SECTION 2 - PROJECT DESCRIPTION

2.1 Need for Project

As stated in Section 1.6 of this MND, PG&E has proposed the Point Buchon Ocean Bottom Seismometer Project as a means of gathering data consistent with the recommendations contained in the 2008 final report that the CEC prepared in response to AB 1632. The Project would provide data to aid in the assessment of the DCPP's vulnerability from seismic events, and would thus further PG&E's efforts to implement the AB 1632 report recommendations. More specifically, the Project would provide accurate real-time data, which will be shared with and be available to the public, universities, and agencies through the U.S. Geological Survey (USGS), regarding the characteristics of earthquakes in the vicinity of the DCPP. These data will also be useful in emergency preparedness that could benefit the public beyond the Project area.

2.2 Proposed Structures

The Project consists of placing two temporary and four long-term OBS instruments and an 18.3-km (11.0 mile [mi]) long data/power supply cable onto the seafloor. The Project area extends offshore San Luis Obispo County from the DCPP (located onshore), seaward to the State of California jurisdictional limit located 3 nm from the shoreline, and between Point Buchon (to the north) to Point San Luis (to the south) (Figure 2-1). Figure 2-2 shows the Project area and the proposed locations for the temporary and long-term OBS units and the cable that would connect the long-term OBS units with an existing onshore power supply and data recording facility. The Project area includes a 15-meter (m) (50-foot [ft]) radius area centered on each of the OBS units and a 30-m (100-ft) wide corridor within which the cable would be laid. Project work would begin in the summer of 2012.

PG&E has proposed the OBS locations based on consultation with CDFG staff and other factors that include: 1) keeping the instruments within the State's 3-Mile Limit to preclude potential interference with commercial trawling activities; 2) placing all OBS units and all but 1.6 km (1.0 miles [mi]) of the cable onto sedimentary seafloor habitat to reduce impacts to sensitive rocky reef habitats; 3) using the protected water area and existing conduits within the DCPP intake embayment to protect the cable from the effects of waves in shallow water areas; and 4) positioning the units in the best locations to record earth movements from the Hosgri and Shoreline fault zones.

The temporary units are "self-contained" and would be placed on the seafloor at two locations for approximately two weeks, recovered, then placed in two new locations for an additional two-week period. The long-term OBS units would be connected via cable to an onshore data recorder and power source and would remain in-place for up to 10 years.

1 **Figure 2-1. Project Area**

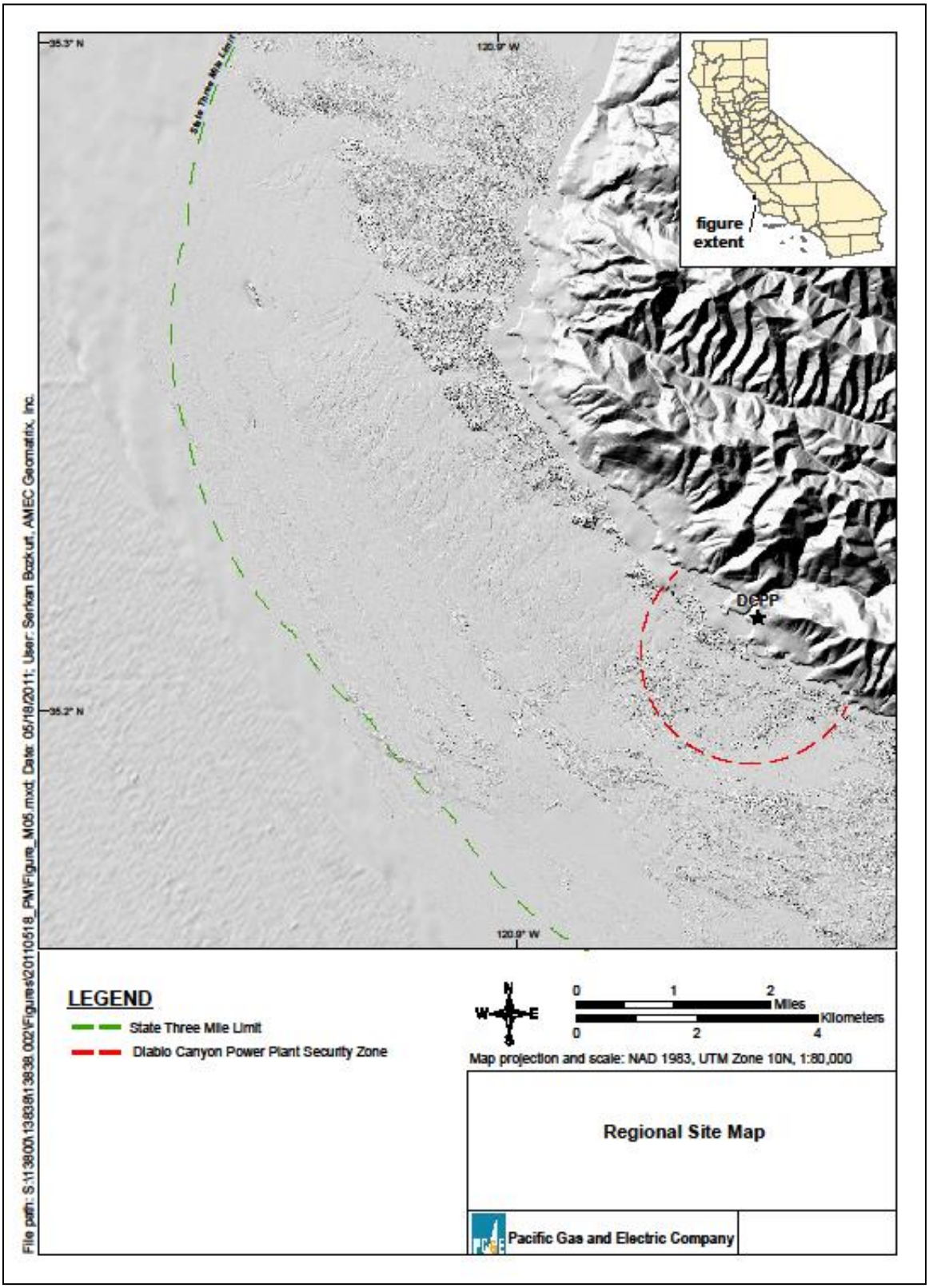
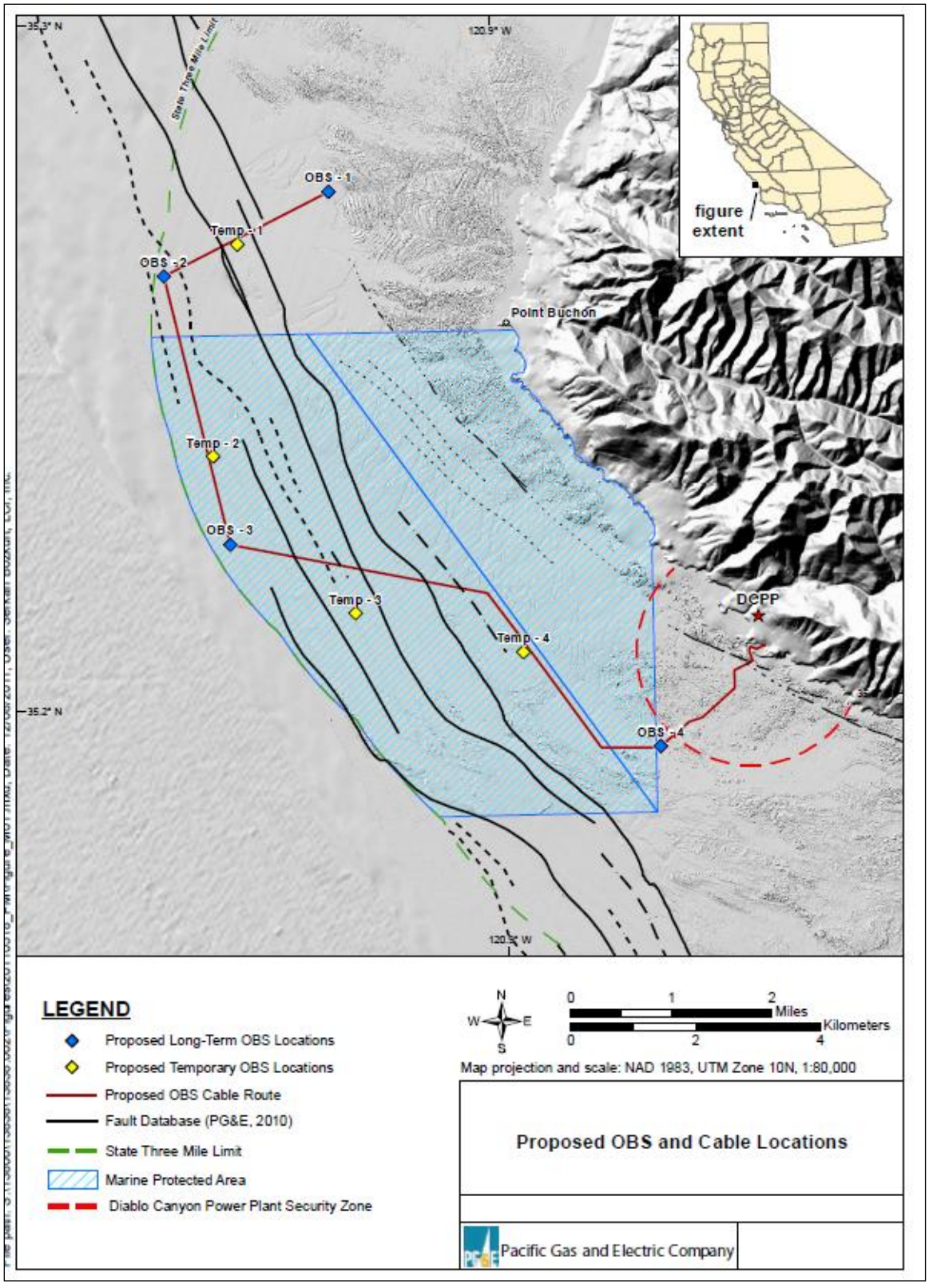


Figure 2-2. Site Specific Project Area Including Temporary and Long-Term OBS Locations



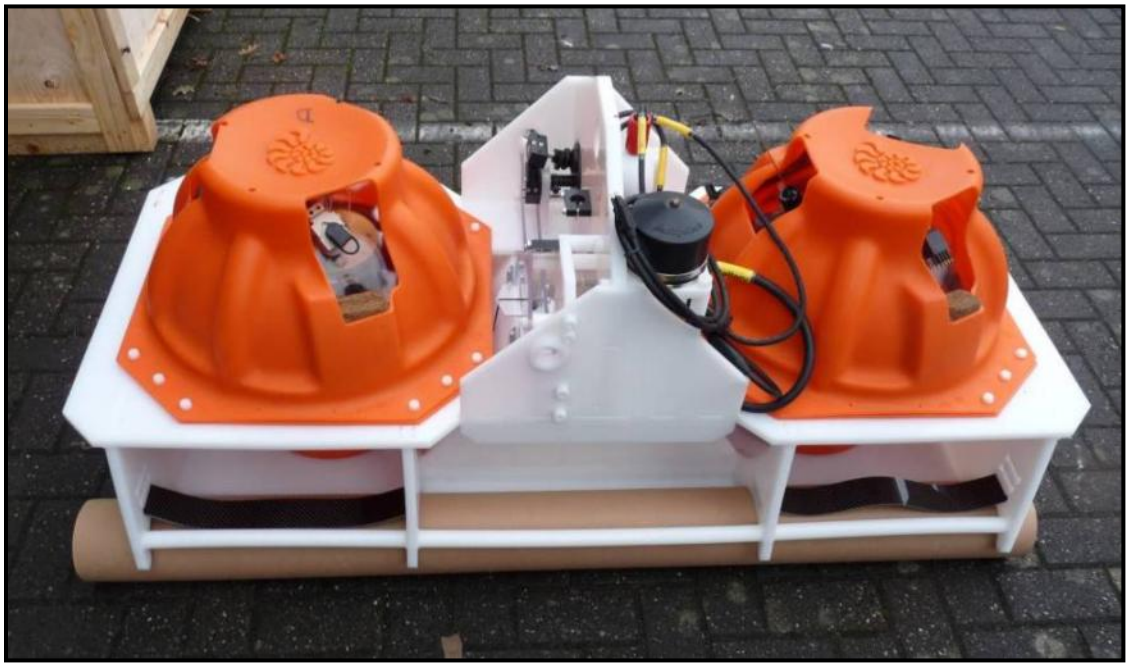
Installation of the intertidal portion of the cable would require an extension of an existing polyvinyl chloride (PVC) conduit located on the rip-rap armor rock within the intertidal area of the DCPP intake embayment. The PVC conduit would house the cable across the existing rock rip-rap where it would connect to onshore recording equipment located within an existing building within the DCPP facility. Vessel installation of the cable will occur within the proposed 30 m (100 ft) wide corridor. All of the OBS units and all but approximately 1.6 km (1.0 mi) of the cable would be placed onto sedimentary seafloor habitat. The non-sedimentary habitat along the cable route includes discontinuous rocky substrate between the 25 and 62 m (82.5 and 212 ft) water depths along the southern and inshore segments of the cable corridor.

Power to the long-term OBS units will be provided from an existing onshore source within the DCPP and data will be recorded at a station located within an existing building located within the DCPP intake embayment. Details on the OBS units, installation methods, and maintenance are provided below.

2.2.1 Temporary OBS Units

Figure 2-3 shows a temporary OBS unit. Each temporary OBS unit would record ambient sound and seafloor movement (termed “noise” in geophysical terms) to allow assessment of background conditions. The temporary OBS units are self-contained units, each comprising two spheres that encase digitizers, data loggers, and rechargeable batteries supported by a 0.6 by 1.2 m (2 ft by 4 ft) tubular plastic rack. The total area of each temporary OBS unit is 0.7 m^2 (8 ft^2) and a volume of approximately 4 m^3. The temporary OBS units have two, 10-centimeter (cm) (4-inch [in]) diameter by 1.2 m- (4 ft) long concrete cylinders attached to the bottom of each rack for ballast.

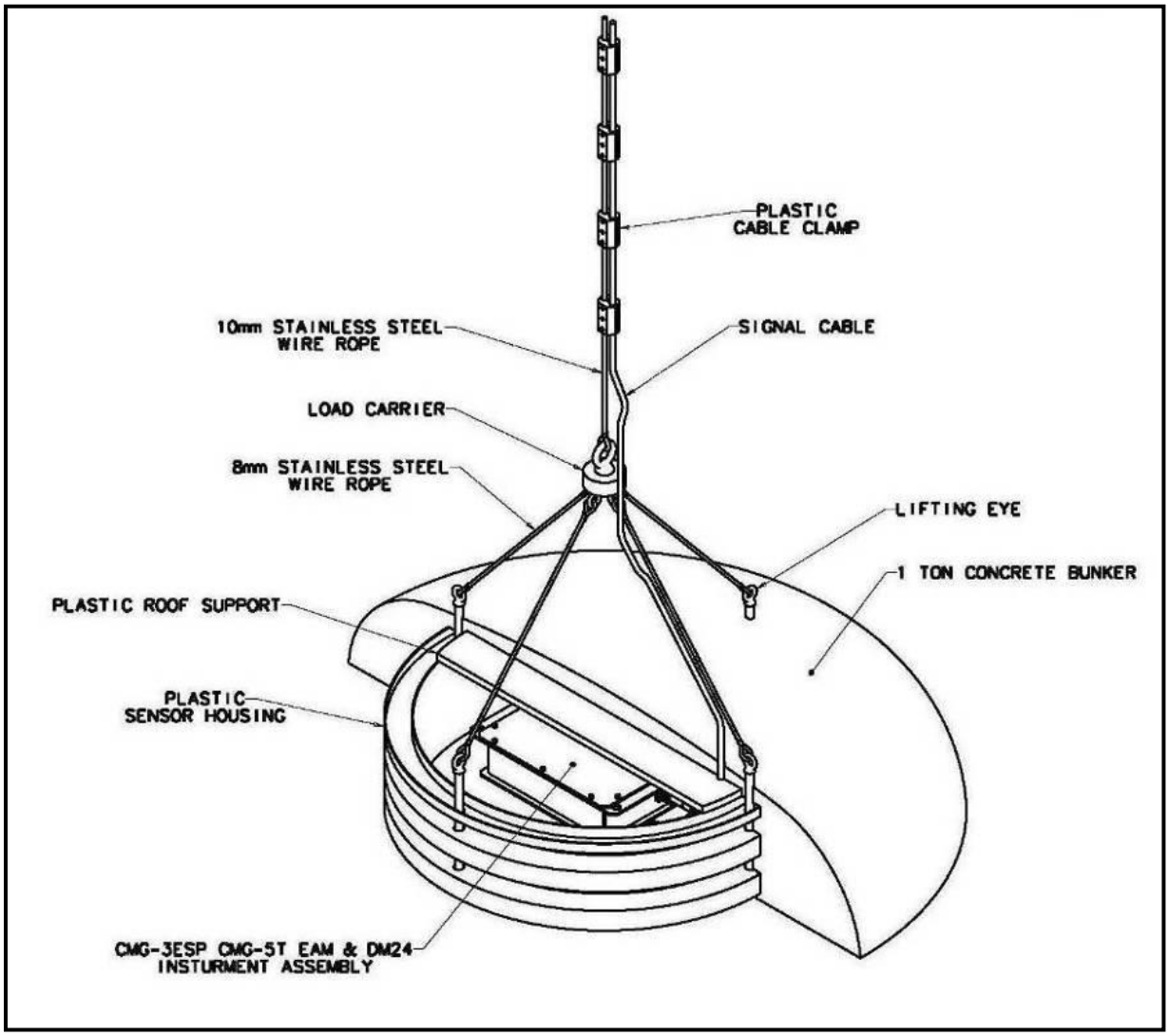
Figure 2-3. Temporary OBS Unit



2.2.2 Long-Term OBS Units

The long-term OBS units would record earthquake-generated ground movement and sound data and continually transmit real-time data to the onshore facility through the cable described in Section 2.3.3. Each long-term OBS unit is a 30 cm (1 ft) -diameter titanium-encasement that encloses sensors, digitizers and data loggers which is covered by a 1.8 m wide by 0.3 m (6.0 ft by 1.0 ft) high concrete dome that secures and protects the unit (Figure 2-4). The concrete dome has an aperture located at the top to facilitate attachment to the proposed cable. Each long-term OBS unit is powered by electricity provided by a shore-based power source that is transmitted through the attached cable. Collected data are transmitted to a shore-based recorder through the same cable.

Figure 2-4. Schematic of Long-Term OBS Unit



2.2.3 Power and Data Transfer Cable

As discussed above, a cable would connect each of the four long-term OBS units to a shore-based power supply and data recording center located onshore within an existing facility at the DCPP. The cable would be approximately 18.3 km (11.4 mi) long and 5 cm (2 in) in diameter, and would be wrapped in an armored polyethylene casing to minimize the potential for wear during its time on the seafloor. The cable would:

- exit from the top of each concrete dome covering the long-term OBS units (Figure 2-4);
- cross shore through an existing 10 cm (4 in) diameter conduit (Figure 2-5); and
- terminate on DCPP property in an existing data collection building (Figure 2-6).

2.2.4 Onshore Component

One of the two existing 10 cm (4 in) diameter conduits shown in Figure 2-5 would be extended from its current location on top of the armor rock rip-rap along the east side of the DCPP intake embayment into the water where it would terminate on the sedimentary seafloor.

Figure 2-5. Existing Onshore Cable Conduits

Figure 2-6. Existing Onshore Data Collection Building

2.3 Transportation and Installation Procedures and Methods

The OBS units (both temporary and long-term) and the cable would be transported from the Port of Los Angeles (POLA) to Morro Bay via an 18-wheel diesel truck-trailer. Upon arrival at the Morro Bay mobilization site, the OBS units and cable would be placed onto the primary vessel (marine vessel [MV] *Michael Uhl*, Figure 2-7) using an onboard crane, then transported to the Project area located offshore of the DCPP.

Figure 2-7. *MV Michael Uhl*

The *MV Michael Uhl,* a 30 m- (100 ft) long, steel-hulled work boat owned and operated by Maritime Logistics of Morro Bay, California (refer to Appendix A for additional information on this vessel), would also be used to install the OBS units and cable. Both temporary and long-term OBS units would be installed concurrently as feasible to minimize any potential impacts associated with timing and scheduling. Figure 2-2 shows the proposed locations of each of the temporary and long-term units.

2.3.1 Installation of Temporary OBS Units

As noted above, the temporary OBS units would be mobilized in Morro Bay, loaded onboard the *MV Michael Uhl*, and taken to the offshore Project area. Once onsite, each of the two temporary OBS units would be rigged to the 11-ton crane and lowered into the water at the pre-plotted locations shown in Figure 2-2. Installation of the temporary OBS units would be completed when seastate and weather conditions are conducive to safe operations and would be via “live boat” (no anchoring is proposed).

Prior to installation, each temporary OBS unit would be fitted with an acoustical release device. After the two units have been at locations Temp #1 and #2 for approximately two weeks and sufficient data have been recorded, the *MV Michael Uhl* would return to the site and the acoustic releases would be signaled to release the OBS frame from the concrete ballast. Lines attached to the frame and the ballast pieces will facilitate ballast recovery with the temporary OBS units. One end of a line will be attached to the end of one of the two concrete ballast pieces and the other end will be attached to the OBS unit’s frame. Once the acoustic release signal is given, the ballast pieces will be released from the frame and the OBS will start to rise from the seafloor due to its own buoyancy. While the OBS floats to the surface, the lines will uncoil (the lines will be 15

to 20 percent longer than the water depth in which the temporary OBS unit is placed) allowing sufficient "slack" for the unit to freely float to the surface. Once the floating temporary OBS unit is retrieved by the deck crew, the onboard winch will be used to recover the ballast pieces, which will be hoisted from the seafloor and reattached to the temporary OBS units onboard the vessel. Following retrieval of the data from the two temporary units, the *MV Michael Uhl* would reinstall the temporary units at locations Temp #3 and #4 for an additional two weeks. After two weeks of sampling, the units would be recovered in an identical manner as discussed above and the data would be retrieved and analyzed.

Installation of the temporary OBS units is expected to take approximately four days to complete (one day for each unit), with the first two units' placement being completed concurrently with the installation of the long-term OBS units. When the temporary OBS units are no longer required, each unit would be returned to PG&E.

2.3.2 Installation of Long-Term OBS Units and Power/Data Transfer Cable

As with the installation of the temporary OBS units, the long-term OBS units would be mobilized in Morro Bay and transported onboard the *MV Michael Uhl* to the Project area. Each long-term OBS unit would arrive encased in and attached to the concrete dome, which would have three or four "lifting eyes" (Figure 2-4). The crane onboard the *MV Michael Uhl* would use a lifting bridle, consisting of wire rope cables attached to the lifting eyes, to deploy the unit; one long-term OBS unit would be deployed at a time. The cable would be deployed with each unit and the "free end" would be fitted with a buoy for ease of recovery and connecting the cable(s) from the other long-term units. Once the OBS is on the seafloor, the lifting bridle would be released and the short lifting bridle, which is connected to the cable, would remain draped over the concrete dome.

Following deployment of the first long-term unit, the *MV Michael Uhl* would return to port to secure the second unit and cable. It would return to the site the following day, recover the buoy attached to the free end of the previously-laid cable and prepare to deploy the second unit following onboard cable-splicing operations. Subsequent long-term units would be deployed in the same manner, progressing north to south (locations OBS 1 to 4 in Figure 2-2). Deploying one OBS unit at a time precludes nighttime operations and the use of a larger vessel (the *MV Michael Uhl* has sufficient deck space for a single OBS unit and the associated cable).

The cable would be laid onto the seafloor and would not be trenched or buried during installation. The weight of the cable is 1.3 grams/cm^3 (81.1 pounds [lbs] per ft^3) and in sedimentary habitats the cable is expected to naturally sink; previous projects using this same cable have resulted in natural sinking into sedimentary seafloor (Guralp Systems, Ltd. , 2011). Where necessary, it would lay across rocky substrates; no trenching is proposed. Installation would be completed when seastate and weather conditions are conducive to safe operations and would be via "live boat" (i.e., no anchoring of the *MV Michael Uhl* would be required).

As currently proposed, the long-term OBS units would be *in situ* for up to 10 years. Once deployment is completed, no additional offshore maintenance activities are anticipated over the life of the installation.

Following placement of OBS #4, the *MV Michael Uhl* would deploy the cable from that location to the DCPP intake embayment (Figure 2-8). A buoy would be placed on the inshore free end of the cable segment and moored in the embayment. A small diver support boat would transport divers from an existing dock in the embayment (Figure 2-9) to the cable terminus location; the divers would retrieve the cable and transport it to the submerged terminus of an existing cable conduit (Figure 2-10). The conduits, which are intended to support the wave rider buoy,[2] are not being currently used; only one of the two conduits would be used for the Project. An onshore winch would be used to pull the cable through the conduit and into the data recording building. The data cable would be attached to a computer system and the power cable would be attached to an existing electrical power supply in the recording building.

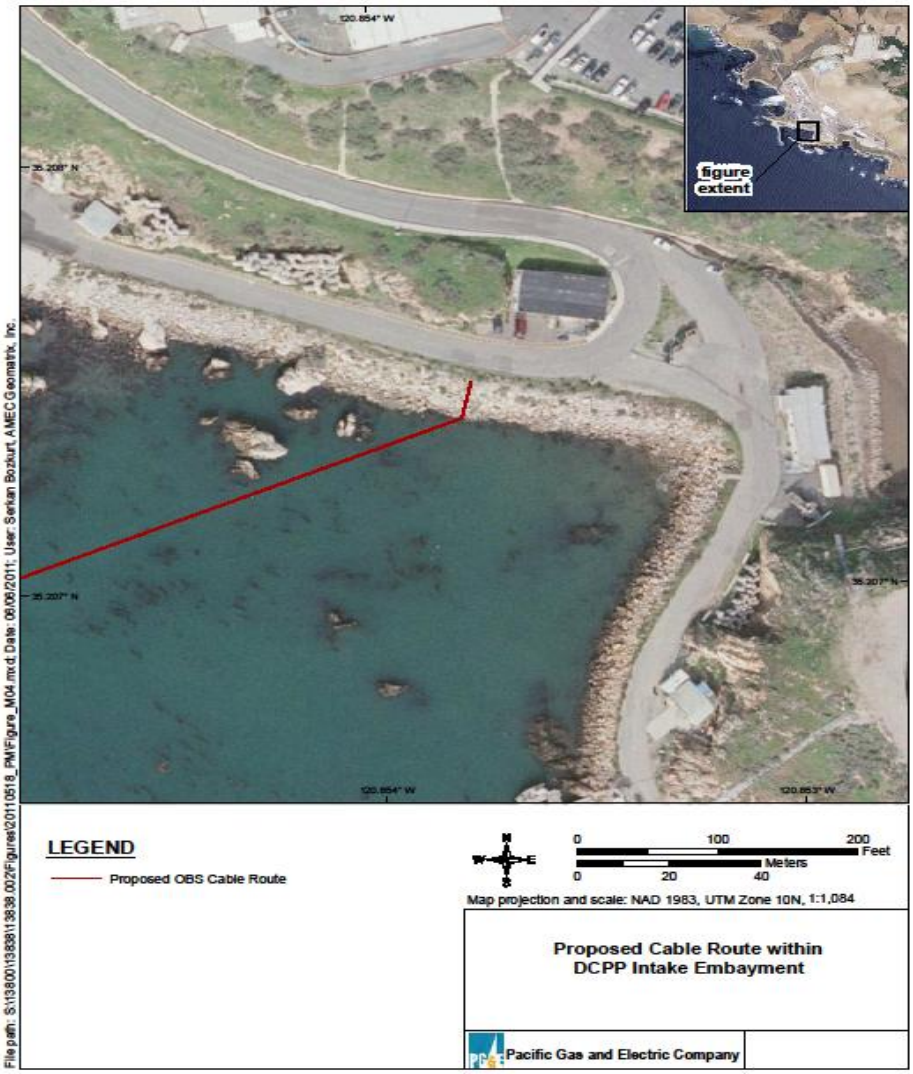
Installation of the long-term OBS units and cable is expected to be completed in about two weeks. Once installed, the long-term system would be tested. Following confirmation that all systems are operating properly, the conduit would be closed and data collection would be initiated. A post-lay survey of the cable and OBS locations would be completed as soon after the completion of the installation as weather permits. That survey would record the location of each OBS unit and the cable along its entire length using a precision navigation system and a remotely operated vehicle (ROV). The locational information would be provided to NOAA's mapping unit, the San Luis Obispo Cable/Fisheries Liaison Office, CSLC, and other agencies requesting that information.

Figure 2-8. Intake Embayment Entrance

Figure 2-9. Existing Boat Dock within DCPP Intake Embayment

[2] The wave rider buoy, managed by the Scripps Institution of Oceanography at the University of California, San Diego, collects data on wave movement.

Figure 2-10. Proposed Inshore Cable Route Across Rock Rip-Rap



2.3.3 Onshore Component

The only onshore new "structure" that would be constructed as part of this Project is an extension of an existing 10 cm (4 in) diameter conduit (Figure 2-5) from its current location on top of the armor rock rip-rap along the east side of the DCPP intake bay into the water where it would terminate in approximately 2.4 m (8 ft) of water, mean lower low water (MLLW). The extension would be assembled onsite and attached to the existing part with PVC glue. The cable would be pulled through the conduit and into the data recording building.

2.3.4 Actions Within the Point Buchon Marine Protected Area (MPA)

As shown in Figure 2-2, a portion of the Project will be within the existing Point Buchon MPA which includes the inshore State Marine Reserve (SMR) and offshore State Marine Conservation Area (SMCA). Cable-laying activities associated with the Project

are expected to cross over rocky substrate at four locations within the MPA between kilometer posts 1.0, 1.2, 4.8 and 5.0.

The Marine Life Protection Act (Fish & G. Code, § 2850 et seq.) and existing MPA regulations generally prohibit the take of all living marine resources in an SMR; an SMCA designation also prohibits take of living marine resources, but excepts the commercial and recreational take of salmon and albacore. However, take of specified marine species in an MPA may be authorized by the CFGC for scientific purposes under a scientific collecting permit (SCP) issued by the CDFG. PG&E's marine biological consultant, Tenera Environmental, has requested such authorization for several of its staff to allow take of marine and intertidal invertebrates during the proposed placement and operation of the proposed OBS units and cable within the MPA. The SCP may allow the sacrifice of specified marine fishes, marine aquatic plants, and marine and intertidal invertebrates, and the capture and release of marine fishes and marine intertidal invertebrates from within the Point Buchon MPA and may contain other provisions or conditions deemed necessary and appropriate by CDFG.

2.4 Operation and Maintenance of Long-term OBS Units

Maintenance of the equipment is expected to be minimal; however if a long-term OBS unit malfunctions, a vessel, equipped with appropriate lifting equipment and an ROV, would be deployed to the site to observe and, if necessary, recover the damaged unit and/or cable. Repairs would be made onboard or the damaged equipment would be taken to an onshore facility. Reinstallation of the repaired equipment would be conducted in a similar manner as discussed in Section 2.4.

The long-term OBS units are anticipated to remain in-place for up to 10 years and, when the equipment is no longer required, each unit and all of the cable would be removed from the seafloor and the material would either be recycled or disposed of at a permitted onshore facility. No equipment would be left on the seafloor or within the intake embayment upon removal of the long-term OBS units.

2.5 Project Schedule

2.5.1 Temporary OBS Units

It is anticipated that installation of the OBS units would occur in June or July 2012. Each temporary OBS unit would remain in place for approximately two weeks for data collection. Following data collection, the temporary OBS units at locations Temp #1 and Temp #2 would be moved to Temp #3 and Temp #4, where they would record data for an additional two weeks. Following the second data collection effort, both temporary OBS units would be recovered and would no longer be used for this Project.

2.5.2 Long-Term OBS Units

The long-term OBS units would be installed in June or July 2012 at approximately the same time as the temporary units are deployed and would be *in situ* for up to 10 years.

2.6 Project Personnel and Equipment

2.6.1 Personnel Requirements

PG&E estimates that 17 personnel would be required for OBS unit installation:

- *MV Michael Uhl* crew: 5
- Onboard OBS service crew: 4
- Support boat and divers: 3
- Administrative/computer support: 3
- Onboard marine wildlife monitors: 2

All personnel would be either local or be representatives of the OBS manufacturer. No new jobs would be created by the proposed project.

2.6.2 Equipment Requirements

Most of the equipment required to install the temporary and long-term OBS units and cable is already onboard the *MV Michael Uhl*, and consists of an existing hydraulic crane, A-frame, and positioning system. Except for a small cable reel onto which the cable would be wound for transport to the site, no additional equipment would be required. A listing of the engines and equipment onboard the *MV Michael Uhl* is provided in Appendix A. The diver support vessel is used for environmental monitoring at DCPP and is already at the DCPP small boat dock within the intake embayment.

2.7 Environmental Compliance Inspection and Mitigation Monitoring

Environmental checks for the Project would include specific requirements for controlling and/or mitigating potential impacts to water quality (such as oil spills), and biological resources.

Project plans that would be prepared by PG&E (or its contractors) and approved by the CSLC include: a Marine Safety Plan; Rigging and Lifting Plan; Critical Operations and Curtailment Plan; Navigation Marking and Lighting Plan; and Oil Spill Response Plan (refer to Appendix B for additional information on these plans). In addition, cable-laying operations will conform to the Project's Marine Wildlife Contingency Plan (refer to Appendix H), and a qualified marine wildlife monitor would be onboard the *MV Michael Uhl* during OBS deployment operations.

Table 2-1 lists the "Applicant-Proposed Mitigations" (APMs) that PG&E will implement; these APMs are designed to reduce or eliminate potentially significant impacts. When implemented, the APMs and any mitigation measures recommended as a result of the environmental analysis detailed in the MND (see Section 5.0) are intended to reduce all Project-related impacts to less than significant.

Table 2-1. Applicant-Proposed Measures (APMs)

APM-1.	Vessel fueling shall only occur at an approved docking facility. No cross vessel fueling shall be allowed. Marine vessels generally will contain petroleum products within tankage that is internal to the hulls of the vessels.
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 nightime operations are proposed.
APM-5.	Onboard spill response equipment and contracted services shall be sufficient to contain and recover the worst-case scenario spill of petroleum products.
APM-6.	To reduce the area of seafloor disturbance, no vessel anchoring is proposed, and the cable between the long-term 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 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 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 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 (NOAA Fisheries) 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 of the proposed alignment, as shown in Figure 4 in Appendix I, December 2011 ROV Survey – Summary Report.