VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

April 24, 2009

Attention: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555-0001

Serial No.	09-267
SS&L/TJN	R0
Docket Nos.	50-280
	50-281
	72-2
	72-55
License Nos.	DPR-32
	DPR-37
	SNM-2501

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

Surry Units 1 and 2 Technical Specification 6.6.B.2 requires the submittal of an Annual Radiological Environmental Operating Report (AREOR) for Surry Power Station. Surry Independent Spent Fuel Storage Installation (ISFSI) Technical Specification Appendix C, Item 1.3.1 requires that the Surry ISFSI be included in the environmental monitoring for the Surry Power Station. Accordingly, enclosed is the Surry Power Station AREOR for the period of January 1, 2008 through December 31, 2008, which includes environmental monitoring for the Surry ISFSI.

If you have any questions or require additional information, please contact Paul Harris at 757-365-2692.

Sincerely,

B. L. Stanley
Director Station Safety and Licensing
Surry Power Station

Attachment

Commitments made in this letter: None

IE25
NRR

Serial No. 09-267
Docket Nos.: 50-280
50-281
72-2
72-55

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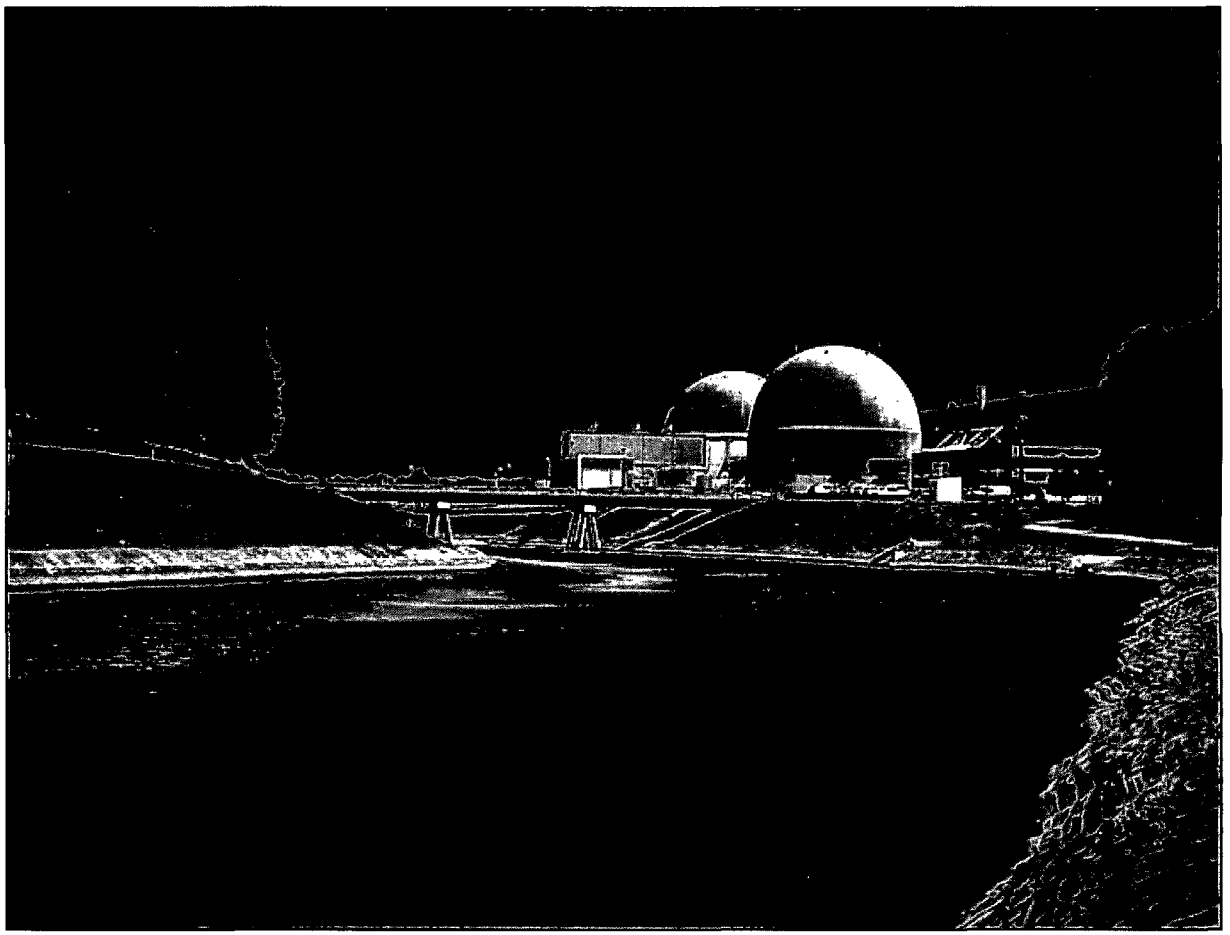
Serial No. 09-267
Docket Nos.: 50-280
50-281
72-2
72-55

ATTACHMENT 1
2008 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

SURRY POWER STATION UNITS 1 AND 2
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
VIRGINIA ELECTRIC AND POWER COMPANY

Surry Power Station



2008 Annual Radiological Environmental Operating Report

Dominion®

Dominion

Surry Power Station

Radiological Environmental Monitoring Program

January 1, 2008 to December 31, 2008

Annual Radiological Environmental Operating Report

Surry Power Station

January 1, 2008 to December 31, 2008

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PREFACE

This report is submitted as required by Technical Specification 6.6.B.2, Annual Radiological Environmental Operating Report, for Surry, Units 1 and 2, Virginia Electric and Power Company Docket Nos. 50-280 and 50-281.

1. EXECUTIVE SUMMARY

This document is a detailed report of the 2008 Surry Power Station Radiological Environmental Monitoring Program (REMP). Radioactivity levels from January 1 through December 31, 2008, in air, water, silt, shoreline sediment, milk, aquatic biota, food products and direct exposure pathways have been analyzed, evaluated and summarized. The REMP is designed to confirm that radiological effluent releases are As Low As is Reasonably Achievable (ALARA), no undue environmental effects occur and the health and safety of the public are protected. The program also detects any unexpected environmental processes that could allow radiation accumulations in the environment or food pathway chains.

Radiation and radioactivity in the environment are monitored within a 20-mile radius of the station. Surry Power Station personnel collect a variety of samples within this area. A number of sampling locations for each medium are selected using available meteorological, land use, and water use data. Two types of samples are obtained. The first type, control samples, is collected from areas that are beyond the measurable influence of Surry Power Station or any other nuclear facility. These samples are used as reference data. Normal background radiation levels, or radiation present due to causes other than Surry Power Station, can be compared to the environment surrounding the station. Indicator samples are the second sample type obtained. These samples show how much radiation is contributed to the environment by the station. Indicator samples are taken from areas close to the station where any station contribution will be at the highest concentration.

Prior to station operation, samples were collected and analyzed to determine the amount of radioactivity present in the area. The resulting values are used as a "pre-operational baseline." Analysis results from the indicator samples are compared to control sample values and the pre-operational baseline to determine if changes in radioactivity levels are attributable to station operations, or causes such as the Chernobyl accident or natural variation.

GEL Laboratories LLC provides radioanalyses for this program and Global Dosimetry Solutions Inc. provides thermoluminescent dosimetry (TLD) services. Participation in an Interlaboratory Comparison Program provides an independent check of sample measurement precision and accuracy. Typically, radioactivity levels in the environment are so low that analysis values frequently fall below the minimum detection limits of state-of-the-art measurement methods. Because of this, the United States Nuclear Regulatory Commission (USNRC) requires that equipment used for radiological environmental monitoring must be able to detect specified minimum Lower Limits of Detection (LLDs). This ensures that analyses are as accurate as possible. The USNRC also mandates a reporting level for

radionuclides. Licensed nuclear facilities must report the radionuclide activities in those environmental samples that are equal to or greater than the specified reporting level. Environmental radiation levels are sometimes referred to as a percent of the reporting level.

Analytical results are reported for all possible radiation exposure pathways to man. These pathways include airborne, aquatic, terrestrial and direct radiation exposure. The airborne exposure pathway includes radioactive airborne iodine and particulates. The 2008 airborne results were similar to previous years. No plant related radioactivity was detected and natural radioactivity levels remained at levels consistent with past years' results. Aquatic exposure pathway samples include well and river water, silt and shoreline sediments, crabs, fish, clams and oysters. Naturally occurring potassium-40 was detected at average environmental levels. No man-made radionuclides were detected in well water. This trend is consistent throughout the operational environmental monitoring program. No man-made radionuclides were detected in river water. Silt samples indicated the presence of cesium-137. The cesium-137 activity was present in the control and indicator locations and is attributable to global fallout from past nuclear weapons testing and nuclear accidents such as Chernobyl. Shoreline sediment, which may provide a direct exposure pathway, contained no station related radionuclides. Naturally occurring potassium-40 and thorium-228 were detected at average environmental levels. The terrestrial exposure pathway includes milk and food products. Iodine-131 was not detected in any 2008 milk samples and has not been detected in milk prior to or since the 1986 Chernobyl accident. Strontium-89 and strontium-90 were detected in milk in 2008. The presence of strontium-89 in milk is suspect and attributable to contamination of milk samples at the laboratory. The presence of strontium-90 is attributable to past atmospheric nuclear weapons testing. No man-made radionuclides were detected in food product samples. Consistent with historical data, naturally occurring potassium-40 was detected in milk and food products. The direct exposure pathway measures environmental radiation doses using TLDs. TLD results have remained relatively constant over the years.

During 2008, as in previous years, the operation of Surry Power Station has created no adverse environmental effects or health hazards. The maximum dose calculated for a hypothetical individual at the station site boundary due to liquid and gaseous effluents released from the station during 2008 was 0.001 millirem. For reference, this dose may be compared to the 360 millirem average annual exposure to every person in the United States from natural and man-made sources. Natural sources in the environment provide approximately 82% of radiation exposure to man, while nuclear power contributes less than 0.1%. These results demonstrate compliance with federal and state regulations and also demonstrate the adequacy of radioactive effluent controls at Surry Power Station.

2. PROGRAM DESCRIPTION

2.1 Introduction

This report documents the 2008 Surry Power Station operational Radiological Environmental Monitoring Program (REMP). The Dominion Surry Power Station is located on the Gravel Neck peninsula adjacent to the James River, approximately 25 miles upstream of the Chesapeake Bay. The site consists of two units, each with a pressurized water reactor (PWR) nuclear steam supply system and turbine generator furnished by Westinghouse Electric Corporation. Each unit is designed with a gross electrical output of 855 megawatts electric (MWe). Unit 1 achieved commercial operation on December 22, 1972, and Unit 2 on May 1, 1973.

The United States Nuclear Regulatory Commission regulations (10CFR50.34a) require that nuclear power plants be designed, constructed and operated to keep levels of radioactive material in effluents to unrestricted areas As Low As is Reasonably Achievable. To ensure these criteria are met, the operating license for Surry Power Station includes Technical Specifications that address the release of radioactive effluents. In-plant monitoring is used to ensure that these release limits are not exceeded. As a precaution against unexpected or undefined environmental processes which might allow undue accumulation of radioactivity in the environment, a program for monitoring the station environs is also included in Surry Power Station Technical Specifications.

Dominion personnel are responsible for collecting the various indicator and control environmental samples. Global Dosimetry Solutions Incorporated is responsible for processing the TLDs. GEL Laboratories LLC is responsible for sample analyses. The results of the analyses are used to determine if changes in radioactivity levels may be attributable to station operations. Measured values are compared with control values, which vary with time due to external events, such as cosmic ray bombardment, nuclear weapons test fallout and seasonal variations of naturally occurring radionuclides. Data collected prior to station operation is used to indicate the degree of natural variation to be expected. This pre-operational data is compared with data collected during the operational phase to assist in evaluating any radiological impact of station operation.

Occasionally, samples of environmental media may show the presence of man-made radionuclides. As a method of referencing the measured radionuclide concentrations in the sample media to a dose consequence to man, the data is compared to the reporting level concentrations listed in the USNRC Regulatory Guide 4.8, "Environmental Technical Specifications for Nuclear Power Plants", (December, 1975) and VPAP-2103S, Offsite Dose Calculation Manual (Surry). These concentrations are based upon the annual dose commitment recommended

by 10CFR50, Appendix I, to meet the criterion of "As Low As is Reasonably Achievable."

This report documents the results of the REMP for 2008 and satisfies the following objectives of the program:

- To provide measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides that lead to the highest potential radiation exposure of the maximum exposed member of the public resulting from station operations.

- To supplement the radiological effluent monitoring program by verifying that radioactive effluents are within allowable limits.

- To identify changes in radioactivity in the environment.

- To verify that station operations have no detrimental effect on the health and safety of the public.

2.2 Sampling and Analysis Program

Table 2-1 summarizes the 2008 sampling program for Surry Power Station. All samples listed in Table 2-1 are taken at indicator locations except those labeled "control." Dominion personnel collect all samples listed in Table 2-1.

Table 2-2 summarizes the analysis program conducted by GEL Laboratories LLC and Global Dosimetry Solutions for Surry Power Station. All samples, with the exception of the TLDs, are shipped to GEL Laboratories LLC, located in Charleston, SC, for analysis. The TLDs are shipped to Global Dosimetry Solutions, located in Costa Mesa, CA, for processing.

The Surry Radiological Monitoring Locations maps (Figures 1 – 5) denote sample locations for Surry Power Station. The locations are color coded to designate sample types.

Table 2-1

SURRY - 2008
RADIOLOGICAL SAMPLING STATIONS
DISTANCE AND DIRECTION FROM UNIT NO. 1

Sample Media	Location	Station	Distance Miles	Direction	Degrees	Collection Frequency	Remarks
Environmental	Control	(00)	-	-	-	Quarterly	Onsite (Stored in a lead shield outside the protected area)
TLDs	West North West	(02)	0.2	WNW	293°	Quarterly	Site Boundary
	Surry Station Discharge	(03)	0.4	NW	321°	Quarterly	Site Boundary
	North North West	(04)	0.2	NNW	329°	Quarterly	Site Boundary
	North	(05)	0.3	N	4°	Quarterly	Site Boundary
	North North East	(06)	0.3	NNE	28°	Quarterly	Site Boundary
	North East	(07)	0.3	NE	44°	Quarterly	Site Boundary
	East North East	(08)	0.4	ENE	67°	Quarterly	Site Boundary
	East	(09)	0.3	E	89°	Quarterly	Site Boundary
	West	(10)	0.1	W	271°	Quarterly	Site Boundary
	West South West	(11)	0.4	WSW	252°	Quarterly	Site Boundary
	South West	(12)	0.3	SW	228°	Quarterly	Site Boundary
	South South West	(13)	0.3	SSW	201°	Quarterly	Site Boundary
	South	(14)	0.4	S	182°	Quarterly	Site Boundary
	South South East	(15)	0.6	SSE	157°	Quarterly	Site Boundary
	South East	(16)	0.9	SE	135°	Quarterly	Site Boundary
	Station Intake	(18)	1.6	ESE	115°	Quarterly	Site Boundary
	Hog Island Reserve	(19)	2.0	NNE	26°	Quarterly	Near Resident
	Bacon's Castle	(20)	4.5	SSW	202°	Quarterly	Apx. 5 mile
	Route 633	(21)	4.9	SW	227°	Quarterly	Apx. 5 mile
	Alliance	(22)	5.1	WSW	247°	Quarterly	Apx. 5 mile
	Surry	(23)	7.7	WSW	256°	Quarterly	Population Center
	Route 636 and 637	(24)	4.0	W	270°	Quarterly	Apx. 5 mile
	Scotland Wharf	(25)	5.0	WNW	284°	Quarterly	Apx. 5 mile
	Jamestown	(26)	6.3	NW	308°	Quarterly	Apx. 5 mile
	Colonial Parkway	(27)	3.8	NNW	333°	Quarterly	Apx. 5 mile
	Route 617 and 618	(28)	4.9	NNW	340°	Quarterly	Apx. 5 mile
	Kingsmill	(29)	4.6	N	2°	Quarterly	Apx. 5 mile
	Williamsburg	(30)	7.8	N	0°	Quarterly	Population Center
	Kingsmill North	(31)	5.5	NNE	12°	Quarterly	Apx. 5 mile
	Budweiser	(32)	5.8	NNE	27°	Quarterly	Population Center
	Water Plant	(33)	5.0	NE	46°	Quarterly	Apx. 5 mile

Table 2-1

SURRY - 2008
RADIOLOGICAL SAMPLING STATIONS
DISTANCE AND DIRECTION FROM UNIT NO. 1

Sample Media	Location	Station	Distance Miles	Direction	Degrees	Collection Frequency	Remarks
Environmental TLDs	BASF	(34)	5.1	ENE	70°	Quarterly	Apx. 5 mile
	Lee Hall	(35)	7.1	ENE	75°	Quarterly	Population Center
	Goose Island	(36)	5.1	E	90°	Quarterly	Apx. 5 mile
	Fort Eustis	(37)	4.9	ESE	104°	Quarterly	Apx. 5 mile
	Newport News	(38)	19.3	SE	130°	Quarterly	Population Center
	James River Bridge	(39)	17.1	SE	142°	Quarterly	Control Location
	Benn's Church	(40)	17.0	SSE	159°	Quarterly	Control Location
	Smithfield	(41)	13.4	SSE	167°	Quarterly	Control Location
	Rushmere	(42)	5.3	SSE	156°	Quarterly	Apx. 5 mile
	Route 628	(43)	5.1	S	177°	Quarterly	Apx. 5 mile
Air Charcoal and Particulate	Surry Station	(SS)	0.3	NNE	18°	Weekly	Site boundary location with highest D/Q
	Hog Island Reserve	(HIR)	2.0	NNE	26°	Weekly	
	Bacon's Castle	(BC)	4.5	SSW	202°	Weekly	
	Alliance	(ALL)	5.1	WSW	247°	Weekly	
	Colonial Parkway	(CP)	3.8	NNW	333°	Weekly	
	BASF	(BASF)	5.1	ENE	70°	Weekly	
	Fort Eustis	(FE)	4.9	ESE	104°	Weekly	
	Newport News	(NN)	19.3	SE	130°	Weekly	Control Location
River Water	Surry Station Discharge	(SD)	0.4	NW	323°	Monthly	
	Scotland Wharf	(SW)	4.9	WNW	284°	Monthly	Control Location
Well Water	Surry Station	(SS)	0.1	SW	227°	Quarterly	Onsite
	Hog Island Reserve	(HIR)	2.0	NNE	28°	Quarterly	
	Construction Site	(CS)	0.3	E	87°	Quarterly	
Shoreline Sediment	Hog Island Reserve	(HIR)	0.6	N	7°	Semi-Annually	
	Chickahominy River	(CHIC)	11.2	WNW	301°	Semi-Annually	Control Location
Silt	Chickahominy River	(CHIC)	11.2	WNW	300°	Semi-Annually	Control Location
	Surry Station Discharge	(SD)	1.3	NNW	341°	Semi-Annually	

Table 2-1

SURRY - 2008
RADIOLOGICAL SAMPLING STATIONS
DISTANCE AND DIRECTION FROM UNIT NO. 1

Sample Media	Location	Station	Distance Miles	Direction	Degrees	Collection Frequency	Remarks
Milk	Colonial Parkway	(CP)	3.7	NNW	336°	Monthly	
	Williams	(WMS)	27.5	S	175°	Monthly	Control Location
	Epps	(EPPS)	4.8	SSW	200°	Monthly	
Oysters	Point of Shoals	(POS)	6.4	SSE	157°	Semi-Annually	
	Mulberry Point	(MP)	4.9	ESE	124°	Semi-Annually	
Clams	Chickahominy River	(CHIC)	11.2	WNW	300°	Semi-Annually	Control Location
	Surry Station Discharge	(SD)	1.3	NNW	341°	Semi-Annually	
	Hog Island Point	(HIP)	2.4	NE	52°	Semi-Annually	
	Lawne's Creek	(LC)	2.4	SE	131°	Semi-Annually	
	Jamestown Island	(JI)	3.9	NNW	324°	Semi-Annually	
Fish	Surry Station Discharge	(SD)	1.3	NNW	341°	Semi-Annually	
Crabs	Surry Station Discharge	(SD)	1.3	NNW	341°	Annually	
Crops (Corn, Peanuts, Soybeans)	Brock's Farm	(BROCK)	3.8	S	183°	Annually	
	Slade's Farm	(SLADE)	3.2	S	179°	Annually	

Table 2-2

(Page 1 of 3)
SURRY - 2008
SAMPLE ANALYSIS PROGRAM

SAMPLE MEDIA	FREQUENCY	ANALYSIS	LLD*	REPORT UNITS
Thermoluminescent Dosimetry (TLD)	Quarterly	Gamma Dose	2	mR/Std. Month
Air Iodine	Weekly	I-131	0.07	pCi/m^3
Air Particulate	Weekly	Gross Beta	0.01	pCi/m^3
	Quarterly (a)	Gamma Isotopic		pCi/m^3
		Cs-134	0.05	
		Cs-137	0.06	
River Water	Quarterly Composite of monthly sample	Tritium (H-3)	2000	pCi/L
	Monthly	I-131	10	pCi/L
		Gamma Isotopic		pCi/L
		Mn-54	15	
		Fe-59	30	
		Co-58	15	
		Co-60	15	
		Zn-65	30	
		Zr-95	30	
		Nb-95	15	
		Cs-134	15	
		Cs-137	18	
		Ba-140	60	
		La-140	15	
Well Water	Quarterly	Tritium (H-3)	2000	pCi/L
		I-131	1	
		Gamma Isotopic		pCi/L
		Mn-54	15	
		Fe-59	30	
		Co-58	15	
		Co-60	15	
		Zn-65	30	
		Zr-95	30	
		Nb-95	15	
		Cs-134	15	
		Cs-137	18	
		Ba-140	60	
		La-140	15	

Footnotes located at end of table.

Table 2-2 (Cont.)
(Page 2 of 3)
SURRY - 2008
SAMPLE ANALYSIS PROGRAM

SAMPLE MEDIA	FREQUENCY	ANALYSIS	LLD*	REPORT UNITS
Shoreline Sediment	Semi-Annual	Gamma Isotopic		pCi/kg - dry
		Cs-134	150	
		Cs-137	180	
Silt	Semi-Annual	Gamma Isotopic		pCi/kg - dry
		Cs-134	150	
		Cs-137	180	
Milk	Monthly	I-131	1	pCi/L
		Gamma Isotopic		pCi/L
		Cs-134	15	
		Cs-137	18	
		Ba-140	60	
		La-140	15	
	Quarterly Composite of CP monthly sample	Sr-89	NA	pCi/L
		Sr-90	NA	
Oysters	Semi-Annual	Gamma Isotopic		pCi/kg - wet
		Mn-54	130	
		Fe-59	260	
		Co-58	130	
		Co-60	130	
		Zn-65	260	
		Cs-134	130	
		Cs-137	150	
Clams	Semi-Annual	Gamma Isotopic		pCi/kg - wet
		Mn-54	130	
		Fe-59	260	
		Co-58	130	
		Co-60	130	
		Zn-65	260	
		Cs-134	130	
		Cs-137	150	
Crabs	Annually	Gamma Isotopic		pCi/kg - wet
		Mn-54	130	
		Fe-59	260	
		Co-58	130	
		Co-60	130	
		Zn-65	260	
		Cs-134	130	
		Cs-137	150	

Footnotes located at end of table.

Table 2-2 (Cont.)
(Page 3 of 3)
SURRY - 2008
SAMPLE ANALYSIS PROGRAM

SAMPLE MEDIA	FREQUENCY	ANALYSIS	LLD*	REPORT UNITS
Fish	Semi-Annual	Gamma Isotopic		pCi/kg - wet
		Mn-54	130	
		Fe-59	260	
		Co-58	130	
		Co-60	130	
		Zn-65	260	
		Cs-134	130	
		Cs-137	150	
Food Products	Annually	Gamma Isotopic		pCi/kg - wet
		I-131	60	
		Cs-134	60	
		Cs-137	80	

Note: This table is not a complete listing of nuclides that can be detected and reported. Other peaks that are measurable and identifiable, together with the above nuclides, are also identified and reported.

* LLD is the Lower Limit of Detection as defined and required in the USNRC Branch Technical Position on an Acceptable Radiological Environmental Monitoring Program, Revision 1, November 1979. LLDs indicate those concentrations to which environmental samples are required to be analyzed. Actual analysis of samples may be lower than these listed values.

(a) Quarterly composites of each location's weekly air particulate samples are analyzed for gamma emitters.

NA None assigned

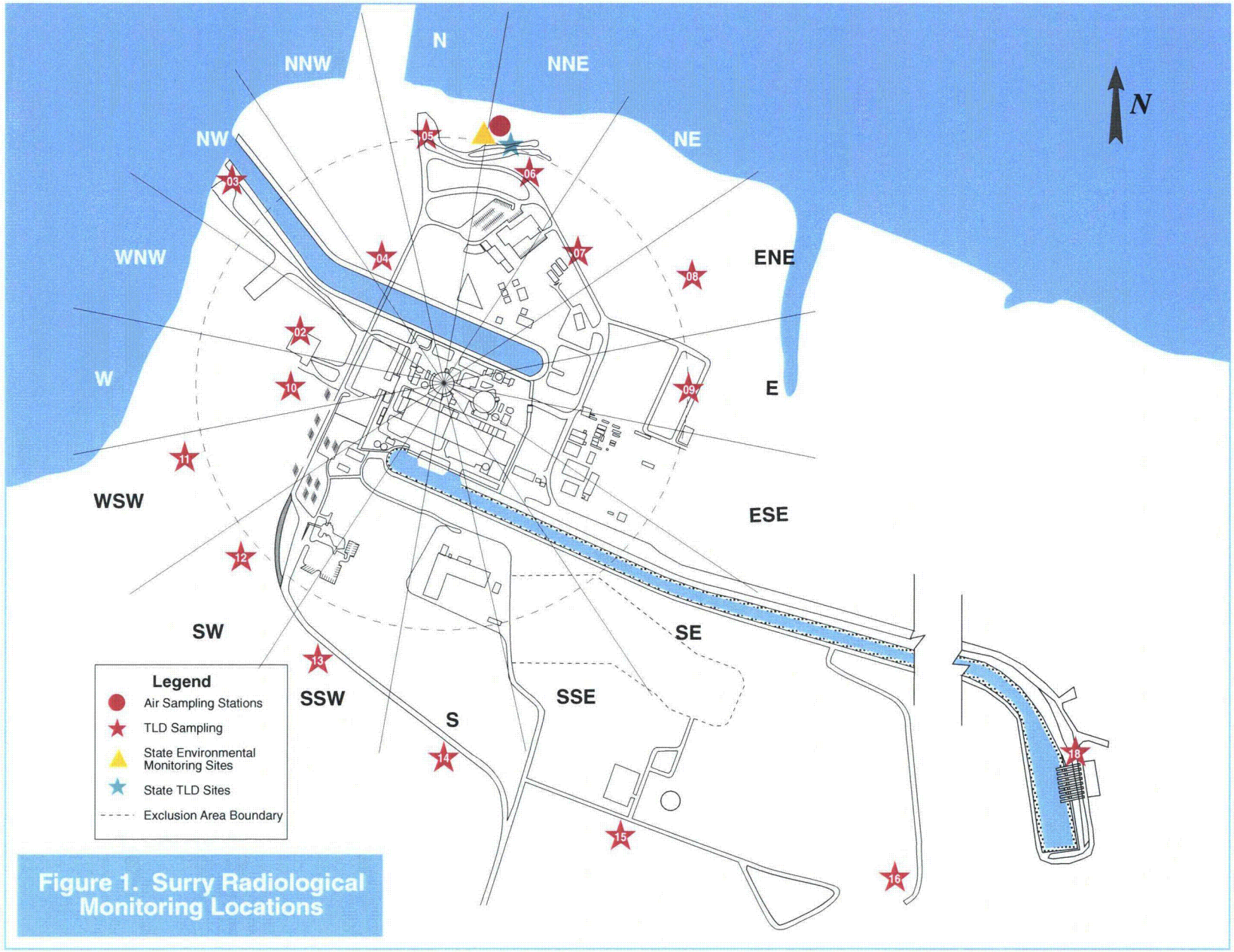

Figure 1. Surry Radiological Monitoring Locations

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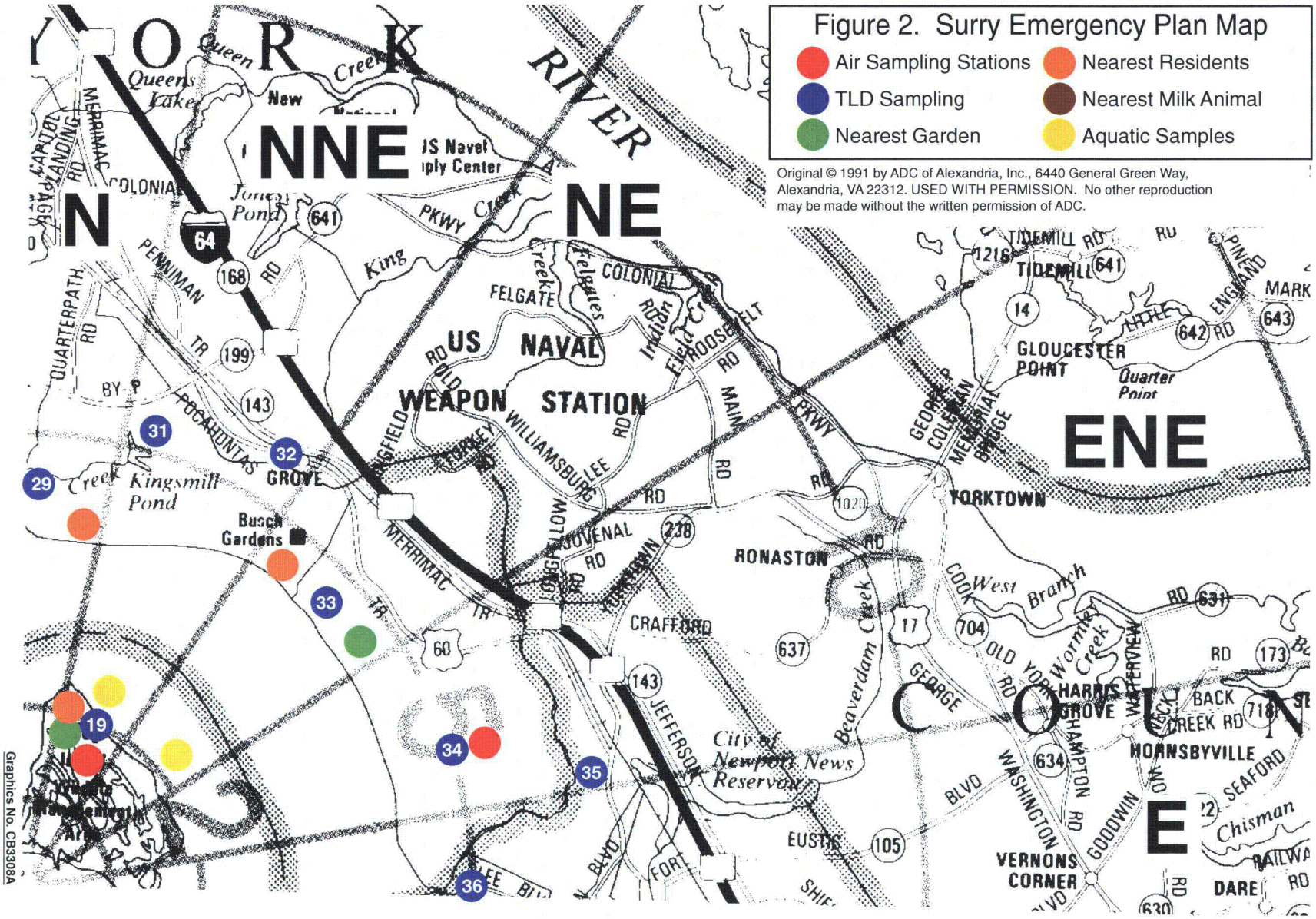

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Figure 2. Surry Emergency Plan Map

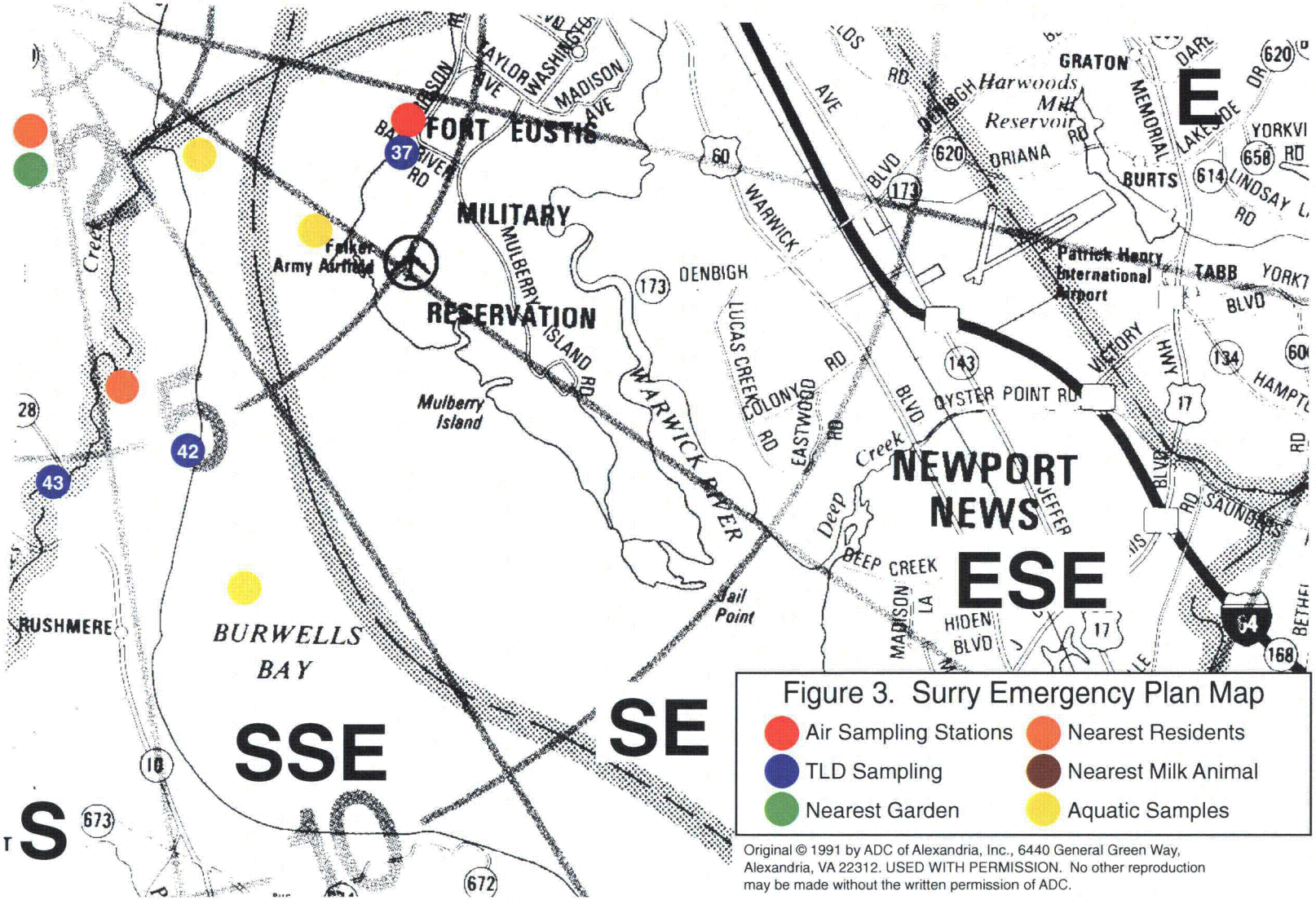

Figure 3. Surry Emergency Plan Map

- Air Sampling Stations
- Nearest Residents
- TLD Sampling
- Nearest Milk Animal
- Nearest Garden
- Aquatic Samples

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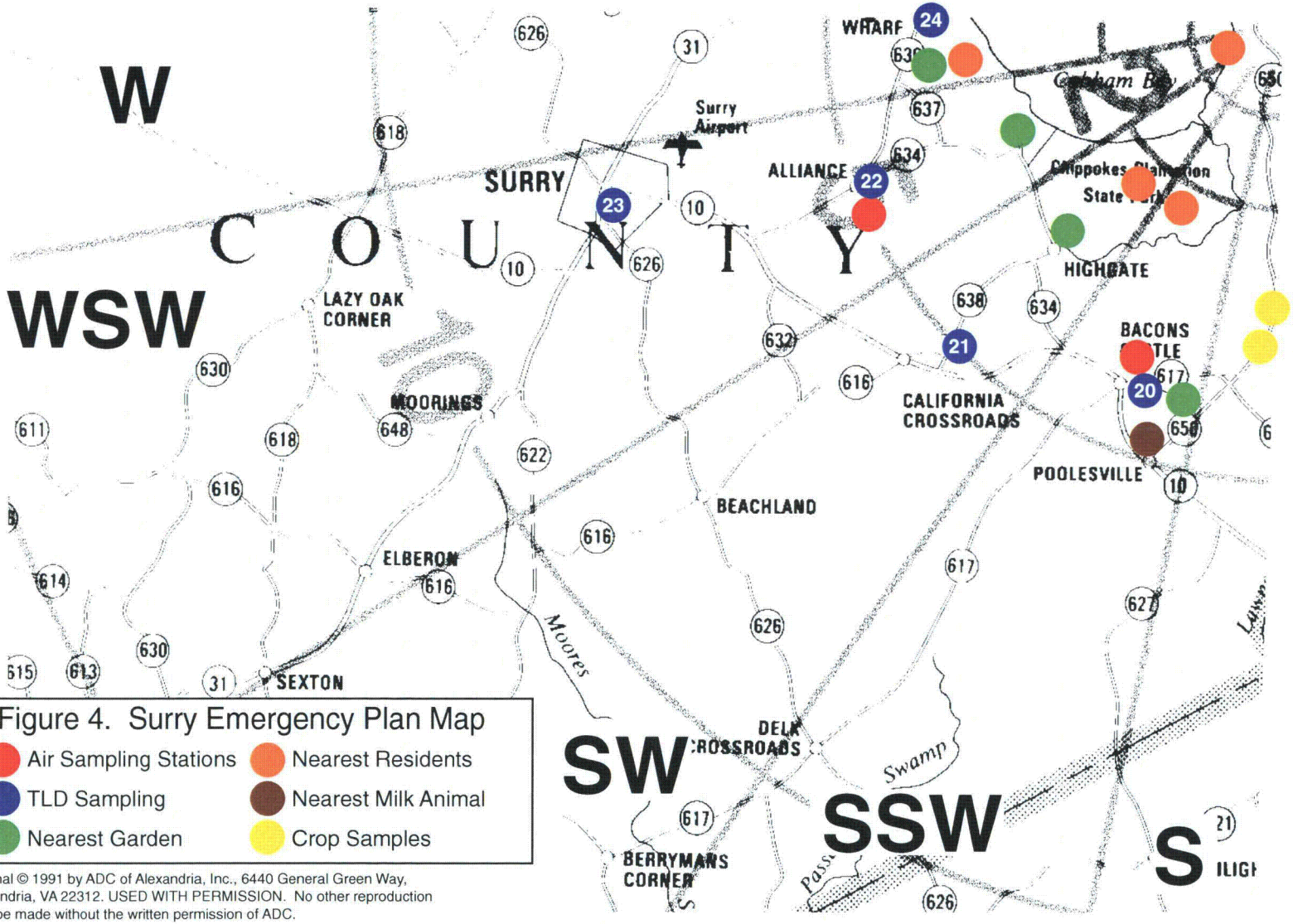

Figure 4. Surry Emergency Plan Map

- Air Sampling Stations
- TLD Sampling
- Nearest Garden
- Nearest Residents
- Nearest Milk Animal
- Crop Samples

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Figure 5. Surry Emergency Plan Map

- Air Sampling Stations
- TLD Sampling
- Nearest Garden
- Nearest Residents
- Nearest Milk Animal
- Aquatic Samples

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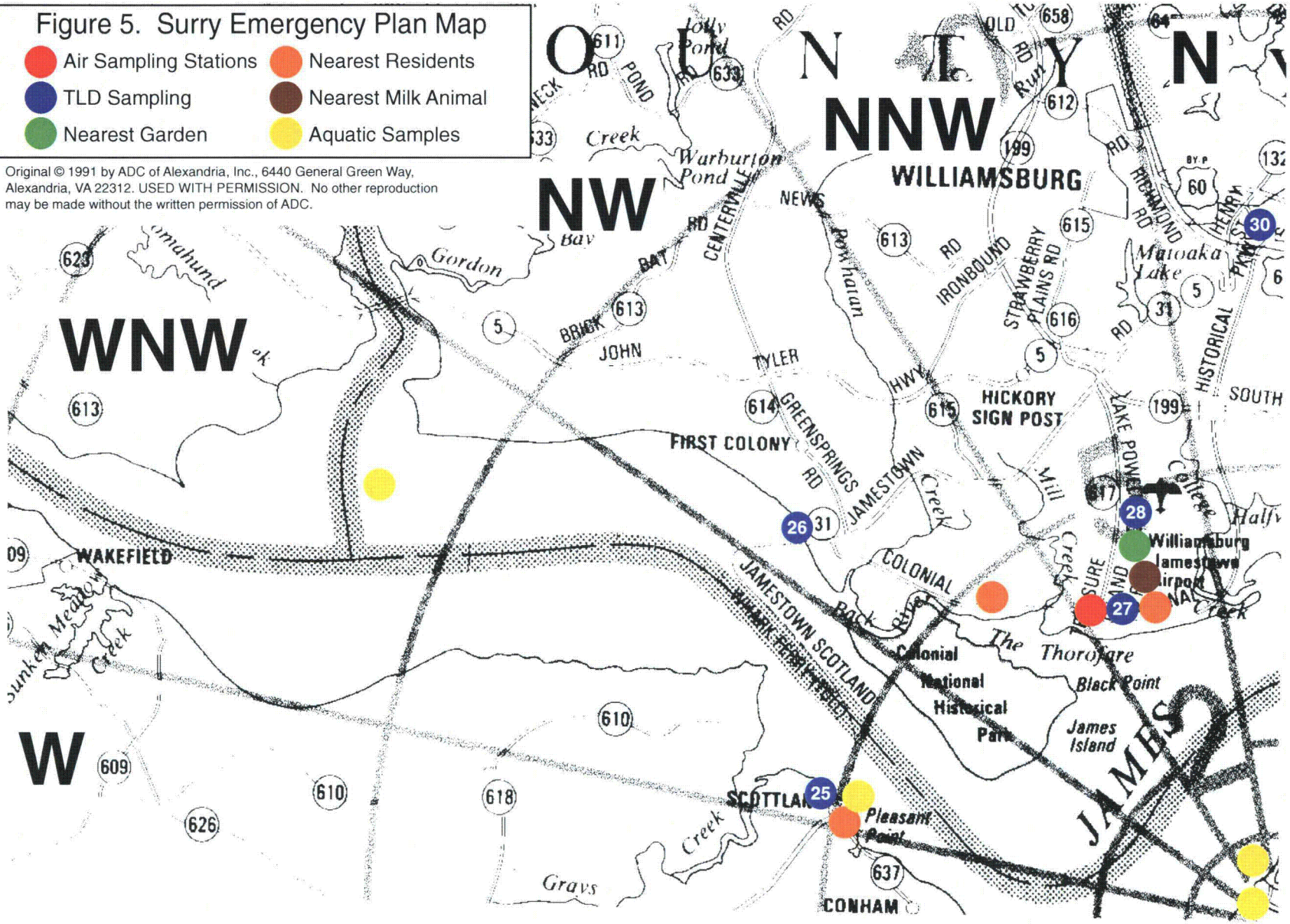

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3. ANALYTICAL RESULTS

3.1 Summary of Results

In accordance with the Surry Offsite Dose Calculation Manual (ODCM), a summary table of the analytical results has been prepared and is presented in Table 3-1. This data is presented in accordance with the format of the USNRC Branch Technical Position, "Acceptable Radiological Environmental Monitoring Program", Revision 1, November 1979. A more detailed analysis of the data is given in Section 4.

TABLE 3-1: RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

Surry Power Station, Surry County, Virginia - 2008
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Medium or Pathway Sampled (Units)	Analysis Type	Analysis Total No.	LLD*	Indicator Locations Mean Range	Location with Highest Mean Name	Location with Highest Mean Distance Direction	Location with Highest Mean Mean Range	Control Locations Mean Range	Non-Routine Reported Measurements
Direct Radiation *TLD (mR/ Std Month)*	**Gamma**	164	2	**3.8 (152/152) (1.6 - 7.3)**	**STA-9**	**0.3 mi E**	**5.8 (4/4) (5.0 - 6.4)**	**4.1 (12/12) (2.0 - 6.6)**	0
Air Particulate *(1E-3 pCi/m3)*	**Gross Beta**	416	10	**29.9 (364/364) (-0.4 - 71.2)**	**BC**	**4.5 mi SSW**	**32.5 (52/52) (5.1 - 71.2)**	**30.2 (52/52) (8.5 - 66.3)**	0
	Gamma	32							
	Be-7	32		**133 (28/28) (88 - 192)**	**BC**	**4.5 mi SSW**	**158 (4/4) (106 - 192)**	**128 (4/4) (83 - 146)**	0
	Cs-134	32	50	< LLD	N/A		< LLD	< LLD	0
	Cs-137	32	60	< LLD	N/A		< LLD	< LLD	0
Air Iodine *(1E-3 pCi/m3)*	**I-131**	416	70	< LLD	N/A		< LLD	< LLD	0
Milk *(pCi/Liter)*	**Strontium**	4							
	Sr-89	4		**2.78 (2/4) (1.56 - 4.00)**	**CP**	**3.7 mi NNW**	**2.78 (2/4) (1.56 - 4.00)**	**N/A**	0
	Sr-90	4		**1.37 (2/4) (1.10 - 1.64)**	**CP**	**3.7 mi NNW**	**1.37 (2/4) (1.10 - 1.64)**	**N/A**	0
	Gamma	36							
	K-40	36		**1427 (24/24) (1350 - 1520)**	**CP**	**3.7 mi NNW**	**1437 (12/12) (1350 - 1520)**	**1347 (12/12) (1269 - 1400)**	0
	I-131	36	1	< LLD	N/A		< LLD	< LLD	0
	Cs-134	36	15	< LLD	N/A		< LLD	< LLD	0
	Cs-137	36	18	< LLD	N/A		< LLD	< LLD	0
	Ba-140	36	60	< LLD	N/A		< LLD	< LLD	0
	La-140	36	15	< LLD	N/A		< LLD	< LLD	0

* LLD is the Lower Limit of Detection as defined and required in the USNRC Branch Technical Position on an Acceptable Radiological Environmental Monitoring Program, Revision 1, November 1979.

TABLE 3-1: RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Units)	Analysis Type	Analysis Total No.	LLD*	Indicator Locations Mean Range	Location with Highest Mean: Name	Location with Highest Mean: Distance Direction	Location with Highest Mean: Mean Range	Control Locations Mean Range	Non-Routine Reported Measurements
Food Products *(pCi/kg wet)*	**Gamma**	3							
	K-40	3		**8295 (3/3) (2662 - 14850)**	**Slade**	**3.2 mi S**	**14850 (1/1) (14850-14850)**	N/A	0
	I-131	3	60	< LLD	N/A		< LLD	N/A	0
	Cs-134	3	60	< LLD	N/A		< LLD	N/A	0
	Cs-137	3	80	< LLD	N/A		< LLD	N/A	0
Well Water *(pCi/Liter)*	**H-3**	12	2000	< LLD	N/A		< LLD	N/A	0
	Gamma	12							
	Mn-54	12	15	< LLD	N/A		< LLD	N/A	0
	Co-58	12	15	< LLD	N/A		< LLD	N/A	0
	Fe-59	12	30	< LLD	N/A		< LLD	N/A	0
	Co-60	12	15	< LLD	N/A		< LLD	N/A	0
	Zn-65	12	30	< LLD	N/A		< LLD	N/A	0
	Nb-95	12	15	< LLD	N/A		< LLD	N/A	0
	Zr-95	12	30	< LLD	N/A		< LLD	N/A	0
	I-131	12	1	< LLD	N/A		< LLD	N/A	0
	Cs-134	12	15	< LLD	N/A		< LLD	N/A	0
	Cs-137	12	18	< LLD	N/A		< LLD	N/A	0

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TABLE 3-1: RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Units)	Analysis Type	Analysis Total No.	LLD*	Indicator Locations Mean Range	Location with Highest Mean: Name	Location with Highest Mean: Distance Direction	Location with Highest Mean: Mean Range	Control Locations Mean Range	Non-Routine Reported Measurements
Well Water *(pCi/Liter)*	Ba-140	12	60	< LLD	N/A		< LLD	N/A	0
	La-140	12	15	< LLD	N/A		< LLD	N/A	0
River Water *(pCi/Liter)*	**H-3**	8	2000	< LLD	N/A		< LLD	N/A	0
	Gamma	24							
	K-40	24		**111.7 (9/12) (47.9 - 152)**	**SD**	**0.4 mi NW**	**111.7 (9/12) (47.9 - 152)**	**72.4 (3/12) (65.8 - 75.7)**	0
	Mn-54	24	15	< LLD	N/A		< LLD	< LLD	0
	Co-58	24	15	< LLD	N/A		< LLD	< LLD	0
	Fe-59	24	30	< LLD	N/A		< LLD	< LLD	0
	Co-60	24	15	< LLD	N/A		< LLD	< LLD	0
	Zn-65	24	30	< LLD	N/A		< LLD	< LLD	0
	Nb-95	24	15	< LLD	N/A		< LLD	< LLD	0
	Zr-95	24	30	< LLD	N/A		< LLD	< LLD	0
	I-131	24	10	< LLD	N/A		< LLD	< LLD	0
	Cs-134	24	15	< LLD	N/A		< LLD	< LLD	0
	Cs-137	24	18	< LLD	N/A		< LLD	< LLD	0
	Ba-140	24	60	< LLD	N/A		< LLD	< LLD	0
	La-140	24	15	< LLD	N/A		< LLD	< LLD	0

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TABLE 3-1: RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Units)	Analysis Type	Analysis Total No.	LLD*	Indicator Locations Mean Range	Location with Highest Mean: Name	Location with Highest Mean: Distance Direction	Location with Highest Mean: Mean Range	Control Locations Mean Range	Non-Routine Reported Measurements
Silt *(pCi/kg dry)*	**Gamma**	4							
	K-40	4		**12017 (2/2) (8633-15400)**	**CHIC**	**11.2 mi WNW**	**13007 (2/2) (6423-19590)**	**13007 (2/2) (6423-19590)**	0
	Cs-134	4	150	< LLD	N/A		< LLD	< LLD	0
	Cs-137	4	180	**154 (2/2) (110 - 198)**	**CHIC**	**11.2 mi WNW**	**167 (2/2) (61.3 - 272)**	**167 (2/2) (61.3 - 272)**	0
	Th-228	4		**948 (2/2) (566 - 1330)**	**CHIC**	**11.2 mi WNW**	**1005 (2/2) (483 - 1528)**	**1005 (2/2) (483 - 1528)**	0
Shoreline Sediment *(pCi/kg dry)*	**Gamma**	4							
	K-40	4		**6604 (2/2) (4785 - 8423)**	**HIR**	**0.6 mi N**	**6604 (2/2) (4785 - 8423)**	**1877 (2/2) (1732 - 2022)**	0
	Cs-134	4	150	< LLD	N/A		< LLD	< LLD	0
	Cs-137	4	180	< LLD	N/A		< LLD	< LLD	0
	Th-228	4		**323 (1/2) (323 - 323)**	**HIR**	**0.6 mi N**	**323 (1/2) (323 - 323)**	**129 (1/2) (129 - 129)**	0
Fish *(pCi/kg wet)*	**Gamma**	4							
	K-40	4		**2277 (4/4) (1764 - 2489)**	**SD**	**1.3 mi NNW**	**2277 (4/4) (1764 - 2489)**	**N/A**	0
	Mn-54	4	130	< LLD	N/A		< LLD	N/A	0
	Co-58	4	130	< LLD	N/A		< LLD	N/A	0
	Fe-59	4	260	< LLD	N/A		< LLD	N/A	0
	Co-60	4	130	< LLD	N/A		< LLD	N/A	0
	Zn-65	4	260	< LLD	N/A		< LLD	N/A	0

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TABLE 3-1: RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Units)	Analysis Type	Analysis Total No.	LLD*	Indicator Locations Mean Range	Location with Highest Mean: Name	Location with Highest Mean: Distance Direction	Location with Highest Mean: Mean Range	Control Locations Mean Range	Non-Routine Reported Measurements
Fish *(pCi/kg wet)*	Cs-134	4	130	< LLD	N/A		< LLD	N/A	0
	Cs-137	4	150	< LLD	N/A		< LLD	N/A	0
Oysters *(pCi/kg wet)*	**Gamma**	4							
	K-40	4		**697 (4/4) (413 - 877)**	**MP**	**4.9 mi ESE**	**763 (2/2) (650 - 877)**	**N/A**	0
	Mn-54	4	130	< LLD	N/A		< LLD	N/A	0
	Fe-59	4	260	< LLD	N/A		< LLD	N/A	0
	Co-58	4	130	< LLD	N/A		< LLD	N/A	0
	Co-60	4	130	< LLD	N/A		< LLD	N/A	0
	Zn-65	4	260	< LLD	N/A		< LLD	N/A	0
	Cs-134	4	130	< LLD	N/A		< LLD	N/A	0
	Cs-137	4	150	< LLD	N/A		< LLD	N/A	0
Clams *(pCi/kg wet)*	**Gamma**	8							
	K-40	8		**589 (4/6) (524 - 649)**	**JI**	**3.9 mi NNW**	**641 (1/2) (641 - 641)**	**490 (1/2) (490 - 490)**	0
	Mn-54	8	130	< LLD	N/A		< LLD	< LLD	0
	Co-58	8	130	< LLD	N/A		< LLD	< LLD	0
	Fe-59	8	260	< LLD	N/A		< LLD	< LLD	0
	Co-60	8	130	< LLD	N/A		< LLD	< LLD	0

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TABLE 3-1: RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SUMMARY

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Medium or Pathway Sampled (Units)	Analysis Type	Analysis Total No.	LLD*	Indicator Locations Mean Range	Location with Highest Mean: Name	Location with Highest Mean: Distance Direction	Location with Highest Mean: Mean Range	Control Locations Mean Range	Non-Routine Reported Measurements
Clams *(pCi/kg wet)*	Zn-65	8	260	< LLD	N/A		< LLD	< LLD	0
	Cs-134	8	130	< LLD	N/A		< LLD	< LLD	0
	Cs-137	8	150	< LLD	N/A		< LLD	< LLD	0
Crabs *(pCi/kg wet)*	**Gamma**	1							
	K-40	1		**1648 (1/1) (1648 - 1648)**	**SD**	**1.3 mi NNW**	**1648 (1/1) (1648 - 1648)**	**N/A**	0
	Mn-54	1	130	< LLD	N/A		< LLD	N/A	0
	Co-58	1	130	< LLD	N/A		< LLD	N/A	0
	Fe-59	1	260	< LLD	N/A		< LLD	N/A	0
	Co-60	1	130	< LLD	N/A		< LLD	N/A	0
	Zn-65	1	260	< LLD	N/A		< LLD	N/A	0
	Cs-134	1	130	< LLD	N/A		< LLD	N/A	0
	Cs-137	1	150	< LLD	N/A		< LLD	N/A	0

* LLD is the Lower Limit of Detection as defined and required in the USNRC Branch Technical Position on an Acceptable Radiological Environmental Monitoring Program, Revision 1, November 1979.

3.2 Analytical Results of 2008 REMP Samples

Radiological analyses of environmental media characteristically approach and frequently fall below the detection limits of state-of-the-art measurement methods. The reported error is two times the standard deviation (2σ) of the net activity. Unless otherwise noted, the overall error (counting, sample size, chemistry, errors, etc.) is estimated to be 2 to 5 times that listed. Results are considered positive when the measured value exceeds 1.5 times the listed 2σ error (i.e., the measured value exceeds 3σ).

GEL Laboratories LLC analytical methods meet the Lower Limit of Detection (LLD) requirements given in Table 2 of the USNRC Branch Technical Position, "An Acceptable Radiological Environmental Monitoring Program", (November 1979, Revision 1) and the Surry ODCM.

Data are given according to sample type as indicated below.

1. Gamma Exposure Rate
2. Air Particulates, Weekly Gross Beta Radioactivity
3. Air Particulates, Weekly I-131
4. Air Particulates, Quarterly Gamma Spectroscopy
5. Cow Milk
6. Food Products
7. Well Water
8. River Water
9. Silt
10. Shoreline Sediment
11. Fish
12. Oysters
13. Clams
14. Crabs

TABLE 3-2: GAMMA EXPOSURE RATE

Surry Power Station, Surry County, Virginia - 2008

mR/Std Month ± 2 Sigma

STATION NUMBER	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER	AVERAGE ± 2 SIGMA
02	5.4 ± 0.2	3.8 ± 0.2	4.4 ± 0.5	5.7 ± 0.3	4.8 ± 0.9
03	5.4 ± 0.3	3.4 ± 0.4	4.4 ± 0.2	5.4 ± 0.3	4.7 ± 1.0
04	4.2 ± 1.0	4.4 ± 1.6	4.3 ± 0.6	4.8 ± 0.4	4.4 ± 0.3
05	4.8 ± 0.4	3.8 ± 1.5	3.8 ± 0.6	5.0 ± 0.4	4.4 ± 0.6
06	5.0 ± 0.8	4.4 ± 0.9	4.4 ± 0.3	5.3 ± 0.9	4.8 ± 0.4
07	5.1 ± 1.0	3.9 ± 1.0	4.3 ± 0.5	4.9 ± 0.2	4.6 ± 0.6
08	4.4 ± 0.6	3.8 ± 1.1	3.8 ± 0.1	4.7 ± 0.3	4.2 ± 0.5
09	6.4 ± 0.7	5.0 ± 0.6	5.3 ± 0.2	6.4 ± 0.2	5.8 ± 0.7
10	4.9 ± 1.9	3.9 ± 0.3	4.5 ± 1.2	5.1 ± 0.2	4.6 ± 0.5
11	4.1 ± 0.5	2.5 ± 0.2	3.6 ± 1.6	3.9 ± 0.8	3.5 ± 0.7
12	3.9 ± 0.4	3.1 ± 1.0	3.7 ± 0.3	3.9 ± 0.7	3.7 ± 0.4
13	4.7 ± 1.1	3.4 ± 1.0	4.0 ± 0.8	5.0 ± 0.5	4.3 ± 0.7
14	4.8 ± 0.5	3.1 ± 0.2	4.6 ± 2.0	5.0 ± 0.5	4.4 ± 0.9
15	5.5 ± 1.2	3.7 ± 0.3	4.5 ± 0.2	5.6 ± 0.6	4.8 ± 0.9
16	4.6 ± 0.9	2.8 ± 0.6	4.3 ± 1.9	4.8 ± 0.3	4.1 ± 0.9
18	2.7 ± 0.9	1.8 ± 0.3	2.5 ± 0.6	3.5 ± 0.1	2.6 ± 0.7
19	3.8 ± 0.2	2.2 ± 0.3	3.2 ± 1.2	3.3 ± 0.9	3.1 ± 0.7
20	3.3 ± 0.6	2.1 ± 0.1	3.3 ± 1.7	3.3 ± 1.3	3.0 ± 0.6
21	3.8 ± 0.3	3.2 ± 0.5	3.7 ± 1.9	3.6 ± 1.5	3.6 ± 0.3
22	2.3 ± 0.2	1.7 ± 0.4	2.0 ± 0.2	2.5 ± 0.8	2.1 ± 0.4
23	3.8 ± 0.5	3.0 ± 0.3	3.7 ± 0.7	4.8 ± 0.9	3.8 ± 0.7
24	3.3 ± 1.0	2.5 ± 0.3	2.6 ± 0.1	3.5 ± 1.1	3.0 ± 0.5
25	4.3 ± 0.6	2.8 ± 0.6	2.8 ± 0.3	3.6 ± 0.2	3.4 ± 0.7
26	5.1 ± 0.3	3.3 ± 0.3	3.8 ± 0.3	4.9 ± 1.0	4.3 ± 0.9
27	3.1 ± 1.0	2.0 ± 0.3	2.7 ± 0.3	3.0 ± 0.4	2.7 ± 0.5
28	3.4 ± 0.6	2.4 ± 0.9	2.9 ± 0.9	3.3 ± 1.0	3.0 ± 0.5
29	2.5 ± 0.8	2.0 ± 0.6	2.5 ± 0.2	2.7 ± 1.5	2.4 ± 0.3
30	2.6 ± 0.4	2.2 ± 0.9	2.5 ± 0.4	3.0 ± 1.7	2.6 ± 0.3
31	2.8 ± 0.5	1.6 ± 0.2	2.1 ± 0.2	2.4 ± 0.9	2.2 ± 0.5
32	3.2 ± 0.9	2.6 ± 0.6	3.0 ± 0.4	3.5 ± 0.8	3.1 ± 0.4
33	3.6 ± 1.0	3.3 ± 0.4	3.1 ± 0.6	4.2 ± 0.7	3.6 ± 0.5
34	3.7 ± 0.1	3.1 ± 1.4	3.0 ± 0.3	3.8 ± 1.0	3.4 ± 0.4
35	5.2 ± 0.6	3.2 ± 0.3	4.0 ± 0.4	4.6 ± 0.7	4.3 ± 0.9
36	5.3 ± 0.2	3.1 ± 0.3	3.8 ± 0.4	5.0 ± 0.8	4.3 ± 1.0
37	3.7 ± 0.5	2.4 ± 0.1	3.3 ± 0.9	3.4 ± 0.7	3.2 ± 0.6
38	7.3 ± 0.9	4.6 ± 0.7	5.2 ± 0.5	6.0 ± 1.2	5.8 ± 1.2
39	3.1 ± 0.7	2.0 ± 0.7	2.6 ± 0.1	3.5 ± 0.3	2.8 ± 0.6
40	4.2 ± 1.0	2.9 ± 0.3	3.5 ± 0.5	3.8 ± 0.1	3.6 ± 0.5
41	6.6 ± 0.6	4.9 ± 1.0	5.5 ± 0.6	6.5 ± 0.9	5.9 ± 0.8
42	4.3 ± 0.6	2.7 ± 0.3	3.1 ± 0.2	3.5 ± 0.5	3.4 ± 0.7
43	3.4 ± 0.7	2.5 ± 0.6	2.7 ± 0.7	2.9 ± 0.8	2.9 ± 0.4

TABLE 3-3: GROSS BETA CONCENTRATION IN FILTERED AIR

Surry Power Station, Surry County, Virginia - 2008

1.0E-3 pCi/m3 ± 2 Sigma

COLLECTION DATE	SAMPLING LOCATIONS SS	HIR	BC	ALL	CP	BASF	FE	NN-C
January 08	45.1 ± 4.5	42.6 ± 4.4	44.6 ± 4.5	36.3 ± 4.1	49.0 ± 4.7	37.0 ± 4.1	43.6 ± 4.4	41.2 ± 4.3
January 15	17.0 ± 16.5	2.7 ± 16.0	19.1 ± 16.8	16.2 ± 16.7	17.5 ± 16.2	12.0 ± 16.8	17.0 ± 16.4	13.3 ± 16.7
January 22	41.1 ± 4.6	13.6 ± 3.0	36.0 ± 4.4	35.3 ± 4.3	34.5 ± 4.2	39.4 ± 4.5	40.6 ± 4.5	33.5 ± 4.2
January 29	64.3 ± 5.7	22.7 ± 3.6	71.2 ± 6.0	64.3 ± 5.7	55.7 ± 5.3	61.1 ± 5.6	62.8 ± 5.5	66.3 ± 5.8
February 05	52.4 ± 5.2	18.6 ± 3.3	45.5 ± 4.9	45.7 ± 4.9	43.5 ± 4.7	46.4 ± 4.9	42.3 ± 4.6	45.0 ± 4.8
February 12	33.9 ± 13.6	28.7 ± 13.3	32.4 ± 13.8	32.2 ± 13.6	32.0 ± 13.2	24.8 ± 13.6	32.8 ± 13.4	33.7 ± 13.5
February 19	33.0 ± 13.9	32.1 ± 13.8	33.7 ± 14.0	31.8 ± 14.0	31.9 ± 13.6	28.2 ± 13.9	30.5 ± 13.6	27.8 ± 13.9
February 26	29.5 ± 15.2	25.1 ± 15.0	29.4 ± 15.4	30.6 ± 15.3	17.5 ± 14.7	29.0 ± 15.3	29.2 ± 14.9	33.5 ± 15.7
March 04	35.1 ± 13.3	29.0 ± 12.7	40.4 ± 13.6	31.3 ± 13.3	23.8 ± 12.9	32.2 ± 13.4	32.9 ± 13.1	32.9 ± 13.4
March 11	32.6 ± 12.9	24.8 ± 13.1	25.3 ± 12.9	29.7 ± 13.0	20.1 ± 12.4	27.0 ± 12.9	22.4 ± 12.5	27.9 ± 12.8
March 18	35.4 ± 12.0	38.2 ± 11.9	42.9 ± 12.3	42.4 ± 12.2	24.8 ± 11.6	39.3 ± 12.3	38.9 ± 11.9	37.5 ± 12.1
March 25	21.2 ± 13.0	22.1 ± 12.8	29.9 ± 13.2	25.1 ± 13.0	14.9 ± 12.6	30.0 ± 13.4	23.2 ± 12.7	27.2 ± 13.2
Qtr. Avg. ± 2 s.d.	**36.7 ± 25.7**	**25.0 ± 21.3**	**37.5 ± 26.6**	**35.1 ± 23.8**	**30.4 ± 26.5**	**33.9 ± 24.5**	**34.7 ± 24.3**	**35.0 ± 25.4**
April 01	38.0 ± 12.2	28.1 ± 11.9	35.1 ± 13.2	33.4 ± 12.1	20.3 ± 11.6	34.1 ± 12.9	33.8 ± 11.9	30.8 ± 11.9
April 08	10.3 ± 12.6	10.9 ± 12.6	14.8 ± 12.8	16.4 ± 12.7	4.9 ± 12.3	15.7 ± 12.8	14.1 ± 12.4	12.6 ± 12.5
April 15	11.0 ± 11.5	14.8 ± 11.5	15.5 ± 11.7	13.1 ± 11.5	3.4 ± 11.2	15.8 ± 11.8	10.9 ± 11.4	10.5 ± 11.7
April 22	10.8 ± 2.5	10.2 ± 2.4	5.1 ± 2.0	4.7 ± 1.9	7.2 ± 2.1	9.1 ± 2.4	18.5 ± 3.1	18.4 ± 3.1
April 29	-0.4 ± 9.1	7.1 ± 9.1	18.6 ± 9.5	22.4 ± 9.6	4.4 ± 8.8	18.5 ± 9.5	22.9 ± 9.3	25.6 ± 9.4
May 06	6.4 ± 2.1	4.9 ± 1.9	6.9 ± 2.1	4.6 ± 1.9	-1.1 ± 1.0	4.3 ± 1.9	4.9 ± 1.9	8.5 ± 2.3
May 13	28.4 ± 3.9	30.5 ± 4.0	42.5 ± 4.7	32.2 ± 4.1	31.8 ± 4.1	29.3 ± 4.0	32.3 ± 4.1	31.8 ± 4.1
May 21	24.9 ± 12.1	15.7 ± 11.8	29.0 ± 12.2	24.4 ± 12.1	21.2 ± 12.1	19.1 ± 12.0	22.6 ± 11.8	20.7 ± 11.8
May 27	17.5 ± 15.6	12.7 ± 15.4	18.1 ± 15.7	13.7 ± 15.7	16.9 ± 15.8	16.0 ± 15.6	14.0 ± 15.2	17.7 ± 15.2
June 03	21.0 ± 15.2	18.2 ± 15.1	22.6 ± 15.3	20.8 ± 15.5	16.9 ± 15.4	19.0 ± 15.4	21.7 ± 15.0	24.9 ± 15.2
June 10	29.5 ± 15.2	23.7 ± 15.0	30.6 ± 15.4	31.0 ± 15.4	33.0 ± 15.6	23.7 ± 15.4	26.9 ± 15.0	27.1 ± 15.5
June 17	28.0 ± 10.4	-2.6 ± 9.7	29.8 ± 10.6	21.7 ± 10.4	15.6 ± 10.4	18.3 ± 10.4	18.5 ± 10.1	15.4 ± 10.4
June 24	20.3 ± 10.3	16.2 ± 10.2	17.9 ± 10.4	14.9 ± 10.3	14.1 ± 10.5	0.5 ± 10.0	21.7 ± 10.2	26.7 ± 10.6
Qtr. Avg. ± 2 s.d.	**18.9 ± 21.8**	**14.7 ± 18.4**	**22.0 ± 21.8**	**19.5 ± 18.9**	**14.5 ± 21.2**	**17.2 ± 18.3**	**20.2 ± 16.3**	**20.8 ± 15.3**

TABLE 3-3: GROSS BETA CONCENTRATION IN FILTERED AIR

Surry Power Station, Surry County, Virginia - 2008

1.0E-3 pCi/m3 ± 2 Sigma

COLLECTION DATE	SAMPLING LOCATIONS SS	HIR	BC	ALL	CP	BASF	FE	NN
July 01	32.3 ± 14.4	35.9 ± 14.0	33.6 ± 14.2	29.5 ± 14.0	34.5 ± 16.0	27.2 ± 13.8	30.3 ± 13.7	36.1 ± 14.0
July 08	24.4 ± 13.6	22.8 ± 13.5	22.8 ± 13.7	26.0 ± 13.9	28.9 ± 13.8	16.2 ± 13.6	19.4 ± 13.1	19.0 ± 13.4
July 15	22.9 ± 13.8	24.7 ± 13.7	24.3 ± 13.9	26.4 ± 13.9	28.5 ± 14.2	18.4 ± 14.0	23.2 ± 13.7	20.2 ± 13.7
July 22	30.7 ± 14.1	29.8 ± 13.9	25.9 ± 14.1	31.4 ± 14.1	36.2 ± 14.3	24.2 ± 14.0	30.1 ± 13.7	27.4 ± 13.9
July 29	35.3 ± 13.4	33.2 ± 13.2	38.3 ± 13.6	40.5 ± 13.6	43.7 ± 13.9	24.1 ± 13.4	41.8 ± 13.5	37.6 ± 13.5
August 05	42.7 ± 14.4	36.9 ± 14.1	48.6 ± 14.6	50.8 ± 14.7	46.5 ± 14.7	36.8 ± 14.5	38.5 ± 14.0	39.5 ± 14.4
August 13	27.2 ± 11.3	31.4 ± 11.3	34.4 ± 11.6	43.1 ± 11.7	37.9 ± 11.7	6.5 ± 11.0	36.7 ± 11.5	35.3 ± 11.4
August 19	42.6 ± 12.3	42.1 ± 12.2	44.1 ± 12.4	45.5 ± 12.4	43.5 ± 12.6	35.0 ± 12.3	48.9 ± 12.4	42.6 ± 12.1
August 26	31.6 ± 12.0	30.0 ± 11.8	35.3 ± 12.2	36.1 ± 12.0	30.6 ± 12.0	26.4 ± 12.0	30.0 ± 11.7	27.3 ± 11.8
September 02	27.6 ± 11.2	27.0 ± 11.1	28.3 ± 11.3	30.1 ± 11.3	30.6 ± 11.4	20.5 ± 11.2	27.8 ± 11.0	28.6 ± 11.2
September 09	38.2 ± 12.7	33.9 ± 12.5	39.6 ± 12.9	41.8 ± 13.0	36.8 ± 12.7	28.3 ± 12.7	37.5 ± 12.5	35.4 ± 12.6
September 16	27.5 ± 11.6	20.4 ± 11.2	26.3 ± 11.6	24.3 ± 11.5	28.2 ± 11.7	19.0 ± 11.4	23.6 ± 11.2	18.5 ± 11.2
September 23	33.7 ± 10.8	29.2 ± 10.6	35.2 ± 10.9	34.3 ± 10.9	32.2 ± 11.0	33.3 ± 10.8	30.8 ± 10.6	27.3 ± 10.4
September 30	16.8 ± 10.2	21.4 ± 10.2	23.2 ± 10.4	23.3 ± 10.4	20.9 ± 10.4	18.2 ± 10.3	20.5 ± 10.0	21.1 ± 10.0
Qtr. Avg. ± 2 s.d.	**31.0 ± 14.7**	**29.9 ± 12.5**	**32.8 ± 16.1**	**34.5 ± 17.3**	**34.2 ± 14.2**	**23.9 ± 16.4**	**31.4 ± 17.0**	**29.7 ± 16.2**
October 07	49.8 ± 12.4	41.4 ± 12.1	42.1 ± 12.3	47.5 ± 12.4	45.1 ± 12.6	9.1 ± 11.8	43.6 ± 12.0	41.7 ± 12.0
October 14	42.4 ± 11.8	33.7 ± 11.5	42.8 ± 12.0	43.3 ± 11.8	41.1 ± 12.0	36.0 ± 11.6	37.5 ± 11.5	40.9 ± 11.4
October 21	47.5 ± 11.8	42.0 ± 11.5	45.3 ± 11.9	49.8 ± 11.9	46.5 ± 16.1	40.7 ± 11.8	44.4 ± 11.5	44.4 ± 11.9
October 28	31.3 ± 12.5	22.0 ± 12.3	27.8 ± 12.5	28.4 ± 12.5	29.6 ± 12.6	24.6 ± 12.4	26.2 ± 12.1	26.0 ± 12.3
November 03	46.8 ± 11.2	38.4 ± 10.9	45.9 ± 11.3	49.2 ± 11.3	43.9 ± 11.3	44.3 ± 11.1	29.3 ± 10.6	44.7 ± 11.9
November 11	37.9 ± 10.2	30.1 ± 9.9	39.2 ± 10.3	36.2 ± 10.3	31.4 ± 10.2	31.3 ± 10.1	32.8 ± 9.9	27.4 ± 9.9
November 18	20.8 ± 9.7	17.4 ± 9.5	22.6 ± 9.9	21.6 ± 9.8	21.5 ± 9.9	19.7 ± 9.7	19.9 ± 9.5	22.7 ± 9.8
November 25	25.8 ± 11.4	19.8 ± 11.1	29.6 ± 11.6	29.9 ± 11.5	30.8 ± 11.7	25.6 ± 11.3	34.3 ± 11.4	27.4 ± 13.6
December 02	44.8 ± 11.9	35.8 ± 11.6	40.5 ± 11.9	46.2 ± 11.9	47.7 ± 12.0	45.7 ± 11.8	46.9 ± 11.6	43.5 ± 11.7
December 09	43.4 ± 10.0	38.5 ± 9.7	40.7 ± 10.0	44.8 ± 10.0	42.2 ± 10.1	37.8 ± 8.8	35.5 ± 8.6	34.5 ± 8.8
December 16	32.3 ± 12.4	28.5 ± 12.2	30.2 ± 12.5	26.7 ± 12.4	26.1 ± 12.5	28.4 ± 14.0	25.1 ± 13.8	24.3 ± 13.9
December 23	38.6 ± 12.3	35.5 ± 12.2	33.3 ± 12.3	38.2 ± 12.4	43.6 ± 12.7	41.0 ± 12.3	39.7 ± 12.1	35.0 ± 12.3
December 29	61.9 ± 13.5	46.2 ± 13.1	55.3 ± 13.6	62.8 ± 13.6	61.8 ± 13.7	50.5 ± 13.3	45.4 ± 12.9	51.1 ± 13.1
Qtr. Avg. ± 2 s.d.	**40.3 ± 21.8**	**33.0 ± 17.9**	**38.1 ± 17.9**	**40.3 ± 23.1**	**39.3 ± 21.8**	**33.4 ± 23.4**	**35.4 ± 17.1**	**35.7 ± 18.7**
Ann. Avg. ± 2 s.d.	**31.6 ± 26.2**	**25.7 ± 22.2**	**32.5 ± 23.9**	**32.3 ± 25.6**	**29.7 ± 27.8**	**26.9 ± 24.5**	**30.4 ± 22.0**	**30.2 ± 22.0**

TABLE 3-4: IODINE-131 CONCENTRATION IN FILTERED AIR

Surry Power Station, Surry County, Virginia - 2008

1.0E-3 pCi/m3 ± 2 Sigma

COLLECTION DATE	SAMPLING LOCATIONS							
	SS	HIR	BC	ALL	CP	BASF	FE	NN-C
January 08	7.1 ± 4.2	2.5 ± 4.7	1.3 ± 4.4	8.2 ± 10.4	0.5 ± 4.5	-1.4 ± 3.7	-1.5 ± 5.9	1.4 ± 4.2
January 15	-0.2 ± 4.5	2.8 ± 4.8	0.0 ± 5.0	-0.1 ± 3.2	-1.6 ± 4.8	-2.3 ± 4.7	4.7 ± 7.3	3.7 ± 5.7
January 22	2.7 ± 7.1	3.3 ± 8.0	1.0 ± 8.3	1.1 ± 8.0	3.8 ± 8.3	9.6 ± 8.5	1.9 ± 7.9	3.7 ± 7.3
January 29	0.0 ± 5.3	-1.2 ± 4.1	-4.3 ± 5.7	-1.8 ± 4.9	-0.6 ± 5.2	2.9 ± 5.1	3.8 ± 4.7	0.3 ± 6.6
February 05	1.7 ± 8.4	9.1 ± 8.8	-8.7 ± 11.5	2.8 ± 9.0	1.1 ± 7.7	-3.8 ± 8.2	0.1 ± 7.9	2.0 ± 8.5
February 12	0.6 ± 5.0	0.4 ± 4.8	4.4 ± 6.1	1.0 ± 4.7	-0.8 ± 4.0	1.2 ± 5.2	-0.8 ± 8.3	0.5 ± 5.0
February 19	-4.3 ± 5.9	1.4 ± 5.9	-1.2 ± 4.1	2.5 ± 7.8	1.0 ± 6.9	5.3 ± 4.8	-4.6 ± 5.8	0.7 ± 3.8
February 26	-0.9 ± 5.0	-0.4 ± 4.2	-1.6 ± 6.1	2.3 ± 3.8	1.8 ± 3.6	-3.6 ± 5.5	-2.0 ± 3.6	5.2 ± 4.5
March 04	2.0 ± 5.8	0.6 ± 5.0	4.2 ± 6.2	2.8 ± 6.8	-1.1 ± 4.7	-1.0 ± 5.2	2.0 ± 3.7	3.1 ± 7.3
March 11	0.9 ± 5.4	-5.2 ± 6.1	-5.7 ± 6.0	-0.8 ± 4.7	-1.3 ± 7.5	-2.9 ± 6.1	-3.2 ± 5.3	-1.9 ± 4.5
March 18	3.6 ± 4.5	3.0 ± 7.9	0.8 ± 6.9	3.1 ± 6.2	4.7 ± 5.8	-3.8 ± 3.7	1.1 ± 4.6	-6.8 ± 7.0
March 25	3.6 ± 4.5	0.4 ± 5.2	-1.7 ± 5.5	-1.6 ± 5.0	1.6 ± 5.2	-5.4 ± 5.8	0.5 ± 5.6	-4.2 ± 6.4
April 01	-1.6 ± 5.0	0.9 ± 7.8	-1.3 ± 4.8	5.6 ± 4.9	-0.6 ± 5.8	4.2 ± 5.6	3.1 ± 5.7	8.5 ± 5.4
April 08	6.0 ± 3.9	-6.5 ± 6.0	5.8 ± 4.4	4.1 ± 6.1	-2.9 ± 3.7	0.9 ± 6.1	2.4 ± 5.1	1.9 ± 5.6
April 15	4.2 ± 3.9	2.8 ± 8.2	1.2 ± 4.6	0.7 ± 4.5	1.0 ± 6.2	1.3 ± 5.5	8.2 ± 7.3	-3.7 ± 5.3
April 22	1.2 ± 5.0	0.8 ± 3.2	4.6 ± 5.3	0.3 ± 3.6	0.0 ± 4.1	0.8 ± 6.0	1.8 ± 5.2	-3.4 ± 4.3
April 29	0.4 ± 6.0	-2.8 ± 6.5	-1.6 ± 5.7	-2.0 ± 3.7	-2.4 ± 5.3	-2.1 ± 4.8	3.6 ± 4.8	-2.8 ± 4.3
May 06	0.7 ± 5.0	-1.3 ± 5.5	0.5 ± 4.9	-1.7 ± 4.8	1.5 ± 6.4	-2.3 ± 5.3	2.6 ± 4.2	3.4 ± 5.1
May 13	1.1 ± 5.7	-0.2 ± 5.8	16.1 ± 9.7	-6.5 ± 5.1	5.8 ± 5.7	1.5 ± 5.4	4.5 ± 6.8	0.0 ± 4.2
May 21	-2.0 ± 4.6	-1.9 ± 4.0	0.1 ± 3.5	-1.4 ± 7.3	8.8 ± 5.9	3.2 ± 5.6	2.8 ± 3.8	-1.1 ± 4.9
May 27	1.2 ± 5.3	0.8 ± 4.6	-0.3 ± 5.5	1.0 ± 3.9	6.8 ± 7.7	1.9 ± 5.9	3.5 ± 11.4	-3.4 ± 5.5
June 03	-0.6 ± 7.0	0.3 ± 6.2	0.4 ± 4.0	2.6 ± 4.9	3.3 ± 4.3	2.3 ± 5.2	0.2 ± 3.6	-0.7 ± 4.6
June 10	0.1 ± 6.9	-2.8 ± 4.7	-3.2 ± 6.5	2.9 ± 6.0	-1.1 ± 4.5	-0.4 ± 4.9	-2.7 ± 5.3	1.6 ± 4.5
June 17	-2.8 ± 6.2	3.7 ± 4.7	0.4 ± 4.3	-1.7 ± 4.8	1.0 ± 6.4	0.6 ± 9.3	0.1 ± 6.6	0.6 ± 4.3
June 24	-1.5 ± 4.6	-2.9 ± 4.2	-0.8 ± 4.2	-4.6 ± 5.3	-0.2 ± 7.1	-1.4 ± 5.1	-1.2 ± 6.1	3.2 ± 9.8

TABLE 3-4: IODINE-131 CONCENTRATION IN FILTERED AIR

Surry Power Station, Surry County, Virginia - 2008

1.0E-3 pCi/m3 ± 2 Sigma

COLLECTION DATE	SAMPLING LOCATIONS							
	SS	HIR	BC	ALL	CP	BASF	FE	NN
July 01	-3.8 ± 5.1	1.4 ± 5.9	-2.9 ± 4.7	-2.2 ± 4.9	-6.0 ± 6.0	-6.4 ± 4.3	-1.6 ± 4.8	6.1 ± 7.8
July 08	3.6 ± 4.7	1.0 ± 6.4	-2.5 ± 6.7	-0.9 ± 4.1	11.2 ± 6.5	2.9 ± 7.7	-1.9 ± 4.7	-4.7 ± 5.8
July 15	4.2 ± 4.8	-1.9 ± 4.9	-0.1 ± 5.7	1.0 ± 4.5	3.4 ± 5.7	-3.2 ± 4.9	-3.2 ± 7.8	-1.5 ± 5.9
July 22	-6.4 ± 6.2	-1.3 ± 5.4	-9.8 ± 7.2	6.4 ± 8.1	0.7 ± 5.4	-1.6 ± 7.4	1.0 ± 5.4	-4.5 ± 4.8
July 29	0.3 ± 4.1	4.6 ± 4.8	0.9 ± 6.0	1.9 ± 5.4	3.0 ± 4.5	2.3 ± 4.6	-2.4 ± 4.6	1.9 ± 5.7
August 05	1.1 ± 4.5	-3.1 ± 4.7	0.1 ± 4.3	2.4 ± 4.4	-2.7 ± 5.6	-3.7 ± 4.8	-3.6 ± 4.0	-0.6 ± 4.3
August 13	4.5 ± 6.3	0.4 ± 4.4	-3.2 ± 4.6	-2.3 ± 4.6	0.2 ± 3.9	-4.0 ± 5.2	1.7 ± 4.0	-0.1 ± 5.2
August 19	-1.9 ± 5.8	2.1 ± 5.3	-5.2 ± 5.1	0.4 ± 5.5	-1.6 ± 5.4	-4.1 ± 5.6	-1.7 ± 5.4	-3.1 ± 7.0
August 26	-2.2 ± 6.5	-0.4 ± 4.4	6.2 ± 6.4	0.0 ± 3.7	0.6 ± 6.3	-5.0 ± 4.8	4.4 ± 5.3	-0.8 ± 3.7
September 02	4.2 ± 5.0	-1.1 ± 5.5	-1.3 ± 4.5	-0.6 ± 7.0	-5.1 ± 6.7	3.9 ± 6.0	-1.2 ± 4.9	1.7 ± 5.7
September 09	2.1 ± 5.3	1.7 ± 5.1	-2.8 ± 6.5	-1.7 ± 5.4	5.0 ± 5.8	0.2 ± 4.8	2.0 ± 3.8	0.4 ± 3.6
September 16	0.2 ± 5.1	-4.9 ± 5.4	-3.5 ± 4.5	-5.3 ± 4.6	-4.1 ± 3.6	-4.8 ± 5.0	-2.0 ± 4.5	0.5 ± 4.2
September 23	1.9 ± 4.2	-2.9 ± 5.6	-5.2 ± 6.2	-0.4 ± 5.5	0.3 ± 5.4	-3.6 ± 6.5	-2.5 ± 4.4	2.2 ± 5.6
September 30	-1.2 ± 3.7	-0.4 ± 4.4	-0.1 ± 5.4	2.3 ± 4.2	0.8 ± 6.0	0.6 ± 4.1	2.5 ± 4.3	-0.1 ± 5.1
October 07	1.0 ± 4.2	0.6 ± 3.5	-4.1 ± 5.4	-2.5 ± 4.7	-0.2 ± 5.8	0.0 ± 5.3	-1.2 ± 6.0	2.7 ± 5.1
October 14	-1.1 ± 5.5	-0.8 ± 5.2	-4.5 ± 4.7	1.3 ± 3.8	1.4 ± 5.5	0.5 ± 4.1	0.2 ± 4.2	4.6 ± 4.6
October 21	0.7 ± 6.3	0.0 ± 6.5	-3.2 ± 6.4	3.6 ± 8.5	0.1 ± 6.5	2.0 ± 7.6	0.7 ± 6.7	-1.6 ± 5.7
October 28	1.3 ± 4.6	1.8 ± 5.7	-0.3 ± 5.5	2.2 ± 7.3	2.0 ± 4.9	-5.1 ± 5.5	-2.3 ± 4.4	8.3 ± 6.9
November 03	-0.8 ± 8.6	-3.2 ± 7.6	8.3 ± 9.7	1.1 ± 7.8	7.3 ± 7.4	-2.0 ± 9.2	-3.3 ± 8.9	5.1 ± 11.9
November 11	1.5 ± 5.6	-1.3 ± 5.7	3.3 ± 4.8	-1.4 ± 5.0	-1.6 ± 4.1	1.8 ± 6.4	1.7 ± 4.5	1.0 ± 4.0
November 18	-0.6 ± 5.5	-2.8 ± 4.2	0.1 ± 5.9	-0.4 ± 5.1	-3.8 ± 6.2	-0.1 ± 7.2	-2.1 ± 4.9	3.1 ± 5.6
November 25	-2.1 ± 4.6	-2.6 ± 5.2	-2.6 ± 4.6	0.5 ± 7.3	1.6 ± 5.0	1.9 ± 5.4	3.1 ± 4.4	1.1 ± 5.2
December 02	-1.5 ± 5.0	-3.9 ± 7.2	-3.5 ± 7.9	0.2 ± 5.0	-4.8 ± 8.3	0.7 ± 5.2	-1.4 ± 6.8	2.6 ± 4.8
December 09	0.2 ± 5.5	1.0 ± 5.2	1.8 ± 6.1	-2.7 ± 4.9	0.8 ± 4.9	-1.3 ± 4.1	-2.0 ± 4.3	3.5 ± 4.2
December 16	-1.5 ± 4.8	-3.5 ± 6.1	3.2 ± 4.8	1.2 ± 4.5	0.5 ± 6.3	1.1 ± 5.3	3.7 ± 5.2	-1.0 ± 6.1
December 23	0.9 ± 6.7	2.2 ± 6.0	1.7 ± 3.9	4.8 ± 6.5	0.0 ± 7.5	-3.6 ± 6.0	4.6 ± 4.8	3.0 ± 5.5
December 29	-1.1 ± 6.5	3.5 ± 6.2	-5.5 ± 7.2	2.0 ± 5.8	-3.2 ± 6.8	2.1 ± 5.6	-0.8 ± 5.0	-6.9 ± 6.8

TABLE 3-5: GAMMA EMITTER CONCENTRATION IN FILTERED AIR

Surry Power Station, Surry County, Virginia - 2008

1.0E-3 pCi/m3 ± 2 Sigma

SAMPLING LOCATIONS	NUCLIDE	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER	AVERAGE ± 2 SIGMA
SS	Cs-134	0.09 ± 0.26	0.20 ± 0.60	-0.20 ± 0.40	-0.20 ± 0.20	
	Cs-137	-0.01 ± 0.03	-0.60 ± 0.50	-0.10 ± 0.30	0.00 ± 0.20	
	Be-7	157.0 ± 20.9	145.4 ± 27.7	165.9 ± 24	103.2 ± 13.0	143 ± 55
HIR	Cs-134	-0.19 ± 0.27	0.10 ± 0.30	0.00 ± 0.30	0.10 ± 0.20	
	Cs-137	-0.02 ± 0.23	0.10 ± 0.30	0.20 ± 0.30	-0.10 ± 0.10	
	Be-7	110.0 ± 17	126.6 ± 18.3	135.9 ± 21.7	88.0 ± 11.1	115 ± 42
BC	Cs-134	0.07 ± 0.33	-0.40 ± 0.40	0.10 ± 0.40	0.10 ± 0.20	
	Cs-137	0.08 ± 0.29	0.20 ± 0.30	0.00 ± 0.30	0.10 ± 0.20	
	Be-7	158.0 ± 20.0	191.8 ± 26.7	174.7 ± 25.0	106.3 ± 12.2	158 ± 74
ALL	Cs-134	-0.04 ± 0.25	0.00 ± 0.30	-0.10 ± 0.40	0.00 ± 0.20	
	Cs-137	0.08 ± 0.22	0.20 ± 0.30	0.00 ± 0.20	-0.10 ± 0.20	
	Be-7	134.0 ± 18.1	159.7 ± 20.7	145.2 ± 21.7	103.4 ± 13.6	136 ± 48
CP	Cs-134	-0.05 ± 0.28	0.10 ± 0.50	0.40 ± 0.40	0.00 ± 0.20	
	Cs-137	-0.08 ± 0.26	0.10 ± 0.20	0.10 ± 0.20	0.10 ± 0.10	
	Be-7	104.0 ± 16.3	119.9 ± 19.0	151.3 ± 25.4	108.1 ± 13.1	121 ± 43
BASF	Cs-134	-0.16 ± 0.50	-0.30 ± 0.50	0.10 ± 0.40	0.00 ± 0.20	
	Cs-137	-0.13 ± 0.45	0.10 ± 0.30	-0.20 ± 0.30	0.10 ± 0.10	
	Be-7	137.0 ± 21.3	147.3 ± 28.3	124.1 ± 24.3	94.1 ± 11.9	126 ± 46
FE	Cs-134	0.19 ± 0.40	-0.10 ± 0.30	0.00 ± 3.00	0.20 ± 0.20	
	Cs-137	-0.12 ± 0.36	0.00 ± 0.20	0.10 ± 0.30	0.10 ± 0.20	
	Be-7	136.0 ± 21.1	157.6 ± 20.3	144.7 ± 22.7	95.5 ± 11.4	133 ± 54
NN-C	Cs-134	0.14 ± 0.42	0.20 ± 0.50	0.10 ± 0.30	0.00 ± 0.20	
	Cs-137	0.14 ± 0.31	0.30 ± 0.50	0.20 ± 0.30	0.10 ± 0.10	
	Be-7	146.0 ± 24.1	146.4 ± 25.0	137.3 ± 21.0	83.3 ± 11.3	128 ± 61

TABLE 3-6: GAMMA EMITTER AND STRONTIUM CONCENTRATIONS IN MILK

Surry Power Station, Surry County, Virginia - 2008

pCi/Liter ± 2 Sigma

NUCLIDE	EPPS	COLONIAL PARKWAY	WILLIAMS-C
JANUARY			
Cs-134	0.30 ± 1.55	0.49 ± 1.26	-0.85 ± 1.52
Cs-137	-2.51 ± 1.48	1.14 ± 1.29	0.73 ± 1.11
Ba-140	-3.54 ± 6.50	1.07 ± 6.11	-0.38 ± 4.60
La-140	0.53 ± 1.81	0.61 ± 1.73	-0.39 ± 1.30
I-131	-0.10 ± 0.45	-0.32 ± 0.61	-0.12 ± 0.48
K-40	1410 ± 151	1450 ± 109	1269 ± 93
FEBRUARY			
Cs-134	-0.73 ± 1.29	-0.44 ± 1.61	-0.36 ± 1.24
Cs-137	0.50 ± 1.22	-0.73 ± 1.30	2.05 ± 1.35
Ba-140	-1.93 ± 5.52	-2.97 ± 6.04	3.70 ± 5.64
La-140	-0.26 ± 2.08	0.45 ± 2.14	0.32 ± 1.61
I-131	-0.07 ± 0.33	0.08 ± 0.44	-0.24 ± 0.38
K-40	1380 ± 99	1460 ± 104	1400 ± 106
MARCH			
Cs-134	0.72 ± 1.49	-0.40 ± 1.39	0.38 ± 1.30
Cs-137	0.93 ± 1.38	1.01 ± 1.24	0.13 ± 1.29
Ba-140	0.20 ± 5.26	0.06 ± 4.63	-0.09 ± 5.40
La-140	1.81 ± 3.06	1.50 ± 1.51	-0.73 ± 1.86
I-131	0.47 ± 0.82	0.10 ± 0.32	0.25 ± 0.43
K-40	1350 ± 120	1510 ± 106	1351 ± 105
Sr-89		0.02 ± 0.56	
Sr-90		1.10 ± 0.45	
APRIL			
Cs-134	0.52 ± 1.25	1.76 ± 1.47	-1.12 ± 1.18
Cs-137	-0.10 ± 1.22	0.85 ± 1.29	0.32 ± 1.05
Ba-140	-1.72 ± 5.40	1.84 ± 6.09	1.73 ± 5.83
La-140	1.30 ± 1.67	-1.18 ± 1.89	-0.13 ± 1.29
I-131	0.01 ± 0.52	0.32 ± 0.52	0.26 ± 0.55
K-40	1410 ± 100	1480 ± 129	1295 ± 93

TABLE 3-6: GAMMA EMITTER AND STRONTIUM CONCENTRATIONS IN MILK

Surry Power Station, Surry County, Virginia - 2008

pCi/Liter ± 2 Sigma

NUCLIDE	EPPS	COLONIAL PARKWAY	WILLIAMS-C
MAY			
Cs-134	-0.21 ± 1.32	0.26 ± 1.70	-0.32 ± 1.11
Cs-137	0.31 ± 1.62	-1.61 ± 2.86	1.55 ± 1.61
Ba-140	-1.26 ± 10.30	1.71 ± 7.05	3.44 ± 5.22
La-140	-1.21 ± 1.97	-0.32 ± 2.24	-0.09 ± 1.73
I-131	0.00 ± 0.40	0.08 ± 0.34	0.48 ± 0.50
K-40	1420 ± 109	1430 ± 104	1318 ± 94
JUNE			
Cs-134	0.48 ± 1.61	-0.67 ± 1.49	-0.48 ± 1.18
Cs-137	-0.08 ± 1.52	0.22 ± 1.45	-0.05 ± 1.22
Ba-140	-2.06 ± 6.70	-6.57 ± 5.77	0.21 ± 4.47
La-140	0.59 ± 1.66	1.19 ± 1.75	-0.89 ± 1.41
I-131	0.14 ± 0.27	0.24 ± 0.45	-0.11 ± 0.22
K-40	1410 ± 121	1370 ± 123	1380 ± 99
Sr-89		1.56 ± 0.87	
Sr-90		0.25 ± 0.38	
JULY			
Cs-134	-1.01 ± 2.36	0.13 ± 1.37	-0.55 ± 1.33
Cs-137	0.04 ± 2.00	1.77 ± 1.32	0.37 ± 1.92
Ba-140	-0.90 ± 7.20	-7.75 ± 8.59	1.56 ± 5.64
La-140	0.72 ± 2.43	1.16 ± 1.75	2.98 ± 1.70
I-131	0.51 ± 0.40	0.34 ± 0.43	0.05 ± 0.29
K-40	1400 ± 111	1440 ± 112	1399 ± 116
AUGUST			
Cs-134	-0.01 ± 1.89	2.20 ± 2.12	0.91 ± 1.35
Cs-137	0.31 ± 1.77	-1.06 ± 3.98	-1.28 ± 1.98
Ba-140	2.72 ± 6.78	-3.21 ± 7.79	3.41 ± 4.50
La-140	0.01 ± 2.08	0.21 ± 2.46	0.95 ± 1.37
I-131	0.28 ± 0.32	0.29 ± 0.25	0.20 ± 0.32
K-40	1470 ± 119	1380 ± 115	1360 ± 98

TABLE 3-6: GAMMA EMITTER AND STRONTIUM CONCENTRATIONS IN MILK

Surry Power Station, Surry County, Virginia - 2008

pCi/Liter ± 2 Sigma

NUCLIDE	EPPS	COLONIAL PARKWAY	WILLIAMS-C
SEPTEMBER			
Cs-134	-0.67 ± 1.48	-1.13 ± 1.42	0.97 ± 1.53
Cs-137	2.07 ± 2.06	0.72 ± 1.90	-0.32 ± 1.49
Ba-140	0.04 ± 7.50	-4.86 ± 7.54	3.90 ± 7.27
La-140	0.55 ± 2.22	0.31 ± 2.22	-0.34 ± 2.12
I-131	-0.03 ± 0.39	-0.20 ± 0.38	0.15 ± 0.45
K-40	1426 ± 126	1360 ± 106	1339 ± 116
Sr-89		4.00 ± 1.02 A	
Sr-90		1.64 ± 0.67 A	
OCTOBER			
Cs-134	-0.16 ± 2.14	0.02 ± 1.85	1.12 ± 1.60
Cs-137	-2.73 ± 2.90	0.58 ± 2.18	-0.91 ± 2.16
Ba-140	-14.28 ± 14.68	-1.15 ± 6.43	1.17 ± 5.30
La-140	0.68 ± 2.35	1.24 ± 1.89	0.39 ± 1.61
I-131	0.06 ± 0.38	0.14 ± 0.42	-0.02 ± 0.29
K-40	1483 ± 129	1350 ± 148	1352 ± 121
NOVEMBER			
Cs-134	1.20 ± 1.59	-0.64 ± 1.99	-0.47 ± 1.38
Cs-137	2.16 ± 1.39	0.90 ± 1.38	0.64 ± 1.14
Ba-140	0.78 ± 5.96	1.90 ± 6.72	-7.27 ± 7.62
La-140	1.90 ± 1.69	-2.58 ± 2.10	-0.63 ± 1.64
I-131	-0.10 ± 0.42	0.14 ± 0.57	0.07 ± 0.42
K-40	1481 ± 112	1490 ± 129	1325 ± 104
DECEMBER			
Cs-134	-0.47 ± 1.50	0.05 ± 1.58	0.25 ± 1.72
Cs-137	1.11 ± 1.32	-0.73 ± 2.48	0.95 ± 1.43
Ba-140	2.82 ± 5.32	-1.16 ± 6.86	6.46 ± 8.03
La-140	-0.82 ± 1.61	-2.16 ± 1.89	1.13 ± 2.56
I-131	-0.19 ± 0.45	0.20 ± 0.40	0.08 ± 0.43
K-40	1378 ± 102	1520 ± 134	1379 ± 122
Sr-89		-0.96 ± 2.32	
Sr-90		0.84 ± 0.56	

Footnote A - These concentrations were subsequently determined to be the result of sample contamination at the laboratory.

TABLE 3-7: GAMMA EMITTER CONCENTRATION IN FOOD PRODUCTS

Surry Power Station, Surry County, Virginia - 2008

pCi/kg (wet) ± 2 Sigma

SAMPLING LOCATIONS	COLLECTION DATE	SAMPLE TYPE	Cs-134	Cs-137	I-131	K-40
BROCK FARM	12/01/2008	Corn	-2.08 ± 5.32	4.41 ± 5.07	-2.00 ± 5.83	2,662 ± 281
	12/01/2008	Peanuts	5.55 ± 10.09	1.02 ± 7.77	1.83 ± 8.82	7,372 ± 711
SLADE FARM	12/01/2008	Soybeans	-1.48 ± 8.71	-4.79 ± 6.33	2.46 ± 7.47	14,850 ± 1,019

TABLE 3-8: GAMMA EMITTER AND TRITIUM CONCENTRATIONS IN WELL WATER

Surry Power Station, Surry County, Virginia - 2008

pCi/Liter ± 2 Sigma

SAMPLING LOCATIONS	COLLECTION DATE	ISOTOPE														
		Ba-140			Co-58			Co-60			Cs-134			Cs-137		
SS	03/10/2008	1.41	±	4.84	-0.59	±	1.16	-0.36	±	1.31	0.57	±	1.37	0.91	±	1.27
	06/09/2008	-0.97	±	4.54	-0.41	±	1.12	0.58	±	1.34	-0.04	±	1.42	1.73	±	1.55
	09/08/2008	-9.32	±	7.41	-0.03	±	1.21	-0.29	±	1.74	-0.69	±	1.20	0.17	±	1.18
	12/09/2008	5.01	±	6.47	0.37	±	1.23	0.10	±	1.42	0.96	±	1.56	0.38	±	1.36
		Fe-59			I-131			La-140			Mn-54			Nb-95		
	03/10/2008	-0.45	±	2.61	0.06	±	0.32	-0.77	±	1.73	-0.74	±	1.23	2.09	±	1.80
	06/09/2008	-0.64	±	3.78	-0.02	±	0.27	-1.22	±	1.61	-0.02	±	1.21	0.40	±	1.17
	09/08/2008	1.69	±	2.59	0.06	±	0.21	-0.79	±	2.42	0.11	±	1.19	0.02	±	1.36
	12/09/2008	0.70	±	2.84	-0.12	±	0.38	0.69	±	2.32	-0.53	±	1.17	1.68	±	1.42
		Zn-65			Zr-95			H-3								
	03/10/2008	-2.77	±	2.59	3.09	±	2.20	116.3	±	183.1						
	06/09/2008	-0.35	±	2.82	0.42	±	1.92	0.0	±	84.4						
	09/08/2008	-1.42	±	2.54	1.36	±	2.15	-104.9	±	224.1						
	12/09/2008	-0.59	±	3.86	0.16	±	2.36	127.7	±	290.5						
		Ba-140			Co-58			Co-60			Cs-134			Cs-137		
HIR	03/11/2008	3.25	±	4.31	0.28	±	0.99	-0.04	±	1.12	0.64	±	1.14	0.02	±	1.01
	06/09/2008	3.74	±	3.92	-0.24	±	0.95	0.12	±	0.99	-0.95	±	1.34	0.04	±	1.25
	09/08/2008	8.73	±	6.62	-0.36	±	1.04	1.38	±	1.13	-0.08	±	1.12	0.03	±	1.05
	12/09/2008	-0.62	±	6.42	-0.22	±	1.18	1.10	±	1.25	0.13	±	1.43	0.54	±	1.22
		Fe-59			I-131			La-140			Mn-54			Nb-95		
	03/11/2008	-0.06	±	2.05	0.20	±	0.27	-1.03	±	1.51	0.13	±	1.00	1.86	±	1.05
	06/09/2008	-0.44	±	1.99	0.26	±	0.26	-0.85	±	1.31	0.17	±	0.99	0.74	±	1.02
	09/08/2008	1.87	±	2.44	0.08	±	0.29	0.69	±	2.17	-0.15	±	1.04	0.73	±	1.50
	12/09/2008	1.75	±	2.56	0.33	±	0.37	-0.46	±	2.46	0.44	±	1.20	1.58	±	1.45
		Zn-65			Zr-95			H-3								
	03/11/2008	0.85	±	2.45	-0.12	±	1.65	88.6	±	184.7						
	06/09/2008	-2.82	±	2.05	0.29	±	1.70	23.1	±	91.9						
	09/08/2008	0.26	±	2.19	0.89	±	1.76	127.5	±	247.3						
	12/09/2008	-2.75	±	2.74	0.40	±	2.17	89.3	±	286.2						

TABLE 3-8: GAMMA EMITTER AND TRITIUM CONCENTRATIONS IN WELL WATER

Surry Power Station, Surry County, Virginia - 2008

pCi/Liter ± 2 Sigma

SAMPLING LOCATIONS	COLLECTION DATE	ISOTOPE														
		Ba-140			Co-58			Co-60			Cs-134			Cs-137		
CS	03/11/2008	2.50	±	5.49	0.05	±	0.86	-0.22	±	1.04	0.18	±	1.07	-0.48	±	0.96
	06/09/2008	-0.61	±	4.21	-0.37	±	1.06	1.40	±	1.22	-1.26	±	1.12	-1.20	±	1.16
	09/08/2008	-4.35	±	6.95	0.76	±	1.23	1.10	±	1.23	-0.02	±	1.24	0.98	±	1.24
	12/09/2008	-3.58	±	7.16	0.75	±	1.37	-0.66	±	1.45	-0.81	±	1.71	-0.06	±	1.47
		Fe-59			I-131			La-140			Mn-54			Nb-95		
	03/11/2008	-0.68	±	1.81	0.23	±	0.29	-0.28	±	1.25	-0.31	±	0.89	0.23	±	1.04
	06/09/2008	0.87	±	1.98	0.30	±	0.28	-0.16	±	1.50	-0.39	±	1.06	1.65	±	1.29
	09/08/2008	-1.00	±	2.52	-0.07	±	0.31	-0.93	±	2.44	-0.11	±	1.14	0.26	±	1.37
	12/09/2008	0.17	±	2.83	-0.31	±	0.53	-0.07	±	2.24	-0.21	±	1.31	1.42	±	1.48
		Zn-65			Zr-95			H-3								
	03/11/2008	0.45	±	2.13	0.21	±	1.63	238.7	±	193.9						
	06/09/2008	1.06	±	2.45	1.01	±	1.77	23.9	±	95.2						
	09/08/2008	-1.07	±	2.55	-0.73	±	2.11	25.1	±	236.6						
	12/09/2008	-2.03	±	3.76	1.07	±	2.32	-253.8	±	256.8						

TABLE 3-9: GAMMA EMITTER AND TRITIUM CONCENTRATIONS IN RIVER WATER

Surry Power Station, Surry County, Virginia - 2008

pCi/Liter ± 2 Sigma

SAMPLING LOCATIONS	COLLECTION DATE	ISOTOPE				
		Ba-140	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**
SD	01/08/08	-0.38 ± 9.87	-3.24 ± 1.26	1.35 ± 1.44	-0.51 ± 2.10	0.41 ± 1.32
	02/19/08	0.51 ± 5.93	0.52 ± 1.26	0.45 ± 1.33	0.04 ± 1.43	-0.36 ± 1.94
	03/10/08	-1.60 ± 6.28	1.00 ± 1.03	0.42 ± 1.16	0.20 ± 1.22	-0.70 ± 1.46
	04/15/08	-0.42 ± 3.88	0.30 ± 1.11	-0.44 ± 1.09	0.15 ± 1.15	0.21 ± 1.07
	05/21/08	-0.27 ± 6.22	-0.31 ± 1.04	0.86 ± 1.01	-1.14 ± 1.08	-1.13 ± 1.16
	06/17/08	0.64 ± 4.28	0.52 ± 1.02	0.83 ± 1.02	0.46 ± 1.04	-0.51 ± 1.00
	07/15/08	1.19 ± 4.67	0.43 ± 1.10	0.48 ± 1.16	-1.45 ± 1.34	0.29 ± 1.25
	08/19/08	1.11 ± 5.43	-0.50 ± 1.18	0.49 ± 1.19	-0.31 ± 1.26	1.06 ± 1.14
	09/08/08	4.10 ± 6.36	-0.43 ± 1.14	-1.22 ± 1.74	1.01 ± 1.34	0.84 ± 1.25
	10/21/08	-2.37 ± 5.32	-1.08 ± 1.00	-0.06 ± 1.09	1.19 ± 1.24	0.39 ± 1.08
	11/11/08	-1.65 ± 4.29	-0.63 ± 0.91	-0.69 ± 0.94	0.59 ± 1.07	0.18 ± 0.98
	12/09/08	-0.29 ± 4.96	0.64 ± 1.09	-0.34 ± 1.23	0.92 ± 1.35	0.23 ± 1.05
		Fe-59	**I-131**	**La-140**	**Mn-54**	**Nb-95**
	01/08/2008	1.37 ± 4.60	1.24 ± 5.52	2.36 ± 6.19	-0.26 ± 2.08	0.45 ± 1.51
	02/19/2008	2.47 ± 2.52	0.79 ± 2.33	-1.05 ± 1.99	0.37 ± 1.26	1.23 ± 1.37
	03/10/2008	1.49 ± 2.19	0.27 ± 1.53	-0.04 ± 1.56	-0.06 ± 1.00	1.26 ± 1.02
	04/15/2008	0.11 ± 2.69	1.17 ± 1.39	0.44 ± 1.38	-1.86 ± 1.57	-0.03 ± 1.04
	05/21/2008	-3.84 ± 3.46	0.23 ± 2.37	0.60 ± 2.14	0.24 ± 1.00	0.46 ± 1.15
	06/17/2008	-0.55 ± 2.00	0.70 ± 1.61	-0.33 ± 1.48	-1.00 ± 0.93	0.84 ± 1.04
	07/15/2008	0.18 ± 2.39	-1.32 ± 1.56	0.12 ± 1.62	-0.86 ± 1.58	1.00 ± 1.20
	08/19/2008	1.79 ± 2.41	-0.56 ± 1.97	-0.89 ± 1.84	0.10 ± 1.13	1.47 ± 1.21
	09/08/2008	-0.13 ± 2.70	0.02 ± 2.29	-0.15 ± 1.93	-1.16 ± 1.14	0.45 ± 1.32
	10/21/2008	0.41 ± 2.14	1.09 ± 1.89	-0.60 ± 1.75	-0.17 ± 0.94	-0.49 ± 1.41
	11/11/2008	0.70 ± 1.87	-0.36 ± 1.68	-0.05 ± 1.40	-0.30 ± 0.90	0.23 ± 1.26
	12/09/2008	-1.15 ± 2.12	-0.91 ± 1.85	-0.04 ± 1.89	0.26 ± 1.03	0.47 ± 1.17
		Zn-65	**Zr-95**	**H-3**	**K-40**	
	01/08/2008	0.69 ± 2.67	1.43 ± 2.32		104.0 ± 32.1	
	02/19/2008	-3.72 ± 3.06	0.40 ± 2.15	13.0 ± 281.8	72.7 ± 34.4	
	03/10/2008	-0.70 ± 2.20	0.36 ± 1.86		47.9 ± 28.3	
	04/15/2008	0.14 ± 2.08	-0.85 ± 1.77			
	05/21/2008	0.94 ± 2.57	0.86 ± 1.94	13.5 ± 290.5		
	06/17/2008	-1.23 ± 2.10	0.85 ± 1.73		78.1 ± 31.7	
	07/15/2008	-1.15 ± 2.81	-0.08 ± 1.95			
	08/19/2008	1.18 ± 2.79	2.50 ± 2.03	13.1 ± 286.6	151.5 ± 35.5	
	09/08/2008	-2.64 ± 2.69	2.22 ± 2.07		124.4 ± 36.1	
	10/21/2008	-1.73 ± 2.16	-0.83 ± 1.81		150.8 ± 31.7	
	11/11/2008	-2.26 ± 1.92	-0.05 ± 1.58	32.9 ± 181.4	146.1 ± 27.2	
	12/09/2008	-1.20 ± 2.31	1.31 ± 1.85		130.0 ± 29.9	

TABLE 3-9: GAMMA EMITTER AND TRITIUM CONCENTRATIONS IN RIVER WATER

Surry Power Station, Surry County, Virginia - 2008

pCi/Liter ± 2 Sigma

SAMPLING LOCATIONS	COLLECTION DATE	ISOTOPES				
		Ba-140	**Co-58**	**Co-60**	**Cs-134**	**Cs-137**
SW-C	01/08/08	1.69 ± 8.78	-0.61 ± 1.23	0.49 ± 1.11	-0.10 ± 1.34	1.06 ± 1.26
	02/19/08	0.68 ± 5.07	0.74 ± 1.11	0.31 ± 1.14	-0.11 ± 1.21	0.41 ± 1.17
	03/11/08	0.07 ± 5.63	0.53 ± 1.34	-0.15 ± 1.42	0.17 ± 1.55	-1.21 ± 2.24
	04/15/08	1.67 ± 3.73	0.11 ± 0.91	0.30 ± 0.91	0.45 ± 0.94	0.18 ± 0.97
	05/21/08	-0.47 ± 5.60	-0.14 ± 1.00	0.47 ± 1.11	-0.10 ± 1.15	-0.89 ± 1.04
	06/17/08	5.83 ± 5.11	0.14 ± 1.02	0.60 ± 1.15	-0.32 ± 1.16	0.48 ± 1.17
	07/15/08	2.94 ± 4.78	-0.27 ± 1.16	0.93 ± 1.22	0.57 ± 1.40	0.60 ± 1.28
	08/19/08	1.83 ± 4.84	0.72 ± 1.03	-0.84 ± 1.80	0.00 ± 1.12	0.48 ± 1.13
	09/09/08	-2.03 ± 5.11	0.55 ± 1.06	-0.58 ± 1.14	0.52 ± 1.17	0.46 ± 1.11
	10/21/08	1.64 ± 4.57	-0.74 ± 0.92	0.66 ± 1.02	0.67 ± 1.13	-0.57 ± 1.01
	11/11/08	-1.41 ± 4.43	0.46 ± 0.81	0.53 ± 0.92	-0.10 ± 1.00	-0.42 ± 0.89
	12/09/08	2.33 ± 4.69	-0.74 ± 0.99	0.72 ± 1.10	0.58 ± 1.26	-0.19 ± 1.09
		Fe-59	**I-131**	**La-140**	**Mn-54**	**Nb-95**
	01/08/2008	0.60 ± 2.55	4.72 ± 5.83	-4.31 ± 5.18	-0.38 ± 1.30	0.27 ± 1.45
	02/19/2008	-0.69 ± 2.44	0.91 ± 2.10	0.07 ± 1.77	-1.07 ± 1.80	0.80 ± 1.12
	03/11/2008	1.32 ± 2.77	-0.71 ± 1.53	0.15 ± 1.88	0.13 ± 1.37	-1.49 ± 1.45
	04/15/2008	-0.38 ± 2.74	-1.27 ± 1.47	0.56 ± 1.13	-0.39 ± 0.92	2.15 ± 1.77
	05/21/2008	1.21 ± 2.22	-0.18 ± 2.60	0.60 ± 2.10	0.41 ± 0.97	-0.69 ± 1.14
	06/17/2008	-2.25 ± 2.28	-0.04 ± 1.89	-0.26 ± 1.64	-0.06 ± 1.09	0.32 ± 1.16
	07/15/2008	1.09 ± 2.16	-0.16 ± 1.57	-0.63 ± 1.43	-0.50 ± 1.68	0.99 ± 1.23
	08/19/2008	-1.57 ± 2.26	0.53 ± 1.82	0.21 ± 1.77	-0.03 ± 1.11	-0.03 ± 1.12
	09/09/2008	0.27 ± 2.22	0.13 ± 1.93	-0.26 ± 1.94	-0.60 ± 1.04	-0.36 ± 1.46
	10/21/2008	0.16 ± 2.06	0.60 ± 1.77	-0.73 ± 1.70	-0.51 ± 0.95	0.19 ± 1.07
	11/11/2008	-1.10 ± 1.75	-0.41 ± 1.61	-0.48 ± 1.44	0.25 ± 0.83	0.40 ± 0.96
	12/09/2008	-0.82 ± 2.03	-0.17 ± 1.74	-0.11 ± 1.80	-0.14 ± 1.06	-0.14 ± 1.09
		Zn-65	**Zr-95**	**H-3**	**K-40**	
	01/08/2008	0.06 ± 2.40	0.19 ± 2.12		65.80 ± 24.20	
	02/19/2008	-2.37 ± 2.33	-1.07 ± 1.86	347.0 ± 313.1		
	03/11/2008	-0.88 ± 3.02	-0.82 ± 2.40			
	04/15/2008	-2.30 ± 2.85	0.39 ± 1.43			
	05/21/2008	-1.80 ± 2.10	0.49 ± 1.93	24.8 ± 288.3		
	06/17/2008	-1.14 ± 2.91	-0.79 ± 1.73		75.60 ± 25.68	
	07/15/2008	0.01 ± 2.48	1.27 ± 2.06			
	08/19/2008	1.76 ± 2.32	-0.39 ± 1.91	-74.7 ± 278.2		
	09/09/2008	-0.57 ± 2.16	-0.38 ± 1.98			
	10/21/2008	-2.50 ± 2.21	-0.34 ± 1.74		75.73 ± 28.53	
	11/11/2008	-0.93 ± 1.76	0.10 ± 1.67	-88.7 ± 163.6		
	12/09/2008	0.56 ± 2.21	-1.68 ± 1.72			

TABLE 3-10: GAMMA EMITTER CONCENTRATIONS IN SILT

Surry Power Station, Surry County, Virginia - 2008

pCi/kg (dry) ± 2 Sigma

SAMPLING LOCATIONS	COLLECTION DATE	Cs-134	Cs-137	Th-228	K-40
SD	03/25/2008	19.6 ± 17.6	110 ± 19	566 ± 47.2	8633 ± 715.7
	09/08/2008	20.9 ± 69.2	198 ± 82	1330 ± 169	15400 ± 2140
CHIC-C	03/25/2008	15.9 ± 12.3	61.3 ± 11.9	483 ± 40	6423 ± 545.7
	09/08/2008	58.4 ± 67.5	272 ± 102	1528 ± 202	19590 ± 2487

TABLE 3-11: GAMMA EMITTER CONCENTRATIONS IN SHORELINE SEDIMENT

Surry Power Station, Surry County, Virginia - 2008

pCi/kg (dry) ± 2 Sigma

SAMPLING LOCATIONS	COLLECTION DATE	Cs-134	Cs-137	Th-228	K-40
HIR	02/19/2008	9.88 ± 7.80	0.32 ± 4.22	323 ± 25.6	4785 ± 384
	08/13/2008	20.90 ± 16.40	2.45 ± 15.60		8423 ± 823
CHIC-C	02/19/2008	7.46 ± 7.98	1.03 ± 4.00	129 ± 13.7	2022 ± 194
	08/13/2008	2.02 ± 15.30	8.03 ± 13.70		1732 ± 367

TABLE 3-12: GAMMA EMITTER CONCENTRATION IN FISH

Surry Power Station, Surry County, Virginia - 2008

pCi/kg (wet) ± 2 Sigma

SAMPLING LOCATION	COLLECTION DATE	SAMPLE TYPE	ISOTOPE			
			K-40	**Co-58**	**Co-60**	**Cs-134**
SD	04/23/2008	Catfish	2367 ± 235	-1.23 ± 4.15	0.05 ± 3.47	-1.08 ± 3.32
	04/23/2008	White Perch	2487 ± 199	-3.37 ± 2.94	0.64 ± 3.04	0.40 ± 2.83
	10/30/2008	Catfish	2489 ± 283	-1.64 ± 6.45	-0.98 ± 6.64	10.5 ± 6.45
	10/30/2008	White Perch	1764 ± 264	-3.30 ± 8.44	0.94 ± 7.41	2.90 ± 8.38
			Cs-137	**Fe-59**	**Mn-54**	**Zn-65**
	04/23/2008	Catfish	4.43 ± 2.98	-7.98 ± 9.53	-1.45 ± 3.10	8.26 ± 7.26
	04/23/2008	White Perch	0.48 ± 3.16	-0.28 ± 8.55	-0.27 ± 2.41	0.39 ± 6.79
	10/30/2008	Catfish	-2.51 ± 5.74	10.9 ± 19.0	0.46 ± 5.08	-3.50 ± 14.6
	10/30/2008	White Perch	7.76 ± 6.73	-2.86 ± 21.1	-0.89 ± 6.15	-6.15 ± 17.2

TABLE 3-13: GAMMA EMITTER CONCENTRATIONS IN OYSTERS

Surry Power Station, Surry County, Virginia - 2008

pCi/kg (wet) ± 2 Sigma

SAMPLING LOCATIONS	COLLECTION DATE	ISOTOPE			
		K-40	**Co-58**	**Co-60**	**Cs-134**
POS	03/25/2008	413 ± 252	1.25 ± 13.8	-1.36 ± 13.2	-1.91 ± 15.2
	09/08/2008	850 ± 410	0.97 ± 8.42	-0.28 ± 7.29	-4.25 ± 9.08
		Cs-137	**Fe-59**	**Mn-54**	**Zn-65**
	03/25/2008	3.05 ± 12.9	-14.8 ± 22.7	-5.41 ± 13.5	2.52 ± 42.5
	09/08/2008	1.82 ± 5.71	0.89 ± 21.6	0.24 ± 6.65	-13.4 ± 19.1
		K-40	**Co-58**	**Co-60**	**Cs-134**
MP	03/25/2008	877 ± 376	16.9 ± 16.7	-12.9 ± 19.7	10.5 ± 18.3
	09/08/2008	650 ± 430	2.11 ± 10.3	-9.35 ± 8.32	-3.9 ± 6.98
		Cs-137	**Fe-59**	**Mn-54**	**Zn-65**
	03/25/2008	-13.3 ± 18.9	19.1 ± 34.2	-17.4 ± 15.9	-23.6 ± 44.1
	09/08/2008	-0.86 ± 7.28	-8.83 ± 21.2	-0.44 ± 8.51	0.58 ± 12.0

TABLE 3-14: GAMMA EMITTER CONCENTRATIONS IN CLAMS

Surry Power Station, Surry County, Virginia - 2008

pCi/kg (wet) ± 2 Sigma

SAMPLING LOCATIONS	COLLECTION DATE	ISOTOPE			
		K-40	**Co-58**	**Co-60**	**Cs-134**
JI	03/25/2008	641 ± 254	4.96 ± 15.5	8.78 ± 24.5	-2.92 ± 18.9
	09/08/2008		1.27 ± 7.40	6.71 ± 7.01	3.82 ± 8.39
		Cs-137	**Fe-59**	**Mn-54**	**Zn-65**
	03/25/2008	2.21 ± 14.6	-63.7 ± 43.8	11.4 ± 17.3	8.20 ± 29.2
	09/08/2008	3.55 ± 5.82	5.95 ± 16.9	0.64 ± 5.87	-17.3 ± 14.8
		K-40	**Co-58**	**Co-60**	**Cs-134**
SD	03/25/2008	542 ± 285	-2.47 ± 12.2	13.00 ± 14.8	-1.81 ± 20.7
	09/08/2008		-1.96 ± 10.2	2.31 ± 9.75	-10.5 ± 11.7
		Cs-137	**Fe-59**	**Mn-54**	**Zn-65**
	03/25/2008	-6.07 ± 13.9	-4.87 ± 25.7	3.92 ± 11.9	-9.98 ± 26.8
	09/08/2008	-2.92 ± 9.29	4.90 ± 22.6	3.72 ± 8.85	5.50 ± 16.4
		K-40	**Co-58**	**Co-60**	**Cs-134**
CHIC-C	03/25/2008	490 ± 395	-2.77 ± 18.5	-24.1 ± 31.1	0.15 ± 19.1
	09/08/2008		-4.60 ± 10.5	-3.51 ± 8.43	0.41 ± 8.13
		Cs-137	**Fe-59**	**Mn-54**	**Zn-65**
	03/25/2008	-4.82 ± 17.7	0.48 ± 38.4	23.4 ± 26.2	-3.20 ± 42.0
	09/08/2008	-2.73 ± 7.38	10.90 ± 23.9	0.08 ± 8.48	-10.5 ± 21.1
		K-40	**Co-58**	**Co-60**	**Cs-134**
LC	03/25/2008	649 ± 286	-5.23 ± 13.4	-2.45 ± 15.6	-0.78 ± 14.0
	09/08/2008	524 ± 201	9.57 ± 11.6	0.35 ± 8.96	-0.23 ± 8.78
		Cs-137	**Fe-59**	**Mn-54**	**Zn-65**
	03/25/2008	-1.48 ± 13.0	-1.73 ± 29.7	17.50 ± 19.3	-28.8 ± 30.1
	09/08/2008	-3.31 ± 9.17	15.1 ± 29.3	-3.30 ± 9.66	6.29 ± 20.9

TABLE 3-15: GAMMA EMITTER CONCENTRATIONS IN CRABS

Surry Power Station, Surry County, Virginia - 2008

pCi/kg (wet) ± 2 Sigma

SAMPLING LOCATIONS	COLLECTION DATE	ISOTOPE			
		K-40	**Co-58**	**Co-60**	**Cs-134**
SD	06/17/2008	1648 ± 365	-7.51 ± 19.6	10.8 ± 15.8	-4.63 ± 18.2
		Cs-137	**Fe-59**	**Mn-54**	**Zn-65**
		8.5 ± 14.8	-23.8 ± 41.4	-7.78 ± 16.1	-16.1 ± 36.4

4. DISCUSSION OF RESULTS

Data from the radiological analyses of environmental media collected during 2008 and tabulated in Section 3, are discussed below. The procedures and specifications followed in the laboratory for these analyses are as required in the GEL Laboratories LLC quality assurance manual and laboratory procedures. In addition to internal quality control measures performed by the laboratory, it also participates in an Interlaboratory Comparison Program. Participation in this program ensures that independent checks on the precision and accuracy of the measurements of radioactive material in environmental samples are performed. The results of the Interlaboratory Comparison Program are provided in Appendix B.

The predominant radioactivity detected throughout 2008 was from external sources, such as fallout from nuclear weapons tests (cesium-137, strontium-90) and naturally occurring radionuclides. Naturally occurring nuclides such as beryllium-7, potassium-40, and thorium-228 were detected in numerous samples.

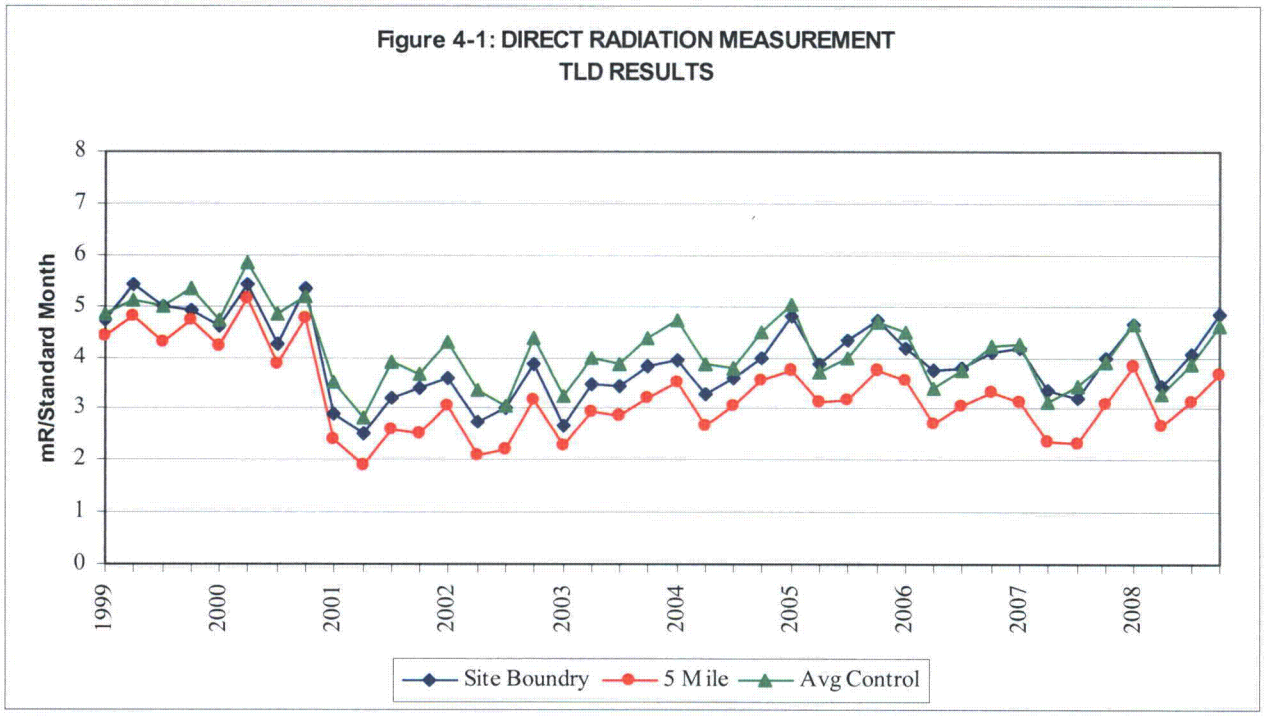
The following is a discussion and summary of the results of the environmental measurements taken during the 2008 reporting period.

4.1 Gamma Exposure Rate

A thermoluminescent dosimeter (TLD) is an inorganic crystal used to detect ambient radiation. TLDs are placed in two concentric rings around the station. The inner ring is located in the vicinity of the site boundary, and the outer ring is located at approximately five miles from the station. TLDs are also placed in special interest areas, such as population centers and nearby residences. Additional TLDs serve as controls. Ambient radiation comes from naturally occurring radioisotopes in the air and soil, radiation from cosmic origin, fallout from nuclear weapons testing, station effluents and direct radiation from the station.

The results of the TLD analyses are presented in Table 3-2. Figure 4-1 shows a historical trend of TLD exposure rate measurements, comparing the average of indicator TLDs located near the site boundary and at 5 miles to the average of all control TLD locations. Control and indicator averages indicate a steady relationship. Two dosimeters, made of CaF and LiF elements and specifically designed for environmental monitoring, are deployed at each sampling location. In 2001, these TLDs replaced the previously used CaSO4:Dy in Teflon TLDs. The dose with the replacement TLDs is lower than that of the previously used TLDs as the increased sensitivity of the replacement TLD provides a more representative response to ambient radiation.

The eight-year trend since TLD type replacement indicates a minor increase in ambient exposure. Because the trend of the control and indicator locations continue to show the same historical relationship, this demonstrates that the increasing trend is not related to the operation of Surry Power Station. The most recent six-year trend indicates a stable trend. These trends will continue to be monitored.



4.2 Airborne Gross Beta

Air is continuously sampled by passing it through glass fiber particulate filters. The filters collect airborne particulate radionuclides. Once a week the samples are collected and analyzed for gross beta activity. Results of the weekly gross beta analyses are presented in Table 3-3. A review of the results from control and indicator locations continues to show no significant variation in measured activities (see Figure 4-2 and 4-3). This indicates that any station contribution is not measurable.

Gross beta activity found during the pre-operational and early operating period of Surry Power Station was higher because of nuclear weapons testing. During that time, nearly 740 nuclear weapons were tested worldwide. In 1985 weapons testing ceased, and with the exception of the Chernobyl accident in 1986, airborne gross beta results have remained steady.

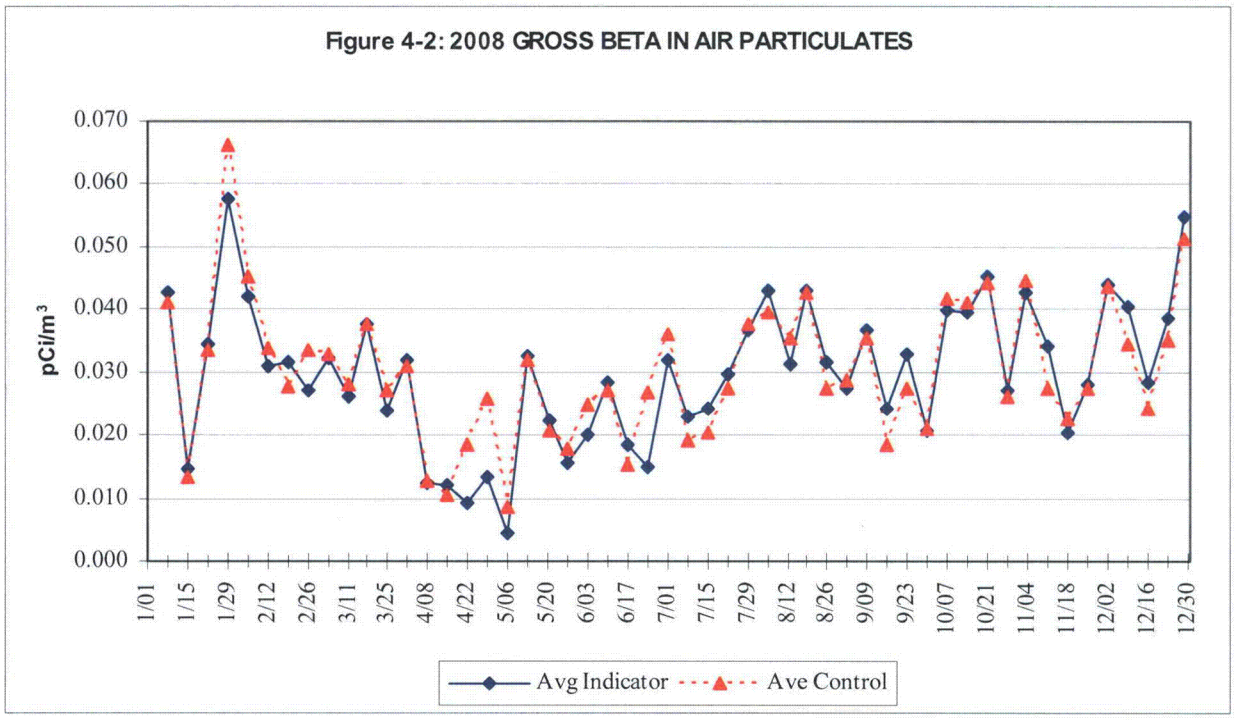


Figure 4-2: 2008 GROSS BETA IN AIR PARTICULATES
pCi/m³
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
1/01
1/15
1/29
2/12
2/26
3/11
3/25
4/08
4/22
5/06
5/20
6/03
6/17
7/01
7/15
7/29
8/12
8/26
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10/07
10/21
11/04
11/18
12/02
12/16
12/30
Avg Indicator
Ave Control

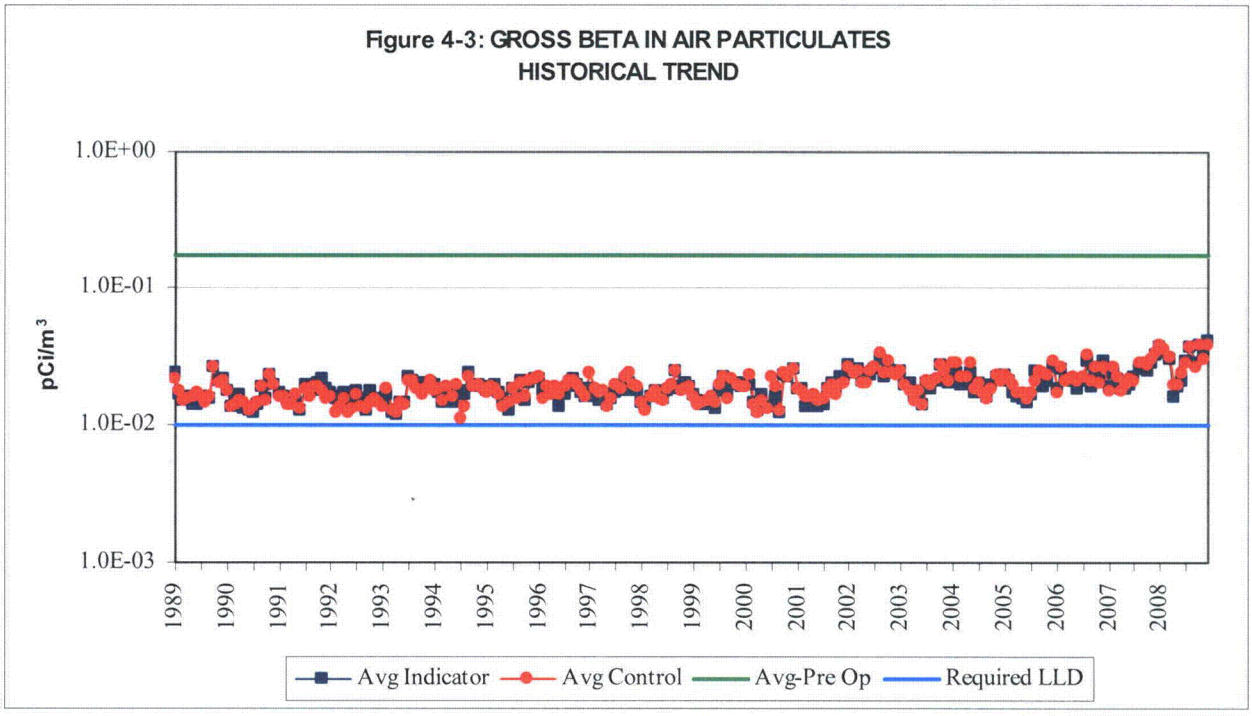


Figure 4-3: GROSS BETA IN AIR PARTICULATES
HISTORICAL TREND
pCi/m³
1.0E+00
1.0E-01
1.0E-02
1.0E-03
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
Avg Indicator
Avg Control
Avg-Pre Op
Required LLD

4.3 Airborne Radioiodine

Air is also continuously sampled for radioiodines by passing it through charcoal cartridges. Once a week the charcoal cartridge samples are collected and analyzed. The results of the analyses are presented in Table 3-4. All results are below the lower limit of detection. No positive iodine-131 was detected. These results are similar to pre-operational data and the results of samples taken prior to and after the 1986 accident in the Soviet Union at Chernobyl.

4.4 Air Particulate Gamma

The air particulate filters from the weekly gross beta analyses are composited by location and analyzed quarterly by gamma spectroscopy. The results are listed in Table 3-5. The results indicate the presence of naturally occurring beryllium-7, which is produced by cosmic processes. No man-made radionuclides were identified. These analyses confirm the lack of station effects.

4.5 Cow Milk

Analysis of milk samples is generally the most sensitive indicator of fission product existence in the terrestrial environment. This, in combination with the fact that consumption of milk is significant, results in this pathway usually being the most critical from the plant release viewpoint. This pathway also shows measurable amounts of nuclear weapons testing fallout. Therefore, this media needs to be evaluated very carefully when trying to determine if there is any station effect.

Analysis results for cow milk are contained in Table 3-6. All results show a lack of detectable iodine-131 above the LLD of 1 pCi/L. Results of gamma spectroscopy indicate no other detectable station related radioactivity in the milk samples. In years past, cesium-137 has been detected sporadically. The occurrences were attributed to residual global fallout from past atmospheric weapons testing. Cs-137 was not detected at a level above the LLD in 2008.

At the request of the Commonwealth of Virginia, a quarterly composite sample is prepared from the monthly milk samples from the Colonial Parkway collection station. The composite samples are analyzed for strontium-89 and strontium-90. Sr-90 was detected in the 1st and 3rd quarterly composites at an average concentration of 1.37 pCi/L. The average Sr-90 concentration for the ten year period of 1999 to 2008 is 1.84 pCi/L. Sr-89 was detected in the 2nd and 3rd quarterly composites at an average concentration of 2.78 pCi/L. A historical review of milk analyses back to 1985 revealed no previous Sr-89 detection. Due to the unusual detection of Sr-89, the vendor laboratory initiated an independent

assessment of the analyses. The assessment concluded that sample contamination at the laboratory was the only reasonable explanation for the 3rd quarter composite sample results. Although the analytical data is included in this report, Surry Power Station does not have confidence in the positive Sr-89 data in the 2nd and 3rd quarter composite analyses and the positive Sr-90 data in the 3rd quarter composite analysis based on the conclusion of the independent assessment and the fact that Sr-89 and Sr-90 are not components of the station radiological effluents. The presence of Sr-90 in the environment is rather a product of nuclear weapons testing fallout which has been well documented.

4.6 Food Products

Three samples were collected and analyzed by gamma spectroscopy. The results of the analyses are presented in Table 3-7. As expected, naturally occurring potassium-40 was detected in all samples. The average concentration is consistent with that observed in previous years. No station related radioactivity was detected.

4.7 Well Water

Well water is not considered to be affected by station operations because there are no discharges made to this pathway. However, Surry Power Station monitors well water quarterly at three indicator locations and analyzes for gamma radiation and for tritium. The results of these analyses are presented in Table 3-8. Consistent with past monitoring, no station related radioactivity was detected. No gamma emitting isotopes were detected during the pre-operational period.

4.8 River Water

Samples of the James River water are collected monthly and the results are presented in Table 3-9. All samples are analyzed by gamma spectroscopy. The monthly samples are also composited and analyzed for tritium on a quarterly basis. With the exception of naturally occurring potassium-40 detected in some samples analyzed, no other gamma emitters were detected.

4.9 Silt

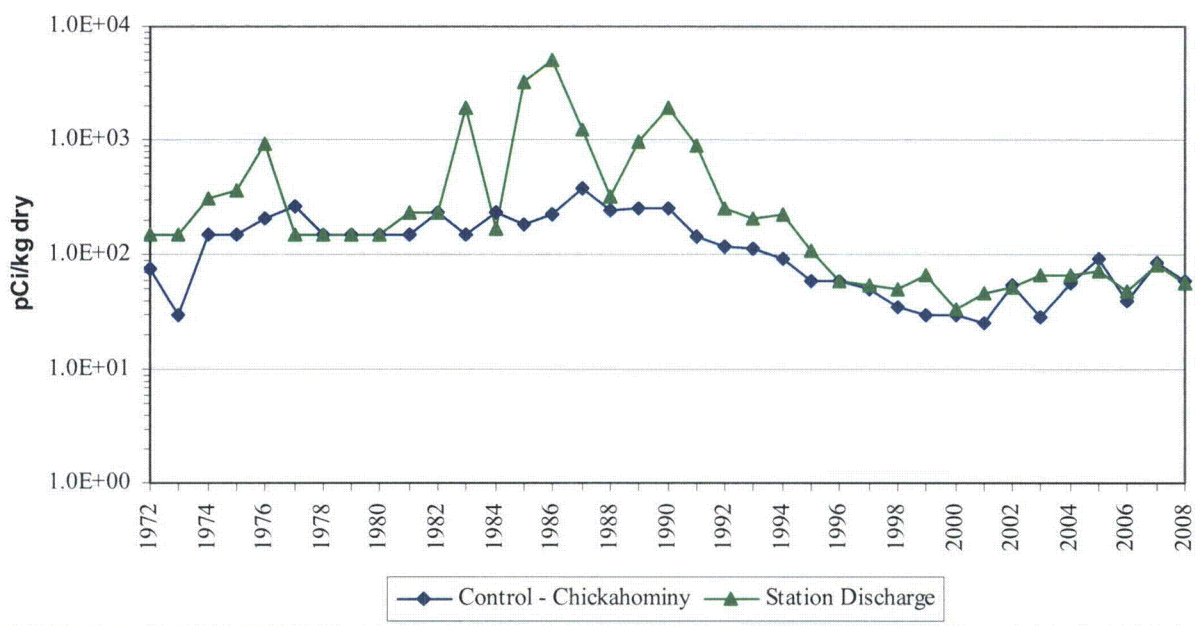
Silt is sampled to evaluate any buildup of radionuclides in the environment due to the operation of the station. Sampling of this pathway provides a good indication of the dispersion effects of effluents to the river. Buildup of radionuclides in silt could indirectly lead to increasing radioactivity levels in clams, oysters, crabs and fish.

Samples of silt are collected from two locations, one upstream and one downstream of the station. The results of the gamma spectroscopy analyses are presented in Table 3-10. Trend graphs of cobalt-60 and cesium-137 in silt appear in Figures 4-4 and 4-5.

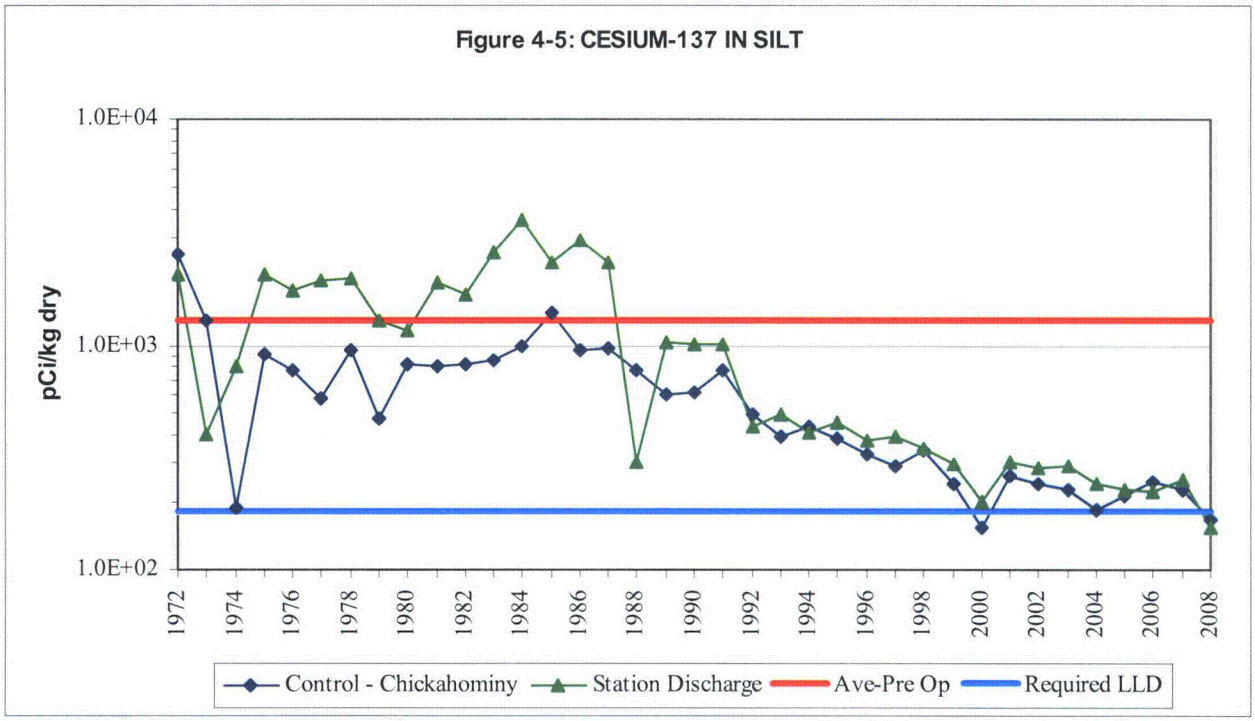
Historically, cobalt-60 has been detected in samples obtained from the indicator location (SD). Cobalt-60 has not been detected since 2003.

Cesium-137 was detected, as expected, in both the control and indicator samples. The levels detected indicate a continual decreasing trend seen for over a decade. The detection of Cs-137 in both the control and indicator samples and decreasing levels indicate that the presence of Cs-137 is the result of accumulation and runoff into the river of residual weapons testing fallout. Its global presence has been well documented. During the pre-operational period, Cs-137 was detected in most silt samples with an average concentration as indicated in Figure 4-5. In 2008, cesium-137 was detected with an average indicator location concentration of 154 pCi/kg and an average control location concentration of 167 pCi/kg. These activities continue to represent fallout from nuclear weapons testing. Both indicator and control cesium-137 activities trend closely as shown in Figure 4-5.

Figure 4-4: COBALT-60 IN SILT



Chickahominy had detectable activity in 1982 and 1984 through 1994. Other years were <MDC, Minimum Detectable Concentration. Station Discharge was <MDC activity 1996 through 1998 and 2004 through 2008.



4.10 Shoreline Sediment

Shoreline sediment, unlike river silt, may provide a direct dose to humans. Buildup of radionuclides along the shoreline may provide a source of direct exposure for those using the area for commercial and recreational uses. The results are presented in Table 3-11.

The naturally occurring radionuclides potassium-40 and thorium-228 were detected at concentrations equivalent to normal background activities. The activities of these radionuclides indicate a steady trend. There were no radionuclides attributable to the operation of the station found in any shoreline sediment samples.

4.11 Fish

The radioactivity measured in fish sampled from the station discharge canal and analyzed by gamma spectroscopy is presented in Table 3-12. These results are the same as those seen over the last decade. No activity was observed in this media except for naturally occurring potassium-40.

4.12 Oysters

Oysters are collected from two different locations. The results of the oyster analyses are presented in Table 3-13.

There were no gamma emitting radionuclides detected in oysters sampled except for naturally occurring potassium-40. No station related radioactivity has been detected in this media since 1991. The absence of station related radionuclides is attributable to the replacement of steam generators in 1982 and past improvements made to liquid effluent treatment systems.

4.13 Clams

Clams are analyzed from four different locations. The results of the gamma spectroscopy analyses are presented in Table 3-14. Like oysters, no station related radioactivity was detected. Naturally occurring potassium-40 was detected.

4.14 Crabs

A crab sample was collected in June from the station discharge canal and analyzed by gamma spectroscopy. The results of the analysis are presented in Table 3-15. Other than naturally occurring potassium-40, no other gamma emitting radionuclides were detected in the sample. This is consistent with pre-operational data and data collected over the past decade.

5. PROGRAM EXCEPTIONS

There were two REMP exceptions for scheduled sampling and analysis during 2008.

The I-131 minimum detectable concentration (MDC) was 1.02 pCi/L in the January Colonial Parkway milk sample. This concentration is greater than the lower limit of detection (LLD) concentration of 1.0 pCi/L. Although an MDC is a posteriori measurement, Surry Power Station requires that this value be less than or equal to the required LLD. This ensures that REMP samples are analyzed to required program elements.

During the March clam sampling campaign, clams were not found at the Hog Island Point sample location. An alternate sampling location, Jamestown Island, was selected and sampled throughout 2008.

6. CONCLUSIONS

The results of the 2008 Radiological Environmental Monitoring Program for Surry Power Station have been presented in previous sections. This section presents conclusions for each pathway.

- **Direct Radiation Exposure Pathway** - Control and indicator location averages continue to indicate a steady relationship. The dose trend of the new type TLD will continue to be monitored and evaluated.

- **Airborne Exposure Pathway** - Analysis of charcoal cartridge samples for radioiodines indicated no positive activity was detected. Quarterly gamma isotopic analyses of the composite particulate samples identified only naturally occurring beryllium-7. Air particulate gross beta concentrations at all of the indicator locations for 2008 trend well with the control location.

- **Milk** - Milk samples are an important indicator measuring the effect of radioactive iodine and radionuclides in airborne releases. Cesium-137 and iodine-131 were not detected in any of the thirty-six samples. Naturally occurring potassium-40 was detected at a similar level when compared to the average of the previous year.

  Strontium-89 was detected in the 2nd and 3rd quarter samples and strontium-90 was detected in 1st and 3rd quarter samples this year. The 2nd and 3rd quarter sample analyses for strontium-89 and strontium-90 are questionable due to probable laboratory contamination issues during sample preparation. In the 1st quarter, strontium-90 was detected at a concentration of 1.10 pCi/L. Strontium-90 is not a component of station effluents, but rather, a product of nuclear weapons testing fallout.

- **Food Products** - As expected, naturally occurring potassium-40 was detected in all three samples. In the past, cesium-137 has occasionally been detected in these samples and is attributable to global fallout from past nuclear weapons testing. Cesium-137 was not detected in any of the three samples collected in 2008.

- **Well Water** - Well water samples were analyzed and the analyses indicated that there were no man-made radionuclides present. This trend is consistent throughout the monitoring period. No radioactivity attributable to the operation of the station was identified.

- **River Water** - All river water samples were analyzed for gamma emitting radionuclides. Only naturally occurring potassium-40 was detected in twelve of twenty-four samples. Tritium was not detected at levels exceeding the lower limit of detection for any samples in 2008.

- **Silt** - Cesium-137 was detected in both the control and indicator samples. The presence of Cs-137 is attributable to residual weapons testing fallout; its presence has been well documented. Cobalt-60 has not been detected since 2003.

- **Shoreline Sediment** - Naturally occurring radionuclides were detected at concentrations equivalent to normal background activities. There were no radionuclides attributable to the operation of Surry Power Station found in any sample.

Aquatic Biota

- **Fish** - As expected, naturally occurring potassium-40 was detected in all four samples. There were no other gamma emitting radionuclides detected in any of the fish samples.

- **Oysters and Clams** – Other than naturally occurring potassium-40, there were no other gamma emitting radionuclides detected in any of the oyster or clam samples.

- **Crabs** – Naturally occurring potassium-40 was detected. No other gamma emitting radionuclides were detected.

REFERENCES

References

1. NUREG-0472, "Radiological Effluent Technical Specifications for PWRs", Draft Rev. 3, March 1982.

2. United States Nuclear Regulatory Commission Regulatory Guide 1.109, Rev. 1, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10CFR50, Appendix I", October 1977.

3. United States Nuclear Regulatory Commission, Regulatory Guide 4.8 "Environmental Technical Specifications for Nuclear Power Plants", December 1975.

4. United States Nuclear Regulatory Commission Branch Technical Position, "Acceptable Radiological Environmental Monitoring Program", Rev. 1, November 1979.

5. Dominion, Station Administrative Procedure, VPAP-2103S, "Offsite Dose Calculation Manual (Surry)".

6. Virginia Electric and Power Company, Surry Power Station Technical Specifications, Units 1 and 2.

7. HASL-300, Environmental Measurements Laboratory, "EML Procedures Manual," 27th Edition, Volume 1, February 1992.

8. NUREG/CR-4007, "Lower Limit of Detection: Definition and Elaboration of a Proposed Position for Radiological Effluent and Environmental Measurements," September 1984.

APPENDICES

APPENDIX A: LAND USE CENSUS

Year 2008

*LAND USE CENSUS**

Surry Power Station, Surry County, Virginia

January 1 to December 31, 2008 Page 1 of 1

Sector	Direction	Nearest Resident	Nearest Garden**	Nearest Cow	Nearest Goat
A	N	4.1 @ 10°	(a)	(a)	(a)
B	NNE	1.9 @ 32°	1.9 @ 32°	(a)	(a)
C	NE	4.7 @ 35°	4.9 @ 56°	(a)	(a)
D	ENE	(a)	(a)	(a)	(a)
E	E	(a)	(a)	(a)	(a)
F	ESE	(a)	(a)	(a)	(a)
G	SE	(a)	(a)	(a)	(a)
H	SSE	3.1 @ 149°	(a)	(a)	(a)
J	S	1.7 @ 181°	1.8 @ 183°	(a)	(a)
K	SSW	2.3 @ 212°	4.3 @ 193°	4.8 @ 200°	(a)
L	SW	2.3 @ 221°	3.6 @ 223°	(a)	(a)
M	WSW	0.4 @ 244°	3.6 @ 245°	(a)	(a)
N	W	3.1 @ 260°	3.4 @ 260°	(a)	(a)
P	WNW	4.9 @ 283°	(a)	(a)	(a)
Q	NW	4.6 @ 321°	(a)	(a)	(a)
R	NNW	3.8 @ 338°	4.4 @ 334°	3.7 @ 336°	(a)

* *Locations are listed by miles and degrees heading relative to true north from center of Unit #1 Containment.*
** *Area greater than 50 m^2 and contains broadleaf vegetation.*
(a) None

APPENDIX B: SUMMARY OF INTERLABORATORY COMPARISONS

YEAR 2008

INTRODUCTION

This appendix covers the Interlaboratory Comparison Program (ICP) of GEL Laboratories LLC (GEL). GEL uses QA/QC samples provided by Analytics, Inc., Environmental Resource Associates (ERA) and the Mixed Analyte Performance Evaluation Program (MAPEP) to monitor the quality of analytical processing associated with the REMP. Each provider has a documented Quality Assurance program and the capability to prepare Quality Control materials traceable to the National Institute of Standards and Technology (NIST). The providers supply the samples to GEL, and upon receipt, the laboratory performs the analyses in a normal manner. The results are then reported to the provider for evaluation. The suite of QA/QC samples is designed to provide sample media and radionuclide combinations that are offered by the providers and included in the REMP and typically includes:

- milk for gamma nuclides and low-level iodine-131 analyses,
- milk for Sr-89 and Sr-90 analyses,
- water for gamma nuclides, low-level iodine-131, and gross beta analyses,
- water for tritium, Sr-89, and Sr-90 analyses,
- cartridge for I-131 analyses,
- air filter for gamma nuclide, gross beta, and Sr-90 analyses.

The accuracy of each result reported to Analytics, Inc is measured by the ratio of GEL's result to the known value. Accuracy for all other results is based on statistically derived acceptance ranges calculated by the providers. An investigation is undertaken whenever the ratio or reported result fell outside of the acceptance range.

RESULTS

The GEL ICP results are included in the following tables for the first through the fourth quarters of 2008. Nine results did not meet the acceptance criteria and are discussed as follows.

• 1st quarter milk - The root cause of the Sr-90 failure was determined to be method inaccuracies when using a small sample volume. The Sr-90 data over the past 2.5 years was evaluated using average relative bias and relative precision statistics as outlined in ANSI N13.30. The average relative bias over this period is 0.0230 which is an excellent average relative bias. The relative precision is within the recommended 0.40 range at 0.2325. This indicates the method is in control. The normal procedure utilizes 500 - 800 mL of sample for analysis resulting in a lower detection limit and a lower uncertainty when compared to the analysis of the cross check samples normally utilizing 200 mL of sample due to limited sample volume.

• 1st quarter water - The nickel-63 failure was attributed to an unusually low gravimetric yield. Results back to the year 2000 were reviewed with no other failures for this matrix identified. The carrier was re-standardized and the sample was re-analyzed with acceptable results. No further actions needed.

• 2nd quarter milk – The Sr-89 result fell below the acceptance criteria. All data were reviewed and no errors are apparent. A batch duplicate was also analyzed with this sample and its results fall within the acceptance criteria. All other quality control criteria were also met. No further investigation will be performed.

• 2nd quarter water - The root cause of the gamma emitter (Ba-133, Cs-134, Cs-137, Co-60, Zn-65) failures was attributed to an incorrect dilution. The samples are received as concentrates and must be diluted prior to preparation. Per the instructions, the samples should have been diluted to a final volume of 2 liters but were diluted to 4 liters instead. All instructions are now scanned by the Quality Assurance Officer and emailed to the laboratory Group Leader when the samples are logged. The instructions are also stored in a location accessible to all laboratory personnel.

• 4th quarter water - The Cs-137 result fell just above the acceptance criteria. All data was reviewed and no errors were apparent. A batch duplicate was also analyzed with this sample and its results fall within the acceptance criteria. All other quality control criteria were also met. A remedial sample was performed and the results fell within the acceptance range.

2007 Interlaboratory Comparison Data

The 2007 Annual Radiological Environmental Operating Report was submitted documenting seven analyses that did not pass the acceptance criteria of the AREVA NP Inc. Environmental Laboratory Analytics Intercomparison Program. The unsuccessful analyses occurred in the 2nd and 4th quarters. AREVA NP submitted Condition Reports (CR) 08-02, 08-10 and 08-11 to document the unsuccessful analyses. The CRs have since been closed and are summarized as follows.

CR 08-02 documented the 2nd quarter low biased analyses for cerium-141 in the milk matrix and chromium-51 in the particulate filter matrix. The cause for the cerium-141 low bias was determined to be poor counting statistics due to a delay in sample analysis. The sample decayed through two half-lives before analysis. Contributing factors included laboratory staff turn-over, sample back log, failure to initially identify the sample as a quality control sample and analyze appropriately, and failure of laboratory supervision to identify the problem in a

reasonable time frame. Corrective actions included laboratory staff retraining and elimination of sample back log.

The cause for the chromium-51 low bias was determined to be a sample geometry issue. Upon examination, it was discovered that the particulate filter did not completely lay flat in the sample holder. The corrective action taken was to modify the sample holder to ensure the sample laid completely flat. A subsequent filter analysis with the modified holder performed in the 2nd quarter of 2008 passed the Analytics Intercomparison Program criteria.

CR 08-10 documents the 4th quarter low biased analyses for strontium-89 and strontium-90 in the particulate filter matrix. The bias was caused by a radiotracer sample volume error that led to an incorrect determination of chemical recovery. A sample volume of 2 mL was used while a sample volume of 1 mL is hard coded in the laboratory data management system. Corrective actions included restricting the radiotracer volume to 1 mL, removing the hard coded 1 mL sample volume from the laboratory data management system, and requiring manual entry of tracer sample volume by the laboratory technician into the laboratory data management system.

CR 08-11 documents the 4th quarter low biased analyses for iron-59, zinc-65 and cobalt-60 in the particulate filter matrix. The same issue and corrective action described above in CR 08-02 apply to CR 08-11.

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1st Quarter 2008	Date	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Evaluation (c)
	2/22/2008	Filter	Cs-134	Bq	1.97	2.52	A
			Cs-137	Bq	2.47	2.70	A
			Co-57	Bq	3.30	3.55	A
			Co-60	Bq	1.16	1.31	A
			Mn-54	Bq	-0.0113	0.00	A
			Zn-65	Bq	1.92	2.04	A
	3/6/2008	Water	Cs-134	Bq/L	0.108	0	A
			Cs-137	Bq/L	0.0648	0	A
			Co-57	Bq/L	23.2	22.8	A
			Co-60	Bq/L	8.41	8.4	A
			Mn-54	Bq/L	483	472	A
			Zn-65	Bq/L	17.4	16.3	A
	3/12/2008		Am-241	Bq/L	1.27	1.23	A
	3/18/2008	Filter	Am-241	Bq	0.123	0.158	A
	3/20/2008	Milk	I-131	pCi/L	61.8	60	A
			Ce-141	pCi/L	255	249	A
			Cr-51	pCi/L	331	359	A
			Cs-134	pCi/L	107	125	A
			Cs-137	pCi/L	151	146	A
			Co-58	pCi/L	72.9	70.8	A
			Mn-54	pCi/L	98.7	94.2	A
			Fe-59	pCi/L	106	102	A
			Zn-65	pCi/L	142	137	A
			Co-60	pCi/L	240	236	A
			Sr-89	pCi/L	96.7	95.8	A
			Sr-90	pCi/L	9.32	12.9	U
	3/20/2008	Water	I-131	pCi/L	77.3	70.4	A
			Ce-141	pCi/L	191.3	198	A
			Cr-51	pCi/L	279.2	286	A
			Cs-134	pCi/L	96.1	99.7	A
			Cs-137	pCi/L	114.8	116	A
			Co-58	pCi/L	58.9	56.4	A
			Mn-54	pCi/L	80.4	75	A
			Fe-59	pCi/L	86.1	81.4	A
			Zn-65	pCi/L	110.7	109	A
			Co-60	pCi/L	194.8	188	A
			Sr-90	Bq/L	12.0	11.4	A
	3/20/2008	Cartridge	I-131	pCi	63	60	A
	3/22/2008	Filter	Gr-Beta	Bq	0.321	0.286	A
			Gr-Alpha	Bq	0.143	0.348	A
	3/27/2008	Water	Fe-55	Bq/L	46.9	36.5	A
			Ni-63	Bq/L	40.3	30.7	U
	3/28/2008	Filter	Sr-90	Bq	1.48	1.548	A

Footnotes are on page 4 of 4.

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2nd Quarter 2008	Date	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Evaluation (c)
	4/15/2008	Water	I-131	pCi/L	28.4	28.7	A
	5/8/2008	Water	Gr-Beta	pCi/L	46.3	51.4	A
			Gr-Alpha	pCi/L	56.0	50.8	A
			Am-241	pCi/L	95	90.9	A
			Cs-134	pCi/L	693	751	A
			Cs-137	pCi/L	1970	1990	A
			Co-60	pCi/L	1480	1420	A
			Mn-54	pCi/L	<9.32	0	A
			Zn-65	pCi/L	800	694	A
	5/9/2008	Water	Sr-89	pCi/L	57.8	60.4	A
			Sr-90	pCi/L	30.7	39.2	A
	5/13/2008	Water	Ba-133	pCi/L	17.2	58.3	U
			Cs-134	pCi/L	11.2	46.6	U
			Cs-137	pCi/L	24.8	102	U
			Co-60	pCi/L	20.6	76.6	U
			Zn-65	pCi/L	31.8	106	U
			Sr-90	pCi/L	517	512	A
	5/19/2008	Water	H-3	pCi/L	12500	12000	A
	6/19/2008	Water	I-131	pCi/L	40.9	45.3	A
			Ce-141	pCi/L	222	237	A
			Cr-51	pCi/L	212	188	A
			Cs-134	pCi/L	100	104	A
			Cs-137	pCi/L	169	158	A
			Co-58	pCi/L	85.6	84.2	A
			Mn-54	pCi/L	193	184	A
			Fe-59	pCi/L	129	125	A
			Zn-65	pCi/L	194	172	A
			Co-60	pCi/L	155	142	A
	6/20/2008	Water	H-3	pCi/L	25800	25800	A
	6/19/2008	Cartridge	I-131	pCi	87.5	84.5	A
	6/19/2008	Milk	I-131	pCi/L	72.9	71.4	A
			Ce-141	pCi/L	166	174	A
			Cr-51	pCi/L	151.5	138	A
			Cs-134	pCi/L	73.8	76.7	A
			Cs-137	pCi/L	122	116	A
			Co-58	pCi/L	64.4	61.9	A
			Mn-54	pCi/L	153	135	A
			Fe-59	pCi/L	92	91.7	A
			Zn-65	pCi/L	128	127	A
			Co-60	pCi/L	103	104	A
			Sr-89	pCi/L	61.14	85	U
			Sr-90	pCi/L	11.82	14.5	A

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4th Quarter 2008	Date	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Evaluation (c)
	There were no samples processed in the 3rd quarter						
	10/15/2008	Water	I-131	pCi/L	29.2	28.1	A
	10/22/2008	Water	Am-241	Bq/L	-0.0003	0	A
			Cs-134	Bq/L	18.9	19.5	A
			Cs-137	Bq/L	23.0	23.6	A
			Co-57	Bq/L	0.01	0	A
			Co-60	Bq/L	11.4	11.7	A
			Mn-54	Bq/L	13.4	13.7	A
			Zn-65	Bq/L	17.0	17.1	A
			Fe-55	Bq/L	44.8	46.2	A
			Ni-63	Bq/L	-0.2	0	A
			Sr-90	Bq/L	6.40	6.45	A
	10/22/2008	Filter	Gr-Beta	Bq	0.564	0.525	A
			Gr-Alpha	Bq	0.003	0	A
			Am-241	Bq	-0.0003	0.0	A
			Cs-134	Bq	2.727	2.63	A
			Cs-137	Bq	0.024	0.00	A
			Co-57	Bq	1.653	1.50	A
			Co-60	Bq	0.051	0.00	A
			Mn-54	Bq	2.87	2.64	A
			Zn-65	Bq	1.063	0.94	A
			Sr-90	Bq	1.08	1.12	A
	10/30/2008	Milk	I-131	pCi/L	69.1	67.9	A
			Ce-141	pCi/L	159	161	A
			Cr-51	pCi/L	392	421	A
			Cs-134	pCi/L	213	232	A
			Cs-137	pCi/L	154	162	A
			Co-58	pCi/L	167	179	A
			Mn-54	pCi/L	172	166	A
			Fe-59	pCi/L	157	144	A
			Zn-65	pCi/L	327	319	A
			Co-60	pCi/L	227	234	A
			Sr-89	pCi/L	63.1	73.9	A
			Sr-90	pCi/L	9.25	11	A
	10/30/2008	Water	I-131	pCi/L	115	105	A
			Ce-141	pCi/L	114	107	A
			Cr-51	pCi/L	317	279	A
			Cs-134	pCi/L	147	154	A
			Cs-137	pCi/L	116	107	A
			Co-58	pCi/L	119	118	A
			Mn-54	pCi/L	126	110	A
			Fe-59	pCi/L	109	95.6	A
			Zn-65	pCi/L	228	211	A
			Co-60	pCi/L	155	155	A
	10/30/2008	Cartridge	I-131	pCi	93.8	89.1	A

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4th Quarter 2008	Date	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Evaluation (c)
	11/1/2008	Water	H-3	pCi/L	2100	2220	A
	11/8/2008	Water	Sr-89	pCi/L	44.3	48.7	A
			Sr-90	pCi/L	32.2	33.6	A
	11/11/2008	Water	Ba-133	pCi/L	60.7	63.5	A
			Cs-134	pCi/L	28.1	25.6	A
			Cs-137	pCi/L	31.5	25.6	U
			Co-60	pCi/L	46.7	49.1	A
			Zn-65	pCi/L	77.2	68.6	A
	11/20/2008	Water	Ba-133	pCi/L	72.6	73.1	A
			Cs-134	pCi/L	72.8	64.9	A
			Cs-137	pCi/L	184	176	A
			Co-60	pCi/L	87.3	84.4	A
			Zn-65	pCi/L	354	327	A
	11/21/2008	Water	Gr-Beta	pCi/L	28.8	38	A
			Gr-Alpha	pCi/L	17.6	26.9	A
			Am-241	pCi/L	174	161	A
			Cs-134	pCi/L	1250	1240	A
			Cs-137	pCi/L	1270	1270	A
			Co-60	pCi/L	1160	1130	A
			Mn-54	pCi/L	<9.12	0	A
			Zn-65	pCi/L	1070	987	A
			Sr-90	pCi/L	678	655	A
			H-3	pCi/L	27600	28800	A
	12/11/2008	Water	I-131	pCi/L	63.7	64.1	A
			Ce-141	pCi/L	224	224	A
			Cr-51	pCi/L	278	288	A
			Cs-134	pCi/L	159	157	A
			Cs-137	pCi/L	148	140	A
			Co-58	pCi/L	126	122	A
			Mn-54	pCi/L	192	178	A
			Fe-59	pCi/L	128	117	A
			Zn-65	pCi/L	238	214	A
			Co-60	pCi/L	168	156	A
	12/11/2008	Milk	I-131	pCi/L	76.6	79.9	A
			Ce-141	pCi/L	179	191	A
			Cr-51	pCi/L	248	246	A
			Cs-134	pCi/L	128	134	A
			Cs-137	pCi/L	123	120	A
			Co-58	pCi/L	101	104	A
			Mn-54	pCi/L	151	152	A
			Fe-59	pCi/L	103	100	A
			Zn-65	pCi/L	193	183	A
			Co-60	pCi/L	139	133	A
			Sr-89	pCi/L	85.5	91.9	A
			Sr-90	pCi/L	10.9	12.6	A
	12/11/2008	Cartridge	I-131	pCi	56.5	53.2	A

(a) GEL reported result.
(b) Reference value.
(c) Evaluation: A= Acceptable. U= Unacceptable.