April 17, 2024

L-2024-056
10 CFR 50.4
10 CFR 50.36

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Re: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Annual Radiological Environmental
Operating Report for Calendar Year 2023

The enclosed report is being submitted pursuant to Technical Specification 6.9.1.8. The Annual Radiological Environmental Operating Report provides information summaries and analytical results of the Radiological Environmental Monitoring Program (REMP) for calendar year 2023.

If you have any questions regarding this submittal, please contact Kenneth Mack at 561-904-3635.

Sincerely,

Paul Rasmus
General Manager, Regulatory Affairs
Florida Power & Light Company

Enclosure: 2023 Annual Radiological Environmental Operating Report

cc: USNRC Regional Administrator, Region II
USNRC Project Manager, St. Lucie Nuclear Plant
USNRC Resident Inspector, St. Lucie Nuclear Plant

2023

ANNUAL

RADIOLOGICAL ENVIRONMENTAL

OPERATING REPORT

ST. LUCIE PLANT

UNITS 1 & 2

LICENSE NOS. DPR-67, NPF-16

DOCKET NOS. 50-335, 50-389

Prepared by: Calvin G. Crawford

Reviewed by: Robert Story 3-29-24

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1. Introduction

This report is submitted pursuant to Specification 6.9.1.8 of St. Lucie Unit 1 and St. Lucie Unit 2 Technical Specifications. The Annual Radiological Environmental Operating Report (AREOR) provides information, summaries, and analytical results pertaining to the radiological environmental monitoring program for the calendar year indicated. This report covers surveillance activities meeting the requirements of Unit 1 and Unit 2 Technical Specifications.

2. Radiological Environmental Monitoring Program

A. Purpose

The purpose of the Radiological Environmental Monitoring Program (REMP) is to provide representative measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides which lead to the highest potential radiation exposures to members of the public resulting from station operation. The radiological environmental monitoring program also supplements the radioactive effluents monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected based on the effluent measurements and the modeling of the environmental exposure pathways.

B. Program Description

The Radiological Environmental Monitoring Program for the St. Lucie Plant (PSL) is conducted pursuant to the St. Lucie Units 1 and 2 Offsite Dose Calculation Manual (ODCM) Section 3/4.12.1 Monitoring Program.

1. Sample Locations, Types, and Frequencies

    a. Direct radiation gamma exposure rate is monitored continuously at 27 locations by Thermoluminescent Dosimeters (TLDs). TLDs are collected and analyzed quarterly.

    b. Airborne radioiodine and particulate samplers are operated continuously at five locations. Samples are collected weekly. Analyses include Iodine-131 and gross beta weekly, and gamma isotopic measurements of composite quarterly by location.

    c. Surface water samples are collected from two locations. The indicator samples are collected and analyzed weekly, while control samples are collected and analyzed monthly. Analyses include gamma isotopic and tritium measurements.

    d. Shoreline sediment samples are collected from two locations coinciding with the locations for surface water samples. Samples are collected and analyzed

semi-annually. Sediment samples are analyzed by gamma isotopic measurements.

e. Fish and invertebrate samples are collected from two locations. Samples are collected and analyzed semi-annually. Fish and invertebrate samples are analyzed by gamma isotopic measurements.

f. Broad leaf vegetation samples are collected from three locations. Samples are collected and analyzed monthly. Broad leaf vegetation samples are analyzed by gamma isotopic measurements.

2. Analytical Responsibility

Radiological environmental monitoring for PSL is conducted by the State of Florida, Department of Health (DOH), Bureau of Radiation Control (BRC). Samples are collected and analyzed by DOH field and laboratory personnel, respectively. The samples are analyzed at the DOH BRC Environmental Radiation Control Laboratory in Orlando, Florida.

C. Analytical Results

Summarized analysis data and results for all specified samples collected and analyzed during the surveillance period is provided in Section 4. Deviations from the sample schedule or missing data, if any, are noted and explained in Section 5. Samples not meeting the specified "a priori" LLD, if any, are noted and explained in Section 6. Detailed analysis data and results for all samples collected and analyzed by the BRC during the surveillance period is provided in Section 9.

D. Land Use Census

A Land Use Census survey out to a five-mile radius around PSL is conducted annually to determine the location of the nearest milk animal, residence, and garden producing broad leaf vegetation in each of the 16 meteorological sectors. A summary of the Land Use Census for the surveillance year is provided in Section 4.

E. Interlaboratory Comparison Program

The interlaboratory comparison program consists of participating in the DOE Mixed Analyte Performance Evaluation Program (MAPEP) and the Environmental Resources Associates (ERA) RadCheM Study proficiency testing. The samples are analyzed using the methods applicable to the REMP (gamma spectroscopy, gross beta, and tritium for water). Results for the interlaboratory comparison program are listed in Section 10.

3. Discussion and Interpretation of Results

A. Reporting of Results

This AREOR contains the summaries, interpretations, and information required by the PSL ODCM. The following tables provide a summary of the measurements made for the nuclides required by ODCM Table 4.12-1 for all samples specified by Table 3.12-1. In addition, summaries are provided for other nuclides identified in the specified samples, including those not related to PSL operation. These include nuclides such as Be-7, K-40, Th-232, and Ra-226 which are common and naturally occurring in the Florida environment.

B. Interpretation of Results

1. Direct Radiation

   The results of direct radiation monitoring are consistent with past measurements for the specified locations. The exposure rate data showed no indication of any adverse trends attributed to effluents from the plant. The measured exposure rates were consistent with exposure rates that were observed during the pre-operational surveillance program.

2. Air Particulates/Radioiodine

   The results for radioactive air particulate and radioiodine attributed to plant effluents indicated no trends attributable to plant effluents and were consistent with past measurements. No detectable I-131 was present in any of the radioiodine samples. Gamma isotopic measurements yielded no indication of any nuclides attributed to PSL operation. The results for air particulate/radioiodine samples were consistent with measurements that were made during the pre-operational surveillance program.

3. Waterborne, Surface Water

   The results for radioactivity measurements in surface water were consistent with past measurements and with measurements made during the pre-operational surveillance program. Tritium was reported as present in surface water in 2 out of 52 weekly ODCM-required indicator location samples and 1 out of 12 monthly control location samples. The highest amount of tritium reported was 4.67% of the required Lower Limit of Detection (LLD) for non-drinking water listed in ODCM Table 4.12-1 and 0.47% of the reporting level for non-drinking water listed in ODCM Table 3.12-2. There was no indication of any other nuclides attributable to plant effluents.

4. Waterborne, Sediment and Food Products

   The results for radioactivity measurements in waterborne sediment and fish samples were consistent with past measurements and with measurements made during the pre-operational surveillance program. For the Fish Ingestion Pathway, Cs-137 was not reported in any indicator samples or control samples. There was no indication of any other nuclides attributable to plant effluents.

5. Broad Leaf Vegetation

   The results for radioactivity measurements in broad leaf vegetation were consistent with past measurements and with measurements made during the pre-operational surveillance program. Cs-137 was present in 5 of the 24 ODCM-required indicator samples and was present in 1 of the 12 control location samples. The amount of Cs-137 reported was 103.75% of the required LLD listed in ODCM Table 4.12-1 and 4.15% of the reporting level listed in ODCM Table 3.12-2. There were no indications of any other nuclides attributable to plant effluents.

6. Land Use Census

   The nearest residences are the Dune Walk/Sand Dollar Condominiums at 7370 Ocean Drive (SE). This is the nearest of a series of seven high-rise buildings on the east side of A1A.

   5136 Watersong Way is now the closest residence to the power plant in the Watersong development (NNW). No locations within a 5-mile radius of PSL were identified with gardens or with potential milk-producing animals (cows or goats).

   No locations yielding a calculated dose or dose commitment greater than the values currently being calculated were identified by the Land Use Census.

   No locations yielding a calculated dose or dose commitment (via the same exposure pathway) 20% greater than locations currently being sampled as part of the REMP were identified by the Land Use Census.

7. Interlaboratory Comparison Program

   The State of Florida DOH BRC laboratory participated in MAPEP Series 49, and the ERA RadCheM Study 135 with satisfactory results. This satisfied the requirements for the Interlaboratory Comparison Program as directed in the PSL ODCM.

C. Conclusions

The data obtained through the PSL REMP verifies that the levels of radiation and concentrations of radioactive materials in environmental samples, representing the highest potential exposure pathways to members of the public, are not increasing due to station operation. Measured exposure rates are consistent with the exposure rates observed during the pre-operational surveillance program.

- Results for air particulate/radioiodine samples are consistent with measurements that were made during the pre-operational surveillance program.
- The highest value for tritium in surface water, based on 2 positive indicator samples, was 4.67% of the required LLD listed in ODCM Table 4.12-1 and 0.47% of the reporting level listed in ODCM Table 3.12-2. There was no indication of any other nuclides attributable to plant effluents.
- There was no indication of any nuclides in the waterborne sediment or food product samples that could be attributed to plant effluents.
- The amount of Cs-137 reported in the positive broad leaf vegetation Indicator Location H51 sample was 103.75% of the required LLD listed in ODCM Table 4.12-1 and 4.15% of the reporting level listed in ODCM Table 3.12-2. There were no indications of any other nuclides attributable to plant effluents.

REMP sample analyses verify that the dose or dose commitment to members of the public, attributable to the operation of St. Lucie Units 1 and 2 during the surveillance period, are well within "as low as reasonably achievable" (ALARA) criteria established by 10 CFR 50, Appendix I.

4. Environmental Radiological Monitoring Program Annual Summary

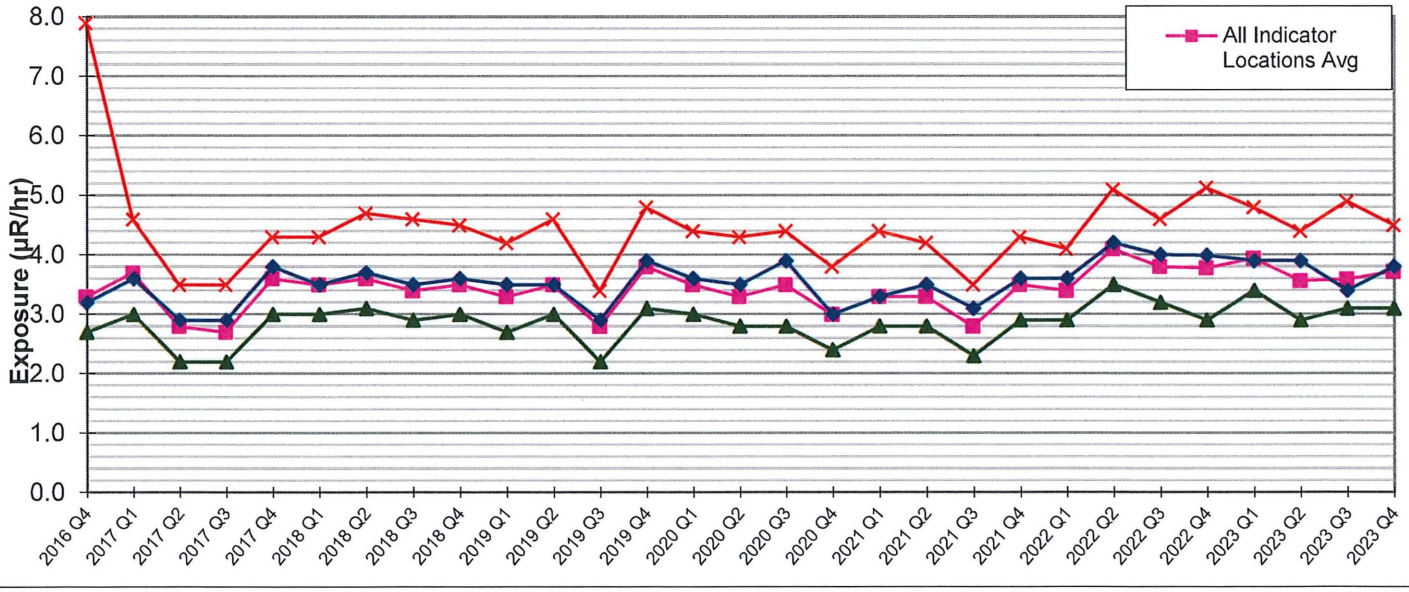
I. Direct Radiation

PATHWAY: DIRECT RADIATION
SAMPLES COLLECTED: TLD
UNITS: micro-R/hr

Type of Analyses	Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f)[b] Range	Location with Highest Annual Mean Name[c] Distance & Direction	Location with Highest Annual Mean Mean (f)[b] Range	Control Location Mean (f)[b] Range
Exposure[d]	107	----------	3.70 (103/104)	NW-10	4.65 (4/4)	3.75 (4/4)
			2.90-4.90	9.6 mi., NW	4.40-4.90	3.40-3.90

Number of Non-Routine Reported Measurements = 0.

Figure 1 - St. Lucie Direct Radiation Gamma Exposure (via TLD)



II. Air Particulates/Radioiodine

PATHWAY: AIRBORNE
SAMPLES COLLECTED: RADIOIODINE AND PARTICULATES UNITS: pico-Ci/M^3

Type of Analyses	Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f)[b] Range	Location with Highest Annual Mean Name[c] Distance & Direction	Location with Highest Annual Mean Mean (f)[b] Range	Control Location Mean (f)[b] Range
^{131}I	260	0.012	<MDA (0/208)	----------	----------	<MDA (0/52)
			----------	----------	----------	----------
Gross Beta	260	0.0064	0.0140 (208/208)	H14	0.014 (52/52)	0.015 (52/52)
			0.003-0.029	1 mi., SE	0.005-0.029	0.004-0.029
Composite Gamma	20					
^{7}Be	20	0.006	0.1147 (16/16)	H14	0.1203 (4/4)	0.1238 (4/4)
			0.0946-0.1450	1 mi., SE	0.1120-0.1390	0.110-0.1510
^{40}K	20	0.018	<MDA (0/16)	----------	----------	<MDA (0/4)
^{134}Cs	20	0.0008	<MDA (0/16)	----------	----------	<MDA (0/4)
^{137}Cs	20	0.0008	<MDA (0/16)	----------	----------	<MDA (0/4)
^{210}Pb	20	----------	<MDA (0/16)	----------	----------	<MDA (0/4)

Be-7, K-40, and Pb-210 are naturally occurring.

Number of Non-Routine Reported Measurements = 0.

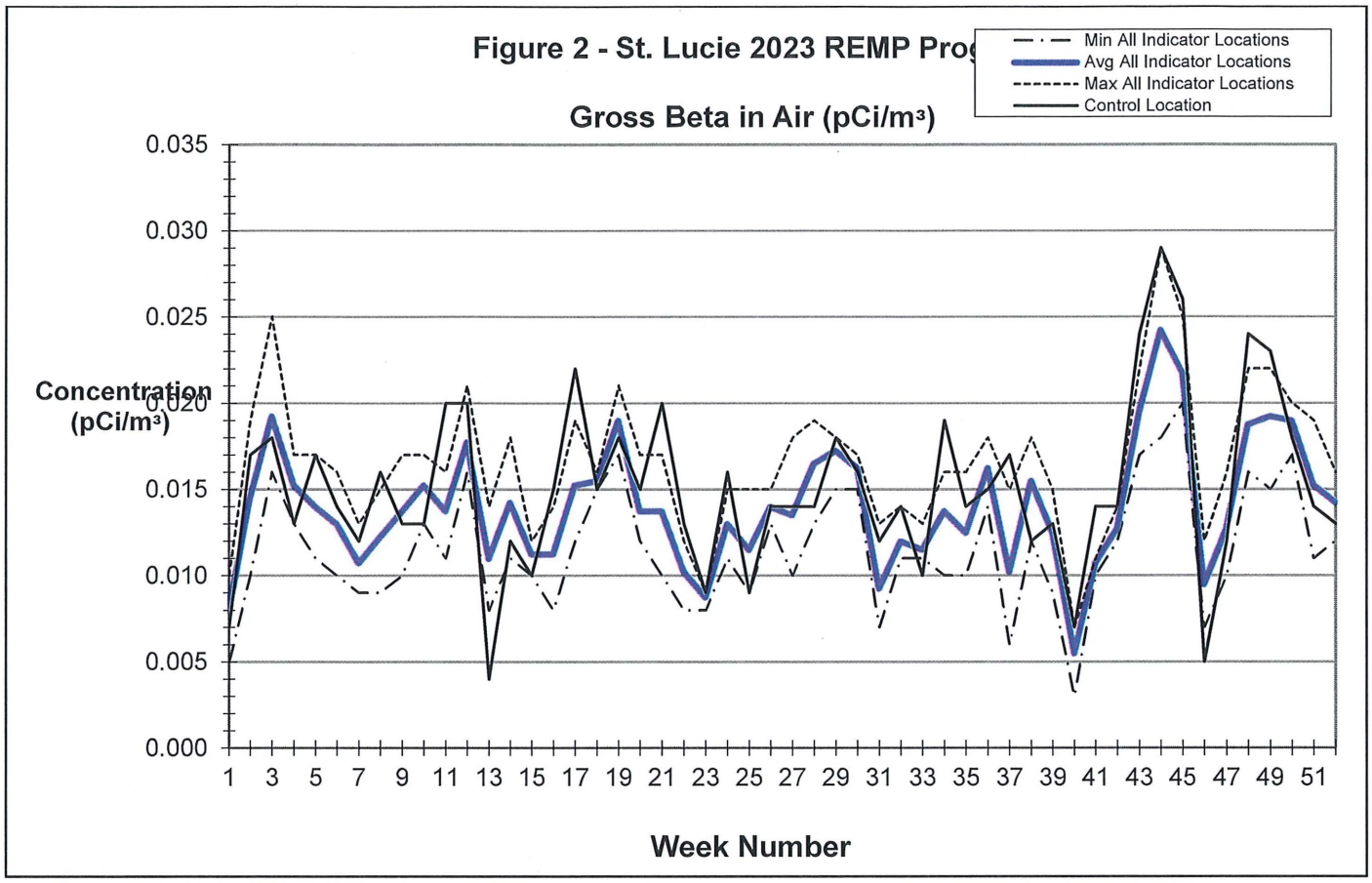


Figure 2 - St. Lucie 2023 REMP Prog
Gross Beta in Air (pCi/m³)
Min All Indicator Locations
Avg All Indicator Locations
Max All Indicator Locations
Control Location
Concentration (pCi/m³)
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51
Week Number

III. Waterborne, Surface Water

PATHWAY: WATERBORNE
SAMPLES COLLECTED: SURFACE WATER
UNITS: pico-Ci/LITER

Type of Analyses	Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f)[b] Range	Location with Highest Annual Mean Name[c] Distance & Direction	Location with Highest Annual Mean Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Tritium	64	172	135 (2/52)	H15	135 (2/52)	946 (1/12)
			130-140	<1mi., ENE/E/ESE	130-140	946-946
Gamma Isotopic	64					
^{40}K		58	355 (52/52)	H15	355 (52/52)	337 (12/12)
			282-415	<1mi., ENE/E/ESE	282-415	295-391
^{54}Mn		3	<MDA (0/52)	----------	----------	<MDA (0/12)
^{59}Fe		6	<MDA (0/52)	----------	----------	<MDA (0/12)
^{58}Co		3	<MDA (0/52)	----------	----------	<MDA (0/12)
^{60}Co		4	<MDA (0/52)	----------	----------	<MDA (0/12)
^{65}Zn		7	<MDA (0/52)	----------	----------	<MDA (0/12)
^{95}Zr-Nb		6/3	<MDA (0/52)	----------	----------	<MDA (0/12)
^{131}I		4	<MDA (0/52)	----------	----------	<MDA (0/12)
^{134}Cs		4	<MDA (0/52)	----------	----------	<MDA (0/12)
^{137}Cs		4	<MDA (0/52)	----------	----------	<MDA (0/12)
^{140}Ba-La		9/3	<MDA (0/52)	----------	----------	<MDA (0/12)

K-40 is naturally occurring.
Number of Non-Routine Reported Measurements = 0.

IV. Waterborne, Sediment and Food Products

PATHWAY: WATERBORNE
SAMPLES COLLECTED: SHORELINE SEDIMENT
UNITS: pico-Ci/kg DRY

Type of Analyses	Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f)[b] Range	Location with Highest Annual Mean Name[c] Distance & Direction	Location with Highest Annual Mean Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Gamma Isotopic	44					
^{7}Be		56	41 (1/2)	H-15	41 (1/2)	<MDA (0/2)
			41-41	<1mi, ENE/E/ESE	41-41	----------
^{40}K		100	150 (2/2)	H15	150 (2/2)	328 (2/2)
			123-176	<1mi, ENE/E/ESE	123-176	169-487
^{58}Co		6	<MDA (0/2)	----------	<MDA (0/2)	<MDA (0/2)
^{60}Co		7	<MDA (0/2)	----------	<MDA (0/2)	<MDA (0/2)
^{134}Cs		7	<MDA (0/2)	----------	<MDA (0/2)	<MDA (0/2)
^{137}Cs		7	<MDA (0/2)	----------	<MDA (0/2)	<MDA (0/2)
^{210}Pb		----------	<MDA (0/2)	----------	<MDA (0/2)	<MDA (0/2)
^{226}Ra		15	35 (1/2)	H15	35 (1/2)	81 (2/2)
			35-35	<1mi, ENE/E/ESE	35-35	41-121
^{232}Th		25	<MDA (0/2)	----------	<MDA (0/2)	<MDA (0/2)
^{235}U		----------	<MDA (0/2)	H15	<MDA (0/2)	<MDA (0/2)
				<1mi, ENE/E/ESE		
^{238}U		----------	<MDA (0/2)	----------	<MDA (0/2)	<MDA (0/2)

Be-7, K-40, Pb-210, Ra-226, Th-232, U-235, and U-238 are naturally occurring.
Number of Non-Routine Reported Measurements = 0.

PATHWAY: INGESTION
SAMPLES COLLECTED: CRUSTACEA
UNITS: pico-Ci/kg WET

Type of Analyses	Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f)[b] Range	Location with Highest Annual Mean Name[c] Distance & Direction	Location with Highest Annual Mean Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Gamma Isotopic	4					
^{40}K		270	2270 (2/2)	H-15	2270 (2/2)	1925 (2/2)
			1990-2550	<1 mi, ENE/E/ESE	1250-3420	1700-2150
^{54}Mn		16	<MDA (0/2)	----------	----------	<MDA (0/2)
^{58}Co		15	<MDA (0/2)	----------	----------	<MDA (0/2)
^{60}Co		16	<MDA (0/2)	----------	----------	<MDA (0/2)
^{134}Cs		16	<MDA (0/2)	----------	----------	<MDA (0/2)
^{137}Cs		18	<MDA (0/2)	----------	----------	<MDA (0/2)
^{226}Ra		300	<MDA (0/2)	----------	----------	<MDA (0/2)
^{228}Ra		58	<MDA (0/2)	----------	----------	<MDA (0/2)
^{59}Fe		28	<MDA (0/2)	----------	----------	<MDA (0/2)
^{65}Zn		32	<MDA (0/2)	----------	----------	<MDA (0/2)

K-40, Ra-226, and Ra-228 are naturally occurring.
Number of Non-Routine Reported Measurements = 0.

PATHWAY: INGESTION
SAMPLES COLLECTED: FISH
UNITS: pico-Ci/kg WET

Type of Analyses	Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f)[b] Range	Location with Highest Annual Mean Name[c] Distance & Direction	Location with Highest Annual Mean Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Gamma Isotopic	4					
^{40}K		270	3100 (2/2) 2940-3260	H15 <1mi., ENE/E/ESE	3100 (2/2) 2940-3260	3075 (2/2) 2790-3360
^{54}Mn		16	<MDA (0/2)	----------	----------	<MDA (0/2)
^{58}Co		15	<MDA (0/2)	----------	----------	<MDA (0/2)
^{60}Co		16	<MDA (0/2)	----------	----------	<MDA (0/2)
^{134}Cs		16	<MDA (0/2)	----------	----------	<MDA (0/2)
^{137}Cs		18	<MDA (0/2)	----------	----------	<MDA (0/2)
^{226}Ra		300	<MDA (0/2)	----------	----------	<MDA (0/2)
^{228}Ra		58	<MDA (0/2)	----------	----------	<MDA (0/2)
^{59}Fe		28	<MDA (0/2)	----------	----------	<MDA (0/2)
^{65}Zn		32	<MDA (0/2)	----------	----------	<MDA (0/2)

K-40, Ra-226, and Ra-228 are naturally occurring.
Number of Non-Routine Reported Measurements = 0.

V. Broad Leaf Vegetation

PATHWAY: INGESTION
SAMPLES COLLECTED: BROADLEAF VEGETATION
UNITS: pico-Ci/kg WET

Type of Analyses	Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f)[b] Range	Location with Highest Annual Mean Name[c] Distance & Direction	Location with Highest Annual Mean Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Gamma Isotopic	36					
^{7}Be		64	1808 (24/24)	H51	1909 (24/24)	1302 (12/12)
			1100-3320	1mi., N/NNW	1100-3320	271-1950
^{40}K		120	4818 (18/24)	H52	4853 (18/24)	3894 (9/12)
			2920-7440	1mi., S/SSE	2920-7440	1160-7160
^{131}I		8	<MDA (0/24)	----------	<MDA (0/24)	<MDA (0/12)
^{134}Cs		8	<MDA (0/24)	----------	<MDA (0/24)	<MDA (0/12)
^{137}Cs		8	57 (5/24)	H51	78 (5/24)	23 (1/12)
			26-83	1mi., N/NNW	73-83	23-23
^{210}Pb		693	760 (8/24)	H51	935 (8/24)	<MDA (0/12)
			86-2230	1mi., N/NNW	150-2230	
^{212}Pb		19	46 (3/24)	H51	46 (3/24)	<MDA (0/12)
			17-96	1mi., N/NNW	17-96	
^{226}Ra		189	<MDA (0/24)	----------	<MDA (0/24)	<MDA (0/12)
^{228}Ra		29	<MDA (0/24)	----------	<MDA (0/24)	<MDA (0/12)

Be-7, K-40, Pb-210, Pb-212, Ra-226, and Ra-228 are naturally occurring.
Number of Non-Routine Reported Measurements = 0.

NOTES

a. The LLD is an "a priori" value which establishes the smallest concentration of radioactive material in a sample that will yield a net count above system background, that will be detected with 95% probability, with only 5% probability of falsely concluding that a blank observation represents a real signal.

   Minimum Detectable Activity (MDA) reported in the Quarterly Reports (Section 9) for the individual samples have been corrected to the time of sample collection.

b. Mean and Range are based upon detectable measurements only. The fraction of detectable measurements at specified locations is indicated in parentheses (f).

c. Specific identifying information for each sample location is provided in Section 7.

d. Results were based upon the average net response of three elements in a TLD.

VI. Land Use Census

The PSL Annual Land Use Census Survey was performed during the months of June - October 2023. No locations with a garden or with potential milk-producing animals (cows or goats) were identified within a 5-mile radius of the St. Lucie Plant.

2023 St. Lucie Land Use Census: Distance to Nearest Location[a, b]			
Sector	**Residence**	**Garden[d]**	**Milk Animal[c]**
N	O[e]	O	O
NNE	O	O	O
NE	O	O	O
ENE	O	O	O
E	O	O	O
ESE	O	O	O
SE	(A) 1.5 / 142° (B) 1.6 / 145°	O	O
SSE	(A) 1.8 / 147°[g] (B) 2.0 / 149°	L[f]	L
S	3.3 / 190°	L	L
SSW	2.2 / 212°	L	L
SW	1.9 / 234°	L	L
WSW	1.9 / 240°	L	L
W	1.9 / 260°	L	L
WNW	2.3 / 281°	L	L
NW	3.4 / 304°	L	L
NNW	(A) 2.7 / 344° (B) 2.8 / 343°	L	L

NOTES

a. All categories surveyed out to a 5-mile radius from the St. Lucie Plant.

b. The format used to denote location is:

distance (miles) / bearing (degrees).

For example, a residence located in the southeast sector at 1.5 miles bearing 142 degrees is recorded as 1.5 / 142°.

c. Potential milk animal locations.

d. Only gardens with an estimated total area of 500 square feet or more and producing green leafy vegetables are considered.

e. "O" denotes the sector is predominantly an ocean area.

f. "L" denotes the sector is predominantly a land area that is unoccupied by the category type.

g. Non-residential occupied buildings in this sector include:

Sector	Distance	Description
SSE (A)	1.8 / 147°	Fire Station

5. Deviations / Missing Data

A. Subject: Ground Water: Radioisotopes
Location: H70- H79 Ground Water wells
Dates: 1-1-2023 to 3-31-2023 (Quarterly samples)
Deviation: Failure to perform environmental surveillance.
Description: Sample not taken.
Corrective Action: BRC field team collected and analyzed samples for the following Quarter.

B. Subject: Direct Radiation: Thermoluminescent Dosimeter (TLD)
Location: S/SSE-10 (Indian River Drive and Quail Run Lane)
Dates: 3-27-2023 to 7-26-2023 (Quarterly collection)
Deviation: TLD was missing at the time of collection.
Description: The TLD was missing at the time of collection, therefore was not analyzed.
Corrective Action: The TLD was replaced and returned to routine collection.(AR 2479522)

C. Subject: Ground Water: Radioisotopes
Location: H78 South of North Warehouse
Dates: 5-11-2023
Deviation: Well failed to produce a sample
Description: This well has shown no activity in the past and has periodically failed to produce a sample. (AR 2457648)

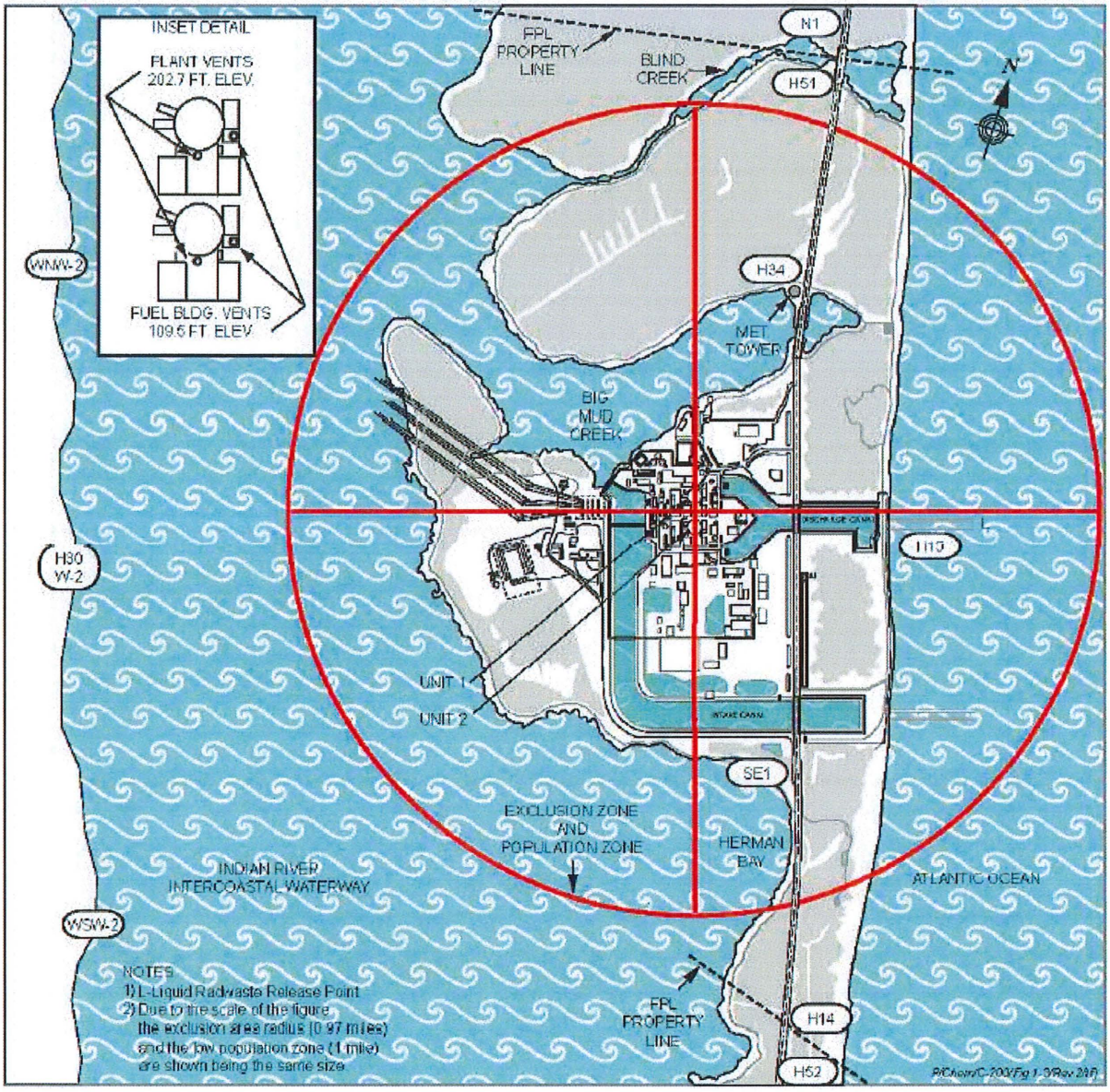
D. Subject: Mixed Analyte Performance Evaluation Program
Location: Florida Department of Health Environmental Laboratory
Dates: *12-22-2023*
Deviation: MAPEP-23-MaS49, for the radiological and inorganic combined soil standard Mn-54 was "Not Acceptable".
Description: This result was a false positive result. A reported value of 1.85 Bq/Kg (50 pCi/Kg). for this false positive test. The Minimum Detectable Activity (MDA) for this nuclide was 2.15 Bq/Kg (58.05 pCi/Kg). After investigation, it was determined that we did not subtract a background soil sample and believe it may cause a report value that is biased high. (AR# 2481542)
Corrective Action: A request for the Mixed Analyte Performance Evaluation Program (MAPEP) to send a blank soil sample for the next series MAPEP-24-MaS50. This should enable an appropriate background subtract.

6. Analyses with LLDs Above Required Detection Capabilities

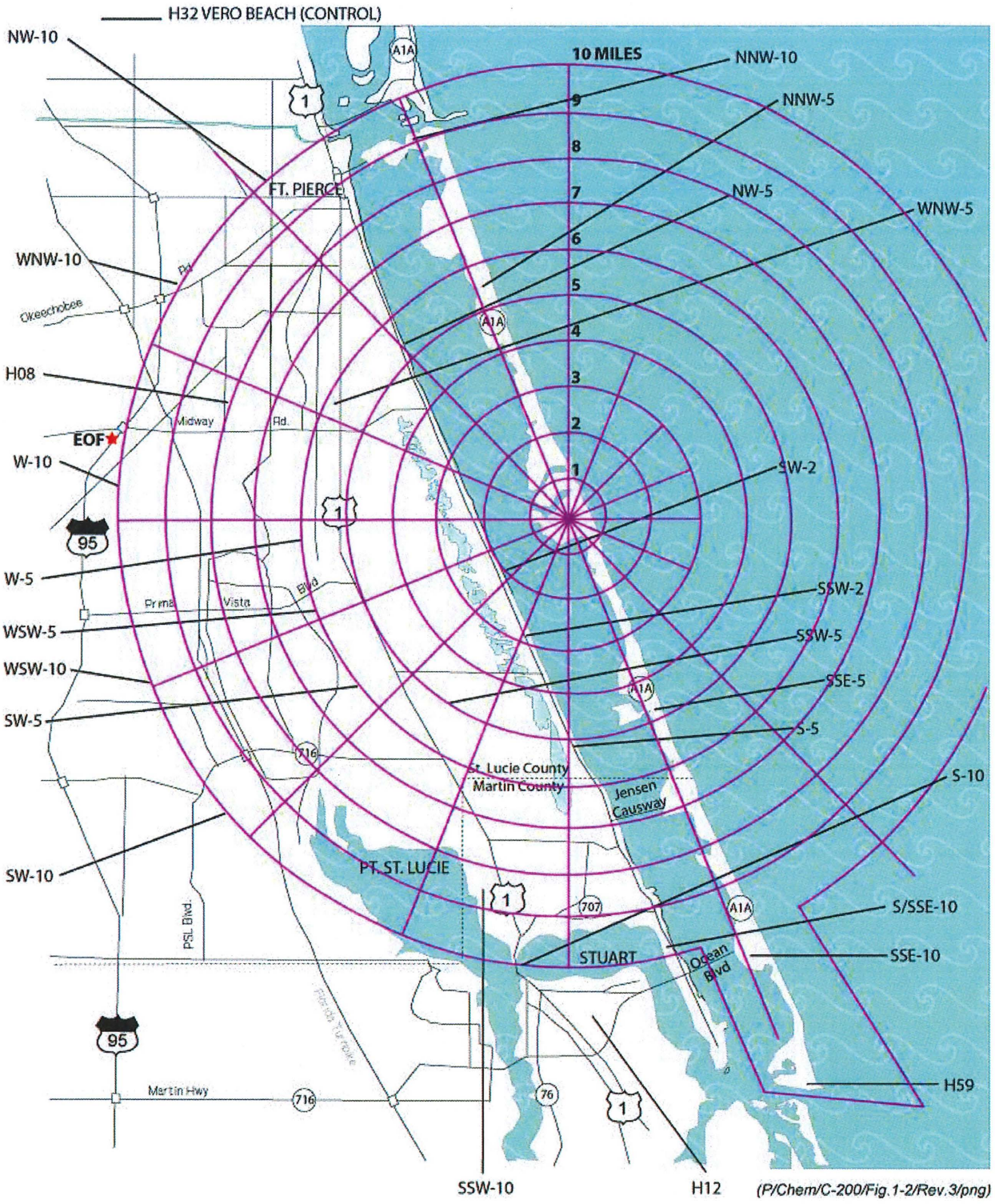
The values specified in ODCM Table 4.12-1 Detection Capabilities For Environmental Sample Analysis were achieved for all samples. REMP sampling deviations and missing data are listed in Section 5.

7. Key to Sample Locations

Site Area Map & Environmental Sample Locations



Environmental Sample Locations (10 Miles)



(P/Chem/C-200/Fig.1-2/Rev.3/png)

PATHWAY: Direct Radiation

SAMPLES COLLECTED: TLD
SAMPLE FREQUENCY: Quarterly

Location Name	Direction Sector	Approximate Distance (Miles)	Description
N-1	N	1	North of Blind Creek (A1A)
NNW-5	NNW	4.8	Frederick Douglas Beach Entrance
NNW-10	NNW	8.7	Coast Guard Station
NW-5	NW	5.4	Indian River Drive at Rio Vista Drive
NW-10	NW	9.6	Intersection of SR 68 and 33rd St (FPL Facility)
WNW-2	WNW	2.3	Cemetery South of 7107 Indian River Drive
WNW-5	WNW	5.1	US-1 at SR 712
WNW-10	WNW	10	SR 70, Just West of I-95
W-2	W	2	Power Line - 77609 Indian River Drive
W-5	W	5.4	Oleander and Sager Streets
W-10	W	10.3	I-95 and SR 709
WSW-2	WSW	1.8	8503 Indian River Drive
WSW-5	WSW	5.6	Prima Vista Blvd. at Yacht Club
WSW-10	WSW	10	Del Rio and Davis Streets
SW-2	SW	2	9205 Indian River Drive
SW-5	SW	4.5	FPL Walton Service Center
SW-10	SW	10.2	Port St. Lucie Blvd. and Cairo Road
SSW-2	SSW	2.6	10307 Indian River Drive
SSW-5	SSW	6	Port St. Lucie Blvd. and US-1
SSW-10	SSW	8	Pine Valley and Westmoreland Roads
S-5	S	5.2	13189 Indian River Drive
S-10	S	10.8	US 1 and Palm City Ave
S/SSE-10	SSE	9.9	Indian River Drive and Quail Run Lane
SSE-5	SSE	5.1	North of Entrance to Miramar
SSE-10	SSE	10.2	Elliot Museum
SE-1	SE	1	South of Cooling Canal
H32 (Control)	NNW	18.1	U. of Florida - IFAS Entomology Lab Vero Beach

PATHWAY: Airborne

SAMPLES COLLECTED: Radioiodine and Particulates
SAMPLE FREQUENCY: Weekly

Location Name	Direction Sector	Approximate Distance (Miles)	Description
H08	WNW	6	FPL Substation – Weatherbee Road
H14	SE	1	On-Site - Near South Property Line
H30	W	2	Power Line - 7609 Indian River Drive
H34	N	0.5	On-Site - At Meteorological Tower
H12 (Control)	S	12	FPL Substation, SR-76 Stuart

PATHWAY: Waterborne

SAMPLES COLLECTED: Surface Water (Ocean)
SAMPLE FREQUENCY: H-15 Weekly; H-59 Monthly

Location Name	Direction Sector	Approximate Distance (Miles)	Description
H15	ENE/E/ESE	<1	Atlantic Ocean Public Beaches, East Side A1A
H59 (Control)	S/SSE	10-20	Near South End of Hutchinson Island

SAMPLES COLLECTED: Shoreline Sediment
SAMPLE FREQUENCY: Semi-Annually

Location Name	Direction Sector	Approximate Distance (Miles)	Description
H15	ENE/E/ESE	<1	Atlantic Ocean Public Beaches, East Side A1A
H59 (Control)	S/SSE	10-20	Near South End of Hutchinson Island

PATHWAY: Ingestion – Food Products

SAMPLES COLLECTED: Crustacea and Fish
SAMPLE FREQUENCY: Semi-Annually

Location Name	Direction Sector	Approximate Distance (Miles)	Description
H15	ENE/E/ESE	<1	Ocean Side, Vicinity of St. Lucie Plant
H59 (Control)	S/SSE	10-20	Near South End of Hutchinson Island

SAMPLES COLLECTED: Broad Leaf Vegetation – Food Products
SAMPLE FREQUENCY: Monthly

Location Name	Direction Sector	Approximate Distance (Miles)	Description
H51	N/NNW	1	Off-Site Near North Property Line
H52	S/SSE	1	Off-Site Near South Property Line
H59 (Control)	S/SSE	10-20	Near South End of Hutchinson Island

8. Ground Water Protection – Industry Initiative

A. Description of Program

Quarterly ground water sampling was performed by the State of Florida Department of Health (DOH), Bureau of Radiation Control (BRC), pursuant to an agreement between FPL and the DOH as part of the ODCM REMP sampling program. Samples were analyzed for tritium and principal gamma emitters. Tritium was the only fission product identified. Naturally occurring potassium (K-40) was identified occasionally.

The wells identified for radiological environmental sampling in support of the industry initiative are listed below and in Appendix B-2 of the ODCM. The 10 wells are on the outside perimeter of PSL's Protected Area. The two locations with the St. Lucie Plant ID ending in "S" (H70 and H73) are shallower wells adjacent (within a few feet) to a deeper well at the same location.

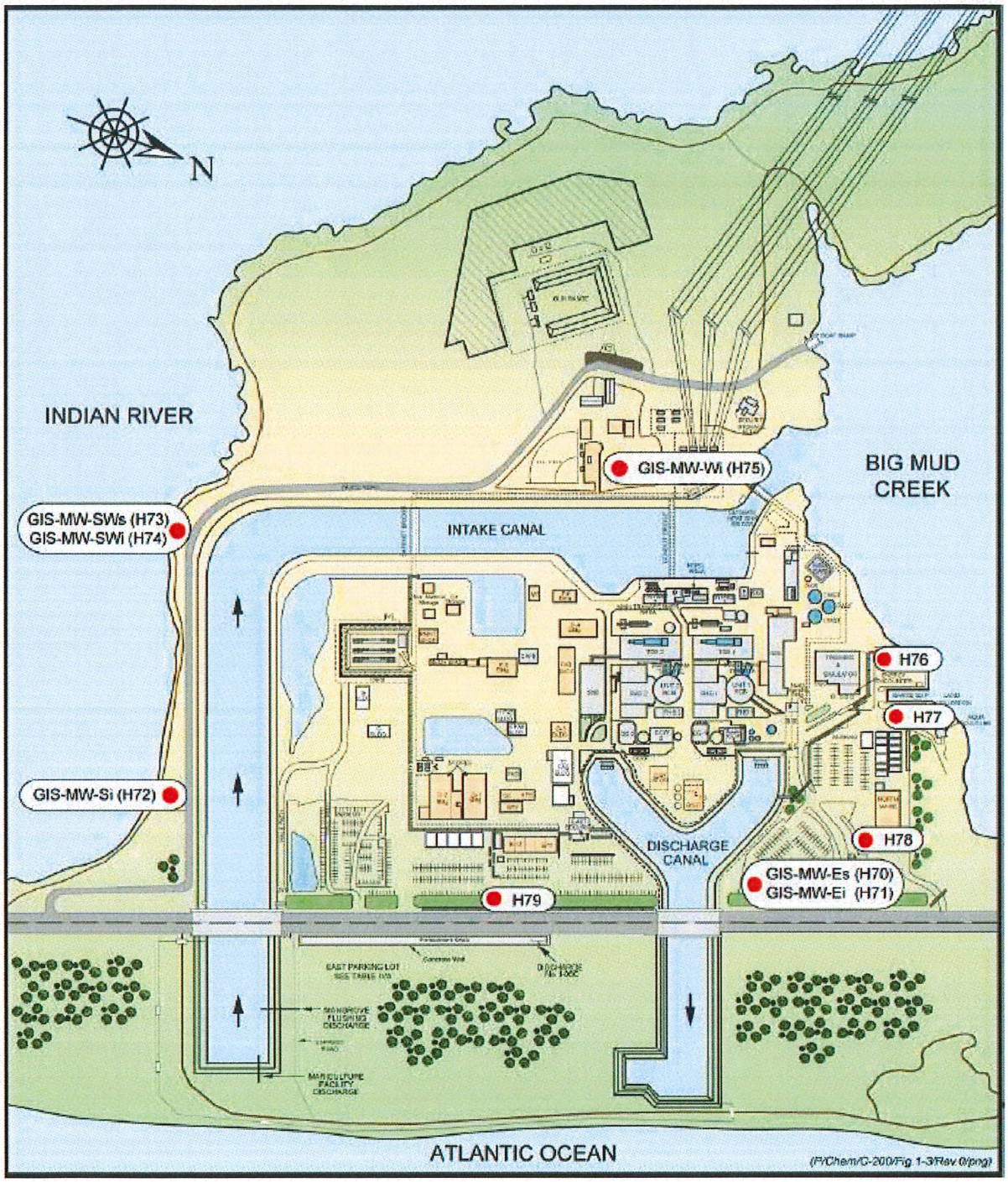
State ID	St. Lucie Plant ID	Location Description
H70	GIS-MW-ES	West of A1A; Between the Discharge Canal and Gate "B"
H71	GIS-MW-EI	West of A1A; Between the Discharge Canal and Gate "B"
H72	GIS-MW-SI	South of Intake Canal and the adjacent access road
H73	GIS-MW-SWS	S/W corner of Intake Canal and the adjacent access road
H74	GIS-MW-SWI	S/W corner of Intake Canal and the adjacent access road
H75	GIS-MW-WI	West of plant site and Intake Canal; South of switchyard
H76	H76	North of Simulator; South of Big Mud Creek
H77	H77	East of Barge Slip; By Land Utilization Building
H78	H78	South of North Warehouse
H79	H79	West of A1A and East of Parking Lot

B. St. Lucie 2022 Tritium Results[1] Summary (pCi/L)

State ID	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
H70	(2)	<136	<127	593
H71	(2)	488	529	711
H72	(2)	<136	<136	<138
H73	(2)	<136	<127	<138
H74	(2)	<136	<142	<138
H75	(2)	<141	<142	<138
H76	(2)	<141	<139	<138
H77	(2)	<136	<127	<138
H78	(2)	<136	<141	<138
H79	(2)	<136	<139	<138

1. Samples analyzed for H3 and principal gamma emitters; tritium was the only fission product identified. Naturally occurring K-40 was occasionally identified.
2. First Quarter Ground Water samples were not collected by the BRC.

C. Map of Groundwater Water Protection – Industry Initiative Wells



9. Radiological Surveillance of Florida Power & Light Company - St. Lucie Site

A. First Quarter 2023

B. Second Quarter 2023

C. Third Quarter 2023

D. Fourth Quarter 2023

RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT

FIRST QUARTER 2023

BUREAU OF RADIATION CONTROL

ST. LUCIE SITE

Offsite Dose Calculation Manual Sampling

First Quarter, 2023

Sample Type	Collection Frequency	Number of Sample Locations	Number of Samples
1. Direct Radiation	Quarterly	27	27
2. Airborne			
2.a. Air Iodines	Weekly	5	65
2.b. Air Particulates	Weekly	5	65
3. Waterborne			
3.a. Surface Water	Weekly	1	13
	Monthly	1	3
3.b. Shoreline Sediment	Semiannually	2	0
4. Ingestion			
4.a. Fish and Invertebrates			
4.a.1. Crustacea	Semiannually	2	1
4.a.2. Fish	Semiannually	2	0
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 180

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

The marine fauna listed in this report were collected in part, under Florida FWC SAL030.

1. DIRECT RADIATION - DEPLOYED TLD's - (μR/hour)

Sample Site	Deployment 21-Dec-22 Collection 27-Mar-23
N-1	3.7 ± 0.41
NNW-5	3.7 ± 0.19
NNW-10	4.6 ± 0.41
NW-5	3.5 ± 0.37
NW-10	4.8 ± 0.63
WNW-2	3.7 ± 0.38
WNW-5	3.8 ± 0.32
WNW-10	3.7 ± 0.19
W-2	3.5 ± 0.43
W-5	4.0 ± 0.41
W-10	3.4 ± 0.68
WSW-2	3.9 ± 0.32
WSW-5	4.0 ± 0.20
WSW-10	4.2 ± 0.18
SW-2	3.6 ± 0.77
SW-5	4.5 ± 0.52
SW-10	4.0 ± 0.12
SSW-2	3.8 ± 0.44
SSW-5	4.3 ± 0.29
SSW-10	3.5 ± 0.66
S-5	3.9 ± 0.56
S-10	4.3 ± 0.67
S/SSE-10	4.1 ± 0.15
SSE-5	3.9 ± 0.60
SSE-10	4.3 ± 0.39
SE-1	3.7 ± 0.46
H-32	3.9 ± 0.51

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/ m^3)

Collection Date	H08	H12	H14	H30	H34
04-Jan-23	<0.03	<0.03	<0.03	<0.03	<0.03
09-Jan-23	<0.02	<0.02	<0.02	<0.02	<0.02
18-Jan-23	<0.02	<0.02	<0.02	<0.02	<0.02
25-Jan-23	<0.02	<0.02	<0.04	<0.02	<0.02
31-Jan-23	<0.02	<0.02	<0.03	<0.02	<0.02
07-Feb-23	<0.03	<0.03	<0.03	<0.03	<0.03
15-Feb-23	<0.02	<0.02	<0.02	<0.02	<0.02
22-Feb-23	<0.02	<0.02	<0.02	<0.02	<0.02
28-Feb-23	<0.02	<0.02	<0.02	<0.02	<0.02
06-Mar-23	<0.02	<0.03	<0.02	<0.02	<0.03
15-Mar-23	<0.02	<0.02	<0.02	<0.02	<0.02
22-Mar-23	<0.01	<0.01	<0.01	<0.01	<0.01
28-Mar-23	<0.02	<0.02	<0.02	<0.02	<0.02

2.b.1. AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	H08	H12	H14	H30	H34
04-Jan-23	0.010 ± 0.002	0.007 ± 0.001	0.008 ± 0.001	0.009 ± 0.002	0.005 ± 0.001
09-Jan-23	0.010 ± 0.002	0.017 ± 0.003	0.019 ± 0.003	0.016 ± 0.003	0.013 ± 0.002
18-Jan-23	0.017 ± 0.002	0.018 ± 0.002	0.016 ± 0.003	0.025 ± 0.002	0.019 ± 0.002
25-Jan-23	0.017 ± 0.002	0.013 ± 0.002	0.013 ± 0.002	0.016 ± 0.002	0.015 ± 0.002
31-Jan-23	0.016 ± 0.002	0.017 ± 0.002	0.017 ± 0.002	0.011 ± 0.002	0.012 ± 0.002
07-Feb-23	0.010 ± 0.002	0.014 ± 0.002	0.016 ± 0.002	0.013 ± 0.002	0.013 ± 0.002
15-Feb-23	0.010 ± 0.002	0.012 ± 0.002	0.009 ± 0.002	0.011 ± 0.002	0.013 ± 0.002
22-Feb-23	0.013 ± 0.002	0.016 ± 0.002	0.012 ± 0.002	0.009 ± 0.002	0.015 ± 0.002
28-Feb-23	0.017 ± 0.002	0.013 ± 0.002	0.010 ± 0.002	0.012 ± 0.002	0.016 ± 0.002
06-Mar-23	0.013 ± 0.002	0.013 ± 0.002	0.017 ± 0.002	0.015 ± 0.002	0.016 ± 0.002
15-Mar-23	0.015 ± 0.002	0.020 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.016 ± 0.002
22-Mar-23	0.021 ± 0.002	0.020 ± 0.002	0.017 ± 0.002	0.016 ± 0.002	0.017 ± 0.002
28-Mar-23	0.014 ± 0.002	0.004 ± 0.002	0.009 ± 0.002	0.013 ± 0.002	0.008 ± 0.002

2.b.2. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
H08	0.1450 ± 0.0095	<0.0149	<0.0012	<0.0009	<0.0157
H12	0.1510 ± 0.0093	<0.0168	<0.0011	<0.0010	<0.0149
H14	0.1390 ± 0.0096	<0.0164	<0.0010	<0.0006	<0.0317
H30	0.1280 ± 0.0091	<0.0132	<0.0012	<0.0010	<0.0145
H34	0.1250 ± 0.0093	<0.0144	<0.0010	<0.0008	<0.0336

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
H15	04-Jan-23	<142	304 ± 25	<41	<3	<3	<8	<3	<8	<6	<4	<4	<4
	10-Jan-23	<142	311 ± 36	<60	<5	<5	<11	<6	<12	<9	<8	<5	<6
	18-Jan-23	<137	354 ± 26	<32	<3	<4	<7	<3	<7	<7	<4	<3	<4
	25-Jan-23	130 ± 45	370 ± 27	<36	<3	<3	<6	<4	<8	<6	<4	<3	<3
	31-Jan-23	<136	389 ± 32	<52	<4	<3	<8	<4	<9	<7	<5	<4	<4
	07-Feb-23	<138	408 ± 39	<41	<5	<5	<13	<4	<11	<9	<10	<5	<6
	15-Feb-23	140 ± 45	349 ± 27	<39	<4	<3	<7	<4	<8	<5	<4	<4	<4
	22-Feb-23	<139	333 ± 27	<44	<3	<3	<7	<3	<7	<6	<4	<3	<3
	28-Feb-23	<141	363 ± 27	<32	<4	<3	<8	<4	<7	<6	<4	<3	<4
	06-Mar-23	<141	403 ± 29	<37	<4	<3	<6	<4	<9	<5	<4	<3	<3
	15-Mar-23	<139	346 ± 26	<36	<4	<4	<5	<5	<9	<5	<4	<3	<5
	23-Mar-23	<139	312 ± 30	<63	<3	<4	<8	<4	<9	<7	<6	<4	<4
	28-Mar-23	<139	347 ± 26	<37	<3	<3	<6	<4	<8	<6	<4	<3	<4
H59	04-Jan-23	<142	295 ± 26	<4	<4	<7	<4	<8	<6	<5	<3	<4	<3
	07-Feb-23	<138	391 ± 40	<6	<6	<10	<6	<13	<10	<11	<5	<5	<10
	06-Mar-23	<141	315 ± 25	<3	<3	<7	<3	<8	<6	<4	<4	<3	<3

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
H15	07-Feb-23	<63	176 ± 42	<7	<7	<6	<7	<296	35 ± 8	<58	<13	<132
H59	07-Feb-23	<54	169 ± 37	<7	<6	<6	<6	<263	41 ± 7	<41	<12	<121

4.a.1. CRUSTACEA - (pCi/kg, wet weight)

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15		Sample to be collected at a later time									
H59	03-Mar-23	2150 ± 185	<21	<26	<42	<26	<50	<19	<21	<532	<109

4.a.2. FISH - (pCi/kg, wet weight)

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15		Samples to be collected at a later time									
H59											

4.b. BROADLEAF VEGETATION - Brazilian Pepper - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137	Pb-210	Pb-212	Ra-226	Ra-228
H51	04-Jan-23	2150 ± 113	3070 ± 163	<21	<10	<14	1310 ± 311	<28	<343	<51
	07-Feb-23	1360 ± 126	4670 ± 208	<12	<10	<11	<707	<22	<250	<49
	06-Mar-23	1700 ± 143	6270 ± 353	<58	<25	<30	2230 ± 644	96 ± 15	<707	<121
H52	04-Jan-23	1840 ± 164	3070 ± 152	<17	<11	<12	<673	<22	<255	<45
	07-Feb-23	1600 ± 144	3580 ± 167	<12	<9	<12	<675	<21	<244	<40
	06-Mar-23	1180 ± 114	5240 ± 234	<26	<12	<14	<759	<25	<294	<49
H59	04-Jan-23	1930 ± 70	2750 ± 124	<14	<8	<11	<58	<18	<217	<35
	07-Feb-23	917 ± 88	2680 ± 139	<12	<9	<10	<556	<20	<227	<39
	06-Mar-23	1180 ± 58	3380 ± 150	<21	<10	<10	<96	<21	<250	<40

ST. LUCIE SITE

Supplemental Sampling

First Quarter, 2023

Sample Type	Collection Frequency	Number of Sample Locations	Number of Samples
1. Direct Radiation	Quarterly	9	9
2. Airborne			
2.a. Air Iodines	Weekly	3	39
2.b. Air Particulates	Weekly	3	39
3. Waterborne			
3.a. Surface Water	Monthly	2	6
3.b. Shoreline Sediment	Semiannually	4	0
3.c. Beach Sand	Semiannually	3	0
3.d. Ground Water	Quarterly	10	0
4. Ingestion			
4.a. Garden Crop	Annually	1	0
4.b. Citrus	Annually	1	1
			Total: 66

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

1. DIRECT RADIATION - DEPLOYED TLD's - (μR/hour)

Sample Site	Deployment 21-Dec-22 Collection 27-Mar-23
H08	4.34 ± 0.74
H09	4.56 ± 0.86
H12	9.11 ± 0.40
H14	4.36 ± 0.38
H33	4.04 ± 0.43
H34	3.94 ± 0.47
H60	3.82 ± 0.17
H61	5.48 ± 0.19
H62	4.60 ± 0.20

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m³)

Collection Date	H09	H32	H33
04-Jan-23	<0.03	<0.03	<0.03
09-Jan-23	<0.02	<0.02	<0.02
18-Jan-23	<0.02	<0.02	<0.02
25-Jan-23	<0.02	<0.03	<0.02
31-Jan-23	<0.03	<0.02	<0.03
07-Feb-23	<0.02	<0.02	<0.02
15-Feb-23	<0.02	<0.02	<0.02
22-Feb-23	<0.02	<0.02	<0.02
28-Feb-23	<0.03	<0.03	<0.03
06-Mar-23	<0.02	<0.02	<0.02
15-Mar-23	<0.01	<0.02	<0.01
22-Mar-23	<0.02	<0.02	<0.02
28-Mar-23	<0.03	<0.03	<0.03

2.b. AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	H09	H32	H33
04-Jan-23	0.009 ± 0.002	0.010 ± 0.001	0.009 ± 0.002
09-Jan-23	0.016 ± 0.003	0.011 ± 0.002	0.011 ± 0.002
18-Jan-23	0.021 ± 0.002	0.023 ± 0.002	0.022 ± 0.002
25-Jan-23	0.011 ± 0.002	0.022 ± 0.003	0.008 ± 0.002
31-Jan-23	0.017 ± 0.002	0.016 ± 0.002	0.013 ± 0.002
07-Feb-23	0.012 ± 0.002	0.013 ± 0.002	0.015 ± 0.002
15-Feb-23	0.010 ± 0.002	0.014 ± 0.002	0.011 ± 0.002
22-Feb-23	0.016 ± 0.002	0.012 ± 0.002	0.011 ± 0.002
28-Feb-23	0.012 ± 0.002	0.018 ± 0.002	0.012 ± 0.002
06-Mar-23	0.013 ± 0.002	0.015 ± 0.002	0.017 ± 0.002
15-Mar-23	0.016 ± 0.002	0.016 ± 0.002	0.014 ± 0.002
22-Mar-23	0.017 ± 0.002	0.021 ± 0.002	0.018 ± 0.002
28-Mar-23	0.010 ± 0.002	0.009 ± 0.002	0.007 ± 0.002
Average	0.014 ± 0.001	0.015 ± 0.001	0.013 ± 0.001

2.b. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
H09	0.1380 ± 0.0100	<0.0172	<0.0007	<0.0010	<0.0089
H32	0.1360 ± 0.0093	<0.0141	<0.0006	<0.0007	<0.0322
H33	1.4400 ± 0.0953	<0.2210	<0.0083	<0.0074	0.0918 ± 0.0282

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
H13	04-Jan-23	<142	314 ± 35	<5	<6	<10	<6	<13	<9	<7	<4	<5	<10
	07-Feb-23	<138	270 ± 24	<3	<3	<8	<4	<7	<6	<6	<4	<4	<3
	06-Mar-23	<141	268 ± 24	<4	<3	<8	<4	<7	<5	<4	<3	<4	<3
H36	04-Jan-23	11820 ± 156 (C)	304 ± 25	<41	<3	<3	<8	<3	<8	<6	<4	<5	<5
	07-Feb-23	<138	431 ± 39	<5	<6	<12	<5	<12	<9	<9	<5	<5	<11
	06-Mar-23	<141	348 ± 27	<3	<3	<7	<4	<9	<6	<4	<4	<4	<3

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample. (C) – Sample was taken during release

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
H13	08-Feb-23	<86	649 ± 57	<11	<7	<8	<10	<1080	34 ± 11	<66	<20	<183
H16	08-Feb-23	<62	155 ± 44	<8	<7	<6	<6	<383	<29	<52	<13	<137
H19	08-Feb-23	<82	231 ± 34	<9	<7	<8	<9	<922	39 ± 11	<52	<20	<180
H36	07-Feb-23	<164	5200 ± 196	<21	<18	<17	22 ± 5	4390 ± 323	242 ± 17	86 ± 21	32 ± 9	466 ± 43

3.c. BEACH SAND - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
H15	07-Feb-23	<95	262 ± 40	<10	<9	<9	<9	<935	338 ± 103	<70	<21	<200
H16	08-Feb-23	<58	140 ± 39	<7	<8	<7	<6	<404	111 ± 59	<41	<12	<125
H19	08-Feb-23	<108	150 ± 36	<10	<12	<10	<11	<1070	532 ± 124	74 ± 17	34 ± 8	129 ± 40

3.d. GROUND WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co58	Fe59	Co60	Zn 65	Zr95 Nb-95 (A)	I-131	Cs134	Cs-137	Ba140 La140 (B)
H70													
H71	These samples to be collected at a later time												
H72													
H73													
H74													
H75													
H76													
H77													
H78													
H79													

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La140, whichever method yields the greater sensitivity for a given sample.

SL QR 1Q-2023

4.a. GARDEN CROP - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137
H41	This sample has not been available.					

4.b. CITRUS - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137
H23	23-Mar-23	<64	1400 ± 86	<8	<6	<8

RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT

SECOND QUARTER 2023

ST. LUCIE SITE

Offsite Dose Calculation Manual Sampling

Second Quarter, 2023

Sample Type	Collection Frequency	Number of Sample Locations	Number of Samples
1. Direct Radiation	Quarterly	27	26
2. Airborne			
2.a. Air Iodines	Weekly	5	65
2.b. Air Particulates	Weekly	5	65
3. Waterborne			
3.a. Surface Water	Weekly	1	13
	Monthly	1	3
3.b. Shoreline Sediment	Semiannually	2	0
4. Ingestion			
4.a. Fish and Invertebrates			
4.a.1. Crustacea	Semiannually	2	1
4.a.2. Fish	Semiannually	2	2
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 178

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

The marine fauna listed in this report were collected in part, under Florida FWC SAL030.

1. DIRECT RADIATION - DEPLOYED TLD's - (µR/hour)

Sample Site	Deployment: 27-Mar-23 Collection: 26-July-23
N-1	3.3 ± 0.30
NNW-5	3.2 ± 0.24
NNW-10	4.2 ± 0.63
NW-5	3.3 ± 0.45
NW-10	4.4 ± 0.36
WNW-2	3.2 ± 0.16
WNW-5	3.5 ± 0.33
WNW-10	3.3 ± 0.16
W-2	3.4 ± 0.52
W-5	3.7 ± 0.66
W-10	2.9 ± 0.21
WSW-2	3.5 ± 0.53
WSW-5	3.5 ± 0.50
WSW-10	3.8 ± 0.44
SW-2	3.4 ± 0.74
SW-5	4.0 ± 0.33
SW-10	3.4 ± 0.51
SSW-2	3.3 ± 0.09
SSW-5	3.9 ± 0.65
SSW-10	3.3 ± 0.29
S-5	3.5 ± 0.31
S-10	3.9 ± 0.56
S/SSE-10	(A)
SSE-5	3.2 ± 0.40
SSE-10	3.8 ± 0.36
SE-1	3.9 ± 0.85
H-32	3.9 ± 0.38

(A) – Missing at time of collection. Replaced by New TLD

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/ m³)

Collection Date	H08	H12	H14	H30	H34
04-Apr-23	<0.04	<0.04	<0.04	<0.04	<0.04
11-Apr-23	<0.02	<0.02	<0.02	<0.02	<0.02
18-Apr-23	<0.02	<0.02	<0.02	<0.02	<0.02
25-Apr-23	<0.02	<0.02	<0.02	<0.02	<0.02
03-May-23	<0.02	<0.02	<0.02	<0.02	<0.02
08-May-23	<0.03	<0.03	<0.03	<0.03	<0.03
16-May-23	<0.02	<0.02	<0.02	<0.02	<0.02
22-May-23	<0.02	<0.02	<0.02	<0.02	<0.02
31-May-23	<0.02	<0.02	<0.02	<0.02	<0.02
06-Jun-23	<0.02	<0.02	<0.02	<0.02	<0.02
13-Jun-23	<0.02	<0.02	<0.02	<0.02	<0.02
20-Jun-23	<0.02	<0.02	<0.02	<0.02	<0.02
27-Jun-23	<0.02	<0.02	<0.02	<0.02	<0.02

2.b.1. AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	H08	H12	H14	H30	H34
04-Apr-23	0.018 ± 0.002	0.012 ± 0.002	0.011 ± 0.002	0.014 ± 0.002	0.014 ± 0.002
11-Apr-23	0.012 ± 0.002	0.010 ± 0.002	0.010 ± 0.002	0.012 ± 0.002	0.011 ± 0.002
18-Apr-23	0.008 ± 0.002	0.015 ± 0.002	0.011 ± 0.002	0.012 ± 0.002	0.014 ± 0.002
25-Apr-23	0.016 ± 0.002	0.022 ± 0.002	0.014 ± 0.002	0.012 ± 0.002	0.019 ± 0.002
03-May-23	0.015 ± 0.002	0.015 ± 0.002	0.016 ± 0.002	0.016 ± 0.002	0.015 ± 0.002
08-May-23	0.020 ± 0.003	0.018 ± 0.003	0.021 ± 0.003	0.018 ± 0.003	0.017 ± 0.003
16-May-23	0.012 ± 0.002	0.015 ± 0.002	0.017 ± 0.002	0.013 ± 0.002	0.013 ± 0.002
22-May-23	0.016 ± 0.002	0.020 ± 0.002	0.012 ± 0.002	0.017 ± 0.002	0.010 ± 0.002
31-May-23	0.012 ± 0.001	0.013 ± 0.002	0.008 ± 0.001	0.010 ± 0.001	0.011 ± 0.001
06-Jun-23	0.009 ± 0.002	0.009 ± 0.002	0.008 ± 0.002	0.009 ± 0.002	0.009 ± 0.002
13-Jun-23	0.013 ± 0.002	0.016 ± 0.002	0.015 ± 0.002	0.011 ± 0.002	0.013 ± 0.002
20-Jun-23	0.010 ± 0.002	0.009 ± 0.002	0.015 ± 0.002	0.012 ± 0.002	0.009 ± 0.002
27-Jun-23	0.015 ± 0.001	0.014 ± 0.001	0.015 ± 0.001	0.013 ± 0.001	0.013 ± 0.001

2.b.2. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
H08	0.1110 ± 0.0094	<0.0164	<0.0011	<0.0013	<0.0010
H12	0.1110 ± 0.0091	<0.0197	<0.0010	<0.0013	<0.0010
H14	0.1120 ± 0.0095	<0.0135	<0.0007	<0.0009	<0.0007
H30	0.0946 ± 0.0082	<0.0134	<0.0008	<0.0011	<0.0007
H34	0.1100 ± 0.0091	<0.0123	<0.0008	<0.0010	<0.0009

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
H15	04-Apr-23	<151	349 ± 40	<5	<5	<11	<5	<13	<9	<7	<5	<6	<10
	11-Apr-23	<148	405 ± 41	<5	<5	<11	<4	<10	<8	<8	<4	<5	<7
	18-Apr-23	<137	355 ± 38	<5	<5	<12	<6	<13	<9	<7	<5	<6	<12
	25-Apr-23	<137	412 ± 29	<4	<4	<7	<3	<9	<6	<4	<4	<4	<3
	03-May-23	<136	368 ± 31	<4	<4	<9	<5	<10	<7	<6	<4	<4	<6
	08-May-23	<136	415 ± 30	<4	<4	<6	<3	<7	<6	<4	<4	<4	<3
	16-May-23	<141	376 ± 27	<3	<4	<7	<4	<8	<6	<4	<3	<3	<3
	22-May-23	<150	389 ± 28	<3	<3	<7	<4	<8	<6	<5	<4	<4	<3
	31-May-23	<150	334 ± 26	<4	<5	<12	<4	<8	<9	<49	<4	<4	<14
	06-Jun-23	<150	332 ± 26	<4	<3	<7	<4	<7	<6	<5	<4	<4	<3
	13-Jun-23	<140	366 ± 32	<4	<4	<9	<4	<9	<7	<5	<4	<4	<6
	20-Jun-23	<140	361 ± 26	<3	<3	<7	<4	<8	<6	<4	<4	<4	<3
	27-Jun-23	<140	368 ± 28	<3	<4	<7	<4	<7	<6	<5	<3	<4	<3
H59	06-Apr-23	<148	316 ± 31	<4	<4	<8	<4	<8	<6	<6	<4	<4	<6
	03-May-23	<140	301 ± 35	<5	<5	<12	<6	<13	<11	<10	<5	<5	<7
	06-Jun-23	<150	362 ± 32	<4	<4	<8	<4	<9	<7	<8	<4	<5	<5

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
H15				Sample was previously collected								
H59												

4.a.1. CRUSTACEA - (pCi/kg, wet weight)

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15	06-Apr-23	1990 ± 197	<23	<26	<65	<29	<49	<22	<22	<21	<689
H59		This sample was previously collected									

4.a.2. FISH - (pCi/kg, wet weight)

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15	06-Apr-23	3260 ± 211	<17	<18	<44	<21	<49	<15	<16	<15	<18
H59	06-Apr-23	3360 ± 233	<24	<21	<50	<23	<56	<19	<20	<19	<21

4.b. BROADLEAF VEGETATION - Brazilian Pepper - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137	Pb-210	Pb-212	Ra-226	Ra-228
H51	06-Apr-23	1410 ± 93	3990 ± 202	<24	<12	<13	832 ± 326	<32	<366	<62
	03-May-23	1310 ± 128	6920 ± 305	<19	<16	<18	<902	<36	<401	<75
	06-Jun-23	1140 ± 112	6730 ± 289	<17	<17	<16	<930	24 ± 8	<367	<71
H52	06-Apr-23	1220 ± 57	4040 ± 167	<15	<11	<11	86 ± 23	<22	<241	<44
	03-May-23	1580 ± 141	5190 ± 274	<24	<23	<25	<1160	<46	<520	<91
	06-Jun-23	1270 ± 86	4960 ± 239	<17	<14	<16	643 ± 354	<36	<393	<73
H59	06-Apr-23	482 ± 61	4190 ± 194	<18	<10	<12	<635	<23	<277	<44
	03-May-23	1040 ± 84	4250 ± 234	<24	<16	<19	<1100	<45	<442	<69
	06-Jun-23	1900 ± 170	2840 ± 155	<14	<13	<13	<778	<28	<319	<52

ST. LUCIE SITE

Supplemental Sampling

Second Quarter, 2023

Sample Type	Collection Frequency	Number of Sample Locations	Number of Samples
1. Direct Radiation	Quarterly	9	8
2. Airborne			
2.a. Air Iodines	Weekly	3	31
2.b. Air Particulates	Weekly	3	31
3. Waterborne			
3.a. Surface Water	Monthly	2	6
3.b. Shoreline Sediment	Semiannually	4	0
3.c. Beach Sand	Semiannually	3	0
3.d. Ground Water	Quarterly	10	10
4. Ingestion			
4.a. Garden Crop	Annually	1	0
4.b. Citrus	Annually	1	0
			Total: 86

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

1. DIRECT RADIATION - DEPLOYED TLD's - (µR/hour)

Sample Site	Deployment: 27-Mar-23 Collection: 26-July-23
H08	3.8 ± 0.36
H09	3.9 ± 0.85
H12	(A)
H14	3.9 ± 0.38
H33	3.6 ± 0.15
H34	3.6 ± 0.50
H60	3.5 ± 0.04
H61	3.6 ± 0.38
H62	4.6 ± 0.16

(A) – Missing at time of collection. Replaced with New TLD

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m³)

Collection Date	H09	H32	H33
04-Apr-23	<0.04	<0.04	<0.04
11-Apr-23	<0.02	<0.02	<0.02
18-Apr-23	<0.02	<0.02	<0.02
25-Apr-23	<0.02	<0.02	<0.02
03-May-23	<0.02	<0.02	<0.02
08-May-23	<0.03	<0.03	(A)
16-May-23	<0.02	<0.02	(A)
22-May-23	<0.02	<0.02	(A)
31-May-23	<0.02	<0.02	(A)
06-Jun-23	<0.02	<0.02	(A)
13-Jun-23	<0.02	<0.02	(A)
20-Jun-23	<0.02	<0.02	(A)
27-Jun-23	<0.02	<0.02	(A)

(A) No power at site – sample not collected.

2.b. AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	H09	H32	H33
04-Apr-23	0.014 ± 0.002	0.019 ± 0.002	0.013 ± 0.002
11-Apr-23	0.012 ± 0.002	0.010 ± 0.002	0.008 ± 0.002
18-Apr-23	0.013 ± 0.002	0.012 ± 0.002	0.008 ± 0.002
25-Apr-23	0.015 ± 0.002	0.019 ± 0.002	0.016 ± 0.002
03-May-23	0.017 ± 0.002	0.012 ± 0.002	0.021 ± 0.008
08-May-23	0.019 ± 0.003	0.022 ± 0.003	(A)
22-May-23	0.017 ± 0.002	0.016 ± 0.002	(A)
31-May-23	0.014 ± 0.002	0.011 ± 0.001	(A)
06-Jun-23	0.006 ± 0.002	0.011 ± 0.002	(A)
13-Jun-23	0.016 ± 0.002	0.016 ± 0.002	(A)
16-May-23	0.010 ± 0.002	0.012 ± 0.002	(A)
20-Jun-23	0.014 ± 0.002	0.010 ± 0.002	(A)
27-Jun-23	0.012 ± 0.002	0.011 ± 0.002	(A)
Average	0.014 ± 0.001	0.014 ± 0.001	0.013 ± 0.001

(B) No power at site – sample not collected.

2.b. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
H09	0.1110 ± 0.0090	<0.0090	<0.0151	<0.0009	<0.0010
H32	0.1130 ± 0.0093	<0.0093	<0.0174	<0.0007	<0.0010
H33	0.0583 ± 0.0167	<0.0167	<0.0723	<0.0033	<0.0028

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
H13	06-Apr-23	<148	287 ± 25	<41	<4	<4	<7	<3	<7	<7	<6	<3	<3
	03-May-23	<136	251 ± 24	<41	<4	<4	<7	<3	<8	<7	<6	<4	<4
	06-Jun-23	<150	354 ± 39	<65	<5	<5	<12	<5	<13	<7	<10	<5	<5
H36	06-Apr-23	<148	428 ± 34	<57	<4	<3	<9	<4	<8	<6	<5	<3	<4
	03-May-23	<136	418 ± 43	<68	<5	<5	<13	<6	<14	<11	<10	<5	<6
	06-Jun-23	<150	371 ± 27	<33	<3	<4	<8	<4	<8	<6	<5	<3	<4

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample. (C) – Sample was taken during release

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
H13	Samples previously collected											
H16												
H19												
H36												

3.c. BEACH SAND - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
H15					Samples previously collected							
H16												
H19												

3.d. GROUND WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co58	Fe-59	Co60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
H70	11-May-23	<136	<56	<3	<3	<7	<3	<7	<5	<5	<3	<4	<3
H71	11-May-23	488 ± 51	425 ± 40	<5	<5	<11	<5	<13	<10	<8	<5	<5	<9
H72	11-May-23	<136	<320 ± 30	<4	<4	<8	<4	<9	<7	<7	<4	<4	<6
H73	11-May-23	<136	<65	<4	<4	<9	<4	<10	<7	<6	<4	<5	<3
H74	11-May-23	<136	292 ± 28	<4	<4	<9	<5	<10	<7	<7	<5	<5	<6
H75	11-May-23	<141	270 ± 31	<5	<4	<12	<5	<10	<8	<8	<4	<6	<9
H76	11-May-23	<141	<65	<5	<4	<8	<4	<9	<7	<8	<4	<5	<7
H77	11-May-23	<136	<48	<<3	<3	<9	<4	<9	<7	<6	<4	<4	<6
H78	11-May-23	<136	<53	<4	<5	<9	<4	<10	<8	<7	<5	<5	<6
H79	11-May-23	<136	<56	<3	<3	<7	<3	<7	<5	<5	<3	<4	<3

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La140, whichever method yields the greater sensitivity for a given sample.

SL QR 2Q-2023

4.a. GARDEN CROP - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137
H41	This sample has not been available.					

4.b. CITRUS - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137
H23		This sample was previously collected				

RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT

THIRD QUARTER 2023

BUREAU OF RADIATION CONTROL

ST. LUCIE SITE

Offsite Dose Calculation Manual Sampling

Third Quarter, 2023

Sample Type	Collection Frequency	Number of Sample Locations	Number of Samples
1. Direct Radiation	Quarterly	27	27
2. Airborne			
2.a. Air Iodines	Weekly	5	65
2.b. Air Particulates	Weekly	5	65
3. Waterborne			
3.a. Surface Water	Weekly	1	13
	Monthly	1	3
3.b. Shoreline Sediment	Semiannually	2	2
4. Ingestion			
4.a. Fish and Invertebrates			
4.a.1. Crustacea	Semiannually	2	1
4.a.2. Fish	Semiannually	2	2
4.b. Broadleaf Vegetation	Monthly	3	9

Total: 187

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard-deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

The marine fauna listed in this report were collected in part, under Florida FWC SAL030.

1. DIRECT RADIATION - DEPLOYED TLD's - (μR/hour)

Sample Site	Deployment: 26-July-23 Collection: 09-Sep-23
N-1	3.3 ± 0.2
NNW-5	3.4 ± 0.8
NNW-10	3.9 ± 0.2
NW-5	3.3 ± 0.6
NW-10	4.9 ± 0.5
WNW-2	3.7 ± 0.5
WNW-5	3.7 ± 0.2
WNW-10	3.5 ± 0.5
W-2	3.1 ± 0.8
W-5	3.9 ± 0.6
W-10	3.2 ± 0.2
WSW-2	3.6 ± 0.6
WSW-5	3.5 ± 0.6
WSW-10	3.4 ± 0.7
SW-2	3.4 ± 0.4
SW-5	4.1 ± 0.7
SW-10	3.5 ± 0.6
SSW-2	3.5 ± 0.8
SSW-5	3.6 ± 0.2
SSW-10	3.2 ± 0.8
S-5	3.7 ± 1.1
S-10	4.1 ± 0.6
S/SSE-10	3.9 ± 0.3
SSE-5	3.4 ± 0.3
SSE-10	3.3 ± 0.2
SE-1	3.4 ± 0.8
H-32	3.4 ± 0.4

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/ m^3)

Collection Date	H08	H12	H14	H30	H34
05-Jul-23	<0.02	<0.02	<0.02	<0.02	<0.02
11-Jul-23	<0.02	<0.02	<0.02	<0.02	<0.02
18-Jul-23	<0.02	<0.02	<0.02	<0.02	<0.02
25-Jul-23	<0.02	<0.02	<0.02	<0.02	<0.02
01-Aug-23	<0.02	<0.02	<0.02	<0.02	<0.02
08-Aug-23	<0.01	<0.01	<0.01	<0.01	<0.01
15-Aug-23	<0.02	<0.02	<0.02	<0.02	<0.02
23-Aug-23	<0.03	<0.02	<0.02	<0.02	<0.02
31-Aug-23	<0.01	<0.01	<0.01	<0.01	<0.01
05-Sep-23	<0.02	<0.02	<0.02	<0.02	<0.02
12-Sep-23	<0.02	<0.02	<0.02	<0.02	<0.02
18-Sep-23	<0.04	<0.04	<0.04	<0.04	<0.04
27-Sep-23	<0.02	<0.02	<0.02	<0.02	<0.02

2.b.1. AIR PARTICULATES - GROSS BETA - (pCi/m^3)

Collection Date	H08	H12	H14	H30	H34
05-Jul-23	0.013 ± 0.002	0.014 ± 0.002	0.018 ± 0.002	0.013 ± 0.002	0.010 ± 0.001
11-Jul-23	0.017 ± 0.002	0.014 ± 0.002	0.017 ± 0.002	0.013 ± 0.002	0.019 ± 0.002
18-Jul-23	0.018 ± 0.002	0.018 ± 0.002	0.018 ± 0.002	0.018 ± 0.002	0.015 ± 0.002
25-Jul-23	0.017 ± 0.002	0.016 ± 0.002	0.016 ± 0.002	0.017 ± 0.002	0.015 ± 0.002
01-Aug-23	0.013 ± 0.002	0.012 ± 0.002	0.008 ± 0.002	0.009 ± 0.002	0.007 ± 0.001
08-Aug-23	0.011 ± 0.002	0.014 ± 0.002	0.011 ± 0.002	0.014 ± 0.002	0.012 ± 0.002
15-Aug-23	0.011 ± 0.002	0.010 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.011 ± 0.002
23-Aug-23	0.010 ± 0.002	0.019 ± 0.002	0.016 ± 0.002	0.013 ± 0.002	0.016 ± 0.002
31-Aug-23	0.010 ± 0.002	0.014 ± 0.002	0.012 ± 0.002	0.016 ± 0.002	0.012 ± 0.002
05-Sep-23	0.018 ± 0.003	0.015 ± 0.002	0.017 ± 0.003	0.014 ± 0.002	0.016 ± 0.002
12-Sep-23	0.015 ± 0.002	0.017 ± 0.002	0.011 ± 0.002	0.009 ± 0.002	0.006 ± 0.002
18-Sep-23	0.012 ± 0.002	0.012 ± 0.002	0.018 ± 0.002	0.015 ± 0.002	0.017 ± 0.002
23-Sep-23	0.009 ± 0.001	0.013 ± 0.002	0.014 ± 0.002	0.012 ± 0.002	0.015 ± 0.002
Average:	0.015 ± 0.001	0.015 ± 0.001	0.016 ± 0.001	0.015 ± 0.001	0.014 ± 0.001

2.b.2. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m^3)

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
H08	0.1110 ± 0.0094	<0.0164	<0.0011	<0.0013	<0.0010
H12	0.1110 ± 0.0091	<0.0197	<0.0010	<0.0013	<0.0010
H14	0.1120 ± 0.0095	<0.0135	<0.0007	<0.0009	<0.0007
H30	0.0946 ± 0.0082	<0.0134	<0.0008	<0.0011	<0.0007
H34	0.1100 ± 0.0091	<0.0123	<0.0008	<0.0010	<0.0009

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
H15	05-Jul-23	<140	349 ± 26	<4	<4	<6	<3	<6	<6	<4	<4	<4	<2
	11-Jul-23	<127	367 ± 36	<5	<5	<10	<6	<11	<8	<9	<5	<6	<7
	18-Jul-23	<127	320 ± 32	<3	<4	<9	<5	<10	<7	<6	<4	<5	<3
	25-Jul-23	<142	361 ± 41	<5	<5	<11	<7	<12	<9	<7	<5	<6	<6
	01-Aug-23	<141	386 ± 40	<5	<5	<13	<5	<12	<10	<9	<5	<6	<10
	08-Aug-23	<138	294 ± 37	<5	<5	<10	<5	<11	<10	<7	<6	<6	<9
	15-Aug-23	<138	312 ± 26	<4	<5	<12	<4	<9	<8	<55	<3	<3	<14
	23-Aug-23	<138	365 ± 41	<6	<6	<10	<6	<12	<10	<8	<5	<6	<10
	31-Aug-23	<138	338 ± 30	<4	<4	<9	<4	<10	<7	<8	<4	<4	<6
	05-Sep-23	<138	368 ± 33	<5	<5	<14	<5	<12	<10	<10	<4	<4	<35
	12-Sep-23	<137	282 ± 30	<4	<4	<9	<4	<8	<7	<5	<4	<4	<8
	18-Sep-23	<127	341 ± 31	<4	<4	<10	<4	<9	<7	<8	<4	<4	<5
	23-Sep-23	<141	365 ± 27	<4	<3	<8	<3	<9	<6	<4	<4	<4	<3
H59	21-Jul-23	<138	302 ± 37	<5	<5	<11	<6	<15	<9	<8	<6	<6	<8
	15-Aug-23	<140	349 ± 26	<4	<4	<6	<3	<6	<6	<4	<4	<4	<2
	06-Sep-23	<127	367 ± 36	<5	<5	<10	<6	<11	<8	<9	<5	<6	<7

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
H15	22-Sep-23	41 ± 21	123 ± 33	<9	<9	<8	<10	<942	<42	<6	<21	<183
H59	22-Sep-23	<74	487 ± 54	<8	<8	<8	<7	<478	121 ± 9	53 ± 13	<15	<119

4.a.1. CRUSTACEA - (pCi/kg, wet weight)

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15	16-Aug-23	2550 ± 233	<254	<30	<28	<71	<30	<76	<25	<33	<689
H59	16-Aug-23	1700 ± 186	<424	<28	<29	<64	<26	<62	<30	<28	<518

4.a.2. FISH - (pCi/kg, wet weight)

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15	25-Aug-23	2940 ± 211	<22	<19	<57	<23	<50	<19	<19	<21	<491
H59	21-Aug-23	2790 ± 187	<20	<21	<46	<21	<47	<19	<21	<23	<348

4.b. BROADLEAF VEGETATION - Brazilian Pepper - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137	Pb-210	Pb-212	Ra-226	Ra-228
H51	21-Jul-23	3130 ± 276	5700 ± 265	<27	<17	83 ± 8	<1060	<38	<444	<65
	15-Aug-23	3290 ± 104	4050 ± 170	<18	<10	78 ± 6	150 ± 28	<22	<268	<43
	06-Sep-23	3320 ± 114	4770 ± 199	<36	<11	73 ± 6	155 ± 31	<26	<302	<46
H52	21-Jul-23	2070 ± 114	4270 ± 212	<21	<11	26 ± 6	<1030	<32	<389	<63
	15-Aug-23	2780 ± 109	6230 ± 258	<19	<14	<138	<138	<33	<363	<60
	06-Sep-23	1320 ± 131	5050 ± 234	<43	<15	27 ± 5	<877	<34	<348	<61
H59	21-Jul-23	1670 ± 151	3520 ± 173	<20	<11	23 ± 4	<776	<25	<320	<48
	15-Aug-23	1340 ± 92	6580 ± 291	<21	<15	<18	<1250	<33	<436	<67
	06-Sep-23	1910 ± 126	7160 ± 318	<50	<16	<23	<1160	<44	<471	<73

ST. LUCIE SITE

Supplemental Sampling

Third Quarter, 2023

Sample Type	Collection Frequency	Number of Sample Locations	Number of Samples
1. Direct Radiation	Quarterly	9	9
2. Airborne			
2.a. Air Iodines	Weekly	3	38
2.b. Air Particulates	Weekly	3	38
3. Waterborne			
3.a. Surface Water	Monthly	2	6
3.b. Shoreline Sediment	Semiannually	4	4
3.c. Beach Sand	Semiannually	3	3
3.d. Ground Water	Quarterly	10	10
4. Ingestion			
4.a. Garden Crop	Annually	1	0
4.b. Citrus	Annually	1	0

Total: 108

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard-deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

1. DIRECT RADIATION - DEPLOYED TLD's - (µR/hour)

Sample Site	Deployment: 26-July-23 Collection: 09-Sep-23
H08	3.6 ± 0.8
H09	3.5 ± 0.8
H12	3.7 ± 0.3
H14	3.4 ± 0.5
H33	4.5 ± 0.4
H34	4.6 ± 0.4
H60	3.2 ± 0.8
H61	3.7 ± 1.1
H62	4.1 ± 0.6

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m^3)

Collection Date	H09	H32	H33
05-Jul-23	<0.02	<0.02	(A)
11-Jul-23	<0.01	<0.01	<0.01
18-Jul-23	<0.02	<0.02	<0.02
25-Jul-23	<0.02	<0.02	<0.02
01-Aug-23	<0.01	<0.02	<0.01
08-Aug-23	<0.02	<0.02	<0.02
15-Aug-23	<0.02	<0.02	<0.02
23-Aug-23	<0.01	<0.01	<0.01
31-Aug-23	<0.02	<0.02	<0.02
05-Sep-23	<0.02	<0.02	<0.02
12-Sep-23	<0.01	<0.02	<0.01
18-Sep-23	<0.02	<0.02	<0.02
27-Sep-23	<0.02	<0.02	<0.02

(A) No power at site – sample not collected.

2.b. AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	H09	H32	H33
05-Jul-23	0.013 ± 0.002	0.005 ± 0.002	(A)
11-Jul-23	0.010 ± 0.002	0.014 ± 0.002	0.006 ± 0.002
18-Jul-23	0.013 ± 0.002	0.012 ± 0.002	0.010 ± 0.002
25-Jul-23	0.010 ± 0.002	0.006 ± 0.001	0.012 ± 0.002
01-Aug-23	0.007 ± 0.001	0.018 ± 0.002	0.006 ± 0.001
08-Aug-23	0.011 ± 0.002	0.017 ± 0.003	0.013 ± 0.002
15-Aug-23	0.012 ± 0.002	0.015 ± 0.002	0.010 ± 0.002
23-Aug-23	0.010 ± 0.002	0.013 ± 0.002	0.012 ± 0.002
31-Aug-23	0.012 ± 0.002	0.016 ± 0.002	0.007 ± 0.001
05-Sep-23	0.013 ± 0.002	0.005 ± 0.002	0.012 ± 0.002
12-Sep-23	0.007 ± 0.001	0.013 ± 0.002	0.006 ± 0.002
18-Sep-23	0.013 ± 0.002	0.012 ± 0.002	0.011 ± 0.002
27-Sep-23	0.010 ± 0.002	0.006 ± 0.001	0.012 ± 0.002
Average	0.11 ± 0.001	0.013 ± 0.001	0.010 ± 0.001

(A) No power at site – sample not collected.

2.b. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
H09	0.1190 ± 0.0093	<0.0168	<0.0200	<0.0009	<0.0012
H32	0.1230 ± 0.0109	<0.0155	<0.0226	<0.0011	<0.0014
H33	0.1020 ± 0.0087	<0.0161	<0.0215	<0.0010	<0.0012

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
H13	21-Jul-23	<127	246 ± 33	<5	<6	<11	<6	<12	<9	<10	<5	<5	<10
	15-Aug-23	<141	315 ± 37	<5	<6	<9	<5	<13	<7	<7	<5	<5	<11
	06-Sep-23	<138	288 ± 30	<4	<4	<8	<5	<9	<8	<6	<4	<5	<7
H36	21-Jul-23	<127	300 ± 30	<4	<4	<9	<5	<9	<8	<8	<4	<5	<5
	15-Aug-23	<139	390 ± 28	<4	<4	<7	<4	<9	<6	<4	<3	<4	<3
	06-Sep-23	<138	381 ± 33	<3	<4	<8	<4	<8	<7	<6	<4	<5	<6

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

(C) – Sample was taken during release

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
H13	22-Sep-23	631 ± 87	5280 ± 248	<28	<26	<20	<24	6540 ± 1550	329 ± 24	154 ± 34	<42	<359
H16	22-Sep-23	165 ± 26	486 ± 39	<10	<6	<7	<7	<207	36 ± 7	<38	<13	<120
H19	22-Sep-23	<68	130 ± 25	<7	<6	<7	<6	<202	32 ± 7	<42	<13	<110
H36	22-Sep-23	<91	262 ± 40	<9	<7	<8	<8	<724	<44	<69	<19	<184

3.c. BEACH SAND - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
H15	22-Sep-23	<58	<101	<6	<6	<7	<6	<272	<159	<35	<10	<101
H16	22-Sep-23	83 ± 22	168 ± 39	<8	<7	<8	<7	<384	<186	<51	<12	<113
H19	22-Sep-23	<99	180 ± 34	<9	<6	<8	<9	<859	225 ± 93	<67	<19	<177

3.d. GROUND WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
H70	19-Jul-23	<127	<55	<3	<4	<8	<4	<8	<6	<7	<4	<4	<5
H71	19-Jul-23	529 ± 53	<70	<4	<4	<10	<5	<11	<8	<6	<4	<5	<4
H72	19-Jul-23	<139	282 ± 30	<4	<4	<10	<5	<10	<7	<6	<5	<5	<4
H73	19-Jul-23	<127	60 ± 20	<4	<4	<9	<5	<10	<7	<8	<4	<5	<5
H74	19-Jul-23	<142	324 ± 25	<4	<4	<7	<4	<9	<6	<4	<4	<4	<3
H75	19-Jul-23	<142	291 ± 35	<5	<5	<11	<5	<11	<8	<8	<5	<5	<7
H76	19-Jul-23	<139	<62	<4	<4	<9	<4	<9	<7	<7	<4	<4	<4
H77	19-Jul-23	<127	<61	<5	<6	<14	<6	<9	<9	<9	<5	<5	<9
H78	19-Jul-23	<141	<164	<12	<8	<15	<9	<25	<18	<19	<10	<12	<14
H79	19-Jul-23	<139	<73	<4	<5	<10	<5	<11	<8	<7	<5	<6	<5

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

4.a. GARDEN CROP - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137
H41	This sample has not been available.					

4.b. CITRUS - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137
H23		This sample was previously collected				

RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT

FOURTH QUARTER 2023

BUREAU OF RADIATION CONTROL

ST. LUCIE SITE

Offsite Dose Calculation Manual Sampling

Fourth Quarter, 2023

Sample Type	Collection Frequency	Number of Sample Locations	Number of Samples
1. Direct Radiation	Quarterly	27	27
2. Airborne			
2.a. Air Iodines	Weekly	5	65
2.b. Air Particulates	Weekly	5	65
3. Waterborne			
3.a. Surface Water	Weekly	1	13
	Monthly	1	3
3.b. Shoreline Sediment	Semiannually	0	0
4. Ingestion			
4.a. Fish and Invertebrates			
4.a.1. Crustacea	Semiannually	0	0
4.a.2. Fish	Semiannually	0	0
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 187

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

The marine fauna listed in this report were collected in part, under Florida FWC SAL030.

1. DIRECT RADIATION - DEPLOYED TLD's - (μR/hour)

Sample Site	Deployment: 09-Sep-23 Collection: 20-Dec-23
N-1	3.4 ± 0.2
NNW-5	3.5 ± 0.1
NNW-10	4.3 ± 0.4
NW-5	3.3 ± 0.3
NW-10	4.5 ± 0.2
WNW-2	3.3 ± 0.1
WNW-5	3.7 ± 0.3
WNW-10	3.6 ± 0.1
W-2	3.4 ± 0.4
W-5	3.9 ± 0.3
W-10	3.1 ± 0.2
WSW-2	3.6 ± 0.1
WSW-5	3.7 ± 0.4
WSW-10	4.2 ± 0.1
SW-2	3.5 ± 0.1
SW-5	4.2 ± 0.2
SW-10	3.7 ± 0.2
SSW-2	3.6 ± 0.2
SSW-5	3.9 ± 0.3
SSW-10	3.3 ± 0.4
S-5	3.8 ± 0.1
S-10	4.0 ± 0.1
S/SSE-10	4.2 ± 0.3
SSE-5	3.7 ± 0.3
SSE-10	3.8 ± 0.1
SE-1	3.4 ± 0.1
H-32	3.8 ± 0.4

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/ m^3)

Collection Date	H08	H12	H14	H30	H34
02-Oct-23	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
11-Oct-23	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
17-Oct-23	< 0.02	< 0.03	< 0.02	< 0.02	< 0.02
25-Oct-23	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
31-Oct-23	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
07-Nov-23	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
15-Nov-23	< 0.01	< 0.02	< 0.01	< 0.01	< 0.01
20-Nov-23	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
28-Nov-23	< 0.02	< 0.02	< 0.02	< 0.01	< 0.02
05-Dec-23	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
13-Dec-23	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
20-Dec-23	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
27-Dec-23	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02

2.b.1. AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	H08	H12	H14	H30	H34
02-Oct-23	0.007 ± 0.002	0.007 ± 0.002	0.005 ± 0.002	0.007 ± 0.002	0.003 ± 0.002
11-Oct-23	0.011 ± 0.003	0.014 ± 0.002	0.011 ± 0.002	0.011 ± 0.002	0.010 ± 0.001
17-Oct-23	0.012 ± 0.002	0.014 ± 0.002	0.012 ± 0.002	0.013 ± 0.002	0.014 ± 0.002
25-Oct-23	0.017 ± 0.002	0.024 ± 0.002	0.022 ± 0.002	0.020 ± 0.002	0.019 ± 0.002
31-Oct-23	0.018 ± 0.002	0.029 ± 0.003	0.029 ± 0.003	0.024 ± 0.003	0.026 ± 0.003
07-Nov-23	0.021 ± 0.002	0.026 ± 0.002	0.021 ± 0.002	0.020 ± 0.002	0.025 ± 0.002
15-Nov-23	0.010 ± 0.002	0.005 ± 0.001	0.007 ± 0.002	0.012 ± 0.002	0.009 ± 0.002
20-Nov-23	0.010 ± 0.002	0.012 ± 0.002	0.016 ± 0.003	0.011 ± 0.002	0.014 ± 0.002
28-Nov-23	0.016 ± 0.002	0.024 ± 0.002	0.022 ± 0.002	0.020 ± 0.002	0.017 ± 0.002
05-Dec-23	0.015 ± 0.002	0.023 ± 0.002	0.022 ± 0.002	0.020 ± 0.002	0.020 ± 0.002
13-Dec-23	0.020 ± 0.002	0.018 ± 0.002	0.020 ± 0.002	0.017 ± 0.002	0.019 ± 0.002
20-Dec-23	0.011 ± 0.002	0.014 ± 0.002	0.019 ± 0.002	0.013 ± 0.002	0.018 ± 0.002
27-Dec-23	0.012 ± 0.002	0.013 ± 0.002	0.015 ± 0.002	0.016 ± 0.002	0.014 ± 0.002
Average:	0.014 ± 0.001	0.017 ± 0.001	0.017 ± 0.001	0.016 ± 0.001	0.016 ± 0.001

2.b.2. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
H08	0.1050 ± 0.0103	<0.0142	<0.0257	<0.0015	<0.0018
H12	0.1220 ± 0.0122	<0.0222	<0.0273	<0.0016	<0.0020
H14	0.1180 ± 0.0080	<0.0107	<0.0156	<0.0010	<0.0013
H30	0.0975 ± 0.0108	<0.0206	<0.0214	<0.0016	<0.0021
H34	0.1220 ± 0.0085	<0.0126	<0.0149	<0.0011	<0.0014

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
H15	02-Oct-23	<142	375 ± 38	<56	<5	<5	<11	<5	<11	<9	<7	<5	<5
	11-Oct-23	<142	379 ± 39	<62	<6	<6	<14	<7	<15	<9	<8	<5	<6
	17-Oct-23	<138	382 ± 28	<39	<4	<4	<8	<3	<9	<7	<6	<4	<4
	25-Oct-23	<138	380 ± 28	<39	<4	<3	<6	<3	<7	<6	<4	<3	<4
	31-Oct-23	<138	342 ± 27	<38	<4	<3	<8	<4	<8	<7	<4	<4	<4
	07-Nov-23	<138	298 ± 39	<86	<5	<5	<11	<5	<12	<11	<9	<5	<6
	15-Nov-23	<138	408 ± 29	<36	<3	<3	<8	<4	<7	<5	<6	<3	<4
	20-Nov-23	<138	323 ± 26	<43	<3	<3	<8	<3	<9	<6	<6	<4	<4
	28-Nov-23	<137	378 ± 32	<60	<4	<4	<8	<5	<10	<7	<6	<4	<4
	05-Dec-23	<137	317 ± 28	<48	<4	<4	<8	<4	<9	<8	<8	<4	<4
	13-Dec-23	<137	346 ± 28	<42	<4	<4	<8	<4	<9	<7	<6	<3	<4
	20-Dec-23	<133	351 ± 28	<42	<4	<4	<8	<4	<8	<7	<5	<4	<4
	27-Dec-23	<133	301 ± 25	<41	<4	<3	<8	<4	<9	<7	<4	<4	<4
H59	11-Oct-23	<138	338 ± 32	<64	<4	<4	<10	<5	<9	<7	<8	<4	<5
	07-Nov-23	<138	389 ± 28	<35	<3	<4	<6	<3	<8	<6	<5	<4	<4
	13-Dec-23	946 ± 59	316 ± 33	<67	<4	<5	<10	<5	<9	<7	<8	<4	<5

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample.

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
H15	These samples were previously collected											
H59												

4.a.1. CRUSTACEA - (pCi/kg, wet weight)

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15	These samples were previously collected										
H59											

4.a.2. FISH - (pCi/kg, wet weight)

Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15	These samples were previously collected										
H59											

4.b. BROADLEAF VEGETATION - Brazilian Pepper - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137	Pb-210	Pb-212	Ra-226	Ra-228
H51	11-Oct-23	1620 ± 148	4010 ± 183	<36	<9	<12	<645	<25	<274	<51
	07-Nov-23	1100 ± 73	3810 ± 183	<14	<10	<12	<741	17 ± 8	<306	<64
	13-Dec-23	1380 ± 129	3070 ± 157	<21	<11	<13	<742	<26	<305	<51
H52	11-Oct-23	2180 ± 98	7440 ± 287	<51	<13	<16	<123	<30	<315	<53
	07-Nov-23	1240 ± 113	2920 ± 141	<11	<10	<10	670 ± 217	<20	<256	<42
	13-Dec-23	2200 ± 193	3580 ± 175	<23	<12	<13	<821	<27	<305	<51
H59	11-Oct-23	1950 ± 122	3000 ± 184	<63	<13	<17	<1210	<33	<408	<66
	07-Nov-23	1030 ± 100	2350 ± 133	<14	<12	<13	<749	<28	<302	<51
	13-Dec-23	271 ± 48	1160 ± 112	<26	<12	<14	<948	<33	<410	<57

ST. LUCIE SITE

Supplemental Sampling

Fourth Quarter, 2023

Sample Type	Collection Frequency	Number of Sample Locations	Number of Samples
1. Direct Radiation	Quarterly	9	9
2. Airborne			
2.a. Air Iodines	Weekly	3	38
2.b. Air Particulates	Weekly	3	38
3. Waterborne			
3.a. Surface Water	Monthly	2	6
3.b. Shoreline Sediment	Semiannually	0	0
3.c. Beach Sand	Semiannually	0	0
3.d. Ground Water	Quarterly	10	10
4. Ingestion			
4.a. Garden Crop	Annually	0	0
4.b. Citrus	Annually	0	0
			Total: 108

NOTE: Measurement results having magnitudes that are significantly above the background of the measurement system are reported as net values plus or minus a one-standard deviation error term. Measurement results that are not significantly above background are reported as less than a Lower Limit of Detection (<LLD), which is an estimated upper limit (with at least 95% confidence) for the true activity in the sample.

1. DIRECT RADIATION - DEPLOYED TLD's - (µR/hour)

Sample Site	Deployment: 09-Sep-23 Collection: 20-Dec-23
H08	4.0 ± 0.2
H09	4.1 ± 0.2
H12	4.1 ± 0.4
H14	3.9 ± 0.4
H33	3.8 ± 0.4
H34	3.7 ± 0.1
H60	3.7 ± 0.2
H61	5.2 ± 0.4
H62	4.4 ± 0.3

2.a. IODINE-131 IN WEEKLY AIR CARTRIDGES - (pCi/m³)

Collection Date	H09	H32	H33
02-Oct-23	< 0.02	< 0.02	< 0.02
11-Oct-23	< 0.02	< 0.02	< 0.02
17-Oct-23	< 0.02	< 0.03	< 0.02
25-Oct-23	< 0.01	< 0.01	< 0.01
31-Oct-23	< 0.02	< 0.02	< 0.02
07-Nov-23	< 0.02	< 0.02	< 0.02
15-Nov-23	< 0.01	< 0.01	< 0.01
20-Nov-23	< 0.02	< 0.02	< 0.02
28-Nov-23	< 0.02	< 0.02	< 0.02
05-Dec-23	< 0.01	< 0.01	< 0.01
13-Dec-23	< 0.01	< 0.01	< 0.01
20-Dec-23	< 0.01	< 0.01	< 0.01
27-Dec-23	< 0.02	< 0.02	< 0.02

2.b. AIR PARTICULATES - GROSS BETA - (pCi/m³)

Collection Date	H09	H32	H33
02-Oct-23	0.005 ± 0.002	0.004 ± 0.002	0.007 ± 0.002
11-Oct-23	0.011 ± 0.002	0.010 ± 0.002	0.009 ± 0.001
17-Oct-23	0.009 ± 0.002	0.013 ± 0.002	0.010 ± 0.002
25-Oct-23	0.017 ± 0.002	0.020 ± 0.002	0.014 ± 0.002
31-Oct-23	0.030 ± 0.003	0.029 ± 0.003	0.026 ± 0.003
07-Nov-23	0.019 ± 0.002	0.025 ± 0.002	0.017 ± 0.002
15-Nov-23	0.009 ± 0.002	0.011 ± 0.002	0.010 ± 0.002
20-Nov-23	0.014 ± 0.003	0.017 ± 0.003	0.012 ± 0.002
28-Nov-23	0.014 ± 0.002	0.023 ± 0.002	0.012 ± 0.002
05-Dec-23	0.019 ± 0.002	0.018 ± 0.002	0.014 ± 0.002
13-Dec-23	0.018 ± 0.002	0.020 ± 0.002	0.017 ± 0.002
20-Dec-23	0.012 ± 0.002	0.013 ± 0.002	0.016 ± 0.002
27-Dec-23	0.012 ± 0.002	0.017 ± 0.002	0.012 ± 0.002
Average	0.015 ± 0.001	0.017 ± 0.001	0.013 ± 0.001

2.b. AIR PARTICULATES - GAMMA ANALYSIS OF QUARTERLY COMPOSITES - (pCi/m³)

Sample Site	Be-7	K-40	Cs-134	Cs-137	Pb-210
H09	0.1130 ± 0.0085	<0.0154	<0.0152	<0.0010	<0.0012
H32	0.1080 ± 0.0077	<0.0106	<0.0136	<0.0011	<0.0013
H33	0.1050 ± 0.0107	<0.0164	<0.0214	<0.0014	<0.0017

3.a. SURFACE WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
H13	11-Oct-23	<139	285 ± 29	<63	<4	<4	<7	<4	<9	<7	<7	<4	<4
	07-Nov-23	<138	283 ± 29	<61	<4	<4	<10	<4	<9	<7	<8	<4	<4
	13-Dec-23	<134	376 ± 40	<66	<5	<6	<12	<6	<13	<9	<10	<5	<6
H36	11-Oct-23	<139	295 ± 30	<64	<4	<5	<8	<4	<9	<7	<8	<4	<5
	07-Nov-23	<138	332 ± 27	<44	<3	<3	<8	<4	<8	<6	<4	<4	<4
	13-Dec-23	<134	364 ± 39	<62	<5	<5	<13	<7	<14	<10	<8	<5	<6

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La-140, whichever method yields the greater sensitivity for a given sample. (C) – Sample was taken during release

3.b. SHORELINE SEDIMENT - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co-58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
H13					These samples were previously collected							
H16												
H19												
H36												

3.c. BEACH SAND - (pCi/kg, dry weight)

Sample Site	Collection Date	Be-7	K-40	Co58	Co-60	Cs-134	Cs-137	Pb-210	Ra-226	Th-232	U-235	U-238
H15					These samples were previously collected							
H16												
H19												

3.d. GROUND WATER - (pCi/L)

Sample Site	Collection Date	H-3	K-40	Mn-54	Co58	Fe59	Co60	Zn65	Zr-95 Nb-95 (A)	I-131	Cs-134	Cs-137	Ba-140 La-140 (B)
H70	19-Oct-23	593 ± 53	30 ± 16	<4	<4	<8	<4	<9	<7	<8	<4	<4	<7
H71	19-Oct-23	711 ± 55	412 ± 41	<5	<5	<12	<5	<11	<12	<11	<5	<5	<9
H72	19-Oct-23	<138	315 ± 30	<4	<4	<9	<4	<10	<7	<8	<4	<5	<6
H73	19-Oct-23	<138	64 ± 13	<4	<3	<8	<4	<7	<6	<6	<4	<4	<3
H74	19-Oct-23	<138	324 ± 36	<5	<5	<12	<6	<12	<11	<11	<5	<5	<7
H75	19-Oct-23	<138	285 ± 35	<6	<5	<10	<5	<12	<10	<10	<5	<6	<8
H76	19-Oct-23	<138	<55	<4	<4	<9	<4	<8	<7	<9	<4	<4	<6
H77	19-Oct-23	<138	<63	<4	<4	<8	<4	<8	<6	<8	<3	<4	<6
H78	19-Oct-23	<138	<168	<12	<9	<23	<10	<24	<19	<19	<10	<11	<17
H79	19-Oct-23	<138	<48	<4	<4	<8	<3	<9	<6	<8	<4	<4	<4

(A) - These tabulated LLD values for Zr/Nb-95 are the higher of the individual parent or daughter LLD's.

(B) - These tabulated LLD values are for Ba-140, either based on direct measurement of Ba-140 or based on ingrowth of La140, whichever method yields the greater sensitivity for a given sample.

SL QR 4Q-2023

4.a. GARDEN CROP - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137
H41	This sample has not been available.					

4.b. CITRUS - (pCi/kg, wet weight)

Sample Site	Collection Date	Be-7	K-40	I-131	Cs-134	Cs-137
H23		This sample was previously collected				

10. Results from the BRC Interlaboratory Comparison Program – 2023

DOE MAPEP Series 48 BRC Results

Matrix: Air Filter (Bq/sample)				
Radionuclide	**Result**	**Ref. Value**	**Flag (Evaluation)**	**Acceptance Range**
Mn-54	2.133	2.140	A	1.50-2.78
Co-60	1.003	1.05	A	0.74-1.37
Zn-65	2.402	2.250	A	1.58-2.93
Cs-134	1.336	1.52	A	1.06-1.98
Cs-137	0.608	0.63	A	0.441-0.819
Gross Alpha	0.984	0.97	A	0.29-1.65
Gross Beta	1.361	1.49	A	0.75-2.24

Matrix: Soil (Bq/kg)				
Radionuclide	**Result**	**Ref. Value**	**Flag (Evaluation)**	**Acceptance Range**
K-40	519	574	A	402-746
Mn-54	1171.67	1230	A	861-1599
Co-60	721.17	795	A	557-1034
Zn-65	962.33	990	A	693-1287
Cs-134	-0.54	----	A	False Pos. Test
Cs-137	1.02	----	A	False Pos. Test
U-238	252.24	258	A	181-335

Matrix: Water (Bq/L)				
Radionuclide	**Result**	**Ref. Value**	**Flag (Evaluation)**	**Acceptance Range**
K-40	0.746	----	A	False Pos. Test
Mn-54	0.447	11.3	A	7.9-14.7
Co-60	6.53	7.24	A	5.07-9.41
Zn-65	14.750	15.3	A	10.7-19.9
Cs-134	8.738	9.6	A	6.7-12.5
Cs-137	8.502	8.7	A	6.1-11.3

Flag (Evaluation): A = Acceptable, W = Acceptable with Warning, N = Not Acceptable

DOE MAPEP Series 49 and ERA RAD-135 BRC Results

Matrix: Air Filter (Bq/sample)				
Radionuclide	**Result**	**Ref. Value**	**Flag (Evaluation)**	**Acceptance Range**
Mn-54	1.577	1.570	A	1.10-2.04
Co-60	0.025	-----	A	False Pos. Test
Zn-65	2.027	1.890	A	1.32-2.49
Cs-134	1.549	1.6	A	1.12-2.08
Cs-137	0.046	-----	A	False Pos. Test
Gross Alpha	0.284	0.255	A	0.077-0.434
Gross Beta	0.962	0.927	A	0.464-1.391

Matrix: Soil (Bq/kg)				
Radionuclide	**Result**	**Ref. Value**	**Flag (Evaluation)**	**Acceptance Range**
K-40	530.33	574	A	402-746
Mn-54	1.85	----	N	False Pos. Test
Co-60	843.00	898	A	629-1167
Zn-65	1180	1160	A	812-1508
Cs-134	698.04	693	A	485-901
Cs-137	1757.50	1810	A	1267-2353
U-238	229.66	221	A	155-287

Matrix: Water (Bq/L)				
Radionuclide	**Result**	**Ref. Value**	**Flag (Evaluation)**	**Acceptance Range**
H-3 (pCi/L)	23285	22900	A	19700-26100
K-40	0.6	----		False Pos. Test
Mn-54	12.100	12.7	A	8.9 - 16.5
Co-60	0.05	----	A	False Pos. Test
Zn-65	19.000	19.1	A	13.4 - 24.8
Cs-134	11.074	11.3	A	7.9 - 14.7
Cs-137	8.620	8.7	A	6.1 - 11.3
Ra-226 (pCi/L)	16.220	15.8	A	13.3-18.3

Flag (Evaluation): A = Acceptable, W = Acceptable with Warning, N = Not Acceptable

DOE MAPEP Series 49 and ERA RAD-135 BRC Results

Matrix: Vegetation (Bq/sample)				
Am-241	0.156	0.131	A	0.092-0.170
Mn-54	2.54	2.56	A	1.79-3.33
Co-60	2.627	2.790	A	1.95-3.63
Zn-65	0.134	-----	A	False Pos. Test
Cs-134	4.599	4.98	A	3.49-6.47
Cs-137	-0.014	-----	A	False Pos. Test
U-238	0.13	0.092	N	0.064-0.120

Flag (Evaluation): A = Acceptable, W = Acceptable with Warning, N = Not Acceptable