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Environmental Assessment for the Controlled Area Boundary Exemption for SONGS in San Diego County, California

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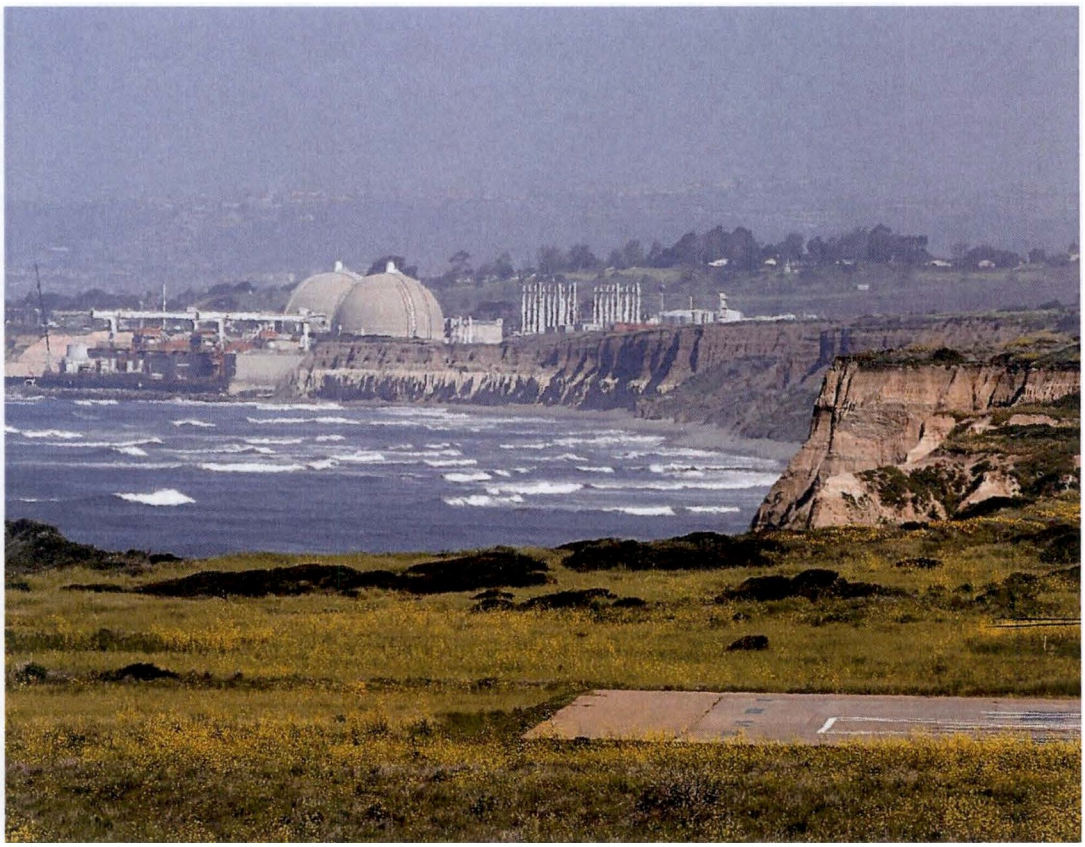
Environmental Review Materials Branch
Division of Rulemaking, Environmental, and Financial Support
Office of Nuclear Material Safety and Safeguards



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ABBREVIATIONS AND ACRONYMS

ALARA	as low as is reasonably achievable
CAB	Controlled Area Boundary
CCC	California Coastal Commission
CFR	*Code of Federal Regulations*
D&D	decontamination and decommissioning
DBA	design basis accident
DHS	Department of Homeland Security
EA	environmental assessment
EAB	Exclusion Area Boundary
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
ft	feet
FWS	U.S. Fish and Wildlife Service
GEIS	Generic Environmental Impact Statement
HI-STORM	Holtec International STORage Module
I-5	Interstate 5
ISFSI	Independent Spent Fuel Storage Installation
ILTAB	Intelligence Liaison and Threat Assessment
MEI	Maximum Exposed Individual
m	meter(s)
m/s	meter(s) per second
mi	mile(s)
mrem	millirem
mSv	millisievert
LLRW	Low Level Radioactive Waste
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIA	North Industrial Area
NRC	U.S. Nuclear Regulatory Commission
NUHOMS	Nuclear Horizontal Modular Storage
OCA	Owner Controlled Area
OUO-SRI	Official Use Only – Security Related Information
PSDAR	Post Shutdown Decommissioning Activities Report
REIRS	Radiation Exposure Information and Reporting System
rem	roentgen equivalent man
REMP	Radiological Environmental Monitoring Program
RIS	Regulatory Issue Summary
RPP	Radiation Protection Program
SCE	Southern California Edison
SHPO	State Historic Preservation Officer
SONGS	San Onofre Nuclear Generating Station

TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter
TN	Transnuclear
UMAX	Underground Maximum Storage System
µR	10^{-6}; unit of measurement; micro 1 x 10^{-6} REM

DEFINITIONS

Controlled Area Boundary (CAB)	means a bounded area immediately surrounding an independent spent fuel storage installation (ISFSI) for which SONGS exercises authority over its use and where ISFSI operations are performed. The proposed CAB is depicted as a dotted red line in figure 1 and is not a physical barrier.
Exclusion Area Boundary (EAB)	means a bounded area surrounding the reactor(s) in which SONGS has the authority to determine all activities including exclusion or removal of personnel and property from the area. The EAB is depicted as a green line in figure 1 and is not a physical barrier.
ISFSI Protected Area	means the physical, fence line barrier immediately surrounding the ISFSI but inside the CAB. The ISFSI Protected Area is depicted as a dotted black line in figure 2.
Owner Controlled Area (OCA)	is an area that encompasses all areas contiguous to the reactor site property that is owned or leased by SONGS over which they exert control. SONGS can limit access to this area for any reason. The owner controlled area is bounded by a physical perimeter. The OCA is depicted as a solid yellow line in figure 1.

1.0 INTRODUCTION

By letter dated December 16, 2021, Southern California Edison (SCE) requested an exemption from the title 10 of the *Code of Federal Regulations* (10 CFR) part 72.106(b) requirement that the minimum distance from an independent spent fuel storage installation (ISFSI) to the ISFSI Controlled Area Boundary (CAB) be at least 100 meters (m) (SCE, 2021). SCE requests the U.S. Nuclear Regulatory Commission (NRC) approval to modify the existing CAB at the San Onofre Nuclear Generating Station (SONGS) ISFSI to be in some places less than the 100m required distance. On March 31, 2022, the NRC accepted SCE's application for detailed technical review (NRC, 2022a).

In accordance with 10 CFR 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," that implements the National Environmental Policy Act of 1969, as amended (NEPA), the NRC staff's environmental review of the proposed exemption request is documented in this environmental assessment (EA).

1.1 Proposed Action

SCE requests NRC approval for an exemption to the requirement in 10 CFR 72.106(b) for the SONGS ISFSI. Figure 1, San Onofre Site Boundary Location Map, shows a color-coded depiction of the various boundaries in relation to the SONGS ISFSI. 10 CFR 72.106(b) requires the minimum distance from an ISFSI to the ISFSI CAB be at least 100m (328 feet [ft]). Any individual located on or beyond the nearest boundary to the controlled area may not receive from any design basis accident the more limiting of a total effective dose of 5 roentgen equivalent man (rem) (0.05 Sv), or the sum of the deep-dose equivalent and the committed dose equivalent to any individual organ or tissue (other than the lens of the eye) of 50 rem.

When the SONGS ISFSI was constructed, the SONGS ISFSI CAB was established with the same boundary as the reactor Exclusion Area Boundary (EAB). Thus, all the arrangements with local agencies for the ability to remove people from the thruways post-accident applied to the reactors and the ISFSI. SCE proposes to establish the ISFSI CAB at or within the site boundary near the ISFSI, which coincides with the physical boundaries of the site (SONGS, 2021). In some areas, the distance would be less than 100 m (328 ft). The areas that would be within 100 m (328 ft) are the North Industrial Area (NIA) seawall to the west of the ISFSI and the Owner Controlled Area (OCA) fence line. If approved, this would result in the minimum distance from the closest storage location in the ISFSI to the CAB of 38 m (125 ft) on the western (seaward) side and 95 m (312 ft) on the eastern (landward) side. This also results in a minimum distance from the ISFSI Protected Area (PA) fence line to the CAB of 16.6 m (54.4 ft) on the western (seaward) side and 75 m (246 ft) on the eastern (landward) side. Figure 2, ISFSI Protected Area to CAB Schematic, shows the proposed boundary in relation to the 100 m (328 ft) distance requirement, and figure 3, ISFSI layout, shows the position of the Transnuclear and Holtec systems.

Figure 1. San Onofre Site Boundary Location Map (Source: SONGS, 2022c)

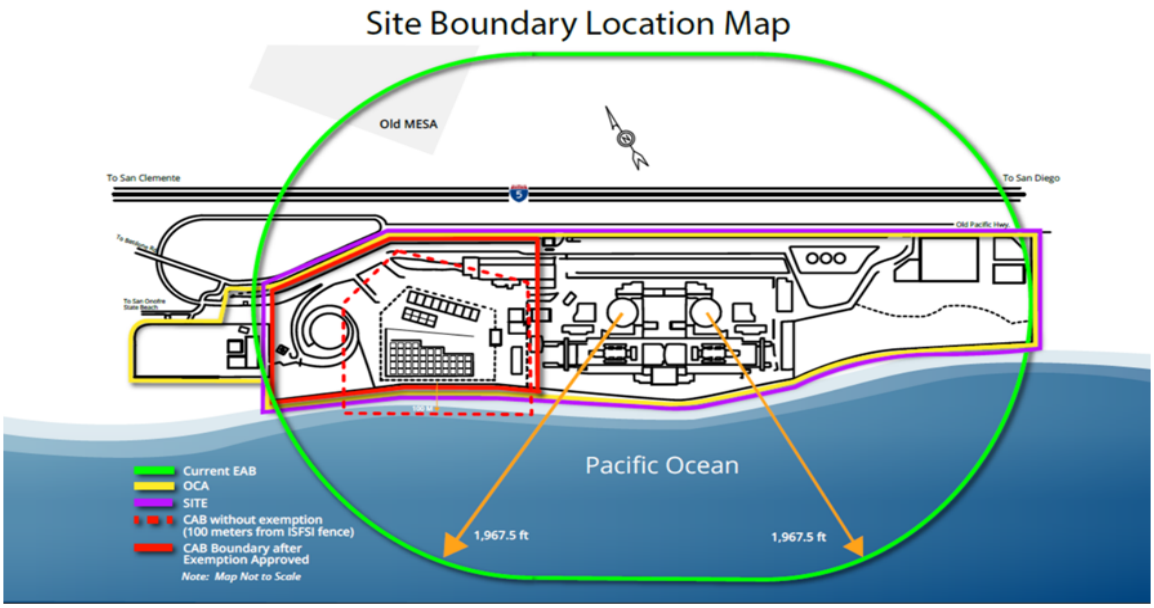

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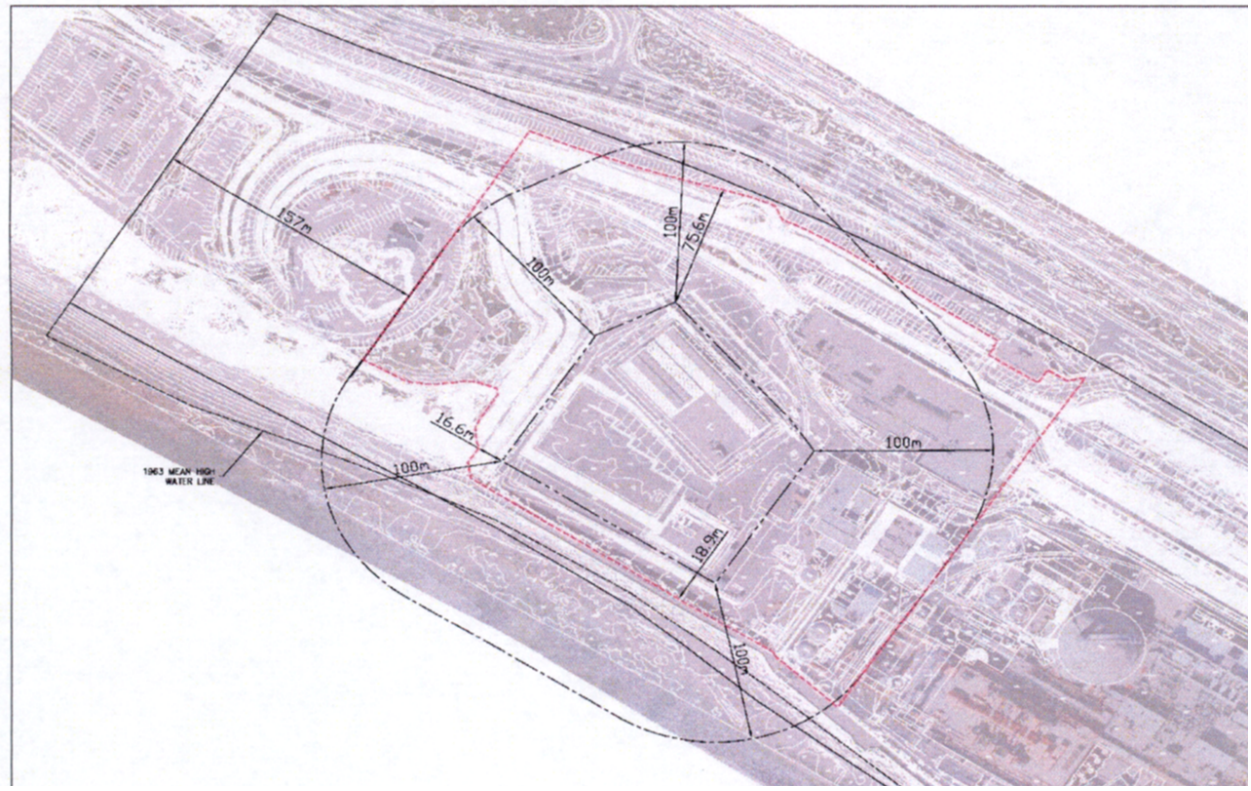
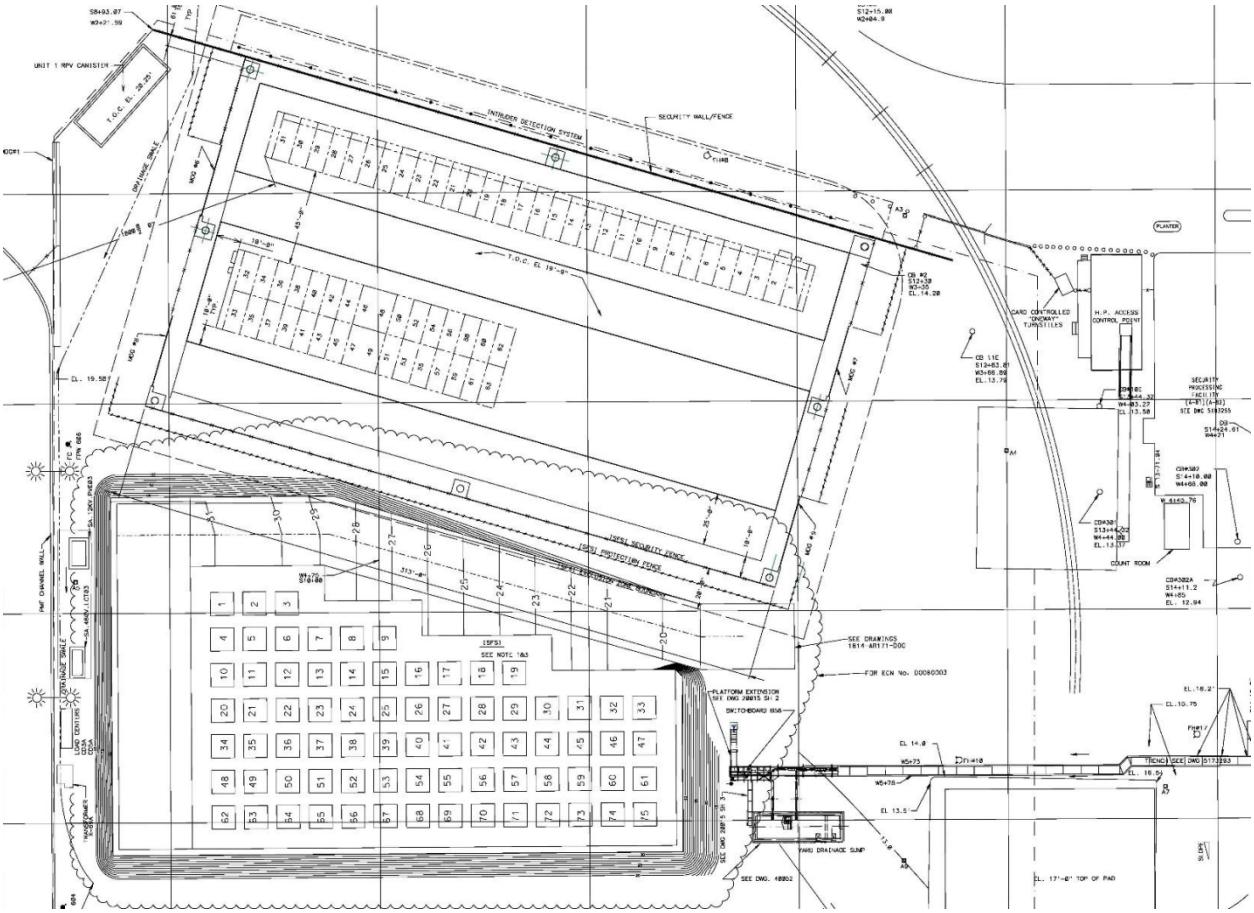
Figure 2. ISFSI Protected Area to CAB Schematic (Source: SONGS, 2021)



Note: The red dotted line depicts the CAB if the exemption request is approved. The black dotted line in the middle depicts the ISFSI PA fence line. The minimum distance from the ISFSI PA fence line to the proposed CAB would be 16.6 m (54.4 ft) on the seaward side and 75 m (246 ft) on the landward side as shown above.

Figure 3. ISFSI Layout (Source: SONGS, 2003)



Note: The Transnuclear NUHOMS site is located on the landward side of the ISFSI. The Holtec HI-STORM site is an underground system and is located on the seaward side of the ISFSI.

1.2 Purpose of and Need for the Proposed Action

SCE is requesting the exemption in response to a lease condition granted by the California State Lands Commission (CSLC) in 2019 (SONGS, 2021). Lease condition 32 states:

> At the conclusion of the transfer of the SONGS spent nuclear fuel to the Approved Independent Spent Fuel Storage Installation (Approved ISFSI), the Lessee shall seek approval from the NRC to decrease the size of the Exclusion Area Boundary (EAB) to the minimum required by law. Lessee and Leasor shall jointly consult with the California Coastal Commission (CCC) to ensure that such an approval, if granted, will not interfere with the Lessee's compliance with the CCC permit conditions.

To meet the lease condition, SCE would pursue the disestablishment of the EAB in accordance with 10 CFR 50.59, which allows reactor licensees to make certain changes without prior NRC approval. Since SONGS has permanently ceased reactor operations in Unit 2 and 3 (SCE, 2013), an EAB is no longer required to be maintained. While compliance with this lease condition only requires an attempt to decrease the size of the EAB, SCE states that an exemption to 10 CFR 72.106(b) to decrease the size of the CAB will also serve the public's interest related to beach access (SONGS, 2021). However, the public already has full access to the beach area, the bluff overlooking the ISFSI, and Pacific Ocean on the seaward side of SONGS. These public thoroughfares are allowed in accordance with 10 CFR 72.106(c). However, SCE has an agreement with Camp Pendleton, State, and local agencies to restrict public access to these areas and thoroughfares during an emergency such as a hostile action, natural disaster, or fire.

If the exemption is approved, SCE would modify their agreement with the Camp Pendleton, State, or local agencies to respond and perform duties within the CAB under emergency conditions because SCE would no longer control areas beyond their site boundary (SCE, 2021). However, in any emergency, first responders would likely secure access to the beach area based upon the circumstances, to protect the public in the event of an emergency.

1.3 Scope of the Environmental Analysis

The NRC staff has evaluated the potential environmental impacts associated with the proposed action and no-action alternative, and has documented the results of the evaluation in this EA. The NRC staff performed this review in accordance with the requirements of 10 CFR Part 51 and staff guidance found in NUREG-1748, *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs* (NRC, 2003).

The following documents were reviewed and considered in the development of this EA:

- Information contained in SCE's Exemption Request, dated December 16, 2021 (ML ML22355A241); and
- Information contained in previous NRC environmental review documents for SONGS (ML12193A217).

The requested exemption would be a change to the regulatory boundaries and would not involve construction or ground disturbing activities. Therefore, the NRC staff anticipate that there would be no environmental impacts to the land, air, or water. As previously stated, the public is already allowed to access the beach land areas and ocean proposed to be removed from the CAB. There would be no dust or noise generated as part of the proposed action therefore the air quality and noise conditions would be unaffected. There would be no physical barriers being created or moved. Similarly, there would be no surface or groundwater used, and no onshore and offshore marine habitat would be affected. There would be no impacts on cultural or historic preservation activities since no work is being conducted. Overall, there would be no direct, indirect, or cumulative effects in the following environmental resource areas:

- Land Use
- Visual and Scenic Resources/Aesthetics
- Climatology, Meteorology, and Air Quality
- Noise
- Geology and Soil
- Water
- Ecological Resources
- Historical and Cultural Resources
- Socioeconomics
- Transportation and Traffic
- Waste Generation and Management

This EA evaluates the environmental impacts of the proposed action. This includes impacts to public and occupational health and impacts from potential acts of terrorism in accordance with the June 2006 decision by the United States Court of Appeals for the Ninth Circuit [*San Luis Obispo Mothers for Peace v. NRC*, 449 F.3d 1016, 1028 (9th Cir. 2006)].

2.0 PROPOSED ACTION, ALTERNATIVES AND HISTORY OF THE LICENSE

2.1 Proposed Action

SCE informed the NRC that based on its interactions with key State agencies (e.g., CSLC), provisions of the State lease, and public interest in unfettered access to the beach, it proposes to reduce or eliminate the site EAB consistent to the maximum extent allowed by law. SCE proposes to eliminate the exclusion area boundary and to retain the Site and Controlled Area boundaries. However, SCE contends the ISFSI control area boundary must be also addressed because it currently extends onto the beach past a portion of the EAB and would require NRC approval to move it to the other side of the seawall. If approved by the NRC, SCE could eliminate offsite agreements for control of public access to the Beach under normal and emergency conditions (SONGS, 2021). Pre-existing arrangements are established with offsite agencies for removal of the public from the EAB area during an emergency (as needed). Since the CAB would no longer extend past the EAB on the public beach, no pre-existing arrangements would be needed for the CAB.

An EAB is established around an operating reactor to protect individuals from a postulated fission product release during an emergency. Since Units 1, 2 and 3 reactors are no longer operating and are defueled, there is no possibility of an accident involving a fission product release. Therefore, the establishment of an EAB is no longer required. SCE is pursuing this action separately from the exemption in accordance with 10 CFR 50.59. This EA does not evaluate the elimination of the EAB.

2.2 Alternatives

In this section the NRC describes the ‘no-action’ alternative which would be for the NRC to deny the exemption request.

2.2.1 No-Action Alternative

The no-action alternative would be NRC’s denial of SCE’s request for an exemption from the requirement of 10 CFR 72.106(b) for the SONGS ISFSI. The denial of the exemption would not impact decommissioning activities. SCE would continue to maintain the distance from the ISFSI to the ISFSI CAB to 100 m (328 ft). SCE would continue to maintain its relationship with Camp Pendleton security forces, State, and Federal first responders in the unlikely event of an emergency condition within the CAB. As a result, SCE would not be able to pursue the elimination of the offsite boundary agreements for control of public access to the beach of the SONGS facility under emergency conditions. Public access to the beach and walkways would continue as allowed under normal conditions.

SCE would need to report the NRC’s denial of the exemption request to the CSLC regarding the affected lease condition. The NRC’s denial of the exemption request would have no effect on whether the lease condition is met or not because the lease condition describes the EAB not the CAB. The disestablishment of the EAB in accordance with 10 CFR 50.59 and the request to

exempt SONGS from the 100 m (328 ft) requirement in 10 CFR 72.106(b) for the SONGS ISFSI are two separate and distinct actions. SCE intends to eliminate the EAB in accordance with 10 CFR 50.59, which does not require NRC approval.

2.3 History of the SONGS Licenses

SONGS is operated by SCE. The site is approximately 97 kilometers (km) (60 miles [mi]) south of Los Angeles, 6 km (4 mi) south of San Clemente, CA. SONGS is located between I-5 and the Pacific Ocean, entirely within the boundary of the Camp Pendleton military reserve. The landowner is the United States Navy. The site originally comprised three pressurized water nuclear power plants. Unit 1 (License No. DPR-13) commenced operation in 1968 and shut down in 1992. Units 2 and 3 (License No. NPF-10 & NPF-15) commenced operation in 1983 and 1984, respectively and permanently ceased operations concurrently in June 2013 (SCE, 2013). Dismantlement of Unit 1 is essentially complete. The site is now partially occupied by an ISFSI containing both Transnuclear (TN) and Holtec storage systems. Units 1, 2, and 3 are defueled and all spent fuel has been removed from the spent fuel pool and transferred to the ISFSI. The onsite ISFSI consists of two spent fuel storage systems, the TN standardized Advanced NUHOMS Horizontal Modular Storage System and the Holtec International Storage Module (HI-STORM) Underground Maximum (UMAX) storage system. The ISFSI stores both spent fuel and Greater than Class C waste. The NUHOMS system is located on the northeast of the ISFSIs closest to I-5 and the UMAX system is located on the northwest side of the ISFSI closest to the seaward side of the ISFSI. Figure 3, ISFSI layout, shows the position of the TN and Holtec systems.

2.3.1 Decommissioning

SONGS Unit 1 was shut down on November 30, 1992, and all fuel removed by March 1993. By 2009, the Unit 1 site was dismantled (SCE, 2013). An ISFSI with the Holtec HI-STORM UMAX and the TN NUHOMS storage systems now occupy the former Unit 1 site. On June 12, 2013, SCE submitted a Certification of Permanent Cessation of Power Operations (SCE, 2013) to the NRC, certifying that SCE has permanently ceased power operations at SONGS Units 2 and 3. Upon SCE’s certification of permanent cessation, the NRC staff established an inspection and oversight program that is appropriate for the licensee's proposed decommissioning activities. On May 7, 2020, SCE submitted an Updated Post-Shutdown Decommissioning Activities Report and Irradiated Fuel Management Plan (SCE, 2020). On August 6, 2020, the licensee completed the transfer of all irradiated fuel from Unit 2 and Unit 3 to the ISFSI. By the end of 2028, the licensee is expected to have completed all decommissioning activities necessary to demonstrate unrestricted future use for all final status survey units, not including the ISFSI. The licensee expects that all decommissioning activities will be completed by 2051, approximately two years after the anticipated removal of the last spent fuel from the SONGS ISFSI to the U.S. Department of Energy custody.

3.0 AFFECTED ENVIRONMENT AND POTENTIAL ENVIRONMENTAL IMPACTS

SONGS is requesting to establish the ISFSI CAB at or within the site physical boundary. The physical boundary would be less than 100 m (328 ft) at the North Industrial Area (NIA) seawall to the west of the ISFSI and the OCA fence line to the east of the ISFSI. This would result in the minimum distance from the closest storage location in the ISFSI to the CAB of 38 m (125 ft) to the seaward side and 95 m on the eastern side. This also results in a minimum distance from the ISFSI PA to the new CAB boundary of 16.6 m (54.4 ft). The proposed action does not involve construction activities and therefore would not disturb any land or include any physical modifications; and is not anticipated to affect the visual appearance of the site, or create noise, dust, or debris. The proposed exemption does not create any effluents or require any natural resources, and the aquatic and terrestrial habitat is unaffected.

3.1 Public and Occupational Health

An ISFSI provides interim storage, protection, and safeguarding of spent fuel pending its final disposal. Risks to occupational health and safety can include exposure to radiological and non-radiological hazards. SCE conducts environmental monitoring of the ISFSI and surrounding area under the site-wide environmental monitoring program and provides an annual radioactive effluent release report to the NRC per 10 CFR 72.44 (d), noting that no radionuclides are released to the environment from liquid or gaseous effluents (SONGS 2022a). Because no radioactive gas, liquid, or solid waste effluents are released from the SONGS ISFSI during operation, a radioactive effluent monitoring system is not required (SONGS, 2022a). However, SCE uses an as low as reasonably achievable (ALARA) program to minimize radiation exposure to ISFSI personnel, visitors, and the general public.

The primary source of radiation exposure is neutron and gamma radiation emanating from the spent fuel and the shielded casks. External radiation from the casks could potentially affect workers and members of the public; however, the cask is a passive system designed to limit exposure to radiation. For a U.S. resident, the average annual estimated total effective dose equivalent (TEDE) from natural background and anthropogenic (manmade) radiation sources is about 620 millirem (mrem) (6.2 millisieverts [mSv]) (NRC, 2017). The source of this dose includes cosmic radiation, background radiation (radon and thoron), radiation sources in the Earth (terrestrial sources), naturally occurring radionuclides that exist in the body, medical and occupational sources, industrial sources, and radionuclides present in consumer products. The U.S. population is exposed to two primary sources: naturally occurring background radiation and medical exposure to patients.

Non-radiological (industrial) hazards include moving heavy objects, working outside, working with heavy equipment during cask transfer operations, and exposure to hazardous materials.

3.1.1 Nonradiological Impacts

The proposed action would not result in any changes in the types, characteristics, or quantities of nonradiological effluents or solid waste. There are no planned refurbishments beyond maintenance, monitoring, and routine inspections of the ISFSI site in accordance with the requirements in 10 CFR parts 20 and 72. Accordingly, the NRC staff concludes that nonradiological impacts from the proposed action on public and occupational health would not be significant.

3.1.2 Radiological Impacts

The ISFSI is within the OCA of the SCE site and is surrounded by a fence. The proposed exemption request involves no change in routine operations, no new construction, and no land disturbance. The ISFSI consists of two different storage systems. There are 63 TN NUHOMS horizontal dry storage modules and 75 Holtec HI-STORM UMAX system vertical, ventilated modules that are underground. The Radiological Environmental Monitoring Program (REMP) includes measuring radiation levels in the environment surrounding SONGS. Through the environmental monitoring program, SCE evaluates exposure to the public during the term of the ISFSI license and verifies compliance with dose limits in 10 CFR 72.104. Direct radiation is measured with thermoluminescent dosimeters (TLDs) located around the periphery of the ISFSI and site. Beyond the immediate area of the ISFSI, the REMP data collected during 2021, as in previous years, continues to be representative of background levels (SONGS, 2022b).

The public currently has access to a beach walkway on the seaward side, as well as a bluff. These areas are within 100 m (328 ft) of the ISFSI but outside of the ISFSI protected area fence line. If the requested exemption is granted, the public would not be exposed to any additional dose from the ISFSI. Doses will continue to be monitored through the site radiological environmental monitoring program.

3.1.2.1 Occupational Dose

NRC NUREG-0713, Volume 42, *Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities 2020*, *Fifty-third Annual Report* summarizes the 2020 occupational radiation exposure data (NRC, 2020). In 2020, the average measurable dose of all commercial light water reactors was 0.093 person-rem (0.00093 person-Sv). The average measurable dose at SONGS was 0.15 rem (0.0015 Sv). SCE's calculation of collective dose is limited to direct radiation and measures 31.108 person-rem.

The SONGS ISFSI maintains a radiation protection program that ensures radiation doses are maintained ALARA in accordance with 10 CFR Part 20. The requested exemption does not change the surveillance and maintenance activities onsite. There were no releases of principal radionuclides in liquid or gaseous form from the SONGS ISFSI to the environment in 2021(SONGS, 2022). As such, the only occupational dose received would occur during weekly surveillance, quarterly surveys, and regular maintenance activities. These activities are performed in accordance with the occupational dose limits specified in 10 CFR 20.1201. Licensees must also have in place and follow a radiation protection program consistent with

10 CFR 20.1101. Therefore, the NRC staff concludes that the radiological impacts of the proposed action on workers would not be significant.

3.1.2.2 Dose to the Public

The ISFSI is surrounded by a security fence to prevent unauthorized access. The only dose to members of the public during normal operations would result from the gamma and neutron radiation that is emitted from the cask surfaces. The annual radiological effluent release reports include fixed TLD measurements (SONGS, 2022b). If parts of the existing CAB are moved to the existing ISFSI fence line, the minimum distance from the closest storage location in the ISFSI to the CAB would be 38 m (125 feet) to the west (seaward side) and 95 m (312 feet) on the eastern (landward) side. The nearest edge of the ISFSI storage vault would then be located approximately 38 m (125 feet) from a public-access beach walkway. TLD55 in the effluent release report represents the limiting location of the proposed CAB and is located on the beach walkway between the ISFSI and the Pacific Ocean. As noted in the effluent release report, the public dose is non-detectable at this location. In addition to the effluent release report, SONGS performed confirmatory dose analysis calculations based on a beach annual occupancy time of 300 hours (SONGS 2021) resulting in a maximum calculated dose of 0.60 mrem/year to a member of the public. This calculation bounds the anticipated dose to a member of the public based on TLD readings that included fuel canister movement activities within the ISFSI that took place during the 2020 reporting period. These activities are now complete onsite. Public access to the beach walkways and bluff near the fence line does not change. Therefore, radiological doses to the public from the proposed action would not change from existing doses, would be within regulatory limits, and would not be significant.

3.1.3 Accidents

There are no design basis accidents (DBA) with offsite dose consequences exceeding the limits of 10 CFR 72.106. 10 CFR 72.106(b) states that “any individual located on or beyond the nearest boundary of the controlled area may not receive from any DBA the more limiting of a total effective dose of 5 rem (0.05 Sv) and the nearest boundary of the controlled area must be at least 100 m (328 ft). The only design basis accident at SONGS would involve fuel handling and transfer operations in the ISFSI. SCE modelled transfer operations involving both fuel storage systems. No results challenged the existing limits except for a loss of cooling water jacket accident in the Holtec HI-STORM system. Holtec performed a calculation using the revised 38 m (125 ft) distance which resulted in a 30-day dose of 3.87 rem (0.0387 Sv), which meets the criteria of 10 CFR 72.106(b) (SCE, 2021). Dose consequences will decrease over time as fuel is stored and decayed in their storage cells. The NRC staff also concluded that the components of the ISFSI that are important to safety would continue to perform their design functions during normal operation, off-normal conditions, and credible postulated accidents. Therefore, the NRC staff concludes that the potential impacts from accidents at the ISFSI would not be significant.

3.2 Environmental Justice

Under Executive Order 12898 (59 FR 7629; February 11, 1994), Federal agencies are responsible for identifying and addressing potential disproportionately high and adverse human health and environmental impacts on minority and low-income populations. In 2004, the Commission issued *Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions (*69 FR 52040; August 24, 2004). The environmental justice impact analysis evaluates the potential for disproportionately high and adverse human health and environmental effects on minority and low-income populations that could result from activities associated with the proposed action. Such effects may include human health, biological, cultural, economic, or social impacts. Minority and low-income populations are subsets of the public residing in the vicinity of SONGS, and all are exposed to the same health and environmental effects generated from activities at SONGS.

NUREG-1748, appendix C states that “if it is determined that a particular action will have no significant environmental impact, then there is no need to consider whether the action will have disproportionately high and adverse impacts on certain populations” (NRC, 2003). There are no significant environmental impacts in connection with the exemption request. Therefore, a detailed environmental justice review is not necessary for this action.

3.3 Impacts from a Hypothetical Terrorist Attack

3.3.1 NRC Security Requirements for ISFSIs

The NRC has established requirements and has initiated several actions designed to provide assurance that a terrorist attack would not lead to a significant radiological event at an ISFSI. These include (1) the continual evaluation of the threat environment by the NRC, in coordination with the intelligence and law enforcement communities, which provides, in part, the basis for the protective measures currently required; (2) the protective measures that are in place to reduce the chance of an attack that leads to a significant release of radiation; (3) the robust design of storage casks, which provides substantial resistance to penetration; and (4) NRC security assessments of the potential consequences of terrorist attacks against ISFSIs that inform the decisions made regarding the types and level of protective measures. Over the past 25 years, there have been no known or suspected attempts to sabotage, or to steal, radioactive material from storage casks at ISFSIs, or to directly attack an ISFSI. Nevertheless, NRC is continually evaluating the threat environment to determine whether any specific threat to ISFSIs exists.

3.3.1.1 General Security Considerations

In response to the terrorist attacks of September 11, 2001, and to intelligence information subsequently obtained, the U.S. government initiated nationwide measures to reduce the threat of terrorism. The Federal government continues to improve the sharing of intelligence information and the coordination of response actions among Federal, State, and local agencies. The NRC is an active participant in these efforts; it has regular and frequent communications with other Federal, State, and local government agencies and industry

representatives to discuss and evaluate the current threat environment, to assess the adequacy of security measures implemented at licensed facilities, and, when necessary, to recommend additional actions.

The NRC expanded its system for notifying licensees of possible threats to their facilities after the September 11, 2001, terrorist attacks, to include a broader range of licensees, including ISFSI licensees. The NRC has incorporated the threat condition levels used in the U.S. Department of Homeland Security's (DHS) National Terrorism Advisory System into its own threat advisory system. The NRC's Office of Nuclear Reactor Regulation issued Official Use Only – Security Related Information (OUO-SRI) Regulatory Issue Summary (RIS) 2018-03, "National Terrorism Advisory System and Protective Measures for the Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material (OUO-SRI)," dated June 1, 2018. The NRC revised its threat alerts and recommended specific actions in RIS 2018-03. The RIS provides recommended actions that licensees and Agreement States may wish to consider if DHS issues a National Terrorism Advisory System alert.

The Intelligence Liaison and Threat Assessment Branch (ILTAB) within the NRC's Office of Nuclear Security and Incident Response reviews, analyzes, coordinates, and disseminates threat and intelligence information relevant to NRC licensees and Agreement States, at both strategic and tactical levels. The ILTAB staff also serve as NRC's liaison and coordination staff with other organizations and agencies, including the intelligence and law enforcement communities. Through these improved coordination and communication functions, the NRC can efficiently develop and transmit advisories to the appropriate licensees, who are then able to take prompt action. Thus, the broad actions taken by the Federal government and the specific actions taken by the NRC since September 11, 2001, have helped to reduce the potential for terrorist attacks against NRC-regulated facilities.

3.3.1.2 Requirements for ISFSIs

The NRC considered the potential impacts of terrorist acts in the development and implementation of its 10 CFR part 73, "Physical Protection of Plants and Materials," security requirements (72 FR 12705). The NRC's strategy for protecting public health and safety, the common defense and security, and the environment focuses on ensuring that its requirements, in combination with the design features of storage casks, are effective in protecting against the potential effects of terrorist attacks on ISFSIs.

The NRC security requirements provide assurance that terrorist attacks cannot endanger the public's health and safety by intentionally releasing radiation from an ISFSI. The NRC reviews and approves facility security plans in evaluating the adequacy of these on-site measures. The SONGS ISFSI is also inspected to ensure complete and correct implementation of the features of the site security plan, as well as the applicable regulations and orders. The NRC staff has determined through recent inspections that the facility meets the requirements of 10 CFR part 73 and applicable orders (NRC, 2022b).

The details of specific security measures for each facility are designated as Safeguards Information, in accordance with section 147 of the Atomic Energy Act and 10 CFR 73.21, and,

for that reason, cannot be released to the public. However, key features of the security programs for ISFSIs include (1) physical barriers; (2) surveillance; (3) intrusion detection; (4) intrusion response; and (5) offsite assistance from local law enforcement agencies, as necessary. After the September 11 terrorist attacks, the Commission initiated prompt and comprehensive actions to address both immediate and longer-term security measures for NRC-regulated facilities. In the months immediately after the attacks, the Commission issued numerous safeguards and threat advisories to its licensees to strengthen licensees' capabilities and readiness to respond to a potential attack on a nuclear facility. As part of the longer-term efforts, the NRC conducted a comprehensive review of the Agency's security program. This review examined specific threats, such as a land-based vehicle bomb, ground assault with the use of an insider, and water-borne assaults, which have led to the imposition of additional requirements, through orders and rules, affecting many categories of licensees, including ISFSIs.

The Commission has issued orders to all licensees of operating ISFSIs to implement additional security enhancements identified in NRC's ongoing comprehensive review of its safeguards and security programs and requirements. These orders, imposing additional security measures were issued to SCE for the SONGS ISFSI prior to the loading of spent fuel into the facility (October 16, 2006). These measures, which the NRC staff has determined through its inspection activities to be fully implemented, include: (1) increased security patrols; (2) augmented security forces and weapons; (3) additional security posts; (4) heightened coordination with local law enforcement and military authorities; (5) enhanced screening of personnel; and (6) additional limitations on vehicular access. Collectively, these measures further reduce the already low probability of a successful terrorist attack on an ISFSI, by providing assurance that an attempted attack could be detected and by mitigating the extent of damage and the potential radiological consequences if an attack were successful. Based on its ongoing consideration of safeguards and security requirements, its review of information provided by the intelligence community, and the implementation of additional security measures at the nation's ISFSIs, the NRC has assurance that public health and safety and the environment, and the common defense and security, continue to be adequately protected in the current threat environment.

3.3.2.1 Generic Security Assessments

Following issuance of the 2002 security orders for ISFSIs, the NRC used a security assessment framework as a screening and assessment tool to determine whether additional security measures, beyond those required by regulation and the security orders, were warranted for NRC-regulated facilities, including ISFSIs. Initially, the NRC screened threat scenarios to determine plausibility. This screening was informed by information gathered through the NRC's regular interactions with the law enforcement and intelligence communities. For those scenarios deemed plausible, the NRC assessed the attractiveness of the facility to attack by accounting for factors such as iconic value, complexity of planning required, resources needed, execution risk, and public protective measures. Separately, the NRC made conservative assessments of consequences, to assess the potential for prompt fatalities from radiological impacts from those plausible scenarios. The NRC then looked at the combined

effect of the attractiveness and the consequence analyses, to determine whether additional security measures for ISFSIs were necessary.

In conducting the security assessments for ISFSIs, the NRC chose several storage cask designs that were representative of current NRC-certified designs. Plausible threat scenarios considered in the generic security assessments for ISFSIs included a large aircraft impact similar in magnitude to the attacks of September 11, 2001, and ground assaults using expanded adversary characteristics consistent with the design basis threat for radiological sabotage for nuclear power plants. The resulting generic assessments formed the basis for NRC's conclusion that there was no need for further security measures at ISFSIs beyond those currently required by regulation and imposed by orders issued after September 11, 2001.

3.3.2 Consideration of Environmental (Radiological) Impacts from Terrorist Acts

The NRC staff has considered the potential radiological impacts of terrorist acts on ISFSIs, even though the staff considers the probability of a malevolent act against an ISFSI that could result in a significant radiological event to be very low. By design, storage casks are highly resistant to penetration. To be licensed or certified by the NRC, these casks must meet stringent requirements for structural, thermal, shielding, and criticality performance, and for confinement integrity, for normal and accident events. Consequently, storage casks are extremely robust structures, specifically designed to withstand severe accidents, including the impact of tornado-generated missiles.

The SONGS ISFSI is within the OCA of the SCE SONGS facility located in San Diego County, CA, near U.S. Highway 5, approximately 62 miles southeast of Los Angeles and 51 miles northwest of San Diego, CA. The TN system consists of 63 Horizontal Storage Modules. Prior to the decommissioning of Units 2 and 3, spent fuel was stored in TN spent fuel containers in an ISFSI located on the portion of the site previously occupied by Unit 1. In 2016, SCE expanded the ISFSI to store Unit 2 and 3 spent fuel and a Holtec UMAX system with 75 vertically ventilated, underground modules was constructed. All Unit 2 and 3 fuel has been transferred to the ISFSI.

Because of the uncertainty inherent in assessing the likelihood of a terrorist attack and the unlimited number of potential scenarios, the NRC recognizes that under general credible threat conditions, although the probability of such an attack is believed to be low, it cannot be reliably quantified. The NRC has adopted an approach that focuses on ensuring that the safety and security requirements are adequate and effective in countering and mitigating the effects of terrorist attacks against storage casks. To provide assurance that a terrorist act will not lead to significant radiological consequences, the NRC has analyzed plausible threat scenarios and required enhanced security measures to protect against the threats, and has developed emergency planning requirements, which could mitigate potential consequences for certain scenarios. The NRC finds this protective strategy reduces the risk from a terrorist attack to an acceptable level.

The NRC staff performed a qualitative assessment ~~to~~ compare the consequence of a postulated terrorist attack for the current site configuration against the relocated boundary in the exemption request. For both scenarios, the likelihood of a significant release in the event of a plausible attack would be very low. The staff's qualitative assessment accounted for the effectiveness of NRC security requirements and the mitigating effects of the emergency planning and emergency response actions.

This exemption would have no change to the consequences of a hypothetical terrorist attack as compared to the current state. Public access to the beach and areas up to the security fence is currently allowed. A potential release from a hypothetical terrorist attack will be immediate and of limited duration. Changing the CAB will have no effect on the size or position of the release. As discussed in section 3.1.3, under normal and ISFSI accident conditions (i.e., water jacket failure), the dose requirements would be met.

In conclusion, the probability of a significant radioactive release caused by a terrorist attack remains very low, and the potential health and land contamination effects of the most severe plausible attack would not be altered by the proposed CAB as compared to the existing CAB.

4.0 CONSULTATION AND COORDINATION

4.1 State Review

The NRC submitted the draft EA to the State Liaison Officer at the California Department of Public Health, Division of Radiation Safety and Environmental Management for their review and comment on November 8, 2022 (NRC, 2022c). The California Department of Public Health concurred on the EA with comments by letter dated December 5, 2022 (CDPH, 2022).

4.2 National Historic Preservation Act Section 106 Consultation

The National Historic Preservation Act (NHPA) requires the NRC to determine whether historic properties are present, and if present, whether the undertaking would have an adverse effect upon such properties. The requested exemption is a passive, benign activity and does not include changes to any physical barriers, construction, or ground-disturbing activities. The exemption will not alter any of the current characteristics of the site. The NRC staff finds that in accordance with 36 CFR 800.3(a)(1) the undertaking does not have the potential to cause effects on historic properties, assuming such historic properties are present.

4.3 Endangered Species Act Section 7 Consultation

The requested exemption to move the CAB boundary is a passive, benign activity that does not perform any physical work, construction, or require any water resources. The exemption would not generate or release any radiological or non-radiological effluents or waste. The ESA requires the NRC to ensure the exemption is not likely to jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify any critical habitat for such species. The exemption will not affect a listed species or habitat, therefore the exemption request will have “no effect” on any species or habitat.

5.0 CONCLUSION AND FINDING OF NO SIGNIFICANT IMPACT

The NRC has prepared this EA as part of the NRC's review of SCE's request for an exemption to a requirement in 10 CFR 72.106(b) for the SONGS ISFSI. SCE proposes to establish the ISFSI CAB at or within the site boundary which coincides with the physical boundaries of the site but in some areas would be less than 100 m (328 ft). The areas that would be within 100 m (328 ft) are the North Industrial Area (NIA) seawall to the west of the ISFSI and the OCA fence line. If approved, this would result in the minimum distance from the closest storage location in the ISFSI to the CAB of 38 m (125 ft) to the western (seaward) side and 95 m (312 ft) on the eastern (landward) side. The exemption does not move any physical boundaries and the physical perimeter of SONGS is the same whether the exemption request is approved or disapproved. The licensee has shown, and the staff has independently verified, that offsite doses would meet 10 CFR 72.104 requirements under normal ISFSI operations, and 10 CFR 72.106(b) under accident conditions.

If a terrorist act did occur, it would not reasonably be expected to result in a significant release affecting the public under the current or proposed CAB. The NRC security requirements imposed through regulations and implemented through the SONGS security plan and the robust design of cask systems provide adequate protection against attacks at SONGS. Based on the staff's qualitative assessment, there would be no difference in consequences of a terrorist attack for the current CAB configuration as compared to that of the proposed reduced CAB configuration.

Based on the NRC staff review of the exemption request, in accordance with the requirements of 10 CFR part 51, the staff has determined that moving the CAB will not significantly affect the quality of the human environment. The basis for this finding is that the approval of the exemption request would not result in any new construction. The ISFSI is a passive facility that produces no liquid or gaseous effluents. This exemption will have no effect on the consequences of a hypothetical terrorist attack. No significant radiological or non-radiological impacts are expected from continued normal operations. Occupational dose estimates associated with the proposed action and continued normal operation and maintenance of the ISFSI are expected to be at ALARA levels and within the limits of 10 CFR 20.1201. Therefore, the NRC staff has determined that pursuant to 10 CFR 51.31, preparation of an environmental impact statement is not required for the proposed action, and pursuant to 10 CFR 51.32, a FONSI is appropriate. A copy of this Environmental Assessment shall be made available to the public via ADAMS and listed in the *Federal Register*.

6.0 LIST OF PREPARERS

This EA was prepared by staff in the Office of Nuclear Material Safety and Safeguards.

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