



December 4, 2019

PG&E Letter DCL-19-077

U.S. Nuclear Regulatory Commission  
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10 CFR 50.82(a)(4)

Docket No. 50-275, OL-DPR-80  
Docket No. 50-323, OL-DPR-82  
Diablo Canyon Units 1 and 2  
Diablo Canyon Power Plant, Units 1 and 2 – Post-Shutdown Decommissioning  
Activities Report

Reference:

1. PG&E Letter DCL-18-096, "Certification of Permanent Cessation of Power Operations," dated November 27, 2018 (ML18331A553)
2. Regulatory Guide 1.185, Revision 1, "Standard Format and Content for Post-Shutdown Decommissioning Activities Report," dated June 2013 (ML13140A038)
3. PG&E Letter DCL-19-091, "Letter to Inform the NRC of the Submittal Date for the Post-Shutdown Decommissioning Activities Report, Site-Specific Decommissioning Cost Estimate, and Irradiated Fuel Management Plan," dated October 31, 2019 (ML19304C675)

Dear Commissioners and Staff:

In accordance with 10 CFR 50.82(a)(4)(i), Pacific Gas and Electric Company (PG&E) is submitting the Post-Shutdown Decommissioning Activities Report (PSDAR) for Diablo Canyon Power Plant (DCPP), Units 1 and 2. On November 27, 2018, PG&E informed the Nuclear Regulatory Commission (NRC) that it will permanently cease power operations at DCPP, Units 1 and 2 on November 2, 2024, and August 26, 2025, respectively (Reference 1).

The enclosure contains the PSDAR for DCPP Unit 1 and Unit 2. The PSDAR has been developed consistent with Regulatory Guide 1.185, Revision 1, "Standard Format and Content for Post-Shutdown Decommissioning Activities Report" (Reference 2). As required by 10 CFR 50.82(a)(7), PG&E will notify the NRC in writing, with copies sent to the State of California, before performing any decommissioning activity inconsistent with, or making any significant schedule change from, those actions and schedules described in the PSDAR, including changes that significantly increase the decommissioning cost.



The Irradiated Fuel Management Plan (IFMP) and site-specific decommissioning cost estimate (SSDCE) are being submitted concurrently with the PSDAR under separate cover letters. The technical, schedule, and cost information provided is consistent among these submittals.

In response to public input provided during the NRC pre-submittal meeting, PG&E will provide the NRC an updated PSDAR within six months following submittal of each Nuclear Decommissioning Cost Triennial Proceeding (in addition to the notification required by 10 CFR 50.82(a)(7)).

In Reference 3, PG&E informed the NRC of a delay in submitting the PSDAR, SSDCE, and the IFMP. The reason for the delay was to allow additional time for external outreach and engagement associated with these key decommissioning submittals. PG&E has engaged with over 40 entities to discuss the submittals, including federal, state and local officials, key community leaders, the Diablo Canyon Decommissioning Engagement Panel, interested parties/intervenors, employees, and local media. This submittal satisfies the commitment to submit the PSDAR by December 6, 2019, as documented in the Enclosure of Reference 3.

PG&E makes no new or revised regulatory commitments (as defined by NEI 99-04) in this letter.

Should you have any questions, please contact Mr. Philippe Soenen at (805) 459-3701.

Sincerely,

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*Senior Vice President Generation and Chief Nuclear Officer*

Enclosure

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cc/enc: Scott A. Morris, NRC Region IV Administrator  
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Enclosure  
PG&E Letter DCL-19-077

**Post-Shutdown Decommissioning Activities Report  
Diablo Canyon Power Plant  
Unit 1 and Unit 2**

# POST-SHUTDOWN DECOMMISSIONING ACTIVITIES REPORT

DIABLO CANYON POWER PLANT  
Unit 1 and Unit 2

December 2019  
Pacific Gas and Electric



# Diablo Canyon Power Plant Post-Shutdown Decommissioning Activities Report

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**Acronyms**

ALARA	as low as reasonably achievable
BMP	best management practices
C&D	cold and dark
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHRIS	California Historical Resources Information System
CPUC	California Public Utilities Commission
D&D	decontaminate and dismantle
DC	Diablo Canyon
DCPP	Diablo Canyon Power Plant
DOE	Department of Energy
EPA	Environmental Protection Agency
ER	environmental report
FES	Final Environmental Statement
GEIS	Generic Environmental Impact Statement
GTCC	greater than Class C
HEPA	high-efficiency particulate air
HSA	historical site assessment
IFMP	Irradiated Fuel Management Plan
ISFSI	independent spent fuel storage installation
kV	kilovolt
LARW	low-activity radioactive waste
LTP	License Termination Plan

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MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
NDT	nuclear decommissioning trust
NEPA	National Environmental Policy Act
NRC	Nuclear Regulatory Commission
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health Administration
PG&E	Pacific Gas and Electric Company
PSDAR	Post-Shutdown Decommissioning Activities Report
PWR	pressurized water reactor
SFP	spent fuel pool
SFPI	spent fuel pool island
SHPO	State Historic Preservation Office
SNF	spent nuclear fuel
SSC	systems, structures, and components
SSDCE	site-specific decommissioning cost estimate



# Diablo Canyon Power Plant Post-Shutdown Decommissioning Activities Report

## 1. Introduction and Summary

### 1.1. Introduction

In accordance with the requirements of 10 CFR 50.82(a)(4)(i), "Termination of license," this report constitutes the Post-Shutdown Decommissioning Activities Report (PSDAR) for the Diablo Canyon Power Plant (DCPP). This PSDAR contains the following:

1. a description of the planned decommissioning activities along with a schedule for their accomplishment
2. a discussion that provides the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by appropriate previously issued environmental impact statements

In accordance with 10 CFR 50.82(a)(4)(i), Pacific Gas and Electric Company (PG&E) will verify that the decommissioning activities for the Pismo Beach Rail Yard improvements are bounded by previously issued environmental impact statements or seek appropriate regulatory approval if needed.

3. A summary of the site-specific decommissioning cost estimate (SSDCE) that is being submitted concurrently, including the projected cost of managing irradiated fuel and the post-decommissioning site restoration cost

The PSDAR has been developed consistent with Regulatory Guide 1.185, "Standard Format and Content for Post-Shutdown Decommissioning Activities Report," (Reference 1). This report is based on currently available information and the plans discussed herein may be modified as additional information becomes available or conditions change. As required by 10 CFR 50.82(a)(7), PG&E will notify the Nuclear Regulatory Commission (NRC or Commission) in writing, with copies sent to the State of California, before performing any decommissioning activity inconsistent with, or making any significant schedule change from, those actions and schedules described in the PSDAR, including changes that significantly increase the decommissioning cost. In addition, PG&E will submit an updated PSDAR to the NRC within six months following the Nuclear Decommissioning Cost Triennial Proceedings filing to the California Public Utilities Commission (CPUC), which is on a nominal three-year frequency. PG&E will provide the periodic updates (in addition to the notification required by 10 CFR 50.82(a)(7)) to the PSDAR until 10 CFR 50 license termination.

The Irradiated Fuel Management Plan (IFMP) and SSDCE are being submitted concurrently with the PSDAR. The technical, schedule, and cost information provided is consistent among these submittals.

# Diablo Canyon Power Plant Post-Shutdown Decommissioning Activities Report

## 1.2. Background

The two-unit DCPD consists of a pair of Westinghouse four loop pressurized water reactors (PWRs). At full capacity, Unit 1 and Unit 2 each has a thermal rating of 3,411 megawatt thermal, with corresponding gross electrical outputs of 1,190 megawatt electrical. The current facility operating licenses for DCPD expire on November 2, 2024, for Unit 1 and August 26, 2025, for Unit 2.

The DCPD site is adjacent to the Pacific Ocean in San Luis Obispo County, California, and is approximately 12 miles west-southwest of the city of San Luis Obispo. The residential community of Los Osos is approximately 8 miles north of the site. This community is in a coastal hillside area adjacent to Montaña de Oro State Park. The township of Avila Beach is located down the coast at approximately 7 miles southeast of the site. The city of Morro Bay is located up the coast approximately 11 miles northwest of the site. The plant is roughly equidistant between San Francisco and Los Angeles.

The principal structures of DCPD include two containment structures, turbine building, auxiliary building, radwaste buildings, administration building, training building, maintenance building, storage tanks, intake and discharge structures, and transmission switchyards. An independent spent fuel storage installation (ISFSI) is also located at DCPD that has capacity for all spent nuclear fuel (SNF) generated through the end of the operating licenses. The Diablo Canyon (DC) ISFSI is licensed under a Part 72 site-specific license.

A brief history of the major milestones related to DCPD construction and operational history is as follows:

	<u>Unit 1</u>	<u>Unit 2</u>
• Construction Permit Issued	April 23, 1968	December 9, 1970
• Full Power - Operating License Issued	November 2, 1984	August 26, 1985
• Commercial Operation	May 7, 1985	March 13, 1986
• Operating License Expiration	November 2, 2024	August 26, 2025

By letter dated November 27, 2018 (Reference 2), PG&E provided formal notification to the NRC that it intends to permanently cease power operations of DCPD on November 2, 2024, for Unit 1 and August 26, 2025, for Unit 2. Once each DCPD unit has permanently ceased operation and fuel has been permanently removed from the reactor vessel, PG&E will submit written certifications to the NRC, in accordance with 10 CFR 50.82(a)(1)(ii) and 10 CFR 50.4(b)(8) and (9). Upon docketing of the certifications required by 10 CFR 50.82(a)(1)(i) and 10 CFR 50.82(a)(1)(ii), pursuant to 10 CFR 50.82(a)(2), the 10 CFR Part 50 licenses for DCPD will no longer authorize operation of the reactors or emplacement or retention of fuel in the reactor vessels.

## **Diablo Canyon Power Plant Post-Shutdown Decommissioning Activities Report**

Pursuant to 10 CFR 50.51(b), "Continuation of license," the license for a facility that has permanently ceased operations continues in effect beyond the expiration date to authorize ownership and possession of the utilization facility until the Commission notifies the licensee in writing that the license has been terminated.

During the period that the license remains in effect, 10 CFR 50.51(b) requires that PG&E:

1. Take actions necessary to decommission and decontaminate the facility and continue to maintain the facility including storage, control, and maintenance of the SNF in a safe condition.
2. Conduct activities in accordance with all other restrictions applicable to the facility in accordance with NRC regulations and the 10 CFR 50 facility license.

10 CFR 50.82(a)(9) states that power reactor licensees must submit an application for termination of the license and that the application must be accompanied or preceded by a license termination plan (LTP) to be submitted for NRC approval.

### **1.3. Summary of Decommissioning Alternatives**

The NRC has evaluated the environmental impacts of three general strategies for decommissioning power reactor facilities in NUREG-0586, "Final Generic Environmental Impact Statement (GEIS) on Decommissioning of Nuclear Facilities: Supplement 1, Regarding the Decommissioning of Nuclear Power Reactors" (Reference 3). The three general methods evaluated are summarized as follows:

- **DECON:** The systems, structures, and components (SSCs) that contain radioactive contaminants are promptly removed or decontaminated to a level that permits termination of the 10 CFR 50 license shortly after cessation of operations.
- **SAFSTOR:** After the plant is shut down and defueled, the facility is placed in a safe, stable condition and maintained in that state (safe storage). The facility is decontaminated and dismantled at the end of the storage period to levels that permit 10 CFR 50 license termination. During SAFSTOR, a facility is left intact, or may be partially dismantled, but the SNF is removed from the reactor vessel, and radioactive liquids are drained from systems and components and then processed. Radioactive decay occurs during the SAFSTOR period, thereby reducing the quantity of contamination and radioactivity that must be disposed of during decontamination and dismantlement.
- **ENTOMB:** Radioactive SSCs are encased in a structurally long-lived substance, such as concrete. The entombed structure is appropriately maintained, and continued surveillance is carried out until the radioactivity decays to a level that permits termination of the 10 CFR 50 license.

## **Diablo Canyon Power Plant Post-Shutdown Decommissioning Activities Report**

The decommissioning approach that has been selected by PG&E for DCPD is the DECON method. While some decommissioning activities would begin after the Unit 1 shutdown, the majority of decommissioning activities at the two units would begin soon after the Unit 2 shutdown and are sequenced and integrated to minimize the total cost and duration of the physical dismantling processes. DCPD decommissioning includes: permanent removal of fuel from the reactors; transfer SNF to the DC ISFSI; decontaminate and dismantle (D&D) SSCs to levels that permit license termination; and restore non-DC ISFSI site areas. In accordance with 10 CFR 50.82(a)(9), a LTP will be developed and submitted for NRC approval at least two years prior to termination of the licenses. 10 CFR 50 license termination is targeted for approximately 13 years after Unit 2 shutdown. After SNF and greater than Class C (GTCC) waste are transferred to the Department of Energy (DOE) for storage at a permanent offsite repository, the DC ISFSI will be decommissioned in accordance with 10 CFR 72, and the site restored (including biological monitoring), within an additional 9 years.

The decision to transition to immediate DECON is consistent with the CPUC and stakeholder preference and is also in the best interest of PG&E's customers because the total cost of decommissioning can be reduced by direct transition to decommissioning immediately upon plant shutdown. PG&E determined that immediate transition to decommissioning is more cost-effective than the SAFSTOR strategy based on the following considerations: (1) the operating licenses are terminated earlier; (2) earlier security staff and emergency plan reductions due to security modifications and earlier transfer of SNF to the DC ISFSI; (3) benchmarking experience of other plants supports more efficient resolution of technical challenges; and (4) availability of experienced, in-house staff.

Typically, initial planning efforts detailing the decommissioning process can take 18 to 24 months after reactor shutdown before physical decommissioning begins. To support a direct transition to immediate DECON, PG&E plans to leverage the CPUC's early approval of DCPD shutdown in 2024 and 2025 to continue decommissioning planning and permitting activities from 2019 to 2024 (see Section 2.1 below). The planning would streamline the decommissioning effort, reduce decommissioning costs, and accelerate the schedule by allowing portions of physical decommissioning to begin shortly after permanent shut down of each unit. This also would shorten the overall decommissioning schedule. Industry experience indicates that early, detailed preparation and planning reduces the duration and cost of decommissioning while enhancing safety and efficiency (References 4 and 5).

The decommissioning approach for DCPD is described in the following sections.

- Section 2.0 describes the planned decommissioning activities and the general timing of their implementation.
- Section 3.0 describes the overall decommissioning schedule, including the SNF management and site restoration activities.

## Diablo Canyon Power Plant Post-Shutdown Decommissioning Activities Report

- Section 4.0 summarizes the cost estimating methodology and references the SSDCE being submitted concurrently.
- Section 5.0 describes the basis for concluding that the environmental impacts associated with decommissioning DCPD are bounded by the NRC GEIS related to decommissioning. In accordance with 10 CFR 50.82(a)(4)(i), PG&E will verify that the decommissioning activities for the Pismo Beach Rail Yard improvements are bounded by previously issued environmental impact statements or seek appropriate regulatory approval if needed.
- Section 6.0 is a list of references.

### 2. Description of Planned Decommissioning Activities

DCPD expects to conduct decommissioning of DCPD in the following periods presented in Table 2-1. The SSDCE is divided into phases or periods based upon major milestones within the project or significant changes in the annual projected expenditures. The following periods correspond to the seven major decommissioning periods within the SSDCE. Details for each period are provided in the subsections that follow. While SNF management items are provided here to give a complete overall picture of decommissioning, further details are included in the IFMP.

**Table 2-1: DCPD Decommissioning Periods Summary**

Period	Period Title	Period Start	Period Finish	General Description
1	Pre-Shutdown Planning	Dec 2010	Oct 2024	Consists of detailed planning, engineering, contracting, licensing, and permitting efforts.
2	Power Block Modifications	Nov 2024	Apr 2027	Transitions the plant to a decommissioning configuration to support safe and efficient decommissioning.
3	Wet Storage	May 2027	Jun 2032	Designates the timeframe where SNF is cooling in the spent fuel pools (SFPs) and/or is being transferred to the DC ISFSI. Concurrently, preparations are being made for major D&D in the next period.
4	Building Demolition	Jul 2032	Apr 2035	Consists of D&D of radiological SSCs. Also includes removal of several ancillary (non-radiological) structures.
5	Site Restoration	May 2035	Dec 2038	Includes demolition of non-radiological structures, conduct of final radiological surveys to support license termination, and restoration of non-ISFSI areas. Period ends with 10 CFR 50 license termination.
6	ISFSI Operations	Jan 2039	Aug 2067	Designates the timeframe after 10 CFR 50 license termination where SNF and GTCC waste are stored only at the DC ISFSI and transferred

## Diablo Canyon Power Plant Post-Shutdown Decommissioning Activities Report

Period	Period Title	Period Start	Period Finish	General Description
				to the DOE for storage at a permanent off-site repository. This period also includes biological monitoring of the plant site restoration.
7	ISFSI Restoration	Sep 2067	Jan 2076	Consists of removal of ISFSI structures, permitting, conduct of final radiological surveys for ISFSI license termination, restoration of affected areas, and biological monitoring.

### 2.1. Period 1 – Pre-Shutdown Planning

As discussed in Section 1.3, PG&E plans to transition DCPD directly from operational status to DECON status upon permanent shutdown. To support this, PG&E must implement decommissioning planning activities during the final years of plant operations including the following:

- Preparation, submittal, and NRC review and approval of licensing submittals that support a decommissioning site status, such as revisions to Emergency Planning procedures, Security procedures, and DCPD Technical Specifications. Early approvals will allow preparation of the approved changes into plant documentation. Once conditions are met, PG&E can immediately implement the approved changes instead of taking several months or years to develop and issue documentation changes.
- Preparation, submittal, and federal, state, and local agency review and approval of permitting submittals. Federal, state, and local permits and approvals are required to perform nearly every decommissioning activity. Through these processes, the decommissioning project will be subject to thorough environmental review as required by both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). If activities to support permitting are not initiated and completed sufficiently in advance of plant shutdown, all decommissioning activities will be delayed awaiting receipt of permits. PG&E's goal is to have the permits necessary to begin physical decommissioning activities in hand as of plant shut down.
- Completion of site radiological characterization, which provides the basis for radiation protection, identification of contamination, assessment of potential risks, cost estimation, planning, and implementation of decommissioning (as described in Section 2.8.1).
- Development of the Waste, Transportation, and the Material Management programs.

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- Completion of detailed engineering, planning, and approvals for modifications (as described in Section 2.2); technical evaluations of waste packaging and transportation systems for the reactor vessel and reactor vessel internals; decommissioning program and procedure development; site infrastructure development; and site demolition planning.

### **2.2. Period 2 – Power Block Modifications**

Following reactor shutdown and final defueling of the reactor vessels, several modifications are needed at DCPD to support employee safety, infrastructure needs during decommissioning, and safe and reliable cooling of the SNF in the SFPs. These include implementing alternative power sources (cold and dark [C&D] power plant) modifications; SFP island (SFPI) modifications; site infrastructure modifications; SNF and GTCC storage modifications; and site security modifications. In addition, site characterizations and chemical decontaminations will take place. Each of these activities is discussed in more detail below.

#### **Cold and Dark Power Plant Modifications** (see SSDCE Figure 5-1, items 99 and 100 for schedule)

Perhaps the most significant safety hazard associated with decommissioning power plants is the risk posed by personnel and equipment coming in direct contact with exposed and energized electrical circuits. Industry operating experience indicates that even a robust electrical clearance program is insufficient at managing risks associated with electrical shock or arc flash events, in power plants being decommissioned and demolished. The most effective approach to manage these risks is to remove or disconnect the original power supplies from structures and components within structures before undergoing demolition. This necessitates the installation of an alternate external power supply to support decommissioning work and for selected power plant loads and lighting. This alternate power supply, referred to as C&D power, is independent of the normal plant power supply and distribution system. PG&E intends to install C&D power to enhance worker safety and reduce the risk of decommissioning activities.

Once implemented, the C&D power system will continue to evolve along with the demands for electrical power to support decommissioning activities. Initially, at least two independent power supplies will be preserved to ensure reliable cooling of the SFPs. The original existing electrical sources will meet this requirement. When the heat loads in the SFPs have diminished sufficiently to allow plant personnel to prevent a zirconium fire, a series of modifications will be undertaken to transition the power feeds for the C&D systems to two new load centers outside of the power block.

#### **SFPI Modifications** (see SSDCE Figure 5-1, items 52 and 53 for schedule)

Several existing plant systems are used to ensure there is adequate cooling of the SFPs. These existing systems could continue to be used for SFP cooling during decommissioning; however, to facilitate safe and efficient decommissioning, the nuclear industry has implemented the SFPI concept. A SFPI is an independent

## **Diablo Canyon Power Plant Post-Shutdown Decommissioning Activities Report**

cooling system for the SFPs that allows the licensee to abandon the in-place plant systems supporting SFP cooling. PG&E plans to develop and install an SFPI to reduce the risk of decommissioning activities impacting the SFPs and to allow more timely decommissioning of those previous in-place plant systems.

**Site Infrastructure Modifications** (see SSDCE Figure 5-1, items 101 – 110 for schedule)

Site infrastructure modifications are changes to site facilities, civil features, utilities, and equipment that will be required to support general decommissioning activities. By developing a robust infrastructure suited to decommissioning needs, these modifications will help transition DCCP from an operational site to a decommissioning site and provide the framework to successfully execute the project. Site infrastructure changes to support decommissioning will take place during Periods 2 and 3. These changes cover many areas, including:

- facilities (such as buildings, structures, trailers, defensive positions, sheds, and ancillary facilities)
- civil features (such as roadways, haul routes, drainage, parking lots, storage areas, staging areas, retaining walls, pathways, walkways, stairways, fences, and gates)
- overhead and underground utilities and systems (such as domestic water, fire water, electrical, wastewater, telecommunications, heating, ventilation, and cooling systems, fire detection and suppression systems, public address systems, site alarm systems, information technology systems, and light stanchions)
- specialty equipment, systems, and facilities (such as truck scales, portal monitors, gamma radiation assay survey system, passive and active vehicle barriers, alarm stations, control rooms, security access buildings, and waste processing facilities that reduce existing concrete into rubble)

**Spent Nuclear Fuel and Greater than Class C Storage Modifications** (see SSDCE Figure 5-1, items 106 and 107 for schedule)

PG&E has a site-specific license for the DC ISFSI. The CPUC required PG&E to conduct an assessment for expediting SNF offload to the DC ISFSI. The results of this study demonstrated that there are currently alternate dry casks storage systems available (as compared to those currently approved for use in the DC ISFSI site-specific license) that may reduce the cooling time required in the SFPs prior to transfer to the DC ISFSI. Thus, PG&E plans to conduct a request-for-proposal process to select an alternate dry cask storage system. In the 2019-2024 timeframe, PG&E will work with the chosen dry cask storage vendor to perform all the work necessary to prepare for implementing the chosen expedited SNF offload strategy at the DC ISFSI, including any licensing and permitting actions for the 10 CFR 72 facility and preparation for physical modifications to the site (to be implemented in Periods 2 and 3) to store both SNF and GTCC waste.

**Security Modifications** (see SSDCE Figure 5-1, item 98 for schedule)



## **Diablo Canyon Power Plant Post-Shutdown Decommissioning Activities Report**

There are significant changes at a site during decommissioning activities. Security plans and staffing can be adjusted to reflect the site changes. After the Unit 1 shutdown, PG&E plans to implement physical security modifications to improve efficiency and, ultimately, security staff reductions while still maintaining a robust decommissioning defense strategy.

### **Site Characterizations** (see SSDCE Figure 5-1, items 13 and 14 for schedule)

The approximately 750-acre industrial portion of the DCPD site will be characterized for both radiological contamination and non-radiological contaminants of concern. Physical sampling and analysis will occur after Unit 1 and Unit 2 are shut down.

Radiological characterization will be conducted in accordance with NUREG-1575, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) (Reference 6). Non-radiological hazardous characterization will be in accordance with both federal and California Environmental Protection Agency (EPA) standards.

### **Chemical Decontamination** (see SSDCE Figure 5-1, item 12 for schedule)

PG&E evaluated various methods available for reducing the radioactive source term in contaminated systems exposed to radioactive fluids. Based on the results of this evaluation, PG&E plans to perform chemical decontamination of the reactor coolant piping, pressurizer, chemical volume and control system, and residual heat removal system to reduce worker exposure during the decommissioning work.

## **2.3. Period 3 – Wet Storage**

This period designates the timeframe where SNF is cooling in the SFPs and/or is being transferred to the DC ISFSI. Concurrently, preparations are being made for major D&D in period 4. Significant activities include:

- SFP operations and maintenance
- reactor internals segmentation and removal
- SNF and GTCC waste transfer to the DC ISFSI
- large component removals, such as steam generators, reactor heads, reactor coolant pumps, main generators, main turbines, and other various large components that must be removed prior to demolition
- containment buildings, auxiliary building, intake structure, and balance of site system and area closure, which consists of preparing a building for demolition
- turbine building abatements and removals
- intake structure and various support buildings demolition
- Unit 1 reactor pressure vessel segmentation and removal begins

## **2.4. Period 4 – Building Demolition**

This period consists of D&D of radiological SSCs and removal of several ancillary (non-radiological) structures. Significant activities include:

- remainder of Unit 1 reactor pressure vessel segmentation and removal
- Unit 2 reactor pressure vessel segmentation and removal

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- fuel handling building, discharge structure, and various support buildings system and area closure, which consists of preparing a building for demolition
- containment buildings, auxiliary building, fuel handling building, turbine building, discharge structure, and various support buildings demolition
- partial surveys and final decontamination
- portions of site restoration of the non-ISFSI areas

### **2.5. Period 5 – Site Restoration**

This period includes demolition of non-radiological structures (i.e., site restoration) such as the breakwaters and seawater reverse osmosis facility, conduct of final radiological status surveys to support license termination, and restoration of non-ISFSI areas.

### **2.6. Period 6 – Independent Spent Fuel Storage Installation Operations**

This period designates the timeframe where the 10 CFR 50 licenses have been terminated, SNF and GTCC waste are stored at the DC ISFSI (10 CFR 72 license), and then are transferred to DOE for storage at a permanent off-site repository.

### **2.7. Period 7 – Independent Spent Fuel Storage Installation Restoration**

This period consists of removal of ISFSI structures after all SNF and GTCC waste have been transferred to the DOE for storage at a permanent off-site repository, conduct of final radiological surveys for ISFSI 10 CFR 72 license termination, and restoration of affected areas.

### **2.8. General Decommissioning Considerations**

As defined in 10 CFR 50.2, “definitions,” a “major decommissioning activity” is “any activity that results in permanent removal of major radioactive components, permanently modifies the structure of the containment, or results in dismantling components for shipment containing GTCC waste in accordance with § 61.55 of this chapter.” The following discussion provides a summary of the “major decommissioning activities” currently planned for DCCP decommissioning. These activities are envisioned to occur in the Wet Storage and Building Demolition periods. The schedule may be modified as conditions dictate.

Prior to starting a major decommissioning activity, the affected components will be surveyed and decontaminated, as required, in order to minimize worker exposure, and a plan will be developed for the activity. Shipping casks and other equipment necessary to conduct major decommissioning activities will be procured.

The initial major decommissioning activity inside the containment building will be the removal, packaging, and disposal of systems and components attached to the reactor, to provide access and allow it to be removed.

The reactor vessel internals will be removed from the reactor vessel and segmented for packaging, transport, and disposal. Internals classified as GTCC waste will be segmented and packaged into containers similar to spent fuel canisters and

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transferred to the DC ISFSI for storage until transferred to the DOE. Segmentation and removal of the reactor vessel follows the removal of the reactor internals.

In addition to the reactor and large components discussed above, all other plant components will be removed from the containment, auxiliary, turbine, and associated support buildings, radiologically surveyed and disposed appropriately.

### **2.8.1. Site Characterization**

A Historical Site Assessment (HSA) was performed for the site in 2018. This investigation collected information regarding the site history from the start of operations to the present and used the following sources of information:

- annual environmental reports
- annual effluent reports
- licensee event reports
- 10 CFR 50.75(g) files
- groundwater sampling data
- radiation survey data
- area and boundary locations for radiological areas
- corrective action reports
- personnel interviews

The HSA identified potential non-radiological contamination (i.e., petroleum hydrocarbons, asbestos, and lead paint) and potential radioactive contamination. Both radiological and potential non-radiological contamination warrant additional investigation as part of the site characterization plan to be performed upon plant shutdown. Based on the results of the HSA:

- There are currently not any known inaccessible areas that may contain radiological contamination.
- Soil remediation is assumed to be necessary to reduce (1) soil radioactive contamination to levels that meet NRC's radiological release criteria for unrestricted use and (2) non-radioactive soil contamination to levels that meet the California Department Toxic Substances Control (governed by the California EPA) chemical cleanup standards which will comply with federal EPA water quality standards at a minimum.
- Active groundwater remediation is not anticipated for DCP, as groundwater monitoring has not identified tritium at the well that is used for a drinking water source (located up DC, away from the power block).

As mentioned in Section 2.2, during the decommissioning process, site characterization will be performed in which radiological, regulated, and hazardous wastes will be identified, categorized, and quantified. Surveys will be conducted to establish the contamination and radiation levels throughout the site. This information will be used in developing procedures, surveys, and sampling

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plans to ensure that hazardous, regulated, and radiologically contaminated areas are remediated and to ensure that worker exposure during decommissioning is controlled. As D&D work proceeds, surveys will be conducted to maintain a current site characterization and to ensure that decommissioning activities are adjusted accordingly.

After completing site decommissioning activities, the final status surveys will be performed to demonstrate that the remediated portion of the site (excluding the ISFSI containing the spent fuel and GTCC waste) can be released for unrestricted use and removed from the license. The site release criteria is defined by the MARSSIM protocol and is in general 25 millirem per year from all pathways. Adherence to the NRC-approved LTP and MARSSIM guidance will ensure that the surveys are conducted so that applicable regulatory criteria are satisfied.

To support planning and scheduling of reactor pressure vessel and internals segmentation activities, a waste characterization analysis was performed to develop a basis for the radionuclide isotopes and concentrations that will be present in the reactor pressure vessels and internals at the time of final shutdown for Units 1 and 2. After final shutdown, a validation of the reactor internals and reactor pressure vessel characterization analysis will be performed to ensure radioactivity estimates and plans are adequate. Using the results of this validation analysis, neutron irradiated components will be classified in accordance with 10 CFR 61, "Licensing requirements for land disposal of radioactive waste." The results of the initial waste characterization analysis and validation analysis form the basis of the plans for removal, segmentation, packaging, and disposal.

### **2.8.2. Groundwater Protection**

A groundwater protection program currently exists at DCPD in accordance with the Nuclear Energy Groundwater Protection Initiative (GPI 07-007). This program is directed by procedures and will continue during decommissioning.

PG&E will also continue to maintain the existing radiological decommissioning records program required by 10 CFR 50.75(g). The program is directed by procedures.

Neither the monitoring results of the groundwater protection program nor events noted in the 10 CFR 50.75(g) files indicate the presence of long-lived radionuclides in sufficient concentrations following remediation as needed to preclude unrestricted release under 10 CFR 20.1402, "Radiological criteria for unrestricted use."

### **2.8.3. Radioactive Waste Management**

A major component of the decommissioning work scope for DCPD is the packaging, transportation, and disposing of primarily contaminated/activated equipment, piping, concrete, and in some cases soil. Demolition methods and handling techniques will be selected to minimize cross-contaminating clean

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materials with those required to be disposed of as wastes. To minimize cross-contamination with clean materials, the clean materials will be removed first prior to building demolition if it will be reused, recycled, or repurposed and segregated from the transportation and storage areas used for radiological or hazardous/regulated materials.

A waste management plan was developed to incorporate the most cost-effective disposal strategy, consistent with regulatory requirements and disposal/processing options for each waste type. Currently, there are three licensed facilities that can accept DCPD radiological material for disposal in the United States: Clive Disposal Facility (EnergySolutions) in Clive, Utah; Waste Control Specialists LLC in Andrews, Texas; and US Ecology in Grand View, Idaho. Each of these facilities can receive different types of radiological materials. To the extent practical, PG&E will minimize the generation of Class B/C waste in order to avoid the high cost of disposing it. Further, much of the material that is potentially contaminated is expected to have very low radiological contamination, below Class A, known as low-activity radioactive waste (LARW). The Idaho facility is currently the most cost-effective facility available to DCPD and permitted to accept LARW waste. PG&E will attempt to segregate LARW material from material that meets the Class A criteria because it can be disposed of at nearly one-fifth the cost of Class A waste. PG&E's disposal plans for DCPD Class A, B, and C waste are provided in Table 4-4 of the SSDCE. If other licensed disposal facilities become available in the future, PG&E may elect to use them. Radioactive wastes from DCPD will be transported by licensed transporters.

There are no facilities in the United States that can receive GTCC wastes. The GTCC wastes will be packaged in containers similar to those used for packaging of SNF in order to provide for safe onsite storage and to ensure that the material is isolated from the environment. As discussed previously, GTCC waste storage is included in the request-for-proposal process for an alternate dry cask storage system. Ultimately, PG&E anticipates the GTCC wastes will be transferred to DOE or some other federally licensed final repository.

### **2.8.4. Removal of Mixed Wastes**

Mixed wastes contain both a radioactive and chemical hazard, requiring increased controls on the disposal requirements for these wastes. If mixed wastes are generated, they will be managed in accordance with applicable federal and state regulations.

If generated, mixed wastes will be transported by authorized and licensed transporters and shipped to authorized and licensed facilities. If technology, resources, and approved processes are available, the processes will be evaluated to render the mixed waste non-hazardous.

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### **2.8.5. Changes to Management and Staffing**

Throughout the decommissioning process, plant management, and staffing levels will be adjusted to reflect the ongoing transition of the site organization. Staffing levels and qualifications of personnel used to monitor and maintain the plant during the various periods after plant shutdown will be subject to appropriate Technical Specification and Emergency Plan requirements. The anticipated staffing levels are discussed in the SSDCE and include the following types of staff:

- Project Management
- Project Controls
- Engineering
- Decommissioning Plant Operations
- Maintenance
- Radiation Protection
- Final Status Survey
- Security
- Safety
- Procedure Writing
- Training
- Regulatory Management

### **2.8.6. Diablo Canyon Decommissioning Engagement Panel**

Stakeholders have a vested interest in the safe, effective, and efficient completion of all decommissioning activities. Stakeholders include PG&E shareholders, employees, ratepayers, local community members, local government, state regulators, and federal regulators. Stakeholder interests range from continued employment opportunities to the radiological consequences of decommissioning activities to environmental impacts of previous plant operations and the site environmental end-state condition.

PG&E has formed the Diablo Canyon Decommissioning Engagement Panel as part of an effort to engage in open and transparent dialogue with interested stakeholders on matters regarding decommissioning (e.g., SNF, emergency planning, and the environmental permitting process) and future use of the lands around DCP. The panel functions as a volunteer-based, non-regulatory body to enhance and foster open communication, public involvement, and education on PG&E's DCP decommissioning and future land use plans.

Panel members are volunteers and are not paid by PG&E or otherwise compensated for their time. Methods of communication with/from the panel may include routine meetings, letters, administrative meetings, joint public briefings, publication of a regularly updated panel Vision Document, and an open-door policy with management.

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### **3. Schedule of Planned Decommissioning Activities**

The schedule for DCPD decommissioning is presented in Table 2-1. Detailed schedules are provided in the SSDCE, Figures 5-1 and 5-2.

Future land uses at the DCPD site are currently being evaluated and discussed with community stakeholders. The schedule conservatively assumes the D&D of all DCPD structures to meet NRC's radiological release criteria for unrestricted use. PG&E is currently evaluating the possibility of phased release of the site, but no decisions have been made regarding this approach.

### **4. Estimate of Expected Decommissioning Costs and Associated Funding**

10 CFR 50.82(a)(4)(i) requires the submission of a PSDAR prior to or within two years following permanent cessation of operations that contains a SSDCE, including the projected cost of managing irradiated fuel.

PG&E has prepared a SSDCE for DCPD, which also provides projected costs of managing irradiated fuel, as well as non-radiological decommissioning and other site restoration costs. The SSDCE fulfills the requirements of 10 CFR 50.82(a)(4)(i), 10 CFR 50.82(a)(8)(iii), and 10 CFR 50.75(f)(3) and is being submitted concurrent with this PSDAR. A summary of the annual costs associated with decommissioning, irradiated fuel management, and site restoration are provided in the IFMP which is also being submitted concurrently in accordance with 10 CFR 50.54(bb).

PG&E did not rely on a generic nuclear industry decommissioning unit cost factor methodology, but instead used a dedicated team of nuclear, decommissioning, and DCPD experts to form a detailed decommissioning plan, schedule, and associated cost estimate. The SSDCE is based on cost-based and historical bid-based estimating, direct experience gained by PG&E after 10 years of full-scale decommissioning at Humboldt Bay Power Plant Unit 3, industry expertise, and benchmarking. The planning team included experts in specific fields who understand the complexity and multi-discipline requirements for a project of this scale. This included PG&E leadership, decommissioning-experienced personnel, DCPD operating plant departmental personnel, specialty contractors, and corporate legal, finance, and accounting.

Under 10 CFR 50.82(a)(8), a licensee must provide reasonable assurance that funds will be available (or "financial assurance") for decommissioning (i.e., license termination) costs. The regulations also describe the acceptable methods a licensee can use to demonstrate financial assurance. Most licensees do this by funding a nuclear decommissioning trust (NDT) fund. To assure that sufficient funds will be available for decommissioning, PG&E has established separate external sinking NDT fund accounts for DCPD, Units 1 and 2. As noted in the SSDCE, contingent on CPUC approval of the 2018 DCPD Decommissioning Cost Estimate, sufficient funds (based on balances and earnings) are projected to be available to complete license termination. PG&E currently

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has more funds in the NDT for DCPD Units 1 and 2 than required to meet the minimum NRC decommissioning amount for each unit that was calculated pursuant to the requirements of 10 CFR 50.75(c).

In addition, on September 10, 2019 (Reference 17), the NRC granted exemptions from 10 CFR 50.82(a)(8)(ii) and 10 CFR 50.82(a)(8)(i)(A) to allow PG&E to withdraw \$187.8 million (2017 dollars) from the DC NDT for decommissioning planning between now and permanent cessation of operations, instead of three percent of the generic amount specified in 10 CFR 50.75. A portion of the funds will be used for pre-planning activities associated with spent fuel management and site restoration.

The cost to decommission the site, safeguard the spent fuel and GTCC waste until it can be transferred to the DOE, and restore the impacted area of the site is estimated to be \$5.1 billion in 2019 dollars. The summary of the costs estimated for License Termination, Spent Fuel Management, and Site Restoration activities are presented in Table 4-1.



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**Table 4-1 Cost Summary from DCPD Site-Specific DCE (in thousands of 2019 dollars)**

ID	Scope Description	A	I	J	K
		Total Estimate	License Termination	Spent Fuel Management	Site Restoration
<b>Unassigned Costs</b>					
1	Program Management, Oversight, and Fees	\$ 1,547,114	\$ 1,139,092	\$ 292,320	\$ 115,701
2	Security Operations	\$ 597,882	\$ 15,367	\$ 581,402	\$ 1,112
3	Waste/Transportation/Material Management (Excluding: Breakwater, Reactor Vessel/Internal Segmentation, & Large Component Removal)	\$ 953,944	\$ 800,419	\$ 69,267	\$ 84,258
<b>Discrete Costs</b>					
4	Power Block Modifications	\$ 85,116	\$ 85,116	\$ -	\$ -
5	Site Infrastructure	\$ 148,417	\$ 147,143	\$ 1,274	\$ -
6	Large Component Removal	\$ 182,004	\$ 182,004	\$ -	\$ -
7	Reactor/Internals Segmentation	\$ 363,271	\$ 363,271	\$ -	\$ -
8	Spent Fuel Transfer to ISFSI	\$ 246,588	\$ 29,217	\$ 217,371	\$ -
9	Turbine Building	\$ 72,557	\$ 72,557	\$ -	\$ -
10	Auxiliary Building	\$ 97,219	\$ 97,219	\$ -	\$ -
11	Containment	\$ 127,656	\$ 127,656	\$ -	\$ -
12	Fuel Handling Building	\$ 51,262	\$ 51,262	\$ -	\$ -
14	Balance of Site	\$ 85,021	\$ 26,644	\$ -	\$ 58,377
15	Intake Structure	\$ 43,664	\$ 6,851	\$ -	\$ 36,813
16	Discharge Structure	\$ 15,867	\$ 15,867	\$ -	\$ -
17	Breakwater	\$ 299,821	\$ -	\$ -	\$ 299,821
18	Non-ISFSI Site Restoration	\$ 142,232	\$ -	\$ -	\$ 142,232
19	Spent Fuel Transfer to DOE	\$ 26,382	\$ -	\$ 26,382	\$ -
20	ISFSI Demolition and Site Restoration	\$ 57,850	\$ -	\$ 57,850	\$ -
	<b>GRAND TOTAL</b>	<b>\$ 5,143,867</b>	<b>\$ 3,159,685</b>	<b>\$ 1,245,867</b>	<b>\$ 738,315</b>

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## 5. Environmental Impacts

To support the PSDAR environmental review, the environmental effects of decommissioning activities planned for DCPD, as currently understood, were evaluated to determine if potential environmental impacts are bounded by previously issued environmental impact statements (Reference 7). 10 CFR 50.82(a)(4)(i) requires that the PSDAR include, "... a discussion that provides the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by appropriate previously issued environmental impact statements." As noted in Regulatory Guide 1.185, "the PSDAR does not need to include the analysis of the specific environmental impacts associated with decommissioning activities....the licensee must ensure that supporting documentation and analyses are available at the reactor site for inspection by the NRC Staff." Such detailed documentation and analyses are contained in the Environmental Report (ER) (Reference 7) which is available onsite for NRC review.

To determine if the estimated potential environmental impacts associated with DCPD decommissioning activities are bounded, the following previously issued NEPA reviews were relied upon:

- NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," Supplement 1 (termed the Decommissioning GEIS) (Reference 3).
- NUREG-1496, "Generic Environmental Impact Statement in Support of Rulemaking on Radiological Criteria for License Termination of NRC-Licensed Nuclear Facilities" (Reference 8).
- Atomic Energy Commission, "Final Environmental Statement related to the Nuclear Generating Station Diablo Canyon Units 1 & 2" (Final Environmental Statement [FES], Reference 9).

As required, site-specific assessments were conducted for threatened and endangered species and environmental justice. Site-specific assessments were also performed for offsite land use and impacts to aquatic ecology, terrestrial ecology, and cultural and historic resources for decommissioning activities beyond the operational area. For the purpose of assessing decommissioning environmental impacts, the operational area at DCPD is defined as the area within the site boundary plus the DCPD Access Road. This area encompasses the reactors and surrounding buildings, intake and discharge structures, parking lots, laydown yards, landscape-maintained areas, and transportation infrastructure. Operational area is defined in the Decommissioning GEIS. The levels of significance assigned to site-specific environmental impacts are classified as small, moderate, or large, as defined by the NRC in the Decommissioning GEIS (Reference 3,

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pages 4-1 and 4-2). Some decommissioning activities to support the current plans for decommissioning would take place outside of the operational area:

- **Offsite Power Supply Modifications:** PG&E plans to implement a new offsite 12-kilovolt (kV) power supply system to provide long-term power for site facilities and decommissioning activities. The system will be in place prior to de-energizing and removing the existing power block distribution system and will remain in service until all SNF has been removed from the site. This system will make extensive use of existing electrical infrastructure and will repurpose the existing 230-kV transmission corridor to a lower voltage. Evaluation of the offsite power supply modifications are discussed in the sections that follow.
- **Offsite Pismo Beach Rail Yard Improvements:** To support transport of waste offsite during decommissioning, PG&E plans to modify an existing rail yard owned by PG&E. The Pismo Beach Rail Yard is located 9 miles from the Avila Beach PG&E security gate and is the most practical location for railroad transport during DCPD decommissioning. The Pismo Beach rail spur was constructed in the early 1970s by PG&E to support construction of DCPD. It is currently used by PG&E as a staging yard with shared use of buildings and parking lot infrastructure. The current plans include modifications to the facility to enable the transfer of waste material containers to gondola rail cars staged at the spur. The Pismo Beach Rail Yard improvements are not included in the below environmental evaluation. In accordance with 10 CFR 50.82(a)(4)(i), PG&E will verify that the decommissioning activities for the Pismo Beach Rail Yard improvements are bounded by previously issued environmental impact statements or seek appropriate regulatory approval if needed.

Except for the Pismo Beach Rail Yard improvements, PG&E has concluded that the environmental impacts associated with planned DCPD decommissioning activities are small to moderate and are bounded by the impacts addressed by previously issued NEPA reviews.

DCPD's decommissioning plans are consistent with the methods assumed by NRC in the GEIS. No unique site-specific features or unique aspects of the planned decommissioning have been identified.

### **5.1. Environmental Impacts of Decommissioning**

The following is a summary of the reasons for reaching the conclusion that the environmental impacts of decommissioning DCPD are bounded by a previously issued NEPA review, or are site-specific and small to moderate. Each environmental resource evaluated in the Decommissioning GEIS is listed along with an explanation as to why PG&E concludes that either a previously issued NEPA review bounds the impacts of DCPD decommissioning on that resource, or the impacts are site-specific and small to moderate.

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### **5.1.1. Onsite and Offsite Land Use**

In the Decommissioning GEIS, the NRC generically determined onsite land use impacts to be small for facilities having land-use changes only within the operational area (Reference 3, page 4-9). For decommissioning that involves land use changes outside the operational area, the GEIS concluded that impacts could not be predicted generically and must be evaluated on a site-specific basis.

#### **Onsite Land Use**

Onsite land is expected to be used for decommissioning activities such as laydown, staging, handling, temporary storage, processing, packaging, and shipping of waste and materials; personnel processing; and parking. PG&E has determined that onsite land to be used to support decommissioning at DCPD has been previously disturbed and decommissioning activities would not result in changes in onsite land use patterns, except to the extent that onsite land may be restored to uses that are similar to current uses of the land surrounding the site. Hence, PG&E concludes that no new and significant information has been identified regarding onsite land use and anticipated onsite land use impacts are bounded by the Decommissioning GEIS.

#### **Offsite Land Use**

A PG&E substation will be upgraded to support the new power load requirements, including a new transformer, bus work, circuit protection, and various supporting structures. PG&E will use approximately 10 miles of existing transmission lines (repowered) and will install approximately 6 miles of new 12-kV distribution line (expected to be installed beneath an existing 70-kV line). Existing towers and poles along existing rights-of-way will be used; however, several poles are likely to require replacement to provide the required separation from ground and the different voltages, and some of the existing transmission towers will need to be modified to accommodate the physical load changes resulting from the new configuration of the transmission lines.

The FES concluded that the operation of transmission lines will not result in adverse impact on land use (Reference 9, page 5-1). Because the proposed modifications will use existing transmission line rights-of-way and an existing substation, it would not constitute a change in land use compared to that evaluated in the FES. PG&E therefore concludes impacts to offsite land from power supply modifications would be small and are bounded by the FES.

### **5.1.2. Water Use**

The Decommissioning GEIS observes that quantities of water required during decommissioning are trivial (Reference 3, page 4-10) compared to those used when a plant is operating. The Decommissioning GEIS mentions construction dust abatement and decontamination (flushing systems or pressure washing components) as typical decommissioning water uses. NRC asserted in Section 4.3.2 in the Decommissioning GEIS that potential impacts of decommissioning on water use at all plants are neither detectable nor destabilizing and made the generic conclusion that impacts in all cases are small.

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### **Operational Area**

DCPP utilizes a once-through cooling water system for plant operations whereby seawater is drawn from the Pacific Ocean through a shoreline intake structure, used to cool plant components, and discharged back to the Pacific Ocean at a second, separate shoreline location. A seawater reverse osmosis treatment unit provides the majority of freshwater for plant primary and secondary systems makeup, fire protection system supply water, and source water for the plant domestic water system supply. DCPP also has one active permitted deep well (Deep Well #2) located in DC that supplies water to the makeup water system.

PG&E expects to reduce the Pacific Ocean water and groundwater withdrawals substantially following plant shutdown. PG&E assumes the DCPP service water system will be shut down after all SNF has been transferred to the ISFSI, and that the seawater reverse osmosis treatment unit and onsite well will provide the source water for potable water and nonpotable water for a variety of uses. Based purely on staffing projections, the demand for potable/domestic water at the plant will be substantially lower during decommissioning years than during operational years, but it is expected that water will also be required during decommissioning for dust abatement and decontamination. Nevertheless, PG&E expects water use during DCPP decommissioning to be much lower than water use during operational years, consistent with the statements made in the Decommissioning GEIS. PG&E concludes that onsite decommissioning water use impacts for DCPP are small and are bounded by the Decommissioning GEIS.

### **Offsite Power Supply**

For initial DCPP transmission line construction, the FES concluded that the transmission lines will not produce an unreasonable burden on natural resources; environment and aesthetic values; public health and safety; air and water quality; parks, recreational, and scenic areas; historic sites and buildings; or archaeological sites (Reference 9, page 4-12).

To support the offsite power supply modifications, it is expected that water consumption through public utilities or DCPP site connections will temporarily increase during construction activities (e.g., dust abatement and worker consumption). After offsite power supply modifications are complete, it is expected that water use will return to existing levels. Because water use to support offsite power supply modifications will be temporary, will coincide with an expected decrease in water use due to plant shutdown, and will be less than that needed for and evaluated in the FES for initial transmission line construction, PG&E concludes the impacts of water use for the offsite power supply modifications pertaining to DCPP decommissioning are small and are bounded by the FES.

### **5.1.3. Water Quality**

Decommissioning activities with potential for impacting surface water quality include fuel removal, stabilization, large component removal, decontamination

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and dismantlement, and structure dismantlement. Stormwater runoff and accidental releases (spills) are the most likely sources of pollutants entering surface waters during decommissioning. The Decommissioning GEIS asserts that regulatory programs applicable to permitted substance releases plus the application of best management practices (BMPs) for controlling stormwater runoff and erosion will render any change in surface water quality from decommissioning activities nondetectable and nondestabilizing. With respect to groundwater, the Decommissioning GEIS noted that demolishing concrete structures and storing rubble on site could result in changes (higher alkalinity) in local water chemistry, but the nonradiological effects of such changes on water quality would be nondetectable offsite at all nuclear power plants.

### **Operational Area**

If decommissioning activities require ground disturbance of more than one acre in size, PG&E will obtain storm water construction general permits which requires development of a storm water pollution prevention plan. For smaller disturbances, PG&E will implement BMPs.

Compliance with permits and implementation of erosion and sediment controls, soil stabilization practices, structural practices, and pollution prevention measures will ensure that water quality impacts from decommissioning are small and temporary. Any land-disturbing activities would be of relatively short duration, permitted and overseen by responsible regulatory agencies, and guided by BMPs. Some soil disturbed during decommissioning could be carried with storm water into Diablo Creek or the Pacific Ocean, but to reduce the likelihood, disturbed areas would be stabilized (recontoured and revegetated), limiting impacts, in accordance with required permits. Once slopes are stabilized and revegetated, the amount of erosion and sedimentation should be greatly reduced.

Spills of hazardous materials (liquids) are perhaps a larger concern, as they are a threat to both surface waters and groundwater. The DCPSP Spill Prevention, Control, and Countermeasure Plan addresses management and prevention of oil releases to the environment. PG&E expects to continue its compliance with existing regulations, which require reporting of spills of hazardous materials. Also, precautions will be taken to prevent spills of hazardous materials.

Removal of DCPSP structures and buildings and related earth-moving work (digging, grading, filling) has at least a limited potential to affect water quality, but these kinds of construction activities routinely take place around operating nuclear power plants and are subject to the provisions of state-issued permits. The topography of the DCPSP area precludes any connection between the onsite and offsite groundwater resources. If any localized alteration in the groundwater chemistry associated with the use of backfill were to occur, it would not impact offsite groundwater quality.

In Section 4.3.3 in the Decommissioning GEIS, the NRC concluded generically that for all facilities, decommissioning impacts to surface and groundwater quality

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would be small. Because there is nothing about DCPP's design, location, configuration, operating history, or decommissioning plans that would alter or contradict this generic conclusion and PG&E would comply with regulatory and permit requirements to protect surface water and groundwater resources, PG&E has determined that impacts of decommissioning on water quality would be small and bounded by the analysis in the Decommissioning GEIS.

### **Offsite Power Supply**

For initial DCPP transmission line construction, the FES concluded that the transmission lines will not produce an unreasonable burden on natural resources; environment and aesthetic values; public health and safety; air and water quality; parks, recreational, and scenic areas; historic sites and buildings; or archaeological sites (Reference 9, page 4-12).

To support the offsite power supply modifications, it is expected there may be a limited potential to affect water quality during construction activities (e.g., digging, grading, filling). After offsite power supply modifications are complete, it is expected that water quality will return to existing levels. Because the limited potential to affect water quality during construction activities will be temporary and will consist of less construction and involve no activities that are new or significantly different from those evaluated in the FES for initial transmission line construction, PG&E concludes that the impacts to water quality for the offsite power supply modifications pertaining to DCPP decommissioning are small and are bounded by the FES.

#### **5.1.4. Air Quality**

The Decommissioning GEIS identified decommissioning activities that may have an effect on air quality as including worker transportation to and from the site, dismantling of systems and removal of equipment, movement and open storage of material onsite, demolition of buildings and structures, shipment of material and debris to offsite locations, and operation of concrete batch plants. The NRC considered the potential for adverse impacts from these activities, the greatest of which would be fugitive dust, for the range of decommissioning plants and generically determined air quality impacts to be small.

#### **Operational Area**

During DCPP decommissioning, appropriate and reasonable control measures will be taken to minimize fugitive dust. The California Air Resources Board (CARB) regulates fugitive dust, requiring construction and demolition sites to prevent, reduce, and mitigate fugitive dust so that emissions do not impact the National and California Ambient Air Quality Standards attainment status (CARB Rule 402). For example, during certain decommissioning activities such as building demolition, high-efficiency particulate air (HEPA) filtrations systems will be used as required, along with a dust suppression system. In addition, methods that limit releases to the environment as required by state and federal regulations will be used to purge systems. Permits applicable to the above decommissioning activities and equipment will be maintained/obtained as required. Compliance

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with permits and applicable laws and regulations, will minimize the potential impacts on air quality. The exhaust from commuting and shipping vehicles could affect air quality somewhat, but the workforce during decommissioning will be smaller than those used for construction or refueling outages (see Section 5.1.12). Hence, because (1) the air quality impacts from decommissioning activities at DCPD are expected to be temporary, localized, and small in magnitude; (2) reasonable and appropriate control measures would be employed; (3) the appropriate air permits would be obtained; and (4) there is nothing about DCPD's design, location, configuration, operating history, or decommissioning plans that would alter or contradict the generic conclusion in Section 4.3.4 in the Decommissioning GEIS, PG&E concludes that air quality impacts from DCPD decommissioning activities are bounded by the analysis in the Decommissioning GEIS.

### **Offsite Power Supply**

The FES concluded that transmission line construction will not produce an unreasonable burden on natural resources; environment and aesthetic values; public health and safety; air and water quality; parks, recreational, and scenic areas; historic sites and buildings; or archaeological sites (Reference 9, page 4-12).

While the Decommissioning GEIS does not specifically evaluate construction-related activities, it does discuss the common impacts from construction emissions from heavy equipment and vehicles and dust from earth movement/ground disturbance, and states the likely impacts from emissions would be smaller than those from dust (Reference 3, page 4-19). As noted above, appropriate and reasonable control measures will be taken to minimize fugitive dust, which is regulated by CARB. Permits applicable to the above decommissioning activities and equipment will be maintained/obtained as required. Compliance with permits and applicable laws and regulations will minimize potential impacts to air quality.

After offsite power supply modifications are complete, it is expected that air quality will return to existing levels. Because the limited potential to affect air quality during construction activities will be temporary and will consist of less construction and involve no activities that are new or significantly different from those evaluated in the FES for initial transmission line construction, PG&E concludes that the impacts to air quality for the offsite power supply modifications pertaining to DCPD decommissioning are small and are bounded by the FES.

### **5.1.5. Aquatic Ecology**

Aquatic resources may be directly or indirectly impacted by decommissioning activities. Direct impacts to aquatic communities may result from shoreline or in-water construction or from dredging. Indirect impacts may result from construction-related erosion and stormwater runoff. These impacts are typically undetectable (or barely discernible) and do not destabilize any important attributes of the resources. The Decommissioning GEIS concluded generically



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that such decommissioning activities within the operational areas of nuclear power plants, including removal of shoreline or in-water structures, would have only minor impacts on aquatic communities, provided all appropriate BMPs are employed. Therefore, Section 4.3.5 in the Decommissioning GEIS concluded that aquatic impacts from decommissioning activities would be small. The Decommissioning GEIS further states, however, that if decommissioning activities outside of the operational area are anticipated, impacts to aquatic resources cannot be predicted and must be determined through site-specific analysis.

### **Operational Area**

The aquatic resources of chief concern for decommissioning impacts at DCPD are the (1) Pacific Ocean intake and discharge coves and (2) Diablo Creek which runs along a portion of the site.

PG&E will use appropriate BMPs for non-in-water structure decommissioning activities; therefore, consistent with the Decommissioning GEIS, PG&E concludes that aquatic impacts from removing onsite non-in-water structures would be small.

DCPD decommissioning will include the removal of the discharge structure at the shoreline of the Discharge Cove. Removal of this structure is currently required by PG&E's lease with the California State Lands Commission (Reference 10) and will require federal, state, and local permits and approvals and CEQA process reviews. Since the discharge structure was constructed at DCPD, many aquatic communities have established themselves on it. Removal of the discharge structure has the potential to impact existing benthic marine invertebrate communities including the federally endangered black abalone, if present, marine algae, both surface and under-story algae within the inter-tidal and sub-tidal habitat and associated fish communities. There is also the potential for indirect impacts to marine mammals, such as the federally endangered and state fully protected southern sea otter, California sea lion, harbor seal and federally threatened green sea turtle which have occurred in the intake cove in the past (special-status species are discussed in more detail in Section 5.1.7). During removal of the discharge structure, PG&E will follow the mitigation, minimization, and avoidance measures required by the necessary federal, state, and local permits obtained and use appropriate BMPs. Therefore, PG&E concludes that aquatic impacts from removing the discharge structure would be small and are bounded by the Decommissioning GEIS.

### **Offsite Power Supply**

The FES concluded the transmission line construction will not produce an unreasonable burden on natural resources; environment and aesthetic values; public health and safety; air and water quality; parks, recreational, and scenic areas; historic sites and buildings; or archaeological sites (Reference 9, pages 4-11 and 4-12).

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In 2008, background research and biological surveys for plant and wildlife species and wetland habitats were conducted along the DCPD transmission lines. For the portions of existing transmission lines that will be affected by the offsite power supply modifications (i.e., along the existing 230-kV transmission line), the following aquatic species were identified as having the potential to occur.

- California coastal steelhead (*Oncorhynchus mykiss*)
- California red-legged frog (*Rana aurora draytonii*)
- Tidewater goby (*Eucyclogobius newberryi*)

As discussed in Section 5, offsite power supply modifications will include addition of structures at a PG&E substation, approximately six miles of new transmission line, reuse of, and potential modification to, existing transmission towers, and the reuse of existing poles. Much of the work will require helicopter support due to the rugged terrain which will reduce ground disturbance. PG&E will use appropriate BMPs and will comply with required permits and regulations from local and state agencies to mitigate impacts to aquatic ecology from the modifications. Potential impacts from offsite power supply modifications would be less than the initial transmission line construction, which included hundreds of miles of transmission lines that crossed federal and state listed species territory and was deemed acceptable in the FES. Because the construction would be temporary, localized, and mitigated by local and state permit conditions, PG&E concludes the potential impacts to aquatic ecology is small and are bounded by the FES.

### **5.1.6. Terrestrial Ecology**

Section 4.3.6 of the Decommissioning GEIS maintains that “[f]or facilities where habitat disturbance is limited to operational areas, the impacts on terrestrial ecology (i.e., plant and animal communities) are not detectable or destabilizing,” primarily because most vegetation and wildlife habitat in the operational area was removed during plant construction. NRC staff concluded that, “for such facilities...potential impacts to terrestrial ecology are small” and no further mitigation measures are warranted. Site-specific analysis is only required of licensees when decommissioning activities are likely to occur outside of the operational area.

#### **Operational Area**

DCPD decommissioning activities within the operational area are bounded by those evaluated in the Decommissioning GEIS. Because PG&E will use appropriate BMPs during DCPD decommissioning, consistent with the Decommissioning GEIS, PG&E concludes that terrestrial impacts from decommissioning within the operational area would be small and bounded.

#### **Offsite Power Supply**

The FES concluded the transmission line construction will not produce an unreasonable burden on natural resources; environment and aesthetic values;

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public health and safety; air and water quality; parks, recreational, and scenic areas; historic sites and buildings; or archaeological sites (Reference 9, pages 4-11 and 4-12).

In 2008, background research and biological surveys for plant and wildlife species and wetland habitats were conducted along the DCPD transmission lines. For the portions of existing transmission lines that will be affected by the offsite power supply modifications (i.e., along the existing 230-kV transmission line), the following plants and animals were identified as having the potential to occur.

### *Vegetation*

- Arroyo de la Cruz manzanita (*Arctostaphylos cruzensis*)
- Blochman's dudleya (*Dudleya blochmaniae* ssp. *Blochmaniae*)
- Hoover's bent grass (*Agrostis hooveri*)
- Jones' layia (*Layia jonesii*)
- Most beautiful jewel-flower (*Streptanthus albidus* ssp. *Peramoenus*)
- Pecho manzanita (*Arctostaphylos pechoensis*)
- San Luis Obispo monardella (*Monardella frutescens*)
- San Luis Obispo owl's-clover (*Castilleja densiflora* ssp. *Obispoensis*)

### *Wildlife*

- American badger (*Taxidea taxus*)
- Burrowing owl (*Athene cunicularia*)
- California coastal steelhead (*Oncorhynchus mykiss*) – federally threatened (see Section 5.1.7)
- California red-legged frog (*Rana aurora draytonii*) – federally threatened (see Section 5.1.7)
- Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*) – federally and state endangered (see Section 5.1.7)
- Morro shoulderband snail (*Helminthoglypta walkeriana*) – federally endangered (see Section 5.1.7)
- San Diego desert woodrat (*Neotoma lepida intermedia*)
- San Joaquin kit fox (*Vulpes macrotis mutica*) – federally endangered and state threatened (see Section 5.1.7)
- San Luis Obispo pyrg snail (*Pyrgulopsis taylori*)
- Tidewater goby (*Eucyclogobius newberryi*) – federally endangered (see Section 5.1.7)
- Western mastiff bat (*Eumops perotis*)

As discussed in Section 5, offsite power supply modifications will include addition of structures at a PG&E substation, approximately six miles of new transmission line, reuse of, and potential modification to, existing transmission towers, and the reuse of existing poles. Much of the work will require helicopter support due to the rugged terrain which will reduce ground disturbance. PG&E will use appropriate BMPs and will comply with required permits and regulations from

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local and state agencies to mitigate impacts to terrestrial ecology from the modifications. Potential impacts from offsite power supply modifications would be less than the initial transmission line construction, which included hundreds of miles of transmission lines that crossed federal and state listed species territory and was deemed acceptable in the FES. Because the modification construction would be temporary, localized, and mitigated by local and state permit conditions, PG&E concludes the potential impacts to terrestrial ecology is small and are bounded by the FES.

### **5.1.7. Threatened and Endangered Species**

The Decommissioning GEIS lists stabilization, large component removal, decontamination and dismantlement (removal of contaminated soil), and structure dismantlement as activities with potential to impact threatened and endangered species. Section 4.3.7 in the Decommissioning GEIS did not make a generic determination on the impact of decommissioning on threatened and endangered species, noting that impacts to these species are expected to be minor and nondetectable when activities are confined to the site operational area. Impacts are to be determined on a site-specific basis, paying particular attention to activities outside of the developed operational area. Noise and dust generation from construction activity and increased truck traffic, rather than direct impacts such as habitat destruction, are the primary concerns.

#### **Operational Area**

Table 5-1 presents a list of special status species that have been observed or have a high potential to occur (i.e., suitable habitat is available) in the DCPD operational area. PG&E compiled this list from several resources, including the following, and used current species status designations from the California Department of Fish and Wildlife (Reference 11):

- 2004 DOE report on threatened or endangered species (Reference 12)
- 2006 National Marine Fisheries Service Biological Opinion on the effects of continued operation of DCPD on federally listed aquatic species (Reference 13)
- 2010 National Marine Fisheries Service response to the NRC request for information on threatened or endangered species in the vicinity of the DCPD site (Reference 14)
- ongoing intertidal and shallow subtidal area monitoring from prior to plant start up to present
- DC lands inventory studies conducted on numerous occasions from 1992 to 2012

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**Table 5-1 Threatened and Endangered Species Identified  
Within the Vicinity of DCP<sup>1</sup>**

Scientific Name	Common Name	State Status <sup>(2)</sup>	Federal Status <sup>(3)</sup>	Critical Habitat within Vicinity <sup>(1)</sup>
<b>AMPHIBIAN SPECIES</b>				
<i>Rana draytonii</i>	California red-legged frog	--	FT	Yes
<b>AVIAN SPECIES</b>				
<i>Charadrius alexandrinus</i>	Western snowy plover	--	FT	Yes
<i>Vireo bellii pusillus</i>	Least Bell's vireo	SE	FE	No
<b>FISH SPECIES</b>				
<i>Eucyclogobius newberryi</i>	Tidewater goby	--	FE	No
<i>Oncorhynchus kisutch</i>	Coho Salmon [south of Punta Gorda]	SE	FT	No
<i>Oncorhynchus mykiss</i>	Steelhead	--	FE	Yes
<b>INVERTEBRATE SPECIES</b>				
<i>Haliotis cracherodii</i>	Black abalone	--	FE	No
<i>Helminthoglypta walkeriana</i>	Morro shoulderband snail	--	FE	Yes
<b>MAMMALIAN SPECIES</b>				
<i>Arctocephalus townsendi</i>	Guadalupe fur seal	ST	FT	No
<i>Balaenoptera musculus</i>	Blue whale	--	FE	No
<i>Enhydra lutris nereis</i>	Southern sea otter	--	FT	No
<i>Megaptera novaeangliae</i>	Humpback whale	--	FE	No
<i>Orcinus orca</i>	Killer whale	--	FE	No
<i>Physeter macrocephalus</i>	Sperm whale	--	FE	No
<b>PLANT SPECIES</b>				
<i>Arctostaphylos morroensis</i>	Morro manzanita	--	FT	No
<b>REPTILIAN SPECIES</b>				
<i>Caretta caretta</i>	Loggerhead sea turtle	--	FE	No
<i>Chelonia mydas</i>	Green sea turtle	--	FT	No
<i>Dermochelys coriacea</i>	Leatherback sea turtle	--	FE	Yes
<i>Lepidochelys olivacea</i>	Olive Ridley's turtle	--	FT	No

Notes:

(1) Within 5 miles of DCP.

(2) SE: State listed as Endangered

ST: State listed as Threatened

(3) FE: Federally listed as Endangered

FT: Federally listed as Threatened

The FES listed terrestrial and aquatic rare, endangered, and declining species known to occur in the DCP area.

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Decommissioning activities with the greatest potential for directly and indirectly affecting terrestrial threatened and endangered communities include those associated with demolishing major reactor structures. Land within the operational area is sufficient to provide space for laydown yards, equipment or materials storage, temporary offices, and other decommissioning support areas or structures. Current parking facilities have been adequate to support refueling and maintenance outages through facility history and are assumed to be adequate to support decommissioning. Because there is ample open space to support DCPD decommissioning operations, there would be no reason to clear any land outside of the site operational area. Therefore, there would be no direct impacts to the habitat of any terrestrial threatened or endangered species. Excluding offsite power supply modifications, decommissioning activities will be confined to the operational area, which contains undeveloped portions adjacent to roads and facilities that are exposed to a fairly constant level of noise and human activity.

During DCPD decommissioning, appropriate and reasonable control measures will be taken to minimize fugitive dust, such as wetting of soils. During certain decommissioning activities such as building demolition, HEPA filtrations systems will be used as required, along with a dust suppression system.

Federally endangered black abalone are known to occur in the intertidal zone of DCPD. Federally designated critical habitat is also present within the intertidal zones of the coast around DCPD, including in the discharge and intake coves and along the breakwaters. Federally threatened and state fully protected southern sea otter and federally threatened green sea turtle are also known to occur in the intake cove and discharge cove. Direct and indirect impacts to these protected species may occur during demolition of the discharge structure, including direct mortality of individual species, as well as impacts from runoff, sedimentation, dust generation, or noise disturbance. Measures to avoid or minimize impacts to threatened and endangered species within the intake cove and discharge cove would be carried out pursuant to permit conditions.

Per the Decommissioning GEIS (page 4-29), these impacts to endangered or threatened species may be detectable, but not destabilizing. Therefore, impacts to ecological resources as a result of decommissioning activities within the operational area, including threatened and endangered species, are expected to be moderate. Because the FES listed terrestrial and aquatic rare, endangered, and declining species known to occur in the DCPD area, PG&E concludes the potential impacts to threatened and endangered species are bounded by the FES.

### **Offsite Power Supply**

The FES concluded the transmission line construction will not produce an unreasonable burden on natural resources; environment and aesthetic values; public health and safety; air and water quality; parks, recreational, and scenic areas; historic sites and buildings; or archaeological sites (Reference 9, pages 4-11 and 4-12).

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In 2008, background research and biological surveys for plant and wildlife species and wetland habitats were conducted along the DCPD transmission lines. The following federal or state listed species (per species status in Reference 11) were found to have the potential to occur in the portions of existing transmission lines that will be affected by the offsite power supply modifications (i.e., along the existing 230-kV transmission line):

- California coastal steelhead (*Oncorhynchus mykiss*) – federally threatened
- California red-legged frog (*Rana aurora draytonii*) – federally threatened
- Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*) – federally and state endangered
- Morro shoulderband snail (*Helminthoglypta walkeriana*) – federally endangered
- San Joaquin kit fox (*Vulpes macrotis mutica*) – federally endangered and state threatened
- Tidewater goby (*Eucyclogobius newberryi*) – federally endangered

No designated critical habitat is known to occur along the transmission line right-of-way that will be affected by the offsite power supply modifications.

As discussed in Section 5, offsite power supply modifications will include addition of structures at a PG&E substation, approximately six miles of new transmission line, reuse of, and potential modification to, existing transmission towers, and the reuse of existing poles. Much of the work will require helicopter support due to the rugged terrain which will reduce ground disturbance. PG&E will use appropriate BMPs and will comply with required permits and regulations from local and state agencies to mitigate impacts to threatened or endangered aquatic and terrestrial ecology from the modifications. Potential impacts from offsite power supply modifications would be less than the initial transmission line construction, which included hundreds of miles of transmission lines that crossed federal and state listed species territory and was deemed acceptable in the FES. Because the modification construction would be temporary, localized, and mitigated by local and state permit conditions, PG&E concludes the potential impacts to threatened and endangered species are small and are bounded by the FES.

### **5.1.8. Radiological**

The Decommissioning GEIS considered radiological doses to workers and members of the public when evaluating the potential consequences of decommissioning activities and concludes that radiological impacts of decommissioning activities are small.

### **Occupational Dose**

One conclusion of the Decommissioning GEIS is that, based on decommissioning experience, occupational dose during decommissioning is comparable to that observed during routine operations at the same or similar facilities. Therefore, PG&E evaluated DCPD operational dose data and

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compared it to that of other PWRs and established that DCPD operating collective dose has been below the average of U.S. PWRs. In addition, the average individual worker dose at DCPD is well below the average worker dose during operations for the decommissioning sites considered in the GEIS (Reference 3, page G-15). Similar to DCPD, the decommissioning sites evaluated in the GEIS include sites that have transitioned directly into DECON. DCPD's current decommissioning plans fall within decontamination, dismantlement, and waste processing activities considered by the NRC in the GEIS. Thus, DCPD decommissioning collective dose is estimated to be bounded by typical decommissioning U.S. PWRs. In addition, during decommissioning PG&E plans to chemically decontaminate specific portions of the nuclear steam supply system. This chemical decontamination will reduce the radioactive source term, and therefore reduce the potential for decommissioning personnel to receive high doses from fixed contamination typically associated with corrosion or oxide products on inside surfaces of metal components and piping. During decommissioning, PG&E will maintain the as low as reasonably achievable (ALARA) Program to ensure that occupational dose is maintained ALARA and well within the 10 CFR 20 limits.

### **Public Dose**

Section 4.3.8 in the Decommissioning GEIS states that radionuclide emissions in gaseous and liquid effluents are reduced in facilities undergoing decommissioning. Given that DCPD public doses during operations were well below the NRC-established public dose limits, it is reasonable to expect that public doses during decommissioning would also be well below such limits. Annual reports of environmental monitoring at DCPD for the years from 2013 through 2017 demonstrate that radioactivity levels in the offsite environment are well below the NRC established public dose limits, and controls on potential radiological releases will continue to be applied during decommissioning.

### **Conclusion**

PG&E concludes that radiological impacts of PG&E decommissioning are small for the following reasons:

- The Decommissioning GEIS generic evaluation of radiological impacts applies to a typical PWR. Occupational and public dose from normal DCPD operations are like those of other PWR plants, indicating that DCPD doses are typical.
- The decommissioning sites considered in the GEIS include sites that have transitioned directly into DECON.
- DCPD implements administrative dose limits well below the regulatory limits and will continue to implement the ALARA Program.
- DCPD's current decommissioning plans fall within decontamination, dismantlement, and waste processing activities considered by the NRC, and site-specific conditions do not represent unique conditions that would lead to a conclusion different than that reached in the Decommissioning GEIS.



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- Radiological impacts are considered to be undetectable and nondestabilizing, in the NEPA sense, if doses remain within regulatory limits (Reference 3, page 4-33)
- During Decommissioning, PG&E plans to chemically decontaminate specific portions of the nuclear steam supply system to reduce the radioactive source term.

Therefore, PG&E concludes that the radiological impacts of DCPD decommissioning are small and bounded by the Decommissioning GEIS's assessment.

### **5.1.9. Radiological Accidents**

Section 4.3.9 in the Decommissioning GEIS examined a range of radiological accidents hypothetically possible during the decommissioning period. These included anticipated operational occurrences, non-nuclear fuel-related accidents, and nuclear fuel-related accidents. NRC determined that many of these accidents had been previously analyzed in environmental reviews for the operation of the plant. The Decommissioning GEIS concludes that impacts of radiological accidents of all types applicable to decommissioning activities are small.

The anticipated operational occurrences such as those identified in the Decommissioning GEIS were considered in the FES (Reference 9, Section 7.1) for operation of DCPD. Given their potential to result in offsite doses, the Decommissioning GEIS considered SNF accidents of most concern for decommissioning. Once removed from the SFPs, however, SNF management is no longer within the scope of decommissioning environmental review because NRC evaluated the environmental impacts of continued SNF storage for all nuclear power plants in NUREG-2157, "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel," (Reference 15). Consequently, the only accidents of importance to offsite doses during decommissioning are those involving SNF in the SFP. SFP accidents would no longer be applicable after the SNF is removed from the SFPs and transferred to the ISFSI.

The most significant of the SNF accidents, in terms of consequences and probability, involves SFP drainage leading to a zirconium fire. However, the NRC, in both NUREG-2157 and the Decommissioning GEIS, determined that the risk of a zirconium fire is very low because of the very low likelihood of a zirconium fire, even though the consequences of a zirconium fire could be serious (Reference 3, page 4-43).

In the Decommissioning GEIS (Reference 3), the NRC, after reviewing existing information from licensees' documents analyzing accidents from decommissioning activities and from a technical review of SFP accident risk at decommissioning nuclear power facilities, generically determined that the potential impacts of both non-SNF-related and SNF-related radiological accidents resulting from decommissioning to be small. This analysis was based on the

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current design basis and maintaining an acceptable design and performance criteria throughout the life of the plant.

These same conditions are applicable to DCPD as a licensed plant maintaining its licensing basis and safety analysis along with the environmental impact assessment of radiological accident risk as documented in the FES (Reference 9). PG&E knows of no unique features or conditions at DCPD that would lead to a conclusion different than that reached in the Decommissioning GEIS (Reference 3). Therefore, PG&E concludes that radiological accident impacts of decommissioning activities at DCPD are bounded by those in the Decommissioning GEIS, resulting in small impacts.

### **5.1.10. Occupational Issues**

Section 4.3.10 in the Decommissioning GEIS concluded that impacts due to nonradiological occupational issues would be small for all plants based on strict adherence to NRC and Occupational Safety and Health Administration (OSHA) safety standards, practices, and procedures.

DCPD decommissioning will continue to implement an industrial safety program during decommissioning for onsite and offsite decommissioning-related work in compliance with OSHA, NRC, California Division of Occupational Safety and Health, and PG&E requirements. For DCPD, the average incident rate falls well below that of the 2016 construction industry sector's average incident rate and compares favorably with the United States 2016 incident rate for the electrical power generation industry sector. Because the industrial safety program will be continued and would be expected to be effective in preventing occupational injuries and illnesses, decommissioning activities are expected to have a small impact on occupational issues. The DCPD decommissioning plan poses no unique hazards from what was evaluated in the Decommissioning GEIS. Accordingly, PG&E concludes that anticipated impacts resulting from nonradiological occupational issues during DCPD decommissioning are small and thus bounded by the analysis in the Decommissioning GEIS.

### **5.1.11. Cost**

Section 4.3.11 of the GEIS recognizes that an evaluation of decommissioning cost is not a NEPA requirement. Therefore, a bounding analysis is not applicable. However, as required for a PSDAR, PG&E has developed a SSDCE for DCPD Units 1 and 2 that is described in Section 4.

### **5.1.12. Socioeconomics**

Section 4.3.12 in the Decommissioning GEIS evaluated changes in workforce and population, changes in local tax revenues, and changes in public services for decommissioning. NRC considered the decreases in workforce and tax payments related to the cessation of operations outside the scope of decommissioning. The Decommissioning GEIS concluded that socioeconomic impacts are neither detectable nor destabilizing and that mitigation measures are not warranted.

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As DCPD ceases operation and transitions through the phases of decommissioning, an overall decrease in plant workforce and tax payments will occur. The changes during decommissioning would primarily impact San Luis Obispo County where the majority (approximately 87 percent) of the plant workforce resides and which receives the DCPD property tax payments. The largest station workforce reduction (during decommissioning) would decrease the San Luis Obispo County population by 0.67 percent. DCPD is not a significant source of tax revenue for state and local government. Plant property tax payments during operation have been approximately 4.7 percent of San Luis Obispo County. Compared with the existing property tax base, the anticipated decrease in DCPD property taxes as a result of decommissioning is likely to be small.

Based on the findings summarized above, PG&E concludes that impacts to socioeconomic resources from DCPD decommissioning would be small and thus bounded by the analysis in the Decommissioning GEIS.

### **5.1.13. Environmental Justice**

Section 4.3.13 in the Decommissioning GEIS determined environmental justice to be an environmental impact area for which no generic conclusion could be determined due to its site-specific nature. Therefore, the Decommissioning GEIS indicates that site-specific assessments for each decommissioning nuclear power plant must be prepared.

PG&E prepared a site-specific assessment of environmental justice as it relates to the effects of DCPD decommissioning. PG&E examined the geographic distribution of minority and low-income populations within a 50-mile radius of the DCPD site using the 2016 American Community Survey Five-Year Summary data. The results of the analysis indicate that two minorities had census block groups within the 50-mile radius with significant percentages of minority populations – (1) Hispanic, Latino, or Spanish Ethnicity, and (2) All Other Single Race Minorities – and there are three census tracts north of San Luis Obispo within the 50-mile radius that have a significant percentage of low income households.

PG&E determined that decommissioning impacts to all resource areas would be small to moderate, indicating the effects may noticeably alter but not destabilize any important attribute of the resource. Because no member of the public will be substantially affected, there can be no disproportionately high and adverse impact or effects on minority and low-income populations resulting from the decommissioning of DCPD. Based on these site-specific findings, PG&E concludes that the impacts of decommissioning DCPD on minority and low-income populations are small.

### **5.1.14. Cultural, Historical, and Archaeological Resources**

Section 4.3.14 in the GEIS determined that potential effects of decommissioning on cultural, historical, and archaeological resources would be small for all plants

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when the decommissioning activities are confined to the operational area. However, impacts outside the operational area “must be determined through site-specific analysis.”

PG&E anticipates that decommissioning activities will take place within the DCPD operational area, except for the use of the offsite power supply modification as discussed in Section 5.

### **Operational Area**

Decades of archaeological research on the DC lands have provided complete systematic survey coverage of the coastal terrace, including the developed plant operational area. The extent of previous studies for the DCPD operational area and surrounding 6-mile radius have been established by compiling bibliographic references, previous survey reports, and archaeological site records through records searches of the California Historical Resources Information System (CHRIS) at the Central Coastal Information Center at the University of California, Santa Barbara.

The DCPD operational area is comprised of two elements; the central area of DCPD (plant site) and a road that runs from Avila Beach to the plant site (DCPD Access Road). Although both of these areas are within the DCPD operational area, their resources will be discussed separately.

Cultural resource studies completed in the last 70 plus years have identified a range of prehistoric and historic period resources on DC lands. In conjunction with California State Parks, PG&E has recently undertaken nomination of the Rancho Cañada de los Osos y Pecho y Islay Archaeological District (Boundary Increase) (District). This District comprises 2,434 acres and includes 84 contributing archaeological sites (15 previously listed resources and 69 nominated resources) and 22 non-contributing archaeological sites along the coastal terrace within PG&E's property (including portions of the DCPD operational area) and Montaña de Oro State Park, north of Avila Beach, San Luis Obispo County, California.

Of the 106 sites within the District, all but 22 sites are on DC lands. Of the known sites on the DC lands, 16 are currently listed on the National Register of Historic Places (NRHP) as contributing elements to the District. An additional 59 sites were recommended eligible to the NRHP as contributing elements of the District, although the State Historic Preservation Office (SHPO) has not yet concurred. Another nine sites have been recommended as non-contributing sites to the District to the NRHP due to a lack of significance and/or integrity. Nonetheless, all resources are managed as if they are eligible to the NRHP until demonstrated otherwise with SHPO concurrence.

Table 5-2 compiles the list of known cultural resources located within the DCPD operational area, including sites within 30 meters of the DCPD operational area Access Road.

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There is a total of 22 cultural resources within the DCPD operational area, 9 of which are within the plant site boundaries and thirteen within 30 meters of the DCPD Access Road (Table 5-2). Three sites, CA-SLO-59, -585, and -682/689, are bisected by the DCPD Access Road.

Known cultural resources within the plant site (CA-SLO-2/3, -61, -584, -1159, -1160, -1161, -1162, -1163) are within the District. CA-SLO-2/3 is listed on the NRHP and CA-SLO-584 has been destroyed as a result of the original construction of the DCPD switchyard. CA-SLO-61, -1159, -1160, -1161, -1162, and -1163 are sites found to be contributing to the District.

Decommissioning activities within previously disturbed portions of the operational area will not impact cultural resources, because PG&E intends to avoid ground disturbances during decommissioning in the areas of high archaeological sensitivity at CA-SLO-2/3, -61, -584, -1159, -1160, -1161, -1162, -1163, and -2866 within the plant site; and CA-SLO-52, -53/62, -54/63/1411, -59, -585, -682/689, 686, -687/916, -773, -1507, -1508, -2863, and -2867 along the DCPD Access Road. If use of the area during decommissioning could entail ground disturbance, PG&E will take steps, prior to commencing ground disturbing activities, to verify its archaeological sensitivity and identify ways to minimize impacts. Accordingly, PG&E concludes that impacts to cultural and historical resources from decommissioning activities within the DCPD operational area are small and bounded by the Decommissioning GEIS.

Following construction of DCPD and the resulting impacts to CA-SLO-2, -61 and -584, PG&E has responsibly managed significant cultural resources within the DC lands for more than 40 years. Land-disturbing activities at DCPD are reviewed in accordance with DCPD Land Stewardship guidance and the DCPD archaeological resources management plan to ensure the conservation of cultural resources. The Land Stewardship Committee's guidance emphasizes preserving significant cultural resources in-place and avoiding damage to the maximum extent feasible. Complete impact avoidance is the preferred approach for National and California Register-eligible resources, as well as those with undetermined status. In instances where effects are unavoidable, PG&E has implemented prudent treatment measures to conserve the values associated with the affected resources, in consultation with affiliated communities, tribal groups, and appropriate agencies. Treatment measures include partnering with regional scholars to undertake data recovery excavations, compilation of a Pecho District radiocarbon database, updating the Pecho District National Register nomination, ethnographic documentation, development of interpretive signage, sharing research findings in the Native and archaeological community, as well as employee and trail docent education.

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**Table 5-2 Known Cultural Resources Within the DCPD Operational Area**

Site No. CA-SLO-	Age	Site Type	National Register Status	District Status <sup>1</sup>	Location
2/3	P	Prehistoric village	Listed	L	Plant Site
52	P	Village	Listed	L	DCPD Access Road
53/62	P	Village	Listed	L	DCPD Access Road
54/63/1411	P	Village	Listed	L	DCPD Access Road
59	P	Short-term residence	Eligible**	C	DCPD Access Road
61	P	Midden	Eligible*	C	Plant Site
584	P	Short-term residential	Destroyed	NC	Plant Site
585	P	Village, ideological	Listed	L	DCPD Access Road
682/689	P	Village	Listed	L	DCPD Access Road
686	P	Short-term residence	Listed	L	DCPD Access Road
687/916	P	Long-term residence	Listed	L	DCPD Access Road
773	P	Village	Not determined	NA	DCPD Access Road
1159	P	Short-term residential	Eligible*	C	Plant Site
1160	P	Short-term residential	Eligible*	C	Plant Site
1161	P	Short-term residential	Eligible*	C	Plant Site
1162	P	Short-term residential	Eligible*	C	Plant Site
1163	P	Lithic and shell scatter	Eligible**	C	Plant Site
1507	P	Long-term residence	Eligible**	C	DCPD Access Road
1508	P	Location	Eligible**	C	DCPD Access Road
2863	P	Short-term residence	Eligible**	C	DCPD Access Road
2866	P	Location	Eligible**	C	Plant Site
2867	P	Short-term residence	Eligible**	C	DCPD Access Road

P = prehistoric

\* Appears to meet National Register criteria; SHPO has not yet concurred.

\*\* Appears to meet National Register criteria as a part of a District; SHPO has not yet concurred.

<sup>1</sup> NRHP Status Codes: L = Already listed as part of the District; C = Contributing resource; NC = Noncontributing resource

**Offsite Power Supply**

In the FES, it was concluded the transmission line construction will not produce an unreasonable burden on natural resources; environment and aesthetic values; public health and safety; air and water quality; parks, recreational, and scenic areas; historic sites and buildings; or archaeological sites (Reference 9, page 4-12).

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A data search was completed using the CHRIS and National Register Information System to compile previously-identified cultural resources along the DCPD transmission lines. For the portions of existing transmission lines that will be affected by the offsite power supply modifications (i.e., along the existing 230-kV transmission line), 108 studies were reported to the Information Center within 1.2-miles of the transmission line. Many of the studies were completed for residential properties. Forty-six cultural resources were recorded with only three of these within 100 meters of the transmission line.

As discussed in Section 5, offsite power supply modifications will include addition of structures at a PG&E substation, approximately six miles of new transmission line, reuse of, and potential modification to, existing transmission towers, and the reuse of existing poles. Much of the work will require helicopter support due to the rugged terrain which will reduce ground disturbance; however, PG&E will take steps, prior to commencing ground disturbing activities, to verify a site's archaeological sensitivity, and minimize impacts accordingly. Potential impacts from offsite power supply modifications would be less than the initial transmission line construction, which included hundreds of miles of transmission lines that crossed cultural and historical resources and was deemed acceptable in the FES. Therefore, PG&E concludes the potential impacts to cultural, historic, and archaeological resources is small and are bounded by the FES.

### **5.1.15. Aesthetic Issues**

Section 4.3.15 in the Decommissioning GEIS singles out structure dismantlement and entombment as the only activities that may have impacts on aesthetic resources. The aesthetic impacts of decommissioning fall into two categories: (a) impacts, such as noise, associated with decommissioning activities that are temporary and cease when decommissioning is complete and (b) the changed appearance of the site when decommissioning is complete. NRC drew the generic conclusion that for all plants, the potential impacts from decommissioning on aesthetics are small and that the removal of structures is generally considered beneficial to the aesthetics of the site.

### **Operational Area**

The DCPD site is bordered on the west by the Pacific Ocean, on the east by the Irish Hills, and to the north and south by PG&E controlled lands. As a result, DCPD is viewable to the public only from two possible perspectives: Point Buchon Trail and the Pacific Ocean. The only publicly accessible, land-based area from which the DCPD facility is visible is from a short section of the Point Buchon Trail (a PG&E managed access trail north of the DCPD site), which resides on PG&E property. The DCPD site may also be somewhat visible from the Pacific Ocean from the west and south. However, the Captain of the Port of Los Angeles-Long Beach, under the authority of 33 U.S.C. 1226 and 1231, has established a Security Zone in the Pacific Ocean from surface to bottom, within a 2,000-yard radius of DCPD. No person or vessel may enter or remain in this Security Zone without permission of the Captain of the Port of Los Angeles-Long

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Beach. At a distance of 2,000 yards (1.14 miles) views of the DCPD site and access road are visually subordinate.

During decommissioning, the impact of noise and dust would be temporary and controlled to minimize impacts, as discussed in Sections 5.1.4 and 5.1.16. The appearance of DCPD will be altered as the buildings are dismantled. The changes in appearance would be noticeable from the Pacific Ocean and a short section of the Point Buchon Trail. During dismantlement, the visual intrusion would be temporary and would serve to reduce the aesthetic impact of the site. Therefore, PG&E concludes that the aesthetic impact of DCPD decommissioning is small and is bounded by the Decommissioning GEIS.

### **Offsite Power Supply**

The existing 230-kV transmission lines and PG&E substation are visible to the public. In the FES, it was concluded the transmission line construction will not produce an unreasonable burden on natural resources; environment and aesthetic values; public health and safety; air and water quality; parks, recreational, and scenic areas; historic sites and buildings; or archaeological sites (Reference 9, page 4-12).

As discussed in Section 5, offsite power supply modifications will include addition of structures at a PG&E substation, approximately six miles of new transmission line, reuse of, and potential modification to, existing transmission towers, and the reuse of existing poles. Because existing rights-of-way and structures will be used, the change to aesthetics would be limited to a few new transmission towers and poles, and new structures in the existing substation. Due to the FES conclusion for initial transmission line construction and this smaller scope modification, PG&E concludes the aesthetic impacts for the offsite power supply modifications pertaining to DCPD decommissioning are small and are bounded by the FES.

### **5.1.16. Noise**

Section 4.3.16 in the Decommissioning GEIS generically examined noise during decommissioning, concluding that noise impacts would be small.

### **Operational Area**

The noise levels associated with the decommissioning activities are not expected to be any more severe than during refueling outages and are not expected to present an audible intrusion on the surrounding community and environment. Decommissioning activities will be primarily limited to previously disturbed land surrounding the power block and isolated from both wildlife and members of the public. Therefore, because DCPD decommissioning activities are of the type previously considered by NRC and DCPD has no site-specific conditions that would alter the NRC's prior findings, PG&E concludes that the noise impacts from decommissioning activities would be small and thus bounded by the analysis in the Decommissioning GEIS.



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### **Offsite Power Supply**

As discussed in Section 5, offsite power supply modifications will include addition of structures at a PG&E substation, approximately six miles of new transmission line, reuse of, and potential modification to, existing transmission towers, and the reuse of existing poles. Much of the work will require helicopter support due to the rugged terrain. According to the Federal Aviation Administration, the effective perceived noise level for helicopters can range from 80-100 decibels (Reference 16, Appendix 10).

After offsite power supply modifications are complete, it is expected that noise will return to existing levels. PG&E will comply with required permits and regulations from local and state agencies and will comply with required permitting conditions to mitigate noise from the modifications. Because the impacts of noise would be comparable to or less than the initial construction of the transmission lines, would be temporary and localized, and would be mitigated by local and state permit conditions, PG&E concludes the noise levels are not expected to present an audible intrusion on the surrounding community and environment and are bounded by the FES.

#### **5.1.17. Transportation**

In Section 4.4.17 of the Decommissioning GEIS, the NRC states that its “regulations are adequate to protect the public against unreasonable risk from the transportation of radioactive materials.” Therefore, the effects of transportation of radioactive waste on public health and safety are considered to be neither detectable nor destabilizing.

#### **Operational Area**

Radiological: PG&E will comply with NRC and Department of Transportation regulations for shipments of radioactive waste from DCPD decommissioning.

The Decommissioning GEIS analyzes radiological shipments of waste from decommissioning and calculates incident-free doses and latent cancer fatalities to crew, the public along the route, and onlookers. The Decommissioning GEIS also calculates the collective dose for radiological accidents during transportation. The calculated impacts are closely related to the distance shipped, volumes shipped, and activity levels. The estimated volumes of radioactive waste associated with DCPD decommissioning are summarized in Table 4-3 of the SSDCE.

The waste volumes estimated per unit to be shipped would be lower for the high-activity waste and higher for the low-activity waste than the NRC had assumed for its Decommissioning GEIS analysis. While the very low-activity and low-activity waste volume for DCPD is higher, two other parameters greatly reduce worker and population exposure:

- Due to the availability of the PG&E rail spur approximately 16 miles from DCPD (i.e., the Pismo Beach Rail Yard), PG&E plans to ship the bulk of radiological waste first by truck from DCPD to the Pismo Beach Rail Yard

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using intermodal containers, then the majority of the distance to the disposal site by rail using gondola railcars; however, there may be times when direct truck shipments will be required, such as for large components. The NRC indicates in the Decommissioning GEIS that use of rail reduces radiological impacts by more than a factor of 10 over truck shipments (Reference 3, page 4-79).

- PG&E considered a scenario that bounds the potential distance the DCPD waste shipments would travel. In this scenario, Class A, B, and C wastes are assumed to be shipped to the farthest disposal site available for DCPD waste at Waste Control Specialists in Andrews, Texas. The shipping distance between DCPD and Waste Control Specialists in Andrews, is 60 percent of the distance assumed by NRC in its Decommissioning GEIS analysis.

Nonradiological: Nonradiological impacts of transportation include increased traffic and wear and tear on area roadways. Traffic associated with decommissioning, including workers, would use the same set of local roads surrounding the plant site.

At the peak of decommissioning, the total workforce is estimated to be less than half of the workforce during plant operations. In addition, no more than 50 truckloads of waste material would depart the DCPD site over a 24-hour period. Combining these traffic numbers would result in lower traffic than during operations.

The Decommissioning GEIS concludes that both nonradiological and radiological impacts of decommissioning transportation are small. No unique features or site-specific conditions are present at DCPD that would alter these NRC prior findings. Therefore, PG&E concludes that transportation impacts of DCPD decommissioning are small and thus bounded by the analysis in the Decommissioning GEIS.

### **Offsite Power Supply**

As discussed in Section 5, offsite power supply modifications will include addition of structures at a PG&E substation, approximately six miles of new transmission line, reuse of, and potential modification to, existing transmission towers, and the reuse of existing poles. Much of the work will require helicopter support due to the rugged terrain which will reduce the associated ground transportation needs. PG&E will comply with required permits and regulations from local and state agencies and will comply with required permitting conditions to mitigate traffic impacts from the modifications. Traffic from offsite power supply modifications would be comparable to or less than the initial transmission line construction, would be temporary and localized, and would be mitigated by local and state permit conditions. PG&E concludes the traffic impacts are small and are bounded by the FES.

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### **5.1.18. Irreversible and Irretrievable Commitment of Resources**

Section 4.3.18 in the Decommissioning GEIS generically concluded that the impacts of decommissioning on irreversible and irretrievable commitments of resources are small. Given that DCPD would be decommissioned to radiological standards for unrestricted release, the land will be available for other uses. Furthermore, the materials and fuel consumed during DCPD decommissioning would be minor. The decommissioning of DCPD would generate radioactive waste and nonradiological waste requiring land disposal. Land devoted to radioactive waste disposal sites or industrial landfills was not within the scope of the Decommissioning GEIS because such commitments are addressed in the licensing documents for the disposal sites. Therefore, PG&E concludes that the impacts of DCPD decommissioning on irreversible and irretrievable commitments of resources would be small and thus bounded by the analysis in the Decommissioning GEIS.

### **5.2. Environmental Impacts of License Termination – NUREG-1496**

According to the schedule provided in Section 3 of this report, a LTP for DCPD will be developed and submitted to NRC approximately two years prior to the anticipated license termination date. The LTP will include a supplement to the DCPD PSDAR ER describing any new information or significant environmental changes associated with the proposed termination activities. Although the LTP, including a supplement to the ER, need not be prepared and submitted until a minimum of two years prior to the anticipated license termination date, as required by 10 CFR 50.82(a)(9), the absence of any unique site-specific factors, significant groundwater contamination, unusual demographics, or impediments to achieving unrestricted release indicate that impacts resulting from DCPD license termination will be similar to those evaluated in NUREG-1496 (Reference 8).

### **5.3. Discussion of Decommissioning in the Final Environmental Statement**

Applicable portions of the FES were addressed as noted in each of the topics previously summarized.

### **5.4. Additional Considerations**

The following considerations are relevant to concluding that DCPD decommissioning activities prior to license termination will not result in significant environmental impacts not previously reviewed:

- continued compliance with radiological release and dose regulatory limits and adherence to plant procedures for monitoring and controlling release
- continued site access control to minimize or eliminate radiation release pathways to the public
- transport of radioactive waste in accordance with plant procedures, applicable federal regulations, and the requirements of the receiving facility

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- continued adherence to ALARA principles during decommissioning and compliance with occupational dose limits
- continued compliance with applicable regulations and permit conditions for water withdrawals and wastewater discharges
- continued storage of SNF in accordance with license and plant procedures
- compliance with local and state regulations and permits for decommissioning activities

Additionally, NUREG-2157, “Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel,” found that the generic environmental impacts of ongoing SNF storage are small (Reference 15).

### **5.5. Conclusion**

PG&E evaluated the site-specific impacts anticipated from decommissioning of DCPD for each environmental resource area in the same manner and context as used by the NRC in its Decommissioning GEIS. This evaluation indicates that DCPD decommissioning operational area activities fall within the range of decommissioning activities considered by NRC in the Decommissioning GEIS. There are no unique aspects of the plant or the expected decommissioning techniques that would invalidate the applicability to DCPD of the Decommissioning GEIS conclusions. The evaluation indicates that the impacts of DCPD decommissioning are bounded by the Decommissioning GEIS’s assessment for those environmental issues for which NRC made generic determinations.

For the areas where a site-specific assessment was required (including offsite power supply modifications), the anticipated impacts from DCPD decommissioning were determined to be small to moderate. The evaluation indicates that the potential impacts during decommissioning are bounded by the plant’s FES and Decommissioning GEIS. As previously discussed, this evaluation did not include a review of the environmental impacts associated with the Pismo Beach Rail Yard improvements.

NRC regulation 10 CFR 50.82(a)(6)(ii) prohibits a licensee from performing decommissioning activities that result in significant environmental impacts not previously reviewed. In accordance with 10 CFR 50.82(a)(4)(i), PG&E will verify that the decommissioning activities for the Pismo Beach Rail Yard improvements are bounded by previously issued environmental impact statements or seek appropriate regulatory approval if needed.

## **6. References**

1. Regulatory Guide 1.185, “Standard Format and Content for Post-Shutdown Decommissioning Activities Report,” Revision 1, dated June 2013 (ADAMS Accession No. ML13140A038).

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2. PG&E Letter DCL-18-096, "Certification of Permanent Cessation of Power Operations," dated November 27, 2018 (ADAMS Accession No. ML18331A553).
3. NUREG-0586, Supplement 1, "Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," November 2002 (ADAMS Accession No. ML023470304 [Vol 1]) and ML023470323 [Vol 2]).
4. EPRI Report No. 1011734, "Maine Yankee Decommissioning Experience Report (1997 – 2004)," 2005. Publicly accessible at: [www.epri.com](http://www.epri.com).
5. EPRI Report No. 1003025, "Decommissioning Pre-Planning Manual," 2001. Publicly accessible at: [www.epri.com](http://www.epri.com).
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7. Environmental Report, "Post-Shutdown Decommissioning Activities Report, Diablo Canyon Power Plant," dated May 30, 2019.
8. NUREG-1496, "Generic Environmental Impact Statement in Support of Rulemaking on Radiological Criteria for License Termination of NRC-Licensed Nuclear Facilities," dated July 1997 (ADAMS Accession No. ML042310492).
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11. California Department of Fish and Wildlife. "Threatened and Endangered Species: Endangered, Threatened, or Rare Plant List; Endangered, Threatened, or Rare Animal List; and Fully Protected Animals," dated August 6, 2018. Accessed at: [http://www.dfg.ca.gov/wildlife/nongame/t\\_e\\_spp/](http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/)
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14. National Marine Fisheries Service. "Response to Request for List of Protected Species and Essential Fish Habitat Within the Area Under Evaluation for the Diablo Canyon Nuclear Power Plant, Units 1 and 2, License Renewal Application Review." National Oceanic and Atmospheric Administration, Southwest Region, dated May 10, 2010.
15. NUREG-2157, Volume 1, "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel, Final Report." Office of Nuclear Material Safety and Safeguards, September 2014. (ADAMS Accession No. ML14196A105).
16. Federal Aviation Administration. Advisory Circular 36-1H, Change 1. "Noise Levels for U.S. Certificated and Foreign Aircraft," dated May 25, 2012. Accessed at:  
[https://www.faa.gov/documentLibrary/media/Advisory\\_Circular/AC\\_36-1H.pdf](https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_36-1H.pdf)
17. NRC Letter, "Diablo Canyon Nuclear Power Plant, Units 1 and 2 – Exemptions from the Requirements of 10 CFR Part 50, Sections 50.82(a)(8)(i)(A) and 50.82(a)(8)(ii) (EPID L-2018-LLE-0023)," dated September 10, 2019 (ADAMS Accession No. ML19163A104).