ATTACHMENT C

DURING CONSTRUCTION MITIGATION MEASURES AND APMS

CONSTRUCTION MITIGATION MEASURES and APMs

APM/MM/ FP	Moraga Oakland X 115 Kilovolt Rebuild APM/MM/FP Requirements	Monitoring Requirement	Status
Aesthetics			
APM AES-1	**Aesthetics Impact Reduction During Construction**. All Project sites will be maintained in a clean and orderly state. Nighttime lighting will be directed away from residential areas and have shields to prevent light spillover effects. Upon completion of Project construction, Project staging and temporary work areas will be returned to pre-Project conditions, including regrading of the site and revegetating or repaving of disturbed areas to match pre-existing contours and conditions.	PG&E to implement aesthetics impact reduction measures	
APM AES-2	**Use of Dulled Galvanized Finish or Corten Steel on Replacement Structures and Non-Specular Conductors.** Use of a factory-dulled galvanized finish or Corten steel on replacement power line structures and non-specular (non-reflective) conductors will reduce the potential for a new source of glare and visual contrast resulting from the Project.	PG&E to apply dulled galvanized finish or Corten steel	
Agriculture and Forestry Resources			
APM AGR-1	**Minimize Impacts on Active Agricultural Areas.** ▪ Prior to construction, PG&E will provide written notice to agricultural landowners out-lining construction activities, preliminary schedule, and timing of restoration efforts. ▪ PG&E will coordinate with landowners to minimize construction-related disruptions to grazing operations. To the extent reasonably feasible, PG&E will schedule construction activities to minimize disruptions to grazing. ▪ PG&E will restore grazing land temporarily impacted by construction to pre-project conditions following completion of construction, including areas impacted by establishment of temporary staging, laydown and storage areas, overland access, guard structures, and pull sites. The responsibility of performing these various tasks may be stipulated in an agreement between PG&E and the landowner.	PG&E to minimize construction related disruptions to grazing operators; grazing lands are restored to pre-project conditions per agreements with agricultural landowners.	
Air Quality			
APM AIR-1	**Dust Control During Construction.** PG&E will implement measures to control fugitive dust consistent with BAAQMD's Basic Best Management Practices (BAAQMD, 2023) as follows: ▪ All exposed surfaces within the active construction area (for example, parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day as necessary to contain dust.	PG&E to implement dust control measures	

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	▪ All haul trucks transporting soil, sand, or other loose material offsite will be covered. ▪ All visible mud or dirt trackout onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. ▪ All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph). ▪ All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. ▪ All grading activities shall be suspended when average wind speeds exceed 20 mph. If excavating soils when average wind speeds exceed 20 mph, soil piles will be lightly sprayed with water to contain dust to the work area. ▪ Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations. ▪ Where project activities are within 1,000 feet of residential areas, PG&E will also implement the following additional BMPs, consistent with BAAQMD's Enhanced BMPs (BAAQMD, 2023): ▪ Limit the simultaneous occurrence of excavation, grading, and ground-disturbing construction activities. ▪ Minimize the amount of excavated material or waste materials stored at the site. ▪ Stabilize soil where project grading occurred and the area is inactive for at least 14 calendar days. Soil stabilization measures may include wood mulch, gravel, seeding or application of other non-toxic soil stabilizer consistent with APM HYD-1.		
APM AIR-3	**Minimize Construction Equipment Exhaust.** PG&E will minimize construction equipment exhaust as follows: ▪ Use low-emission or electric construction equipment where feasible. ▪ Ensure that cranes, off-highway trucks, and tractors/loaders/backhoes used during project construction will comply with Tier 4 emissions standards, pending availability. Minimize unnecessary construction vehicle idling time. The ability to limit construction vehicle idling time will depend on the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm-up times following	PG&E to implement exhaust minimization measures	

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	startup that limit their availability for use following startup. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The project will apply a "common sense" approach to vehicle use, so that idling is reduced as far as possible below the maximum of 5 consecutive minutes allowed by California law; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Construction supervisors will include briefings to crews on vehicle use as part of preconstruction conferences. Those briefings will include discussion of a "common sense" approach to vehicle use.		
MM AQ-2a	**Construction Activity Management Plan**. To accomplish this, construction phasing for the alternatives would be required to occur staggered such that of the four main construction activities (overhead circuit replacement in the eastern portion, underground replacement in the western portion, two underground replacement alter-natives in the central portion), only two of these activities would occur concurrently. For example, construction would be required to be staggered such that each alternative would only be constructed at the same time as either the underground replacement in the western portion of the project, or the overhead circuit replacement. The construction activity management plan shall reflect PG&E's anticipated final design consistent with the CPUC-approved alternative(s) and provide emissions estimates reflecting the final design.	PG&E to implement a construction activity management plan	
Biological Resources			
Field Protocols (FPs) from the Bay Area Habitat Conservation Plan (BAHCP)			
FP-02	**Field Protocol 02.** Park vehicles and equipment on pavement, existing roads, or other disturbed or designated areas (barren, gravel, compacted dirt).	PG&E to use designated vehicle and equipment parking areas	
FP-03	**Field Protocol 03.** Use existing access and ROW roads. Minimize the development of new access and ROW roads, including clearing and blading for temporary vehicle access in areas of natural vegetation.	PG&E to use existing access and ROW roads and minimize development of new access and ROW roads	
FP-04	**Field Protocol 04.** Locate off-road access routes and work sites to minimize impacts on plants, shrubs, and trees, small mammal burrows, and unique natural features (e.g., rock outcrops).	PG&E to locate off-road access routes and work sites to minimize impacts on natural resources	
FP-06	**Field Protocol 06.** Minimize potential for covered species to seek refuge or shelter in pipes and culverts. Inspect pipes and culverts of diameter wide enough to be entered by a covered species that could inhabit the area where pipes are stored for wildlife species prior to moving pipes and culverts. Immediately contact a biologist if a covered species is suspected or discovered.	PG&E to inspect pipes and culverts. PG&E to contact a biologist if a covered species is suspected or discovered.	

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FP-07	**Field Protocol 07.** Vehicle speeds on unpaved roads will not exceed 15 miles per hour [mph].	PG&E to implement speed limits	
FP-08	**Field Protocol 08.** Prohibit trash dumping, firearms, open fires (such as barbecues), hunting, and pets (except for safety in remote locations) at work sites.	PG&E to prohibit trash dumping, firearms, open fires (such as barbecues), hunting, and pets (except for safety in remote locations) at work sites	
FP-09	**Field Protocol 09.** During fire season in designated State Responsibility Areas, equip all motorized equipment with federally approved or state-approved spark arrestors. Use a backpack pump filled with water and a shovel and fire-resistant mats and/or windscreens when welding. During fire "red flag" conditions, as determined by the California Department of Forestry and Fire Protection, curtail welding. Each fuel truck will carry a large fire extinguisher with a minimum rating of 40 B:C. Clear parking and storage areas of all flammable materials.	PG&E to implement fire suppression equipment during fire season	
FP-10	**Field Protocol 10.** Minimize the activity footprint and minimize the amount of time spent at a work location to reduce the potential for take of species.	PG&E to minimize activity footprint and minimize the amount of time spent at a work location	
FP-11	**Field Protocol 11.** Utilize standard erosion and sediment control BMPs (pursuant to the most current version of PG&E's *Stormwater Field Manual for Construction Best Management Practices*) to prevent construction site runoff into waterways.	PG&E to implement erosion and sediment control best management practices (BMPs)	
FP-12	**Field Protocol 12.** Stockpile soil within established work area boundaries and locate stockpiles so as not to enter water bodies, stormwater inlets, other standing bodies of water. Cover stockpiled soil prior to precipitation events.	PG&E to implement stockpile soil control measures	
FP-13	**Field Protocol 13.** Fit open trenches or steep-walled holes with escape ramps of plywood boards or sloped earthen ramps at each end if left open overnight. Field crews will search open trenches or steep-walled holes every morning prior to initiating daily activities to ensure wildlife are not trapped. If any wildlife are found, a biologist will be notified and will relocate the species to adjacent habitat or the species will be allowed to naturally disperse, as determined by a biologist.	Field crews to inspect open trenches or steep-walled holes prior to initiating daily activities. Biologist to be notified if any species are discovered	
FP-14	**Field Protocol 14**. If the covered activity disturbs 0.1 acre or more of habitat for a covered species in grasslands, the field crew will revegetate the area with a commercial weed-free seed mix.	PG&E to revegetate grasslands habitats for covered species	
FP-15	**Field Protocol 15.** Prohibit vehicular and equipment refueling 250 feet from the edge of vernal pools and 100 feet from the edge of other wetlands, streams, or waterways. If refueling must be conducted closer to wetlands, construct a secondary containment area subject to review by an environmental field	PG&E to prohibit refueling within established buffer zones for vernal pools, wetlands, streams, or waterways	

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	specialist and/or biologist. Maintain spill prevention and cleanup equipment in refueling areas.		
FP-16	**Field Protocol 16.** Maintain a buffer of 250 feet from the edge of vernal pools and 50 feet from the edge of wetlands, ponds, or riparian areas. If maintaining the buffer is not possible because the areas are either in or adjacent to facilities, the field crew will implement other measures as prescribed by the land planner, biologist, or HCP administrator to minimize impacts by flagging access, requiring foot access, restricting work until dry season, or requiring a biological monitor during the activity.	PG&E to establish buffer zones for vernal pools, wetlands, ponds, or riparian areas	
FP-17	**Field Protocol 17.** Directionally fell trees away from an exclusion zone if an exclusion zone has been defined. If this is not possible, remove the tree in sections. Avoid damage to adjacent trees to the extent possible. Avoid removal of snags and conifers with basal hollows, crown deformities, and/or limbs over 6 inches in diameter.	PG&E to establish exclusion zones	
FP-18	**Field Protocol 18.** Nests with eggs and/or chicks will be avoided: contact a biologist, land planner or Avian Protection Program manager for further guidance.	PG&E to avoid nests with eggs/and or chicks	
Species-specific Avoidance and Minimization Measures (AMMs) from the BAHCP			
AMM Wetland-2	**Avoidance and Minimization Measure Wetland-2.** Identify wetlands, ponds, and riparian areas and establish buffers. Maintain a buffer of 50 feet around wetlands, ponds, and riparian areas. If maintaining the buffer is not possible because the areas are either in or adjacent to facilities, the field crew will implement other measures as prescribed by the biologist or HCP administrator to minimize impacts. These measures include flagging access, requiring foot access, restricting work until the dry season, requiring a biological monitor during the activity, or excavating burrows in ROWs where trenching will occur. Activities must maintain the downstream hydrology to the wetland, pond, or riparian area. Additional minimization measures may be implemented with prior concurrence from USFWS.	PG&E to establish 50-foot buffers near wetlands, ponds, and riparian areas, if possible	
AMM Plant-01	**Avoidance and Minimization Measure Plant-01.** No herbicides will be used for vegetation management, pole clearing, or any other purpose within 100 feet of an MBZ (except vegetation management's direct application to cut stumps when greater than 25 feet from an MBZ and in conformance with applicable pesticide regulations).	PG&E to restrict herbicide use within 100 feet of MBZ	

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AMM Plant-02	**Avoidance and Minimization Measure Plant-02.** Heavy equipment shall remain on access roads or other previously disturbed areas unless otherwise prescribed by a land planner, biologist, or HCP administrator.	PG&E to restrict locations of heavy equipment	
AMM Plant-03	**Avoidance and Minimization Measure Plant-03.** Stockpile separately the upper 4 inches of topsoil during excavations associated with covered activities. Stockpiles topsoil will be used to restore the disturbed ROW.	PG&E to implement stockpile soil procedures	
AMM Plant-04	**Avoidance and Minimization Measure Plant-04.** When covered activities greater than 0.1 acre in size within a MBZ will have direct impacts on covered species, work with the crew to place flagging, fencing, or other physical exclusion barriers to minimize disturbances. If the work will directly impact covered plant species, implement AMMs Plant-05, -06, -07, and -08.	PG&E to implement physical exclusion barriers	
AMM Plant-05	**Avoidance and Minimization Measure Plant-05.** If a covered plant species is present and it cannot be avoided, PG&E will salvage plant material (i.e., seeds, cuttings, whole plants) and prepare a restoration plan that details the handling, storage, propagation, or reintroduction to suitable and appropriate habitat subject to USFWS review and approval.	PG&E to submit restoration plan for unavoidable covered plant species to USFWS	
AMM Plant-06	**Avoidance and Minimization Measure Plant-06.** If a covered annual plant species is present and it cannot be avoided, conduct covered activities after seeds have matured to the extent possible.	PG&E to conduct activities after covered plant seeds have matures	
AMM Plant-07	**Avoidance and Minimization Measure Plant-07**. If a covered perennial plant species is present and it cannot be avoided, conduct covered activities after seeds have matured to the extent possible. Minimize disturbance to the below-ground portions of the plants (e.g., roots, bulbs, tubers).	PG&E to conduct activities after covered plant seeds have matures	
AMM Plant-08	**Avoidance and Minimization Measure Plant-08.** PG&E will prune shrubs in a manner that promotes resprouting. If permanent impacts are unavoidable, establish new individuals by planting seedlings or from cuttings in adjacent suitable habitat. PG&E will implement best management practices [BMPs] including vehicle, equipment, and personnel hygiene protocols; procedures for conducting activities in infected areas; and timing restrictions that avoid working when soils are moist and the likelihood of spreading *Phytophthora cinnamomi* is greatest.	PG&E to implement BMPs	
CDFW Measures from the Bay Area O&M ITP			
5.3	**Biological Monitor Authority**. To ensure compliance with the Conditions of Approval of this ITP, all Designated Biologists and General Biological Monitors shall immediately stop any activity, when safe to do so, that does not comply with this ITP and/or order any reasonable measure to avoid the unauthorized	Designated Biologist or General Biological Monitor to ensure compliance with ITP; notify the CDFW Representative of non-compliance with ITP.	

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	take of an individual of the Covered Species. PG&E shall provide unfettered access to each Work Area and otherwise facilitate the Designated Biologists and General Biological Monitors in the performance of his/her duties. If a Designated Biologist or General Biological Monitor are either unable to comply with the ITP or prevented from performing required ITP compliance, then they shall notify the CDFW Representative immediately. PG&E shall not enter into any agreement or contract of any kind, including but not limited to non-disclosure agreements and confidentiality agreements, with its contractors and/or Designated Biologists or Biological Monitors that prohibit or impede open communication with CDFW, including but not limited to providing CDFW staff with the results of any surveys, reports, or studies or notifying CDFW of any non-compliance or take. Failure to notify CDFW of any non-compliance or take or injury of a Covered Species as a result of such agreement or contract may result in CDFW taking actions to prevent or remedy a violation of this ITP.		
5.4	**Education Program.** PG&E shall conduct an education program for all persons employed or otherwise working in the Project Area before performing any work. The program shall consist of a presentation from the Designated Biologist or General Biological Monitor that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status pursuant to CESA including legal protection, recovery efforts, penalties for violations and Project specific protective measures described in this ITP. PG&E shall provide interpretation for non-English speaking workers, and the same instruction shall be provided to any new workers before they are authorized to perform work in the Project Area. Upon completion of the education program, employees or contractors shall sign a form or equivalent acknowledging that they attended the program and understand all protection measures. This training shall be repeated at least once annually for long-term and/or permanent employees or contractors that shall be conducting work in the Project Area.	PG&E to implement an education program throughout the duration of construction activities and at least annually for long-term and/or permanent employees or contractors	
5.5	**Covered Activity Monitoring Documentation.** When biological monitoring is required per Condition of Approval 6.4 (Compliance Monitoring) or when required for conducting Covered Activities E9a (Reconductoring), G9 (Pipeline Lowering), G11 (Pipeline Replacement) and minor new construction in modeled habitat, the Monitoring Biologist(s) shall maintain monitoring documentation onsite in either hard copy or digital format through-out the duration of work, which shall include a copy of this ITP with attachments. PG&E shall ensure a	Monitoring documentation and the ITP is available onsite upon request in hard copy or digital format	

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	copy of the monitoring documentation is available for review at the Work Area upon request by CDFW.		
5.6	**Trash Abatement.** PG&E shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. PG&E shall ensure that trash and food items are contained in animal-proof containers and removed, ideally at daily intervals but at least once a week, to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs.	PG&E to implement trash abatement program	
5.7	**Dust Control.** PG&E shall implement dust control measures during construction activities to facilitate visibility for monitoring of the Covered Species by Biological Monitors and crews. PG&E shall keep the amount of water used to the minimum amount needed and shall not allow water to form puddles.	PG&E to implement dust control program prior to and during construction activities	
5.8	**Prohibition of Firearms.** Firearms and domestic dogs shall be prohibited in work areas as well as from site access routes during construction and development of the project, except those firearms and domestic dogs that are in the possession of authorized security personnel or local, state, or federal law enforcement officials.	PG&E to prohibit firearms and domestic dogs	
5.9	**Erosion Control.** PG&E shall implement and install all erosion and sediment control measures and devices prior to conducting Covered Activities that include grading, excavation, or placement of fill. PG&E shall utilize erosion measures where sediment runoff from exposed slopes or surfaces could enter a drainage, stream, wetland, or pond. PG&E shall repair and/or replace ineffective measures or contrivances whose integrity has been compromised immediately.	PG&E to implement erosion control measures prior to and during construction activities	
5.10	**Erosion Control Materials.** PG&E shall prohibit use of erosion control materials potentially harmful to Covered Species and other species, such as monofilament netting (erosion control matting) or similar material, in potential Covered Species' habitat.	PG&E to prohibit erosion materials potentially harmful to Covered Species	
5.11	**Clean Vehicles.** PG&E shall implement the following: ▪ 5.11.1 Mud and/or accumulated soils shall be removed from equipment and vehicles to the maximum extent practicable. ▪ 5.11.2. Vehicles and equipment shall be cleaned or washed before entering a new work site. ▪ 5.11.3 A log shall be kept for each work site and shall be completed to document each cleaning or washing of vehicles or equipment before entering each new work site.	PG&E to implement clean vehicle measures and maintain equipment log	

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	▪ 5.11.4 Vehicles shall be staged and stored on paved or cleared areas to the extent practicable. ▪ 5.11.5 Certified weed-free mulch, straw, hay bales, or equivalent materials shall be used where necessary.		
5.12	**Delineation and Avoidance of Sensitive Habitat Features**. A Designated Biologist shall clearly identify sensitive resources that crews must avoid for the duration of the activities with posted signs, posting stakes, flags, and/or rope or cord, and place fencing as necessary to minimize or avoid disturbance.	Avoidance measures are implemented as approved	
5.13	**Work Area Access.** To the extent practicable, project-related personnel shall access a work area using existing routes, and shall not cross Covered Species' habitat outside of or en route to a work area. PG&E shall restrict project-related vehicle traffic to established roads, staging, and parking areas to the maximum extent practicable. PG&E shall ensure that vehicle speeds do not exceed 15 mph to avoid Covered Species on or traversing the roads.	PG&E to limit work area access and speed limit to protect Covered Species	
5.14	**Staging Areas**. PG&E shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to a Work Area using, to the extent possible, previously disturbed areas. No staging areas shall be located in chaparral or scrub habitats, over rock outcroppings or within 300 feet of a stock pond or vernal pool.	PG&E to limit locations Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities	
5.15	**Hazardous Waste.** PG&E shall immediately stop and, pursuant to pertinent state and federal statutes and regulations, arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. PG&E shall properly contain and dispose of any unused or leftover hazardous products offsite.	PG&E to implement hazardous waste control measures	
5.16	**Pesticides.** At no time shall PG&E utilize broadcast baiting of rodenticides within the project area. When pesticides are used, PG&E shall follow all applicable state and federal laws, County Agricultural Commissioner regulations, label requirements, and when applicable, according to requirements in habitat management plans associated with ITP 8.5 (Habitat Acquisition and Protection).[1]	PG&E to prohibit broadcast baiting and follow all applicable pesticide regulations	
5.17	**CDFW Access.** PG&E shall provide CDFW staff with reasonable access to Work Areas and mitigation lands under PG&E control and shall otherwise fully cooperate with CDFW efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.	CDFW access and cooperation occurs as approved	

[1] PG&E may elect to provide for the acquisition, permanent protection, and perpetual management of habitat mitigation lands to complete compensatory mitigation obligations (PG&E 2024).

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5.18	**Refuse Removal.** Upon completion of construction activities within a work area, PG&E shall remove from, and properly dispose of all temporary fill and construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.	PG&E to implement refuse removal measures	
6.4	**General Compliance Monitoring.** The Designated Biologist shall be onsite: ▪ Daily when Covered Species are encountered within a work area; ▪ At the determination of the Designated Biologist, when Covered Species are relocated outside a work area to monitor and assess relocation success; ▪ When required by species-specific ITP measures. ▪ A Biological Monitor shall be onsite: ▪ Daily when construction activities are conducted in [BAHCP] modeled habitat; ▪ When required by species-specific ITP measures. For construction activities in Covered Species modeled habitat that required work over a period of two weeks or greater, a General Biological Monitor shall conduct compliance inspections, at a minimum, once very week after clearing, grubbing, and grading are completed and during periods of inactivity. The General Biological Monitor shall conduct compliance inspections to: (i) Minimize incidental take of the Covered Species; (ii) Prevent unlawful take of species; (iii) Check for compliance with all measures of the ITP; (iv) Check all exclusion zones; (v) Ensure that signs, stakes, and fencing are intact, and that construction activities are only occurring in the pre-designated project footprint. The Designated Representative or Monitoring Biologist shall prepare daily written observation and inspection records summarizing oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by this ITP.	Designated Representative or Monitoring Biologist to prepare daily written observation and inspection records summarizing oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities	
6.8	**Observations.** The Designated Biologist or PG&E shall submit all observations of Covered Species to CDFW's California Natural Diversity Database within 60 calendar days of the observation and the PG&E shall include copies of the submitted forms with the next Annual Summary Report or 5-year compliance report. If observations occur on lands not owned in fee title by PG&E, then PG&E may elect to inform the landowner of an observation. If the landowner objects to submission of the observation, then PG&E may elect to not submit.	Designated Biologist or PG&E to submit all observations of Covered Species within 60 calendar days; include in Annual Summary Report or 5-year compliance report	

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6.10	**Notification of Take or Injury**. PG&E shall immediately notify the Designated Biologist if a Covered Species is taken or injured by a project-related activity, or if a Covered Species is otherwise found dead or injured within the vicinity of the project. The Designated Biologist or Designated Representative shall provide initial notification to CDFW by calling the Regional Office at (707) 428-2002. The initial notification to CDFW shall include information regarding the location, species, and number of animals taken or injured and the ITP Number. Following initial notification, PG&E shall send CDFW a written report within two working days. The report shall include the date and time of the finding or incident, location of the animal or carcass, and if possible, provide a photograph, explanation as to cause of take or injury, and any other pertinent information.	PG&E to notify the Designated Biologist and submit written report within two days of initial notification	
7.1	**Equipment Fueling.** No vehicles or heavy equipment shall be refueled within 100 feet of a wetland, stream, or other waterway, or within 250 feet of vernal pools, unless secondary containment is used. The fueling operator must always stay with the fueling operation. Tanks may not be topped off. If refueling must be conducted closer to wetlands, construct a secondary containment area subject to review by an environmental field specialist and/or biologist. PG&E shall maintain spill prevention and cleanup equipment in refueling areas. Sufficient spill containment and cleanup equipment shall be present at all mobile, temporary, and permanent equipment fueling locations.	PG&E to implement equipment fueling buffers and control measures	
7.2	**Lighting.** PG&E shall ensure that all artificial outdoor lighting be limited to lighting for safety and security, and designed using Illuminating Engineering Society's design guidelines, International Dark-Sky Association-approved fixtures, or other industry standards that address lighting impacts. Lighting above ground level shall be directed downward or inward, where consistent with safety concerns, and shielding shall be utilized, where needed, to minimize light scatter offsite. Light fixtures shall have non-glare finishes that shall not cause reflective daytime glare.	PG&E to implement lighting control measures	
7.3	**Construction Activities Hours.** Construction activities shall cease 30 minutes before sunset and shall not begin prior to 30 minutes after sunrise, to the extent practicable. Emergency night work shall be limited in extent, duration, and brightness, to the extent feasible. For Covered Activities E9a (Reconductoring), G9 (Pipeline Lowering), G11 (Pipeline Replacement), and minor new construction, work may not occur at night during rain events in CTS habitat within 0.5 miles of known or potential breeding habitat between November 1 and April 30 unless otherwise authorized by CDFW. Covered Activities shall not	PG&E to implement construction activities hours restrictions	

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	occur at night for non-emergency work in California freshwater shrimp habitat any time of year unless otherwise authorized by CDFW.		
7.4	**Stored Materials Inspections.** Workers shall thoroughly inspect for AWS and CTS in all construction pipe, culverts, or similar structures with a diameter of 7.6 centimeters (3 inches) or greater that are stored for one or more overnight periods before the structure is subsequently moved, buried, or capped. If during inspection one of these animals is discovered inside the structure, workers shall notify the Biological Monitors) and allow the Covered Species to safely escape that section of the structure before moving and utilizing the structure or moved out of harm's way by a Designated Biologist.	PG&E to implement inspections of stored materials	
7.5	**Cover or Ramp Open Excavations.** Trenches or pits shall be covered or equipped with an escape ramp if left overnight in Covered Species modeled habitat. Crews shall inspect any trench, pit, or hole every morning prior to conducting construction activities to ensure no individuals are trapped; if any animals are found staff shall contact the Designated Biologist(s) to identify whether it is a Covered Species and if so, it shall be moved out of harm's way by the Designated Biologist(s). If the animal is not a Covered Species, then a General Monitoring Biologist or other individual with wildlife handling experience in possession of any applicable handling permits may move it out of harm's way.	PG&E to cover or equip ramps in open excavations and inspect open excavations daily	
7.6	**Spoils Stockpiles.** PG&E shall ensure that soil stockpiles are placed where soil shall not pass into wetlands or any other "waters of the state," in accordance with CFGC section 5650. PG&E shall cover and protect stockpiles to prevent soil erosion, including wind and rain. Spoils shall be placed away from chaparral habitat, rock outcroppings, and concentrated ground squirrel, pocket gopher, or other small mammal burrows or habitat features suitable for use by the Covered Species as refugia habitat.	PG&E to implement spoils stockpile control measures	
7.7	**Screen or Cap Hollow Pipes or Posts.** All hollow pipes or posts that are installed as part of construction activities, or encountered in a work area that PG&E owns or is responsible for that are above ground shall be capped, screened, or filled with material by PG&E prior to the end of the day in which installation occurs.	PG&E to screen or cap hollow pipes or posts daily	
7.8	**Equipment Inspections**. Workers shall inspect for Covered Species under vehicles and equipment before the vehicles and equipment are moved. If a Covered Species is present, the worker shall notify the Biological Monitors and wait for the Covered Species to move unimpeded to a safe location. Alternatively, PG&E shall contact a Designated Biologist to determine if they can safely move the Covered Species out of harm's way in compliance with the ITP.	PG&E to implement vehicle inspections prior to movement of vehicles and equipment	

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7.9	**No Barriers to Covered Species Movements.** PG&E shall construct access routes such that there are no steep curbs, v-ditches, berms, straw wattles, or dikes that could prevent Covered Species from traversing through ROWs or from exiting roadways. If curbs/ berms/straw wattles are necessary for safety and/or surface runoff, PG&E shall design and construct them to allow Covered Species to move over them. PG&E shall modify or remove exclusion fencing at the request of Biological Monitors or CDFW staff that may impede Covered Species movements.	PG&E to construct access routes for Covered Species	
7.18	**Exclusionary Barrier**. The Designated Biologist or General Monitoring Biologist shall inspect the barrier daily and the barrier shall remain in place until all construction activities have been completed or where recommended by a Designated Biologist. PG&E shall maintain and repair barrier immediately, if damaged, to ensure that it is functional and without defects. PG&E shall provide refuge opportunities along or near the outer side of the silt fence for the Covered Species (also refer to ITP 7.19).	PG&E to have the Designated Biologist or General Monitoring Biologist shall inspect the barrier daily	
7.19	**Refugia Coverboards.** Coverboards shall be installed in work areas as determined by the Designated Biologist in modeled core and perimeter core habitat prior to construction activities. When coverboards are recommended, they shall be placed to provide refuge for the Covered Species [AWS] fleeing the area, including areas where a directional treatment methodology is used (e.g., phasing a project to encourage Covered Species [AWS] to move towards core habitats and away from potentially harmful environs). When coverboards are recommended, they shall be inspected at the end of each workday by a General Monitoring Biologist and use by wildlife shall be recorded.	PG&E to install coverboards and inspected daily	
7.20	**Alameda Whipsnake (AWS) Clearance Surveys.** Immediately prior to the start of construction activities impacting greater than 0.1 acre that affects core AWS habitat, including scrub or chaparral plant communities in modeled habitat, the Designated Biologist(s) shall visually survey the work area and adjacent areas, as determined by the Designated Biologist, to clear the area of AWS. If construction activities may affect habitat features flagged per ITP 7.17 then a General Biological Monitor shall conduct daily clearance surveys in the active work area(s).	Designated Biologist(s) to conduct clearance surveys immediately prior to the start of construction activities; daily surveys during construction activities	
7.21	**Alameda Whipsnake Pre-Activity Tailboards.** The Designated Biologist or General Biological Monitor may prescribe activity-specific tailboards trainings reminding staff of the importance of following measures to minimize impacts on AWS as they relate to the work site. Site-specific tailboards are to be conducted	Designated Biologist or General Biological Monitor to conduct activity or site-specific tailboards	

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	for staff working on construction activities that impact greater than 0.1 acre in core habitat or perimeter core habitat.		
7.22	**Suspected Alameda Whipsnake in Work Area.** If AWS is found by any person in the work area before or during construction activities, all work that could potentially injure the snake shall stop immediately and the snake shall be allowed to leave the work area on its own. If the snake does not leave the work area or cannot move to an area with sufficient habitat outside of the work area, the Designated Biologist shall move the snake to suitable habitat outside the work area. Construction activities shall resume only after the snake has been confirmed to be out of the work area.	PG&E to stop construction activity in work area upon discovery of AWS until relocation from work area	
7.23	**Alameda Whipsnake Seasonal Restrictions**. Disturbance in AWS modeled core and peri-meter core habitat shall only take place between April 15 and October 31 to the extent feasible when AWS is more active and less likely to be affected by construction activities. For activities occurring in AWS core or perimeter core habitat between November 1 and April 14, a Designated Biologist(s) shall be present during operations.	PG&E to restrict timing of disturbance activities to only take place between April 15 and October 31	
7.24	**Alameda Whipsnake Injury.** If an AWS has major or serious injuries as a result of construction activities, the Designated Biologist shall immediately take it to a qualified wildlife rehabilitation or veterinary facility. PG&E shall bear any costs associated with the care or treatment of such injured AWS. If the injury is minor or healing and the AWS is likely to survive as determined by the Designated Biologist, it shall be released immediately to an area out of harm's way. PG&E shall notify CDFW of the injury to the AWS within 2 working days by telephone and e-mail followed by a written incident report to CDFW. Notification shall include the name of the facility where the animal was taken.	PG&E to notify and submit written report incident to CDFW within 2 working days by telephone and e-mail followed by a written incident report to CDFW	
Applicant-Proposed Measures from the Incidental Take Permit (ITP) Final EIR (FEIR)			
ITP FEIR APM BIO-1	**Prevent or minimize the spread of invasive weeds.** The following will be implemented on E9a (Reconductoring), G9 (Pipeline Lowering), G11 (Pipeline Replacement), and minor new construction to prevent the spread of invasive weeds during all phases of covered activities, as appropriate: ▪ During covered activities involving ground disturbance, mud and/or accumulated soils will be removed from equipment and vehicles to the extent feasible. Vehicles and equipment will be cleaned or washed before entering a new work site. A log will be kept for each job site and will be completed to document each cleaning or washing of vehicles or equipment before entering each new work site.	PG&E to implement invasive weed spread prevention and minimization measures	

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	▪ Vehicles will be staged and stored on paved or cleared areas whenever feasible. Certified weed-free mulch, straw, hay bales, or equivalent materials will be used where necessary for covered activities.		
ITP FEIR APM BIO-2	**Protect special-status wildlife encountered while performing covered activities and report covered wildlife observations.** Any special-status wildlife species encountered during the course of a covered activity will be allowed to leave the area unharmed, and work activities that could disturb or harm the individual will halt until the wildlife has left the area. Encounters with a special-status species will be reported to a qualified biologist and PG&E Environmental staff. PG&E will maintain records of all covered wildlife species encountered during permitted activities. Encounters with covered wildlife species will be documented and provided to CDFW in an annual report as required by the ITP. If a covered wildlife species is encountered during the course of operations, the following information will be reported for each species: ▪ The locations (i.e., narrative, vegetation type, and maps) and dates of observations, including occurrences observed during any required surveys. ▪ The general condition of individual health (e.g., apparent injuries). ▪ If the species is moved, the location where the species was captured and the location where it was released. ▪ The locations, dates, and species and behaviors observed during covered wildlife monitoring. When conducting covered activities E9a (Reconductoring), G9 (Pipeline Lowering), G11 (Pipeline Replacement), and minor new construction PG&E will document encounters with special-status species to the same level of detail as required for covered species. During PG&E's environmental screening process, PG&E will also apply this measure to other covered activities to protect special-status species and habitats based on recommendations from qualified biologists. This data will be provided in ITP annual reports.	PG&E to submit documentation to CDFW in annual report	
ITP FEIR APM BIO-3a	**Minimize spread of invasive plant and plant pathogens in minor new construction.** When conducting minor new construction activities, PG&E will avoid or minimize the spread of invasive species by taking the following actions: 1. Prior to commencement of activities located on or adjacent to non-paved surfaces, a qualified biologist will flag known populations of noxious weeds and invasive plants in the work areas. Invasive plant species include those listed as invasive by the California Invasive Plant Council (Cal IPC).	PG&E to implement invasive plant and plant pathogen spread minimization measures prior to the start of project construction and during construction activities	

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	2. PG&E will stage work in areas not infested with weeds or treat for weed removal prior to using an infested area. 3. Prior to ground disturbance in areas containing species susceptible to Sudden Oak Death, a qualified professional (e.g., biologist, arborist, botanist familiar with Sudden Oak Death and the vegetation communities in the area) will assess the risk of activities and will identify and implement measures to reduce or avoid the risk of Sudden Oak Death spread. These measures will include but will not be limited to the following, and will be further developed and updated based on the best available science and site-specific conditions: a. Designate quarantine areas and implement proper measures for disposal of infested materials (e.g., branches, split wood, wood chips). b. Sanitize shoes, pruning gear, and other equipment with sanitizing materials (e.g., chlorine bleach, Clorox Clean-up, Lysol, scrub brush, boot brush) before and after ground-disturbing and vegetation removal activities are implemented. 4. Clothing, footwear, and equipment used during minor new construction will be cleaned of soil, seeds, vegetation, or other debris or seed-bearing material before entering a work site or when leaving an area with infestations of invasive plants and noxious weeds. 5. Heavy equipment and other machinery used in areas with infestations of invasive plant species or Sudden Oak Death will be inspected for the presence of invasive species before use on the project site and will be cleaned before entering the site, to reduce the risk of introducing invasive plant species or plant pathogens. 6. To minimize the introduction and spread of noxious weeds and invasive plants, PG&E will avoid moving weed-infested gravel, rock, and other fill materials to relatively weed-free locations. In areas where invasive plants are removed during minor new construction or vegetation removal activities, PG&E will dispose of invasive plant biomass offsite at an appropriate waste collection facility or treat biomass onsite to eliminate seeds and propagules and prevent reestablishment; if moved offsite, PG&E will transport invasive plant material in a closed container or bag to prevent the spread of propagules during transport. PG&E will use certified weed-free straw and mulch for erosion-control projects. PG&E will maintain stockpiled, uninfested material in a weed-free condition.		

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	7. Areas where ground disturbance has resulted in exposed soil as a result of minor new construction shall be seeded with compatible California annual species, as determined by a qualified biologist or botanist familiar with the native vegetation in the area and experienced in revegetation techniques. Revegetation will occur prior to the onset of winter rains within the year initial impacts take place. If work cannot feasibly be scheduled he rainy season, revegetation may occur as directed by the qualified biologist and no later than the onset of the next winter rains. 8. To ensure a successful revegetation effort, onsite vegetation shall meet the following success criteria: a. PG&E shall perform pre-activity surveys to record baseline vegetative ground cover conditions and composition by a qualified biologist prior to covered activities as follows. The biologist will record the following: i. Absolute percent ground cover for the entire work area. ii. Relative percentages of ground cover within the work area by herbaceous plants, shrubs, trees, and noxious/invasive plants. iii. Develop a catalog of all invasive species present within the work area, including an estimate of percent composition by species. b. PG&E will conduct post-activity monitoring of work areas in the spring following completion of minor new construction. i. A qualified biologist will record any new invasive species that may have inadvertently been introduced to the work area. The biologist shall make special note of any new invasive plant species rated as "high" by the Cal IPC. ii. A qualified biologist will record whether there was an increase in relative cover of invasive species from baseline that may have resulted from the covered activity. iii. If relative cover of invasive plant species has increased within the work area, PG&E shall remove and/or dispose of invasive plants in an appropriate manner, as recommended by a qualified biologist and/or a Pest Control Advisor. If any new invasive plants rated by Cal IPC as "high" are found within the work area, they will be removed in an appropriate manner, as recommended by a qualified biologist and/or a Pest Control Advisor.		

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	If the relative ground cover of invasive plants exceeds baseline by 100 percent or more, PG&E will reseed the areas where invasive plants are removed and monitor for one additional year.		
ITP FEIR APM BIO-4	**Avoid special-status plants.** Occurrences of special-status plant species will be avoided to the extent practicable and will include performance of project activities in special-status plant habitat after senescence. PG&E has created "Map Book zones" for the 13 state or federally listed plants that are covered in the O&M HCP. A Map Book zone is defined as an area of occupied or potentially occupied the HCP- covered plant species habitat as determined by PG&E botanical surveys. When rare and endangered plant species subject to the Native Plant Protection Act cannot be avoided, PG&E will follow the requirements of California Fish and Game Code Sections 1913(b) and 1913(c) concerning notification to CDFW at least 10 days in advance and provide an opportunity to salvage such species. If a special-status plant is found or known to occur, the plant will be avoided if feasible (i.e., O&M objectives could still be met). If feasible to avoid, avoidance will include establishing a buffer around the plants and demarcation of the buffer by a qualified biologist or botanist using flagging. Consideration of site-specific environmental factors such as terrain, site hydrology, light, and potential introduction of invasive plants may inform the avoidance approach.	PG&E to implement avoidance measures and notify CDFW at least 10 days in advance when avoidance is not feasible	
ITP FEIR APM BIO-5	**Erect wildlife flagging or exclusion fencing.** Prior to construction or commencement of any activity that, in the absence of fencing, is likely to directly or indirectly adversely affect covered species, flagging or exclusion fencing for the species will be installed around the perimeter of the activity footprint, or otherwise to ensure species protection. Any exemption or modification of flagging or exclusion fencing requirements will be based on the specifics of the activity, site-specific population, or habitat parameters. Sites with low population density and disturbed, fragmented, or poor habitat will likely be candidates for flagging or fencing requirement exemptions or modifications. Substitute measures, such as onsite Biological Monitors in the place of the flagging or fencing requirement, will be performed as appropriate. Prior to flagging or fencing, the qualified individual will ensure (to the extent feasible) that covered special-status species are absent from the activity footprint. After an area is flagged or fenced, PG&E is responsible for ensuring that covered special-status species flagging or fencing is maintained and opened/closed appropriately during project activities and regularly inspected for damage, which will be repaired as soon as possible.	PG&E to implement flagging or exclusion fencing	

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	This measure will also be applied when conducting covered activities E9a (Reconductoring), G9 (Pipeline Lowering), G11 (Pipeline Replacement), and minor new construction when these activities are likely to adversely affect special-status species. PG&E may also apply this measure to other covered activities to protect special-status species and habitats based on recommendations from qualified biologists.		
ITP FEIR APM BIO-6	**Protect nesting birds.** All vegetation clearing and ground-disturbing activities will be conducted outside of the nesting season (generally March 1–August 31) to the extent feasible. If this is not feasible, a biologist or qualified individual will determine if preconstruction activity surveys, nest buffers, and/or monitoring are needed in accordance with PG&E's Nesting Bird Management Plan. Nesting bird surveys will be scheduled to occur within a timeframe prior to construction the activity that is suitable for the detection of recently established nests. If active nests containing eggs or young are found, the qualified biologist or individual will establish an appropriate nest buffer in accordance with the species-specific buffers in PG&E's Nesting Bird Management Plan. Nest buffers under the Plan will be species-specific and can range from 15 to 100 feet for passerines, 50 to 300 feet for raptors, or larger if necessary, depending on the planned activity's level of disturbance, site conditions, and the observed bird behavior. Covered activities will not commence within the established buffer areas until the qualified biologist or individual determines that the young have fledged or the nest is no longer active. Active nests will be periodically monitored until the young have fledged or the activity all construction is finished. If birds with active nests are observed showing behavioral signs of agitation (e.g., standing up from a brooding position, flying off the nest) during covered activities, the buffer will be increased to a distance in which the behavioral signs of agitation cease, in accordance with PG&E's Nesting Bird Management Plan.	PG&E to implement avoidance and protection measures	
ITP FEIR APM BIO-7	**Avoid and protect special-status bats.** When feasible, activities directly affecting bat roosting habitat will be conducted outside of the bat breeding/pupping season (generally, April through mid-September). If work that will affect known bat breed-ing sites must be done in the bat breeding/pupping season, a qualified biologist will evaluate known breading/roosting sites or conduct surveys for bat roosts in suitable breeding/roosting sites (e.g., bridges, mines, caves, trees with hollows, palm trees, snags, buildings, long and dark culverts, rock outcrops, dense tree canopies, and flaking tree bark). If evidence of a bat maternity roost is found or maternity roosts are detected, PG&E will avoid	PG&E to implement avoidance and protection measures	

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	conducting covered activities that may directly affect the active roost site, including the following: ▪ If a maternity roost is identified then the qualified bat biologist will develop a Bat Avoidance and Monitoring Plan prior to the start of project activities that shall include: (1) an assessment of all impacts to bats from the activity, including noise disturbance during covered activities and (2) effective AMMs to protect bats in order to ensure that direct impact to active bat maternity roost site do not occur. Notification will be provided to CDFW prior to the start of covered activities. The notification will include a copy of the Bat Avoidance and Monitoring Plan. If direct impacts to identified maternity roost sites cannot be avoided, PG&E will provide a compensatory mitigation plan to CDFW for review and approval. ▪ As necessary, an exclusionary buffer will be maintained around active roosts. The size of the buffer will be determined by the qualified biologist based on factors such as the planned activity's level of disturbance and site conditions and will typically be 250 feet. ▪ As necessary, a qualified biologist will monitor active bat roost site buffers during O&M activities to determine if roosting activity is influenced by noise or vibrations until a qualified biologist has determined if the young bats are volant (about to fly) or the roost is unoccupied. ▪ When feasible, to protect bats and in accordance with BAHCP BMP-30 tree work near riparian zones will be conducted during the dry season. If it is not feasible to conduct tree work during the dry season, operations will occur between rain events or during dry spells unless there is an emergency or imminent threat to life or property.		
Project-specific Applicant-Proposed Measures for Species Not Covered for Take In the BAHCP/ITP			
APM BIO-1	**Preconstruction Surveys and Biological Monitoring.** To reduce impacts to sensitive biological resources that may be present within and adjacent to work areas, clearance surveys and preconstruction surveys will be implemented at the discretion of the PG&E biologist.	PG&E to conduct clearance and preconstruction surveys prior to daily construction activities	
APM BIO-2	**Crotch's Bumble Bee and Monarch Butterfly.** The CDFW ITP FEIR concluded that implementation of the HCP and ITP measures (such as FP-01 through FP-04, FP-07, FP-10, FP 11, FP-12, and FP-14) will reduce the level of impact to less than significant for the Crotch's bumble bee; in this APM, these same measures are being extended to include the Monarch butterfly, which was not addressed in the HCP or ITP.	PG&E to implement BAHCP and ITP measures	

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APM BIO-3	**Foothill Yellow-legged Frog.** Applicable measures from PG&E's BAHCP, including FP-01 through FP-08, FP-10 through FP-17, and AMM Wetland-2 (Tables 5.4-9 and 5.4-10) also will minimize impacts to FYLF. All special-status amphibians encountered in the work areas will be reported to the project biologist or PG&E Environmental staff and allowed to leave the work area in accordance with ITP FEIR APM BIO-2 (Table 5.4-12).	PG&E to implement applicable measures from the BAHCP	
APM BIO-4	**Northwestern Pond Turtle.** The measures FP-01 through FP-17 from PG&E's BAHCP and AMM Wetland-2 to minimize potential impacts to CRLF and wetlands also will minimize impacts to Northwestern pond turtle (Tables 5.4-9 and 5.4-10).	PG&E to implement measures from the BAHCP	
APM BIO-5	**Nesting Birds.** PG&E will implement FP-01 through FP-18 from PG&E's Bay Area O&M HCP as well as ITP FEIR APM BIO-6 to avoid and minimize impacts to nesting birds (Tables 5.4 9 and 5.4-12). As both helicopter and drone use are proposed for this project, the established nest buffers will include vertical buffers based on the horizontal ground buffers presented in Nesting Birds: Species-Specific Buffers for PG&E Activities (Appendix B6).	PG&E to implement measures from the Bay Area O&M HCP and ITP FEIR	
APM BIO-6	**San Francico Dusky-footed Woodrat.** Measures FP-01 through FP-17 from the BAHCP (Table 5.4-9) also will reduce impacts to dusky-footed woodrat. Any woodrat nests encountered in the work areas during covered activities will be reported to the project biologist or PG&E Environmental staff and individuals, if found, will be allowed to leave the work area (ITP FEIR APM BIO 2) (Table 5.4-12). If active nests are identified and cannot be avoided, PG&E will implement the dismantling and relocation measures described in Attachment D of Appendix B3.	PG&E to implement measures from the BAHCP	
MM BIO-1b	**Crotch's Bumble Bee Avoidance and Minimization**. For areas where suitable Crotch's bumble bee habitat is identified, Crotch's bumble bee individuals are identified, or potential habitat exists as determined by CDFW, PG&E will develop a Crotch's Bumble Bee Survey, Impact Avoidance, and Mitigation Plan and submit the plan to CPUC and CDFW. Methodologies and results of the habitat assessment will be included in the plan. The plan will outline additional survey needs, such as overwintering or colony active period surveys, and any additional appropriate avoidance and minimization measures beyond those already accepted. If take is unavoidable, a 2081(a) MOU/ITP will be developed and appropriate mitigation, as approved by CDFW, will be implemented.	Implement Crotch's Bumble Bee Survey, Impact Avoidance, and Mitigation Plan during construction activities	

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	Ground disturbing activities that occur in suitable habitat during the colony active period of Crotch's bumble bee will include CDFW-approved methodology and avoidance measures, including but not limited to the following: *Colony Active Period Season Surveys*: If a Crotch's bumble bee nest is identified during surveys or during ground disturbance of vegetation removal activities, PG&E shall establish a 50-foot no disturbance buffer around each nest or as otherwise determined based on the ITP/MOU. Buffers shall remain in place until the nest has senesced or project activities are complete. To determine if a nest has senesced, the qualified biologist shall monitor the nest for senescence in late summer and fall in accordance with methodology provided in the ITP/MOU. Nest senescence can typically be denoted after the presence of reproductives (gynes and males) are observed. If there has been no nest activity after the above conditions are met, the no disturbance buffer may be removed. If Crotch's bumble bees, overwintering site, or nest sites are detected**, ITP FEIR APM BIO 2** shall be implemented, which requires protection of special status wildlife species encountered. Should an active nest or overwintering site be discovered, PG&E shall implement **ITP FEIR APM BIO-3** to avoid sensitive areas and **ITP FEIR APM BIO-5** to exclude construction activities to ensure species protection. The qualified biologist(s) will remain onsite throughout the duration of activities to ensure that impacts are avoided in accordance with **O&M ITP-6.4**. Documentation and reporting of Crotch's bumble bee habitat assessments, bee observations, overwintering sites, and/or nesting sites shall be conducted in accordance with **O&M ITP-6.8, -6.10**, and **ITP FEIR APM BIO-2**. Observations will be submitted to CNDDB in accordance with **O&M ITP-6.8**. Other avoidance or mitigation measures as outlined in the MOU/ITP will be implemented as determined by CDFW in the MOU/ITP.		
MM BIO-1c	**Monarch Avoidance.** *Overwintering sites*: PG&E shall implement **ITP FEIR APM BIO-3** to avoid sensitive areas, and **ITP FEIR APM BIO-5** to exclude construction activities to ensure species protection. *Milkweed Plants:* If milkweed species are observed, **AMM Plant-01**, which prohibits herbicide use, **AMM Plant-04**, which requires barriers to minimize disturbance, and **O&M ITP-5.12**, which requires delineation and avoidance of	Implement Monarch avoidance measures during construction activities	

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	sensitive habitat features, will be implemented. If milkweed species cannot be avoided, the plants will be inspected for signs of eggs (undersides of leaves), larva, signs of herbivory, and presence of frass. If evidence of eggs, larva, or larval use is found, **ITP FEIR APM BIO-2** shall be implemented, which requires protection of special status wildlife species encountered, and the plant will be avoided until October 1. If no evidence of eggs, larva, or larval use is found, **AMM Plant 05, -06, and -07** will be implemented.		
MM BIO-1d	**Northwestern Pond Turtle Avoidance.** If adult or juvenile northwestern pond turtles are present, the qualified biologist(s) will remain onsite throughout the duration of activities to ensure that impacts are avoided in accordance with **O&M ITP-6.4.** Any northwestern pond turtle adults or juveniles that are present will be allowed to leave the area on their own volition. If it is not possible to allow the animal to leave the work area on its own, the qualified biologist(s) will relocate it to the nearest suitable habitat out of harm's way. If northwestern pond turtle is formally listed as federally threatened or endangered, any take or handling would only be authorized under the context of the appropriate permits from USFWS. If northwestern pond turtle is present, and project activities are scheduled to occur April 1 through August 31 (when females are searching for suitable nest sites), the qualified biologist will monitor turtle overland activities for nesting behavior and the presence of nesting sites. If nesting behavior is suspected, a buffer of 300 feet will be implemented around any overland activities conducted by the turtle(s). The buffer may be modified by the qualified biologist, if appropriate, due to factors such as fencing and intervening barriers. The biological monitor will have authority to stop work and implement appropriate buffers in accordance with **O&M ITP 5.3 and -5.12**. The qualified biologist will implement the buffer based on their observations, habitat presence, and known life history of the species, to protect nesting behavior and potential nesting sites. This buffer shall be maintained, and no work shall be allowed, from the onset of observed nesting behavior to spring of the following year, to allow eggs to develop and young to hatch. If some work is necessary within that appropriate buffer, the qualified biologist will determine whether the specific work activities can safely be conducted, and if so, will monitor the work. If the biologist determines, through surveys and monitoring, that the nest has hatched or has been predated, work may proceed in the area. If mechanized vegetation removal must be conducted in potential nesting site habitat during the nesting season, CDFW will be contacted for further guidance if the species has not been	Implement northwestern pond turtle avoidance measures during construction	

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	federally listed; and USFWS will be contacted for further guidance if the species has been federally listed. Documentation, reporting, and submittal to CNDDB of northwestern pond turtle observations and potential nesting sites shall be conducted in accordance with **O&M ITP 6.8, 6.10,** and **ITP FEIR APM BIO-2**. Potential nesting habitat will be avoided during future activities in accordance with **ITP FEIR APM BIO-3**.		
MM BIO-5a	**Tree Trimming and Removal Requirements.** Trimming and removal of trees shall be conducted in accordance with the International Society of Arboriculture (ISA) American National Standards Institute (ANSI) A300 Tree Care Standards and ISA's Pruning Best Management Practices and overseen by an ISA Certified Arborist. The ISA Certified Arborist will evaluate trees that may be impacted by the Project and determine which trees can be retained and which trees shall be removed. Trees would only be proposed for removal if they would interfere with construction work areas or access safety, utility structures, trimming of the tree branches or roots would be severe enough to impact tree health and result in tree decline, trees are considered a safety hazard to structures or personnel, or retention of the tree would not be in compliance with CPUC General Order 95 for vegetation clearance around powerlines.	ISA Certified Arborist oversight and documentation of recommendations prior to and during construction and restoration	
Cultural Resources			
APM CUL-1	**Workers Environmental Awareness Program.** This training will be administered by a qualified cultural resource professional either as a standalone training or as part of the overall environmental awareness training required by the project and may be recorded for use in subsequent training sessions. No construction worker will be involved in field operations without having participated in the worker environmental awareness program, which will include, at a minimum: ▪ A review of archaeology, history, precontact, and Native American cultures associated with historical resources near the project ▪ A review of applicable local, state, and federal ordinances, laws, and regulations pertaining to historic preservation ▪ A discussion of procedures to be followed in the event that unanticipated cultural resources are discovered during implementation of the project ▪ A discussion of disciplinary and other actions that could be taken against persons violating historic preservation laws and PG&E policies ▪ A statement by the construction company or applicable employer agreeing to abide by the Worker Education Program, PG&E policies, and other applicable laws and regulations	PG&E to implement training program during construction activities	

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APM CUL-2	**Discovery of Unanticipated Cultural Resources.** If unanticipated cultural resources are identified during construction, the following procedures will be initiated: ▪ All ground-disturbing construction activities within 100 feet of the discovery will halt immediately. ▪ The construction crew will protect the discovery from further disturbance until a qualified archaeologist has assessed it. ▪ The construction supervisor will immediately contact the project environmental inspector and the PG&E cultural resource specialist. ▪ The PG&E cultural resources specialist will coordinate with the state lead officials, as appropriate. If the discovery can be avoided or protected and no further impacts will occur, then the resource will be documented on DPR 523 forms, and no further effort will be required. If the resource cannot be avoided and may be subjected to further impacts, qualified personnel will evaluate the significance of the discovery in accordance with the state laws outlined previously; personnel will implement data recovery or other appropriate treatment measures, if warranted. A qualified historical archaeologist will complete an evaluation of historic period resources, while evaluation of precontact resources will be completed by a qualified archaeologist specializing in California prehistoric archaeology. Evaluations may include archival research, oral interviews, and/or field excavations to determine the full depth, extent, nature, and integrity of the deposit.	PG&E to report discoveries to project environmental inspector and PG&E cultural resource specialist	
APM CUL-3	**Unanticipated Discovery of Human Remains.** If human remains or suspected human remains are discovered during PG&E construction, work within 100 feet of the find will stop immediately and the construction supervisor will contact the PG&E cultural resources specialist, who meets the Secretary of Interior's Standards for archaeology. Upon discovery, the Coroner Division of the Alameda County Sheriff's Office will be contacted for identification of human remains. The Coroner has 2 working days to examine the remains after being notified. If the remains are Native American, the Coroner must notify the NAHC of the discovery within 24 hours. The NAHC then will identify and contact a Most Likely Descendant (MLD). The MLD may make recommendations to the landowner or representative for the treatment or disposition, with proper dignity, of the remains and grave goods. When proper consultation has occurred, a procedure that may include the preservation, excavation, analysis, and curation of artifacts and/or reburial of those remains and associated artifacts will be formulated and implemented.	PG&E to report discovery to PG&E cultural resources specialist	

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	If the remains are not Native American, the Coroner will consult with the archaeological research team and the lead agency to develop a procedure for the proper study, documentation, and ultimate disposition of the remains. If a determination can be made as to the likely identity – either as an individual or as a member of a group – of the remains, an attempt should be made to identify and contact any living descendants or representatives of the descendant community. As interested parties, these descendants may make recommendations to the owner or representative for the treatment or disposition, with proper dignity, of the remains and grave goods. Final disposition of any human remains or associated funerary objects will be determined in consultation between the landowner and the MLD.		
Geology and Soils			
APM GEO-3	**Appropriate Design Measures Implementation.** Potentially problematic subsurface conditions during project construction include soft or loose soils that could be susceptible to liquefaction, especially at and in the vicinity of stream or river crossings. Where soft or loose soils are encountered during design studies or construction, appropriate measures will be implemented to avoid, accommodate, replace, or improve soft or loose soils. Such measures may include the following: ▪ Over excavating soft or loose soils and replacing them with non-expansive engineered fill. ▪ Increasing the density and strength of soft or loose soils through mechanical vibration and compaction. Treating soft or loose soils in place with binding or cementing agents.	PG&E to implement design measures during construction activities	
Greenhouse Gas Emissions			
APM GHG-1	**PG&E Minimize Gas Emissions.** PG&E will implement the following to minimize GHG emissions: ▪ If suitable park-and-ride facilities are available in the project vicinity, construction workers shall be encouraged to carpool to the job site. ▪ The Applicant shall develop a carpool program to the job site. ▪ On-road and off-road vehicle tire pressures shall be maintained to manufacturer specifications. Tires shall be checked and re-inflated at regular intervals. ▪ Demolition debris shall be recycled for reuse to the extent feasible. ▪ The contractor shall use line power instead of diesel generators at all construction sites where line power is available.	PG&E to implement greenhouse gas minimization measures	

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	▪ The contractor shall maintain construction equipment per manufacturing specifications. ▪ Minimize unnecessary construction vehicle idling time. The ability to limit construction vehicle idling time will depend on the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm-up times following start-up that limit their availability for use following start-up. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The project will apply a "common sense" approach to vehicle use, so that idling is reduced as far as possible below the maximum of 5 consecutive minutes allowed by California law; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Construction supervisors will include briefings to crews on vehicle use as part of preconstruction conferences. Those briefings will include discussion of a "common sense" approach to vehicle use.		
APM GHG-2	**PG&E Minimize SF6 Emissions**. PG&E will implement the following to minimize SF6 emissions: ▪ Incorporate Moraga Substation modifications into PG&E's systemwide SF6 emission reduction program. ▪ Require that new breakers at Moraga Substation, as applicable, have a manufacturer's guaranteed maximum leakage rate of 0.5 percent per year or less for SF6. ▪ Maintain substation breakers in accordance with PG&E's maintenance standards. ▪ Comply with CARB Early Action Measures as the policies become effective.	SF6 minimization measures are implemented as approved	
Hazards, Hazardous Materials, and Public Safety			
APM HAZ-1	**Development and Implementation of Hazardous Material and Emergency Response Procedures.** PG&E will implement construction controls, training, and communication to minimize the potential exposure of the public and site workers to potential hazardous materials during all phases of project construction. Construction procedures that will be implemented include worker training appropriate to the worker's role, and containment and spill control practices in accordance with the Stormwater Pollution Prevention Plan (SWPPP) (APM HYD-1).	PG&E to implement response procedures for all phases of project construction	
APM HAZ-2	**Emergency Spill Supplies and Equipment.** Materials will be available on the project site during construction to contain, collect, and dispose of any minor spill.	PG&E to implement emergency spill supplies and equipment	

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	Oil-absorbent material, tarps, and storage drums will be available on the project site during construction and will be used to contain and control any minor releases of oil. If excess water and liquid concrete escape during pouring, they will be directed to adjacent lined and bermed areas, where the concrete will dry and then be transported for disposal per applicable regulations.		
APM HAZ-3	**Shock Hazard Safety Measures.** All authorized personnel working on site, during either construction or operations and maintenance, will be trained according to PG&E standards. Training will be implemented prior to construction by PG&E or construction contractor safety managers. A record of when the safety training occurred, the safety manager delivering the training and who attended will be stored by the contractor and available for review by PG&E and the CPUC as requested. Training will include identifying electrical hazards, establishing safe distances from the lines, deenergizing lines where appropriate, and use of personal protective equipment such as arc flash-resistant apparel. The public will be excluded from work areas. When power lines are energized during construction and operation, they are suspended in the air at the requisite ground clearance distance that avoids shock or arc flash hazard to the public.	PG&E to implement training program and safety measures during construction activities	
APM HAZ-4	**Worker Environmental Awareness Training Program.** A worker environmental awareness training program (WEAP) will be developed and implemented prior to construction. The WEAP program will be established to communicate environmental concerns and appropriate work practices to all construction field personnel. The training program will emphasize site specific physical conditions to improve hazard prevention and will include a review of the SWPPP, which also will address spill response and proper best management practice (BMP) implementation. The WEAP program will be provided separately to CPUC staff prior to construction. If it is necessary to store chemicals, they will be managed in accordance with all applicable regulations. Safety data sheets will be maintained and kept available onsite, as applicable.	PG&E to implement training program during construction	
APM HAZ-5	**Potentially Contaminated Soil or Groundwater.** Where there is known potential of contaminated soil in the area based on review of databases of hazardous materials and sites, soil sampling will be conducted in project areas prior to or upon commencement of construction. Soil that is known (based on testing prior to or upon commencement of construction) or suspected of being contaminated (based on visual, olfactory, or other evidence identified during construction) and is removed during trenching or excavation activities will be segregated. These segregated soils will require testing and investigation procedures to be supervised by a qualified person, as appropriate, to meet state and federal	PG&E to implement soil and groundwater testing	

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	regulations before disposal at a non-PG&E facility that is licensed to handle the soil based on contaminants identified from test results. If the soil is taken to a PG&E spoils facilities, the soil will be tested, handled, and disposed of in accordance with applicable state and federal regulations. Appropriate handling, transportation, and disposal locations will be determined based on results of the analyses. If the soil is contaminated above hazardous levels, it will be contained and disposed of offsite at a licensed waste facility. In addition, results will be provided to contractor and construction crews to inform them about soil conditions and potential hazards. The location, distribution, and frequency of the sampling locations where there is a known potential of contaminated soil in the area will be determined during final design with the intent to provide adequate representation of the conditions in the construction area. Groundwater is not expected to be encountered during construction. However, if it is encountered, groundwater will be collected during construction, contained, tested, and disposed of in accordance with all applicable regulations. Containment will be done by pumping the groundwater into holding tanks. Noncontaminated groundwater will be released to the stormwater drainage system in the area (with prior approval). If the groundwater is contaminated, it will be disposed of at a facility that accepts liquid hazardous waste, in accordance with applicable regulations.		
MM HH-1a	**Prepare and Implement a Soil Management Plan.** Prepare and Implement a Soil Management Plan. A Soil Management Plan shall be developed and implemented for construction of the proposed Project. The objective of the Soil Management Plan is to provide procedures PG&E shall undertake in the event unanticipated contaminated soil is encountered. The Soil Management Plan shall also include requirements for documenting and reporting incidents of encountered contaminants, such as documenting locations of occurrence, sampling results, and reporting actions taken to dispose of contaminated materials. The Soil Management Plan shall be submitted to the CPUC 30 days prior to the start of construction for review and approval. The Soil Management Plan shall provide detailed processes for the following: ▪ Procedures for when unanticipated contaminated soil is encountered. ▪ Reporting and notification for contaminated soil. ▪ Description of soil testing, which shall include the collection of shallow soil samples and analyses for contamination to verify presence or absence of unknown soil contamination and the collection of soil samples at locations at and near areas of known contamination.	Implement Soil Management Plan during construction activities	

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	▪ Procedures and protocols for safe storage, stockpiling, and disposal of any contaminated soils. If contaminants are encountered, PG&E shall notify all schools, daycare facilities, elderly housing, and residences within 250 feet of the contaminated soil within 24 hours of discovery and immediately remove the contaminated soil.		
MM HH-6a	**Prepare and Implement a Helicopter Safety Plan.** A Helicopter Safety Plan shall be developed and implemented during construction of the Project should PG&E anticipate flying suspended loads into airspace over residential or occupied areas. The Plan shall document PG&E's compliance with FAA regulation 14 CFR § 133.33. The objective of the Helicopter Safety Plan is to define procedures PG&E shall undertake in the event that helicopters carrying suspended loads fly within the airspace over any residential or occupied areas. The Helicopter Safety Plan shall be submitted to the CPUC for review and approval 90 days prior to helicopters flying suspended loads within airspace over any residential or occupied areas. The Helicopter Safety Plan shall include the following: ▪ A flight plan for each proposed operation with suspended loads that would occur in airspace over residential or occupied areas and a detailed chart depicting the flight routes and altitudes. ▪ Evidence that PG&E has coordinated these flight plans with the responsible FAA Flight Standards office and obtained approval for the operation from that office. ▪ Each flight must be conducted at an altitude, and on a route, that will allow external loads to be released, and the rotorcraft landed, in an emergency without hazard to persons or property on the surface. ▪ A defined process for PG&E to pay for temporary housing for all residents required to be temporarily relocated due to helicopter operations that require carrying of suspended loads over residences. PG&E must document its coordination with residents, including providing at least 60 days' notice of the need to relocate, the time period for relocation, and PG&E's commitment to pay for all relocation costs.	Implement Helicopter Safety Plan during construction activities within the airspace over any residential or occupied area	
Hydrology and Water Quality			
APM HYD-1	**Implement a SWPPP.** Following project approval, PG&E will prepare and implement an SWPPP, which will address erosion and sediment control concerns to minimize construction impacts on surface water quality, as well as reduce the potential for stormwater runoff to impact adjacent properties. The SWPPP will be designed specifically for the hydrologic setting of the proposed	PG&E to implement a SWPPP during construction activities	

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	project (surface topography, storm drain configuration, and other factors). Implementation of the SWPPP will help stabilize graded areas and reduce erosion and sedimentation. The SWPPP will propose BMPs that will be implemented during construction activities. Erosion and sediment control BMPs – such as straw wattles, erosion control blankets, and silt fences – will be installed in compliance with the SWPPP. Suitable soil stabilization BMPs will be used to protect exposed areas during construction activities, as specified in the SWPPP. During construction activities, BMPs will be implemented to reduce exposure of construction materials and wastes to stormwater. BMPs will be installed following manufacturer's specifications and according to standard industry practice. Erosion and sediment control measures may include the following: ▪ Straw wattle, silt fence, or gravel bag berms ▪ Trackout control at all entrances and exits ▪ Stockpile management ▪ effective dust control measures ▪ Good housekeeping measures ▪ Stabilization measures, which may include wood mulch, gravel, and seeding Identified erosion and sediment control measures will be installed prior to the start of construction activities and will be inspected and improved as required by the CGP. Temporary sediment control measures intended to minimize sediment transport from temporarily disturbed areas such as silt fences or wattles will remain in place until disturbed areas are stabilized. In areas where soil is to be temporarily stockpiled, soil will be placed in a controlled area and will be managed using industry-standard stockpile management techniques. Where construction activities occur near a surface waterbody or drainage channel, the staging of construction materials and equipment and excavation spoil stockpiles will be placed and managed in a manner to minimize the risk of sediment transport to the drainage. Any surplus soil will be transported from the site and disposed of in accordance with federal, state, and local regulations. The SWPPP will identify areas where refueling and vehicle-maintenance activities and storage of hazardous materials will be permitted, if necessary. A copy of the SWPPP will be provided to CPUC for recordkeeping. The plan will be maintained and updated during construction as required by the CGP.		
APM HYD-2	**Worker Environmental Awareness Program.** The worker environmental awareness program will communicate environmental issues and appropriate work practices specific to project components to all field personnel. These will	PG&E to implement training program during construction activities	

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	include spill prevention and response measures and proper BMP implementation. A copy of the worker environmental awareness program record will be provided to CPUC for recordkeeping at the completion of the project. An environmental monitoring program also will be implemented to ensure that the plans are followed throughout the construction period for project components.		
APM HYD-3	**Project Site Restoration.** As part of the final construction activities, PG&E will restore all removed curbs and gutters, repave, and restore landscaping or vegetation, as necessary.	PG&E to implement restoration measures	
Noise			
APM NOI-1	**General Construction Noise Management. (*Superseded by MM N-1a and MM N-1b)*.** PG&E will employ standard noise-reducing construction practices such as the following: ▪ Comply with manufacturer's muffler requirements on all construction equipment engines and ensure exhaust mufflers are in good condition. ▪ Turn off construction equipment when not in use, where applicable. ▪ Locate stationary equipment, construction staging areas, helicopter landing zones, and construction material areas as far as practical from sensitive receptors. ▪ Include noise control requirements for construction equipment and tools in specifications provided to construction contractors to the maximum extent practicable, including performing all work in a manner that minimizes noise. ▪ PG&E will provide written notice at least 1 week prior to planned construction activities to all sensitive receptors and residences within approximately 500 feet of construction sites, staging yards, access roads, and areas of drone use, and within approximately 1,000 feet of helicopter landing zones. PG&E also will post notices in public areas, including recreational use areas, within approximately 500 feet of the project alignment and construction work areas. The announcement will state approximately where and when construction will occur in the area, including areas of helicopter construction. Notices will provide tips on reducing noise intrusion – for example, by closing windows facing the planned construction. PG&E will identify a public liaison to respond to concerns of neighboring receptors during construction, including residents, about construction noise disturbance. PG&E also will establish a toll-free telephone number for receiving questions or concerns during construction and develop procedures for responding to callers. Contact information for	PG&E will employ standard noise-reducing construction practices	

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	reaching the PG&E public liaison officer by telephone or in person will be included in the notices and also posted conspicuously at the construction sites. PG&E will respond to questions or concerns received.		
APM NOI-2	**Noise Minimization with Portable Barriers**. Compressors and other small stationary equipment used during construction of PG&E project components will be shielded with portable barriers if appropriate and if located within approximately 200 feet of a residence.	PG&E to implement portable barriers if located within 200 feet of a residence	
APM NOI-3	**Noise Minimization with Quiet Equipment.** Quiet equipment will be used during construction of PG&E project components whenever possible (for example, equipment that incorporates noise control elements into the design, such as quiet model compressors or generators, can be specified).	PG&E to utilize quiet equipment when possible	
APM NOI-4	**Noise Minimization through Direction of Exhaust**. When in proximity to noise-sensitive uses, equipment exhaust stacks and vents will be directed away from those noise-sensitive uses where feasible.	PG&E to direct equipment exhaust stacks and vents away from noise-sensitive uses	
APM NOI-5	**Nighttime Noise Disruption Minimization through Residential Notification.** In the event that nighttime construction is necessary for PG&E project components– for instance, if certain activities such as underground line splicing need to continue to completion – affected residents will be notified in advance by mail, personal visit, or door-hanger, and will be informed of the expected work schedule.	PG&E to provide advanced notification of nighttime construction to affected residences	
APM NOI-6	**Helicopter Noise Minimization Measures.** PG&E will select helicopter landing zones that are located at least 500 feet from occupied residences where feasible. Nearby residences will be notified at least 1 week ahead of helicopter operations to minimize concerns regarding helicopter noise.	PG&E to select helicopter landing zones at least 500 feet from occupied residences, where feasible, and provide advanced notification at least 1 week prior to helicopter operations	
APM NOI-7	**Noise Minimization Equipment Specification.** PG&E will specify general construction noise reduction measures that require the contractor to ensure that all equipment is in good working order, adequately muffled, and maintained in accordance with the manufacturers' recommendations.	PG&E to implement general construction noise reduction measures	
APM NOI-8	**Incorporate Vibration Assessment into Project Construction. (*Superseded by Mitigation Measure MM N-2a*)** Where pile driving may be required adjacent residential or commercial uses, final design efforts and construction methods will consider soils and hammer type and use when assessing potential for vibration. Vibration monitoring will be conducted during pile driving activities, or in response to a complaint, to confirm that vibration levels are within acceptable guidelines. Site-specific minimization measures such as modifying the type of	PG&E to conduct vibration monitoring during pile driving activities	

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	hammer, reducing hammer energy, modifying hammer frequency, or using vibratory pile driving will be implemented as necessary to reduce the potential effects of off-site vibration. Monitoring may be reduced or eliminated when it has been established that these measures, if required, are effective for the site conditions.		
MM N-1a	**General Construction Noise Management.** (Supersedes APM NOI-1). PG&E will employ standard noise-reducing construction practices including the following: ▪ Comply with manufacturer's muffler requirements on all construction equipment engines and ensure exhaust mufflers are in good condition. ▪ Turn off construction equipment when not in use. ▪ Locate stationary equipment, construction staging areas, helicopter landing zones, and construction material areas as far as practical from sensitive receptors. ▪ Include noise control requirements for construction equipment and tools in specifications provided to construction contractors to the maximum extent practicable, including performing all work in a manner that minimizes noise. ▪ Shield portable and stationary noise sources (e.g., generators, pumps) and staging areas from adjacent noise-sensitive receptors by an engine shroud, enclosure, temporary sound walls, or acoustic blankets. Where feasible, sound walls or acoustic blankets shall have a height of no less than 8 feet, a Sound Transmission Class (STC) of 27 or greater, and a surface with a solid face from top to bottom without any openings or cutouts. ▪ To mitigate noise from metal plates covering trenches, rubber padding or other noise-dampening materials shall be installed beneath the plates to reduce noise and vibrations caused by vehicles passing over them, and from construction activities, particularly during nighttime work.	PG&E to implement standard noise-reducing construction practices	
MM N-2a	**Vibration Assessment and Control.** (Supersedes APM NOI-8). PG&E shall limit pile driving to occur only between the hours of 8:00 a.m. and 4:00 p.m., to prevent levels that could disrupt sleep by exceeding the annoyance threshold of 80 VdB at residential structures. Where sonic pile drivers may be used within 40 feet of a historic structure or impact pile drivers within 115 feet of a historic structure, or if an impact pile driver is used within 60 feet of an occupied structure, PG&E shall prepare a Vibration Control Plan prior to the commencement of construction activities, meeting the following requirements: ▪ The Vibration Control Plan shall be prepared by a licensed structural engineer and shall include all reasonable methods required to minimize vibration such that monitored vibration levels do not exceed 0.5 inches per second Peak Particle Velocity. These methods may include limiting the	Implement Vibration Control Plan during construction activities	

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	extent of pile driving activity near occupied structures and using alternative installation methods for piles. Final design efforts and construction methods will consider soils and hammer type and use when assessing potential for vibration. ▪ Site-specific minimization measures such as pre-drilling pilot holes to reduce resistance, modifying the type of hammer, reducing hammer energy, modifying hammer frequency, or using vibratory pile driving will be implemented as necessary to reduce the potential effects of off-site vibration. ▪ Vibration monitoring will be conducted during pile driving activities, or in response to a complaint, to confirm that monitored vibration levels do not exceed 0.5 inches per second Peak Particle Velocity. ▪ If threshold levels are exceeded, vibration monitoring reports shall document the site-specific minimization measures implemented to reduce or limit the duration and level of the impact and shall document actions taken to adjust construction activities in response to field conditions. ▪ The Vibration Control Plan shall also establish baseline conditions at potentially affected structures, provide shoring design to protect buildings and structures from damage, document damage at the conclusion of vibration generating activities, and include recommendations for repair if necessary. Monitoring for vibration may be reduced or eliminated when it has been established that these measures, if required, are effective for the site conditions.		
Paleontological Resources			
APM PAL-1	**Retain a Qualified Paleontological Principal Investigator.** A Paleontological Principal Investigator who meets the standards set forth by the Society of Vertebrate Paleontology will be retained to ensure that all APMs related to paleontological resources are properly implemented during construction. The Paleontological Principal Investigator will have a master's degree or Ph.D. in geology or paleontology, have knowledge of the local paleontology, and be familiar with paleontological procedures and techniques.	Paleontological Principal Investigator is retained during construction activities	
APM PAL-2	**Worker Environmental Awareness Training.** Training on paleontological resources protection will be administered for excavation deeper than 3 feet below ground surface (bgs) at all work locations. Training may be provided by PG&E as a stand-alone training, or it may be included as part of the overall	Training program is implemented for work locations with excavation occurring deeper than 3 feet below ground surface	

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	environmental awareness training as required by the Project. The training will include the following: ▪ The types of fossils that could occur at the Project site ▪ The types of lithologies in which the fossils could be preserved ▪ The procedures that should be taken in the event of a fossil discovery ▪ Penalties for disturbing paleontological resources		
APM PAL-3	**Paleontological Resource Monitoring for Select Construction Activities.** A paleontological monitor will be present to monitor for paleontological resources in areas where Siesta Formation (Tst), Orinda Formation (Tor), glauconitic sandstone (Ta), and Pleistocene alluvial and fluvial deposits (Qpaf) occur at the surface and where excavation is greater than 3 feet deep and, for excavations involving drilling or augering, where a drill diameter that is larger than 3 feet will be used. Monitoring is not required if this work occurs in soil or sediment that is imported or previously disturbed. Locations of activities requiring monitoring where previously disturbed or imported soil or sediment is not known are: ▪ Structure foundation excavation greater than 3 feet bgs using a drill that is 3 feet or greater in diameter at the following locations: RN1, RS1, RN2, RS2, RN5, RS5, RN6, RS6, RN7, RS7, RN8, RS8, RN15, RS15, RN21, RS21, TN28, TS28, and TN29. ▪ Vault installation within Park Boulevard beginning at its intersection with Wellington Street continuing within Park Boulevard Way to the Oakland X Substation property. The paleontological monitor will be able to: (1) recognize fossils and paleontological deposits and deposits that may be paleontologically sensitive; (2) take accurate and detailed field notes, photographs, and locality coordinates; and (3) document Project-related ground-disturbing activities, their locations, and other relevant information, including a photographic record. Monitoring at these locations can be reduced if, after initial monitoring, it is determined the Project's Paleontological Principal Investigator that there is a low likelihood of identifying paleontological resources.	Paleontological monitor is present and document monitoring activities as approved	
APM PAL-4	**Unanticipated Paleontological Discovery.** If significant paleontological resources are discovered during PG&E's construction activities, the following procedures will be followed: ▪ Stop work immediately within 100 feet of the fossil find. ▪ Contact the designated Project inspector and PG&E Cultural Resource Specialist (CRS) immediately. ▪ Protect the site from further impacts, including looting, erosion, or other human or natural damage.	PG&E to implement discovery procedures	

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	▪ Arrange for a qualified paleontologist to evaluate the discovery. If the discovery is determined to be significant, PG&E will implement measures to protect and document the paleontological resource. Work may not resume within 100 feet of the find until approved by the paleontologist and CRS. ▪ Obtain permission from the landowner before treating the fossils. Curate all fossils discovered in an appropriate repository. A qualified paleontologist will be notified to review the need for paleontological monitoring during subsequent ground-disturbing activities with the potential to affect paleontologically sensitive sediments at that location. The qualified paleontologist will be responsible for the reassessment of paleontological sensitivity upon the receipt of additional information from ongoing excavations, which may result in reducing or increasing the amount of monitoring required.		
Recreation			
MM REC-5a	**Coordinate with managers of recreation facilities to restore damaged assets**. If property owner agreements or agency permits stipulate usage and how to address damage, the conditions specified in any agreement or permit condition shall be applied in lieu of this mitigation measure. In the absence of such agreements or permit conditions, PG&E will identify damages and make appropriate repairs or compensation.	PG&E to notify and coordinate with recreation facilities immediately following any damage caused by construction activities	
MM T-1a	**Traffic Management Plan and Safe Transport.** The TMP shall establish methods for minimizing construction effects on roadways, transit services, pedestrian facilities, and bicycle facilities; and address staging areas, haul routes, types of equipment anticipated to be used, timing of heavy equipment and material deliveries, workers and equipment parking, potential street or lane closures, alternative routes and detours, signing, lighting, temporary relocation or closure of bus stops, and traffic control device placement to minimize disruption and ensure safe and efficient traffic flow. The TMP shall include measures for directing delivery and haul trucks away from sensitive receptor locations (e.g., residential neighborhoods, schools) and congested intersections during construction, where reasonably feasible. The TMP shall identify routes that minimize driving of delivery and haul trucks through sensitive receptor locations as feasible. The TMP shall also establish the timing and method for notifying emergency service providers regarding Project activities and notifying the public, including wayfinding signage, regarding full or partial closure of public streets, detours, and alternative routes for various travel modes including relocated or closed bus stops.	PG&E to implement Traffic Management Plan measures during construction	

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	The Traffic Management Plan shall include a separate section entitled "Safe Transport." This section shall define the following components: • A list of all residences (by street address) that could have access blocked by construction equipment or activities and that have no alternate or secondary routes for entry or egress (see EIR Table 2.3-6). • A defined outreach effort (stating the frequency, method, and intended audience for outreach, such as the general public or a targeted community) that identifies one or more contacts within each household to define likely transport needs during the construction timeline, including consideration of family size and age (and whether car seats or pet carriers are needed), disability or special needs, and timing of typical daily ingress and egress needs. Based on the result of the outreach efforts, PG&E shall prepare transport plan and provide all requested transport during the construction activity. A written communication plan to be provided to each affected household prior to the start of each week's construction that describes the anticipated daily construction activities, the specific location and type of activity, and the resulting constraints on household vehicle use.		
Tribal Cultural Resources (TCR)			
APM TRC-1	**Undiscovered Potential Tribal Cultural Resources.** Undiscovered Potential Tribal Cultural Resources. After stopping work and following the procedure for determining eligibility in APM CUL-2, in the event that a prehistoric or protohistoric site is identified and cannot be avoided, PG&E will contact the CPUC to identify an appropriate tribe with whom to consult on treatment. If no agreement can be reached for mitigation after discussions with the California Native American tribe(s) or it is determined that the tribe(s)' preferred mitigation is not feasible, PG&E will implement one of the example mitigation measures listed in Public Resources Code Section 21084.3(b), or other feasible mitigation.	PG&E cultural resources specialist to coordinate with CPUC	
MM TCR-2a	**Native American Monitoring.** Confederated Villages of Lisjan Tribal monitor(s) will have the authority to halt and redirect work should any archeological or tribal cultural resources be identified during monitoring. If archeological or Tribal cultural resources are encountered during ground disturbing activities, work within 100 feet of the find must halt so that a qualified archaeologist can assess its potential significance. Monitoring may be reduced or discontinued at the discretion of the CVLN monitor, in consultation with the lead agency, as warranted by soil conditions such as encountering bedrock, sediments being	CVLN monitor onsite at their discretion. If a CVLN monitor does not arrive onsite when needed, the Applicant will notify the CPUC and work will be allowed to continue.	

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	excavated are fill, or negative findings during the first 50 percent of the entire area of ground disturbance. If monitoring is reduced to spot checking, spot checking shall occur when ground disturbing activities moves to a new location within the Project site and/or when ground disturbance will extend to depths not previously reached (unless those depths are within bedrock).		
MM TCR-2b	**Unanticipated Discovery of Tribal Cultural Resources.** If cultural resources of Native American origin are identified during grading or excavation of the proposed Project, all ground disturbing activities within 100 feet shall cease until an archeologist has evaluated the nature and significance of the find as a cultural resource and a representative from the Confederated Villages of Lisjan Nation is consulted by the government agency. The archeologist will stake the area of discovery, placing stakes no more than 10 feet apart, forming a circle having a radius of no less than 100 feet from the point of discovery. If the entity in consultation with the consulting Tribe(s), determines that the resource is a tribal cultural resource and thus significant under CEQA and/or the Tribe, the entity shall retain a qualified archeologist and a Tribal monitor, at the Applicant's expense, to prepare a mitigation plan, which shall be implemented by the entity in accordance with state guidelines and in consultation with the consulting Tribe. The mitigation plan shall include avoidance of the resource or, if avoidance of the resource is not feasible, the plan shall outline appropriate treatment of the resource in coordination with the consulting Tribe and, if applicable, a qualified archeologist. Examples of appropriate mitigation for tribal cultural resources include, but are not limited to, protecting the cultural character and integrity of the resources, protecting traditional use of the resources, protecting the confidentiality of the resources, or heritage recovery.	Ground disturbing activities halted within 100 feet; preparation and implementation of a mitigation plan	
MM TCR-2c	**Unanticipated Discovery of Human Remains.** If human remains are encountered during construction and/or other ground disturbing activities, all work within 100 feet of the remains should be redirected and the County Coroner notified immediately. At the same time, an archaeologist shall be contacted to assess the situation. If the human remains are of Native American origin, the Coroner must notify the Native American Heritage Commission (NAHC) within 24 hours of this identification. The NAHC will identify a Native American Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and any associated funerary objects. There shall be no pictures taken or testing done on the Native American human remains. All bone, if not identifiable as human or animal, shall be treated as human remains and the appropriate protocols followed. The archaeologist shall record information, as appropriate and in accordance with	All work redirected within 100 feet; County Coroner notified; report submitted to CPUC	

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	the recommendations of the MLD and/or Tribal representative. Upon completion of the archeologist's assessment, a report should be prepared documenting methods and results, as well as recommendations regarding the treatment of the human remains and any associated archaeological materials. The report should be submitted to CPUC, the project proponent, the NWIC and the consulting Tribe. Tribal representatives will rebury the Native American human remains and associated funerary objects with the appropriate dignity, either; in accordance with the recommendations of the MLD if available or in the Project vicinity at a location agreed upon between the Tribe and the consultant, where the reburial would be accessible to Tribal members in perpetuity and would not be subject to further disturbance. The discovery and reburial is to be kept confidential and secure to prevent any further disturbance.		
Utilities and Service Systems			
MM US-1a	**Underground Utilities Accident Response Plan.** The plan shall include: ▪ A list of emergency contacts for all utility providers within the Underground Power Line segment ROW and for the Cities of Oakland and Piedmont emergency response providers. This information shall be retained onsite where underground construction is taking place. ▪ Description of actions to be taken by PG&E's construction personnel in the event of an accident affecting each different type of underground utility (e.g., natural gas, water, telecommunications, sewer). ▪ Description of notification processes to the affected community in the event of an unanticipated service outage. ▪ Description of the service areas covered by existing underground utilities so notification to the community can be effectively communicated. ▪ Documentation of coordination with all utility owners with facilities in the immediate vicinity of proposed Project construction, including their review of PG&E's construction plans and a description of any protective measures or compensation to be implemented to protect affected utilities.	Underground Utilities Accident Response Plan to be implemented during construction	
Wildfire			
APM WFR-1	**Construction Fire Prevention Plan.** The plan will be fully implemented throughout the construction period, and it will include the following at a minimum: ▪ The purpose and applicability of the plan ▪ Incorporation of the requirements in PG&E's current Utility Standard TD-1464S for Preventing and Mitigating Fires While Performing PG&E Work ▪ Responsibilities and duties for compliance	PG&E to implement construction fire prevention plan during construction	

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	▪ Preparedness training and drills
	▪ Procedures for fire reporting, response, and prevention that include:
	  ▪ Identification of daily site-specific risk conditions
	  ▪ The tools and equipment needed on vehicles and on hand at sites
	  ▪ Reiteration of fire prevention and safety considerations during tailboard meetings
	  ▪ Daily monitoring of the Red-Flag Warning System with appropriate restrictions on types and levels of permissible activity
	▪ Coordination procedures with federal, state, and local fire officials and emergency responders, including notifications of temporary lane or road closures
	▪ Crew training, including the construction fire prevention practices described in APM WFR-2
	▪ Method(s) for verifying that all plan protocols and requirements are being followed
	PG&E or its contractor will be responsible for training Project personnel and enforcing all provisions of the PG&E Construction Fire Prevention Plan, as well as performing other duties related to fire detection, prevention, and suppression for the Project. Construction activities will be monitored to ensure implementation and effectiveness of the plan.		

APM WFR-2	**Wildfire Prevention Practices.** PG&E will implement the following fire prevention practices at active construction sites and during maintenance activities: ▪ Existing PG&E personnel conducting maintenance on the Project are trained on the PG&E Utility Standard TD-1464S for Preventing and Mitigating Fires While Performing PG&E Work or relevant current standard and will follow the standard in regard to training, preparation, communication methods and means, observations of and alerts concerning weather conditions including NWS events, and PG&E's work restrictions and fire mitigation required for elevated PG&E Utility FPI ratings (R4, R5, or R5-Plus). ▪ Construction personnel will be trained in fire-safe actions, including PG&E's current Utility Standard for Preventing and Mitigating Fires While Performing PG&E Work, Wildfire Prevention Contract Requirements, and the Project's PG&E Construction Fire Prevention Plan concerning initial attack, firefighting, and fire reporting. Construction personnel will be trained and equipped to extinguish small fires to prevent them from growing into more serious threats.	PG&E to implement wildfire prevention training and procedures during construction and maintenance activities	

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	▪ Construction personnel will have fire suppression equipment on all construction vehicles per PG&E Utility Standard TD-1464S and will be required to park vehicles away from dry vegetation. Water tanks and/or water trucks will be sited or available at active project sites for fire protection during construction. ▪ All construction crews and inspectors will be provided with radio and cellular telephone access that is operational in all work areas and access routes to allow for immediate reporting of fires. All fires will be reported to the fire agencies with jurisdiction in the area upon discovery of the ignition. ▪ While performing stationary ground-level jobs or activities from which a spark, fire, or flame may originate (for example, welding, cutting, grinding), all flammable material (for example, grass, leaf litter, dead or dying tree) must be removed down to the mineral soil around the operation for a minimum of 10 feet. ▪ PG&E General Requirements for Wildfire Mitigation (R1 to R3) apply for PG&E work areas located farther than 5 miles from an FIA when the nearest FIA has an elevated FPI rating (R4, R5, or R5-Plus), except during NWS Red-Flag Warnings and Fire Weather Watch events when R5 mitigations would apply. ▪ For work within an FIA, during Red-Flag Warning and Fire Weather Watch events, as issued by the NWS, and elevated PG&E Utility FPI rating (R4, R5, or R5-Plus), all construction activities will refer to the current PG&E Standard TD-1464S and related requirements such as PG&E Wildfire Prevention Contract Requirements, Attachment 1 – Wildfire Mitigation Matrix, and Attachment 2 – Wildfire Risk Checklist Fire Mitigations. With the increased potential fire risk of R4, additional water resources are required, and a working fire watch is assigned to be able to continue work as long as the weather conditions are evaluated to ensure it remains safe to continue work. For R5 and R5-Plus ratings, measures beyond R1 to R4 levels include posting a dedicated fire watch at the jobsite, making available a trailer-mounted water tank or alternative water delivery method at the jobsite, and modifying the fuel sources surrounding the jobsite. All planned work is suspended during an R5-Plus fire rating. During all emergency work being performed for an R5-Plus fire rating, personnel must have a PG&E Safety and Infrastructure Protection Team on standby or a 300-gallon water ten-der available. Use of heavy equipment (blades, dozers, skid steers, excavators, back hoes), construction hot work, and electrical equipment work (including tasks related to conductors, pole, and		

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	overhead equipment from which a spark, fire, or flames may originate) are allowed with the R5 mitigations in place but not allowed during R5-Plus conditions.		
MM WF-1a	**Prepare Emergency Evacuation Plan**. A Construction Coordination Emergency Evacuation Plan that defines the following information: ▪ Documentation of coordination with each affected jurisdiction, and incorporation of each jurisdiction's requirements. ▪ Identification and mapping of all designated evacuation routes defined by jurisdictions in the Project area. Evacuation route signage shall be installed and updated on a regular basis as construction activity moves. This signage would identify "critical" and "non-critical" evacuation routes. Critical evacuation routes are defined as evacuation routes that, if partially or entirely closed, would lead to an increase in evacuation times or blockage (dead-end). Non-critical evacuation routes are defined as short (less than 0.25 miles) evacuation routes that, if partially or entirely closed, would not affect evacuation times or road capacity. The evacuation routes shall be based on net evacuation time for affected populations considering factors including, but not limited to, each jurisdiction's identified evacuation routes, which will be determined in coordination with each applicable jurisdiction. Affected populations will also be determined in coordination with each applicable jurisdiction based on the proximity of residents to affected evacuation routes. ▪ Identification of all roads that will support any type of construction activity (including definition of construction vehicle access routes to all work areas). Maps and descriptions shall define the activity that would occur on each affected road (e.g., access only, parking, crane set-up, guard structure installation) and map the specific extent of each activity at an appropriate level of detail, including identification of all residential driveways. ▪ Provide for CPUC review of draft notification letters, which, pursuant to MM N-1b, will be provided to all affected residents a least one month prior to the start of construction, including all residents, emergency service responders, and other affected local agencies that would use affected roads in an evacuation situation. Notification shall include information on detours and schedule of road closures and shall be coordinated with requirements of other mitigation measures (including MM N-1b). ▪ PG&E shall provide information of closures to the City of Oakland to connect with Genasys Protect to provide real-time information on Project-related road closures to the public.	PG&E to implement Emergency Evacuation Plan during construction	

CONSTRUCTION MITIGATION MEASURES and APMs

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MM WF-1b	**Limit Construction Requiring Full Road Closures.** In work areas requiring full road closures on critical evacuation routes (identified in the construction coordination emergency evacuation plan prepared under MM WF-1a) of any length of time, full closures shall occur between December 1 and March 31, when the risk of fire is generally the lowest. During National Weather Service Red-Flag Warnings, Fire Weather Watch events, and PG&E Fire Potential Ratings of R4, R5, or R5-Plus, full road closures shall be prohibited until the warning or event has been lifted or expires. When construction is occurring on critical evacuation routes and partial road closures are required, at least one lane shall always remain open. The lane(s) to remain open shall be the shortest route to the closest evacuation route, arterial road, or other major roadway. Work is permitted year round on partial road closure segments. On non-critical evacuation routes (identified in the emergency evacuation plan prepared under MM WF-1a) with full closures, work is permitted year-round. Detours for these road closures shall have signage, and first responders shall be notified in accordance with the construction coordination emergency evacuation plan.	Construction in work areas requiring full road closures on critical evacuation routes occurs between December 1 and March 31 and no full road closures during National Weather Service Red-Flag Warnings and Fire Weather Watch events; detours have signage	