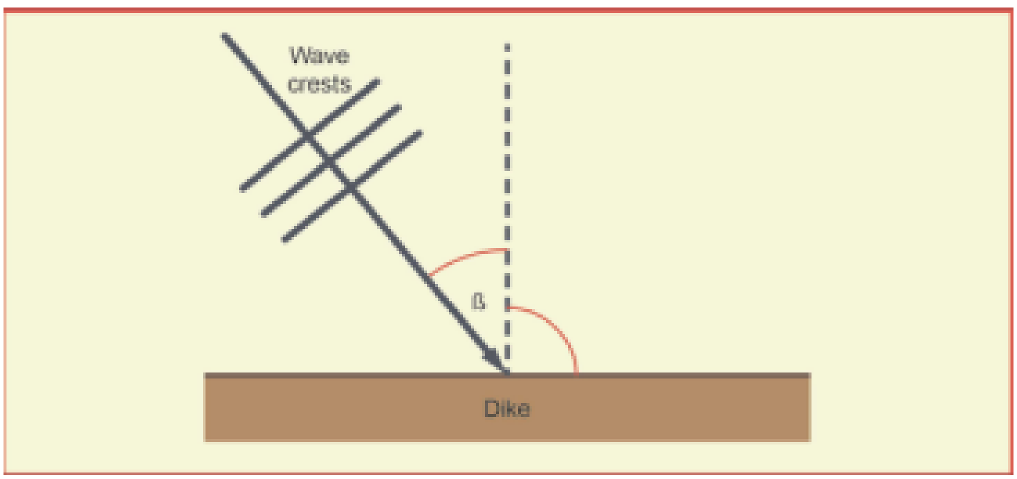
** Spectral period (m_{-1}/m_0)*

$$T_{spec} := \frac{T_p}{1.1} = 16.4\,s$$

** Wave steepness*

$$S_0 := \frac{H_{m0}}{\left(\frac{g \cdot T_{spec}^{\ 2}}{2 \cdot \pi}\right)} = 5.8345 \times 10^{-3}$$

** Influence factor of wave attack angle*

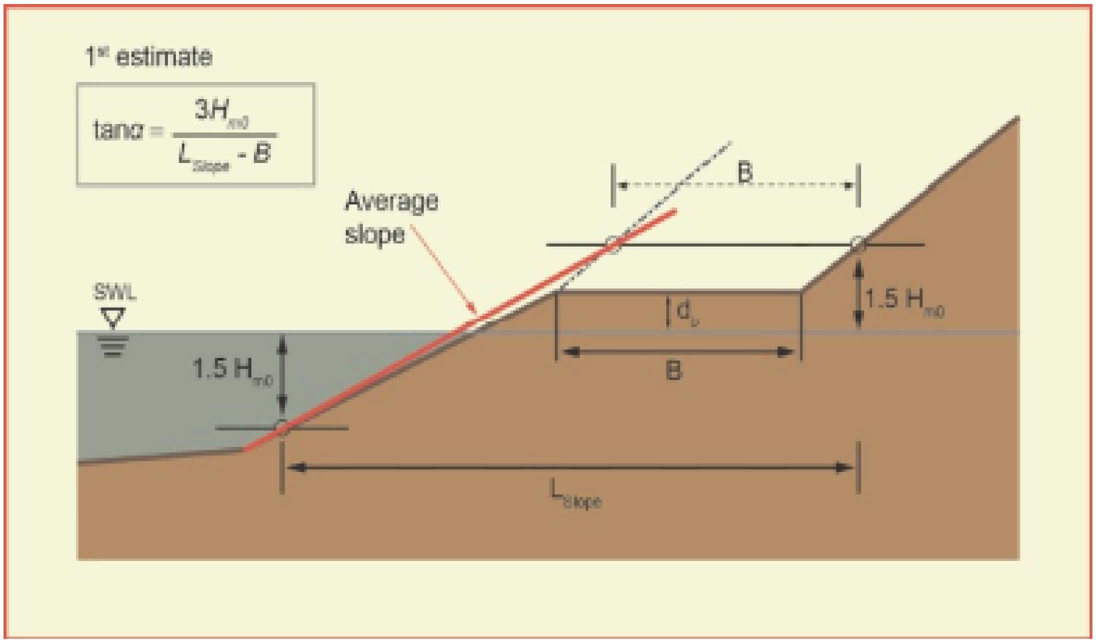


$\beta := 0$ Angle of wave attack

$$\gamma_\beta := \begin{cases} 1 - 0.0022 \cdot |\beta| & \text{if } 0 \le |\beta| \le 80 \\ 0.824 & \text{otherwise} \end{cases}$$ Eq 5.28

$$\gamma_\beta = 1$$

** 1st estimate of composite slope*



$$Check1 := \begin{cases} \text{"Valid"} & \text{if } B \geq 0 \wedge 1.5 \cdot H_{m0} \geq |Berm\_elev - SWL| \\ \text{"Not Valid"} & \text{otherwise} \end{cases}$$

$Check1 = \text{"Valid"}$ If "Valid", composite slope takes effect

$$L_{slope} := \left| \begin{array}{l} 1.5 \cdot H_{m0} \cdot Bot\_slope + (Berm\_elev - SWL) \cdot Bot\_slope + B + [1.5 \cdot H_{m0} - (Berm\_elev - SWL)] \\ [[1.5 \cdot H_{m0} - (SWL - Berm\_elev)] \cdot Bot\_slope + B + (SWL - Berm\_elev) \cdot Upp\_slope + 1.5 \cdot H_{n} \end{array} \right.$$

$$L_{slope} = 161.8\,m$$

$$\tan\alpha := \frac{3 \cdot H_{m0}}{L_{slope} - B} = 0$$ Eq 5.38

** Breaker parameter (Iribarren number)*

$$\xi := \frac{\tan\alpha}{\sqrt{S_0}} = 0.6$$

** Influence factor of roughness*

Index	Reference type	γ_r
1	Concrete	1.0
2	Asphalt	1.0
3	Closed concrete blocks	1.0
4	Grass	1.0
5	Basalt, basalton	0.90
6	Placed revetment blocks (Haringman, Fixtone)	0.90
7	Small blocks over 1/25 of surface, optimum height	0.85
8	Small blocks over 1/9 of surface, optimum height	0.80
9	¼ of revetment blocks 8.8 cm higher	0.90
10	Ribs (optimum dimensions)	0.75
	Type of armour layer	**γ_r**
11	Smooth impermeable surface	1.00
12	Rocks (1 layer, impermeable core)	0.60
13	Rocks (1 layer, permeable core)	0.45
14	Rocks (2 layers, impermeable core)	0.55
15	Rocks (2 layers, permeable core)	0.40
16	Cubes (1 layer, flat positioning)	0.49
17	Cubes (2 layers, random positioning)	0.47
18	Antifers	0.50
19	HARO's	0.47
20	Tetrapods	0.38
21	Dolosse	*0.43*
22	Accropode™ I	0.46
23	Xbloc®; CORE-LOC®; Accropode™ II	0.44
24	Cubipods one layer	*0.49*
25	Cubipods two layers	*0.47*

$Index := 1$ Expend the following matrix as needed

$$\gamma_f := \begin{cases} 1 & \text{if } (1 \le Index \le 4) \\ 0.9 & \text{if } (Index = 5 \lor Index = 6 \lor Index = 9) \\ 0.85 & \text{if } (Index = 7) \\ 0.8 & \text{if } (Index = 8) \\ 0.75 & \text{if } (Index = 10) \\ 1 & \text{if } (Index = 11) \\ 0.6 & \text{if } (Index = 12) \\ 0.45 & \text{if } (Index = 13) \\ 0.55 & \text{if } (Index = 14) \\ 0.4 & \text{if } (Index = 15) \end{cases}$$

$$\gamma_f = 1$$

$$\gamma_{fsurging} := \begin{cases} \gamma_f & \text{if } Index \le 11 \lor \xi \le 1.8 \\ \min\left[1, \gamma_f + \frac{(\xi - 1.8)\cdot(1-\gamma_f)}{8.2}\right] & \text{if } Index > 11 \land \xi > 1.8 \end{cases}$$

$$\gamma_{fsurging} = 1$$

** 1st estimate of 2% Runup*

$\gamma_b := 1$ ** Assume no berm reduction*

$$R_{u2\%} := H_{m0}\cdot \min\left[1.75\cdot\gamma_b\cdot\gamma_f\cdot\gamma_\beta\cdot\xi, 1.07\cdot\gamma_{fsurging}\cdot\gamma_\beta\cdot\left(4.0 - \frac{1.5}{\sqrt{\gamma_b\cdot\xi}}\right)\right]$$ Eq 6.2

$$R_{u2\%} = 8.3\cdot ft$$

** 2nd estimate of composite slope*

$$Check2 := \begin{cases} \text{"Valid"} & \text{if } B \ge 0 \land R_{u2\%} \ge |Berm\_elev - SWL| \\ \text{"Not Valid"} & \text{otherwise} \end{cases}$$

$Check2 = \text{"Valid"}$ If "Valid", composite slope takes effect

$$L_{slope} := \left| \begin{array}{l} 1.5 \cdot H_{m0} \cdot Bot\_slope + (Berm\_elev - SWL) \cdot Bot\_slope + B + \left[R_{u2\%} - (Berm\_elev - SWL)\right] \cdot \\ \left[\left[1.5 \cdot H_{m0} - (SWL - Berm\_elev)\right] \cdot Bot\_slope + B + (SWL - Berm\_elev) \cdot Upp\_slope + R_{u2} \right. \end{array} \right.$$

$$L_{slope} = 493.8 \cdot ft$$

$$\tan\alpha := \frac{\left(1.5 \cdot H_{m0} + R_{u2\%}\right)}{L_{slope} - B} = 0$$ Eq 5.39

$$\xi := \frac{\tan\alpha}{\sqrt{S_0}} = 0.5$$

$$\gamma_{fsurging} = 1$$

2% Runup

$$R_{u2\%} := H_{m0} \cdot \min\left[1.75 \cdot \gamma_b \cdot \gamma_f \cdot \gamma_\beta \cdot \xi, 1.07 \cdot \gamma_{fsurging} \cdot \gamma_\beta \cdot \left(4.0 - \frac{1.5}{\sqrt{\gamma_b \cdot \xi}}\right)\right]$$ Eq 6.2

$$R_{u2\%} = 7.5 \cdot ft$$

$$TWL := R_{u2\%} + SWL$$

$$SWL = 1.6\,m$$

$$TWL = 12.8 \cdot ft$$

Appendix E – Geotechnical Report

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December 6, 2024

Moffatt & Nichol
1660 Hotel Circle North, Suite 500
San Diego, California 92108

Attention: Chad Monfort, PE

Subject: Geotechnical Letter Report
Spindrift Drive Beach Access Walkway – Feasibility Study
Spindrift Drive and Roseland Drive
La Jolla, California
File No. 25290-006-00

Introduction

In accordance with our proposal dated January 23, 2024, GeoEngineers, Inc. (GeoEngineers) has prepared this letter report summarizing our geotechnical engineering services in support of the Spindrift Drive Beach Access Walkway – Feasibility Study project located in the La Jolla neighborhood of San Diego, California. This letter report summarizes our geotechnical findings and recommendations. The general project location is shown in the Vicinity Map, Figure 1.

We understand that the west end of the walkway is regularly impacted by wave run-up from large surf, leading to scouring and wave-based erosion of the beach sand at the base of the stairs located at the end of the walkway. The scouring and wave-based erosion has led to minor difficulty in pedestrian access to the beach due to an increase in the height of the last stair with the loss of sand. It is our understanding that the project consists of developing a feasibility study report to evaluate the existing walkway and provide three concept design alternatives.

We performed the following scope of work for the project:

1. Review of readily available geotechnical information;
2. Geologic site reconnaissance to characterize the site conditions, including manually excavated borings;
3. Assessment of site conditions, including site topography, site geology, subsurface conditions, groundwater conditions, and geologic hazards;
4. Assessment of code-specific seismic ground motion parameters per the 2022 California Building Code (CBC)/American Society of Civil Engineers (ASCE) 7-16;
5. Assessment of parameters for foundation design; and
6. Preparation of this letter report.

Field Investigation and Site Conditions

FIELD INVESTIGATION AND SITE CONDITIONS

GeoEngineers conducted a field investigation on June 24, 2024, which included visual site reconnaissance and excavation of six manually advanced exploratory borings (B-1 through B-6). Manually advanced exploratory borings were selected for explorations at this site instead of test pits and mechanically drilled geotechnical borings due to limited access and project budget constraints. B-1 through B-6 were excavated with a 3¼-inch-diameter hand auger to depths ranging from approximately 2 to 4 feet below the existing ground surface (bgs). All hand augers encountered practical refusal at their terminating depths. Boring B-1 encountered practical refusal on a concrete surface. Based on the nature of the hand auger refusal at borings B-2 through B-6, we interpret that these borings encountered refusal on Point Loma Formation (Kp).

The hand auger borings were logged in the field by GeoEngineers staff in accordance with Unified Soil Classification System (USCS). The locations of the hand auger borings are presented in the Site Plan, Figure 2. The boring logs, including descriptions of the soils encountered, are presented as Appendix A, Field Explorations.

Based on the review of the request for proposal (RFP) prepared by the City of San Diego and Task Order #22MM06, WBS #P-24011 prepared by Moffatt & Nichol, we understand the walkway is approximately 150 feet in length. The existing walkway is bounded by the Marine Room Restaurant at 2000 Spindrift Drive to the north, Spindrift Drive to the east, a private residence at 1920 Spindrift Drive to the south, and La Jolla Shores Beach to the west.

SITE GEOLOGY AND SUBSURFACE CONDITIONS

According to the Geologic Map of the San Diego 30' X 60' quadrangle by Kennedy and Tan (2008), three geologic units are present within the site area (Figure 3), including marine beach deposits (Qmb), young alluvial flood-plain deposits (Qya), and Quaternary Old Paralic Deposits, Unit 6 (Qop_6).

Kennedy and Tan describe marine beach deposits (Qmb) as "unconsolidated beach deposits consisting mostly of fine-to medium grained sand", and young alluvial flood-plain deposits as "poorly consolidated, poorly sorted, permeable flood-plain deposits of sandy, silty or clay-bearing alluvium."

Quaternary Old Paralic Deposits, Unit 6 (Qop_6) are surficially mapped to the east of the marine beach deposits within the project area. The paralic deposits generally consist of poorly sorted, reddish-brown, interfingered strandline, beach, estuarine, and colluvial deposits composed of fossiliferous marine sandstone.

Based on geologic map unit relationships, we anticipate that the marine beach deposits are underlain by the Cretaceous-age Point Loma Formation (Kp), which is an approximately 900-foot-thick sedimentary unit consisting of well-indurated marine sediments which locally forms the lower, more erosion-resistant portion of the coastal bluffs along the western side of the Point Loma Peninsula and La Jolla. The Point Loma formation also locally forms the shore platform, which is a relatively flat-lying surface which extends seaward from the base of the coastal bluff and is created as a result of back/down wearing from marine processes. Exposures of the Point Loma Formation in the project vicinity generally consist of subunits of massive medium-grained sandstone, siltstone, and partially cemented siltstone interbeds.

The soils encountered in B-1 through B-6 consisted of marine beach deposits composed of very loose poorly graded sand with silt. Practical refusal was encountered at depths between 2 to 4 feet bgs within each of the hand auger borings upon the underlying shore platform (Point Loma Formation) at approximate elevations[1] -2 to 1 feet, respectively.

The findings from our investigation were generally consistent with the regional geologic mapping in the project area.

REGIONAL SEISMICITY, FAULTING, AND GEOLOGIC HAZARDS

The City of San Diego is located in an active seismic region of Southern California and is subject to significant hazards from earthquakes.

Figure 4 (Regional Fault Map) presents approximate locations of regional quaternary-dated faulting based on the on the United States Geological Survey (USGS) *Quaternary Fault and Fold Database of the United States.* The database contains information on faulting that demonstrates geological evidence of coseismic surface deformation in large earthquakes during the past 1.6 million years.

Assessment of geologic hazards was not included as part of the scope of services; however, we note that the project site lies within a mapped Alquist-Priolo Earthquake Fault Zone (EFZ) as mapped by the California Geological Survey (CGS). CGS defines a EFZ as "encompassing active faults that constitute a potential hazard to structures from surface faulting or fault creep such that avoidance as described in Public Resources Code Section 2621.5(a) would be required." Seismic hazard zones have not been prepared by CGS for the La Jolla quadrangle.

The City of San Diego has prepared the San Diego Seismic Safety study (SDSSS), which is a series of maps that indicate likely geologic hazards in select areas of the County of San Diego. On SDSSS grid tile 30, the site is mapped under the geologic hazard category 48: generally stable, broad beach areas, developed harbor. Figure 5 presents the site location relative to the SDSSS mapping.

GROUNDWATER

Groundwater was encountered in the manually excavated borings at depths of 1 to 3 feet, corresponding to approximately Elevation -½ feet to 2 feet. Due to the proximity of the site to the Pacific Ocean, the water at depth is likely a function of tidal effects. As such, we anticipate the groundwater encountered lies perched above the geologic contact between the Marine Beach Deposits and the underlying Point Loma Formation.

---

[1] All elevations referenced herein reference the National Geodetic Vertical Datum of 1929 (NGVD 29).

Geotechnical Recommendations

GENERAL

We conclude, based on our exploration and understanding of the proposed site improvements that the project is feasible as envisioned from a geotechnical standpoint, provided that the recommendations provided herein are incorporated in the design and construction of the project.

2022 CBC/ASCE 7-16 Seismic Design Information

The following presents our recommended seismic design parameters for use in the design of the varying project elements per ASCE 7-16. The 2022 California Building Code (CBC) is also based on the criteria from ASCE 7-16. The site-specific design spectra parameters for Site Class, short-period spectral response acceleration (S_S), 1 second period spectral response acceleration (S_1), and seismic coefficients F_A and F_V are presented in Table 1. The available site-specific subsurface geotechnical information is not sufficient to determine Site Class. Accordingly, we have provided seismic design parameters for default site conditions (Site Class D, Default).

Per ASCE 7-16 Section 11.4.8, a ground motion hazard analysis or site-specific response analysis is required to determine design ground motions for structures on Site Class D sites with S_1 greater than or equal to 0.2 g (where g represents gravitational acceleration). For this project, the site is best classified as Site Class D (Default) based on available subsurface information with an S_1 value of 0.491 g; therefore, this provision applies. Alternatively, the parameters listed in Table 1 below may be used to determine the design ground motions provided Exception 2 of Section 11.4.8 of ASCE 7-16 is used. Using this exception, the seismic response coefficient (C_s) is determined by Equation (Eq.) (12.8-2) for values of $T \leq 1.15T_S$ and taken as equal to 1.5 times the value computed in accordance with either Eq. (12.8-3) for $T_L \geq T > 1.5T_s$ or Eq. (12.8-4) for $T > T_L$, where T represents the fundamental period of the structure and T_S=0.53 seconds (sec).

TABLE 1. ASCE 7-16 MAPPED SEISMIC DESIGN PARAMETERS

CBC 2022/ASCE 7-16 PARAMETERS	VALUE
Site Class	Default (D)
Short Period Spectral Response Acceleration, S_S	1.404g
1-Second Period Spectral Response Acceleration, S_1	0.491g
Seismic Coefficient, F_A	1.2
Seismic Coefficient, F_V	1.809[2]
Design Spectral Acceleration at 0.2 second period (S_{DS})	1.123g
Design Spectral Acceleration at 1.0 second period (S_{D1})	0.592g
$T_s = S_{D1}/S_{DS}$	0.53

Notes:

[1] Parameters developed based on latitude 32.852135 and longitude -117.261090 using the ASCE 7 Hazards online tool (https://asce7hazardtool.online/)

[2] These values are only valid if the structural engineer utilizes Exception 2 of Section 11.4.8 (ASCE 7-16).

SHALLOW FOUNDATIONS

Subgrade Preparation

It is anticipated that the proposed new stairs will be supported by a shallow foundation embedded and founded entirely within the Point Loma Formation. It is our opinion that competent Point Loma Formation is present at the anticipated locations of shallow foundations between approximately Elevation -2 to 1 feet, corresponding to depths of 2 to 4 feet below ground surface. The shallow foundation excavation should extend a minimum of 6 inches into competent Point Loma Formation, to reduce the long-term potential for undermining of the foundation. We recommend that a member from our firm observe the exposed subgrade within the limits of the footing excavations during construction and prior to placing the reinforcing steel in order to confirm that bearing surfaces have been prepared or to provide recommendations for removal of weak or unsuitable material.

Shallow Foundations

We recommend that shallow foundations (footings) be embedded a minimum of 6 inches into the competent Point Loma Formation. We recommend that foundations founded entirely within competent Point Loma Formation be designed using an allowable soil-bearing pressure of 2,500 pounds per square foot (psf). These bearing pressures should be applied to the total of dead and long-term live loads and may be increased by one-third when considering total loads, including earthquake or wind loads. This is a net bearing pressure; the weight of the footing and overlying backfill can be ignored in calculating footing sizes. Higher bearing pressures, if required, can be achieved with additional criteria on footing embedment and bearing surface preparation.

The post-construction static settlement of shallow footings supported as recommended above is estimated to be less than 1 inch. Postconstruction differential static settlement is estimated to be less than ½ inch between foundation elements approximately 30 feet apart. These static settlements are expected based on typical bearing surface disturbance and should be expected to occur rapidly, essentially as the loads are applied.

Lateral foundation loads may be resisted by passive resistance on the sides of the footings and by friction on the base of the footings. For footings supported on competent Point Loma Formation, the allowable frictional resistance may be computed using an allowable coefficient of friction of 0.35 applied to vertical dead load forces.

The allowable passive resistance may be computed using an equivalent fluid density of 115 pounds per cubic foot (pcf). The allowable passive resistance is for horizontal soil conditions in front of the footing and is applicable provided that the footings are surrounded by compacted structural fill. These allowable frictional resistance and passive resistance values include a factor of safety of about 1.5. The passive earth pressure and friction components may be combined provided that the frictional resistance be reduced by 50 percent, considering the deformation required for full passive resistance mobilization. The passive earth pressure value is based on the assumptions that the adjacent grade is level and free water levels are present above the base of the footing throughout the year. The top 2 feet of soil should be neglected when calculating passive lateral earth pressures unless the area adjacent to the foundation is covered with pavement or slab-on-grade. Passive pressure should also be neglected in soils prone to wave-based erosion.

STEM WALL DESIGN

We understand that the proposed walkway will be backfilled by structural fill placed above the shallow foundations and below the stairs.

Stem Wall Design Parameters

Stem walls should be designed to withstand soil pressures. Lateral soil pressures acting on walls will depend on the amount of lateral wall movement that occurs as backfill is placed. For walls free to yield at the top at least one-thousandth of the wall height (i.e., wall height times 0.001), active soil pressures may be used. If walls are restrained, at-rest pressures should be used. We recommend the walls to be designed using the equivalent fluid weights provided in Table 2, below. These values assume non-expansive backfill and saturated conditions.

TABLE 2. LATERAL EARTH PRESSURES

CONDITION	LEVEL BACKFILL BEHIND WALL
Active (Triangular Distribution, Equivalent Fluid Weight [pcf])	82
At-Rest (Triangular Distribution, Equivalent Fluid Weight [pcf])	91
Seismic (Uniform Rectangular Distribution [psf])[2]	21*H

Notes:

[1] Soil parameters developed based on backfill unit weight of 120 pcf and include the effects of hydrostatic pressure.

[2] Seismic surcharge calculated using Mononobe-Okabe method with a k_h of 0.39, equal to one half of the site modified peak ground acceleration, PGA_M.

Lateral earth pressures have been provided for level backfill behind the retaining wall. If sloped backfill is being considered for backfill behind the proposed retaining walls, GeoEngineers should provide updated lateral earth pressures for stem wall design.

Surcharge pressures induced by heavy equipment or loads behind the retaining wall have not been evaluated. If needed, we can provide recommendations regarding surcharge pressures acting on retaining walls on a case-by-case basis.

Fill Material and Placement

The workability of material for use as structural fill will depend on the gradation and moisture content of the soil. Material used for structural fill should be free of debris, organic contaminants, and rock fragments larger than 3 inches. Structural fill should consist of poorly graded or well-graded sand and gravel with fines content of less than 5 percent. The fill material used should have a very low to low expansion index (Elevation = 20 or less) as defined by ASTM D 4829. Other materials or gradations can be considered on a case-by-case basis.

In order to prevent overstressing the concrete retaining walls and causing bulging or rotation during construction, we recommend that the structural fill placed against the back of the wall be compacted within the range of 90 to 92 percent of the Maximum Dry Density (MDD) estimated in general accordance with ASTM D 1557, and the use of light compaction equipment. Backfill should be placed after the concrete has had sufficient time to cure and develop the necessary strength. In general, structural fill should be placed in loose lifts not exceeding 12 inches in thickness. The actual lift thickness will depend on the structural fill material used and the type and size of compaction equipment.

Temporary Slopes and Neighboring Structures

Temporary cut slopes may be utilized at the site during construction. Regardless of the soil types encountered in the excavation, either shoring, trench boxes and/or temporary slopes will be required for excavations deeper than 4 feet under the Occupational Safety and Health Administration (OSHA) guidelines. The stability of open-cut slopes is a function of soil type, groundwater level, slope inclination and nearby surface loads. The use of inadequately designed open cuts could impact the stability of adjacent structures and existing utilities and endanger personnel. Construction site safety is generally the responsibility of the contractor, who also is solely responsible for the means, methods, and sequencing of the construction operations and choices regarding temporary excavations and shoring.

The guidelines allow temporary slopes for excavations less than 20 feet deep, from 0.75H:1V (Horizontal to Vertical) to 1.5H:1V depending upon soil type. The guidelines assume that surface loads such as construction equipment and storage loads will be kept a sufficient distance away from the top of the cut so that the stability of the excavation is not affected. Based on our explorations and experience in the immediate area, the native marine beach deposits through which water freely seeps would be "Type C" by definition and should have a maximum a temporary maximum slope angle of 1.5H:1V based on the guidelines.

Structural plans pertaining to the existing seaward-facing seawalls associated with the Marine Room Restaurant at 2000 Spindrift Drive and the residential structure 1920 Spindrift Drive were not available at the time of writing this letter report.

<u>New construction work must be conducted in a manner that does not negatively impact the integrity of, or undermine, the existing seawalls or structures.</u> We recommend that project specifications include a requirement that the contractor pothole to expose the top or edge of adjacent foundations prior to mass excavation. If adjacent footings are not founded on firm rock, GeoEngineers should be retained to provide underpinning recommendations, as needed.

Limitations

We have prepared this report for the exclusive use of Moffatt & Nichol and members of the design team for the Spindrift Drive Beach Access Walkway property in La Jolla, California. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Please refer to Appendix B "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

References

American Society of Civil Engineers, 2016. “ASCE 7-16, Minimum Design Loads for Buildings and Other Structures.”

California Building Standards Commission. 2022. “California Building Code, California Code of Regulations Title 24.”

California Geological Survey, 2021. “Earthquake Zones of Required Investigation, La Jolla Quadrangle”.

Kennedy, M.P., and Tan, S.S., 2008, Geologic map of the San Diego 30' x 60' quadrangle, California: California Geological Survey, Regional Geologic Map RGM-3, scale 1:100,000.

City of San Diego, 2008, San Diego Seismic Safety Study, Geologic Hazards and Faults, Grid 30.

U.S. Geological Survey California Geological Survey, Quaternary fault and fold database for the United States, accessed July 24, 20124, at: https://www.usgs.gov/natural-hazards/earthquake-hazards/faults.

Closing

We trust this letter serves your current needs. Please call if you have any questions or require additional information.

Sincerely,
GeoEngineers, Inc.

Taylor M. Gater, PE
Project Geotechnical Engineer

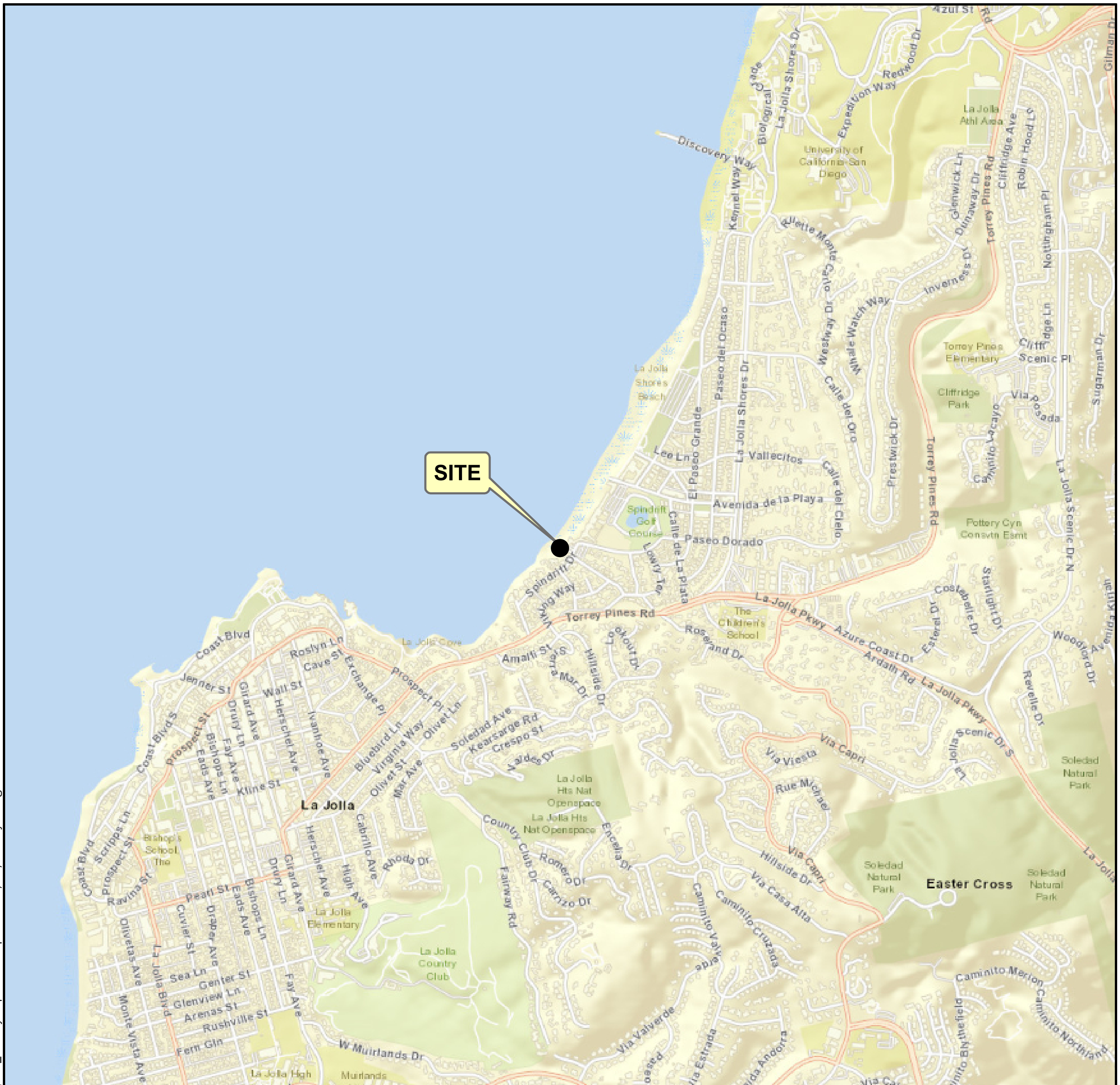
Arash Pirouzi, PhD, PE
Senior Geotechnical Engineer

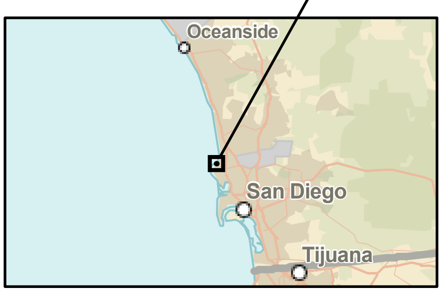
Matthew D. Martinez, PG, CEG
Senior Engineering Geologist

Lyle J. Stone, PE, GE
Associate Geotechnical Engineer

TMG:AP:MDM:LJS:leh

Attachments:
Figure 1. Vicinity Map
Figure 2. Site Plan
Figure 3. Geologic Map
Figure 4. Regional Fault Map
Figure 5. Seismic Safety Study Map
Appendix A. Field Explorations
Figure A-1. Key to Exploration Logs
Figure A-2 to A-7. Logs of Borings
Appendix B. Report Limitations and Guidelines for Use





N

0 2,000

Feet

Source(s):
- ESRI

Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet

Disclaimer: This figure was created for a specific purpose and project. Any use of this figure for any other project or purpose shall be at the user's sole risk and without liability to GeoEngineers. The locations of features shown may be approximate. GeoEngineers makes no warranty or representation as to the accuracy, completeness, or suitability of the figure, or data contained therein. The file containing this figure is a copy of a master document, the original of which is retained by GeoEngineers and is the official document of record.

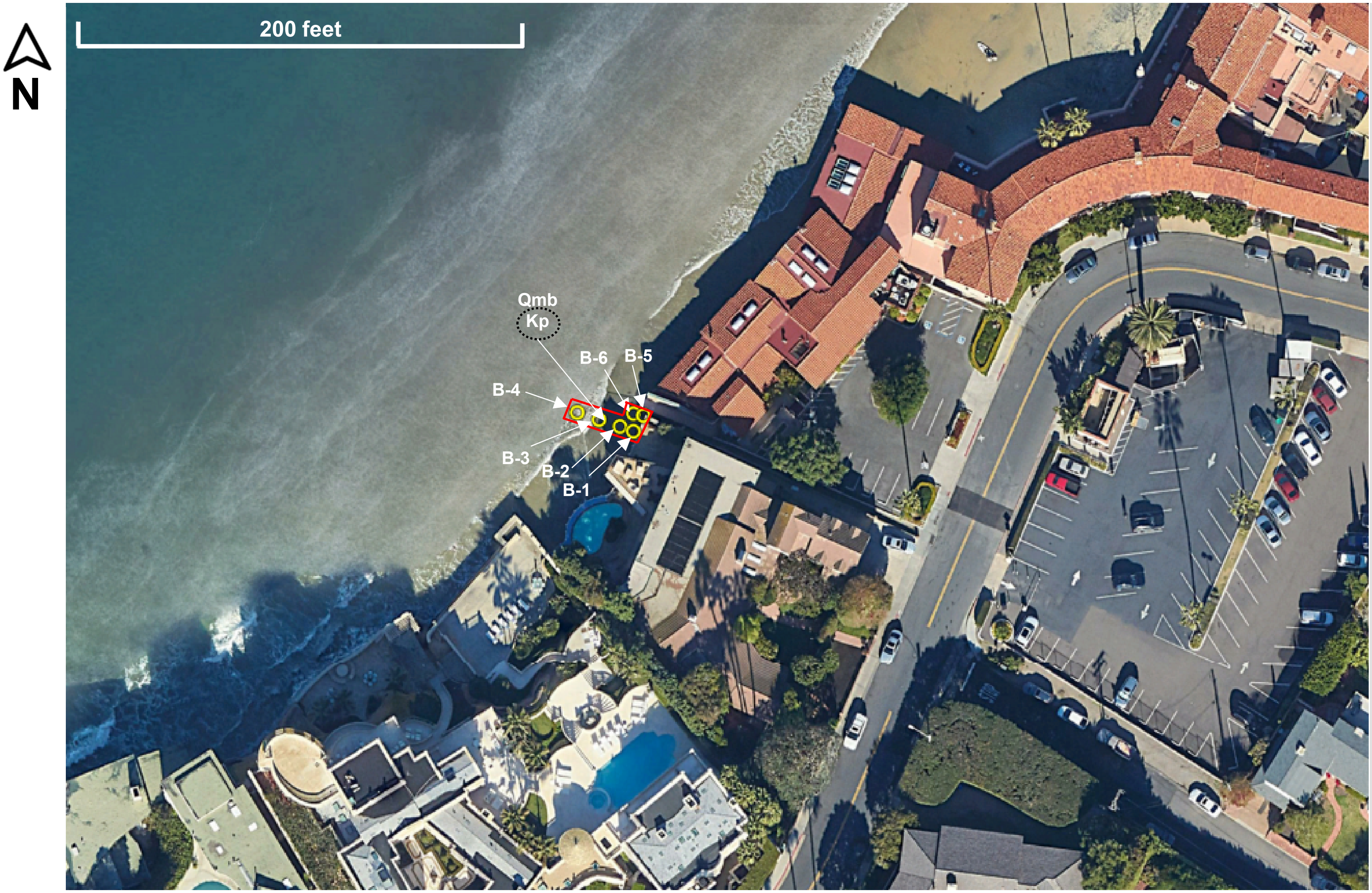
Vicinity Map

Spindrift Drive Access Walkway
La Jolla, California

GEOENGINEERS

Figure 1

P:\25\25290006\GIS\25290006_Project\25290006_Project.aprx\2529000600_F01_VicinityMap Date Exported: 07/18/24 by maugust



Legend

- Manually advanced hand auger boring
- Limits of site investigation

Geologic Units (circled where buried)

Qmb	Marine Beach Deposits
Kp	Point Loma Formation

Disclaimer: This figure was created for a specific purpose and project. Any use of this figure for any other project or purpose shall be at the user's sole risk and without liability to GeoEngineers. The locations of features shown may be approximate. GeoEngineers makes no warranty or representation as to the accuracy, completeness, or suitability of the figure, or data contained therein. The file containing this figure is a copy of a master document, the original of which is retained by GeoEngineers and is the official document of record.

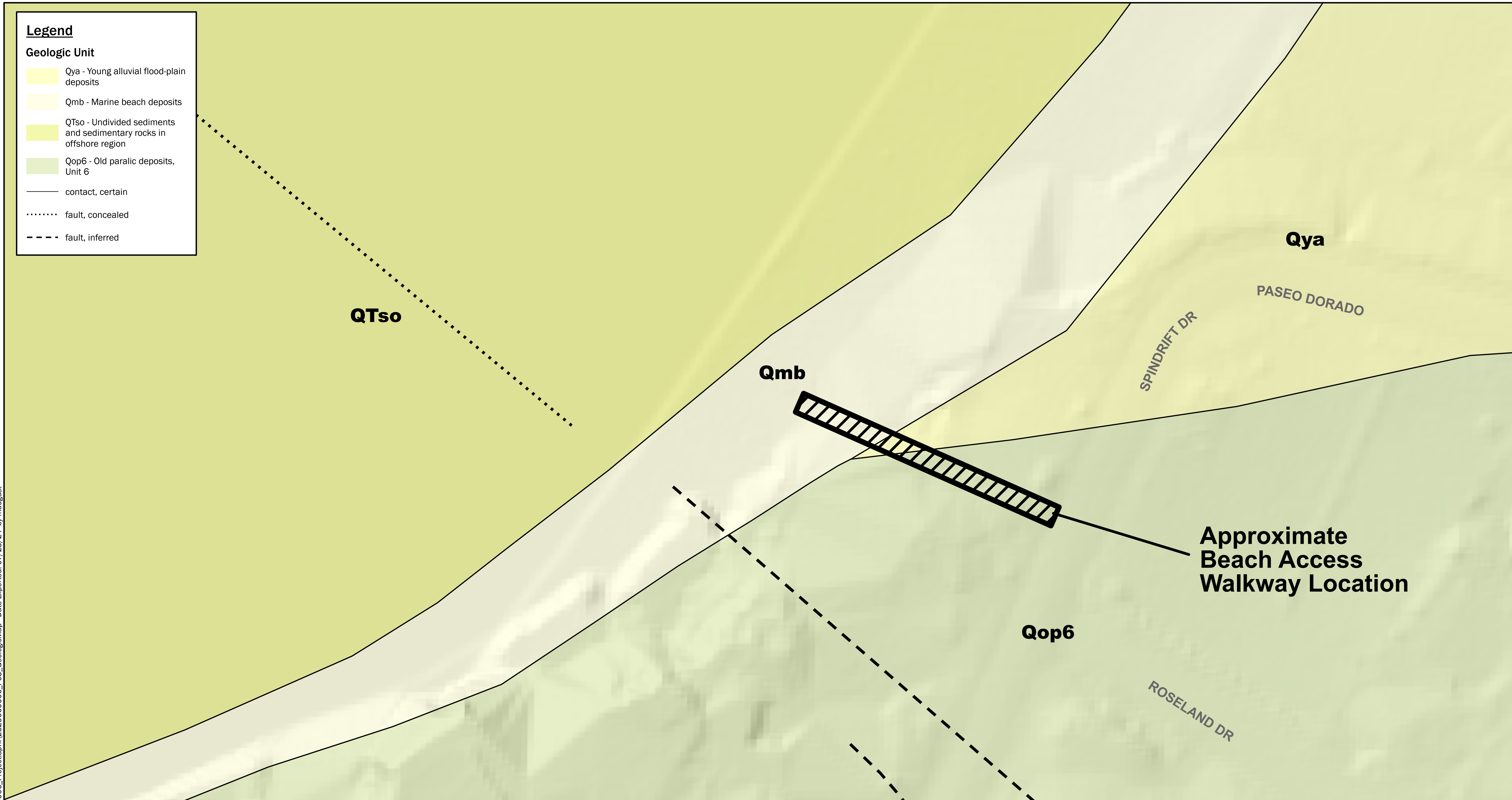
Data Source: Google (2024)

Site Plan

Spindrift Drive Access Walkway
La Jolla, California

GeoEngineers

Figure 2



Source(s):
• Michael P. Kennedy and Siang S. Tan, Geologic Map of the San Diego 30' x 60' Quadrangle, California Regional Geologic Map Series, 1:100,000 Scale, 2008

Coordinate System: NAD 1983 StatePlane California VI FIPS 0406 Feet

Disclaimer: This figure was created for a specific purpose and project. Any use of this figure for any other project or purpose shall be at the user's sole risk and without liability to GeoEngineers. The locations of features shown may be approximate. GeoEngineers makes no warranty or representation as to the accuracy, completeness, or suitability of the figure, or data contained therein. The file containing this figure is a copy of a master document, the original of which is retained by GeoEngineers and is the official document of record.

N

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Feet

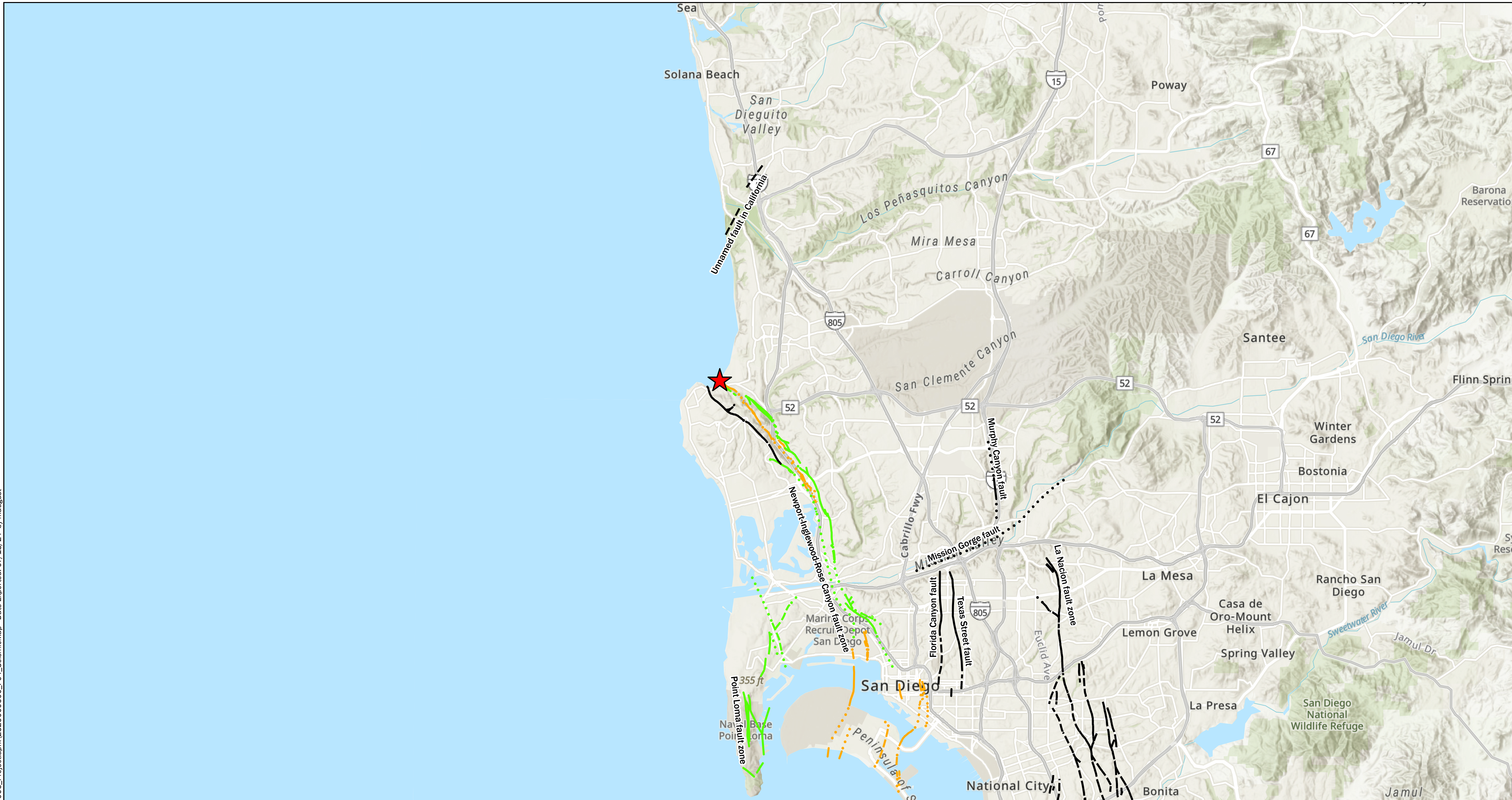
Geologic Map

Spindrift Drive Access Walkway
La Jolla, California

GeoEngineers

Figure 3

P:\25\25290006\GIS\25290006_Project\25290006_Project.aprx\2529000600_F03_GeologicMap Date Exported: 07/23/24 by maugust



Legend

Spindrift Drive Access Walkway

Quaternary Faults
Based on time of most recent surface deformation
- latest Quaternary (<15,000 years), well constrained location
- latest Quaternary (<15,000 years), moderately constrained location
- latest Quaternary (<15,000 years), inferred location
- late Quaternary (<130,000 years), well constrained location
- late Quaternary (<130,000 years), moderately constrained location
- late Quaternary (<130,000 years), inferred location
- undifferentiated Quaternary(<1.6 million years), well constrained location
- undifferentiated Quaternary(<1.6 million years), moderately constrained location
- undifferentiated Quaternary(<1.6 million years), inferred location

Data Source: USGS. ESRI.

N

0 3
Miles

Regional Fault Map

Spindrift Drive Access Walkway
La Jolla, California

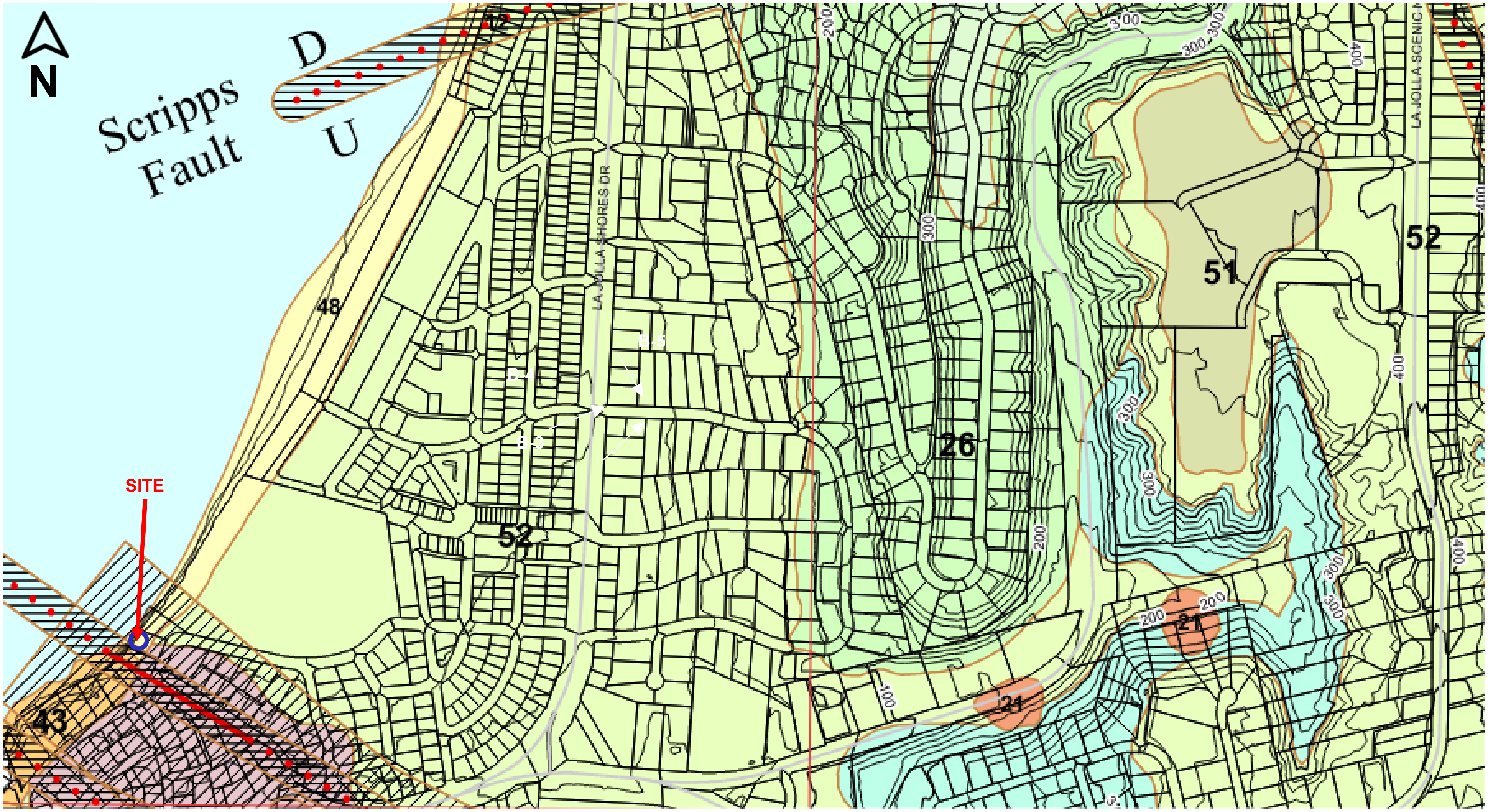
GEOENGINEERS

Figure 4

P:\25\25290006\GIS\25290006_Project.aprx\2529000600_F04_SeismicMap Date Exported: 07/18/24 by maugust

Notes:

25290-006-00 Date Exported: 07/25/2024



Legend

FAULT ZONES

- 11 Active, Alquist-Priolo Earthquake Fault Zone
- 12 Potentially Active, Inactive, Presumed Inactive, or Activity Unknown

LANDSLIDES

- 21 Confirmed, known, or highly suspected

COASTAL BLUFFS

- 43 Generally unstable Unfavorable jointing, local high erosion
- 48 Generally stable Broad beach areas, developed harbor

SLIDE-PRONE FORMATIONS

- 25 Ardath: neutral or favorable geologic structure
- 26 Ardath: unfavorable geologic structure
- 27 Otay, Sweetwater, and others

OTHER TERRAIN

- 51 Level mesas -- underlain by terrace deposits and bedrock nominal risk
- 52 Other level areas, gently sloping to steep terrain, favorable geologic structure, Low risk

Disclaimer: This figure was created for a specific purpose and project. Any use of this figure for any other project or purpose shall be at the user's sole risk and without liability to GeoEngineers. The locations of features shown may be approximate. GeoEngineers makes no warranty or representation as to the accuracy, completeness, or suitability of the figure, or data contained therein. The file containing this figure is a copy of a master document, the original of which is retained by GeoEngineers and is the official document of record.

Data Source: City of San Diego, Seismic Safety Study, Geologic Hazards and Faults, dated 3 April 2008.

Not to scale.

Seismic Safety Study Map

Spindrift Drive Access Walkway
La Jolla, California

GEOENGINEERS

Figure 5

Appendix A
Field Explorations

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

Sampler Symbol Descriptions

- Modified California Sampler (6-inch sleeve) or Dames & Moore
- Standard Penetration Test (SPT)
- Shelby tube
- Piston
- Direct-Push
- Bulk or grab
- Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata

Approximate contact between soil strata

Material Description Contact

Contact between geologic units

Contact between soil of the same geologic unit

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PL	Point load test
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
UU	Unconsolidated undrained triaxial compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

Key to Exploration Logs

GeoEngineers

Figure A-1

Rev. 03/2024

Date Excavated	6/24/2024	Total Depth (ft)	2	Logged By	YD	Excavator		Groundwater not observed
				Checked By	MM	Equipment	Hand Auger	See "Remarks" section for caving observed

Surface Elevation (ft)	3	Latitude	32.852142	Coordinate System	Decimal Degrees
Vertical Datum	NGVD29	Longitude	-117.261206	Horizontal Datum	WGS84 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
					SP-SM	Gray poorly graded sand with silt (very loose, moist) (Quaternary Marine Beach Deposits, Qmb)			
2	1					Becomes wet			Caving/collapse of excavation
1	2					Practical refusal on concrete			

Notes: See Figure A-1 for explanation of symbols.
The depths on the hand-augered boring logs are based on an average of measurements across the hand-auger and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on Topographic Survey completed by GIS Surveyors, Inc..

Log of Hand Auger B-1

GEOENGINEERS

Project: Sprindrift Access Stair Way
Project Location: La Jolla, California
Project Number: 25290-006-00

Figure A-2
Sheet 1 of 1

Date Excavated	6/24/2024	Total Depth (ft)	3	Logged By	YD	Excavator		Groundwater not observed
				Checked By	MM	Equipment	Hand Auger	See "Remarks" section for caving observed

Surface Elevation (ft)	3	Latitude	32.85215	Coordinate System	Decimal Degrees
Vertical Datum	NGVD29	Longitude	-117.261228	Horizontal Datum	WGS84 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
3	0				SP-SM	Gray poorly graded sand with silt (very loose, moist) (Quaternary Marine Beach Deposits, Qmb)			
2	1								
1	2					Becomes wet			Caving/collapse of excavation
0	3					Practical refusal on Cretaceous Point Loma Formation (Kp)			

Notes: See Figure A-1 for explanation of symbols.
The depths on the hand-augered boring logs are based on an average of measurements across the hand-auger and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on Topographic Survey completed by GIS Surveyors, Inc..

Log of Hand Auger B-2

GeoEngineers

Project: Sprindrift Access Stair Way
Project Location: La Jolla, California
Project Number: 25290-006-00

Date Excavated	6/24/2024	Total Depth (ft)	3.5	Logged By	YD	Excavator	Groundwater not observed
				Checked By	MM	Equipment Hand Auger	See "Remarks" section for caving observed

Surface Elevation (ft)	2	Latitude	32.852158	Coordinate System	Decimal Degrees
Vertical Datum	NGVD29	Longitude	-117.261258	Horizontal Datum	WGS84 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				SP-SM	Gray poorly graded sand with silt (very loose, moist) (Quaternary Marine Beach Deposits, Qmb)			
1	1								
0	2								
						Becomes wet			Caving/collapse of excavation
-1	3								
	3.5					Practical refusal on Cretaceous Point Loma Formation (Kp)			

Notes: See Figure A-1 for explanation of symbols.
The depths on the hand-augered boring logs are based on an average of measurements across the hand-auger and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on Topographic Survey completed by GIS Surveyors, Inc..

Log of Hand Auger B-3

GeoEngineers

Project: Sprindrift Access Stair Way
Project Location: La Jolla, California
Project Number: 25290-006-00

Date Excavated	6/24/2024	Total Depth (ft)	4	Logged By	YD	Excavator		Groundwater not observed
				Checked By	MM	Equipment	Hand Auger	See "Remarks" section for caving observed

Surface Elevation (ft)	2	Latitude	32.852167	Coordinate System	Decimal Degrees
Vertical Datum	NGVD29	Longitude	-117.261289	Horizontal Datum	WGS84 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0				SP-SM	Gray poorly graded sand with silt (very loose, moist) (Quaternary Marine Beach Deposits, Qmb)			
1	1								
0	2								
-1	3					Becomes wet			Caving/collapse of excavation
-2	4					Practical refusal on Cretaceous Point Loma Formation (Kp)			

Notes: See Figure A-1 for explanation of symbols.
The depths on the hand-augered boring logs are based on an average of measurements across the hand-auger and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on Topographic Survey completed by GIS Surveyors, Inc..

Log of Hand Auger B-4

GeoEngineers

Project: Sprindrift Access Stair Way
Project Location: La Jolla, California
Project Number: 25290-006-00

Date Excavated	6/24/2024	Total Depth (ft)	3	Logged By	YD	Excavator		Groundwater not observed
				Checked By	MM	Equipment	Hand Auger	See "Remarks" section for caving observed

Surface Elevation (ft)	4	Latitude	32.852161	Coordinate System	Decimal Degrees
Vertical Datum	NGVD29	Longitude	-117.261192	Horizontal Datum	WGS84 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
					SP-SM	Gray poorly graded sand with silt (very loose, moist) (Quaternary Marine Beach Deposits, Qmb)			
3	1								
2	2					Becomes wet			Caving/collapse of excavation
1	3								
						Practical refusal on Cretaceous Point Loma Formation (Kp)			

Notes: See Figure A-1 for explanation of symbols.
The depths on the hand-augered boring logs are based on an average of measurements across the hand-auger and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on Topographic Survey completed by GIS Surveyors, Inc..

Log of Hand Auger B-5

GeoEngineers

Project: Sprindrift Access Stair Way
Project Location: La Jolla, California
Project Number: 25290-006-00

Figure A-6

Date Excavated	6/24/2024	Total Depth (ft)	2	Logged By	YD	Excavator		Groundwater not observed
				Checked By	MM	Equipment	Hand Auger	See "Remarks" section for caving observed

Surface Elevation (ft)	3	Latitude	32.852164	Coordinate System	Decimal Degrees
Vertical Datum	NGVD29	Longitude	-117.261206	Horizontal Datum	WGS84 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name / Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
					SP-SM	Gray poorly graded sand with silt (very loose, moist) (Quaternary Marine Beach Deposits, Qmb)			
2	1					Becomes wet			Caving/collapse of excavation
1	2					Practical refusal on Cretaceous Point Loma Formation (Kp)			

Notes: See Figure A-1 for explanation of symbols.
The depths on the hand-augered boring logs are based on an average of measurements across the hand-auger and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on Topographic Survey completed by GIS Surveyors, Inc..

Log of Hand Auger B-6

GEOENGINEERS

Project: Sprindrift Access Stair Way
Project Location: La Jolla, California
Project Number: 25290-006-00

Figure A-7
Sheet 1 of 1

Appendix B

Report Limitations and Guidelines for Use

Appendix B
Report Limitations and Guidelines For Use[2]

This appendix provides information to help you manage your risks with respect to the use of this report.

GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES, PERSONS AND PROJECTS

This report has been prepared for the exclusive use of Moffett & Nichol (Client) and project team members for the Spindrift Drive Beach Access Walkway project in La Jolla, California. This report may be made available to prospective contractors for their bidding or estimating purposes, but our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Because each geotechnical or geologic study is unique, each geotechnical engineering or geologic report is unique, prepared solely for the specific client and project site. Our report is prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with which there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted geotechnical practices in this area at the time this report was prepared. This report should not be applied for any purpose or project except the one originally contemplated.

A GEOTECHNICAL ENGINEERING OR GEOLOGIC REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

This report has been prepared for the Spindrift Drive Beach Access Walkway project in La Jolla, California. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- Not prepared for you,
- Not prepared for your project,
- Not prepared for the specific site explored, or
- Completed before important project changes were made.

For example, changes that can affect the applicability of this report include those that affect:

---

[2] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

- The function of the proposed structure;
- Elevation, configuration, location, orientation or weight of the proposed structure;
- Composition of the design team; or
- Project ownership.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

SUBSURFACE CONDITIONS CAN CHANGE

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying a report to determine if it remains applicable.

MOST GEOTECHNICAL AND GEOLOGIC FINDINGS ARE PROFESSIONAL OPINIONS

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

GEOTECHNICAL ENGINEERING REPORT RECOMMENDATIONS ARE NOT FINAL

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from GeoEngineers' professional judgment and opinion. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for this report's recommendations if we do not perform construction observation.

Sufficient monitoring, testing and consultation by GeoEngineers should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

A GEOTECHNICAL ENGINEERING OR GEOLOGIC REPORT COULD BE SUBJECT TO MISINTERPRETATION

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having GeoEngineers confer with appropriate members of the design team after submitting the report. Also retain GeoEngineers to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having GeoEngineers participate in pre-bid and preconstruction conferences, and by providing construction observation.

DO NOT REDRAW THE EXPLORATION LOGS

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognize that separating logs from the report can elevate risk.

GIVE CONTRACTORS A COMPLETE REPORT AND GUIDANCE

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

CONTRACTORS ARE RESPONSIBLE FOR SITE SAFETY ON THEIR OWN CONSTRUCTION PROJECTS

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and to adjacent properties.

READ THESE PROVISIONS CLOSELY

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or site.

GEOTECHNICAL, GEOLOGIC AND ENVIRONMENTAL REPORTS SHOULD NOT BE INTERCHANGED

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

BIOLOGICAL POLLUTANTS

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants and no conclusions or inferences should be drawn regarding Biological Pollutants, as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

If Client desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.

Appendix F – Storm Drain CCTV Report

GPRS

GPRS Inc.
, San Diego
Tel. 760-859-9846
Joe.Whitaker@gprsinc.com

Table of Contents

Project		
MOFFATT AND NICHOL_1920 SPINDRIFT DR_6.19.2024		6/19/2024

GPRS Inc.
, San Diego
Tel. 760-859-9846
Joe.Whitaker@gprsinc.com

Project Information

Project		
MOFFATT AND NICHOL_1920 SPINDRIFT DR_6.19.2024		6/19/2024

Contractor

Name:	GPRS Inc.
:	Joe Whitaker
:	Video Pipe Inspection
:	
City:	San Diego
:	760-859-9846
:	
:	
:	Joe.Whitaker@gprsinc.com

GPRS Inc.
, San Diego
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Joe.Whitaker@gprsinc.com

Project Summary

Project	Project Number	Project Date
MOFFATT AND NICHOL_1920 SPINDRIFT DR_6.19.2024		6/19/2024

Pipe Summary

No.	Type	Pipe Name	Upstream Node	Downstream Node	Road	Town	Use	Mat.	Profile	Length
1	SEC	6/19/2024 8:38:47 AM	SDCB1	LINE OUTFALL	1920 Spindrift Drive	La Jolla	SW	RCP	Circular 18inch	114.86
									Total:	114.86

Pipe Levels

No.	Pipe Name	Upstream Node	Upstream C.L.	Upstream I.L.	Upstream I.D.	Downstream Node	Downstream C.L.	Downstream I.L.	Downstream I.D.
1	6/19/2024 8:38:47 AM	SDCB1			0.000	LINE OUTFALL			0.000

Pipe Summary by Profile

Profile		Total Length	No. Pipes
Circular 18inch		114.86	
Circular 18inch	=	114.86	1
Total	=	**114.86**	**1**

Inspection Summary

Pipe No.	Insp. No.	Upstream Node	Downstream Node	Dir.	Operator	Insp. Date	Insp. Time	Str	Ser	Final Observation	Length
1	1	SDCB1	LINE OUTFALL	DS	Joseph Whitaker	06/19/2024	8:41	2	2	MSA, SURVEY ABANDONED 3'-4' FROM LINE OU	114.86
										Total:	114.86

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Project Summary

Project	Project Number	Project Date
MOFFATT AND NICHOL_1920 SPINDRIFT DR_6.19.2024		6/19/2024

Inspection Summary by Profile

Profile		Total Length	No. Inspections
Circular 18inch		114.86	
Circular 18inch	=	114.86	1
Total	=	**114.86**	**1**

Defect Summary

CCTV Drainage Survey Observation Count

				General				Structural Condition									Service Condition						Misc	
Sect. No.	Insp. No.	Upstream Node	Downstream Node	Insp. Length	No. Grade 4/5 Obs.	Survey Abandoned	Camera Under Water	Cracks	Fractures	Broken	Deformed	Collapsed	Holes	Surface Damage	Displaced Joints	Open Joints	Roots	Infiltration	Encrustation	Silt	Grease	Obstruction	Water Level	Line Deviates
1	1	SDCB1	LINE OUTFALL	114.9	1			1	5					2			1							
			Total:	114.9	1			1	5					2			1							

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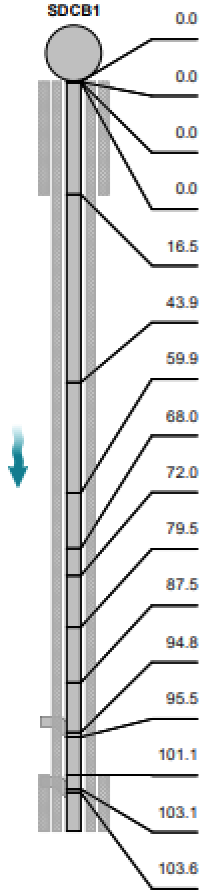
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
6/19/2024			**JOSEPH WHITAKER**	**P0042713-052023**	**6/19/2024 8:38:47 AM**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Not Known	**Downstream**		**114.9 '**	**114.9 '**

City:	**LA JOLLA**	Drainage Area:		Upstream MH:	**SDCB1**
Street:	**1920 SPINDRIFT DRIVE**	Media Label:		Up Rim to Invert:	**0.0**
Location Code:		Flow Control:		Downstream MH:	**LINE OUTFALL**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Stormwater Pipe**	Total gallons used:	**0.0**
Pipe size:	**18 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Reinforced Concrete Pipe**	Purpose:		Joints failed:	**0**
Lining Method:		Owner:			
Additional Info:					



Distance		Code	Observation	Counter	Photo	Grade
0.0		ACB	Catch Basin / SDCB1	00:00:00	6_19_2024 8_38_47 AM_1f266	
0.0		MWL	Water Level, 5% of the vertical dimension	00:00:13	6_19_2024 8_38_47 AM_58955	
0.0	S01	DSZ	Deposits Settled Other, 10% of cross sectional area from 5 o'clock to 7 o'clock, Start / GRAVEL, SAND AND MOSS	00:01:09	6_19_2024 8_38_47 AM_c935e	
0.0	S02	SSS	Surface Damage Spalling from 12 o'clock to 12 o'clock, Start / PATCHY SPALLING ON LINE SURFACE	00:01:22	6_19_2024 8_38_47 AM_95290	
16.5	F01	DSZ	Deposits Settled Other, 10% of cross sectional area from 5 o'clock to 7 o'clock, Finish / GRAVEL, SAND AND MOSS	00:04:07	6_19_2024 8_38_47 AM_3caa1	
43.9		FM	Fracture Multiple from 2 o'clock to 6 o'clock	00:08:43	6_19_2024 8_38_47 AM_0f726	
59.9		FC	Fracture Circumferential from 9 o'clock to 2 o'clock, within 8 inch	00:11:39	6_19_2024 8_38_47 AM_79d5b	
68.0		FC	Fracture Circumferential from 11 o'clock to 4 o'clock, within 8 inch	00:13:06	6_19_2024 8_38_47 AM_24de2	
72.0		RFJ	Roots Fine Joint from 6 o'clock to 7 o'clock, within 8 inch	00:13:52	6_19_2024 8_38_47 AM_1c873	
79.5		FC	Fracture Circumferential from 6 o'clock to 9 o'clock, within 8 inch	00:17:20	6_19_2024 8_38_47 AM_ebbea	
87.5		CM	Crack Multiple from 3 o'clock to 9 o'clock, within 8 inch	00:20:10	6_19_2024 8_38_47 AM_1f886	
94.8		TB	Tap Break-in/Hammer at 3 o'clock, dia/height: 10inch / PVC	00:21:24	6_19_2024 8_38_47 AM_766d6	
95.5		FC	Fracture Circumferential from 4 o'clock to 8 o'clock, within 8 inch	00:23:22	6_19_2024 8_38_47 AM_caed6	
101.1	S03	DSF	Deposits Settled Fine, 30% of cross sectional area from 4 o'clock to 8 o'clock, Start / INFILTRATION SAND FROM END OF LINE	00:23:52	6_19_2024 8_38_47 AM_b7add	
103.1		MLC	Miscellaneous Lining Change, Segmented Panel / UNKNOWN PLASTIC PATCH	00:26:03	6_19_2024 8_38_47 AM_962a7	
103.6		TB	Tap Break-in/Hammer at 4 o'clock, dia/height: 6inch / PVC	00:24:33	6_19_2024 8_38_47 AM_1d5b6	

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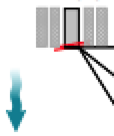
Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
6/19/2024			**JOSEPH WHITAKER**	**P0042713-052023**	**6/19/2024 8:38:47 AM**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Not Known	**Downstream**		**114.9 '**	**114.9 '**



1:825	Distance		Code	Observation	Counter	Photo	Grade
	114.9	F02	SSS	Surface Damage Spalling from 12 o'clock to 12 o'clock, Finish / PATCHY SPALLING ON LINE SURFACE	00:27:16	6_19_2024 8_38_47 AM_8c770	
	114.9	F03	DSF	Deposits Settled Fine, 30% of cross sectional area from 4 o'clock to 8 o'clock, Finish / INFILTRATION SAND FROM END OF LINE	00:27:21	6_19_2024 8_38_47 AM_bdee1	
	114.9		MSA	Miscellaneous Survey Abandoned / SURVEY ABANDONED 3'-4' FROM LINE OUTFALL DUE TO INFILTRATION SAND FROM END OF LINE SETTLED TO	00:27:42	6_19_2024 8_38_47 AM_b077e	

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
4131	4323	4431	61.0	19.0	80.0	2.1	2.7	2.2

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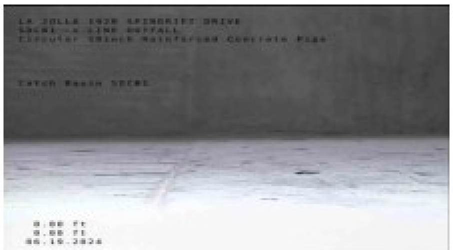
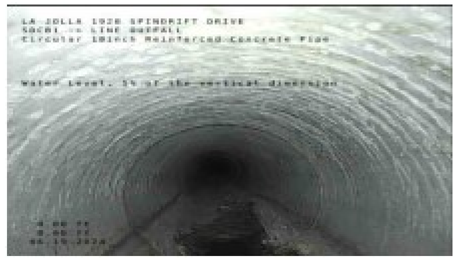
Section Pictures - 6/19/2024 - 6/19/2024 8:38:47 AM

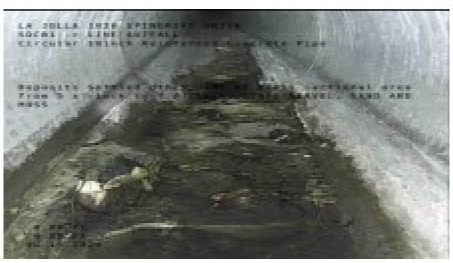
City	Street	Date	Lateral Segment Reference	Section No.
LA JOLLA	1920 SPINDRIFT DRIVE	6/19/2024	6/19/2024 8:38:47 AM	1



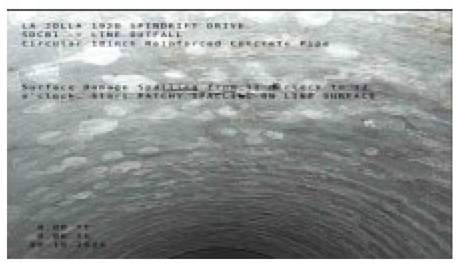
6_19_2024 8_38_47
AM_1f266963-8e54-4be9-a238-c8c29457738a_20240619_08
4108_356.jpg, 00:00:00, 0.00ft
Catch Basin / SDCB1



6_19_2024 8_38_47
AM_58955abf-561a-47ac-a215-6f621b38a6d6_20240619_08
4133_411.jpg, 00:00:13, 0.00ft
Water Level, 5% of the vertical dimension



6_19_2024 8_38_47
AM_c935e4ba-b6d6-4bf2-bb19-20621609d127_20240619_08
4327_146.jpg, 00:01:09, 0.00ft
Deposits Settled Other, 10% of cross sectional area from 5 o'clock to 7 o'clock, Start / GRAVEL, SAND AND MOSS



6_19_2024 8_38_47
AM_95290416-60cf-4410-b9a9-6b76657c0ae3_20240619_08
4425_591.jpg, 00:01:22, 0.00ft
Surface Damage Spalling from 12 o'clock to 12 o'clock, Start / PATCHY SPALLING ON LINE SURFACE

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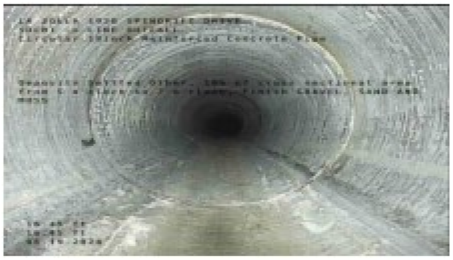
Section Pictures - 6/19/2024 - 6/19/2024 8:38:47 AM

City	Street	Date	Lateral Segment Reference	Section No.
LA JOLLA	**1920 SPINDRIFT DRIVE**	**6/19/2024**	**6/19/2024 8:38:47 AM**	**1**



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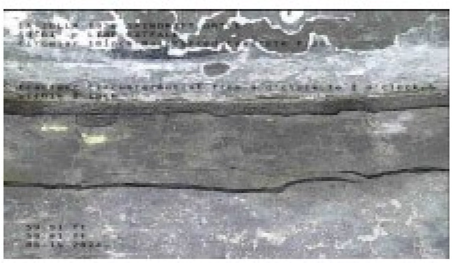
AM_3caa1bbd-c059-41bb-84b3-c3f17a6236ae_20240619_08
4718_082.jpg, 00:04:07, 16.45ft
Deposits Settled Other, 10% of cross sectional area from 5 o'clock to 7 o'clock, Finish / GRAVEL, SAND AND MOSS

6_19_2024 8_38_47
AM_0f726960-950d-4a27-bdab-65484b535c8c_20240619_08
5206_898.jpg, 00:08:43, 43.86ft
Fracture Multiple from 2 o'clock to 6 o'clock



6_19_2024 8_38_47
AM_79d5b197-3ead-4be2-a2c1-094cd389c15d_20240619_08
5526_624.jpg, 00:11:39, 59.91ft
Fracture Circumferential from 9 o'clock to 2 o'clock, within 8 inch

6_19_2024 8_38_47
AM_24de2c71-ad68-427b-a8a7-a4956208227b_20240619_08
5707_643.jpg, 00:13:06, 68.01ft
Fracture Circumferential from 11 o'clock to 4 o'clock, within 8 inch

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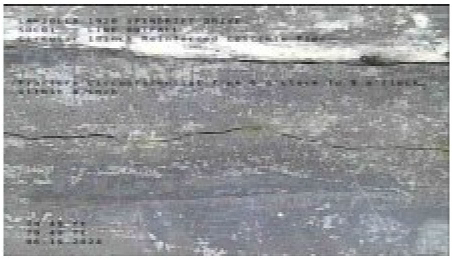
Section Pictures - 6/19/2024 - 6/19/2024 8:38:47 AM

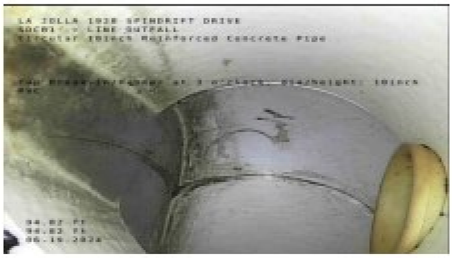
City	Street	Date	Lateral Segment Reference	Section No.
LA JOLLA	1920 SPINDRIFT DRIVE	6/19/2024	6/19/2024 8:38:47 AM	1

6_19_2024 8_38_47 AM_1c873789-e0ab-4fce-aedc-108457dd4125_20240619_085837_512.jpg, 00:13:52, 71.98ft
Roots Fine Joint from 6 o'clock to 7 o'clock, within 8 inch



6_19_2024 8_38_47 AM_ebbea3c3-e284-47a1-8a5f-781c465b12c0_20240619_090220_074.jpg, 00:17:20, 79.49ft
Fracture Circumferential from 6 o'clock to 9 o'clock, within 8 inch

6_19_2024 8_38_47 AM_1f8864a1-3f39-4ab7-a717-e3241505f7b3_20240619_090522_605.jpg, 00:20:10, 87.54ft
Crack Multiple from 3 o'clock to 9 o'clock, within 8 inch



6_19_2024 8_38_47 AM_766d60c6-9c16-4fe3-851d-6b8abd75ba58_20240619_090711_433.jpg, 00:21:24, 94.82ft
Tap Break-in/Hammer at 3 o'clock, dia/height: 10inch / PVC

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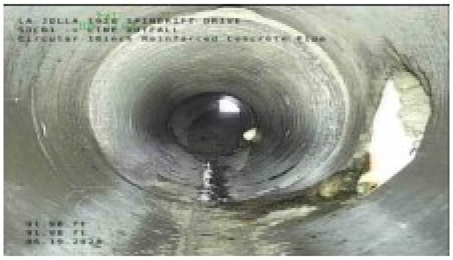
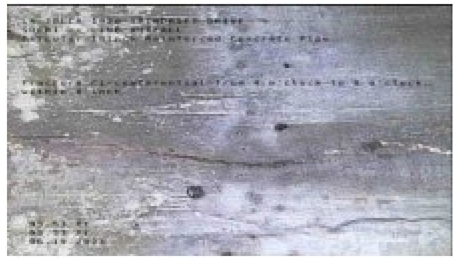
Section Pictures - 6/19/2024 - 6/19/2024 8:38:47 AM

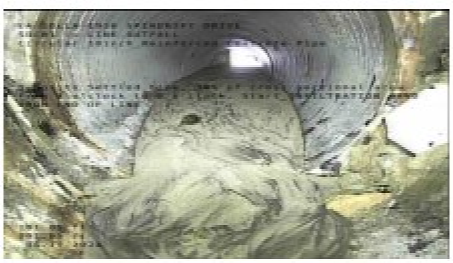
City	Street	Date	Lateral Segment Reference	Section No.
LA JOLLA	**1920 SPINDRIFT DRIVE**	**6/19/2024**	**6/19/2024 8:38:47 AM**	**1**



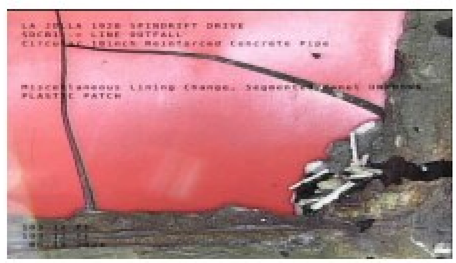
6_19_2024 8_38_47
AM_e3a77e7c-027d-4fd1-9f41-c945a03d9907_20240619_090735_259.jpg, 00:21:24, 94.82ft
Tap Break-in/Hammer at 3 o'clock, dia/height: 10inch / PVC



6_19_2024 8_38_47
AM_caed6832-be4d-403f-affc-bb08a0190e83_20240619_090952_269.jpg, 00:23:22, 95.53ft
Fracture Circumferential from 4 o'clock to 8 o'clock, within 8 inch



6_19_2024 8_38_47
AM_b7adda81-fe80-4bfe-80fe-d08caa6d08c1_20240619_091118_439.jpg, 00:23:52, 101.05ft
Deposits Settled Fine, 30% of cross sectional area from 4 o'clock to 8 o'clock, Start / INFILTRATION SAND FROM END OF LINE



6_19_2024 8_38_47
AM_962a7287-cbb1-4510-9ccb-3d07d8e623b8_20240619_091459_815.jpg, 00:26:03, 103.12ft
Miscellaneous Lining Change, Segmented Panel / UNKNOWN PLASTIC PATCH

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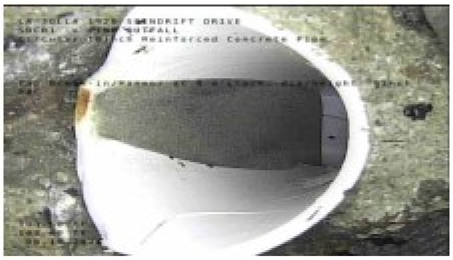
Section Pictures - 6/19/2024 - 6/19/2024 8:38:47 AM

City	Street	Date	Lateral Segment Reference	Section No.
LA JOLLA	1920 SPINDRIFT DRIVE	6/19/2024	6/19/2024 8:38:47 AM	1



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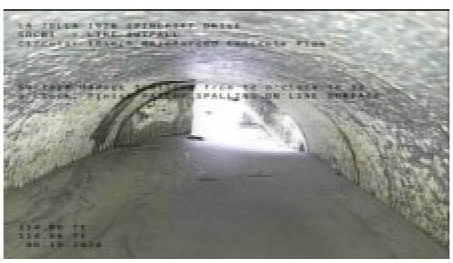
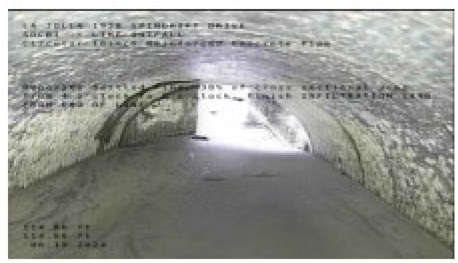
AM_1d5b6e31-1e33-4793-ad0d-9203de338e59_20240619_091241_307.jpg, 00:24:33, 103.60ft
Tap Break-in/Hammer at 4 o'clock, dia/height: 6inch / PVC

6_19_2024 8_38_47
AM_cf0abf57-eae2-4adf-a145-be4e861364bd_20240619_091306_024.jpg, 00:24:33, 103.60ft
Tap Break-in/Hammer at 4 o'clock, dia/height: 6inch / PVC



6_19_2024 8_38_47
AM_8c770fa7-19ed-4bc6-ada8-7ff79a8851d6_20240619_091617_299.jpg, 00:27:16, 114.85ft
Surface Damage Spalling from 12 o'clock to 12 o'clock, Finish / PATCHY SPALLING ON LINE SURFACE



6_19_2024 8_38_47
AM_bdee165d-46f5-4218-ac34-ac563d5f81eb_20240619_091630_270.jpg, 00:27:21, 114.86ft
Deposits Settled Fine, 30% of cross sectional area from 4 o'clock to 8 o'clock, Finish / INFILTRATION SAND FROM END OF LINE

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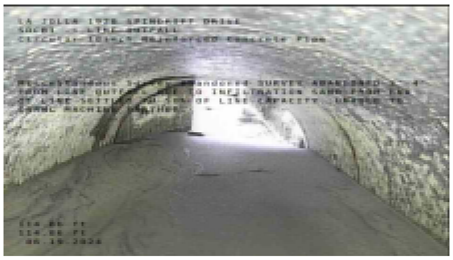
Section Pictures - 6/19/2024 - 6/19/2024 8:38:47 AM

City	Street	Date	Lateral Segment Reference	Section No.
LA JOLLA	**1920 SPINDRIFT DRIVE**	**6/19/2024**	**6/19/2024 8:38:47 AM**	**1**



6_19_2024 8_38_47 AM_b077e4a6-233a-49bf-a723-663587ef7489_20240619_091900_385.jpg, 00:27:42, 114.86ft
Miscellaneous Survey Abandoned / SURVEY ABANDONED 3'-4' FROM LINE OUTFALL DUE TO INFILTRATION SAND FROM END OF LINE SETTLED TO 50% OF LINE CAPACITY. UNABLE TO CRAWL MACHINE FARTHER.

Appendix G – Cultural Monitoring/Study Report

Cultural Resources Report Form

for

Spindrift Drive Beach Access Walkway,
Avenida de la Playa Project,
San Diego, California

Submitted to
City of San Diego
Engineering and Capital Projects Branch
525 B St., Suite 750, MS# 908A
San Diego, CA 92101

Prepared for
Moffat and Nichol
1660 Hotel Circle North # 500,
San Diego, CA 92108

Prepared by
Rebekah Loveless, M.A., RPA, Brandon Linton,
and Juliette Meling, M.A., RPA
Loveless Linton, Inc.
1421 W. Lewis Street
San Diego, CA 92103

Loveless Linton, Inc.
Cultural Preservation & Archaeology

August 12, 2024

I. PROJECT DESCRIPTION AND LOCATION

This report documents the results of the cultural resource monitoring conducted by Loveless Linton, Inc. for the Spindrift Drive Walkway Access, Avenida de la Playa Project, San Diego, California located along Roseland Drive west of the intersection with Spindrift Drive in the City of San Diego, California (Attachment C: Figure 1). Loveless Linton, Inc. was contracted by was contracted by Moffat and Nichol, 1660 Hotel Circle North # 500, San Diego, CA 92108, to conduct both archaeological and Native American monitoring (hereafter referred to as a single task- cultural resource monitoring). The City of San Diego is Lead Agency for carrying out the Project according to California Environmental Quality Act (CEQA).

The project area is shown on the *La Jolla* 7.5-minute USGS topographic quadrangle in Township 15S, Range 4W, Section 12. The Project sits at the approximate mean sea level. The surrounding area is a combination of commercial and residential development including residences, restaurants, and hotels.

The Project consists of the destruction and removal of the existing concrete walkway, and the construction of a curb inlet, and gutter for storm drain, and the construction and installation of a storm drain outlet at the end of the stairs. Cultural resource monitoring was conducted throughout the duration of the destruction and removal of the walkway and the excavation for the storm drain elements on June 24, 2024.

II. SETTING

NATURAL SETTING

The project area is within the western region of the Peninsular Ranges Province of San Diego with a climate classified as a semiarid cool steppe climate having average January low temperatures around 43° F, and average July high temperatures around 73° F (Pryde 2014: Figure 3.1). The Project lies along a previously constructed pedestrian stairway that leads directly to the sandy shore of the La Jolla Shores beach. The Project lies at the approximately mean seal level.

The Project area lies amongst Corralitos loamy sand (National map unit hbb1), that are characterized as deep and excessively drained loamy sands consisting mostly of fine- and medium-grained sand (USDA 2024) on top of unconsolidated and poorly consolidated Pleistocene sand, silt and clay deposits that mantle the modern seafloor (California Department of Conservation 2010).

The climate and the vegetal communities nearby the project area provide home to many animals, bird, reptile, and marine species. Some of these include cottontails, jackrabbits, gophers, skunks, a variety of rodents, opossums, racoons, bats, foxes, fence lizards, alligator lizards, skinks, sparrows, hawks, songbirds, abalone, clam, oyster, muscle, and scallop. Altogether, the various plant and creature species would have provided the Native

American communities of San Diego with ample resources; some of which are known today to have been used as edible and/or material resources (Kroeber 1976, Pryde 2014: Appendix 4.1).

CULTURAL SETTING

The Project lies within the ancestral territory of the Kumeyaay people. Though Kumeyaay is definitive in some literatures as an ethnic designation for the people of this region, it is a modern term used to refer to a large group of San Diego Native American tribes allowing for the formation anthropological narratives into a homogenized identity of a large group of people who were culturally, socially, and politically interconnected, though likely have more differences and nuances than documented and is thus a controversial term among some groups of local Native Americans. The collective term, Kumeyaay, however, will be used for the purposes of this report but shall remain noted for its generality in intent.

The Kumeyaay territory is unlike most Native American groups in that they have their regional and historical habitation split by the present-day international border of Mexico and the United States and are largely divided by reservations yet continue to identify with their Indigenous heritage. Today the tribes are largely divided by reservations but continue to identify with their Indigenous heritage. Although most Native Americans are identified in the literature as being part of a large regional group associated with a mission during the Spanish occupation, such as Diegueno (San Diego Mission), Gabrielino (Mission San Gabriel), etc., many still identify with their tribal names which usually translates to some vernacular form of “the people.”

Prehistoric Overview

Pre-Contact Southern California was a rich and diverse landscape that supported abundant human populations. Archaeologists have developed several cultural chronologies to describe the precontact cultural history of the Project area and region of Southern California. The precontact era is divided into cultural traditions generally based on changes in technological patterns that are evidenced by the archaeological record and generally supported by climatic fluctuations and resource availability. Typically, conversations about the prehistoric past of this region covers the Paleoindian Period, the Early Archaic Period, the Late Archaic Period, and the Late Prehistoric Period. Some Archaeologists and local tribal peoples have notably replaced this concept of separate distinctive cultures with one that encompasses a more fluid description of San Diego’s prehistory, advocating for continuous occupation of the ancestral groups of San Diego’s Native American population and arguing that the differences found in the archaeological record indicate regional and seasonal adaptations of a single culture (Carbone 1991; Gallegos 1991; Sasson 2014).

Paleoindian Period - San Dieguito Complex (c. 12,000 BP to c. 8000 BP)

According to the local traditional knowledge of the Indigenous people of the San Diego region, they are descendants of the first people and have lived in their ancestral lands since time immemorial. The earliest widely accepted archaeological manifestation of native

Americans in the San Diego area is the San Dieguito Complex, dating to approximately 10,000 years ago (Rogers 1939; Warren 1967). Some archaeologists, however, advocate for an occupation of Southern California of more than 100,000 years ago (i.e., Carter 1957, 1980, Minshall 1976). Noted early period sites include Texas Street, Buchanan Canyon, Mission Valley (San Diego River Valley), Del Mar, and La Jolla (Bada et al., 1974; Carter 1957, 1980; Minshall 1976, 1983, 1989; Moriarty and Minshall 1972; Reeves 1985, 1986).

Much of the artifactual evidence that represents this period is found along ancient shorelines of Pleistocene and Early Holocene periods (Apple et al. 1997; Warren et al. 1981). The Paleoindian period is generally characterized as an early mobile hunting culture marked by abundant scrapers and large percussion-flaked bifaces, flaked crescentic stones, and large projectile points. Grinding tools (manos and metates) are rare suggesting a hunting and gathering/collecting subsistence pattern that likely relied on a variety of resources including birds, mollusks, and large and small mammals rather than on wild seeds and plant foods (Warren 1968). Although the San Dieguito people were previously thought to have been almost exclusively big game hunters, (Pourade 1967), recent research suggests that they were also gatherers, and, along the coast, exploiters of marine resources and sedementism with artifacts that include manos, metates, cobble-flaked tools, and ceramics (Carbone 1991; Erlandson and Roger 1991; Gallegos 1992).

Archaic Period (c. 8000 BP to c. 1500 BP)

California's coast changed drastically during the Archaic Period. This period is marked by shifting sea surface temperatures as well as several climatic shifts between cool-wet, warm-dry, and warm-wet over several thousands of years. This shifted environmental and ecological conditions such as the intensity of the seasonal upwelling of the California currents along the coast, which affected marine productivity (Carbone 1991; Moratto et al. 1978). Simultaneously, there are several shifts in technology represented within archaeological deposits, further breaking down the Archaic Period into the Early Archaic Period and the Late Archaic Period.

Early Archaic Period (c. 8000 BP to c. 3500 BP)

Beginning about 8,000 BP, the climate of Southern California shifted, changing the environment from one that supported a variety of flora and fauna across abundant marshlands, estuaries, and lakeshores, to one that was warmer and drier with rocky shorelines and bays. Inland sites of this era are technologically dominated with grinding implements such as manos and metates, representing an increased subsistence on terrestrial resources. This period has been termed by some as the Millingstone Horizon or Pauma Pattern. Alternately, the coastal sites of this this period have been generally associated with the culture manifestation referred to as the La Jolla Complex. The La Jolla Complex is similarly defied by the presence of comparable metates and manos, however, it exhibits a culture that subsisted largely on marine resource and shellfish, in addition to the plant foods of the area. Differences in subsistence patterns between the inland sites and coastal sites resemble a regional emphasis on available resources (Cardenas 1986; Cline 1984).

During this period, artifact assemblages comprise metates and manos (and eventually pestles and mortars), shell midden, and a pattern of relatively sophisticated cobble-based flake technology and hammering tools, along with fire-affected rock features, indicating a source of flaked tools, and baking and/or roasting of food resources. Flexed burials are also more common (Erlandson and Colten 1991; Glassow et al. 2007; Moriarty 1985; Shumway et al. 1981).

Late Archaic (c. 3500 BP to c. 1500 BP)
Around 3,500 BP, the environment is marked by climactic fluctuations with notable ecological changes along the coast: rocky shores declined, sandy beaches established, and lagoons filled with sediment, leading to siltation and the loss of shellfish beds. There is a paucity in archaeological sites along the coast during this period, which some archaeologists attribute to the decline in lagoon resources, forcing populations to move inland for reliable subsistence (Cardenas 1986; Gallegos 1991; Meighan 1954; Warren 2008; Warren et al. 1961). Archaeological deposits associated with this period include the introduction of new forms of milling tools, such as the mortar and pestle. It is unclear why there is a shift to these heavier tools occurred; however, the addition of these tools suggests the expansion of diets to include new resources and/or new processing techniques. Other materials found in archaeological sites include lithic utilitarian tools such as blades, drills, scraper, and decorative materials such as painted pebbles and shell beads.

It is around this same time that the La Jolla Pattern transitions into the Yuman Tradition in the southern San Diego area

Late Prehistoric Period (c. 1500 BP to European Contact)

Around 1500 BP, archaeological evidence suggests a change in cultural traditions, marking a transition from the La Jolla Pattern to the Yuman Tradition, however, reasons and cultural relations have yet to be scientifically documented (Moratto 1984, Sutton 2009). Regardless, the Late Prehistoric Period is noticeable for several significant changes for the early inhabitants of southern California. Although some archaeologists consider the Kumeyaay tribes of the Yuman Tradition to be latecomers, traditional knowledge and oral history of the local Native American people speak both presently and ethnographically to tribal continuity in the region since the beginning of human occupation. Additionally, recent reevaluation of previous archaeological claims indicates there may have been a cultural blend between the La Jolla Complex and the Yuman Tradition during the earliest years. It has also been suggested that the Yuman Complex may have developed from the preceding La Jolla patterns (Sutton and Gardner 2006).

In general, the Yuman Tradition is characterized by the appearance of small pressure flaked projectile points (Cottonwood Triangular and Desert Side-notched) which is indicative of bow and arrow technology, the appearance of ceramics, the replacement of flexed inhumations with cremations, and an emphasis is inland plant food collecting and processing, steatite containers, pottery vessels, fishhooks, personal ornaments made of shell, bone and stone, and bone tools. (Meighan 1954; Moratto 1984; Rogers 1945; Wallace 1955; Warren 1964, 1968).

ETHNOGRAPHY

Due to the unfortunate history of diminishing populations of the local Native Americans during the Historical period of San Diego, there is little ethnographic information about the coastal Kumeyaay. Due to the lesser amount of early extraneous invasion of the mountain and desert regions, the Kumeyaay people of these two regions were better able to preserve their cultural traditions and therefore much more ethnographic information is available to this day. Consequently, this report best represents the ethnohistory of the preserved mountain and desert Kumeyaay, with little specific ethnography of the coastal communities.

Characterized by sustainable practices, the Kumeyaay people were conscientious hunter-gatherers who understood the landscape and resources and who utilized food and materials accordingly. Pottery was made of clay mixed with finely crushed rock, coiled, shaped with a stone or paddle, and then fired; some pottery exhibited ornamental inscriptions. Basketry, unmatched in California, was created from string like materials and formed into vessels, close-twined sacks, and wallets. A variety of native cordage was used to create such items as nets. Pipes were created of either clay or stone, and the *Olivella* shell was used to create necklaces (Kroeber 1976).

What we know of Kumeyaay houses is that they reflected the resources available and the local climates and therefore they varied greatly. Summer shelters typically only provided windbreak and shelter from the sun, while winter homes were much more formal and required more construction effort. Kumeyaay winter homes were small, sunken, elliptical huts with small entrance doors just big enough to crawl through. These homes were constructed of poles covered with brush or bark and could be covered with earth for further insulation if the weather got cold enough (Cline 1984; Miskwish 2007; Spier 1928). The Kumeyaay also created a variety of structures for their daily activities. For example, cooking and eating took place outside of their homes, in specific locations and sometimes within specific structures. Sweathouses were also constructed of a dug-out floor and a roof structure, typically located near a river or stream. These sweathouses were used regularly by Kumeyaay men as well as a place of healing (Kroeber 1976; Spier 1928).

Kumeyaay social organization was formed in kinships and organized as band units. They customarily married outside of their band and resided with or near the family. The Kumeyaay band is often considered synonymous with a village or territory. Several villages were part of a larger kin group, often sharing resources. No resource was kept from any other band as the Kumeyaay believed that no one person owned the resources individually. Familial practices and sourcing of materials were generally unique to a family tradition and respected throughout the larger population. Divisions between bands were normally settled by the course of moves that bands made between villages and resources (Luomala 1963).

The Kumeyaay practiced many forms of spiritualism. It has been documented that their spiritual leaders achieved their status by way of knowledge of song indicating that these individuals were in touch with the supernatural and spiritual world (Cuerco and Shipek 1991). The Kumeyaay had many important ceremonies, some of which included male and female puberty rites, the fire ceremony, the eagle dance, the cremation ceremony, and the mourning ceremony (Cline 1984; Kroeber 1976; Spier 1928).

In some literary sources, it is believed that the Kumeyaay material culture came to emphasize an increased importance on the acquisition and processing of the acorn due to the eventual depletion of alternative accustomed resources (Moratto 1984). However, it is believed by the authors of this report that the emphasis in acorn production prevalent in the literature is due to the referenced lack of costal ethnographic material and a general misunderstanding of Kumeyaay food production culture. Recent studies of faunal remains at known Kumeyaay sites suggest sedentism occurred throughout the San Diego region for an extended period (Sasson 2014).

HISTORY

The San Diego Historic era is separated into three periods. These periods are the Spanish Colonial Period, Mexican Period, and American Period.

Spanish Colonial Period (1769-1821)

Cabrillo made landfall in San Diego in 1542, however, it was not until 1769 that actual colonization of the area began. Prior to settlement, there were multiple exploration parties and mariner voyages during the 1500 and 1600s. Expeditions traveled northwest to meet the Colorado River from Mexico and ships that made landfall produced maps, but never established settlements (Pourade 1971). Russian and English interests in California, prompted the Spanish Crown to send a party comprised of soldiers, missionaries, and settlers to occupy and secure the area (Engelhardt 1920). In early 1769 the first Spanish exploring party, led by Gaspar de Portolá, arrived in San Diego.

Spanish occupation was to be accomplished by the establishment of a joint relationship between Missions, Presidios and Pueblos. The Missions were created as an extension of Spain, and each was placed in its specific location allowing for military and religious considerations. Though Spanish Pueblos never developed during the Spanish rule, Missions were constructed from San Diego all the way up to San Francisco. The Missions were intended to be the pushing force converting the local Native American population to the Franciscan Order and upon success, to subsequently convert the Missions into Spanish Pueblos. It was during this period that the El Camino Real was constructed, believed to be the most direct route between Missions which served to transport goods and military activities between the Spanish colonies (Smythe 1908).

In 1771, the construction of the Presidio began in San Diego. The Kumeyaay proved to be resistant to conversion and hesitant to the Spanish Incursion. In 1775, several Kumeyaay led an attack against the Mission in the middle of the night; the Mission was destroyed that night and then rebuilt the Mission by 1776 (Miskwish 2007). The Kumeyaay continued to fight for their lands, sustained attacks and mostly resisted conversion yet, major expansions of the Spanish territory in the coastal areas pushed the Kumeyaay communities into the mountain and desert regions and thus began the devastating historical migration of the Kumeyaay people as they began to enter new territories and join with other tribes (Cline 1984). The Missionization of California was detrimental to the local Native American communities, driving many to either convert to the Franciscan Order forcing them to work within the missions, and/or killing off scores with newly introduced illnesses and diseases.

Mexican Period (1821-1846)

By 1810, the political situation of the San Diego region began to change. On September 16th, 1810, Father Miguel Hidalgo y Costilla revolted against the Spanish rule within California. Leading his team of untrained Native Americans into the revolution, however, the attack failed terminating in his own execution. Inspired by Hidalgo, Father José Morales led the revolutionaries to battle again. He, too, failed and was executed. In 1822, Spain was finally defeated by the collaboration of the Mexican-born Spanish and Catholic Church, ignited by the efforts of the two previously led revolutions. Mexico gained independence from Spain and San Diego became part of the Mexican Republic.

Once California became independent from Spain, the Mexican Government opened the ports of San Diego to international trade and created a booming trade industry (Killea 1966; Pourade 1973; Robinson 1948). San Diego had little support from Mexico, and quickly became victim to further foreign encroachment (Miskwish 2007). By the early 1820's the Mexican Government began to issue private land and garden lot grants to soldiers and their families, and to those in favor with the Mexican Government. The local Native American tribes were overlooked in this process (Richman 1911). This gifting of land grants prompted many people to move from the Presidio and down into the river valley area below into the new land grant plots, igniting the slow abandonment of the Mission altogether.

By 1834 the San Diego region had drastic political and religious changes again. All the Missions had been removed from Franciscan Order through secularization, the Presidio and the Mission San Diego de Alcala were slowly abandoned leaving only a small unsupported population of Mission Indians and the mission system deteriorated. Mission Indians could become Mexican citizens, and inevitably many of the Native American community therefore refused to continue work on mission grounds. Consequently, the secularization of 1833 created more anguish for the Native American community as entire populations were left without land and without availability to resources (Cline 1984). Demoralized by the unjust secularization led by Mexico, the Kumeyaay continued to fight for their land and their rights. San Diego prospered and continued to grow and by 1835 was large enough in economy and population that Mexico granted San Diego official pueblo status (Killea 1966). The Pueblo of San Diego did not prosper for long, and the title was rescinded by Mexico in 1838.

American Period (1846 to Present Day)

In July of 1846, the United States invaded California, prompting the Mexican American War. The Americans raised a flag in San Diego in 1846 and gained control of the lands by 1848 by way of the Treaty of Guadalupe-Hidalgo, ending the war and introducing Anglo culture and traditions to San Diego. The Treaty of Guadalupe-Hidalgo made sure to include respect for the lands of the Kumeyaay, however, Americans flooded into the Native's lands, driving the Kumeyaay to reach out again to further distances for work unable to support themselves any longer (Cline 1984).

In 1850, the United States Congress passed the Act for Government and Protection of Indians, allowing Indian affairs to be regulated on a state level. California saw the Native American population as a threat and was intent on eradicating all Native Americans from their lands. Local, federal, and state agencies supported the cultural genocide of Native Americans. In 1852, Congress rescinded the power to the State, appointing Oliver Wozencraft as Indian Agent intending to give voice to the Native American population through the Senate.

Wozencraft traveled the country and designed treaties between the United States and the Native American communities. He negotiated a treaty with the local Kumeyaay that would reserve seven and a half million acres of land for the Native American tribes of California. The treaty was submitted to the United States Senate, rejected for ramification, and then sealed from public record until 1905 (Miskwish 2007). California was one of the few states that did not establish a treaty with the Native American people during this period. Inevitably, this inaction resulted in it becoming more difficult for California Indians to be recognized as a tribe to this present day, than it has been for many other tribes across America.

Leaving the Kumeyaay with no legal protection of their lands and therefore quickly displacing the communities, San Diego quickly became transformed from a Mexican Pueblo into an Anglo-American community with changed commerce, politics and culture (Newland 1992). With the onset to the Civil War, a severe drought, and failed developmental plans, San Diego became a wasted frontier land. By 1867, San Diego was back in full swing while "Americanization" and urbanization continued to influence San Diego's every-changing economy; most drastic was the shifting of primary use of land from cattle ranching to agriculture and the introduction of the railway in 1885.

By World War I, San Diego was utilized mostly as a home base for the United States Navy (Pourade 1963). Population numbers increased around the San Diego Bay area as well as inland and north. Agriculture continued to grow throughout the entire San Diego region and recreational areas became established within the mountains and desert areas. After World War II, and to this day, urbanization continues to spread to all corners of the county.

III. AREA OF POTENTIAL EFFECT

The Area of Potential Effect (APE) for this Project was constructed in compliance with the *San Diego Municipal Code Land Development Code: Historical Resource Guidelines.* The APE for this Project includes the entire project path and a buffer of 10 feet in either direction. There are no off-site work locations for this Project. There are also no indirect effects anticipated for this Project, as all disturbance will take place below the surface to a maximum depth of approximately 5 feet. The APE is illustrated in Attachment C: Figure 2.

IV. STUDY METHODS

BACKGROUND RESEARCH

Loveless Linton, Inc, conducted an in-house record search on June 11, 2024, that was later supplemented by a records search at the South Coastal Information Center (SCIC) at San Diego State University on July 3, 2024. The search involved a review of the documentation for recorded cultural resources, previous survey report boundaries, and historic addresses within a buffer of ¼-mile around the APE. The records search results are discussed in Section V of this report and attached as Confidential Attachment D.

As part of the background research for the project, additional sources were consulted including historical aerial and topographic map review, and General Land Office (GLO) Land Patents.

NATIVE AMERICAN COLLABORATION

Loveless Linton, Inc. monitors are a team of an academically trained archaeologist and a local Native American monitor. Although it is widespread practice to divide the two roles into mutually exclusive components of a project, they share a common goal and are tasked with nearly identical duties. Loveless Linton, Inc. approaches projects with a diverse cultural lens; The goal, as a well-trained team to merge the two viewpoints of the archaeologist and local Native American monitor creating a more holistic view of a project that is both regulatory compliant and culturally expressive. Our teams are therefore better able to assess impact areas because we have the academic knowledge coupled with cultural knowledge that is inaccessible without sound Native American cultural knowledge and experience. This approach allows Loveless Linton, Inc. to better assess a project and produce recommendations that will minimize the risk of unanticipated discoveries and help eliminate the timely and costly process of formulating new mitigation measures mid-project.

FIELD METHODS

Loveless Linton, Inc. conducted archaeological and Native American Monitoring for the Project on June 24, 2024. Principal Archaeologists Rebekah Loveless, M.A., RPA, and Cultural Principal, Brandon Linton, oversaw all activities. Eddie Carrera functioned as Project Manager. Archaeological monitoring was conducted by Brooklyn Christofis and Native America monitoring was conducted by Loveless Linton, Inc. local Native American representatives Neshay Linton. Photographs were taken, and daily reports were kept in the field; both are available at Loveless Linton, Inc.'s office in San Diego, California.

Cultural resource monitoring was conducted using standard archaeological procedures and techniques. Excavation and soil spoils produced from construction activities were monitored for archaeological constituents by an archaeologist and Kumeyaay Native American monitors throughout the duration of the project. During monitoring, close attention was paid to the excavation process, as well as to the excavated soils. This technique is a preventative method allowing for any potential impacts to previously undisturbed cultural and historical resources to be monitored prior to possible discovery.

In the event of encountering a cultural resource, the monitoring crew would pause the construction activity to better evaluate the resource and associated soils. As defined by the *San Diego Municipal Code Land Development Code: Historical Resource Guidelines* and in compliance with California's Office of Historic Preservation's (OHP) regulations, cultural resources include buildings, objects, archaeological sites, districts, or landscapes with physical evidence of human activity over 45 years of age, and traditional cultural properties. Three or more artifacts, or one or more features, within a 50 square meter area would be classified as a site, while less than three associated artifacts and/or ecofacts within a 50 square meter area would be classified as isolates. Artifacts would be documented, noting any diagnostic features. Upon observing a dense deposit, representative samples of artifacts would be collected. Measurements on features/sites and any soil characteristics and distribution would also be noted. The location of diagnostic artifacts, features, and sites would be recorded with a hand-held GPS device, and digital photographic documentation.

V. RESULTS

BACKGROUND RESEARCH

Record Search

The record search results indicate that 78 investigations have been previously conducted, and 10 cultural resources have been previously recorded within a ¼-mile of the APE. One of these resources, P-37-000039, a large Kumeyaay village site known as *Mut-Lah-Hoy-Yah/Mut-Kula-Xu'y,* overlaps the APE (Table 1). None of the previously recorded resources are listed in either the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR).

Table 1. Previously Recorded Resources within the 1/4-mile of the APE

Primary No.	Age	Type	Brief Description	Year, Affiliation
P-37-000002	Prehistoric	Site	Underwater habitation site	Unknown date, San Diego State University

P-37-000039	**Prehistoric**	**Site**	***Mut-Lah-Hoy-Yah/ Mut-Kula-Xu’y,* La Jolla Village**	**Updated 2023, BFSA**
P-37-017306	Historic	Structure	Other - 1900 Spindrift Drive	1999 (Marie Burke Lia)
P-37-018661	Historic	Structure	Other - 1888 Torrey Pines"	2000 (Affinis)
P-37-018991	Historic	Structure	Other - 1908 Hypatia Way	2000 (Moomjian)
P-37-019081	Historic	Structure	Other - 7938 Roseland Drive	2001 (Marie Burke Lia)
P-37-019874	Historic	Structure	"OHP PRN - 2037-0172-0000;	2002 (La Jolla Research Program)
P-37-027666	Historic	Structure	Other - 1874 Viking Way"	2006 (Marie Burke Lia)
P-37-028511	Historic	Structure	Other - 7962 Princess Street	2007 (Christianne Knoop & Beth Montes)

Bold indicates resource overlaps the APE.

Additional Research

Review of the earliest aerial (1953) indicates that the Project area was developed by 1953; It appears that the neighboring parking lot to the northeast and the lot to the southwest were already developed. From 1953 to present-day, much of the Project area has remained the same aside from smaller changes to the two neighboring lots (NETROnline 2024). Historic topographic maps indicate the two neighboring lots were developed sometime prior to 1943 and remained relatively the same from then until present-day (USGS 2024).

GLO Land Office patent records indicate that the APE is part of a 46,619.21-acre Land Patent no. PLC 526 that was granted to the President and Trustees of the City of San Diego by the authority of the March 3, 1851: Grant-Spanish/Mexican (9. Stat. 631) (BLM 2024) indicating that the APE is within a portion of the Pueblo Lands of San Diego. The 1851 act, known as the Act to Settle Private Land Claims in California, was enacted to ascertain and settle private land claims for land in the newly formed State of California, which was acquired by means of Spanish-Mexican land grants. The Act set forth procedures for claimants to present their land claims. All lands for which claims were not established were to be taken as public lands.

Summary

The record search results indicate a moderate-to-high likelihood of encountering prehistoric cultural resources due to the Project area’s proximity to the known Kumeyaay village site, as well as due to past archaeological investigations within the vicinity. There is a low likelihood of encountering historic-period cultural resources, despite the evidence of nearby historic-period structures, since the Project takes place within the sandy beach walkway.

CULTURAL RESOURCE MONITORING

No cultural resources were observed during cultural resource monitoring for this Project. An DPR523 update has been prepared for P-37-000039 and submitted to the SCIC and is attached to this report in Confidential Attachment E.

EVALUATION

The project activities related to Spindrift Drive Walkway Access – Avenida de la Playa Project, have had no adverse impacts to cultural resources.

VI. RECOMMENDATIONS

Although no cultural resources were identified during monitoring, the project is within a region that is rich in prehistoric and tribal cultural resources. Therefore, any future work should consult with a qualified archaeologist and local Native American representative prior to any ground disturbing activities.

VII. SOURCES CONSULTED

National Register of Historic Places	August 2024
California Register of Historical Resources	August 2024
Historic Aerials and Topographic Map Review	August 2024
Archaeological/Historical Site Records:	June 2024
South Coastal Information Center	July 2024

VIII. CERTIFICATION

Preparer: Rebekah Loveless, M.A., RPA	Title: Principal Archaeologist
Signature:	Date: August 12, 2024

IX. ATTACHMENTS

Attachment A. National Archaeological Database Information

Attachment B. Bibliography

Attachment C. Project Maps

Attachment D. Confidential SCIC Search Results

Attachment E. Confidential DPR 523 Record

Attachment A. National Archaeological Database Information

National Archaeological Database (NADB) Information

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Report Date: August 12, 2024

Report Title: Cultural Resource Report Form for Spindrift Drive Walkway Access – Avenida de la Playa Project, San Diego, California

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USGS Quadrangle: *La Jolla* (7.5 minute)

Key Words: Spindrift stairs; storm drain; La Jolla; Mut-Lah-Hay-Yah; Mut-Kula-Xu'y; negative cultural resource monitoring

Attachment B. Bibliography

Apple, Rebecca McCorkle, Andrew York, Andrew Pignoli, James H. Cleland, and Stephen Van Wormer
1997 *Archaeological Survey and Evaluation Program for the Salton Sea Test Base, Imperial County, California.* Prepared for KEA Environmental for the U.S. Department of the Navy, Southwest Division, Naval Facilities Engineering Command, San Diego.

Bada, Jeffrey L., Roy A. Schroeder, and George F. Carter
1974 New Evidence for the Antiquity of Man in America Deduced from Aspartic Acid Racemization. *Science* 184: 791-793.

Bureau of Land Management (BLM)
2024 General Land Office Records. U.S. Department of Interiors. Website. https://glorecords.blm.gov/search/default.aspx#, accessed August 12, 2024.

California Dept of Conservation
2010 Compilation of Quaternary Surficial Deposits. *ArcGIS web application*.

Carbone, Larry A.
1991 Early Holocene Environment and Palaeoecological Contexts on the Central and Southern California Coast. In *Hunter-Gatherer of Early Holocene Coastal California*, pp. 11-18. Editors Jon Erlandson and Roger Colten. Perspectives in California Archaeology, Vol. I. Institute of Archaeology, University of California Los Angeles.

Cardenas, D. Sean.
1986 Avocado Highlands: An Inland Late La Jolla and Preceramic Yuman Site from Southern San Diego County. *Cultural Resource Management Casual Paper* 2(2). Department of Anthropology, San Diego State University.

Carter, George F.
1957 *Pleistocene Man at San Diego.* John Hopkins Press, Baltimore.
1980 *Earlier than You Think: A Personal View of Man in America.* Texas A&M University Press, College Station.

Cline, L.
1984 *Just Before Sunset*. Sunbelt Publications, Inc. San Diego, California, 3rd edition 2008.

Cuerco, D, & F. Shipek
1991 *Delfina Cuero: Her autobiography, an account of her last years, and her ethnobotanic contributions*. Ballena Press. Menlo Park, California.

Engelhardt, Z.
1920 *San Diego Mission.* James H. Barry Company, San Francisco.

Erlandson, Jon, and Roger Colten
1991 Perspectives on Early Hunter-Gatherers of the California Coast. In *Hunter-Gatherer of Early Holocene Coastal California*, pp. 133-140. Perspectives in California Archaeology, Vol. I. Institute of Archaeology, University of California Los Angeles.

Gallegos, D.R.
1991 Antiquity and Adaptation at Agua Hedionda, Carlsbad, California. In *Hunter-Gatherer of Early Holocene Coastal California*, pp. 19-42. Editors Jon Erlandson and Roger Colten. Perspectives in California Archaeology, Vol. I. Institute of Archaeology, University of California Los Angeles.
1992 Patterns and Implications of Coastal Settlement in San Diego County: 9000 to 1300 Years Ago. In: *Essays on the Prehistory of Maritime California*, Terry L. Jones, ed., pp. 205-216. Center for Archaeological Research at Davis, University of California, Davis.

Glassow, Michael, Lynn Gamble, Jennifer Perry, and Glenn Russell
2007 *Prehistory of the Northern California Bight and the Adjacent Transverse Ranges. California Prehistory: Colonization, Culture, and Complexity*, pp. 191-214. Edited by Terry L. Jones and Kathryn Klar. Society for California Archaeology.

Killea, Lucy L.
1966 The Political History of a Mexican Pueblo: San Diego from 1825-1845. *Journal of San Diego History 12* (July): 5-35.

Kroeber, A. L.
1976 *Handbook of the Indians of California*. Dover Publications. Bulletin 78 of the Bureau of American Ethnology of the Smithsonian Institute, 1919.

Luomala, K.
1963 Flexibility in Sib Affiliation among the Diegueño. *Ethnology* 2(3): 282-301.

Minshall, Herbert L.
1976 *The Broken Stones*. Copley Books, San Diego.
1983 Geological Support for the Age Deduced by Aspartic Acid Racemization of a Human Skull Fragment from La Jolla Shore, San Diego, California. *Cultural Resource Management Center Casual Papers* 1(3): 65-75. Department of Anthropology, San Diego State University.
1989 *Buchanan Canyon: Ancient Human Presence in the Americas*. Slawson Communications, San Marcos, California.

Meighan, C. W.
1954 A Late Complex in Southern California Prehistory. *Southwestern Journal of Anthropology*, Vol. 10. No. 2, pp. 215-227, Albuquerque, NM.

Miskwish, M.
2007 *Kumeyaay A History Textbook. Volume I. Precontact to 1893*. Sycuan Press. El Cajon, California.

Moratto, M.
1984 *California Archaeology.* Academic Press, New York.

Moratto, M., T. F. King, and W. B. Woolfenden
1978 Archaeology and California's Climate. *The Journal of California Anthropology, 5*(2), 147-161.

Moriarty, James R., III
1967 Transitional Pre-Desert Phase in San Diego, California. *Science* 155: 553-556. Scripps Institution – UCSD Contribution NO. 2278.
1969 San Dieguito Complex: Suggested Environmental and Cultural Relationships. *Anthropological Journal of Canada* 7(3): 2-18.

Moriarty, James Robert, III and Herbert L. Minshall
1972 A New Pre-Desert Site Discovered near Texas Street. *Anthropological Journal of Canada* 10(3): 10-13.

NETROnline
2024 Historic Aerials. Website. https://www.historicaerials.com/, accessed August 12, 2024.

Newland, James.
1992 *The Americanization of the Cultural Landscape of Frontier San Diego 1846-1872.* Unpublished M.A. thesis, Department of Anthropology, San Diego State University.

Pourade, Richard F.
1967 *The Rising Tide: Southern California in the Twenties and Thirties.* Union Tribune Publishing Company, San Diego.
1963 *The History of San Diego: The Silver Dons*. San Diego: Union-Tribune Publishing Company.
Pryde, Philip R.
2014 *San Diego: An Introduction to the Region*, 5th Edition. Sunbelt Publications, Inc., San Diego, California.

Reeves, Brian O.K.
1985 Early Man in the Americans: Who, When, and Why. In Woman, Poet, Scientist: Essays in *New World Anthropology Honoring Dr. Emma Louise Davis*, edited by Clark W. Brott, pp. 79-104. Socorro: Ballena Press.
1986 The Mission Ridge Site and the Texas Street Question. In *New Evidence for the Pleistocene Peopling of the Americas,* edited by Alan L. Bryan, pp. 65-80. Orono: Center for the Study of Early Man.

Richman, I.
1911 *California Under Spain and Mexico*. Houghlin-Mifflin Company, Boston.

Rogers, Malcolm J.
1945 An Outline of Yuman Prehistory. *Southwestern Journal of Anthropology*, Vol I, No. 2, pp. 167-198. Albuquerque, NM.
1939 Early Lithic Industries of the Lower Basin of the Colorado River and Adjacent Desert Areas. *San Diego Museum Paper*, Number 3.

Sasson, Aharon
2014 *A Zooarchaeological Study of Vertebrate Remains from Ystagua (W-654; SDI-4609). In Data Recovery Excavations at CA-SDI-4609/SDM-W-654, Ethnohistoric Village of Ystagua, for the San Diego Association of Governments Sorrento-to-Miramar Double Track Phase One Project, San Diego, California*, edited by S. Gunderman Castells, M. S. Becker, I. Scharlotta, T. Quach and S. Ní Ghabháin. San Diego, CA. Report on File at the South Coastal Information Center, San Diego State University: ASM Affiliates.

Shumway, G., Carl L. Hubbs, and James R. Moriarty.
1961 Scripps Estate Site, San Diego, California: A La Jollan Site Dated 5,460-7,370 Years Before the Present. *Annals of the New York Academy of Sciences* 93(3).

Smythe, William E.
1908 *The History of San Diego 1542-1908: An Account of the Rise and Progress of the Pioneer Settlement on the Pacific Coast of the United States.* San Diego: The History Company.

Sutton, Mark Q., and Jill K. Gardener
2006 Reconceptualizing the Encinitas Tradition of Southern California. *Pacific Coast Archaeological Society Quarterly 32* (4).

United States Department of Agriculture (USDA)
2024 *Web Soil Survey*. Website. https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx, accessed August 12, 2024.

United States Geological Survey (USGS)
2024 *TopoView: USGS.* US Department of Interior. Website. https://ngmdb.usgs.gov/topoview/viewer/#15/32.8049/-117.1896, accessed August 12, 2024.

Wallace, William J.
1955 A Suggested Chronology for Southern California Coastal Archaeology. *Southwestern Journal of Anthropology, Vol, 11,* No. 3, pp. 214-230. Albuquerque, NM.

Warren, Claude
1966 The San Dieguito Type Site: Malcolm Rogers' 1938 Excavation on the San Dieguito River. *San Diego Museum Papers* No. 5.
1967 The San Dieguito Complex: A Review and Hypothesis. *American Antiquity* 32: 168-186.
1968 Cultural Tradition and Ecological Adaptation on the Southern California Coast. In *Archaic Prehistory in the Western United States*, edited by C. Irwin-Williams. Eastern New Mexico Contributions in Anthropology 1(3): 1-14.

Warren, Elizabeth von Till and Ralph J. Roske
1981 *Cultural Resources of the California Desert, 1776-1980: Historic Trails and Wagon Roads.* USDI, Bureau of Land Management, Riverside, California.

Attachment C. Project Maps

Figure 1. Project Location Map

Figure 2. Area of Potential Effect

Figure 1: Project Location Map

Figure 2: Area of Potential Effect Map

Attachment D. Confidential SCIC Search Results

(Bound Separately)

Attachment E. DPR523 Update for P-37-000039

(Bound Separately)

Appendix H – Regulatory Permitting Assessment

The Spindrift Access project involves a comprehensive review of environmental and permitting considerations necessary for the repair or replacement of the existing beach access walkway. This section outlines the key regulatory requirements, including CEQA review and the various federal, state, and local permits needed for the project. Additionally, it highlights the critical factors that will influence the selection of the preferred alternative and the overall timeline for regulatory approval. The following subsections detail the specific considerations and processes involved in ensuring that the project complies with all relevant environmental and permitting regulations.

CEQA Review

The Spindrift Access project, which involves the repair or replacement of the existing beach access walkway, will undergo a review process under the California Environmental Quality Act (CEQA). The City of San Diego will act as the lead agency for CEQA review. It is likely that Alternatives 1-3 will be deemed categorically exempt (CE) from CEQA, either under Class 1 Section 15301 (Existing Facilities) or Class 2 Section 15302 (Replacement or Reconstruction). Alternative 4 on the other hand will likely be required to undergo a full CEQA review process (Mitigated Negative Declaration) due to its impact on the beach.

Class 1 Exemption: This exemption applies to the restoration or rehabilitation of deteriorated structures to meet current standards of public health and safety, with no expansion of use. (i.e. public use will not change from the existing condition; the project is to maintain/restore that existing use by repair or replacement of the deteriorated stairs.)

Class 2 Exemption: This exemption covers the replacement or reconstruction of existing structures on the same site, with the new structure serving substantially the same purpose and capacity as the one being replaced.

Even if these exemptions are applicable, the City may choose to conduct a more extensive review to allow for public input, possibly including stakeholder meetings.

Federal, State, and Local Permitting

Federal and state permitting agencies include the U.S. Army Corps of Engineers (USACE), San Diego Regional Water Quality Control Board (RWQCB), California Coastal Commission (CCC), and California State Lands Commission (CSLC). The USACE permit jurisdictions are for both temporary and permanent work seaward of the highest tide line (+4.9’ NGVD29) for Section 404 fill of Waters of the U.S. and seaward of the mean high water (MHW) line (+2.3’ NGVD29) and for Section 10 work in navigable Waters of the U.S. The RWQCB Section 401 Water Quality Certification follows the USACE jurisdictions. The CCC jurisdiction is for work within the Coastal Zone and CSLC is work seaward of the mean high-water line.

The intersections of these water elevations on the beach vary as the beach conditions vary, i.e., as the beach erodes and/or accretes over time. As of the time of the 2024 topo survey, the seaward edge of the existing stairs appears to be at approximately +3’ NGVD29, i.e. beyond (landward of) the jurisdiction of CSLC, but within USACE Section 404 jurisdiction.

In summary, the following permits/approvals are likely to be required for construction:

- USACE Section 10/404 Permit
    - This will be either a Standard Individual Permit or possibly a Nationwide Permit (NWP)#3 for maintenance/repair of existing structures. The latter is a quicker permit process. Even if the footprint of the new stairs is landward of the MHHW line, it is likely construction work will need to occur seaward of the MHHW line (for all alternatives except Alternative 1) and thus Section 10 approval is required in addition to Section 404.

- RWQCB Section 401 Certification
    - If this project is allowed to fall under the USACE NWP #3, the Water Board may allow for "pre-certification" under that NWP, in which case only a notification and fee submittal to the RWQCB are required. Otherwise, an individual 401 certification, including application fee, will be required. Issuance of the 401 certification is required prior to USACE permit issuance. If a USACE Section 10/404 is not required, e.g. for Alternative 1, then this Section 401 Certification is also not required.
- CCC Coastal Development Permit (CDP)
    - It is assumed the City's existing Local Coastal Program (LCP) does not allow for the City to issue the CDP, i.e. the CDP is to be issued by the State/CCC. The City's "Local Approval in Concept", including CEQA determination, will be required for inclusion in the CDP application package.
- CSLC Lease of State Lands
    - May be required for alternatives with footprints seaward of the MHW line. A request for determination of jurisdiction will need to be submitted to CSLC first. Even if a CSLC lease is required, it may be "rent-free" as the stairs are for public use.
- City of San Diego Building and Safety Permit
    - The building permit ensures compliance with structural and safety codes, as per Section 129.0203 of the Municipal Code.
- City of San Diego Right of Way Permit
    - The right-of-way permit ensures that public infrastructure is not impacted. The right-of-way permit is necessary as the staircase affects public streets, sidewalks, or utilities, as outlined in Section 129.0701 of the Municipal Code.
- RWQCB Construction General Permit
    - The project disturbed soil areas is less than 1 acre and therefore a SWPPP will not be required to be submitted to the RWQCB through Smarts for the statewide Construction General Permit issuance. Instead, the project may proceed with a Water Pollution Control Plan (WPCP), requiring the contractor to implement minimum construction site BMPs in accordance with the City standards and approved WPCP with the contract documents. The project is within a watershed with areas of Special Biological Significance (ASBS) and therefore increased inspection frequencies will be required.
- RWQCB NPDES Local MS4 Permit
    - The project is covered under the California state administered National Pollution Discharge Elimination Program (NPDES) permits. Stormwater discharges associated with the permanent condition of development or redevelopment that are conveyed to Municipal Separate Storm Sewer Systems (MS4) are regulated locally by the City of San Diego MS4 Permit (order R9-2013-001 as amended). The project is considered a redevelopment project that discharges into an environmentally sensitive area. The threshold for priority project development triggering post construction stormwater mitigations is 2,500 sq ft. None of the proposed alternatives anticipate adding or replacing more than 2,500 sq ft and

as such the project would qualify as a standard project requiring the preparation of a Standard Storm Water Quality Management Plan. The project will still be required to meet source and site design BMPs however permanent treatment BMPs are unlikely.

- Per MS4 permit "Attachment A - Discharge Prohibitions and Special Protections", the proposed modifications are not expected to constitute a new discharge as they involve minor re-location or alterations of the existing outfall and do not generate a new contribution of waste. The existing MS4 permit may still need to be revised for alternatives which propose modifications to the storm drain discharge location or configurations. Given that the proposed storm drain system modifications will not affect outfall discharge volume, annual MS4 permit fees, which are associated with discharge volume, should not be impacted.

The Federal and State regulatory permitting process is likely to take 8-12 months upon submittal of applications regardless of the selected alternative. CCC will likely require the submittal of various alternatives along with the proposed project. They will require all alternatives to meet current coastal engineering standards and will likely determine whether ADA access is required.

Given the environmental and permitting considerations, and assuming ADA access is not required, Alternative 1 is likely to be favored by the regulatory agencies. However, Alternative 2, which has a more accessible design and lies within the original walkway footprint, may also be acceptable. Alternative 3, with a slightly extended footprint, may present more challenges but is still feasible. Alternative 4, however, is likely not feasible from a permitting standpoint due to the structure's large footprint extending onto the beach (impacts to both sandy beach habitat and public recreation "towel space").

Key Considerations

For all alternatives, permit considerations are:

- Size of footprint seaward of the MHW and highest tide lines (USACE, RWQCB and CSLC concerns)
- Size of footprint on sandy beach and associated loss of public recreation area (CCC concern)
- Need for rock protection at toe of stairs
- Resiliency for current and future coastal hazards
- Ability to adapt to future sea level rise, including associated future beach scour conditions
- Construction BMPs to protect water quality, including ability to work during only low tide hours
- Public safety
- Modifications to the storm drain system that require revision of the existing MS4 permit

Appendix I – Cost and Schedule Summary

(More detailed cost estimates with construction descriptions available upon request)

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Spindrift Stairs - Alternative 1 (Structural Reparis and Handrails)

ROM Opinion of Probable Cost

M&N Job Number: 21315-03

Date prepared: October 1, 2024

Design Status: Concept

Item	Description	Qty	Unit	Unit Price	Total Price
1	**Demolition & Removal**				**$ 63,109**
1.1	Demo Existing Stairs	1	LS	$ 63,109	$ 63,109
2	**Form / Pour / Strip Concrete Stairs**				**$ 10,818**
2.1	Form / Pour / Strip Concrete Stairs	1	CY	$ 11,268	$ 10,818
3	**Storm Repairs**				**$ 12,208**
3.1	Storm Repairs	1	LS	$ 12,208	$ 12,208
4	**Handrail**				**$ 10,922**
4.1	Install Handrail	147	LF	$ 74	$ 10,922
SUBTOTAL					**$ 97,056**
	Contractor O&P, Bonds, Insurance, & Indirect Costs		20%		$ 19,411
	Mobilization		5%		$ 4,853
	Traffic Control		5%		$ 4,853
	Water Pollution Control (BMP)		2%		$ 1,941
	Field Orders		2.5%		$ 2,426
	Bonds		2.5%		$ 2,426
	Construction Contigencies		10%		$ 9,706
Total Construction Cost (TCC)					**$ 142,672**
	TCC Rounded				**$ 143,000**
	Construction (Field) Engineering and Construction Admin. Support		25%		$ 35,750
	Design Administration, Engineering, and Environmental		30%		$ 42,900
	Permitting and Regulatory Costs				$ 120,000
	Project Delivery Cost				**$ 198,650**
	20% Project Contigency		**20%**		**$ 68,330**
	Project Total				**$ 409,980**

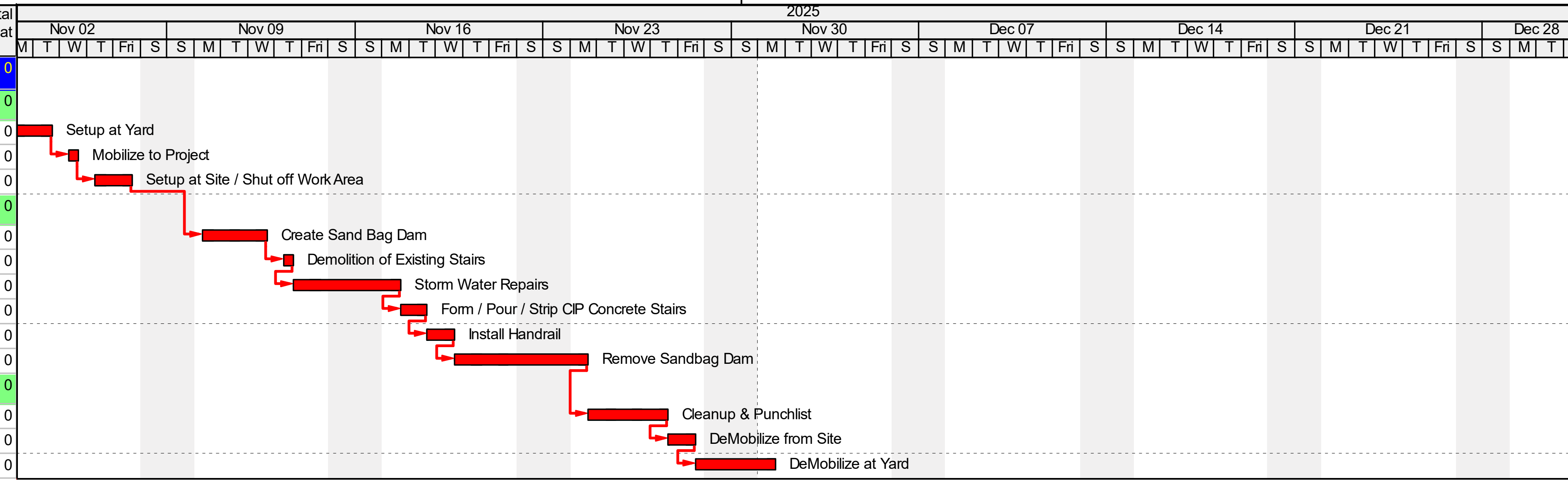
Notes:

1. Costs are in 2024 USD.

2. This cost estimate is an opinion of construction cost made by the Consultant. In providing opinions of construction cost, it is recognized that neither the Client nor the Consultant has control over the costs of labor, equipment, materials or over the Contractors' methods of determining prices and bids. This opinion of construction cost is based on the Consultant's reasonable professional judgment and experience. This estimate does not constitute a warranty, expressed or implied, that the Contractors' bids or negotiated prices of work will correspond with the Owner's budget or the opinion of construction cost prepared by the Consultant.

3. Costs assume a work schedule of 5 days per week, 10 hours per day. (This is due to working around the potential Tides)
4. Cost assumes use of parking lot as contractor lay-down and staging area.
5. No Escalation is included.
6. Assumes no time of year restrictions environmental or other potential ecological shutdowns.
7. Costs assume Single Mobilization and DeMobilization for each scope of work.
8. Estimate assumes Mobilization and Demobilization of contractors' equipment from within a 250-mile radius.
9. Esimate includes no cost for potential dewatering.
10. Estimate assumes complete shutdown of work space to the public.
11. No costs have been included for geotechnical exploration.
12. Permitting costs include labor, final design fees for City permits, and potential mitigation

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
Spin Drift Stairs (Option 1) REV 1		21	03-Nov-25	01-Dec-25	0
Mobilization		5	03-Nov-25	07-Nov-25	0
M1000	Setup at Yard	2	03-Nov-25	04-Nov-25	0
M1010	Mobilize to Project	1	05-Nov-25	05-Nov-25	0
M1020	Setup at Site / Shut off Work Area	2	06-Nov-25	07-Nov-25	0
Stair Construction		11	10-Nov-25	24-Nov-25	0
C1000	Create Sand Bag Dam	3	10-Nov-25	12-Nov-25	0
C1010	Demolition of Existing Stairs	1	13-Nov-25	13-Nov-25	0
C1020	Storm Water Repairs	2	13-Nov-25	17-Nov-25	0
C1030	Form / Pour / Strip CIP Concrete Stairs	1	17-Nov-25	18-Nov-25	0
C1040	Install Handrail	1	18-Nov-25	19-Nov-25	0
C1050	Remove Sandbag Dam	3	19-Nov-25	24-Nov-25	0
DeMobilization		5	24-Nov-25	01-Dec-25	0
DM1000	Cleanup & Punchlist	3	24-Nov-25	27-Nov-25	0
DM1010	DeMobilize from Site	1	27-Nov-25	28-Nov-25	0
DM1020	DeMobilize at Yard	1	28-Nov-25	01-Dec-25	0



Marine Work | Remaining Work | Milestone
Actual Work | Critical Remaining Work

TASK filter: All Activities

moffatt & nichol

Spindrift Stairs - Alternative 2 (Replacement Stairs Within Existing Footprint)

ROM Opinion of Probable Cost

M&N Job Number: 21315-03

Date prepared: October 1, 2024

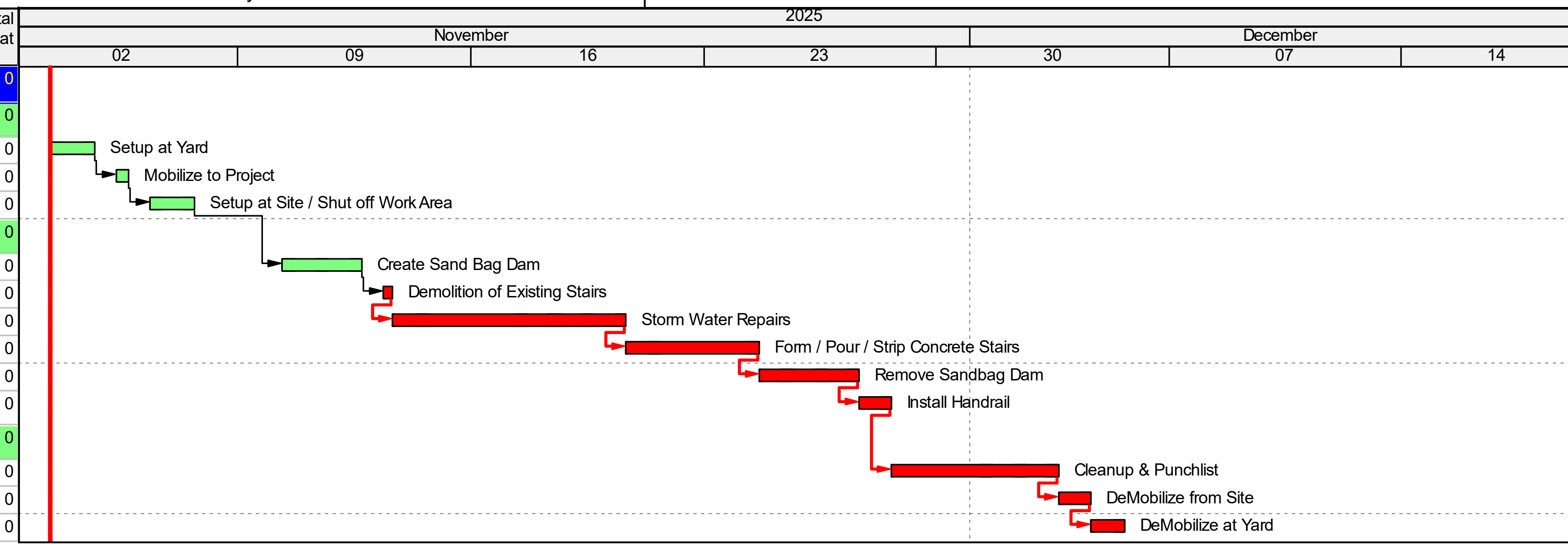
Design Status: Concept

Item	Description	Qty	Unit	Unit Price		Total Price
1	**Demolition & Removal**				**$**	**73,697**
1.1	Demo Existing Stairs	1	LS	$ 73,697	$	73,697
3	**Form / Pour / Strip Concrete Stairs**				**$**	**22,916**
3.1	Form / Pour / Strip Concrete Stairs (64' 9.5" Stair Length)	8	CY	$ 2,857	$	22,916
3	**Storm Repairs**				**$**	**59,229**
3.1	Storm Repairs (Type "E" Catch Basin, 2 EA - Grate Inlets, 2 EA - CIP Box Culverts)	1	LS	$ 59,229	$	59,229
4	**Handrail**				**$**	**10,922**
4.1	Install Handrail	147	LF	$ 74	$	10,922
SUBTOTAL					**$**	**166,764**
	Contractor O&P, Bonds, Insurance, & Indirect Costs	20%			$	33,353
	Mobilization	5%			$	8,338
	Traffic Control	5%			$	8,338
	Water Pollution Control (BMP)	2%			$	3,335
	Field Orders	2.5%			$	4,169
	Bonds	2.5%			$	4,169
	Construction Contigencies	10%			$	16,676
Total Construction Cost (TCC)					**$**	**245,143**
	TCC Rounded				**$**	**245,000**
	Construction (Field) Engineering and Construction Admin. Support	25%			$	61,250
	Design Administration, Engineering, and Environmental	30%			$	73,500
	Permitting and Regulatory Costs				$	175,000
	Project Delivery Cost				**$**	**309,750**
	20% Project Contigency	**20%**			**$**	**110,950**
	Project Total				**$**	**665,700**

Notes:

1. Costs are in 2024 USD.
2. This cost estimate is an opinion of construction cost made by the Consultant. In providing opinions of construction cost, it is recognized that neither the Client nor the Consultant has control over the costs of labor, equipment, materials or over the Contractors' methods of determining prices and bids. This opinion of construction cost is based on the Consultant's reasonable professional judgment and experience. This estimate does not constitute a warranty, expressed or implied, that the Contractors' bids or negotiated prices of work will correspond with the Owner's budget or the opinion of construction cost prepared by the Consultant.
3. Costs assume a work schedule of 5 days per week, 10 hours per day. (This is due to working around the potential Tides)
4. Cost assumes use of parking lot as contractor lay-down and staging area.
5. No Escalation is included.
6. Assumes no time of year restrictions environmental or other potential ecological shutdowns.
7. Costs assume Single Mobilization and DeMobilization for each scope of work.
8. Estimate assumes Mobilization and Demobilization of contractors' equipment from within a 250-mile radius.
9. Esimate includes no cost for potential dewatering.
10. Estimate assumes complete shutdown of work space to the public.
11. No Costs have been included for geotechnical exploration.
12. Permitting costs include labor, final design fees for City permits, and potential mitigation

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
Spin Drift Stairs (Option 2) REV 2		25	03-Nov-25	05-Dec-25	0
Mobilization		5	03-Nov-25	07-Nov-25	0
M1000	Setup at Yard	2	03-Nov-25	04-Nov-25	0
M1010	Mobilize to Project	1	05-Nov-25	05-Nov-25	0
M1020	Setup at Site / Shut off Work Area	2	06-Nov-25	07-Nov-25	0
Stair Construction		15	10-Nov-25	28-Nov-25	0
C1000	Create Sand Bag Dam	3	10-Nov-25	12-Nov-25	0
C1010	Demolition of Existing Stairs	1	13-Nov-25	13-Nov-25	0
C1020	Storm Water Repairs	5	13-Nov-25	20-Nov-25	0
C1030	Form / Pour / Strip Concrete Stairs	2	20-Nov-25	24-Nov-25	0
C1040	Remove Sandbag Dam	3	24-Nov-25	27-Nov-25	0
C1050	Install Handrail	1	27-Nov-25	28-Nov-25	0
DeMobilization		5	28-Nov-25	05-Dec-25	0
DM1000	Cleanup & Punchlist	3	28-Nov-25	03-Dec-25	0
DM1010	DeMobilize from Site	1	03-Dec-25	04-Dec-25	0
DM1020	DeMobilize at Yard	1	04-Dec-25	05-Dec-25	0



Marine Work | Remaining Work | ◆ Milestone
Actual Work | Critical Remaining Work

TASK filter: All Activities

moffatt & nichol

Spindrift Stairs - Alternative 3 (Replacement Stairs with Extended Footprint)
ROM Opinion of Probable Cost

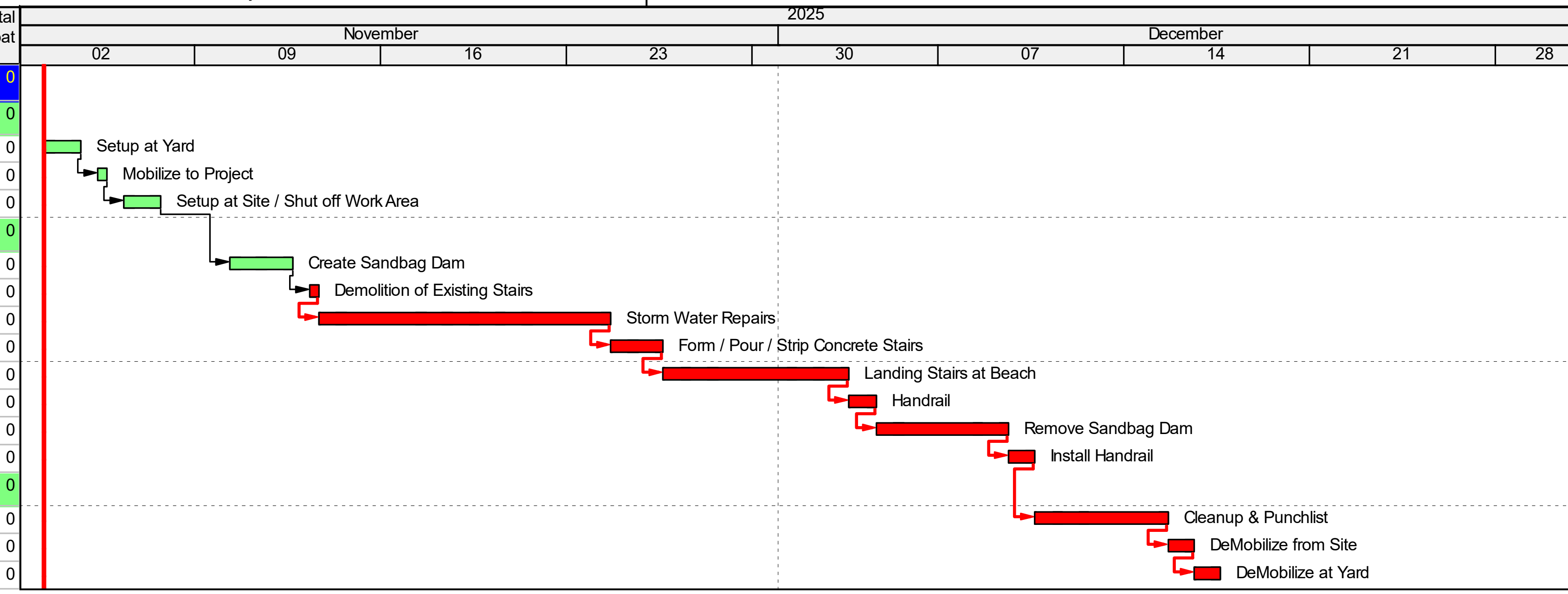
M&N Job Number: 21315-03
Date prepared: October 1, 2024
Design Status: Concept

Item	Description	Qty	Unit	Unit Price	Total Price
1	**Demolition & Removal**				**$ 72,873**
1.1	Demo Existing Stairs	1	LS	$ 72,873	$ 72,873
2	**Form / Pour / Strip Concrete Stairs**				**$ 21,305**
2.1	Form / Pour / Strip Concrete Stairs (64' 7.5" Stair Length)	5	CY	$ 4,020	$ 21,305
3	**Storm Repairs**				**$ 94,685**
3.1	Storm Repairs (Type "E" Catch Basin, 18" RCP)	1	LS	$ 94,685	$ 94,685
4	**Form / Pour / Strip CIP Concrete Landing Stairs at Beach**				**$ 42,541**
4.1	Form / Pour / Strip Landing Stairs	6	CY	$ 6,626	$ 42,541
5	**Handrail**				**$ 12,073**
5.1	Handrail Beach Landing	15	LF	$ 77	$ 1,151
5.2	Install Handrail on Stairs	147	LF	$ 74	$ 10,922
SUBTOTAL					**$ 243,478**
	Contractor O&P, Bonds, Insurance, & Indirect Costs		20%		$ 48,696
	Mobilization		5%		$ 12,174
	Traffic Control		5%		$ 12,174
	Water Pollution Control (BMP)		2%		$ 4,870
	Field Orders		2.5%		$ 6,087
	Bonds		2.5%		$ 6,087
	Construction Contigencies		10%		$ 24,348
Total Construction Cost (TCC)					**$ 357,912**
	TCC Rounded				**$ 358,000**
	Construction (Field) Engineering and Construction Admin. Support		25%		$ 89,500
	Design Administration, Engineering, and Environmental		30%		$ 107,400
	Permitting and Regulatory Costs				$ 245,000
	Project Delivery Cost				**$ 441,900**
	20% Project Contigency		**20%**		**$ 159,980**
	Project Total				**$ 959,880**

Notes:

1. Costs are in 2024 USD.
2. This cost estimate is an opinion of construction cost made by the Consultant. In providing opinions of construction cost, it is recognized that neither the Client nor the Consultant has control over the costs of labor, equipment, materials or over the Contractors' methods of determining prices and bids. This opinion of construction cost is based on the Consultant's reasonable professional judgment and experience. This estimate does not constitute a warranty, expressed or implied, that the Contractors' bids or negotiated prices of work will correspond with the Owner's budget or the opinion of construction cost prepared by the Consultant.
3. Costs assume a work schedule of 5 days per week, 10 hours per day. (This is due to working around the potential Tides)
4. Cost assumes use of parking lot as contractor lay-down and staging area.
5. No Escalation is included.
6. Assumes no time of year restrictions environmental or other potential ecological shutdowns.
7. Costs assume Single Mobilization and DeMobilization for each scope of work.
8. Estimate assumes Mobilization and Demobilization of contractors' equipment from within a 250-mile radius.
9. Esimate includes no cost for potential dewatering.
10. Estimate assumes complete shutdown of work space to the public.
11. No Costs have been included for geotechnical exploration.
12. Permitting costs include labor, final design fees for City permits, and potential mitigation

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
Spin Drift Stairs (Option 3) REV 3		33	03-Nov-25	17-Dec-25	0
Mobilization		5	03-Nov-25	07-Nov-25	0
M1000	Setup at Yard	2	03-Nov-25	04-Nov-25	0
M1010	Mobilize to Project	1	05-Nov-25	05-Nov-25	0
M1020	Setup at Site / Shut off Work Area	2	06-Nov-25	07-Nov-25	0
Stair Construction		23	10-Nov-25	10-Dec-25	0
C1000	Create Sandbag Dam	3	10-Nov-25	12-Nov-25	0
C1010	Demolition of Existing Stairs	1	13-Nov-25	13-Nov-25	0
C1020	Storm Water Repairs	7	13-Nov-25	24-Nov-25	0
C1030	Form / Pour / Strip Concrete Stairs	2	24-Nov-25	26-Nov-25	0
C1040	Landing Stairs at Beach	5	26-Nov-25	03-Dec-25	0
C1050	Handrail	1	03-Dec-25	04-Dec-25	0
C1060	Remove Sandbag Dam	3	04-Dec-25	09-Dec-25	0
C1070	Install Handrail	1	09-Dec-25	10-Dec-25	0
DeMobilization		5	10-Dec-25	17-Dec-25	0
DM1000	Cleanup & Punchlist	3	10-Dec-25	15-Dec-25	0
DM1010	DeMobilize from Site	1	15-Dec-25	16-Dec-25	0
DM1020	DeMobilize at Yard	1	16-Dec-25	17-Dec-25	0



Marine Work | Remaining Work | Milestone
Actual Work | Critical Remaining Work

TASK filter: All Activities

moffatt & nichol

Spindrift Stairs - Alternative 4 (ADA Compliant Ramp)
ROM Opinion of Probable Cost

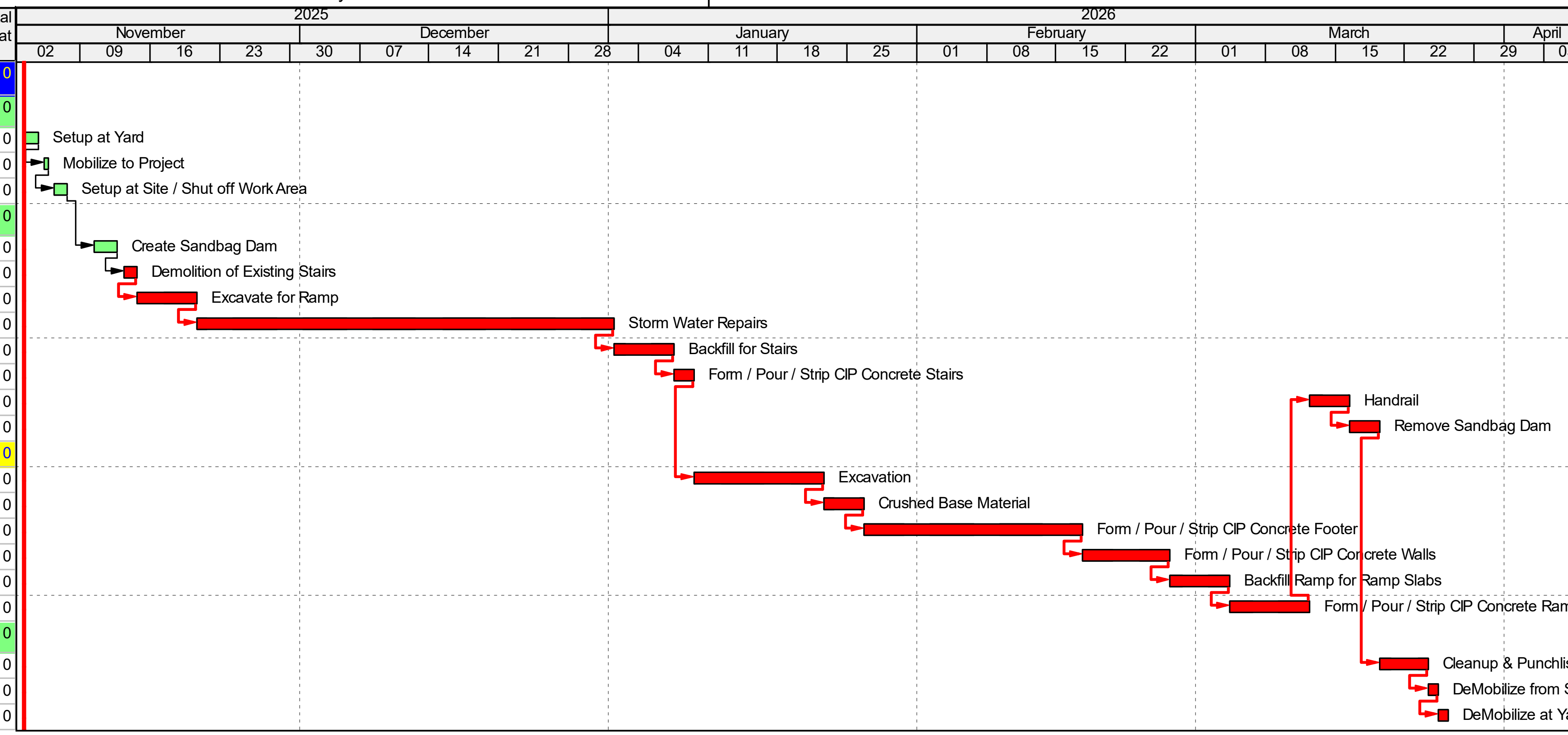
M&N Job Number: 21315-03
Date prepared: October 1, 2024
Design Status: Concept

Item	Description	Qty	Unit	Unit Price		Total Price
1	**Demolition & Removal**				**$**	**81,470**
1.1	Demo Existing Stairs	1	LS	$ 81,470	$	81,470
2	**Excavate / Backfill for Ramp**				**$**	**77,824**
2.1	Excavate / Backfill for Ramp	21	CY	$ 3,702	$	77,824
3	**Form / Pour / Strip CIP Concrete Stairs**				**$**	**30,606**
3.1	Form / Pour / Strip CIP Concrete Stairs	23	CY	$ 1,343	$	30,606
4	**Storm Repairs**				**$**	**401,911**
4.1	Storm Repairs (Type "F" Catch Basin, 6"PVC Pipe, 18" RCP, 18" RCP Collar)	1	LS	$ 401,911	$	401,911
5	**ADA Landing Ramp at Beach**				**$**	**707,991**
5.1	ADA Landing Ramp at Beach	1	LS	$ 707,991	$	707,991
6	**Handrail**				**$**	**73,991**
6.1	Handrail	580	LF	$ 128	$	73,991
SUBTOTAL					**$**	**1,373,793**
	Contractor O&P, Bonds, Insurance, & Indirect Costs		20%		$	274,759
	Mobilization		5%		$	68,690
	Traffic Control		5%		$	68,690
	Water Pollution Control (BMP)		2%		$	27,476
	Field Orders		2.5%		$	34,345
	Bonds		2.5%		$	34,345
	Construction Contigencies		10%		$	137,379
Total Construction Cost (TCC)					**$**	**2,019,475**
	TCC Rounded				**$**	**2,019,000**
	Construction (Field) Engineering and Construction Admin. Support		25%		$	504,750
	Design Administration, Engineering, and Environmental		30%		$	605,700
	Permitting and Regulatory Costs				$	850,000
	Project Delivery Cost				**$**	**1,960,450**
	20% Project Contigency		**20%**		**$**	**795,890**
	Project Total				**$**	**4,775,340**

Notes:

1. Costs are in 2024 USD.
2. This cost estimate is an opinion of construction cost made by the Consultant. In providing opinions of construction cost, it is recognized that neither the Client nor the Consultant has control over the costs of labor, equipment, materials or over the Contractors' methods of determining prices and bids. This opinion of construction cost is based on the Consultant's reasonable professional judgment and experience. This estimate does not constitute a warranty, expressed or implied, that the Contractors' bids or negotiated prices of work will correspond with the Owner's budget or the opinion of construction cost prepared by the Consultant.
3. Costs assume a work schedule of 5 days per week, 10 hours per day. (This is due to working around the potential Tides)
4. Cost assumes use of parking lot as contractor lay-down and staging area.
5. No Escalation is included.
6. Assumes no time of year restrictions environmental or other potential ecological shutdowns.
7. Costs assume Single Mobilization and DeMobilization for each scope of work.
8. Estimate assumes Mobilization and Demobilization of contractors' equipment from within a 250-mile radius.
9. Esimate includes no cost for potential dewatering.
10. Estimate assumes complete shutdown of work space to the public.
11. No Costs have been included for geotechnical exploration.
12. Permitting costs include labor, final design fees for City permits, and potential mitigation

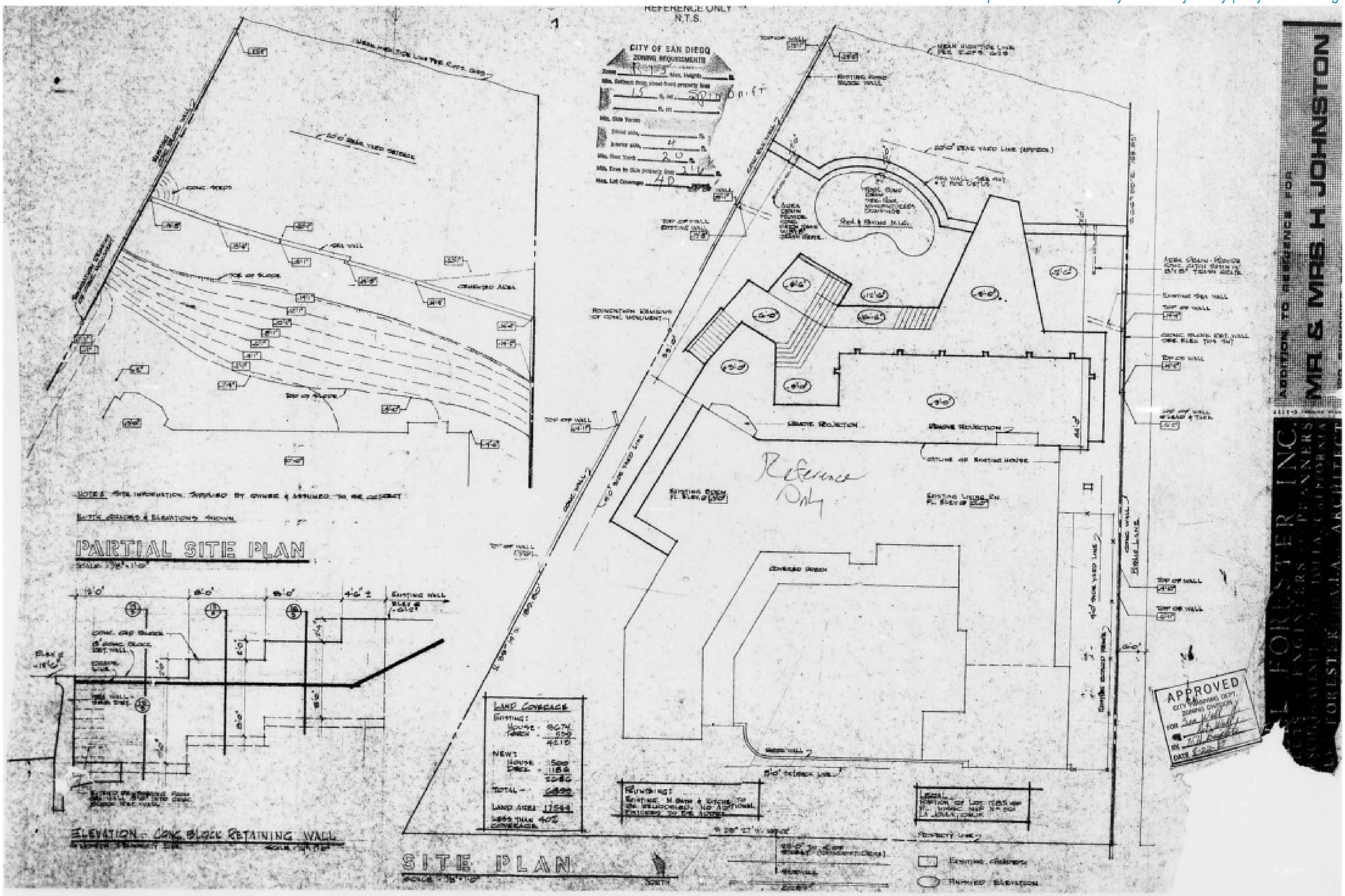
Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
Spin Drift Stairs (Option 4) REV 2		103	03-Nov-25	26-Mar-26	0
Mobilization		5	03-Nov-25	07-Nov-25	0
M1000	Setup at Yard	2	03-Nov-25	04-Nov-25	0
M1010	Mobilize to Project	1	05-Nov-25	05-Nov-25	0
M1020	Setup at Site / Shut off Work Area	2	06-Nov-25	07-Nov-25	0
Stair Construction		93	10-Nov-25	19-Mar-26	0
C1000	Create Sandbag Dam	3	10-Nov-25	12-Nov-25	0
C1010	Demolition of Existing Stairs	2	13-Nov-25	14-Nov-25	0
C1020	Excavate for Ramp	4	14-Nov-25	20-Nov-25	0
C1030	Storm Water Repairs	30	20-Nov-25	01-Jan-26	0
C1040	Backfill for Stairs	4	01-Jan-26	07-Jan-26	0
C1050	Form / Pour / Strip CIP Concrete Stairs	2	07-Jan-26	09-Jan-26	0
C1060	Handrail	2	12-Mar-26	16-Mar-26	0
C1070	Remove Sandbag Dam	3	16-Mar-26	19-Mar-26	0
ADA Landing at Beach		44	09-Jan-26	12-Mar-26	0
ADARamp1000	Excavation	9	09-Jan-26	22-Jan-26	0
ADARamp1010	Crushed Base Material	2	22-Jan-26	26-Jan-26	0
ADARamp1020	Form / Pour / Strip CIP Concrete Footer	16	26-Jan-26	17-Feb-26	0
ADARamp1030	Form / Pour / Strip CIP Concrete Walls	6	17-Feb-26	26-Feb-26	0
ADARamp1040	Backfill Ramp for Ramp Slabs	4	26-Feb-26	04-Mar-26	0
ADARamp1050	Form / Pour / Strip CIP Concrete Ramp	6	04-Mar-26	12-Mar-26	0
DeMobilization		5	19-Mar-26	26-Mar-26	0
DM1000	Cleanup & Punchlist	3	19-Mar-26	24-Mar-26	0
DM1010	DeMobilize from Site	1	24-Mar-26	25-Mar-26	0
DM1020	DeMobilize at Yard	1	25-Mar-26	26-Mar-26	0

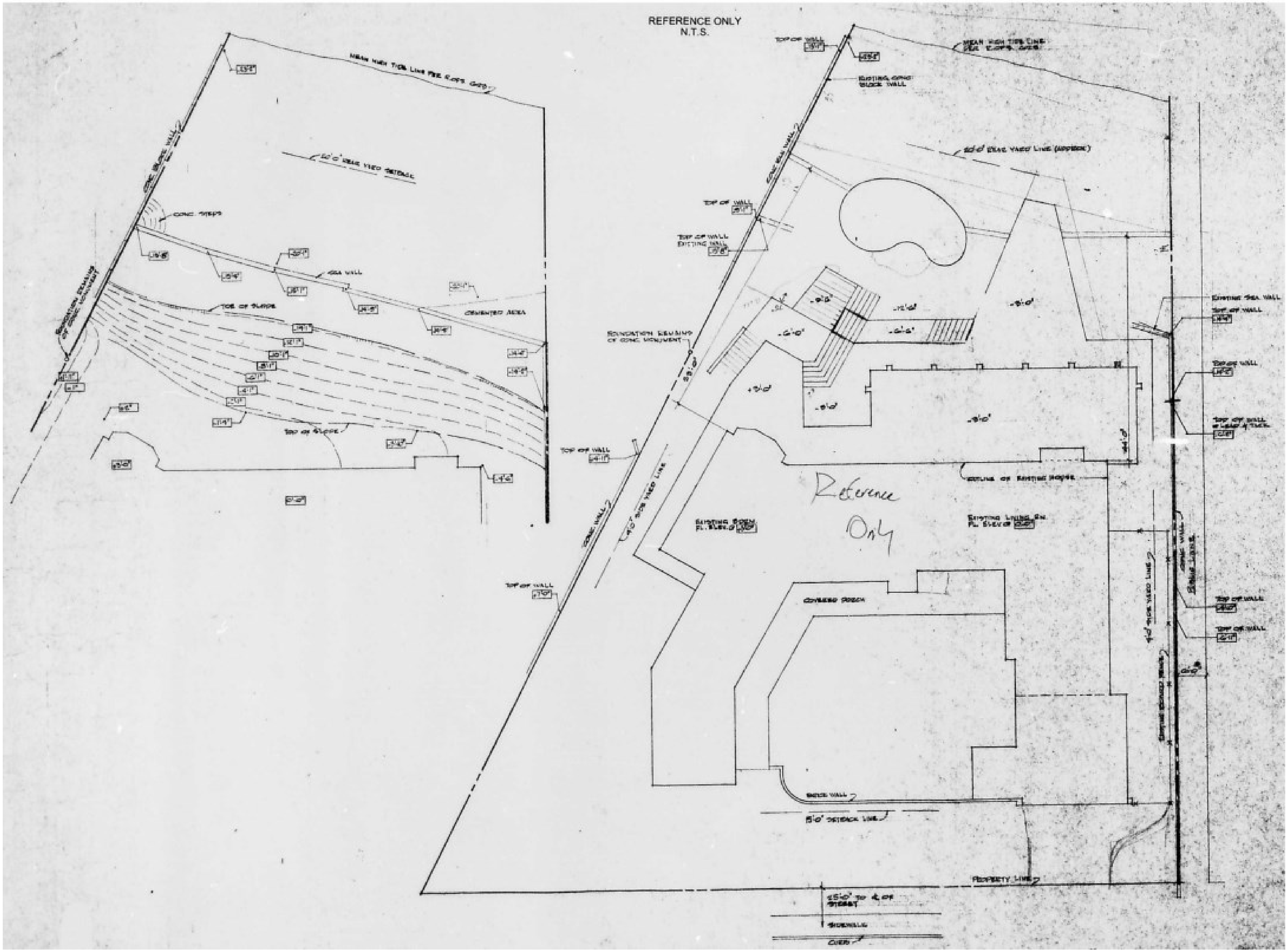


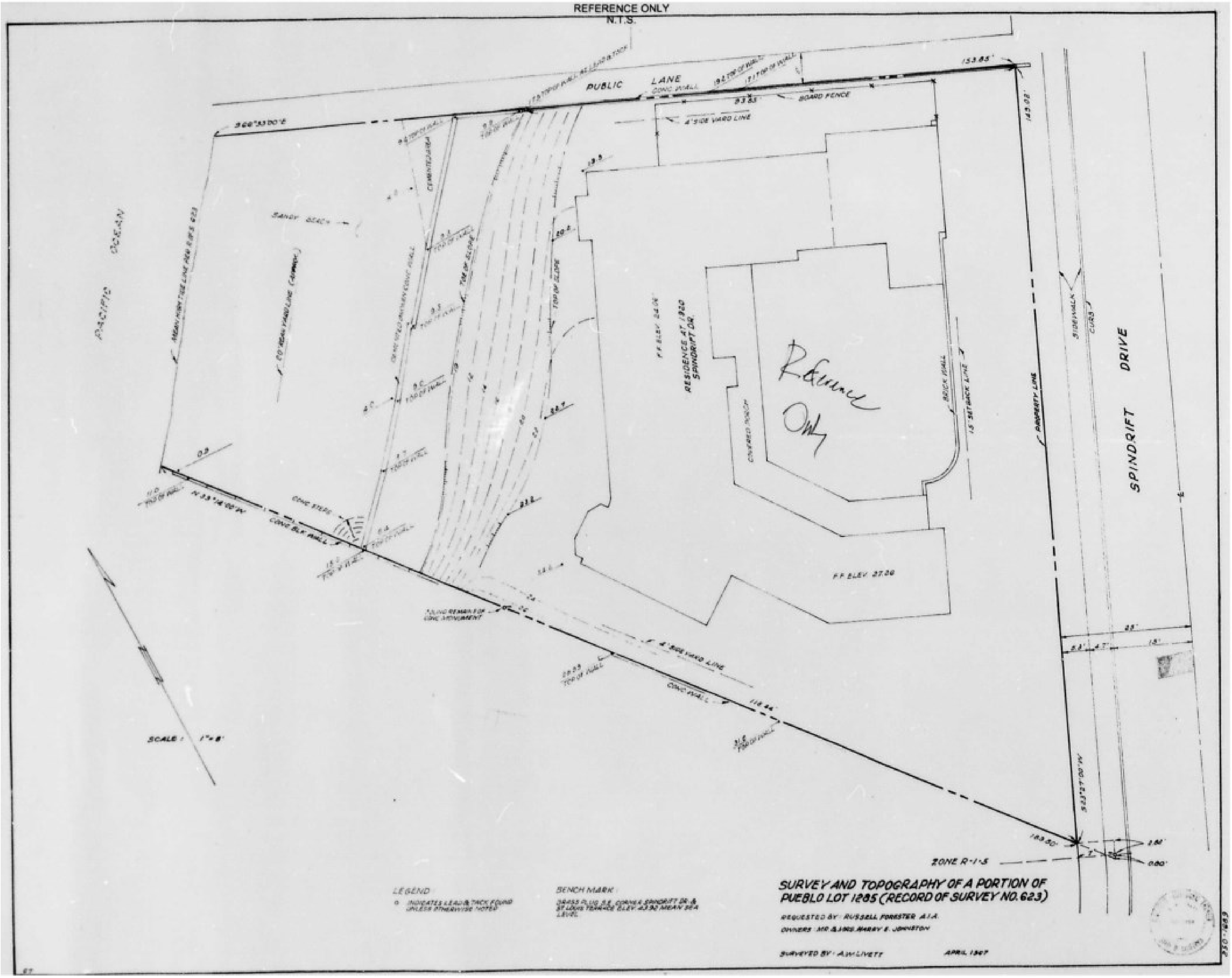
Marine Work — Remaining Work — Milestone
Actual Work — Critical Remaining Work

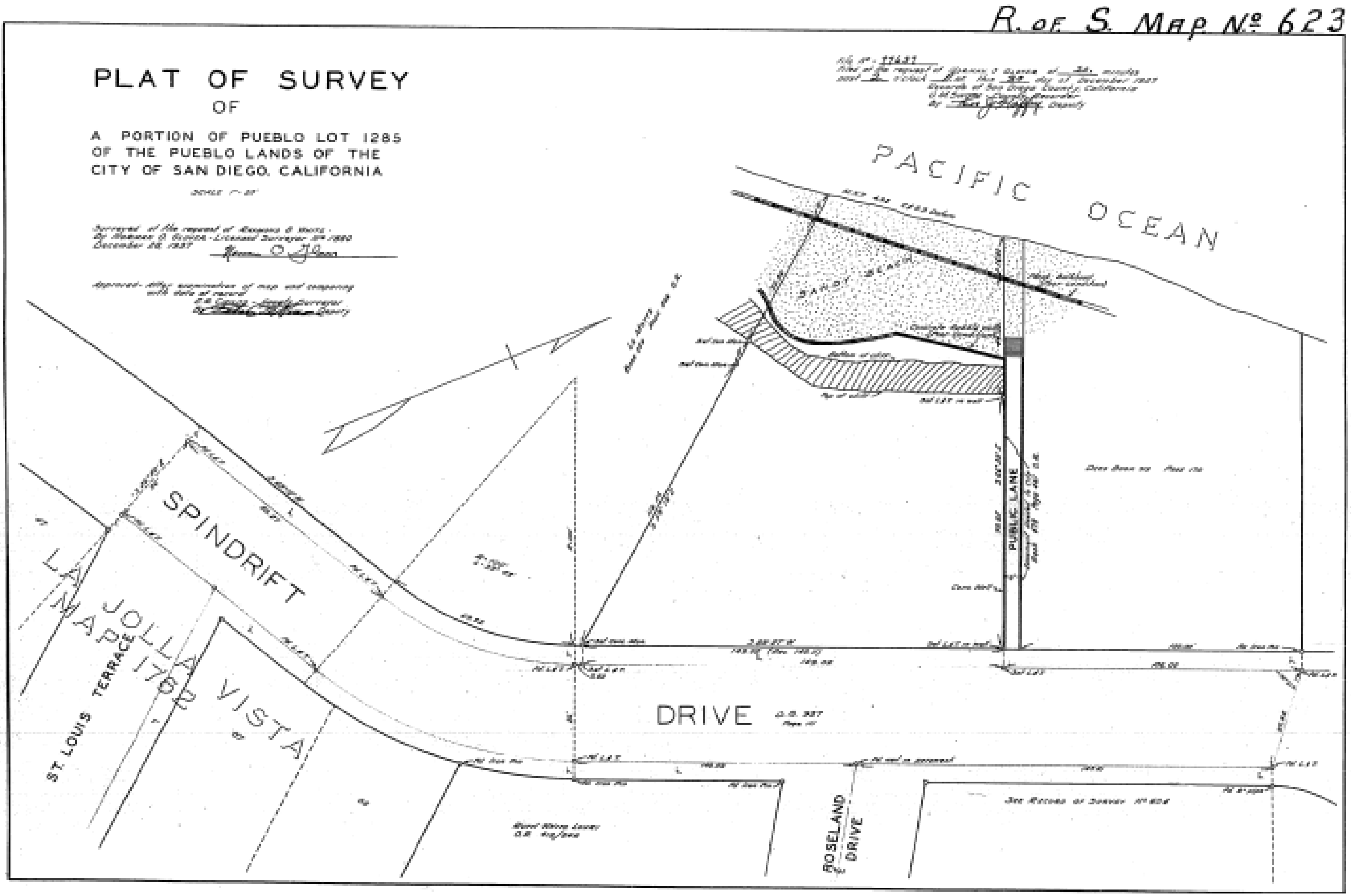
TASK filter: All Activities

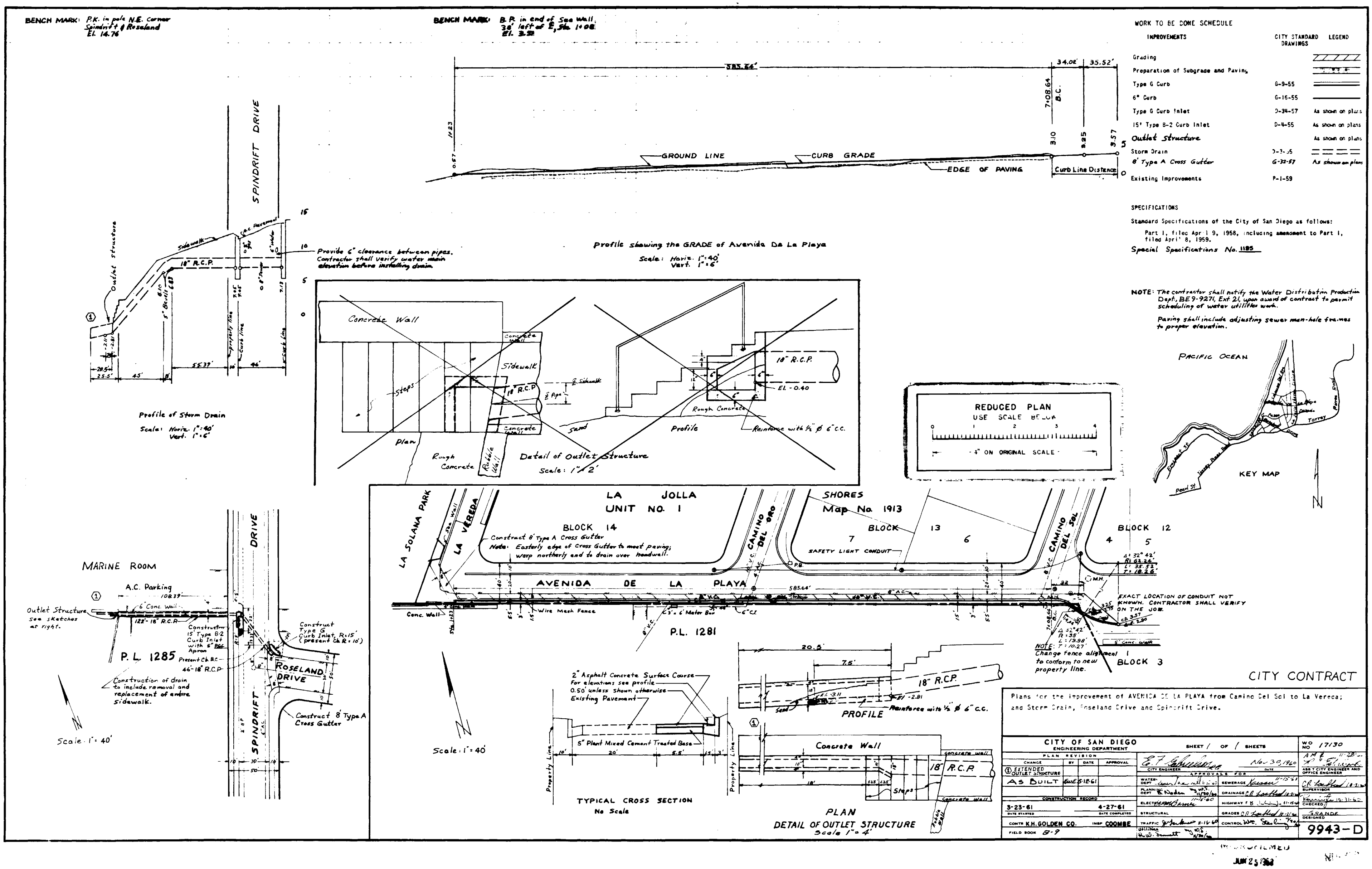
Appendix J – Available As-Built Drawings and Surveys


REFERENCE ONLY
N.T.S.
CITY OF SAN DIEGO
ZONING REQUIREMENTS
PARTIAL SITE PLAN
ELEVATION - CONC BLOCK RETAINING WALL
SITE PLAN
LAND COVERAGE
Reference Only
APPROVED
ADDITION TO RESIDENCE FOR
MR & MRS H JOHNSTON
FORESTER INC.
ARCHITECT


REFERENCE ONLY
N.T.S.
Reference Only
TOP OF WALL
EXISTING SEA WALL
CONC. STEPS
SEA WALL
TOE OF SLOPE
TOP OF SLOPE
CEMENTED AREA
OUTLINE OF EXISTING HOUSE
COVERED PORCH
PROPERTY LINE
SIDEWALK
CURB


REFERENCE ONLY
N.T.S.
PACIFIC OCEAN
PUBLIC LANE
SPINDRIFT DRIVE
SANDY BEACH
RESIDENCE AT 1920 SPINDRIFT DR.
COVERED PORCH
BRICK WALL
PROPERTY LINE
SIDEWALK
CURB
BOARD FENCE
4' SIDE YARD LINE
F F ELEV. 27.20
TOP OF SLOPE
TOE OF SLOPE
CONC. STEPS
CONC. BLK. WALL
CONC. WALL
ZONE R-1-5
SCALE: 1" = 8'
LEGEND
BENCH MARK
SURVEY AND TOPOGRAPHY OF A PORTION OF PUEBLO LOT 1285 (RECORD OF SURVEY NO. 623)
REQUESTED BY: RUSSELL FORESTER A.I.A.
OWNERS: MR. & MRS. HARRY E. JOHNSTON
SURVEYED BY: A.W. LIVETT
APRIL 1947
Reference Only


R. of S. Map No 623
PLAT OF SURVEY
OF
A PORTION OF PUEBLO LOT 1285
OF THE PUEBLO LANDS OF THE
CITY OF SAN DIEGO, CALIFORNIA
PACIFIC OCEAN
SANDY BEACH
SPINDRIFT
DRIVE
PUBLIC LANE
LA JOLLA VISTA
ST. LOUIS TERRACE
ROSELAND DRIVE


BENCH MARK: P.K. in pole N.E. Corner Spindrift & Roseland El. 14.76
BENCH MARK: B.P. in end of Sea Wall 32' left of ℄ Sta. 1+08 El. 3.52
WORK TO BE DONE SCHEDULE
IMPROVEMENTS
CITY STANDARD DRAWINGS
LEGEND
Grading
Preparation of Subgrade and Paving
Type G Curb
6" Curb
Type G Curb Inlet
15' Type B-2 Curb Inlet
Outlet Structure
Storm Drain
8' Type A Cross Gutter
Existing Improvements
SPECIFICATIONS
Special Specifications No. 1195
GROUND LINE
CURB GRADE
EDGE OF PAVING
Curb Line Distance
Profile showing the GRADE of Avenida De La Playa
Scale: Horiz. 1"=40' Vert. 1"=6'
SPINDRIFT DRIVE
Provide 6" clearance between pipes. Contractor shall verify water main elevation before installing drain.
Profile of Storm Drain
Scale: Horiz. 1"=40' Vert. 1"=6'
Concrete Wall
Sidewalk
18" R.C.P.
Steps
Plan
Profile
Rough Concrete
Detail of Outlet Structure
Scale: 1"=2'
REDUCED PLAN
USE SCALE BELOW
PACIFIC OCEAN
KEY MAP
LA JOLLA SHORES
UNIT NO. 1
Map No. 1913
BLOCK 14
BLOCK 13
BLOCK 12
BLOCK 3
AVENIDA DE LA PLAYA
LA SOLANA PARK
LA VEREDA
CAMINO DEL ORO
CAMINO DEL SOL
MARINE ROOM
A.C. Parking
Outlet Structure See sketches at right.
P.L. 1285
P.L. 1281
ROSELAND DRIVE
Construct 8' Type A Cross Gutter
Scale: 1"=40'
EXACT LOCATION OF CONDUIT NOT KNOWN. CONTRACTOR SHALL VERIFY ON THE JOB.
TYPICAL CROSS SECTION
No Scale
PROFILE
PLAN
DETAIL OF OUTLET STRUCTURE
Scale 1"=4'
CITY CONTRACT
Plans for the improvement of AVENIDA DE LA PLAYA from Camino Del Sol to La Vereda; and Storm Drain, Roseland Drive and Spindrift Drive.
CITY OF SAN DIEGO
ENGINEERING DEPARTMENT
AS BUILT
K.H. GOLDEN CO.
COOMBE
9943-D