

SAFETY EVALUATION BY THE OFFICE OF
NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
RELATED TO PARTIAL SITE RELEASE REQUEST FOR
FACILITY OPERATING LICENSE NO. DPR-72
DUKE ENERGY FLORIDA, LLC.
CRYSTAL RIVER UNIT 3 NUCLEAR POWER PLANT
DOCKET NO. 50-302

1.0 INTRODUCTION

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated January 22, 2019 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML19029A018), as supplemented by e-mail dated October 24, 2019 (ADAMS Accession No. ML19310D860), Duke Energy Florida, LLC (DEF, the licensee) submitted a request to the NRC for approval of a partial site release (PSR) at Crystal River Unit 3 Nuclear Generating Plant (CR-3). The proposed action would remove and release portions of the site which have been classified as radiologically non-impacted from its Part 50 license.

2.0 REGULATORY EVALUATION

Section 50.83, "Release of part of a power reactor facility or site for unrestricted use," in Title 10 of the *Code of Federal Regulations* (10 CFR), 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 specifies recordkeeping requirements associated with partial release. Nuclear power reactor licensees seeking NRC approval shall:
 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 10 CFR Part 20, Subpart D;
 - 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 off-site dose calculation manual are revised to account for the changes;
 - v. The siting criteria of 10 CFR Part 100 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 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 this section;
 - 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 § 50.59; 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 this section;
 - 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 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." 10 CFR 50.2 defines an Historical Site Assessment (HSA) as the "identification of potential, likely, or known sources of radioactive material and radioactive contamination based on existing or derived information for the purpose of classifying a facility or site, or parts thereof, as impacted or non-impacted."

3.0 BACKGROUND

The Crystal River Energy Complex (CREC) is located in Crystal River, Florida approximately 75 miles north of Tampa, Florida. CR-3 was a 2,609 MWt, single-unit pressurized light-water reactor (PWR) supplied by Babcock & Wilcox that was licensed to operate from December of 1976 to February 20, 2013. During a steam generator replacement outage that started on September 26, 2009, the CR-3 containment structure was damaged. The licensee attempted to

repair the damage, but later decided to decommission the reactor. The facility is currently in a SAFSTOR condition although DEF is considering beginning active decommissioning. DEF submitted the CR-3 post-shutdown decommissioning activities report, including the site-specific cost estimate, on December 2, 2013. The plant began construction of an ISFSI in 2016, and began loading fuel in summer 2017. Fuel transfer to the ISFSI was completed in January 2018.

By letter dated January 22, 2019 (ADAMS) Accession No. ML19029A018), as supplemented by e-mail dated October 24, 2019 (ADAMS Accession No. ML19310D860), DEF submitted a request to the NRC for approval of a partial site release for unrestricted use of approximately 3,854 acres (1,600 hectare) of the of the 4,738-acre (1917-hectare) CREC. CR-3 used approximately 27 acres (11 hectares) of previously disturbed land within the CREC site. A proposed new site boundary/CR-3 Controlled Area of 884 acres (358 hectares) includes the 27-acre footprint of the CR-3 facility and 857 acres of industrialized portions of the CREC, which are not within the scope of the PSR request. The PSR area consists of 2,190 acres (890 hectares) of uninhabitable tidal flats and 1,664 acres (670 hectares) of non-industrialized forests, creeks, and wetlands. The licensee has stated that the property to be released has not been radiologically impacted by CR-3 operations. Non-impacted areas have no reasonable potential for residual contamination because historical information indicates there was no known impact from site operations. This land is referred to in this document as “the property.” Maps of the property are included as enclosures to the licensee’s submittal.

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)”, an HSA was performed and documented in June 2016 (ADAMS Accession No. ML19029A010). Historical information, including interviews of long-tenured employees; records from the Florida Department of Environmental Protection; incident files; special survey and operational radiological survey records; Health Physics and Operator logs; engineering reports of subsurface investigations; reports of station inspections by American Nuclear Insurers; the CR-3 file maintained in compliance with federal regulation 10 CFR 50.75(g); the CR-3 Offsite Dose Calculation Manual; the CR-3 Final Safety Analysis Report; the CR-3 Spill Prevention, Control and Countermeasures Plan; the CR-3 Storm Water Pollution Prevention Plan; the CR-3 Annual Radioactive Effluent Release Reports; and the CR-3 Annual Radiological Environmental Monitoring Reports were reviewed and compiled for this investigation.

The HSA documents an investigation to collect existing information 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, on-site 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. 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 characterization surveys discussed in the next section, the licensee deemed the subject open land areas to be not impacted by licensed activities or materials and therefore, the licensee determined that the "non-impacted" classification was appropriate.

The licensee's review indicated that: the land has not been used for plant operations; the land has not been used for storage of any radioactive material or waste; and there are no event records that any spills, leaks, or uncontrolled release of radioactive material have ever occurred on the land, reportable or non-reportable.

The licensee indicated that this property has no reasonable potential for residual radioactivity in excess of natural background or fallout levels; therefore, this property qualifies as a "non-impacted area" as that term is defined in 10 CFR 50.2.

The licensee evaluated the property to be released with respect to the criteria 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, use of radiation monitoring systems within the plant, and the surveillance and analyses performed as part of the Radiological Environmental Monitoring Program (REMP). The release of this property does not change any controls used to comply with dose limits for individual members of the public. DEF has determined that the property was never used for any radiological purposes.
- ii. Impact on the effectiveness of emergency planning or physical security has been evaluated. No credit is taken for this land in either the Emergency Plan or Security Plan. Therefore, the release of this property has no adverse effect on either plan.
- iii. The plant programs to maintain effluent releases within license conditions remain in effect and the release of this property does not impact those programs. Therefore, the effluent releases from CR-3 will remain within license limits.
- iv. The release of this property does not have any effect on the REMP. The off-site dose calculation manual will be revised when the release is approved to re-define the Controlled Area/Site boundary and to account for any dispersion factor changes.
- 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 in 10 CFR Part 100 and it has been determined that the requirements of 10 CFR Part 100 are either not impacted or are not applicable. DEF will continue to control the owner controlled area and maintain the ability to remove members of the public from the owner controlled area in the case of a radiological emergency.
- vi. Other statutory and regulatory requirements continue to be met. DEF maintains CR-3 policies and procedures to ensure that statutory and regulatory requirements continue to be met.

The licensee concludes that this property release has no impact on CR-3's continued compliance with applicable NRC regulatory standards.

4.2 NRC Staff Evaluation of the Property to be Released

The NRC staff has reviewed the licensee's application for the release of part of the CR-3 site for unrestricted use. The property to be released is an approximately 3,854-acre parcel of land that the licensee states has not been radiologically impacted by CR-3 operations. The scope of the partial site release is a portion of the non-impacted areas of the CREC consisting of 2,190 acres of uninhabitable tidal flats and approximately 1,664 acres of non-industrialized forest, creeks and wetlands as well as the site access road. The CREC is located on the gulf coast of Florida approximately 75 miles north of Tampa, Florida.

Release of this property should not degrade the environment, impact public health, or impact local land uses. Release of the property will not result in public or environmental exposure to radioactive contamination. There are no known records of any spills, leaks, or uncontrolled release of radioactive material on this parcel of land. The property was not used for any activities that could have contaminated the property. Contaminated groundwater from power plant decommissioning could not migrate to the property as the property is not down-gradient from the decommissioning power plant.

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.

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. As the proposed action is wholly 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 environmental concerns associated with the release of the 3,854-acre property were identified. The environmental impacts associated with the plant will not change as a result of this property transfer. Therefore, the environmental impacts associated with the proposed release of the property are bounded by the previously issued environmental impact statement (Final Environmental Statement Related to the Proposed Crystal River Unit 3, Florida Power Corporation, Docket No. 50-302, May 1973, US Atomic Energy Commission [ADAMS Accession No. ML091520178]).

The NRC staff reviewed the 10 CFR 50.59 evaluation for the partial site release. The NRC finds that the property is not specifically listed in the license or the Technical Specifications (TS); 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; and the property is classified as a non-impacted area.

The NRC staff has 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 radiological surveys of the PSR area from August to October 2018 (ADAMS Accession No. ML19029A008). Before conducting radiological surveys of the PSR area, the licensee reviewed results of its REMP and noted that cesium-137 (Cs-137), cobalt-60 (Co-60), and tritium (H-3) were expected to be present at impacted areas located within the CR-3 plant area. Since those areas of the CR-3 site are not included in this

PSR request, the only radionuclides expected in non-impacted areas are associated with naturally occurring radioactive material and global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear accidents such as Chernobyl and Fukushima Daiichi.

For the purpose of conducting radiological surveys of the PSR area, the licensee subdivided the tidal flats area into five large survey units that were mostly inaccessible or difficult to access without watercraft. The non-industrialized areas were subdivided into 16 survey units that were mostly accessible by land. The licensee designed and implemented its radiological survey using guidance contained in NUREG-1575, "Multi Agency Radiation Survey and Site Investigation Manual (MARSSIM), and NUREG-1505, "A Nonparametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys Areas - Interim Draft Report for Comment and Use." The licensee collected both systematic (random) and biased (judgemental) measurements within the 21 survey units. Random measurement and sample collection locations were obtained by use of computer software, such as Visual Sample Plan or ArcGIS. Judgemental samples were obtained at areas that indicated elevated radioactivity levels during walkover scan surveys or had the potential for accumulating radioactive materials.

The licensee performed walkover gamma scan surveys over 68,286 square meters of the accessible land surface using a Ludlum model 2350-1 survey meter coupled to a Ludlum model 44-10 sodium iodide scintillation detector. Portable radionuclide identification instruments, such as the Thermo-Scientific identi-FINDER and Bicron Fieldspec, were used in combination with bulk material sampling to discriminate between naturally occurring radioactive material and radioactive material that could be attributed to CR-3 operations. Based on the results of the walkover scans, a total of seven locations were identified for further investigation; all were determined to be naturally occurring radioactive material.

The licensee collected and analyzed a total of 294 soil/sediment samples for radioactive material content. Quantitative analysis results were obtained by the licensee from radionuclide-specific analysis of surface soil media at onsite and offsite radioanalytical laboratories. The results identified H-3 and nickel-63 (Ni 63) in three samples above their analytical minimum detectable concentrations (MDCs) for the off-site laboratory. H-3 was identified in soil samples collected from two non-industrialized survey units (SU NI-09 and SU NI-15), and Ni-63 was identified in a soil sample collected from one non-industrialized survey unit (SU NI-10). At each of these locations, the licensee collected four additional samples in a one-meter square grid around the sample location and sent the samples for analysis at the off-site laboratory. No H-3 or Ni-63 was identified in the additional samples above the laboratory's MDC.

The licensee determined that Cs-137 was the only radionuclide identified during the survey that could be attributed to CR-3 operations. Approximately seven percent of the samples exceeded the 95th percentile of background measurements for Cs-137, and less than four percent exceeded the 99th percentile of background measurements for Cs-137. The licensee noted that, for the PSR survey, vegetative matter was not removed from soil samples prior to laboratory analysis. The licensee stated that vegetative matter is removed from shoreline sediment samples for the REMP and attributed the difference in collection methods as a possible reason for higher values (and a broader range) of Cs-137 concentrations reported in the PSR survey than the REMP.

The licensee provided information on Cs-137 in soils within the region (ADAMS Accession No. ML19310D860). The licensee assessed data from several information sources and determined that the expected range of Cs-137 from fallout in soils is between 0.18 to 1.8 pCi/g at the CREC

site. The licensee also noted that the radiological survey results for this PSR request demonstrated that the Cs-137 concentrations in soils were within this range, and lower overall. The licensee concluded that the concentrations of Cs-137 in the soil samples were within the expected range of global fallout and were not attributed to CR-3 operations.

The NRC staff reviewed the licensee's basis for designating the PSR area as non-impacted, and, in April 2019, performed surveys with representatives from Oak Ridge Institute for Science and Education (ORISE) to independently verify radiological conditions within the PSR area (ADAMS Accession No. ML19343A825). The surveys of land areas comprised gamma scan measurements and collection and analysis of surface soil samples. The surveys of building structures comprised smear sampling, scan measurements, and gamma direct (static) measurements.

The NRC survey included gamma scans of land areas and structural surfaces using Ludlum Model 44-10 sodium iodide scintillation detectors coupled to Ludlum Model 2221 ratemeter-scalers with audible indicators. Gamma walkover scans were performed along the pathway to and from most sample locations and in the vicinity of sample collection locations. The results of gamma walkover scans varied depending on the land area, as expected. In general, gamma radiation levels were consistent with natural background levels. No areas were identified as distinguishable from the local ambient background, and no areas were marked for further investigation based on results of the gamma scans.

Beta scans were performed on structural surfaces on the Mariculture Center with a Ludlum Model 44-142 scintillation detector coupled to Ludlum Model 2221 ratemeter-scalers. Smear samples were also taken at the Mariculture Center and analyzed for alpha, beta, H-3, Ni-63 and carbon-14. Analysis of the smear samples at the ORISE radioanalytical laboratory did not detect these radionuclides, which were below their respective MDCs. These survey results confirmed there was no residual radioactivity attributed to CR-3 operations at the Mariculture Center.

For the assessment of surface soils, a total of 73 soil samples were collected and analyzed. Twenty-five random surface soil samples were collected and analyzed from the confirmatory survey unit established in the non-industrialized areas. A total of 12 judgmental samples were collected around each of the three locations where H-3 and Ni-63 were previously identified by the licensee in their radiological survey. Also, a total of 36 soil samples were collected and analyzed from background reference areas that were identified by the licensee.

The results of laboratory analyses for H-3 and Ni-63 in soils indicate that concentrations of those radionuclides were below their respective MDCs. This finding confirms that H-3 and Ni-63 are not present in these areas, based on the detection limits of the ORISE laboratory and the licensee's laboratory.

The median concentration of Cs-137 (0.1 pCi/g) in soils collected in confirmatory survey units was compared against the median Cs-137 concentration established in local background reference area soils during this survey. A two-sample statistical hypothesis test (Wilcoxon-Mann-Whitney) determined that the median concentration of Cs-137 in the confirmatory and reference area survey units were similar. A retrospective analysis of the statistical test performance confirmed the validity of this finding. In addition to the comparison of mean Cs-137 concentrations, individual concentrations of Cs-137 were compared to a background threshold value to evaluate the presence of non-background data points. Eight soil samples with the highest Cs-137 concentrations were analyzed for the presence of other fission products,

including Ni-63 and H-3. Although no fission products were identified, higher concentrations of naturally occurring radioactive materials were measured in these samples. This finding indicates that the locations where those soil samples were collected may have a different soil composition than other land areas within the PSR survey area.

The NRC staff recognizes the potential for fluctuations in radiological fallout retention depending on soil type. It is noted that fallout from nuclear weapons testing and, more recently from the Fukushima Daiichi nuclear accident, could contribute to background Cs-137 concentrations in soils at the CREC site. In 2011, airborne fission products from the Fukushima Daiichi accident passed over the Florida Gulf-coast region, causing notable increases in airborne gross beta activity concentrating at the US Environmental Protection Agency's Nation Wide Environmental Monitoring network (RadNet) station in Tampa, Florida (Wetherbee 2012; EPA 2019). Deposition of Cs-137 at the CREC site would occur due to washout from a rain event during the time of increased airborne radioactivity concentrations (Wetherbee 2012). Although Cs-137 deposition values for the local area were not reported, the licensee and Florida Department of Public Health measured increased levels of radioiodine and cesium in citrus and broad leaf vegetation following the Fukushima Daiichi accident in their annual environmental monitoring reports (DEF 2012).

The NRC staff review notes that survey results for the PSR area were at a small fraction of the Cs-137 surface soil screening value (11 pCi/gm) presented in NUREG-1757 Volume 2 (NRC 2006). Additionally, no other plant-derived gamma emitters (such as Co-60, H-3, Ni-63 or C-14) were identified during the NRC confirmatory surveys of non-impacted areas. The NRC staff review also notes that it cannot be concluded that the very low concentrations of Cs-137 in soils at the CREC site is due to plant activity. As such, the NRC staff concludes that property meets the definition of a non-impacted area in accordance with 10 CFR 50.2.

Based on the property being a non-impacted area, the NRC staff reviewed the requirements in 10 CFR 50.83(c)(1) and (2) for releasing non-impacted areas for unrestricted use and determined that the licensee's submittal, as listed in Section 4.1, has sufficiently addressed the requirements 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 and CR-3 Technical Specification 5.6.2. The NRC finds that the licensee's surveillance and analyses conducted as part of their REMP 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, and are expected to remain within 10 CFR Part 20, Subpart D, 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 is addressed in the licensee's request in that it evaluated the release of the property and no credit is taken for the land by the licensee in its emergency plan or physical security plan. The NRC staff verified that there are no off-site emergency plan facilities on this property. The NRC staff concludes that the release of the land will not reduce the effectiveness of the emergency plan or physical security.

- 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, the use of the property by members of the public will not create new pathways of exposure that would cause radioactive releases from the site to exceed license conditions. The NRC finds sufficient information in the licensee's submittal to conclude that the licensee's site programs, which maintain effluent releases from CR-3 within license conditions, will remain in effect and this release of property does not impact those programs. Therefore, the NRC concludes the release of this land will not impact the licensee's ability to maintain effluent releases from CR-3 within license conditions.
- iv. 10 CFR 50.83(a)(1)(iv) - Ensure the environmental monitoring program and off-site dose calculation manual are revised to account for the change. The licensee conducted a review of the current REMP sampling locations and TLD positions and determined that no changes to the REMP program are needed when the Controlled Area is reduced to 884 acres. Changes to the ODCM will be required when the new Controlled Area/Site boundary become effective to re-define these terms and account for any dispersion factor changes. 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., residence, gardens, etc.). A permanently shutdown and decommissioning facility no longer has high energy systems which present the possibility of a release with sufficient energy for transport beyond the owner controlled boundary. The NRC finds that the release of this land will not impact the potential for a release beyond the owner controlled boundary. As a result, the NRC concludes the release of the land has no negative effect on the environmental monitoring program, the off-site dose calculation manual, or the established plant programs used to maintain effluent releases within license conditions.
- 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. 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 requirements of 10 CFR Part 100 are either not impacted or are not applicable. DEF will continue to control the exclusion area and maintain the ability to remove members of the public from the exclusion area in the 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. This is addressed by item (vi) in the licensee's request that states other statutory and regulatory requirements continue to be met because there are no changes to CR-3's policies and procedures. 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 evaluation of the items in (i) through (vi) above, the NRC concludes the requirements of 10 CFR 50.83(c)(1) are satisfied.

The requirements in 10 CFR 50.83(c)(2) are addressed by the licensee as listed in Section 4.1

of this Safety Evaluation (SE), and the NRC's assessment is as follows:

10 CFR 50.83(c)(2) - After receiving an approval request from the licensee for the release of a non-impacted area, the NRC shall determine whether the licensee's classification of any release areas as non-impacted is adequately justified. 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) 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 reviewed the licensee's HSA and radiological surveys and determined that they adequately supported the licensee's conclusion the area to be released was non-impacted.

Based on the historical site assessment performed by the licensee and the confirmatory surveys performed by the NRC contractor, the NRC finds that the requirement in 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 (2) for releasing non-impacted areas for unrestricted use.

5.0 CONCLUSION

The licensee requested approval for the release of the land described in the licensee's submittal and Section 3.0 of this Safety Evaluation, which is currently part of the CREC, site for unrestricted use. Based on the NRC staff evaluation of this partial site release application, the NRC 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 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 and: (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.

6.0 REFERENCES

1. Duke Energy Florida, 2019. "NRC PSR Questions," October 24, 2019; ADAMS Accession No. ML19310D860.

2. Historical Site Assessment for Crystal River 3, June 28, 2017; ADAMS Accession No. ML19029A010.
3. Duke Energy Florida, 2012. "Crystal River Unit 3 – 2012 Annual Radiological Environmental Operating Report."
4. ORISE, 2019. "Independent Confirmatory Survey Summary and Results for the 3,854 Acre Area Partial Site Release at The Crystal River Energy Complex, Crystal River, Florida; Docket No. 05-302; RFTA No. 19-004; DCN 5336-SR-01; ADAMS Accession No. ML19343A825.
5. US Environmental Protection Agency; EPA RadNet Reference, <https://www.epa.gov/radnet/radnet-air-data-tampa-fl#grossbetaair>.
6. US Nuclear Regulatory Commission, 2006. "Consolidated Decommissioning Guidance - Characterization, Survey, and Determination of Radiological Criteria; NUREG-1757; Volume 2; Revision 1; ADAMS Accession No. ML063000252.
7. Wetherbee, 2011. "Wet Deposition of Fission-Product Isotopes to North America from the Fukushima Dai-ichi Incident." Environmental Science and Technology. Vol 46, pp 2574-2582; March 2011.

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