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F13c

2-20-0443 (Pillar Point Harbor Living Shoreline)

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EXHIBITS

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Exhibit 1 – Project Location Maps

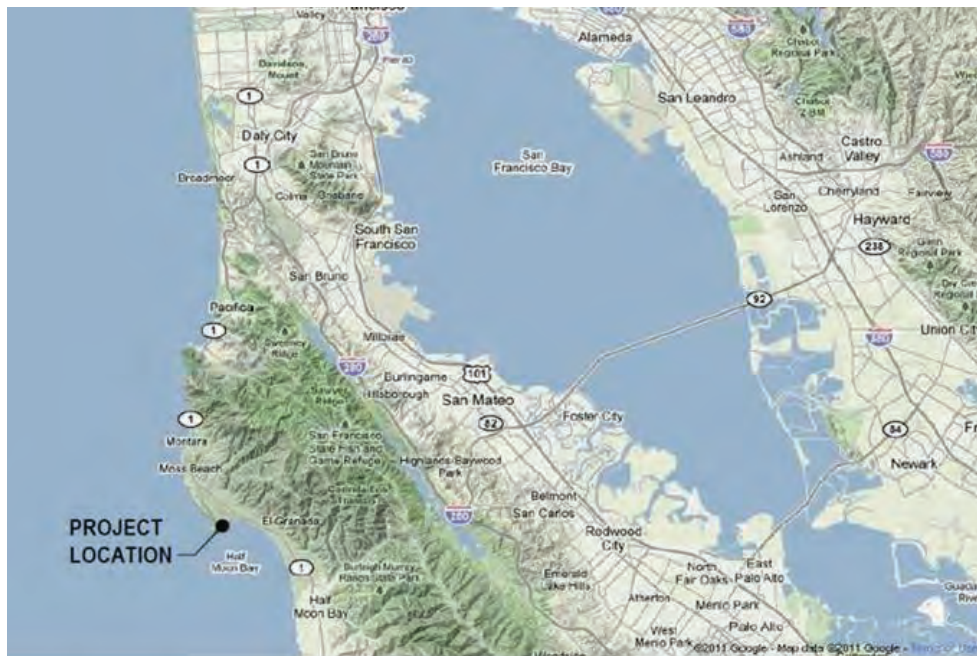


Figure 1. West Trail Regional Vicinity Location Map



Figure 2. West Trail Location Map Pillar Point Harbor

Exhibit 2 – Project Plans

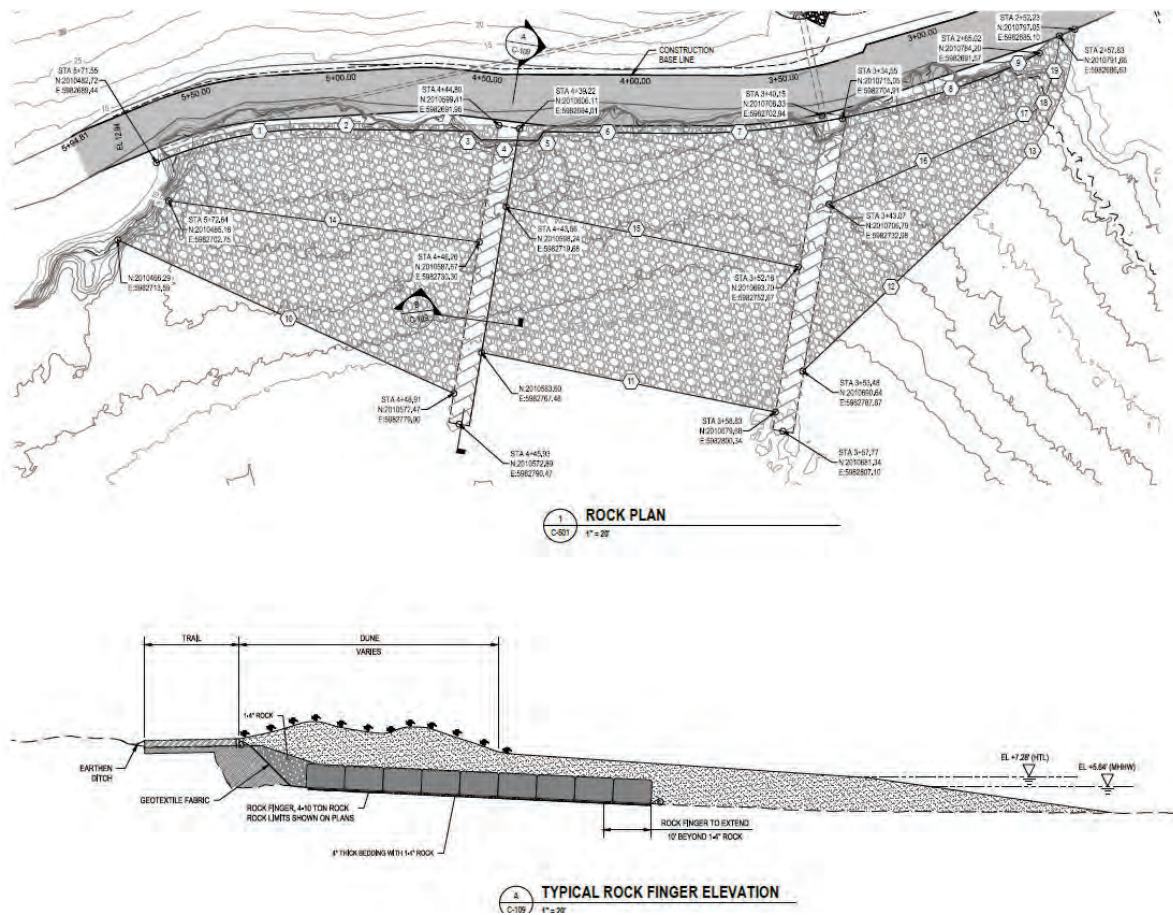


Figure 1. Rock plan.

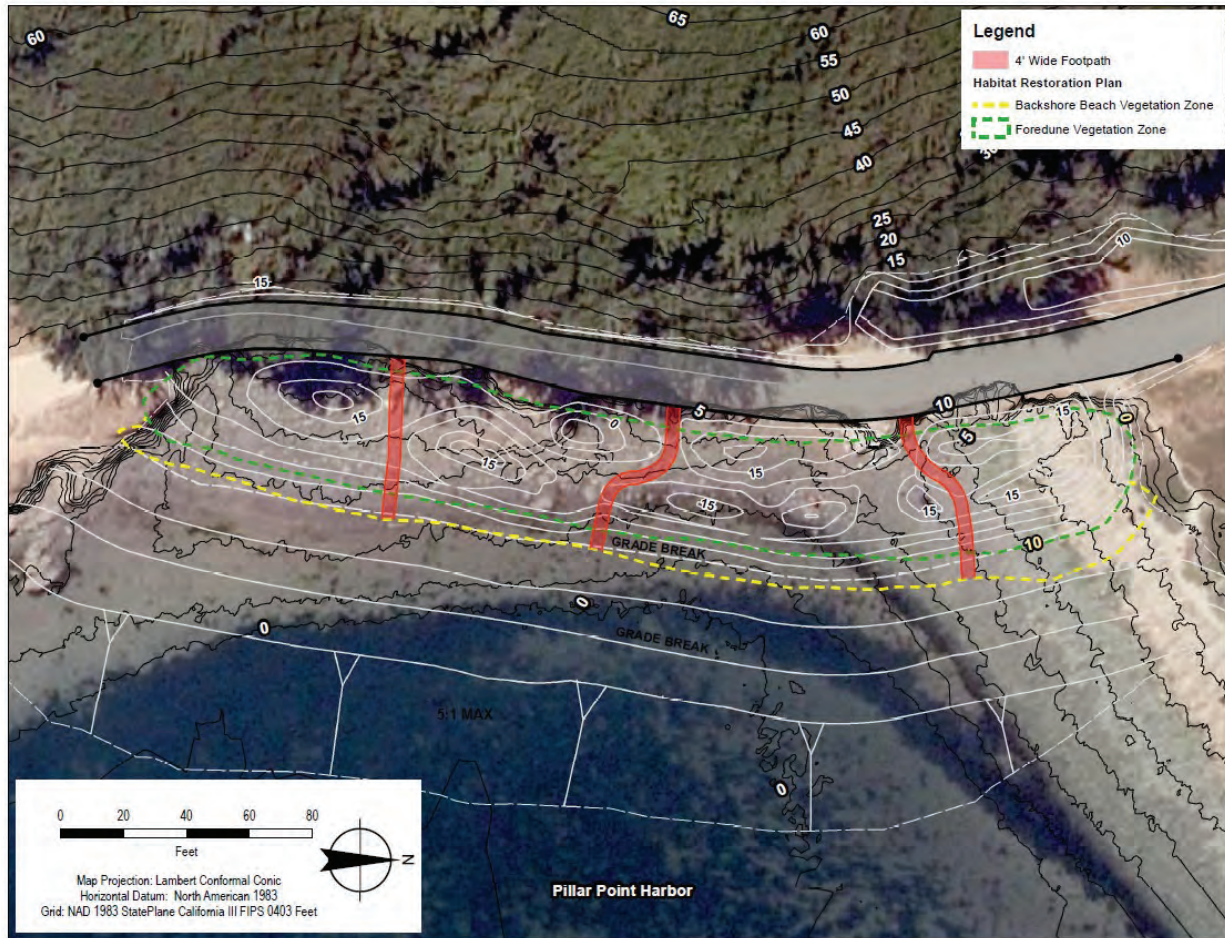


Figure 2. Site plan with pedestrian access to nourished beach from West Trail.

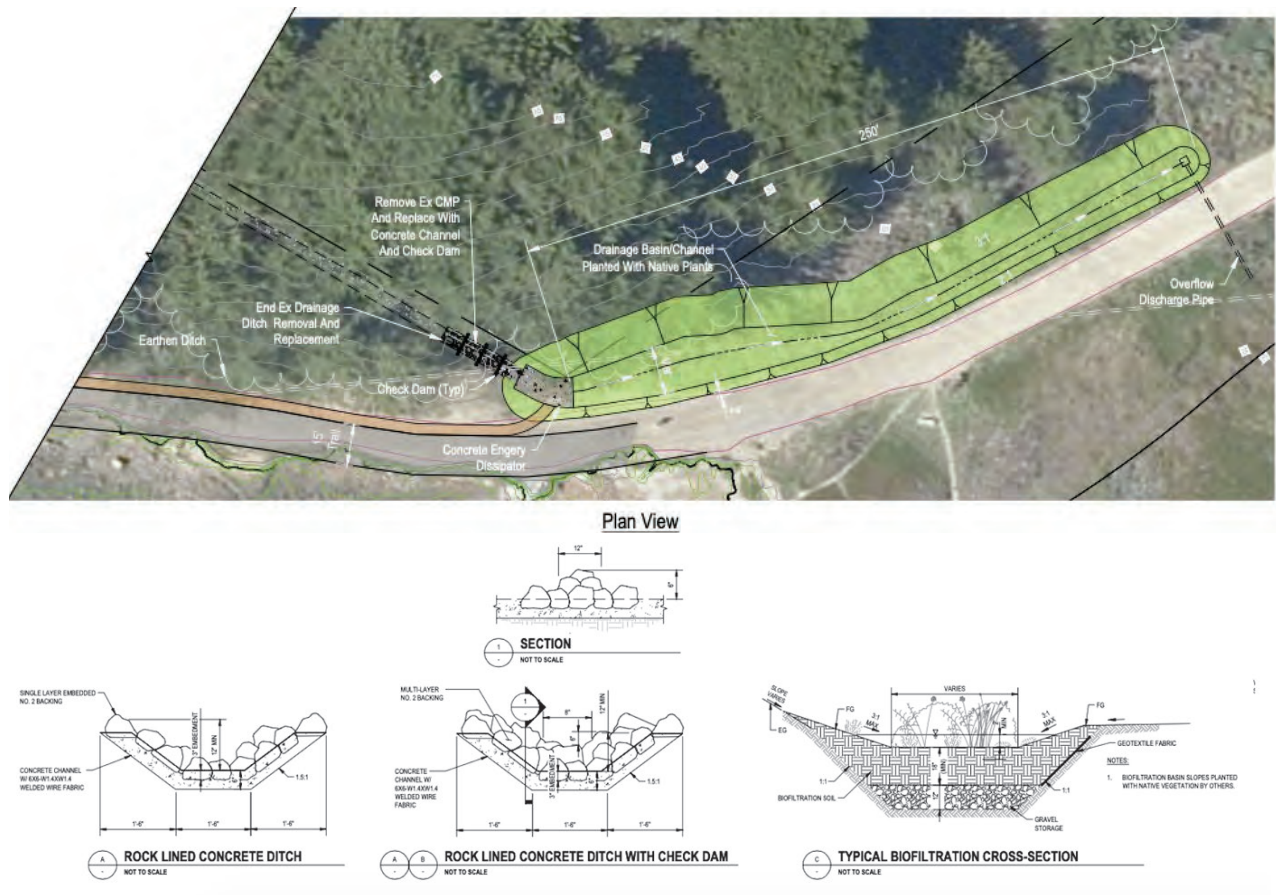


Figure 3. Proposed stormwater improvements.



Figure 4. Avian rookery adjacent to West Trail (in red).

Exhibit 3 – Site Photos



Figure 1. View of West Trail heading towards Maverick's beach.



Figure 2. View of undercut trail and rock debris heading north to West Trail parking lot.



Figure 3. Left – existing conditions of West Trail at high tide. Right – simulation of proposed living shoreline with vegetated dune.



Figure 4. View of undercut trail facing south west with view of the corrugated metal drainage pipe on hillside.



Figure 5. Rock debris next to eroded West Trail being used by pedestrians and cyclists.



Figure 6. Existing stormwater discharge pipe (to the right of center) with sandbag protection emptying into harbor.



Figure 7. Abandoned asbestos pipe to be encased in cement and sand slurry mix.



Figure 8. Photos of erosion and trail closures at the West Trail following storms in early December 2019.



Figure 9. Great Blue Heron roosting in the Monterey Cypress grove/rookery (left) and plucking perch within grove (right).

Exhibit 4 – Sand Source Location

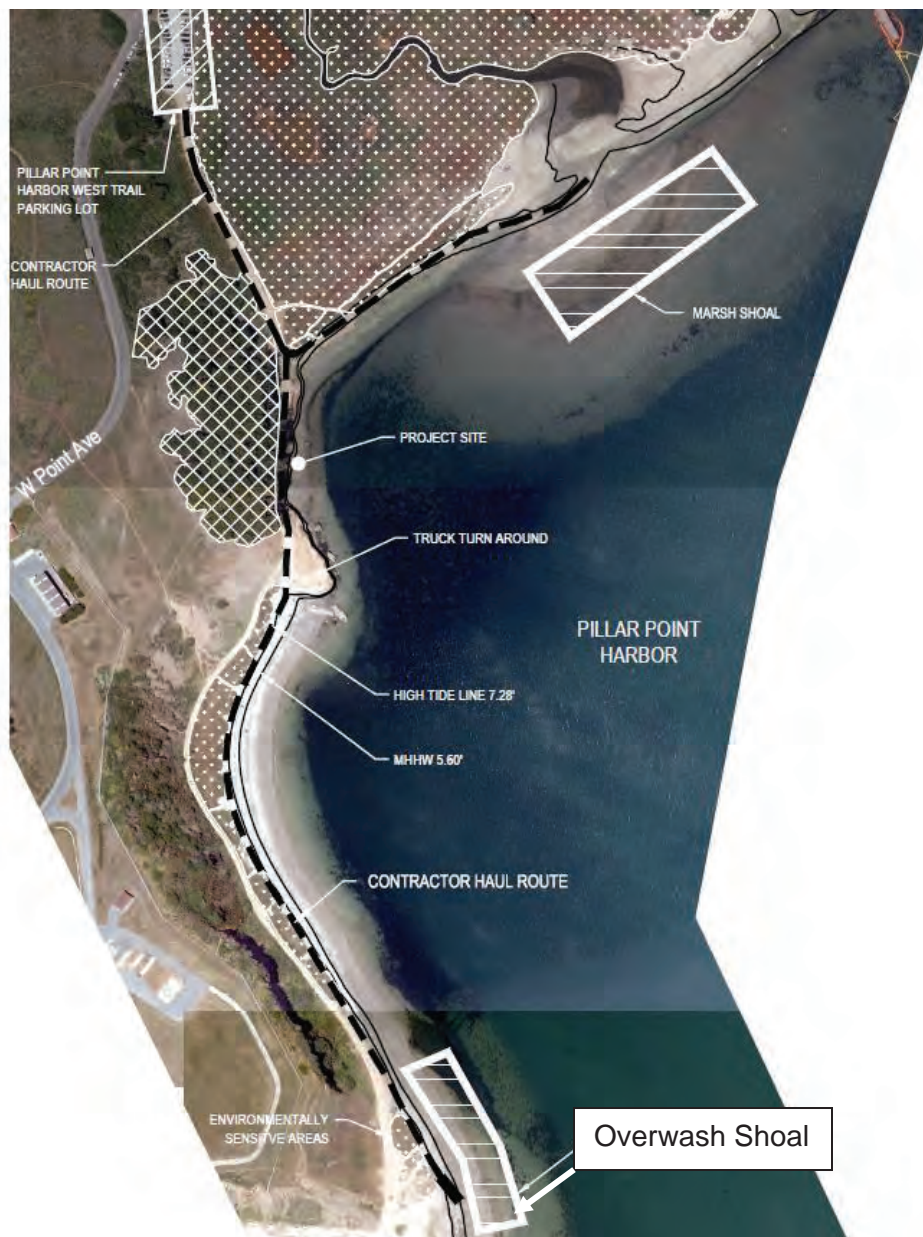


Figure 1. Sand Source area location. Only the Overwash Shoal will be used as a sand source site (as well as stockpiled sand in Half Moon Bay Airport).

Exhibit 5 - Proposed Mitigation Measures and BMPs

Conservation Measures Incorporated Into Project Design

- All cobble, gravel, and sand used for shoreline rehabilitation placed under the waterline shall be clean with minimal inclusion of fine material. Materials shall also be free of pollutants, pathogens, and invasive species;
- All construction materials proposed to be used for the living shoreline, including gravel, sand, and vegetation, is designed to mimic native environmental features of the surrounding area.
- Gravel and rock to be used for the living shoreline will be sourced from local quarries where possible or from other providers. Material that is chosen shall be clean material that replicates the existing shoreline while meeting the Project goals for trail protection. In addition, existing, native onsite rock at the site will be utilized in the project design. Onsite concrete debris will be removed.
- Improvements to the existing stormwater drainage system would halt direct discharge into the harbor and remove the visually unappealing pipe. Improvements would enhance the Pillar Point Marsh brackish-freshwater wetland transition zones, where they would be naturally filtered and transformed to improve harbor water quality, instead of flowing as point discharges directly to tidal waters (**Appendix A Figures, Figures 4**).
- As part of the backshore dune included in the living shoreline design, proposed plantings are designed to reintroduce native species and discourage re-establishment of non-native invasive species. Proposed works include relatively low-density transplanting (wide spacing, 6 feet or more apart) of local native perennial pioneer foredune and beach species (primarily yellow sand-verbena (*Abronia latifolia*), beach-bur (*Ambrosia chamissonis*), Vancouver wildrye (*Elymus x vancouverensis*), and saltgrass (*Distichlis spicata*) from Pillar Point Harbor) to allow for natural spread, vegetation patterning, and foredune landforms. Three historically native species are proposed to diversify the low foredune vegetation, including silvery beach pea (*Lathyrus littoralis*), pink sand-verbena (*Abronia umbellata*), and beach morning-glory (*Calystegia soldanella*). Inclusion would increase pollinator support, plant species diversity, enhance wildlife habitat and scenic views.

General Construction Conservation Measures

- The contractor will be supplied a copy of the consultation with conditions of approval that detail the below listed conservation measures prior to ground breaking, as well as any other pertinent avoidance and minimization measures.
- No project related activities will occur outside the delineated work area.
- No rodenticides, pesticides, or herbicides will be used as part of the project.
- Construction Areas: Areas within which construction activities and staging are to take place shall be minimized in size and shall be sited and designed to avoid impacts on coastal waters and marine life, and to the extent feasible, public access to the water and shoreline. Construction (including but not limited to dredging activities, and materials and/or equipment storage) is prohibited outside of the defined construction, staging, and storage areas.
- Construction Methods and Timing: Methods shall be used to keep the construction areas separated from public recreational use areas (including using unobtrusive fencing or equivalent measures to delineate construction areas) to the maximum extent practicable. Full closure of the trail is anticipated during night work (trail is already closed after dusk (varies seasonally) to the public per county rules).
- All vehicle parking will be restricted to previously determined staging areas or existing roads. Necessary vehicles belonging to the biological monitors and construction supervisors will be parked at the nearest point on existing access roads.

Construction Best Management Practices (BMPs)

Construction BMPs shall be used during construction to protect coastal water quality, including the following:

- Silt fences, straw wattles, or equivalent apparatus shall be installed at the perimeter of the construction site to prevent construction-related runoff or sediment from discharging to coastal waters or to areas that would eventually transport such discharge to coastal waters;

- The fueling and maintenance of vehicles and other equipment shall occur at least 100 ft (30.5 m) from any aquatic habitat or water body.
- All construction equipment shall be inspected and maintained at an off-site location to prevent leaks and spills of hazardous materials at the project site;
- The contractor shall ensure that good construction housekeeping controls and procedures are maintained at all times (e.g., clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain (including covering exposed piles of soil and wastes); dispose of all wastes properly; place trash receptacles on site for that purpose; cover open trash receptacles during wet weather; and remove all construction debris from the site); and
- All erosion and sediment controls shall be in place prior to the commencement of construction as well as at the end of each workday

Dredging BMPs

The approved dredging activities shall be carried out in compliance with BMPs that include the following:

- No project debris or waste shall be placed or stored where it may enter harbor or ocean waters, a storm drain, sensitive habitat, or be exposed to wave, wind, rain, or tidal erosion or dispersion;
- Dredging shall be conducted using an excavator during low tides;
- Dredging work shall occur in the dry (equipment is prohibited within the harbor). Equipment wetting as a result of an unforeseen wave is allowed;
- Dredging shall be executed as quickly as practicable to limit the duration of any impacts to water quality;
- Project equipment, vehicles, or other machinery not essential to the dredging shall not be allowed at any time to enter harbor waters or the intertidal zone;

Dredging operations, including transport of dredge materials shall not interfere with the public's ability to access the shoreline.

Solid Debris Management Plan (SDMP)

- An SDMP will be submitted by the contractor to ensure that solid debris generated during dredging, construction, or any other aspect of the work is retained and properly disposed. At a minimum, the plan shall include:
- Source and type of debris and solid waste;
- Method to retrieve and dispose of debris and solid waste;
- Legal upland site for disposal of debris and solid waste; and
- Removal of all debris from the work area each day.

Eelgrass

- An eelgrass survey undertaken by a qualified marine biologist was undertaken in August 2019, and no eelgrass was identified within or near the Project Area. The only vegetation observed to occur within the Project survey area was sea lettuce (*Ulva lactuca*). The seafloor across the surveyed area was fine sand and silt at depth and primarily fine sand close to shore (Marine Taxonomic Services 2019). Another eelgrass survey completed in November 2019 also confirmed that there is no eelgrass in or adjacent to the Project Area. However, since eelgrass growth can fluctuate both seasonally and from year to year, a pre- construction eelgrass and *Caulerpa* spp. clearance survey will be conducted to confirm the absence of these species prior to construction activities.

General Wildlife Conservation Measures

- At least 15 days prior to any ground disturbing activities, the applicant will submit to the Service for review and approval the qualifications of the proposed biological monitor(s). A qualified biological monitor means any person who has completed at least four years of university training in wildlife biology or a related science and/or has demonstrated field experience in the identification and life history of the listed species.
- Prior to the start of construction, a Service-approved biologist will conduct an Environmental Awareness Training. The training will educate all construction personnel regarding habitat, identification of special status species, and required practices before the start of construction. The training will include the general measures that are being implemented to conserve the species as they relate to the Project, the penalties for non-compliance, and the boundaries of

the Project Area. If new construction personnel are added to the project, the contractor will ensure that the personnel receive the mandatory training before starting work. A fact sheet or other supporting materials containing this information will be prepared and distributed to all construction personnel. Upon completion of training, construction personnel will sign a form stating that they attended the training and understand all the conservation and protection measures.

- A “soft-start” policy shall be implemented in order to allow wildlife species to vacate the area prior to construction activities
- A litter control program will be instituted at the Project site. All construction personnel will ensure that their food scraps, paper wrappers, food containers, cans, bottles, and other trash from the project area are deposited in covered or closed trash containers. The trash containers will be removed from the Project Area at the end of each working day.

Avian Conservation Measures

- In the highly unlikely event that Western Snowy Plovers or California Least Terns nest on the small beach along the West Trail within the Project Area, nest protection measures (as described below) will be implemented. In addition, no night work (including artificial lighting) will be permitted within 300 feet of the nest.
- If construction work occurs adjacent to suitable nesting habitat (i.e., beach) between January 15 to September 15 (general nesting season in the Project Area), a qualified ornithologist shall conduct pre-construction nest surveys (specifically for Western Snowy Plovers and California Least Terns). The ornithologist shall conduct at minimum a one day pre-construction survey within the 7-day period prior to ground-disturbing activities. If ground disturbance work lapses for seven days or longer during the nesting season, a qualified ornithologist shall conduct a supplemental avian pre-construction survey before project work is reinitiated.
- If active nests are detected within the construction footprint or up to 500 ft (152.4 m) from construction activities, the ornithologist shall flag a buffer around each nest (assuming property access). Construction activities shall avoid nest sites until the ornithologist determines that the young have fledged or nesting activity has ceased. If nests are documented outside of the construction (disturbance) footprint, but within 500 ft (152.4 m) of the

construction area, buffers will be implemented as needed (buffer size dependent on species). In general, the buffer size would be determined on a case-by-case basis in consultation with the CDFW and, if applicable, with USFWS. Buffer sizes will take into account factors such as (1) noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity (including proposed temporary new sources of light in the Project Area during night work); (2) distance and amount of vegetation or other screening between the construction site and the nest; and (3) sensitivity of individual nesting species and behaviors of the nesting birds. An absolute minimum buffer size of 30 feet (9.1 m) is recommended as a starting point of discussion for common species, with larger buffers expected for special status species and raptors.

- If active nests are detected during the survey, the qualified ornithologist shall monitor all nests at least once per week to determine whether birds are being disturbed. Activities that might, in the opinion of the qualified ornithologist, disturb nesting activities (e.g., excessive noise), shall be prohibited within the buffer zone until such a determination is made. If signs of disturbance or distress are observed, the qualified ornithologist shall immediately implement adaptive measures to reduce disturbance. These measures may include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed or nesting activity has ceased, placement of visual screens or sound dampening structures between the nest and construction activity, reducing speed limits, replacing and updating noisy equipment, queuing trucks to distribute idling noise, locating vehicle access points and loading and shipping facilities away from noise-sensitive receptors, reducing the number of noisy construction activities occurring simultaneously, and/or reorienting and/or relocating construction equipment to minimize noise at noise-sensitive receptors.
- To minimize the potential for disturbance of Marbled Murrelets foraging in or traveling to/from PPH during the dawn and dusk hours, temporary artificial lighting proposed during night work would be angled away from open water in PPH.

Reptile/Amphibian Conservation Measures

The following conservation measures, most adopted from the California Red-legged Frog (CRLF) Programmatic Biological Opinion (USFWS 2014), will be implemented to prevent mortality of ESA-listed reptiles or amphibians. Note that San Francisco

Garter Snake (SFGS) is state fully protected and there is no provision for issuance of a state incidental take permit, thus mortality must be avoided.

- There will be no use of plastic mesh erosion control materials, to prevent entanglement of CRLF or SFGS.
- No less than 15 calendar days prior to the onset of activities, the applicant shall submit the name(s) and credentials of biologists who could conduct the activities specified in the following measures. A qualified biologist means any person who has completed at least four years of university training including wildlife biology or related coursework, and/or has demonstrated field experience in the identification and life history of the CRLF and SFGS. Resumes of all biologists will be submitted to the Service for approval. No earth moving or other project activities will begin until written approval from the Service has been received that the biologist(s) is qualified to conduct the work.
- Pre-construction surveys for listed species will be conducted immediately prior to groundbreaking or ground disturbance activities (including grading or equipment staging) that occurs in CRLF or SFGS habitat or any activity that may result in take of these species. Surveys will be conducted by Service-approved biologists who will carefully search all obvious potential hiding spots for CRLF and SFGS, including but not limited to downed woody debris, culverts, riparian vegetation, and entrances to small mammal burrows. In the event that an ESA-listed animal is observed, construction will cease until the individual has moved out of the area of its own volition or has been relocated to an appropriate location. Only Service- approved biologists with appropriate permits will relocate listed species to the nearest suitable habitat away from project activities.
- Before the onset of any construction activities, the construction manager and Service- approved biologist will discuss locations for equipment, personnel access, and materials staging to minimize disturbance to CRLF and SFGS habitat.
- A Service-approved biologist will be onsite during all ground-disturbing activities (i.e., vegetation grubbing, excavation) within potential ESA-listed species habitat to ensure compliance with these avoidance measures. This includes monitoring during both daytime and nighttime work.

- After ground disturbing activities are complete, the Service-approved biologist will train an individual to act as the on-site construction monitor. The construction monitor will have attended the Environmental Awareness Training described above under Section 2.5.5. Both the Service-approved biologist and the construction monitor will have the authority to stop and/or redirect project activities to ensure protection of resources and compliance with all environmental permits and conditions of the Project. The Service-approved biologist and construction monitor will complete a daily log summarizing activities and environmental compliance.
- The Service-approved biologist will have oversight over the implementation of all the Terms and Conditions resulting from consultation (conducted as part of the resource permitting process), and will have the authority to stop Project activities if any of the requirements associated with these Terms and Conditions are not being fulfilled. If the biologist has presented a stop work order due to take or near-take of any of the listed species, the Service and the CDFW will be notified within one (1) working day via email or telephone.
- A Service-approved biologist shall survey the work site immediately prior to construction activities. If CRLF adults, tadpoles, or eggs or SFGS or are found, the approved biologist shall contact the Service to determine if moving any of these life-stages is appropriate. In making this determination the Service shall consider if an appropriate relocation site exists as provided in the relocation plan. Artificial lighting at night will be taken into consideration for relocation sites (i.e., relocation should occur outside of areas proposed for nighttime illumination). If the Service approves moving animals, the approved biologist shall be allowed sufficient time to move CRLF or SFGS from the work site before work activities begin. Only Service-approved biologists shall participate in activities associated with the capture, handling, and monitoring of CRLF or SFGS.
- Bare hands shall be used to capture CRLF or SFGS. Service-approved biologists will not use soaps, oils, creams, lotions, repellents, or solvents of any sort on their hands within two hours before and during periods when they are capturing and relocating individuals. To avoid transferring disease or pathogens of handling of the amphibians, Service-approved biologists will follow the Declining Amphibian Populations Task Force's Code of Practice (DAPTF 2004).

- The site inspector will be trained by the Service-approved biologist and may act as the construction monitor during non-ground disturbing or lower risk portions of the Project. The inspector will be identified during the employee education program. The name and telephone number will be provided to the Service prior to the initiation of ground disturbance activities.
- No pets will be permitted in the work area to avoid harassment, killing, or injuring of CRLF or SFGS individuals. Because the work area occurs along a pedestrian trail on which dogs are permitted, it is understood that canine or feline pets may be present in the vicinity of the work area that do not belong to the construction workers.
- No firearms may be discharged within the work area (except for Federal, State, or local law enforcement officers in the conduct of their duties).

Fish and Sea Turtle Conservation Measures

Although listed fish and sea turtles species may occur in the Action Area during construction activities, these species will not occur in the Project Area itself (as no in-water work will occur, and the beach within the Project Area is not a turtle nesting beach) (see justification for exclusion in greater detail in **Section 3.3**). However, critical habitat for Leatherback Sea Turtles is located within the Action Area below the extreme low water line. To avoid any possible impacts to listed fish and sea turtles and critical habitat, the following measures shall be implemented:

- All sediment dredging would occur at low tide when no standing water is present.
- No refueling or maintenance of equipment would occur below the high tide line plus a reasonable buffer to prevent contamination.

Marine Mammal Conservation Measures

Pacific Harbor Seals and California Sea Lions are common residents of PPH and frequently haul-out on docks in the harbor. These species do not commonly haul out on the small strip of sand adjacent to the West Trail (likely due to the small area of the beach and regular disturbance from pedestrians and domestic dogs; G. Rozhon, personal observation). However, both species are frequently observed foraging in the water directly adjacent to the trail (G. Rozhon, personal observation). It is possible that in-air construction noise may disturb marine mammals foraging in or

adjacent to the Action Area during trail and shoreline restoration efforts. No in-water noise impacts are expected, as no in-water work (i.e., work below the high tide line) will occur with the exception of placement of sand and rock fill during low tide. Placement of fill will only occur in the dry. Visual disturbance is not expected, as the trail receives heavy pedestrian use on a daily basis. Based on the proposed construction equipment (Section 2.1.3), it is anticipated that construction noise may reach levels as high as 106 dBA at the source (associated with the CAT 336 excavator) (CAT 2017). Marine mammals may be disturbed by elevated in-air noise levels.

NOAA Fisheries (2018) has provided the following guidance on in-air noise behavioral disruption thresholds for Harbor Seals and non-Harbor Seal pinnipeds. These thresholds are provided in Table 2.2, for reference. Behavioral disruption guidance has not been published by NOAA at this time for other marine mammal groups, such as cetaceans. Cetaceans are not expected to experience any airborne noise impacts from construction activities in the Action Area.

Table 2.2 Marine Mammal Behavioral Disruption Thresholds for In-Air Noise (Level B Harassment) (NOAA Fisheries 2018)

Marine Mammal Group	Behavioral Disruption Threshold
Harbor Seals	90 dBrms
Non-harbor seal pinnipeds	100 dBrms

In-air noise thresholds for marine mammals are published in root-mean-squared decibels (dBrms). Construction equipment noise was only readily available in the form of a-weighted decibels (related to peak sound pressure level perceived by the human ear). We applied these dBA values in the models (and they serve as a conservative approach, as peak vs dBrms noise values for the same construction activity typically have higher values; Buehler et al. 2015). To investigate in-air noise impacts to marine mammals in the Action Area, we used the Spherical Spreading Loss Model (SSLM) recommended by NMFS (2012) for spherical-spreading noise. The SSLM is presented in NMFS (2012) as:

$$\text{Transmission Loss (TL)} = 15 \log (R2/R1)$$

Where R1 is the distance of a known or measured sound level and R2 is the estimated distance required for the sound to attenuate to a predetermined acoustic threshold. The number 15 serves as the transmission loss constant in water while this is substituted for a value of 20 on land (NMFS 2012, WSDOT 2012).

The equation may be rearranged to solve for R2 (the isopleth or area of potential noise effects for the purposes of our analysis) as:

$$R2 = R1 * 10^{((dB \text{ at } R1 - dB_{\text{acoustic threshold}})/20)}$$

Applying expected construction noise data and marine mammals thresholds to the spherical spreading loss model (provides distance at which source noise attenuates to a certain threshold; WSDOT 2012), it is expected that Pacific Harbor Seals may be disturbed by construction noise within 6.3 feet (1.9 meters) and California Sea Lions within 2 feet (0.6 meters) of the Project Area. Based on the width of the trail and the width of the beach, it is extremely unlikely that either of these species would be that close to construction activities. However, to avoid any potential for disturbance, the following avoidance measure is proposed:

- A “soft start” (e.g. ramp-up period) prior to full-power equipment use at the beginning of each day, or following a 30 minute or longer break, will be implemented to warn any marine mammals to move away from the construction area.

To address possible disturbance from temporary artificial lighting during night work:

- Temporary artificial lighting proposed during night work would be angled away from open r in PPH.