



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

April 12, 2017

Mr. John Sauger  
Executive Vice President  
Chief Nuclear Officer Reactor D & D  
EnergySolutions  
2701 Deborah Avenue  
Zion, IL 60099

SUBJECT: LA CROSSE BOILING WATER REACTOR – APPROVAL OF PARTIAL SITE  
RELEASE FOR POSSESSION ONLY LICENSE NO. DPR-45 (CAC NO. L53136)

Dear Mr. Sauger:

By letter dated to the U.S. Nuclear Regulatory Commission (NRC) dated June 27, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16181A068), LaCrosseSolutions, LLC (LS or the licensee) submitted a request to the NRC for approval of a partial site release at the La Crosse Boiling Water Reactor (LACBWR). The proposed action would remove and release the portions of the site which have been classified as radiologically non-impacted from LACBWR's Possession Only License No. DPR-45, which was issued pursuant to Part 50, "Domestic Licensing of Production and Utilization Facilities," of Title 10 of the *Code of Federal Regulations* (10 CFR). The proposed site release would release approximately 88 of the 165 acres that currently comprise the LACBWR site.

Specifically, Section 50.83, "Release of part of a power reactor facility or site for unrestricted use," of Title 10 of the *Code of Federal Regulations* (10 CFR) requires written approval from the NRC prior to release for unrestricted use of any part of a site at a nuclear power plant before receiving approval of a license termination plan. The licensee's application contained: (1) the results of evaluations performed to determine the effect of releasing the property, including dose to the public, effluent release, and environmental monitoring; (2) a description of the land to be released; (3) a schedule for release of the property; (4) results of the 10 CFR 50.59, "Changes, tests, and experiments," evaluation performed; and (5) environmental impact conclusions.

In accordance with 10 CFR 50.83, the NRC staff reviewed the overall effects that the early release of the property would have on radiation doses and whether the classification of the release as non-impacted was justified. The NRC also held a public meeting in the vicinity of LACBWR on September 20, 2016, to obtain public comments associated with the partial site release (see public meeting summary dated October 17, 2016, at ADAMS Accession No. ML16286A050). The public comments are addressed in Enclosure 4 of the associated meeting summary. None of the comments resulted in the NRC making changes to the review of the partial site release request. The NRC staff has completed its review of the LACBWR partial site release and approves the proposed release of the 88 acres from the LACBWR 10 CFR Part 50 license. A copy of the Safety Evaluation is also enclosed.

The NRC's review did not identify any environmental concerns associated with the release of the 88-acre property from LACBWR's 10 CFR Part 50 license. The environmental impacts

associated with the plant will not change as a result of this property release. Therefore, the environmental impacts associated with the proposed release of the property are bounded by previously issued environmental impact statements for LACBWR. Based on the above, the NRC determined that preparation of an Environmental Assessment was not required.

You are reminded that Paragraph (g) of 10 CFR 50.75, "Reporting and recordkeeping for decommissioning planning," requires keeping records of information important to the safe and effective decommissioning of the facility, which includes the plant site, until the license is terminated by the Commission. In addition, 10 CFR 50.75(g)(4)(iii) requires records be retained in relation to: (1) the release and final disposition of any property recorded in 10 CFR 50.75(g)(4)(i); (2) the historical site assessment performed for the release; (3) radiation surveys performed to support release of the property; (4) submittals to the NRC made in accordance with 10 CFR 50.83; and (5) the methods employed to ensure that the property met the radiological criteria of Subpart E, "Radiological Criteria for License Termination," to 10 CFR Part 20, "Standards for Protection Against Radiation," at the time the property was released.

In accordance with 10 CFR Part 2, "Agency Rules of Practice and Procedure," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's ADAMS. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions regarding this action, please contact Marlayna Vaaler of my staff at 301-415-3178, or by e-mail at [Marlayna.Vaaler@nrc.gov](mailto:Marlayna.Vaaler@nrc.gov).

Sincerely,

**/RA A. Kock for/**

John R. Tappert, Director  
Division of Decommissioning, Uranium Recovery,  
and Waste Programs  
Office of Nuclear Material Safety  
and Safeguards

Docket Nos.: 50-409 and 72-046

License No.: DPR-45

Enclosure:

1. Safety Evaluation

cc: La Crosse Boiling Water  
Reactor Service List w/ Enclosure

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Docket Nos.: 50-409 and 72-046  
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Enclosure:

1. Safety Evaluation

cc: La Crosse Boiling Water  
Reactor Service List w/ Enclosure

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**ADAMS Accession No. ML16250A200**

**\*via email**

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**OFFICIAL RECORD COPY**

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**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001**

SAFETY EVALUATION BY THE OFFICE OF  
NUCLEAR MATERIAL SAFETY AND SAFEGUARDS  
RELATED TO PARTIAL SITE RELEASE REQUEST FOR  
POSSESSION ONLY LICENSE NO. DPR-45  
LACROSSESOLUTIONS, LLC  
DAIRYLAND POWER COOPERATIVE  
LA CROSSE BOILING WATER REACTOR  
DOCKET NOS. 50-409 AND 72-046

1.0 INTRODUCTION

By letter dated to the U.S. Nuclear Regulatory Commission (NRC) dated June 27, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16181A068), LaCrosseSolutions, LLC (LS or the licensee) submitted a request to the NRC for approval of a partial site release at the La Crosse Boiling Water Reactor (LACBWR). The proposed action would remove and release the portions of the site which have been classified as radiologically non-impacted from LACBWR's Possession Only License No. DPR-45, which was issued pursuant to Part 50, "Domestic Licensing of Production and Utilization Facilities," of Title 10 of the *Code of Federal Regulations* (10 CFR). The proposed site release would release approximately 88 of the 165 acres that currently comprise the LACBWR site.

2.0 REGULATORY EVALUATION

10 CFR 50.83, "Release of part of a power reactor facility or site for unrestricted use," establishes the following requirements:

- a. Prior written NRC approval is required to release part of a facility or site for unrestricted use at any time before receiving approval of a license termination plan. Section 50.75, "Reporting and recordkeeping for decommissioning planning," specifies recordkeeping requirements associated with partial release. Nuclear power reactor licensees seeking NRC approval shall:

Enclosure

1. Evaluate the effect of releasing the property to ensure that –
    - i. The dose to individual members of the public does not exceed the limits and standards of Subpart D, “Radiation Dose Limits for Individual Members of the Public,” 10 CFR Part 20, “Standards for Protection Against Radiation;”
    - ii. There is no reduction in the effectiveness of emergency planning or physical security;
    - iii. Effluent releases remain within license conditions;
    - iv. The environmental monitoring program and offsite dose calculation manual are revised to account for the changes;
    - v. The siting criteria of 10 CFR Part 100, “Reactor Site Criteria,” continue to be met; and
    - vi. All other applicable statutory and regulatory requirements continue to be met.
  2. Perform a Historical Site Assessment of the part of the facility or site to be released; and
  3. Perform surveys adequate to demonstrate compliance with the radiological criteria for unrestricted use specified in 10 CFR 20.1402, “Radiological criteria for unrestricted use,” for impacted areas.
- b. For release of non-impacted areas, the licensee may submit a written request for NRC approval of the release if a license amendment is not otherwise required. The request submittal must include:
1. The results of the evaluations performed in accordance with paragraphs (a)(1) and (a)(2) of 10 CFR 50.83;
  2. A description of the part of the facility or site to be released;
  3. The schedule for release of the property;
  4. The results of the evaluations performed in accordance with 10 CFR 50.59, “Changes, tests, and experiments;” and
  5. A discussion that provides the reasons for concluding that the environmental impacts associated with the licensee’s proposed release of the property will be bounded by appropriate previously issued environmental impact statements.
- c. After receiving an approval request from the licensee for the release of a non-impacted area, the NRC shall:

1. Determine whether the licensee has adequately evaluated the effect of releasing the property as required by paragraph (a)(1) of 10 CFR 50.83;
2. Determine whether the licensee's classification of any release areas as non-impacted is adequately justified; and
3. Upon determining that the licensee's submittal is adequate, inform the licensee in writing that the release is approved.

"Non-impacted areas" are defined in 10 CFR 50.2, "Definitions," as "the areas with no reasonable potential for residual radioactivity in excess of natural background or fallout levels."

### 3.0 BACKGROUND

The LACBWR was an Atomic Energy Commission (AEC) Demonstration Project Reactor that first went critical in 1967, commenced commercial operation in November 1969, and was capable of producing 50 megawatts electric. The LACBWR is located on the east bank of the Mississippi River in Vernon County, Wisconsin, and is co-located with the Genoa Generating Station, which is a coal-fired electrical power plant that is still in operation. The Allis-Chalmers Company was the original licensee; the AEC later sold the plant to the Dairyland Power Cooperative (DPC) and granted it Provisional Operating License No. DPR-45 on August 28, 1973 (ADAMS Accession No. ML17080A423).

The LACBWR permanently ceased operations on April 30, 1987 (ADAMS Accession No. ML17080A422), and reactor defueling was completed on June 11, 1987 (ADAMS Accession No. ML17080A420). By letter dated August 18, 1988 (ADAMS Accession No. ML17080A421), the NRC amended DPC's Provisional Operating License No. DPR-45 to a Possession Only License to reflect the permanently defueled configuration at LACBWR.

The NRC issued an order to authorize decommissioning of LACBWR and approve the licensee's proposed Decommissioning Plan (DP) on August 7, 1991 (ADAMS Accession No. ML17080A454). Because the NRC approved DPC's DP before August 28, 1996, pursuant to 10 CFR 50.82, the DP is considered the Post-Shutdown Decommissioning Activities Report (PSDAR) for LACBWR. The PSDAR public meeting was held on May 13, 1998, and subsequent updates to the LACBWR decommissioning report have combined the DP and PSDAR into the "LACBWR Decommissioning Plan and Post-Shutdown Decommissioning Activities Report" (D-Plan / PSDAR). DPC constructed an onsite Independent Spent Fuel Storage Installation (ISFSI) under its 10 CFR Part 72 general license, and completed the movement of all 333 spent nuclear fuel elements from the Fuel Element Storage Well to dry cask storage at the ISFSI by September 19, 2012 (ADAMS Accession No. ML12290A027). The remaining associated buildings and structures are ready for dismantlement and decommissioning activities.

By order dated May 20, 2016 (ADAMS Accession No. ML16123A073), the NRC approved the direct transfer of Possession Only License No. DPR-45 for LACBWR from DPC to LS, a wholly-owned subsidiary of EnergySolutions, LLC, and approved a conforming license amendment, pursuant to 10 CFR 50.80, "Transfer of licenses," and 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," to reflect the change. The

order was published in the *Federal Register* on June 2, 2016 (81 FR 35383). The transfer assigns DPC's licensed possession, maintenance, and decommissioning authorities for LACBWR to LS in order to implement expedited decommissioning at the LACBWR site. Decommissioning of LACBWR is scheduled to be completed in 2018.

By letter dated June 27, 2016 (ADAMS Accession No. ML16200A095), LS submitted the License Termination Plan (LTP) for LACBWR in accordance with 10 CFR 50.82(a)(9). The LTP includes a site characterization to ensure that final radiation surveys (FRS) cover all areas where contamination existed, remains, or has the potential to exist or remain; identification of remaining dismantlement activities; plans for site remediation; a description of the FRS plan to confirm that LACBWR will meet the release criteria in Subpart E, "Radiological Criteria for License Termination," to 10 CFR Part 20; dose-modeling scenarios that ensure compliance with the radiological criteria for license termination; an estimate of the remaining site-specific decommissioning costs; and a supplement to the Environmental Report describing any new information or significant environmental changes associated with proposed license termination activities. The LACBWR LTP is currently being reviewed by the NRC.

LS submitted an additional letter on June 27, 2016, previously identified above (ADAMS Accession No. ML16181A068), which requested the 10 CFR 50.83 partial site release. LS stated in this second letter that the reference documents supporting the partial site release analysis were submitted as part of its request for approval of the LACBWR LTP. With respect to its partial site release request, LS intends to remove and release from its 10 CFR Part 50 license the portions of the site that the Historical Site Assessment (HSA) characterization process has classified as radiologically non-impacted, in accordance with 10 CFR 50.83(b). The property that is subject to this release request is an approximately 88-acre parcel of land that includes the Genoa Generating Station operating coal plant. This land is referred to in this document as "the property"; maps of the property are included in the licensee's submittal. The 88-acre parcel of land that is subject to this request is sub-divided into five survey units, which the licensee has characterized as non-impacted. Specifically, the parcels / survey units proposed for release are:

1. Survey unit L4012103 contains the Genoa Generating Station as well as ancillary facilities and grounds areas.
2. Survey unit L4012105 contains the coal yard and surrounding grounds.
3. Survey unit L4012106, located in the southern most area of the site, is an open land area surrounding the capped coal ash pile area and is also a public access area to the Mississippi River for boaters, which does not allow camping in the area.
4. Survey unit L4012107 is a steep sloped area to the east of the LACBWR site that is wooded and has no residences.
5. Survey unit L4012108 is an area of open land with no residences that is east of the LACBWR site and includes right of way access for the railroad and U.S. Highway 35.



Portions of the 88-acre property have limited access for personnel or vehicle transit due to the presence of thick underbrush, trees, natural grasses, or steep sloped eroded land.

Non-impacted areas have no reasonable potential for residual radiological contamination because historical information indicates there was no known impact from site operations. The non-impacted areas include the outlying open land areas of the site, as well as contiguous areas and facilities that have not been impacted by site operations based upon the location(s) of licensed operations, site use, topography, site discharge locations, and other site physical characteristics.

#### 4.0 TECHNICAL EVALUATION

##### 4.1 Licensee's Assessment of the Property to be Released

In accordance with the guidance provided in NUREG-1575, "Multi Agency Radiation Survey and Site Investigation Manual (MARSSIM)," Section 3.0, an HSA for the LACBWR site was performed and documented in November 2015 (ADAMS Accession No. ML17037C912). Historical information, including any 10 CFR 50.75(g) files, employee interviews, radiological incident reports, pre-operational survey data, spill reports, special surveys (e.g., site aerial surveys, marine fauna and sediment surveys), operational survey records, and annual radiological operating reports (including sampling of air, groundwater, estuary water, milk, invertebrates, fish, and surface vegetation) were reviewed and compiled for this investigation.

The HSA was a detailed investigation to collect existing information dating from the start of LACBWR's activities related to radioactive materials or other contaminants for the site and its surroundings. The HSA focused on historical events and routine operational processes that resulted in the contamination of the plant systems, onsite buildings, surface and subsurface soils within the radiologically controlled area (RCA) as well as support structures, open land areas, and subsurface soils outside of the RCA, but within the owner controlled area. The information compiled by the HSA was used to establish initial area survey units and classifications and eventually, input into the development of potential site-specific derived concentration guideline levels (DCGLs), development of remediation plans, and the design of the FRS for the LTP. The scope of the HSA included potential contamination from radioactive materials, hazardous materials, and state-regulated materials.

The HSA investigation was designed to obtain sufficient information to provide initial classification of the site land areas and structures as impacted or non-impacted. Impacted areas have a potential for contamination (based on historical data) or contain known contamination (based on past or preliminary radiological surveillance). As stated in Section 2.0 above, "non-impacted area" is defined in 10 CFR 50.2 as "the areas with no reasonable potential for residual radioactivity in excess of natural background or fallout levels."

Based on a review of the operating history of the facility, historical incidents, and operational radiological surveys as documented in the HSA, as well as subsequent additional site characterization surveys performed in 2015 to support a non-impacted classification, the licensee deemed the subject open land areas and buildings to be not impacted by previous licensed activities or materials, or by ongoing decommissioning activities. The licensee's review also indicated that: (1) the property has not been used for plant operations; (2) the property has

not been used for storage or burial of any radioactive material or waste; and (3) there are no event records that any spills, leaks, or uncontrolled release of radioactive material have ever occurred on the property, either reportable or non-reportable. Therefore, the licensee determined that the “non-impacted” classification for the property was appropriate.

The licensee evaluated the property to be released with respect to the criteria set forth in 10 CFR 50.83(a)(1)(i)-(vi) and made the following declarations:

- i. The dose to individual members of the public does not exceed the limits and standards of 10 CFR Part 20, Subpart D, because of the strict control of radioactive effluents, implementation of as low as reasonably achievable (ALARA) principles, use of radiation monitoring systems within the plant, and the surveillance and analyses performed as part of the offsite environmental monitoring program. The release of this property does not change any controls used to comply with dose limits for individual members of the public. LS determined that the property was never used for any radiological purposes.
- ii. The potential impact on the overall effectiveness of emergency planning and/or physical security at the site has been evaluated. No credit is taken for this property in either the LACBWR Emergency Plan or Security Plan. Therefore, the release of this property has no adverse effect on either plan.
- iii. Effluent releases remain within license conditions; in addition, the plant programs to monitor and maintain effluent releases within license conditions remain in effect and the release of this property for unrestricted use does not impact those programs. Therefore, the effluent releases from LACBWR will remain within license limits.
- iv. The release of this property does not have any effect on the environmental monitoring program and offsite dose calculation manual, and neither requires revision as a result of this property release because the owner controlled boundary will remain the same.
- v. The siting criteria of 10 CFR Part 100 continue to be met. The release of the subject property has been reviewed with respect to the siting criteria and it has been determined that the requirements of 10 CFR Part 100 are either not impacted or are not applicable. In addition, the reactor vessel has been defueled and was removed from the site for disposal in 2008, and all of the spent fuel has been relocated to the south end of the site for storage in the licensed ISFSI area.
- vi. All other applicable statutory and regulatory requirements continue to be met. There are no changes to the LACBWR policies and procedures, thereby ensuring that statutory and regulatory requirements continue to be met as a result of this property release.

The licensee concluded that the proposed property release has no impact on LACBWR’s continued compliance with applicable NRC regulatory requirements and standards.

#### 4.2 NRC Staff Evaluation of the Property to be Released

The LACBWR site encompasses approximately 165 acres and is located in southwestern Wisconsin, in Vernon County, on the eastern shore of the Mississippi River, about one mile

south of the Village of Genoa, Wisconsin and approximately 19 miles south of the city of La Crosse, Wisconsin. The LACBWR site is relatively isolated as it is bordered to the north by right of ways for the railroad and U.S. Highway 35, to the west by the Mississippi River, to the south by a U.S. Wildlife Fish and Game Refuge, and to the east by U.S. Highway 35 and the railroad property. There are no schools or hospitals within one mile of the LACBWR site and there are no residences within 1,000 feet of LACBWR structures.

The NRC staff has reviewed the licensee's application for the release of part of the LACBWR site for unrestricted use. The property proposed for unrestricted release totals approximately 88 acres and represents the non-impacted open land areas owned by DPC outside of the footprint of the 2.5-acre, fence-enclosed Radiologically Restricted Area and its surrounding 4-acre buffer area. Release of the property for unrestricted use will not result in public or environmental exposure to radioactive contamination. There are no known records of any spills, leaks, or uncontrolled releases of radioactive material within the property. The property was not used for any activities that could have radiologically contaminated the property. Therefore, the NRC staff has determined that release of this property should not degrade the environment, impact public health, or impact local land uses.

A historical cultural review was performed when Provisional Operating License DPR-45 was converted to a full-term operating license for LACBWR after purchase of the plant by DPC in August 1973. No historic properties or cultural sites were identified in the immediate area of the property. This assessment was documented in the NRC's Final Environmental Statement related to operation of LACBWR, which was captured in NUREG-0191 (ADAMS Accession No. ML17038A257), dated April 1980, and affirmed by the State Historical Society of Wisconsin. The release of the property does not involve any disturbance of the ground. Therefore, release of the property will not affect any known historic or cultural sites. In addition, the proposed action will not result in any change to non-radiological plant effluents, and thus will have no impact on either air or water quality. Finally, as the proposed action is primarily procedural and administrative in nature, the NRC staff has determined that the proposed action will have no effect on listed species or critical habitat.

No other environmental concerns associated with the release of the 88-acre property were identified, and the release of the property will not impact ongoing decommissioning activities. The release of the approximate 88 acre parcel will cause no increase in offsite dose consequences and no change in effluent releases, and the LACBWR radiological monitoring program will account for the revised site area boundary. As such, no increases in adverse radiological effects are anticipated. The environmental impacts associated with the plant will not change as a result of this property transfer. Therefore, the NRC staff has determined that the environmental impacts associated with the proposed unrestricted release of the property are bounded by the 1980 environmental impact statement (NUREG-0191).

The NRC staff reviewed the licensee's justification for concluding that the property to be released is a non-impacted area as defined in 10 CFR 50.2. Although 10 CFR 50.83(a)(3) only requires the performance of radiological surveys to demonstrate compliance with the radiological criteria for unrestricted use specified in 10 CFR 20.1402 **for impacted areas** (emphasis added), the licensee conducted surveys of the property in order to verify the initial conclusions that the areas to be released are non-impacted. The characterization survey was designed and executed using the guidance provided in MARSSIM and NUREG-1757,

Volume 2, Revision 1, "Consolidated Decommissioning Guidance – Characterization, Survey, and Determination of Radiological Criteria, Final Report."

The licensee's surveys for the non-impacted areas included a combination of systematic and biased survey measurement locations and scan areas. The biased survey designs used known information to select locations for scan measurements and/or to collect samples. The systematic survey designs relied upon selected scan measurements and/or sample collection locations chosen at random or by using a systematic sampling design with a random start. Buildings that were classified as non-impacted received surveys including scanning, direct, and removable contamination surveys. Based on the results of the beta scanning surveys, static measurements for alpha and beta were taken at the highest observed detection locations during the scanning surveys. Removable alpha and beta contamination surveys were also performed at the location of each static measurement.

Within each of the land survey units specified, the survey focused primarily on surface (0 to 15 cm) and subsurface (15 to 100 cm) soil samples that were included in the survey design. Surface scanning using was performed in one percent of each land survey unit focusing on areas that have been disturbed in the past or low point areas when available. Of the 282,360 square meters of accessible surface area within the property, 3,025 square meters were scanned; alarm set points for the detection instrument were set at the observed background plus the Minimum Detectable Count Rate of the instrument. Elevated areas identified during surface scanning were flagged and monitored with a portable multi-channel analyzer to evaluate the elevated area for presence of LACBWR radionuclides of concern. The sample and static measurement locations were based on a random design to ensure an unbiased survey.

The characterization survey of each survey unit consisted of both qualitative evaluations and quantitative analysis results. The qualitative evaluation consisted of investigative and verification gamma scans; Minimum Detectable Concentrations (MDC) and gamma scanning sensitivities were estimated based on the assumed geometry and the potential plant-derived gamma emitting radionuclides that may be present. Quantitative analysis results were obtained from radionuclide specific analysis of surface soil media using a calibrated counting geometry. Analysis times were set to achieve the required MDCs that were based on the expected Cesium-137 (Cs-137) background due to global fallout. Based upon the results of the characterization surveys performed of the open land areas and buildings within the property, the licensee concluded that a non-impacted classification for these areas was appropriate. Cs-137 was the only radionuclide positively identified that could potentially be classified as facility generated from previous operation of LACBWR. However, the concentrations observed were well within the range of activity defined as background due to global fallout.

The NRC staff noted during its review of the LACBWR partial site release request, as well as its ongoing review of the LACBWR LTP, that several locations were identified in the non-impacted areas with spectrometry results greater than the achieved MDC, specifically for tritium (H-3), Carbon-14 (C-14), Iron-55 (Fe-55), Nickel-63 (Ni-63), and Strontium-90 (Sr-90). The activity at these locations was further examined by the licensee using the TestAmerica laboratory and determined to be "false-positive" results, considered likely to be the result of counting statistics or laboratory interference during liquid scintillation analysis. The LACBWR LTP states that:

Based on operational history, the radionuclide ratios, similar sporadic positive results in samples from impacted areas, and the concentrations of Cs-137 which are consistent with natural background and comprise 88 percent of the site-specific radionuclide mixture, the sporadic positive analytical results are very unlikely to represent the actual presence of plant-derived radionuclides in these survey units. This conclusion includes the H-3 results which, while reported at slightly higher levels relative to the MDC, are still much more likely to be the result of laboratory interference during liquid scintillation analysis than due to the presence of plant-derived activity.

The staff evaluated the licensee's statements and results from both the LTP and TestAmerica evaluations and determined that for C-14, Fe-55, Ni-63, and Sr-90, the analyses showed activity slightly above the MDC, but in all cases below the licensee-specified action level of 5 picoCuries per gram (pCi/g) (1 pCi/g for Sr-90). As such, the staff concludes that the presence of these radionuclides is likely the result of a false-positive scenario (i.e., due to counting statistics or laboratory interference), rather than attributable to plant-derived activity or past operations.

However, for the analysis of H-3, which indicated activity ranging from 1.74 to 32 times the MDC, it was more difficult to establish that the characterization results were the result of "laboratory interference during liquid scintillation analysis [rather] than due to the presence of plant-derived activity." In order to determine if the H-3 results continue to support the classification of the land areas to be released as non-impacted, the NRC staff evaluated the TestAmerica results for H-3 and noted that (1) of the twelve samples analyzed, only one demonstrated activity at several times the MDC and (2) even were that sample considered an actual data point, the concentration detected is only a small fraction (approximately 13 percent) of the surface soil screening values found in NUREG-1757, Volume 1, Revision 2, "Consolidated Decommissioning Guidance – Decommissioning Process for Materials Licensees." The NRC staff determined that the H-3 concentrations detected are not likely attributable to plant-derived activity, would have already been accounted for as part of the source term in the effluent monitoring and reporting requirements for the plant if they were a result operational activities, and/or may be the result of other non-plant activities. As such, even if the H-3 results are not considered false-positives, the concentration and dose associated with each sample is trivial and does not change the classification of the land areas as non-impacted.

In order to confirm the licensee's radiological surveys, the NRC staff contracted the Oak Ridge Institute for Science and Education (ORISE) to conduct confirmatory surveys of the non-impacted open land and building areas at LACBWR. ORISE conducted their radiological surveys and sampling from November 14 - 17, 2016 and provided the final report of their activities on January 23, 2017 (ADAMS Accession No. ML17024A021). The survey activities included visual inspections, gamma walkover scans, and surface soil sampling. As a result of the gamma walkover surveys, four locations were identified for further investigation by soil sampling. Analysis of these judgmental samples did not reveal any issues or anomalies. Cs-137 was not identified above the concentration predicted by the licensee's background study in any of the judgmental samples. Radionuclides that were identified in the judgmental samples were attributable to natural sources and not LACBWR operations.

The majority of gamma walkover scans and soil activity measurements were not distinguishable from background. The mean Cs-137 concentration of the confirmatory samples was not

statistically greater than that reported by the licensee. However, analysis of 16 random samples revealed that five had Cs-137 concentrations above the predicted level. Based on the exceedance of this predicted value, an additional evaluation was performed by comparing the data to the upper confidence limit. The results of this evaluation confirm the licensee's classification of the proposed areas to be released as non-impacted. Based on the licensee's radiological and environmental assessment of the property and the ORISE confirmatory surveys, the NRC staff concludes that the property has no reasonable potential for residual radioactivity in excess of natural background or fallout levels. Additionally, no other plant-derived gamma emitters (such as Cobalt-60 (Co-60)) were identified during characterization or confirmatory surveys of non-impacted areas. As such, the NRC staff concludes that the property meets the definition of a non-impacted area in accordance with 10 CFR 50.2.

In addition, the NRC staff reviewed the licensee's 10 CFR 50.59 evaluation for the partial site release, which was submitted in accordance with 10 CFR 50.83(b)(4). The licensee assessed the impact of the proposed site release on offsite dose calculations and effluent releases and concluded that: (1) the change does not adversely affect any design function as described in the D-Plan/PSDAR, which is the Safety Analysis Report (SAR) equivalent at LACBWR; (2) does not adversely affect how a design function as described in the D-Plan/PSDAR is performed or controlled; (3) does not revise or replace an evaluation method used to establish design basis or safety analysis; and (4) does not involve a test or experiment not described in the D-Plan/PSDAR.

Based on the property being a non-impacted area, the NRC staff reviewed the requirements in 10 CFR 50.83(c)(1) and 10 CFR 50.83(c)(2) for releasing non-impacted areas for unrestricted use and determined that the licensee's submittal, as described in Section 4.1 of this Safety Evaluation, has sufficiently addressed these requirements. In accordance with 10 CFR 50.83(c)(1), the NRC staff assessed the licensee's evaluation of the effect of releasing the property as follows:

- i. 10 CFR 50.83(a)(1)(i) - Ensure that the dose to individual members of the public does not exceed the limits and standards of 10 CFR Part 20, Subpart D. The licensee continues to be required to implement a radiation protection program commensurate with 10 CFR Part 20. The NRC finds that the licensee's implementation of ALARA principles, as well as the surveillance and analyses conducted as part of their offsite environmental monitoring program, provides sufficient information to conclude that the doses to members of the public on the property are currently within 10 CFR Part 20, Subpart D, limits and standards, and are expected to remain within those limits and standards following the property release. The NRC staff concludes that additional assurance is provided by the licensee's radiation monitoring systems and the fact that no licensed activities were ever conducted on this property.
- ii. 10 CFR 50.83(a)(1)(ii) - Ensure that there is no reduction in the effectiveness of emergency planning or physical security. This criterion is addressed in the licensee's request in that LS evaluated the proposed release of the property and confirmed that no credit is taken for the land or the buildings by the licensee in its Emergency Plan or Physical Security Plan. The NRC staff verified that there are no offsite emergency plan facilities on this property. The NRC staff concludes that the release of the property will not reduce the effectiveness of the LACBWR Emergency Plan or Physical Security Plan.

- iii. 10 CFR 50.83(a)(1)(iii) - Ensure effluent releases remain within the license conditions. The NRC has evaluated the release of the property and finds that a decommissioning facility has negligible potential for effluent releases. After the release, any use of the property by members of the public will not create new pathways of exposure from the decommissioning facility that would exceed license conditions or challenge the requirements of 10 CFR 20.1402, "Radiological criteria for unrestricted use," which require licensees to reduce residual radioactivity to levels that are as low as reasonable achievable. The NRC finds sufficient information in the licensee's submittal to conclude that the licensee's site programs, which maintain effluent releases from LACBWR within license conditions and ALARA, will remain in effect, and this release of property does not impact those programs. Therefore, the NRC staff concludes that the release of the property will not impact the licensee's ability to maintain effluent releases from LACBWR within license conditions and ALARA.
- iv. 10 CFR 50.83(a)(1)(iv) - Ensure the environmental monitoring program and offsite dose calculation manual are revised to account for the change. The licensee states that the owner controlled boundary for LACBWR will remain the same and, therefore, the Environmental Monitoring Program, Offsite Dose Calculation Manual (ODCM), and supporting documents are still valid and no changes or revisions are needed.

The NRC recognizes a radiological exposure pathway as the vehicle by which the public may become exposed to radioactivity released from nuclear facilities. The major pathways of concern are those that could cause the highest calculated radiation dose. These pathways are determined from the type and amount of radioactive material released, the environmental transport mechanism, and how the plant environs are used (e.g., farm, residence, gardens, etc.). A permanently shutdown and decommissioning facility no longer has high energy systems which present the possibility of a radiological release with sufficient energy for transport beyond the owner controlled boundary.

The NRC finds that the release of this property will not impact the owner controlled boundary or the potential for an unmonitored radiological release to occur beyond that boundary. As a result, the NRC staff concludes that the release of the property has no effect on the environmental monitoring program, the offsite dose calculation manual, or the established plant programs used to maintain effluent releases within license conditions. Therefore, the NRC staff also concludes that the current LACBWR Environmental Monitoring Program and ODCM are not impacted by the release of this property, and no changes to the Environmental Monitoring Program or the ODCM would be required by the release of this property.

- v. 10 CFR 50.83(a)(1)(v) - Ensure the siting criteria of 10 CFR Part 100 continue to be met. The licensee states that the siting criteria of 10 CFR Part 100 continue to be met because the reactor vessel was removed from the site for disposal in 2008 and all of the spent fuel was relocated to the south end of the site for storage in the ISFSI in 2012. The release of the subject property has been reviewed with respect to the siting criteria in 10 CFR Part 100 and it has been determined that the siting requirements are either not impacted or are not applicable. LS will continue to control the exclusion area and maintain the ability to remove members of the public from the exclusion area in case of a

radiological emergency. The NRC has separately reviewed the 10 CFR Part 100 siting criteria and agrees with the licensee's conclusion.

- vi. 10 CFR 50.83(a)(1)(vi) - Ensure that all other applicable statutory and regulatory requirements continue to be met. The licensee's request states that all other statutory and regulatory requirements continue to be met because there are no other changes to the LACBWR policies and procedures as a result of the proposed site release. The NRC staff concludes that the release of the property has no adverse effect on the licensee's compliance with all other statutory and regulatory requirements.

Based on the NRC staff's evaluation of the items in (i) through (vi) above, the NRC concludes the requirements of 10 CFR 50.83(c)(1) are satisfied for the LACBWR proposed site release.

In accordance with 10 CFR 50.83(c)(2), the NRC staff assessed the licensee's classification of the property as non-impacted as follows:

The NRC (in 10 CFR 50.2) defines non-impacted areas as "areas with no reasonable potential for residual radioactivity in excess of natural background or fallout levels." The NRC (in 10 CFR 20.1003, "Definitions") defines residual radioactivity as "radioactivity in structures, materials, soils, groundwater, and other media at a site resulting from activities under the licensee's control. This includes radioactivity from all licensed and unlicensed sources used by the licensee, but excludes background radiation. It also includes radioactive materials remaining at the site as a result of routine or accidental releases of radioactive material at the site and previous burials at the site, even if those burials were made in accordance with the provisions of 10 CFR Part 20."

As noted above, the NRC finds that the property is not specifically listed in the license or the technical specifications; is not actively used by LACBWR for routine or decommissioning operations; is not within the security fence of the plant; is not needed for execution of the site emergency plan; is not within the exclusion zone; has no effect on plant decommissioning; and the property is classified as non-impacted. In addition, the NRC staff reviewed the licensee's HSA and radiological surveys and determined that they adequately supported the licensee's conclusion that the property to be released was non-impacted. Based on the HSA performed by the licensee, the surveys performed by the licensee, and the confirmatory surveys performed by the NRC contractor, the NRC finds that the requirement for justification that the property may be classified as non-impacted per 10 CFR 50.83(c)(2) is met.

Based on the above considerations, the NRC staff concludes that the licensee has adequately met the requirements in 10 CFR 50.83(c)(1) and 10 CFR 50.83(c)(2) for releasing non-impacted areas for unrestricted use.

## 5.0 CONCLUSION

The licensee requested approval for release of the property described in its submittal dated June 27, 2016, and Section 3.0 of this Safety Evaluation, which is currently part of the LACBWR



site, for unrestricted use. Based on the NRC staff's evaluation of LS's partial site release application, the staff concludes that the licensee's submittal has adequately:

1. Assessed the property to be released;
2. Evaluated the effect of releasing the property;
3. Justified that the property is a non-impacted area and no amendment to the license is needed; and
4. Addressed the effect of releasing the property for unrestricted use.

The NRC staff concludes that the licensee's request meets the requirements in 10 CFR 50.83, as well as that: (1) there is reasonable assurance that the health and safety of the public will not be endangered; and (2) the release will not be inimical to the common defense and security or to the health and safety of the public. Therefore, the NRC approves the unrestricted release of the 88 acres comprising survey units L4012103, L4012105, L4012106, L4012107, and L4012108, as described in the partial site release application, from the LACBWR 10 CFR Part 50 Possession Only License, No. DPR-45.

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