Southern Nuclear

Cheryl A. Gayheart
Regulatory Affairs Director

40 Inverness Center Parkway
Post Office Box 1295
Birmingham, AL 35242
205 992 5316 tel
205 992 7601 fax

cagayhea@southernco.com

MAR 2 9 2018

Docket No.: 50-321
50-336

NL-18-0421

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

Edwin I. Hatch Nuclear Plant
Results of Augmented Radiological Environmental
Monitoring Program for the Years 2008 through 2017

Ladies and Gentlemen:

By letter to the NRC dated January 7, 1987, Georgia Power Company provided a description of an augmented Radiological Environmental Monitoring Program that was initiated following the release of radioactive water from the spent fuel storage pools at the Edwin I. Hatch Nuclear Plant to an onsite swamp in December 1986. Accordingly, the enclosed provides the latest summary of the program results for the years 2008 through 2017. The summary indicates that radioactivity levels in the swamp have continued to decrease to background levels. Monitoring of the swamp is being terminated with the submittal of this report.

This letter contains no NRC commitments. If you have any questions, please contact Ken McElroy at 205.992.7369.

Respectfully submitted,

Cheryl A. Gayheart
Regulatory Affairs Director

CAG/TLE/cbg

Enclosure: Assessment of the Results of Augmented Radiological Environmental Monitoring Program for the Years 2008 through 2018

Cc: Regional Administrator, Region II
NRR Project Manager – Hatch
Senior Resident Inspector – Hatch
RTYPE: CHA02.004

Edwin I. Hatch Nuclear Plant
Results of Augmented Radiological Environmental
Monitoring Program for the Years 2008 through 2017

Enclosure

Assessment of the Results of Augmented Radiological Environmental Monitoring Program for the Years 2008 through 2018

Enclosure

Assessment of the Results of Augmented Radiological Environmental Monitoring Program for the Years 2008 through 2017

On December 3 and 4, 1986, an event occurred at the Hatch Nuclear Plant (HNP) in which radioactive water from the spent fuel storage pools (SFSP) was released into the onsite swamp east of the cooling towers. As a result of this event, Georgia Power Company (GPC) initiated an augmented Radiological Environmental Monitoring Program concerning the swamp on December 15, 1986. This program, as described in a letter to the NRC dated January 7, 1987, calls for a periodic assessment to the program (including termination) as a result of the assessment.

Past assessments of the results of this program were provided to the NRC by letter as given below.

Period	**Date of Letter**
12/15/86 through 1987	March 31, 1988
1988	April 3, 1989
1989 – 1991	March 31, 1992
1992 – 1994	March 28, 1995
1995 – 1999	March 3, 2000
2000 – 2007	March 28, 2008

This report provides the program's result for the years 2008 through 2017, an assessment of those results, and the program modifications as a result thereof.

The program's current commitment calls for biennial collection of "muck" samples at locations A, PL-2, PL-3, MBC and a background location for gamma isotopic analysis. All of the sampling locations, except for the background location, are shown in Figure 1. The biennial collections were made on September 8, 2009, September 6, 2011, October 28, 2013, October 15, 2015, and September 5, 2017. Three samples were collected at location A and two at each of the other locations (including the upstream background location). The so-called muck samples are composed of substantial quantities of root and other organic material, as well as mud and sediment. Usually, each of the sampling locations are underwater for multiple weeks each year due to flood conditions. All laboratory analyses were performed at the GPC Environmental Laboratory in Smyrna, Georgia.

Sample location A is situated in the swamp pond in a representative location to the point where the water from the SFSP entered the swamp. Locations PL-2 and PL-3 lie along the plant's eastern property line. Location PL-2 lies on the left bank of Bay Creek. Bay Creek provides a drain for the swamp; the mouth of Bay Creek is about three-quarters of a mile east of the plant's eastern property line. Location MBC lies along the right bank of Bay Creek adjacent to its entry into the Altamaha River.

The background location, like the swamp, lies in the floodplain of the Altamaha River but is positioned approximately 0.8 miles upstream of the plant's discharge and on the opposite side of the river.

The average manmade radionuclide activity at each sample location from 1987 through 2017 is provided in Table 1. Plots of the annual averages of the activities for Co-60 and Cs-137 are presented in Figure 2 and Figure 3, respectively. No other manmade radionuclides have been detected in samples collected from the onsite swamp since 1989. During this reporting period, only Co-60 and Cs-137 were identified. Cs-134 (which has a 2.1-year radiological half-life) has not been identified since 1999 at location A and has not been found since 1990 in the other sampling locations.

The activities found in the samples collected at location A were consistently higher than that of those collected elsewhere; however, there has been an evident downward trend present in the data since the previous report, indicating that weathering and decay are resulting in decreasing activity concentrations. Figure 2 shows the Co-60 activity at location A, which dropped to below detection limit during the 2017 sampling event. No other locations showed activity above detection limit for Co-60. Figure 3 shows Cs-137 levels at each location. The figure illustrates that while Cs-137 activity levels at location A were consistently above background over the past two decades, the values have been decreasing and ultimately returned to below background with this last sampling event.

Given the evident downward trends and most recent samples matching background levels, sample collection from the onsite swamp will be terminated and this will be the last report submitted under the Hatch Augmented REMP program. The existing REMP sampling program (air, water, sediment, etc.) continues to indicate further justification for terminating the Augmented REMP program, given that no adverse effects have been observed in the surrounding environment at HNP. The results from the REMP sampling events are submitted in the Annual Radiological Environmental Operating Report (AREOR).

Table 1

Average Activity of Manmade Radionuclides Found in Muck Samples Collected at Select Locations 1987 through 2017 (pCi/kg dry)

Location	Nuclide	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Background	Cs-137	342	369	708	280	418	428	335	452	302	172	170	178	178
	Eu-154	0	0	0	0	0	0	0	0	0	0	0	0	0
A	Mn-54	1684	183	513	0	0	0	0	0	0	0	0	0	0
	Fe-59	430	0	0	0	0	0	0	0	0	0	0	0	0
	Co-58	270	0	0	0	0	0	0	0	0	0	0	0	0
	Co-60	6202	3628	4627	2567	1312	1733	961	835	549	570	1100	322	455
	Zn-65	3118	631	0	0	0	0	0	0	0	0	0	0	0
	Sb-125	658	0	0	0	0	0	0	0	0	0	0	0	0
	Cs-134	10892	3642	3153	1400	576	718	326	229	79	83	0	0	0
	Cs-137	19813	10708	12790	7667	5010	9763	4073	3855	2310	2767	1610	1580	5897
PL-2	Co-60	0	27	0	0	49	0	0	0	0	0	0	0	0
	Cs-134	194	67	0	145	0	0	0	0	0	0	0	0	0
	Cs-137	1457	927	558	1450	1205	916	582	650	318	93	211	394	230
PL-3	Mn-54	24	0	0	0	0	0	0	0	0	0	0	0	0
	Cs-134	340	91	84	0	0	0	0	0	0	0	0	0	0
	Cs-137	1488	862	76	870	967	288	128	134	507	0	0	0	54
MBC	Mn-54	47	0	0	0	0	0	0	0	0	0	0	0	0
	Co-60	68	34	0	34	48	70	90	134	43	0	131	110	111
	Zn-65	95	0	0	0	0	0	0	0	0	0	0	0	0
	Cs-134	331	224	0	0	0	0	0	0	0	0	0	0	0
	Cs-137	807	556	419	280	298	304	377	266	260	290	193	232	221

Note: Periods for which no detectable measurements were observed are listed in the table as zero.

Table 1 (continued)

Average Activity of Manmade Radionuclides Found in Muck Samples Collected at Select Locations 1987 through 2017 (pCi/kg dry)

Location	Nuclide	2000	2001	2002	2003	2005	2007	2009	2011	2013	2015	2017
Background	Cs-137	132	178	174	204	128	163	132	132	132	132	132
	Eu-154	0	0	0	0	0	0	0	0	0	0	0
A	Mn-54	0	0	0	0	0	0	0	0	0	0	0
	Fe-59	0	0	0	0	0	0	0	0	0	0	0
	Co-58	0	0	0	0	0	0	0	0	0	0	0
	Co-60	317	243	270	196	249	312	215	155	176	134	0
	Zn-65	0	0	0	0	0	0	0	0	0	0	0
	Sb-125	0	0	0	0	0	0	0	0	0	0	0
	Cs-134	0	0	0	0	0	0	0	0	0	0	0
	Cs-137	1538	1405	2754	1654	1130	1360	1180	1473	917	1243	95
PL-2	Co-60	0	0	0	0	0	0	0	0	0	0	0
	Cs-134	0	0	0	0	0	0	0	0	0	0	0
	Cs-137	249	293	223	240	182	434	268	114	183	175	82
PL-3	Mn-54	0	0	0	0	0	0	0	0	0	0	0
	Cs-134	0	0	0	0	0	0	0	0	0	0	0
	Cs-137	0	34	37	63	29	177	12	37	45	71	62
MBC	Mn-54	0	0	0	0	0	0	0	0	0	0	0
	Co-60	0	0	*	0	0	0	0	0	0	0	0
	Zn-65	0	0	0	0	0	0	0	0	0	0	0
	Cs-134	0	0	0	0	0	0	0	0	0	0	0
	Cs-137	133	89	158	208	92	78	19	71	268	18	29

*One sample showed no detectable activity and the other sample showed 1967 pCi/kg-dry which is thought to be an erroneous value.
Note: Periods for which no detectable measurements were observed are listed in the table as zero.

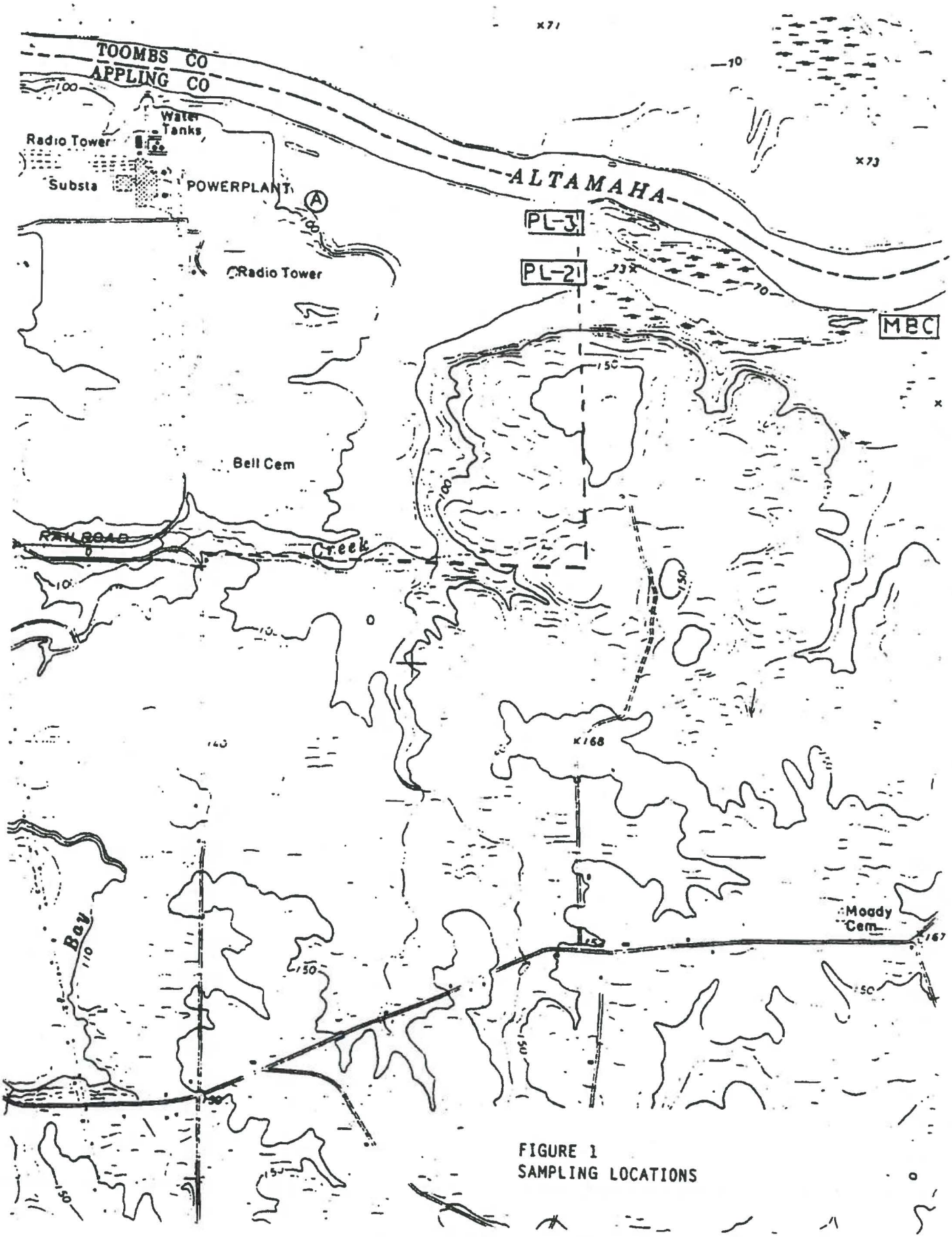
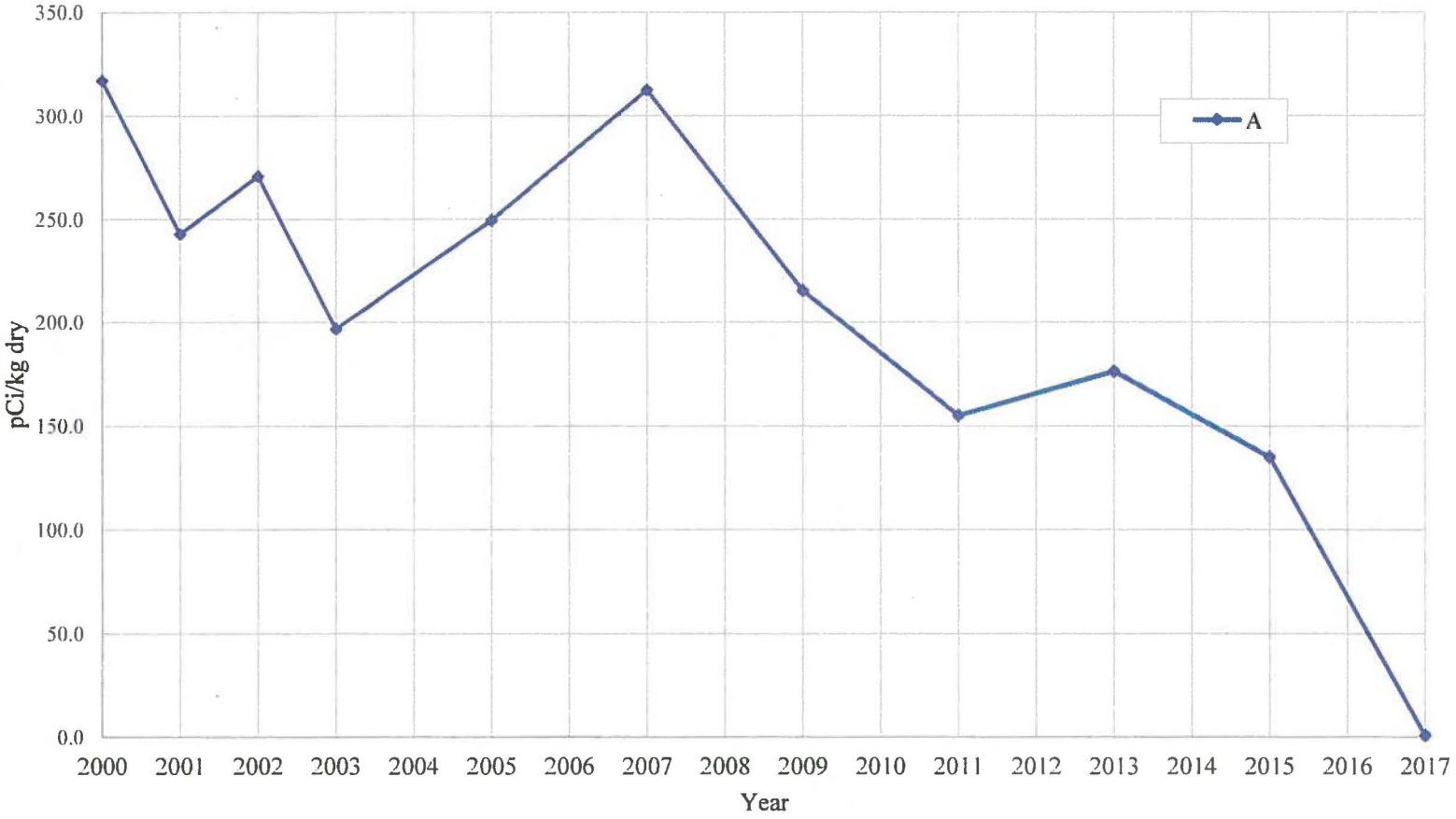


FIGURE 1
SAMPLING LOCATIONS

Figure 2

Co-60 Yearly Average
(Half-life 5.27 years)



Note: Since 2000, Location A was the only sample location at which Co-60 was detected.

Figure 3

Cs-137 Yearly Average
(Half-life 30.17 years)