U.S. NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

DIVISION OF FUEL CYCLE, SAFEGUARDS, AND ENVIRONMENTAL REVIEW

ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED RENEWAL OF THE U.S. NUCLEAR REGULATORY COMMISSION LICENSE NUMBER SNM-2510 FOR THE RANCHO SECO INDEPENDENT SPENT FUEL STORAGE INSTALLATION IN SACRAMENTO COUNTY, CALIFORNIA

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ABBREVIATIONS AND ACRONYMS

ac	acres
ALARA	as low as reasonably achievable
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
DSC	dry shielded canister
DHS	Department of Homeland Security
DTS	dry transfer system
EA	Environmental Assessment
EJ	Environmental Justice
ER	environmental report
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
FR	*Federal Register*
FWS	U.S. Fish and Wildlife Service
ft	feet
g	acceleration of gravity
GTCC	Greater Than Class C
GWC	Greater –Than – Class C Waste Canister
ha	hectares
HSM	Horizontal Storage Module
ILTAB	Intelligence Liaison and Threat Assessment Branch
IPaC	Information for Planning and Consultation
ISFSI	independent spent fuel storage installation
km	kilometers
LAR	License Amendment Request
LRA	License Renewal Application
m	meters
mi	miles
MTU	metric tons of uranium
MW	megawatt
MWD	megawatt-days
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	U.S. National Marine Fisheries Service
NRC	Nuclear Regulatory Commission
OCA	Owner Controlled Area
OUO-SRI	Official Use Only – Security Related Information
RIS	Regulatory Issue Summary
ROI	region of influence
RSNGS	Rancho Seco Nuclear Generating Station
SAR	Safety Analysis Report
SER	Safety Evaluation Report
SHPO	State Historic Preservation Office/Officer
SMUD	Sacramento Municipal Utility District
SNM	Special Nuclear Material

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1.0 INTRODUCTION

1.1 Background

By letter dated March 19, 2018, Sacramento Municipal Utility District (SMUD) submitted an application to the U.S. Nuclear Regulatory Commission (NRC) requesting renewal of Special Nuclear Materials (SNM) License Number SNM-2510 (license SNM-2510) for the Rancho Seco Nuclear Generating Station (RSNGS) Independent Spent Fuel Storage Installation (ISFSI) for an additional 40 years (SMUD, 2018). On July 20, 2018, the NRC staff accepted SMUD's application for detailed technical review (NRC, 2018a). On August 22, 2018, the NRC issued a notice in the *Federal Register* (FR) providing an opportunity to request a hearing and petition for leave to intervene (83 FR 42527).

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 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 for the proposed license renewal is documented in this environmental assessment (EA). The purpose of this document is to assess the potential environmental impacts of the proposed 40-year license renewal. The NRC is also conducting a safety evaluation of this license renewal request, which will be documented in a separate safety evaluation report (SER).

1.2 Rancho Seco ISFSI History

The NRC authorizes construction and operation of ISFSIs by issuance of general and specific licenses. A specifically-licensed ISFSI is licensed separately from the nuclear power plant license and requires an application to perform the licensed activities. In 1991, SMUD submitted an application for a specifically-licensed ISFSI to store spent nuclear fuel on the RSNGS site. In support of SMUD's application to construct and operate the specifically-licensed ISFSI, the NRC staff prepared an EA (NRC, 1994), which determined that the construction and operation of the ISFSI would not have a significant impact on the quality of the human environment. The NRC published the finding of no significant impact (FONSI) on August 15, 1994 (59 FR 41797). On June 30, 2000, the NRC issued a 20-year license to SMUD to receive, possess, store, and transfer the RSNGS spent fuel to sealed storage canisters at a specifically-licensed ISFSI located on the Rancho Seco site. License SNM-2510 allows SMUD to store 22 NUHOMS sealed surface storage casks on two pads.

The Rancho Seco ISFSI is a reinforced concrete storage pad constructed in 1996. Both spent fuel and GTCC waste are currently stored onsite in DSCs. DSCs containing four different types of waste are stored in 22 reinforced concrete horizontal storage modules (HSM). Twenty-one DSCs contain spent fuel assemblies; 18 DSCs each accommodate 24 fuel assemblies with control components, two DSCs contain 24 fuel assemblies only, and one DSC holds 13 failed spent fuel assemblies with no control hardware (SMUD, 2018). One DSC contains only GTCC waste consisting of solid, reactor-related waste, such as activated reactor internals and in-core

instrumentation. Twenty-two DSCs are stored in 22 HSMs on the Rancho Seco site (SMUD, 2010).

SMUD's license also allows the storage of GTCC waste from the decommissioned RSNGS. SMUD requested and was granted a license amendment (SMUD, 2004a) for storage of GTCC waste at the Rancho Seco ISFSI in July 2004. GTCC waste is a classification of radioactive waste defined in 10 CFR 61.55 and consists of activated core components composed primarily of segmented reactor vessel internals. The GTCC waste at Rancho Seco consists of solid, reactor-related waste such as activated reactor internals and in-core instrumentation. The NRC staff determined that the proposed action would not have a significant impact on the environment (NRC, 2005a).

Additionally, in July 2004, SMUD requested and was granted an exemption (SMUD, 2004b and NRC, 2005b, respectively) from the requirement to submit an annual radioactive effluent release report. Specifically, 10 CFR 72.44(d)(3) requires that an annual report be submitted to the NRC specifying the quantity of each of the principal radionuclides released to the environment in liquid and gaseous effluents during the previous 12 months of ISFSI operation. The ISFSI, by design, does not have any liquid or gaseous effluents. The exemption was granted because the NRC staff found, in its SER and EA for the exemption request, that the proposed action would not reduce safety and would not result in any significant environmental impacts at the Rancho Seco ISFSI.

In November 2008, SMUD requested and was granted a license amendment (SMUD, 2008 and NRC, 2009, respectively) to allow the storage of six fuel assemblies with known or suspected cladding defects greater than hairline cracks or pinhole leaks. These fuel assemblies are stored in five different DSCs containing fuel and control components. The NRC staff found that the proposed action in the license amendment request qualified for a categorical exclusion under 10 CFR 51.22(c)(11). For these reasons, neither an EA nor an environmental impact statement (EIS) were prepared. The NRC staff concluded in its SER (NRC, 2009) that the proposed license amendment to allow the storage of six damaged fuel assemblies would not affect the ability of the Rancho Seco ISFSI to safely store spent fuel consistent with the requirements of 10 CFR Part 72.

In January 2017, SMUD requested and was granted a license amendment (SMUD, 2017 and NRC, 2017, respectively) to transfer the licensing for one Strontium-90 radioactive source possessed by SMUD under its 10 CFR Part 50 license to its 10 CFR Part 72 license. SMUD stated in its license amendment request that it would continue to maintain a radioactive source for the purpose of calibrating instrumentation to monitor the ISFSI and for use in emergency response. The NRC staff found that the proposed action to transfer the source to the 10 CFR Part 72 license was acceptable. The NRC staff further found that the proposed action in the license amendment request qualified for a categorical exclusion under 10 CFR 51.22(c)(11). Therefore, the NRC staff did not prepare an EA or an EIS. The RSNGS 10 CFR Part 50 operating license, No. DRP-54, Possession Only, was terminated on August 31, 2018 (NRC, 2018b) after the NRC's amendment of the Part 72 license.

1.3 Proposed Action

License SNM-2510 allows SMUD to store spent nuclear fuel, as well as damaged fuel assemblies, fuel debris contained in failed fuel cans or damaged fuel containers, and GTCC waste from the decommissioned RSNGS. In accordance with license SNM-2510, SMUD uses the horizontal storage modules of the NUHOMS design. SMUD is requesting to renew license SNM-2510 for the Rancho Seco ISFSI for a 40-year period. The current license expires on June 30, 2020. The proposed Federal action is the renewal of the ISFSI license for up to an additional 40 years. If the renewal is approved, SMUD would be able to continue to possess and store spent nuclear fuel at the Rancho Seco specifically-licensed ISFSI in accordance with the requirements in 10 CFR Part 72 for up to an additional 40 years.

1.3.1 Site Location and Description

The Rancho Seco ISFSI is located in Sacramento County, California approximately 42 kilometers (km) [26 miles (mi)] north-northeast of Stockton and 40 km (25 mi) southeast of Sacramento. The Sierra Nevada Mountains are to the east, and the Coast Range along the Pacific Ocean is to the west.

The Rancho Seco ISFSI is made of reinforced concrete and is approximately 69 meters (m) [225 feet (ft)] by 52 m (170 ft). The former RSNGS site is comprised of approximately 1004 hectares (ha) [2,480 acres (ac)]. The ISFSI is contained within an approximately 6 ha (14 ac) licensed area in the northwest portion of the RSNGS site. The nearest California communities to the Rancho Seco ISFSI are the towns of Galt and Lodi.

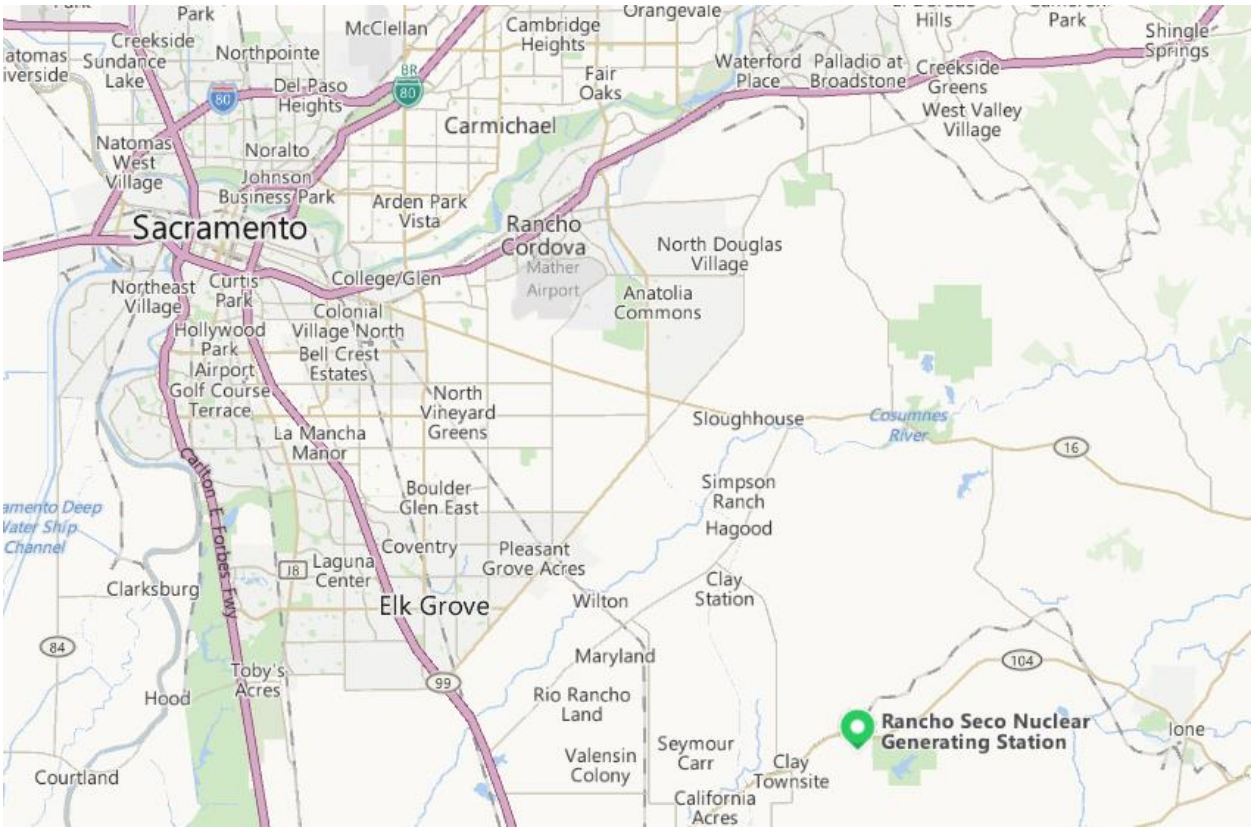

Figure 1-1: Location of Rancho Seco ISFSI Site (SMUD, 2016)

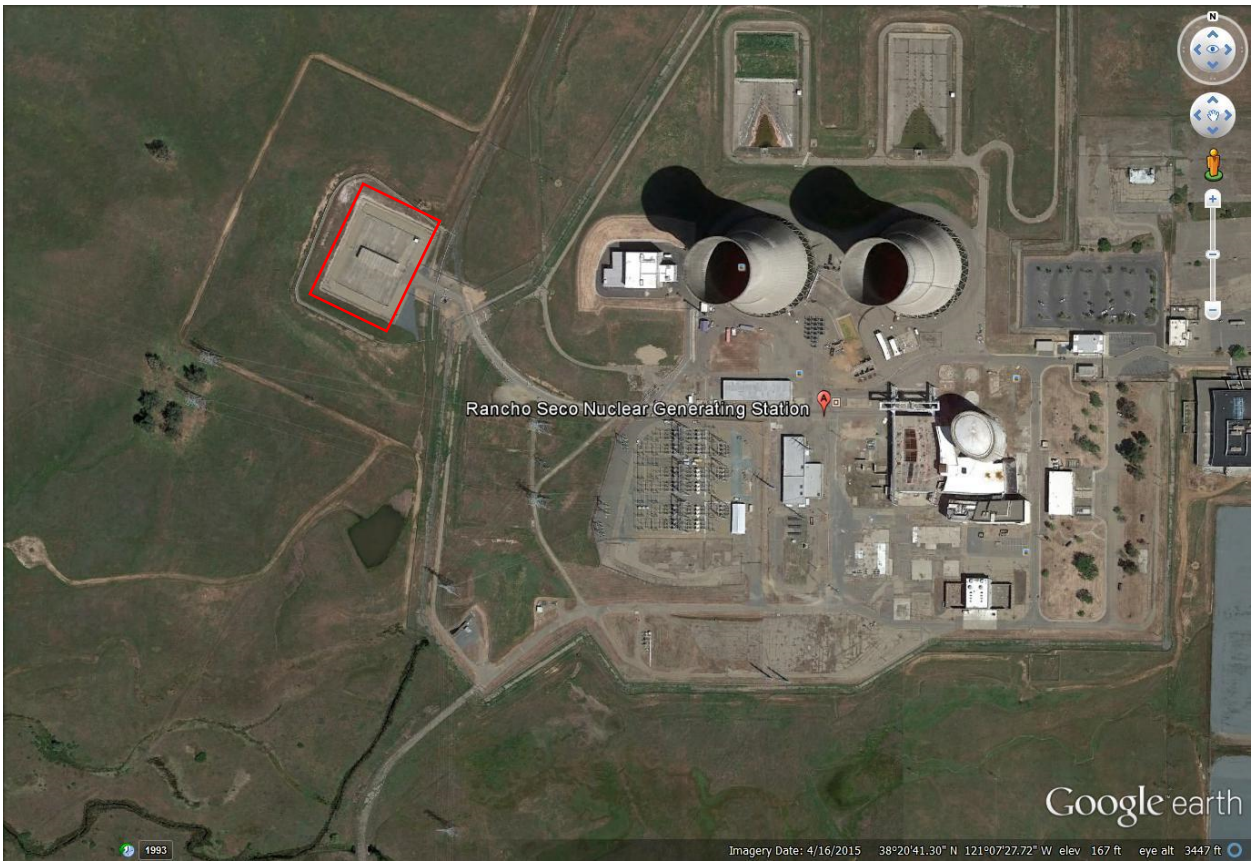

Figure 1.2: Arial Photo of the Rancho Seco ISFSI – outlined in red (SMUD, 2016)

1.3.2 Current ISFSI and Dry Cask Storage Description

The ISFSI uses a site-specific model of a Standardized NUHOMS-24P dry cask storage system. This NUHOMS system is designed to have the spent fuel assemblies and associated control components stored in DSCs kept in reinforced concrete HSMs. The ISFSI consists of a reinforced concrete storage pad designed to hold 22 HSMs.

The Rancho Seco ISFSI stores both spent fuel and GTCC waste in the DSCs. DSCs containing four different types of waste are stored in 22 reinforced concrete horizontal storage modules (HSM). Twenty-one DSCs contain spent fuel assemblies; 18 DSCs each accommodate 24 fuel assemblies with control components, two DSCs contain 24 fuel assemblies only, and one DSC holds 13 failed spent fuel assemblies with no control hardware (SMUD, 2018). One DSC contains only GTCC waste consisting of solid, reactor-related waste, such as activated reactor internals and in-core instrumentation. Twenty-two DSCs are stored in 22 HSMs on the Rancho Seco site (SMUD, 2010).

The ISFSI also has auxiliary equipment consisting of a vacuum drying system, transfer cask lifting yoke, DSC automatic welding system, hydraulic ram system and a transfer trailer equipped with a transfer cask skid. SMUD will not load additional DSCs because the reactor was defueled in 1989 and all spent fuel was transferred from the spent fuel pool by August 2002 and the single GTCC waste canister was loaded at the ISFSI in August 2006 (SMUD, 2018).

Therefore, the auxiliary equipment will not be used for loading operations. Current operations include storage and routine inspections and monitoring of the ISFSI site. SMUD has indicated that there would be no change in routine operations, and no new construction or land disturbance is being requested as part of this license renewal application.

Figure 1.3: Rancho Seco ISFSI Horizontal Storage Modules (SMUD, 2018)

1.3.3 Waste Management

The operation of the ISFSI will not result in the generation of gaseous, liquid, or solid radioactive wastes. No non-radioactive wastes are associated with the operation of the ISFSI. No additional sanitary or other wastes are generated as a result of the operation of the ISFSI. Therefore, no waste management impacts are expected from continued ISFSI operation (SMUD, 2018).

1.3.4 Decommissioning

RSNGS permanently shut down in June 1989 and was completely defueled in December 1989. Decommissioning of the ISFSI was discussed in the 1994 EA (NRC, 1994), which the NRC prepared for the original ISFSI license application review.

1.4 Purpose and Need for the Proposed Action

In 1989, SMUD ceased operations of RSNGS and the reactor was completely defueled. The Rancho Seco ISFSI was built to provide interim storage for all the fuel stored in the spent fuel pool and to facilitate decommissioning of the RSNGS. All spent fuel from the RSNGS was placed in the ISFSI by August 2002. Dry storage is needed until a permanent facility (or facilities) is available for off-site final disposition of the spent nuclear fuel. If the NRC renews the Rancho Seco ISFSI as requested, SMUD would be authorized to continue safe storage of the spent nuclear fuel generated from the RSNGS operations, for an additional 40 years.

1.5 Scope of the Environmental Analysis

The NRC staff has evaluated the potential environmental impacts associated with the proposed action of license renewal of SNM-2510 and alternatives to the proposed action, and has documented the results of the assessment in this EA. The NRC staff performed this review in accordance with the requirements of 10 CFR 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 SMUD's License Renewal Application (LAR), which included the environmental report (ER), dated March 19, 2018 (SMUD, 2018), and

- Information contained in previous NRC environmental review documents for the Rancho Seco site and ISFSI (NRC, 1994, NRC, 2009).

The EA prepared for the original application for the specifically-licensed ISFSI (NRC, 1994) is the basis for the current EA. The current EA presents and evaluates all aspects of the proposed action and the affected environment. The NRC staff refers to the detailed resource descriptions in prior environmental review documents that have not changed.

1.5.1 Continued Storage of Spent Nuclear Fuel

The NRC's licensing proceedings for nuclear reactors and ISFSIs have historically relied upon a generic determination codified in the NRC's regulations at 10 CFR 51.23 to satisfy the agency's obligations under NEPA, with respect to the narrow area of the environmental impacts of storage of spent nuclear fuel (spent fuel) beyond a reactor's licensed life for operation and prior to ultimate disposal (continued storage). The Court of Appeals for the District of Columbia Circuit, in *New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012), vacated the NRC's 2010 update to that rule and remanded it to the NRC. Thereafter, the Commission determined that NRC would not issue licenses dependent upon the formerly known Waste Confidence Decision and Temporary Storage Rule until deficiencies identified by the Courts of Appeals were appropriately addressed (NRC Commission Order CLI-12-16, 2012).

On September 19, 2014, the NRC published a revised rule at 10 CFR 51.23, "Environmental Impacts of Continued Storage of Spent Nuclear Fuel Beyond the Licensed Life for Operations of a Reactor" (79 FR 56238). The rule codifies the NRC's generic determinations in NUREG-2157, "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel" regarding the environmental impacts of the continued storage of spent nuclear fuel beyond a reactor's operating license (NRC, 2014). In Memorandum and Order CLI-14-08, the Commission held that the revised 10 CFR 51.23 and associated NUREG-2157 cured the deficiencies identified by the court in *New York v. NRC*, 681 F.3d 471 (D.C. Cir., 2012) and stated that the rule satisfied the NRC's NEPA obligations with respect to continued storage. The revised rule requires, in 10 CFR 51.23(b), that EAs prepared for future reactor and spent fuel storage facility licensing actions consider the environmental impacts of continued storage, if the impacts of continued storage of spent fuel are relevant to the proposed action. The proposed action, if approved, will extend the term of the license and therefore the impacts of continued storage of spent fuel are relevant to the proposed action. Section 4.13 of this EA

provides the NRC staff's consideration of the generic environmental impacts of NUREG-2157 for the proposed renewal of the Rancho Seco specifically-licensed ISFSI.

2.0 ALTERNATIVES TO THE PROPOSED ACTION

2.1 No-Action

The no-action alternative would consist of denial of SMUD's request to renew the Rancho Seco ISFSI license. The license, however, would continue to be in effect with respect to possession of licensed material per 10 CFR 72.54(c) until the NRC notifies the licensee in writing that the license is terminated. SMUD would continue to maintain the stored spent fuel on the ISFSI in a safe and secure condition.

Environmental impacts from the no-action alternative would only result from activities performed to ensure the continued safe and secure operations of the ISFSI. The NRC staff finds that environmental impacts from these activities would be similar in nature and scope to the current maintenance, monitoring, and inspection activities and, thus, would be SMALL and not significant.

2.2 License Renewal for an Additional 20-year Term Alternative

The Rancho Seco ISFSI was originally licensed for a 20-year period. For this alternative, the ISFSI license would be renewed for an additional 20-year period consistent with the current license term. The NRC staff considered as an alternative the continued operation of the Rancho Seco ISFSI for an additional 20 years to understand whether the environmental impacts of continued operations for an additional 20 years would differ from those of continued operations for an additional 40 years (proposed action).

In considering the 20-year alternative, this EA discusses the potential radiological impacts to public and occupational health in Section 4.9.2. This EA does not separately address the 20-year alternative for the other resource areas, because the staff determined that, for those resource areas, the site operations and the potential environmental impacts of the ISFSI would be the same for the 20-year alternative and the proposed 40-year license renewal period.

2.3 Shipment of Spent Fuel to an Off-Site Facility

Shipment of the spent fuel to a commercial reprocessing facility, a federal repository, or an interim storage facility is not a reasonable alternative, because these facilities are currently not available in the United States. The NRC, however, has received license applications for consolidated interim storage facilities. If an interim facility were approved by the NRC, it is possible a facility could become available during the proposed Rancho Seco ISFSI license renewal period. Furthermore, the transfer of spent fuel from Rancho Seco to a consolidated interim facility would require a license amendment that would have its own environmental review.

3.0 AFFECTED ENVIRONMENT

3.1 Land Use

The Rancho Seco ISFSI is contained within approximately 6 ha (14 ac) in the Owner Controlled Area (OCA) of the Rancho Seco site, which is owned by SMUD. The Rancho Seco site is comprised of approximately 1,004 ha (2,480 ac) (SMUD, 2018).

Land use in the vicinity of the site is primarily vegetation with naturalized grasses, seasonal wetlands, and intermittent drainages. Further to the north of the ISFSI are agricultural uses. The area includes the decommissioned RSNGS, Rancho Seco Photovoltaic Solar Project, Cosumnes Power Plant, Rancho Seco Lake and associated recreational facilities, and Amanda Blake Memorial Wildlife Refuge (SMUD, 2018).

The Rancho Seco Photovoltaic Solar Project is a 10-megawatt (MW) power facility located within the boundary of the former RSNGS. The Cosumnes Power Plant, a 500-MW combined-cycle gas fired power plant, is situated approximately 1 km (0.5 mi) south of the Rancho Seco ISFSI (SMUD, 2018).

Continued operation of the Rancho Seco ISFSI does not require any additional permits, licenses, or approvals other than the renewal of the NRC's ISFSI operating license.

3.2 Transportation

Road access to Rancho Seco is via the Twin Cities Access Road which connects to State Route 104 (Twin Cities Road), which runs just north of the site, in a generally east west direction and is used primarily by local traffic. It connects to State Route 99 to the west and State Route 88 to the east. Rail access is via a spur from the existing Southern Pacific Railroad line, which runs parallel to the site. The nearest major airfield is the Mather Air Force Base, 29 km (18 mi) northwest of the site.

SMUD does not anticipate completing any additional work at the site that would require workers beyond those currently working at the ISFSI. Therefore, an increase in associated vehicular traffic is also not anticipated.

3.3 Geology and Soils

The Rancho Seco site is about 40.2 kilometers (km) [25 mi] southeast of Sacramento in the low hills at the edge of the Sierra Nevada Mountains. The site is founded on the Pliocene Laguna Formation and is underlain by approximately 457 to 610 m (1500 to 2000 ft) of Tertiary or older sediments deposited on a basement complex of granitic to metamorphic rocks. Detailed field mapping, auger holes, soil samples, and geophysical refraction profiles indicate the unfaulted nature of the sediments (NRC, 1994).

The nearest fault system, the Foothill Fault System, is about 16 km (10 mi) to the east of the site. It has been inactive since the Jurassic Period, approximately 135 million years ago. The nearest active faultings along which historic large earthquake shocks have originated are the Hayward and San Andreas Faults, 113-143 km (70 and 89 mi) to the west, respectively. Additionally, there are faults to the east beyond the Sierra Nevada Range approximately 129 km (80 mi) from the site (NRC, 1994).

The earthquake design basis for the Rancho Seco ISFSI is 0.25 acceleration of gravity (g) horizontal and 0.17 g vertical. Earthquake shaking may occur as the result of shocks along distant faults, but because of their distant origin and the nature of the foundation material beneath the site, ground accelerations greater than 0.05 g should not occur during the life of the ISFSI (NRC, 1994).

3.4 Water Resources

The site is bounded on the north by Hadselville Creek, which intercepts all drainage from the site and empties into Laguna Creek to the west. Flow continues westerly into the Mokelumne River. The Mokelumne is a tributary of the Sacramento River, entering it approximately 32 km (20 mi) south of Sacramento, where the Sacramento continues its southerly flow (NRC, 1994 and SMUD, 2018).

Storm water run-off is controlled primarily by surface ditches. Generally, these ditches intercept overland flows and divert them around the ISFSI. When that is not possible the water is diverted via culvert pipes to the plant drainage system (NRC, 1994 and SMUD, 2018).

Ground water in this area occurs under free or semi-confined conditions as a part of the Sacramento Valley Ground Water Basin. The storage capacity is large but is steadily dropping near the site. The water is stored chiefly in the Mehrten Formation. The sand and gravel zones of the formation yield water readily to wells (NRC, 1994).

3.5 Threatened and Endangered Species

Under Section 7 of the Endangered Species Act of 1973 (ESA), prior to taking a proposed action, a federal agency must determine whether: (i) endangered and threatened species or their critical habitats are known to be in the vicinity of the proposed action and if so, whether (ii) the proposed federal action may affect listed species or critical habitats.

In the ER supplement submitted for the license renewal, SMUD provided a list of special status species within a five-mile radius of the Rancho Seco ISFSI (SMUD, 2018).

The NRC staff reached out to the California Department of Fish and Wildlife (CDFW). The response received from the CDFW indicated that the Rancho Seco site is known habitat for California's Central Valley population of California Tiger Salamander (Ambystoma californiense). This species is listed as threatened under both the Federal and California ESAs. The site provides primarily upland habitat for the salamanders, meaning they will be underground in rodent burrows or cracks (CDFW, 2018b). The details of this consultation are provided in Section 4.5 of this EA. The NRC visited the U.S. Fish and Wildlife (FWS) Information for Planning and Consultation (IPaC) website and completed its online project review process. The results of the review process generated a list of threatened or endangered species (FWS, 2019). The critical habitat of one of the threatened species, the California Tiger Salamander, was identified as overlapping the Rancho Seco ISFSI site.

3.6 Climate, Meteorology, and Air Quality

The regional climate of the Rancho Seco site is typical of the Great Central Valley of California, consisting of hot summers and mild winters. The rainy season occurs between October and May, with over two-thirds of the annual rainfall occurring in December through March.

As described in the EA for the construction and operation of the Rancho Seco ISFSI (NRC, 1994), the mountains that surround the valley to the west, north, and east are the most important geographical influence on the climate.

3.7 Demography, Socioeconomics, and Environmental Justice

The population distribution and projections for Sacramento County are based on information from the U.S. Census Bureau website, which includes 2010 census data and where available, updated 2018 data (USCB, 2019). Sacramento County experienced a 7.9 percent population growth between the years of 2010 and 2017. Table 3.1 below shows the ethnicity breakdown and median income level for both Sacramento County and the State of California. Table 3.2 provides information for Sacramento County and other geographic areas for comparison regarding the percentage of minority and low-income populations. The nearest permanent resident is located approximately 1,494 m (4,900 ft) from the Rancho Seco ISFSI (NRC, 1994).

The socioeconomic region of influence (ROI) is defined as the area in which the Rancho Seco employees and their families reside, spend their income, and use their benefits, thereby affecting economic conditions in the region. The socioeconomic ROI consists of Sacramento County, California, which has a population of approximately 1,530,615 (USCB 2017 Demographic Profile). There are three regional parks, including campgrounds, within 16 km (10 mi) of the site. Operation of the ISFSI will require minimal staff and will not contribute to any socioeconomic impacts in the region (NRC, 1994).

In its environmental justice review, the staff defined a 6 km (4 mi) radius as the area of potential effect and compared demographic and economic data from this area to data for the state and county. Specifically, the larger area of potential effect was defined as the State of California, Sacramento County, and the city of Lodi. The results of the analysis indicate that census block groups within the 6 km (4 mi) radius do not have significant percentages of minority populations, nor do they have significant percentages of low-income households (SMUD, 2018).

Table 3.1 Ethnicity and Median Income Levels for Sacramento County and State of California

Ethnicity Percent, 2018	Sacramento County, CA	State of California
White[b]	63.4	72.4
Black[b]	10.9	6.5
American Indian and Alaska Native[b]	1.5	1.6
Asian[b]	16.6	15.2
Native Hawaiian and other Pacific Islander[b]	1.3	0.5
Persons reporting two or more races	6.2	3.9
Persons of Hispanic or Latino origin[c]	23.3	39.1
White persons not Hispanic	44.8	37.2
Median Household Income, 2013-2017 (in 2017 dollars)	$60,239	$67,169

(a) U.S. Census website https://www.census.gov/quickfacts/fact/table/lodicitycalifornia,ca,sacramentocountycalifornia,US/PST045218
(b) Includes persons reporting only one race.
(c) Hispanics may be of any race, thus are also included in applicable race categories.

Table 3.2 Percentage of Minority and Low-income Populations by Geographic Comparison Area (data from www.census.gov, QuickFacts)

Geographic Area of Comparison	Black or African American	Asian	American Indian & Alaska Native	Native Hawaiian and other Pacific Islander	Multi-racial	Hispanic or Latino Ethnicity	Low Income Households/ Persons in Poverty
Lodi, CA	2%	9%	<1%	<1%	15%	37%	17%
Sacramento County, CA	7%	15%	2%	<1%	4%	39%	13%
State of California	11%	17%	2%	1%	6%	23%	14%

3.8 Historic and Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) requires the NRC staff to take into account the effects of the proposed licensing action on historic properties. The area of potential effect for this proposed action consists of the Rancho Seco ISFSI site. In the EA previously prepared by the NRC for construction and operation of the Rancho Seco ISFSI, the staff

acknowledged that while there are no historical landmarks within a 16 km (10 mi) radius of Rancho Seco, there are approximately 20 landmarks within 24 km (15 mi) (NRC, 1994). The EA also stated that no historical or archeological sites were reported within the Rancho Seco site (NRC, 1994).

The NRC staff contacted the State of California Native American Heritage Commission (NAHC) (NRC, 2018c), the California State Historic Preservation Officer (SHPO) (NRC, 2019a), and eight Native American Tribes (NRC, 2019b). A record of these consultations can be found in Section 4.8 of this EA. Based on past NRC EAs, there are no known historic and cultural properties within the Rancho Seco ISFSI.

3.9 Public and Occupational Health and Safety

Risks to occupational health and safety can include exposure to radiological and non-radiological hazards. The Rancho Seco ISFSI does not generate any liquid or gaseous effluents to the environment from operation (SMUD, 2018). External radiation from the HSMs and sealed DSCs could potentially affect workers and members of the public; however, the cask is a passive system designed to limit exposure to radiation. In its LRA, the licensee calculated the annual occupational dose from normal operations to workers conducting inspection and maintenance, at the ISFSI to be 1.2 person-rem per year (SMUD, 2018).

The Safety Analysis Report (SAR) presents the licensee's calculation of the total annual dose rate from ISFSI external radiation to the nearest permanent resident as 0.0016 mSv/yr (0.16 mrem/yr), which is below the 0.25 mSv/yr (25 mrem/yr) regulatory limit in 10 CFR 72.104(a) (SMUD, 2016). For a U.S. resident, the average annual estimated total effective dose equivalent from natural background and anthropogenic (man-made) radiation sources is about 6.2 mSv (620 mrem) (NRC, 2019c). 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.

3.10 Visual and Scenic Resources

The Rancho Seco ISFSI is located within the boundaries of the former RSNGS, which is fenced. There is limited or no visibility of the Rancho Seco ISFSI from areas accessible to the public as the view is blocked by terrain or other existing structures on the plant site. From Highway 104, views are of vineyards, open grazing land, small clusters of trees, and the RSNGS cooling towers. Therefore, the Rancho Seco ISFSI presents minimal visual or aesthetic impact on the surrounding area (SMUD, 2018).

3.11 Noise

The storage of spent nuclear fuel and associated materials at the Rancho Seco ISFSI involves the use of a passive system that does not generate noise. Noise directly attributable to operation of the ISFSI is typically limited to occasional vehicle traffic to and from the ISFSI during routine operations and maintenance activities. No additional noise impact is expected from continued operation of the ISFSI.

4.0 ENVIRONMENTAL IMPACTS

The NRC staff reviewed the licensee's environmental report, collected information from federal and state agencies and evaluated the environmental impacts to the various resources of the affected environment from the proposed action. The NRC staff used the guidelines outlined in NUREG-1748 (NRC, 2003) in its evaluation of the environmental impacts from the proposed action on each resource. The NRC staff assessed whether the impact on resource areas from the proposed action is "significant" or "not significant" (NRC, 2019d).

4.1 Land Use

Approval of the proposed action will not result in any construction or expansion of the existing ISFSI footprint or operations. Only routine monitoring and maintenance are expected over the proposed 40-year license renewal period. The proposed action will not result in new land use. For these reasons, the NRC staff concludes that the impacts on land use from the proposed action are not significant.

4.2 Transportation

The NRC staff expects that the volume of traffic at the Rancho Seco site and surrounding area will not change due to the proposed action. The proposed action does not include new construction or expansion, and no new radioactive waste shipments or related activities are expected. Based on this information, the NRC staff concludes that the impacts on transportation from the proposed action are not significant.

4.3 Geology and Soils

The NRC staff does not expect the continued operation of the Rancho Seco ISFSI to impact the underlying geology because the ISFSI has no moving parts that would impact the subsurface. The NRC's EA described impacts for the construction and operation of the Rancho Seco ISFSI (NRC, 1994). No additional impacts to the geology or soils at the facility are expected due to the continued operation (SMUD, 2018). The proposed action does not include any physical modification to the ISFSI. Moreover, the ISFSI does not generate liquid or solid effluents that could impact the geology or soils. Therefore, the NRC staff concludes that the impacts on geology and soils from the proposed action are not significant.

4.4 Water Resources

The ISFSI does not require water or otherwise generate liquid effluents during normal operation and minimal sanitary waste is generated (SMUD, 2018). Water consumption at the Rancho Seco ISFSI is not anticipated to change, and no additional workers beyond the current workforce are required to operate the ISFSI during the proposed license renewal period (SMUD, 2018). Because there are no changes in water consumption or impacts to water quality as a result of the proposed action, the NRC staff concludes that the impacts on water resources from the proposed action are not significant.

4.5 Threatened and Endangered Species

The proposed renewal of the Rancho Seco ISFSI does not involve activities that would disturb any new land or include any physical modification. Routine operation of the ISFSI is largely passive, activities include inspections and maintenance (SMUD, 2018). These activities would be the only activities that would continue if the license is renewed.

The NRC staff reached out to the CDFW regarding the potential effects that the proposed action could have on the ecology, particularly on endangered and threatened species (NRC, 2018e) The CDFW responded via email that the Rancho Seco site is known habitat for California Central Valley population of California Tiger Salamander (Ambystoma californiense), a species that is listed as Threatened under both Federal and California Endangered Species Act (CDFW, 2018a). During a follow-up phone call, the CDFW indicated that no harmful effects were likely to occur because no new construction or ground-breaking activities are planned. The CDFW recommended that the licensee obtain a California Incidental Take Permit. This permit minimizes the legal ramifications of an inadvertent take of the salamander. The CDFW also recommended that the licensee avoid walking around the facility on rainy nights because that is when salamanders are most likely to be out in the open (CDFW, 2018b). Therefore, the NRC concludes that the proposed action is not likely to adversely affect federally-listed threatened and endangered species, nor state-identified rare species or species of special concern.

4.6 Climate, Meteorology, and Air Quality

The continued operation of the Rancho Seco ISFSI will have no adverse impact to the local or regional climate. The dry shielded canister has been in service for over 15 years and had an initial decay heat of 9,005 Joules/sec (9.005 kiloWatts) (SMUD, 2016). The amount of heat released in the air in the vicinity of the ISFSI during the proposed renewal period will be relatively small and localized (NRC, 1994). The ISFSI does not release airborne emissions (NRC, 1994). Thus, the continued operation of the ISFSI will be of minimal impact to the air quality in the area. Therefore, the NRC staff concludes that impacts on climate, meteorology, and air quality from the proposed action are not significant.

4.7 Demography and Socioeconomics

In its license renewal application, SMUD indicated that significant changes in staffing are not expected at the ISFSI during the period of extended operation (SMUD, 2018).
For this reason, the NRC does not anticipate a need for additional housing as a result of the proposed action because no influx of people to the area is anticipated. Also, no additional changes or impacts to the local economy are expected. Therefore, the NRC staff does not expect any direct or indirect socioeconomic impacts and concludes that the demography and socioeconomic impacts from the proposed action are not significant.

4.8 Historic and Cultural Resources

As discussed in Section 3.8, there are no known historic or cultural properties within the Rancho Seco ISFSI. California SHPO responded to the NRC's consultation letter and indicated that they had no comment or concurrence on the NRC's finding of effect (CA SHPO, 2019).

Additionally, the NRC staff contacted the NAHC to request a Sacred Lands File search (NRC, 2018c). The NAHC indicated that its search of the Sacred Lands File for this project was completed with negative results (NAHC, 2018).

As stated in Section 4.1, the licensee has no plans for expansion or construction activities. Therefore, there would be no impact to cultural resources around the immediate vicinity of the Rancho Seco ISFSI. In accordance with the definition in 36 CFR 800.3(a)(1) of *no potential to cause effects*, "if the undertaking is a type of activity that does not have the potential to cause effects on historic properties, assuming such historic properties were present, the agency official has no further obligations under Section 106 or this part." As indicated in Section 4.1 of this EA the proposed action does not result in any construction or expansion of the existing ISFSI footprint or operations. Based on this information, the NRC staff concludes that there would be no historic properties affected by the proposed action.

4.9 Public and Occupational Health and Safety

4.9.1 Non-Radiological Impacts

The proposed action does not include physical modifications to the Rancho Seco ISFSI. Refurbishment of facilities beyond normal maintenance and aging management activities are not planned. No liquid or gaseous effluents are released due to operation of the ISFSI. Therefore, the NRC staff finds that the proposed action will not result in non-radiological impacts to resources, including land use, geology and soils, water resources, ecology, threatened and endangered species, meteorology, climate, air quality, noise, historic and cultural resources, visual and scenic resources, socioeconomic resources, transportation, and waste management. Accordingly, the NRC staff concludes that non-radiological impacts from the proposed action are not significant.

4.9.2 Radiological Impacts

The Rancho Seco ISFSI is located within the OCA, a secure area on the former RSNGS site. The Rancho Seco ISFSI is located west of the site's Industrial Area (see Figure 1.3); it consists of a dry fuel storage system that includes a reinforced concrete pad, sealed DSCs, and reinforced concrete HSMs. The system provides radiation shielding and natural circulation cooling removes decay heat (SMUD, 2018). There are no radiological liquid or gaseous effluents released to the environment, therefore external exposure to direct and scattered radiation is the primary pathway of radiation exposure from the sealed dry storage canisters to workers and the public (SMUD, 2018). Currently 22 DSCs are stored on the ISFSI and no additional casks will be added. The SMUD license renewal application proposes no changes in routine operations and no new construction or land disturbance. Operations during the proposed renewal license period would include storage and routine inspections and monitoring of the ISFSI site, in accordance with the requirements in 10 CFR Part 72.

Occupational Dose

Rancho Seco maintains a radiation protection program for the ISFSI, in accordance with 10 CFR Part 20, to ensure that radiation doses are maintained as low as reasonably achievable (ALARA) (SMUD, 2018). The ISFSI is routinely monitored and evaluated. The final power operation occurred in June 1989; therefore, the fuel stored at the Rancho Seco ISFSI has cooled for a minimum of 30 years. No additional casks will be placed at the ISFSI. For these reasons, the only occupational dose received would occur during inspections and regular maintenance activities. The dose per year from normal operation activities is 1.2 person-rem per year (SMUD, 2018). This occupational dose is within the required occupational dose limits specified in 10 CFR Part 20. Licensees are required to conduct authorized operational, inspection, and maintenance activities 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 radiological impacts to workers from the proposed 40-year renewal period are not significant.

Under the 20-year alternative, spent fuel would continue to be stored at the ISFSI only for 20 additional years. Operational inspection and maintenance of the Rancho Seco ISFSI would be conducted in the same manner as for the proposed 40-year renewal period. Annual radiological doses to workers during the 20-year alternative would be similar to those evaluated for the 40-year ISFSI renewal period, but for the shorter period of 20 years. Therefore, NRC staff concludes that potential annual radiological doses to workers from the 20-year renewal alternative are not significant.

Dose to the Public

No gaseous or liquid effluents are discharged from operation of the Rancho Seco ISFSI. Therefore, only external direct and air-scattered radiation from the 22 sealed DSCs contribute to potential radiological dose exposure to an off-site member of the public (NRC, 1994). In July 2004, SMUD submitted a LAR for the Rancho Seco ISFSI for an exemption from the requirement to submit an annual report specifying the liquid and gaseous effluents during the previous 12 months of ISFSI operations. In the 2005 EA, the NRC staff concluded that the exemption from the requirement to submit an annual radioactive effluent monitoring report is authorized by law and would not endanger life or property. Further, the staff found that the exemption will not increase the probability or consequences of accidents, no changes would be made to the types of effluents that may be released off-site, and there would be no increase in public radiation exposure. (70 FR 1911, January 11, 2005). The NRC granted the exemption finding that doing so would not significantly affect the quality of the human environment (NRC, 2005b).

SMUD has placed dosimetry around the ISFSI to monitor direct radiation. The SMUD Radiological Protection ALARA program is an effective method for ensuring that doses to workers and the public are as low as can be reasonably achieved. The maximum calculated dose from ISFSI external radiation to the nearest permanent resident is 0.16 mrem per year, which is below the 25 mrem/yr limit imposed by 10 CFR 72.104(a) (SMUD, 2018). Therefore, NRC staff concludes that potential annual radiological doses to public from the proposed action are not significant.

Under the 20-year alternative, spent fuel would continue to be stored at the ISFSI for an additional 20 years. The current maximum direct dose rate to the public has been calculated and is in compliance with federal regulations. Therefore, the NRC staff concludes that annual radiological doses to members of the public from the ISFSI would be below those expected from the proposed action and be below the annual limits in 10 CFR 20.1301. Therefore, NRC staff concludes that potential radiological impacts to members of the public from the 20-year renewal alternative are not significant.

Accidents

SMUD evaluated potential radiological impacts resulting from postulated accident events during off-normal conditions in Section 8.2 of its SAR for the Rancho Seco ISFSI (SMUD, 2016). They include five design basis accidents: cask drop, leakage of the DSC, accident pressurization, earthquake, and fire. The canisters and storage modules are designed to withstand the resultant forces from these accidents. Leakage of the DSC was the only postulated accident event which produced radiological consequences and it provides the bounding scenario for radiological consequences. The results of the evaluation demonstrate that the radiation dose from an accident or natural phenomena event will not exceed the limit in 10 CFR 72.106(b) (SMUD, 2018).

SMUD postulated an accident where a non-mechanistic simultaneous failure of the fuel cladding and the confinement boundary of the DSC occurs. This postulated accident results in the loss of the helium cover gas and 30 percent of the radioactive Kr-85, I-129, and H-3 inventory in the spent fuel for one DSC. The release fraction is the most conservative available for fission gases (Regulatory Guides 1.183 and 1.195). Under this accident scenario the calculated dose at the CAB is 0.195 rem, which is within the 10 CFR 72.106 limit of 5 rem. The organ doses are also below the corresponding 10 CFR 72.106 limits (SMUD, 2018). Therefore, NRC staff concludes that the impact from postulated accidents at the ISFSI by the proposed action are not significant.

For the 20-year alternative, spent fuel would continue to be stored at the ISFSI for an additional 20 years. Operational inspection and maintenance of the Rancho Seco ISFSI would be conducted in the same manner as for the proposed action. The bounding accident scenario would be the same as for the proposed action; thus the calculated dose would also be within regulatory limits. For these reasons, the NRC staff expects the impacts from these postulated accidents will not be significant during continued ISFSI operations. Therefore, the NRC staff concludes that the impacts from the 20-year renewal alternative are not significant.

4.10 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). Regarding EAs, the NRC's policy statement on environmental justice (EJ) states, "…if there will be no significant impact as a result of the proposed action, it follows that an EJ review would not be necessary. However, the agency must be mindful of special circumstances that might warrant not making a FONSI. In most EAs, the Commission expects that there will be little or no off-site impacts and, consequently, impacts would not occur to people outside the facility. However, if there is a clear potential for significant off-site impacts from the proposed action, then an appropriate EJ review might be needed to provide a basis for concluding that there are no unique impacts that would be significant. If the impacts are significant because of the uniqueness of the communities, then a FONSI may not be possible and mitigation or an environmental impact statement (EIS) should be considered." (69 FR 52047).

In the section “Guidelines for Implementation of NEPA as to EJ Issues” (69 FR 52048), the NRC explains that special circumstances arise only where the proposed action has a clear potential for off-site impacts to minority and low-income communities associated with the proposed action.

In its ER, SMUD explained that there are no significant percentages of minority or low-income populations within a 4-mile radius of the Rancho Seco ISFSI (SMUD, 2018). As discussed in Section 4.9 of this EA, off-site radiation doses from the Rancho Seco ISFSI would remain unchanged for both the proposed action and the 20-year alternative. There would be no significant impacts to any off-site population associated with the proposed action or the alternatives. Therefore, the NRC staff concludes that the proposed action will not have disproportionately high and adverse human health or environmental effects on minority and low-income populations

4.11 Noise

The NRC staff expects that since the storage of spent nuclear fuel and associated materials at the ISFSI is largely a passive system and no additional casks will be added during the license renewal period, that there will be no significant noise generated by the continued operation of the ISFSI. Based on this information, the NRC staff concludes that the impacts on noise from the proposed action are not significant.

4.12 Cumulative Impacts

The NRC staff considered the impacts of the proposed action, as described in Section 4.0 of this EA, combined with other past, present, and reasonably foreseeable future actions that could affect the same resources impacted by the proposed action. Because there are no expected off-site environmental impacts associated with the proposed action, the geographic area considered in this cumulative impacts discussion is the Rancho Seco ISFSI site. The timeframe considered for future actions extends through 2060, the expiration year of the site-specific license for the Rancho Seco ISFSI, if the license is renewed. Because there are no non-radiological impacts expected from the proposed action, this discussion focuses only on radiological impacts.

Workers in the ISFSI Radiologically Controlled Area wear personnel radiation monitoring devices and dose is recorded and tracked for analysis. Dosimetry is used to monitor direct radiation around the ISFSI. If measured doses were to significantly exceed historical levels, SMUD would perform analyses to determine the cause and would establish mitigation measures. The SMUD Radiological Protection ALARA program is an effective method for ensuring that doses to workers and the public are as low as can be achieved by reasonable, cost-effective methods. In addition to monitoring the radiation environment around the ISFSI, inspection and maintenance activities of the ISFSI equipment are performed to ensure that no degradation of equipment could lead to increased radiation levels (SMUD, 2018).

4.13 Continued Storage of Spent Nuclear Fuel

On September 19, 2014, the NRC published a revised rule at 10 CFR 51.23, “Environmental Impacts of Continued Storage of Spent Nuclear Fuel Beyond the Licensed Life for Operations of a Reactor” (79 FR 56238). The rule codifies the NRC’s generic determinations in NUREG-2157 regarding the environmental impacts of the continued storage of spent nuclear fuel beyond a reactor’s operating license. As discussed in the statements of consideration for

the final rule (79 FR 56238; September 19, 2014), the rule does not authorize the storage of spent fuel, nor does it address the safety of continued storage of spent fuel. Appendix B of NUREG-2157, however, discusses the feasibility of the safe storage of spent fuel.

In EAs prepared for reactor and spent fuel storage facility licensing actions submitted after October 20, 2014, 10 CFR 51.23(b) requires that the NRC consider the environmental impacts of continued storage, if the impacts of continued storage of spent fuel are relevant to the proposed action. The analysis below documents the required consideration of the environmental impacts of continued storage, as determined in NUREG-2157, for the proposed renewal of the Rancho Seco ISFSI license.

Overview of 10 CFR 51.23 and NUREG-2157

NUREG-2157 supports the revised rule at 10 CFR 51.23 and includes, among other things, the staff's analyses related to the particular deficiencies identified by the D.C. Circuit in the vacated Waste Confidence Decision and Temporary Storage Rule. The information in NUREG-2157 was developed using an open and public process.

The NRC staff's evaluation of the potential environmental impacts of continued storage of spent fuel presented in NUREG-2157 identifies an impact level, or a range of impacts, for each resource area for a range of site conditions and timeframes. The timeframes analyzed in NUREG-2157 include the short-term timeframe (60 years beyond the licensed life of a reactor), the long-term timeframe (an additional 100 years after the short-term timeframe), and an indefinite timeframe (see NUREG-2157, Section 1.8.2).

The NRC concluded in NUREG-2157 that the potential impacts of spent fuel storage at the reactor site in both a spent fuel pool and in an at-reactor ISFSI would be SMALL during the short-term timeframe (see NUREG-2157, Section 4.20). However, for the longer timeframes for at-reactor storage, and for all timeframes for away-from-reactor, the analysis in NUREG-2157 has determined a range of potential impacts that are greater than SMALL in some resource areas (see NUREG-2157, Sections 4.20 and 5.20, respectively). The analysis in NUREG-2157 also presents an assessment of cumulative impacts for continued storage with ranges of potential impacts for most resource areas (see NUREG-2157, Section 6.5). These ranges reflect uncertainties that are inherent in analyzing environmental impacts to some resource areas over long timeframes. As explained in NUREG-2157 (Appendix D, page D-96), those uncertainties exist regardless of whether the impacts are analyzed generically or site-specifically.

Appendix B of NUREG-2157 provides an assessment of the technical feasibility of a deep geologic repository and continued safe storage of spent fuel. That assessment concluded that a deep geologic repository is technically feasible and that a reasonable timeframe for its development is approximately 25 to 35 years. The assessment in NUREG-2157 referenced the Department of Energy's (DOE) *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* published in January 2013, which stated that DOE's goal "…is to have a repository sited by 2026; the site characterized, and the repository designed and licensed by 2042; and the repository constructed and its operations started by 2048." Based on the evaluation of international experience with geologic repository programs—

including the issues some countries have overcome—and the affirmation by the Blue Ribbon Commission of the geologic repository approach, the NRC continues to believe that 25 to 35 years is a reasonable period for repository development (i.e., candidate site selection and characterization, final site selection, licensing review, and initial construction for acceptance of waste).

At-Reactor Storage

The analysis in NUREG-2157 concluded that the potential impacts of at-reactor storage during the short-term timeframe would be SMALL (see NUREG-2157, Section 4.20). Further, the analysis in NUREG-2157 stated that disposal of the spent fuel by the end of the short-term timeframe is the most likely outcome (see NUREG-2157, Section 1.2). In this EA, the NRC staff determined that impacts from the proposed renewal for 40 years would be SMALL and not significant for all environmental resource areas. This is due to the passive nature of the ISFSI in that it emits no gaseous or liquid effluents during operation. Also, the ISFSI is designed to minimize radiological doses to workers and members of the public. SMUD did not propose any significant changes in authorized operations for the Rancho Seco ISFSI or request approval of any new construction or expansion of the existing ISFSI footprint. Thus, the potential impacts of at-reactor continued storage during the short-term timeframe are consistent with the evaluation of the environmental impacts for the proposed Rancho Seco ISFSI license renewal as documented in this EA.

The analysis in NUREG-2157, however, evaluated the potential impacts of continued storage if the fuel is not disposed of by the end of the short-term timeframe. During the long-term and indefinite timeframes, the analysis in NUREG-2157 determined that impacts to all resource areas would be SMALL, except for historic and cultural resources and nonradioactive waste management. NUREG-2157 determined that the potential impacts to historic and cultural resources from at-reactor storage during the long-term timeframe and the indefinite timeframe are dependent on factors that are unpredictable this far in advance, and therefore concluded those impacts would be SMALL to LARGE (see NUREG-2157, Section 4.12). Among other things, as discussed in NUREG-2157, the NRC cannot determine at this time what resources may be present or discovered at a continued storage site a century or more in the future and whether those resources will be historically or culturally significant to future generations. Additionally, potential impacts greater than SMALL could occur if the activities to replace the ISFSI and construct and replace a dry transfer system (DTS) adversely affect cultural or historic resources, and the effects cannot be mitigated. The analysis in NUREG-2157 recognized that ground disturbing activities occurred during initial construction of the nuclear power plant and, thus, the land within and immediately surrounding the power block has been extensively disturbed. The analysis in NUREG-2157 also explained that if replacement of the ISFSI and construction and replacement DTS occur within the previously disturbed areas or there are no historic or cultural resources present, then impacts would likely be SMALL. If these facilities, however, are located in less-developed or less-disturbed portions of a power plant site outside of the power block with historic and cultural resources present, then impacts to historic and cultural resources could be greater than SMALL (see NUREG-2157, Sections 4.12.2 and 4.12.3). In Section 4.8 of this EA, the NRC staff concluded that there would be no potential impacts to historic and cultural resources as a result of the proposed action.

As discussed in NUREG-2157, given the minimal size of an ISFSI and DTS, and the large land areas at nuclear power plant sites (e.g., the former Rancho Seco site occupies approximately 1000 ha (2480 ac) and the land area designated for the ISFSI is approximately 6 ha (14 ac)), licensees should be able to locate these facilities away from historic and cultural resources (SMUD, 2018). Potential adverse effects on historic properties or impacts on historic and cultural resources could also be minimized through development of agreements and implementation of the licensee's historic and cultural resource management plans and procedures to protect known historic and cultural resources and address inadvertent discoveries during construction and replacement of these facilities. However, the analysis in NUREG-2157 recognized that it may not be possible to avoid adverse effects on historic properties under NHPA or impacts on historic and cultural resources under NEPA and, therefore, concluded that impacts would be SMALL to LARGE (see NUREG-2157, Section 4.12.2).

NRC also concluded in NUREG-2157 that the impacts of nonradioactive waste management in the indefinite timeframe would be SMALL to MODERATE, with the higher impacts potentially occurring if the waste from repeated replacement of the ISFSI and DTS exceed local landfill capacity (see NUREG-2157, Section 4.15). Although the NRC concluded that non-radioactive waste disposal would not be destabilizing (or LARGE), the range reflects uncertainty regarding whether the volume of non-radioactive waste from continued storage would contribute to noticeable waste management impacts over the indefinite timeframe when considered in context of the overall local volume of non-radioactive waste.

As previously discussed, the NRC found in NUREG-2157 that disposal of the spent fuel is most likely to occur by the end of the short-term timeframe. Therefore, disposal during the long-term timeframe is less likely, and the scenario depicted in the indefinite timeframe—continuing to store spent nuclear fuel indefinitely—is highly unlikely. As a result, the most likely impacts of the continued storage of spent fuel are those considered in the short-term timeframe. In the unlikely event that fuel remains on site into the long-term and indefinite timeframes, the associated impact ranges in NUREG-2157 reflect the accordingly greater uncertainties regarding the potential impacts over these very long periods of time. The NRC staff finds that the impact determinations for at-reactor storage from NUREG-2157 do not change the staff's assessment of the potential environmental impacts from the proposed 40-year renewal of the Rancho Seco ISFSI license.

Away-From-Reactor Storage

In NUREG-2157, the NRC concluded that a range of potential impacts could occur for some resource areas if the spent fuel from multiple reactors is shipped to a large away-from-reactor ISFSI capable of holding roughly 40,000 metric tons of uranium (see NUREG-2157, Section 5.20). The range of impacts on resources such as air quality, terrestrial resources and aesthetics is inexact due to the uncertainty regarding siting of a facility, as well the difficulty of predicting the local resources that would be affected. For example, regarding terrestrial resource impacts, the analysis in NUREG-2157 explained that the impacts would likely be SMALL. However, NUREG-2157 also stated "it is possible that the construction of the project could have some noticeable, but not destabilizing, impacts on terrestrial resources, depending on what resources are affected." Therefore, in NUREG-2157, for away-from-reactor storage, the NRC concluded that the impacts to terrestrial resources would be SMALL to MODERATE (see NUREG-2157, Section 5.9.1) for the short-term timeframe, based primarily on the potential impacts of construction activities. In addition, there are uncertainties associated with the longer timeframes that contribute to the ranges for historic and cultural resources and for non-radioactive waste management, for the same reasons discussed above for at-reactor storage.

As discussed in Section 2 of this EA, the NRC staff considered the storage of the spent fuel at an away-from-reactor storage as an alternative. The NRC determined, however, that it was not a reasonable alternative, because no such facility is available in the United States. There is no such ISFSI currently in existence in the United States; however, the NRC has received license applications for consolidated interim storage facilities. A facility could become available during the continued storage period. If so, an ISFSI of the size considered in NUREG-2157 could store the fuel from up to 25 reactors, which means that only a small portion of the overall impacts of the ISFSI would be attributable to the fuel from any individual reactor.

Based on the factors discussed above, there is uncertainty whether an away-from-reactor storage would be constructed, uncertainty where it might be located, and uncertainty regarding the impacts in the short-term and the longer timeframes, leading to ranges of impacts. As a result, consideration of the generic impacts from continued storage at an away-from-reactor storage facility provides limited insights to the decision-maker in the overall picture of the environmental impacts from the proposed renewal of the Rancho Seco ISFSI license.

Cumulative Impacts

In NUREG-2157, the NRC examined the incremental impact of continued storage on each resource area analyzed in combination with other past, present, and reasonably foreseeable future actions. The analysis in NUREG-2157 presented ranges of potential cumulative impacts for multiple resource areas (see NUREG-2157, Section 6.5). These ranges, however, are primarily driven by impacts from activities other than the continued storage of spent nuclear fuel at the reactor site and these impacts would occur regardless of whether spent fuel is stored during the continued storage period.

Similarly, the NRC evaluated the incremental impact of the proposed renewal of the Rancho Seco ISFSI license on each resource area in combination with other past, present, and reasonably foreseeable future actions. The NRC staff concluded that the potential impacts of the proposed Rancho Seco ISFSI license renewal are not a significant contributor to cumulative impacts. The analysis in NUREG-2157 concluded that, in the short-term timeframe, which is the most likely timeframe for the disposal of the fuel in a deep geologic repository, the potential impacts of continued storage for at-reactor storage are SMALL and would not be a significant contributor to the cumulative impacts. Therefore, the NRC staff has determined that there would be no significant change to the cumulative impacts analysis in this EA.

4.14 Impacts from a Hypothetical Terrorist Attack

4.14.1 NRC Security Requirements for Independent Spent Fuel Storage Installations

The NRC has established requirements and has initiated several actions designed to provide high 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, the NRC is continually evaluating the threat environment, to determine whether any specific threat to ISFSIs exists.

4.14.1.1 General Security Considerations

In response to the terrorist attacks of September 11, 2001, and 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 Department of Homeland Security's (DHS) National Terrorism Advisory System (previously the Homeland Security 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 in the event that 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 serves 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 is able to 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.

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 serves 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 is able to 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.

4.14.1.2 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 (NRC, 2007). 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.

NRC security requirements provide high 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 Rancho Seco 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, 2010b; 2012b).

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) off-site 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, 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 SMUD for the Rancho Seco ISFSI prior to the loading of spent fuel into the facility (NRC, 2002 and 2004). 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 high 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 high 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.

4.14.2 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 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 Rancho Seco ISFSI's robust design and construction provides multiple layers of protection. Spent fuel and GTCC waste are stored on the Rancho Seco site in sealed DSCs. The ISFSI consists of 22 DSCs that contain 493 spent fuel assemblies and GTCC waste on an above-ground, reinforced concrete pad constructed in 1996. In total 21 DSCs contains spent fuel assemblies; 18 DSCs each accommodate 24 fuel assemblies with control components, two DSCs contain 24 fuel assemblies only, and one DSC holds 13 failed spent fuel assemblies with no control hardware (SMUD, 2018). One DSC contains only GTCC waste. These 22 DSCs are contained in the 22 onsite HSMs (SMUD, 2010).

The Rancho Seco ISFSI contains 22 reinforced concrete horizontal storage modules (HSMs) in a 2 X 11 array on a concrete pad. Both spent fuel and GTCC waste DSCs were placed into the HSMs at the Rancho Seco ISFSI. The spent fuel loading was completed in August 2002 and the single GTCC waste canister was loaded at the ISFSI in August 2006 (SMUD, 2018). This ISFSI site sits wholly within the approximately 1004-hectare (2480 acre) Rancho Seco site, which is fenced for security. A 2.4 m (8 ft) high inner fence immediately surrounds the ISFSI pad, which is 0.6 m (2 ft) thick and approximately 68.6 m by 51.8 m (225 ft by 170 ft), and the HSMs sit atop it (SMUD, 2010). A second 2.4 m fence surrounds the inner fence 10.7 m (35 ft) away from each side of the pad. Each HSM is approximately 5.8 m (19 ft) long, 4.6 m (15 ft) high and 2.9 m (9.7 ft) wide (SMUD, 2010). The design of the HSMs provides radiation shielding and protection from external hazards such as missiles, earthquakes, and tornadoes.

Based on these facts, and the results of the security assessments of the ISFSIs (discussed below), the NRC has determined that the current design features and additional security measures in place provide high assurance that the Rancho Seco ISFSI is adequately protected.

Because of the uncertainty inherent in assessing the likelihood of a terrorist attack, 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 high assurance that a terrorist act will not lead to significant radiological consequences, 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. All of these actions have been taken without regard to the probability of an attack. The NRC finds this protective strategy reduces the risk from a terrorist attack to an acceptable level.

4.14.2.1 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 (Kipp, 2004; Smith, 2004; Yoshimura, 2004). 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 taking into account 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 currently 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.

4.14.2.2 Comparison of the Generic Security Assessment to Rancho Seco

The NRC staff reviewed the ISFSI security assessments and compared the assumptions in the generic assessments, with the relevant features of the Rancho Seco ISFSI, including storage cask design and atmospheric dispersion. The NRC staff determined the assumptions in the generic ISFSI security assessments for storage cask design and atmospheric dispersion are representative of actual conditions at the Rancho Seco ISFSI. The NRC staff also concluded

that a DSC, an overpack design, and construction materials for a storage cask analyzed in the generic security assessments were representative of the horizontal storage modules (HSMs) used at the Rancho Seco ISFSI. The NRC staff compared the wind speeds and atmospheric stability classes with those in the generic assessment and determined the conditions at Rancho Seco, measured over a two-year period, tend to promote more atmospheric mixing than the conditions evaluated in the generic assessment. Because the prevailing atmospheric conditions at Rancho Seco are less stable, it is more likely the atmospheric conditions in the generic assessment are bounding for those at the Rancho Seco ISFSI. Thus, the methodology of the generic assessment likely over-predicts the consequences (dose) to a given individual. The conditions in the generic assessment were representative of the actual conditions during periods of highest atmospheric stability at the Rancho Seco site. The staff assumed that the atmospheric conditions at the Rancho Seco site maximize the dose to a given individual. Those conditions approximate the conditions used in the generic assessment. For these reasons, staff determined the consequences of a release of radioactive material from a hypothetical attack at Rancho Seco do not differ significantly from those of the generic assessment, and thus are bounding.

The NRC staff separately compared two different types of material stored at the Rancho Seco ISFSI, spent fuel and GTCC waste (activated components). The staff compared the radioactive material stored at the Rancho Seco ISFSI to the source term (amount of radioactive material stored) used in the generic assessments to determine whether the dose consequences of the generic assessments bound those of the Rancho Seco ISFSI.

The NRC staff assumed all the fuel stored at the Rancho Seco ISFSI was burned to 40,000 megawatt-days per metric ton uranium (MWD/MTU), which is a higher burnup than for any of the spent fuel stored on site. Because spent fuel radioactivity increases with burnup, the staff's use of the conservative assumption over-predicts the source term at the Rancho Seco ISFSI. The actual burnup of fuel in the Rancho Seco ISFSI is less than that used in the generic assessment. The higher burnup value evaluated in the generic assessment, 45,000 MWD/MTU and higher, also over-predicts the activity of the stored fuel. The Rancho Seco DSCs contain a maximum of 24 spent fuel assemblies, however, while the generic assessment evaluated more densely loaded DSCs, which contain more than 24 assemblies. Also, the Rancho Seco ISFSI contains less spent fuel than casks evaluated in the generic assessment. For these reasons, the NRC staff concludes the consequences (dose) of a radiological release at the Rancho Seco ISFSI are bounded by the dose calculated in the generic security assessments.

The NRC staff also evaluated the properties of the GTCC waste stored in special HSMs at the Rancho Seco ISFSI. The properties of the GTCC waste are described in Report 2041-RE-009 Rev. 1 – "Rancho Seco Activation Analysis and Component Characterization" WMG Project 2041D, July 2003, which reported the GTCC waste activity as of May 1, 2003. The staff calculated the consequences of radiological releases using the radioactivity of GTCC waste reported in 2003. Because radioactivity decreases with time, not including the radioactive decay of GTCC waste since 2003, produced a GTCC waste activity value which over-estimates the current activity of the GTCC.

The staff evaluated the consequences of the release of materials analogous to the GTCC waste to estimate the releasable source term inventory in a GTCC waste DSC at Rancho Seco. The

staff compared these results with the release of materials from a spent fuel DSC in the generic assessment. In scenarios where the cask or packaging was not comparable in design or materials to the Rancho Seco HSMs, the staff selected the scenario for that design that resulted in the highest release fraction. This evaluation produced conservative results. The staff calculations show the potential release from spent fuel is several orders of magnitude larger than a hypothetical release from GTCC waste. Therefore, the staff concludes the consequences from a hypothetical attack on a GTCC waste DSC at Rancho Seco are bounded by the spent fuel release evaluated in the generic assessments.

The NRC staff concluded the projected dose to the maximally exposed individual would be well below the 0.05 Sv (5 rem), which is the accident dose limit in 10 CFR 72.106. Emergency planning and response actions by on-site personnel and law enforcement agencies could also provide additional protections and mitigate consequences, in the unlikely event that an attack were attempted at the Rancho Seco ISFSI.

For the reasons discussed above, the staff concludes that potential radiological dose to the public associated with a hypothetical attack on the Rancho Seco ISFSI would be less than the dose calculated in the generic security assessments. The generic security assessments support the NRC's conclusion that the agency's security regulations and orders for the ISFSIs provide adequate protection for the public health and safety, the common defense and security, and the environment. Therefore, additional security measures at ISFSIs are not required.

The NRC staff finds the robust structure of storage casks, which are specifically designed to withstand severe accidents, in conjunction with NRC's existing security regulations and orders, provide adequate protection that a terrorist attack on the Rancho Seco HSMs would not result in a significant release of radiation. For these reasons, the NRC staff concludes that the impacts from a hypothetical terrorist attack are not significant.

5.0 AGENCIES AND PERSONS CONSULTED

The NRC staff consulted with other agencies regarding the proposed action in accordance with NUREG-1748 (NRC, 2003). These consultations were undertaken to (1) ensure that the requirements of Section 7 of the ESA of 1973 and Section 106 of the NHPA of 1966, as amended were met, and (2) provide the designated state liaison agencies the opportunity to comment on the proposed action. The NRC also contacted the California Department of Public Health (CDPH) via letter dated June 7, 2019 (NRC, 2019e) requesting a review of the draft EA. The CDPH responded by email dated July 3, 2019 (CDPH, 2019), indicating they had no comments on the draft EA.

5.1 National Historic Preservation Act

The NHPA was enacted to create a national historic preservation program, including the National Register of Historic Places and the Advisory Council on Historic Preservation. Section 106 of the NHPA requires federal agencies to consider the effects of their undertakings on historic properties. NHPA implementing regulations at 36 CFR Part 800, "Protection of Historic Properties," define an undertaking as "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license, or approval." Therefore, the NRC's approval of this license renewal request constitutes a federal undertaking. The NRC determined the scope of activities

described in this license renewal request do not have the potential to cause effects on historic properties which may be present on the site because renewal of the ISFSI license will not result in construction or land disturbance activities. In accordance with 36 CFR 800.3(a)(1), no consultation is required under Section 106 of the NHPA.

The NRC staff also contacted the California SHPO by letter dated December 14, 2018 (NRC, 2018d). The California SHPO responded by letter dated January 9, 2019, indicating they had no comments or concurrence on the finding of no effect (CA SHPO, 2019). NRC staff also notified eight Native American tribes (Buena Vista Rancheria of Me-Wuk Indians of California, Colfax-Todds Valley Consolidated Tribe, Tsi Akim Maidu Tribe, Lone Band of Miwok Indians, Nashville Enterprise Miwok-Maidu-Nishinam Tribe, United Auburn Indian Community of the Auburn Rancheria, Shingle Springs Band of Miwok Indians, and Wilton Rancheria) by letter on January 9, 2019 (NRC, 2019b).

5.2 The Endangered Species Act

Under Section 7 of the ESA and through its implementing regulations (50 CFR 402, Subpart B), prior to taking a proposed action, a federal agency must determine whether: (i) endangered and threatened species or their critical habitats are known to be in the vicinity of the proposed action and if so, whether (ii) the proposed federal action may affect listed species or critical habitats. If the proposed action may affect listed species or critical habitats, the federal agency is required to consult with the FWS and/or the U.S. National Marine Fisheries Service (NMFS). The FWS has instituted a process which streamlines their environmental review process. The FWS implemented a web-based project planning tool, called IPaC. The IPaC tool provides information to federal agencies, state agencies, and the public to assist in the assessment of how proposed federal activities may impact sensitive natural resources, and when appropriate, suggests ways to address these impacts. After a federal agency uses the IPaC website process, the local FWS office issues a letter to assist the agency's evaluation of the project's potential impacts on threatened and endangered species and critical habitats within the project area. A project-specific official species list is attached to the letter. The project-specific list identifies the species and critical habitats that should be considered under Section 7 of the Endangered Species Act.

The NRC staff utilized the FWS's IPaC website to obtain an official species list for the Rancho Seco ISFSI area (FWS, 2019). The following listed species may be present in the area of the proposed action and are as follows:

Table 5.1: Listed Species that may be Present in the Rancho Seco Area

	NAME	STATUS
Reptiles	Giant Garter Snake	Threatened
Amphibians	California Red-Legged Frog	Threatened
	California Tiger Salamander	Threatened
Fishes	Delta Smelt	Threatened
Insects	Valley Elderberry Longhorn Beetle	Threatened
Crustaceans	Conservancy Fairy Shrimp	Endangered
	Vernal Pool Fairy Shrimp	Threatened
	Vernal Pool Tadpole Shrimp	Threatened
Flowering Plants	Fleshy Owl's-clover	Threatened
Critical habitats	California Tiger Salamander	Final

The NRC staff, with the assistance of the IPaC project planning tool, determined that listed species and/or critical habitat will not be adversely affected by the proposed action. The NRC's approval of the proposed action will not result in new construction activities or land disturbance. Therefore, further consultation with the FWS was not necessary. The NRC staff requested information from the CDFW on the presence of endangered or threatened species or critical habitat in the project area in a letter dated December 14, 2018 (NRC, 2018e). The CDFW responded that the Rancho Seco site is known as habitat for the California Central Valley population of California Tiger Salamander (Ambystoma californiense) in an email dated December 21, 2018. The species is listed as Threatened by both the FWS and the CDFW (CDFW, 2018a). During a follow-up phone call, the CDFW indicated that no harmful effects were likely to occur because the proposed action does not entail new construction or ground-breaking activities. On September 24, 2019, the NRC held a conference call with SMUD. During the call SMUD detailed its mitigation plans for protecting the salamander and ongoing efforts to complete a habitat conservation plan and acquire an incidental take permit (NRC, 2019f). Therefore, the NRC concludes that the proposed action will not adversely affect federally- or state-listed threatened and endangered species.

6.0 CONCLUSION AND FINDING OF NO SIGNIFICANT IMPACT

Based on its review of the proposed action, in accordance with the requirements of 10 CFR Part 51, the NRC staff has preliminarily determined that renewal of NRC license SNM-2510, authorizing continued operation of the Rancho Seco ISFSI for an additional 40 years, will not significantly affect the quality of the human environment. In its license renewal request, SMUD does not propose changes to the handling or storage of spent fuel at the Rancho Seco ISFSI. Approval of the proposed action is not expected to result in new construction or expansion beyond the existing ISFSI footprint. The ISFSI is a passive facility that produces no liquid or gaseous effluents. Therefore, no significant radiological or non-radiological impacts are expected from continued normal operations. Occupational dose estimates associated with continued normal operation and maintenance of the ISFSI are expected to be at ALARA levels and within the regulatory limits of 10 CFR 20.1201.

The NRC staff determined that under 10 CFR 51.31 the preparation of an environmental impact statement is not required for the proposed action and that a FONSI is appropriate under 10 CFR 51.32.

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