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March 31, 1992

U.S. Nuclear Regulatory Commission
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Washington, D.C. 20555

PLANT HATCH - UNITS 1, 2
NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
RESULTS OF AUGMENTED RADIOLOGICAL
ENVIRONMENTAL MONITORING PROGRAM FOR 1989 THROUGH 1991

Gentlemen:

Georgia Power Company's (GPC's) letter to the NRC of January 7, 1987, provided a description of an augmented radiological environmental monitoring program that was initiated following the release of radioactive water to the environment from the spent fuel pools at Plant Hatch on December 3, 1986. By GPC's letters of March 31, 1988 and April 3, 1989, the NRC was provided assessments of the results of the augmented radiological environmental monitoring program and modifications to the program as a consequence of such assessments for the periods of December 15, 1986 to the end of 1987, and of calendar year 1988, respectively. Enclosed herein is an assessment of the program results and modifications thereto for the period of calendar years 1989 through 1991.

Please contact this office if you have any questions.

Sincerely,

W. G. Hairston III

W. G. Hairston, III

WHO/ejf

Enclosure: Assessment of Results of the Augmented Radiological
Environmental Monitoring Program for Calendar Years 1989
through 1991 and Modifications Thereto

cc: (See next page.)

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U.S. Nuclear Regulatory Commission

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cc: Georgia Power Company

Mr. H. L. Sumner, General Manager - Nuclear Plant
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Mr. K. Jabbour, Licensing Project Manager - Hatch

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ENCLOSURE

ASSESSMENT OF RESULTS OF THE AUGMENTED RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM FOR CALENDAR YEARS 1989 THROUGH 1991 AND MODIFICATIONS THERETO

As a result of the release of radioactive water from the spill of the spent fuel storage pools (SFSP) which occurred at the Hatch Nuclear Plant (HNP) on December 3, 1986 and of its subsequent entry into the onsite swamp east of the cooling towers, Georgia Power Company (GPC) committed to implement an augmented radiological environmental monitoring program concerning the swamp, effective December 15, 1986, by letter to the NRC dated January 7, 1987. An assessment of the results of this program through 1987 and modifications to the program as a consequence of such assessment were reported to the NRC by letter dated March 31, 1988. The assessment of the program's results for calendar year 1988 and modifications thereto were reported to the NRC by letter of April 3, 1989. Reported herein, in compliance with the commitment made in the assessment for calendar year 1988, are an assessment of the program results for calendar years 1989 through 1991 and modifications thereto.

The committed program for calendar years 1989 through 1991 called for the annual collection of muck and grass samples at Locations A, PL-2, PL-3 and MBC and for the gamma isotopic analysis of each sample. Collections were also made at Locations B and H, and at a background location; a gamma isotopic analysis was also performed on each of these samples. All of these sampling locations except the one for background are shown in Figure 1 (which shows the sampling locations committed to when this augmented monitoring program began in 1986) and/or in Figure 2 (which shows the sampling locations added later).

Location A is situated in the swamp pond adjacent to the point where the water from the SFSP spill entered the swamp. Location B is positioned in an effluent stream from the pond; at the time of the spill it was the only effluent stream from the pond under low water conditions. This stream discharges into a slough which provides an outlet to the Altamaha River. Under high water conditions, Location H would lie along a release pathway from the pond to the slough mentioned above in regard to Location B.

Locations PL-2 and PL-3 lie along the eastern property line of the plant. Location MBC lies along the right bank of Bay Creek adjacent to its entry into the Altamaha River. Bay Creek provides a drain for the swamp; the mouth of Bay Creek is about three quarters of a mile east of the eastern property line. Location PL-2 lies on the left bank of Bay Creek. Each of these locations lies along an effluent path from the swamp under high water conditions. The background location, like the swamp, lies in the floodplain but is positioned upstream of the plant.

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Samples were collected on December 18, 1989, November 26, 1990 and November 4-5, 1991. At each of the locations, except Location A, two muck samples and one or two grass samples were collected. At Location A, three muck samples and one or two grass samples were collected. The muck samples are so called since they are composed of substantial quantities of root and other organic material, as well as mud or sediment. All of the laboratory analyses were performed by GPC's Environmental Laboratory.

Presented in Tables 1, 2 and 3 are the positive readings of the manmade radionuclides found in each of the samples for calendar years 1989, 1990 and 1991, respectively. The average positive readings for calendar years 1987 through 1991 are presented in Tables 4 and 5 for the muck and grass samples respectively.

To provide some perspective to the results for the muck and grass samples, the half life and the LLD nominally achieved by the Environmental Laboratory for each of the radionuclides detected in the various media are presented below.

<u>RADIONUCLIDE</u>	<u>HALF LIFE</u>	<u>MUCK - LLD</u> <u>(pCi/kg dry)</u>	<u>GRASS - LLD</u> <u>(pCi/kg wet)</u>
Mn-54	331 days	20	25
Fe-59	45 days	30	
Co-58	71.4 days	15	
Co-60	5.26 years	30	50
Zn-65	244 days	35	55
Sb-125	2.73 years	50	
Cs-134	2.06 years	30	40
Cs-137	30.2 years	30	40

From examining the results presented in the tables, the following conclusions are made.

The results for the samples collected at Location A continue to dominate those collected at the other locations both in the number of the radionuclides detected and in the levels of these radionuclides; this dominance is less pronounced for the grass samples.

The high variability in the readings of the muck samples as indicated by the results presented in Tables 1, 2 and 3 suggests a lack of uniformity in surface contamination; it also reflects the difficulty in obtaining replicate samples especially at locations (like A) where there is a preponderance of root matter in the soil. Efforts were made in obtaining samples to an average depth of about one inch. The high variability also indicates difficulty in providing estimates of the average values.

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Table 4 shows a generally steady reduction with time for the various levels found in muck samples at Location A due to decay and weathering. The reductions are less pronounced at the other locations. The levels appear to have increased slightly at PL-2 and PL-3.

The only radionuclides found in grass samples since 1988 has been Cs-137. In 1991, all grass samples showed levels near or below that found at the background location.

Because the activity levels in the grass samples have effectively decreased, to background levels, the swamp monitoring program is henceforth modified, so that only muck samples are to be collected annually at locations A, PL-2, PL-3, MBC and at a background location for gamma isotopic analysis; the collections are to be made during the latter four months of the year. In this way, monitoring will continue in the vicinity of the greatest contamination in the swamp, at two points where the contamination begins to spread to unrestricted areas and at a point along an effluent stream which is well into the unrestricted area.

The program results will continue to be assessed triennially. The program will continue to be modified as appropriate; modification includes the option of termination. By April 1 of 1995, the NRC will be informed by written report of the assessment of the program results for the three year period and of any modification to the program as a consequence thereof.

Table 1

Positive Readings for Manmade Radionuclides
Found in Samples Collected on December 18, 1989

<u>Location</u>	<u>Muck Samples</u> (pCi/kg dry)		<u>Grass Samples</u> (pCi/kg wet)
<u>Upstream</u>			
Cs-137	788	627	87
<u>A</u>			
Mn-54		702	324
Co-60	1480	6770	5630
Cs-134	2140	3810	3510
Cs-137	8170	16300	13900
			43
<u>B</u>			
Co-60	81	67	
Cs-134	313	278	
Cs-137	895	897	41
<u>H</u>			
Co-60	61		
Cs-134	339	156	
Cs-137	1390	607	
<u>PL-2</u>			
Cs-137	261	855	63
<u>PL-3</u>			
Cs-134		84	
Cs-137	88	64	
<u>MBC</u>			
Cs-137	599	238	36

Table 2

Positive Readings for Manmade Radionuclides
Found in Samples Collected on November 26, 1990

<u>Location</u>	<u>Muck Samples</u> (pCi/kg dry)			<u>Grass Samples</u> (pCi/kg wet)	
<u>Upstream</u>					
Cs-137	280	280		63	67
<u>A</u>					
Co-60	2200	2500	2000		
Cs-134	1300	1300	1600		
Cs-137	7200	7400	8400	170	150
<u>B</u>					
Co-60	55	81			
Cs-134	90	110			
Cs-137	770	830			46
<u>H</u>					
Cs-134	43				
Cs-137	460	450			47
<u>PL-2</u>					
Cs-134	100	190			
Cs-137	1500	1400		78	74
<u>PL-3</u>					
Cs-137	860	880		170	95
<u>MBC</u>					
Co-60	49	18			
Cs-137	270	290		130	87

Table 3

Positive Readings for Manmade Radionuclides
Found in Samples Collected on November 4-5, 1991

<u>Location</u>	<u>Muck Samples</u> (pCi/kg dry)			<u>Grass Samples</u> (pCi/kg wet)	
<u>Upstream</u>					
Cs-137	533	302		131	51
<u>A</u>					
Co-60	996	1400	1540		
Cs-134	439	594	694		
Cs-137	3760	5240	6030	87	114
<u>B</u>					
Co-60	84	32			
Cs-137	296	258			47
<u>H</u>					
Cs-137	226	45			
<u>PL-2</u>					
Co-60		49			
Cs-137	1140	1270		80	53
<u>PL-3</u>					
Cs-137	941	1010		60	72
<u>MBC</u>					
Co-60	53	44			
Cs-137	256	340		50	69

Table 4

Average of Positive Readings in Muck Samples for
Calendar Years 1987 Through 1991
(pCi/kg dry)

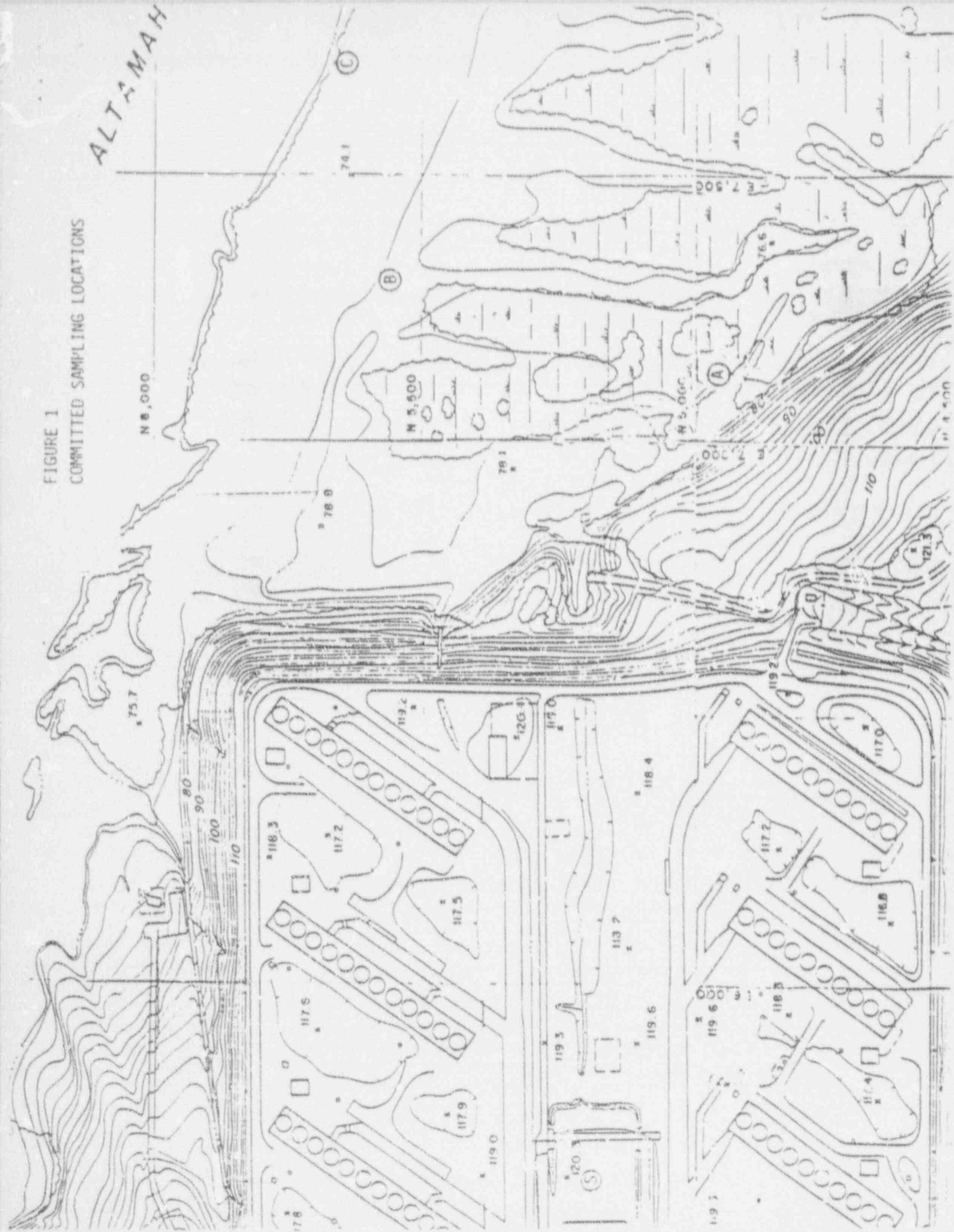
Location	1987	1988	1989	1990	1991
<u>Upstream</u>					
Cs-137	342	369	708	280	418
<u>A</u>					
Mn-54	1684	183	513		
Ce-59	430				
Co-58	270				
Co-60	6202	3628	4627	2567	1312
Zn-65	3118	431			
Sb-125	658				
Cs-134	10892	3642	3153	1400	576
Cs-137	19813	10708	12790	7667	5010
<u>B</u>					
Mn-54	74				
Co-60	168	61	74	68	58
Zn-65	165				
Cs-134	680	218	296	100	
Cs-137	1390	743	896	800	277
<u>H</u>					
Mn-54	23				
Co-60		38	61		
Cs-134	490	264	248	43	
Cs-137	1100	955	999	455	136
<u>PL-2</u>					
Co-60		27			49
Cs-134	194	67		145	
Cs-137	1457	927	558	1450	1205
<u>PL-3</u>					
Mn-54	24				
Cs-134	340	91	84		
Cs-137	1488	862	76	870	976
<u>MBC</u>					
Mn-54	47				
Co-60	68	34		34	48
Zn-65	95				
Cs-134	331	224			
Cs-137	807	556	419	280	298

Table 5

Average of Positive Reading in Grass Samples for
Calendar Years 1987 Through 1991
(pCi/kg wet)

Location	1987	1988	1989	1990	1991
<u>PL-1</u>					
Cs-134		43	87	65	91
Cs-137					
<u>PL-2</u>					
Cs-134	80				
Cs-137	24	103			
<u>PL-3</u>					
Cs-134		184	43	160	100
Cs-137					
<u>H</u>					
Cs-134	83	49			
Cs-137	130	72	41	46	47
<u>MBC</u>					
Cs-134	97				
Cs-137	150	61		47	
<u>PL-2</u>					
Cs-134	17				
Cs-137	88	22	63	76	67
<u>PL-3</u>					
Cs-134	33				
Cs-137	84	45		133	66
<u>MBC</u>					
Cs-134		78			
Cs-137	87	117	36	109	60

FIGURE 1



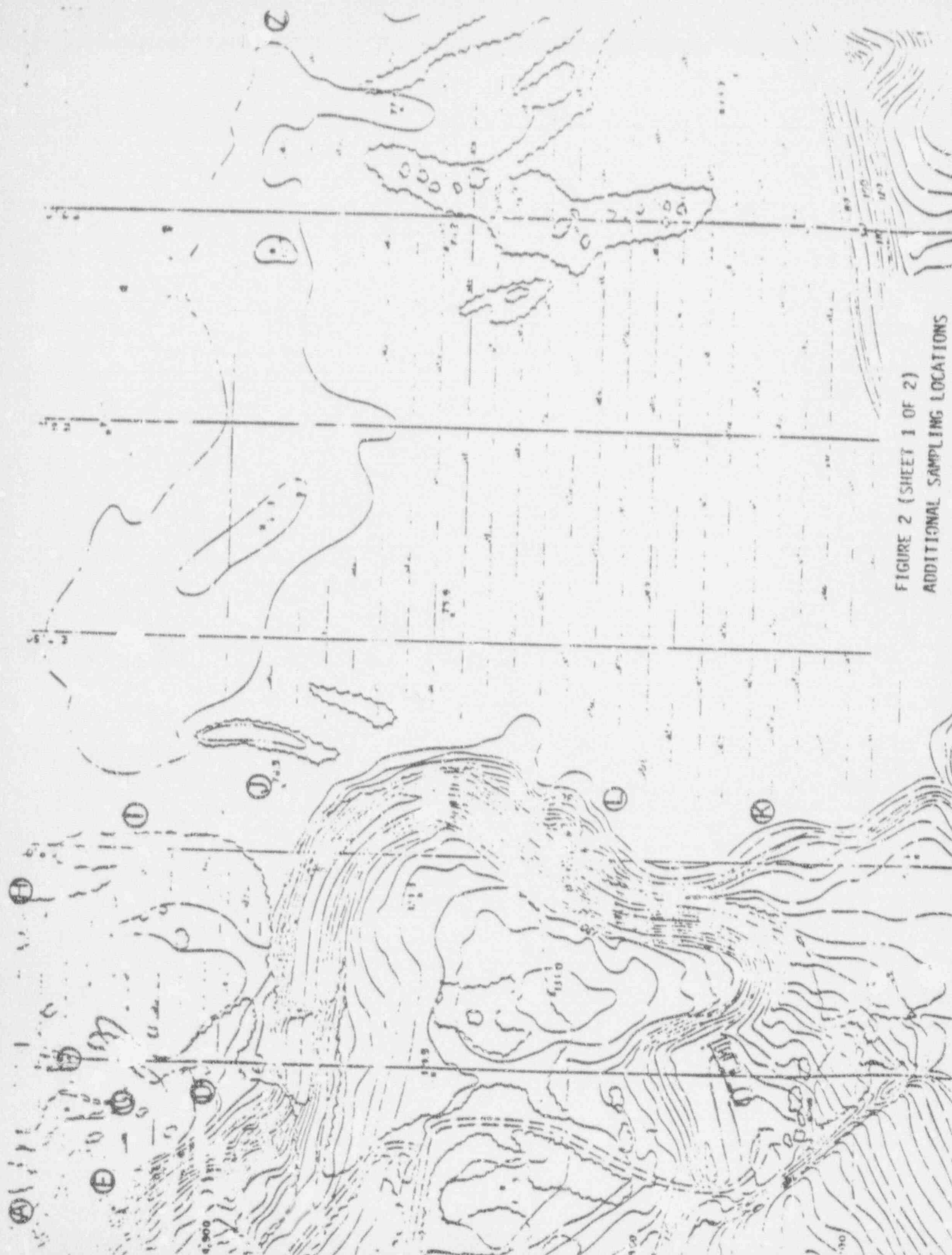


FIGURE 2 (SHEET 1 OF 2)
ADDITIONAL SAMPLING LOCATIONS

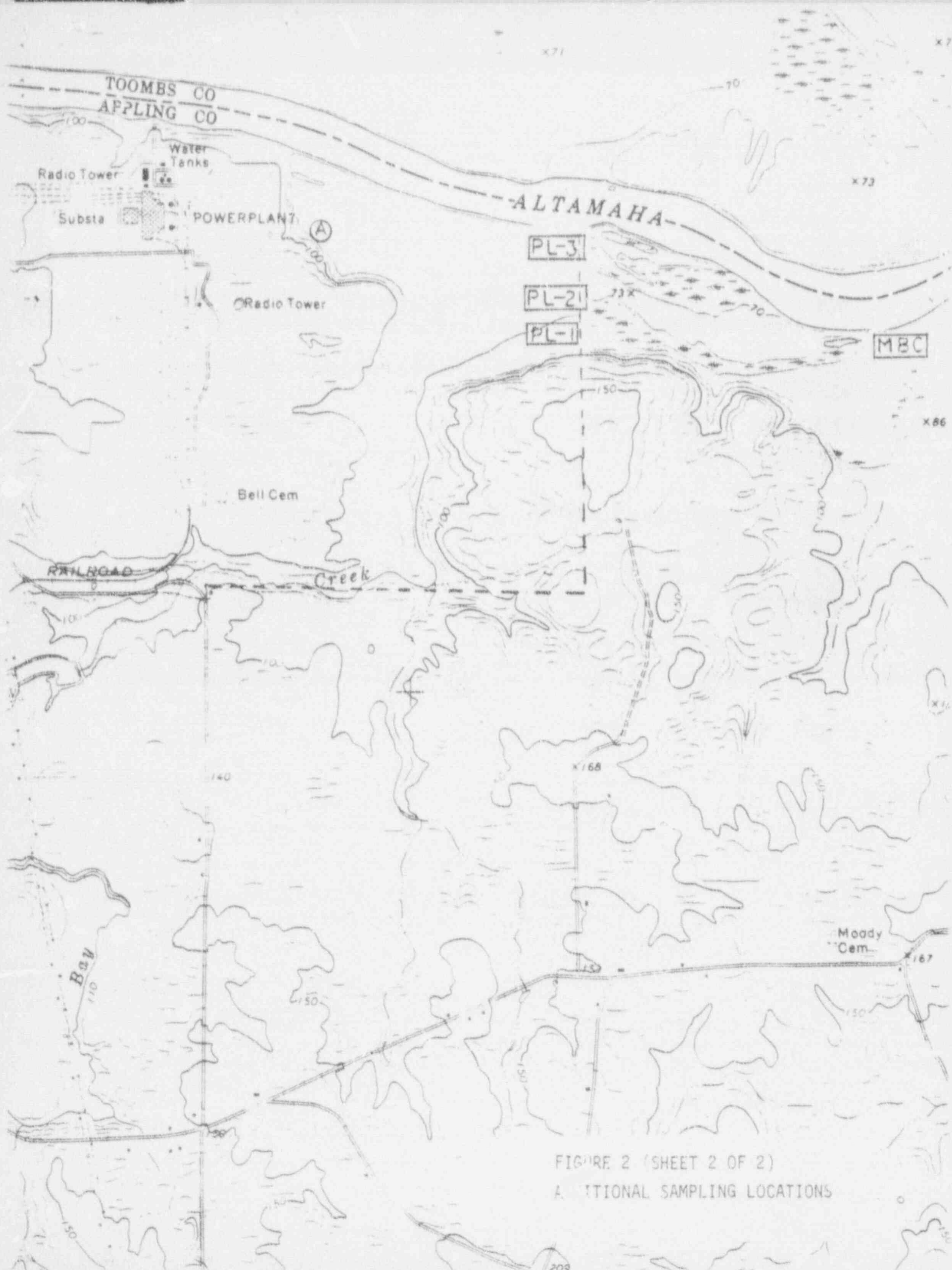


FIGURE 2 (SHEET 2 OF 2)
ADDITIONAL SAMPLING LOCATIONS