

Appendix A

Incidental Take Permit Application

2081 INCIDENTAL TAKE PERMIT APPLICATION
for
Pacific Gas and Electric Company's
California Desert Gas Pipeline Operation and Maintenance
Program

Prepared for:



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LIST OF ATTACHMENTS

Attachment A: Programmatic Biological Opinion for Maintenance Activities on the Pacific Gas and Electric Company Gas Pipeline System in the California Desert (6840, CA-063.50) (1-8-99-F-71)

1 – APPLICANT INFORMATION

Pacific Gas and Electric Company (PG&E) is submitting this application for a long-term Section 2081 Incidental Take Permit (ITP) to the California Department of Fish and Wildlife (CDFW), pursuant to California Fish and Game Code Sections 2081(b) and 2081(c), and California Code of Regulations, Title 14, Division 1, Subdivision 3, Chapter 6, Article 1, Section 783.2, for the potential incidental take of two threatened species—Mohave desert tortoise (*Gopherus agassizii*) and Mohave ground squirrel (*Xerospermophilus mohavensis*)—during routine operation and maintenance (O&M) activities on PG&E’s gas transmission pipelines in the Southern California desert. PG&E requests that the 2081 ITP remain valid for 30 years.

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2 – SPECIES TO BE COVERED

The species to be covered by the Section 2081 ITP are the Mohave desert tortoise (hereafter referred to as “desert tortoise”) and Mohave ground squirrel, which are both listed under the California Endangered Species Act (CESA) as threatened.

3 – DESCRIPTION OF PLAN FOR WHICH PERMIT IS SOUGHT

3.0 BACKGROUND AND PURPOSE

PG&E operates an extensive system of interconnecting natural gas pipelines within the Mojave Desert. The majority of this gas pipeline system was constructed in the 1950s, prior to the enactment of the federal Endangered Species Act (FESA) and the CESA. As PG&E operated and maintained its system through the years that followed, many consultations with the United States (U.S.) Fish and Wildlife Service (USFWS) and agency agreements with the Bureau of Land Management (BLM) were made to allow PG&E to construct its work while maintaining compliance with the FESA. In 2000, PG&E coordinated with the BLM on the development of a programmatic approach to comply with the FESA. PG&E was issued incidental take authorization for desert tortoise by the USFWS through Section 7 consultation with the BLM in 2000, and since that time, PG&E has successfully followed the measures set forth in the USFWS Programmatic Biological Opinion (PBO) for Maintenance Activities on the Pacific Gas and Electric Company Gas Pipeline System in the California Desert. Therefore, FESA compliance for O&M activities are covered under the PBO. The PBO is provided in Attachment A: Programmatic Biological Opinion for Maintenance Activities on the Pacific Gas and Electric Company Gas Pipeline System in the California Desert.

To ensure that O&M activities comply with the CESA, PG&E is submitting this long-term 2081 ITP application to authorize incidental take of desert tortoise and Mohave ground squirrel.

PG&E will continue to implement the compliance program described in this permit application during routine O&M activities on PG&E's southern California desert pipeline system.

The area under consideration for this permit application is located within the Mojave Desert region and encompasses facilities in San Bernardino and Kern counties, as depicted in Figure 1: Program Overview Map. The program area boundary is generally located from the City of Tehachapi, east to the California border approximately 15 miles southeast of Needles, and from the City of Ridgecrest, south to the City of Victorville. The PG&E gas pipeline system in this region consists of the following high-pressure transmission pipelines—Line 300 A, Line 300 B, Line 311 and 372, Line 313, and Line 314—and several distribution feeder mains (DFMs), customer lines, and associated facilities that transport natural gas throughout California. In the Mojave Desert, natural gas delivery is made almost exclusively to commercial, industrial, and electric generation customers with some minor residential customers. The gas transmission system within the Mojave Desert consists solely of gas pipelines; the rights-of-way (ROWs); areas up to 0.25 mile beyond the ROWs, where needed; and their related equipment and facilities. Maintenance and repair of the system is required by California Public Utilities Commission (CPUC) General Order 112-E, which incorporates the U.S. Department of Transportation (DOT) regulations provided by Title 49, Part 192 (Transportation of Natural and Other Gas by Pipeline) of the Code of Federal Regulations.

3.1 DESCRIPTION OF ACTIVITIES

O&M activities are divided into four categories—activities that do not result in new surface disturbance, activities that could result in new surface disturbance, activities that could extend outside of pipeline ROW corridors, and emergency repair activities. Specific work and/or activity areas include the following:

- pipelines and all related facilities, including compressor stations and valve lots;
- access roads;
- cathodic protection systems;
- telecommunication facilities; and
- ROWs, including areas up to 0.25 mile beyond the ROWs, where needed.

The following subsections provide descriptions of routine maintenance activities and identify current methods used to repair, maintain, and operate gas pipelines and related facilities. Other methods that do not result in greater impacts may be used in the future. The equipment, labor, and extent of surface disturbance provided in the following subsections are estimates and vary depending on the nature of the activity, its location, and the available technology. The activities range from those that are performed on a daily basis to those that are performed occasionally and for longer durations (i.e., weeks or months).

The amount of disturbance varies each year depending on the type and number of O&M activities scheduled. Over the past 16 years, the number of O&M activities conducted per year ranged from a minimum of one activity to a maximum of 51 activities. During this time frame, an average of 14 O&M activities were typically conducted per year. The minimum and maximum amount of temporary and permanent disturbance associated with O&M activities over the past 16 years ranged from 0.5 to 37.2 acres and 0.01 to 2.7 acres, respectively. The average temporary and permanent disturbance associated with O&M activities during this 16-year time frame was approximately 9.7 and 0.9 acres per year, respectively. To account for the variable number and type of O&M activities conducted per year, PG&E anticipates that up to 40 acres of temporary disturbance to desert tortoise habitat and up to 10 acres of disturbance to Mohave ground squirrel habitat would occur each year. In addition, up to 2 acres of permanent disturbance to either desert tortoise or Mohave ground squirrel habitat would occur each year. These estimates were derived from examining the amount of disturbance that occurred over the past 16 years and anticipating future maintenance needs for the pipelines. Historical data indicated that O&M activities in the program area typically result in less than 6.15 and 0.12 acres of temporary and permanent disturbance, respectively. PG&E anticipates that the minimal number of O&M activities required per year would typically result in less than the estimated 40 acres of temporary disturbance to desert tortoise habitat, 10 acres of disturbance to Mohave ground squirrel habitat, and 2 acres of permanent disturbance. On occasion, the amount of temporary or permanent disturbance that occurs annually may exceed these estimates.

3.1.0 Activities on Existing Facilities that Do Not Result in New Surface Disturbance

A variety of routine maintenance activities occur daily along different portions of the pipeline system. Workers typically use pick-up trucks equipped with tools or instruments appropriate for the given task.

Pipeline Patrols

Compliance with federal and state pipeline safety regulations requires periodic aerial and ground patrols of the gas transmission lines. Aerial patrols are conducted on a quarterly basis using either fixed-wing aircraft or helicopters. On a quarterly to annual basis, PG&E conducts patrols of the pipelines and associated facilities on foot, with all-terrain vehicles, and/or by using small trucks or sport utility vehicles (SUVs) on existing access and pipeline patrol roads¹. Pipeline patrol crews generally consist of one or two workers. The purpose of the patrols is to observe surface conditions above and adjacent to the pipeline ROW, to conduct leak detection, to ensure that pipeline markers are clearly visible, and to record conditions that might affect safety and operation. Ground patrols are also used to read gas meters.

Valve Inspections and Lubrication

Valves are located at multiple locations along all pipelines, wherever pressure/flow must be controlled or diverted to another gas line or facility. PG&E inspects the valve sites along the pipelines and tests the valves several times per year. Light trucks are used on existing access and pipeline patrol roads. Valves are often located inside vaults or fenced areas and can be accessed

¹ Existing access roads are for accessing the ROW, and existing patrol roads are located along the pipelines within the ROW.

by a two- or three-member maintenance crew. Crews lubricate valves as necessary, using a gun pump to apply either oil or grease.

Integrity Management

PG&E inspects cathodic protection every 2 months, or as indicated by the integrity management team, by checking the electric current at various Electronic Test System (ETS) stations and Cathodic Test Stations (CTSs) along the line and at anode bed sites. Anode beds are part of the cathodic protection system and are usually spaced 0.25 to 10 miles apart along the pipeline. ETS stations and CTS facilities are typically placed between 0.25 mile and 0.5 mile apart along the pipeline. Simple testing instruments are used. Typical surveys take approximately 10 days to complete and include the length of the pipeline within the region. The sites are accessed with light trucks using existing access and pipeline patrol roads. Crews conducting integrity management activities typically consist of one or two workers.

Telecommunication Site Inspections

Telecommunication sites, which are used to monitor gas pipeline functions remotely, are inspected monthly, but inspections may be performed more frequently to maintain the system. The sites are accessed with light trucks using existing access and pipeline patrol roads. Fixed-wing aircraft and helicopters could also be used for inspecting sites in remote locations. Telecommunication site inspections typically require one to two workers.

Road Surface Maintenance

Road surface maintenance occurs regularly (i.e., yearly and as needed) to keep roads in a passable and safe condition. Typically, road surface maintenance is accomplished using a motor grader, backhoe, or front loader without altering the road profile. Because all vehicles are required to stay on existing roads, this activity does not result in new surface disturbance. The length of the road that is subject to surface maintenance in any given year varies due to weather and the degree of washouts or damage. A large percentage of this damage is caused by erosion and flash flooding. Road surface maintenance typically involves two to four workers or contractors and could require up to 60 days per year to complete. An average year could require maintenance of approximately 50 miles of patrol roads and 30 miles of access roads.

3.1.1 Activities that Result in New Surface Disturbance

Some O&M activities could result in minor, moderate, or major surface disturbance. These activities may include, but are not limited to, the following:

- ROW and access road clearing and repair;
- telecommunication site maintenance;
- below-grade pipeline inspections;
- valve and pipeline excavation and recoating;
- integrity management, including installation of anodes and ETS and CTS facilities;
- hydrostatic (strength) testing; and
- pipeline segment replacement.

The amount of habitat disturbance varies for each type of activity, as shown in Table 1:
Anticipated Surface Disturbance from O&M Activities. The surface area affected will depend on

the nature of the needed repairs and may result in temporary or permanent impacts. Temporary impacts are defined as those impacts that are short in duration and typically result from ground disturbance or vegetation clearing. Permanent impacts are those impacts that result in long-term effects to the environment. Permanent impacts typically result in loss of habitat through permanent clearing from the installation or expansion of structures and facilities.

Activities that result in new surface disturbance are described in the following subsections. Not all of the activities described are anticipated to occur every year. The frequency and amount of disturbed surface area are estimates that are based on past O&M activities. The actual frequency and amount of disturbance will vary depending on the location of the activity and the nature of the repair needed.

Right-of-Way and Access Road Repair

This activity includes repair work extending beyond the existing roadbed and berm and results in new surface disturbance. ROW and access road repair is often required after heavy storms due to erosion. At times, repairs are also needed as a result of damage caused by off-road vehicles. Typically, this activity involves a motor grader, water truck, backhoe, and/or cat-loader. The surface area affected will depend on the nature of the needed repairs and may result in temporary or permanent disturbance. ROW and access road repairs typically involve two workers or contractors. The duration of the repair would vary depending on the type and length of repairs needed.

If a culvert is replaced or substantial alterations to drainages are required during maintenance activities, PG&E would obtain the necessary permits (e.g., a U.S. Army Corps of Engineers Clean Water Act Section 404 Nationwide Permit or a CDFW Section 1600 Lake and Streambed Alteration Agreement). Based on historical data, ROW and access road repairs may require less than 0.04 acre of temporary and less than 0.01 acre of permanent disturbance per year. Dust control during ROW and access road repair would require approximately 158,000 gallons of water per year.

Erosion Control

PG&E employs many erosion control techniques to preclude pipeline washout, gully development, and sedimentation of local drainages. Standard erosion control measures could include the creation of diversion channels and terraces to reduce erosion and runoff, installation of ditch plugs in ditches to prevent washout, and implementation of other soil stabilization practices (e.g., jute mats, wood mulching, straw mulch, and other best management practices [BMPs]). The erosion control technique chosen depends on the situation and the condition of the site. Standard erosion control measures temporarily disturb between 1,100 and 20,000 square feet and permanently disturb between 20 and 200 square feet. PG&E can use permanent articulating cement ground mat systems (i.e., erosion control or “Ercon” mats) and stone erosion control techniques when other biomechanical methods cannot be used or when repairs are made to existing stone or Ercon mat structures. PG&E uses the minimum area necessary to accomplish an erosion control activity if biomechanical methods cannot be used or if repairs to existing stones, gravel, or rocks are needed. In addition, existing rip-rap structures can require repair or replacement in areas subject to high flow that may expose pipelines. PG&E minimizes vegetation removal or grading to the extent practical when performing erosion control work.

Table 1: Anticipated Surface Disturbance from O&M Activities

Activity	Approximate Temporary Surface Disturbance² (square feet)	Approximate Permanent Surface Disturbance (square feet)	Approximate Temporary Surface Disturbance (acres)	Approximate Permanent Surface Disturbance (acres)	Estimated Frequency² (times per year)
Right-of-Way and Access Road Repair	<1742	<435	<0.04	<0.01	Variable
Erosion Control ³	1,100 - 20,000	20 - 200	0.03 - 0.46	<0.01	Variable
Span Painting/Air-to-Soil Corrosion Protection	200 - 3,500	0	<0.01 - 0.08	0	Variable
Below-Grade Pipe and Coating Inspection	200 - 25,000	0	<0.01 - 0.57	0	10
Internal Pipeline Inspection	5,000 - 10,000	0	<0.25	0	5 - 10
Installation of Pig Launcher/Receiver Facilities	92,500	30,000	2.12	0.69	4 - 6
Valve/Pipeline Excavation and Recoating	100 - 12,000	0	<0.01 - 0.28	0	0 - 25
Installation of Magnesium Anodes	40 - 60	<435	< 0.01	<0.01	0 - 10
Installation of Deep-Well Anodes	1,000 - 14,000	<435	0.02 - 0.32	<0.01	0 - 6
Installation of Flex Anodes	20 - 1,000	0	<0.01 - 0.02	0	<1
Installation or Replacement of Horizontal Anode Beds	1,000 - 14,000	0	0.02 - 0.32	0	<1
ETS Station and CTS Installations	2,540 - 2,560	0	0.06	0	5 - 150
Thermoelectric Generators (TEGs)	2,500 - 6,000	40 - 100	0.06 - 0.14	<0.01	0 - 5
Valve Replacement/Automation	22,500 - 25,000	2,500	0.52 - 0.57	0.06	0 - 10

² The frequency and amount of disturbed surface areas are estimates based on past O&M activities. Therefore, ranges of temporary and permanent disturbance are provided for most O&M activities. Based on historical disturbance estimates and anticipated future maintenance needs, PG&E anticipates that up to 40 acres of temporary disturbance to desert tortoise habitat, up to 10 acres of disturbance to Mohave ground squirrel habitat, and up to 2 acres of permanent disturbance would occur each year. As previously discussed, PG&E anticipates that most years would require a minimal number of O&M activities and that disturbance resulting from O&M activities would typically be lower than these anticipated disturbance estimates. The actual frequency and amount of disturbance would vary depending on the location of the activity and the nature of the repair needed. Not all of the activities listed are anticipated to occur every year.

³ These activities are dependent on weather. During years with greater storm activity, more erosion control and ROW repair work are anticipated.

Activity	Approximate Temporary Surface Disturbance² (square feet)	Approximate Permanent Surface Disturbance (square feet)	Approximate Temporary Surface Disturbance (acres)	Approximate Permanent Surface Disturbance (acres)	Estimated Frequency² (times per year)
Hydrostatic Testing	10,000 - 221,000	0	0.23 – 5.07	0	Variable
Pipeline Segment Replacement	20,000 - 300,000	0	0.46 – 6.89	0	Variable
HPR Deactivation	100 - 200	0	< 0.01	0	0 - 10

Water Diversion Channels

Pipeline crossings within water features that have flowing water require the implementation of water diversion techniques to minimize the potential for impacts to water quality and create a dry and safe work area. Because the majority of water features in the program area are ephemeral, work would most likely be conducted when the features are dry and diversion would not be necessary. If surface flow is absent or minimal, an open cut would likely be the preferred method. However, Line 314 crosses the Mojave River at three locations where water flow is possible. In the rare event that work needs to occur in a channel when there is perceptible flow, the following methods could be employed:

- flume crossings – water in the work area would be conveyed through a flume (pipe); or
- dam and pump crossings – the water upstream of the work area would be temporarily dammed, pumped from the work area, and discharged downstream.

Telecommunication Site Maintenance

A supervisory control and data acquisition (SCADA) system monitors pipeline functions remotely and transmits pipeline operational information to PG&E's operations offices via PG&E's utility telecommunication system. Periodic vehicle or helicopter access is required to check the telecommunication facilities, replace batteries, conduct minor maintenance, or make adjustments to the facilities or components. PG&E performs this activity approximately once per month. In the event of major storm damage, reconstruction of the facility or replacement of a component is required as soon as weather permits. A temporary staging area may be required for major maintenance or storm damage repairs. The staging area may be located either next to the site within a temporary work area or at a distant location (for helicopter transport of workers and materials). Temporary work areas will generally be located within PG&E's ROW or other disturbed areas. Major maintenance or storm damage repairs typically take one to two days to complete and require two to five workers.

Span Painting/Air-to-Soil Corrosion Protection

The painting of spans involves excavation around the air-to-soil transition in areas where the pipeline exits the soil and spans a terrain feature. The excavation is used to expose the pipeline and generally extends approximately 0 to 4 feet into the soil. The pipeline coating is then removed from this area and replaced or patched in place. The exposed pipeline span is then sandblasted and painted. The pipeline may be enclosed in scaffolding and tenting material to protect the pipeline after sandblasting and during the painting process. This process requires an excavator, pick-up trucks, painting equipment, and scaffolding. Span painting and corrosion protection activities typically take six weeks to complete and require six workers. Span painting and corrosion protection activities may require less than 0.1 to 0.08 acre of temporary disturbance per year. This operation is conducted on an as-needed basis. The air-to-soil transition is backfilled and restored to approximately pre-activity contours, and erosion protection materials may be installed.

Below-Grade Pipe and Coating Inspections

Cathodic protection surveys could reveal an isolated pipeline segment with low pipe-to-soil electrical potentials that would require excavation of a portion of the pipe for visual inspection.

This activity typically involves pick-up trucks, a flatbed truck/trailer or dump truck with a trailer, a backhoe, a trailer-mounted compressor, barricades, and plastic fencing. Pipe inspections typically require two to four workers, two to 10 days to complete, and temporarily disturb less than 0.57 acre per year. Dust control during pipe inspections would require approximately 32,700 gallons of water per year. Excavations required for pipe inspections would typically encompass an approximately 20-foot by 40-foot area within an approximately 50-foot by 200-foot work area. PG&E anticipates that approximately 10 of these inspections would be required annually.

Internal Pipeline Inspections

PG&E conducts an annual internal pipeline inspection. Pipelines are inspected above ground by electronically measuring the integrity of the pipeline coating. Using technology such as magnetic flux leakage, PG&E inspects the pipeline with sensors to measure pipe corrosion, cracks, and indentations. During these procedures, the pipeline remains in operation. If problems are indicated, the pipeline is inspected internally using a pipeline inspection device (i.e., a pipeline inspection gauge, which is often referred to as a “pig”) that is inserted into the pipeline at aboveground pig launcher/receiver facilities, which are typically located in fenced yards. The pig travels throughout the length of the pipeline, employing robotically operated cameras and sensors to assess the condition of the pipeline. Inspection of pipelines by this method is known as “pigging” a pipeline or an in-line inspection. In-line inspections are typically conducted once every seven years and require four weeks of preparation, 24 hours for the inspection, and two weeks for demobilization. Inspection crews of one to two workers would access work areas by using small trucks or SUVs on existing access and pipeline patrol roads. Excavation, soil stockpiling, staging, and the use of construction vehicles disturb an approximately 50-foot by 50-foot work area for each inspection; however, this activity is typically conducted within the existing, fenced station. Dust control during pigging activities or in-line inspections would require approximately 1,000 gallons of water per year.

Once this data is analyzed, the inspection crew conducts a calibration test (i.e., excavates a hole over or alongside the pipeline to allow the line to be examined and to provide room for workers to perform maintenance on the pipeline). A calibration test is conducted at two or three locations along the pipeline to confirm that the results are accurate. The length of the exposed pipeline depends on the extent of the indicated anomalies. Excavations required for calibration tests would typically encompass an approximately 20-foot by 40-foot area within an approximately 50-foot by 800-foot work area. If corrosion cannot be repaired, pipeline segment replacement is necessary, which is discussed in further detail in the Pipeline Segment Replacement section that follows. Calibration tests typically require two to four workers, take five to 10 days to complete per test, and temporarily disturb less than 0.25 acre of pipeline ROW per excavation. Dust control during calibration testing would require approximately 263,000 gallons of water per year. PG&E anticipates that five to 10 of these excavations would be required annually.

Installation of Pig Launcher/Receiver Facilities

Permanent pig launcher/receiver facilities are not currently installed at Lines 311 and 313. These facilities would be installed within or adjacent to existing fenced facilities when possible; however, existing fenced areas may need to be permanently expanded by approximately

0.69 acre to accommodate the new facilities. Four to six new pig launcher/receiver facilities would be installed on these lines.

Equipment required for installing pig launcher/receiver facilities includes a flatbed truck/trailer or dump truck with a trailer, a backhoe, excavator, a trailer-mounted compressor, a truck-mounted crane, a side boom, a water truck, welding trucks, crew trucks, barricades, and safety fencing. For each installation, a work area measuring approximately 300 feet by 300 feet is required for soil excavation, soil stockpiling, and the use of construction vehicles. Excavation depths would range from 3 to 10 feet. An approximately 50-foot by 50-foot temporary storage area (TSA) could also be required to store equipment. Pig launcher/receiver installations typically require 12 to 15 workers, and take six to eight weeks to complete. Dust control during pig launcher/receiver installation would require approximately 635,700 gallons of water per year. PG&E anticipates that four to six of these installations will be required. Maintenance and upgrades to these facilities would occur annually and on an as-needed basis.

Valve/Pipeline Excavation and Recoating

Should a below-grade inspection reveal failing pipeline coating, excavation and recoating of the pipeline segment will be necessary. In addition to pick-up trucks, this activity typically involves a flatbed truck/trailer or dump truck with a trailer, a backhoe, a trailer-mounted compressor, a portable sand-blaster, a water truck, barricades, and safety fencing. Excavation and recoating usually requires four to five workers. PG&E anticipates that the temporarily disturbed area would be less than 0.28 acre, and the time required to complete this activity would depend on the length of the pipeline that needs repair. Pipeline excavations would require approximately 50-foot by 200-foot work areas, and valve excavations would require approximately 40-foot by 40-foot work areas. Excavation depths would range from 3 to 10 feet. Each excavation and recoating activity would be completed in two to four weeks, and PG&E anticipates that 0 to 25 of these excavations would be required annually. Dust control during valve/pipeline excavation and recoating would require approximately 349,200 gallons of water per year.

Installation of Magnesium Anodes

Cathodic protection surveys may reveal an isolated pipeline segment with low pipe-to-soil electrical potentials, requiring installation of magnesium anodes to mitigate the potential for corrosion. In addition to pick-up trucks with equipment specific to the task, this activity will involve a flatbed truck/trailer or dump truck with a trailer, a water truck, and a backhoe. Installation of magnesium anodes typically require three workers for one to three days. PG&E anticipates that 0 to 10 installations of magnesium anodes would be necessary each year. Each installation would require one approximately 20-foot by 100-foot work area and could temporarily disturb less than 0.01 acre. The permanent disturbance associated with each installation would include an approximately 5-foot by 5-foot area. Dust control during magnesium anode installation would require approximately 4,200 gallons of water per year.

Installation of Deep-Well Anodes/Thermoelectric Generators

Cathodic protection surveys could reveal a pipeline segment with low pipe-to-soil electrical potentials that would require the installation of deep-well anodes to mitigate the potential for corrosion. Deep-well anode beds typically have an approximately 20-year life span and are abandoned in place when no longer in use, pursuant to local environmental health department

regulations. Installation of deep-well anode beds involves drilling deep ground wells and installing zinc or magnesium bars, platinum anode rods, or ground mats. PG&E uses this installation method where pipelines are exposed to large amounts of induced alternating current, typically from adjacent high-voltage electric transmission lines or where soil conditions dictate. Deep-well anodes are installed 200 to 600 feet below the surface. If a deep-well anode requires permanent, aboveground equipment to generate electricity, a photovoltaic or natural gas-powered TEG would be installed, requiring a 6- to 7-foot-tall fenced area measuring approximately 30 feet by 60 feet and a permanent footprint of less than 0.01 acre. Based on historical data, the installation of deep-well anodes may require less than 0.32 acre of temporary disturbance per year. If an existing electrical circuit is available nearby, no fencing is required as the electrical connection is underground.

Installation requires a truck-mounted drilling rig, a water truck, and pick-up trucks with equipment specific to the task. In addition to a three-person drilling crew, installation typically requires four to five workers, takes two to four weeks to complete, and temporarily disturbs less than 0.11 acre of pipeline ROW for deep-well anode installation and 0.06 acre for TEG installation. Each anode installation would require one approximately 20-foot by 100-foot work area and would permanently disturb, at a minimum, an approximately 5-foot by 5-foot work area. As previously described, anode installations requiring the implementation of TEGs would permanently disturb less than 0.01 acre. Dust control during the installation of deep-well anodes and TEGs would require approximately 28,400 gallons of water per year. PG&E anticipates that 0 to 6 deep-well anodes would be installed annually, and 0 to 5 TEGs would be installed annually.

Installation of Flex Anodes

A flex anode is a cathodic protection device that is installed by trenching next to the pipeline and installing a cathodic lead anode wire over the length of the pipeline needing cathodic protection. Flex anodes can be installed parallel to the pipeline from several thousand feet to several miles. They are typically buried to a depth of 4 to 8 feet using a narrow blade. A trencher and trailer, as well as several utility trucks, are required to install flex anodes. The number of workers and the construction schedule vary depending on the length of the pipeline needing cathodic protection. The installation of flex anodes typically requires two to four workers. Flex anode installations would be conducted within an approximately 10-foot-wide work area along the length of the pipeline. The excavations required to install each flex anode would be conducted within an approximately 20-foot by 20-foot work area. The area disturbed by this activity varies, but typically less than 0.02 acre is temporarily disturbed. This type of maintenance is likely to be needed less than once per year, and each flex anode installation would be conducted in approximately four weeks. Dust control during the installation of flex anodes would require approximately 2,700 gallons of water per year.

Installation or Replacement of Horizontal Anode Beds

Should existing, shallow-depth, cathodic protection units prove incapable of maintaining desirable pipe-to-soil electrical potentials over a long pipeline segment, horizontal anodes will be installed. Horizontal anodes parallel the pipeline at 400 to 1,000 feet from the ROW centerline and are installed at approximately the same depth as the pipeline. In addition to pick-up trucks with equipment specific to the task, this activity will involve a welding truck, a flatbed

truck/trailer or dump truck with a trailer, a backhoe, a lowboy trailer, a tractor cat-loader, and a water truck. Typically, horizontal anode installation requires five workers, takes five to seven days, and temporarily disturbs less than 0.32 acre. Horizontal anode bed installations would be conducted within an approximately 20-foot by 20-foot work area, and these installations would be needed less than once per year. Dust control during horizontal anode bed installation would require approximately 800 gallons of water per year.

Electronic Test System Stations and Cathodic Test Station Installations

ETS stations and CTSs are components of the cathodic protection system. Facilities are installed 0.25 to 0.5 mile apart along pipelines to determine protection system effectiveness by measuring conductivity, and to help crews locate the pipe prior to excavation.

The ETS stations consist of two wires (i.e., leads) that are welded to the pipe; the leads are exposed at the surface inside an approximately 4-foot-tall, 4-inch-diameter plastic tube or valve box. Installation entails exposing a 3- to 5-foot-long section of pipe, attaching the leads with a small weld, and recovering the pipe. During ETS station installation, the pipeline remains in operation. Most sites would be accessible from existing access roads. Where an ETS cannot be accessed from an existing road, workers would access it on foot or by use of small trucks. PG&E would repair or install 5 to 50 ETS stations per year. Each installation typically requires a pick-up truck, one worker, temporarily disturbs less than 0.01 acre, and requires five days to complete. At each installation site, soil excavation, soil stockpiling, and the use of construction vehicles would temporarily disturb an additional work area measuring approximately 50 feet by 50 feet.

CTSs are installed along natural gas transmission pipelines to support pipeline maintenance, specifically cathodic protection of the pipes, which is needed to prevent corrosion and is required pursuant to the Pipeline Safety Improvement Act of 2002. CTS excavations generally measure approximately 10 feet by 10 feet, and the larger work area for temporary staging of excavated soil and equipment can be approximately 30 feet by 30 feet, which includes the approximately 10-foot by 10-foot excavation area. Each CTS is housed within a 3-inch-diameter, orange, plastic pole housing and is connected to the pipe using hand tools. CTS excavations are generally backfilled using a backhoe. The CTS remains permanently in place at an above-grade height of approximately 4 feet. To monitor corrosion over time, corrosion coupons would potentially be installed during CTS installation activities. Equipment and vehicle support for a CTS installation includes one truck with a trailer (to transport a backhoe), one backhoe, and pick-up trucks. CTS installations typically take one to two days to complete, require up to five construction workers, and would be conducted approximately 100 times per year. Dust control during CTS installations would require approximately 800 gallons of water per year.

Valve Replacement/Automation

Valves regulate the flow of gas through the pipeline and enable crews to isolate portions of the pipeline, but they occasionally malfunction or wear out. PG&E replaces valves to allow for the passage of inspection devices (e.g., pigs for pigging or in-line inspections). PG&E replaces faulty valves for operational and public safety reasons. As part of PG&E's ongoing efforts to improve and ensure pipeline system safety, PG&E would automate approximately 14 existing valves in the program area within the next eight years, and upgrade approximately 40 other

valves where automation may not be possible or required. Enhancing or replacing approximately six of the valves per year could include an expansion of existing facilities to accommodate an aboveground valve, several small cabinets for a SCADA system, and an electric service extension. The valves would generally be 7 to 20 miles apart. Prior to replacing or installing valves, a portion of the gas line would need to be blown down (i.e., gas would be evacuated to the atmosphere from the affected section of pipe through a blowdown stack). To minimize the amount of gas discharged into the atmosphere, a technique called cross-compression is used when feasible. Cross-compression moves gas from the line being worked on to an adjacent pipeline, thereby minimizing the amount of discharged gas. Cross-compression activities typically require the use of an area measuring approximately 1 acre. Trailer-mounted compressors, welding trucks, pick-up trucks, and aboveground hoses and pipes are required for cross-compression. Excavation activities are typically not necessary to conduct cross-compression operations.

Valve replacement would occur within the existing station facility corridor. If PG&E replaces a small segment of the pipeline during valve placement or automation, then that pipeline segment needs to be hydrostatically tested, which is described in more depth in the following section. PG&E could replace or automate valves at any time, depending on the weather and operational restrictions related to the need to temporarily shut down the pipeline. Equipment required for replacing or installing valves typically includes a flatbed truck/trailer or dump truck with a trailer, backhoe, a water truck, an excavator, a vacuum excavator, welding trucks, a trailer-mounted compressor, a truck-mounted crane, a side boom, a front-end loader, crew trucks, barricades, and safety fencing. Soil excavation, soil stockpiling, and the use of construction vehicles would require a temporary work area measuring approximately 150 feet by 150 feet. A TSA measuring approximately 50 feet by 50 feet could also be required to store equipment. An expansion of existing fenced facilities could be necessary to accommodate the automation/replacement, which would result in approximately 0.06 acre of permanent disturbance. The number of workers and the construction schedule would vary depending on the number of valves to be replaced or installed. Each valve replacement/automation typically requires six to 13 workers, and takes four to five weeks to complete. PG&E anticipates that 0 to 10 of these replacements/automations would be required annually.

Hydrostatic Testing

PG&E would hydrostatically test all pipeline segments for which a documented hydrostatic test does not exist. Hydrostatic testing assesses the pipeline for strength and leaks. Aside from the tests that PG&E typically conducts before backfilling over a newly replaced pipeline segment, PG&E typically uses water as the test medium during hydrostatic testing, but compressed air or compressed nitrogen gas can sometimes be used for testing short segments or small-diameter pipes (i.e., less than 6 inches). Testing pressure and duration are determined by the pipe size, the pipe specifications, the thickness of the pipe wall, and the elevation. Prefabricated test heads are installed on the section of line to be tested. The section is then filled with water from an available source (e.g., a fire hydrant) or transported to the site by trucks or temporary pipes. Once the pipeline is filled, a hydrostatic pump is used to increase the internal pressure to the designed test pressure, which is typically 1.5 times the system's maximum allowable operating pressure. The amount of water that is used in a hydrostatic test depends on the diameter and length of the pipe being tested.

Upon successful completion of the hydrostatic test, pressure is reduced and the water is expelled from the pipeline using air compressors and cylindrical foam pigs. PG&E only discharges clean water where possible, and the water is not released under pressure. PG&E would obtain any necessary water quality permits, expel and dispose of test water in a manner consistent with local water quality considerations, and implement its water quality BMPs when disposing of test water. PG&E anticipates that it would be able to discharge water to steel liquid storage tanks and/or sewers. Dust control during hydrostatic testing and hydrostatic testing would require approximately 55, 145 to 1.5 million of gallons of water per year. Primary water sources for O&M activities in the program area would include well water from PG&E's existing facilities or private landowners in the area.

Soil excavation, soil stockpiling, and the use of construction equipment at each end of the pipeline would require a temporary work area measuring approximately 20 feet by 50 feet to accommodate work activities. An additional TSA would also be required at each end of the pipeline for material and equipment storage and staging. If a liquid storage tank is used, an approximately 100-foot by 100-foot TSA would be required to store each on-site tank. Equipment required for hydrostatic testing includes a flatbed truck/trailer, a backhoe, water trucks, excavator, welding trucks, compressor, a crane, a side boom, track hoe, generator, grader, trencher, crew trucks, water pump, bulldozer, and aboveground storage tanks.

PG&E anticipates that 0 to 6 hydrostatic tests would be conducted annually over the next five years. Hydrostatic tests are limited to approximately 4-mile pipeline segments that require 10 to 20 acres of disturbance per mile. However, the disturbance required for hydrostatic testing is generally less than 10 acres. Based on previously conducted O&M activities, a typical hydrostatic test requires eight to 10 workers, takes six to eight weeks to complete, and temporarily disturbs 0.23 to 5.07 acres. Although this disturbance estimate is representative of a typical hydrostatic test, the frequency and length of hydrostatic testing would vary annually.

Pipeline Segment Replacement

Pipeline segments are replaced when inspections and assessments indicate the pipeline is in need of replacement due to age or corrosion. Additionally, public safety requirements necessitate replacing sections of pipe for various reasons, including the following:

- to create development alongside the pipeline that results in a change of Class Location⁴;
- to increase the depth of the pipeline below the ground surface;
- to repair pipeline damage due to a third-party construction "dig-in;" or
- to repair pipeline damage due to acts of nature.

In the case of Class Location changes, PG&E must move or replace the pipeline or segments of the pipeline with stronger pipe to comply with U.S. DOT- and CPUC-mandated safety regulations. As the existing pipeline is removed from service for interconnection to the new line, it is blown down. Any gas condensation is captured and removed from the existing pipeline and disposed of in compliance with current regulatory requirements. The existing pipeline is either removed or abandoned in place by filling it with slurry before capping the pipeline. Typically,

⁴ The U.S. DOT uses the term "Class Location" to define levels of population density along a pipeline based on the number of buildings intended for human occupancy within a fixed distance of the pipeline.

the crew cuts and caps the pipeline every 1,000 feet, depending on the location. Slurry could be placed into the abandoned pipeline segments if the pipeline needs to be stabilized. In the event that a pipeline is abandoned in place, PG&E would typically place the new section of pipe as close to the abandoned pipeline as possible and modify any existing easements by expanding their widths or acquiring new easement rights to accommodate the new section of pipeline.

The length of pipe affected would vary, and would depend on the reason for replacement. The minimum length of pipe that would be replaced is approximately 40 feet (i.e., one joint or segment of pipe), although up to 2 miles could be replaced during each replacement effort. Trenching and soil excavation, soil stockpiling, staging, and construction vehicles typically disturb an approximately 100-foot-wide work area, which includes the excavation area. The length of the work area depends on the length of the segment being replaced. A hydrostatic test would also need to be performed on the new pipeline segment. A pipeline segment replacement could occur at any time of year, depending on operational restrictions related to the need to temporarily shut down the pipeline. In addition to pick-up trucks, this activity typically involves a flatbed truck/trailer or dump truck with a trailer, a backhoe, an excavator, a water truck, welding trucks, a trailer-mounted compressor, a truck-mounted crane, a side boom, barricades, and plastic fencing. The replacement of a pipeline segment usually requires 11 to 24 workers and typically takes one to six months to complete. The area disturbed and the time required to complete this activity could vary, depending on the length of the pipeline needing replacement, but typically 0.46 to 6.89 acres are temporarily disturbed as a result of this activity. Although this disturbance estimate is representative of a typical pipeline segment replacement activity, the frequency and length of pipeline segment replacement activities would vary annually. Depending on the length of the pipeline segment being repaired, dust control would require a minimum of 44,900 gallons per year and a maximum of 1.5 million gallons per year..

High-Pressure Regulator Deactivation

High-pressure regulators (HPRs) are valves that reduce the gas pressure in pipelines from transmission pressures to distribution and/or customer feed pressures. HPRs are generally located along gas transmission pipelines in locations where gas service is being supplied to customers. HPR deactivation would involve the excavation of an existing HPR and the subsequent removal or replacement of the HPR and/or its components. Equipment would vary based on the nature of the activity and may involve the use of pick-up trucks, a flatbed truck/trailer or dump truck with a trailer, a backhoe, a trailer-mounted compressor, a portable sand-blaster, a water truck, barricades, and safety fencing. HPR deactivation, removal, or repair usually requires four to five workers and less than 0.01 acre of temporary disturbance. The time required to complete HPR deactivation activities would be approximately one week. PG&E anticipates that 0 to 10 HPR deactivation, removal, and/or replacement activities would be required annually.

3.1.2 Activities that May Extend Outside of Pipeline Right-of-Way Corridors

At times, O&M activities may need to extend outside of the pipeline ROW corridors. Any of the previously mentioned activities could possibly need to extend beyond 0.25 mile of the ROWs. In addition, the creation of temporary staging or laydown areas and equipment stockpile and spoil deposition areas may be needed in certain circumstances. The extent of disturbance outside of the existing pipeline ROW will vary with the activity and depend on the ROW width, topography, layout, and other factors. Typically, less than 0.5 acre outside of a pipeline ROW

will be temporarily disturbed. To the extent possible, previously disturbed areas within the activity sites will be used for temporary staging or laydown areas and equipment stockpile and spoil deposition areas.

3.1.3 Emergency Repair Activities

Emergency work is defined in PG&E's Utility Procedure ENV-8003P-01⁵ as "[a] project or activity which includes but is not limited to emergency repairs to facilities necessary to maintain service essential to the public health, safety or welfare. Emergency repairs include those that require a reasonable amount of planning where the delay of a project or activity results in significant safety or environmental effects. Furthermore, emergency projects include specific actions necessary to prevent or mitigate an emergency." The previously described activities are the same as those conducted for emergency work (i.e., the amount and extent must be the same), with the difference being the timing and urgency of completing the work. Emergency work typically requires immediate repairs and thus an abbreviated environmental review process or no environmental review process. If not pre-screened, emergency work requires post-activity assessments to determine impacts and associated mitigation.

Emergency response actions are not limited to the actual repair of PG&E facilities, but also include preliminary site assessments to understand the extent of the potential problem. Site restoration and other post-emergency response activities could also be required. Emergency response actions are also designed to limit additional potential threats. Most O&M activities are routinely conducted on specific schedules; however, emergencies could require an immediate response from PG&E, and therefore could preclude the implementation of avoidance and minimization measures (AMMs). Emergency repairs could be necessary in the following scenarios:

- to address pipeline leaks or breaks;
- to prevent leaks from occurring in the near future;
- to fix access roads severely damaged by storms or earthquakes; or
- for any other condition that jeopardizes system reliability, property, human health, or the environment.

Emergency response activities could occur throughout the year. The time required for these activities varies with each situation. Hand tools, crew trucks, water trucks, and heavy equipment are typically required. Additional equipment (e.g., dewatering equipment, vacuum trucks, fire-suppression gear, and large earth-moving equipment) could be required for certain activities. The crew size varies according to the size, urgency, and complexity of the job. PG&E's emergency response activities are further described in the following subsections.

Fire Response

Fires could threaten aboveground structures, including pipelines and facilities. They could also damage the protective coating of the pipeline and cause substantial damage to facilities, resulting in the loss of facility use or possible rupture of the gas pipeline. When these situations arise,

⁵ This definition is consistent with the California Environmental Quality Act Guidelines' definition of emergency projects, as stated in Title 14, Section 15269 of the California Code of Regulations.

crews could be required to create firebreaks or fire roads in an effort to stop the fire, or to minimize the resulting damage. These activities would be conducted on an as-needed basis, and could be performed at the request of local fire departments. Actual fire-related activities and the size of the crew would be dependent on the local fire department allowing the work to be performed when conditions are safe.

Soil Stabilization

Saturation of soils and/or erosion can result in unstable slopes, landslides, and other conditions that may threaten pipelines and facilities. When these emergency situations arise, crews are required to stabilize the surrounding areas immediately. An immediate response is particularly important when pipeline pressure must be reduced or shut off. During these response actions, the slopes are often stabilized temporarily until long-term solutions can be planned and implemented. In these situations, large earth-moving equipment is necessary, but the amount of equipment and the crew size is dependent on the urgency and complexity of each situation.

4 – LOCATION OF OPERATION AND MAINTENANCE

4.0 LOCATION OF ACTIVITIES

The area under consideration for this permit is the area that encompasses PG&E's gas transmission pipelines in the Mojave Desert region of southern California, as depicted in Figure 1: Program Overview Map. Of the approximately 645 miles of transmission pipeline in the program area, approximately 244 miles are located on private, non-government-owned lands; 347 miles are located on BLM-managed lands; less than 1 mile is located on CDFW-managed lands; 448 miles are located on Department of Defense- (DoD-) managed lands; 3.5 miles are located on lands managed by the California State Lands Commission (CSLC); 2.3 miles are located on lands managed by the USFWS; and less than 1 mile is located on land owned by Kern County. The area includes land within the California Desert Conservation Area⁶ (CDCA) and land located east of the CDCA but west of the Colorado River. The primary natural gas pipelines in the system are Line 300 A, Line 300 B, Line 311 and Line 372, Line 313, and Line 314. Several DFMs, customer lines, compressor stations, and associated facilities that transport natural gas to commercial, private, military, industrial, and utility electric generating customers are also in the program area. In the Mojave Desert region, natural gas delivery is made almost exclusively to commercial, military, industrial, and electric generation, and residential customers. The pipelines have customer connections or "taps" that serve customers and businesses. These customer taps are generally located at valve stations along the pipeline route. The pipeline system includes approximately 645 miles of transmission pipeline within San Bernardino and Kern counties as well as DFMs and associated facilities. The pipelines and related support facilities are located on federal, state, private, and municipal land.

The program area includes the ROWs; areas up to 0.25 mile beyond the ROWs, where needed; and the associated telecommunication, cathodic protection, valves, related facilities, and

⁶ The CDCA is an approximately 25-million-acre expanse of land in Southern California designated by Congress in 1976 through the Federal Land Policy and Management Act. Approximately 10 million acres are administered by the BLM.

compressor stations for the pipelines. O&M activities will generally occur within the existing ROWs and along the established access roads. Table 2: Pipeline Descriptions provides a summary of the pipeline length, diameter, and approximate ROW width for each pipeline. Each gas pipeline is described in the following subsections.

Table 2: Pipeline Descriptions

Pipeline	Approximate Length (miles)	Pipeline Diameter (inches)	Approximate ROW Width (feet)
Line 300 A	226	34 - 36	15 - 100
Line 300 B	226	34 - 36	15 - 100
Line 311 and Line 372	58	10 - 12	10 - 50
Line 313	35	8 - 10	10 - 50
Line 314	44	8 - 12	10 - 50
DFMs and Associated Lines	56	0.75 - 10	5 - 25

4.0.0 Line 300 A and Line 300 B

Line 300 A and Line 300 B are two parallel, high-pressure natural gas pipelines that run from the California-Arizona border to the San Francisco Bay Area. Portions of these pipelines are 34 inches in diameter, and other portions are 36 inches in diameter.

Approximately 230 miles of Line 300 A and Line 300 B are within the Mojave Desert region and are located within portions of San Bernardino and Kern counties. The eastern ends of Line 300 A and Line 300 B begin at the Colorado River in San Bernardino County, which is approximately 15 miles southeast of the City of Needles, and pass through Topock Compressor Station. The pipeline routes then proceed west for approximately 172 miles and pass through the communities of Essex and Daggett; the City of Barstow; and PG&E's Hinkley Compressor Station, which receives and moves natural gas west through the pipelines. West of PG&E's Hinkley Compressor Station, the pipelines then continue west for approximately 56 miles to the City of Mojave in Kern County, after which they depart the Mojave Desert region and terminate in the San Francisco Bay Area. The portions of Line 300 A in the program area are located on approximately 136 miles of BLM-managed lands; 20.5 miles on DoD-managed lands; 1 mile on CSLC-managed lands; and 67 miles on private, non-government-owned lands. Of the portions of Line 300 B in the program area, approximately 131 miles are located on BLM-managed lands; less than 1 mile is located on DoD-managed lands; 1.3 miles are located on USFWS-managed lands; and 93 miles are located on private, non-government-owned lands. Line 300 A and Line 300 B receive gas from four interstate pipelines and also interconnect with Southern California Gas Company and Southwest Gas Company facilities.

O&M personnel originating from the City of Bakersfield would likely be requested to work on the segments of Line 300 A and Line 300 B located west of the U.S. Highway 395 and State Route (SR-) 58 intersection. Round-trip travel for O&M personnel departing from Bakersfield would range from 120 to 140 miles per day. Depending on the location of O&M activities, O&M

personnel originating from areas near Ridgecrest and Barstow may also conduct O&M activities on the segments of Line 300 A and Line 300 B located west of Barstow. From Barstow, O&M personnel would travel 0 to 160 miles per day to conduct O&M activities on these pipeline segments.

O&M personnel departing from Barstow, the community of Hinkley, the community of Topock, and nearby communities would likely conduct O&M activities on the segments of Line 300 A and Line 300 B between Hinkley Compressor Station and Topock Compressor Station. To work on these pipeline segments, O&M personnel would likely travel 0 to 200 miles per day. Travel distances would vary depending on personnel availability, the specific O&M activity, and the closest distance between available O&M personnel and work sites.

4.0.1 Line 311 and Line 372

Line 311 and Line 372 are 10- to 12-inch-diameter, high-pressure natural gas pipelines that cross the western portions of San Bernardino County. The pipeline begins at Line 300 A at the intersection of SR-58 and U.S. Highway 395 near Kramer Junction in San Bernardino County. Line 311 traverses north for approximately 24 miles along U.S. Highway 395 and then continues north along Trona Road. Several DFMs and customer lines originate from Line 311. The pipeline splits at milepost 43, with one section continuing toward the City of Trona in San Bernardino County and the other section continuing to its endpoint near the City of Ridgecrest in Kern County. The pipeline is located on approximately 44 miles of BLM-managed lands; 2.3 miles on DoD-managed lands; 11 miles on private, non-government-owned lands; 1.1 miles of CSLC-managed lands; and less than 0.1 mile on CDFW-managed lands.

Line 311 would likely be serviced by O&M personnel originating from Barstow and Ridgecrest. Depending on the location of the O&M activity, round-trip travel from these cities to work sites would range from 15 to 160 miles per day.

4.0.2 Line 313

Line 313 is an 8- to 10-inch-diameter, high-pressure natural gas pipeline located in San Bernardino County. The pipeline begins at Line 300 A, approximately 2.5 miles east of the community of Daggett (milepost 0) along Interstate 40. Line 313 traverses south for approximately 34 miles along Camp Rock Road to its endpoint, which is approximately 8 miles southeast of Lucerne Valley (milepost 34). The pipeline is located on approximately 20 miles of BLM-managed lands and 15 miles of private, non-government-owned lands.

Line 313 would likely be serviced by O&M personnel originating from Barstow. Depending on the location of the O&M activity, round-trip travel from these cities to potential work sites along Line 313 would range from 30 to 120 miles per day.

4.0.3 Line 314

Line 314 is a high-pressure natural gas pipeline located in San Bernardino County. Portions of this pipeline are 8 inches, 10 inches, and 12 inches in diameter. The pipeline begins at Line 300 A, approximately 2.5 miles west of Barstow (milepost 0). The pipeline traverses south for approximately 27 miles and then traverses east for approximately 16 miles to its endpoint, which is approximately 4 miles east of the Town of Apple Valley (milepost 43). The pipeline is

located on approximately 38 miles of private, non-government-owned lands and 6 miles of BLM-managed lands.

Line 314 would likely be serviced by O&M personnel from Barstow or Hinkley. Depending on the location of the O&M activity, round-trip travel from these cities to work sites along Line 314 would range from 0 to 80 miles per day.

4.0.4 Distribution Feeder Mains and Associated Lines

PG&E operates several DFMs, customer lines, and associated facilities that extend the delivery of gas to customers. Many of these lines branch off of Line 300 A and Line 300 B and are located near the communities of Edwards, Boron, Kramer Junction, and Amboy, and the PG&E Topock Compressor Station. An additional DFM is located on the northern end of Line 311 and runs toward the City of Ridgecrest. These DFMs, customer lines, and associated facilities deliver gas to a variety of customers, including Edwards Air Force Base, Naval Air Weapons Station China Lake, the City of Trona, and solar facilities. All of the pipelines in the desert have customer taps that serve residents and businesses. These customer taps are generally located at valve stations along the pipeline route.

4.0.5 Access

PG&E accesses the pipeline ROWs and related facilities using existing public and private roads and PG&E-maintained pipeline patrol roads. PG&E-maintained pipeline patrol roads are approximately 12 feet wide. No new roads are constructed as part of routine O&M activities. However, road surface maintenance and access road repair would be required as part of O&M activities to keep roads in a passable and safe condition.

4.1 LOCATION OF POTENTIAL HABITAT

4.1.0 Desert Tortoise

The desert tortoise includes those animals living north and west of the Colorado River, primarily in the Mojave Desert of California, Nevada, Arizona, and southwestern Utah. Desert tortoises live in a variety of habitats where suitable soils for den construction might be found. PG&E's gas transmission pipelines in the Mojave Desert cross several vegetation communities that support populations of desert tortoise. Examples of these communities include Mojave creosote bush scrub, desert dunes, Mojave wash scrub, desert saltbush scrub, desert sink scrub, desert greasewood scrub, shadscale scrub, blackbush scrub, Mojave desert wash scrub, and Joshua tree woodland.

The species' range overlaps with the area crossed by the gas pipeline system within the Mojave Desert. The pipelines and related facilities cross several BLM-designated Desert Wildlife Management Areas (DWMAs), including the following:

- Chemehuevi DWMA (Lines 300 A and 300 B),
- Ord-Rodman DWMA (Lines 300 A, 300 B, and 313),
- Fremont-Kramer DWMA (Lines 300 A, 300 B, and 311), and
- Superior-Cronese DWMA (Lines 300 A, 300 B, and 314).

These DWMAs overlap with portions of USFWS-designated critical habitat for desert tortoise, as shown in Figure 2: Conservation Areas and Critical Habitat Map. Table 3: Conservation Areas and Critical Habitat within the Program Area provides the distance crossed by the pipelines through conservation areas and critical habitats. Focused surveys for desert tortoises have not been conducted for this program as PG&E assumes presence of the species throughout the majority of the natural areas. However, as part of the conditions of the PBO, PG&E does conduct pre-activity surveys prior to the onset of O&M activities that result in new surface disturbances during the desert tortoise's active period. A range of 0 to 53 desert tortoise observations have been documented per year over the past 16 years of following the conditions of the PBO. In addition, there are 156 California Natural Diversity Database (CNDDDB) occurrences of desert tortoise within 5 miles of existing O&M facilities. This information supports PG&E's position that tortoises are known to occur within the program area.

Table 3: Conservation Areas and Critical Habitat within the Program Area

Conservation Area	Distance Crossed by Line 300 A (miles)	Distance Crossed by Line 300 B (miles)	Distance Crossed by Line 311 and Line 372 (miles)	Distance Crossed by Line 313 (miles)	Distance Crossed by Line 314 (miles)	Distance Crossed by DFM's and Associated Lines (miles)
Chemehuevi DWMA	38.9	36.5	0.0	0.0	0.0	0.5
Ord-Rodman DWMA	0.7	0.0	0.0	22.2	0.0	0.0
Fremont-Kramer DWMA	15.3	15.3	26.3	0.0	0.0	0.4
Superior-Cronese DWMA	3.9	4.1	0.0	0.0	2.5	0.0
Desert Tortoise Critical Habitat	62.8	63.2	29.8	20.1	0.0	1.0
Mohave Ground Squirrel Conservation Area	19.2	19.4	40.0	0.0	2.5	49.3

4.1.1 Mohave Ground Squirrel

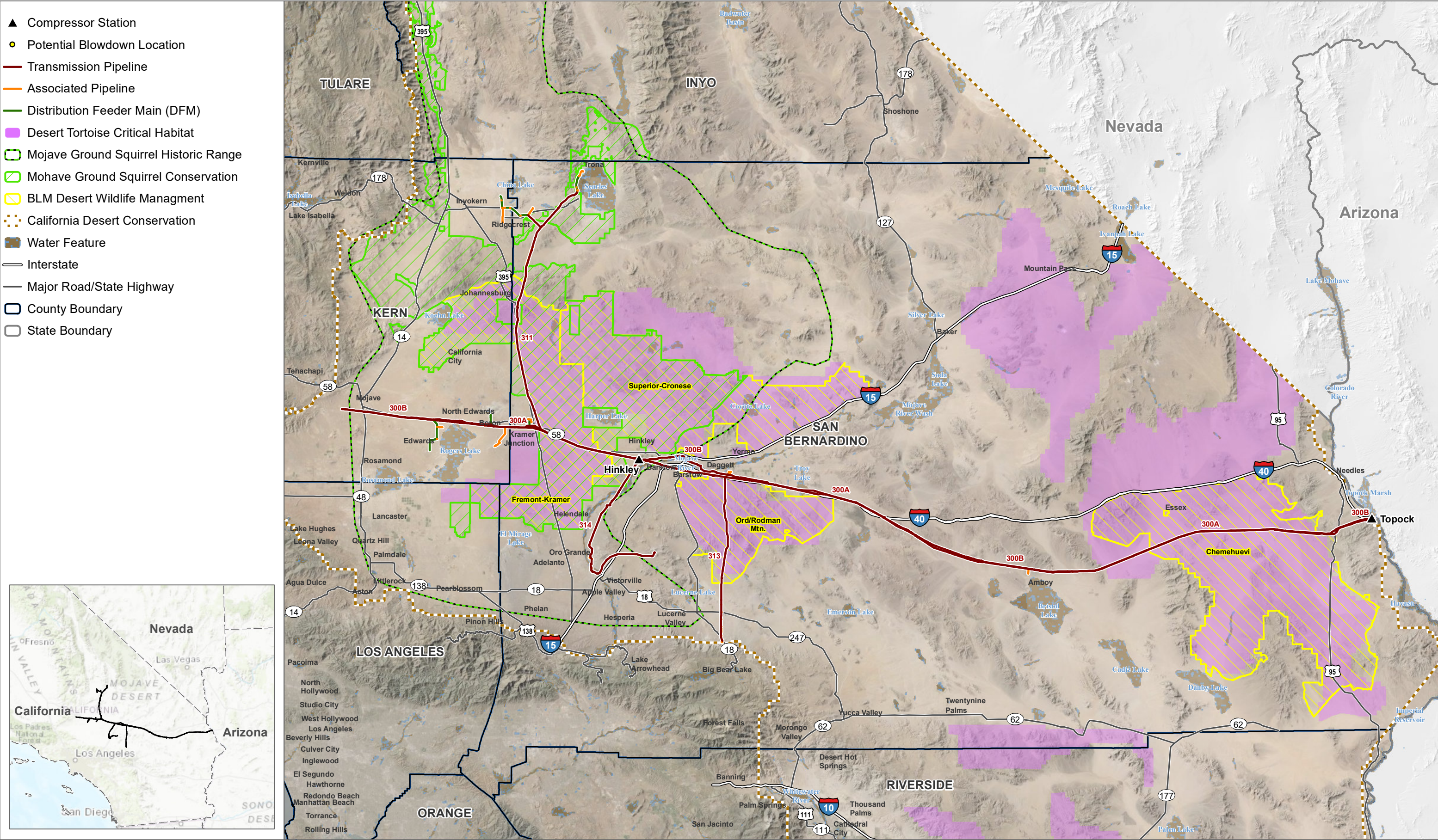
The Mohave ground squirrel is found only in the western portion of California's Mojave Desert. The species inhabits flat to moderate terrain, lives in burrows, and requires soils conducive to burrowing. PG&E's gas transmission pipelines in the Mojave Desert cross several vegetation communities that support populations of Mohave ground squirrel. Examples of these communities include Mojave creosote bush scrub, desert saltbush scrub, desert sink scrub, desert greasewood scrub, shadscale scrub, and Joshua tree woodland. Approximately 44 percent of the

program area is located within the historic range of the species. The following pipelines occur within the historic range of the species:

- Line 300 A – the portion of the line that is located west of the City of Barstow (approximately 66 miles)
- Line 300 B – the portion of the line that is located west of the City of Barstow (approximately 68 miles)
- Line 311 and Line 372 – the entire pipeline (approximately 58 miles)
- Line 314 – the northernmost portion of the line where it intersects with Line 300 (approximately 39 miles)
- DFMs and associated lines – the majority of the lateral lines are located within the range of the species (approximately 49 miles)

Leitner's review (Leitner, 2008) of trapping surveys identified four core areas that continue to support relatively abundant Mohave ground squirrel populations, and four other areas that have multiple recent records of the species. PG&E's pipeline system in the Mojave Desert overlaps with three of the eight core areas. Line 300 A and Line 300 B are located near the Edwards Air Force Base Core Area, which is located south of SR-58. The northern portion of Line 311 overlaps with a known Mohave ground squirrel population located in the vicinity of the City of Ridgecrest. The southern portion of Line 311 overlaps with a known population located north of the community of Boron.

The pipelines and related facilities cross the Mohave Ground Squirrel Conservation Area as designated by the BLM in the West Mojave Plan (BLM, 2005). The distance that each pipeline crosses within the conservation area is shown in Table 3: Conservation Areas and Critical Habitat within the Program Area. Protocol trapping surveys have not been conducted for this program as PG&E is assuming presence of this species. Protocol trapping surveys were conducted in 2012 and 2013 for the PG&E Hinkley Compressor Station Remediation Project; the species was not detected. Additionally, there are 138 CNDDDB occurrences of Mohave ground squirrel documented within 5 miles of existing O&M facilities. Based on these data, Mohave ground squirrel may occur within portions of the program area located west of the City of Barstow. This species is not expected to occur within portions of the program area east of the City of Barstow, which is outside of the known range of the species.



SOURCES: BLM 2015; CPAD 2020; Insignia 2020; PG&E 2020; U.S. Geological Survey 2013.



FIGURE 2

Conservation Areas and Critical Habitat Map

Operations and Maintenance Activities on the Gas Pipeline System in the California Desert

5 – ANALYSIS OF WHETHER AND TO WHAT EXTENT THE PLAN COULD RESULT IN TAKE OF SPECIES TO BE COVERED BY PERMIT

O&M activities on PG&E's gas transmission pipelines could result in the disturbance of habitat and incidental take of desert tortoise and Mohave ground squirrel. Incidental take may result from impacts related to burrow and den destruction, vegetation removal, and vehicular traffic. In general, PG&E's routine O&M activities result in minor amounts of habitat disturbance spread throughout the Mojave Desert and have relatively small impacts to covered species, most of which are temporary in nature.

The amount of ground disturbance would vary each year depending on the type and number of O&M activities scheduled. During the period of 2001 to 2017, the annual amount of temporary disturbance resulting from O&M activities has ranged from 0.53 acre to 37.21 acres, and permanent disturbance has ranged from 0.01 acre to 2.72 acres. Per the annual reports submitted by PG&E to the BLM and the USFWS, averages of approximately 9.67 acres of temporary disturbance and 0.89 acres of permanent disturbance occur per year within the Mojave Desert region. Between 2018 and early 2021, PG&E completed hydrotest and in-line inspection activities in the Mojave Desert region for an unprecedented length of pipeline.⁷ This large hydrotest is unusual and inconsistent with O&M work that has been required in the program area since 2001. It is not anticipated that hydrotesting on segments so large would be required in the next 30 years, so the amount of disturbance resulting from current hydrotesting in the Mojave Desert region is not accounted for in the disturbance projections for required O&M activities in the next 30 years. As such, PG&E anticipates that approximately 40 acres of disturbance to desert tortoise habitat and approximately 10 acres of disturbance to Mohave ground squirrel habitat would occur each year. These estimates are derived from examining the amount of disturbance that has occurred over the past 16 years and anticipating future maintenance needs for the pipelines.

In general, routine O&M activities result in temporary habitat disturbance in areas that have been previously disturbed, such as along existing pipeline ROWs and existing access roads. The amount of habitat disturbance varies for each type of activity, as shown in Table 1: Anticipated Surface Disturbance from O&M Activities. The majority of impacts resulting from O&M activities are related to pipeline corrosion protection. These activities include coating inspections, installation of anodes, and valve/pipeline recoating. Corrosion protection activities may result in minor amounts of temporary and permanent disturbance. Hydrostatic testing and pipeline segment replacement result in the greatest amount of temporary disturbance. However, these activities are conducted on a less frequent basis. Other O&M activities that may result in permanent loss of covered species habitat include ROW/road repair, erosion control, pig launcher/receiver installation, and valve replacement/automation.

The amount of disturbance varies each year depending on the type and number of O&M activities scheduled. Over the past 16 years, the number of O&M activities conducted per year ranged from a minimum of one activity to a maximum of 51 activities. During this time frame,

⁷ PG&E conducted hydrotesting of approximately 160 miles of Line 300 A and Line 300 B, and 54 miles of Line 311 in the Mojave Desert region.

an average of 14 O&M activities were typically conducted per year. The minimum and maximum amount of temporary disturbance associated with O&M activities over the past 16 years ranged from 0.5 to 37.2 acres per year. The minimum and maximum amount of permanent disturbance associated with O&M activities over the past 16 years ranged from 0.01 to 2.7 acres, respectively. The average temporary disturbance associated with O&M activities during this 16-year time frame was approximately 9.7 acres per year. The average permanent disturbance associated with O&M activities during this 16-year time frame was approximately 0.9 acres per year. To account for the variable number and type of O&M activities conducted per year, PG&E anticipates, and this application assumes, that up to 40 acres of temporary disturbance to desert tortoise habitat and up to 10 acres of disturbance to Mohave ground squirrel habitat would occur each year. In addition, up to 2 acres of permanent disturbance to either desert tortoise or Mohave ground squirrel habitat would occur each year. These estimates were derived from examining the amount of disturbance that occurred over the past 16 years and anticipating future maintenance needs for the pipelines. Historical data indicated that O&M activities in the program area typically result in less than 6.15 and 0.12 acres of temporary and permanent disturbance, respectively. PG&E anticipates that the minimal number of O&M activities required per year would typically result in less than the estimated 40 acres of temporary disturbance to desert tortoise habitat, 10 acres of disturbance to Mohave ground squirrel habitat, and 2 acres of permanent disturbance. On occasion, the amount of temporary or permanent disturbance that occurs annually may exceed these estimates.

Table 4: Anticipated Impacts from Future O&M Activities provides a summary of anticipated temporary and permanent habitat loss resulting from O&M activities.

Potential impacts from O&M activities could affect small numbers of covered species. However, these impacts are primarily temporary in nature (i.e., of short duration), and no long-term impacts to the populations of covered species are likely as a result of conducting O&M activities, based on the following factors:

- PG&E has diligently followed the conditions and measures of the PBO. All crews and personnel are trained on an annual basis and additional site-specific training is delivered when major projects are executed. The desert tortoise training program has been well integrated into pipeline operations over the past 16 years with no direct mortality of tortoises.
- PG&E has proposed avoidance and minimization measures (AMMs—as provided in Section 8 – Proposed Avoidance and Minimization Measures—that will continue to guide PG&E in avoiding and minimizing the take of covered species and the loss of their habitats. Compensatory mitigation will also be provided to fully mitigate for the loss of habitat that may occur. Few covered species are likely to be taken, and take of those individuals will not have an adverse effect on the continued existence of local populations of the species or the entire species population.
- Disturbance to covered species from O&M activities will be small, localized, and primarily temporary in nature.

Table 4: Anticipated Impacts from Future O&M Activities

Species	Temporary Loss per Year (acres)	Permanent Loss per Year (acres)	Total Loss per Year (acres)	Temporary Loss Over 30 Years (acres)	Permanent Over 30 Years (acres)	Total Loss Over 30 Years (acres)	Individual Take⁸ per Year	Maximum Take Over 30 Years
Desert tortoise	40	2	42	1,200	60	1,260	0 - 3	45
Mohave ground squirrel	10	2	12	300	60	360	0 - 3	45
Total Habitat Loss ⁹	40	2	42	1,200	60	1,260	--	--

⁸ "Take" is defined as direct mortality.

⁹ Total habitat loss numbers are not additive because desert tortoise habitat and Mohave ground squirrel habitat co-occur within approximately 44 percent of the program area.

Direct take of desert tortoise and Mohave ground squirrel may be difficult to detect or quantify when take involves impacts to underground refuges. PG&E anticipates that routine O&M activities could result in the direct take of up to three desert tortoise individuals every 2 years. In addition, PG&E anticipates that routine O&M activities could result in the direct take of up to three Mohave ground squirrel individuals every 2 years.

6 – ANALYSIS OF THE IMPACTS OF THE PROPOSED TAKING

6.0 DESERT TORTOISE

6.0.0 Impacts to Individuals

Direct impacts to desert tortoise could occur during O&M activities. There is potential for direct take of desert tortoise by vehicle and equipment strikes, tortoises falling into open excavations and becoming trapped, or crushing of occupied burrows during O&M activities. The risk of potential impacts to desert tortoise is increased during the species' most active season, which is typically defined as March 1 through June 15 and August 1 through October 15. Neonate and juvenile desert tortoises are at greater risk of direct mortality during O&M activities due to their small size and inability to be detected. These young tortoises can be as small as a silver dollar coin and are extremely difficult to locate. Neonate and juvenile desert tortoises may be missed during surveys and are at higher risk for mortality resulting from vehicle and equipment strikes. In addition, smaller desert tortoises use abandoned rodent burrows, which are typically more fragile than the larger burrows constructed by adult desert tortoise. Therefore, juvenile and immature burrows are more susceptible to damage than adult tortoise burrows.

No direct take of desert tortoise has been documented in the past 15 years during routine O&M activities, as detailed in the annual reports submitted in compliance with the reporting requirements of the PBO. O&M activities could affect small numbers of desert tortoise, but PG&E does not anticipate any long-term impacts to the species. Implementation of AMMs will minimize the number of desert tortoises that are killed or injured by O&M activities. Although these AMMs are designed to avoid and minimize impacts to desert tortoise, implementation of some of these AMMs may put the species at risk. For example, AMMs which involve moving desert tortoises out of harm's way and erecting desert tortoise fencing—have the potential to impact the species by potentially exposing the animal to threats. However, PG&E does not anticipate that direct mortality will result from the implementation of AMMs.

Direct take of desert tortoise may be difficult to detect or quantify when take involves impacts to underground refuges. PG&E anticipates that routine O&M activities could result in the direct take of up to three desert tortoise individuals every 2 years.

Indirect impacts to desert tortoise during O&M activities may be caused by increased human presence in the desert. Human presence in isolated areas of the desert may attract opportunistic predators, such as ravens (*Corvus corax*), coyotes (*Canis latrans*), and feral dogs (*Canis familiaris*), which are threats to desert tortoise.

6.0.1 Impacts to Habitat

Surface disturbance activities may impact desert tortoise by permanently or temporarily disturbing suitable habitat within the program area. The entire pipeline system within the Mojave Desert is located within the range of the desert tortoise, and suitable habitat exists within the program area. PG&E anticipates that up to 42 acres of desert tortoise habitat will be disturbed per year. The majority of the habitat loss—approximately 40 acres—will be temporary. However, activities that result in temporary disturbance would be considered a permanent impact based on the slow recovery time of habitats in desert ecosystems. Temporary disturbances include short-term impacts during soil excavation, soil stockpiling, improvements to the ROW and existing access roads, and work at staging/laydown areas. Minimal amounts of permanent habitat disturbance (i.e., conversion of habitat to a facility footprint) will result from O&M activities. Activities that may result in permanent impacts include the expansion of existing facilities, installation of deep well anodes, the development of pig launcher/receiver facilities, and the installation of erosion control structures.

Indirect impacts to desert tortoise habitat may also occur as a result of O&M activities. Surface-disturbing activities may increase the opportunities for introduction of invasive non-native plant species that may compete with or replace forage species for the desert tortoise (i.e., grasses and the flowers of annual plants). An increase in invasive plants may also facilitate fires in the area, especially when cars and construction vehicles are present. In addition, human presence in isolated areas of the desert may attract opportunistic predators, such as ravens, coyotes, and feral dogs, which are threats to the species.

6.1 MOHAVE GROUND SQUIRREL

6.1.0 Impacts to Individuals

Direct impacts to Mohave ground squirrel could occur during O&M activities. There is potential for direct take of Mohave ground squirrel by vehicle and equipment strikes, squirrels falling into open excavations and becoming trapped, or crushing of occupied burrows during O&M activities. However, no direct take of Mohave ground squirrel has been documented during routine O&M activities. The risk of potential impacts to Mohave ground squirrel is increased during the species' active season. Aboveground activity for this species is usually limited to between February and July (Desert Managers Mohave Ground Squirrel Work Group, 2011). It is anticipated that very few individuals are likely to be taken, and take of those individuals will not have an adverse effect on the continued existence of the species.

Direct take of Mohave ground squirrel may be difficult to quantify. PG&E anticipates that routine O&M activities could result in the direct take of up to three Mohave ground squirrel individuals every 2 years.

Indirect impacts to Mohave ground squirrel during O&M activities may be caused by increased human presence in the desert. Human presence in isolated areas of the desert may attract opportunistic predators, such as ravens, coyotes, and feral dogs, which are threats to Mohave ground squirrels.

6.1.1 Impacts to Habitat

Approximately 44 percent of the program area is located within the historic range of the species, and suitable habitat exists within the program area. PG&E anticipates that up to 12 acres of Mohave ground squirrel habitat will be disturbed per year. The majority of the habitat loss—approximately 10 acres—will be temporary. Activities that result in temporary disturbance would be considered a permanent impact based on the slow recovery time of habitats in desert ecosystems. Temporary disturbances include short-term impacts during soil excavation, soil stockpiling, improvements to the ROW and existing access roads, and work at staging/laydown areas. Minimal amounts of permanent habitat disturbance will result from O&M activities. Activities that may result in permanent impacts include the installation of deep well anodes, the development of pig launcher/receiver facilities, and installation of erosion control structures.

Indirect impacts to Mohave ground squirrel habitat may also occur as a result of O&M activities. Surface-disturbing activities may increase the opportunities for introduction of invasive non-native plant species that may compete with or replace forage species for Mohave ground squirrel (i.e., seeds, fruit, and leafy vegetation of desert forbs, grasses, and shrubs). An increase in invasive plants may also facilitate fires in the area, especially when cars and construction vehicles are present.

7 – ANALYSIS FOR THE POTENTIAL TO JEOPARDIZE THE CONTINUED EXISTENCE OF THE SPECIES

7.0 DESERT TORTOISE

7.0.0 Population Trends

For more than two decades, researchers have documented population declines throughout much of the range of the desert tortoise in California. Due to this decline in population, the desert tortoise was listed as threatened under the CESA in 1989 and the FESA in 1990. In 1994, the USFWS-prepared Recovery Plan for the Desert Tortoise presented data indicating that populations of the desert tortoise in the western extent of the species' range (i.e., the western Mojave Desert of California) were experiencing significant declines. In 2011, the USFWS released a Revised Recovery Plan for the Mojave Population of the Desert Tortoise. Populations of desert tortoise in the western Mojave Desert continue to decline, and a downward trend has also been documented for populations in the eastern Mojave Desert.

7.0.1 Threats to the Species

Threats to the desert tortoise include the loss and degradation of habitat caused by numerous human activities, such as urbanization, agricultural development, military training, recreational use, mining, renewable energy (e.g., solar) development, and livestock grazing (USFWS, 1994, 2011a). Desert tortoises are also subject to other detrimental factors, including the following:

- predation by common raven and other predators;
- collection by humans for pets or consumption;
- collisions with vehicles on paved and unpaved roads; and

- mortality from diseases, specifically upper respiratory tract disease, shell necrosis, and cutaneous dyskeratosis.

7.1 MOHAVE GROUND SQUIRREL

7.1.0 Population Trends

Information on the abundance and trends of the Mohave ground squirrel population is limited (Leitner, 2008). Two studies that analyzed data from trapping studies suggested that the Mohave ground squirrel may be undergoing a long-term decline, as indicated by the decreased trapping success (Leitner, 2001; Brooks and Matchett, 2002). However, it is difficult to determine the presence or abundance of the species using trapping studies because there is a high degree of variability associated with live trapping (Leitner, 2008; USFWS, 2011b). In addition, much of the species range has never been surveyed (Leitner, 2008). Few sites have been the focus of repeated live-trapping studies over extended periods and relatively recent results from Leitner (2013) for two sites in the northern portion of the range demonstrate the extent to which rainfall and other environmental factors can influence year-to-year trapping success—even in the absence of human impacts. With such high annual variability in sampling success, extrapolation of data from one or two (disparate) sampling locations to broader populations is not possible. Population-level data for Mohave ground squirrel are not available throughout the range of the species, and it is not known with any certainty whether the overall Mohave ground squirrel population is decreasing, stable, or increasing relative to the time of its listing.

7.1.1 Threats to the Species

Threats to the Mohave ground squirrel include loss, fragmentation, and degradation of habitat associated with various human activities. These activities include urban and rural development, off-highway vehicle recreation use, transportation infrastructure, military operations, renewable energy (e.g., solar) development, livestock grazing, agricultural development, and mining (Leitner, 2008; USFWS, 2011b). In addition, climate change, which includes increased severity and persistence of drought, is a threat to the Mohave ground squirrel. Prolonged drought may also threaten the reproductive success of the species (USFWS, 2011b). Although it is not believed to be a significant impact on the species, direct mortality of individual ground squirrels can occur in association with roadway impacts (i.e., highway and off-highway vehicle collisions), military operations, and construction activities in areas of preferred habitat (USFWS, 2011b).

7.2 FORESEEABLE IMPACTS FROM RELATED PROJECTS

There are no related projects occurring in the area. However, two separate PG&E projects—the PG&E Hinkley Compressor Station Remediation Project and the PG&E Topock Compressor Station Remediation Project—could potentially occur in the same time frame and also have the potential to impact covered species during O&M activities.

PG&E is currently under orders from the Lahontan Regional Water Quality Control Board to conduct groundwater remediation activities resulting from the historic use of hexavalent chromium at the PG&E Hinkley Compressor Station. Incidental take of desert tortoise could occur in association with groundwater remediation activities proposed by PG&E at this facility.

Impacts to Mohave ground squirrel are not anticipated. PG&E is in the process of preparing a 2081 ITP application and a Habitat Conservation Plan in support of an application to the CDFW and USFWS, respectively, requesting permits for the incidental take of desert tortoise. Therefore, incidental take of desert tortoise resulting from the implementation of remediation activities at the PG&E Hinkley Compressor Station is not included in this permit application.

Groundwater remediation activities are also being conducted at the PG&E Topock Compressor Station. Desert tortoise surveys conducted for the remediation activities at the PG&E Topock Compressor Station have not documented tortoises or tortoise sign. Much of the area has been heavily disturbed over the years or does not contain suitable tortoise habitat. Therefore, incidental take authorization is not needed for the groundwater remediation activities at the PG&E Topock Compressor Station.

The PG&E Hinkley Compressor Station Remediation Project will incorporate AMMs and compensatory mitigation to mitigate impacts to desert tortoise. Therefore, it is not anticipated that the combined impacts of this project will appreciably diminish recovery efforts or jeopardize the continued existence of the species, because potential impacts to desert tortoise will be avoided, minimized, and mitigated.

7.3 POTENTIAL TO JEOPARDIZE

The issuance of an ITP will not jeopardize the continued existence of desert tortoise and Mohave ground squirrel because O&M activities will impact a limited portion of the species habitat and few individuals will likely be taken. Further, the potential for take would be minimized by the implementation of proposed AMMs and the loss of habitat will be fully mitigated. The proposed activities are required for the ongoing O&M of existing pipeline infrastructure in the Mojave Desert, which occupies a limited portion of the overall available desert tortoise and Mohave ground squirrel habitat in the region. Approximately 2,050 acres of pipeline facilities and ROWs are within the range of Mohave desert tortoise. This represents less than 0.01 percent of the habitat available within the current species' range. For the Mohave ground squirrel, approximately 780 acres of pipeline facilities and ROWs are within the current range of the squirrel. This also represents less than 0.01 percent of the habitat available in the current known range of the species. In addition, the pipelines and related facilities do not serve as permanent barriers to movement or dispersal of either desert tortoise or Mohave ground squirrel because the majority of the facilities are underground. O&M activities on such facilities will also not cause barriers to movement. Because there are no specialized breeding habitats for either desert tortoise or Mohave ground squirrel, the proposed activities will not affect the survival or reproduction of the species through impacts to such habitat.

Maintenance activities will generally occur along existing pipeline ROWs and access roads, resulting in limited temporary and permanent habitat impacts for desert tortoise and Mohave ground squirrel, as indicated for each species in Table 4: Anticipated Impacts from Future O&M Activities. Compensatory mitigation will fully mitigate the temporary and permanent habitat impacts, while implementation of the proposed AMMs will greatly reduce the likelihood of individual mortality. When the USFWS reviewed PG&E's O&M activities in 2000, it similarly concluded that O&M activities were not likely to jeopardize the continued existence of the desert tortoise or adversely modify its critical habitat.

As stated previously, the desert tortoise population is known to be decreasing in the western and eastern portions of the Mojave Desert, and Mohave ground squirrel population trends are unknown. However, over the proposed 30-year permit term, no more than 15 individuals of each species are expected to be directly affected by O&M activities. The low number of individuals that may be directly or indirectly affected (i.e., up to 15 individuals for each species) will not reach population-level impacts for either species. Because proposed activities will occur in support of existing infrastructure, recovery will remain unchanged as a result of ongoing pipeline operations and maintenance.

Although populations of both species may be declining due to threats (e.g., habitat loss, development, disease, and predation), the issuance of an ITP for the proposed O&M activities will not jeopardize the continued existence of either the desert tortoise or Mohave ground squirrel. Any potential impacts to desert tortoise and Mohave ground squirrel during routine O&M activities will represent a negligible impact to the local populations that occur within the larger range of the species. In addition, any incremental loss of species or habitat will be negligible in light of all protection efforts implemented under this program.

8 – PROPOSED AVOIDANCE AND MINIMIZATION MEASURES

PG&E has proposed to implement the AMMs in the following subsections to avoid and minimize impacts on covered species during O&M activities. In the following AMMs, a “Designated Biologist” is defined as a person with appropriate education, training, and experience to conduct covered species surveys, monitor O&M activities, and supervise or perform other implementing actions. The Designated Biologist must demonstrate an acceptable knowledge of desert tortoise and/or Mohave ground squirrel biology, avoidance and minimization techniques, habitat requirements, sign identification techniques, and survey procedures. Evidence of such knowledge may include work as a compliance monitor on a project in covered species habitat, or prior experience conducting surveys for desert tortoise or Mohave ground squirrel. Attendance at a training course endorsed by the agencies (e.g., the Desert Tortoise Council tortoise training workshop) is a supporting qualification. Some Designated Biologists may be authorized by the CDFW, BLM, and USFWS to handle covered species for this program if prior experience is demonstrated.

8.0 GENERAL

The following is a list of general AMMs that will apply to all O&M activities. These measures are designed to prevent environmental degradation and avoid and minimize impacts to covered species. PG&E will ensure implementation of these measures to the greatest extent feasible.

- **Worker Education.** A worker education program would be implemented for all activities, as determined to be appropriate on an activity-by-activity basis. The worker education program would be carried out during all phases of the program (e.g., site mobilization, ground disturbance, grading, construction, operation, closure/decommissioning or abandonment, and restoration/reclamation activities). The worker education program would provide interpretation for non-English-speaking workers and instruction for new workers prior to beginning work on site. As appropriate

based on the activity, the worker education program would contain the following information:

- site-specific biological and nonbiological resources;
 - information on legal protections for protected resources and penalties for violation of federal and state laws and administrative sanctions for failure to comply with requirements intended to protect site-specific biological and nonbiological resources;
 - the required measures for avoiding and minimizing effects during all program phases (e.g., resource setbacks, trash, speed limits, fire prevention, etc.);
 - reporting requirements and measures to follow if protected resources are encountered, including potential work stoppage and requirements for notification of the Designated Biologist(s); and
 - measures that personnel can take to promote the conservation of biological and nonbiological resources.
- **Designated Biologist.** A Designated Biologist would be approved as “qualified” by the CDFW, BLM, and/or USFWS, as appropriate for the location of the program activities. The Designated Biologist is responsible for overseeing compliance with applicable AMMs.
 - **Special-Status Wildlife Encounters.** Any special-status wildlife encountered during the course of an activity—including construction, operation, and decommissioning—would be allowed to leave the area unharmed. Encounters with a special-status species would be reported to a Designated Biologist and/or PG&E Environmental staff. Designated Biologists/PG&E Environmental staff members would maintain records of all special-status species encountered during permitted activities. Encounters with special-status species would be documented and provided to the CDFW in an annual report. If a Designated Biologist encounters a special-status species, the following information would be reported for each species:
 - the locations (i.e., narrative, vegetation type, and maps) and dates of observations;
 - the general conditions and health;
 - any apparent injuries and state of healing;
 - if moved, the location where the species was captured and the location where it was released (for desert tortoises, include whether animals voided their bladders); and
 - diagnostic markings (i.e., identification numbers or, on desert tortoises, marked lateral scutes).
 - **Waste and Equipment Removal.** All work areas would be kept free of trash and debris. Particular attention would be paid to “micro-trash” (e.g., screws, nuts, washers, nails, coins, rags, small electrical components, small pieces of plastic, glass or wire, and any debris or trash that is colorful or shiny) and organic waste that may attract predators. All

trash would be covered, kept in closed containers, or otherwise removed from the work site at the end of each day or at regular intervals prior to periods when workers are not present at the site. Upon the completion of each maintenance action on the ROW, all unused material and equipment would be removed from the site. The removal of all unused material and equipment does not apply to fenced stations.

- **Domestic Pets.** Domestic pets would be prohibited on work sites. The prohibition would not apply to the use of domestic animals (e.g., dogs) that may be used to aid in official and approved monitoring procedures/protocols, or service animals under Title II and Title III of the Americans with Disabilities Act.
- **Firearms.** Use and possession of firearms would be prohibited at all activity sites, with the exception of licensed security officers and police officers.
- **Speed Limits.** Vehicular traffic would not exceed 15 mph on unpaved roads and in the ROW within areas that are not cleared by protocol-level surveys and where desert tortoise would be impacted.
- **Disturbance Minimization.** PG&E would use state-of-the-art construction and installation techniques that are appropriate for the specific activity, program, and site. These techniques should minimize new site disturbance, soil erosion and deposition, soil compaction, disturbance to topography, and removal of vegetation. In addition, PG&E would implement the following actions:
 - The area of disturbance would be confined to the smallest practical area, considering topography, placement of facilities, locations of burrows, public health and safety, and other limiting factors.
 - As needed, work area boundaries would be delineated with flagging or other markings to minimize surface disturbance associated with the work activity.
 - Exclusion areas or special habitat features, such as burrows identified by the Designated Biologist, would be avoided to the extent possible.
 - To the extent possible, previously disturbed areas within the activity sites would be used for the stockpiling excavated materials, storing equipment, digging slurry and borrow pits, staging or parking trailers, vehicles, and any other surface-disturbing activity.
 - When possible, natural vegetation removal would be minimized through the implementation of crush and drive, or cut or mow vegetation, rather than removing it entirely.
 - The Designated Biologist, in consultation with PG&E, would ensure compliance with these measures.
- **Invasive Weeds.** The following would be implemented to prevent the spread of invasive weeds during all phases of program activities, as appropriate:
 - During O&M activities involving ground disturbance, mud and/or accumulated soils would be removed from equipment and vehicles, to the extent feasible.

Vehicles and equipment would be cleaned or washed before entering a new program site.

- O&M vehicles would be stored in paved or cleared areas whenever possible.
- Certified weed-free mulch, straw, hay bales, or equivalent materials would be used for all O&M activities.
- **Special-Status Plant Avoidance.** Occurrences of special-status plant species, including those in designated transmission corridors, would be avoided to the maximum extent practicable.
- **Inspections of Construction Materials.** All construction materials would be inspected for the presence of special-status wildlife prior to their movement or use. Any special-status wildlife encountered during the course of these inspections would be allowed to leave the construction area unharmed.
- **Open Trenches.** All steep-walled trenches or excavations would be covered, except when they are actively used to prevent the entrapment of wildlife. If trenches cannot be covered, they would be constructed with escape ramps, following up-to-date design standards to facilitate and allow wildlife to exit; or wildlife exclusion fencing would be installed around the trench(es) or excavation(s). Open trenches or other excavations would be inspected for the presence of wildlife immediately before backfilling, excavation, or other earthwork. After a work area is fenced, escape ramps would not be necessary for program activities.
- **O&M Activity Habitat Assessments.** Prior to the commencement of the planned O&M activities that would impact potential habitat, a PG&E biologist would assess the location and the potential for impacts to special-status species and would recommend additional avoidance and minimization measures (e.g., pre-construction clearance surveys, biological monitoring, buffers, physical barriers, etc.) as needed to ensure that behaviors necessary for the survival of such special-status species (e.g., breeding, lambing, nesting, burrowing, migration, foraging, etc.) are not significantly disrupted by the planned activity and associated noise.
- **Facility Siting and Design.** To the maximum extent practicable, the siting and design of new, permanent facilities would avoid impacts to vegetation types, unique plant assemblages, and climate refugia, as well as occupied habitat and suitable habitat for special-status species. To the maximum extent practicable, the following actions would be taken during the siting and design of new roads:
 - Construction of new roads and/or routes would be avoided within suitable habitat and identified linkages for special-status species, and these areas would have a goal of “no net gain.” The exception would be if the new road and/or route is beneficial to minimize net impacts to natural or ecological resources of concern.
 - Any new road and/or route considered within suitable habitat or identified linkages for protected species would be paved so as to avoid negatively affecting the function of identified linkages.

- Non-toxic road sealants and soil-stabilizing agents would be used on any new road and/or route.

8.1 DESERT TORTOISE

The following is a list of measures designed to avoid and minimize impacts to desert tortoise and will apply to all O&M activities in areas with the potential to support the species:

- **Desert Tortoise Fencing.** Prior to construction or commencement of any long-term activity that is likely to adversely affect desert tortoises, exclusion fencing for the species would be installed around the perimeter of the activity footprint¹⁰ in accordance with the Desert Tortoise Field Manual or the most up-to-date USFWS protocol. Additionally, short-term desert tortoise exclusion fencing would be installed around short-term construction and/or activity areas (e.g., staging areas, storage yards, excavations, and linear facilities), as appropriate per the Desert Tortoise Field Manual or the most up-to-date USFWS protocol.

Any exemption or modification of desert tortoise exclusion fencing requirements would be based on the specifics of the activity and the site-specific population and habitat parameters. Sites with low population density and disturbed, fragmented, or poor habitat would likely be candidates for fencing requirement exemptions or modifications. Substitute measures, such as on-site biological monitors in the place of the fencing requirement, would be required as appropriate.

After an area is fenced, and until desert tortoises are removed, the Designated Biologist would be responsible for ensuring that desert tortoises are not exposed to extreme temperatures or predators as a result of placing the fence. Remedies would include the use of shelter sites placed along the fence, immediate translocation, or removal to a secure holding area.

Modification or elimination of the previous requirement would also be approved by the CDFW if the activity would retain the desert tortoise habitat within the footprint. If such a modification is approved, modified protective measures would be required to minimize impacts to desert tortoises within the activity area.

Immediately prior to the construction of desert tortoise exclusion fencing, a Designated Biologist would conduct a clearance survey of the fence alignment to clear desert tortoises from the proposed path of the fence line.

All exclusion fencing would incorporate desert tortoise-proof gates or other approved barriers to prevent desert tortoise access to work sites through access road entry points.

¹⁰ An activity footprint is the area of long- and short-term ground disturbance associated with the pre-construction, construction, operation, implementation, maintenance, and decommissioning of an activity, including associated linear and non-linear components (e.g., staging areas, access routes and roads, gen-ties, pipelines, other utility lines, borrow pits, disposal areas, etc.). The footprint may also be considered synonymous with the program/activity site.

Following installation, long-term desert tortoise exclusion fencing would be inspected for damage quarterly and within 48 hours of a surface flow due to a rain event that may damage the fencing.

All damage to long-term or short-term desert tortoise exclusion fencing would be immediately blocked to prevent desert tortoise access and would be repaired within 72 hours.

- **Desert Tortoise Monitoring and Pipe Inspection.** Following clearance surveys within sites that have long-term desert tortoise exclusion fencing, a Designated Biologist would monitor initial clearing and grading activities to ensure that desert tortoises missed during the initial clearance surveys are moved from harm's way.

Before construction pipes, culverts, or similar structures are moved, buried, or capped, a Designated Biologist would inspect these materials for the following:

- a diameter greater than 3 inches,
- storage for one or more nights,
- placement less than 8 inches above ground, and
- location within desert tortoise habitat (i.e., outside of the long-term fenced area).

As an alternative, such materials would be capped before they are stored outside of the fenced area or placed on pipe racks. Pipes stored within the long-term fenced area after desert tortoise clearance surveys would not require inspection.

- **Inspections Under Vehicles.** The ground under vehicles would be inspected for the presence of desert tortoise any time a vehicle or construction equipment is parked in desert tortoise habitat that is outside of areas with desert tortoise exclusion fencing. If a desert tortoise is seen, it would be allowed to move away from the site on its own. If it does not move within 15 minutes, a Designated Biologist would translocate the animal to a safe location.
- **Geotechnical Boring Monitoring.** In suitable desert tortoise habitat, biological monitoring would occur for any geotechnical boring or movement of geotechnical boring vehicles to ensure that no desert tortoises are killed and no burrows are crushed. In these areas, a Designated Biologist would accompany the geotechnical testing equipment.
- **Predator Management.** Subsidized predator standards would be implemented during all appropriate phases of activities to manage predator food subsidies, water subsidies, and breeding sites.

Common raven management actions would be implemented for all activities to address food and water subsidies, as well as roosting and nesting sites that are specific to the common raven. These actions would include strategies for refuse management, as well as design strategies and passive repellent methods to avoid providing perches, nesting sites, and roosting sites for common ravens.

The application of water and/or other palliatives for dust abatement in construction areas and during O&M would be accomplished with the minimum amount of water necessary to meet safety and air quality standards. This would also occur in a manner that prevents the formation of puddles, which would attract wildlife.

8.2 MOHAVE GROUND SQUIRREL

The following measure for Mohave ground squirrel will apply to all O&M activities in areas with the potential to support the species:

- Mohave Ground Squirrel Avoidance.** For O&M activities conducted within suitable Mohave ground squirrel habitat, within the geographic range of the species,¹¹ and during the typical active Mohave ground squirrel season (i.e., February 1 through August 31), a qualified biologist would conduct clearance surveys throughout the site immediately prior to initial ground disturbance (e.g., earthwork and/or trenching) and/or vegetation removal. In areas cleared for O&M activities after surveys, biological monitoring would be performed to determine if Mohave ground squirrels have entered cleared areas. Detected occurrences of Mohave ground squirrel would be flagged and avoided, with a minimum avoidance area of 50 feet, until the individuals leave on their own accord. As needed, a Designated Biologist would also move Mohave ground squirrels out of harm's way.

8.2.0 Mitigation for Impacts to Covered Species

PG&E will acquire, preserve, and/or enhance suitable habitat for desert tortoise and Mohave ground squirrel to fully mitigate for the potential take of these species. Currently, PG&E provides compensatory mitigation for disturbance to desert tortoise habitat in accordance with the USFWS PBO. To fully mitigate for the take of desert tortoise and Mohave ground squirrel under this long-term permit, PG&E will make an initial purchase of up to 100 acres through the purchase of mitigation credits (where available), the purchase of a conservation easement from willing landowners, or the purchase of fee-title lands where a conservation easement can be placed from a private land trust (e.g., Transition Habitat Conservancy) for advance mitigation purposes. Acquired lands will be permanently protected through conservation easements or deed restrictions in perpetuity. Mitigation credits or lands will serve as a means for PG&E to debit and credit its mitigation account as impacts occur or as mitigation lands are acquired over the life of the permit, respectively. The amount of acreage to be debited will be determined annually based on the end-of-year summary, which will describe the actual impacts resulting from completed O&M activities. The amount of habitat compensation is dependent on the nature and location of the habitat disturbed. PG&E plans to mitigate for all impacts—regardless of whether they are temporary or permanent.

Although the majority of habitat disturbance resulting from routine O&M activities will be temporary, compensatory mitigation will be provided as previously described at a permanent ratio due to the slow recovery time of habitats in desert ecosystems. No mitigation will occur for impacts to developed land within the program area.

¹¹ This excludes the zone of hybridization with round-tailed ground squirrel located between Fort Irwin National Training Center and the City of Barstow.

9 – PROPOSED PLAN TO MONITOR COMPLIANCE

9.0 COMPLIANCE MONITORING

An implementation and compliance program will be executed once the permit has been issued, and will be similar to what PG&E currently follows for the PBO. PG&E will be responsible for overseeing the compliance monitoring as covered activities are planned and completed. PG&E will verify that the AMMs are being implemented as required. This will include collecting information that demonstrates the participation of PG&E's staff in the education program, providing results from pre-activity surveys and monitoring, and accounting for impacts and mitigation. Compliance monitoring information will be provided in the annual report, as described in Section 9.1 Reporting.

PG&E will also be responsible for evaluating the effectiveness of the measures in avoiding and minimizing impacts. PG&E will collect, compile, and summarize data from its environmental staff regarding the number of activities, surveys, monitoring reports, and other information to evaluate the overall effectiveness of the ITP. PG&E will collect and analyze information from its staff and the Designated Biologist to determine if the AMMs are effective. PG&E will develop modifications to existing measures in order to improve them or to make the measures more effective.

9.1 REPORTING

Beginning with the issuance of the permit, PG&E will provide CDFW with an annual report by no later than March 31 of each year. The annual report will document the effectiveness and practicality of the AMMs, the number of desert tortoises or Mohave ground squirrels encountered, the number of desert tortoises and Mohave ground squirrels taken, and the specific information for each species required under AMM Special-Status Wildlife Encounters. The report will also make recommendations for modifying the stipulations to enhance species protection or improve the utility of the programmatic permit. The report will provide information on the actual acreage that was temporarily and permanently disturbed by various aspects of the operation, both cumulatively and during the preceding calendar year.

10 – FUNDING

PG&E is fully able to fund costs associated with this permit and the implementation of avoidance and mitigation. PG&E's costs for compliance will be fully covered by its gas rates. Collection of these funds is authorized by the CPUC and the Federal Energy Regulatory Commission for the ongoing construction and O&M of utility facilities. PG&E is solvent and able to meet its current financial obligations, including the conditions and obligations in this permit.

11 – CERTIFICATION

I certify that the information submitted in this application is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to

suspension or revocation of this permit and to civil and criminal penalties under the laws of the State of California.

Steve Willoughby

Steve Willoughby
Principal Land Planner,
Environmental Management,
Gas Transmission, PG&E

Revised 04/15/21

Date

12 – REFERENCES

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**ATTACHMENT A: PROGRAMMATIC BIOLOGICAL OPINION FOR MAINTENANCE
ACTIVITIES ON THE PACIFIC GAS AND ELECTRIC COMPANY GAS PIPELINE SYSTEM
IN THE CALIFORNIA DESERT (6840, CA-063.50) (1-8-99-F-71)**

Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

January 7, 2000

Memorandum

To: District Manager, California Desert District, Bureau of Land Management,
Riverside, California /s/ Diane K. Noda

From: Field Supervisor, Ventura Fish and Wildlife Office, Ventura, California

Subject: Biological Opinion for Maintenance Activities on the Pacific Gas and Electric
Company Gas Pipeline System in the California Desert (6840, CA-063.50) (1-8-
99-F-71)

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion for ongoing maintenance activities on the Pacific Gas and Electric Company gas pipeline system in the California desert on lands managed by the Bureau of Land Management (Bureau) and its effects on the federally threatened desert tortoise (*Gopherus agassizii*) and its critical habitat. This biological opinion has been prepared in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act). Your request for formal consultation was dated June 1, 1999 and was received on June 4, 1999.

This biological opinion is based on the information you supplied in the biologic assessment that accompanied your request for consultation. A complete administrative record of this consultation is on file at the Service's Ventura Fish and Wildlife Office.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Bureau proposes to permit the Pacific Gas and Electric Company (PG&E) to continue ongoing actions necessary to maintain a gas pipeline system. PG&E operates an extensive system of interconnecting pipelines that transport natural gas to residential communities,

commercial, industrial, and utility electric generating customers throughout much of California. The areas specifically affected include land within the California Desert Conservation Area (CDCA) and land located east of the CDCA but west of the Colorado River channel. The maintenance actions include such activities as the regular monitoring, inspection and repair of the pipelines, associated access roads, compressor stations, centerline markers, deep well and horizontal anodes, valves, and cathodic protection units (CPUs), and the future installation of CPUs, markers, and associated facilities required for maintaining pipeline integrity and safety, as required by the California Public Utilities Commission (CPUC) and the U.S. Department of Transportation.

The project area includes the rights-of-way (ROWs), up to $\frac{1}{4}$ mile beyond the ROWs where needed, and associated telecommunication, cathodic protection, valves, related facilities and compressor stations for the following PG&E gas pipelines. These locations are defined as the PG&E Desert Region (PG&EDR):

Lines 300 A and B, both 36-inch high pressure natural gas pipelines, from the Colorado River (milepost 0) to their intersection with the western boundary of the West Mojave Planning boundary (approximately milepost 228.5);

Line 311, a 13-inch high pressure natural gas pipeline, from Line 300 A near Kramer Junction to its endpoint near Ridgecrest (mileposts 0 to 54);

Line 313, an 11-inch high pressure natural gas pipeline, from Line 300 A at approximately 2.5 miles east of Daggett (milepost 0) to its endpoint, approximately 8 miles southeast of Lucerne Valley (milepost 34); and

Line 314, an 11- to 13-inch high pressure natural gas pipeline, from Line 300 A at about 2.5 miles west of Barstow (milepost 0) to its endpoint approximately 4 miles east of Apple Valley (milepost 43).

These lines were constructed prior to the enactment of the State and Federal Endangered Species Acts, and no protection, mitigation or compensation measures for listed species were included in the existing permits. After completion of the biological opinion, PG&E proposes amending the existing Bureau ROW grant to provide protection and mitigation measures to protect those species potentially occurring in the existing ROWs. For purposes of this project, the system under review consists exclusively of the primary and secondary natural gas pipeline system in the PG&EDR and does not include: any pipeline segments or support facilities outside of the PG&EDR; or new construction actions unrelated to existing pipeline maintenance, repair and operation.

The existing natural gas pipeline system consists of a series of pipelines and related support facilities (e.g., aerial and ground markers, access roads, valve stations, cathodic protection units) that require inspection and maintenance to remain in operation. These maintenance actions will include regular inspections required by Section 192 of the CPUC General Order 112E. These

actions may include, but are not limited to the following: (1) regular inspection of the pipeline corridors for pipe exposure due to washouts or signs of leaks, or to evaluate condition of valve stations, deep well or horizontal anode beds, or evaluation of above-ground support equipment, including centerline markers, cathodic protection units, valve stations and compressor stations; (2) excavation and repair of pipeline segments experiencing unacceptably high levels of pipeline corrosion; (3) repair and maintenance (e.g., lubrication) of valve stations, anode beds, and CPUs; (4) selective placement of additional CPUs to reduce pipe corrosion rates; (5) blading to clear vegetation from existing maintenance roads and repairs of maintenance road segments due to washouts, erosion, or other damage; and (6) emergency repairs on pipe segments experiencing leaks caused by corrosion or from external damage. The total acreage of habitat disturbance each year will depend upon the specific maintenance actions needed. The majority of this disturbance would be temporary as it would typically involve the repair of existing facilities. A rough yearly average of disturbance would be less than two acres.

With guidance from the Bureau, PG&E has grouped the proposed maintenance activities into Classes I through V, which are defined as-

Class I: maintenance activities that do not result in new surface disturbance;

Class II: maintenance activities that result in surface disturbance during seasons desert tortoises are inactive;

Class III: maintenance activities that result in surface disturbance during seasons desert tortoises are active;

Class IV: maintenance activities that may extend outside the pipeline ROW corridors; and

Class V: emergency repairs within the PG&EDR.

The distinction being made between the classes recognizes the difference in risk associated with causing surface disturbance within or outside of the active season of the desert tortoise. The active season is defined as March 1 through June 15 and August 1 through October 15.

Class I: Normal maintenance activities that do not result in new surface disturbance

A variety of routine maintenance activities would likely occur on a daily basis on different portions of the pipeline system. Except as noted, under this class of activities, workers would use pick-up trucks equipped with tools or instruments appropriate for the given task.

Class II: Maintenance activities that result in surface disturbance during the inactive season of the desert tortoise

Right-of-Way Repair - This activity typically would follow heavy winter storms and would include repair work extending beyond the existing roadbed and berm. Typically, this activity would involve a motor grader, backhoe and/or cat-loader. PG&E anticipates that ROW repair, involving 2 employees or contractors, could require up to 60 days per year to complete. The surface area affected would depend upon the specific damage needed repair. An average year might require 50 miles of access road repairs.

Below-Grade Pipe and Coating Inspections - Following a cathode protection survey indicating low pipe-to-soil electrical potentials, a portion of the pipe would be excavated for visual inspection. This activity typically would involve pick-up trucks, a flatbed truck/trailer or dump truck with trailer, a backhoe, a trailer-mounted compressor, barricades and plastic fencing. PG&E anticipates that pipe inspections would require 2 to 4 employees, would last for approximately 2 to 5 days, and disturb 200 to 2,000 square feet of pipeline ROW per year.

Installation of Magnesium Anodes - Should routine cathodic protection surveys reveal an isolated pipeline segment with low pipe-to-soil electrical potentials, magnesium anodes would be installed. In addition to pick-up trucks with equipment specific to the task, this activity would involve a flatbed truck/trailer or dump truck with trailer, and a backhoe. Installation of magnesium anodes, which are installed at the same depth as the pipeline, would require three workers for approximately one day. PG&E anticipates that three to six such installations would be necessary each year. Each installation could affect about 20 square feet.

Installation of Deep Well Anodes - Deep well anodes are installed 200 to 600 feet below the surface. Installation requires a truck-mounted drilling rig, and pick-up trucks with equipment specific to the task. An area approximately 30 feet by 60 feet will be permanently fenced with a 6 to 7 foot fence and electricity (either from an existing circuit or from a photovoltaic source) will be required. In addition to a three-man drilling crew, PG&E anticipates that deep well anode installation would require 4 employees, last for approximately 4 to 6 days, and temporarily disturb approximately 1,000 to 5,000 square feet of pipeline ROW.

Installation of Anode Flex - Should a below-grade inspection reveal failed pipeline coating, excavation and recoating of the pipeline segment could be necessary. The installation of anode flex could alleviate the need to excavate the pipeline. Anode flex is a cathodic protection device that is installed by trenching next to the pipeline and installing a cathodic lead anode wire over the length of the pipeline needing cathodic protection. Anode flex can be installed parallel to the pipeline from several thousand feet to several miles. It is typically buried to a depth of four to eight feet deep using a narrow blade. The surface disturbance is very minimal. Equipment required to install the anode flex is a trenching truck and trailer, and several utility trucks. The number of employees and the construction schedule would vary depending upon the length of the area. This type of maintenance is likely to be needed only infrequently (less than once per year).

Installation or Replacement of Horizontal Anodes - Should existing, shallow-depth, cathodic protection units prove incapable of maintaining desirable pipe-to-soil electrical potentials over a long pipeline segment, horizontal anodes would be installed. Horizontal anodes parallel the pipeline 400 to 800 feet from the ROW centerline and are installed at approximately the same depth as the pipeline. In addition to pickup trucks with

equipment specific to the task, this activity would involve a welding truck, flatbed truck/trailer or dump truck with trailer, a backhoe, a lowboy trailer, a tractor cat-loader, and water truck. Typically, horizontal anode installation would require 5 employees, take 5 to 7 days, and disturb 1,000 to 5,000 square feet. This type of maintenance activity would be needed only infrequently (less than once per year).

Valve/Pipeline Excavation and Recoating - Should a below-grade inspection reveal failed pipeline coating, excavation and recoating of the pipeline segment would be necessary. In addition to pickup trucks, this activity typically would involve a flatbed truck/trailer or dump truck with trailer, a backhoe, a trailer-mounted compressor, a portable sand-blaster, barricades and plastic fencing. Excavation and recoating usually requires four to five employees. The area disturbed and the time required to complete this activity would depend upon the length of pipeline needing repair. This maintenance activity would be needed only infrequently (about once per year).

Pipeline Segment Replacement - Should a below-grade inspection reveal severe corrosion or other damage, excavation and replacement of a portion of the pipeline would be necessary. In addition to pickup trucks, this activity typically would involve a flatbed truck/trailer or dump truck with trailer, a backhoe, a trailer-mounted compressor, a truck-mounted crane, a side boom, barricades and plastic fencing. Replacement of pipeline usually requires 11 to 12 employees. The area disturbed and the time required to complete this activity would depend upon the length of pipeline needing replacement.

Telecommunication Pole Removal - Currently PG&E is upgrading its telecommunication system to a satellite system. When this upgrade is completed, the existing system consisting of a wood pole communication line parallel to the pipeline and the access road would be removed. The area to be disturbed and the time required to complete this activity would vary. Access is by an existing access road, and the pole line is within three to ten feet from the access road. Minimal to no loss of vegetation is expected.

Electrolysis Test Stations Installations - The installation of the electrolysis test stations (ETS) includes the use of one backhoe and one crew truck. A dump truck will only be required when the pipe is located in a rocky formation to provide sand to re-cover the pipeline (a CPUC requirement). The location of a typical ETS is right above the pipe. Access is by existing access roads. Location of the existing pipeline is within three to eight feet from the access road. ETS stations need to be located approximately one per mile along a pipeline. When possible, they are sited on existing disturbed areas and next to existing location paddles. Minimum vegetation removal is required. Two to four ETSs can be installed per day. The pipe is exposed by the use of the backhoe to a point where an employee can connect two standard wires to the pipe with a liquid weld material. (Trench opening size is based on regulations of the California Occupational Safety and Health Administration) The area of temporary ground disturbance will be approximately 100 square feet per installation. The pipe will then be covered leaving the two lead wires exposed. The wires are placed in a four-inch tube that is exposed four feet

above the ground and capped. Approximately 100 ETS installations will be needed over the next 20 years.

Class III: Maintenance activities that result in surface disturbance during the active season of the desert tortoise

These maintenance activities are the same as those described for Class II activities but would be carried out during the active desert tortoise season. Consequently, without additional protective measures, they would present more risk to this species than Class II activities.

Class IV: Maintenance activities that may extend outside the pipeline ROW corridors

This class of activities could include any of the previously mentioned actions that would extend beyond the ROW, plus creation of staging or laydown areas and equipment stockpile and spoils-pile deposition areas. The extent of disturbance outside of the existing pipeline ROW would vary with the project and depend upon ROW width, topography, layout, and other factors. Typically, less than 0.5 acre outside of a pipeline ROW would be disturbed. These activities could take place during the active or inactive season.

Class V: Emergency repairs

Emergency Repairs - To ensure public safety and service reliability and to protect the environment, emergency repairs may be necessary for pipeline leaks or breaks, exposure of the pipeline due to erosion, and access roads severely damaged by storms. These activities would usually involve a backhoe and/or cat-loader, motor grader, and possibly other heavy earth-moving equipment. PG&E anticipates that road repair activities would require two to five employees and three to five days to complete. Pipeline leaks or breaks would involve equipment similar to those identified under the preceding "Leak Investigations" or "Pipeline Segment Replacement" headings. PG&E anticipates that most emergency situations would affect less than 0.5 acre, although the amount of habitat disturbance would vary depending upon the nature of the emergency.

Emergency Leak Excavations - Following a leakage survey indicating escaping gas, a portion of the pipe would be excavated for visual inspection. In addition to pickup trucks, this activity would typically involve a flatbed truck/trailer or dump truck with trailer, a backhoe, a trailer-mounted compressor, barricades and plastic fencing. Should workers find a leak, four additional trucks with welding machines would be required. PG&E anticipates that pipe inspections would require 4 employees, last for approximately 5 days, and disturb 1,000 to 2,000 square feet of pipeline ROW. In instances where a leak was confirmed, four additional workers and four to five additional days beyond the initial excavation activities would be necessary to complete repairs.

PG&E, with guidance from the Bureau, has proposed to undertake the following measures to mitigate project effects on listed species during maintenance and repair activities. Measures that are not applicable to the desert tortoise have been omitted; to avoid confusion, we have not changed the numbers used by the Bureau.

Maintenance Class I: Normal maintenance activities that do not result in new surface disturbance

1. All PG&E employees and its contractors involved with pipeline inspections and maintenance activities will be required to take a threatened and endangered species education program. The program will be approved by the Service, Bureau and California Department of Fish and Game (CDFG). All maintenance and monitoring employees shall participate in the education program prior to initiation of activities. New employees shall receive formal, approved training prior to working on-site. At a minimum, the program shall cover the distribution of listed species, general behavior and ecology of these species, sensitivity to human activities, legal protection, penalties for violation of State and Federal laws, reporting requirements, and project mitigation measures. In addition, the program shall include fire prevention measures to be implemented by employees during project activities.
2. Encounters with a listed species shall be reported to an authorized or qualified biologist. These biologists shall maintain records of all listed species encountered during project activities. This information shall include for each individual: the locations (narrative, vegetation type, and maps) and dates of observations; general conditions and health; any apparent injuries and state of healing; if moved, the location from which it was captured and the location in which it was released (for desert tortoises, whether animals voided their bladders); and diagnostic markings (i.e., identification numbers or, on desert tortoises, marked lateral scutes).
3. Existing routes of travel to and from the maintenance and inspection sites shall be used. Cross-country use of vehicles and equipment shall be strictly prohibited.
4. Trash and food items will be contained in closed containers and removed daily to reduce attractiveness to opportunistic predators such as common ravens (*Corvus corax*), coyotes (*Canis latrans*), and feral dogs.
5. Employees will not bring pets to the project site.
6. Firearms shall be prohibited from the maintenance/inspection sites.
7. Desert tortoises commonly seek shade during the hot portions of the day. Employees working within the geographic range of this species shall be required to check under their equipment or vehicle before it is moved. If desert tortoises are encountered, the vehicle is not to be moved until such animals have voluntarily moved to a safe distance away

from the parked vehicle. Desert tortoises may be moved by a person authorized by the Service for this task.

8. Upon completion of each maintenance action of the ROW, all unused material and equipment shall be removed from the site. This condition does not apply to fenced pump station sites.
9. Only personnel authorized by the Service may handle desert tortoises. When a listed species is moved, the qualified biologist shall be responsible for taking appropriate measures to ensure that the animal is not exposed to temperature extremes which could be harmful. The authorized personnel shall follow the appropriate protocols outlined in "Guidelines for Handling Desert Tortoises During Construction Projects" (Desert Tortoise Council 1996) when handling desert tortoises or excavating their burrows.
10. Upon locating an individual of a dead or injured listed species, PG&E shall make initial notification to the Bureau and Service within three working days of its finding. The notification must be made in writing to the Service's Division of Law Enforcement in Torrance (370 Amapola Avenue, Suite 114, Torrance, California 90501; (310) 328-1516) and by telephone and writing to the Ventura Fish and Wildlife Office (2493 Portola Road, Suite B, Ventura, California 93003; (805) 644-1766). The report shall include the date and time of the finding or incident (if known), location of the carcass, a photograph, cause of death (if known), and other pertinent information. Animals injured through PG&E activities shall be transported to a qualified veterinarian for treatment at the expense of PG&E. If an injured animal recovers, the CDFG and the Bureau shall be contacted for final disposition of the animal.
11. In January of each year beginning in 2000, PG&E shall submit a list of proposed activities by name, category, location, and approximate start date to the Bureau, California Desert District Office, 6221 Box Springs Boulevard, Riverside, California 92507, Attention: Pipeline Projects. PG&E shall also forward the list of activities to the Service and CDFG. The agencies shall have 30 days following receipt of the report to reject the proposed action. In the event of a rejection, PG&E will work with the agencies to resolve issues. Agency approval of the proposed list of projects is valid for one year after agency acceptance.
12. Routine road surface maintenance activities shall be conducted during the inactive season of the desert tortoise. Localized repair of major damage may take place throughout the year.

Maintenance Class II: Maintenance activities that result in surface disturbance during the inactive season of the desert tortoise

In addition to measures described for Class I maintenance actions above, the following mitigation measures shall be implemented for Class II maintenance actions:

13. All listed species surveys and monitoring work within areas where pre-activity surveys have demonstrated the potential to affect one or more listed species shall be accomplished by a qualified biologist. The biologist shall be responsible for assisting crews in compliance with protection measures, performing surveys in front of the crew as needed to locate and avoid sensitive species, and monitoring compliance.
14. A pre-activity survey of the project area shall be conducted by a qualified biologist no more than 14 days prior to the onset of activities. Burrows of listed species (including desert tortoise burrows) outside of, but near, the pipeline ROW shall be prominently flagged at that time so that they may be avoided during work activities. Proposed actions shall avoid disturbing such sites to the extent possible. In the event an occupied burrow is found within the proposed construction site, a qualified biologist will be on-site during construction.
15. Should it prove necessary to excavate a desert tortoise from its burrow to move it from harm's way, excavation shall be done using hand tools, either by or under the direct supervision of an authorized biologist. Excavation of desert tortoise burrows shall occur no more than seven days before the onset of maintenance or construction activities. All desert tortoises removed from burrows shall be placed in an unoccupied burrow of approximately the same size as the one from which it was removed. If an existing burrow is unavailable, the authorized biologist shall construct or direct the construction of a burrow of similar shape, size, depth, and orientation as the original burrow. To ensure their safety, desert tortoises moved during inactive periods shall be monitored for at least two days after placement in the new burrows or until the end of the job. The authorized biologists shall be allowed some judgment and discretion to ensure that survival of the desert tortoise is likely.

If desert tortoises need to be moved at a time of day when ambient temperatures could harm them (less than 40 degrees Fahrenheit or greater than 90 degree Fahrenheit), they shall be held overnight in a clean cardboard box. These desert tortoises shall be kept in the care of the authorized biologist under appropriate controlled temperatures and released the following day when temperatures are favorable. All cardboard boxes shall be appropriately discarded after one use.
16. PG&E shall designate a field contact representative (FCR) who will be responsible for overseeing compliance with protective stipulations for listed species. The FCR must be on site during all project activities. The FCR shall have authority to halt all activities that are in violation of the stipulations. The FCR shall have a copy of all stipulations when work is being conducted on the site. The FCR may be a project manager, PG&E representative, or a contract biologist.
17. The FCR shall have the authority to halt all non-emergency project activity should danger to a listed species arise. Work shall proceed only after hazards to the listed

species are removed, the species is no longer at risk, or the individual has been moved from harm's way by the authorized biologist.

18. During project activities, vehicle parking and material stockpiles shall be located in existing disturbed areas along the pipeline ROW. Pipe segments shall be inspected for the presence of listed species. Should a pipe segment become occupied by a listed species, a qualified biologist shall remove it from the pipe segment and release it out of harm's way.
19. All surface-disturbing activities within the range of any listed species shall be conducted in a manner that reduces, as much as possible, the potential for take of individuals of a listed species. Impacts to habitat shall also be minimized to the maximum possible extent.
20. The area of disturbance shall be confined to the smallest practical area, considering topography, placement of facilities, location of burrows, nesting sites or dens, public health and safety, and other limiting factors. As needed, work area boundaries shall be delineated with flagging or other marking to minimize surface disturbance associated with vehicle straying. Special habitat features, such as burrows identified by the qualified biologist, shall be avoided to the extent possible. To the extent possible, previously disturbed areas within the project sites shall be used for the stockpiling of excavated materials, storage of equipment, digging of slurry and burrow pits, locations of trailers, parking of vehicles, and any other surface-disturbing activity. The qualified biologist, in consultation with the PG&E, shall ensure compliance with these measures.
22. All activities shall be restricted to a pre-determined corridor. If unforeseen circumstances require expansion of this width, the potential expanded work areas shall be surveyed for listed species prior to use of the area. All appropriate mitigation measures shall be implemented within the expanded work areas based on the judgment of the agencies and PG&E's biological consultant. Work outside of the original ROW shall proceed only after receiving written approval from the Bureau and CDFG describing the exact location of the expansion.
23. PG&E has the option of erecting desert tortoise fencing in lieu of inspection of open trenches. If the trench is short, PG&E construction or maintenance personnel may monitor the trench. During excavation of trenches or holes, earthen ramps will be provided to facilitate the escape of any wildlife species that may inadvertently become entrapped. The length of pipeline trench left open at any given time shall not exceed the length of pipeline segment that would be worked on in one week. A final inspection of the open trench segment shall also be made immediately before backfilling. All open pipe segments shall be covered when work activity is not occurring at a site. Trenches must meet the safety requirements of the Occupational Safety and Health Administration before personnel enter open trenches to remove wildlife.

28. Employees shall exercise caution when commuting to the project area and while traveling the ROW during maintenance activities. To minimize the likelihood for vehicle strikes of listed species, speed limits when commuting to project areas on ROW roads shall not exceed 20 miles per hour.
29. The Bureau shall ensure that activities are confined to the authorized work areas by means of project assessments. The assessments may be conducted by the authorized biologist. Should the assessment find that maintenance activities extended beyond the approved work areas, the Bureau shall ensure that PG&E uses appropriate measures to restore the disturbed areas.
30. Where necessary, PG&E shall be required to restore disturbed areas in a manner that will assist in the re-establishment of biological values within the disturbed rights-of-way. Methods of such restoration shall include the reduction of erosion, re-spreading of the top two inches of soil, planting with appropriate native shrubs, and scattering of bladed vegetation and rocks across the ROW, depending upon the appropriateness or effectiveness in a given area.
31. Within 60 days of completion of maintenance or construction activities, the FCR and authorized biologist shall prepare a report for the Bureau documenting the effectiveness and practicality of the mitigation measures, the number of desert tortoises excavated from their burrows, the number of desert tortoises removed from the site, the number of desert tortoises killed or injured, and the specific information for each species required under mitigation measure 2. The report shall also make recommendations for modifying the stipulations to enhance species protection or improve the utility of the programmatic permit. The report shall provide information on the actual acreage disturbed by various aspects of the operation.
32. The Bureau shall endeavor to place the remains of intact listed species with educational or research institutions holding the appropriate state and federal permits per their instructions. If such institutions are not available or the animal's remains are in poor condition, the information noted above shall be obtained and the carcass left in place. If the animal is a desert tortoise, the Bureau should consider marking the carcass in a manner that would not be toxic to other wildlife to ensure that it would not be re-recorded in the future. Arrangements regarding proper disposition of potential museum specimens shall be made with the institution by the Bureau through a biologist prior to implementation of the action. Animals injured by project activities should be transported to a qualified veterinarian. Should any treated animals survive, the appropriate Service field office should be contacted regarding the final disposition of the animals.

Maintenance Class III: Maintenance activities that result in surface disturbance during the active season of the desert tortoise in desert tortoise habitat

In addition to measures described for Class I and Class II maintenance actions above, the following mitigation measures shall be implemented for Class III maintenance actions:

33. The width of any activity corridor for any pipeline excavation project or construction of any aboveground facility shall be determined prior to the onset of ground-disturbing activities. Consistent with worker safety, work areas shall be restricted to the narrowest possible corridors.
34. Authorized biologists shall be present during maintenance to assist in the implementation of on-site mitigation measures for the desert tortoise and to monitor compliance. The appropriate number of authorized biologists shall be dependent upon the nature and extent of the work being conducted and shall be stated in the Bureau's ROW grant for each particular action, after discussion with the Bureau, CDFG, and PG&E's biological consultant.
35. Desert tortoises removed from work areas shall be released as described previously. To facilitate clearing of the area of desert tortoises, excavation of burrows shall begin no more than 14 days prior to the onset of surface disturbing activities, as long as a final survey is conducted within 24 hours of the onset of activities to ensure that desert tortoises have not returned to the work area.

Maintenance Class IV: Maintenance activities that may extend outside the pipeline ROW corridors

In addition to measures described for Class I, Class II and Class III maintenance actions above, the following mitigation measures shall be implemented for Class IV maintenance actions:

36. For regular activities that may extend outside of any pipeline ROW in all or in part, a separate permit may be required.

Maintenance Class V: Emergency repairs within the PG&EDR

37. For emergency situations involving a pipeline leak or spill or any other immediate safety hazard, PG&E shall notify the appropriate Bureau field office within 48 hours. As a part of this emergency response, the Bureau may require specific measures to protect listed species. During cleanup and repair, the agencies may also require measures to recover damaged habitats.

Compensation

38. Compensation for loss of habitat shall be provided according to Bureau requirements. Current requirements are based on a formula presented in the California Statewide Desert Tortoise Management Policy (Bureau and CDFG 1992). For the purposes of this consultation, changes to the compensation formula must be reviewed and approved by

the Service and CDFG. At PG&E's discretion, PG&E shall either (1) acquire the compensation lands and deliver the deed to the Bureau or CDFG; (2) provide adequate funds, to be determined by the Bureau, to the Bureau or CDFG for the acquisition of compensation lands or for other activities approved by the Service; or (3) make permanent improvements to desert tortoise habitat upon agreement of CDFG, the Service and the Bureau. Lands to be acquired must be within Category I or II of the same desert tortoise management unit. If acquiring lands (option 1 above), the project proponent must work closely with the Bureau in selecting the lands benefitting conservation and recovery efforts. Compensation requirements may be paid subsequent to the year-end report.

STATUS OF THE SPECIES

The desert tortoise is a large, herbivorous reptile found in portions of the California, Arizona, Nevada, and Utah deserts. It also occurs in Sonora and Sinaloa, Mexico. In California, the desert tortoise occurs primarily within the creosote, shadscale, and Joshua tree series of Mojave desert scrub, and the lower Colorado River Valley subdivision of Sonoran desert scrub. Optimal habitat has been characterized as creosote bush scrub in which precipitation ranges from two to eight inches, diversity of perennial plants is relatively high, and production of ephemerals is high (Luckenbach 1982, Turner and Brown 1982, Turner 1982, and Schamberger and Turner 1986). Soils must be friable enough for digging of burrows, but firm enough so that burrows do not collapse. In California, desert tortoises are typically associated with gravelly flats or sandy soils with some clay, but are occasionally found in windblown sand or in rocky terrain (Luckenbach 1982). Desert tortoises occur in the California desert from below sea level to an elevation of 7,300 feet, but the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet (Luckenbach 1982, Schamberger and Turner 1986).

Desert tortoises are most active in California during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rain storms. Desert tortoises spend the remainder of the year in burrows, escaping the extreme conditions of the desert. Further information on the range, biology, and ecology of the desert tortoise can be found in Burge (1978), Burge and Bradley (1976), Hovik and Hardenbrook (1989), Luckenbach (1982), Weinstein et al. (1987), and Service (1994).

The Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Colorado Desert in California. On August 4, 1989, the Service published an emergency rule listing the Mojave population of the desert tortoise as endangered. In its final rule, dated April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened. The Service designated critical habitat for the desert tortoise in portions of California, Nevada, Arizona, and Utah in a final rule, published February 8, 1994.

Critical habitat is designated by the Service to identify the key biological and physical needs of the species and key areas for recovery, and focuses conservation actions on those areas. Critical

habitat is composed of specific geographic areas that contain the biological and physical attributes that are essential to the species' conservation within those areas, such as space, food, water, nutrition, cover, shelter, reproductive sites, and special habitats. These features are called the constituent elements of critical habitat. The specific constituent elements of desert tortoise critical habitat are: sufficient space to support viable populations within each of the six recovery units and to provide for movement, dispersal, and gene flow; sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species; suitable substrates for burrowing, nesting, and overwintering; burrows, caliche caves, and other shelter sites; sufficient vegetation for shelter from temperature extremes and predators; and habitat protected from disturbance and human-caused mortality (59 FR 5820).

The recovery plan for the desert tortoise is the basis and key strategy for recovery and delisting of the desert tortoise (Service 1994). The plan divides the range of the desert tortoise into six distinct population segments or recovery units and recommends establishment of 14 Desert Wildlife Management Areas throughout the recovery units. Within each Desert Wildlife Management Area, the recovery plan recommends implementation of reserve level protection of desert tortoise populations and habitat, while maintaining and protecting other sensitive species and ecosystem functions. The design of Desert Wildlife Management Areas should follow accepted concepts of reserve design. As part of the actions needed to accomplish recovery, land management within all Desert Wildlife Management Areas should restrict human activities that negatively affect desert tortoises (Service 1994).

The desert tortoise was listed in response to loss and degradation of habitat caused by numerous human activities including urbanization, agricultural development, military training, recreational use, mining, and livestock grazing. The loss of individual desert tortoises to increased predation by common ravens, collection by humans for pets or consumption, collisions with vehicles on paved and unpaved roads, and mortality resulting from diseases also contributed to the Service's listing of this species. During the summers of 1998 and 1999, biologists associated with the West Mojave Coordinated Management Plan surveyed over 1,200 transects over a large area of the western Mojave Desert. These transects failed to detect sign of desert tortoises in large portions of the Mojave Desert where desert tortoises were previously considered to be common. Although these data have not been fully analyzed and compared with previously existing information, they strongly suggest that the factors mentioned above have caused a widespread decline in the numbers of desert tortoises in the western Mojave Desert. In 1999, monitoring of the long-term study plot in the Chemehuevi Valley indicated a substantial decline in the density of desert tortoises; the cause of the decline and its extent are not known at this time.

ENVIRONMENTAL BASELINE

PG&E's pipelines cross several vegetation communities that can support populations of the desert tortoise including Mojave creosote bush scrub, desert dunes, Mojave wash scrub, desert saltbush scrub, desert sink scrub, desert greasewood scrub, shadscale scrub, blackbush scrub, Mojave desert wash scrub, and Joshua tree woodland.

This species ranges over most of the area crossed by the project gas lines. The project gas lines and related facilities cross the Chemehuevi, Ord-Rodman, and Fremont-Kramer critical habitats units and the Eastern Mojave, Northern Colorado, and Western Mojave recovery units. Because project activities will occur in undetermined locations over a large area, focused surveys for desert tortoises were not conducted prior to this consultation.

EFFECTS OF THE ACTION

The proposed action may have both direct and indirect effects on the desert tortoise. Direct effects include disturbance of habitat associated with maintenance of the pipeline, which could result in the injury or mortality of desert tortoises in several ways. Desert tortoises could be killed or injured through collisions with vehicles required for these activities as they travel on existing roads through habitat. Desert tortoises may take shelter under parked vehicles and be crushed when the vehicles are subsequently moved. Desert tortoises could be crushed in their burrows or while under shrubs during maintenance of the pipeline and its ancillary facilities. Maintenance activities could also result in the crushing of unoccupied burrows; the destruction of a burrow could result in the additional exposure of a desert tortoise to temperature extremes or predation. Trenching activities could result in the injury or mortality of desert tortoises if individuals fall into exposed trenches.

The Bureau has included numerous measures as part of the proposed action to minimize these effects. These measures include educating workers about the presence of desert tortoises, checking under vehicles before they are moved, instituting and maintaining speed limits, avoiding desert tortoises when they are encountered, and reducing the area of disturbance when possible. In general, past implementation of such measures has reduced the numbers of desert tortoises that are killed or injured by project activities.

An additional direct effect of pipeline maintenance would be disturbance and loss of habitat. The Bureau estimates that project activities would disturb approximately two acres annually. The pipelines occur within three separate critical habitat units. The loss or disturbance of a total of 2 acres of habitat per year in the Chemehuevi, Ord-Rodman, and Fremont-Kramer critical habitat units, which include 937,400, 253,200, and 518,000 acres, respectively, will not substantially affect the ability of these areas to support the survival and recovery of the desert tortoise. Additionally, although shrub cover will likely not return to pre-disturbance conditions for many years, most disturbance will not be permanent.

The amount of linear disturbance associated with the pipeline and the small areas disturbed by other activities would not be expected to completely destroy all of the habitat within the territory of any single desert tortoise; if an individual used burrows or shrubs within the area of the maintenance, it would also be familiar with habitat outside the work area. Desert tortoises will also cross areas devoid of shrubs that are much greater than 30 feet in width. Although individuals crossing such open terrain may have greater exposure to predation, the maintenance of the pipeline would not substantially increase fragmentation of habitat.

Maintenance activity could attract common ravens to the work site if trash is left by workers. As noted previously, common ravens prey on young desert tortoises. Uninformed workers could also intentionally or unintentionally harm desert tortoises. The Bureau has also proposed measures to reduce the likelihood that these effects will occur.

Determining the number of individual desert tortoises or their burrows that could be affected is not possible. In general, subadults and adults and their burrows will be more easily detected and avoided than juveniles; construction occurring during the species' inactive periods will be less likely to cause injury or mortality.

The request for formal consultation notes that the Bureau will require PG&E to offset the loss or disturbance of desert tortoise habitat resulting from the project. PG&E may choose to acquire and transfer compensation lands to the Bureau for the conservation of the species, to provide sufficient funds to Bureau for it to acquire land, or to permanently restore disturbed desert tortoise habitat; implementation of the last option requires the approval of the Service and Bureau. Any of these measures should improve the overall management of the species as desert tortoise habitat is brought under Bureau administration and becomes subject to federal regulations. Acquired lands also are eligible for inclusion in habitat enhancement and management plans which could further improve their wildlife values. Therefore, implementation of the proposed action would include the acquisition and management of compensation lands which support desert tortoises and would result in beneficial effects on this species.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Because the Bureau manages much of the land surrounding these sites, many of the actions that are reasonably expected to occur will likely be subject to the requirements of section 7. The Service is unaware of any non-federal actions that are reasonably expected to occur in the vicinity of the pipeline routes.

CONCLUSION

After reviewing the current status of the desert tortoise, the environmental baseline for the action area, the effects of the proposed maintenance activities, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the desert tortoise or adversely modify its critical habitat. We have reached this conclusion for the following reasons. Few desert tortoises are likely to be killed or injured by pipeline maintenance as a result of minimization measures proposed by the Bureau. The areas to be disturbed are a small portion of designated desert tortoise critical habitat. This loss of

habitat is not likely to appreciably reduce the ability of critical habitat to support the survival and recovery of the desert tortoise.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be undertaken by the Bureau so that they become binding conditions of any permit or grant issued to PG&E for the exemption in section 7(o)(2) to apply. The Bureau has a continuing duty to regulate the activity covered by this incidental take statement. If the Bureau fails to assume and implement the terms and conditions or fails to require PG&E and its contractors to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Bureau must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(I)(3)].

Because of the relatively small amount of habitat that would be disturbed by the pipeline maintenance and the measures the Bureau has proposed as part of its proposed action to minimize the amount of incidental take, the Service anticipates that the maintenance of the PG&E pipeline is likely to result in few mortalities of or injuries to desert tortoises. The possibility exists that desert tortoises, particularly small individuals or nests, may not be observed by project monitors or workers and could be taken by project activities.

To ensure that the measures proposed by the Bureau are effective and are being properly implemented, the Bureau shall contact the Service immediately if a desert tortoise is killed or injured. At that time, the Service and the Bureau shall review the circumstances surrounding the incident to determine whether additional protective measures are required. Project activities may continue pending the outcome of the review, unless the Bureau or the Service determine that a work stoppage is warranted. This biological opinion provides an

exemption to the prohibitions against take only for those activities occurring within the delineated boundaries of project sites.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of the desert tortoise:

1. Only qualified biologists shall be authorized to handle desert tortoises during activities associated with maintenance of the pipeline.
2. The Bureau shall ensure that desert tortoises are not trapped in open trenches or holes.
3. Individual desert tortoises shall be moved from harm's way during activities associated with maintenance of the pipeline.
4. The Bureau shall suspend the right-of-way grant if the protective measures for the desert tortoise are not fully implemented.

These reasonable and prudent measures recognize the measures proposed by the Bureau to minimize the effects of incidental take during the construction of the pipeline. Our incidental take statement and analysis are contingent upon the full implementation of these measures; if the Bureau or PG&E changes or fails to implement any of these measures, the exemption from the prohibition against take contained in section 9 of the Act may lapse and the Bureau must contact the Service to determine whether reinitiation of consultation is required.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Bureau must comply, or ensure that PG&E complies, with the following terms and conditions, which implement the reasonable and prudent measures described above and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

1. The following term and condition implements reasonable and prudent measure 1:

Only biologists authorized by the Service under the auspices of this biological opinion shall handle desert tortoises. The Bureau shall submit the names(s) and credentials of the proposed biologist(s) to the Service for review and approval at least 15 days prior to the onset of activities. No activities shall begin until a biologist is approved.

2. The following term and condition implements reasonable and prudent measure 2:

The Bureau's measure 23 is hereby modified by adding the following: All open holes and trenches shall be inspected for trapped desert tortoises at the beginning, middle, and

end of the work day, at a minimum. If desert tortoises are trapped, the authorized biologist shall be notified immediately. The desert tortoises shall be allowed to escape or shall be carefully removed and relocated by the authorized biologist before work continues in that location.

3. The following term and condition implements reasonable and prudent measure 3:

The following shall be added to the Bureau's measure 14: The authorized biologist shall examine areas to be disturbed for desert tortoises and their burrows immediately prior to ground disturbance. The inspection shall provide 100 percent coverage of the area within the project limits. The authorized biologist shall relocate any desert tortoises found within the project area to suitable, undisturbed habitat outside the project alignment. Desert tortoises shall not be relocated to such distances that they are placed outside of their likely territories. All desert tortoise burrows and pallets outside of, but near, the pipeline construction corridor shall be flagged at that time so that they may be avoided during work activities. At the conclusion of work activities, all flagging shall be removed.

4. The following term and condition implements reasonable and prudent measure 4:

If PG&E does not comply with all of the Bureau's protective measures and the terms and conditions of this biological opinion, the Bureau shall suspend the right-of-way grant until such time all protective measures are being fully implemented.

REPORTING REQUIREMENTS

The Bureau shall provide a copy of the written report, described in measure 31, to the Service.

DISPOSITION OF DEAD OR INJURED DESERT TORTOISES

Dead or injured desert tortoises shall be treated as described by the Bureau in measure 10. Care must be taken in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service recommends that the Bureau consider including measures to protect all wildlife species during project activities along the right-of-way. Such measures could include

prohibiting the collection of or harm to native species encountered by project personnel and removal of trapped wildlife to outside the project area.

The Service requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

REINITIATION NOTICE

This concludes formal consultation on the Bureau's proposal to issue a ROW grant for maintenance activities on the Pacific Gas and Electric Company gas pipeline system in the California desert. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions regarding this authorization, please contact Tim Thomas of my staff at (805) 644-1766.

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