FPL

April 15, 2015

L-2015-124
10 CFR 50.4
10 CFR 50.36

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

RE: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Annual Radiological Environmental
Operating Report for Calendar Year 2014

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 2014.

Please contact us should there be any questions regarding this report.

Sincerely,

Eric S. Katzman
Licensing Manager
St. Lucie Plant

Enclosure

ESK/tlt

IE25
NRR

2014

ANNUAL

RADIOLOGICAL ENVIRONMENTAL

OPERATING REPORT

ST. LUCIE PLANT

UNITS 1 & 2

LICENSE NOS. DPR-67, NPF-16

DOCKET NOS. 50-335, 50-389

Data Submitted by: Florida DOH

Prepared by: James W Hunt

Reviewed by:

2014
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT – UNITS 1 & 2

TABLE OF CONTENTS

2014
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT – UNITS 1 & 2

I. 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 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.

II. RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

A. Purpose

The purpose of the radiological environmental monitoring program 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 radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and the modeling of the environmental exposure pathways.

B. Program Description

The radiological environmental monitoring program (REMP) 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 and analyzed weekly. Analyses include Iodine-131, gross beta, and gamma isotopic measurements.

   c. Surface water samples are collected from two locations. Samples are collected and analyzed weekly and monthly, respectively. 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.
Attachment A provides specific information pertaining to sample locations, types and frequencies.

Note: Ground Water Protection, NEI Initiative: The program and results are described in Attachment D

2. Analytical Responsibility:

Radiological environmental monitoring for the St. Lucie Plant is conducted by the State of Florida, Department of Health (DOH), Bureau of Radiation Control (BRC). Samples are collected and analyzed by DOH personnel.

Samples are analyzed at the DOH BRC Environmental Radiation Control Laboratory in Orlando, Florida.

C. Analytical Results

Table 1, Environmental Radiological Monitoring Program Annual Summary provides a summary for all specified samples collected during the referenced surveillance period. Deviations from the sample schedule or missing data, if any, are noted and explained in Table 1A. Samples not meeting the specified "A PRIORI" LLD, if any, are noted and explained in Table 1B. Analysis data for all specified samples analyzed during the surveillance period is provided in Attachment B.

D. Land Use Census

A land use census out to a distance of a five mile radius from the St. Lucie Plant 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 Table 2, Land Use Census Summary.

E. Interlaboratory Comparison Program

The interlaboratory comparison program consists of participating in the DOE Mixed Analyte Performance Evaluation Program (MAPEP).

This program provides similar testing (matrices, nuclides, and levels) as the former EPA Interlaboratory Comparison Program and is referred to as the Mixed Analyte Performance Evaluation Program (MAPEP).

The samples are analyzed using the methods applicable to the REMP (Gamma Spectroscopy, Gross Beta, and Tritium for Water).

From the MAPEP handbook:
Acceptance criteria were developed from a review of precision and accuracy data compiled by other performance evaluation programs (PEPs), the analytical methods literature, from several MAPEP pilot studies, and from what is considered reasonable, acceptable, and achievable for routine analyses among the more experienced laboratories.

The results for nuclides associated with the REMP are listed in ATTACHMENT C, RESULTS FROM THE INTERLABORATORY COMPARISON PROGRAM.

III. DISCUSSION AND INTERPRETATION OF RESULTS

A. Reporting of Results

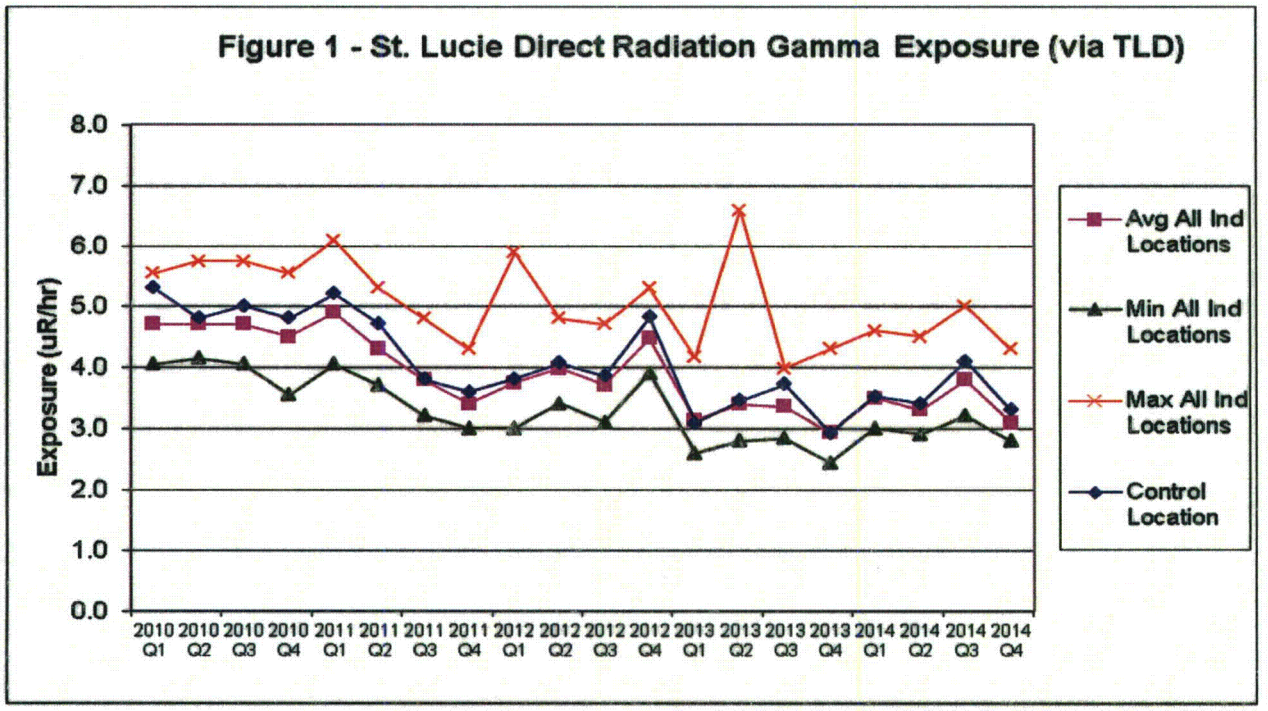
The Annual Radiological Environmental Operating Report contains the summaries, interpretations and information required by St. Lucie Plant ODCM. Table 1 provides a summary of the measurements made for the nuclides required by ODCM, Table 4.12-1, for all samples specified by Table 3.12-1. In addition, summaries are provided for other nuclides identified in the specified samples, including those not related to station operation. These include nuclides such as K-40, Th-232, Ra-226, and Be-7, which are common 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 shows no indication of any adverse trends attributed to effluents from the plant. The measured exposure rates are consistent with exposure rates that were observed during the pre-operational surveillance program.

   A condition report has been generated to evaluate a potential downward trend in Direct Exposure TLD Readings over the past several years in the PSL Site Radiological Environmental Monitoring Program (REMP). The PSL Site REMP Coordinator is working with the State of Florida Bureau of Radiation Control and the other two nuclear sites, Turkey Point and Crystal River to evaluate if there is a potential trend and any possible causes of the trend.

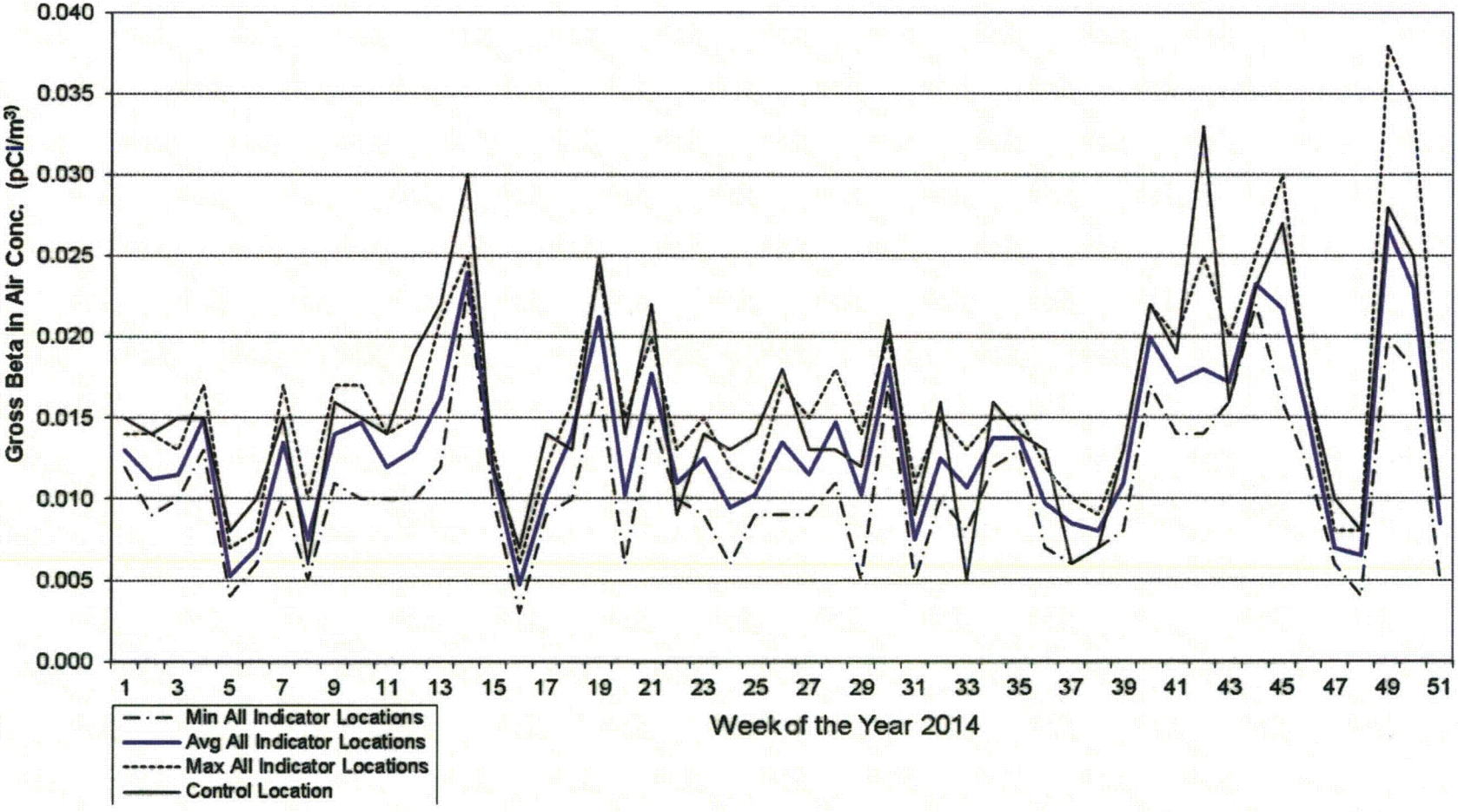
   Direct radiation monitoring results are summarized in Table 1 and are trended in Figure on next page.



2. Air Particulates/Radioiodine:

For results attributed to plant effluents: The results for radioactive air particulate and radioiodine monitoring are consistent with past measurements and indicate no trends attributed to plant effluents. All samples for radioiodine yielded no detectable I-131. Gamma isotopic measurements yielded no indication of any nuclides attributed to station operation. The results for air particulate/radioiodine samples are consistent with measurements that were made during the pre-operational surveillance program. Air particulate and radioiodine monitoring results are summarized in Table 1 and are trended in Figure 2 below.

Figure 2 - St. Lucie 2014 REMP Program
Gross Beta in Air, pCi/m³



3. Waterborne, Surface Water:

The results for radioactivity measurements in surface water are consistent with past measurements and with measurements made during the pre-operational surveillance program. Tritium was reported as present in one of the 52 indicator locations and none of the 12 control location surface water samples collected. The highest value was 2.5% of the required LLD listed in ODCM Table 4.12-1. There were no indications of any other nuclides that could be attributed to plant effluents. Results for surface water samples are summarized in Table 1.

4. Waterborne, Sediment and Food Products:

The results for radioactivity measurements in waterborne sediment, fish, and crustacean samples are consistent with past measurements and with measurements made during the pre-operational surveillance program. There were no indications of any nuclides attributed to plant effluents. Results for the waterborne sediment, fish and crustacean samples are summarized in Table 1.

5. Broad Leaf Vegetation:

The results for radioactivity measurements in broad leaf vegetation are consistent with past measurements and with measurements made during the pre-operational surveillance program. There were no indications of any nuclides attributed to plant effluents. Results for broad leaf vegetation samples are summarized in Table 1.

6. Land Use Census:

There were no additions or changes to the Land Use Census as compared to last year's report.

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 percent greater than locations currently being sampled in the radiological environmental monitoring program were identified by the land use census.

7. Interlaboratory Comparison Program:

The State of Florida laboratory participated in MAPEP 30 and 31. These satisfied the requirements as directed in the PSL Offsite Dose Calculation Manual (ODCM) for the Interlaboratory Comparison Program.

The results are listed in Attachment C.

C. Conclusions

The data obtained through the St. Lucie Plant radiological environmental monitoring program 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 being increased.

- The measured exposure rates are consistent with exposure rates that were observed during the pre-operational surveillance program.
- The results for air particulate/radioiodine samples are consistent with measurements that were made during the pre-operational surveillance program.
- The highest value of tritium in surface water was 2.5% of the required LLD listed in ODCM Table 4.12-1. There were no indications of any other nuclides that could be attributed to plant effluents.
- There were no indications of any nuclides in waterborne sediment or food products attributed to plant effluents.
- There were no indications of any nuclides in broad leaf vegetation attributed to plant effluents.

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

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility: St. Lucie Units 1 & 2, Docket No(s): 50-335 & 50-389
Location of Facility: St. Lucie, Florida, Reporting Period: January 1 - December 31, 2014
(County, State)

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

Type and Total Number of Analyses Performed	Lower Limit of Detection [a] (LLD)	All Indicator Locations Mean (f)[b] Range	Location with Highest Annual Mean		Control Locations Mean (f)[b] Range
			Name [c] Distance & Direction	Mean (f)[b] Range	
Exposure [d] Rate, 108	—	3.45 (102/104) 2.8 - 5.0	NW - 10 10 mi., NW	4.50 (4/4) 4.0 – 5.0	3.56 (4/4) 3.3 – 4.1

Number of Non-Routine Reported Measurements = 0

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility: St. Lucie Units 1 & 2, Docket No(s): 50-335 & 50-389
Location of Facility: St. Lucie, Florida, Reporting Period: January 1 - December 31, 2014
(County, State)

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

Type and Total 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
^{131}I, 260	0.012	<MDA	---	---	<MDA
Gross Beta, 260	0.0064	0.0132 (208/208) 0.0030 - 0.038	H-08 6 mile, WNW	0.014 (52/52) 0.005 - 0.034	0.015 (52/52) 0.005 - 0.033
Composite Gamma Isotopic, 20					
^{7}Be	0.0006	0.1090 (16/16) 0.062 - 0.143	H-30 2 mile, W	0.1118 (4/4) 0.081 - 0.134	0.1269 (4/4) 0.076 - 0.158
^{134}Cs	0.0008	<MDA	<MDA	<MDA	<MDA
^{137}Cs	0.0008	<MDA	<MDA	<MDA	<MDA
^{210}Pb	---	0.0110 (11/16) 0.0063 - 0.016	H-08 6 mile, WNW	0.0125 (3/4) 0.0095 - 0.016	0.0174 (3/4) 0.0134 – 0.021

Be-7 & Pb-210 are naturally occurring.

Number of Non-Routine Reported Measurements = 0

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility: St. Lucie Units 1 & 2, Docket No(s): 50-335 & 50-389
Location of Facility: St. Lucie, Florida, Reporting Period: January 1 - December 31, 2014
(County, State)

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

Type and Total 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	75 (1/52) 75 - 75	H-15 <1 mi., ENE/E/ESE	75 (1/52) 75 - 75	<MDA (0/12)
Gamma Isotopic, 64					
^{40}K	58	330 (52/52) 264 - 396	H-15 <1 mi., ENE/E/ESE	330 (52/52) 264 - 396	333 (12/12) 277 - 372
^{54}Mn	3	<MDA	---	---	<MDA
^{59}Fe	6	<MDA	---	---	<MDA
^{58}Co	3	<MDA	---	---	<MDA
^{60}Co	4	<MDA	---	---	<MDA
^{65}Zn	7	<MDA	---	---	<MDA
^{95}Zr-Nb	6-3	<MDA	---	---	<MDA
^{131}I	4	<MDA	---	---	<MDA
^{134}Cs	4	<MDA	---	---	<MDA
^{137}Cs	4	<MDA	---	---	<MDA
^{140}Ba-La	9-3	<MDA	---	---	<MDA

K-40 is naturally occurring.

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility: St. Lucie Units 1 & 2, Docket No(s): 50-335 & 50-389
Location of Facility: St. Lucie, Florida, Reporting Period: January 1 - December 31, 2014
(County, State)
Number of Non-Routine Reported Measurements = 0

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility: St. Lucie Units 1 & 2, Docket No(s): 50-335 & 50-389
Location of Facility: St. Lucie, Florida, Reporting Period: January 1 - December 31, 2014
(County, State)

PATHWAY: WATERBORNE
SAMPLES COLLECTED: SHORELINE SEDIMENT
UNITS: PICO - Ci/Kg, DRY

Type and Total 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	Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Gamma Isotopic, 4					
^{7}Be	56	<MDA	---	---	75 (1/2)
^{40}K	100	377 (2/2) 243 - 510	H-15 <1 mi, ENE/E/ESE	377 (2/2) 243 - 510	357 (2/2) 284- 429
^{58}Co	6	<MDA	---	---	<MDA
^{60}Co	7	<MDA	---	---	<MDA
^{134}Cs	7	<MDA	---	---	<MDA
^{137}Cs	7	<MDA	---	---	<MDA
^{210}Pb	---	374 (1/2)	H-15 <1 mi., ENE/E/ESE-	374 (1/2)	<MDA
^{226}Ra	15	276 (1/2)	H-15 <1 mi., ENE/E/ESE	276 (1/2)	327 (1/2) 261 - 392
^{232}Th	25	72 (2/2) 63 - 81	H-15 <1 mi., ENE/E/ESE	72 (2/2) 63 - 81	64 (1/2)
^{235}U	---	<MDA	---	---	<MDA
^{238}U	---	306 (1/2)	H-15 <1 mi., ENE/E/ESE	306 (1/2)	259 (1/2)

Be-7, K-40, Pb-210, Ra-226, Th-232, U-235 & U-238 are naturally occurring.

Number of Non-Routine Reported Measurements = 0

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility: St. Lucie Units 1 & 2, Docket No(s): 50-335 & 50-389
Location of Facility: St. Lucie, Florida, Reporting Period: January 1 - December 31, 2014
(County, State)

PATHWAY: INGESTION
SAMPLES COLLECTED: CRUSTACEA
UNITS: PICO - Ci/Kg, WET

Type and Total 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	Mean (f)[b] Range	Control Locations Mean (f)[b] Range
Gamma Isotopic, 4					
^{40}K	270	1805 (2/2) 1365 – 2244	H-15 <1 mi., ENE/E/ESE	1805 (2/2) 1365 – 2244	1643 (2/2) 1526-1760
^{54}Mn	16	<MDA	—	—	<MDA
^{59}Fe	28	<MDA	—	—	<MDA
^{58}Co	15	<MDA	—	—	<MDA
^{60}Co	16	<MDA	—	—	<MDA
^{65}Zn	32	<MDA	—	—	<MDA
^{134}Cs	16	<MDA	—	—	<MDA
^{137}Cs	18	<MDA	—	—	<MDA
^{226}Ra	300	<MDA	—	—	407 (1/2)
^{228}Ra	58	< MDA	—	—	< MDA

K-40, Ra-226 & Ra-228 are naturally occurring.

Number of Non-Routine Reported Measurements = 0

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility: St. Lucie Units 1 & 2, Docket No(s): 50-335 & 50-389
Location of Facility: St. Lucie, Florida, Reporting Period: January 1 - December 31, 2014
(County, State)

PATHWAY: INGESTION
SAMPLES COLLECTED: FISH
UNITS: PICO - Ci/Kg, WET

Type and Total Number of Analyses Performed	Lower Limit of Detection[a] (LLD)	All Indicator Locations Mean (f)[b] Range	Location with Highest Annual Mean		Control Locations Mean (f)[b] Range
			Name[c] Distance & Direction	Mean (f)[b] Range	
Gamma Isotopic, 4					
^{40}K	270	2445 (2/2) 2181 - 2708	H-15 <1 mi., ENE/E/ESE	2445 (2/2) 2181 - 2708	2218 (2/2) 2159 - 2276
^{54}Mn	16	<MDA	---	---	<MDA
^{59}Fe	28	<MDA	---	---	<MDA
^{58}Co	15	<MDA	---	---	<MDA
^{60}Co	16	<MDA	---	---	<MDA
^{65}Zn	32	<MDA	---	---	<MDA
^{134}Cs	16	<MDA	---	---	<MDA
^{137}Cs	18	<MDA	---	---	<MDA

K-40 is naturally occurring.

Number of Non-Routine Reported Measurements = 0

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility: St. Lucie Units 1 & 2, Docket No(s): 50-335 & 50-389
Location of Facility: St. Lucie, Florida, Reporting Period: January 1 - December 31, 2014
(County, State)

PATHWAY: INGESTION
SAMPLES COLLECTED: BROAD LEAF VEGETATION
UNITS: PICO - Ci/Kg, WET

Type and Total 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	916 (24/24) 567 - 1735	H-52 1 mi., S/SSE	946 (12/12) 567 - 1735	835 (12/12) 263 - 1718
^{40}K	120	3609 (24/24) 2047 - 5114	H-52 1 mi., S/SSE	3684 (12/12) 2413 - 5114	3373 (12/12) 2432 - 4254
^{58}Co	6	<MDA	---	---	<MDA
^{60}Co	8	<MDA	---	---	<MDA
^{131}I	8	<MDA	---	---	<MDA
^{134}Cs	8	<MDA	---	---	<MDA
^{137}Cs	8	<MDA	---	---	<MDA
^{210}Pb	---	726 (3/24) 584 - 858	H-51 1 mi., N/NNW	797 (2/12) 735 – 858	198 (1/12)
^{212}Pb	---	18 (2/24) 17 - 18	H-52 1 mi., S/SSE	18 (1/12)	20 (2/12) 16 - 24
^{226}Ra	189	<MDA			<MDA

Be-7, K-40, Pb-210, Pb-212, & Ra-226 are naturally occurring.

Number of Non-Routine Reported Measurements = 0

TABLE 1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM ANNUAL SUMMARY
Name of Facility: St. Lucie Units 1 & 2, Docket No(s): 50-335 & 50-389
Location of Facility: St. Lucie, Florida, Reporting Period: January 1 - December 31, 2014
(County, State)

NOTES

a. The LLD is an "a priori" lower limit of detection 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.

LLDs in this column are at time of measurement. The MDAs reported in Attachment B for the individual samples have been corrected to the time of sample collection.

b. Mean and range based upon detectable measurements only. Fraction of detectable measurements at specified locations is indicated in parentheses (f).

c. Specific identifying information for each sample location is provided in Attachment A.

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

MDA refers to minimum detectable activity.

2014
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT - UNITS 1 & 2

TABLE 1A

DEVIATIONS / MISSING DATA

There were several instances of missing data and air sampler partial run times as follows:

A) Direct Radiation Exposure

Location:	TLD: Location SSE-5
Dates:	1/1/14 – 3/31/14
Deviation:	TLD data lost during quarterly processing
Description of Problem:	TLD data was lost during BRC quarterly TLD processing for the ODCM required TLD located 5 miles SSE of the PSL Nuclear Plant. The BRC TLD software program read data came back with a System Read Error 16 during TLD processing. Due to this read error, data for the TLD was unretrievable.
Corrective Action:	The BRC worked with their State of Florida TLD software vendor "Doctor's Software" for troubleshooting and resolution of the issue. The BRC completed installation of the shorter data cable and installation of a software "patch" and the problem has not reoccurred. All other TLD locations analyzed for the quarter were within their normal range.

B) Direct Radiation Exposure

Location:	TLD: Location WNW-10
Dates:	10/1/14 – 12/31/14
Deviation:	TLD Missing and Lost at TLD: Location WNW-10
Description of Problem:	REMP Program TLD was missing and lost at REMP Program sampling location WNW-10. The TLD was attached to a State of Florida BRC Labeled Utility Box cluster which was removed and missing due to construction and road widening work on SR 70.
Corrective Action:	The BRC deployed a new TLD/cricket cage nearby but outside of the construction work area on a chain link fence. All other TLD locations analyzed for the quarter were within their normal range.

TABLE 1B

ANALYSIS WITH LLDs ABOVE THE REQUIRED DETECTION CAPABILITIES
(LLDs) Listed in ODCM TABLE 4.12-1
1/1/2014 – 12/31/2014

The values specified in ODCM Table 4.12-1, Detection Capabilities, were achieved for all samples.

2014
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT - UNITS 1 & 2

TABLE 2

LAND USE CENSUS
(Page 1 of 2)

Survey performed June through August 2014 - No changes were identified as compared to the 2013 St. Lucie Annual Land Use Census Survey. No locations were identified of potential milk-producing animals (cows or goats).

	Distance to Nearest (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	1.5/142 1.6/145	O	O
SSE	1.8/147 (g) 2.0/149	L (f)	L
S	3.3/190	L	L
SSW	2.2/212	4.4/207	L
SW	1.9/234	L	L
WSW	1.9/240	2.0/250	L
W	1.9/260	L	L
WNW	2.3/281	4.0/282 4.2/284	L
NW	3.4/304	L	L
NNW	2.7/344 2.8/343	L	L

TABLE 2

LAND USE CENSUS
(Page 2 of 2)

NOTES

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

b. The following format is used to denote the location:

distance (miles) / bearing (degrees)

For example, a residence located in the southeast sector at a distance of 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 that the sector area is predominantly an ocean area.

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

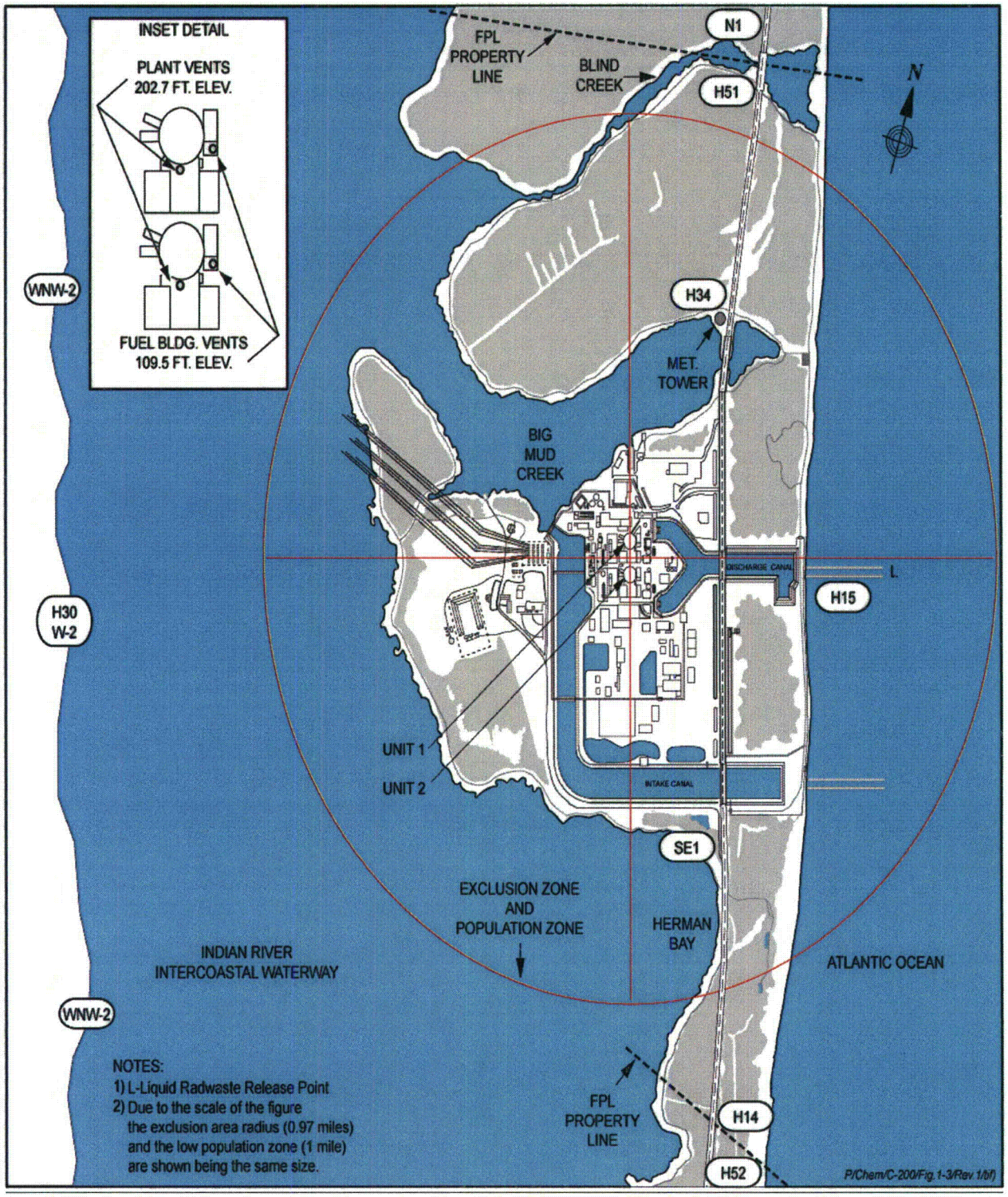
g. Non-residential occupied buildings in these sectors include the following:

Sector	Distance	Description
SSE	1.8/147	Fire Station

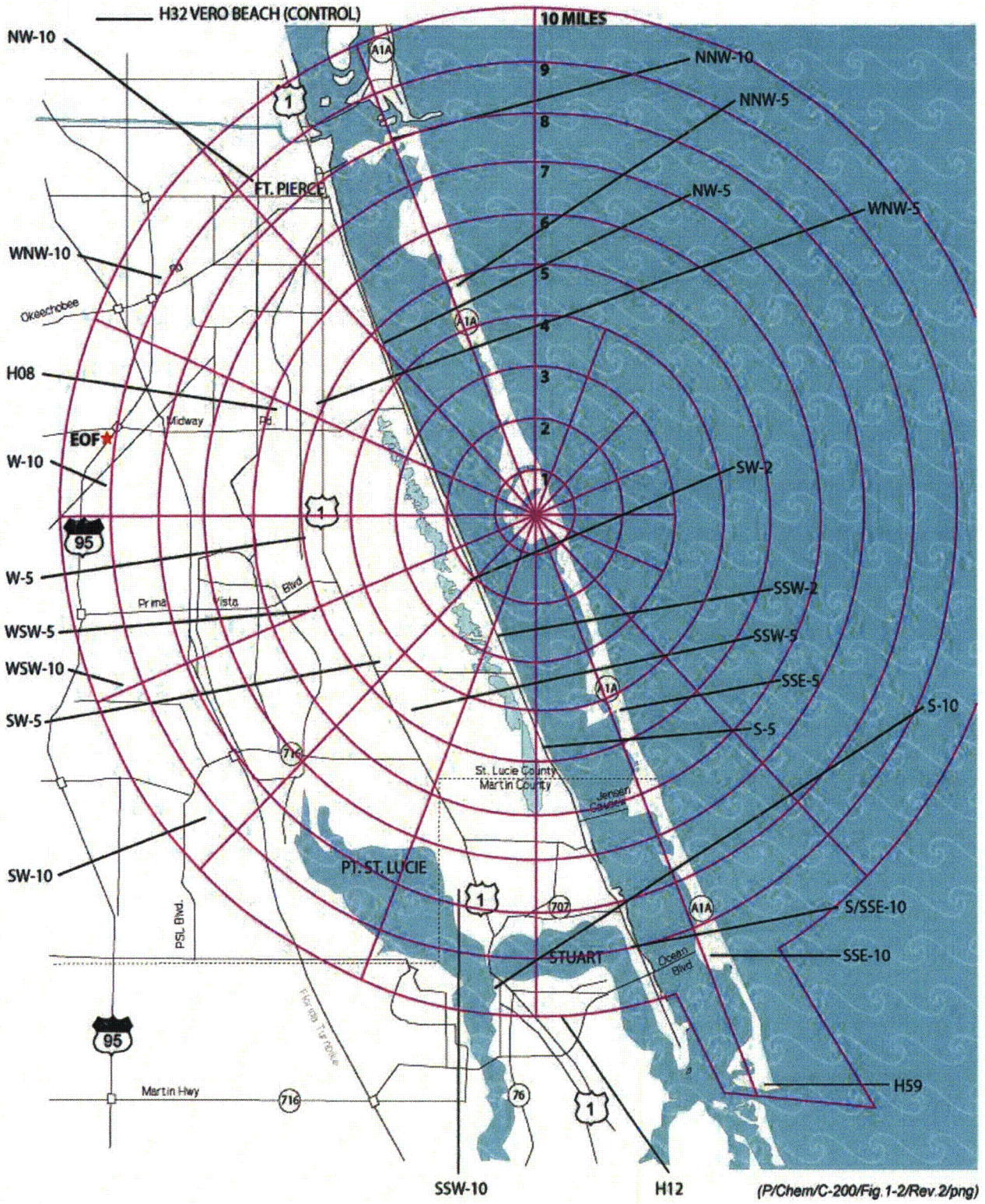
ATTACHMENT A

KEY TO SAMPLE LOCATIONS

SITE AREA MAP & ENVIRONMENTAL SAMPLE LOCATIONS



ENVIRONMENTAL SAMPLE LOCATIONS (10 MILES)



ATTACHMENT A
PAGE 1 OF 3

PATHWAY: DIRECT RADIATION
SAMPLES COLLECTED: TLD
SAMPLE COLLECTION FREQUENCY: QUARTERLY

Location Name	Direction Sector	Approximate Distance (miles)	Description
N-1	N	1	A1A, North of Blind Creek
NNW-5	NNW	4.8	Frederick Douglas Beach Entrance
NNW-10	NNW	8.7	Coast Guard Station
NW-5	NW	5.4	Indian River Dr. at Rio Vista Dr.
NW-10	NW	9.6	FPL Facility, S.R. 68 and 33RD St.
WNW-2	WNW	2.3	Cemetery South of 7107 Indian River Dr.
WNW-5	WNW	5.1	U.S. 1 at S.R. 712
WNW-10	WNW	10	S.R. 70, West of Interstate 95
W-2	W	2	Power Line - 77609 Indian River Drive
W-5	W	5.4	Oleander and Sager Street
W-10	W	10.3	Interstate 95 and S.R. 709
WSW-2	WSW	1.8	8503 Indian River Dr.
WSW-5	WSW	5.6	Prima Vista Blvd. at Yacht Club
WSW-10	WSW	10	Del Rio and Davis Street
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 Rd.
SSW-2	SSW	2.6	10307 Indian River Drive
SSW-5	SSW	6	U.S. 1 and Port St. Lucie Blvd.
SSW-10	SSW	8	Pine Valley and Westmoreland Rd.
S-5	S	5.2	13189 Indian River Drive
S-10	S	10.8	U.S. 1 and Palm City Ave
S/SSE-10	SSE	9.9	Indian River Dr. 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
Control:			
H-32	NNW	18.1	U. of Florida IFAS Entomology Lab Vero Beach

ATTACHMENT A
PAGE 2 OF 3

PATHWAY: AIRBORNE
SAMPLES COLLECTED: RADIOIODINE AND PARTICULATES
SAMPLE COLLECTION FREQUENCY: WEEKLY

Location Name	Direction Sector	Approximate Distance (miles)	Description
H-08	WNW	6	FPL Substation, Weatherbee Rd.
H-14	SE	1	On-Site, near south property line
H-30	W	2	Power Line, 7609 Indian River Drive
H-34	N	0.5	Onsite at Meteorological Tower
Control:			
H-12	S	12	FPL Substation, SR-76 Stuart

PATHWAY: WATERBORNE
SAMPLES COLLECTED: SURFACE WATER (OCEAN)
SAMPLE COLLECTION FREQUENCY: H-15 WEEKLY, H-59 MONTHLY

Location Name	Direction Sector	Approximate Distance (miles)	Description
H-15	ENE/E/SSE	<1	Atlantic Ocean, public beaches east side A1A
Control:			
H-59	S/SSE	10-20	Near south end of Hutchinson Island

ATTACHMENT A
PAGE 3 OF 3

SAMPLES COLLECTED: SHORELINE SEDIMENT
SAMPLE COLLECTION FREQUENCY: SEMI-ANNUALLY

Location Name	Direction Sector	Approximate Distance (miles)	Description
H-15	ENE/E/ESE	<1	Atlantic Ocean, public beaches east side A1A
Control:			
H-59	S/SSE	10-20	Near south end of Hutchinson Island

PATHWAY: INGESTION - FOOD PRODUCTS
SAMPLES COLLECTED: CRUSTACEA AND FISH
SAMPLE COLLECTION FREQUENCY: SEMI-ANNUALLY

Location Name	Direction Sector	Approximate Distance (miles)	Description
H-15	ENE/E/ESE	<1	Ocean Side, Vicinity of St. Lucie Plant
Control:			
H-59	S/SSE	10-20	Near south end of Hutchinson Island

SAMPLES COLLECTED: BROAD LEAF VEGETATION - FOOD PRODUCTS
SAMPLE COLLECTION FREQUENCY: MONTHLY

Location Name	Direction Sector	Approximate Distance (miles)	Description
H-51	N/NNW	1	Off-Site Near North Property Line
H-52	S/SSE	1	Off-Site Near South Property Line
Control:			
H-59	S/SSE	10-20	Near south end of Hutchinson Island

ATTACHMENT B

RADIOLOGICAL SURVEILLANCE OF

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT

2014

First Quarter 2014

Second Quarter 2014

Third Quarter 2014

Fourth Quarter 2014

RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT

FIRST QUARTER 2014

BUREAU OF RADIATION CONTROL

ST. LUCIE SITE

Offsite Dose Calculation Manual Sampling

First Quarter 2014

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	60
2.b. Air Particulates	Weekly	5	60
3. Waterborne			
3.a. Surface Water	Weekly	1	12
	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: 176

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 - TLD's - (μR/hour)

Sample Site	Deployment 09-Dec-13 Collection 11-Mar-14	Sample Site	Deployment 09-Dec-13 Collection 11-Mar-14
N-1	3.51 ± 0.10	SW-2	3.21 ± 0.13
NNW-5	3.31 ± 0.28	SW-5	3.93 ± 0.34
NNW-10	4.02 ± 0.25	SW-10	3.37 ± 0.19
NW-5	3.43 ± 0.07	SSW-2	3.20 ± 0.25
NW-10	4.52 ± 0.26	SSW-5	3.67 ± 0.43
WNW-2	3.27 ± 0.27	SSW-10	3.55 ± 0.27
WNW-5	3.26 ± 0.24	S-5	4.57 ± 1.50
WNW-10	3.74 ± 0.10	S-10	3.22 ± 0.25
W-2	3.07 ± 0.17	S/SSE-10	3.20 ± 0.48
W-5	3.56 ± 0.54	SSE-5	(A)
W-10	3.29 ± 0.40	SSE-10	3.22 ± 0.35
WSW-2	3.48 ± 0.46	SE-1	3.09 ± 0.10
WSW-5	3.26 ± 0.37	H-32	3.52 ± 0.20
WSW-10	2.98 ± 0.10		

(A) TLD read data lost due to software error

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

Collection Date	H08	H12	H14	H30	H34
06-Jan-14	<0.03	<0.03	<0.03	<0.03	<0.03
14-Jan-14	<0.03	<0.02	<0.02	<0.03	<0.03
21-Jan-14	<0.03	<0.02	<0.02	<0.02	<0.02
29-Jan-14	<0.03	<0.03	<0.03	<0.03	<0.03
04-Feb-14	<0.03	<0.03	<0.03	<0.03	<0.03
10-Feb-14	<0.02	<0.04	<0.04	<0.04	<0.04
19-Feb-14	<0.02	<0.02	<0.03	<0.02	<0.02
25-Feb-14	<0.04	<0.04	<0.04	<0.04	<0.03
04-Mar-14	<0.03	<0.03	<0.03	<0.03	<0.03
12-Mar-14	<0.03	<0.03	<0.03	<0.03	<0.03
18-Mar-14	<0.04	<0.04	<0.04	<0.04	<0.04
25-Mar-14	<0.03	<0.03	<0.03	<0.03	<0.03

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

Collection Date	H08	H12	H14	H30	H34
06-Jan-14	0.014 ± 0.002	0.015 ± 0.002	0.013 ± 0.002	0.012 ± 0.002	0.013 ± 0.002
14-Jan-14	0.011 ± 0.002	0.014 ± 0.002	0.009 ± 0.001	0.011 ± 0.002	0.014 ± 0.002
21-Jan-14	0.010 ± 0.002	0.015 ± 0.002	0.013 ± 0.002	0.012 ± 0.002	0.011 ± 0.002
29-Jan-14	0.016 ± 0.002	0.015 ± 0.002	0.014 ± 0.002	0.013 ± 0.002	0.017 ± 0.002
04-Feb-14	0.006 ± 0.002	0.008 ± 0.002	0.004 ± 0.002	0.004 ± 0.001	0.007 ± 0.002
10-Feb-14	0.008 ± 0.002	0.010 ± 0.002	0.007 ± 0.002	0.007 ± 0.002	0.006 ± 0.002
19-Feb-14	0.012 ± 0.002	0.015 ± 0.002	0.015 ± 0.002	0.010 ± 0.001	0.017 ± 0.002
25-Feb-14	0.005 ± 0.002	0.006 ± 0.002	0.008 ± 0.002	0.007 ± 0.002	0.010 ± 0.002
04-Mar-14	0.017 ± 0.002	0.016 ± 0.002	0.011 ± 0.002	0.013 ± 0.002	0.015 ± 0.002
12-Mar-14	0.017 ± 0.002	0.015 ± 0.002	0.017 ± 0.002	0.010 ± 0.002	0.015 ± 0.002
18-Mar-14	0.012 ± 0.002	0.014 ± 0.002	0.012 ± 0.002	0.010 ± 0.002	0.014 ± 0.002
25-Mar-14	0.014 ± 0.002	0.019 ± 0.002	0.015 ± 0.002	0.013 ± 0.002	0.010 ± 0.002
Average:	0.012 ± 0.001	0.014 ± 0.001	0.012 ± 0.001	0.010 ± 0.001	0.012 ± 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	0.1010 ± 0.0079	<0.0161	<0.0013	<0.0011	0.0095 ± 0.0021
H12	0.1330 ± 0.0101	<0.0216	<0.0014	<0.0014	0.0134 ± 0.0021
H14	0.1124 ± 0.0084	<0.0140	<0.0011	<0.0012	0.0110 ± 0.0021
H30	0.1032 ± 0.0090	<0.0238	<0.0014	<0.0015	0.0088 ± 0.0019
H34	0.1150 ± 0.0095	<0.0150	<0.0016	<0.0014	0.0083 ± 0.0018

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	06-Jan-14	<143	317 ± 32	<5	<5	<10	<7	<10	<10	<6	<5	<5	<8
	14-Jan-14	<135	395 ± 34	<5	<5	<10	<7	<11	<9	<6	<5	<6	<13
	21-Jan-14	<135	335 ± 21	<2	<3	<6	<3	<5	<4	<3	<3	<2	<9
	29-Jan-14	<136	330 ± 32	<4	<5	<10	<7	<11	<8	<5	<4	<5	<14
	04-Feb-14	<144	310 ± 21	<3	<3	<6	<4	<7	<5	<4	<3	<4	<8
	10-Feb-14	<136	340 ± 24	<3	<2	<5	<3	<6	<5	<3	<3	<3	<6
	19-Feb-14	<133	374 ± 18	<2	<2	<4	<2	<4	<3	<2	<2	<2	<5
	25-Feb-14	<133	298 ± 22	<3	<3	<6	<3	<7	<5	<3	<3	<3	<9
	04-Mar-14	<143	293 ± 23	<3	<3	<6	<3	<6	<5	<3	<3	<3	<9
	12-Mar-14	<133	326 ± 17	<2	<2	<4	<2	<4	<3	<2	<2	<2	<5
	18-Mar-14	<133	299 ± 22	<3	<3	<7	<3	<6	<5	<3	<3	<3	<11
	25-Mar-14	<149	348 ± 24	<3	<3	<6	<4	<7	<5	<3	<3	<3	<10
H59	06-Jan-14	<143	372 ± 34	<4	<5	<10	<7	<9	<8	<6	<5	<6	<10
	04-Feb-14	<136	316 ± 23	<3	<3	<6	<3	<6	<5	<3	<3	<3	<8
	11-Mar-14	<144	277 ± 22	<3	<3	<7	<3	<6	<5	<3	<3	<3	<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	04-Feb-14	<90	243 ± 37	<9	<12	<9	<10	374 ± 123	276 ± 64	63 ± 8	<12	306 ± 95
H59	04-Feb-14	<82	284 ± 35	<7	<9	<7	<9	<601	392 ± 42	64 ± 8	<10	259 ± 80

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

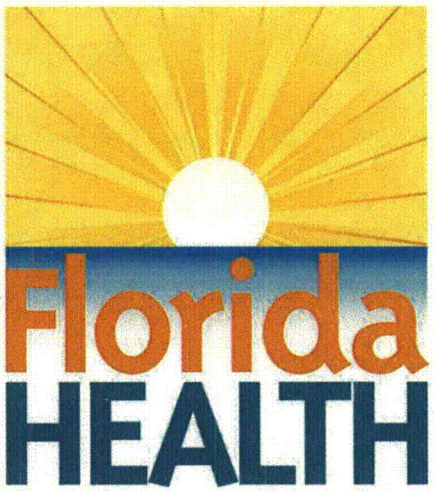
Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15	This sample not yet collected.										
H59	12-Mar-14	1526 ± 182	<27	<25	<53	<41	<62	<30	<30	<475	<145

4.a.2. FISH - Crevalle Jacks - (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	10-Feb-14	2181 ± 149	<23	<20	<37	<22	<45	<22	<22	<392	<76
H59	12-Mar-14	2276 ± 151	<20	<20	<37	<22	<42	<23	<20	<397	<74

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	Ra-226	Ra-228
H51	06-Jan-14	1258 ± 58	2840 ± 137	<14	<10	<12	<1000	<258	<44
	04-Feb-14	1167 ± 59	3752 ± 179	<15	<13	<15	<1194	<306	<58
	11-Mar-14	791 ± 48	4932 ± 206	<14	<12	<13	<1172	<304	<61
H52	06-Jan-14	790 ± 46	4128 ± 181	<15	<11	<12	<1089	<287	<55
	04-Feb-14	749 ± 45	3629 ± 166	<13	<12	<12	<1146	<267	<44
	11-Mar-14	757 ± 46	3272 ± 159	<14	<12	<13	<1133	<277	<51
H59	06-Jan-14	412 ± 39	3810 ± 188	<16	<15	<19	<1281	<359	<66
	04-Feb-14	874 ± 52	3937 ± 183	<12	<13	<15	<1148	<293	<48
	11-Mar-14	263 ± 19	4254 ± 146	<9	<8	<9	<616	<176	<33



RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT

SECOND QUARTER 2014

BUREAU OF RADIATION CONTROL

ST. LUCIE SITE

Offsite Dose Calculation Manual Sampling

Second Quarter 2014

Sample Type	Collection Frequency	Locations Sampled	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: 183

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 - TLD's - (μR/hour)

Sample Site	Deployment 11-Mar-14 Collection 17-Jun-14	Sample Site	Deployment 11-Mar-14 Collection 17-Jun-14
N-1	3.17 ± 0.43	SW-2	3.15 ± 0.46
NNW-5	3.30 ± 0.31	SW-5	3.53 ± 0.28
NNW-10	3.84 ± 0.07	SW-10	3.32 ± 0.15
NW-5	2.95 ± 0.14	SSW-2	3.11 ± 0.18
NW-10	4.50 ± 0.71	SSW-5	3.62 ± 0.29
WNW-2	3.55 ± 1.58	SSW-10	3.71 ± 0.33
WNW-5	2.99 ± 0.19	S-5	4.00 ± 0.29
WNW-10	3.45 ± 0.33	S-10	3.18 ± 0.33
W-2	2.98 ± 0.20	S/SSE-10	3.07 ± 0.02
W-5	3.27 ± 0.37	SSE-5	3.01 ± 0.33
W-10	3.38 ± 0.34	SSE-10	3.11 ± 0.16
WSW-2	3.25 ± 0.22	SE-1	3.16 ± 0.20
WSW-5	3.25 ± 0.11	H-32	3.35 ± 0.18
WSW-10	2.87 ± 0.02		

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

Collection Date	H08	H12	H14	H30	H34
02-Apr-14	<0.03	<0.03	<0.03	<0.03	<0.03
08-Apr-14	<0.04	<0.04	<0.04	<0.04	<0.04
15-Apr-14	<0.02	<0.02	<0.02	<0.02	<0.02
22-Apr-14	<0.02	<0.02	<0.02	<0.02	<0.02
28-Apr-14	<0.04	<0.04	<0.04	<0.04	<0.04
06-May-14	<0.03	<0.03	<0.03	<0.03	<0.03
12-May-14	<0.04	<0.04	<0.04	<0.04	<0.04
20-May-14	<0.02	<0.02	<0.02	<0.02	<0.02
27-May-14	<0.03	<0.03	<0.03	<0.03	<0.03
03-Jun-14	<0.03	<0.03	<0.03	<0.03	<0.03
10-Jun-14	<0.03	<0.03	<0.03	<0.03	<0.03
17-Jun-14	<0.03	<0.03	<0.03	<0.03	<0.03
24-Jun-14	<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-Apr-14	0.012 ± 0.002	0.022 ± 0.002	0.021 ± 0.002	0.013 ± 0.002	0.019 ± 0.002
08-Apr-14	0.025 ± 0.002	0.030 ± 0.003	0.025 ± 0.002	0.023 ± 0.002	0.023 ± 0.002
15-Apr-14	0.013 ± 0.002	0.012 ± 0.002	0.013 ± 0.002	0.011 ± 0.002	0.010 ± 0.002
22-Apr-14	0.006 ± 0.001	0.007 ± 0.001	0.005 ± 0.001	0.003 ± 0.001	0.005 ± 0.001
28-Apr-14	0.012 ± 0.002	0.014 ± 0.002	0.009 ± 0.002	0.009 ± 0.002	0.011 ± 0.002
06-May-14	0.014 ± 0.002	0.013 ± 0.002	0.016 ± 0.002	0.010 ± 0.002	0.016 ± 0.002
12-May-14	0.021 ± 0.002	0.025 ± 0.003	0.023 ± 0.003	0.017 ± 0.002	0.024 ± 0.003
20-May-14	0.008 ± 0.002	0.014 ± 0.002	0.012 ± 0.002	0.006 ± 0.001	0.015 ± 0.002
27-May-14	0.017 ± 0.002	0.022 ± 0.002	0.015 ± 0.002	0.019 ± 0.002	0.020 ± 0.002
03-Jun-14	0.013 ± 0.002	0.009 ± 0.002	0.011 ± 0.002	0.010 ± 0.002	0.010 ± 0.002
10-Jun-14	0.009 ± 0.002	0.014 ± 0.002	0.013 ± 0.002	0.013 ± 0.002	0.015 ± 0.002
17-Jun-14	0.012 ± 0.002	0.013 ± 0.002	0.006 ± 0.001	0.009 ± 0.002	0.011 ± 0.002
24-Jun-14	0.009 ± 0.002	0.014 ± 0.002	0.011 ± 0.002	0.011 ± 0.002	0.010 ± 0.002
Average:	0.013 ± 0.001	0.016 ± 0.001	0.014 ± 0.001	0.012 ± 0.001	0.015 ± 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	0.1372 ± 0.0238	<0.0145	<0.0012	<0.0011	0.0114 ± 0.0019
H12	0.1579 ± 0.0108	<0.0208	<0.0012	<0.0016	0.0208 ± 0.0025
H14	0.1205 ± 0.0082	<0.0139	<0.0011	<0.0011	0.0074 ± 0.0018
H30	0.1294 ± 0.0100	<0.0250	<0.0016	<0.0013	<0.0136
H34	0.1433 ± 0.0094	<0.0218	<0.0014	<0.0015	<0.0140

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-Apr-14	<141	364 ± 25	<3	<3	<7	<3	<8	<5	<4	<3	<3	<5
	08-Apr-14	<139	396 ± 22	<2	<2	<5	<3	<5	<4	<3	<2	<3	<8
	15-Apr-14	<140	395 ± 34	<5	<6	<12	<7	<10	<9	<9	<4	<6	<7
	22-Apr-14	<140	370 ± 25	<3	<3	<5	<3	<7	<5	<3	<3	<3	<8
	28-Apr-14	<140	353 ± 15	<1	<1	<3	<1	<3	<2	<1	<1	<1	<3
	06-May-14	<145	300 ± 23	<3	<2	<6	<3	<7	<5	<3	<3	<3	<5
	12-May-14	<145	309 ± 32	<5	<4	<9	<7	<10	<10	<6	<6	<5	<9
	20-May-14	75 ± 26	385 ± 35	<4	<4	<8	<7	<11	<9	<5	<5	<6	<10
	27-May-14	<141	370 ± 25	<3	<3	<6	<4	<7	<5	<3	<3	<3	<9
	03-Jun-14	<135	320 ± 24	<3	<3	<6	<3	<7	<5	<4	<3	<3	<9
	10-Jun-14	<140	351 ± 24	<3	<3	<7	<3	<7	<5	<3	<3	<3	<11
	18-Jun-14	<142	299 ± 23	<3	<3	<6	<3	<6	<5	<4	<3	<3	<6
	24-Jun-14	<142	327 ± 28	<4	<4	<8	<6	<9	<7	<5	<4	<4	<8
H59	02-Apr-14	<139	354 ± 33	<5	<5	<11	<7	<12	<9	<9	<4	<6	<6
	20-May-14	<141	353 ± 25	<3	<3	<6	<3	<7	<5	<3	<3	<3	<7
	18-Jun-14	<142	327 ± 32	<5	<5	<9	<7	<12	<8	<6	<5	<5	<11

(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
	These samples were previously collected.									

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

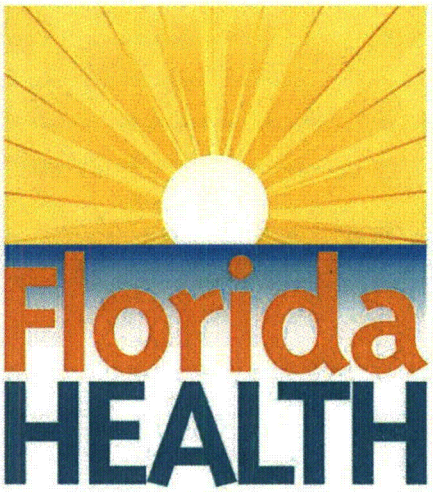
Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15	20-May-14	1365 ± 126	<17	<19	<37	<20	<40	<20	<18	<367	<80
H59	This sample was previously collected.										

4.a.2. FISH - Mixed - (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	This sample was previously collected.										
H59	This sample was previously collected.										

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	02-Apr-14	653 ± 45	2682 ± 139	<18	<12	<14	<1061	<25	<273	<48
	20-May-14	568 ± 29	2360 ± 106	<7	<7	<7	<223	<13	<134	<29
	18-Jun-14	1006 ± 54	3190 ± 155	<14	<13	<16	<1185	17 ± 4	<292	<51
H52	02-Apr-14	1420 ± 71	5114 ± 223	<21	<13	<18	<1412	<30	<367	<62
	20-May-14	574 ± 43	3717 ± 178	<15	<14	<15	<1157	<26	<300	<45
	18-Jun-14	847 ± 46	3212 ± 149	<12	<10	<12	<1117	<22	<250	<45
H59	02-Apr-14	643 ± 43	3709 ± 169	<17	<13	<15	<973	<24	<272	<55
	20-May-14	503 ± 39	2763 ± 146	<14	<14	<15	<1126	<25	<273	<55
	18-Jun-14	1143 ± 57	2432 ± 129	<13	<10	<12	<1031	<25	<274	<52



RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT

THIRD QUARTER 2014

BUREAU OF RADIATION CONTROL

2014
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT - UNITS 1 & 2

ST. LUCIE SITE

Offsite Dose Calculation Manual Sampling

Third Quarter 2014

Sample Type	Collection Frequency	Locations Sampled	Number of Samples
1. Direct Radiation	Quarterly	27	27
2. Airborne			
2.a. Air Iodines	Weekly	5	70
2.b. Air Particulates	Weekly	5	70
3. Waterborne			
3.a. Surface Water	Weekly	1	14
	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	1
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 197

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 - TLD's - (μR/hour)

Sample Site	Deployment 17-Jun-14 Collection 09-Sep-14	Sample Site	Deployment 17-Jun-14 Collection 09-Sep-14
N-1	3.55 ± 0.41	SW-2	3.60 ± 0.14
NNW-5	3.70 ± 0.27	SW-5	4.17 ± 0.16
NNW-10	4.51 ± 0.43	SW-10	3.78 ± 0.30
NW-5	3.80 ± 0.34	SSW-2	3.61 ± 0.26
NW-10	4.99 ± 0.47	SSW-5	4.12 ± 0.26
WNW-2	3.76 ± 0.23	SSW-10	4.17 ± 0.33
WNW-5	3.56 ± 0.33	S-5	4.59 ± 0.45
WNW-10	4.11 ± 0.15	S-10	3.49 ± 0.21
W-2	3.59 ± 0.25	S/SSE-10	3.61 ± 0.46
W-5	3.79 ± 0.27	SSE-5	3.46 ± 0.17
W-10	3.64 ± 0.11	SSE-10	3.69 ± 0.32
WSW-2	3.82 ± 0.34	SE-1	3.59 ± 0.35
WSW-5	3.76 ± 0.16	H-32	4.05 ± 0.02
WSW-10	3.20 ± 0.09		

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

Collection Date	H08	H12	H14	H30	H34
01-Jul-14	<0.03	<0.03	<0.03	<0.03	<0.03
08-Jul-14	<0.03	<0.03	<0.03	<0.03	<0.03
16-Jul-14	<0.02	<0.02	<0.02	<0.02	<0.02
23-Jul-14	<0.03	<0.03	<0.03	<0.03	<0.03
30-Jul-14	<0.03	<0.03	<0.03	<0.03	<0.03
04-Aug-14	<0.03	<0.03	<0.03	<0.03	<0.03
11-Aug-14	<0.04	<0.03	<0.03	<0.03	<0.03
19-Aug-14	<0.03	<0.03	<0.03	<0.03	<0.03
26-Aug-14	<0.03	<0.03	<0.03	<0.03	<0.03
03-Sep-14	<0.03	<0.03	<0.03	<0.03	<0.03
09-Sep-14	<0.04	<0.03	<0.04	<0.04	<0.04
16-Sep-14	<0.03	<0.03	<0.03	<0.03	<0.03
23-Sep-14	<0.03	<0.03	<0.03	<0.03	<0.03
29-Sep-14	<0.03	<0.03	<0.03	<0.03	<0.03

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

Collection Date	H08	H12	H14	H30	H34
01-Jul-14	0.012 ± 0.002	0.018 ± 0.002	0.017 ± 0.002	0.016 ± 0.002	0.009 ± 0.002
08-Jul-14	0.011 ± 0.002	0.013 ± 0.002	0.015 ± 0.002	0.009 ± 0.002	0.011 ± 0.002
16-Jul-14	0.018 ± 0.002	0.013 ± 0.002	0.014 ± 0.002	0.016 ± 0.002	0.011 ± 0.002
23-Jul-14	0.014 ± 0.002	0.012 ± 0.002	<0.009	0.013 ± 0.002	0.005 ± 0.002
30-Jul-14	0.017 ± 0.002	0.021 ± 0.002	0.017 ± 0.002	0.019 ± 0.002	0.020 ± 0.002
04-Aug-14	0.008 ± 0.002	<0.009	0.006 ± 0.002	0.005 ± 0.002	0.011 ± 0.002
11-Aug-14	0.015 ± 0.002	0.016 ± 0.002	0.011 ± 0.002	0.010 ± 0.002	0.014 ± 0.002
19-Aug-14	0.011 ± 0.002	0.005 ± 0.002	0.011 ± 0.002	0.013 ± 0.002	0.008 ± 0.002
26-Aug-14	0.014 ± 0.002	0.016 ± 0.002	0.014 ± 0.002	0.012 ± 0.002	0.015 ± 0.002
03-Sep-14	0.013 ± 0.002	0.014 ± 0.002	0.015 ± 0.002	0.013 ± 0.002	0.014 ± 0.002
09-Sep-14	0.010 ± 0.002	0.013 ± 0.002	0.007 ± 0.002	0.012 ± 0.002	0.010 ± 0.002
16-Sep-14	0.006 ± 0.002	0.006 ± 0.002	0.009 ± 0.002	0.009 ± 0.002	0.010 ± 0.002
23-Sep-14	0.007 ± 0.002	0.007 ± 0.002	0.009 ± 0.002	0.009 ± 0.002	0.007 ± 0.002
29-Sep-14	0.007 ± 0.002	0.012 ± 0.002	0.008 ± 0.002	0.007 ± 0.002	0.007 ± 0.002
Average:	0.012 ± 0.001	<0.013	<0.012	0.012 ± 0.001	0.011 ± 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	0.0629 ± 0.0166	<0.0142	<0.0012	<0.0007	<0.0097
H12	0.0763 ± 0.0059	<0.0120	<0.0011	<0.0009	<0.0100
H14	0.0765 ± 0.0044	<0.0089	<0.0007	<0.0006	0.0063 ± 0.0026
H30	0.0809 ± 0.0075	<0.0194	<0.0011	<0.0012	<0.0084
H34	0.0617 ± 0.0058	<0.0138	<0.0010	<0.0009	<0.0105

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	01-Jul-14	<146	327 ± 21	<3	<2	<5	<3	<5	<4	<2	<2	<2	<8
	08-Jul-14	<146	302 ± 23	<3	<3	<6	<3	<7	<4	<3	<3	<3	<7
	16-Jul-14	<146	334 ± 32	<5	<5	<11	<7	<10	<7	<8	<5	<5	<7
	23-Jul-14	<156	341 ± 24	<3	<3	<6	<3	<6	<5	<3	<2	<3	<5
	30-Jul-14	<139	309 ± 24	<3	<3	<6	<3	<7	<5	<3	<3	<3	<6
	04-Aug-14	<139	324 ± 20	<3	<3	<6	<4	<6	<4	<3	<3	<3	<7
	11-Aug-14	<155	342 ± 24	<3	<3	<6	<3	<6	<5	<3	<3	<3	<6
	19-Aug-14	<155	290 ± 23	<3	<3	<6	<3	<6	<5	<3	<3	<3	<10
	26-Aug-14	<143	279 ± 23	<3	<3	<6	<3	<7	<5	<4	<3	<3	<6
	03-Sep-14	<143	328 ± 20	<3	<3	<5	<4	<6	<4	<3	<3	<3	<8
	09-Sep-14	<148	340 ± 32	<4	<4	<6	<7	<10	<8	<6	<5	<6	<9
	16-Sep-14	<148	278 ± 23	<3	<3	<6	<3	<7	<5	<3	<2	<3	<10
	23-Sep-14	<146	299 ± 24	<3	<3	<7	<3	<7	<5	<3	<3	<3	<9
	29-Sep-14	<146	338 ± 16	<2	<2	<4	<3	<4	<4	<2	<2	<2	<5
H59	08-Jul-14	<146	337 ± 32	<5	<5	<10	<7	<10	<9	<7	<5	<5	<9
	13-Aug-14	<155	325 ± 32	<5	<6	<10	<7	<11	<9	<9	<4	<6	<8
	10-Sep-14	<148	369 ± 26	<3	<2	<5	<3	<7	<5	<3	<3	<3	<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.

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	13-Aug-14	<102	510 ± 49	<9	<11	<8	<10	<762	<299	81 ± 9	<17	<685
H59	13-Aug-14	75 ± 19	429 ± 44	<9	<11	<7	<9	<692	261 ± 44	<48	<13	<610

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

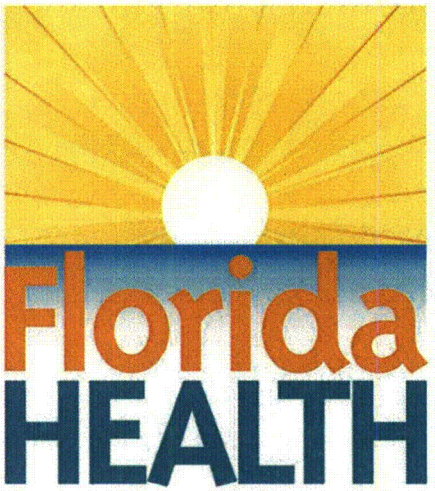
Sample Site	Collection Date	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	Ra-226	Ra-228
H15	10-Sep-14	2244 ± 195	<27	<21	<51	<38	<55	<27	<29	<445	<106
H59	This sample not yet collected.										

4.a.2. FISH - Mixed Species - (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	15-Sep-14	2708 ± 180	<22	<18	<40	<19	<46	<20	<22	<382	<72
H59	This sample not yet collected.										

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	08-Jul-14	619 ± 44	4289 ± 189	<15	<12	<13	<1231	<24	<293	<53
	13-Aug-14	1206 ± 64	3248 ± 166	<17	<13	<15	858 ± 208	<28	<328	<57
	10-Sep-14	1228 ± 63	2047 ± 122	<14	<11	<14	<1142	<24	<292	<55
H52	08-Jul-14	1268 ± 64	3160 ± 160	<15	<12	<15	<1183	<26	<310	<54
	13-Aug-14	897 ± 44	4370 ± 185	<11	<10	<11	<350	<18	<223	<39
	10-Sep-14	986 ± 56	3764 ± 178	<14	<12	<13	<1238	<27	<308	<59
H59	08-Jul-14	1718 ± 78	2644 ± 143	<16	<13	<14	<1319	<26	<327	<54
	13-Aug-14	1072 ± 62	3937 ± 190	<18	<14	<15	<1326	<29	<348	<66
	10-Sep-14	1082 ± 46	2583 ± 124	<9	<8	<11	198 ± 40	<17	<192	<31



RADIOLOGICAL SURVEILLANCE

OF

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT

FOURTH QUARTER 2014

BUREAU OF RADIATION CONTROL

ST. LUCIE SITE

Offsite Dose Calculation Manual Sampling

Fourth Quarter 2014

Sample Type	Collection Frequency	Locations Sampled	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	1
4.b. Broadleaf Vegetation	Monthly	3	9
			Total: 183

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 - TLD's - (μR/hour)

Sample Site	Deployment 09-Sep-14 Collection 09-Dec-14	Sample Site	Deployment 09-Sep-14 Collection 09-Dec-14
N-1	2.99 ± 0.12	SW-2	2.86 ± 0.04
NNW-5	2.83 ± 0.45	SW-5	3.50 ± 0.41
NNW-10	3.87 ± 0.30	SW-10	3.14 ± 0.18
NW-5	3.18 ± 0.17	SSW-2	2.88 ± 0.33
NW-10	3.98 ± 0.37	SSW-5	3.29 ± 0.31
WNW-2	2.84 ± 0.40	SSW-10	3.14 ± 0.25
WNW-5	3.04 ± 0.24	S-5	3.72 ± 0.36
WNW-10	(A)	S-10	2.76 ± 0.15
W-2	2.89 ± 0.17	S/SSE-10	2.84 ± 0.27
W-5	4.30 ± 0.87	SSE-5	2.81 ± 0.25
W-10	2.80 ± 0.54	SSE-10	2.92 ± 0.30
WSW-2	3.06 ± 0.15	SE-1	2.89 ± 0.16
WSW-5	2.92 ± 0.34	H-32	3.31 ± 0.16
WSW-10	2.82 ± 0.18		

(A) TLD missing. Utility box cluster TLD attached to removed due to road widening. Another TLD/cricket cage deployed nearby on a chain link fence.

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

Collection Date	H08	H12	H14	H30	H34
07-Oct-14	<0.03	<0.03	<0.03	<0.03	<0.03
14-Oct-14	<0.03	<0.03	<0.03	<0.03	<0.03
21-Oct-14	<0.03	<0.03	<0.03	<0.03	<0.03
28-Oct-14	<0.03	<0.03	<0.03	<0.03	<0.03
04-Nov-14	<0.03	<0.03	<0.03	<0.03	<0.03
12-Nov-14	<0.03	<0.03	<0.03	<0.03	<0.03
18-Nov-14	<0.04	<0.04	<0.04	<0.04	<0.04
24-Nov-14	<0.02	<0.02	<0.02	<0.03	<0.03
02-Dec-14	<0.03	<0.03	<0.02	<0.03	<0.03
09-Dec-14	<0.03	<0.03	<0.03	<0.03	<0.03
15-Dec-14	<0.04	<0.05	<0.05	<0.05	<0.05
22-Dec-14	<0.03	<0.03	<0.03	<0.03	<0.03
29-Dec-14	<0.03	<0.03	<0.03	<0.03	<0.03

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

Collection Date	H08	H12	H14	H30	H34
07-Oct-14	0.013 ± 0.002	0.013 ± 0.002	0.008 ± 0.001	0.013 ± 0.002	0.010 ± 0.002
14-Oct-14	0.017 ± 0.002	0.022 ± 0.003	0.020 ± 0.002	0.022 ± 0.003	0.021 ± 0.003
21-Oct-14	0.020 ± 0.002	0.019 ± 0.002	0.015 ± 0.002	0.020 ± 0.002	0.014 ± 0.002
28-Oct-14	0.053 ± 0.003	0.033 ± 0.003	0.016 ± 0.002	0.025 ± 0.002	0.017 ± 0.002
04-Nov-14	0.017 ± 0.002	0.016 ± 0.002	0.020 ± 0.002	0.016 ± 0.002	0.016 ± 0.002
12-Nov-14	0.025 ± 0.002	0.023 ± 0.002	0.023 ± 0.002	0.022 ± 0.002	0.023 ± 0.002
18-Nov-14	0.030 ± 0.003	0.027 ± 0.003	0.018 ± 0.002	0.023 ± 0.003	0.016 ± 0.002
24-Nov-14	0.017 ± 0.003	0.017 ± 0.003	0.014 ± 0.003	0.012 ± 0.003	0.017 ± 0.003
02-Dec-14	0.008 ± 0.002	0.010 ± 0.002	0.007 ± 0.002	0.006 ± 0.002	0.007 ± 0.002
09-Dec-14	<0.007	<0.008	0.004 ± 0.002	<0.008	<0.007
15-Dec-14	0.028 ± 0.003	0.028 ± 0.003	0.038 ± 0.003	0.021 ± 0.003	0.020 ± 0.003
22-Dec-14	0.034 ± 0.003	0.025 ± 0.003	0.021 ± 0.002	0.019 ± 0.002	0.018 ± 0.002
29-Dec-14	0.014 ± 0.002	0.010 ± 0.002	0.007 ± 0.002	0.008 ± 0.002	0.005 ± 0.002
Average:	<0.022	<0.019	0.016 ± 0.001	<0.017	<0.015

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	0.1319 ± 0.0095	<0.0192	<0.0013	<0.0014	0.0165 ± 0.0022
H12	0.1402 ± 0.0102	<0.0220	<0.0013	<0.0013	0.0181 ± 0.0023
H14	0.1086 ± 0.0092	<0.0252	<0.0012	<0.0011	0.0141 ± 0.0021
H30	0.1338 ± 0.0082	<0.0174	<0.0008	<0.0008	0.0159 ± 0.0024
H34	0.1254 ± 0.0081	<0.0159	<0.0011	<0.0010	0.0123 ± 0.0021

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	07-Oct-14	<141	325 ± 32	<5	<4	<11	<7	<12	<9	<7	<5	<6	<10
	14-Oct-14	<141	323 ± 21	<3	<3	<6	<4	<6	<5	<3	<3	<4	<5
	21-Oct-14	<141	298 ± 25	<4	<4	<9	<6	<9	<7	<5	<4	<5	<12
	28-Oct-14	<150	345 ± 18	<2	<2	<4	<2	<4	<3	<2	<2	<2	<5
	04-Nov-14	<140	303 ± 20	<3	<2	<5	<3	<5	<4	<3	<2	<3	<8
	12-Nov-14	<140	341 ± 25	<3	<3	<7	<4	<6	<5	<3	<2	<3	<8
	18-Nov-14	<151	319 ± 24	<3	<3	<7	<3	<7	<5	<4	<3	<3	<6
	24-Nov-14	<151	317 ± 24	<3	<3	<6	<4	<6	<5	<3	<3	<3	<10
	02-Dec-14	<140	316 ± 24	<3	<3	<6	<3	<7	<5	<3	<3	<3	<10
	10-Dec-14	<140	264 ± 23	<3	<3	<6	<3	<7	<5	<3	<3	<3	<11
	15-Dec-14	<153	317 ± 24	<3	<3	<7	<3	<6	<5	<4	<3	<3	<5
	22-Dec-14	<152	348 ± 18	<2	<2	<4	<2	<4	<3	<2	<2	<2	<4
	29-Dec-14	<154	388 ± 26	<2	<3	<6	<3	<6	<5	<3	<3	<3	<10
H59	14-Oct-14	<144	346 ± 34	<4	<5	<10	<7	<11	<8	<6	<5	<5	<9
	18-Nov-14	<151	287 ± 31	<6	<5	<9	<7	<11	<8	<6	<5	<6	<13
	10-Dec-14	<140	337 ± 27	<4	<4	<8	<5	<9	<7	<4	<4	<4	<12

(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-238
H15	This sample was previously collected.										
H59	This sample was previously collected.										

4.a.1. CRUSTACEA - Blue Crab - (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	This sample was previously collected.										
H59	12-Nov-14	1760 ± 169	<26	<22	<53	<37	<58	<32	<31	407 ± 97	<138

4.a.2. FISH - Crevalle Jacks - (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	This sample was previously collected.										
H59	17-Dec-14	2159 ± 150	<20	<17	<51	<18	<43	<19	<23	<366	<79

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	14-Oct-14	685 ± 45	4218 ± 185	<14	<12	<14	<1090	<27	<288	<55
	18-Nov-14	677 ± 43	4364 ± 185	<13	<12	<14	<1127	<23	<273	<57
	10-Dec-14	766 ± 47	4493 ± 192	<14	<11	<15	735 ± 175	<23	<287	<56
H52	14-Oct-14	567 ± 42	4057 ± 185	<14	<13	<16	<1202	<27	<295	<59
	18-Nov-14	764 ± 51	3373 ± 168	<17	<13	<15	<1253	<28	<307	<56
	10-Dec-14	1735 ± 60	2413 ± 115	<9	<7	<7	584 ± 53	18 ± 2	<185	<36
H59	14-Oct-14	1152 ± 61	3745 ± 178	<15	<13	<18	<1208	<28	<319	<63
	18-Nov-14	419 ± 37	3535 ± 170	<15	<13	<15	<1110	<26	<288	<56
	10-Dec-14	733 ± 46	3122 ± 151	<14	<11	<12	<1087	<23	<273	<49

ATTACHMENT C

RESULTS FROM THE 2014

INTERLABORATORY COMPARISON PROGRAM

CONDUCTED BY

DEPARTMENT OF ENERGY

2014
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT – UNITS 1 & 2

DOE-MAPEP 30 RESULTS

Radionuclide	Result	Ref. Value	Flag (Evaluation)	Acceptance Range
Matrix: RdF Air Filter (Bq/filter)				
MN54	-0.001	0	A	False Positive Test (within acceptance range)
CO57	-0.058	0	A	False Positive Test (within acceptance range)
CO60	1.377	1.39	A	0.97 – 1.81
ZN65	-0.003	0	A	False Positive Test (within acceptance range)
CS134	1.897	1.91	A	1.34 – 2.48
CS137	1.930	1.76	A	1.23 – 2.29
Matrix: GrF Air Filter (Bq/filter)				
Gross Beta	0.943	0.77	A	0.39 – 1.16
Matrix: MaS Soil (Bq/kg)				
K40	674.78	622	A	435 – 809
MN54	1516.81	1430	A	1001 – 1859
CO57	1014.51	966	A	676 – 1256
CO60	1.18	1.22	A	Sensitivity Evaluation
ZN65	774.16	695	A	487 - 904
CS134	1.18	0	A	False Positive Test (within acceptance range)
CS137	1301.3	1238	A	867 - 1609
Matrix: MaW Water (Bq/L)				
H3	346	321	A	225 – 417
MN54	15.527	13.9	A	9.7 – 18.1
CO57	28.937	27.5	A	19.3 – 35.8
CO60	17.244	16.0	A	11.2 – 20.8
NI63	NR	34.0	N	23.8 – 44.2 (not required)
ZN65	-0.253	0	A	False Positive Test (within acceptance range)
CS134	25.31	23.1	A	16.2 – 30.0
CS137	32.22	28.9	A	20.2 – 37.6
SR90	9.91	8.51	A	5.96 – 11.06

Matrix: RdV Vegetation (Bq/sample)

MN54	7.685	8.62	A	6.03 – 11.21
CO57	9.385	10.1	A	7.1 – 13.1
CO60	6.039	6.93	A	4.85 – 9.01
ZN65	7.155	7.86	A	5.50 – 10.22
CS134	4.829	6.04	W *(*1)*	4.23 – 7.85
CS137	4.230	4.74	A	3.32 – 6.16

Evaluation: A = Acceptable, W = Acceptable with Warning, N = Not Acceptable

In MAPEP 30, the results for gamma on air filters, water, soil, and vegetation matrices for those nuclides associated with nuclear power plant operation and using analytical methods used in the REMP are acceptable.

There was one relevant data flag:

*1) Cs-134 for RdV Vegetation showed a "Warning" Flag for a result which met the MAPEP acceptance criteria but with a bias -20.1%. The previous interlaboratory crosscheck, MAPEP 29 did not show a "Warning" flag for this isotope nuclide-matrix combination and this is the first "Warning" flag for this isotope. The State of Florida Bureau of Radiation Control explained that the MAPEP vegetation nuclear analyses unknown is counted in a different geometry than used for normal nuclear REMP program vegetation isotopic analyses. The MAPEP unknown is analyzed using a smaller container, considerably smaller sample mass and different density than is used for normal, routine power plant vegetation sample counts.

DOE-MAPEP 31 RESULTS

Radionuclide	Result	Ref. Value	Flag (Evaluation)	Acceptance Range
Matrix: RdF Air Filter (Bq/filter)				
MN54	0.852	0.75	A	0.53 – 0.98
CO57	1.410	1.43	A	1.00 – 1.86
CO60	1.143	1.10	A	0.77 – 1.43
ZN65	0.860	0.76	A	0.53 – 0.99
CS134	0.930	0.96	A	0.67– 1.25
CS137	1.274	1.20	A	0.84 – 1.56
Matrix: GrF Air Filter (Bq/filter)				
Gross Beta	1.073	1.06	A	0.53 – 1.59
Matrix: MaS Soil (Bq/kg)				
K40	783.33	824	A	577 - 1071
MN54	1010.00	1009	A	706 - 1312
CO57	1120.00	1116	A	781 - 1451
CO60	736.67	779	A	545 - 1013
ZN65	559.3	541	A	379 - 703
CS134	628.59	622	A	435 - 809
CS137	1.15	0	A	False Positive Test (within acceptance range)
Matrix: MaW Water (Bq/L)				
H3	226.12	208	A	146 - 270
MN54	15.273	14.0	A	9.8 - 18.2
CO57	25.480	24.7	A	17.3 - 32.1
CO60	13.200	12.4	A	8.7 - 16.1
ZN65	12.583	10.9	A	7.6 – 14.2
CS134	0.009	0	A	False Positive Test (within acceptance range)
CS137	19.99	18.4	A	12.9 - 23.9

Matrix: RdV Vegetation (Bq/sample)

MN54	7.923	7.10	A	4.97 – 9.23
CO57	9.540	9.2	A	6.4 – 12.0
CO60	6.283	6.11	A	4.28 – 7.94
ZN65	7.007	6.42	A	4.49 – 8.35
CS134	8.988	7.38	W *(*1)*	5.17 – 9.59
CS137	9.423	8.14	A	5.70 – 10.58

Evaluation: A = Acceptable, W = Acceptable with Warning, N = Not Acceptable

In MAPEP 31, the results for gamma on air filters, water, soil, and vegetation matrices for those nuclides associated with nuclear power plant operation and using analytical methods used in the REMP are acceptable.

There was one relevant data flag for MAPEP 31:

*1) Cs-134 for RdV Vegetation showed a "Warning" Flag for a result within the MAPEP acceptance criteria but with a bias +21.8%. The previous interlaboratory crosscheck, MAPEP 30 also showed a "Warning" point within the acceptance criteria but with a bias of -20.1%. There have been two in a row "Warning" flags for this isotope nuclide-matrix combination. The State of Florida Bureau of Radiation Control explained that the MAPEP vegetation nuclear analyses unknown is counted in a different geometry than used for normal nuclear REMP program vegetation isotopic analyses. The MAPEP unknown is analyzed using a smaller container, considerably smaller sample mass and different density than is used for normal, routine power plant vegetation sample counts. The PSL Site REMP Program Coordinator will continue to monitor crosscheck results for repeated "Warning" flags for Cs-134 for RdV Vegetation over the next couple of MAPEP interlaboratory crosscheck comparison program results.

ATTACHMENT D

Industry Initiative

Ground Water Protection Program

Tritium in Ground Water Monitoring

2014

2014
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT
ST. LUCIE PLANT – UNITS 1 & 2

A. Description of Program:

Quarterly sampling & analysis for Tritium & principle gamma emitters is performed by the State of Florida Department of Health (DOH) and Bureau of Radiation Control (BRC), pursuant to an Agreement between FPL and DOH, as part of the ODCM REMP sampling program.

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 ten wells are on the 'outside' perimeter of the protected area. Two locations where the Plant ID ends with "S" are shallower wells adjacent, within a few feet, of 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 LU bldg
H78	H78	South of North Warehouse
H79	H79	West of A1A and East of Parking Lot

B. St. Lucie 2014 Tritium Results [1] Summary, pCi/L

Well number	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
H-70	141	233	<156	179
H-71	342	484	868 [3]	846 [3]
H-72	<144	<140	<156	<154
H-73	<136	<140	<156	<144
H-74	86	76	<156	<141
H-75	<136	<140	<156	<145
H76	108	165	<156	152
H77	<136	<140	<156	<139
H78	<136	<140	<156	<154
H79	<136	<140	<156	<139

Notes

1. Samples analyzed for H3 and principle gamma emitters; tritium is the only fission product identified. Naturally occurring K-40 is occasionally identified.

2. Laboratory H3 MDA is about 150 pCi/liter

3. A Condition Report was generated to document the increase in groundwater H-3 at H71. There was no increase in groundwater H-3 at the other nine PSL Site REMP groundwater wells. Groundwater H-3 at H71 will continue to be monitored for any additional increasing trend.

Map depicting the well locations follows.

RADIOLOGICAL ENVIRONMENTAL SAMPLING LOCATIONS
IN SUPPORT OF THE INDUSTRY INITIATIVE