

November 2, 2007

MEMORANDUM TO: Michael T. Lesar, Chief
Rules and Directives Branch
Division of Administrative Services
Office of Administration

FROM: Keith I. McConnell, Deputy Director **/RA/**
Decommissioning and Uranium Recovery
Licensing Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

SUBJECT: NOTICE OF AVAILABILITY OF FINAL ENVIRONMENTAL
ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT
RELATED TO THE LICENSE TERMINATION PLAN FOR THE
RANCHO SECO NUCLEAR GENERATING STATION

Enclosed, please find one signed original, four copies and an electronic version on a 3.5 diskette of the subject Federal Register Notice for transmittal to the Office of the Federal Register for publication.

ADM/DAS/RDB has been given owner's rights to the Notice in ADAMS (ML072040235). Publicly available U.S. Nuclear Regulatory Commission documents referenced in the Notice have been finalized in ADAMS and profiled for public release. ADAMS accession numbers for all such documents are provided in the text under Further Information.

Enclosures:

1. Signed original FRN
2. 4 copies of FRN
3. Diskette

CONTACT: John B. Hickman, FSME/DWMEP
(301) 415-3017

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U.S. NUCLEAR REGULATORY COMMISSION

[Docket No.: 050-312]

**Notice of Availability of Final Environmental Assessment and
Finding of No Significant Impact Related to the License Termination Plan
for the Rancho Seco Nuclear Generating Station**

AGENCY: U.S. Nuclear Regulatory Commission

ACTION: Notice of Availability and Finding of No Significant Impact

SUMMARY: Notice is hereby given that the U.S. Nuclear Regulatory Commission (NRC) is issuing an environmental assessment (EA) related to the license termination plan (LTP) for the Rancho Seco Nuclear Generating Station, dated April 12, 2006. The EA was developed as part of the NRC decision-making process on whether or not to approve the LTP that will result in subsequent release of the site from NRC licensing for unrestricted use of the site (as defined in Title 10 of the *Code of Federal Regulations* (10 CFR) 20.1402, "Radiological Criteria for Unrestricted Use"). The scope of the EA is the determination of the adequacy of the radiation release criteria and the final status survey as presented in the LTP. The EA specifically examines potential impacts on land use, water resources, and human health from structures and/or residual materials that will be present at the site at the time the site is released and the license is terminated. The EA also identifies compliance with Section 106 of the National Historic Preservation Act.

FOR FURTHER INFORMATION CONTACT: John Hickman, Project Manager,
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Management and Environmental Protection, Mail Stop T-8F5, U.S. Nuclear Regulatory
Commission, Washington, DC, 20555-0001. Telephone: (301) 415-3017; e-mail: jbh@nrc.gov.

SUPPLEMENTARY INFORMATION:

I. Environmental Assessment

1.0 INTRODUCTION

The U.S. Nuclear Regulatory Commission (NRC) is considering the request submitted by Sacramento Municipal Utility District (SMUD or the licensee) for approval of the license termination plan (LTP) for the Rancho Seco Nuclear Generating Station (Rancho Seco). Consistent with the decommissioning rule that appeared in the *Federal Register* on July 29, 1996 (61 FR 39278), the NRC has prepared this environmental assessment (EA) to determine the environmental effects from approval of the LTP and subsequent release of the site for unrestricted use (as defined in Title 10, Section 20.1402, "Radiological Criteria for Unrestricted Use," of the *Code of Federal Regulations* (10 CFR 20.1402)). As discussed in Section 1.3, "Scope," of this document, the primary scope of this EA is the determination of the adequacy of the radiation release criteria and the final status survey (FSS) presented in the LTP.

1.1 Background

Rancho Seco has a deactivated pressurized-water nuclear reactor and is located on a 2480-acre SMUD site in Sacramento County at 14440 Twin Cities Road, Herald, California. Rancho Seco was constructed between 1968 and 1974. In August 1974, the NRC licensed the reactor to operate commercially at 2772 megawatts thermal. After passage of a nonbinding referendum by the voters of Sacramento County in 1989, SMUD decided to permanently shut down Rancho Seco. In August 1989, SMUD notified the NRC that the plant was permanently shut down and informed the NRC of its intent to seek amendments to the Rancho Seco operating license and decommission the facility (NRC, 1989a). In May 1991, before the promulgation of the current requirements for decommissioning and license termination under 10 CFR 50.82, "Termination of License," (published July 1996, 61 FR 39278), SMUD submitted

a proposed Rancho Seco decommissioning plan (SMUD, 1991). In March 1995, the NRC issued an order that approved the plan and authorized decommissioning of the site (NRC, 1995). In February 1997, SMUD began active decommissioning of the site. In March 1997, SMUD submitted its postshutdown decommissioning activities report (PSDAR) (SMUD, 1997) pursuant to 10 CFR 50.82 requirements, superseding the original decommissioning plan. In August 2002, SMUD completed the transfer of all spent nuclear fuel to its independent spent fuel storage installation (ISFSI) licensed under 10 CFR Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste" (SMUD, 2006a).

In April 2006, SMUD submitted its LTP (SMUD, 2006a). The NRC sent SMUD two requests for additional information (RAI) on the LTP, with corresponding SMUD responses in November 2006 (SMUD, 2006d) and April 2007 (SMUD, 2007). In 2006, SMUD also submitted a revision to its historical site assessment (SMUD, 2006b) and a ground water monitoring report (SMUD, 2006c). SMUD is proposing to decontaminate the Rancho Seco site to meet 10 CFR 20.1402 requirements for unrestricted use. Photographs provided in SMUD's April 2007 response to NRC's RAI (SMUD, 2007) identify the permanent buildings and structures, as well as paved areas and 11 concrete pads of removed structures, that SMUD currently plans to leave in place at the site after license termination. These include the: diesel buildings, backup control center, nuclear services electrical building, auxiliary building, reactor containment building, spent fuel building, turbine building, switchyard control building, machine shop, "B" warehouse, personal access portal building, interim onsite storage building (IOSB), receiving warehouse, and an unfinished technical support building.

SMUD is also proposing that the NRC release the site from licensing for unrestricted use in two phases, with the 10 CFR Part 50 license terminated after completion of the second phase. Table 3-1 of the LTP identifies that, for the first phase, SMUD plans to complete the major decommissioning activities in early 2008. The first-phase release includes most of the site, except for the IOSB. The IOSB will remain on the 10 CFR Part 50 license, and SMUD plans to

continue to store only low-level radioactive waste from the Rancho Seco site in the building until it finds a suitable waste disposal option (SMUD, 2006a). Further, IOSB operations will continue to include the maintenance program, the radiation protection plan for implementing the radiological controls program, the radiological environmental monitoring program, an emergency plan, and the SMUD radioactive waste procedure "IOSB Building Operations" (SMUD, 2007). After the first phase of site release, the remaining IOSB 10 CFR Part 50 licensed site footprint will be approximately 1.1 acres with a proposed new fence line around the licensed area. The IOSB is in the vicinity of the 10 CFR Part 72 licensed ISFSI fence boundary. SMUD estimates the combined maximum dose to a worker between the ISFSI and IOSB fence lines, including the dose from material within the first-phase released area between the fence lines, to be 0.15 millisievert per year (mSv/yr) (15 millirems per year (mrem/yr)), which is below the 0.25 mSv/yr (25 mrem/yr) limit for license termination in 10 CFR 20.1402 (SMUD, 2007).

The NRC has completed several previous EAs during the period of Rancho Seco site decommissioning. Two EAs were related to license amendments addressing record keeping, and another EA was for an exemption and license amendment. The NRC completed a fourth EA in March 2005 for an amendment to the 10 CFR Part 72 ISFSI license, allowing ISFSI storage of greater-than-Class-C waste (defined in 10 CFR Part 72) that was generated and stored at the 10 CFR Part 50 licensed Rancho Seco site (NRC, 2005). The NRC staff reviewed these previous EAs as part of the development of this EA.

1.2 Need for the Proposed Action

As specified in 10 CFR 50.82, licensees of nuclear facilities may apply to the NRC to decommission a facility and terminate their license. These requirements outline a process to follow for eventual termination of the license, including the requirement that the NRC will approve the licensee's LTP provided that it meets the criteria in 10 CFR 50.82(a)(10). SMUD

submitted the required LTP (SMUD, 2006a) before requesting license termination, as specified in 10 CFR 50.82(a)(9).

As part of the LTP review process the NRC determines: (1) whether the procedures and activities planned for completing decommissioning (adequacy of radiation release criteria and the FSS) appear sufficient as described in the LTP; and (2) assuming these procedures and activities are implemented according to plan, whether the plan would demonstrate that the site is suitable for unrestricted use. Further, NRC determines whether additional planning, investigation, and/or other activities are necessary to support the decision on site release for unrestricted use and license termination. This EA describes the potential environmental effects (both radiological and nonradiological) from the decision to approve the SMUD LTP and to release the site from the NRC license for unrestricted use (pursuant to 10 CFR 20.1402) followed by termination of the license.

1.3 Scope

A significant rule change in 1996 (61 FR 39278) allows a licensee to perform major decommissioning activities after submitting a PSDAR. The 1996 rule change prohibits decommissioning activities that could result in significant environmental impacts which have not been previously reviewed. The licensee is also required to include a discussion of the reasons for concluding that the planned decommissioning activities are bound by previously issued environmental impact statements in the PSDAR. For the LTP, the scope of the NRC approval is identified in the final rule as follows:

The Commission must consider: (1) the licensee's plan for assuring that adequate funds will be available for final site release, (2) radiation release criteria for license termination, and (3) the adequacy of the final survey required to verify that these release criteria have been met.

The NRC details its review of these three areas in the safety evaluation report (SER). The licensee's radiation release criteria and the adequacy of the site FSS are considered during the development of the EA. However, the EA does not discuss funding available for decommissioning activities conducted until site release, since funding does not result in environmental impacts.

In fulfilling its obligations under the National Environmental Policy Act (NEPA), the NRC evaluates the environmental impacts associated with approval of the LTP and subsequent termination of the license, as discussed above. The EA considers both radiological and non-radiological impacts. These impact evaluations will typically involve an assessment of the remaining buildings/structures and residual material present at the site at the time the site is released and the license is terminated. In the case of this EA, release of the site for unrestricted use and termination of the license will be completed in two phases (discussed in Section 1.1, "Background," of this document).

1.3.1 Issues Evaluated in Detail

Consistent with NEPA regulations and guidance to focus on environmental issues of concern, this EA examines resource areas that were selected because of their potential to be affected by license termination: land use; water resources; and human health. Specifically, the EA considers potential impacts on these resources from structures and/or residual materials that will remain after the site is released for unrestricted use.

1.3.2 Issues Eliminated from Detailed Evaluation

For reasons cited in Section 1.3 of this document, impacts to air quality, historical and cultural resources, ecological resources (including endangered and threatened species), socioeconomic factors, transportation, noise, visual and scenic quality, waste management, and

accident analysis are not reasonably expected to be impacted by approval of license termination activities (i.e., adequacy of radiation release criteria and the FSS) and site release for unrestricted use. As discussed in Section 1.3 of this document, financial assurance for decommissioning at the site is not related to the environment and will not be discussed in this EA.

Decommissioning activities are not evaluated in this EA. The NRC previously assessed decommissioning impacts in the generic environmental impact statement for decommissioning (NRC, 1988; NRC, 2002). As described in Section 1.3 of this document, the PSDAR addresses environmental impacts from decommissioning activities. SMUD submitted its PSDAR in March 1997 (SMUD, 1997), along with a discussion of the environmental impacts from its decommissioning activities.

2.0 ALTERNATIVES, INCLUDING THE PROPOSED ACTION

2.1 The Proposed Action

The proposed action is the NRC approval of the LTP for the Rancho Seco plant. Before approving the LTP, the NRC staff reviewed the LTP to ensure that the proposed license termination activities (i.e., adequacy of radiation release criteria and the FSS) ensure that: (1) public health and safety will be protected; and (2) no significant impact on the quality of the human environment will result from the unrestricted release of the Rancho Seco site from NRC licensing. The LTP would also become part of the NRC license in a separate license amendment (Amendment Number 133), thereby including the LTP in the NRC inspection and enforcement programs at the Rancho Seco site. This license amendment would specify, among other things, that the licensee must seek NRC approval in order to make certain changes to the LTP.

As described in Section 1.1 of this document, SMUD plans to complete decommissioning of Rancho Seco for unrestricted use (detailed in 10 CFR 20.1402 and Section 3.4, “Human Health,” of this document). SMUD plans to request license termination in two phases. During the first phase, the majority of the site is planned to be released from the 10 CFR Part 50 license. The remainder of the licensed site will continue to include the current IOSB for Class B and C radioactive waste (defined in 10 CFR Part 61, “Licensing Requirements for Land Disposal of Radioactive Waste”), with the overall 10 CFR Part 50 licensed area considerably reduced in size. SMUD estimates that decommissioning of the IOSB and the remaining 10 CFR Part 50 licensed site will be completed by 2028 (LTP Section 3.3.6.2), when the remaining area will be reviewed by NRC for unrestricted release from the license and the license terminated (SMUD, 2006a).

In order to meet the NRC unrestricted release criteria, the licensee will divide areas of the site into survey units and sample/survey them in accordance with the LTP to verify that the derived concentration guideline levels (DCGLs) will be met and, consequently, demonstrate compliance with the NRC release criteria. Sections 3.1.1, “Radiological Contamination”; 3.4, “Human Health”; and 4.3, “Human Health Impacts,” of this document discuss the DCGLs.

2.2 No-Action Alternative

The NRC staff considered the no-action alternative relative to the SMUD request for approval of the LTP. Under the no-action alternative, the NRC would not approve the LTP and would neither apply the unrestricted use criteria nor terminate the Rancho Seco license. This alternative conflicts with the NRC 10 CFR 50.82 license termination requirements, which state that the Commission shall approve an LTP, by license amendment, if the LTP demonstrates that the remainder of the decommissioning activities, among other provisions, will not have a significant effect on the quality of the environment. Additionally, pursuant to this regulation, the NRC shall terminate the license after (1) the remaining dismantlement has been performed in

accordance with the approved LTP, and (2) both the final radiation survey and associated documentation demonstrate compliance with decommissioning in 10 CFR Part 20, "Standards for Protection Against Radiation," Subpart E, "Radiological Criteria for License Termination." Therefore, the no-action alternative is eliminated from further consideration in this EA.

3.0 AFFECTED ENVIRONMENT

3.1 Site Description

As described in the LTP (SMUD, 2006a) (e.g., Sections 1.3.2, 6.2.1, and 8.5), Rancho Seco is located in the southeast part of Sacramento County, California, approximately 40 kilometers (km) (25 miles) southeast of Sacramento and 42 km (26 miles) north-northeast of Stockton. The populations of Sacramento and Stockton are approximately 445,000 and 490,000, respectively. The nearest population center of greater than 25,000 residents is Lodi, approximately 27 km (17 miles) south-southwest of the site, with approximately 57,000 people (U.S. Census Bureau, 2006).

The Rancho Seco site is located in the foothills of the Sierra Nevada Mountains, with the Sierra Nevada Mountains to the east and the coast range along the Pacific Ocean to the west. The site is an area of flat to lightly rolling terrain at an elevation of approximately 60 meters (200 feet) above mean sea level. To the east of the site, the land becomes more rolling, rising to an elevation of 180 meters (600 feet) at a distance of about 11 km (seven miles), and increasing in elevation toward the Sierra Nevada foothills (SMUD, 2006a).

The climate at Rancho Seco is described in the LTP as typical of the Great Central Valley of California. The rainy season occurs between October and May. More than two-thirds of the annual rainfall generally occurs from December through March. Incidents of severe weather,

such as tornados and hurricanes, are infrequent (SMUD details its analysis in LTP Section 8.5) (SMUD, 2006a).

The soil consists of hard to very hard silts and silty clays with dense to very dense sands and gravel. There is no evidence of faulting beneath the site. The nearest fault system is approximately 16 km (ten miles) east of the site and has been inactive for more than 135 million years (SMUD, 2006a).

3.1.1 Radiological Contamination

Several areas within the industrial area have been identified as radiologically impacted (i.e., an NRC term defined in 10 CFR 50.2, "Definitions," to indicate the potential for residual radioactivity in excess of natural background radiation levels) by the operation of the facility. These areas include the retention basin, tank farm, barrel farm, areas adjacent to the regenerative holdup tank area, storm drains, oily water separator, cooling tower basins, and turbine building drains and sumps. Several areas outside of the industrial area, identified as the non-industrial area, have historically had radionuclide concentrations detected above background levels (i.e., impacted, per 10 CFR Part 50 terminology). These areas include the discharge canal sediment, discharge canal soil, depression area soil, and the storm drain outfall. In total, the 10 CFR Part 50 defined radiologically impacted area is approximately 165 acres, outlined in LTP Figure 2-2 (SMUD, 2006a).

In general, the extent of radiological contamination at a site is determined through a process of site characterization that includes radiological surveys with detectors and measuring instruments as well as historical site assessment. Surveys determine the nature and extent of radioactive material contamination in buildings, plant systems and components, site grounds, and both surface and ground water. The process of characterizing the site is described in

further detail in both LTP (Chapter 2) (SMUD, 2006a) and the NRC SER (“Site Characterization” section) (NRC, 2007).

SMUD identified 26 site-specific radionuclides (Table 6-1 of the LTP) that are potentially present in soils, ground water, and structures. These radionuclides include fission and activation products that are typical for pressurized-water reactor plants and were identified using information in several NRC NUREG documents (listed in LTP Section 6.3.1) and the ORIGEN computer code (using irradiated fuel assembly data). During this process, SMUD identified other radionuclides as potentially present at the site and eliminated them from further consideration. SMUD eliminated the radionuclides because, if present, they contribute less than 0.1 percent of the total activity at the site and the potential radiation dose contribution by the sum of these radionuclides is less than one percent of the total calculated radiation dose (detailed in LTP Section 6.3.2).

Specifically, SMUD is using the 26 radionuclides to determine acceptable residual radioactivity levels and radiation dose levels at the site after release for unrestricted use. These radionuclides also are included in the NRC dose modeling to determine acceptance of the LTP. For example, all 26 radionuclides are assigned DCGLs for surfaces on buildings. Additionally, based on analysis of the highest level of soil contamination identified at the site before decommissioning (spent fuel cooler pad soil), the licensee developed DCGLs for the soil based on carbon-14, cobalt-60, nickel-63, strontium-90, cesium-134, and cesium-137. Further, the 26 radionuclides form the basis for identifying specific radionuclides of interest for various other site media components (e.g., volumetric contamination and piping) at the site and for the development of the corresponding DCGLs (discussed in LTP Chapter 6).

Table 5-4D of the LTP shows all the structures that, before decommissioning, had radioactivity levels above the DCGL (SMUD, 2006d). Radiological sampling outside of the industrial area is detailed in the LTP. Specifically, during plant operation, the Oak Ridge National Laboratory

evaluated the environmental impact of the authorized radioactive liquid effluent releases from Rancho Seco for the NRC in 1986 (NRC, 1986). This report and subsequent radiological sampling are discussed in LTP Chapter 2 and in a SMUD response to an NRC RAI (SMUD, 2006d).

3.1.2 Hazardous and Chemical Contamination

Decommissioning activities at the site are subject to Federal regulations, permits, licenses, notifications, approvals, and acknowledgments, including those for hazardous waste generation/disposition, handling and removal of asbestos, handling and removal of lead paint, and removal of underground storage tanks. For example, specific U.S. Environmental Protection Agency regulations (Title 40, "Protection of the Environment," of the CFR) adhered to during decommissioning and operation of the site address the following requirements: 40 CFR Part 61 (asbestos handling and removal); 40 CFR Parts 122 through 125 (National Pollutant Discharge Elimination System); 40 CFR Part 141 (safe drinking water); 40 CFR Part 190 (radiation protection for nuclear power operations); 40 CFR Parts 260 through 272 (Resource Conservation and Recovery Act); 40 CFR Part 280 (underground storage tanks); 40 CFR Part 761 (polychlorinated biphenyls); and 40 CFR Parts 129 through 132 (Clean Water Act) (SMUD, 2007).

3.2 Land Use

The 10 CFR Part 50 licensed site is an approximately 87-acre, fence-enclosed industrial area containing the nuclear facility as well as an emergency backup data center and a SMUD backup control center that are used to support SMUD functions if disruptions occur with the headquarters facility. Additional structures within the industrial area are identified in the LTP (SMUD, 2006a) and the SMUD 2007 RAI response (SMUD, 2007), with key structures highlighted in the listing provided in Section 4.1, "Land Use Impacts." This site is located within an overall approximate 2480-acre area that is owned by SMUD (owner-controlled area). Land

use within the owner-controlled area also includes: a solar power (photovoltaic) electrical generating station (50 acres); the 10 CFR Part 72 licensed ISFSI (discussed in Section 1.1 of this document; ten acres); Rancho Seco Lake and recreation area (560 acres, southeast of the industrial area); a gas-fired power plant (30 acres); a receiving warehouse; portions of a paved access road; and a residence (approximately 1.6 km (one mile) from the industrial area fence) (SMUD, 2006a; SMUD, 2007). A map of the Rancho Seco site is provided in LTP Figure 8-1, and the industrial area is detailed in LTP Figure 2-1. Aerial photographs of the industrial area before and after decommissioning are provided in the SMUD April 2007 RAI response letter (SMUD, 2007).

The land surrounding the Rancho Seco site, within a 24-kilometer (15-mile) radius, is identified by Sacramento County as remaining predominantly (70 percent) agricultural and grazing (beef cattle) for the future. Portions of the non-impacted area and impacted area (per 10 CFR Part 50; discussed in Section 3.1.1 of this document) (e.g., the south storm drain outfall area and the liquid effluent pathway area) that are located within the owner-controlled area are open range lands that local ranchers lease for cattle grazing. At present, three large-scale commercial dairies operate in the vicinity, with the closest dairy located approximately 13 km (eight miles) northwest of the site. Further, domestic use dairy cows are present at a ranch (2480 acres) located approximately one-mile east of the site. Future buildup around the site is likely be limited. A new housing development is located approximately eight km (five miles) northwest of the site (two to five-acre plots). SMUD also identifies that there may be a future buildup of new residences to the west of the site (one to ten-acre plots) (SMUD, 2006a).

Rancho Seco Lake and park activities include picnicking, camping, boating, fishing, and swimming. A 75-acre wildlife compound and a seven-mile nature trail are also within the park. Other recreation areas in the relative vicinity of the site and their approximate distance from the site include a portion of Lake Camanche, 16 km (ten miles) southeast; three golf courses, 16 km (ten miles) east and approximately the same distance at locations to the southwest and

north; and Lake Amador, 21 km (13 miles) east. Activities at the two lakes include boating, fishing, and camping. Additional reservoirs and lakes exist within 24 km (15 miles) of the site, including municipal reservoirs used for recreation (SMUD, 2006a; SMUD, 2007).

An overview diagram of the industrial area roads, rail, and pavement is provided in LTP Figure 2-33. LTP Figure 8-1 identifies transportation routes to and from the industrial area. State Route 104 is located just north of the site, connecting with State Routes 99 and 88 (to the west and east of the site, respectively) and the main access road to the industrial site and recreation area. Rail access is a spur that connects to the Union Pacific rail line (parallel to State Route 104).

3.3 Water Resources

Examination of water resources is divided into surface water and ground water. The sections that follow provide a summary of the characteristics of surface water and ground water resources at, and near, the Rancho Seco site.

3.3.1 Surface Water

Surface water in the vicinity of the site includes Clay Creek; unnamed tributaries to Clay Creek; Rancho Seco Reservoir, which was formed by damming Clay Creek in the southeast portion of the owner-controlled area with construction of the Rancho Seco plant; and an area of vernal pools and seasonal marshes. All these features are south or southeast of the industrial area. Clay Creek eventually discharges beyond the site boundaries into Hadselville Creek.

Runoff from the industrial area drains into an unnamed tributary of Clay Creek. Further, releases from the industrial area average 22,710 liters (6,000 gallons) per minute and discharge in the liquid effluent pathway downstream from the site retention basins into this

creek. Most of these releases to the creek are conveyed to the site from the Folsom South Canal. Other sources of flow in this unnamed creek are releases from the Rancho Seco Reservoir and runoff in its catchment west of the dam and up gradient from the industrial area.

Since the investigation for the development of Rancho Seco in the 1960s, flooding has not occurred within the site boundaries from storm runoff. In addition, the industrial area is not within the 100-year flood plain. However, vernal pools and seasonal marshes develop west of the industrial area and in shallow surface depressions during and after the December to March rainy season (URS Corporation, 2006a).

3.3.2 Ground Water

Ground water at the Rancho Seco site is located within the Cosumnes Subbasin of the San Joaquin Valley Ground Water Basin (URS Corporation, 2006a). This subbasin has extensive unconsolidated and semiconsolidated sedimentary deposits, approximately 608 meters (2000 feet) thick, where most of this material below the water table is likely water-bearing deposits. The uppermost water-bearing unit (the saturated zone or unconfined water table) at this site is within the Mehrten Formation about 50 meters (165 feet) below ground surface (bgs).

Additional water-bearing units are likely to exist in the deeper, older sedimentary deposits until the metamorphic bedrock is reached at about 608 meters (2000 feet) bgs. However, the actual thickness of the sedimentary rocks and their water-bearing status has not been verified because boreholes and wells on site do not extend below the Mehrten Formation (URS Corporation, 2006b).

The uppermost water-bearing unit within the Mehrten Formation holds the ground water that would most likely contain radionuclides from Rancho Seco operations if any are present. SMUD indicates that leaks, spills, and/or releases occurred during Rancho Seco operations and involved several areas including: spent fuel building; spent fuel cooler pad outside the spent

fuel building; tank farm; retention basins; barrel farm; storm drains; turbine building drains and sumps; oily water separator; and regenerant holdup tank areas. The potential for radionuclide movement to the saturated ground water zone was significantly greater for leaks associated with the spent fuel building and spent fuel cooler pad than with the other structures and areas mentioned above. Further, remediation of soil at the spent fuel building and spent fuel cooler pad is complete. As a result of information collected during this process, SMUD reported that radionuclides from Rancho Seco operations were not observed at depths as far as 7.6 meters (25 feet) below grade for the spent fuel building (SMUD, 2006a).

The uppermost water-bearing unit yield is lower beneath the site than at other locations in the subbasin. The predominant lithologies of the water-bearing unit at the site are siltstones and claystones, and the hydraulic conductivity of these lithologies range from 1×10^7 to 1×10^4 centimeters per second (4×10^6 to 4×10^3 inches per second).

In 2005, SMUD installed four groups of monitoring wells (three wells per group) within and downgradient of the industrial area. These wells were all screened-in water-bearing units of the Mehrten Formation from about 50 to 103 meters (160 to 340 feet) bgs. Because one monitoring well was dewatered, SMUD installed a replacement monitoring well with a deeper screened interval in February 2006. SMUD performed four quarterly sampling events on these 12 monitoring wells and on three existing water supply wells during Summer and Fall 2005 and Winter and Spring 2006. The ground water samples from these wells was analyzed for potential radionuclides that may have resulted from operations at Rancho Seco. However, these radionuclide concentrations were not observed to be higher than typical background levels. Further, using these quarterly sampling events, SMUD developed potentiometric ground water surfaces and ground water flow directions for the industrial area and nearby areas (up gradient and down gradient). These ground water surfaces and regional ground water surfaces are delineated in figures within the reports developed for SMUD by the URS Corporation (URS

Corporation, 2006a; URS Corporation, 2006b) and demonstrate that ground water is flowing toward the southwest.

There is extremely slow movement of the ground water and, consequently, the potential radionuclides from operations that may be in the ground water. The movement of potential radionuclides at the site in a downward direction to reach the saturated zone is estimated by SMUD to take 80 years (based on a vertical hydraulic conductivity of 2.0×10^{-4} centimeters per second (7.8×10^{-3} inches per second)). SMUD also estimates that the time for the ground water beneath the industrial area to travel to the current site boundary, a distance of 942 meters (3100 feet), is approximately 1500 years (based on a horizontal hydraulic conductivity of 2.0×10^{-4} centimeters per second (7.8×10^{-3} inches per second)) (URS Corporation, 2006a).

3.4 Human Health

Potential human health hazards associated with the Rancho Seco site range from potential exposure to very low levels of radioactivity in soils to elevated levels of radioactivity within the remaining facility and support structures and systems (e.g., remaining tunnels, lines, and sumps).

The intent of the final decommissioning activity at Rancho Seco is to reduce radiological contamination at the site to meet the NRC requirements for unrestricted release. After decommissioning activities are complete, license termination activities will verify the adequacy of the licensee's actions to meet the radiological release criteria (i.e., DCGLs) and the FSS. Unrestricted use of the site is appropriate if it meets the criteria in 10 CFR 20.1402 which specifies:

A site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE

to an average member of the critical group that does not exceed 25 mrem (0.25 mSv) per year, including that from groundwater sources of drinking water, and that the residual radioactivity has been reduced to levels that are as low as is reasonably achievable (ALARA).

The licensee (in this case, SMUD) committed to developing DCGLs commensurate with release criteria in 10 CFR 20.1402. The licensee will then demonstrate through the FSS that residual radioactivity concentrations at the site are equal to or below the DCGLs.

The DCGLs in use at the Rancho Seco site were calculated using the RESRAD (Versions 6.22 and 6.3) and RESRAD-BUILD (Versions 3.22 and 3.3) computer codes for generating DCGLs. These mathematical models translate residual radioactivity into potential radiation doses to the public, based on selected land-use scenarios, exposure pathways, and identified critical groups. The purpose of calculating the dose to the critical group is to bound the individual dose to other possible exposure groups. The critical group is a relatively small group of individuals who, because of their habits, actions, and characteristics, could receive among the highest potential radiation doses to people at some time in the future. Because the calculation uses the hypothetical critical group as the dose receptor, it is unlikely that any individual would actually receive radiation doses in excess of that calculated for the average member of the critical group. Industrial workers are the critical group used for assessing potential doses at the Rancho Seco site (SMUD, 2006a).

4.0 ENVIRONMENTAL IMPACTS

4.1 Land Use Impacts

Termination of the Rancho Seco license is not reasonably expected to result in any adverse impacts to the onsite and adjacent land use. Specifically, the agricultural, grazing, residential,

and recreational land uses in adjacent areas are expected to continue. Existing Federal and State requirements would continue (LTP Section 8.7), except for NRC licensing requirements. Additionally, local government permits and approvals would continue, including the agreement with the County of Sacramento regarding the administration, operation, and maintenance of recreational facilities at Rancho Seco Lake.

Clean-up of hazardous materials at the site is expected to occur as a result of decommissioning. At present, SMUD has removed the underground storage tanks for diesel fuel and cleaned the remaining lines, and it does not plan to add future tanks to the site. SMUD will remove the hazardous material warehouse and its contents, except for the concrete pad (SMUD, 2007). Any hazardous materials remaining at the site or generated at the site after it is released from licensing would continue to be subject to the same regulatory requirements presently in place since Rancho Seco would be maintained as an industrial site.

SMUD Asset Protection would maintain access to the site as an industrial area. The public would not have free access to the site as SMUD would maintain security of the industrial area to comply with the Federal Energy Regulatory Commission and other agencies regulating electrical distribution systems. Most of the site's infrastructure (e.g., buildings, roads, and parking lots) would not change after the site is released from licensing. The switch yard, switch yard control building, and transmission lines would remain in operation. Additional structures and buildings that would remain after license termination include the following: backup control center; training and records building; diesel buildings; nuclear service electrical building; auxiliary building; reactor containment building; spent fuel building; turbine building; machine shop; "B" warehouse; personal access portal building; IOSB receiving warehouse; and an unfinished technical support building (SMUD, 2007).

4.2 Water Resources

Termination of the license for the Rancho Seco site, using the proposed plan, would not be expected to result in potentially significant and adverse impacts to either surface water or ground water. In addition to Federal and State of California requirements, specific State and local agency permits and approvals would continue to apply to water at the site, including the California Water Resources Board diversion permit; Central Valley Regional Water Quality Control Board waste discharge agreement; Federal Water Pollution Control Act water quality certification; and Army Corps of Engineers permits addressing the dredging, discharge, and deposit of materials into tributaries of navigable waters.

4.2.1 Surface Water

After decommissioning and license termination, there will be a slight decrease in the number of impervious areas on site where fill materials will replace a small area of decommissioned buildings and impervious materials. Storm water drainage that currently exists at the site through sheet flow runoff and point discharges will also decrease by a small amount because infiltration from precipitation will increase in these fill areas.

SMUD recently renewed its National Pollutant Discharge Elimination System permit and plans to maintain the same discharge volumes that it has generated since the reactor shutdown. Both the existing water supply system and the sewage system would remain in place (URS Corporation, 2006a).

4.2.2 Ground Water

The radiological results of the ground water monitoring program, where ground water samples were collected and analyzed every three months (described in Section 3.3.2, "Ground Water,"

of this document) demonstrate that radionuclides from operations, including tritium (a radionuclide that is easily transported in water), have not contaminated the uppermost water-bearing unit at this site (URS Corporation, 2006a).

4.3 Human Health Impacts

Compliance with the requirements of 10 CFR 20.1402 for unrestricted release would ensure that the residual radioactivity left at the site would not cause the TEDE to an average member of the critical group (industrial workers) to exceed 0.25 mSv/yr (25 mrem/yr). The licensee must also reduce residual radioactivity to ALARA levels (defined in 10 CFR Part 20).

SMUD is proposing DCGLs as acceptable levels of residual radioactivity that can be left at the site and comply with the unrestricted use criteria specified in 10 CFR Part 20, Subpart E. LTP Chapter 6 (SMUD, 2006a) documents the manner in which SMUD derived the DCGLs for the Rancho Seco site. As part of its decision on whether to approve the LTP, the NRC conducted an evaluation of the adequacy of the DCGLs to protect members of the public after the proposed site releases.

In derivations of the surface soil DCGLs, an industrial worker represents the average member of the critical group. The calculations assumed the worker is exposed to contaminated soil by exposure pathways, including: (1) direct exposure; (2) inhalation of airborne radionuclides; (3) ingestion of contaminated soil; (4) drinking water from a contaminated well; and, (5) exposure to buried piping. For subsurface soil DCGLs, SMUD would apply the surface soil DCGLs to subsurface soil contamination. As detailed in LTP Section 6.6.2, subsurface contamination has been observed in discrete pockets. Further analysis (using peak of the mean dose results) demonstrates a decrease in dose with increasing depth of the discrete pockets of contamination beneath the soil. The LTP states that using the surface soil DCGL values is more conservative than developing higher DCGL values for discrete pockets of subsurface soil

contamination. As stated in LTP Section 6.6.2.6.3, the subsurface soil DCGL values would be nonconservative if the subsurface soil contamination is excavated later and spread on the surface, becoming surface soil contamination. Table 6-5 of the LTP lists DCGLs that would be used for residual radioactivity in soil.

Buried piping DCGLs are based on the assumption that the buried piping disintegrates instantaneously on license termination, allowing better evaluation of exposure to the piping contents. As such, the disintegrated media is subsurface soil and the media volume is assumed to be equal to the piping volume. The calculations assumed soil contamination to be uniformly mixed within the volume. Therefore, SMUD would apply soil DCGLs to buried piping.

The industrial worker is considered to represent the average member of the critical group for deriving the building surface DCGLs. The building occupancy scenario is used to evaluate potential exposure to fixed and removable surface radioactivity within structures that will be left on the site after license termination. The worker is assumed to be exposed to penetrating radiation from surface sources, inhalation of resuspended surface contamination, and inadvertent ingestion of surface contamination. Table 6-9 of the LTP lists the DCGL values used for residual radioactivity that remains on existing building surfaces. In addition, SMUD determined that volumetric DCGL values were needed, since some structures may be potentially contaminated from neutron activation. Volumetric contamination may also exist as a result of the migration of surface contamination into materials of construction. Table 6-10 of the LTP lists the proposed DCGL values for activated and volumetrically contaminated bulk material.

In deriving the DCGLs for embedded piping, SMUD assumed a scenario in which an industrial worker is exposed to residual radioactivity from a location within the concrete-encased piping (i.e., embedded) as well as from contaminated surfaces of the building. SMUD considers the potential dose from embedded piping to be additive along with the potential dose to the worker

from residual radioactivity from building surfaces. LTP Section 6.6.7 states that the licensee will reduce surface DCGLs by the dose contribution from embedded piping to ensure compliance with the dose criterion. However, to preclude the additional dose contribution from embedded piping, SMUD has committed to grout any piping that has residual contamination above the NRC screening levels.

For the containment building, most of the interior concrete will be removed, leaving only the carbon steel liner plate. Therefore, SMUD determined that the industrial worker scenario used to derive the structural surface DCGLs is an unrealistic scenario for application to the interior surface of the containment building. SMUD developed two sets of DCGLs for the containment building to determine the most limiting scenario in this case: (1) an industrial worker building inspection scenario; and, (2) a building renovation/demolition scenario.

SMUD determined that the building renovation/demolition scenario was more limiting than the industrial worker building inspection scenario. In LTP Section 6.6.5.4, SMUD states that it would impose a more conservative approach through application of structural surface DCGLs, derived in LTP Section 6.6.3, to the reasonably accessible surfaces of the containment building. SMUD would apply the renovation/demolition DCGLs listed in Table 6-12 of the LTP to the containment building dome surfaces. SMUD considered worker safety during remediation and FSS activities in selecting the application of the containment building DCGLs.

Two additional exposure scenarios that SMUD analyzed were (1) a resident farmer scenario (in place of the industrial use scenario) and (2) grazing cattle adjacent to the industrial area. The calculated total dose for a resident farmer scenario within the currently licensed site (industrial area) exceeds the unrestricted use limit of 0.25 mSv/yr (25 mrem/yr) for approximately 30 years following the first phase of release and license termination. LTP Section 6.8.2.4 describes this information and the reason it is unlikely that the current impacted area for the NRC-licensed industrial site would transfer from industrial use to the public during the next 30 years. Hence, the resident farmer is not a reasonably foreseeable scenario and would not be considered for

compliance with 10 CFR Part 20 criteria (NRC, 2006a). Further, the grazing cattle scenario (LTP Section 6.8.3) analyzes the dose impact of maintaining an industrial worker scenario within the industrial area while allowing cattle grazing in the areas outside of the industrial area and consumption of meat from the cattle by an offsite member of the public. The calculation identified a maximum potential dose (peak of the mean) of approximately 0.05 mSv/yr (5.13 mrem/yr).

As discussed in Section 1.1 of this document, the Rancho Seco site would be released from NRC licensing for unrestricted use in two phases. The approach identified in the LTP, using DCGLs to establish cleanup levels that meet the Subpart E criteria and demonstrating compliance with the DCGLs using a FSS, would be applied during both phases.

The NRC staff evaluated the appropriateness of the postulated exposure scenarios and the methodology used for deriving the DCGLs. The staff has concluded that any potential radiation exposures from residual radioactivity that would be present after license termination has not been underestimated by SMUD and that such exposure levels are protective of the general public.

The SMUD plan would use a series of surveys and the FSS to demonstrate compliance with the radiological release criteria consistent with the Multi-Agency Radiation Survey and Site Investigation Manual (NRC, 2000). As identified in previous sections of this document, planning for the FSS involves an iterative process that requires appropriate site characterization (on the basis of the potential residual radionuclide concentration levels relative to the DCGLs) and formal planning. SMUD has committed to an integrated design that would address the selection of appropriate survey and laboratory instrumentation and procedures, including a statistically-based measurement and sampling plan for collecting and evaluating the data needed for the FSS. The staff has determined that the sampling strategy and survey data evaluation methodology presented in the LTP are adequate. Provided that the DCGLs are

demonstrated through FSS, there would be no anticipated adverse impacts to human health from approval of license termination, as described in the final rule “Radiological Criteria for License Termination” (62 FR 39058).

4.4 Cumulative Impacts

The NRC approval of the SMUD Rancho Seco LTP (the proposed action), when combined with known effects on notable resources at the site, is not anticipated to result in any cumulative impacts. Rather, decommissioning and remediation of the Rancho Seco site, resulting in the release of the site for future unrestricted use, would reduce the opportunity for potential negative cumulative impacts.

5.0 AGENCIES AND PERSONS CONSULTED AND SOURCES USED

The NRC staff prepared this EA with consultation from the State of California Office of Historic Preservation. The NRC began the consultation by letter dated October 30, 2006 (NRC, 2006b). The State Historic Preservation Officer responded in a letter dated February 15, 2007 (Donaldson, 2007), with clarifying questions, information requests, and considerations. The NRC responded with the requested information and clarification by letter dated March 12, 2007 (NRC, 2007a). Based on a review of this letter, the Historic Preservation Officer’s representative suggested that the NRC further evaluate whether or not its action on the LTP is an undertaking (as defined in 36 CFR Part 800, “Protection of Historic and Cultural Properties”). The NRC conducted the evaluation and provided the determination that the action is not an undertaking to the State Historic Preservation Officer in a letter dated March 16, 2007 (NRC, 2007b). The representative agreed to mutually conclude the consultation. Therefore, the NRC has complied with Section 106 of the National Historic Preservation Act on this matter.

The NRC staff has determined, based on the scope of this action, that the proposed action will not affect listed species or critical habitat. Therefore, no further consultation is required under Section 7 of the Endangered Species Act.

The staff provided a draft of this EA to the State of California Radiological Health Branch (the Branch) for review by letter dated April 25, 2007 (NRC, 2007c), including a request for comments within 30 days. The request was also forwarded electronically to a Branch contact person. During the week of June, 11, 2007, the NRC staff followed-up with the Branch to determine if the Branch had any plans to comment. The Branch representative indicated that he may not be forwarding any comments. Subsequently, the Branch representative replied electronically on July 3, 2007, and stated that the Branch did not have any comments (CA RHB, 2007).

6.0 CONCLUSION

The NRC has prepared this EA to evaluate the environmental impact of issuing a license amendment to Facility Operating License No. 50-321, that would approve the SMUD LTP. On the basis of this EA, the NRC staff concludes that there are no significant environmental impacts and the license amendment does not warrant the preparation of an environmental impact statement. Accordingly, the NRC staff recommends a finding of no significant impact determination for this action.

7.0 LIST OF PREPARERS

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8.0 LIST OF ACRONYMS AND ABBREVIATIONS

ADAMS	Agencywide Documents Access and Management System
ALARA	as low as is reasonably achievable
bgs	below ground surface
CFR	<i>Code of Federal Regulations</i>
DCGL	derived concentration guideline limit
EA	environmental assessment
FR	<i>Federal Register</i>
FSS	final status survey
IOSB	interim onsite storage building
ISFSI	independent spent fuel storage installation
km	kilometer
LTP	license termination plan
mrem	millirem
mSv	millisievert

NEPA	National Environmental Policy Act
NRC	U.S. Nuclear Regulatory Commission
PSDAR	postshutdown decommissioning activities report
RAI	request for additional information
SER	safety evaluation report
SMUD	Sacramento Municipal Utility District
TEDE	total effective dose equivalent
yr	year

9.0 REFERENCES

10 CFR Part 20. *Code of Federal Regulations*, Title 10, “Energy,” Part 20, “Standards for Protection Against Radiation.”

10 CFR Part 50. *Code of Federal Regulations*, Title 10, “Energy,” Part 50, “Domestic Licensing of Production and Utilization Facilities.”

10 CFR Part 61. *Code of Federal Regulations*, Title 10, “Energy,” Part 61, “Licensing Requirements for Land Disposal of Radioactive Waste.”

10 CFR Part 72. *Code of Federal Regulations*, Title 10, “Energy,” Part 72, “Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste.”

36 CFR Part 800. *Code of Federal Regulations*, Title 36, “Parks, Forests, and Public Property,” Part 800, “Protection of Historic and Cultural Properties.”

61 FR 39278. "Decommissioning of Nuclear Power Reactors." *Federal Register*. July 29, 1996.

62 FR 39058. "Radiological Criteria for License Termination. Final Rule." *Federal Register*. July 21, 1997.

CA RHB, 2007. "E-Mail from Steve Hsu, California Department of Public Health, Radiological Health Branch (RHB), to John Hickman, NRC, stating that the RHB had no comments on the EA for the LTP." July 3, 2007. ADAMS Accession No. ML072000415

Donaldson, 2007. "Re: Section 106 Consultation for Rancho Seco Nuclear Generating Station License Termination Plan, Sacramento County, CA." February 15, 2007. Letter (NRC061102A) to J. Davis, NRC, from M. Donaldson, State Historic Preservation Officer of the State of California, Office of Historic Preservation. Sacramento, CA. ADAMS Accession No. ML070610480.

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NRC, 1988. "Final Generic Environmental Impact Statement on the Decommissioning of Nuclear Facilities." August 1988. U.S. Nuclear Regulatory Commission, Washington, DC.

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NRC, 2000. "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)." August 2000. NUREG-1575, Rev. 1. U.S. Nuclear Regulatory Commission, Washington, DC.

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NRC, 2005. "U.S. Nuclear Regulatory Commission Docket No. 72-11 Sacramento Municipal Utility District Issuance of Environmental Assessment and Finding of No Significant Impact Regarding an Amendment." March 24, 2005. Washington, DC. ADAMS Accession No. ML050830420.

NRC, 2006a. "Consolidated Decommissioning Guidance: Characterization, Survey, and Determination of Radiological Criteria, Volume 2." September 2006. NUREG-1757, Rev. 1. U.S. Nuclear Regulatory Commission, Washington, DC.

NRC, 2006b. "Request for Comments Regarding Cultural and Historic Resources for the Rancho Seco Nuclear Generating Station License Termination Plan (TAC No. L52668)." October 30, 2006. Letter to M. Donaldson, State Historic Preservation Officer for the State of California, from J. Davis, NRC. Washington, DC. ADAMS Accession No. ML062860613.

NRC, 2007a. "Response to Requested Information Regarding Cultural and Historic Resources for the Rancho Seco Nuclear Generating Station License Termination Plan (TAC No. L52668)."

March 12, 2007. Letter to M. Donaldson, State Historic Preservation Officer for the State of California, from G. Suber, NRC. Washington, DC. ADAMS Accession No. ML070680169.

NRC, 2007b. "Follow-Up to Letter and Phone Discussion Regarding Cultural and Historic Resources for the Rancho Seco Nuclear Generating Station License Termination Plan."

March 16, 2007. Letter to M. Donaldson, State Historic Preservation Officer for the State of California, from G. Suber, NRC. Washington, DC. ADAMS Accession No. ML070750080.

NRC, 2007c. "Draft Environmental Assessment Related to the License Termination Plan for the Rancho Seco Nuclear Generating Station." April 25, 2007. Letter to Ed Bailey, Radiation Program Director, Radiological Health Board, State Department of Health Services, from J. Hickman, NRC. Washington, DC. ADAMS Accession No. ML071100166.

SMUD, 1991. "Proposed Decommissioning Plan." May 20, 1991. Letter to S. Weiss, NRC, from D. Keuter, Rancho Seco Nuclear Generating Station. Herald, CA. ADAMS Accession No. LL9106030039.

SMUD, 1997. "Rancho Seco Post-Shutdown Decommissioning Activities Report." March 20, 1997. Letter (MPC&D) to NRC Document Control Desk from S. Redeker, Rancho Seco Nuclear Generating Station. Herald, CA. ADAMS Accession No. LL9704210009.

SMUD, 2006a. "Rancho Seco License Amendment Request and License Termination Plan, Revision 0." April 12, 2006. Letter (MPC&D 06-035) to NRC Document Control Desk from M. Bua, Rancho Seco Nuclear Generating Station. Herald, CA. ADAMS Accession No. ML061430211.

SMUD, 2006b. "Rancho Seco Historical Site Assessment, Revision 1." August 3, 2006. Letter (NQA 06-028) to NRC Document Control Desk from R. Jones, Rancho Seco Nuclear Generating Station. Herald, CA. ADAMS Accession No. ML062220351.

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URS Corporation, 2006b. "Hydrogeological Characterization of the Rancho Seco Nuclear Generating Station. Revision 1." Prepared for the Sacramento Municipal Utility District. ADAMS Accession No. ML060810160.

II. Finding of No Significant Impact

On the basis of this EA, the NRC has concluded that approval of the license termination plan for the Rancho Seco Nuclear Generating Station will not result in significant environmental

impacts, and that the license termination does not warrant the preparation of an environmental impact statement. Accordingly, it has been determined that a Finding of No Significant Impact is appropriate.

III. Further Information

Documents related to this action are available electronically at the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm.html>. From this site, you can access the NRC's Agency Wide Documents Access and Management System (ADAMS), which provides text and image files of NRC's public documents. The ADAMS accession numbers for the documents related to this notice are identified in the reference section of the EA. If you do not have access to ADAMS, or if there are problems in accessing the documents located in ADAMS, contact the NRC Public Document Room (PDR) Reference staff at 1-800-397-4209 or 301-415-4737, or by electronic mailing at pdr@nrc.gov.

These documents may also be viewed electronically on the public computers located at the NRC's PDR at One White Flint North, 11555 Rockville Pike (first floor), Rockville, MD 20852. The PDR reproduction contractor will copy documents for a fee.

Dated at Rockville, Maryland, this 2nd day of November, 2007.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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