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STAFF REPORT: REGULAR CALENDAR

APPLICATION NO.:	**E-11-017**
APPLICANT:	**Pacific Gas and Electric Company**
AGENT:	Padre Associates, Inc.
LOCATION:	State waters offshore of Point Buchon and limited shoreline and upland areas at the Diablo Canyon Nuclear Generating Station facility, San Luis Obispo County.
PROJECT DESCRIPTION:	Install and operate an array of short- and long-term seismic activity monitoring devices on the seafloor and approximately eleven miles of power and data cable.
STAFF RECOMMENDATION:	Approval with Conditions.

SUMMARY OF STAFF RECOMMENDATION

Pacific Gas and Electric Company (PG&E) proposes to install and operate an array of six seismic activity monitoring devices on the seafloor offshore of the Diablo Canyon Nuclear Generating Station at Point Buchon in San Luis Obispo County. Four passive seismic activity monitoring devices (known as ocean bottom seismometers or OBS units) would be in place for no more than ten years before being removed. The OBS units are to be connected to each other

and to shore by way of a two-inch diameter combined power and data transmission cable that would also be removed at the end of the ten year project period. This 11-mile long cable would come ashore at the Diablo Canyon Nuclear Generating Station facility through an existing conduit that is proposed to be extended by approximately 72-feet. Additionally, two short-term OBS units would also be placed on the seafloor within State waters outside of the proposed cable route. Each of these devices would not be connected to shore and would be placed at two different locations for two weeks at a time (for a total of four sites and four total weeks) in order to record and store seismic data.

Major Coastal Act issues associated with this project include potential adverse impacts to marine resources and commercial fishing. Although trenching is not proposed to bury the cable on the seafloor, its installation and long-term presence is still likely to result in the injury, disturbance, and removal of benthic marine organisms and seafloor habitat within the proposed cable route. These adverse impacts would be caused by placement of the cable on delicate marine organisms such as marine algae, anemones, and corals, and abrasion due to its movement with currents over time. Potential adverse impacts to commercial fishing would result from entanglement of fishing gear with the cable or OBS units and damage or losses that could result. To address these potential adverse impacts the Commission staff is recommending **Special Conditions 3, 4, 5, and 6** that would incorporate into this permit certain relevant mitigation measures included in this project's Mitigated Negative Declaration; require an amendment to this permit to authorize the removal of the seismic monitoring array at the end of the ten year monitoring period; memorialize PG&E's offer to contribute $33,600 in funding to the California Lost Fishing Gear Recovery Project to compensate for anticipated impacts to hard substrate seafloor habitats and organisms within the proposed cable route; and require PG&E to provide notice of installation operations and proposed installation locations to the fishing community and vessel operators prior to and during these activities.

In addition, Commission staff is also recommending **Special Conditions 7, 8, 9, and 10** that would require PG&E to provide as-built and final location information for the seismic monitoring array to the National Oceanic and Atmospheric Administration Office of Coast Survey; require PG&E to remove any fishing gear or object that becomes entangled in the seismic monitoring array; require PG&E to develop and submit for Executive Director review and approval a Lost/Damaged Fishing Gear Compensation Plan that outlines that steps that would be taken to address any impacts to commercial fishing operations that may result from the loss and/or damage of fishing gear due to entanglement with the proposed seismic monitoring array.

Commission staff recommends **approval** of coastal development permit application E-11-017, as conditioned.

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APPENDICES

EXHIBITS

I. MOTION AND RESOLUTION

Motion:

*I move that the Commission **approve** Coastal Development Permit Application No. E-11-017 subject to the conditions set forth in the staff recommendation.*

Staff recommends a **YES** vote on the foregoing motion. Passage of this motion will result in conditional approval of the permit and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

Resolution:

The Commission hereby approves coastal development permit E-11-017 and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. 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

See Appendix A.

III. SPECIAL CONDITIONS

This permit is granted subject to the following special conditions:

1. **Indemnification.** In addition to any immunities provided for by law, in exercising this permit, PG&E agrees to hold harmless and indemnify the Coastal Commission, its officers, employees, agents, successors and assigns from any claims, demands, costs, expenses and liabilities for any damage to public or private properties or personal injury that may result directly or indirectly from the project.

2. **Liability for Costs and Attorneys Fees.** PG&E shall reimburse the Coastal Commission in full for all Coastal Commission costs and attorneys fees -- including (1) those charged by the Office of the Attorney General, and (2) any court costs and attorneys fees that the Coastal Commission may be required by a court to pay -- that the Coastal Commission incurs in connection with the defense of any action brought by a party other than PG&E against the Coastal Commission, its officers, employees, agents, successors and assigns challenging the approval or issuance of this permit, the interpretation and/or enforcement of permit conditions, or any other matter related to this permit. The Coastal Commission

retains complete authority to conduct and direct the defense of any such action against the Coastal Commission.

3. **OBS and Cable Removal**. Within 90 days of either taking the OBS units and cable out of service or after the expiration or sooner termination of PG&E's lease(s) or permit(s), PG&E shall apply for an amendment to this permit to remove the OBS units and cable from the territorial waters of the State of California. Upon approval by the Commission of the permit amendment, PG&E shall implement the removal project authorized by the amendment in accordance with the time schedule specified therein.

4. **Hard Substrate Habitat Mitigation**. Within 60 days of completing project installation, PG&E shall compensate for project-related hard substrate habitat impacts through payment of $32,000 plus a five percent administrative fee for a total of $33,600 ("Mitigation Fee") to the Regents of the University of California on behalf of the UC Davis Wildlife Health Center. The Mitigation Fee shall be used by the SeaDoc Society, a marine ecosystem health program of the UC Davis Wildlife Health Center, to remove lost fishing gear offshore of the central coast of California as part of its California Lost Fishing Gear Recovery Project in accordance with the terms and conditions of a Memorandum of Agreement between the California Coastal Commission and the Regents of the University of California on Behalf of the Wildlife Health Center ("the Agreement"). (A Draft Agreement is attached as **Exhibit 3**) If the Executive Director determines that the Wildlife Health Center is not carrying out the hard substrate impact mitigation project in accordance with the terms and conditions of the Agreement, the Executive Director shall require transfer of any Mitigation Fee funds remaining at the time of such determination to an alternative entity to implement an alternative hard substrate mitigation project acceptable to the Executive Director.

5. **Mitigated Negative Declaration Mitigation Measures.** This permit incorporates those mitigation measures identified in the March 2012, *Mitigated Negative Declaration for the Pacific Gas & Electric (PG&E) Point Buchon Ocean Bottom Seismometer Project* (State Clearinghouse No. 2011081079) concerning marine habitats, biological resources, and fishing that are attached to this report as **Exhibit 4**.

6. **Notification of Cable and OBS Unit Installation**. No less than 15-days prior to the start of in-water activities associated with the installation phase of the project, PG&E shall submit to (a) the Executive Director of the Coastal Commission ("Executive Director"), (b) the U.S. Coast Guard (for publication in a Notice to Mariners), and (c) the harbormasters of Port San Luis and Morro Bay (for posting in their offices), notices containing the anticipated start date of installation, the anticipated installation schedule, and the coordinates of the proposed cable route and OBS unit installation sites. During installation, PG&E shall also make radio broadcast announcements on the local fishers' emergency radio frequency that provide the current cable installation location and a toll-free number that can be called for additional information.

7. **As-Built Documentation**. Within 45 days of completing marine cable and long-term OBS unit installation, PG&E shall submit to the Executive Director and the harbormasters of Port San Luis and Morro Bay: (a) as-built plans in writing (Route Position List) and

alignment or strip charts depicting bathymetry, seafloor substrates or features, seabed profile, expected depth of cable burial below the seafloor, and cable tension; and (b) as-built cable plans overlaid on National Oceanic and Atmosphere Administration ("NOAA") navigation charts. The cable location shall be obtained by a post-installation remotely operated vehicle survey of the array (cable and OBS units) and an acoustic navigation system linked to a surface differential global positioning system or a similar methodology that provides a comparable level of accuracy. The transponder for the acoustical navigational system shall be mounted on the equipment used for the remotely operated vehicle survey. The cable shall be considered installed the day after the last day of marine cable and long-term OBS unit installation operations.

8. **Update NOAA Charts**. Within 60 days of OBS unit and cable installation, PG&E shall submit evidence to the Executive Director that it has submitted to the NOAA Office of Coast Survey: (a) geographic coordinates of the cable and OBS units obtained using a Differential Geographic Positioning unit or comparable navigational equipment; (b) as-built plans of the seismic monitoring array; (c) PG&E's point of contact and telephone number; and (d) any other information requested by the NOAA Office of Coast Survey to accurately portray the location of the seismic monitoring array (cable and OBS units) on navigational charts.

9. **Cable Entanglements and Gear Retrieval**. In the event that fishermen snag an OBS unit or associated cable and lose or cut gear, or that any other type of entanglement with the seismic monitoring array occurs (e.g., whale), PG&E shall use all feasible measures to retrieve the fishing gear or object. PG&E shall notify the Executive Director within 48 hours of its knowledge of gear loss or other entanglement. Retrieval shall occur no later than six weeks after discovering or receiving notice of the incident, unless otherwise authorized by the Executive Director. If full removal of gear is not feasible, PG&E shall remove as much gear as practicable to minimize harm to wildlife (e.g. fishes, birds, and marine mammals). Within two weeks of completing the recovery operation, PG&E shall submit to the Executive Director a report describing (a) the nature of and location of the entanglement (with a map) and (b) the retrieval method used for removing the entangled gear or object or the method used for minimizing harm to wildlife if gear retrieval proves infeasible.

10. **Lost/Damaged Fishing Gear Compensation Plan**. PRIOR TO ISSUANCE OF THIS PERMIT, PG&E shall submit for Executive Director review and approval a Lost/Damaged Fishing Gear Compensation Plan that outlines the steps that would be taken by PG&E to address any adverse impacts to commercial fishing operations that may result from the loss and/or damage of fishing gear due to contact or entanglement with the proposed seismic monitoring array.

IV. FINDINGS AND DECLARATIONS

A. Project Description

The Pacific Gas and Electric Company (PG&E) proposes to install and operate an array of six passive seismic monitoring devices on the seafloor within state waters offshore of the Diablo Canyon Nuclear Generating Station at Point Buchon in San Luis Obispo County (**Exhibit 1**). Four of these ocean bottom seismometer (OBS) units would be in place long-term (no more than ten years) and would be connected to each other and to shore by way of a combined power and data transmission cable. Recovery and removal of these four OBS units and the associated cable would be carried out under an amendment to this coastal development permit. The other two OBS units would be in place temporarily and would be recovered and removed after a total of four weeks on the seafloor, as described below.

The four long-term OBS units would record earthquake-generated ground movement and sound data and continually transmit it in real-time to an existing onshore facility through the attached data cable. The cable would be approximately eleven miles in length and two inches in diameter and would be laid within a proposed 100-foot wide cable route across the seafloor before coming ashore at the Diablo Canyon Nuclear Generating Station. The landing would occur through an existing four-inch diameter PVC conduit that is proposed to be extended approximately 80-feet from the rock rip-rap shoreline onto the seafloor in approximately eight feet of water. Two additional short-term OBS units would also be installed on the seafloor within state waters outside of the proposed cable route in order to record ambient (non-seismic related) sound and seafloor movement. These devices would be in place at their initial installation location for two weeks before being recovered and relocated to secondary locations for an additional two weeks (for a total of four proposed temporary OBS sites and four weeks on the seafloor). At the end of each two week period the temporary units would be remotely triggered to disconnect from their ballast and float to the surface for recovery by ship. The ballast would remain attached to the OBS units via cable and would be recovered and removed as well.

All six of the OBS devices are small - the short-term OBS units are rectangular and measure roughly two by four feet while the long-term devices are circular and measure approximately six feet in diameter (as shown in **Exhibit 2**). None of the devices would be more than one foot high. Installation of the OBS units and cable would be carried out by a specialized 100-foot vessel outfitted with an onboard crane, cable spool, GPS guidance, and an active positioning system. Installation of both the OBS units and cable would take roughly two weeks to complete and is proposed to be carried out in June or July during a period when ocean conditions and weather is most conducive to safe operations and accurate placement of the cable and OBS units. The ship's active positioning system would allow it to avoid anchor deployment during installation.

PG&E developed the proposed cable route and OBS unit sites in order to increase the likelihood of capturing the most pertinent information about seafloor movement in the project area while also minimizing the amount of rocky reef habitat that could be adversely affected from the installation and presence of the units and cable. In addition to maps of predicted seafloor substrate and the Shoreline and Hosgri fault zones, a video- and sonar-enabled remotely operated submersible was used to aid these efforts. In addition, PG&E also coordinated with the

California Department of Fish and Game to minimize the placement of materials within the Point Buchon State Marine Reserve. Nevertheless, approximately 0.5 miles of the cable is proposed to be installed within the State Marine Reserve and one mile of cable would be installed within rocky reef habitat – based on the location of the centerline of the proposed cable route. All of the proposed OBS unit sites are within areas of soft substrate.

B. Other Agency Approvals

California State Lands Commission

The California State Lands Commission (CSLC) is the lead agency under the California Environmental Quality Act (CEQA) for the proposed project. The installation and presence of the proposed cable and OBS units on the seafloor requires authorization from the CSLC. On March 29, 2012, the CSLC approved a new General Lease for the placement of the OBS units and associated cable on state sovereign lands. The lease allows PG&E to install, use, and maintain the proposed seismic monitoring array and cable for ten years.

In August 2011 the CSLC published a Draft Mitigated Negative Declaration (MND) for the project. Subsequent to the release of this document, PG&E modified the proposed cable route and recovery procedure for the temporary OBS units. On March 16, 2012, CSLC released a final MND for review and consideration. On March 29, 2012, prior to considering PG&E's lease application, CSLC adopted and certified this MND.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (ACOE) has regulatory authority over the proposed project under Section 10 of the Rivers and Harbors Act of 1899 (*33 U.S.C. 1344*) and Section 404 of the Clean Water Act. Section 10 of the Rivers and Harbors Act regulates the diking, filling and placement of structures in navigable waterways. Section 404 of the Clean Water Act regulates fill or discharge of materials into waters and ocean waters.

For the subject project, ACOE is considering the issuance of a Nationwide Permit 5 for installation of scientific measuring devices. PG&E submitted an application to ACOE for a Nationwide Permit 5 on July 6, 2011. Pursuant to Section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA), any applicant for a required federal permit to conduct an activity affecting any land or water use or natural resource in the coastal zone must obtain the Coastal Commission's concurrence in a certification to the permitting agency that the project will be conducted consistent with California's approved coastal management program. The subject coastal development permit (E-11-017) will serve as Commission review of the project under the CZMA. Should the Commission approve the coastal development permit for the proposed project, ACOE would then be able to issue its Nationwide Permit 5 to PG&E.

California Department of Fish and Game

The majority of the proposed cable route and four of the eight proposed OBS unit installation sites would be within areas designated as either a State Marine Reserve or State Marine Conservation Area. Public Resources Code section 36710 lists the restrictions applied to State Marine Reserves and State Marine Conservation Areas and states that the California Fish and Game Commission may permit research activities that would result in the "take" of marine life

within both types of marine protected area. One of PG&E's consultants on this project, Tenera Environmental, has submitted requests to the California Department of Fish and Game for amendments to its existing Scientific Collecting Permits as a means of authorizing the installation and presence of the project cable and OBS units in the Point Buchon State Marine Reserve and Point Buchon State Marine Conservation Area.

The California Department of Fish and Game anticipates reaching a decision on the Scientific Collection Permit amendment requests during the fist week of April 2012.

C. Dredging and Placement of Fill in Coastal Waters

Coastal Act section 30233(a) states in part:

> *The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*
>
> *(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.*
>
> *(2) Maintaining existing, or restoring previously dredged depths on existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.*
>
> *(3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.*
>
> *(4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.*
>
> *(5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.*
>
> *(6) Restoration purposes.*
>
> *(7) Nature study, aquaculture, or similar resource dependent activities.*

The proposed installation of an 11-mile long cable, six OBS units, and roughly 78-feet of four-inch diameter PVC conduit on the seafloor constitutes the placement of fill in open coastal waters. Coastal Act Section 30233(a) restricts the Coastal Commission from authorizing a project that includes fill of open coastal waters unless it meets three tests. The first test requires that the proposed activity must fit into one of seven categories of uses enumerated in Coastal Act Section 30233(a). The second test requires that there be no feasible less environmentally damaging alternative. The third and last test mandates that feasible mitigation measures be provided to minimize the project's adverse environmental effects.

Allowable Use Test

One of the seven allowable uses of fill under 30233(a) is "incidental public service purposes." To qualify as an incidental public service purpose, the fill of coastal waters being undertaken must demonstrate that: (a) it provides a "public service" insofar as it confers benefits to the public, either at large, or to those served by the public entity; and (b) is "incidental," within the meaning of that term as it is used in the Coastal Act (i.e. is ancillary and appurtenant to an existing public service purpose).

The proposed project would confer benefits to the public by: (1) aiding in the assessment of the Diablo Canyon Nuclear Generating Station's vulnerability to seismic events in order to inform future decision making regarding continued operations, upgrade/retrofit planning, and hazard response; (2) enhancing scientific understanding of earthquake characteristics (such as frequency and magnitude) in the project area – which would benefit emergency response planning in local and regional areas; and (3) supplementing the statewide earthquake monitoring system and facilitating early response to seismic events. Specifically, the proposed OBS units and associated cable are proposed by PG&E as a means of gathering data to aid in the assessment of the Diablo Canyon Nuclear Generating Station's vulnerability to seismic events. The accurate, real-time data to be gathered would be shared with the public, universities, and agencies through the U.S. Geological Service (USGS) and would help the scientific community better understand the characteristics of earthquakes in the vicinity of the Diablo Canyon Nuclear Generating Station. In addition, because the proposed seismic monitoring array would be connected to the statewide USGS earthquake monitoring system, the project would also be useful in emergency preparedness for the public by facilitating early warning and response to seismic events.

The proposed project is incidental to an existing public service purpose because it is being proposed in support of the Diablo Canyon Nuclear Generating Station, an existing power plant that services the public throughout central California. The project would support this power plant by informing ongoing discussions regarding the seismic safety of the plant, its continuing operations, and the need for upgrades or retrofits.

The Commission thus finds that the proposed project meets the allowable use test of Coastal Act Section 30233(a).

Alternatives

The Commission must further find that there is no feasible less environmentally damaging alternative to the proposed placement of fill in open coastal waters. No known project alternatives would meet the objective of the proposed project – to gather long-term high resolution seismic activity and ground movement data on offshore fault zones in the project area – without the placement of at least some fill material in open coastal waters. While options that would not include fill were considered, such as the exclusive use of shore-based seismic monitoring arrays and/or ship-based seismic surveys, PG&E determined that shore-based seismic monitoring arrays would not be able to provide data at the desired resolution and sensitivity and ship-based seismic surveys would provide only short-term or "snapshot" datasets.

PG&E therefore evaluated several project alternatives that would involve less fill, including the sole use of un-cabled temporary OBS units in order to avoid the 11-mile long submarine cable; alternative retrieval techniques for the temporary OBS units that would not require the permanent abandonment of ballast systems on the seafloor; and alternative cable route and OBS unit site configurations that would require different cable lengths and amounts of fill.

Although elimination of the cable portion of the project would reduce the amount of proposed fill and associated seafloor disturbance, based on PG&E's review, it would not be feasible to substitute an array of temporary OBS units that could be periodically deployed and retrieved (to recover data) for the proposed long-term OBS units and attached cable. Specifically, PG&E states in a letter to the Commission staff dated August 25, 2011, that:

> *The science goal of the OBS system is to improve knowledge on the locations of offshore earthquakes to improve the understanding of the Hosgri and Shoreline fault zones. The technical goal is to have a robust offshore seismic system that operates continuously, provides earthquake data in real-time for rapid analyses, and allows for communication with the instruments for system checks.*
>
> *The cabled system will simultaneously record earthquakes along with the PG&E and United States Geological Service onshore seismic networks, creating one, seamless network. The four long-term OBS locations will improve the overall network coverage, resulting in a lower magnitude threshold in the offshore region (i.e. smaller magnitude earthquakes will be recorded), improved accuracy of locating earthquakes, and the acquisition of on-scale waveforms (no data clipping) for larger earthquakes.*
>
> *Temporary OBS units are powered by batteries that last up to approximately 6 months, while the cabled OBS system is powered continuously from a permanent onshore source. The temporary units trigger independently, not as a network, which can result in fewer earthquakes being recorded (higher magnitude threshold). Generally the data from the temporary units are retrieved when the batteries need to be replaced, which can be affected by weather. Data transfer from the long-term OBS units to the onshore data collection center is continuous and is not affected by bad weather.*

At the request of the Commission staff, PG&E also considered an alternative recovery method for the proposed temporary OBS units that would eliminate the proposed permanent placement of fill on the seafloor. The temporary OBS units are designed to be positively buoyant so that they can be recovered by remotely activating a ballast release – thus causing them to float to the surface. PG&E had initially proposed to have the units abandon their ballast material on the seafloor during this process. Upon review of alternative recovery methods, PG&E determined that it would be feasible to modify the proposed recovery method. This modification would allow each OBS unit to remain tethered to its ballast with a line or cable after it floated to the surface so that both the OBS unit and ballast could be recovered. This alternative would eliminate any long-term adverse effects resulting from permanent abandonment of ballast materials on the seafloor and was incorporated into the proposed project.

During the development of the proposed project, PG&E also evaluated several cable route and OBS unit configuration alternatives that would require the placement of less fill materials on the seafloor. The final proposed configuration was selected by PG&E based on four criteria: (1) the optimum locations for seismic monitoring devices to record earthquakes on the Hosgri and Shoreline fault zones; (2) minimization of material placed within the Point Buchon State Marine Reserve; (3) minimization of the amount of rocky substrate within the cable route and OBS unit sites; and (4) use of the Diablo Canyon Nuclear Generating Station intake embayment as a starting location. Under the limitations imposed by these criteria, the Commission finds that the proposed cable route and OBS unit configuration is the least environmentally damaging feasible alternative, and therefore meets the second test of Coastal Act Section 30233(a).

Mitigation

The final requirement of Coastal Act Section 30233(a) is that filling of coastal waters may be permitted if feasible mitigation measures have been provided to minimize any adverse environmental effects associated with that fill. In other sections of this report, the Commission has identified feasible mitigation measures that will minimize the adverse environmental effects of the fill associated with the proposed PG&E seismic activity monitoring array. For example, the section below includes a discussion regarding adverse impacts associated with the placement of the proposed cable within hard substrate habitat areas and PG&E's offer to compensate for these impacts through a contribution of $33,600 to the California Lost Fishing Gear Recovery Project, as described and memorialized in **Special Condition 4**. With the imposition of the conditions of this permit, and implementation by PG&E of the recommended and applicant proposed mitigation measures described in the project MND, the Commission finds that the third test of Coastal Act Section 30233(a) has been met.

D. Marine Resources

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 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 water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

Potential Marine Mammal and Sea Turtle Impacts

There are three potential types of impacts to whales and other marine wildlife due to the proposed project: entanglement with the project cable, entanglement with "ghost nets" or abandoned fishing gear that may collect on the project cable or OBS units, and collision with project vessels.

Wildlife Entanglement with the Project Cable

Marine wildlife present in the project area may become entangled in unburied or insufficiently buried cable or in cable suspended between high-relief seafloor features. PG&E expects that once installed, most of the project cable will naturally sink into the soft sediment on the seafloor.[1] However, approximately nine percent of the total cable distance (approximately one mile) would be within areas of hard substrate where the cable would remain exposed on the seafloor. In addition, the proposed cable route includes several areas with high-relief rock outcroppings.

To date, whale entanglement with fiber optic cables of a similar diameter and material as the project cable has not been reported offshore California. However, a worldwide review of submarine cables carried out by Heezen (1957) documents a variety of recorded incidents of whale entanglement.[2] Most of the incidents evaluated by Heezen involved cases of deep-diving, bottom-feeding sperm whales that, he postulated, became entangled "…while swimming along in search of food, with their lower jaw skimming through the upper layer of sediment. It may also be that the whales attacked the cable mistaking it for prey." The report documented fourteen instances of whales entangled in submarine cables that led to death. All whales positively identified were sperm whales, with possible entanglements of baleen (*e.g.*, gray) whales in shallower water also described along with one humpback whale reported entangled in Alaskan waters.

Very little subsequent analysis of entanglement risk with modern submarine cables has been carried out to place the Heezen (1957) study in a more current context. However, a recent evaluation of global cable fault databases by Wood and Carter (2008) suggests an absence of whale entanglements in seafloor cables installed after 1959. Wood and Carter propose that modern cable materials – coaxial and fiber optics – as well as advances in cable design, marine surveying, and installation techniques have contributed to reduce the entanglement risk of cables. The key changes discussed by Wood and Carter include: 1) development of torque-balanced cables that are less prone to self-coiling; 2) laying armored cables under slight tension to minimize suspensions and loops, and laying low-torque, non-armored cables with minimum

[1] A study carried out by Kogan et al. (2006) offshore of northern California on a cable with similar characteristics as the proposed cable provides support for the assumption that self burial would occur. Kogan et al. found cable self-burial to average depths of four inches occurred in many soft substrate areas, especially in the depth range included in PG&E's proposed cable route.

[2] At the time of the study, there were nearly a half-million miles of cable laid on the sea floor in various parts of the world (Heezen 1957). By 1928, 21 separate cables crossed the Atlantic to Canada and the United States. 658,375 km of fiber optic cable was expected to be installed and operational by the year 2003 (Rampal 1998). That figure equates roughly to an additional 514,050 miles of cable in the marine environment, making a total of more than 1 million miles of cable in the marine environment, not including that which was installed between 1957 and the advent of fiber optic cable installation, and any of which may have been removed since then.

slack to follow the seabed topography; 3) avoidance of rough topography where suspensions may develop; 4) burial of cables below the seabed on the continental shelf and upper slope to protect against shipping and fishing activities; and 5) use of fault repair procedures that reduce cable slack. Additional factors that are likely to affect entanglement risk also include: the amount of time the cable is in place; the length and depth range of the cable route; the burial depth; presence of suspended sections; and the relative tautness of unburied cables (more specifically, shallow, unburied, looped or suspended cables pose more of a hazard than deeply buried cables).

As shown by Heezen (1957), the other important consideration is the type of marine wildlife present along the cable route. Of the whale species (*i.e.*, gray, humpback, blue, fin, sei, sperm) that are known to inhabit or migrate past the project area, two species - the California gray whale (*Eschrichtius robustus*) and sperm whale (*Physeter macrocephalus*) - have the potential to become entangled due to, respectively, bottom-feeding behavior or deep-diving behavior. Cable entanglement with other marine mammals such as pinnipeds (*e.g.*, sea lions, harbor seals) and fissipeds (*e.g.,* sea otters), or with sea turtles, is not expected to occur because these animals do not exhibit similar diving and/or feeding behaviors in bottom sediments.

Approximately 20,000 gray whales migrate through California waters each year between the Gulf of Alaska and breeding lagoons in Baja California. Due to their abundance off the Pacific coast, their tendency to hug the shoreline during migration, and their bottom feeding patterns, gray whales may face the highest risk of entanglement with exposed submarine cables. The majority of southbound (November to January) gray whales migrate within 2 nautical miles of shore, while the northbound migration occurs much closer to shore, with mother and calves reported within kelp beds and sometimes only yards from the shoreline. These distances, however, vary seasonally over time, particularly due to the deterring presence of boat traffic. The number of migrating gray whales recorded at long-term monitoring stations along the central coast of California suggests that a significant proportion of the total population crosses the project area during the southbound and northbound migrations.

Gray whales usually feed nearshore in soft-bottom sediments, and also typically feed opportunistically during migration. Gray whale seafloor foraging methods include diving, rolling onto one side on the seafloor, and sucking up sediments that can be filtered by the whale with its baleen. Sea floor gouges approximately 15 centimeters deep created by migrating gray whales offshore of Northern California have been recorded, suggesting that migrating gray whales interact with the muddy part of the central marine shelf at 60-120 meter water depths (Cacchione et al, 1987). The majority of the proposed project cable would be installed within this depth range.

Compared to gray whales, sperm whales are much less abundant off the coast of California, numbering approximately 1,200 individuals in an abundance estimate carried out from 1996-2001. Sperm whales typically inhabit deep open waters, and are the deepest and longest diving of all cetaceans. Sperm whales regularly dive to water depths between 200 and 1,000 meters and are typically most abundant in areas of with depths greater than 300 meters. Sperm whales are the only species confirmed to have been entangled in a submarine cable and their deep diving puts them at risk of entanglement with exposed or suspended cables. According to the National

Marine Fisheries Service Office of Protected Resources, sperm whales are found year-round in California waters, but are most abundant off the central California coast from April through mid-June and from the end of August through mid-November (Rice 1988). In addition, unlike gray whales, sperm whales do not bottom feed; instead, they feed primarily on squid and octopi found in the water column.

Given the known historical occurrences of entanglements in submarine cables as well as the diving depth ranges of both gray whales and sperm whales, and the bottom-foraging behavior of gray whales, both species are at risk of entanglement in shallow or unburied sections of the project cable. However, several characteristics of the proposed project would suggest that this risk is small. Foremost of these characteristics is that once installed, the project cable is anticipated to sink into the soft sediment seafloor along all but one mile of the proposed route. In addition, the proposed cable would be in place for no more than ten years and modern cable materials and installation techniques are expected to limit areas of loose cable, loops, and cable suspensions, which could pose particular hazards to whales. Cable suspensions would also be minimized because the proposed cable route has been selected to avoid most high-relief seafloor features in the project area that would bring the cable off of the seafloor. Finally, **Special Condition 5** has been added to require those mitigation measures included in the project MND (described in **Exhibit 4**) concerning marine biological resources to be incorporated into the proposed project. Among these measures are several that would help reduce potential entanglement risk to marine wildlife during and after project installation. Specifically, MND mitigation measures MM BIO-2, APM-2, APM-3, APM-4, APM-7, APM-8, APM-9, and APM-10 would require: all areas of hard substrate within the cable route and OBS installation sites to be avoided to the extent feasible; cable installation to be carried out during daily hours during the months of June or July under the direction of a marine wildlife observer on the cable installation vessel; the cable route to be re-directed to avoid a known high-relief seafloor feature; a post-installation video survey of the project cable; and the implementation of the Marine Wildlife Contingency Plan included as Appendix H to the MND.

To address potential entanglement risks to whales and other marine wildlife during the proposed removal of the seismic monitoring array at the end of the ten year monitoring period, **Special Condition 3** has been included to require that within 90 days of either taking the monitoring array out of service or after the expiration or sooner termination of PG&E's California State lands Commission lease(s) or permit(s), PG&E is to apply for an amendment to this permit to remove the cable and OBS units from the ocean. Consideration of entanglement risks and other potential adverse impacts associated with removal activities would be evaluated during the review of that proposed permit amendment.

Entanglement with Ghost Nets and Abandoned Fishing Gear

Fishermen may snag gear or nets on cables or other equipment on the seafloor. When this occurs, fishermen generally abandon their gear or nets (creating "ghost nets"), thereby creating a risk to marine mammals and other types of marine wildlife that may become entangled in this abandoned gear. However, the majority of the proposed cable route and OBS unit installation sites would be within areas where either all fishing activities are prohibited (the Point Buchon State Marine Reserve and the Diablo Canyon Nuclear Generating Station Safety Zone) or the use of bottom contact fishing gear such as trawls and nets is prohibited (the Point Buchon State

Marine Conservation Area and areas with the three-mile limit of state waters). In addition, the low-relief of the proposed OBS units and the anticipated self-burial of the cable are expected to limit the possibility of fishing gear snagging on project equipment. As described in the project MND:

> *The OBS locations and cable route were developed to reduce impacts to commercial fishing (i.e. OBS units and cable would be placed inside the State 3-Mile Limit to eliminate impacts to trawling operations; no buoys would be placed onto the OBS units, thus reducing potential entanglement with fixed fishing gear or vessel anchors; and all OBS units and all but 1.6 km [1.0 mi] of cable would be placed on sedimentary seafloor to reduce impacts to rocky substrate and the associated biota) while allowing for the collection of meaningful data (i.e. placing the long-term OBS units on both sides of known faults to maximize detection of earth movements).*
> …
> *Although the OBS units would extend up to 0.3 m (1.0 ft) above the seafloor, assuming no natural burial, those units are not expected to represent a significant "snag" for recreational or commercial fishing operations. Likewise, the cable, which is expected to naturally sink into the sediment, is not expected to be a significant seafloor obstruction to recreational or commercial fishing. The sediments along the proposed alignment vary from fine, silty clays to sand and shell hash and the length of time needed for the cable to sink will vary with the sediment type and wave/current action. In areas of fine sediment, burial is expected to be immediate; however areas where the cable is laid onto coarser-grained material may take longer. PG&E will conduct a post-installation ROV survey that will document the location and condition of each of the long-term OBS units and the cable, as well as the seafloor at the temporary OBS locations. A video record and a written report on the results of that survey will be submitted to the appropriate agencies.*
>
> *Where the OBS cable crosses the low-relief rock habitat is within the DCPP Security Zone, which has restricted access to recreational and commercial fishing vessels. Also, with the completion of the post-installation survey of the cable and long-term OBS units, the locations of the units will be provided to the NOAA nautical chart facility for incorporation onto future nautical charts. As proposed, no significant effects of the cable within this area to ongoing and future fishing are expected.*

In addition, the Commission includes **Special Condition 5** to require those mitigation measures included in the project MND concerning fishing gear entanglement (described in **Exhibit 4**) to be incorporated into this permit. These measures include several that would help reduce the potential for fishing gear to snag project equipment: MM FISH-1 and MM FISH-2. These measures would help assure that all project materials are removed at the end of the ten year project period and limit the possibility of cable or OBS unit installation occurring near fishing gear that is in place along the cable route or at a proposed OBS unit site during installation.

Special Conditions 6, 7, and 8 have also been included to further reduce the risk of accidental entanglement of fishing gear with the project OBS units and cable by memorializing PG&E's commitments to provide advance notice of installation activities, schedules, and routes, to the

fishing community and vessel operators as well as to allow nautical charts to be accurately updated to show the seismic monitoring array.

Although the entanglement of fishing gear in the proposed monitoring array is not expected to occur, to provide additional assurance that any gear that does become entangled in the array would not pose a threat to marine wildlife, **Special Condition 9** has been added to require PG&E to use all feasible measures to retrieve any fishing gear or object that becomes entangled in the seismic monitoring array no later than six weeks after discovering or receiving notice of the incident.

Project Vessel Collision with Marine Wildlife

Another potential impact to marine mammals and to sea turtles is collision with project vessels during marine operations associated with the proposed project. To address this issue, the MND notes that:

> *A Project-specific Marine Wildlife Contingency Plan has been prepared (see Appendix H). Among other items, that plan specifies that a qualified marine wildlife observer will be onboard the MV Michael Uhl throughout the OBS and cable installation (and recovery) periods. The observer will be located in an area of the vessel that allows clear views of the direction of travel during transit periods and around the vessel during OBS and cable deployment. Should an interaction with a marine mammal or turtle be imminent, the onboard observer will have the authority to curtail operations until the animal is out of the area. The onboard monitor will maintain a record of marine wildlife observations and prepare and submit a post-installation observation report to the CSLC.*

MND mitigation measures APM-7 and APM-9 also require the use of a qualified marine wildlife observer during deployment of the OBS units and cable as well as the implementation of the Marine Wildlife Contingency Plan described above. Given the fact that installation of the proposed monitoring array would be completed in approximately two weeks and would only require the use of a single project vessel that would often be moving at low speeds, the risk of collision with marine wildlife is expected to be low. The Commission has determined in previous submarine cable installation projects that the most effective ways to prevent marine mammal or sea turtle collisions with project vessels are to monitor effectively for the presence of marine mammals or sea turtles in the project area and to time in-water activities so that they occur during daylight hours outside of known migratory seasons. To help assure that timing of installation activities is appropriate and monitoring is carried out, **Special Condition 5** is included in the project coastal development permit. This special condition would require all the biological resource related mitigation measures included in the project MND (and shown in **Exhibit 4**) to be incorporated into the proposed project, including APM-7 and APM-9 described above, as well as APM-2 and APM-4 which require all project installation activities to be carried out in daylight hours during the months of June or July.

Hard Substrate Impacts

Hard substrate is exposed rocky seafloor that provides habitat for a diverse group of plants and animals. Common organisms occurring in hard substrate areas vary based on depth, substrate composition, and substrate relief height. Along much of the California coast, there is a strong

positive association between the types of plant and animal communities and the depths and substrate types in which they occur.

Hard substrates, including exposed bedrock, rock outcroppings, and rock crevices, provide habitat and shelter for numerous sessile organisms, fishes, and mobile invertebrates such as lobsters and crabs. The project MND describes hard substrate along the proposed cable route as follows:

> *Rocky habitat ranges from isolated boulders to low and high-relief (up to 1.5 m [4.9 ft]) high. Rocky features were most common between the 25 and 40 m (82.0 and 131.2 ft) and comprise isolated boulders up to 1.0 m (3.3 ft) high, low-relief bedrock reefs, and isolated higher-relief (up to 1.5 m [4.9 ft]) bedrock reefs. Within this depth range, sediment comprises approximately 60 percent of the seafloor habitat. Characteristic macroepibiota on the rock habitats include unidentified red algae (present to common on the tops of features at least 0.5 m (1.6 ft) high, seastars (Orthasterias sp., Mediaster sp., A. miniata, and Pisaster spp), unidentified solitary corals, gorgonians (Lophogorgia sp.) and solitary anemones (Corynactis sp., Metridium giganteus, and unidentified species). Fish were not commonly observed around the nearshore rock features, although flatfish, including sanddabs (Citharichthys spp) were common within the sedimentary habitat within this depth range.*

In the more shallow waters of the proposed cable route where light penetration is better (less than 25 meters), algae and kelp are more abundant on exposed rocks along with, anemones, rockfish, shellfish, crabs and lobster.

Offshore of central California, hard substrate (especially high-relief substrate) and its associated biota are relatively rare, and therefore any effect to them is potentially significant. Impacts to high-relief substrate in particular are significant because: (a) deepwater reefs are relatively rare along the central and southern California coast; (b) they support a diverse assemblage of epifaunal invertebrates; (c) they attract fish as a nursery ground, food source, and as shelter; and (d) epibiota residing on rocky substrates are sensitive to mechanical disturbance and increased sediment loads.

Adverse impacts (*e.g.*, crushing, scraping, and/or displacement) to hard substrate can occur during cable installation and subsequent movement of the cable on the seafloor due to currents and wave action. In their study on the environmental impacts of a one- to three-inch submarine cable offshore of Half Moon Bay, Kogan et al. (2006) found incisions, scrapes, and vertical grooves from 2.5-inches to 17.5-inches wide in rocky substrate along the cable route. Hard substrate was altered or damaged by these scrapes and grooves and typical epifaunal organisms were absent. Placement of the project cable on rocky substrates would disrupt associated bottom communities, likely crushing and/or dislodging small, sessile or relatively sedentary invertebrates along a narrow strip. Sessile species may experience repeated, localized disturbances throughout the life of the cable if it moves due to current action.

PG&E worked with staff of the California Department of Fish and Game and California State Lands Commission to locate the proposed cable route to minimize potential adverse impacts to

hard substrate. While adjustments to the proposed route were made to avoid some rocky areas, consideration of other project constraints such as placement of the OBS units in the optimal locations for seismic monitoring, minimization of project materials within the Point Buchon State Marine Reserve, and landing the cable at the Diablo Canyon Nuclear Generating Station, mean that not all know areas of hard substrate were avoided.

Based on project specific remotely-operated vehicle surveys carried out along the proposed cable route and OBS unit sites in June and December of 2011, as well as predicted substrate maps of the project area based on previously collected multibeam side-scan sonar data, a total of approximately one mile of the eleven mile cable route would be within areas of hard substrate. Most of the hard substrate included in this estimate would be within the first several miles of the cable route, as it moves from the intake embayment of the Diablo Canyon Nuclear Generating Station to deeper offshore waters. This portion of the cable route includes both long sections of exposed bedrock and reef as well as smaller solitary rock outcroppings and boulders.

The Commission staff has calculated the hard substrate impact area by multiplying the length of cable that will be laid over hard substrate by double the cable width[3] (because the cable does not necessarily stay stationary). In this case, the project MND estimates the length of cable to be laid over hard substrate to be 5,280 feet. Double the width of cable is 4 inches or 0.33 feet. The projected hard substrate impact area is thus 1,760 square feet. As described above, cable-laying activities and any ongoing movement of the cable over the life of project have the potential to damage or crush rocky substrate habitat and its associated biota within this area.

PG&E has offered to compensate for estimated project-related impacts to hard substrate and its biota by paying $32,000 to the UC Davis Wildlife Health Center's California Lost Fishing Gear Recovery Project (Recovery Project). Started in 2005 by the SeaDoc Society, a marine ecosystem health program of the UC Davis Wildlife Health Center, the primary purpose of the Recovery Project is to remove commercial fishing gear that is accidentally lost or intentionally discarded in California's marine environment. The Commission has previously found contributions to the Recovery Project to be an acceptable form of compensation for unavoidable adverse impacts to hard substrate and the organisms it supports. Recently, in combined CDP/Consistency Certification no. E-08-021/CC-005-09, the Commission accepted AT&T's offer of $100,000 to the Recovery Project as adequate to compensate for potential project-related impacts to 5,500 square feet of hard substrate and its biota. The 1,760 square feet of anticipated impacts to hard substrate habitats and organisms associated with this project is approximately 32% of the 5,500 square feet of impacts associated with the previous AT&T project and so the Commission believes 32% of $100,000, or a payment of $32,000, is reasonable here.

Derelict fishing gear is likely found in the water along the entire coast of California and is comprised of derelict nets, fishing lines, lobster traps, and crab pots that can sit on the seafloor, get caught on rocky reefs, or float in the water column. The majority of this gear does not

[3] Although surveys and post-installation evaluations of similar cables suggest that movement of over one foot to either side may occur in shallower waters as a result of wave action and currents (Kogan et al. 2006), based on currently available information, doubling the cable width is anticipated to provide an accurate average given that no cable movement is expected in some areas due to a lack of currents or wedging of the cable between rocks.

decompose in water and can remain in the marine environment for years. The gear is potentially hazardous to divers and an array of wildlife including targeted fish and invertebrates, seabirds, sea turtles, sea otters, whales, and other marine mammals. Derelict fishing gear affects the marine environment in several ways: it can continue to "catch" fish and marine animals, which become enmeshed or trapped, and it can damage the habitat upon which it becomes entangled or upon which it rests. It is also a visual blight on the seafloor, diminishing the natural aesthetic quality of the seafloor and rocky habitat. Recently, the SeaDoc Society has been focusing gear recovery efforts in the newly established Marine Protected Area network in central and southern California.

Although substantial amounts of derelict fishing gear and other marine debris pollutes California's seafloor environment, these materials are not evenly distributed and may be difficult to locate simply through random searches. Accordingly, the Recovery Project maintains a database of reported and observed gear and debris that it uses to guide the siting of its efforts in order to maximize the amount of material recovered during each outing. The $32,000 offered by PG&E is expected to provide the Recovery Project with funding for five to seven in-water work days, including vessel costs, divers, and disposal of collected derelict gear. Based on the results of recovery efforts carried out with a comparable amount of funding by the Recovery Project in 2009, this amount of in-water work time is anticipated to result in the direct removal of approximately 0.80 tons of fishing gear including five purse seine nets, a lobster trap, rope, anchors on chain and rope, and sport fishing gear (rods and monofilament line). The Recovery Project typically removes debris material that is within reef areas or could drift onto reef areas, thus protecting hard substrate habitats and organisms from further impacts from scraping, crushing, and entanglement.

In **Special Condition 4**, the Commission is requiring PG&E, within 60 days of completing cable installation, to pay the $32,000 mitigation fee plus a five percent administrative fee for a total of $33,600 to the UC Davis Wildlife Center to be used to remove lost fishing gear within the central coast area. Because clean-up efforts targeting most of the know locations of existing debris have been carried out within the project area (specifically, the Point Buchon State Marine Reserve) in the past several years, it is expected that additional recovery efforts would be more effectively directed to the south or north of the project area. Attached as **Exhibit 3** is a Draft Memorandum of Agreement ("MOA") between the Commission and the Regents of the University of California on behalf of the UC Davis Wildlife Health Center. The MOA requires the Wildlife Health Center, within 45 days of receiving the mitigation fee, to submit to the Executive Director for review and approval a spending plan. The spending plan is to include, at minimum, a description of the mitigation project and its estimated cost. In developing the spending plan, Commission staff will work with the Wildlife Health Center to see if there is an opportunity to use these funds to remove lost fishing gear from areas of hard substrate near the project area. Within one year of the Executive Director's approval of the spending plan, the Wildlife Health Center is to complete the mitigation project. Removing lost fishing gear from the marine environment, particularly gear entangled with hard substrate, will restore underwater habitat and therefore help to mitigate any lost or damaged rocky bottom areas caused by the installation and presence of the proposed cable.

Additionally, **Special Condition 5** would also require all relevant biological resource related mitigation measures included in the project MND to be incorporated into the proposed project, including APM-3, APM-6, APM-8, APM-10 and MM BIO-2 which protect seafloor habitats by: requiring the proposed cable to be routed to avoid rocky substrate wherever possible; prohibiting vessel anchoring during installation; prohibit manual burial or trenching of the OBS units or cable; requiring all OBS units to be located on sedimentary seafloor habitat and all project related material to be removed from the seafloor after data collection is completed; requiring an approximately 900-foot long section of cable to be re-routed to avoid a known rock feature on the seafloor; requiring post-installation remotely operated vehicle surveys to document the as-built condition and location of the monitoring array.

Soft Bottom Habitat Impacts

Soft-bottom areas are unconsolidated sediments (e.g., gravel, coarse-grained and mixed sediments, sand, and mud) that provide habitat to epifauna (surface living) and infaunal (below-surface living) organisms. Although all eight of the proposed OBS unit installation sites and approximately ten miles of the proposed cable would be within areas of soft substrate, adverse impacts to epifauna and infauna in these habitat areas are expected to be minimal. The proposed cable is thin – two inches in diameter – and is proposed to be self-burying so that more extensive additional trenching or burial would not be required. While some adverse impacts to invertebrate species such as sea pens and brittle stars that were shown in ROV surveys to be locally abundant in several locations along the proposed cable route are expected, the soft-bottom habitat area to be disturbed by the proposed project would be relatively small given the geographical extent of this habitat type offshore of Point Buchon. In addition, most soft substrate organisms are mobile and are expected to re-colonize and recover quickly after the initial installation of the proposed cable and OBS units. In their survey and review of a similar submarine cable in northern California eight years after installation, Kogan et al. (2006) found little variation between cable sites and non-cable sites in the abundance or diversity of soft substrate organisms.

The proposed placement and presence of the cable and OBS units is therefore not expected to result in adverse impacts to soft bottom habitats or organisms. Further, **Special Conditions 4 and 5**, described above, have been added to minimize seafloor disturbance and protect against potential adverse impacts to soft substrate habitat and organisms.

Impacts to Marine Protected Areas

On April 13, 2007, the Fish and Game Commission voted unanimously to adopt 29 marine protected areas (MPAs) covering many of those areas identified as particularly important through the Marine Life Protection Act Initiative process in the central coast study region. The proposed project would involve the placement of portions of the seismic monitoring array (both OBS units and cable) within two of these 29 MPAs, the Point Buchon State Marine Reserve and Point Buchon Marine Conservation Area.

Through coordination with the California Department of Fish and Game, the proposed project has been designed to avoid all known areas of hard substrate within the Point Buchon State Marine Reserve and reduce the placement of project materials within soft substrate areas to only one half-mile of cable. Although a greater amount of project equipment (roughly seven miles of

cable and four OBS units) is proposed to be installed in the Point Buchon State Marine Conservation Area, known areas of hard substrate are proposed to be avoided in this area to the extent feasible, resulting in 275-feet of the proposed cable crossing known areas hard substrate.

As described above in the sections on hard and soft substrate, potential impacts to these habitats and the organisms they support are not expected to be significant and would be addressed by **Special Conditions 4 and 5**. In addition, the California Department of Fish and Game anticipates authorizing the proposed project activities within the MPAs through amendments to the Scientific Collecting Permits held by several of PG&E's contractors on the project.

Conclusion

Based on the reasons discussed above, the Commission finds that the proposed project, as conditioned by **Special Conditions 4 and 5**, in combination with those measures proposed by PG&E and included in the project MND, will be carried out in a manner that maintains marine resources and sustains the biological productivity and quality of coastal waters and is therefore consistent with Coastal Act Sections 30230 and 30231.

E. Commercial and Recreational Fishing

Coastal Act Section 30234.5 states:

> *The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.*

Commercial fishing is an important component of the regional economy in San Luis Obispo County and is conducted out of two ports: Morro Bay and Port San Luis/Avila. Commercial catch data are reported by the California Department of Fish and Game from "fish blocks," each fish block covering an area of marine waters of approximately 100 square nautical miles. The numbered fish blocks are areas within which fish catch is reported by commercial buyers and recreational fishing vessels. The proposed project, including the cable corridor and OBS unit locations, is encompassed by fish block number 615.

Approximately 145 to 170 commercial fishing vessels berth in the Morro Bay and Port San Luis/Avila harbors. Over the past 10 years, the numbers of trawlers within the Morro Bay/Avila harbors has decreased, and currently commercial fishing in this area targets a variety of species ranging from crab and shrimp to rockfish, pelagic species and sharks. Gear types used to catch these resources include trawl, gill net, trap, diving, round-haul nets, and hook-and-line. Recent fish block data (2006-2010) suggests that surface-oriented fishing for rockfish and trap fishing for hagfish contribute both the most pounds of seafood and highest dollar value from fish block 615.

Recreational fishing in the area is predominantly by hook-and-line. Rocky headland areas in the Point Buchon area are fished for rockfish, lingcod, and cabezon. Other target species in this area include barracuda, bonito, and white sea bass. Trolling for salmon occurs parallel to shore out to depths just over 300 feet from near Point Sal to Cayucos. Fishers on charter boats also troll for albacore farther offshore.

Potential Project-Related Impacts

Potential adverse impacts to commercial and recreational fishing could result from: (1) the temporary preclusion of fishing vessels from the project area during the proposed seismic monitoring array installation; and (2) the potential loss of fishing gear that snags on the array during installation or once it is in place.

Commercial and recreational fishing would be precluded from the cable installation corridor during marine activities associated with proposed cable and OBS unit installation. While the duration of these activities may vary slightly, in-water activities are not expected to take more than two weeks and would occur in a different location each day. The project MND estimates that less than one percent of the available fishing area within the project area would be affected during the installation and operation of the proposed OBS units and cable. Further, the majority of the proposed cable route and four of the eight OBS unit sites would be located within the Point Buchon State Marine Conservation Area, an area in which all fishing is prohibited except the commercial and recreational take of salmon and albacore. A large section of the remaining cable route would be within the Diablo Canyon Nuclear Generating Station Security Zone or the Point Buchon State Marine Reserve, areas in which access for commercial and recreational fishing vessels is restricted. Accordingly, most fishing activities are already restricted within the majority of the project area. Because limited project activities are proposed outside of the marine protected areas and security zone, access restrictions for fishing vessels to the remainder of the proposed cable route and OBS unit installation sites would be very short term – likely no more than several days.

Potential adverse impacts to commercial and recreational fishing could also occur due to entanglement of fishing gear with the proposed seismic monitoring array. The project MND provides the following discussion:

> *Potentially significant impacts to in-place commercial fishing gear could occur if the project vessel passes across and/or the cable and OBS units are laid onto that gear. The potential for such an impact to occur would be reduced by the applicant-proposed noticing of local fishing interests through the issuance of a Notice to Mariners, and through the posting of notices in the harbormasters' offices of Morro Bay and Port San Luis at least 15 days in advance of in-water operations; however, there remains a chance that commercial fishing gear will be in-place during in-water operations. The implementation of mitigation measure MM FISH-1, described below, would ensure this potential impact remains less than significant.*
>
> *The OBS locations and cable route were developed to reduce impacts to commercial fishing (i.e. OBS units and cable would be placed inside the State 3-Mile Limit to eliminate impacts to trawling operations; no buoys would be placed onto the OBS units, thus reducing potential entanglement with fixed fishing gear or vessel anchors; and all OBS units and all but 1.6 km [1.0 mi] of cable would be placed on sedimentary seafloor to reduce impacts to rocky substrate and the associated biota) while allowing for the collection of meaningful data (i.e. placing the long-term OBS units on both sides of known faults to maximize detection of earth movements). Minor relocations (i.e. placing OBS-4 inside the MPA) could increase the length of cable needed, or result in additional*

impacts to rocky substrate from the OBS and/or cable; additionally, per conversations with CDFG staff, relocation of OBS-4 into the SMR would be inconsistent with MPA policy and would likely not be permitted under an SCP, making the option infeasible.
…
Although the OBS units would extend up to 0.3 m (1.0 ft) above the seafloor, assuming no natural burial, those units are not expected to represent a significant "snag" for recreational or commercial fishing operations. Likewise, the cable, which is expected to naturally sink into the sediment, is not expected to be a significant seafloor obstruction to recreational or commercial fishing. The sediments along the proposed alignment vary from fine, silty clays to sand and shell hash and the length of time needed for the cable to sink will vary with the sediment type and wave/current action. In areas of fine sediment, burial is expected to be immediate; however areas where the cable is laid onto coarser-grained material may take longer. PG&E will conduct a post-installation ROV survey that will document the location and condition of each of the long-term OBS units and the cable, as well as the seafloor at the temporary OBS locations. A video record and a written report on the results of that survey will be submitted to the appropriate agencies.

Where the OBS cable crosses the low-relief rock habitat is within the DCPP Security Zone, which has restricted access to recreational and commercial fishing vessels. Also, with the completion of the post-installation survey of the cable and long-term OBS units, the locations of the units will be provided to the NOAA nautical chart facility for incorporation onto future nautical charts. As proposed, no significant effects of the cable within this area to ongoing and future fishing are expected.

The proposed cable and OBS units are thus not expected to present a significant entanglement risk for fishing gear. The use of bottom contact fishing gear is restricted within the majority of the proposed cable route and within four of the eight OBS unit installation sites. In addition, PG&E has committed to provide a Notice to Mariners and to post notifications in the harbormaster offices of Port San Luis and Morro Bay at least 15-days in advance of the start of installation activities as well as to provide the final as-built location of the seismic array to the NOAA Office of Coast Survey for incorporation onto future nautical charts. **Special Conditions 6, 7, and 8** have been included to further reduce the risk of accidental entanglement of fishing gear with the project OBS units and cable by memorializing PG&E's commitments to provide advance notice of installation activities, schedules, and routes to the fishing community and vessel operators as well as to allow nautical charts to be accurately updated to show the seismic monitoring array.

Further, **Special Condition 5** requires that all the mitigation measures included in the project MND concerning fishing to be incorporated into the proposed project, including MM FISH-1 and MM FISH-2. MM FISH-1 would require PG&E to begin each day of in-water installation operations by searching along the proposed cable route for any commercial fishing gear located within 100-feet of an OBS unit site or cable route. If gear is located during these searches, PG&E would be required to re-route the cable to avoid the gear by at least 100-feet or contact the owner of the gear to request that it be removed. MM FISH-2 would require PG&E to survey the cable route and OBS unit sites upon project completion and removal to ensure that all project equipment has been removed and that no material remains that could snag fishing gear.

Finally, although the risk of fishing gear becoming lost or damaged as a result of contact with the proposed seismic monitoring array is expected to be small, to address contingencies **Special Condition 10** requires PG&E to develop, submit for Executive Director review and approval, and implement, a Lost/Damaged Fishing Gear Compensation Plan that outlines that steps that would be taken to address any impacts to commercial fishing operations that may result from the loss and/or damage of fishing gear due to entanglement with the proposed seismic monitoring array.

With implementation of all the above-described measures, the Commission believes the economic and commercial importance of fishing activities will be protected and thus finds the project consistent with Coastal Act Section 30234.5.

F. Attorneys Fees and Costs

Coastal Act section 30620(c)(1) authorizes the Commission to require applicants to reimburse the Commission for expenses incurred in processing CDP applications. *See also* 14 C.C.R. § 13055(e). Thus, the Commission is authorized to require reimbursement for expenses incurred in defending its action on the pending CDP application. Therefore, consistent with Section 30620(c), the Commission imposes **Special Condition 2**, requiring reimbursement of any costs and attorneys fees the Commission incurs "in connection with the defense of any action brought by a party other than the Applicant/Permittee … challenging the approval or issuance of this permit."

G. California Environmental Quality Act

As "lead agency" under the California Environmental Quality Act (CEQA), the California State Lands Commission, on March 29, 2012, certified a mitigated negative declaration and approved a lease for the proposed project.

The Commission's permit process has also been designated by the State Resources Agency as the functional equivalent of the CEQA environmental impact review process. The Commission's permit review process identified several impacts that were not resolved in the mitigated negative declaration. Pursuant to section 21080.5(d)(2)(A) of the CEQA and section 15252(b)(1) of Title 14, California Code of Regulations (CCR), the Commission may not approve a development project "if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impact which the activity may have on the environment." The Commission finds that only as conditioned are there no feasible less environmentally damaging alternatives or additional feasible mitigation measures that would substantially lessen any significant adverse impact which the activity may have upon the environment, other than those identified herein. Therefore, the Commission finds that the project as fully conditioned is consistent with the provisions of the CEQA.

APPENDIX A: 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 of 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.

APPENDIX B: SUBSTANTIVE FILE DOCUMENTS

Coastal Development Permit Application Materials:

Application for Coastal Development Permit E-11-017, dated July 7, 2011.

PG&E, Letter to Commission staff, August 25, 2011.

PG&E, Letter to Commission staff, September 23, 2011.

PG&E, Letter to Commission staff, March 1, 2012.

Environmental Documents:

California State Lands Commission, *Mitigated Negative Declaration For the Pacific Gas & Electric (PG&E) Point Buchon Ocean Bottom Seismometer Project, March 2012.*

Published Articles and Reports:

Cacchione, Drake, Field, and Tate, 1987. *Sea-floor gouges caused by migrating gray whales off northern California*, Continental Shelf Research, Vol. 7, No. 6, pp. 553-560.

Heezen, B.C. *Whales entangled in deep sea cables*. Deep-Sea Research 4:105-115, 1957.

Kogan, Paull, Kuhnz, Burton, Von Thun, Greene, and Barry, 2006. *ATOC/Pioneer Seamount cable after 8 years on the seafloor: Observations, environmental impact*. Continental Shelf Research, Vol. 26, pp. 771-787.

Wood and Carter, 2008. *Whale entanglements with submarine telecommunications cables*. Journal of Oceanic Engineering, Vol. 33, No. 4 pp. 445-450.

Rice DW (1988) Sperm whale *Physeter macrocephalus*, Linnaeus 1758. Pages 177-233 in Ridgway SH, Harrison RJ (eds) Handbook of Marine Mammals, Vol 4. Academic Press, London.

Adopted Findings for Coastal Development Permit E-08-021/Consistency Certification CC-005-09.

EXHIBIT 1: Project Location and Seismic Monitoring Array Configuration

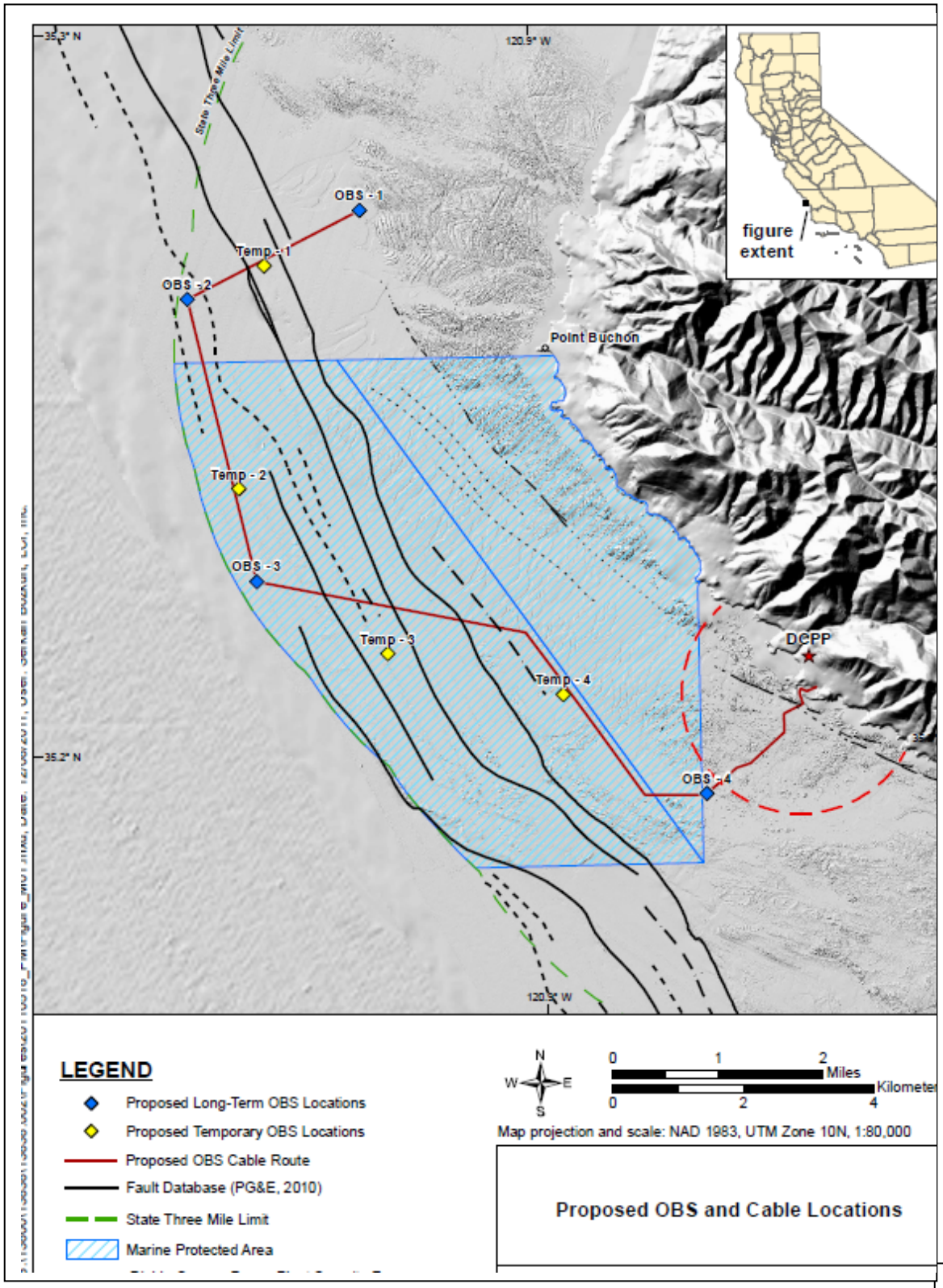
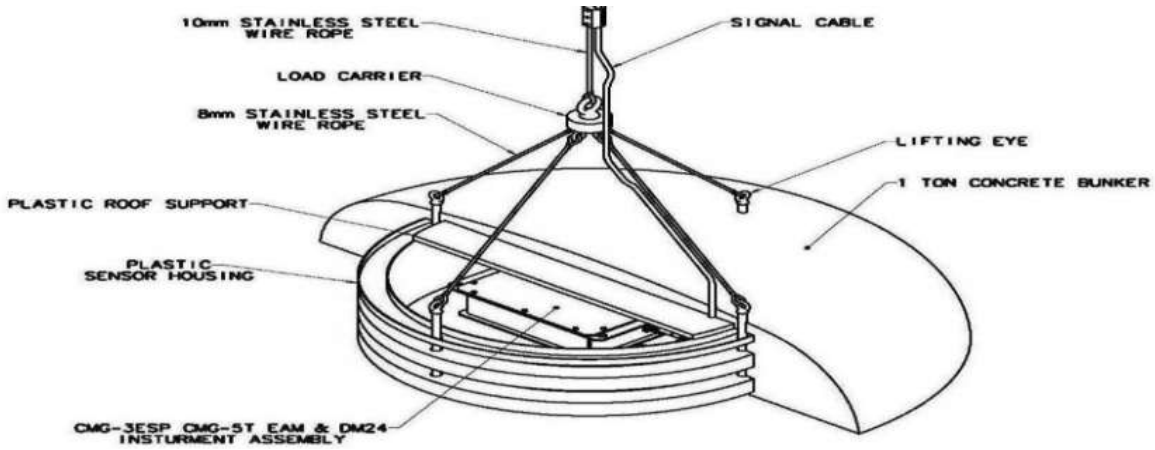


EXHIBIT 1

Project Location and Configuration

EXHIBIT 2: Ocean Bottom Seismometer Unit Design

SHORT-TERM OBS UNIT DESIGN



LONG-TERM OBS UNIT DESIGN

EXHIBIT 2

OBS Unit Design

Compensatory Hard Substrate Mitigation Fund

Memorandum of Agreement
Between the
California Coastal Commission
and
Regents of the University of California on behalf of
the Wildlife Health Center

This Memorandum of Agreement ("MOA") is entered into by and between the California Coastal Commission ("Commission"), a public agency, created and existing under the authority of section 30300 of the California Public Resources Code, and the Regents of the University of California on behalf of the Wildlife Health Center ("WHC"). The Commission and the WHC are sometimes referred to individually as a "Party," and collectively as the "Parties."

RECITALS

WHEREAS, the Commission is a state coastal management and regulatory agency with authority over the development and use of the California coast and coastal waters;

WHEREAS, the WHC is a multidisciplinary center dedicated to balancing the needs of people, wildlife and the environment and the only comprehensive university-based veterinary program dedicated to conservation of healthy wildlife and ecosystems, including marine ecosystems. WHC is able to undertake conservation activities in coastal waters through its California Lost Fishing Gear Recovery Project;

WHEREAS, WHC's California Lost Fishing Gear Recovery Project finds and recovers from marine waters accidentally lost or intentionally discarded fishing gear that can modify rocky seafloor habitats by obstructing crevices, enshrouding ledges, or causing scouring of the seabed and thereby potentially altering the animal, plant and algal communities living on hard substrate.

WHEREAS, The Pacific Gas and Electric Company ("PG&E") applied for a coastal development permit, pursuant to the California Coastal Act ("Coastal Act"),[4] to install and operate an ocean bottom seismic monitoring array ("the Project").

WHEREAS, the Project will result in unavoidable impacts to hard substrate marine habitat for which mitigation is required.

WHEREAS, on April 4, 2012, the Commission approved Coastal Development Permit ("CDP") E-11-017, subject to Special Condition 4 that requires PG&E to pay a hard substrate impact

[4] Cal. Pub. Resources Code §§ 30,000 *et seq*. In this document, all further references to Code Sections in the 30,000s are references to California Public Resources Code sections within the Coastal Act.

EXHIBIT 3

Draft MOA

mitigation fee to WHC in the amount of $32,000 plus a five percent administrative fee for a total of $33,600, which shall be used to remove lost fishing gear from within the Southern California Bight, in accordance with the terms of this MOA;

WHEREAS, WHC maintains the state's largest database of known derelict fishing gear targets;

WHEREAS, WHC wishes to receive the mitigation fee required by Special Condition 4 ("the Funds") and to use it to remove lost fishing gear within the coastal waters of central California ("the Mitigation Project");

WHEREAS, removing lost fishing gear from within the coastal waters of central California may include hiring commercial (e.g., urchin divers) and technical (e.g., military or commercial salvage) divers or remotely-operated vehicle (ROV) contractors to recover lost fishing gear where it poses a hazard to habitat, marine resources, and people.

WHEREAS, the Commission has concluded that WHC will be an appropriate recipient to receive the Funds and will accept the Funds for the purposes described herein;

WHEREAS, the Executive Director is authorized to enter into this agreement on behalf of the Commission by CDP E-11-017, which the Commission approved pursuant to its authority under Sections 30330, 30600(c) and 30607.

NOW, THEREFORE, for consideration of the mutual covenants and representations herein, it is mutually agreed by and between the undersigned Parties as follows:

AGREEMENT

1.0 TRANSFER OF FUNDS

As required by Special Condition 4, within 60 days of completion of ocean bottom seismic monitoring array installation, PG&E shall pay to WHC $32,000 plus a five percent administrative fee for a total of $33,600 ("the Funds"). Upon receipt of the Funds, WHC shall deposit the monies into a separate account established for the Mitigation Project at UC Davis.

2.0 PROJECT IMPLEMENTATION

Within 45 days of the date on which the Funds have been transferred to it, WHC shall submit a spending plan for review and approval by the Commission's Executive Director. The spending plan shall include at a minimum a description of the Mitigation Project and its estimated costs.

Within one year of the Executive Director's approval of the spending plan, WHC shall carry out and complete the Mitigation Project.

Within 45 days of completing the Mitigation Project, WHC shall submit a final report to the Commission's Executive Director describing the gear removed and its location, and a list o

EXHIBIT 3

Draft MOA

disbursements. The WHC shall make all accounting records available for examination by the Commission's Executive Director upon request.

3.0 ACCOUNTABILITY

3.1 Administrative Costs

The WHC shall use the Funds exclusively to finance the Project described herein. Administrative costs in implementing this MOA, computed in accordance with applicable State Administrative Manual sections, shall not exceed five (5%) of the total Funds.

3.2 GAAP

The WHC (in accordance with University policy) shall maintain Generally-Accepted Accounting Principles (GAAP), financial management, and accounting system and procedures that provide for (1) accurate, current and complete disclosure of all financial activity for the Project; (2) effective control over, and accountability for all funds, property and other assets, related to the Project; (3) comparison of actual outlays with budgeted amounts; and (4) accounting records supported by source determination.

3.3 Records Retention

The WHC shall retain all pertinent books, documents and papers, including, but not limited to, financial transactions and supporting documents, in conjunction with University policy and procedure, for the entire period during which the Funds are being used by the WHC under this MOA and for a period of three (3) years thereafter for potential examination by the Auditor General.

4.0 MISCELLANEOUS PROVISIONS

4.1 Good Faith

The Parties agree in good faith to work to fulfill the objectives of this MOA. The Commission's Executive Director may grant an extension of any time deadline under this MOA for good cause, where there is reasonable justification or excuse for the delay.

4.2 Amendment

Neither this MOA nor any provision hereof may be waived, modified, amended, or discharged except by an instrument in writing signed by the Parties.

4.3 Entire Agreement

This MOA constitutes the entire understanding among the Parties with respect to the matters set forth herein and supersedes all prior or contemporaneous understandings or agreements among the parties with respect to the subject matter hereof, whether oral or written.

EXHIBIT 3

Draft MOA

4.4 Severability

If a court of competent jurisdiction determines that a provision included in this MOA is legally invalid, illegal or unenforceable, and such decision becomes final, such provision shall be deemed to be severed and deleted from this MOA and the balance of this MOA shall be reasonably interpreted to achieve the intent of the Parties. The Parties further agree to replace such void or unenforceable provision of this MOA with a valid and enforceable provision that will achieve, to the extent possible, the purposes of the void or unenforceable provision.

4.5 Counterparts

This MOA and any amendment thereto may be executed in two or more counterparts, and by each Party on a separate counterpart, each of which, when executed and delivered, shall be an original and all of which together shall constitute on instrument, with the same force and effect as though all signatures appeared on a single document.

4.6 Assignment

None of the Parties may assign any rights granted by this MOA without prior written approval of the other Party, which approval may be granted or withheld in any Party's reasonable discretion.

4.7 Effective Date and Term

This MOA shall become effective upon the last date of any Party to execute this MOA and shall be in effect from that date unless it is terminated or extended through an amendment, as provided in Section 4.2, above.

4.8 Termination

Either Party to this MOA may for good cause terminate this MOA by providing written notification 30 days prior to termination. In the event of termination, any and all remaining Funds shall be transferred by WHC to a Commission-approved alternate entity within 60 days of termination. Good cause shall include, but is not limited to, a determination by the Executive Director that WHC is not proceeding reasonably and expeditiously to complete any component of the Project. In the event that the MOA is terminated, WHC agrees to take all reasonable measures to prevent further use of the Funds.

4.9 Governing Law

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

5.0 NOTICES

5.1 Receipt of Notices

EXHIBIT 3

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Any demand upon or notice required or permitted to be given by one Party to the other shall be in writing, shall be made in the following manner, and shall be effective (a) upon receipt if given by personal delivery, (b) on the date indicated on the receipt if given by certified or registered mail, return receipt requested, or (c) on the succeeding business day after mailing or deposit if given by Express Mail or by deposit with a private delivery service of general use (e.g. Federal Express), postage or fee paid, as appropriate, addressed to the Parties in Section 5.2.

Notice of a change of address or designated contact person shall be given by written notice in the manner set forth in this section within ten (10) business days of the change.

5.2 Designated Contact Persons

Ms. Alison Dettmer, Deputy Director
Energy, Ocean Resources and Federal Consistency Division
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105
Telephone: (415) 904-5205
Facsimile: (415) 904-5400
Email: adettmer@coastal.ca.gov

Dr. Kirsten Gilardi, Assistant Director
Wildlife Health Center
School of Veterinary Medicine
University of California
Davis, CA 95616
Telephone: (530) 752-4896
Facsimile: (530) 752-3318
Email: kvgilardi@ucdavis.edu

Any change in the Notification Contact shall be communicated to all Parties within ten (10) business days of the change.

SIGNATURES

IN WITNESS WHEREOF, the Parties through the signatures below of their authorized representatives agree to be bound by the terms of this Agreement.

Dated:_____

Regents, University of California, Davis On behalf of the Wildlife Health Center

By:
Title: Director

Dated:_____

California Coastal Commission

By: Charles Lester
Title: Executive Director

EXHIBIT 3

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Relevant Mitigation Measures from the March 2012 Mitigated Negative Declaration for the Pacific Gas & Electric (PG&E) Point Buchon Ocean Bottom Seismometer (OBS) Project

APM-2. Project installation schedule shall be limited to June-July to avoid gray whale migration periods and when weather conditions are conducive to expeditious and safe vessel operations.

APM-3. The cable has been routed to avoid rocky substrate wherever possible. Two pre-construction remotely operated vehicle (ROV) surveys of the rock habitat expected to be crossed by the cable have been conducted and information collected has been used to avoid potential impacts.

APM-4. All operations shall be completed during the daytime hours; no nighttime operations are proposed.

APM-6. To reduce the area of seafloor disturbance, no vessel anchoring is proposed, and the cable between the long-term Ocean Bottom Seismometer (OBS) units shall not be manually buried into the sediment or trenched through the rocky substrate.

APM-7. A qualified marine wildlife observer shall be onboard the *MV Michael Uhl* during the deployment of the Ocean Bottom Seismometer (OBS) units and cable. That observer shall monitor and record the presence of marine wildlife (mammals and reptiles) and shall have the authority to cease operations if the actions are resulting in potentially significant impacts to wildlife.

APM-8. All Ocean Bottom Seismometer (OBS) units shall be located on sedimentary seafloor habitat. All Project related material, including concrete ballast tubes, shall be removed from the seafloor after data collection is completed.

APM-9. The Applicant shall implement the marine wildlife contingency plan for Ocean Bottom Seismometer (OBS) deployment, cable lay, and equipment recovery that includes measures to reduce the chance of vessel/marine mammal and reptile interactions (see Appendix H). This Plan includes: (1) the provision for marine mammal monitors approved by the National Oceanic and Atmospheric Administration Fisheries Service or CSLC staff to be onboard the OBS/cable installation vessel throughout the daytime marine operations; and (2) measures that (a) specify the distance, speed, and direction transiting vessels would maintain when in proximity to a marine mammal or reptile; (b) qualifications, number, location, and authority of onboard marine mammal and reptile monitors; and (c) reporting requirements in the event of an observed impact to marine wildlife.

APM-10. To avoid rock features, a 275 m- (902 ft) long section of the cable from 200 m (656 ft) northwest of Station 5 to 75 m (246 ft) southeast of Station 4 shall be moved 50 m (164 ft) east

EXHIBIT 4

MND Mitigation Measures

of the proposed alignment, as shown in Figure 4 in Appendix I, December 2011 ROV Survey – Summary Report.

MM BIO-2. The Applicant shall install the cable in such a way as to avoid areas of rocky substrate whenever feasible and perform a post-installation ROV survey upon completion of cable installation activities. The survey will document the length of cable in areas of rocky substrate and the actual amount of rocky substrate and number of organisms affected by the cable placement. A CSLC staff-approved marine biologist shall be onboard the post-lay ROV survey vessel to observe and record the effects of cable lay operations on the seafloor substrates and the biota along the entire cable route and at each OBS unit. The Applicant shall subsequently prepare a technical report and shall submit the report and video of the ROV survey to the CSLC and California Department of Fish and Game (CDFG) staffs within 90 days following the ROV survey. The report shall include all of the following:
- Quantification (in square meters) of seafloor impacts and estimated numbers and species of organisms affected as well as a map of the survey route noting the location of the impacted areas included in this quantification and the video timestamp of each relevant site in the ROV survey video;
- A restoration proposal that is based on the results of the survey and proportional to the actual amount of soft substrate and rocky habitat affected. The proposal shall contain direct restoration actions that repair or restore affected areas and/or a contribution to an ongoing restoration program in the area (e.g., SeaDoc Society Lost Fishing Gear Recovery Project), as specified by the CSLC or CDFG staffs (and/or other requesting agencies); and
- A schedule for implementing and completing the required restoration.

MM FISH-1. At the beginning of each day that in-water operations are to occur, observations shall be made along the proposed cable route and the presence of in place commercial fishing gear located within 30 m (100 ft) of the OBS site and/or cable route shall be noted. The vessel operator shall notify the owner of the gear and request that the gear be removed and/or the cable will be re-routed to avoid the existing gear by at least 30 m (100 ft).

MM FISH-2. Upon Project completion and removal of the Ocean Bottom Seismometer (OBS) units and cable, the Applicant shall survey each OBS site and the cable route, submit a report to California State Lands Commission (CSLC) staff documenting the condition of any Project-related materials left on the seafloor, and remove, within six months after Project completion, any Project-related materials that CSLC staff determines pose a hazard to commercial fishing operations.

EXHIBIT 4

MND
Mitigation
Measures