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Staff:	E. Lavine - SF
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STAFF REPORT: REGULAR CALENDAR

Application Number:	2-15-1357
Applicant:	San Francisco Public Utilities Commission
Project Location:	Ocean Beach seaward of the Great Highway in the City/County of San Francisco.
Project Description:	Annual movement of up to 100,000 cubic yards of sand from North Ocean Beach to South Ocean Beach (south of Sloat Boulevard), and potential placement of sandbags fronting the Great Highway south of Sloat in response to defined erosion events, for the next 6 years.
Staff Recommendation:	Approval with Conditions.

SUMMARY OF STAFF RECOMMENDATION

The San Francisco Public Utilities Commission (SFPUC) proposes to annually move sand and, as needed, install sandbags along a portion of Ocean Beach fronting the Great Highway in the City and County of San Francisco. The project is proposed to address an ongoing erosion issue that threatens significant public infrastructure, including the Great Highway and the City's wastewater infrastructure located in the area of Ocean Beach south of the intersection of Sloat Boulevard and the Great Highway. The proposed project is designed to be a temporary (for up to 6 years), "soft" protection approach that will allow for protection of the infrastructure while the Applicant's work on a long-term solution is finalized, goes through environmental review, and receives necessary permit approvals and authorizations. That long-term solution is part of a move

that envisions narrowing and eventually abandoning the Great Highway south of Sloat, removing armoring, and managing shoreline retreat in this area differently, all as called out in the 2012 Ocean Beach Master Plan and its Implementation Studies.[1]

During the initial up to 6-year term of this permit, existing rock revetments and sandbags along much of the project area south of Sloat Boulevard would be allowed to remain in place, as they are required to help assure short-term structural stability and protection of existing significant public infrastructure in danger from erosion. The long-term project, due to be implemented beginning in 2021, would likely include removal of these revetments and sandbags and a series of managed retreat measures designed to avoid hard armoring as much as possible in favor of instead managing the shoreline more naturally (with sand dunes, for example) and facilitating enhanced public recreational access in the area.

To buy the necessary time to reach that goal, the current proposed short-term project would take sand from North Ocean Beach (where sand is accreting — in part due to dredging associated with navigation channels into the San Francisco Bay — and overflowing onto parking areas and the road) and use it both to create temporary sand berms along the bluffs south of Sloat, and to stockpile it for use in sand bags that could be used to address more acute erosion events. Namely, the Applicant would use the sandbags in the event that erosion notches in the bluffs intruded upon the Great Highway and related public infrastructure, including more specifically to within 50 feet from the wastewater transport tunnel located under the Great Highway. At the end of the initial 6 years, all rock revetments and stacked sand bags would be removed, including that all sand within the sandbags would be returned to the beach.

Staff concurs with the Applicant that interim shoreline protection measures, including retention of existing revetments and sandbags for the next 6 years, are necessary to protect the existing infrastructure inland of South Ocean Beach that is in danger from erosion consistent with Coastal Act Section 30235, and that the impacts to coastal resources would be severe should damage as a result of erosion occur to the roadway, wastewater infrastructure, and public access facilities. Even so, this short-term project will still result in some impacts to sand supply and public access during the time it is in place. To a certain degree, adverse impacts of the project are mitigated by the project design, which will nourish the beach in an area with a steep bluff face prone to erosion, and will help enhance lateral and vertical public access to the beach in that same area by creating a wider sandy bluff and vertical sand ramps as opposed to steep and eroding bluffs and rock. The sand relocation also improves lateral and vertical public access to the North Ocean Beach area by removing excessive sand blockage of existing stairwells and corridors to and from the beach and parking lots. While the sand relocation does not address the impact of armoring in terms of the loss of sand to the larger littoral cell, per se, it does have the effect of adding sand to the portion of Ocean Beach where beach loss is occurring and removing it where accretion is having adverse impacts on public access. In addition, the project here must also be understood in relation to Phase II of the project that is intended to occur in 2021. That long-term solution would be expected to have significant positive impacts on the beach and shoreline environment, not only in terms of sand supply processes, but also public recreational access overall. Although

[1] The Ocean Beach Master Plan was prepared by the San Francisco Planning and Urban Research Association (SPUR), and was the result of a significant collaborative planning effort that has engaged the City as well as a range of key interested parties, including Commission staff, and which enjoys fairly broad support.

that project is not before the Commission at this time, the impacts of this project must also be understood in relation to the way in which it facilitates and provides for a longer-term solution like that coming to fruition.

In order to address coastal hazards at this location while also protecting other coastal resources under the Coastal Act, Staff recommends a series of conditions to the project. These conditions are designed to authorize these initial temporary measures for 6 years to facilitate implementation of the long-term plan for this area. The conditions also require ongoing maintenance of all of the shoreline measures installed in relation to as-built plans, and require the Applicant to assume the risk inherent in shoreline development. The proposed project and associated construction activities also present the potential for adverse impacts to public access and recreation, marine resources and water quality, visual resources, environmentally sensitive habitat areas (ESHA), and archaeological resources. Accordingly, conditions are also provided to maintain public access to the beach to the maximum extent possible during construction activities; ensure maximum protection for any special status species that might be present; avoid construction-related impacts; and ensure protection of any archaeological resources uncovered within the project area. Conditions are also incorporated requiring the Applicant to obtain any necessary permits and approvals required by other agencies, and to accept liability for costs and attorneys' fees should approval of this coastal development permit (CDP) result in action against the Commission.

Overall, the proposed project represents a large-scale example of the challenges confronting the State in terms of shoreline erosion, global climate change, sea level rise, and their attendant impacts, including the need to maintain important infrastructure and protect valuable coastal resources. The Ocean Beach Master Plan represents an adaptation success story for not only the City and County of San Francisco but also the State of California. It is generally premised on relocating critical infrastructure inland, restoring the shoreline area to a more natural state, and otherwise allowing natural processes along this stretch of coast to continue and reach their natural equilibrium as much as possible. Although much work and additional decisions are necessary before the longer term solution is brought to fruition, this is an important project that has significant implications not only for Ocean Beach, but also for other areas of the State — including that it shows what a planning process that takes on the types of difficult questions inherent to the coastal interface can look like. Commission Staff has worked closely with SPUR, the City, and a wide range of interested and engaged stakeholders to get to this current place, and strongly recommends that the Commission approve Phase I of these efforts. The motion to approve the CDP with conditions is found on page 5 below.

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I. MOTION AND RESOLUTION

Staff recommends that the Commission, after public hearing, **approve** a coastal development permit for the proposed development. To implement this recommendation, staff recommends a **YES** vote on the following motion. Passage of this motion will result in approval of the CDP as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

Motion: *I move that the Commission approve Coastal Development Permit Number 2-15-1357 pursuant to the staff recommendation, and I recommend a yes vote.*

Resolution to Approve CDP: *The Commission hereby approves Coastal Development Permit Number 2-15-1357 and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with Coastal Act policies. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.*

II. STANDARD CONDITIONS

This permit is granted subject to the following standard conditions:

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the Permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the Permittee to bind all future owners and possessors of the subject property to the terms and conditions.

III. SPECIAL CONDITIONS

This permit is granted subject to the following special conditions:

1. **Term of Authorization**. This CDP authorizes the shoreline protection system fronting the bluffs south of Sloat Boulevard consisting of: 1) the work proposed in CDP Application No. 2-15-1357 (sandbags and sand relocation); 2) the Emergency Quarrystone Revetment as depicted on **Exhibit 3;** 3) the Emergency Bluff Toe Protection as depicted on **Exhibit 3;** and 4) the Emergency Sandbag Structure as depicted on **Exhibit 3**, until December 31, 2021, or until the time when the currently existing structures warranting protection are no longer present and/or no longer require such protection, whichever occurs first. If the Permittee intends to keep the existing shoreline protection system or any portion of it in place, including any sand relocation or sand bag activities, after December 31, 2021, the Permittee must submit a complete CDP application (or complete CDP amendment application if deemed appropriate by the Executive Director) prior to December 31, 2021. Otherwise, the Permittee shall submit two copies of a removal and restoration plan to the Executive Director for review and approval, where such plan shall provide for the removal of the shoreline protection system and restoration of all affected areas in a manner designed to be most protective of coastal resources, no later than December 31, 2021.

2. **Long-Term Solution**. The Permittee acknowledges that the shoreline protection system authorized pursuant to this CDP is temporary in nature, and is permitted in order to provide a reasonable period of time for the Permittee to develop and implement a long-term managed retreat solution (as currently outlined generally in **Exhibit 7**) to the erosion threat to the Great Highway and related public infrastructure in this area. The Permittee shall submit two copies of an annual report to the Executive Director for review and approval at annual intervals no later than November 1st of each year (with the first report due November 1, 2016), identifying progress made toward implementation of the long-term solution. If, after review of the annual report, in the opinion of the Executive Director, the Permittee is significantly out of compliance with the terms and conditions of this CDP, including meeting target deadlines established in **Exhibit 7** (on page 2), then the matter of noncompliance shall be scheduled for Coastal Commission review and potential action, where such action at the Coastal Commission's discretion may include modifying the terms and conditions of this CDP, including the term of the permit.

3. **Project Plans.** PRIOR TO CONSTRUCTION ASSOCIATED WITH ANY INDIVIDUAL DEVELOPMENT EPISODE, the Permittee shall provide two copies of Project Plans for Executive Director review and approval showing all development and related activities (including but not limited to sand relation/berming, sand bag placement, wind fencing/barriers, and public access pathways/accessways) associated with the development episode, all of which shall be substantially consistent with the development as authorized in **Special Condition 1**, and shall be sited and designed to protect coastal resources to the maximum extent feasible. The Permittee shall undertake development in accordance with the approved Project Plans. All requirements above and all requirements of the approved Project Plans shall be enforceable components of this CDP.

4. **As-Built Plans.** WITHIN 30 DAYS OF ANY ACTIVITIES UNDERTAKEN PURSUANT TO THIS COASTAL DEVELOPMENT PERMIT, or within such additional time as the Executive Director may grant for good cause, the Permittee shall submit two copies of As-Built Plans for Executive Director review and approval showing all revetments and sandbags, any development undertaken as authorized by this CDP, public infrastructure (i.e., parking lots, pathways, the Great Highway, the Lake Merced Tunnel), and all property lines for the shoreline area affected by the approved project. The As-Built Plans shall be substantially consistent with the project as described in CDP Application No. 2-15-1357 and as shown in **Exhibit 3**. The As-Built Plans shall include a graphic scale and all elevation(s) shall be described in relation to National Geodetic Vertical Datum (NGVD). The As-Built Plans shall include color photographs (in hard copy and .jpg or other electronic format) that clearly show all components of the as-built project and all areas depicted on the As-Built Plans, and that are accompanied by a site plan that notes the location of each photographic viewpoint and the date and time of each photograph. At a minimum, the photographs shall be upcoast, seaward, and downcoast viewpoints, seen from the edge of the highway and from a sufficient number of beach viewpoints as to provide complete photographic coverage of the permitted shoreline protection system and the public infrastructure being protected at this location. Such photographs shall be at a scale that allows comparisons to be made with the naked eye between photographs taken in different years and from the same vantage points; recordation of GPS coordinates would be desirable for this purpose. The As-Built Plans shall be submitted with certification by a licensed civil engineer with experience in coastal structures and processes, acceptable to the Executive Director, verifying that the shoreline protection system has been constructed in conformance with the project as described in CDP Application No. 2-15-1357 and as shown in **Exhibit 3**.

5. **Construction Plan.** PRIOR TO COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit two sets of a Construction Plan to the Executive Director for review and approval. The Construction Plan shall, at a minimum, include the following:

   (a) Construction Areas. The Construction Plan shall identify the specific location of all construction areas, all staging areas, all storage areas, all construction access corridors (to the construction site and staging areas), and all public pedestrian access corridors. All areas within which construction activities and/or staging are to take place shall be minimized to the maximum extent feasible in order to minimize construction encroachment on the beach, all beach access points, and to have the least impact on public access and coastal resources overall.

   (b) Construction Methods and Timing. The Construction Plan shall specify the construction methods to be used, including all methods to be used to keep the construction areas separated from public recreational use areas (including using the space available on the blufftop portions of the Permittee's property for staging, storage, and construction activities to the maximum extent feasible, and including using unobtrusive fencing (or equivalent measures) to delineate construction areas), and all erosion control/water quality best management practices to be implemented during construction and their location shall be noted.

   (c) Construction Best Management Practices. The Construction Plan applies to any

activities undertaken pursuant to this CDP, as well as future maintenance as described in **Special Condition 7**. The plan shall identify the type and location of all best management practices that will be implemented during construction including the following:

- All work shall take place during daylight hours. Lighting of the beach area is prohibited.
- Unless authorized by the Executive Director, construction work or equipment operations may not be conducted below the mean high tide line unless tidal waters have receded from the authorized work areas, or in an emergency as defined by Coastal Act regulations.
- Grading of intertidal areas is prohibited.
- Only rubber-tired construction vehicles are allowed on the beach, except that track vehicles may be used if the Executive Director agrees that they are required to safely carry out construction. When transiting on the beach, all such vehicles shall remain as high on the upper beach as possible and avoid contact with ocean waters and intertidal areas.
- All construction materials and equipment placed on the beach during daylight construction hours shall be stored beyond the reach of tidal waters. All construction materials and equipment shall be removed in their entirety from the beach area by sunset each day that work occurs. The only exceptions shall be for erosion and sediment controls and/or construction area boundary fencing where such controls and/or fencing are placed as close to the shoreline protection as possible, and their extent is minimized to the extent practicable.
- Construction (including but not limited to construction activities, and materials and/or equipment storage) is prohibited outside of the defined construction, staging, and storage areas.
- No work shall occur during weekends and/or the summer peak months (i.e., from the Saturday of Memorial Day weekend through Labor Day, inclusive), unless due to extenuating circumstances (such as tidal issues or other environmental concerns), the Executive Director authorizes such work.
- Equipment washing may not take place on the beach. Refueling and/or servicing of equipment shall be allowed only at a designated location as noted on the Plan. Appropriate best management practices shall be used to ensure that no spills of petroleum products or other chemicals take place during these activities.
- The construction site shall maintain good construction site housekeeping controls and procedures (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, and cover open trash receptacles during wet weather; remove all construction debris from the beach; etc.).

- All erosion and sediment controls shall be in place prior to the commencement of construction as well as at the end of each workday.

- All beach areas, all beach access points, and all other public access facilities (e.g., parking lots and paths) impacted by construction activities shall be restored to their pre-construction condition or better within three days of completion of construction. Any beach sand impacted shall be filtered as necessary to remove all construction debris from the beach.

(d) Western Snowy Plover Protection Measures. The Construction Plan shall provide for a qualified biologist to identify the beach access route and escort the contractor and any crew with heavy equipment to and from the construction site, in order to avoid potential impacts to western snowy plover or other wildlife, and to ensure that beach habitat is not disturbed. A qualified biologist shall monitor the project area for western snowy plover during construction activities and instruct the contractor and crew on appropriate measures to avoid potential impacts to western snowy plover.

(e) Bank Swallow Protection Measures. The Construction Plan shall provide that all construction activities shall avoid impacts to bank swallows and bank swallow habitat. The Applicant shall consult with and comply with the requirements of the National Park Service related to potential impacts to biological resources.

(f) Construction Site Documents. The plan shall provide that a copy of the signed CDP and the approved Construction Plan shall be maintained in a conspicuous location at the construction job site at all times during construction, and such copies shall be available for public review on request. All persons involved with the construction shall be briefed on the content and meaning of the CDP and the approved Construction Plan, and the public review requirements applicable to them, prior to commencement of construction.

(g) Construction Coordinator. The plan shall provide that a construction coordinator be designated to be contacted during construction for questions by the public. Contact information, including phone number, e-mail address, and street address, shall be conspicuously posted at the job site and readily visible from public viewing areas, along with indication that the construction coordinator should be contacted in the case of questions regarding the construction. The construction coordinator shall record the name, contact information (i.e., address, phone number, e-mail address, as applicable) and nature of all complaints received regarding the construction, and shall investigate complaints and take remedial action, if necessary, within 72 hours of receipt of the complaint or inquiry.

(h) Notification. The Permittee shall notify planning staff of the Coastal Commission's North Central Coast District Office at least 3 working days in advance of commencement of construction, and immediately upon completion of construction.

Minor adjustments to the Construction Plan may be allowed by the Executive Director if such adjustments: (1) are deemed reasonable and necessary; and (2) do not adversely impact coastal resources. All requirements above and all requirements of the approved Construction Plan shall be enforceable components of this CDP. The Permittee shall undertake

construction in accordance with the approved Construction Plan.

6. **Monitoring.** The Permittee shall ensure that the condition and performance of the as-built shoreline protection system is regularly monitored by a licensed civil or geotechnical engineer with experience in coastal structures and processes. Such monitoring evaluation shall, at a minimum, address whether significant weathering or damage has occurred that would adversely affect future performance or the revetments and sandbags, and identify any structural or other damage requiring repair to maintain the as-built revetments or sandbags in a structurally sound manner. Monitoring reports prepared by a licensed civil engineer with experience in coastal structures and processes, and covering the above-described evaluations, shall be submitted to the Executive Director for review and approval at annual intervals by November 1st of each year (with the first report due November 1, 2016) for as long as the development authorized by this CDP exists at this location. The reports shall identify the existing configuration and condition of the shoreline protection system, shall recommend actions necessary to maintain the system, and shall establish locations and methods of survey.

7. **Future Maintenance.** This CDP requires ongoing monitoring of the overall shoreline protection system at this location and authorizes future maintenance of that system as described in this special condition through December 31, 2021. The Permittee acknowledges and agrees that: (a) it is the Permittee's responsibility to maintain the shoreline protection system in a structurally sound manner and in its approved state; (b) it is the Permittee's responsibility to retrieve loose armor rock or sandbags that might otherwise substantially impair the recreational and/or scenic qualities of the beach; (c) it is the Permittee's responsibility to annually or more often inspect the shoreline protection system for signs of failure and/or displaced armor rock or sandbags; and (d) it is the Permittee's responsibility to ensure regular maintenance of the parking lots at South Ocean Beach so as to avoid the accumulation of windblown sand that would limit the public's ability to access parking. Any such maintenance-oriented development associated with the revetments and sandbags shall be subject to the following:

   (a) Maintenance. "Maintenance," as it is understood in this condition, means development that would otherwise require a CDP whose purpose is to repair and/or maintain the shoreline protection system in its approved configuration, including retrieval of armor rock and/or sandbags that may be displaced from the project as approved. Any proposed modifications to the approved as-built plans or required construction BMPs associated with any maintenance event shall be reported to planning staff of the Coastal Commission's North Central Coast District Office with the maintenance notification (described below), and such changes shall require a CDP amendment unless the Executive Director deems an amendment is not legally required.

   (b) Other Agency Approvals. The Permittee acknowledges that these maintenance conditions do not obviate the need to obtain permits from other agencies for any future maintenance and/or repair episodes.

   (c) Future Maintenance Notification. Prior to commencing any future maintenance event, the Permittee shall notify, in writing, planning staff of the Coastal Commission's North

Central Coast District Office. Except for necessary emergency interventions, such notice shall be given by first-class mail at least two weeks in advance of commencement of work. The notification shall include a detailed description of the maintenance event proposed, and shall include any plans, engineering and/or geology reports, proposed changes to the maintenance parameters, other agency authorizations, and other supporting documentation describing the maintenance event. The maintenance event shall not commence until the Permittee has been informed by planning staff of the Coastal Commission's North Central Coast District Office that the maintenance event complies with this CDP. If the Permittee has not received a response within 30 days of receipt of the notification by the Coastal Commission's North Central Coast District Office, the maintenance shall be authorized as if planning staff affirmatively indicated that the event complies with this CDP. The notification shall clearly indicate that the maintenance event is proposed pursuant to this CDP, and that the lack of a response to the notification within 30 days of its receipt constitutes approval of it as specified in the CDP.

(d) Non-Compliance Proviso. If the Permittee is not in compliance with the terms and conditions of this CDP at the time that a future maintenance event is proposed, then the maintenance event that might otherwise be allowed by the terms of this condition may only be allowed subject to approval by the Executive Director.

(e) Emergency. Nothing in this condition shall serve to waive any Permittee rights that may exist in cases of emergency pursuant to Coastal Act Section 30611, Coastal Act Section 30624, and Subchapter 4 of Chapter 5 of Title 14, Division 5.5, of the California Code of Regulations (Permits for Approval of Emergency Work).

8. Assumption of Risk, Waiver of Liability and Indemnity Agreement. The Permittee acknowledges and agrees:

(a) Hazards. That the site is subject to coastal hazards including but not limited to episodic and long-term shoreline retreat and coastal erosion, high seas, ocean waves, storms, tsunami, tidal scour, coastal flooding, earthquakes, landslides, and the interaction of same.

(b) Assume Risks. To assume the risks to the Permittee and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development.

(c) Waive Liability. To unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards.

(d) Indemnify. To indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to the permitted development.

(e) Property Owner Responsible. That any adverse effects to property caused by the permitted project shall be fully the responsibility of the property owner.

9. **Archaeological Resources.** In the event that any article of historical or cultural significance is encountered, all activity that could damage or destroy these resources must cease and the Executive Director and the Native American Heritage Commission must be notified so that the articles may be suitably protected or flagged for future research. A qualified archaeologist and/or the Native American Heritage Commission shall be consulted in order to examine the site and obtain recommendations for subsequent measures for the avoidance, and if necessary, protection and disposition of significant artifacts. Avoidance and mitigation measures shall be developed and submitted to the Executive Director for review and approval.

10. **Other Agency Review and Approval.** PRIOR TO COMMENCEMENT OF CONSTRUCTION, the Permittee shall submit to the Executive Director written evidence that all necessary permits, permissions, approvals, and/or authorizations for the approved project have been granted by all applicable agencies (including NPS, U.S. Army Corps of Engineers, and San Francisco Bay Regional Water Quality Control Board). Any changes to the approved project required by these agencies shall be reported to the Executive Director. No changes to the Commission-approved project shall occur without a Commission amendment to this CDP unless the Executive Director determines that no amendment is legally necessary.

11. **Liability for Costs and Attorney Fees.** The Permittee shall reimburse the Coastal Commission in full for all Coastal Commission costs and attorney fees (including but not limited to such costs and fees that are: (1) charged by the Office of the Attorney General; or (2) required by a court) that the Coastal Commission incurs in connection with the defense of any action brought by a party other than the Permittee against the Coastal Commission, its officers, employees, agents, successors and assigns challenging the approval or issuance of this CDP. The Permittee shall reimburse the Coastal Commission within 60 days of being informed by the Executive Director of the amount of such costs or fees. The Coastal Commission retains complete authority to conduct and direct the defense of any such action against the Coastal Commission.

IV. COASTAL DEVELOPMENT PERMIT DETERMINATION

A. PROJECT LOCATION

The proposed project is located along Ocean Beach west of Highway 1, also referred to as the Great Highway, within the City and County of San Francisco. Ocean Beach is a north-south trending sandy beach that is approximately 3.5 miles long and that is located on the western side of the City, situated south of the Golden Gate entrance to the San Francisco Bay. The Great Highway runs parallel to Ocean Beach immediately to the east. It is the primary coastal access roadway located within City limits. Generally speaking, the land west of the most western edge of the Great Highway is owned by the National Park Service (NPS) as part of the Golden Gate National Recreation Area (GGNRA); areas to the east of the Great Highway are under the ownership of the City. The proposed project would involve work at both the northern and southern ends of Ocean Beach, on land owned by NPS (**Exhibit 1**).

At North Ocean Beach, work would occur in the area south of the Cliff House and Seal Rocks southward to Lincoln Way (**Exhibit 2**). Golden Gate Park is located directly across the Great Highway from the project site, and the beach in this area is bordered on the east by the historic O'Shaughnessy Seawall. There is a wide sandy beach in this area, and the beach has become wider in recent years due to accretion. Public access to the beach is supported by a 600-space public parking lot located to the east of and along the O'Shaughnessy Seawall. Additional parking is available across the Great Highway on the eastern side at the Park's Beach Chalet site.

At South Ocean Beach, work would occur in the area between Sloat Boulevard to the north and Fort Funston to the south (**Exhibit 3**). The beach in this portion of Ocean Beach is fairly narrow, and is further narrowed because of the presence of rubble and debris on the beach that has fallen from the bluff, which contains a significant amount of artificial material (e.g., construction material, concrete) that was used as bluff infill and pavement subgrade to support the Great Highway when it was originally constructed in the early 20th century. There are also two large (600-foot and 440-foot) rock revetments along the bluff, which were installed by the City in 1997 and 2010 (labeled "EQR Reach" and "2010 Emergency Bluff Toe Protection" on **Exhibit 3**; see also Section C below). The backshore in this area transitions from low dunes at Sloat Boulevard to bluffs of about 50 feet above the grade of the beach near Fort Funston. Public access to the beach is supported by two bluff-top parking lots, the Sloat Parking Lot (also referred to as the North Lot) and the South Parking Lot, both of which have both been severely damaged by erosion episodes that occurred between the early 1990s and 2010. The San Francisco Oceanside Wastewater Treatment Plant (WWTP) is located immediately southeast of the proposed project site. The wastewater infrastructure in the area also includes the Lake Merced Tunnel, a 14-foot-diameter tunnel for combined sewer/wastewater overflow storage that runs beneath the Great Highway. The Lake Merced Tunnel holds untreated sewage and wastewater during periods when the WWTP is over capacity and unable to handle the volume of water, until such time as it can be treated. If the tunnel fills to capacity, the untreated wastewater is directly released to the ocean.

B. PROJECT DESCRIPTION

The Applicant, the San Francisco Public Utilities Commission (SFPUC), proposes to conduct temporary erosion control measures to address erosion at South Ocean Beach over the next 6 years (through 2021). The proposed project is Phase I of a two-phase project to implement coastal protection measures and a management strategy with the dual-goal of protecting critical public infrastructure and achieving a high degree of protection for the coastal environment. The larger project has been developed through the Ocean Beach Master Plan (OBMP) process, led by the non-profit organization SPUR in coordination with the City, NPS, and other stakeholders. Phase I is an interim project designed to be implemented while Phase II is developed for submittal and Commission action. Phase II is for long-term protection of the wastewater infrastructure and for the coastal environment. The long-term solution envisions narrowing and ultimately abandoning the Great Highway south of Sloat, removing armoring, and managing shoreline retreat in this area differently, all as called out in the OBMP. Phase II implementation is anticipated to begin in 2020, and the Applicant's preferred approach as of today would involve the removal of existing rock revetments and other shoreline protection measures that are

currently in place, the restoration of the bluffs and beach, and the phased construction of a low-profile shoreline protection device landward of the current bluff face (SPUR/ESA PWA, April 24, 2015). As the design, environmental review, and permitting of Phase II are finalized over the next 6 years, the currently proposed project, Phase I, would manage the erosion hazard to the North and South Parking Lots, the Great Highway, and the Lake Merced Tunnel through a combination of two maintenance activities: 1) annual sand relocation from accreting areas of North Ocean Beach to the erosion hotspots identified at South Ocean Beach south of Sloat, and 2) the placement of sandbags on an as-needed basis when sections of the bluff recede and intrude upon the Great Highway and related public infrastructure, including more specifically to within 50 feet from the location of the Lake Merced Tunnel beneath the Great Highway. The current project would also involve the installation of measures to control wind-blown sand, and the removal of all rubble and debris seaward of the toe of the bluff in existence prior to any sand berming or sandbag placement.

Sand Relocation

The sand relocation component of the proposed project involves the excavation of up to 100,000 cubic yards of sand per year from the northern reach of Ocean Beach, within a zone extending from the northern most extent of the beach to just north of Lincoln Way and within 150 feet of the edge of the O'Shaughnessy Seawall, which is the eastern back of the beach (**Exhibit 2**). Excavated sand would be trucked via the southbound lanes of the Great Highway and placed within an approximately 0.5-mile stretch extending south from Sloat Boulevard and immediately to the west of the bluff edge. Sand placement may occur at any location within this 0.5 mile stretch, but would be prioritized for use within the two locations most threatened by erosion (Reach 2 and Reach 3) (**Exhibit 3**). The sand would be lowered to the beach from the top of the bluff to create sand berms, the average size of which is anticipated to be approximately 300 feet long, 140 feet wide, and 25 feet high. The maximum dimension of the sand berm created by this project would be 900 feet long, 140 feet wide, and 25 feet high.

Measures to control windblown sand after placement may be installed as necessary to prevent sand from collecting on the South Ocean Beach parking lots and the Great Highway, as well as to enhance the longevity and effectiveness of the placed sand berms as erosion control devices. The wind erosion control measures proposed by the Applicant include the placement of beachgrass straw punch (using non-viable European beachgrass treated with saltwater or left to dry prior to installation) to minimize the air transport of sand; the installation of brushwood fences made of eucalyptus branches aligned to encourage the deposition of sand behind the fences; and spreading a lag surface cover of shell fragments and coarse sand of 0.25 inches on the surface of the sand berm. The fencing could also be used to delineate defined vertical access paths from the bluff to the beach.

Sandbag Structures

Sandbags of permeable geotextile fabrics and filled with up to a total 1,000 cubic yards of sand would be installed prior to or during the storm season if a sufficient erosion notch develops in the bluff such that it intrudes upon the Great Highway and related public infrastructure, including more specifically to within 50 feet from the edge of the location of the Lake Merced Tunnel. The proposed project would allow for the construction of up to three sandbag structures of 100 feet in length, 70 feet in width, and 20 feet in height. Alternatively, the Applicant could install a single

combined sandbag structure of up to 300 linear feet. Sandbags would be lowered into position from the bluff top by a crane or a loader equipped with a lowering chain, or alternatively transported along the beach by truck. At the site of a sandbag structure, excavation of the beach may be necessary, up to 20 feet in width and up to 4 feet deep, to create a stable footing for the structure. Once the sandbags have been installed, the structure would be covered by a layer of sand when the next sand relocation effort is conducted. The sandbags would be maintained through activities such as the re-filling, repositioning, and replacement of damaged bags.

Sand used in the bags would come either from North Ocean Beach or from a commercial source that can supply sand of consistent grain size, material and color. Sandbags would be stockpiled offsite (most likely at the San Francisco Zoo) prior to the storm season. At the end of the life of this permit, any sand contained within the bags at the stockpile location or on the beach would be returned to beach and the fabric of the bag would be removed.

C. PROCEDURAL HISTORY

In 2011, the Commission denied the City's application proposing: (1) after-the-fact authorization for the placement of 600 linear feet of rock revetment originally constructed in 1997 without benefit of a CDP, and for the placement of 440 linear feet of rock revetment originally constructed in 2010 (under Emergency CDP 2-10-003-G);[2] and (2) a new additional revetment and two tangent pile walls at South Ocean Beach (CDP Application No. 2-10-033). The Commission denied the project citing inadequate consideration of alternatives by the Applicant that would avoid and/or minimize the adverse impacts of the proposed project, and encouraged the City to develop a viable planning alternative for consideration.

Following denial, the City continued to work with SPUR and interested and engaged stakeholders on the Ocean Beach Master Plan, which was completed in May 2012. That Plan includes many prescriptions for all of Ocean Beach, including a long-term solution for the area south of Sloat Boulevard that envisions narrowing and ultimately abandoning Great Highway south of Sloat, removing armoring, and managing shoreline retreat in this area in a more sensitive manner than armoring. The long-term project, due to be implemented beginning in 2020-2021, would include removal of these revetments and sandbags and a series of managed retreat measures designed to avoid hard armoring as much as possible in favor of instead managing the shoreline more naturally (with sand dunes, for example) and facilitating enhanced public recreational access and in the area.

In addition, the City has agreed to a timeline to develop and initiate implementation of a long-term adaptive management plan for South Ocean Beach under the settlement of a complaint filed against it (*California Coastal Protection Network v. City & County of San Francisco*, Case No. CGC-11-513176) following the Commission's denial of CDP 2-10-033. That timeline commits the City to undertake environmental review under CEQA and NEPA following SPUR's publication of its Preferred Alternative (expected to take 18-36 months, or through 2017); to submit applications for necessary permits and approvals by January 1, 2018 or upon completion

[2] Emergency CDP 2-10-003-G has since expired, and no longer authorizes the revetment.

of the environmental review; to contract bids and awards through 2019; and to undertake construction through 2021 (**Exhibit 7**, see page 2).

Finally, since 2011, the Commission has authorized alternative, relatively "soft" measures in response to erosion episodes, including sand relocation activities and the placement of sandbags similar to that proposed here now. Through its Federal Consistency review, the Commission issued negative determinations (ND-0036-14 and ND-030-12) to move 30,000 cubic yards (in 2014) and 77,000 cubic yards (in 2012) of sand from North Ocean Beach to South Ocean Beach, as conducted by NPS in coordination with the Applicant. In 2011, the Commission issued Emergency CDP 2-11-042-G, allowing for the temporary placement of sand bags by the Applicant in the vicinity of Reach 3 (**Exhibit 3**).

D. STANDARD OF REVIEW

The proposed project involves development both in an area of the Commission's retained coastal development permit (CDP) jurisdiction as well as development in an area of CDP jurisdiction delegated to the City and County of San Francisco by the Commission through certification of its Local Coastal Program (LCP). Coastal Act Section 30601.3 authorizes the Commission to process a consolidated CDP application in such cases when the local government, the applicant, and the Executive Director all agree to such consolidation. The standard of review for a consolidated CDP application is the policies of Chapter 3 of the Coastal Act. The local government's certified LCP may also be used as non-binding guidance.

The proposed development is located on a shoreline between the first public road and the sea. The proposed project is located within the GGNRA. The locations for the proposed sandbags and sand berms are considered tidelands, submerged lands, or other areas subject to the public trust. The Coastal Commission retains jurisdiction over the review and issuance of CDPs in these areas, pursuant to Section 30519 of the Coastal Act. Blufftop areas at South Ocean Beach and areas of sandy beach at North Ocean Beach are within the City's permitting jurisdiction. The City and the Applicant have requested, and the Commission has agreed, that the Commission review the entire project (including the portion within the City's LCP jurisdiction) together as one combined and consolidated CDP application as allowed in Section 30601.3 of the Coastal Act. Thus, the standard of review for the proposed project is the Chapter 3 policies of the Coastal Act, with the City's LCP providing non-binding guidance.

E. GEOLOGIC CONDITIONS AND HAZARDS

Applicable Policies

Coastal Act Section 30235 addresses the use of shoreline protective devices:

> *Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water*

stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.

Coastal Act Section 30253 addresses the need to ensure long-term structural integrity, minimize future risk, and to avoid landform altering protective measures in the future. Section 30253 provides, in applicable part:

New development shall do all of the following:
(1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.
(2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

Coastal Act Sections 30235 and 30253 acknowledge that seawalls, revetments, retaining walls, groins and other such structural or "hard" methods designed to forestall erosion also alter natural landforms and natural shoreline processes. Accordingly, with the exception of coastal-dependent uses, Section 30235 limits the construction of shoreline protective works to those required to protect existing structures or public beaches in danger from erosion. The Coastal Act provides these limitations because shoreline structures can have a variety of negative impacts on coastal resources including adverse effects on sand supply, public access, coastal views, natural landforms, and overall shoreline beach dynamics on and off site.

In addition, the Commission has generally interpreted Section 30235 to apply only to existing principal structures. The Commission must always consider the specifics of each individual project, but has generally found that accessory structures (such as patios, decks, gazebos, stairways, etc.) are not required to be protected under Section 30235, or can be protected from erosion by relocation or other means that do not involve shoreline armoring. The Commission has generally historically permitted at-grade structures within the geologic setback area, recognizing that they are expendable and capable of being removed rather than requiring a protective device that would alter natural landforms and processes along bluffs, cliffs, and beaches.

In general, shoreline armoring has a number of impacts on the coast, including but not limited to impacts from beach encroachment, fixing the back of the beach, and preventing the natural erosion of coastal bluffs that provides sandy material to the nearby beaches. As a result, the Coastal Act is premised on both hazard avoidance and shoreline armoring avoidance.

Under Coastal Act Section 30235, shoreline protective structures may be approved if: (1) there is an existing structure; (2) the existing structure is in danger from erosion; (3) shoreline altering construction is required to protect the existing threatened structure; and (4) the required protection is designed to eliminate or mitigate the adverse impacts on shoreline sand supply. The first three questions relate to whether the proposed armoring is necessary. The fourth question applies to mitigating some of the impacts from armoring.

Analysis

Existing Structure to be Protected

The Great Highway was originally constructed a century ago. A portion was reconstructed as part of the construction of the Westside Sewer Storage/Transport Box and the Lake Merced Tunnel in the 1980s and 1990s. Although the roadway was partially reconstructed in the 1980s and 1990s, the Great Highway predates the Coastal Act and as such is considered to be an existing structure for the purposes of Section 30235. Other pre-Coastal Act existing structures involved in this project include the parking lots located between the Great Highway and the beach, which were also partially reconstructed at the same time as the Great Highway, and the electric infrastructure located beneath the road which services the street lamps located along the Great Highway.

Danger from Erosion

The Coastal Act allows shoreline armoring to protect existing structures in danger from erosion, but it does not define the term "in danger." There is some risk in maintaining development along a California coastline that is actively eroding and subject to severe storms, large waves, flooding, earthquakes, and other hazards. These risks can be exacerbated by such factors as sea level rise and localized geography that can focus storm energy at particular stretches of coastline. As a result, some would say that all development along the immediate California coastline is in a certain amount of "danger." It is a matter of the degree of threat that distinguishes between danger that represents an ordinary and acceptable risk, and danger that requires shoreline armoring as allowed by Section 30235.

Lacking Coastal Act definition, the Commission's long practice has been to evaluate the immediacy of any threat in order to make determinations as to whether an existing structure is in danger. While each case is evaluated based upon its own particular set of facts, the Commission has generally interpreted "in danger" to mean that an existing structure would be unsafe to occupy or utilize within the next two or three storm season cycles (generally, the next few years) if nothing were to be done (i.e., in the no project alternative). These interpretations are applicable to projects involving major infrastructure, such as this, although the lead time for major protective measures can oftentimes be three to ten years, depending on the complexity of the project, level of environmental analysis required, and funding availability.

The Applicant submitted a technical memorandum examining the geologic and coastal process information for South Ocean Beach (Environmental Science Associates (ESA), August 28, 2015) to document its determination that the danger posed by shoreline erosion warrants the proposed project. The memorandum contains a characterization of existing conditions, a summary of the coastal and geological processes threatening public infrastructure, an evaluation of alternative solutions, and the reasons that the Applicant selected the proposed project as the most appropriate alternative for the circumstances at South Ocean Beach.

The proposed project site is located along an eroding bluff that has been modified over time by placing dune sand, earth, and rubble to extend the bluff seaward to support development of the Great Highway, parking, and infrastructure over the past century. The bluff is frequently impacted by waves, and average shore erosion rates have increased in the last two decades to about 2 feet per year. Erosion associated with events such as severe storms, clusters of storms, and severe El Niño winters can result in bluff recession of 10 to 50 feet in a single storm season.

During severe storm seasons in the 1990s through 2010, significant damage occurred to the parking lots and the Great Highway itself, leading to temporary closure and sending significant amounts of debris onto the sandy beach as the bluff erodes. The ongoing threat to the infrastructure located at South Ocean Beach led the City to install two large revetments during the 1997 and 2010 El Niño winters. Previously authorized sand relocation and an emergency sandbag revetment (installed in 2011), along with the revetments, have partially mitigated the erosion risk to the infrastructure. The proposed short-term project is premised on the continued retention of the existing revetments and sandbags, and is designed to prevent significant erosion within those segments of the 0.5-mile stretch that will require action to avoid risk to infrastructure during the next 6 years, particularly those portions of the 0.5-mile stretch that remain unarmored. Since the existing revetments are currently unpermitted it is necessary to consider the impacts associated with their retention for the duration of Phase I of the project, as well as those impacts they have already had on coastal resources during the time they have been installed. Thus, in addition to those impacts associated with the proposed project, the Commission has analyzed the impacts associated with the proposed retention of the existing shoreline armoring system, as the existing armoring system represents an integral component in the success of the short-term erosion management strategy envisioned in the Phase I project.

Accordingly, the Commission agrees that the Great Highway and the associated infrastructure present at South Ocean Beach are in danger from erosion and thus qualify for shoreline protection consideration under the second Section 30235 test. Of particular concern from the perspective of the coastal environment is the risk of damage to the Lake Merced Tunnel located beneath the Great Highway, which could result in combined sewer leakage or complete structural failure, with the resultant release of large amounts of combined sewage and the loss of sewer overflow capacity. The structural integrity of the tunnel is at risk of being compromised as the sand and bluff materials that provide lateral support to the tunnel are removed by shoreline erosion episodes. Geo-structural modeling of the tunnel by McMillen Jacobs Associates recommended that a minimum soil dimension of 35 feet between the tunnel and the edge of the bluff be maintained to avoid risk to the structure. This includes a minimum horizontal buffer of 10 feet to provide structural support for the tunnel, and a 25-foot safety buffer to allow for a rapid erosion event which could occur during a single very large winter storm. To avoid the impacts to the environment and coastal water quality that could occur if the tunnel were to experience such damage, in addition to protecting the roadway and public access infrastructure present seaward of the tunnel, it is therefore necessary to retain the existing shoreline armoring that is in place until such time as the Phase II project can occur. The long-term solution envisions narrowing and then ultimately abandoning the Great Highway south of Sloat, removing armoring, and managing shoreline retreat in this area differently, all as called out in the Ocean Beach Master Plan and its Implementation Studies. It is also necessary to undertake the additional action of allowing sand relocation and potentially the placement of sandbags as proposed by the Applicant to avoid further risk to infrastructure south of Sloat Boulevard.

Alternatives

The third Section 30235 test that must be met is that the proposed armoring must be “required” to protect the existing threatened structure. In other words, shoreline armoring can be permitted

if it is the only feasible alternative capable of protecting the structure.[3] When read in tandem with other applicable Coastal Act policies cited in these findings, this Coastal Act 30235 evaluation is often conceptualized as a search for the least environmentally damaging feasible alternative that can serve to protect existing endangered structures.

Among the alternatives typically considered are a "no project" alternative; the abandonment of threatened structures; and the relocation of the threatened structures. A "no project" alternative is dismissed because of the demonstrated risk during even the short-term to the infrastructure and coastal environment, and the necessity to maintain the beach for use by the public. In the present case, alternatives considering the abandonment or relocation of the threatened structures would not serve the objectives of the project. The goal of the proposed project is to immediately reduce risk to the infrastructure at South Ocean Beach during the limited 6-year term of Phase I, while the Phase II project is finalized, goes through environmental review, is permitted, and ultimately implemented. The Phase II project should consider such alternatives, including removal of existing shoreline armoring and potential relocation of any existing infrastructure. For Phase I, the Applicant considered the following alternatives capable of quickly protecting the infrastructure: 1) a toe wall; 2) rock toe stabilization; 3) consolidation of rubble on the beach; 4) the proposed project. Each of these four alternatives is discussed below.

1) **Toe Wall Alternative**: This alternative consists of the construction of a low-height soldier pile and lagging walls around the seaward edge of the bluff at Reaches 2 and 3. During typical beach conditions, 3 to 10 feet of the wall would be exposed, and the remainder would be buried beneath the surface of the beach. This alternative was dismissed because it presents the greatest potential for environmental damage, as it would cause the greatest amount of beach scour due to wave reflection and thus further constrain lateral beach access. Public access and safety is worse under this alternative as well, as a toe wall could not be scaled during periods of low beach or high water, unlike a sandbag wall. In terms of visual impacts, the toe wall is a more conspicuous change than presented by a temporary sandbag structure, particularly as the sandbag structure would generally be buried under sand. In addition, the construction impacts for a toe wall are substantially greater and increase the risk of direct and indirect effects on biological resources and water quality. Finally, a toe wall presents greater challenges in terms of its removal, and removal is an important component of the proposed project as it is only envisioned as being in place for a temporary period of time until the long-term managed retreat solution can be implemented for this stretch of coast.

2) **Rock Toe Stabilization Alternative**: This alternative consists of the construction of engineered rock revetments similar to those already installed at other sections of South Ocean Beach. The revetments would span the lengths of Reaches 2 and 3, or approximately 60 feet. This alternative provides a greater degree of protection than the preferred alternative, but also a greater risk of environmental damage. It would be more difficult to traverse than a sandbag structure, and would thus limit vertical and, during periods of low beach or high water, lateral access to the beach. It would also be more difficult to remove than would be

[3] Note that Coastal Act Section 30108 defines feasibility as follows: "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

sand berms and sand bags.

3) **Consolidated Rubble Alternative**: This alternative consists of restacking rubble that presently exists along the beach and consolidating it along the bluff toe at Reaches 2 and 3 to form an erosion-resistant slope of about 1:7. Restacked rubble would constrain lateral and vertical access where it is placed, and could be mobilized by wave action, thus resulting in continued presence of debris and hazards on the beach. As rubble might need to be retrieved from below the MHTL, there would be increased potential for water quality impacts. It also presents similar concerns as the rip-rap option otherwise.

4) **Proposed Project**: The proposed project, consisting of annual sand relocation from North Ocean Beach to South Ocean Beach and the placement of sandbags as needed, is superior as a limited-term method for shoreline protection because while it could reasonably be expected to provide temporary shoreline protection, it would require limited work to remove at the end of its life (only cutting and disposing of the sandbags, while leaving the sand from the relocation and from the sandbags on the beach where it will contribute to shoreline sand processes), and it presents the least potential for environmental damage given the level of engineering and construction involved. The effects of the project would be temporary, and previous sand relocation activities show that sand placed here tends to remain on the beach for at most a few years, even during periods of below-average erosion. While the berms created by the sandbags and the sand berming will occupy space on the sandy beach and thus have impacts in times of high water or low beach, such berms are superior to the other alternatives from a public access and safety perspective because they also create a safer vertical access path to and from the beach, and minimize impacts to lateral access overall.

Thus, the proposed project, consisting of the "softer" measures of sand relocation/berming and temporary sandbag structures, was selected by the Applicant as the least environmentally damaging feasible alternative. The Commission concurs.

Beach and Sand Supply Impacts

The fourth test of Section 30235 that must be met in order to allow Commission approval is that shoreline structures must be designed to eliminate or mitigate adverse impacts to local shoreline sand supply.

Beach sand material comes to the shoreline from inland areas, carried by rivers and streams; from offshore deposits, carried by waves; and from coastal dunes and bluffs, becoming beach material when the bluffs or dunes lose material due to wave attack, landslides, surface erosion, gullying, and other processes (collectively termed 'mass wasting' by geomorphologists). Within the project area at Ocean Beach, there is a sandy shoreline consisting of recent or ancient sand dunes, and uplifted lithified silty sand deposits of the Colma and Merced formation. The natural conditions of the area were modified as early as the 1880s by construction and dumping, and the land located seaward of Great Highway in Ocean Beach has been artificially extended seaward by placing dune sand, earth and rubble to support the development of the Great Highway and other infrastructure. As discussed above, exposed rubble and existing shoreline protection are also present along much of the bluff toe along the 0.5-mile stretch of the project area at South

Ocean Beach. Existing shoreline protection consists of the previously described 1997 revetment, the 2010 revetment, and the 2011 sandbag structure.

Natural shoreline processes affecting the formation and retention of the beach and beach material can be significantly altered by the construction of shoreline armoring. When the back-beach or toe of slope is armored by a shoreline protective device, the natural contribution of loose material to the beach will be interrupted. To the extent that the slopes produce material, and to the extent that the shoreline is eroding, shoreline armoring will deprive a beach of a measurable amount of replacement material. In this case, the portion of beach sand in the bluff is thought to be quite low due to the large percentage of fine materials in those natural portions of the bluffs. In addition, many areas of the bluff actually consist of imported fill which would not serve as replacement material.

Some of the effects of armoring structures on the beach and shoreline (such as scour, end effects and modification to the beach profile) are temporary or are difficult to distinguish from all the other actions that modify these areas. Some of the effects that a shoreline structure may have on natural shoreline processes can be quantified, however, including: (1) the loss of the beach area on which the structure is located; (2) the long-term loss of beach which will result when the back beach location is fixed on an eroding shoreline; and (3) the amount of material which would have been supplied to the beach if the back beach or bluff were to erode naturally. In this case, it is necessary to consider the effects of the existing revetments in place at South Ocean Beach over their life to-date and going forward over the 6-year term of Phase I of the project, as the Applicant has premised its project on their retention during this period. As part of the proposed project, the Applicant proposes to undertake annual sand relocation/berming and install additional sandbag structures on an as-needed basis in response to acute erosion events. The proposed additional sandbag structures would act as shoreline armoring structures, and thus it is necessary to consider their effects to the beach and sand supply as well. It is not necessary to consider the effects of the sand relocation in terms of sandy supply, however. While the sand berming will aide in protecting the shoreline infrastructure from storms and erosion, it is an inherently softer measure and not the type of structural armoring represented by rock revetments and even sandbag structures. Sand placed at South Ocean Beach as part of the relocation process will be there only temporarily, until it is washed out by the waves and back into the littoral cell.

Encroachment on the Beach

Shoreline protective devices are all physical structures that occupy space. When a shoreline protective device is placed on a beach area, the underlying beach area cannot be used as beach. This generally results in a loss of public access as well as a loss of sand and/or areas from which sand-generating materials can be derived. The area where the structure is placed will be altered from the time the protective device is constructed, and the extent or area occupied by the device will remain the same over time, until the structure is removed or moved from its initial location. The beach area located beneath a shoreline protective device, referred to as the encroachment area, is the area of the structure's footprint.

In this case, the beach encroachment from the 1997 emergency quarrystone revetment occupies roughly 28,800 square feet of beach space, encroachment from the 2010 rock revetment occupies roughly 30,000 square feet of beach space, and encroachment from the 2011 sandbag structure

occupies roughly 2,400 square feet of beach space. The proposed average sandbag placement under the proposed project is expected to occupy roughly 7,000 square feet of beach space, and at maximum would occupy 21,000 square feet of beach space. The area that is or would be covered by the shoreline protective structures is beach area that could otherwise be used for public access.

Similarly, the sand berming would occupy an area of up to 126,000 square feet on the beach. Given it would be covered in sand, it is not the same type of coverage as rock or even sand bags, but it does cover the beach. The effect, though, is not so much as to occupy that space, as it is to transform it to a beach area that is at a higher elevation. Yes, it will block off beach level access, but it will replace that with higher dune level access atop the berm. As such, there is an area of encroachment, but it is conceptually quite a different type of encroachment as it continues to provide a beach sand area for public use, albeit at a higher elevation.

Fixing the Back Beach

Experts generally agree that where the shoreline is eroding and armoring is installed, as is the case here, the armoring will eventually define the boundary between the sea and the upland. On an eroding shoreline, a beach will exist between the shoreline/waterline and the toe of the slope behind the beach, as long as sand and/or material is available to form a beach. As shoreline erosion proceeds, the profile of the beach also retreats and the beach area migrates inland with the bluff. This process stops, however, when the backshore is fronted by a hard protective structure such as a revetment or a seawall. While the shoreline on either side of the armor continues to retreat, the shoreline in front of the armor eventually stops at the armoring. The beach area will narrow, being squeezed between the moving shoreline and the fixed backshore. Eventually, there will be no available dry beach area and the shoreline will be fixed at the base of the structure. In the case of an eroding shoreline, this represents the loss of a beach as a direct result of the armor.

In addition, sea level has been rising slightly for many years. A growing body of evidence suggests that there has been an increase in global atmospheric and sea temperatures, and that acceleration in the rate of sea level rise can be expected to accompany this increase in temperature. Expert opinion indicates that sea levels could rise as much as 1.67 meters (66 inches) by the year 2100[4] due to thermal expansion of the sea and melting terrestrial ice fields. Mean water level affects shoreline erosion several ways, and an increase in the average sea level will exacerbate all these conditions. On the California coast the effect of a rise in sea level will be the landward migration of the intersection of the ocean with the shore. This, too, leads to loss of the beach as a direct result of the armor. These effects are also known as “passive erosion.”

Such passive erosion impacts can be calculated over the time the proposed armoring is expected to last. In this case, the existing and proposed shoreline structures would be in place through 2021, though the impacts of structures already in place prior to the onset of the proposed project has been calculated from the time they were originally installed. The Commission has established a methodology for calculating passive erosion, or the long-term loss of beach due to fixing the back beach. This impact is equivalent to the footprint of the bluff area that would have

[4] California Coastal Commission, Sea Level Rise Policy Guidance (Aug. 2015), at p. 17.

become beach due to erosion, and is equal to the long-term annual erosion rate multiplied by the width of the property that has been fixed by a resistant shoreline protective device.[5] In this case, the existing and proposed shoreline protective devices would extend along a total of approximately 1,360 linear feet (and up to 1,560 linear feet if the maximum proposed sandbag placement were installed). The armoring footprint also covers some areas of beach (as described above) and for purposes of determining the impacts from fixing the back beach, it is assumed that new beach area would result from landward retreat of the bluff. The Applicant provided an estimate that the long-term average annual erosion rate is roughly 2 feet per year. Therefore, the impacts from fixing the back beach, as calculated using the Commission's identified methodology, are that 45,360 to 47,360 square feet of beach that would have been created will not be created as a result of the project. Thus, the Applicant must mitigate for the loss of beach area that would have been created if the back beach had not been fixed by shoreline protective structures and used for public access.

Retention of Potential Beach Material

If natural erosion were allowed to continue at the project site, some amount of beach material would be added to the beach at this location, as well as to the larger littoral cell sand supply system fronting the bluffs. The volume of total material that would have gone into the sand supply system over the lifetime of the shoreline structure would be the volume of material between (a) the likely future bluff-face location with shoreline protection; and (b) the likely future bluff-face location without shoreline protection. Since the main concern is with the sand component of this bluff material, the total material lost must be multiplied by the percentage of bluff material which is beach sand, giving the total amount of sand that would have been supplied to the littoral system for beach deposition if the proposed device were not installed. The Commission has established a methodology for identifying this impact[6] that equates to a retention impact of 244,700 cubic yards if the proposed sandbag structures of the maximum dimensions were built.

Beach and Sand Supply Impacts Conclusion

The proposed project would result in quantifiable shoreline sand supply impacts. There would be loss of beach area due to: 1) the continued presence of the existing rock revetments and sandbag

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5 The area of beach loss due to long-term erosion (Aw) is equal to the long-term average annual erosion rate (R) times the number of years that the back-beach or bluff will be fixed (L) times the width of the property that will be protected (W). This can be expressed by the following equation: Aw = R x L x W. The annual loss of beach area can be expressed as Aw' = R x W. For example, see California Coastal Commission, Report on In-Lieu Beach Sand Mitigation Program: San Diego County, available at http://www.coastal.ca.gov/pgd/sand1.html.

6 The equation is Vb = (S x W x L) x [(R x hs) + (1/2hu x (R + (Rcu - Rcs)))]/27. Where: Vb is the volume of beach material that would have been supplied to the beach if natural erosion continued (this is equivalent to the long-term reduction in the supply of bluff material to the beach resulting from the structures); S is the fraction of beach quality material in the bluff material; W is the width of property to be armored; L is the design life of structure, if assumed a value of 1, an annual amount is calculated; R is the long term average annual erosion rate; hs is the height of the shoreline structure; hu is the height of the unprotected upper bluff; Rcu is the predicted rate of retreat of the crest of the bluff during the period that the shoreline structure would be in place, assuming no seawall were installed (this value can be assumed to be the same as R unless the Applicant provides site-specific geotechnical information supporting a different value); Rcs is the predicted rate of retreat of the crest of the bluff, during the period that the shoreline armoring would be in place; and divide by 27 (since the dimensions and retreat rates are given in feet and volume of sand is usually given in cubic yards, the total volume of sand must be divided by 27 to provide this volume in cubic yards, rather than cubic feet). For example, see California Coastal Commission, Report on In-Lieu Beach Sand Mitigation Program: San Diego County, available at http://www.coastal.ca.gov/pgd/sand1.html.

structure presently in place, as well as the potential placement of additional sandbag structures, onto an estimated 68,200 square feet of beach (with a minimum of 61,200 square feet if no additional sandbag placement were required and up to a maximum of 82,200 square feet of beach if a sandbag structure of the maximum proposed dimensions were built) that otherwise would be available for public use; 2) fixing of the back beach location, resulting in the loss of an estimated 45,360 square feet of beach (with a minimum of 44,360 if no additional sandbag placement were required or a maximum of 47,360 square feet of beach) that would have been created over the lifetime of the shoreline structures; and 3) retention of 215,000 cubic yards of beach quality sand (with a minimum of 200,000 if no additional sandbag placement were required or a maximum of 244,700 cubic yards) over the next 6 years, and including calculations associated with armoring that has been in place as long as from 1997. These impacts would equate to a maximum total of 129,560 square feet of lost beach area and 244,700 cubic yards of beach quality sand.

It has proven difficult over the years to identify appropriate mitigation for such impacts. Partly this is due to the fact that creating an offsetting beach area is not an easy task, and finding appropriate properties that could be set aside to become beach area over time (through natural processes, including erosion) is difficult both due to a lack of such readily available properties and the cost of coastal real estate. As a proxy, other types of mitigation typically required by the Commission for such direct sand supply impacts have been in-lieu fees and/or beach nourishment, and in some cases compensatory beach access improvements. With regards to beach nourishment, a formal sand replenishment strategy can introduce an equivalent amount of sandy material back into the system over time to mitigate the loss of sand that would be caused by a protective device over its lifetime. A significant proportion of the impacts here are not loss of sand, per se, as much as they are loss of public recreational opportunities on a narrowing beach. The Commission has often applied an alternative form of mitigation by using public recreational access improvements to offset impacts from encroachment, passive erosion, and loss of bluff materials. Such mitigation is typically applied by the Commission to public agencies that manage public access when they have applied for armoring projects.

The sand relocation proposed by the Applicant as part of this project is a method of beach nourishment and provides significant public access improvements, and in part functions in a manner similar to the mitigations the Commission has required of other applicants. The City has already conducted sand relocation on four occasions since 1999, most recently in 2012 and 2014. During this time, the City placed a combined 130,000 cubic yards of sand at South Ocean Beach. This compares to an estimated 200,000 cubic yards of sand loss due to the shoreline armoring in place between 1997 and today. This results in a net effect of the loss of 70,000 cubic yards of sand to date at South Ocean Beach. When considered in the context of the proposed project, however, under which the Applicant proposes to place an average of 33,333 (and up to 100,000) cubic yards of sand each year through 2021 through the sand relocation activities, the net effect of the sand placement will be a gain of 81,665 (and up to 385,300) cubic yards of sand to South Ocean Beach after the loss of sand due to the existing and proposed shoreline armoring structures are considered. However, since there is no new sand being contributed to the overall system through the project activities as the relocation constitutes more of a movement of sand from one area of the beach to another, in terms of sand supply, the losses of sand to the system of 129,560 square feet of lost beach area and 244,700 cubic yards of beach quality sand, still exist. Thus, while the sand relocation cannot be considered an addition of sand to the system for the

purposes of mitigation, the benefits to public access and recreation from the sand relocation can in part mitigate for the losses of sand from the shoreline armoring as further described below.

The sand relocation proposed by the Applicant has the dual effect of erosion control and mitigating some of the adverse impacts of the existing and proposed armoring on the beach and public access at South Ocean Beach. In addition to the role that the berms created by relocation play in erosion control, as they are worn away by wind and waves they nourish the beach and delay the impact of artificially fixing the back beach. The berms are perhaps most effective in terms of mitigating the challenging issues related to public access at South Ocean Beach. Particularly given the sharp drop-off of the bluffs and the presence of hazardous fill and debris that exists in many sections of blufftop, it is difficult for the public to gain vertical access to the beach south of Sloat Boulevard when there is not a sand berm in place. The berms create a sand ramp that greatly increases the ability of the public to get down to the beach (see for instance the conditions at the Sloat Boulevard public parking lot before and after the 2012 sand relocation in **Exhibit 4**.) In addition, as North Ocean Beach has experienced historic levels of accretion during recent years and as the beach has widened, accumulation of excess sand has led to access impediments at the entrances along the O'Shaughnessy Seawall. Thus moving the sand has an overall beneficial impact on public access in this portion of Ocean Beach, as well. While the sand relocation does not do anything to address the impact of armoring in terms of the loss of sand to the larger littoral cell, per se, it does have the effect of adding sand to the portion of Ocean Beach where beach loss is occurring and removing it where accretion is having adverse effects, as further discussed in the Public Access and Recreation analysis in Section E below. The proposed project would also reduce the potential for hazardous rubble to fall out of the bluff and onto the beach, where it presents a safety hazard and can impede lateral beach access. Finally, by protecting the Great Highway (the main north-south access road along the San Francisco western shoreline) and the blufftop parking lots until such time as the Phase II project is developed and implemented, the project helps to ensure the public's continued ability to make use of the beach over the next 6 years. To ensure that windblown sand from the berms will not accumulate on the parking lots and negate the public access benefits associated with keeping them in place during this time, **Special Condition 7** requires the Applicant to ensure regular maintenance of these lots so as to avoid the accumulation of windblown sand that would limit the public's ability to access parking.

Finally, the sand supply conclusion here can only be understood in relation to Phase II of the project that is intended to occur in 2021. The long-term solution envisions narrowing and ultimately abandoning the Great Highway south of Sloat, removing armoring, and managing shoreline retreat in this area differently, all as called out in the Ocean Beach Master Plan. This long-term project intends a series of managed retreat measures designed to avoid hard armoring as much as possible in favor of instead managing the shoreline more naturally (with sand dunes, for example) and facilitating enhanced public recreational access and in the area. Such a project would be expected to have significant positive impacts on the beach environment, not only in terms of sand supply processes but also public recreational access overall. Although that project is not before the Commission at this time,[7] the impacts of this project cannot be understood and

[7] It is noted that the City's current proposal for the long-term project includes many soft managed retreat measures, but it also identifies some low armoring to protect the Lake Merced Tunnel even as the Great Highway is removed and the area restored. Commission Staff has been very clear throughout the development of the Ocean Beach Master Plan that the ultimate decision

accepted without a reliance on a longer-term solution like that coming to fruition. Thus, this project is conditioned to provide for the long-term project to be implemented, including identifying a series of benchmarks to keep it on track and make it so. If it does not, then the Commission will need to reevaluate the fate of this project, including in terms of levels of mitigations (see **Special Condition 2**).

Geologic Conditions and Hazards

The project is designed to minimize impacts on coastal resources. But, certain impacts, particularly the loss of beach area available for recreational use, and impairment of beach access by construction activity, are unavoidable. The role that sand relocation and berming plays in offsetting the project's sand supply and recreational resource impacts has the effect of mitigating some of these effects, as discussed above.

To protect the existing structure in danger from erosion and ensure that new development minimize risks to property in areas of high flood and geologic hazards and assure stability and structural integrity as required by Section 30235 and 30253, the Applicant proposes the sand relocation and berming and sandbag placement activities described as part of this project. As previously discussed, the proposed project is also premised on the continued retention of the existing revetments and sandbags in place at South Ocean Beach for an additional 6 years. These existing shoreline revetments and sandbags consist of three main structures: 1) the 600-linear-foot revetment installed by the City in 1997, without the benefit of a CDP; 2) the 440-linear-foot revetment installed by the City in 2010, under Emergency CDP No. 2-10-003-G; and 3) the 2011 emergency sandbag structure, currently authorized under Emergency CDP No. 2-11-042-G, which is currently authorized through Memorial Day weekend 2016 (**Exhibit 3**). While the City did not explicitly include the retention of the existing armoring as part of the proposed project, the Commission finds it necessary to include them in evaluation of the proposed project, as they are either currently unpermitted or, in the case of the 2011 sandbag structure, with a CDP due to expire during the life of the Phase I project, and integrally related to the structural stability and protection of the existing structures in danger from erosion. As such, **Special Condition 1** authorizes the continued presence of these structures, in addition to the new proposed activities, as necessary components of the shoreline protection system at this location until such time as work under Phase II of this project can be implemented — that is, through 2021. As Phase II is expected to present an environmentally superior project to the existing shoreline protection system, consistent with prior direction by the Commission, these temporary measures are only intended to provide protection through the life of Phase I of the proposed project. **Special Condition 1** thus requires the removal of the existing revetments and the existing and proposed sandbags and discontinued use of the sand relocation activities after December 31, 2021, absent the submittal of an application to the Commission seeking their retention and/or continued use (in full or in part).

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on how best to address threatened infrastructure needs to consider a range of alternatives, including no-armoring alternatives, and that it will ultimately be an LCP and/or CDP decision as to the desired and acceptable outcome in that respect. Similarly, the Commission's decision in this case is without prejudice as to the final outcome in terms of the appropriate long-term solution with respect to armoring or no armoring in this area, and this CDP decision in no way binds the Commission to a particular outcome. When and if that decision is in front of the Commission, it will exercise its discretion at that time to make the appropriate decision based on the facts and the law as applied to the circumstances presented at that time.

There is a possibility that the existing and proposed sandbags and revetment structures may suffer damage during the life of the proposed project and fail, which could result in future hazards and beach encroachment that must be avoided. Failure might include displacement of armor rock or sandbags onto the beach, with consequent additional impairment of recreational opportunities. Accordingly, **Special Condition 6** requires monitoring of the new installation and the existing system to ensure that it remains stable. And, if there is encroachment of the beach by fugitive armoring rock or sandbags, it must be retrieved in a timely manner per **Special Condition 7**. Such future monitoring and maintenance activities must be understood in relation to clear as-built plans. Therefore, **Special Condition 4** requires the submittal of as-built plans to define the footprint and profile of the permitted revetments and sandbags. These Special Conditions also require the submittal of As-Built Plans and monitoring of the sand relocation and berming activities to ensure the sand is placed within the proposed locations and to inform the success of these activities in contributing to erosion control. **Special Condition 3** also requires the submittal of plans prior to any development episode to verify that the intended activity is covered by this CDP.

In terms of recognizing and assuming the hazard risks for shoreline development, the Commission's experience in evaluating proposed developments in areas subject to hazards has been that development has continued to occur despite periodic episodes of heavy storm damage and other such occurrences. Development in such dynamic environments is susceptible to damage due to such long-term and episodic processes. Past occurrences statewide have resulted in public costs (through low interest loans, grants, subsidies, direct assistance, etc.) in the billions of dollars.

In this instance, the Applicant assumes the economic burdens of the shoreline armoring work and any necessary mitigation requirements, as well as the responsibility for seeking a long-term solution. Further, the potentially impacted properties — the Great Highway, the parking lots along the Great Highway, the significant infrastructure under the Great Highway, and the beach itself — are all in public ownership, be it the City or NPS. Nonetheless, given the uncertainties and risks involved, unforeseen costs and impacts may arise as a consequence of project approval. As a means of allowing continued development in areas subject to hazards, applicants are regularly required to acknowledge site hazards and agree to waive any claims of liability on the part of the Commission for allowing the development to proceed. There are inherent risks associated with development on and around shoreline protective devices and eroding slopes in a dynamic coastal bluff environment; this applies to the project proposed as well as for the infrastructure inland. The proposed project, and all development inland of it, is likely to be affected by shoreline erosion in the future. Although the Commission has sought to minimize the risks associated with the development proposed in this application (and in past actions with other development at this location), the risks cannot be eliminated entirely. Accordingly, this approval is conditioned for the Applicant to assume all risks for developing at this location (**Special Condition 8**).

Conclusion

The project represents an appropriate measure to maintain the vital infrastructure in danger from erosion in place at South Ocean Beach as well as the continuity of public access and recreation. Protecting the Lake Merced Tunnel and the Great Highway will protect the public by minimizing

risks associated with geologically unstable areas and areas at risk of flood hazard. Debris from this existing development, if damaged as a result of erosion would present a hazard to the public. A release of untreated waste water should the system experience failure (if the shoreline were not protected from being severely eroded) would threaten public health and safety. Thus, the proposed shoreline protection project is consistent with the requirements of Coastal Act Section 30253 which requires new development to minimize the risk to life and property in an area of high geologic and flood hazard. Further, the proposed project is necessary to continue protection of the existing infrastructure in place at South Ocean Beach, which is in danger from erosion and qualifies for approval based on Coastal Act Section 30235, which instructs the Commission to approve shoreline protective devices required to protect existing structures if specific criteria are met. In this case, there are public benefits and some public impacts[8] (that are appropriately mitigated), and the project can be found consistent with the Coastal Act.

F. PUBLIC ACCESS AND RECREATION

Applicable Policies

Coastal Act Section 30604(c) requires that every CDP issued for any development between the nearest public road and the sea "shall include a specific finding that the development is in conformity with the public access and public recreational policies of [Coastal Act] Chapter 3." The proposed project includes and is located seaward of the first through public road, the Great Highway, and thus this finding needs to be made in this case. Coastal Act Sections 30210 through 30224 specifically protect public access and recreation. In particular:

> *Section 30210. In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*
>
> *Section 30211. Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*
>
> *Section 30212.5. Wherever appropriate and feasible, public facilities, including parking areas or facilities, shall be distributed throughout an area so as to mitigate against the impacts, social and otherwise, of overcrowding or overuse by the public of any single area.*
>
> *Section 30213. Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.…*

[8] As distinct from other types of armoring projects with which the Commission is familiar where there are significant *private* benefits but the impacts all accrue to the public, necessitating different types of mitigation frameworks and packages than that associated with this project.

Section 30221. Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.

Section 30223. Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.

In addition, Coastal Act Section 30240(b) also protects parks and recreation areas, such as the adjacent beach area within GGNRA. Section 30240(b) states:

Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Although not the standard of review, on the topic of Ocean Beach, the City's LCP states in part:

Policy 1: Continue Ocean Beach as a natural beach area for public recreation.

Policy 3: Keep the natural appearance of the beach and maximize its usefulness by maintaining the beach in a state free of litter and debris.

Analysis

The project site is located within the Golden Gate National Recreation Area (GGNRA), which is heavily used by local residents and visitors from outside the area. The GGNRA extends approximately 3.5 miles along Ocean Beach from the Cliff House, at the north, south to Fort Funston. Because of the project site's location in the GGNRA, there is a heightened concern for any potential impacts to public access and recreation and other sensitive coastal resources.

The project site also includes the Great Highway and the parking lots adjacent to it. As described previously, the Great Highway is the main public route through coastal San Francisco, and is a coastal public recreational access amenity in its own right. It also provides parking lots, paths, restrooms, and a variety of public access amenities that are associated with it along its length.

In the area of North Ocean Beach, where sand excavation would occur, coastal access is served by a large (600 space) parking lot located between the Great Highway and the O'Shaughnessy Seawall. There is also parking available at the Beach Chalet restaurant east of the Great Highway, and at the Beach Chalet parking lot itself inland of the Great Highway. There are multiple established vertical access points to the beach along the O'Shaughnessy Seawall, which was designed with concrete stairwells to lead down to the beach. However, due to accretion of sand along North Ocean Beach, which has reached historic levels in recent years, sand has annually buried the staircases. At times, overtopping of sand at the entrances inhibits public access to and from the beach. Due to this condition, the proposed sand movement from this area to South Ocean Beach would have the overall effect of improving public access and recreation at

North Ocean Beach by keeping these entranceways unobstructed and passable. However, removal of sand could have negative effects if too much were removed from any one spot, and possibly creating a trench that could make the beach route impassible to the public. Further, the presence of construction vehicles on the beach, if not carefully coordinated, could cause undue impacts on members of the public attempting to recreate and use the beach. **Special Condition 5** therefore requires that the Applicant maintain North Ocean Beach in a manner that has the least impact on public access overall during construction.

In the area of South Ocean Beach, where sand placement would occur and sand bag placement may occur, coastal access is served by two parking lots (the Sloat Boulevard Parking Lot and the South Parking Lot) and informal roadside parking. Since 1992, winter storms have damaged or destroyed all the formal public access points to the beach in the area south of Sloat Boulevard. The nearby vertical bluffs within the project area of South Ocean Beach are from 5 feet to over 50 feet above the beach area between Sloat Boulevard and Fort Funston to the south. Informal lateral blufftop access exists in most places in this area, located within the parking lots and roadside pullout areas between the blufftop and the Great Highway. There is no formally established vertical beach access along this area, although informal foot paths do exist, such as in front of the parking lot at Sloat Boulevard. This access point consists of an open sandy area created by the previously permitted and completed sand backpassing activity. There, the public can walk down the sand slope from the top of the bluff to the beach. Lateral beach access exists along the entire beach shoreline from Sloat Boulevard to Skyline Boulevard, although the beach is often narrow and it is inhibited by concrete rubble, armor rock, and outfall structures/infrastructure in some places.

As noted above in the discussion on sand supply impacts, in addition to the direct loss of useable recreational beach area, shoreline armoring produces a number of effects on the dynamic shoreline system and the public's beach use interests. First, the existing armoring and the existing and proposed sandbags are part of an assemblage that denies sand and rock bearing material to the beach, because the retained debris slide material behind the revetments and berms will not be available to nourish the beach. Second, and particularly in combination with the denial of beach materials, the armoring work continues to fix the back beach location, with the effect on public use being to narrow the usable beach space. Together, these impacts conspire to reduce the actual area in which the public can pass along the beach. However, the situation is complicated somewhat at South Ocean Beach because so much pre-Coastal Act artificial fill already exists atop the bluff, and could thus be exposed and fall to the beach in greater quantities, also with the effect of impeding the natural dynamics of the shoreline system while further reducing usable beach space and creating a safety hazard.

In the larger context, the proposed project will provide short-term protection for the public access infrastructure that exists at South Ocean Beach, including the parking lots and lateral and vertical access points, which must be maintained (and enhanced in the case of the vertical access points) while the long-term management solution is developed and finalized. Previous erosion events have caused severe damage to both parking lots in this area, and have resulted in the loss of area available for public parking. Without erosion control measures in place, storm damage could result in loss of further parking spaces and might require temporary or permanent closure of the lots.

The berms created by the sand placement will impede onto the beach area and reduce usable beach space, but they will also create enhanced lateral access opportunity along the bluff top, and they provide the only means of safe vertical access to the beach in the area south of Sloat Boulevard. The berms created by previous sand placements in 2012 and 2014 have greatly enhanced the ability of the public to reach this portion of the beach from the blufftop (see before and after photos of the 2012 sand relocation efforts in **Exhibit 4**). Absent these berms, the public is forced to scramble up the bluff along the rubble or rock revetments, or to reach the area by walking down the beach from a point to the north, where parking and facilities are more limited. The berms also create enhanced lateral access along the blufftop. Informal lateral access exists here within the public parking lots and roadside pullout areas, however the public is forced to maneuver around obstacles including rubble, fencing, and guard rails. With the berm in place, there is a sandy shelf that allows for a better experience for visitors walking along and looking out to the ocean.

Finally, the Applicant proposes to conduct cleanup of any exposed rubble material in combination with any sand placement or sand bag placement activities. This has the immediate and ongoing effect of addressing the public access and safety risks associated with the hazard caused by the presence of concrete and construction fill within the bluffs in this stretch of beach. While the long-term strategy is expected to and should include the permanent removal of artificial fill atop the bluffs, the proposed project provides an important mechanism to ensure continued activity to remove new debris as it is exposed and falls to the beach in the interim.

While the proposed project would have the overall effect of generally improving public access conditions at North and South Ocean Beach over its 6-year life, at least when considered overall and in tandem with the long term solution (see also previous shoreline sand supply conclusion) the potential exists for adverse impacts to the public's ability to access and use the public beach during construction. Construction would require approximately 6 weeks for sand relocation and 4 weeks for sand bag placement, if conducted separately. If conducted simultaneously, construction would require approximately 8 weeks. During a single year, construction would not exceed 10 weeks. During this time, construction vehicles and equipment including trucks, excavators, loaders, and bulldozers would be present on portions of the beach, and would be staged within portions of the public parking lots which would be off-limits to the public. The staging area at North Ocean Beach would require about 20 (of 600) parking spaces in the parking lot near the O'Shaughnessy Seawall. At South Ocean Beach, the project would require the majority of the parking spaces in both parking lots (**Exhibit 5**). However, nearby free street parking exists along Sloat Boulevard. Southbound lanes of the Great Highway would also be closed during construction hours of the sand relocation activities. Areas on the beach where construction activities occur would also be temporarily off-limits to the public. At North Ocean Beach, there are many vertical access points and construction activities would not preclude access to the beach at any given time. At South Ocean Beach, activities would be limited primarily to the existing bluff faces, and are not expected to significantly impede access along the beach.

To minimize the impact to the public during periods of recreational use, the Applicant proposes to limit construction activities to weekdays, though sandbag installation would be allowed on

weekends in the event of an emergency. **Special Condition 5** further limits construction during periods to avoid construction during peak visitation times, including summer months. The Applicant has indicated that for purposes of avoiding potential impacts to western snowy plovers, the summer months may be an appropriate time to conduct sand movement activities. According to the Applicant, snowy plovers are least active at Ocean Beach during the period between May and July. While Special Condition 5 limits construction during summer months, it also allows the Executive Director to approve construction activities within this window if required by environmental or public safety concerns. If the Applicant ultimately does propose to undertake construction activities during the summer months, the Executive Director would consider any benefits to coastal resources, including snowy plover habitat, against the potential for such work to adversely affect public access at the beach during a period of generally higher use. The Executive Director would decide if such work would be appropriate on balance, and the most protective overall of coastal resources. If allowed, additional measures to limit potential adverse impacts to public access, such as limiting the area of the beach disturbed by activities at any given time, might be necessary. **Special Condition 5** is also premised overall on protecting public recreational access and other coastal resources as much as possible.

Conclusion

As conditioned, the project will not significantly interfere with public access and public recreation and will protect public access in conformity with the public access requirements of the Coastal Act and the City's LCP.

G. MARINE RESOURCES AND WATER QUALITY

Applicable Policies

Coastal Act Section 30230 requires that marine resources be maintained, enhanced, and restored. New development must not interfere with the biological productivity of coastal waters or the continuance of healthy populations of marine species. Coastal Act Section 30230 states:

> *Marine resources shall be maintained, enhanced, and, where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

Coastal Act Section 30231 requires that the productivity of coastal waters necessary for the continuance of healthy populations of marine species shall be maintained and restored by minimizing waste water discharges and entrainment and controlling runoff. Coastal Act Section 30231 states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and*

substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Analysis

If no action is taken to prevent or slow down erosion while the existing development remains at its current location, untreated waste water from the Lake Merced Tunnel, eroded roadway debris, and utility infrastructure could be discharged and deposited to the adjacent beach and ocean. This could result in adverse effects on the quality of the ocean water, marine habitat, and organisms that rely on these resources, contrary to Coastal Act Sections 30230 and 30231. Thus, the proposed project has an overall potential positive effect on marine resources and water quality by providing protection for the existing development should it be needed.

However, there is some potential for water quality impacts to occur during construction and maintenance activities related to the construction and installation of the sand berms and sandbag structures. The Applicant has incorporated certain measures into the proposed project to limit the potential for such impacts during construction. First, to the extent feasible (i.e., barring an emergency situation), all work would be conducted during dry weather and low tide. Second, construction equipment and vehicles would be stored away from the beach, with the public parking lots at the O'Shaughnessy Seawall and the two lots south of Sloat Boulevard. Third, the Applicant will prepare an erosion and sediment control plan before undertaking sand relocation or installing a sandbag structure, unless more than one acre of disturbance will occur, in which case a Stormwater Pollution Prevention Plan (SWPPP) would be required. In addition, to ensure that the Applicant implements BMPs and control measures adequate to protect coastal resources, including water quality, the Commission attaches **Special Condition 5**. **Special Condition 5** requires submittal of a Construction Plan with a pollution prevention component for Executive Director review and approval. Through the Construction Plan, the Applicant is to demonstrate adherence to various controls and construction responsibilities during project implementation to protect resources and water quality. These include standard controls imposed by the Commission to minimize stormwater runoff, surface erosion, and potential pollutants resulting from construction activities.

With projects involving the relocation of large volumes of sand on a beach, such as this, the Commission has typically addressed the potential impacts on marine resources. Sand relocation can result in direct short-term impacts to the sandy beach by disturbance to infaunal species. However, over the longer-term, sand relocation activities can serve to conserve the beach and slow its erosion. In order to minimize impacts to marine resources from sand relocation, it is important to limit the location, timing, and duration of such activities. In this case, the Applicant proposes to conduct sand relocation activities on an annual basis, and thus the impacts are limited to a narrow window of approximately six weeks per year. In addition, the extent of the sand relocation activities is limited to the areas identified in **Exhibits 2 and 3**. Further, unlike in other instances in which off-site sand is used for beach nourishment activities where changes in average sand grain size and grain size distribution can profoundly impacts beach biota, in this case, there are no concerns related to the quality and appropriateness of the sand being placed at South Ocean Beach, as it is the same source of naturally supplied sand that the beach would receive as it is moved by waves and currents downcoast.

Conclusion

As conditioned, the project would protect the biological productivity and the quality of coastal waters in conformity with Sections 30230 and 30231 of the Coastal Act.

H. ENVIRONMENTALLY SENSITIVE HABITAT AREAS

Applicable Policies

Environmentally Sensitive Habitat Areas (ESHA) are defined as areas in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments. Coastal Act Section 30240 states:

> *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*
>
> *(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

Analysis

The proposed project would not occur within any designated critical habitat, however the Ocean Beach area does provide habitat for two special-status species — the western snowy plover and the bank swallow.

The western snowy plover is a federally threatened species and a California species of special concern. Ocean Beach is not designated critical habitat for the snowy plover and there is no record of snowy plover nesting at Ocean Beach, but the presence of the bird is assumed. Through formal rulemaking, NPS has established a Snowy Plover Protection Area within sections of Ocean Beach in order to provide a protection zone for overwintering plovers. Within this area, which extends from Stairwell 21 (north of Lincoln Boulevard) to Sloat Boulevard, dogs are required to be kept on a leash from July 1 until May 15. To limit the potential for interference with snowy plovers and the protection area, the project area where sand excavation activities may occur is limited to within 150 feet of the O'Shaughnessy Seawall, and limited to the area between Stairwells 1 and 28. Though the area between Stairwells 21 and 28 is within the protection area, as excavation activities are limited to within 150 feet of the seawall (**Exhibit 6**) and snowy plovers at Ocean Beach are more likely to be observed closer to the shoreline, NPS has approved excavation within this area and U.S. Fish and Wildlife Service has previously determined that such activity is not likely to adversely affect the plover population. Further, no sand excavation would be conducted south of Stairway 21 (i.e., within the NPS protection zone) during the overwintering season of July 1-May 15. Nonetheless, to avoid potential impacts to the western snowy plover and beach habitat, **Special Condition 5** requires that a qualified biologist escort the contractor and crew from the construction site. **Special Condition 5** also requires that a qualified biologist monitor the project area for western snowy plovers during construction

activities and instruct the contractor and crew on appropriate measures to avoid potential impacts to western snowy plover.

The bank swallow is a state-listed species. Bank swallows burrow within the beach bluffs, and while no burrows have been identified within the project area, an important nesting colony exists at Fort Funston, about 2.5 miles south of Reach 2. Active bank swallow burrows have also been previously recorded approximately 200 feet south of Reach 2. Reach 2 does have some potential to contain bank swallow habitat because of the presence of natural bluff material, however the native Colma material is near the bluff toe, with the upper bluff (where bank swallows typically nest) appearing to consist of artificial fill. Nonetheless, the Applicant proposes measures to avoid potential impacts to potential habitat at Reach 2. No construction would be allowed if the pre-construction surveys conducted by the Applicant identify the presence of swallows at Reach 2 during nesting season (April 1 – August 15), and if swallows were present, it could not commence until juveniles have fledged. NPS has previously determined that the placement of sand in this area and in the method described is not likely to adversely affect bank swallows. To ensure adequate protection for bank swallows and bank swallow habitat, **Special Condition 5** requires the Applicant to consult with and comply with any additional requirements by NPS related to potential impacts to biological resources.

Conclusion

As conditioned, the proposed project is sited and designed to prevent any adverse habitat impacts, and can be found consistent with Coastal Act Section 30240.

I. VISUAL RESOURCES

Applicable Policies

The scenic and visual qualities of coastal areas are also protected under Coastal Act Section 30251. Coastal Act Section 30251 states:

> *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*

Although not the standard of review, on the topic of Ocean Beach, the City's LCP states in part:

> *Policy 3: Keep the natural appearance of the beach and maximize its usefulness by maintaining the beach in a state free of litter and debris.*

Analysis

The project site is within the GGNRA, which is an urban recreation area under the jurisdiction of the NPS. The site is bounded by the Great Highway and residential areas and other facilities (e.g., the Zoo and the City's Wastewater Treatment Plant) to the east, and GGNRA lands to the north and south. The recreation area includes the beach and bluff areas that provide the public a setting for a natural coastal experience. The visual characteristics of the South Ocean Beach landscape include bluff tops with development (e.g., parking lots), locations with eroded exposed rubble, revetments, and some naturally eroding Colma formation bluffs. The rubble, which would be cleaned up by the Applicant prior to any sand placement or installation of a sandbag structure, comprises smaller rock material interspersed with debris. The engineered revetments currently in place consist of large, thick, angular rock. The rock revetments have an effect on shoreline views from the beach and blufftop vantage points, and would not be considered visually compatible with the surrounding natural area. They would thus be incompatible with Coastal Act Section 30251. However, a shoreline protection structure that is otherwise inconsistent with the Coastal Act shall be permitted if it meets the requirements of Section 30235 of the Coastal Act, and as discussed above, the existing revetments are necessary for this purpose until Phase II of the project can be implemented. **Special Condition 1** requires removal of the revetments and any sandbag structures after the limited 6-year term of this permit to ensure that these visual impacts would be temporary in nature until a long-term solution can be implemented. Sand relocation activities will offset such impacts and have a positive impact on the visual resources in the area, in that sand can help cover sandbag structures and sections of rock revetments on the beach. Where installed, the berms would also create a more visually pleasing intersection between the blufftop and the beach, as the existing exposed blufftops are primarily characterized by jagged asphalt and concrete edges as the result of the effects of erosion on the existing blufftop development. **Special Condition** 7 requires the Applicant to ensure the regular cleaning up and maintenance of the parking lots, and this will enhance visual resources as compared to today. In addition, the project must also be understood visually in relation to the long term solution, which is expected to result in significant public view enhancement (see also previous shoreline sand supply conclusion).

Conclusion

The above measures will help to minimize and mitigate the visual impacts of the existing development. Therefore, as conditioned, the project can be found consistent with Coastal Act Section 30251 and the City's LCP.

J. ARCHAEOLOGICAL RESOURCES

Applicable Policies

Coastal Act Section 30244 requires that reasonable mitigation measures be employed where development would adversely impact archaeological or paleontological resources. Coastal Act Section 30244 states:

> *Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.*

Analysis

No archaeological or paleontological resources have been definitively identified at the subject site to date. However, the results of an archaeological survey conducted by the Applicant's staff archaeologist revealed the presence of a possible shell midden deposit in buff face of the Reach 2 area of South Ocean Beach (**Exhibit 3**). The deposit identified includes small to medium-sized shell fragments (including mussel, clam, and oyster), bone fragments (apparently rodent bones), small charcoal chunks, numerous angular and stream-washed cobbles and pebbles, and modern debris and construction material (e.g., plastic pieces, roadside rubbish, the protruding edge of a steel I-beam).

According to the survey, the presence of modern materials within and apparently beneath the possible midden deposit suggests that either midden material had been at least partially redeposited or substantially disturbed, or that the deposit is simply modern fill with incidental shell content. Because it is presently unclear if the deposit constitutes modern fill or an intact or redeposited prehistoric shell midden, the Applicant will develop a focused Archaeological Testing Plan which will include radiocarbon dating of carbon and shell to date the deposit and which will be conducted by a geoarchaeologist. Until such time as the geoarchaeological testing can occur, the Applicant will limit construction activities such that work in Reach 2 does not have the potential to result in additional erosion of the blufftop edge where the deposit is exposed. The chief concern in this area is that the presence of heavy equipment (used to move sand or sandbags onto the beach) on the blufftop area would contribute to erosion at the bluff edge. Therefore, the Applicant has designed the project to require that equipment be located a minimum of 15 feet from the blufftop edge. Sandbags could be placed from a crane located outside the 15-foot buffer from the blufftop edge, and the Applicant would ensure that sandbags placed on the beach beneath the bluff would not swing or slide against the blufftop or blufftop edge during installation. In addition, until the results of the testing are concluded, the Applicant proposes to build the sandbag structure no higher than 5 feet from the top of the bluff, and to not conduct any sand berming activity at Reach 2. Should archaeological testing reveal that the identified deposit does contain prehistoric cultural deposits, **Special Condition 9** requires the Applicant to ensure that any such archaeological resources are appropriately protected. The condition requires the Applicant to notify the Executive Director of such discoveries, to discontinue work in the vicinity of cultural resources uncovered during the work, and to take steps to protect such resources pursuant to Executive Director review and approval.

Conclusion

As conditioned, the proposed project would employ reasonable mitigation measures to avoid adverse impacts to archaeological resources consistent with Coastal Act Section 30244.

K. INDEMNIFICATION

Coastal Act Section 30620(c)(1) authorizes the Commission to require applicants to reimburse the Commission for expenses incurred in processing CDP applications. Thus, the Commission is authorized to require reimbursement for expenses incurred in defending its action on the pending CDP application in the event that the Commission's action is challenged by a party other than the Applicant. Therefore, consistent with Section 30620(c), the Commission imposes **Special Condition 11** requiring reimbursement for any costs and attorney fees that the Commission

incurs in connection with the defense of any action brought by a party other than the Applicant challenging the approval or issuance of this permit.

L. ALLEGED VIOLATION

Development including, but not limited to, the placement of 600 linear feet of revetment in 1997 took place without benefit of a CDP. In addition, previous authorization for 440 linear feet of rock revetment placed under Emergency Permit No. 2-10-003-G (dated February 8, 2010) never received a follow up CDP, and is thus currently unpermitted as well. Although development has taken place prior to submission of this CDP application, consideration of the application by the Commission has been based solely upon the policies of Chapter 3 of the Coastal Act. Commission review and action on this CDP does not constitute a waiver of any legal action with regard to the alleged violations, nor does it constitute an implied statement of the Commission's position regarding the legality of any development undertaken on the subject site without a CDP, or that all aspects of the violation have been fully resolved.

M. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment.

The San Francisco Planning Department, acting as lead agency, found the project to be categorically exempt under CEQA. The Coastal Commission's review and analysis of land use proposals has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. The Commission has reviewed the relevant coastal resource issues associated with the proposed project, and has identified appropriate and necessary modifications to address adverse impacts to such coastal resources. The preceding CDP findings in this staff report has discussed the relevant coastal resource issues with the proposal, and the CDP conditions identify appropriate mitigations to avoid and/or lessen any potential for adverse impacts to said coastal resources. All public comments received to date have been addressed in the findings above. All above findings are incorporated herein in their entirety by reference.

The Commission finds that only as modified and conditioned by this CDP will the proposed project avoid significant adverse effects on the environment within the meaning of CEQA. As such, there are no additional feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse environmental effects that approval of the proposed project, as modified, would have on the environment within the meaning of CEQA. If so modified, the proposed project will not result in any significant environmental effects for which feasible mitigation measures have not been employed consistent with CEQA Section 21080.5(d)(2)(A).

APPENDIX A: SUBSTANTIVE FILE DOCUMENTS

1. SPUR. May 2012. Ocean Beach Master Plan.

2. SPUR/Environmental Science Associates, Phillip Williams and Associates, Ltd. (ESA PWA). April 24, 2015. Coastal Protection Measures & Management Strategy for South Ocean Beach; Ocean Beach Master Plan: Coastal Management Framework.

3. Environmental Science Associates (ESA). August 28, 2015. Engineering, Geology, and Coastal Process Information for South Ocean Beach Immediate-Term Management Measures.

4. Environmental Science Associates (ESA). October 1, 2105. In-Lieu Sand Mitigation Fee Calculations for OBMP Interim Erosion Control Measures Coastal Development Permit.

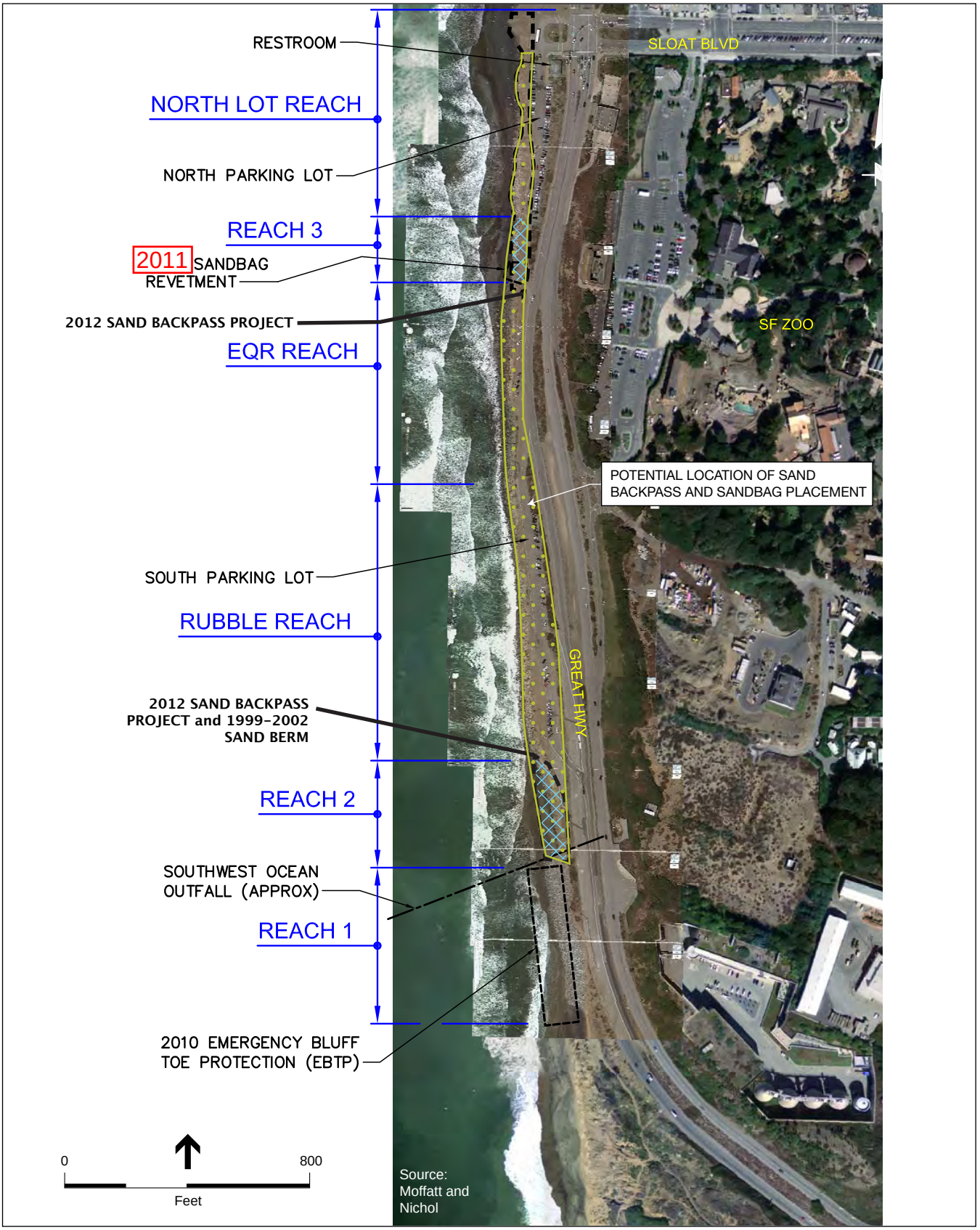
Figure 1. Ocean Beach Immediate Action Plan Project Vicinity

Ocean Beach Interagency Coastal Framework . 120925

SOURCE: ESA, 2015; Google Earth

Figure 1
Proposed Sand Backpass Excavation Areas

2-15-1357
Exhibit 2
North Ocean Beach Project Area
Page 1 of 1



SOURCE: Moffatt & Nichol, 2012; ESA, 2015

Ocean Beach Interagency Coastal Framework . 120925

Figure 2

Soutth Ocean Beach (SOB) Reaches

2-15-1357
Exhibit 3
South Ocean Beach Project Area

Ocean Beach Interagency Coastal Framework . D120195.00

SOURCE: Moffatt & Nichol Engineers

Figure 2

Photographs showing change in beach elevation at SOB in early 2012.

South Ocean Beach Prior to 2012 Sand Backpass

2-15-1357
Exhibit 4
Sloat Blvd. Before and After 2012 Sand Backpass

SOURCE: Moffatt & Nichol Engineers

South Ocean Beach Following 2012 Sand Backpass

Ocean Beach Interagency Coastal Framework . D120195.00

Figure 3

Sand Backpassing Project, September 2012 (above) and December 2012 (below).

2-15-1357
Exhibit 4
Sloat Blvd. Before and After 2012 Sand Backpass
Page 2 of 2

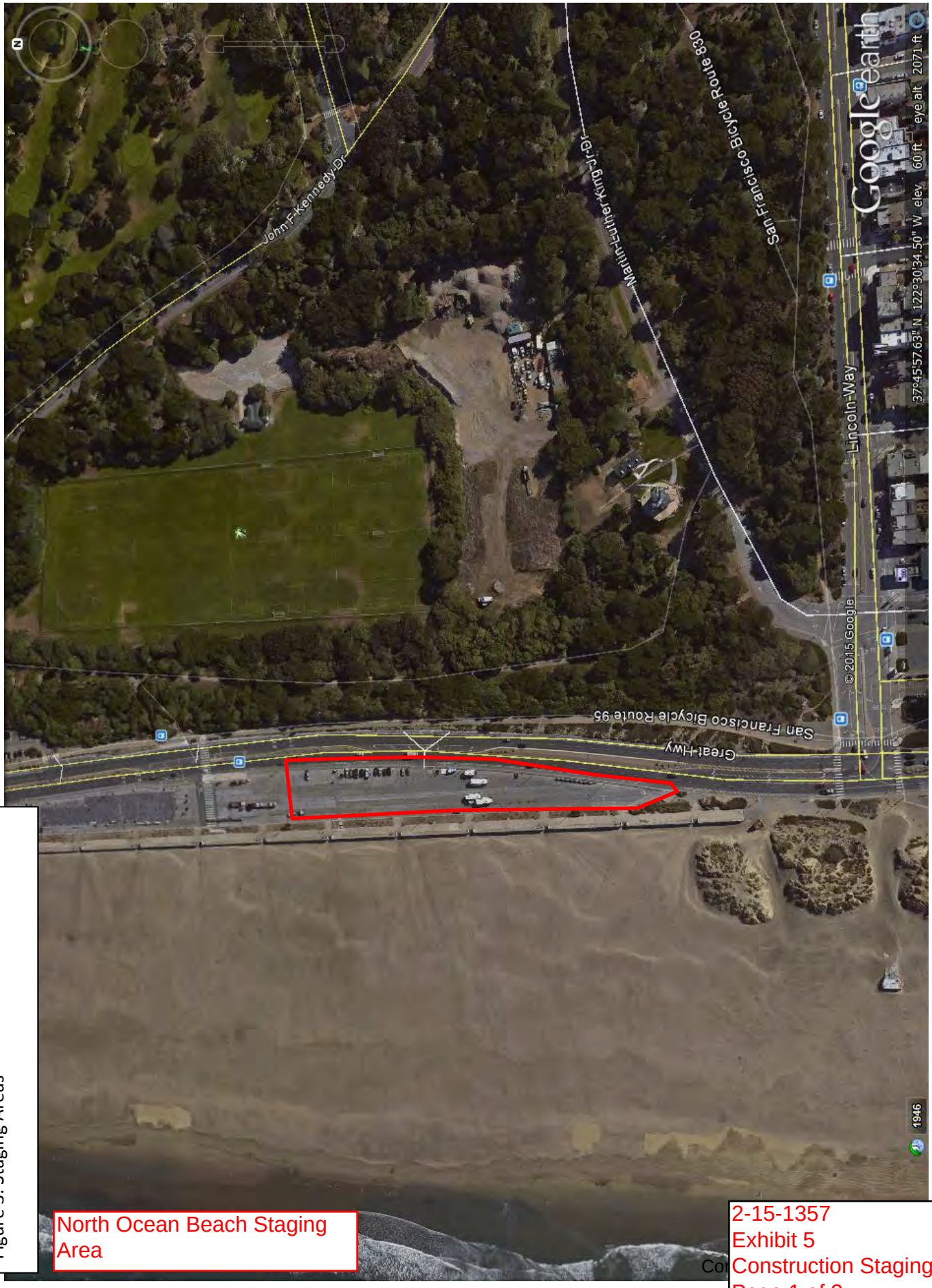


Figure 3. Staging Areas

North Ocean Beach Staging Area

2-15-1357
Exhibit 5
Construction Staging Areas
Page 1 of 2

South Ocean Beach Staging Area

2-15-1357
Exhibit 5
Construction Staging Areas
Page 2 of 2

Figure 2. Project Area adjacent to Stairwell 21 on Ocean Beach.

SETTLEMENT AGREEMENT AND MUTUAL RELEASE

This Settlement Agreement and Mutual Release ("the Agreement") is entered into between and among California Coastal Protection Network ("CCPN") and the City and County of San Francisco ("the City"). Collectively, CCPN and the City are "the Parties."

RECITALS

A. On August 9, 2011 CCPN filed a complaint against the City in San Francisco Superior Court entitled *California Coastal Protection Network v. City & County of San Francisco*, Case No. CGC-11-513176, ("the Action"), asserting causes of action for: (1) declaratory relief; (2) injunctive relief; (3) civil fines; and (4) daily fines;

B. The City answered the complaint, denies CCPN's allegations, and denies any allegations of wrongdoing, fault, or liability alleged in the Action or otherwise;

C. The Parties wish to settle their differences and avoid further litigation, without concession to the merits of any claim or allegation asserted in the Action;

NOW, THEREFORE, the Parties agree to fully settle their dispute on the following terms and conditions:

AGREEMENT

1. This Agreement is subject to approval by the San Francisco Public Utilities Commission, the San Francisco Board of Supervisors and the Mayor. Subject to the foregoing, each Party represents and warrants that it has the right and authority to execute this Agreement.

2. Within five (5) business days after the Public Utilities Commission, the Board of Supervisors and the Mayor have approved this Agreement, CCPN will submit to the San Francisco Superior Court a judgment pursuant to the terms of this settlement, as provided in section 664.6 of the California Code of Civil Procedure.

3. Within thirty (30) business days after entry of judgment, the City shall pay to CCPN the sum of $125,000.00 (one hundred twenty five thousand dollars and no cents). The payment shall be in the form of a check payable to CCPN's counsel, Otten & Joyce, LLP. This payment fully satisfies CCPN's demand for attorneys' fees and costs in connection with this Action.

4. The parties acknowledge and agree that the California Environmental Quality Act ("CEQA") requires public agencies to consider the environmental impacts of a project before committing to implementing it. The actions described below, including the Long Term Adaptive Management Plan and the Immediate-Term Coastal Erosion Management Plan, and any other actions proposed to be undertaken by the City, are subject to CEQA review before the City may approve such action. Accordingly, until the environmental review process has been completed, the City must retain the sole and absolute discretion to: (i) make such modifications to a proposed project as are deemed necessary to mitigate significant environmental impacts; (ii) select other feasible alternatives to avoid such impacts; (iii) balance the benefits against unavoidable significant impacts prior to taking final action if such significant impacts cannot otherwise be avoided; or (iv) determine not to proceed with a proposed project if the City determines that the benefits of a proposed porject fail to outweigh the unavoidable significant impacts.

5. The Parties have agreed to the following timeline for the City to develop and initiate implementation of a Long-term Adaptive Management Plan (LAMP) for the South Reach of San Francisco's Ocean Beach that preserves recreational opportunities, complies with all applicable land use and environmental laws and regulations, and contemplates a managed retreat in the face of expected sea level rise. The South Reach of Ocean Beach ("SROB") is the area south of Sloat Boulevard.

a. The City has already engaged with the San Francisco Planning and Urban Research Association ("SPUR") and stakeholders to develop an Ocean Beach Master Plan. SPUR published the Ocean Beach Master Plan in May 2012.

b. San Francisco expects SPUR to issue its Preferred Alternative, after it is reviewed and approved by all stakeholders, by the end of 2014. The City expects to proceed with environmental review of SPUR's Preferred Alternative recommendation, which is considering and may include managed retreat strategies, as well as debris removal and rerouting of the Great Highway from SROB.

c. Environmental review under CEQA and NEPA, following SPUR's publication of its Preferred Alternative, is expected to take from 18-36 months (through 2017). The variable time estimate depends in part on whether the Preferred Alternative will require a full Environmental Impact Report, or whether it will require only a Mitigated Negative Declaration.

d. By January 1, 2018, or promptly upon completion of the environmental review set forth in section 5.c., the City shall submit applications for necessary permits and approvals for LAMP (from, e.g., the California Coastal Commission, the Army Corps of Engineers, the Golden Gate National Recreation Area, the California Department of Fish & Wildlife, the United States Fish & Wildlife Service). This permit procedure is expected to take approximately 12 months (through 2018).

e. Contract bids and awards for a project of this scope typically take about 8-12 months (through 2019).

f. Construction of the approved project is expected to take about 18-24 months (through 2021).

6. The City will immediately direct SPUR and its partners to consider the following measures in developing the LAMP: 1) analyze shoreline retreat; and 2) analyze limited future shoreline armoring for the sewer facility only, as an aesthetically natural looking curved and contoured structure so as to protect the sewer facility.

7. The Parties recognize that events beyond the City's control could cause unforeseen delay in the timetable set forth in paragraph 5, above. For example, a legal challenge to implementation of the Ocean Beach Master Plan under CEQA or NEPA would likely delay the project. The City agrees to use its best efforts to adhere to the timeline set forth in paragraph 5, above, and to notify CCPN promptly if the City becomes aware of circumstances that will require modification of the timeline. The Parties further recognize that implementation of the LAMP is an adaptive, iterative process that will be informed by the experience obtained through implementation of interim measures, and the parties expect LAMP will be modified as necessary and appropriate to reflect this information and experience that is not yet available.

8. Pending full implementation of the LAMP, the City has engaged SPUR to develop with stakeholders interim measures, including an Immediate-Term Coastal Erosion Management Plan.

9. These interim measures, including the Immediate-Term Coastal Erosion Management Plan, remain under development. Erosion control and beach maintenance interventions currently under consideration as immediate measures include sand backpassing (i.e., trucking surplus sand from the North Reach of Ocean Beach to eroded areas of the South Reach), sandbags to protect the bluff from direct wave action, and rubble reuse to limit bluff erosion. As part of this Agreement, City will immediately direct SPUR to consider the feasibility of the following measures to improve public access and recreation opportunities to the SROB pending full implementation of the LAMP:

a. Remove and/or reconfigure the concrete parking and traffic barriers currently spread throughout the SROB and along the unused roadbed in order to facilitate and allow increased public parking and recreational enjoyment on what remains of the former roadway and remaining asphalt infrastructure, during the pendency of the LAMP planning process.

b. that benches, picnic tables, trails, trash containers, landscaping and other public park amenities be considered for the western bluff edge area in order to create an interim public park-like recreation area between the existing parking lots (and what is left of them) and Fort Funston, in the area formerly used as roadway ("Managed Retreat Area");

c. that rocks and debris located below the mean high tide line in the Managed Retreat Area be annually removed or repurposed so long as such removal and/or repurpose use further up the bluff in the Managed Retreat Area does not jeopardize existing sewer infrastructure; and

d. that nourishment and creation of sand ladders or other safe access down to the beach be included so long as it will not jeopardize natural resources or sensitive species in the area.

10. Within 12 months of the execution of this Agreement, The City will implement the Immediate-Term Coastal Erosion Management Plan consistent with SPUR's analysis and recommendations, to the extent these measures complete environmental review and obtain all necessary permits and approvals from regulatory agencies with jurisdiction over the activities.

11. The City agrees to limit its emergency response during the implementation of LAMP to continued use of beach nourishment (including natural material sand bags) and other measures that may be permitted and approved by the California Coastal Commission. The City further agrees to obtain all necessary permits and/or authorizations from all governmental agencies including, but not limited to, the California Coastal Commission before engaging in any emergency response, subject to the procedures authorized in section 13144 of Title 14 of the California Code of Regulations (14 CCR § 13144), and section 30611 of the California Public Resources Code.

12. CCPN and its officers, agents, servants, employees, attorneys and other persons who are in active concert or participation with them shall not oppose the City's applications for permits and approvals to implement the LAMP and the interim measures, including the Immediate-Term Coastal Erosion Management Plan, set forth herein.

13. Upon entry of the Judgment set forth in paragraph 2 above and receipt of the payment set forth in paragraph 3, above, CCPN, on behalf of itself and its present, former and future affiliates, divisions, departments, officers, directors, employees, representatives, agents, successors, assigns, and attorneys, fully release, waive, and forever discharge the City (including, without limitation, all of the City's departments, boards, commissions, officers, commissioners, employees and attorneys) and its agents and insurers from any and all civil claims, demands, actions, suits, rights, and causes of actions and liabilities of any nature, known or unknown, suspected or unsuspected, whether legal, equitable, or statutory, including, but not limited to, civil penalties and punitive damages, costs, expenses and attorney fees, which arise out of or in any way relate to this Action, based on conduct occurring at any time up to and including the effective date of this Agreement.

14. Upon entry of the Judgment set forth in paragraph 2 above, the City, on behalf of itself and its present, former and future affiliates, divisions, officers, commissioners, employees, representatives, agents, successors, assigns and attorneys, fully releases, waives and forever discharges CCPN and its present, former and future affiliates, divisions, officers, directors, employees, representatives agents, insurers, sureties and attorneys, from any and all civil claims, demands, actions, suits, rights, and causes of actions and liabilities of any nature, known or

unknown, suspected or unsuspected, whether legal, equitable, or statutory, including, but not limited to, civil penalties and punitive damages, costs, expenses and attorney fees, which arise out of or in any way relate to this Action, based on conduct occurring at any time up to and including the effective date of this Agreement.

15. Each of the Parties understands and agrees that if any facts concerning claims released in this Agreement should be found hereafter to be other than or different from the facts now believed to be true, they expressly accept and assume the risk of such possible difference in facts and agree that the releases in this Agreement will remain effective. Therefore, and subject to the reservation stated above, with respect to the claims released in this Agreement, each of the Parties knowingly and expressly waives any rights or benefits provided by Section 1542 of the Civil Code, which reads as follows:

> A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM OR HER MUST HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR.

16. In the event either Party contends that the other Party is in breach of any of its obligations under this Settlement Agreement, then the complaining Party shall give written notice (the "Notice") specifying in reasonable detail the alleged breach or lack of compliance. The responding Party shall be given a thirty (30) day period (the "Cure Period") from the date of receipt of the Notice in which to correct or cure the breach or lack of compliance. If the complaining Party contends at the end of the Cure Period that the alleged breach has not been corrected or cured, the Parties shall meet and confer for a minimum of 30 additional days before the complaining party shall have the right to enforce this Settlement Agreement in court. Each party shall make itself reasonably available to meet and confer during this 30-day period and shall meet and confer in good faith. In any action to enforce this Settlement Agreement, the prevailing party shall be entitled to reasonable attorney fees. The Parties hereby expressly agree and stipulate that the San Franciso County Superior Court shall retain jurisdiction over this matter pursuant to California Code of Civil Procedure, §664.6.

17. Any notice, request, consent, waiver or other communication required or permitted hereunder shall be effective only if it is in writing and personally delivered or sent by certified or registered mail, postage prepaid, by nationally recognized overnight courier or by telecopier (with confirmation of delivery of telecopy), addressed as set forth below:

If to CCPN:

Otten & Joyce, LLP
c/o Victor Otten, Esq.
3620 Pacific Coast Highway, Suite 100
Torrance, CA 90505
Telecopy: (310) 347-4225
E-Mail: vic@ottenandjoyce.com

With copies to:

Mark Massara, Esq.
1642 Great Highway
San Francisco, CA 94122
E-Mail: markmassara@coastaladvocates.com

If to the City:

San Francisco Public Utilities Commission
Harlan L. Kelly, Jr.
SFPUC, General Manager
525 Golden Gate Ave., 13th Floor
San Francisco, CA 94102
Phone: 415-554-0740
Email: hkelly@sfwater.org

and to:

Anna Roche
Wastewater Enterprise
Grants Program Manager and Legislative Liaison
525 Golden Gate Ave., 11th Floor
San Francisco, CA 94102
Phone: 415-551-4560
Email: aroche@sfwater.org

With copies to:

San Francisco City Attorney's Office
City Hall, Room 234
San Francisco, CA 94102
Attention: James M. Emery
Telecopy: (415) 554-4757
E-Mail: jim.emery@sfgov.org

or such other person or address as the addressee may have specified in a notice duly given to the sender as provided herein. Such notice or communication shall be deemed to have been given as of the date received by the recipient thereof or the date of rejection of attempted delivery. All notices given hereunder shall also be given by electronic mail at the electronic mail addresses set forth above.

18. This Agreement shall expire on December 31, 2021.

19. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of California.

20. The terms set forth in this Agreement constitute the final expression of the Parties' agreement and understanding. This Agreement can be amended, modified, or terminated only by a writing executed by all Parties. No modification or waiver of any provisions of this Agreement shall be effective unless the same shall be in writing and signed by all Parties.

21. The Parties agree that the Agreement shall be binding upon the Parties and any successors-in-interest and assigns.

22. The Parties acknowledge that they have read this Agreement, that they have been advised by the counsel of their choice, and that the determination of the terms of this Agreement has been by mutual agreement following negotiation. Each Party understands each and every term, condition, and provision of the Agreement. Accordingly, the rule of construction specified in California Civil Code section 1654 that uncertainties in a contract are to be interpreted against the party who caused the uncertainty to exist is hereby expressly waived by all parties. For purposes of this Agreement, the Parties agree that any ambiguity shall be resolved as if the Agreement and each provision had been jointly conceived and drafted.

23. This Agreement may be executed and delivered in any number of counterparts or copies by the Parties. The execution of counterparts shall have the same force and effect as if all Parties had signed the same instrument. The Parties further agree that facsimile or photocopied signatures have the same force and effect as original signatures for all purposes.

IN WITNESS HEREOF, each Party has caused this Agreement to be executed on the date opposite its signature block.

Dated: _____, 2013 CALIFORNIA COASTAL PROTECTION NETWORK,

_____
by Susan Jordan, its President

Dated: _____, 2013 CITY AND COUNTY OF SAN FRANCISCO

_____
Harlan L. Kelly, Jr.
General Manager
San Francisco Public Utilities Commission

Approved as to form:

Dated: _____, 2013

_____
Victor J. Otten
Counsel for California Coastal Protection Network

Dated: _____, 2013

_____
James M. Emery, Esq.
Deputy City Attorney