40-1341

Edgemont Uranium Mill Decommissioning

Environmental Monitoring Program

Semiannual Report No. 8

May 1, 1986 - October 31, 1986

Tennessee Valley Authority

January 31, 1987

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INTRODUCTION

On August 16, 1974, TVA purchased the Edgemont, South Dakota, Uranium Mill and associated uranium properties. The Source Material License No. SUA-816 was transferred to TVA coincident with transfer of title of the milling facility. TVA subsequently decided not to operate the mill and to decommission the site. The NRC prepared a project FES (Final Environmental Impact Statement Related to the Decommissioning of the Edgemont Uranium Mill, Docket No. 40-1341, Tennessee Valley Authority, NUREG-0846, June 1982), and the source material license was amended (in its entirety) to accommodate the change in site activities. These documents require specific decommissioning related environmental monitoring and semiannual reporting. This report is the eighth such report and contains the results of the decommissioning environmental monitoring activities for the period May 1 through October 31, 1986.

A. RADIOLOGICAL

General

TVA's Radiological Control staff and contractor personnel carried out the radiological sampling program outlined in Tables A-1.1 and A-1.2. Table A-1.1 lists the minimum number of samples required by the licensing conditions and the FES. Table A-1.2 lists the schedule as conducted. Sample locations are shown in Figures A-1 and A-2 Available results of radionuclide and radiation monitoring in restricted and unrestricted areas are presented in Tables A-2 through A-25. For each sample type, the data are listed for individual samples and summarized for the sampling period. These results include quantification of radiation exposure rates, atmospheric particulate concentrations, concentrations in surfacewater and groundwater, sediment concentrations, soil concentrations, and vegetation concentrations. Tables A-26, A-27, and A-28 contain the nominal lower limits of detection (LLDs) for environmental sample analysis, the TVA/EPA interlaboratory comparison data, and maximum permissible concentrations (MPCs) for nonoccupational exposure specified in 10 CFR 20, respectively. Radiological sampling and analytical procedures are defined in Appendix 1 (attached).

Periodic Documented Inspections

An evaluation of the radiological protection program for the project, including a review of the health physics program and TVA's technical and administrative support of the project, was conducted in May 1986. The reviewers recommended that a number of onsite procedures be revised. Subsequently, a major revision to the health physics procedures was accomplished during this report period.

Changes in Land and Water Use

No significant changes in land or water use for this monitoring period were identified.

Monitoring

1.0 Atmospheric

The radiological atmospheric monitoring network consists of five locations: one to the west in Edgemont (EG-02), one to the south in Cottonwood Community (ED-1), one to the southeast (EG-04), one to the south-southeast (EG-05), and one to the northeast (EG-01). (See Figures A-1 and A-2 and Table A-1.2). The monitor EG-01 is used as the control. The monitors denoted EG are colocated with the nonradiological high-volume air samplers. At each radiological monitor, air is continuously pulled through a Hollingsworth and Voss LB5211 glass fiber filter at a flow rate of approximately 3 ft^3/min.

Air filters are collected weekly and analyzed for gross alpha and gross beta activity. The samples are composited monthly and analyzed for total uranium, Th-230, Ra-226, and Pb-210. These data are presented in Table A-2. Table A-3 summarizes the results for this reporting period.

Continuous radon measurements are made using Terradex Track Etch detectors. Three detectors are placed at each of the five monitor locations, with one detector from each location analyzed each month. All measurements are for 3 months, with overlapping sampling periods. The Track Etch detectors were deployed on July 3, 1985, and the first set changed out on August 6, 1985. The results from the analysis of these detectors during this reporting period are presented in Table A-4. The values ranged from 0.13 to 1.88 pCi/L. If 50 percent equilibrium is assumed, these values correlate to 0.0007 and 0.0094 WL, respectively. The higher average values were reported at the station nearest the tailing. (ED-1) while the lowest average values were reported at the control station 3000 meters northeast from the mill site (EG-01). Figures A-3.1 through A-3.5 graphically present the radon levels measured at the five stations since August 1985.

2.0 Vegetation

Vegetation is sampled twice annually (once during the growing season and once at the end of the working season) at the six locations noted on Figure A-1. Vegetation samples are analyzed for Ra-226 and Pb-210. Tables A-5 and A-6 give the results obtained from the laboratory analyses of these samples. Sampling during the reporting period was conducted during the growing season (May).

In the report for the period May-October 1985 (Report #6), the Ra-226 concentration in the vegetation sample collected from station EG-05 on June 13, 1985 (Table A-5, Report #6) was reported as 1.312 ± 0.155 pCi/g. Subsequently, an error was identified in the calculation of the concentration. The value should be 0.153 ± 0.013 pCi/g and the corresponding average for all indicator stations (Table A-6, Report #6) should be 1.09 pCi/g with a range of 0.25 to 3.46 pCi/g.

3.0 Soil

Soil samples are collected semiannually at six sites (Figures A-1 and A-2) to provide an indication of long-term buildup of radioactivity in the environment. These samples are analyzed for Pb-210 and Ra-226. The procedure used to determine the Ra-226 content also quantifies the total uranium activity; therefore, these results are also reported. The results are given in Tables A-7 and A-8.

4.0 Sediment

Sediment samples are collected semiannually at six locations (Figure A-1). In this reporting period three discrete samples were collected along each transect, with one sample taken near the center of the stream, one toward the right bank, and one toward the left bank. A composite was also made from segments collected at each of the three discrete sample locations, so that four different samples were analyzed for each sampling station. Samples are analyzed for total uranium, Th-230 and Ra-226. Selected samples are analyzed for Po-210 and Pb-210. The results are presented in Tables A-9 and A-10.

5.0 Water - General

Samples of surface water and groundwater from the vicinity of the mill site are routinely analyzed for radioactivity. Samples are filtered and the suspended solids dissolved in acid solution and recombined with the water so that the activity in the total sample can be determined. Some samples obtained in this monitoring period contained an excess of solid material precluding the analysis of the "total" sample. Such samples were separated into dissolved and suspended solids fractions for analysis. The volume of suspended solids was too great to reintroduce into the liquid fraction; therefore, the suspended solids were analyzed as separate samples with techniques normally applied to soil and sediment samples. A comparsion of the dissolved/suspended solids results with corresponding concentrations previously determined by analysis of the "total" samples may not be appropriate because of the large volume of suspended solids in the samples collected during this report period.

5.1 Surface Water

Surface water samples are collected monthly at six locations (Figures A-1 and A-2) and are analyzed for gross beta, total uranium, Th-230, and Ra-226. The results are presented in Tables A-11 and A-12. The results from the analysis of dissolved samples are shown in Tables A-13 and A-14. The results from the analysis of suspended solid samples are shown in Tables A-15 and A-16.

5.2 Groundwater

Since 1982 groundwater samples have been collected quarterly from seven wells (Figures A-1 and A-2) and analyzed for total uranium and Ra-226. Some samples collected during this sampling period contained an excess of solid material precluding the analysis of the total sample. Such samples were separated into dissolved and suspended fractions for analysis. The results from the analysis of the total fractions are presented in Tables A-17 and A-18. The results from the analysis of the dissolved samples are shown in Tables A-19 and A-20 and the results for the suspended solids are included in Tables A-21 and A-22.

During this report period, as a part of the groundwater monitoring program implemented on August 17, 1986, nine new wells were drilled and samples were collected monthly (see Figure A-2 and Table A-1.2 for locations). These wells were drilled adjacent to previously existing wells. The groundwater monitoring well numbers M-2, M-7, M-8, M-11, M-12, M-13, M-14, M-102, and M-103 referenced in license condition 14 correspond directly to the wells referred to as "new wells" and numbered M-115, M-120, M-113, M-111, M-116, M-119, M-110, M-112, and M-118, respectively, in this report. This new numbering system was implemented to avoid confusion with samples taken from the previously existing wells. These samples were analyzed for gross alpha and beta, uranium, Ra-226, and Ra-228 activity in the dissolved fraction only. Results are shown in Tables A-23 and A-24.

6.0 Direct Radiation (TLDs)

Direct radiation measurements are taken quarterly at 18 locations (Figures A-1 and A-2). The results are presented in Table A-25, which also presents the average levels reported at each location since October 1982. The measurements for each quarter since October 1982 are plotted in Figures A-4.1, A-4.2, and A-4.3. These data indicate that direct radiation levels are relatively stable for each location, with variations generally less than 10 percent from the mean.

7.0 Radon Flux

Radon flux measurements were taken at the disposal site in June 1983 as part of the disposal site survey required by the FES (Section 4.2.2.7, page 4-30). (See Edgemont, South Dakota, Uranium Mill Semiannual Environmental Report No. 2, May 1, 1983 to October 31, 1983.) The survey was designed to document radon flux levels at the disposal site prior to movement of material to the site. A similar survey will be conducted after all decommissioning activities are concluded.

Discussion

The vast majority of the data are within maximum permissible concentration (MPC) limits. Station EG-02, located in the town of Edgemont had the highest individual air measurement for gross alpha (approximately 50.5 percent of the MPC limits, Tables A-2 and A-3). Station EG-05 had the highest individual air measurement for gross beta (approximately 36.5 percent of the MPC limits, Tables A-2 and A-3). The average gross beta value for all indicator stations is 0.051 pCi/m^3 (approximately 5.1 percent of MPC, Figure A-5). Note that during this report period fallout from the Chernobyl nuclear reactor accident contributed significantly to the gross beta radioactivity in air filters. A plot (Figure A-6) of the gross beta activity at location EG-02 is included as an example of airborne radioactivity found at all five air sampling locations. Maximum values for all other measured isotopes were less than 1 percent of their respective MPCs.

From Table A-12, the average gross beta value in surface water upstream of the mill (control locations) is 611 pCi/L (approximately 2037 percent of MPC) (Figure A-7). The average gross beta value downstream from the mill (indicator locations) is 592 pCi/L (approximately 1973 percent of MPC, Figure A-7). The highest gross beta value upstream from the mill is approximately 2553 percent of MPC. The highest gross beta concentration reported downstream from the mill site is approximately 3063 percent of MPC. For the uranium, thorium, and radium analyses of surface water, the highest measured concentrations are 4.6 percent of MPC or less. Since the MPC values for gross beta radioactivity in surface water are exceeded by both control and indicator samples, it appears to be a natural condition.

Average groundwater concentrations (Table A-18) in samples from the previously existing wells are 2.1 percent of MPC for Ra-226. Concentrations of uranium in samples from well M-10 have risen to over 2000 ug/L so that the average uranium concentration at all indicator stations is 1.2 percent of MPC.

The maximum concentration of 2130 ug/L is only 4.8 percent of MPC. No causes for the increased uranium levels have been identified. Radium and uranium concentrations measured in the new wells are consistent with the levels of those isotopes reported in the dissolved samples from the previously existing wells. Activities measured in samples from the new wells indicated combined Ra-226 and Ra-228 concentrations approaching the maximum contaminant level of 5 pCi/L as specified in the EPA's National Primary Drinking Water Regulations (40 CFR 141). The gross alpha activity appears to be less than the 15 pCi/L outlined in the regulation when the accompanying uranium concentration is taken into consideration. No maximum concentrations for uranium are given in the drinking water regulations, however, the uranium levels are all less than 1 percent of MPC. Since water from these wells is not consumed, the EPA regulations are not applicable. The comparisons are made for reference only.

Conclusion

The movement of tailings from the mill site to the disposal area began in May of this year. With the exception of the uranium concentrations reported for well M-10, the levels reported herein are consistent with levels reported prior to the movement of tailings. Therefore, the levels included in this report do not appear to be the result of decommissioning activities.

Table A-1.1

Radiological Environmental Monitoring for Edgemont Uranium Mill Decommissioning
(Minimum requirements per FES and licensing conditions)

Medium	Number of Stations[1]	Monitor Type	Monitoring Frequency	Type and Frequency of Analysis
Air particulate	5	Low volume [(flow rate ~0.09 m^3/min (~3 ft^3/min)]	Continuous with weekly filter change	Weekly; gross beta and alpha; monthly composite: total U, Th-230, Ra-226, and Pb-210
Air radon or radon progeny[2]	5	Radon progeny monitor or alpha track	Radon progeny: Continuous during working season; no less than 1 week/month at any time or, radon: alpha track continuously with monthly readout.	Radon progeny--monthly average Radon - three detectors/ location, one detector analyzed each month.
Groundwater	6 9	Grab sample Grab sample	Quarterly Monthly[2]	Total U, Ra-226 (total fr.) U-nat, Ra-226
Surface Water	5 (2 on Cottonwood Creek; 3 on Cheyenne River)	Grab sample	Monthly	Gross beta: total U, Th-230, and Ra-226 (total fraction)
Sediment	5 (2 on Cottonwood Creek; 3 on Cheyenne River)	Grab sample	Semiannually	Total U, Th-230, and Ra-226; selected samples analyzed for Pb-210 and Po-210
	Disposal Site	Grab sample	When reclamation is nearly completed	Total U, Th-230, and Ra-226
Soil	6	Grab sample	During growing season and at end of working season	Pb-210 and Ra-226
Vegetation	6	Grab sample of forage and food crops if available	Twice annually (growing season and end of working season)	Pb-210 and Ra-226
Direct Radiation	18	Thermoluminescent dosimeter	Changed quarterly	Direct radiation

1. Location shown on figures A-1, and A-2.
2. As specified in license condition 14.

Table A 1.2

Environmental Monitoring Schedule

Map Site Location Number	Station Location	Air Particulate	Radon	Ground Water	Surface Water	Sediment	Soil	Vegetation[a]	Direct Radiation
1	300 meters S of mill (ED-1)	W	M				S	S	Q
2	3000 meters NE of mill (EG-01)	W	M				S	S	Q
3	Town of Edgemont (EG-02)	W	M						Q
4	Center of Cotton-wood (EG 03)								Q
5	500 m E of haul road (EG-04)	W	M				S	S	Q
6	500 m ESE of dis-posal Area (EG-05)	W	M				S	S	Q
7	NW Pond 1 (Well M-1)			Q					
8	SE Pond 1 (Well M-7)			Q					
9	N ore pile (Well M-8)			Q					
10	Culvert (Well M-10)			Q					

Table A-1.2 (Contd.)

Environmental Monitoring Schedule

Map Site Location Number	Station Location	Air Particulate	Radon Progeny	Ground Water	Surface Water	Sediment	Soil	Vegetation[a]	Direct Radiation
11	NW Pond 7 (Well M-11)			Q					
12	NW Pond 10 (Well M-14)			Q					
13	Well at Rudy Toman Farm			Q					
14	Cottonwood Creek at mouth				M	S			
15	Cottonwood Creek at County Road Bridge				M	S			
16	Cheyenne River at Railroad Bridge				M	S			
17	Cheyenne River below Cottonwood Creek				M	S			
18	Cheyenne River near site boundary				M	S			
19	Cheyenne River at Red Canyon				M	S			
20	Martinez Yard						S	S	Q
21	Edgemont Airport						S	S	

Table A-1.2 (Contd.)

Environmental Monitoring Schedule

Map Site Location Number	Station Location	Air Particulate	Radon Progeny	Ground Water	Surface Water	Sediment	Soil	Vegetation[a]	Direct Radiation
22	McBride Yard (SE Cottonwood)								Q
23	Shutt Fence (NE Cottonwood)								Q
24	New House (E Cottonwood)								Q
25	Site boundary near Bollwork yard (NW Cottonwood)								Q
26	SE Pond 7								Q
27	Harrod House (SW Cottonwood								Q
28	Site Boundary (near seep area)								Q
29	Seep Area, North Post #9								Q
30	Seep Area, NW Post #30								Q
31	Seep Area, SW Post #43								Q

Table A-1.2 (Contd.)

Environmental Monitoring Schedule

Map Site Location Number	Station Location	Air Particulate	Radon Progeny	Ground Water	Surface Water	Sediment	Soil	Vegetation[a]	Direct Radiation
32	Seep Area, South Post #63								Q
New Wells									
8	N Pond 3 (Well M-120)			M					
9	SE Pond 2 (Well M-113)			M					
11	NW Pond 7 (Well M-111)			M					
12	SW Pond 7 (Well M-110)			M					
33	ENE Pond 10 (Well M-112, Control)			M					
34	N Pond 1 (Well M-115)			M					
35	NW Pond 8 (Well M-116)			M					
36	SE Area A (Well M-118)			M					

Table A-1.2 (Contd.)

Environmental Monitoring Schedule

Map Site Location Number	Station Location	Air Particulte	Radon	Ground Water	Surface Water	Sediment	Vegetation[a]	Direct Radiation
37	SE Pond 8 (Well M-119)			M				

a. Samples are taken twice annually (once during the growing season and once at the end of the working season).

W - Weekly M - Monthly Q - Quarterly S - Semiannually

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TABLE A-2

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN AIR FILTER[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION	ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD	% MPC
09041 ED-1 NW COTTON- WOOD, 300METERS S	GROSS ALPHA	+0.0016	+0.0008	06MAY86	0.0050	8.0000
		-0.0018[c]	+0.0014	13MAY86	0.0050	0.0000
		-0.0054[c]	+0.0012	20MAY86	0.0050	0.0000
		+0.0052	+0.0012	27MAY86	0.0050	26.0000
		+0.0016	+0.0007	03JUN86	0.0050	8.0000
		+0.0023	+0.0008	10JUN86	0.0050	11.5000
		+0.0020	+0.0007	17JUN86	0.0050	10.0000
		-0.0011[c]	+0.0014	24JUN86	0.0050	0.0000
		-0.0034[c]	+0.0013	01JUL86	0.0050	0.0000
		-0.0035[c]	+0.0016	08JUL86	0.0050	0.0000
		+0.0066	+0.0013	15JUL86	0.0050	33.0000
		+0.0028	+0.0008	22JUL86	0.0050	14.0000
		+0.0020	+0.0015	29JUL86	0.0050	10.0000
		+0.0027	+0.0010	05AUG86	0.0050	13.5000
		+0.0046	+0.0012	12AUG86	0.0050	23.0000
		+0.0076	+0.0016	19AUG86	0.0050	38.0000
		+0.0046	+0.0010	26AUG86	0.0050	23.0000
		+0.0081	+0.0017	02SEP86	0.0050	40.5000
		+0.0016	+0.0006	09SEP86	0.0050	8.0000
		+0.0012	+0.0007	16SEP86	0.0050	6.0000
		+0.0035	+0.0010	23SEP86	0.0050	17.5000
		+0.0031	+0.0009	30SEP86	0.0050	15.5000
		+0.0038	+0.0010	07OCT86	0.0050	19.0000
		+0.0037	+0.0010	14OCT86	0.0050	18.5000
		+0.0018	+0.0008	21OCT86	0.0050	9.0000
		+0.0025	+0.0009	28OCT86	0.0050	12.5000
	GROSS BETA	+0.0128	+0.0026	06MAY86	0.0100	1.2800
		+0.2169	+0.0224	13MAY86	0.0100	21.6900
		+0.3371	+0.0343	20MAY86	0.0100	33.7100
		+0.1237	+0.0131	27MAY86	0.0100	12.3700
		+0.0576	+0.0065	03JUN86	0.0100	5.7600
		+0.0268	+0.0036	10JUN86	0.0100	2.6800
		+0.0221	+0.0032	17JUN86	0.0100	2.2100
		+0.0233	+0.0035	24JUN86	0.0100	2.3300
		+0.0222	+0.0033	01JUL86	0.0100	2.2200
		+0.0194	+0.0032	08JUL86	0.0100	1.9400
		+0.0179	+0.0030	15JUL86	0.0100	1.7900
		+0.0154	+0.0028	22JUL86	0.0100	1.5400
		+0.0272	+0.0038	29JUL86	0.0100	2.7200
		+0.0211	+0.0032	05AUG86	0.0100	2.1100
		+0.0252	+0.0035	12AUG86	0.0100	2.5200
		+0.0275	+0.0038	19AUG86	0.0100	2.7500
		+0.0192	+0.0031	26AUG86	0.0100	1.9200

TABLE A-2 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN AIR FILTER[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION	ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD	% MPC
09041 ED-1 NW COTTON- WOOD, 300METERS S	GROSS BETA	+0.0270	+0.0038	02SEP86	0.0100	2.7000
		+0.0153	+0.0026	09SEP86	0.0100	1.5300
		+0.0209	+0.0031	16SEP86	0.0100	2.0900
		+0.0158	+0.0027	23SEP86	0.0100	1.5800
		+0.0171	+0.0028	30SEP86	0.0100	1.7100
		+0.0191	+0.0030	07OCT86	0.0100	1.9100
		+0.0200	+0.0030	14OCT86	0.0100	2.0000
		+0.0323	+0.0041	21OCT86	0.0100	3.2300
		+0.0292	+0.0039	28OCT86	0.0100	2.9200
	RADIUM 226	+0.0001	+0.0001	13MAY86	0.0001	0.0050
		+0.0001	+0.0001	10JUN86	0.0001	0.0050
		+0.0001	+0.0001	08JUL86	0.0001	0.0050
		+0.0005	+0.0001	05AUG86	0.0001	0.0250
		+0.0000	+0.0001	02SEP86	0.0001	0.0000
		+0.0001	+0.0001	30SEP86	0.0001	0.0050
		-0.0001[c]	+0.0001	28OCT86	0.0001	0.0000
	ALPHA SPECTROSCOPY PB-210	+0.0011	+0.0004	13MAY86	0.0020	0.0275
		+0.0031	+0.0004	10JUN86	0.0020	0.0775
		+0.0020	+0.0003	08JUL86	0.0020	0.0500
		+0.0022	+0.0004	05AUG86	0.0020	0.0550
		+0.0027	+0.0004	02SEP86	0.0020	0.0675
		+0.0011	+0.0002	30SEP86	0.0020	0.0275
		+0.0031	+0.0005	28OCT86	0.0020	0.0775
	URANIUM[d]	+0.0009	+0.0001	13MAY86	0.0001	0.0122
		+0.0015	+0.0003	10JUN86	0.0001	0.0203
		+0.0011	+0.0002	08JUL86	0.0001	0.0149
		+0.0017	+0.0003	05AUG86	0.0001	0.0230
		+0.0019	+0.0002	02SEP86	0.0001	0.0257
		+0.0008	+0.0001	30SEP86	0.0001	0.0108
		+0.0005	+0.0001	28OCT86	0.0001	0.0068
	THORIUM	+0.0001	+0.0001	13MAY86	0.0001	0.1250
		+0.0001	+0.0001	10JUN86	0.0001	0.1250
		+0.0001	+0.0001	08JUL86	0.0001	0.1250
		+0.0000	+0.0001	05AUG86	0.0001	0.0000
		-0.0001[c]	+0.0002	02SEP86	0.0001	0.0000
		+0.0000	+0.0001	30SEP86	0.0001	0.0000
09091 EG-01 3000 METERS NE	GROSS ALPHA	+0.0001	+0.0001	28OCT86	0.0001	0.1250
		+0.0006	+0.0006	06MAY86	0.0050	3.0000
		-0.0004[c]	+0.0012	13MAY86	0.0050	0.0000
		-0.0049[c]	+0.0011	20MAY86	0.0050	0.0000
		+0.0062	+0.0012	27MAY86	0.0050	31.0000

TABLE A-2 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN AIR FILTER[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD	% MPC
09091 EG-01	3000 METERS NE	GROSS ALPHA	-0.0001[c]	+0.0004	02JUN86	0.0050	0.0000
			+0.0002	+0.0004	10JUN86	0.0050	1.0000
			+0.0002	+0.0004	17JUN86	0.0050	1.0000
			-0.0051[c]	+0.0011	24JUN86	0.0050	0.0000
			-0.0053[c]	+0.0011	01JUL86	0.0050	0.0000
			-0.0044[c]	+0.0014	08JUL86	0.0050	0.0000
			+0.0012	+0.0007	15JUL86	0.0050	6.0000
			-0.0004[c]	+0.0004	22JUL86	0.0050	0.0000
			+0.0013	+0.0006	29JUL86	0.0050	6.5000
			+0.0031	+0.0010	05AUG86	0.0050	15.5000
			+0.0017	+0.0009	12AUG86	0.0050	8.5000
			+0.0015	+0.0009	19AUG86	0.0050	7.5000
			+0.0007	+0.0005	26AUG86	0.0050	3.5000
			+0.0030	+0.0010	02SEP86	0.0050	15.0000
			+0.0008	+0.0005	09SEP86	0.0050	4.0000
			+0.0010	+0.0006	16SEP86	0.0050	5.0000
			+0.0013	+0.0007	23SEP86	0.0050	6.5000
			+0.0015	+0.0007	30SEP86	0.0050	7.5000
			+0.0016	+0.0007	07OCT86	0.0050	8.0000
			+0.0010	+0.0006	14OCT86	0.0050	5.0000
			+0.0035	+0.0009	21OCT86	0.0050	17.5000
			+0.0023	+0.0008	28OCT86	0.0050	11.5000
		GROSS BETA	+0.0129	+0.0024	06MAY86	0.0100	1.2900
			+0.2142	+0.0220	13MAY86	0.0100	21.4200
			+0.3556	+0.0361	20MAY86	0.0100	35.5600
			+0.1361	+0.0142	27MAY86	0.0100	13.6100
			+0.0667	+0.0074	02JUN86	0.0100	6.6700
			+0.0217	+0.0050	10JUN86	0.0100	2.1700
			+0.0223	+0.0031	17JUN86	0.0100	2.2300
			+0.0188	+0.0029	24JUN86	0.0100	1.8800
			+0.0197	+0.0029	01JUL86	0.0100	1.9700
			+0.0181	+0.0029	08JUL86	0.0100	1.8100
			+0.0180	+0.0029	15JUL86	0.0100	1.8000
			+0.0186	+0.0029	22JUL86	0.0100	1.8600
			+0.0156	+0.0026	29JUL86	0.0100	1.5600
			+0.0172	+0.0028	05AUG86	0.0100	1.7200
			+0.0235	+0.0034	12AUG86	0.0100	2.3500
			+0.0217	+0.0032	19AUG86	0.0100	2.1700
			+0.0234	+0.0032	26AUG86	0.0100	2.3400
			+0.0217	+0.0032	02SEP86	0.0100	2.1700
			+0.0143	+0.0025	09SEP86	0.0100	1.4300
			+0.0166	+0.0027	16SEP86	0.0100	1.6600

TABLE A-2 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN AIR FILTER[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD	% MPC
00091 EG-01	3000 METERS NE	GROSS BETA	+0.0133	+0.0025	23SEP86	0.0100	1.3300
			+0.0112	+0.0023	30SEP86	0.0100	1.1200
			+0.0144	+0.0026	07OCT86	0.0100	1.4400
			+0.0144	+0.0026	14OCT86	0.0100	1.4400
			+0.0346	+0.0043	21OCT86	0.0100	3.4600
			+0.0295	+0.0039	28OCT86	0.0100	2.9500
		RADIUM 226	-0.0001[c]	+0.0001	13MAY86	0.0001	0.0000
			+0.0001	+0.0001	10JUN86	0.0001	0.0050
			+0.0001	+0.0001	08JUL86	0.0001	0.0050
			+0.0002	+0.0001	05AUG86	0.0001	0.0100
			-0.0009[c]	+0.0001	02SEP86	0.0001	0.0000
			+0.0000	+0.0001	30SEP86	0.0001	0.0000
			+0.0000	+0.0001	28OCT86	0.0001	0.0000
		ALPHA SPECTROSCOPY PB-210	+0.0041	+0.0005	13MAY86	0.0020	0.1025
			+0.0095	+0.0009	10JUN86	0.0020	0.2375
			+0.0029	+0.0004	08JUL86	0.0020	0.0725
			+0.0009	+0.0003	05AUG86	0.0020	0.0225
			+0.0020	+0.0003	02SEP86	0.0020	0.0500
			+0.0022	+0.0003	30SEP86	0.0020	0.0550
			+0.0002	+0.0004	28OCT86	0.0020	0.0050
		URANIUM[d]	+0.0006	+0.0001	13MAY86	0.0001	0.0081
			+0.0011	+0.0002	10JUN86	0.0001	0.0149
			+0.0006	+0.0001	08JUL86	0.0001	0.0081
			+0.0008	+0.0001	05AUG86	0.0001	0.0108
			+0.0005	+0.0001	02SEP86	0.0001	0.0068
			+0.0011	+0.0001	30SEP86	0.0001	0.0149
			+0.0027	+0.0006	28OCT86	0.0001	0.0365
		THORIUM	+0.0002	+0.0001	13MAY86	0.0001	0.2500
			+0.0002	+0.0001	10JUN86	0.0001	0.2500
			+0.0000	+0.0001	08JUL86	0.0001	0.0000
			+0.0006	+0.0003	05AUG86	0.0001	0.7500
			+0.0004	+0.0002	02SEP86	0.0001	0.5000
			+0.0001	+0.0001	30SEP86	0.0001	0.1250
			+0.0000	+0.0001	28OCT86	0.0001	0.0000
09092 EG-02	TOWN OF EDGEMONT	GROSS ALPHA	+0.0009	+0.0007	06MAY86	0.0050	4.5000
			+0.0000	+0.0014	13MAY86	0.0050	0.0000
			-0.0056[c]	+0.0012	20MAY86	0.0050	0.0000
			+0.0101	+0.0017	27MAY86	0.0050	50.5000
			+0.0038	+0.0010	03JUN86	0.0050	19.0000
			+0.0021	+0.0008	10JUN86	0.0050	10.5000
			+0.0052	+0.0011	17JUN86	0.0050	26.0000

TABLE A-2 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN AIR FILTER[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD	% MPC
09092 EG-02	TOWN OF EDGEMONT	GROSS ALPHA	-0.0020[c]	+0.0013	24JUN86	0.0050	0.0000
			-0.0043[c]	+0.0012	01JUL86	0.0050	0.0000
			-0.0054[c]	+0.0015	08JUL86	0.0050	0.0000
			+0.0052	+0.0012	15JUL86	0.0050	26.0000
			+0.0039	+0.0010	22JUL86	0.0050	19.5000
			+0.0007	+0.0005	29JUL86	0.0050	3.5000
			+0.0048	+0.0012	05AUG86	0.0050	24.0000
			+0.0042	+0.0012	12AUG86	0.0050	21.0000
			+0.0066	+0.0014	19AUG86	0.0050	33.0000
			+0.0045	+0.0010	26AUG86	0.0050	22.5000
			+0.0040	+0.0011	02SEP86	0.0050	20.0000
			+0.0020	+0.0007	09SEP86	0.0050	10.0000
			+0.0070	+0.0013	16SEP86	0.0050	35.0000
			+0.0027	+0.0008	23SEP86	0.0050	13.5000
			+0.0042	+0.0010	30SEP86	0.0050	21.0000
			+0.0018	+0.0007	07OCT86	0.0050	9.0000
			+0.0026	+0.0008	14OCT86	0.0050	13.0000
			+0.0019	+0.0008	21OCT86	0.0050	9.5000
			+0.0028	+0.0009	28OCT86	0.0050	14.0000
		GROSS BETA	+0.0139	+0.0026	06MAY86	0.0100	1.3900
			+0.2436	+0.0250	13MAY86	0.0100	24.3600
			+0.3561	+0.0362	20MAY86	0.0100	35.6100
			+0.1463	+0.0153	27MAY86	0.0100	14.6300
			+0.0604	+0.0068	03JUN86	0.0100	6.0400
			+0.0241	+0.0034	10JUN86	0.0100	2.4100
			+0.0275	+0.0037	17JUN86	0.0100	2.7500
			+0.0232	+0.0034	24JUN86	0.0100	2.3200
			+0.0196	+0.0031	01JUL86	0.0100	1.9600
			+0.0202	+0.0032	08JUL86	0.0100	2.0200
			+0.0218	+0.0033	15JUL86	0.0100	2.1800
			+0.0175	+0.0030	22JUL86	0.0100	1.7500
			+0.0179	+0.0028	29JUL86	0.0100	1.7900
			+0.0159	+0.0027	05AUG86	0.0100	1.5900
			+0.0196	+0.0030	12AUG86	0.0100	1.9600
			+0.0290	+0.0038	19AUG86	0.0100	2.9000
			+0.0236	+0.0033	26AUG86	0.0100	2.3600
			+0.0286	+0.0037	02SEP86	0.0100	2.8600
			+0.0145	+0.0025	09SEP86	0.0100	1.4500
			+0.0248	+0.0034	16SEP86	0.0100	2.4800
			+0.0175	+0.0025	23SEP86	0.0100	1.7500
			+0.0131	+0.0024	30SEP86	0.0100	1.3100
			+0.0137	+0.0025	07OCT86	0.0100	1.3700

TABLE A-2 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN AIR FILTER[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD	% MPC
09092 EG-02	TOWN OF EDGEMONT	GROSS BETA	+0.0183	+0.0029	14OCT86	0.0100	1.8300
			+0.0272	+0.0036	21OCT86	0.0100	2.7200
			+0.0279	+0.0037	28OCT86	0.0100	2.7900
		RADIUM 226	+0.0001	+0.0001	13MAY86	0.0001	0.0050
			+0.0001	+0.0001	10JUN86	0.0001	0.0050
			-0.0001[c]	+0.0001	08JUL86	0.0001	0.0000
			+0.0001	+0.0001	05AUG86	0.0001	0.0050
			-0.0006[c]	+0.0001	02SEP86	0.0001	0.0000
			+0.0000	+0.0001	30SEP86	0.0001	0.0000
			+0.0000	+0.0001	28OCT86	0.0001	0.0000
		ALPHA SPECTROSCOPY PB-210	+0.0008	+0.0002	13MAY86	0.0020	0.0200
			+0.0062	+0.0006	10JUN86	0.0020	0.1550
			+0.0008	+0.0002	08JUL86	0.0020	0.0200
			+0.0039	+0.0006	05AUG86	0.0020	0.0975
			+0.0044	+0.0005	02SEP86	0.0020	0.1100
			+0.0012	+0.0002	30SEP86	0.0020	0.0300
			+0.0015	+0.0002	28OCT86	0.0020	0.0375
		URANIUM[d]	+0.0008	+0.0001	13MAY86	0.0001	0.0108
			+0.0020	+0.0003	10JUN86	0.0001	0.0270
			+0.0009	+0.0001	08JUL86	0.0001	0.0122
			+0.0017	+0.0002	05AUG86	0.0001	0.0230
			+0.0015	+0.0002	02SEP86	0.0001	0.0203
			+0.0013	+0.0001	30SEP86	0.0001	0.0176
		THORIUM	+0.0010	+0.0001	28OCT86	0.0001	0.0135
			+0.0002	+0.0001	13MAY86	0.0001	0.2500
			+0.0001	+0.0001	10JUN86	0.0001	0.1250
			+0.0001	+0.0001	08JUL86	0.0001	0.1250
			+0.0003	+0.0002	05AUG86	0.0001	0.3750
			+0.0002	+0.0002	02SEP86	0.0001	0.2500
			-0.0001[c]	+0.0001	30SEP86	0.0001	0.0000
09094 EG-04,500 METERS	EAST OF HAUL RD.[f]	GROSS ALPHA	+0.0002	+0.0002	28OCT86	0.0001	0.2500
			+0.0003	+0.0006	06MAY86	0.0050	1.5000
			+0.0000	+0.0014	13MAY86	0.0050	0.0000
			-0.0052[c]	+0.0012	20MAY86	0.0050	0.0000
			+0.0082	+0.0015	27MAY86	0.0050	41.0000
			-0.0001[c]	+0.0004	03JUN86	0.0050	0.0000
			+0.0003	+0.0005	10JUN86	0.0050	1.5000
			+999999.000[e]	+99999.0000	17JUN86	0.0050	0.0000
			+999999.000[e]	+99999.0000	24JUN86	0.0050	0.0000
			+999999.000[e]	+99999.0000	01JUL86	0.0050	0.0000
			+999999.000[e]	+99999.0000	08JUL86	0.0050	0.0000

TABLE A-2 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN AIR FILTER[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION	ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD	% MPC
09094 EG-04,500 METERS EAST OF HAUL RD.[f]	GROSS ALPHA	+999999.000[c]	+99999.0000	15JUL86	0.0050	0.0000
		+999999.000[c]	+99999.0000	22JUL86	0.0050	0.0000
		+999999.000[c]	+99999.0000	29JUL86	0.0050	0.0000
		+999999.000[c]	+99999.0000	05AUG86	0.0050	0.0000
		+999999.000[c]	+99999.0000	12AUG86	0.0050	0.0000
		+999999.000[c]	+99999.0000	19AUG86	0.0050	0.0000
		+0.0003	+0.0007	26AUG86	0.0050	1.5000
		+0.0025	+0.0011	02SEP86	0.0050	12.5000
		-0.0002[c]	+0.0004	09SEP86	0.0050	0.0000
		+0.0020	+0.0008	16SEP86	0.0050	10.0000
		+0.0018	+0.0008	23SEP86	0.0050	9.0000
		+0.0011	+0.0007	30SEP86	0.0050	5.5000
		+0.0021	+0.0008	07OCT86	0.0050	10.5000
		+0.0017	+0.0008	14OCT86	0.0050	8.5000
		+0.0021	+0.0008	21OCT86	0.0050	10.5000
		+0.0027	+0.0009	28OCT86	0.0050	13.5000
	GROSS BETA	+0.0161	+0.0028	06MAY86	0.0100	1.6100
		+0.2398	+0.0246	13MAY86	0.0100	23.9800
		+0.3123	+0.0319	20MAY86	0.0100	31.2300
		+0.1323	+0.0139	27MAY86	0.0100	13.2300
		+0.0542	+0.0062	03JUN86	0.0100	5.4200
		+0.0246	+0.0034	10JUN86	0.0100	2.4600
		+999999.000[c]	+99999.0000	17JUN86	0.0100	0.0000
		+999999.000[c]	+99999.0000	24JUN86	0.0100	0.0000
		+999999.000[c]	+99999.0000	01JUL86	0.0100	0.0000
		+999999.000[c]	+99999.0000	08JUL86	0.0100	0.0000
		+999999.000[c]	+99999.0000	15JUL86	0.0100	0.0000
		+999999.000[c]	+99999.0000	22JUL86	0.0100	0.0000
		+999999.000[c]	+99999.0000	29JUL86	0.0100	0.0000
		+999999.000[c]	+99999.0000	05AUG86	0.0100	0.0000
		+999999.000[c]	+99999.0000	12AUG86	0.0100	0.0000
		+999999.000[c]	+99999.0000	19AUG86	0.0100	0.0000
		+0.0222	+0.0038	26AUG86	0.0100	2.2200
		+0.0249	+0.0036	02SEP86	0.0100	2.4900
		+0.0182	+0.0029	09SEP86	0.0100	1.8200
		+0.0191	+0.0031	16SEP86	0.0100	1.9100
		+0.0142	+0.0027	23SEP86	0.0100	1.4200
		+0.0144	+0.0027	30SEP86	0.0100	1.4400
		+0.0117	+0.0025	07OCT86	0.0100	1.1700
		+0.0126	+0.0026	14OCT86	0.0100	1.2600
		+0.0367	+0.0046	21OCT86	0.0100	3.6700
		+0.0253	+0.0036	28OCT86	0.0100	2.5300

TABLE A-2 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN AIR FILTER[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION	ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD	% MPC
09094 EG-04,500 METERS EAST OF HAUL RD.[f]	RADIUM 226	+0.0001	+0.0001	13MAY86	0.0001	0.0050
		+0.0001	+0.0001	10JUN86	0.0001	0.0050
		+999999.000[e]	+99999.0000	08JUL86	0.0001	0.0000
		+999999.000[e]	+99999.0000	05AUG86	0.0001	0.0000
		+0.0001	+0.0001	02SEP86	0.0001	0.0050
		+0.0001	+0.0001	30SEP86	0.0001	0.0050
		+0.0000	+0.0001	28OCT86	0.0001	0.0000
	ALPHA SPECTROSCOPY PB-210	+0.0014	+0.0003	13MAY86	0.0020	0.0350
		+0.0072	+0.0006	10JUN86	0.0020	0.1800
		+999999.000[e]	+99999.0000	08JUL86	0.0020	0.0000
		+999999.000[e]	+99999.0000	05AUG86	0.0020	0.0000
		+0.0112	+0.0015	02SEP86	0.0020	0.2800
		+0.0016	+0.0003	30SEP86	0.0020	0.0400
		+0.0033	+0.0004	28OCT86	0.0020	0.0825
	URANIUM[d]	+0.0010	+0.0002	13MAY86	0.0001	0.0135
		+0.0006	+0.0001	10JUN86	0.0001	0.0081
		+999999.000[e]	+99999.0000	08JUL86	0.0001	0.0000
		+999999.000[e]	+99999.0000	05AUG86	0.0001	0.0000
		+0.0012	+0.0002	02SEP86	0.0001	0.0162
		+0.0012	+0.0001	30SEP86	0.0001	0.0162
		+0.0001	+0.0001	28OCT86	0.0001	0.0014
	THORIUM	+0.0002	+0.0001	13MAY86	0.0001	0.2500
		+0.0005	+0.0002	10JUN86	0.0001	0.6250
		+999999.000[e]	+99999.0000	08JUL86	0.0001	0.0000
		+999999.000[e]	+99999.0000	05AUG86	0.0001	0.0000
		+0.0005	+0.0004	02SEP86	0.0001	0.6250
		+0.0001	+0.0001	30SEP86	0.0001	0.1250
		+0.0000	+0.0001	28OCT86	0.0001	0.0000
09095 EG-05,500 M ESE OF DISPOSAL AREA[f]	GROSS ALPHA	+0.0006	+0.0006	06MAY86	0.0050	3.0000
		+0.0027	+0.0016	13MAY86	0.0050	13.5000
		-0.0056[c]	+0.0013	20MAY86	0.0050	0.0000
		+0.0035	+0.0010	27MAY86	0.0050	17.5000
		-0.0002[c]	+0.0004	03JUN86	0.0050	0.0000
		+0.0002	+0.0005	10JUN86	0.0050	1.0000
		+0.0003	+0.0005	17JUN86	0.0050	1.5000
		+999999.000[e]	+99999.0000	24JUN86	0.0050	0.0000
		-0.0056[c]	+0.0012	01JUL86	0.0050	0.0000
		-0.0046[c]	+0.0016	08JUL86	0.0050	0.0000
		+0.0010	+0.0007	15JUL86	0.0050	5.0000
		-0.0001[c]	+0.0004	22JUL86	0.0050	0.0000
		+0.0005	+0.0005	29JUL86	0.0050	2.5000

TABLE A-2 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN AIR FILTER[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION	ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD	% MPC
09095 EG-05,500 M ESE OF DISPOSAL AREA[f]	GROSS ALPHA	+0.0024	+0.0010	05AUG86	0.0050	12.0000
		+0.0029	+0.0011	12AUG86	0.0050	14.5000
		+0.0029	+0.0011	19AUG86	0.0050	14.5000
		+0.0002	+0.0005	26AUG86	0.0050	1.0000
		+0.0023	+0.0010	02SEP86	0.0050	11.5000
		+0.0006	+0.0006	09SEP86	0.0050	3.0000
		+0.0018	+0.0008	16SEP86	0.0050	9.0000
		+0.0046	+0.0011	23SEP86	0.0050	23.0000
		+0.0011	+0.0007	30SEP86	0.0050	5.5000
		+0.0022	+0.0008	07OCT86	0.0050	11.0000
		+0.0024	+0.0009	14OCT86	0.0050	12.0000
		+0.0013	+0.0007	21OCT86	0.0050	6.5000
		+0.0024	+0.0009	28OCT86	0.0050	12.0000
	GROSS BETA	+0.0122	+0.0025	06MAY86	0.0100	1.2200
		+0.2549	+0.0261	13MAY86	0.0100	25.4900
		+0.3648	+0.0371	20MAY86	0.0100	36.4800
		+0.1393	+0.0146	27MAY86	0.0100	13.9300
		+0.0557	+0.0063	03JUN86	0.0100	5.5700
		+0.0248	+0.0035	10JUN86	0.0100	2.4800
		+0.0257	+0.0035	17JUN86	0.0100	2.5700
		+999999.000[e]	+99999.0000	24JUN86	0.0100	0.0000
		+0.0246	+0.0035	01JUL86	0.0100	2.4600
		+0.0183	+0.0031	08JUL86	0.0100	1.8300
		+0.0189	+0.0031	15JUL86	0.0100	1.8900
		+0.0183	+0.0029	22JUL86	0.0100	1.8300
		+0.0209	+0.0031	29JUL86	0.0100	2.0900
		+0.0211	+0.0033	05AUG86	0.0100	2.1100
		+0.0218	+0.0033	12AUG86	0.0100	2.1800
		+0.0288	+0.0039	19AUG86	0.0100	2.8800
		+0.0200	+0.0031	26AUG86	0.0100	2.0000
		+0.0245	+0.0036	02SEP86	0.0100	2.4500
		+0.0114	+0.0024	09SEP86	0.0100	1.1400
		+0.0208	+0.0032	16SEP86	0.0100	2.0800
		+0.0159	+0.0028	23SEP86	0.0100	1.5900
		+0.0169	+0.0029	30SEP86	0.0100	1.6900
		+0.0162	+0.0028	07OCT86	0.0100	1.6200
		+0.0205	+0.0032	14OCT86	0.0100	2.0500
		+0.0410	+0.0050	21OCT86	0.0100	4.1000
		+0.0250	+0.0036	28OCT86	0.0100	2.5000
	RADIUM 226	+0.0001	+0.0001	13MAY86	0.0001	0.0050
		+0.0000	+0.0001	10JUN86	0.0001	0.0000
		+0.0001	+0.0001	08JUL86	0.0001	0.0050

TABLE A-2 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN AIR FILTER[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION	ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD	% MPC
09095 EG-05,500 M ESE OF DISPOSAL AREA[f]	RADIUM 226	+0.0000	+0.0001	05AUG86	0.0001	0.0000
		+0.0000	+0.0001	02SEP86	0.0001	0.0000
		+0.0000	+0.0001	30SEP86	0.0001	0.0000
		+0.0001	+0.0001	28OCT86	0.0001	0.0050
	ALPHA SPECTROSCOPY PB-210	+0.0020	+0.0003	13MAY86	0.0020	0.0500
		+0.0028	+0.0004	10JUN86	0.0020	0.0700
		+0.0026	+0.0004	08JUL86	0.0020	0.0650
		+0.0067	+0.0008	05AUG86	0.0020	0.1675
		+0.0069	+0.0009	02SEP86	0.0020	0.1725
		+0.0015	+0.0003	30SEP86	0.0020	0.0375
		+0.0012	+0.0002	28OCT86	0.0020	0.0300
	URANIUM[d]	+0.0011	+0.0001	13MAY86	0.0001	0.0149
		+0.0010	+0.0002	10JUN86	0.0001	0.0135
		+0.0006	+0.0001	08JUL86	0.0001	0.0081
		+0.0011	+0.0002	05AUG86	0.0001	0.0149
		+0.0013	+0.0002	02SEP86	0.0001	0.0176
		+0.0009	+0.0001	30SEP86	0.0001	0.0122
		+0.0006	+0.0001	28OCT86	0.0001	0.0081
	THORIUM	+0.0003	+0.0002	13MAY86	0.0001	0.3750
		+0.0001	+0.0001	10JUN86	0.0001	0.1250
		+0.0001	+0.0001	08JUL86	0.0001	0.1250
		+0.0003	+0.0002	05AUG86	0.0001	0.3750
		+0.0001	+0.0002	02SEP86	0.0001	0.1250
		+0.0005	+0.0002	30SEP86	0.0001	0.6250
		+0.0000	+0.0001	28OCT86	0.0001	0.0000

a. Units are pCi/m^3 except for uranium which is ug/m^3.
b. The uncertainity reported is the 1-sigma counting error.
c. The negative value is an artifact of counting statistics and does not infer a negative activity.
d. Natural uranium is assumed to have a specific activity of 0.677 uCi/g.
e. Equipment down for repair.
f. Equipment powered by photovoltaics system.
NOTE: 1 pCi= 3.7×10^{-2} Bq.

TABLE A-3

RADIOACTIVITY IN AIR FILTER

PCI/M(3) - 0.037 BQ/M(3)

NAME OF FACILITY EDGEMONT MILL DECOMMISSION — DOCKET NO. 40-1361
LOCATION OF FACILITY FALL RIVER COUNTY SOUTH DAKOTA — REPORTING PERIOD 1986

TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LOWER LIMIT OF DETECTION (LLD)	ALL INDICATOR LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN NAME DISTANCE AND DIRECTION	MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	SEE NOTE 1	SEE NOTE 2		SEE NOTE 2	SEE NOTE 2	
GROSS ALPHA	5.00E-03	6.99E-03(10/ 93)	EG-04,500 METERS	8.19E-03(1/ 16)	6.18E-03(1/ 26)	
119		5.15E-03 - 1.01E-02	EAST OF HAUL RD.	8.19E-03 - 8.19E-03	6.18E-03 - 6.18E-03	
GROSS BETA	1.00E-02	5.07E-02(93/ 93)	EG-04,500 METERS	6.12E-02(16/ 16)	4.59E-02(26/ 26)	
119		1.14E-02 - 3.65E-01	EAST OF HAUL RD.	1.17E-02 - 3.12E-01	1.12E-02 - 3.56E-01	
RADIUM 226	1.00E-04	1.83E-04(5/ 26)	ED-1 NW COTTON-	4.73E-04(1/ 7)	1.60E-04(1/ 7)	
33		1.02E-04 - 4.73E-04	WOOD,300METERS S	4.73E-04 - 4.73E-04	1.60E-04 - 1.60E-04	
ALPHA SPEC						
33						
PB-210	2.00E-03	4.73E-03(14/ 26)	EG-04,500 METERS	7.22E-03(3/ 5)	4.69E-03(4/ 7)	
		2.24E-03 - 1.12E-02	EAST OF HAUL RD.	3.31E-03 - 1.12E-02	2.21E-03 - 9.48E-03	
URANIUM[a]	1.00E-04	1.12E-03(25/ 26)	EG-02	1.31E-03(7/ 7)	1.06E-03(7/ 7)	
33		5.41E-04 - 1.96E-03	TOWN OF EDGEMONT	8.26E-04 - 1.96E-03	4.65E-04 - 2.67E-03	
THORIUM	1.00E-04	2.49E-04(16/ 26)	EG-04,500 METERS	4.21E-04(3/ 5)	3.51E-04(4/ 7)	
33		1.12E-04 - 5.45E-04	EAST OF HAUL RD.	2.28E-04 - 5.45E-04	1.74E-04 - 6.28E-04	

NOTE: 1. NOMINAL LOWER LIMIT OF DETECTION (LLD) AS DESCRIBED IN TABLE A-26.
NOTE: 2. MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F).

a. Uranium results reported in $\mu g/m^3$

Table A-4
Radon Concentrations, pCi/L
Edgemont Uranium Mill
May - October 1986

Sampling Period	Sampling Location				
	ED-1	EG-01	EG-02	EG-04	EG-05
2/3/86 - 5/6/86	0.46 ± 0.07	0.24 ± 0.05	0.28 ± 0.05	0.44 ± 0.06	0.31 ± 0.05
3/4/86 - 6/3/86	0.54 ± 0.07	0.36 ± 0.06	0.27 ± 0.05	0.25 ± 0.05	0.20 ± 0.04
4/7/86 - 6/30/86	0.57 ± 0.07	0.28 ± 0.05	0.30 ± 0.05	0.32 ± 0.06	0.27 ± 0.05
5/6/86 - 8/5/86	0.47 ± 0.06	0.31 ± 0.05	0.32 ± 0.05	0.29 ± 0.05	0.25 ± 0.05
6/3/86 - 9/3/86	0.41 ± 0.06	0.13 ± 0.03	0.22 ± 0.04	0.21 ± 0.04	0.21 ± 0.04
6/30/86- 10/9/86	1.88 ± 0.11	0.35 ± 0.05	0.39 ± 0.05	0.34 ± 0.05	0.26 ± 0.04
Average: 2/3/86 - 10/9/86	0.72 ± 0.57	0.28 ± 0.09	0.30 ± 0.06	0.31 ± 0.08	0.25 ± 0.04
Average: 7/3/85 - 10/9/86	0.79 ± 0.38	0.40 ± 0.15	0.47 ± 0.16	0.43 ± 0.15	0.40 ± 0.15

NOTE: Three Track Etch detectors at each location, with one detector at each location analyzed each month. All measurements are for 3-months, with overlapping sampling periods.

TABLE A-5

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN VEGETATION [a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR [b]	DATE COLLECT	NOMINAL LLD
09041 ED-1 NW COTTON-	WOOD,300METERS S	RADIUM 226	+0.7405	+0.0521	25MAY86	0.0050
		ALPHA SPECTROSCOPY PB-210	+0.4583	+0.1484	25MAY86	0.2000
09045 EDGEMONT AIRPORT		RADIUM 226	+0.1169	+0.0099	21MAY86	0.0050
		ALPHA SPECTROSCOPY PB-210	+0.5812	+0.2167	21MAY86	0.2000
09047 MARTINEZ PROP	W POND 2	RADIUM 226	+0.6587	+0.0473	21MAY86	0.0050
		ALPHA SPECTROSCOPY PB-210	+1.0809	+0.2460	21MAY86	0.2000
09091 EG-01	3000 METERS NE	RADIUM 226	+0.0181	+0.0033	21MAY86	0.0050
		ALPHA SPECTROSCOPY PB-210	+1.1652	+0.2834	21MAY86	0.2000
09094 EG-04,500 METERS	EAST OF HAUL RD.	RADIUM 226	+0.1157	+0.0090	22MAY86	0.0050
		ALPHA SPECTROSCOPY PB-210	+0.6089	+0.2156	22MAY86	0.2000
09095 EG-05,500 M ESE	OF DISPOSAL AREA	RADIUM 226	+0.0903	+0.0093	23MAY86	0.0050
		ALPHA SPECTROSCOPY PB-210	+0.7623	+0.2260	23MAY86	0.2000

a. Units are pCi/g, dry weight.

b. The uncertainity reported is the 1-sigma counting error.

NOTE: 1 pCi = 3.7×10^{-2} Bq.

TABLE A-6

RADIOACTIVITY IN VEGETATION

PCI/G - 0.037 BQ/G (DRY WEIGHT)

NAME OF FACILITY EDGEMONT MILL DECOMMISSION — DOCKET NO. 40-1361
LOCATION OF FACILITY FALL RIVER COUNTY, SOUTH DAKOTA — REPORTING PERIOD 1986

TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LOWER LIMIT OF DETECTION (LLD) SEE NOTE 1	ALL INDICATOR LOCATIONS MEAN (F) RANGE SEE NOTE 2	LOCATION WITH HIGHEST ANNUAL MEAN NAME, DISTANCE AND DIRECTION	MEAN (F) RANGE SEE NOTE 2	CONTROL LOCATIONS MEAN (F) RANGE SEE NOTE 2	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
RADIUM 226	5.00E-03	4.03E-01(4/ 4)	ED-1 NW COTTON-	7.41E-01(1/ 1)	6.75E-02(2/ 2)	
6		9.63E-02 - 7.41E-01	WOOD, 300METERS S	7.41E-01 - 7.41E-01	1.81E-02 - 1.17E-01	
ALPHA SPEC						
6						
PB-210	2.00E-01	7.28E-01(4/ 4)	MARTINEZ PROP	1.08E+00(1/ 1)	8.73E-01(2/ 2)	
		4.58E-01 - 1.08E+00	W POND 2	1.08E+00 - 1.08E+00	5.81E-01 - 1.17E+00	

NOTE: 1. NOMINAL LOWER LIMIT OF DETECTION (LLD) AS DESCRIBED IN TABLE A-2b.
NOTE: 2. MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F).

TABLE A-7

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN SOIL[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD
09041 ED-1 NW COTTON-	WOOD,300METERS S	ALPHA SPECTROSCOPY				
		PB-210	+23.3465	+1.2805	25MAY86	1.0000
		URANIUM[c]	+24.7251	+0.9565	25MAY86	1.0000
		GELI (URANIUM)				
		RA-226	+82.0450	+4.1045	25MAY86	0.0500
09045 EDGEMONT AIRPORT		ALPHA SPECTROSCOPY				
		PB-210	+2.2385	+0.2445	21MAY86	1.0000
		GELI (URANIUM)				
		RA-226	+2.1542	+0.1090	21MAY86	0.0500
		URANIUM[c]	+4.5528	+0.6005	21MAY86	2.0000
09047 MARTINEZ PROP	W POND 2	ALPHA SPECTROSCOPY				
		PB-210	+4.0977	+0.3485	21MAY86	1.0000
		GELI (URANIUM)				
		RA-226	+4.0715	+0.2059	21MAY86	0.0500
		URANIUM[c]	+10.3227	+1.5141	21MAY86	2.0000
09091 EG-01	3000 METERS NE	ALPHA SPECTROSCOPY				
		PB-210	+1.7322	+0.1897	21MAY86	1.0000
		GELI (URANIUM)				
		RA-226	+0.8515	+0.0456	21MAY86	0.0500
		URANIUM[c]	+2.4924	+0.5687	21MAY86	2.0000
09094 EG-04,500 METERS	EAST OF HAUL RD.	ALPHA SPECTROSCOPY				
		PB-210	+3.2839	+0.2506	22MAY86	1.0000
		GELI (URANIUM)				
		RA-226	+4.7116	+0.2368	22MAY86	0.0500
		URANIUM[c]	+8.7784	+1.4047	22MAY86	2.0000
09095 EG-05,500 M ESE	OF DISPOSAL AREA	ALPHA SPECTROSCOPY				
		PB-210	+2.2060	+0.2227	23MAY86	1.0000
		GELI (URANIUM)				
		RA-226	+1.6222	+0.0826	23MAY86	0.0500
		URANIUM[c]	+6.1269	+0.8526	23MAY86	2.0000

a. Units are pCi/g except for uranium which is µg/g.
b. The uncertainty reported is the 1-sigma counting error.
c. Natural uranium is assumed to have a specific activity of 0.677 µCi/g.

NOTE: 1 pCi = 3.7×10^{-2} Bq.

TABLE A-8

RADIOACTIVITY IN SOIL

PCI/G - 0.037 BQ/G (DRY WEIGHT)

NAME OF FACILITY EDGEMONT MILL DECOMMISSION — DOCKET NO. 40-1341
LOCATION OF FACILITY FALL RIVER COUNTY, SOUTH DAKOTA — REPORTING PERIOD 1986

TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LOWER LIMIT OF DETECTION (LLD)	ALL INDICATOR LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN NAME DISTANCE AND DIRECTION	MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	SEE NOTE 1	SEE NOTE 2		SEE NOTE 2	SEE NOTE 2	
ALPHA SPEC						
6						
PB-210	1.00E-00	8.23E+00(4/ 4)	ED-1 NW COTTON-	2.33E+01(1/ 1)	1.99E+00(2/ 2)	
		2.21E+00 - 2.33E+01	WOOD, 300METERS S	2.33E+01 - 2.33E+01	1.73E+00 - 2.24E+00	
URANIUM[a]	1.00E+00	2.47E+01(1/ 1)	ED-1 NW COTTON-	2.47E+01(1/ 1)		
1		2.47E+01 - 2.47E+01	WOOD, 300METERS S	2.47E+01 - 2.47E+01		
URANIUM SCAN						
6						
RA-226	1.00E-01	2.31E+01(4/ 4)	ED-1 NW COTTON-	8.20E+01(1/ 1)	1.50E+00(2/ 2)	
		1.62E+00 - 8.20E+01	WOOD, 300METERS S	8.20E+01 - 8.20E+01	8.52E-01 - 2.15E+00	
URANIUM[a]	1.00E+00	8.41E+00(3/ 4)	MARTINEZ PROP	1.03E+01(1/ 1)	3.52E+00(2/ 2)	
		6.13E+00 - 1.03E+01	W POND 2	1.03E+01 - 1.03E+01	2.49E+00 - 4.55E+00	

NOTE: 1. NOMINAL LOWER LIMIT OF DETECTION (LLD) AS DESCRIBED IN TABLE A-26.
NOTE: 2. MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F).

a. Uranium results reported in units of ug/g.

TABLE A-9

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN SEDIMENT[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD
09055 COTTONWOOD CREEK	AT MOUTH	THORIUM	+7.3341	+1.9303	04JUN86	1.0000
		GELI (URANIUM)				
		RA-226	+3.6479	+0.1848	04JUN86	0.0500
		URANIUM[c]	+6.1211	+1.1764	04JUN86	2.0000
09057 COTTONWOOD CREEK	COUNTY RD BRIDGE	THORIUM	+4.9063	+1.3066	02JUN86	1.0000
		GELI (URANIUM)				
		RA-226	+1.6682	+0.0861	02JUN86	0.0500
		URANIUM[c]	+7.3947	+1.0162	02JUN86	2.0000
09060 CHEYENNE RIVER	RR BRIDGE	THORIUM	+1.3477	+0.4619	04JUN86	1.0000
		GELI (URANIUM)				
		RA-226	+0.5413	+0.0302	04JUN86	0.0500
		URANIUM[c]	+0.9805	+0.4237	04JUN86	2.0000
09061 CHEYENNE RIVER	AT RED CANYON	THORIUM	+2.2265	+0.6446	04JUN86	1.0000
		GELI (URANIUM)				
		RA-226	+0.5973	+0.0329	04JUN86	0.0500
		URANIUM[c]	+2.1983	+0.4737	04JUN86	2.0000
09063 CHEYENNE RIVER	BELOW C WOOD CR.	ALPHA SPECTROSCOPY				
		PB-210	+1.4291	+0.1760	06JUN86	1.0000
		PO-210	+1.7903	+0.4685	06JUN86	1.0000
		THORIUM	+3.8777	+1.0564	06JUN86	1.0000
		GELI (URANIUM)				
		RA-226	+1.2528	+0.0652	06JUN86	0.0500
		URANIUM[c]	+3.1596	+0.6436	06JUN86	2.0000
09064 CHEYENNE RIVER	AT SITE BOUNDARY	ALPHA SPECTROSCOPY				
		PB-210	+0.9840	+0.1479	06JUN86	1.0000
		PO-210	+0.8640	+0.0461	06JUN86	1.0000
		THORIUM	+2.2970	+0.6407	06JUN86	1.0000
		GELI (URANIUM)				
		RA-226	+0.8640	+0.0461	06JUN86	0.0500
		URANIUM[c]	+2.9183	+0.5695	06JUN86	2.0000
09356 COTTONWOOD CR-CTY RDBRIDGE RIGHT BANK		THORIUM	+4.8883	+1.3032	02JUN86	1.0000
		GELI (URANIUM)				
		RA-226	+1.7771	+0.0915	02JUN86	0.0500
		URANIUM[c]	+6.9351	+1.0072	02JUN86	2.0000
09357 COTTONWOOD CR-CTY RDBRIDGE MIDDLE		RADIUM 226	+2.0292	+0.1435	02JUN86	0.1000
		URANIUM	+21.6976	+3.9178	02JUN86	1.0000
		THORIUM	+11.2599	+2.8908	02JUN86	1.0000
09358 COTTONWOOD CR-CTY RDBRIDGE LEFT BANK		THORIUM	+3.7043	+1.0024	02JUN86	1.0000
		GELI (URANIUM)				
		RA-226	+1.7886	+0.0908	02JUN86	0.0500
		URANIUM[c]	+5.7059	+0.7859	02JUN86	2.0000
09359 COTTONWOOD CR-MOUTH RIGHT BANK		THORIUM	+6.2742	+1.6478	04JUN86	1.0000

TABLE A-9 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN SEDIMENT[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION	ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD
09359 COTTONWOOD CR-MOUTH RIGHT BANK	Y GELI (URANIUM)				
	RA-226	+6.2507	+0.3150	04JUN86	0.0500
	URANIUM[c]	+15.6756	+2.2894	04JUN86	2.0000
	THORIUM	+3.6998	+1.0131	04JUN86	1.0000
09360 COTTONWOOD CR-MOUTH MIDDLE	GELI (URANIUM)				
	RA-226	+0.8691	+0.0463	04JUN86	0.0500
	URANIUM[c]	+2.7771	+0.5611	04JUN86	2.0000
	RADIUM 226	+2.0032	+0.1429	04JUN86	0.1000
	URANIUM[c]	+7.1535	+0.7036	04JUN86	1.0000
	THORIUM	+5.2460	+1.4069	04JUN86	1.0000
09361 COTTONWOOD CR-MOUTH LEFT BANK	THORIUM	+3.1729	+0.8507	04JUN86	1.0000
	GELI (URANIUM)				
	RA-226	+0.8222	+0.0440	04JUN86	0.0500
	URANIUM[c]	+2.9777	+0.5984	04JUN86	2.0000
	THORIUM	+1.3687	+0.4033	04JUN86	1.0000
09362 CHEYENNE RIVER-RR BRIDGE RIGHT BANK	GELI (URANIUM)				
	RA-226	+0.5130	+0.0273	04JUN86	0.0500
	URANIUM[c]	+1.1413	+0.3184	04JUN86	2.0000
	THORIUM	+3.3722	+0.9020	04JUN86	1.0000
09363 CHEYENNE RIVER-RR BRIDGE MIDDLE	GELI (URANIUM)				
	RA-226	+0.5330	+0.0284	04JUN86	0.0500
	URANIUM[c]	+1.6516	+0.3808	04JUN86	2.0000
	THORIUM	+3.0512	+0.8518	04JUN86	1.0000
09364 CHEYENNE RIVER-RR BRIDGE LEFT BANK	GELI (URANIUM)				
	RA-226	+0.7011	+0.0379	04JUN86	0.0500
	URANIUM[c]	+1.4376	+0.4363	04JUN86	2.0000
	THORIUM	+1.2346	+0.4051	04JUN86	1.0000
09365 CHEYENNE RIVER-RED CANYON RIGHT BANK	GELI (URANIUM)				
	RA-226	+0.6259	+0.0344	04JUN86	0.0500
	URANIUM[c]	+1.2571	+0.4579	04JUN86	2.0000
	THORIUM	+2.8688	+0.8074	04JUN86	1.0000
09366 CHEYENNE RIVER-RED CANYON MIDDLE	GELI (URANIUM)				
	RA-226	+0.6913	+0.0379	04JUN86	0.0500
	URANIUM[c]	+2.2900	+0.4895	04JUN86	2.0000
	ALPHA SPECTROSCOPY				
	PB-210	+2.7380	+0.2756	06JUN86	1.0000
	PO-210	+3.7280	+0.6819	06JUN86	1.0000
09367 CHEYENNE RIVER-RED CANYON LEFT BANK	THORIUM	+5.9780	+1.5473	06JUN86	1.0000
	GELI (URANIUM)				
	RA-226	+3.4736	+0.1760	06JUN86	0.0500
	URANIUM[c]	+8.2463	+1.2837	06JUN86	2.0000
	ALPHA SPECTROSCOPY				
	PB-210	+0.2542	+0.0586	06JUN86	1.0000
09368 CHEYENNE RIVER COTTONWOOD RIGHT B					
09369 CHEYENNE RIVER COTTONWOOD MIDDLE					

TABLE A-9 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN SEDIMENT[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION	ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD
09369 CHEYENNE RIVER COTTONWOOD MIDDLE	N ALPHA SPECTROSCOPY				
	PO-210	+0.6641	+0.3179	06JUN86	1.0000
	THORIUM	+1.5297	+0.4439	06JUN86	1.0000
	GELI (URANIUM)				
	RA-226	+0.4887	+0.0277	06JUN86	0.0500
	URANIUM[c]	+2.0118	+0.4882	06JUN86	2.0000
09370 CHEYENNE RIVER COTTONWOOD LEFT BANK	ALPHA SPECTROSCOPY				
	PB-210	+0.4366	+0.1305	06JUN86	1.0000
	PO-210	+2.0674	+0.5016	06JUN86	1.0000
	THORIUM	+1.4796	+0.4627	06JUN86	1.0000
	GELI (URANIUM)				
	RA-226	+0.5070	+0.0285	06JUN86	0.0500
	URANIUM[c]	+2.0919	+0.4476	06JUN86	2.0000
09371 CHEYENNE RIVER BELOWSITE RIGHT BANK	ALPHA SPECTROSCOPY				
	PB-210	+1.2306	+0.1866	06JUN86	1.0000
	PO-210	+1.4910	+0.0772	06JUN86	1.0000
	THORIUM	+5.3763	+1.3967	06JUN86	1.0000
	GELI (URANIUM)				
	RA-226	+1.4910	+0.0772	06JUN86	0.0500
	URANIUM[c]	+3.7210	+0.7194	06JUN86	2.0000
09372 CHEYENNE RIVER BELOWSITE MIDDLE	ALPHA SPECTROSCOPY				
	PB-210	+1.0297	+0.1241	06JUN86	1.0000
	PO-210	+2.9280	+0.1489	06JUN86	1.0000
	THORIUM	+3.0007	+0.6377	06JUN86	1.0000
	GELI (URANIUM)				
	RA-226	+2.9280	+0.1489	06JUN86	0.0500
	URANIUM[c]	+2.0795	+0.9339	06JUN86	2.0000
09373 CHEYENNE RIVER BELOWSITE LEFT BANK	RADIUM 226	+1.5241	+0.1100	06JUN86	0.1000
	ALPHA SPECTROSCOPY				
	PB-210	+1.1406	+0.1637	06JUN86	1.0000
	PO-210	+1.5241	+0.1100	06JUN86	1.0000
	URANIUM[c]	+3.2860	+0.4491	06JUN86	1.0000
	THORIUM	+4.4291	+1.1907	06JUN86	1.0000

a. Units are pCi/g except for uranium which is µg/g.
b. The uncertainty reported is the 1-sigma counting error.
c. Natural uranium is assumed to have a specific activity of 0.677 µCi/g.

NOTE: 1 pCi = 3.7×10^{-2} Bq.

TABLE A-10

RADIOACTIVITY IN SEDIMENT

PCI/G - 0.037 BQ/G (DRY WEIGHT)

NAME OF FACILITY EDGEMONT MILL DECOMMISSION — DOCKET NO. 40-1341
LOCATION OF FACILITY FALL RIVER COUNTY SOUTH DAKOTA — REPORTING PERIOD 1986

TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LOWER LIMIT OF DETECTION (LLD) SEE NOTE 1	ALL INDICATOR LOCATIONS MEAN (F) RANGE SEE NOTE 2	LOCATION WITH HIGHEST ANNUAL MEAN NAME DISTANCE AND DIRECTION	MEAN (F) RANGE SEE NOTE 2	CONTROL LOCATIONS MEAN (F) RANGE SEE NOTE 2	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
RADIUM 226	NOT ESTAB	1.76E+00(2/ 2)	COTTONWOOD CR-MO	2.00E+00(1/ 1)	2.03E+00(1/ 1)	
3		1.52E+00 - 2.00E+00	LEFT BANK	2.00E+00 - 2.00E+00	2.03E+00 - 2.03E+00	
ALPHA SPEC						
8						
PB-210	NOT ESTAB	1.16E+00(8/ 8)	CHEYENNE RIVER	2.74E+00(1/ 1)		
		2.54E-01 - 2.74E+00	COTTONWOOD RIGHT	2.74E+00 - 2.74E+00		
PO-210	NOT ESTAB	1.88E+00(8/ 8)	CHEYENNE RIVER	3.73E+00(1/ 1)		
		6.64E-01 - 3.73E+00	COTTONWOOD RIGHT	3.73E+00 - 3.73E+00		
URANIUM[a]	NOT ESTAB	5.22E+00(2/ 2)	COTTONWOOD CR-MO	7.15E+00(1/ 1)	2.17E+01(1/ 1)	
3		3.29E+00 - 7.15E+00	LEFT BANK	7.15E+00 - 7.15E+00	2.17E+01 - 2.17E+01	
THORIUM	NOT ESTAB	3.59E+00(18/ 18)	COTTONWOOD CREEK	7.33E+00(1/ 1)	4.88E+00(6/ 6)	
24		1.23E+00 - 7.33E+00	AT MOUTH	7.33E+00 - 7.33E+00	1.35E+00 - 1.13E+01	
URANIUM SCAN						
21						
RA-226	NOT ESTAB	1.59E+00(16/ 16)	COTTONWOOD CR-MO	6.25E+00(1/ 1)	1.32E+00(5/ 5)	
		4.89E-01 - 6.25E+00	RIGHT BANK	6.25E+00 - 6.25E+00	5.41E-01 - 1.79E+00	
URANIUM[a]	NOT ESTAB	3.67E+00(16/ 16)	COTTONWOOD CR-MO	1.57E+01(1/ 1)	4.80E+00(5/ 5)	
		1.14E+00 - 1.57E+01	RIGHT BANK	1.57E+01 - 1.57E+01	9.81E-01 - 7.39E+00	

NOTE: 1. NOMINAL LOWER LIMIT OF DETECTION (LLD) AS DESCRIBED IN TABLE A-26.
NOTE: 2. MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F).

a. Uranium results reported in units of ug/g.

TABLE A-11

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN SURFACE WATER TOTAL[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION	ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD
09055 COTTONWOOD CREEK AT MOUTH	GROSS BETA	+687.7561	+38.9074	07MAY86	2.3000
		+999999.000[c]	+99999.0000	02JUN86	2.3000
		+584.0801	+33.3386	30JUN86	2.3000
		+919.4797	+49.9840	06AUG86	2.3000
		+683.7734	+38.4174	03SEP86	2.3000
		+747.8030	+41.2411	060CT86	2.3000
	RADIUM 226	+0.1916	+0.0445	07MAY86	0.1000
		+999999.000[c]	+99999.0000	02JUN86	0.1000
		+0.2981	+0.0340	30JUN86	0.1000
		+1.2363	+0.0984	06AUG86	0.1000
		+1.3917	+0.1087	03SEP86	0.1000
		+0.3890	+0.0627	060CT86	0.1000
	URANIUM[d]	+26.4425	+1.1338	07MAY86	1.0000
		+999999.000[c]	+99999.0000	02JUN86	1.0000
		+21.1111	+2.0578	30JUN86	1.0000
		+26.0656	+1.0447	06AUG86	1.0000
		+47.0000	+1.7239	03SEP86	1.0000
		+12.0000	+2.3021	060CT86	1.0000
	THORIUM	+0.1379	+0.0937	07MAY86	1.0000
		+999999.000[c]	+99999.0000	02JUN86	1.0000
		+0.6269	+0.2148	30JUN86	1.0000
		+0.8214	+0.2640	06AUG86	1.0000
		+0.1786	+0.1156	03SEP86	1.0000
		+0.4284	+0.2046	060CT86	1.0000
09057 COTTONWOOD CREEK COUNTY RD BRIDGE	GROSS BETA	+589.8035	+33.9870	07MAY86	2.3000
		+999999.000[c]	+99999.0000	02JUN86	2.3000
		+647.0764	+36.9214	30JUN86	2.3000
		+662.0994	+36.9175	06AUG86	2.3000
		+371.9238	+22.8685	03SEP86	2.3000
		+765.7773	+42.2223	060CT86	2.3000
	RADIUM 226	+0.2374	+0.0249	07MAY86	0.1000
		+999999.000[c]	+99999.0000	02JUN86	0.1000
		+0.3394	+0.0339	30JUN86	0.1000
		+0.1673	+0.0253	06AUG86	0.1000
		+0.1099	+0.0448	03SEP86	0.1000
		+0.1474	+0.0216	060CT86	0.1000
	URANIUM[d]	+17.3434	+1.8202	07MAY86	1.0000
		+999999.000[c]	+99999.0000	02JUN86	1.0000
		+25.0588	+3.7229	30JUN86	1.0000
		+12.6923	+1.5115	06AUG86	1.0000
		+17.3288	+1.6341	03SEP86	1.0000
		+6.8211	+1.4927	060CT86	1.0000

TABLE A-11 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN SURFACE WATER TOTAL[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD
09057 COTTONWOOD CREEK	COUNTY RD BRIDGE	THORIUM	+0.2240	+0.1149	07MAY86	1.0000
			+999999.000[c]	+99999.0000	02JUN86	1.0000
			+0.2536	+0.1220	30JUN86	1.0000
			+0.1895	+0.1079	06AUG86	1.0000
			+0.1786	+0.1156	03SEP86	1.0000
			+0.3040	+0.1761	06OCT86	1.0000
09060 CHEYENNE RIVER	RR BRIDGE	GROSS BETA	+628.6897	+35.3693	07MAY86	2.3000
			+999999.000[c]	+99999.0000	02JUN86	2.3000
		RADIUM 226	+0.2158	+0.0437	07MAY86	0.1000
			+999999.000[c]	+99999.0000	02JUN86	0.1000
		URANIUM[d]	+17.0042	+2.0246	07MAY86	1.0000
			+999999.000[c]	+99999.0000	02JUN86	1.0000
		THORIUM	+0.5112	+0.1861	07MAY86	1.0000
			+999999.000[c]	+99999.0000	02JUN86	1.0000
09061 CHEYENNE RIVER	AT RED CANYON	GROSS BETA	+554.4019	+31.4821	07MAY86	2.3000
			+999999.000[c]	+99999.0000	02JUN86	2.3000
			+645.4595	+36.4214	03SEP86	2.3000
		RADIUM 226	+0.2588	+0.0286	07MAY86	0.1000
			+999999.000[c]	+99999.0000	02JUN86	0.1000
			+0.4533	+0.0579	03SEP86	0.1000
		URANIUM[d]	+8.7692	+1.2280	07MAY86	1.0000
			+999999.000[c]	+99999.0000	02JUN86	1.0000
			+10.3524	+1.1192	03SEP86	1.0000
		THORIUM	+0.6548	+0.2219	07MAY86	1.0000
			+999999.000[c]	+99999.0000	02JUN86	1.0000
			+0.6094	+0.2167	03SEP86	1.0000
09063 CHEYENNE RIVER	BELOW C WOOD CR.	GROSS BETA	+473.3442	+27.4252	07MAY86	2.3000
			+999999.000[c]	+99999.0000	02JUN86	2.3000
			+23.3804	+4.5893	03SEP86	2.3000
		RADIUM 226	+0.2169	+0.0511	07MAY86	0.1000
			+999999.000[c]	+99999.0000	02JUN86	0.1000
			+0.2510	+0.0522	03SEP86	0.1000
		URANIUM[d]	+11.0571	+1.2930	07MAY86	1.0000
			+999999.000[c]	+99999.0000	02JUN86	1.0000
			+9.0375	+1.0133	03SEP86	1.0000
		THORIUM	+1.1551	+0.3504	07MAY86	1.0000
			+999999.000[c]	+99999.0000	02JUN86	1.0000
			+0.1499	+0.1093	03SEP86	1.0000
09064 CHEYENNE RIVER	AT SITE BOUNDARY	GROSS BETA	+508.3313	+29.1253	07MAY86	2.3000
			+999999.000[c]	+99999.0000	02JUN86	2.3000
			+686.3896	+38.5022	03SEP86	2.3000
		RADIUM 226	+0.2020	+0.0507	07MAY86	0.1000

TABLE A-11 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN SURFACE WATER TOTAL[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION	ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD
09064 CHEYENNE RIVER AT SITE BOUNDARY	RADIUM 226	+999999.000[c]	+99999.0000	02JUN86	0.1000
		+0.2486	+0.0275	03SEP86	0.1000
	URANIUM[d]	+14.3226	+1.3682	07MAY86	1.0000
		+999999.000[c]	+99999.0000	02JUN86	1.0000
		+9.6369	+1.0320	03SEP86	1.0000
	THORIUM	+0.6548	+0.2219	07MAY86	1.0000
		+999999.000[c]	+99999.0000	02JUN86	1.0000
		+0.9541	+0.3009	03SEP86	1.0000

a. Units are in pCi/L except for uranium which is in µg/L.
b. The uncertainty reported in the 1-sigma counting error.
c. Samples not collected due to oversight by contractor.
d. Natural uranium is assumed to have a specific activity of 0.677 µCi/g.

TABLE A-12

RADIOACTIVITY IN SURFACE WATER TOTAL

PCI/L - 0.037 BQ/L

NAME OF FACILITY ERGEMONI MILL DECOMMISSION — DOCKET NO. 40-1341
LOCATION OF FACILITY FALL RIVER COUNTY SOUTH DAKOTA — REPORTING PERIOD 1986

TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LOWER LIMIT OF DETECTION (LLD)	ALL INDICATOR LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN NAME, DISTANCE AND DIRECTION	MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	SEE NOTE 1	SEE NOTE 2		SEE NOTE 2	SEE NOTE 2	
GROSS BETA	2.00E+00	5.92E+02(11/ 11)	COTTONWOOD CREEK	7.25E+02(5/ 5)	6.11E+02(6/ 6)	
17		2.34E+01 - 9.19E+02	AT MOUTH	5.84E+02 - 9.19E+02	3.72E+02 - 7.66E+02	
RADIUM 226	1.00E-01	4.67E-01(11/ 11)	COTTONWOOD CREEK	7.01E-01(5/ 5)	2.03E-01(6/ 6)	
17		1.92E-01 - 1.39E+00	AT MOUTH	1.92E-01 - 1.39E+00	1.10E-01 - 3.39E-01	
URANIUM[a]	1.00E+00	1.78E+01(11/ 11)	COTTONWOOD CREEK	2.65E+01(5/ 5)	1.60E+01(6/ 6)	
17		8.77E+00 - 4.70E+01	AT MOUTH	1.20E+01 - 4.70E+01	6.82E+00 - 2.51E+01	
THORIUM	1.00E+00	1.16E+00(1/ 11)	CHEYENNE RIVER	1.16E+00(1/ 2)	6 VALUES <LLD	
17		1.16E+00 - 1.16E+00	BELOW C WOOD CR	1.16E+00 - 1.16E+00		

NOTE: 1. NOMINAL LOWER LIMIT OF DETECTION (LLD) AS DESCRIBED IN TABLE A-2B.
NOTE: 2. MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F).

a. Uranium results reported in units of ug/L.

TABLE A-13

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN GRAB SURFACE WATER DISSOLVED[a,b]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[c]	DATE COLLECT	NOMINAL LLD
09060 CHEYENNE RIVER	RR BRIDGE	GROSS BETA	+32.2929	+7.0765	30JUN86	2.3000
			+17.8692	+3.7078	06AUG86	2.3000
			+13.7285	+4.0717	03SEP86	2.3000
			+12.6345	+3.3887	060CT86	2.3000
		RADIUM 226	+0.2750	+0.0277	30JUN86	0.1000
			+0.2609	+0.0401	06AUG86	0.1000
			+0.2708	+0.0355	03SEP86	0.1000
			+0.0760	+0.0169	060CT86	0.1000
		URANIUM[d]	+6.9231	+1.0979	30JUN86	1.0000
			+10.2720	+1.3891	06AUG86	1.0000
			+8.8831	+1.0435	03SEP86	1.0000
			+2.8065	+0.2514	060CT86	1.0000
		THORIUM	+0.1387	+0.0936	30JUN86	1.0000
			+0.1321	+0.0940	06AUG86	1.0000
			+0.2070	+0.1238	03SEP86	1.0000
			-0.0829[e]	+0.1037	060CT86	1.0000
09061 CHEYENNE RIVER	AT RED CANYON	GROSS BETA	+18.5785	+4.0712	30JUN86	2.3000
			+21.1499	+3.9191	06AUG86	2.3000
			+5.7964	+3.0262	060CT86	2.3000
		RADIUM 226	+0.1950	+0.0282	30JUN86	0.1000
			+0.3957	+0.0590	06AUG86	0.1000
			+0.2515	+0.0540	060CT86	0.1000
		URANIUM[d]	+8.4522	+1.3627	30JUN86	1.0000
			+9.6000	+1.1954	06AUG86	1.0000
			+2.2222	+0.3201	060CT86	1.0000
		THORIUM	+0.0526	+0.0725	30JUN86	1.0000
			+0.0460	+0.0736	06AUG86	1.0000
			-0.0415[e]	+0.1102	060CT86	1.0000
09063 CHEYENNE RIVER	BELOW C WOOD CR.	GROSS BETA	+25.9278	+4.3979	30JUN86	2.3000
			+39.4001	+4.9150	06AUG86	2.3000
			+5.5111	+3.0103	060CT86	2.3000
		RADIUM 226	+0.2383	+0.0440	30JUN86	0.1000
			+0.2958	+0.0299	06AUG86	0.1000
			+0.1389	+0.0212	060CT86	0.1000
		URANIUM[d]	+8.0769	+1.1789	30JUN86	1.0000
			+8.1778	+1.1421	06AUG86	1.0000
			+2.5833	+0.2119	060CT86	1.0000
		THORIUM	+0.1531	+0.1013	30JUN86	1.0000
			+0.1321	+0.0940	06AUG86	1.0000
			+0.1244	+0.1410	060CT86	1.0000
09064 CHEYENNE RIVER	AT SITE BOUNDARY	GROSS BETA	+15.7580	+3.8810	30JUN86	2.3000
			+27.4084	+4.2350	06AUG86	2.3000

TABLE A-13 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN GRAB SURFACE WATER DISSOLVED[a,b]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION	ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[c]	DATE COLLECT	NOMINAL LLD
09064 CHEYENNE RIVER AT SITE BOUNDARY	GROSS BETA	+8.9084	+3.1868	060CT86	2.3000
	RADIUM 226	+0.1881	+0.0900	30JUN86	0.1000
		+0.0930	+0.0543	06AUG86	0.1000
		+0.2352	+0.0400	060CT86	0.1000
	URANIUM[d]	+8.7628	+1.4243	30JUN86	1.0000
		+8.0291	+1.1174	06AUG86	1.0000
		+3.9677	+0.2804	060CT86	1.0000
	THORIUM	+0.1100	+0.0866	30JUN86	1.0000
		+0.1895	+0.1079	06AUG86	1.0000
		+0.0829	+0.1328	060CT86	1.0000

a. Results from the analysis of the suspended solids fraction are presented in Tables A-15 and A-16.
b. Units are pCi/L except for uranium which is µg/L.
c. The uncertainity reported is the 1-sigma counting error.
d. Natural uranium is assumed to have a specfific activity of 0.677 µCi/g.
e. The negative value is an artifact of counting statistics and does not infer a negative activity.

NOTE: 1 pCi = 3.7×10^{-2} Bq.

TABLE A-14

RADIOACTIVITY IN GRAB SURFACE WATER DISSOLVED

PCI/L - 0.037 BQ/L

NAME OF FACILITY ERGEMONT MILL RECOMMISSION — DOCKET NO. 40-1341
LOCATION OF FACILITY FALL RIVER COUNTY, SOUTH DAKOTA — REPORTING PERIOD 1986

TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LOWER LIMIT OF DETECTION (LLD)	ALL INDICATOR LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN NAME, DISTANCE AND DIRECTION	MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	SEE NOTE 1	SEE NOTE 2		SEE NOTE 2	SEE NOTE 2	
GROSS BETA	2.00E+00	1.87E+01(9/ 9)	CHEYENNE RIVER	2.36E+01(3/ 3)	1.91E+01(4/ 4)	
13		5.51E+00 - 3.94E+01	BELOW C WOOD CR	5.51E+00 - 3.94E+01	1.26E+01 - 3.23E+01	
RADIUM 226	1.00E-01	2.42E-01(8/ 9)	CHEYENNE RIVER	2.81E-01(3/ 3)	2.69E-01(3/ 4)	
13		1.39E-01 - 3.96E-01	AT RED CANYON	1.95E-01 - 3.96E-01	2.61E-01 - 2.75E-01	
URANIUM[a]	1.00E+00	6.65E+00(9/ 9)	CHEYENNE RIVER	6.92E+00(3/ 3)	7.22E+00(4/ 4)	
13		2.22E+00 - 9.60E+00	AT SITE BOUNDARY	3.97E+00 - 8.76E+00	2.81E+00 - 1.03E+01	
THORIUM	1.00E+00	9 VALUES <LLD			4 VALUES <LLD	
13		ANALYSIS PERFORMED				

NOTE: 1. NOMINAL LOWER LIMIT OF DETECTION (LLD) AS DESCRIBED IN TABLE A-26.
NOTE: 2. MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F).

a. Uranium results reported in units of $\mu g/m^3$.

TABLE A-15

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN SUSPENDED SOLIDS (SURFACE WATER)[a,b]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[c]	DATE COLLECT	NOMINAL LLD
09060 CHEYENNE RIVER	RR BRIDGE	GROSS BETA	+217.9989	+13.4784	30JUN86	.
			+59.9723	+3.6807	06AUG86	.
			+2044.2974	+104.5549	03SEP86	.
			+139.9861	+8.5525	060CT86	.
		RADIUM 226	+7.4465	+0.5412	30JUN86	.
			+1.9111	+0.1480	06AUG86	.
			+0.2859	+0.0304	03SEP86	.
			+2.2046	+0.1784	060CT86	.
		URANIUM[d]	+20.2944	+1.9147	30JUN86	.
			+7.0001	+0.7888	06AUG86	.
			+6.3510	+0.6019	03SEP86	.
			+15.7592	+2.7793	060CT86	.
		THORIUM	+22.6660	+6.0743	30JUN86	.
			+6.0439	+1.6217	06AUG86	.
			+10.4036	+2.6931	03SEP86	.
			+17.6667	+4.6575	060CT86	.
09061 CHEYENNE RIVER	AT RED CANYON	GROSS BETA	+1491.7500	+77.1907	30JUN86	.
			+74.5627	+4.5428	06AUG86	.
			+157.4495	+9.7420	060CT86	.
		RADIUM 226	+0.3180	+0.0462	30JUN86	.
			+2.0071	+0.1611	06AUG86	.
			+2.8593	+0.2120	060CT86	.
		URANIUM[d]	+2.8730	+0.6299	30JUN86	.
			+5.8523	+0.6628	06AUG86	.
			+9.4141	+1.5602	060CT86	.
		THORIUM	+4.4178	+1.2236	30JUN86	.
			+6.7461	+1.8140	06AUG86	.
			+18.8741	+5.0094	060CT86	.
09063 CHEYENNE RIVER	BELOW C WOOD CR.	GROSS BETA	+114.4322	+7.1063	30JUN86	.
			+67.0526	+4.0917	06AUG86	.
			+2269.5723	+115.8334	03SEP86	.
			+137.5177	+8.3702	060CT86	.
		RADIUM 226	+2.8398	+0.2080	30JUN86	.
			+1.9411	+0.1526	06AUG86	.
			+0.1358	+0.0522	03SEP86	.
			[illegible]1835	+0.1703	060CT86	.
		URANIUM[d]	[illegible].0861	+1.6742	30JUN86	.
			[illegible]8655	+0.7314	06AUG86	.
			[illegible]3562	+0.6363	03SEP86	.
			.3320	+2.5104	060CT86	.
		THORIUM	.9965	+3.4808	30JUN86	.
			[illegible]8842	+1.8401	06AUG86	.

TABLE A-15 (Continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN SUSPENDED SOLIDS (SURFACE WATER)[a,b]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[c]	DATE COLLECT	NOMINAL LLD
09063 CHEYENNE RIVER	BELOW C WOOD CR.	THORIUM	+6.7558	+1.7830	03SEP86	.
			+15.3042	+4.0583	060CT86	.
09064 CHEYENNE RIVER	AT SITE BOUNDARY	GROSS BETA	+88.9311	+5.513[illegible]	30JUN86	.
			+123.1166	+7.5069	06AUG86	.
			+130.2285	+7.9776	060CT86	.
		RADIUM 226	+2.4259	+0.1755	30JUN86	.
			+3.4899	+0.2835	06AUG86	.
			+2.1851	+0.1618	060CT86	.
		URANIUM[d]	+14.5566	+1.7146	30JUN86	.
			+11.5852	+1.5769	06AUG86	.
			+13.5851	+1.8023	060CT86	.
		THORIUM	+8.7959	+2.3826	30JUN86	.
			+11.1883	+3.0085	06AUG86	.
			+10.8160	+2.9344	060CT86	.

a. Results from the analysis of the dissolved fraction are presented in Tables A-13 and A-14.
b. Results are reported in relation to the original volume of water sample; therefore, units are pCi/L except for uranium which is ugÁ.
c. The uncertainty reported is the 1-sigma counting error.
d. Natural uranium is assumed to have a specific activity of 0.677 uCi/g.

NOTE: 1 pCi = 3.7×10^{-2} Bq.

TABLE A-16

RADIOACTIVITY IN SUSPENDED SOLIDS (SURFACE WATER)

PCI/L - 0.037 BQ/L

NAME OF FACILITY BROWNS VALLEY IRRIGATION DOCKET NO. 50-1361
LOCATION OF FACILITY FALL RIVER COUNTY SOUTH DAKOTA REPORTING PERIOD 1986

TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LOWER LIMIT OF DETECTION (LLD)	ALL INDICATOR LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN NAME DISTANCE AND DIRECTION	MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	SEE NOTE 1	SEE NOTE 2		SEE NOTE 2	SEE NOTE 2	
GROSS BETA	NOT ESTAB	465.46(10/ 10)	CHEYENNE RIVER	647.14(4/ 4)	615.56(4/ 4)	
14		67.05 - 2269.57	BELOW C WOOD CR	67.05 - 2269.57	59.97 - 2044.30	
RADIUM 226	NOT ESTAB	2.04(10/ 10)	CHEYENNE RIVER	2.70(3/ 3)	2.96(4/ 4)	
14		0.14 - 3.49	AT SITE BOUNDARY	2.19 - 3.49	0.29 - 7.45	
URANIUM[a]	NOT ESTAB	10.30(10/ 10)	CHEYENNE RIVER	13.91(3/ 3)	12.35(4/ 4)	
14		2.37 - 18.23	AT SITE BOUNDARY	11.59 - 15.59	6.35 - 20.29	
THORIUM	NOT ESTAB	10.26(10/ 10)	CHEYENNE RIVER	10.49(4/ 4)	14.20(4/ 4)	
14		4.42 - 19.87	BELOW C WOOD CR	6.76 - 15.30	6.05 - 22.67	

NOTE: 1. NOMINAL LOWER LIMIT OF DETECTION (LLD) AS DESCRIBED IN TABLE 3.
NOTE: 2. MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F).

a. Uranium results reported in units of ug/L.

TABLE A-17

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN WELL WATER[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD
09065 (#3-1)M1	NW POND 1	RADIUM 226	+0.5784	+0.0647	08OCT86	0.1000
		URANIUM[c]	+42.2022	+1.7596	08OCT86	1.0000
09068 (#3-7)M7	SE POND 1	RADIUM 226	+1.0113	+0.0827	01JUL86	0.1000
			+0.5759	+0.1091	08OCT86	0.1000
		URANIUM[c]	+215.8235	+11.6290	01JUL86	1.0000
			+282.3599	+18.3058	08OCT86	1.0000
09069 (#3-4)M8	N ORE	RADIUM 226	+0.2125	+0.0295	01JUL86	0.1000
			+0.3976	+0.0482	08OCT86	0.1000
		URANIUM[c]	+41.0435	+1.4925	01JUL86	1.0000
			+34.0220	+1.5567	08OCT86	1.0000
09071 (#3-6)M10	CULVERT	RADIUM 226	+1.0450	+0.0831	01JUL86	0.1000
			+0.7978	+0.0852	08OCT86	0.1000
		URANIUM[c]	+1472.0000	+78.1104	01JUL86	1.0000
			+2129.7051	+116.0453	08OCT86	1.0000
09072 (#3-8)M11	NW POND 7	RADIUM 226	+0.4069	+0.0528	08OCT86	0.1000
		URANIUM[c]	+213.1034	+13.5473	08OCT86	1.0000
09075 WELL M14	POND 10	RADIUM 226	+0.4433	+0.0407	01JUL86	0.1000
			+0.7598	+0.0717	08OCT86	0.1000
		URANIUM[c]	+390.2097	+21.0518	01JUL86	1.0000
			+435.0000	+21.5689	08OCT86	1.0000
09076 (#3-12)	RUDY TOMAN FARM	RADIUM 226	+0.3257	+0.0428	02JUL86	0.1000
			+0.2707	+0.0407	08OCT86	0.1000
		URANIUM[c]	+71.6000	+11.4397	02JUL86	1.0000
			+12.0000	+1.8088	08OCT86	1.0000

a. Units for radium are pCi/L. Units for uranium are µg/L.
b. The uncertainty reported is the 1-sigma counting error.
c. Natural uranium is assumed to have a specific activity of 0.677 µCi/g.

NOTE: 1 pCi = 3.7×10^{-2} Bq.

NOTE: Wells designed with an "M" are onsite wells

TABLE A-18

RADIOACTIVITY IN WELL WATER

PCI/L - 0.037 BQ/L

NAME OF FACILITY EDGEMONT MILL DECOMMISSION — DOCKET NO. 40-1341
LOCATION OF FACILITY FALL RIVER COUNTY, SOUTH DAKOTA — REPORTING PERIOD 1986

TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LOWER LIMIT OF DETECTION (LLD)	ALL INDICATOR LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN NAME DISTANCE AND DIRECTION	MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	SEE NOTE 1	SEE NOTE 2		SEE NOTE 2	SEE NOTE 2	
RADIUM 226	1.00E-01	6.23E-01(10/ 10)	(#3-6)M10	9.21E-01(2/ 2)	2.98E-01(2/ 2)	
12		2.12E-01 - 1.04E+00	CULVERT	7.98E-01 - 1.04E+00	2.71E-01 - 3.26E-01	
URANIUM [a]	1.00E+00	5.26E+02(10/ 10)	(#3-6)M10	1.80E+03(2/ 2)	4.18E+01(2/ 2)	
12		3.40E+01 - 2.13E+03	CULVERT	1.47E+03 - 2.13E+03	1.20E+01 - 7.16E+01	

NOTE: 1. NOMINAL LOWER LIMIT OF DETECTION (LLD) AS DESCRIBED IN TABLE A-16.
NOTE: 2. MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F).

a. Uranium results reported in units of ug/L.

TABLE A-19

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN WELL WATER DISSOLVED[a,b]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[c]	DATE COLLECT	NOMINAL LLD
09065 (#3-1)M1	NW POND 1	RADIUM 226	+0.5097	+0.0444	01JUL86	.
		URANIUM[d]	+35.2759	+1.2408	01JUL86	.
09072 (#3-8)M11	NW POND 7	RADIUM 226	+0.2453	+0.0318	01JUL86	.
		URANIUM[d]	+305.6602	+18.1026	01JUL86	.

a. Results from the analysis of the suspended solids fraction are presented in Tables A-21 and A-22.
b. Units are pCi/L except for uranium which is µg/L.
c. The uncertainty reported is the 1-sigma counting error.
d. Natural uranium is assumed to have a specific activity of 0.677 µCi/g.

NOTE: 1 pCi = 3.7×10^{-2} Bq.

TABLE A-20

RADIOACTIVITY IN WELL WATER DISSOLVED

PCI/L - 0.037 BQ/L

NAME OF FACILITY ERGEMONI MILL DECOMMISSION — DOCKET NO. 40-1161
LOCATION OF FACILITY FALL RIVER COUNTY, SOUTH DAKOTA — REPORTING PERIOD 1986

TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LOWER LIMIT OF DETECTION (LLD) SEE NOTE 1	ALL INDICATOR LOCATIONS MEAN (F) RANGE SEE NOTE 2	LOCATION WITH HIGHEST ANNUAL MEAN NAME AND DISTANCE AND DIRECTION	MEAN (F) RANGE SEE NOTE 2	CONTROL LOCATIONS MEAN (F) RANGE SEE NOTE 2	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
RADIUM 226	1.00E-01	3.78E-01(2/ 2)	(#3-1)M1	5.10E-01(1/ 1)		
2		2.45E-01 - 5.10E-01	NW POND 1	5.10E-01 - 5.10E-01		
URANIUM[a]	1.00E+00	1.70E+02(2/ 2)	(#3-8)M11	3.06E+02(1/ 1)		
2		3.53E+01 - 3.06E+02	NW POND 7	3.06E+02 - 3.06E+02		

NOTE: 1. NOMINAL LOWER LIMIT OF DETECTION (LLD) AS DESCRIBED IN TABLE A-26.
NOTE: 2. MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F).

a. Uranium results reported in units of ug/L.

TABLE A-21

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN SUSPENDED SOLIDS (WELL WATER)[a,b]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[c]	DATE COLLECT	NOMINAL LLD
09065 (#3-1)M1	NW POND 1	RADIUM 226	+0.5379	+0.0596	01JUL86	.
			+3.0498	+0.2187	08OCT86	.
		URANIUM[d]	+5.3681	+0.6017	01JUL86	.
			+3.0758	+0.4740	08OCT86	.
09072 (#3-8)M11	NW POND 7	RADIUM 226	+0.2316	+0.0490	01JUL86	.
		URANIUM[d]	+8.5852	+0.3806	01JUL86	.

a. Results from the analysis of the dissolved fraction are presented in Tables A-19 and A-20.
b. Results are reported in relation to the original volume of water sample; therefore, units are pCi/L except for uranium which is µg/L
c. The uncertainity reported is the 1-sigma counting error.
d. Natural uranium is assumed to have a specific activity of 0.677 µCi/g.

NOTE: 1 pCi = 3.7×10^{-2} Bq.

TABLE A-22

RADIOACTIVITY IN SUSPENDED SOLIDS (WELL WATER)

PCI/L - 0.037 BQ/L

NAME OF FACILITY ERSEMOAT HILL DECOMMISSION — DOCKET NO. 40-1341
LOCATION OF FACILITY BELL RIVER COUNTY SOUTH DAKOTA — REPORTING PERIOD 1986

TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LOWER LIMIT OF DETECTION (LLD)	ALL INDICATOR LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN NAME DISTANCE AND DIRECTION	MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	SEE NOTE 1	SEE NOTE 2		SEE NOTE 2	SEE NOTE 2	
RADIUM 226	NOT ESTAB	1.27(3/ 3)	(#3-1)N1	1.79(2/ 2)		
3		0.23 - 3.05	NW POND 1	0.54 - 3.05		
URANIUM[a]	NOT ESTAB	5.74(3/ 3)	(#3-2)N11	8.59(1/ 1)		
3		3.08 - 8.59	NW POND 7	8.59 - 8.59		

NOTE: 1. NOMINAL LOWER LIMIT OF DETECTION (LLD) AS DESCRIBED IN TABLE 3.
NOTE: 2. MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F).

a. Uranium results reported in units of ug/L.

TABLE A-23

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN WELL WATER (NEW WELLS)[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD
09376 WELL M-110	SW OF POND 7	GROSS ALPHA	+4.2319	+4.2372	17AUG86	.
			+51.8163	+18.0894	16SEP86	.
			+8.0252	+11.4265	22OCT86	.
		GROSS BETA	+40.3045	+7.0530	17AUG86	.
			+51.4752	+10.2228	16SEP86	.
			+53.0324	+10.1761	22OCT86	.
		RADIUM 226	+0.4005	+0.0576	17AUG86	.
			+0.2792	+0.0458	16SEP86	.
			+0.1848	+0.0324	22OCT86	.
		RADIUM 228	+1.4537	+1.3480	17AUG86	.
			+0.4888	+0.6127	16SEP86	.
			+2.2222	+1.3111	22OCT86	.
		URANIUM[c]	+64.0000	+7.2311	17AUG86	.
			+86.2641	+11.6736	16SEP86	.
			+65.3200	+6.2710	22OCT86	.
09377 WELL M-111	NW OF POND 7	GROSS ALPHA	+12.7351	+7.9557	17AUG86	.
			+10.8209	+8.8668	16SEP86	.
			+20.2703	+10.8781	22OCT86	.
		GROSS BETA	+144.5290	+16.0170	17AUG86	.
			+192.9556	+23.7855	16SEP86	.
			+406.7488	+36.8413	22OCT86	.
		RADIUM 226	-0.1671[d]	+0.0504	17AUG86	.
			+0.4194	+0.0505	16SEP86	.
			+0.4953	+0.0973	22OCT86	.
		RADIUM 228	+4.1338	+1.6356	17AUG86	.
			+3.1870	+0.7349	16SEP86	.
			+4.1511	+1.5879	22OCT86	.
		URANIUM[c]	+217.6364	+10.3134	17AUG86	.
			+438.5906	+25.7160	16SEP86	.
			+290.0908	+14.8429	22OCT86	.
09378 WELL M-112	ENE OF POND 1J	GROSS ALPHA	+4.5376	+5.8624	17AUG86	.
			+14.3463	+8.6257	16SEP86	.
			-4.1112[d]	+5.5044	22OCT86	.
		GROSS BETA	+18.0763	+4.3554	17AUG86	.
			+20.7557	+6.9423	16SEP86	.
			+12.9037	+6.4840	22OCT86	.
		RADIUM 226	+0.3763	+0.0533	17AUG86	.
			+0.1995	+0.0490	16SEP86	.
			+0.0074	+0.0664	22OCT86	.
		RADIUM 228	+1.5345	+1.1471	17AUG86	.
			+0.5549	+0.6217	16SEP86	.
			+1.2210	+1.1638	22OCT86	.

TABLE A-23 (continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN WELL WATER (NEW WELLS)[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD
09378 WELL M-112	ENE OF POND 10	URANIUM[c]	+4.0473	+0.3779	17AUG86	.
			+1.6043	+0.1831	16SEP86	.
			+1.1304	+0.1832	22OCT86	.
09379 WELL M-113	SE OF POND 2	GROSS ALPHA	+22.3468	+8.2154	17AUG86	.
			+16.8412	+8.2070	16SEP86	.
			+12.0010	+8.2787	22OCT86	.
		GROSS BETA	+46.2288	+5.9477	17AUG86	.
			+32.2539	+7.3065	16SEP86	.
			+36.2835	+7.7707	22OCT86	.
		RADIUM 226	+0.4727	+0.0516	17AUG86	.
			+0.1231	+0.0432	16SEP86	.
			+0.2820	+0.1019	22OCT86	.
		RADIUM 228	+1.4358	+0.6882	17AUG86	.
			+1.7884	+0.6299	16SEP86	.
			+2.8884	+1.2136	22OCT86	.
		URANIUM[c]	+51.1525	+6.2740	17AUG86	.
			+62.6250	+9.4011	16SEP86	.
			+53.8049	+6.3236	22OCT86	.
09380 WELL M-115	N OF POND 1	GROSS ALPHA	+2.8933	+5.4149	17AUG86	.
			+6.7241	+6.9137	16SEP86	.
			+21.4482	+8.9362	22OCT86	.
		GROSS BETA	+147.5194	+15.6247	17AUG86	.
			+103.3795	+15.1926	16SEP86	.
			+100.2659	+15.0407	22OCT86	.
		RADIUM 226	-0.4224[d]	+0.0494	17AUG86	.
			+0.1102	+0.0522	16SEP86	.
			+0.1952	+0.0926	22OCT86	.
		RADIUM 228	+0.9588	+0.5938	17AUG86	.
			+1.0432	+0.6479	16SEP86	.
			+1.7224	+1.1985	22OCT86	.
		URANIUM[c]	+297.0190	+17.0234	17AUG86	.
			+401.0000	+21.1808	16SEP86	.
			+319.8596	+16.1089	22OCT86	.
09381 WELL M-116	NW OF POND 8	GROSS ALPHA	+6.2413	+8.8866	17AUG86	.
			+20.5856	+11.0473	16SEP86	.
			+9.2523	+9.5132	22OCT86	.
		GROSS BETA	+24.5326	+7.8010	17AUG86	.
			+55.8470	+9.5071	16SEP86	.
			+32.1543	+8.2949	22OCT86	.
		RADIUM 226	-0.0574[d]	+0.0477	17AUG86	.
			+0.1882	+0.0457	16SEP86	.
			+0.1107	+0.0495	22OCT86	.

TABLE A-23 (continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN WELL WATER (NEW WELLS)[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD
09381 WELL M-11a	NW OF POND 8	RADIUM 228	+1.9486	+0.6530	17AUG86	.
			+3.2377	+0.7377	16SEP86	.
		URANIUM[c]	+2.4869	+1.2122	22OCT86	.
			+67.4098	+10.6037	17AUG86	.
			+65.9341	+10.4323	16SEP86	.
09382 WELL M-11B	NE CORNER OF POND 2	GROSS ALPHA	+57.0604	+5.5289	22OCT86	.
			+10.5528	+7.4806	18AUG86	.
			+13.3132	+8.0046	16SEP86	.
		GROSS BETA	+2.5731	+6.3622	22OCT86	.
			+71.1501	+12.1123	18AUG86	.
			+111.5837	+15.9764	16SEP86	.
		RADIUM 226	+72.3633	+13.8854	22OCT86	.
			+1.3637	+0.1044	18AUG86	.
			+0.1595	+0.0215	16SEP86	.
		RADIUM 228	+0.1998	+0.0553	22OCT86	.
			+0.7483	+1.0659	18AUG86	.
			+1.3812	+0.6824	16SEP86	.
		URANIUM[c]	+4.0075	+1.3428	22OCT86	.
			+102.6543	+6.1532	18AUG86	.
			+202.9091	+52.6103	16SEP86	.
09383 WELL M-11B	SE OF POND 8	GROSS ALPHA	+54.4857	+8.5386	22OCT86	.
			+11.9757	+9.8130	17AUG86	.
			+18.6240	+11.1977	16SEP86	.
		GROSS BETA	-5.4753[d]	+7.3308	22OCT86	.
			+46.3342	+8.9913	17AUG86	.
			+40.4868	+8.9120	16SEP86	.
		RADIUM 226	+30.9893	+8.4573	22OCT86	.
			+0.0364	+0.0281	17AUG86	.
			+0.2226	+0.0305	16SEP86	.
		RADIUM 228	+0.1083	+0.0495	22OCT86	.
			+1.2127	+1.276[illegible]	17AUG86	.
			+1.3220	+0.59[illegible]	16SEP86	.
		URANIUM[c]	+1.9968	+0.6537	22OCT86	.
			+42.5294	+1.5412	17AUG86	.
			+36.6372	+1.2956	16SEP86	.
09384 WELL M-12a	N OF POND 3	GROSS ALPHA	+25.4902	+1.1302	22OCT86	.
			+34.6612	+10.5809	16SEP86	.
		GROSS BETA	+27.8944	+9.7381	22OCT86	.
			+168.6167	+18.8532	16SEP86	.
		RADIUM 226	+221.7435	+21.4121	22OCT86	.
			+0.9544	+0.0750	16SEP86	.
			+1.2365	+0.1135	22OCT86	.

TABLE A-23 (continued)

ENVIRONMENTAL RADIOLOGICAL MONITORING AT EDGEMONT MILL DECOMMISSION

RADIOACTIVITY IN WELL WATER (NEW WELLS)[a]

01MAY86 TO 31OCT86

STATION CODE/LOCATION/DESCRIPTION		ANALYSIS (NUCLIDE)	ACTIVITY	ERROR[b]	DATE COLLECT	NOMINAL LLD
09384 WELL M-120	N OF POND 3	RADIUM 228	+1.038[d]	+0.6453	16SEP86	.
			+1.9113	+1.1837	22OCT86	.
		URANIUM[c]	+382.7271	+22.5983	16SEP86	.
			+279.6279	+15.1785	22OCT86	.

a. Units are in pCi/L except for uranium which is in ug/L.
b. The uncertainty reported is the 1-sigma counting error.
c. Natural uranium is assumed to have a specific activity of 0.677 uCi/g.
d. The negative value is an artifact of counting statistics and does not infer a negative activity.

TABLE A-24

RADIOACTIVITY IN WELL WATER (NEW WELLS)

PCI/L - 0.037 BQ/L (DISSOLVED)

NAME OF FACILITY EDGEMONT MILL DECOMMISSION — DOCKET NO. 40-1351
LOCATION OF FACILITY FALL RIVER COUNTY SOUTH DAKOTA — REPORTING PERIOD 1986

TYPE AND TOTAL NUMBER OF ANALYSIS PERFORMED	LOWER LIMIT OF DETECTION (LLD)	ALL INDICATOR LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN NAME DISTANCE AND DIRECTION	MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	SEE NOTE 1	SEE NOTE 2		SEE NOTE 2	SEE NOTE 2	
GROSS ALPHA	NOT ESTAB	15.72(22/ 23)	WELL #-120	31.28(2/ 2)	9.44(2/ 3)	
26		2.57 - 51.82	N OF POND 3	27.89 - 34.66	4.54 - 14.35	
GROSS BETA	NOT ESTAB	96.99(23/ 23)	WELL #-111	248.08(3/ 3)	17.25(3/ 3)	
26		24.53 - 406.75	NW OF POND 7	144.53 - 406.75	12.90 - 20.76	
RADIUM 226	NOT ESTAB	0.39(20/ 23)	WELL #-120	1.10(2/ 2)	0.19(3/ 3)	
26		0.04 - 1.36	N OF POND 3	0.95 - 1.24	0.01 - 0.38	
RADIUM 228	NOT ESTAB	2.03(23/ 23)	WELL #-111	3.82(3/ 3)	1.10(3/ 3)	
26		0.49 - 4.15	NW OF POND 7	3.19 - 4.15	0.55 - 1.53	
URANIUM[a]	NOT ESTAB	158.91(23/ 23)	WELL #-115	339.29(3/ 3)	2.26(3/ 3)	
26		25.49 - 438.58	N OF POND 1	297.02 - 401.00	1.13 - 4.05	

NOTE: 1. NOMINAL LOWER LIMIT OF DETECTION (LLD) AS DESCRIBED IN TABLE 3.
NOTE: 2. MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F).

a. Uranium results reported in units of ug/L.

Table A-25

Environmental Radiation Levels - Edgemont Uranium Mill
May 1986 - October 1986

Environmental Gamma Radiation Levels
mR/Quarter[a]

Reference[b]	Monitoring Station	May 1986 July 1986	August 1986 October 1986	Average: October 1982 October 1986
2	EG-01	26.9 ± 3.2[c]	23.1 ± 0.3[c]	23.5 ± 2.9[d]
3	EG-02	23.5 ± 1.9	23.1 ± 0.8	24.0 ± 3.1
4	EG-03	32.3 ± 0.5	33.4 ± 0.1	32.8 ± 2.8
5	EG-04	33.2 ± 0.9	33.5 ± 0.5	33.0 ± 3.2
6	EG-05	28.5 ± 0.2	28.6 ± 0.1	28.5 ± 2.9
1	ED-1	65.5 ± 0.8	65.1 ± 0.5	63.9 ± 5.3
22	McBride Yard	67.9 ± 2.0	60.7 ± 1.8	65.6 ± 6.4
20	Martinez Yard	37.2 ± 1.5	37.1 ± 0.4	38.7 ± 3.0
26	SE Pond 7	96.1 ± 5.0	96.4 ± 4.0	91.6 ± 8.4
23	Shutt Fence	101.9 ± 0.1	102.0 ± 0.9	102.9 ± 11.0
24	Lolley (New) House	41.7 ± 1.9	40.7 ± 1.2	41.7 ± 3.4
27	Harrod House	---	31.2 ± 0.4	28.7 ± 2.5
25	Site boundary (near Bollwork yard, NW Cottonwood)	110.5 ± 1.5	99.8 ± 4.6	106.5 ± 7.3
28	Site boundary (near seep area)	72.2 ± 2.0	80.9 ± 5.8	76.8 ± 13.7
29	Seep area, North Post #9	81.4 ± 6.6	87.6 ± 1.9	80.5 ± 6.8[e]
30	Seep area, NW Post #30	73.2 ± 0[f]	74.6 ± 0.3	68.8 ± 7.7[e]
31	Seep area, SW Post #43	76.8 ± 0.2	77.5 ± 5.1	76.0 ± 5.9[e]
32	Seep area, South Post #63	85.4 ± 3.8	87.0 ± 5.6	89.4 ± 7.1[e]

a. Data normalized to one quarter (2,190 hours).
b. Referenced to Figures A-1, A-2, and Table A-1.2.
c. Mean of 2 TLDs. Uncertainty is the 1-sigma value for the mean.
d. Mean of quarterly measurements for the period. Uncertainty is the 1-sigma value for the mean.
e. April 1983 - October 1986.
f. Data from one TLD.

Table A-26

Detection Capabilities for Environmental Sample Analysis
Nominal Lower Limit of Detection (LLD)[a]

Type	Air Particulate	(WL.hr) Radon Progeny	Ground Water	Surface Water	Sediment	Soil	Vegetation	Direct Radiation
Gross α	0.005 pCi/m^3			2.0 pCi/L				
Gross β	0.01 pCi/m^3			2.4 pCi/L				
Total U	1×10^{-4} $\mu g/m^3$		1 $\mu g/L$	1 $\mu g/L$	1 $\mu g/g$	1 $\mu g/g$	0.01 $\mu g/g$	
Th-230	1×10^{-4} pCi/m^3			1 pCi/L	1 pCi/g	1 pCi/g	0.01 pCi/g	
Ra-226	1×10^{-4} pCi/m^3		0.1 pCi/L	0.1 pCi/L	0.1 pCi/g	0.1 pCi/g	0.005 pCi/g	
Pb-210	2×10^{-3} pCi/m^3				1 pCi/g	1 pCi/g	0.20 pCi/g	
Radon Progeny		0.1						
Po-210					1 pCi/g	1 pCi/g		
Direct Radiation								0.1 mrem

a. The detection limits listed herein are based on the following sample sizes: (1) air particulates--800-1,000 m^3; (2) water--1 liter; soil and sediment--1 gram dry material; (3) Pb-210 in vegetation--1 gram dry material; (4) all other listed radionuclides in vegetation--1 gram ash. Factors such as sample size, decay times, chemical yield and counting efficiency may vary for a given sample. These variations may change the detection limit for that given sample. Detection limits for soil, sediment, and vegetation are based on sample dry weight.

Table A-27

Results of Interlaboratory Comparison

A. Air Filter (pCi/Filter)

	Gross Alpha		Gross Beta	
Date	EPA Value	TVA Average	EPA Value	TVA Average
4/86	15 ± 9	13.7	47 ± 9	51

B. Water (pCi/Liter)

	Radium-226		Uranium	
Date	EPA Value	TVA	EPA Value	TVA Average
2/86			9 ± 10	10.7
3/86	4.1 ± 1.1	3.6		
6/86	8.6 ± 2.6	9.7		

EPA values are know ± three standard deviations.

Table A-28

Maximum Permissible Concentrations
For Nonoccupational Exposure

	MPC		MPC	
	In Water μCi/mL	In Air μCi/mL	In Water (pCi/L)[a]	In Air (pCi/m^3)[a]
Gross alpha[b]	3 x 10^{-8}	2 x 10^{-14}	30	0.02
Gross beta[c]	3 x 10^{-8}	1 x 10^{-12}	30	1.0
Uranium	3 x 10^{-5}	5 x 10^{-12}	44,000[d]	7.4[d]
Th-230	2 x 10^{-6}	8 x 10^{-14}	2,000	0.08
Ra-226	3 x 10^{-8}	2 x 10^{-12}	30	2.0
Pb-210	1 x 10^{-7}	4 x 10^{-12}	100	4.0
Po-210	7 x 10^{-7}	7 x 10^{-12}	700	7.0

a. 1 pCi = 3.7 x 10^{-2} Bq
b. For mixes.
c. MPC based on most conservative beta emitter, taken as Radium-228.
d. Units in μg/L and μg/m^3, respectively.

Figure A-1

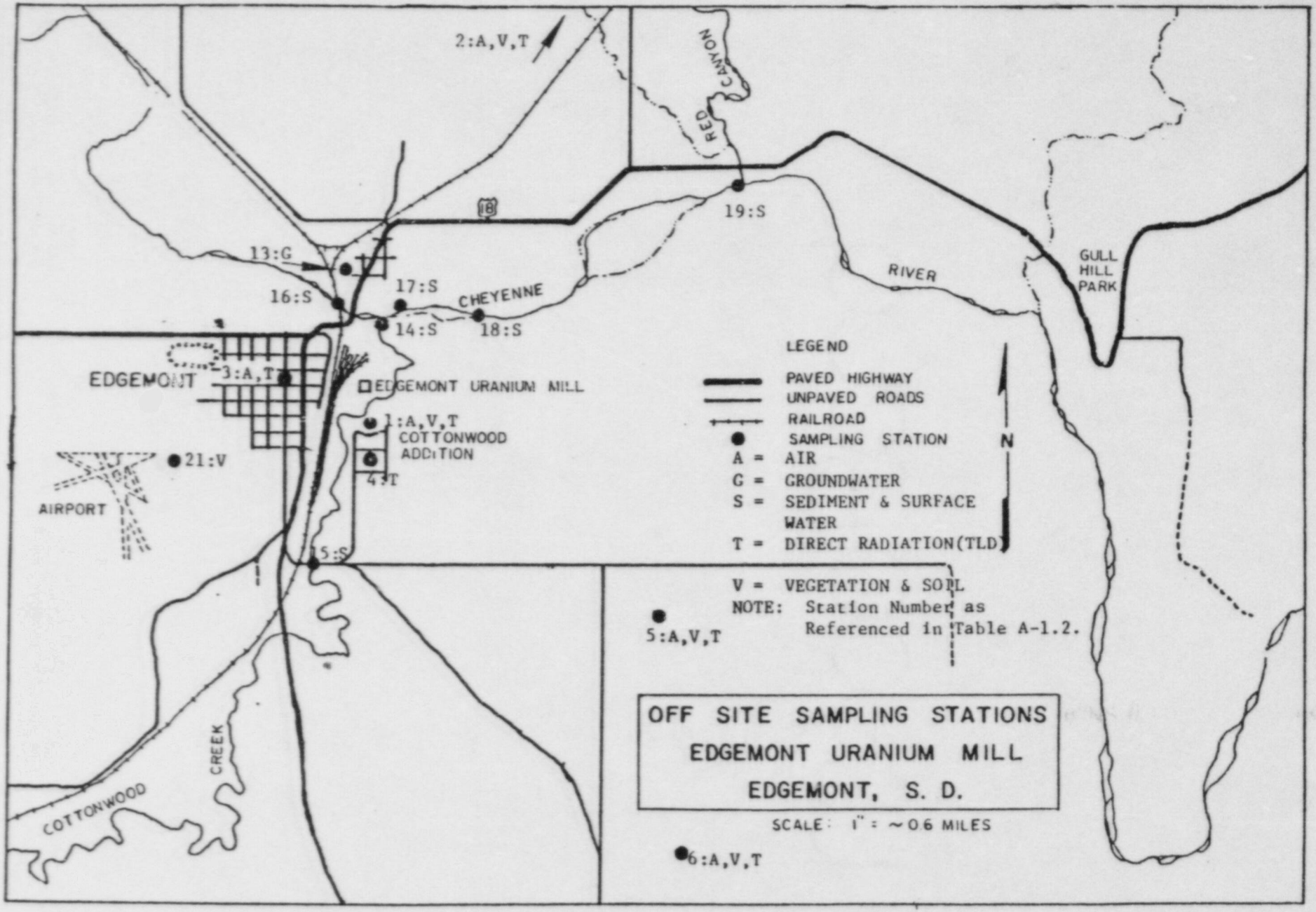
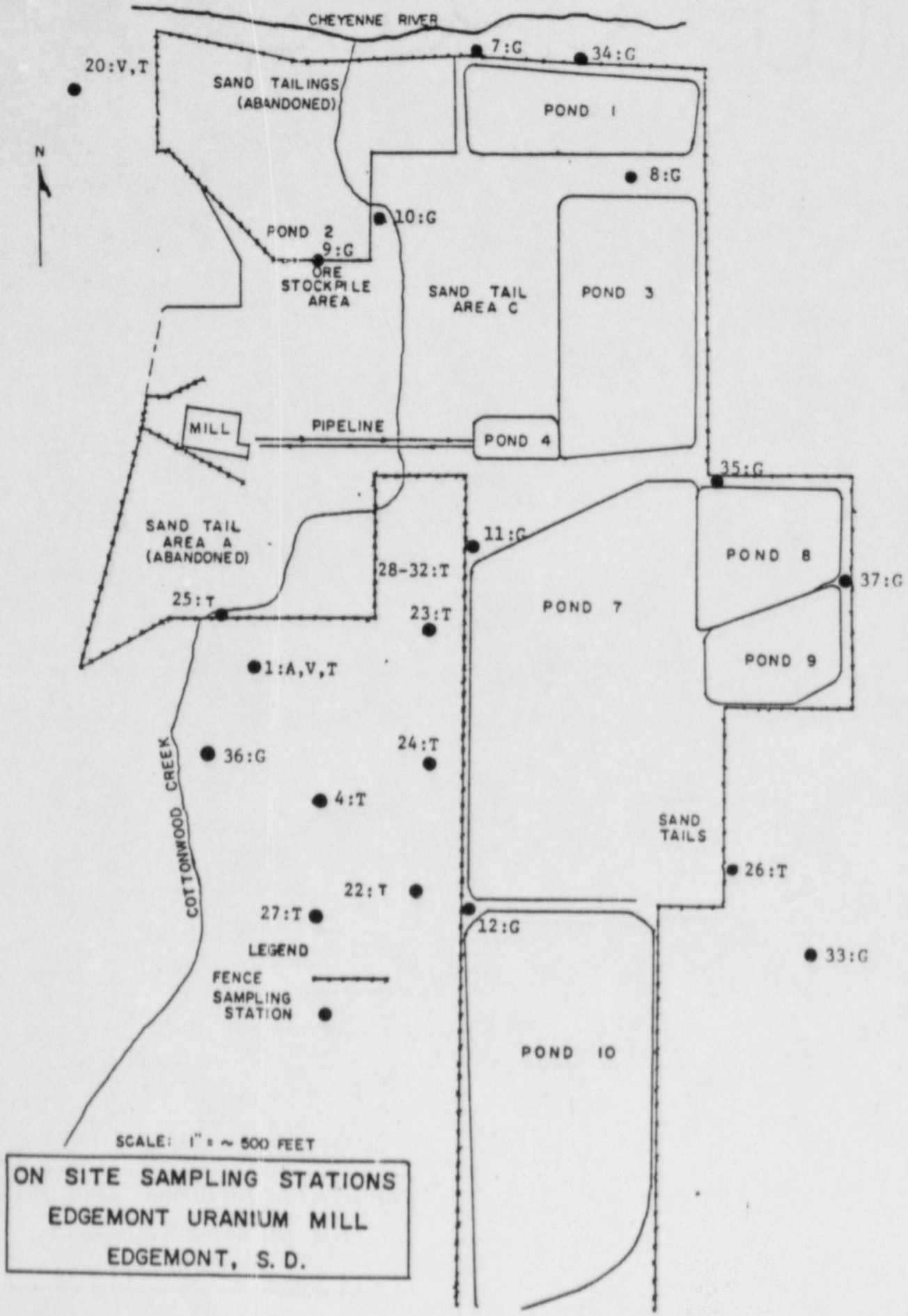

2:A,V,T
RED CANYON
19:S
GULL HILL PARK
RIVER
13:G
16:S
17:S
CHEYENNE
14:S
18:S
EDGEMONT
3:A,T
EDGEMONT URANIUM MILL
1:A,V,T
COTTONWOOD ADDITION
4:T
21:V
AIRPORT
15:S
LEGEND
PAVED HIGHWAY
UNPAVED ROADS
RAILROAD
SAMPLING STATION
A = AIR
G = GROUNDWATER
S = SEDIMENT & SURFACE WATER
T = DIRECT RADIATION(TLD)
V = VEGETATION & SOIL
NOTE: Station Number as Referenced in Table A-1.2.
N
5:A,V,T
OFF SITE SAMPLING STATIONS
EDGEMONT URANIUM MILL
EDGEMONT, S. D.
SCALE: 1" = ~0.6 MILES
6:A,V,T
COTTONWOOD CREEK

Figure A-2



ON SITE SAMPLING STATIONS
EDGEMONT URANIUM MILL
EDGEMONT, S. D.

Figure A-2

Figure A-3.1

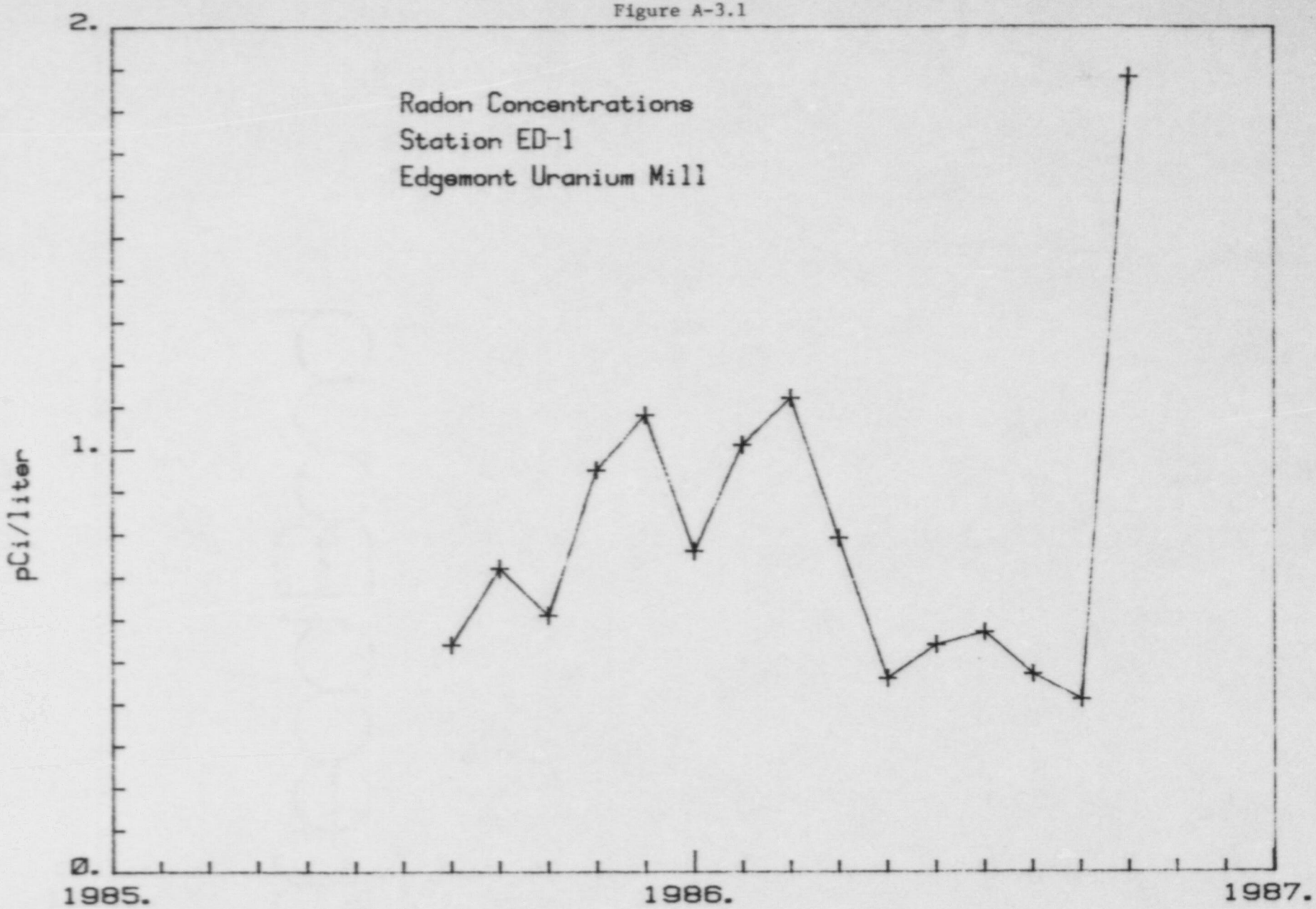

Radon Concentrations
Station ED-1
Edgemont Uranium Mill
pCi/liter
2.
1.
Ø.
1985.
1986.
1987.

Figure A-3.2

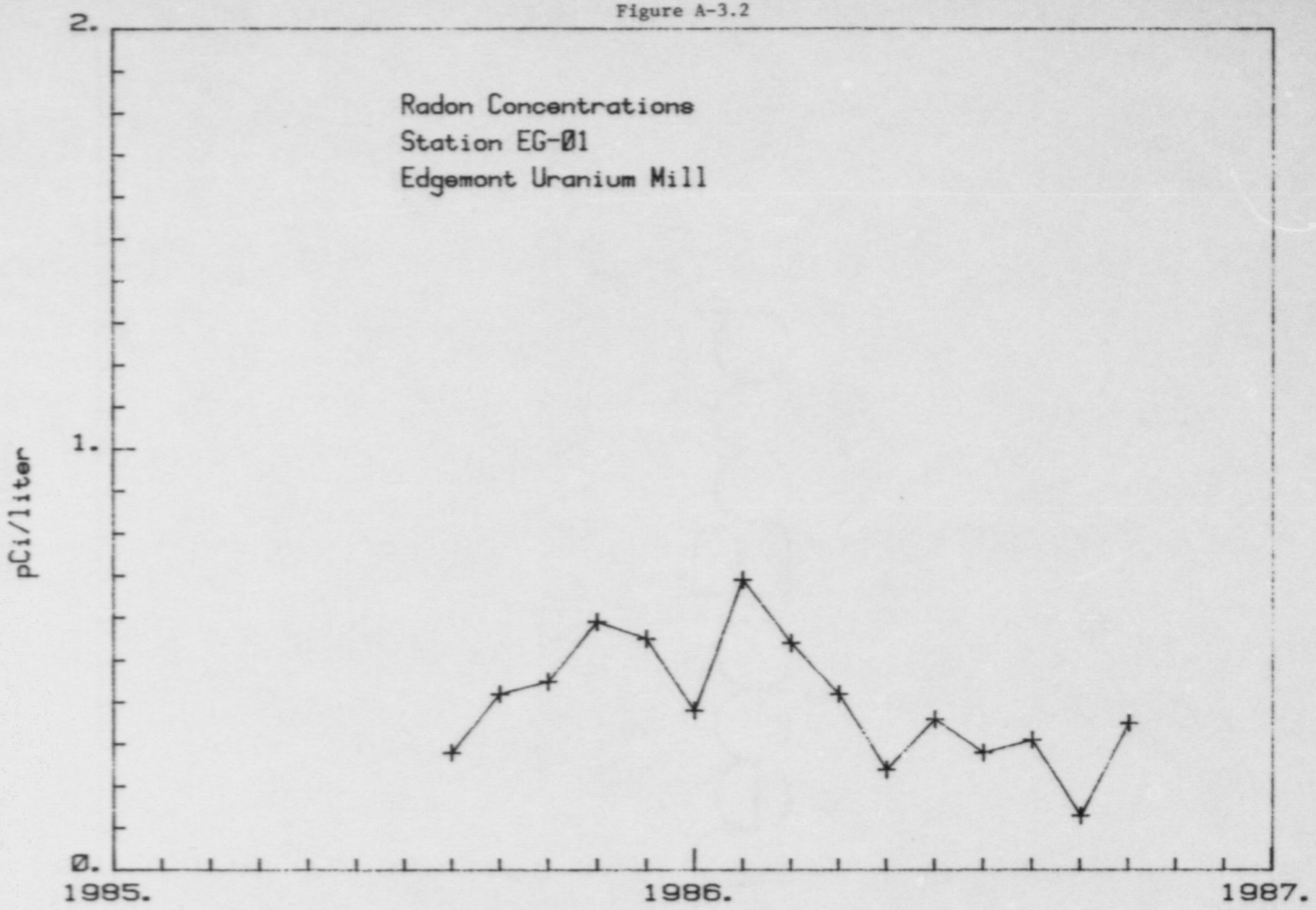

Radon Concentrations
Station EG-Ø1
Edgemont Uranium Mill
pCi/liter
2.
1.
Ø.
1985.
1986.
1987.

Figure A-3.3

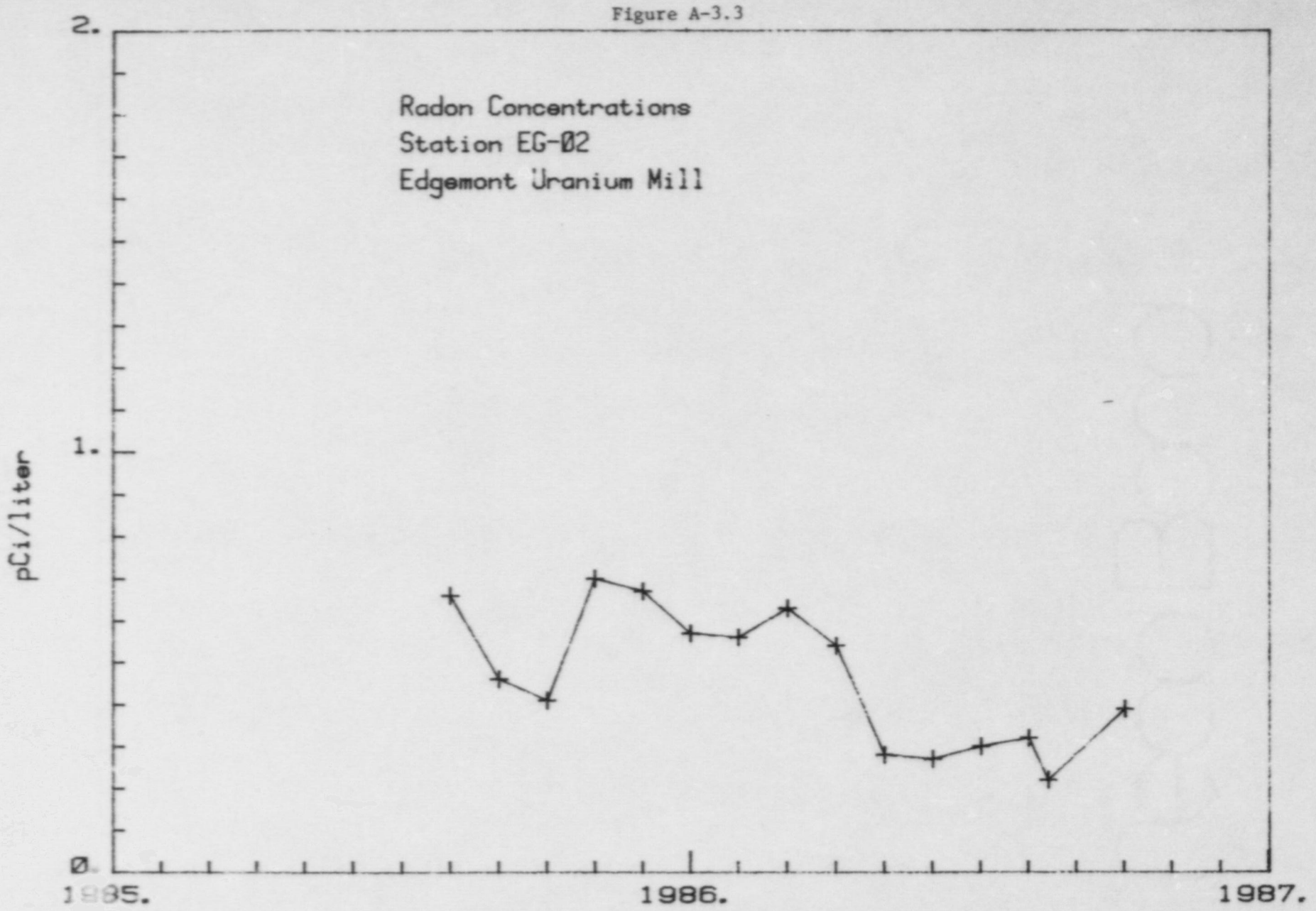

Radon Concentrations
Station EG-02
Edgemont Uranium Mill
pCi/liter
2.
1.
0.
1985.
1986.
1987.

Figure A-3.4

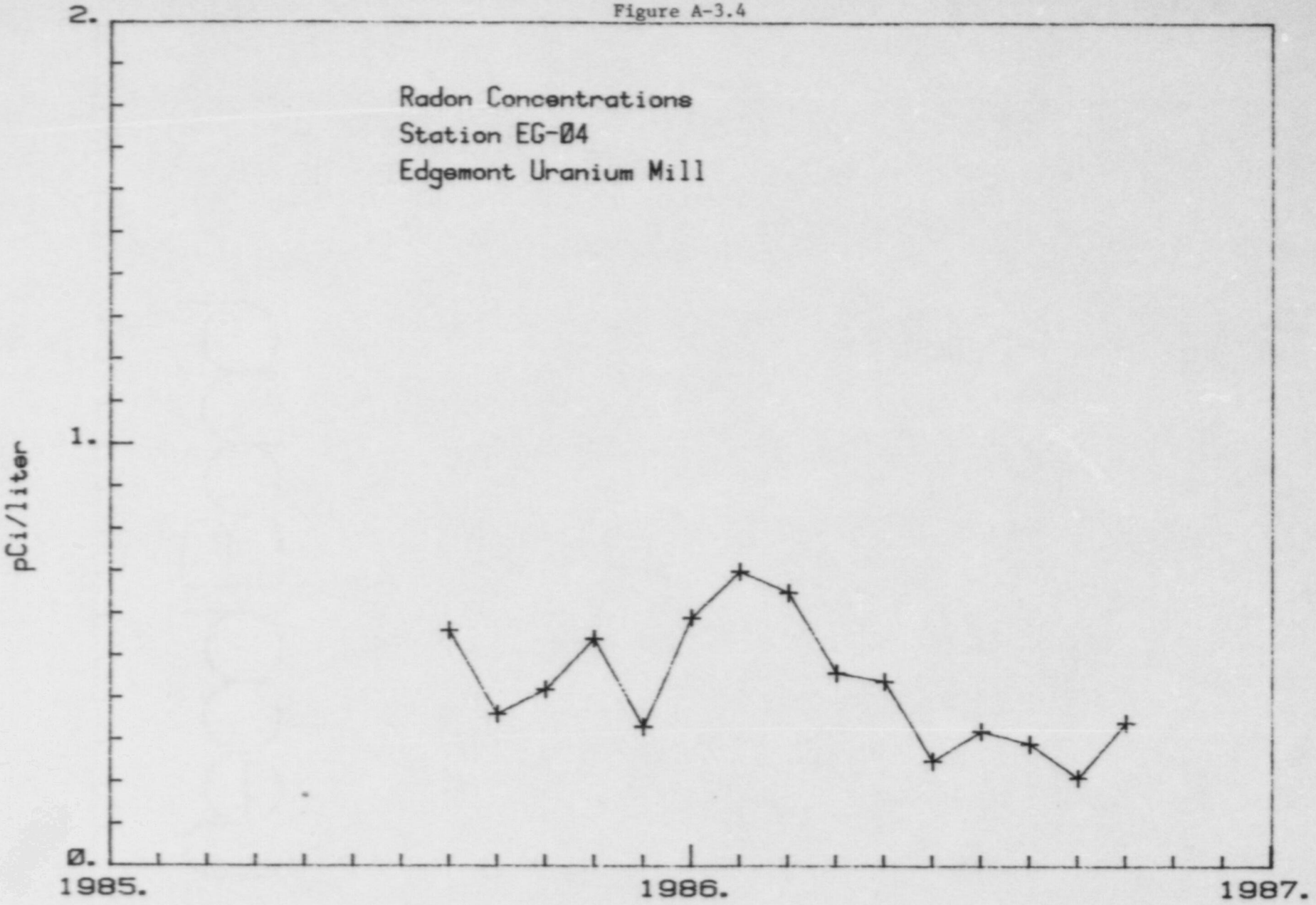

Radon Concentrations
Station EG-Ø4
Edgemont Uranium Mill
pCi/liter
2.
1.
Ø.
1985.
1986.
1987.

Figure A-3.5

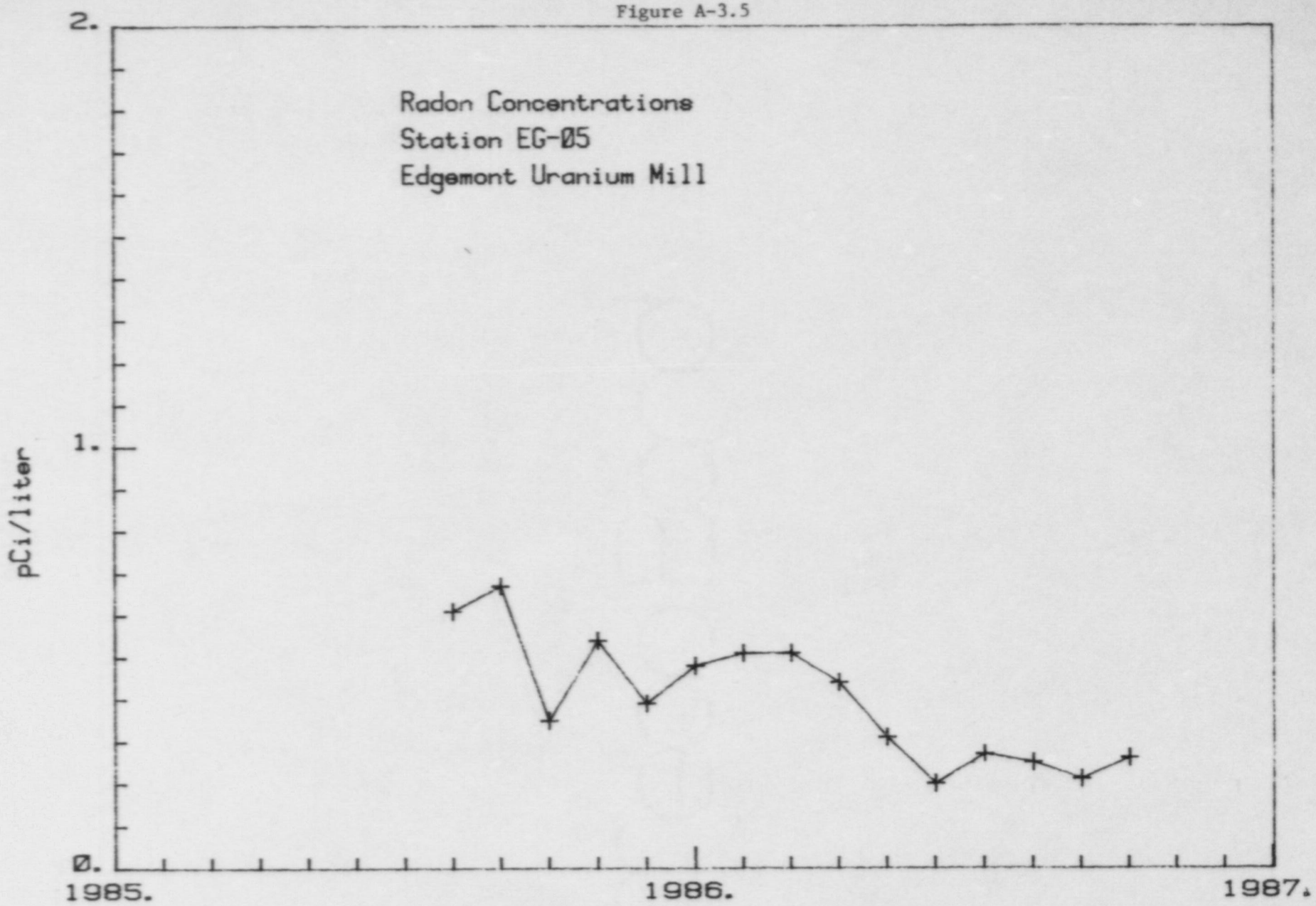

Radon Concentrations
Station EG-Ø5
Edgemont Uranium Mill
pCi/liter
2.
1.
Ø.
1985.
1986.
1987.

Figure A-4.1

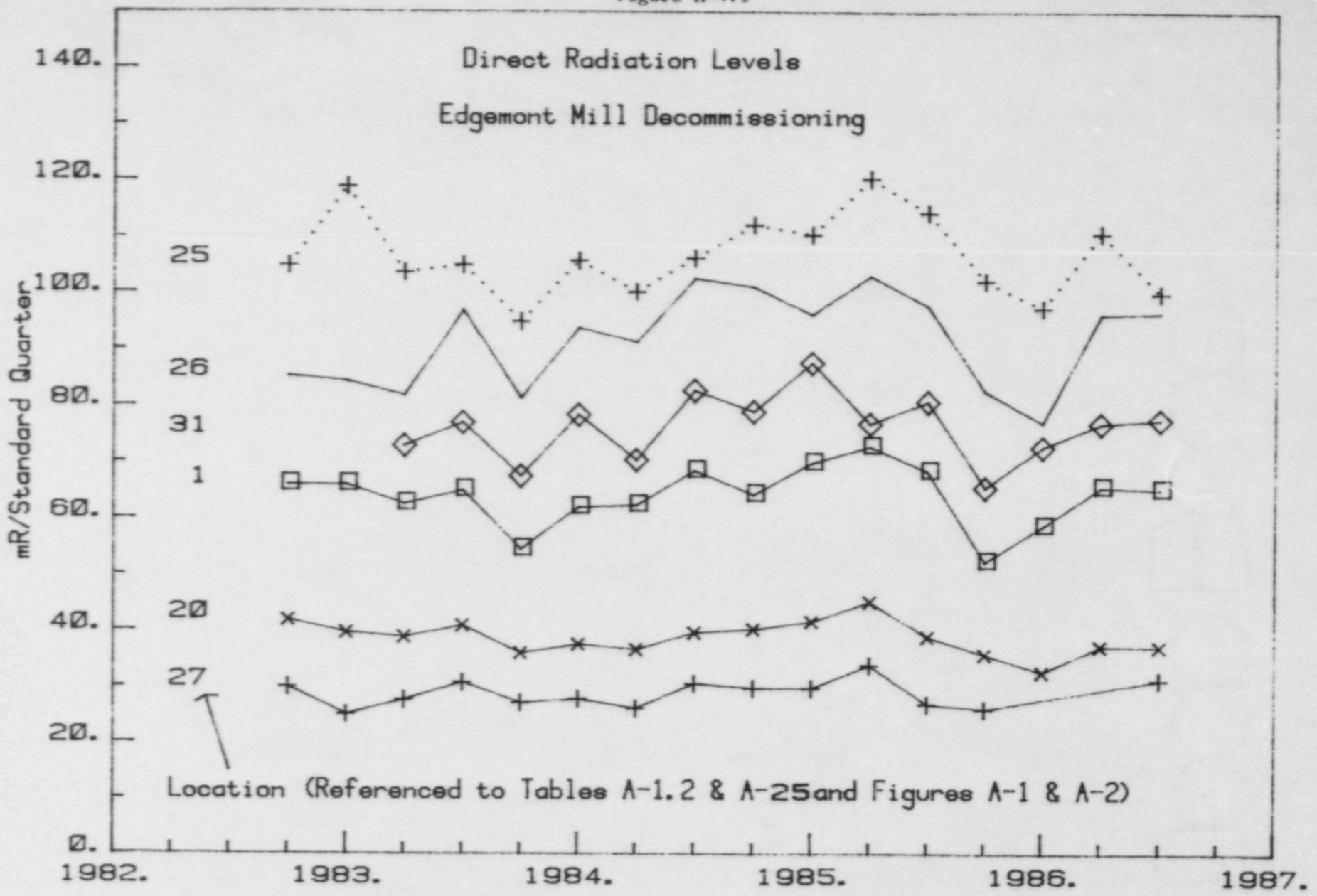

Direct Radiation Levels
Edgemont Mill Decommissioning
mR/Standard Quarter
140.
120.
100.
80.
60.
40.
20.
0.
1982.
1983.
1984.
1985.
1986.
1987.
25
26
31
1
20
27
Location (Referenced to Tables A-1.2 & A-25and Figures A-1 & A-2)

Figure A-4.2

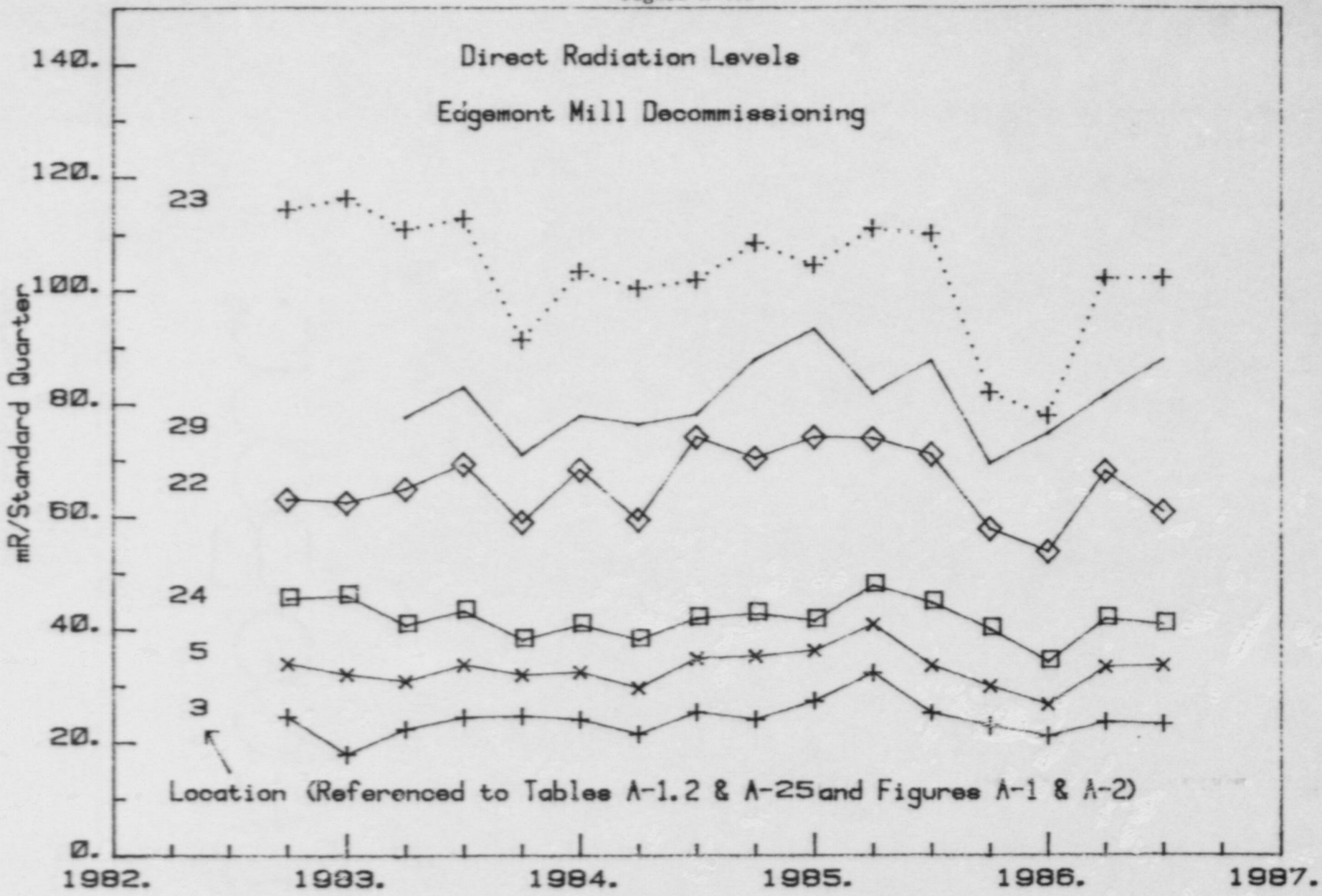

Direct Radiation Levels
Edgemont Mill Decommissioning
mR/Standard Quarter
140.
120.
100.
80.
60.
40.
20.
0.
1982.
1983.
1984.
1985.
1986.
1987.
23
29
22
24
5
3
Location (Referenced to Tables A-1.2 & A-25 and Figures A-1 & A-2)

Figure A-4.3

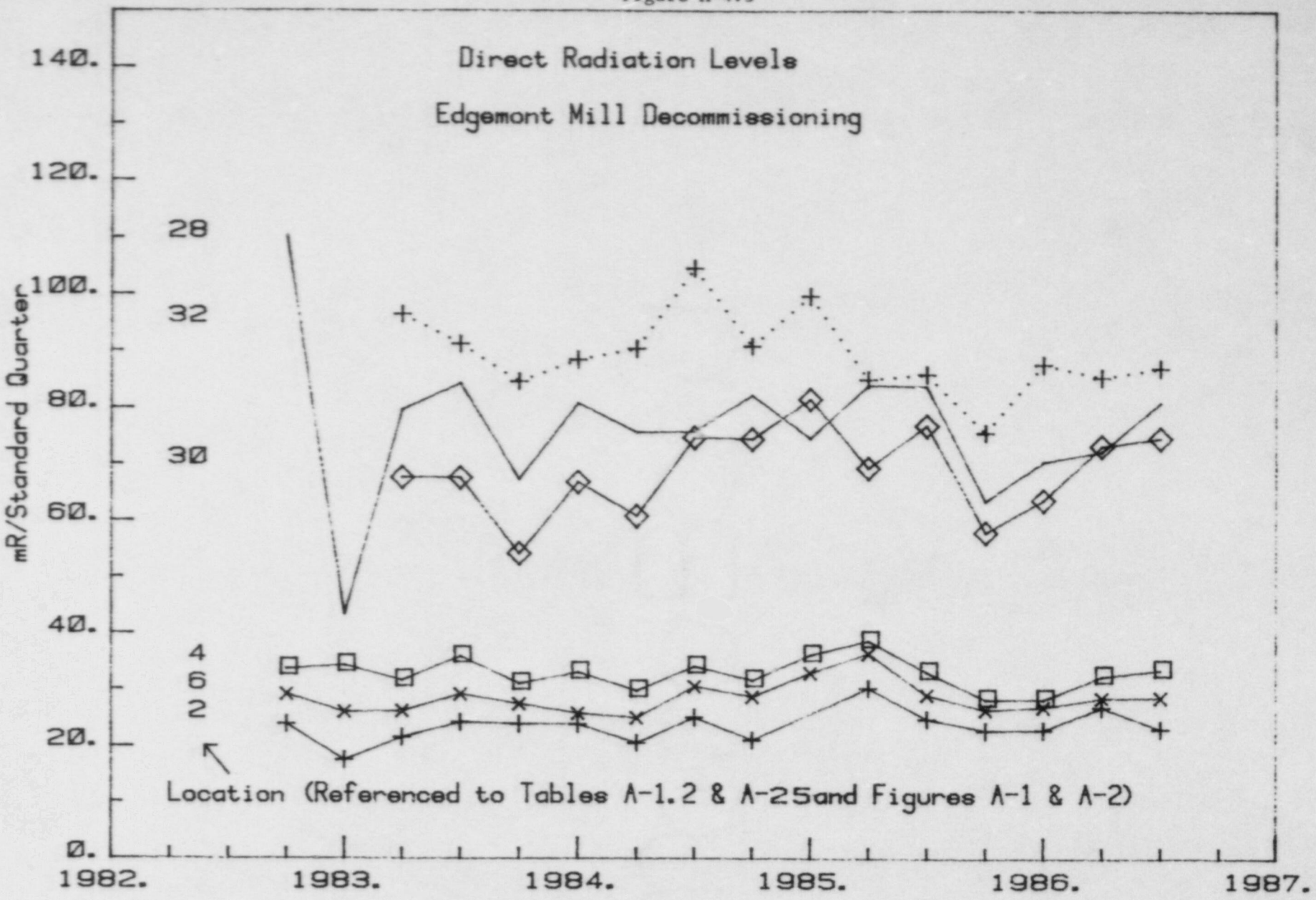

Direct Radiation Levels
Edgemont Mill Decommissioning
mR/Standard Quarter
140.
120.
100.
80.
60.
40.
20.
0.
28
32
30
4
6
2
Location (Referenced to Tables A-1.2 & A-25and Figures A-1 & A-2)
1982.
1983.
1984.
1985.
1986.
1987.

Figure A-5

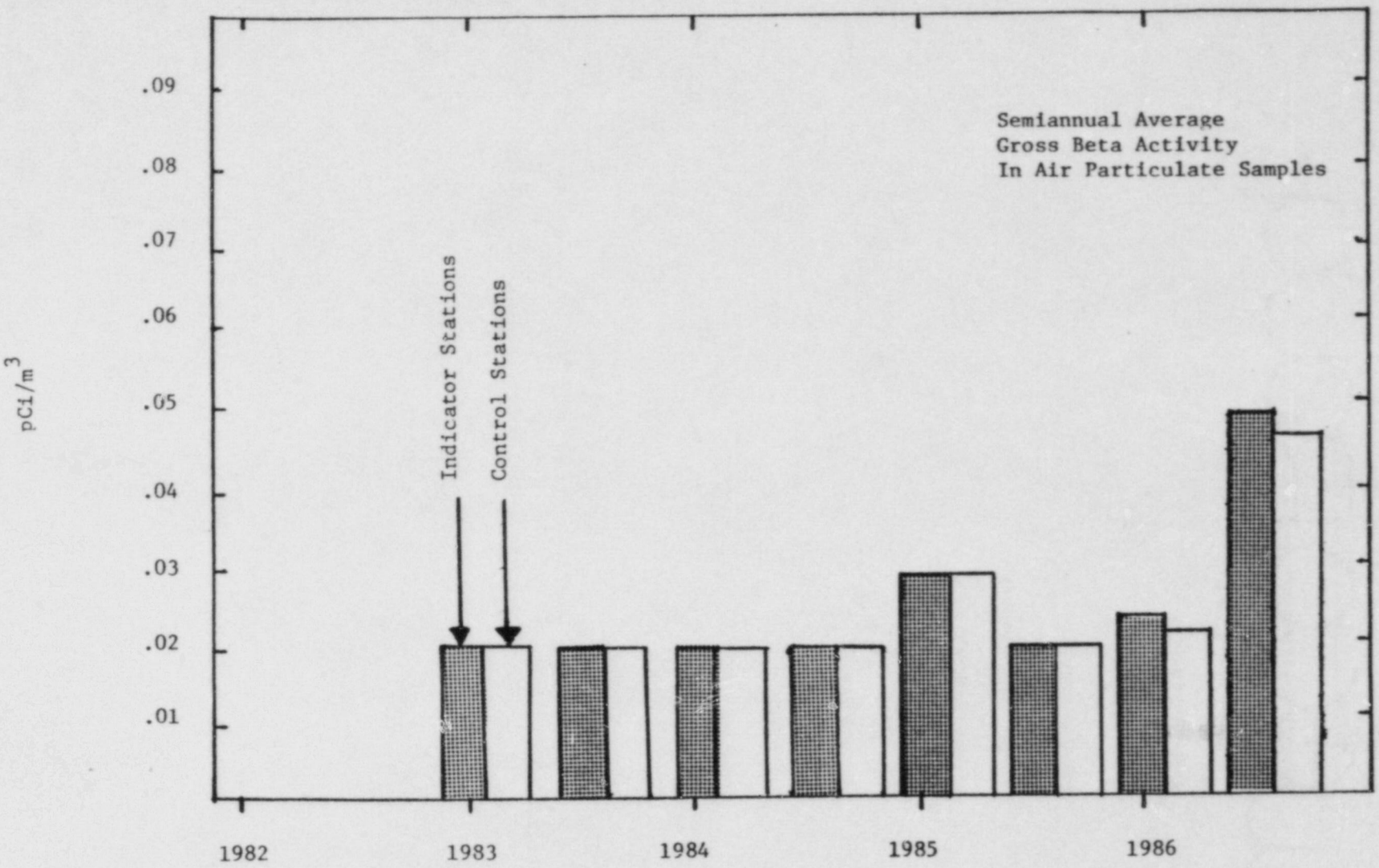

Semiannual Average
Gross Beta Activity
In Air Particulate Samples
Indicator Stations
Control Stations
pCi/m3
.09
.08
.07
.06
.05
.04
.03
.02
.01
1982
1983
1984
1985
1986

Figure A-6

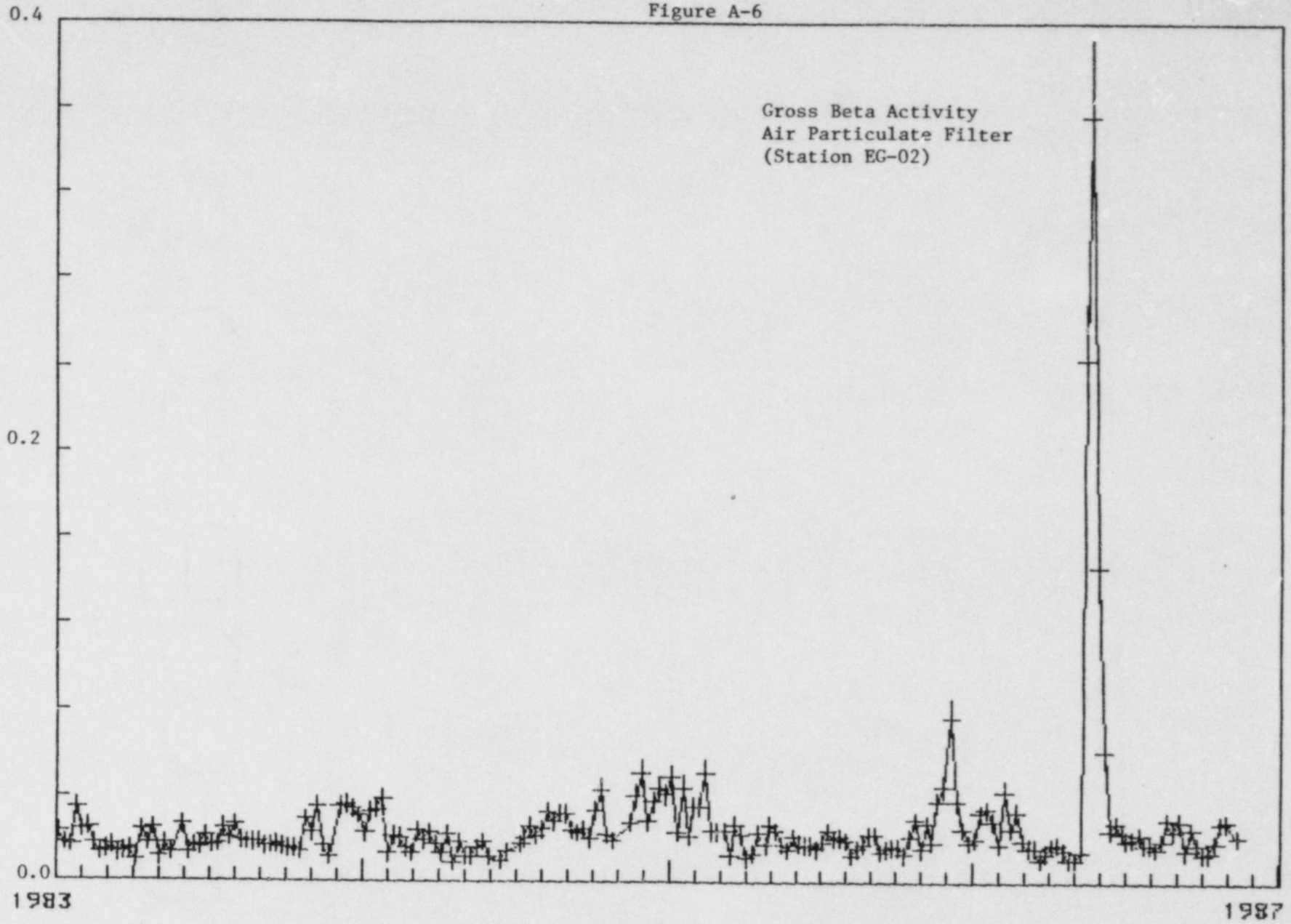
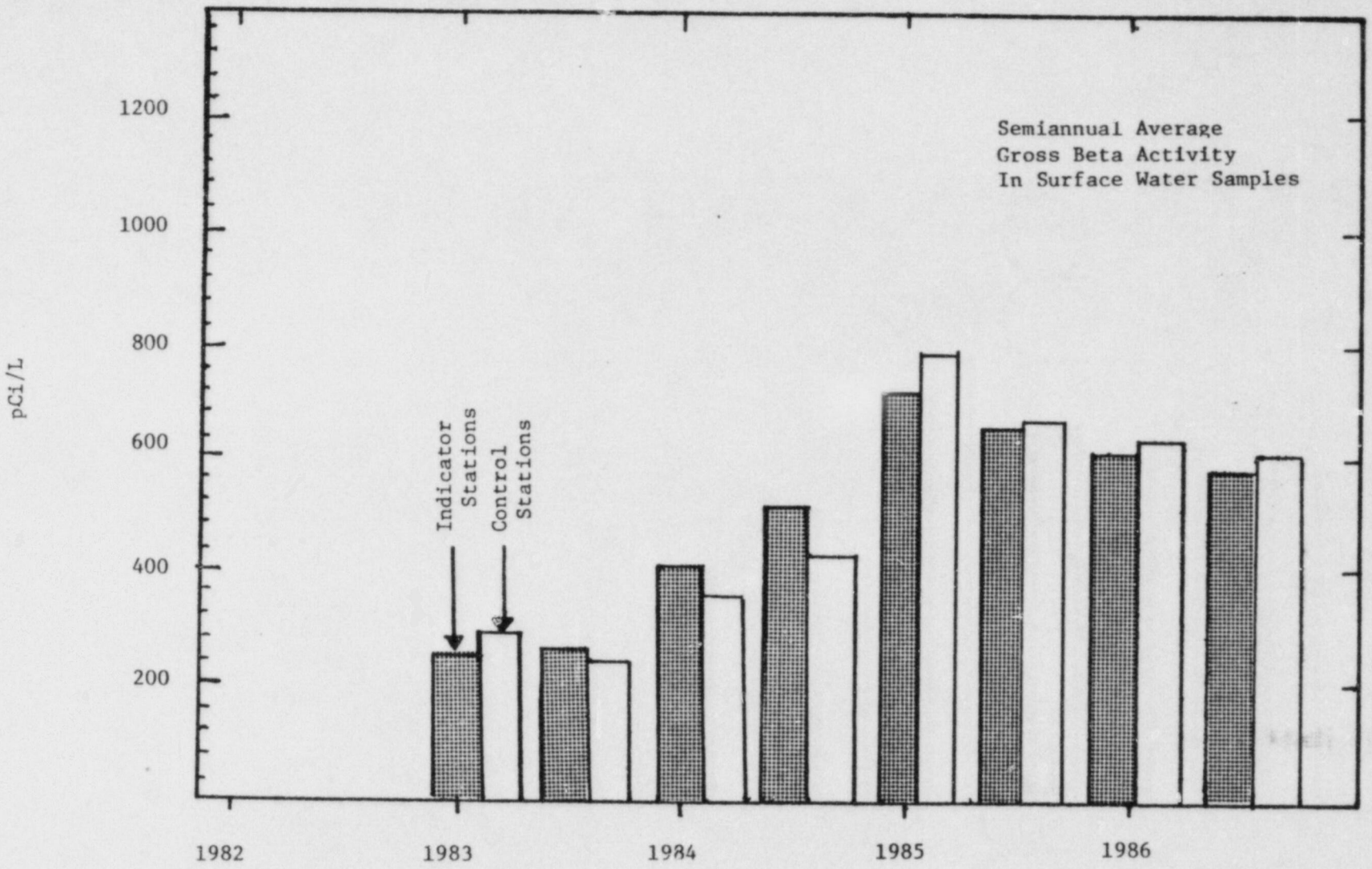

0.4
0.2
0.0
pCi/m3
1983
1987
Gross Beta Activity
Air Particulate Filter
(Station EG-02)

Figure A-7


Semiannual Average
Gross Beta Activity
In Surface Water Samples
pCi/L
1200
1000
800
600
400
200
Indicator Stations
Control Stations
1982
1983
1984
1985
1986

B. NONRADIOLOGICAL AIR QUALITY

Nonradiological air monitoring is currently being performed as described in Section 4.2.1 of the FES. (See Table B-1 and Figure B-1 for a description of the monitoring network.) Table B-2 contains the total suspended particulate (TSP) monitoring results for this 6-month period. Table B-3 contains summary information for the TSP data for this 6-month period and for each of the two previous 6-month periods.

Six-month arithmetic means are discussed in the following for comparison purposes. Means for this reporting period range from 44 percent more (station EG-04) to 91 percent more (station EG-03) than the mean values for the most recent 6-month period. This increase is mainly attributable to higher background levels in the summer and fall and is generally consistent with the trend in previous years. Compared to the May 1985-October 1985 means, the values for this reporting period range from 4 percent more (station EG-02) to 17 percent more (station EG-05) than the corresponding values. This increase is small enough to be within the year to year variability, but it could be indicative of a slight impact from the decommissioning activities, especially for EG-04 and EG-05.

Maximum 24-hour averages for the current reporting period exceeded the 150 $\mu g/m^3$ secondary standard on two occasions at monitor EG-03. Wind conditions on these days indicate that decommissioning activities could have contributed to the measured TSP levels at EG-03.

Figures B-2 through B-6 are plots of monthly average TSP values, by station, for January 1983-October 1986. A small concentration increase in the last six months is evident on Figures B-4 through B-6 for stations EG-03 through EG-05. This could be due to increased decommissioning activities.

All of the TSP monitoring results for stations EG-01 through EG-05 have been provided to the State of South Dakota. Invalid samples during this 6-month period were mainly related to flow controller malfunctions and motor failures.

Estimates of monitoring precision were calculated from the results obtained from the two samplers colocated at site EG-03. The method used for the precision estimates is given in 40 CFR 58, Appendix A. The upper and lower 95 percent probability limits for the May 1986-July 1986 period were +6 percent and -17 percent, respectively. For the August-October 1986 period, the upper and lower limits were +7 percent and -14 percent, respectively. During each of the 3-month periods, one sample was below the 20 $\mu g/m^3$ limit specified for TSP in 40 CFR 58, Appendix A.

B. NONRADIOLOGICAL AIR QUALITY (Cont'd)

Dust mitigation activities increased significantly in this 6-month period as dust-generating activities also increased. About 14 million gallons of water, 20 thousand gallons of magnesium chloride and 23 thousand gallons of ammonium lignum sulfonate (ALS-5) were applied. This compares to about 1.7 million gallons of water, 17 thousand gallons of magnesium chloride and no ALS-5 in the May-October 1985 period.

Tables B-4 and B-5 are quarterly joint frequency distributions (JFDs) of wind speed and wind direction from the 10-meter meteorological tower for the May-July 1986 and August-October 1986 periods, respectively. Data recoverability exceeded 90 percent for both quarters. About 23 percent of the data for the last quarter were obtained from the backup tower located at EG-04, while a circuit board was on order for the primary meteorological system. A larger spare parts inventory is being obtained to minimize downtime for the primary system.

The most frequent wind direction for both the May-July quarter and the August-October quarter was east. In the May-July quarter, winds from the east through southeast directions combined were about 7 and 4 percent more frequent than for the same quarter in the 1985 period and in the March 1977-February 1982 (5-year) period, respectively. Frequencies of winds from the west through northwest were 15 and 6 percent lower than in the corresponding quarter in the 1985 and 5-year periods, respectively. In the August-October quarter, east through southeast wind directions were about 15 and 14 percent more frequent than for the same quarter in 1985 and in the 5-year period, respectively. Frequencies of west through northwest winds were about 18 and 11 percent less than for the same quarter in 1985 and in the 5-year period, respectively. A possible effect of more easterly and less northwesterly winds would be to lessen the impact of decommissioning activities on stations EG-03 through EG-05 and to increase it on station EG-02.

The average wind speeds for the two quarters in this latest 6-month period were 4.2 m/s (9.5 mi/h) and 3.7 m/s (8.3 mi/h). These wind speeds are, respectively, about 2 and 15 percent lower than the averages for the corresponding quarters in 1985. The wind speed values are about 19 and 26 percent higher than the averages for the corresponding quarters in the 5-year data period. A portion of the decommissioning activities were suspended on one occasion because of sustained wind speeds in excess of 11 m/s (25 mi/h) and an inability to provide adequate dust mitigation.

Total precipitation for this 6-month period was about 15 inches. This compares to an average of about 12 inches for the same 6 months in the 1977-82 (5-year) period.

Meteorological instrumentation was calibrated by the National Weather Service on June 26, August 14, and September 29, 1986. No State audits of the monitoring system were conducted during this period.

TABLE B-1

Description of Air Monitoring Locations
for the Edgemont Mill Decommissioning Project

The locations of the hi-vol samplers and 10-m meteorological tower are shown on figure B-1; written descriptions of their locations follows:

1. EG-01: A hi-vol is located in the extreme southwest corner of Section 20. It is near the power line pole which is just east of the path leading into the gravel pit areas. A lo-vol is also located here. Function: Remote (reference) monitor.

2. EG-02: A hi-vol is located at rooftop level of the Black Hills Power and Light Building along the main street of Edgemont. A lo-vol is also located here. Function: TSP impacts at residences near the site boundary.

3. EG-03: A hi-vol is located in Cottonwood Community in the second block south of the mill site. The site is near the power pole located in the alley. Function: TSP impacts at residences near the site boundary.

4. EG-04: A hi-vol is located about 50 m southwest of the northeast corner of section 7. This is about 50 m south of the seldom used country road and about 400 m northeast of the haul road. A lo-vol and the backup meteorological tower are also located here. Function: TSP impacts in the area of predicted maximum short-term and maximum annual average concentrations based on modeling of all sources of the project combined.

5. EG-05: A hi-vol is located in the northeast portion of Section 17, about 700 m southeast of the disposal area. A lo-vol is also located here. Function: TSP impacts downwind of the most frequent wind direction.

6. Meteorological Tower: The 10-m tower and meteorological measurement equipment are located south of the office building in the southwest corner of section 6. The tower is on a small hill just north of the county road which forms the southern boundary of this section.

Table B-2

Edgemont Uranium Mill Decommissioning Project
TSP Data for May 1986 - October 1986
TSP (Micrograms/Cubic Meter)

Sampling Date	EG-01 (3 km NE of Mill)	EG-02 (E Central Edgemont)	EG-03 (Cotton-wood)	EG-04 (E of Haul Road)	EG-05 (SE of Disposal)
05/02/86	NS	81	52	26	36
05/08	9	25	16	10	2
05/14	20	58	59	18	42
05/20	31	117	69	23	27
05/26	16	56	39	20	16
06/01	49	121	104	44	45
06/07	20	46	37	17	17
06/13	24	56	40	25	NS
06/19	47	128	159	48	41
06/25	39	110	185	40	46
07/01	24	51	46	25	32
07/07	33	SV	70	33	32
07/13	26	73	96	23	24
07/19	15	44	56	19	21
07/25	18	54	90	27	20
07/31	26	71	77	32	35
08/06	31	88	121	35	35
08/12	27	60	66	46	37
08/18	64	139	124	NS	96
08/24	SV	58	60	61	41
08/30	27	91	71	41	40
09/05	10	32	23	17	12
09/11	16	47	23	17	19
09/17	15	62	32	16	15
09/23	20	75	29	30	SV
09/29	10	74	39	14	17
10/05	5	57	21	13	10
10/11	8	34	22	9	9
10/17	19	142	73	26	20
10/23	15	23	17	14	2
10/29	18	85	50	9	16

SV - Sample Void
NS - No Sample

Table B-3

Edgemont Uranium Mill Decommissioning Project
TSP Summary Information*

Site	6-Month Arithmetic Mean	Highest Recorded Value	Second Highest Recorded Value	Data Recovera-bility (%)
		May 1986 - October 1986		
EG-01	24	64	49	94
EG-02	72	142	139	97
EG-03	63	185	159	100
EG-04	26	61	48	97
EG-05	27	96	46	94
		November 1985 - April 1986		
EG-01	13	26	20	90
EG-02	49	176	125	100
EG-03	33	123	83	97
EG-04	18	44	35	93
EG-05	16	65	43	90
		May 1985 - October 1985		
EG-01	22	43	41	90
EG-02	69	144	142	97
EG-03	58	137	107	97
EG-04	23	50	36	90
EG-05	23	70	41	90

*Values are in micrograms/cubic meter except where noted.

Table B-4

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION DISREGARDING STABILITY CLASS

EDGEMONT

MAY 1, 86 - JUL 31, 86

WIND DIRECTION	WIND SPEED(MPH) CALM	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.006	0.000	0.831	0.877	0.231	0.877	0.739	0.092	0.139	3.792
NNE	0.002	0.000	0.231	0.139	0.092	0.369	0.462	0.092	0.000	1.387
NE	0.003	0.046	0.323	0.508	0.369	0.646	0.646	0.046	0.000	2.588
ENE	0.002	0.000	0.323	0.185	0.323	1.801	1.570	0.323	0.046	4.573
E	0.004	0.092	0.554	1.431	1.893	7.895	6.464	0.600	0.046	18.980
ESE	0.004	0.046	0.554	1.339	2.078	7.341	3.186	0.739	0.046	15.332
SE	0.005	0.139	0.554	0.600	0.377	1.939	1.524	0.231	0.000	5.868
SSE	0.004	0.046	0.508	0.185	0.135	0.416	0.739	0.092	0.000	2.174
S	0.006	0.185	0.739	0.785	0.416	0.831	0.646	0.416	0.139	4.162
SSW	0.014	0.139	1.847	1.247	0.785	0.831	0.323	0.092	0.000	5.277
SW	0.011	0.139	1.477	1.754	0.554	1.062	0.462	0.000	0.000	5.459
WSW	0.006	0.185	0.646	0.785	0.185	0.785	0.508	0.000	0.000	3.099
W	0.006	0.046	0.877	1.062	0.739	1.524	0.739	0.139	0.369	5.500
WNW	0.006	0.092	0.785	0.846	0.693	1.662	0.693	0.231	0.323	5.131
NW	0.005	0.092	0.693	1.154	0.739	3.278	1.754	0.369	0.277	8.362
NNW	0.008	0.092	1.062	1.985	1.293	2.308	1.016	0.369	0.185	8.318
SUBTOTAL	0.092	1.339	12.004	14.681	11.450	33.564	21.468	3.832	1.570	100.000

TOTAL HOURS OF VALID WIND OBSERVATIONS 2166
TOTAL HOURS OF OBSERVATIONS 2208
RECOVERABILITY PERCENTAGE 98.1

METEOROLOGICAL FACILITY: EDGEMONT
WIND SPEED AND DIRECTION MEASURED AT 10.00 METER LEVEL

DATE PRINTED: 2-DEC-86

MEAN WIND SPEED = 9.53

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

Table B-5

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION DISREGARDING STABILITY CLASS

EDGEMONT

AUG 1, 86 - OCT 31, 86

WIND DIRECTION	CALM	WIND SPEED(MPH) 0.5-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>24.5	TOTAL
N	0.006	0.091	1.004	1.323	0.593	1.004	0.593	0.046	0.000	4.659
NNE	0.002	0.091	0.874	0.456	0.228	0.639	0.776	0.000	0.046	2.511
NE	0.002	0.091	0.228	0.411	0.411	0.912	0.456	0.046	0.046	2.602
ENE	0.002	0.046	0.274	0.274	0.228	1.095	0.730	0.046	0.000	2.693
E	0.005	0.137	0.821	1.870	2.281	7.026	4.836	0.456	0.000	17.432
ESE	0.007	0.137	1.323	1.642	2.144	7.801	2.692	0.365	0.000	16.111
SE	0.004	0.137	0.684	0.867	1.141	3.057	0.228	0.091	0.000	6.209
SSE	0.005	0.274	0.639	0.456	0.730	0.547	0.228	0.000	0.000	2.879
S	0.007	0.502	0.776	0.365	0.593	0.365	0.319	0.046	0.000	2.972
SSW	0.005	0.365	1.323	1.049	0.319	0.274	0.091	0.091	0.000	3.521
SW	0.006	0.274	1.232	1.141	0.411	0.456	0.182	0.182	0.365	4.250
WSW	0.006	0.182	1.049	0.821	0.411	0.137	0.137	0.046	0.091	2.880
W	0.008	0.228	1.369	2.327	0.867	0.502	0.319	0.046	0.228	5.893
WNW	0.006	0.274	1.323	1.369	1.460	2.235	1.369	0.411	0.182	8.630
NW	0.007	0.182	1.232	1.825	1.551	2.874	1.825	0.684	0.091	10.272
NNW	0.007	0.046	1.232	1.460	1.323	1.734	0.502	0.182	0.000	6.485
SUBTOTAL	0.091	3.057	14.791	17.655	14.690	30.657	15.283	2.737	1.049	100.000

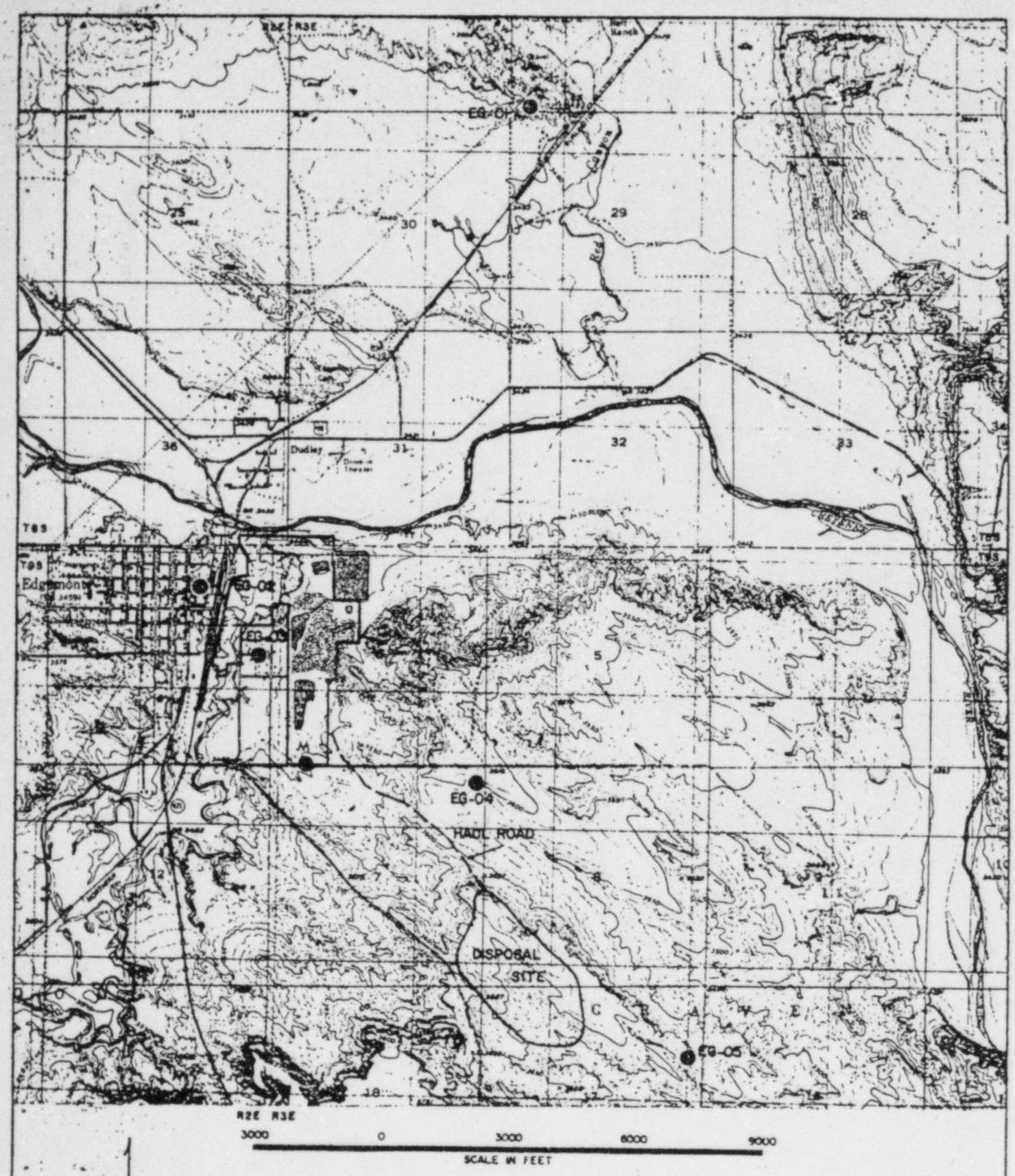
TOTAL HOURS OF VALID WIND OBSERVATIONS 2192
TOTAL HOURS OF OBSERVATIONS 2208
RECOVERABILITY PERCENTAGE 99.3

METEOROLOGICAL FACILITY: EDGEMONT
WIND SPEED AND DIRECTION MEASURED AT 10.00 METER LEVEL

DATE PRINTED: 2-DEC-86

MEAN WIND SPEED = 8.31

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS



EG-01 - EG-05 TSP Hi-Vol monitors
M Meteorological tower

Figure B-1 Monitor Locations

Figure B-2. Monthly Average TSP Concentrations for January 1983-October 1986 at Monitoring Station EG-01.

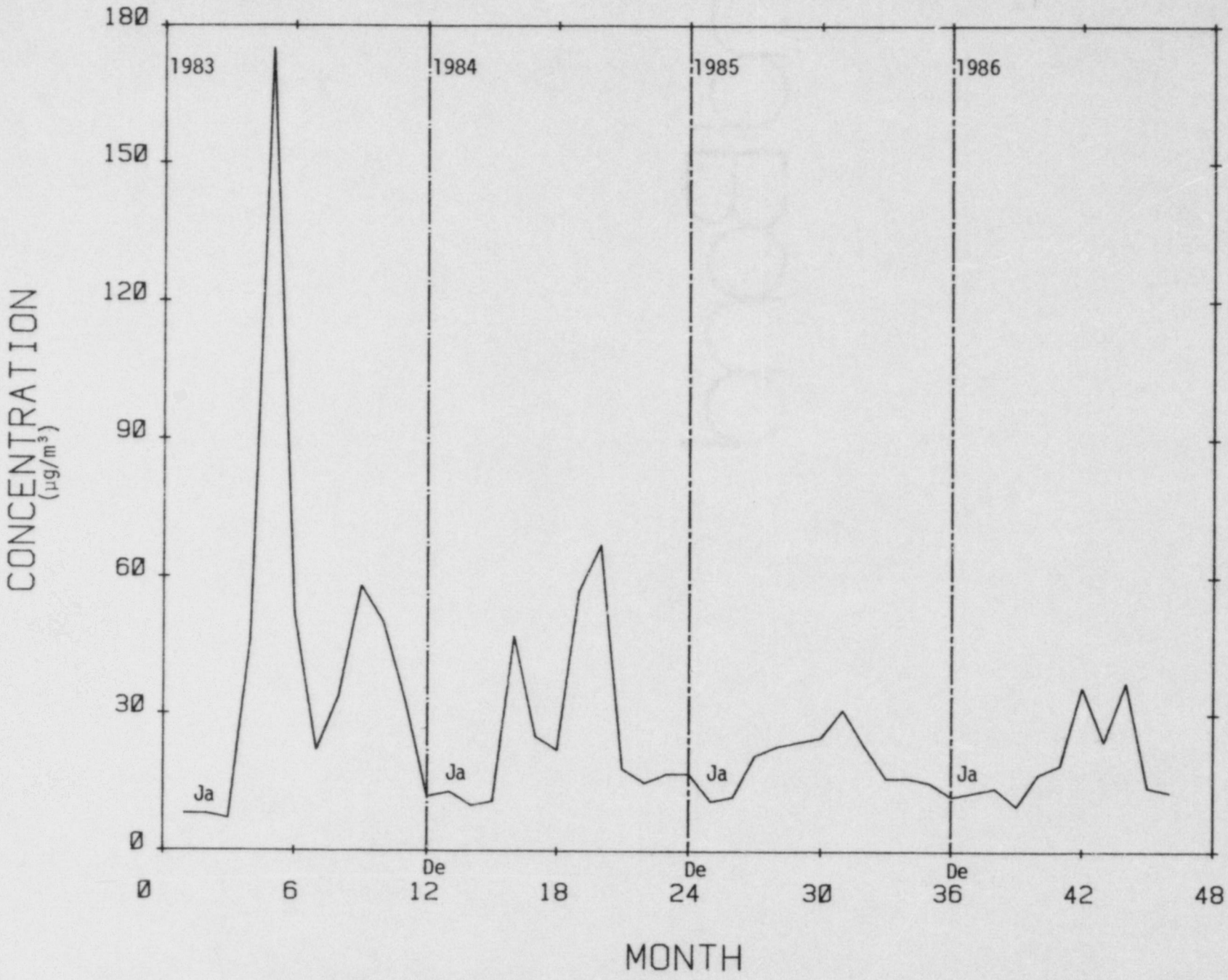


Figure B-3. Monthly Average TSP Concentrations for January 1983-October 1986 at Monitoring Station EG-02.

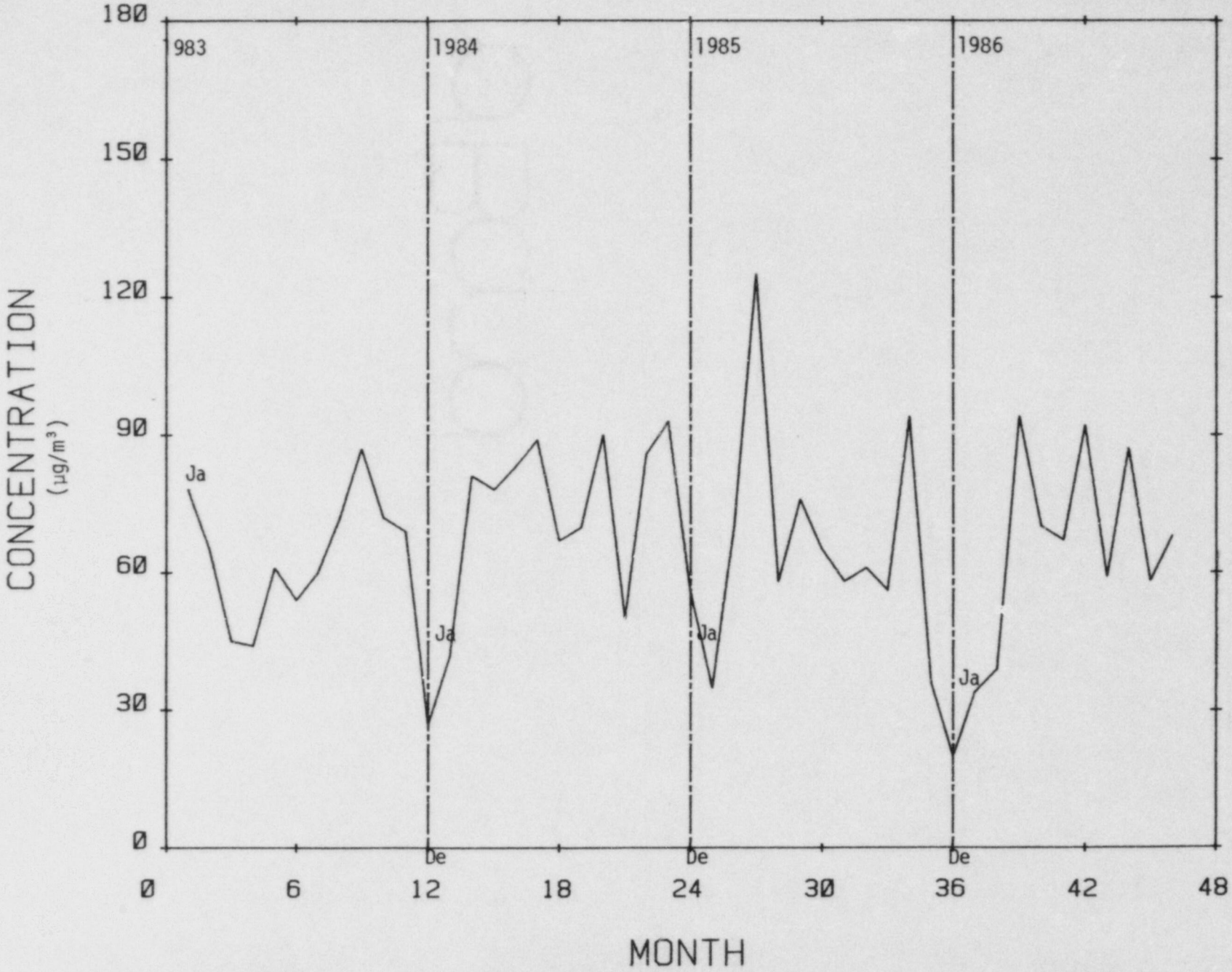


Figure B-4. Monthly Average TSP Concentrations for January 1983-October 1986 at Monitoring Station EG-03.

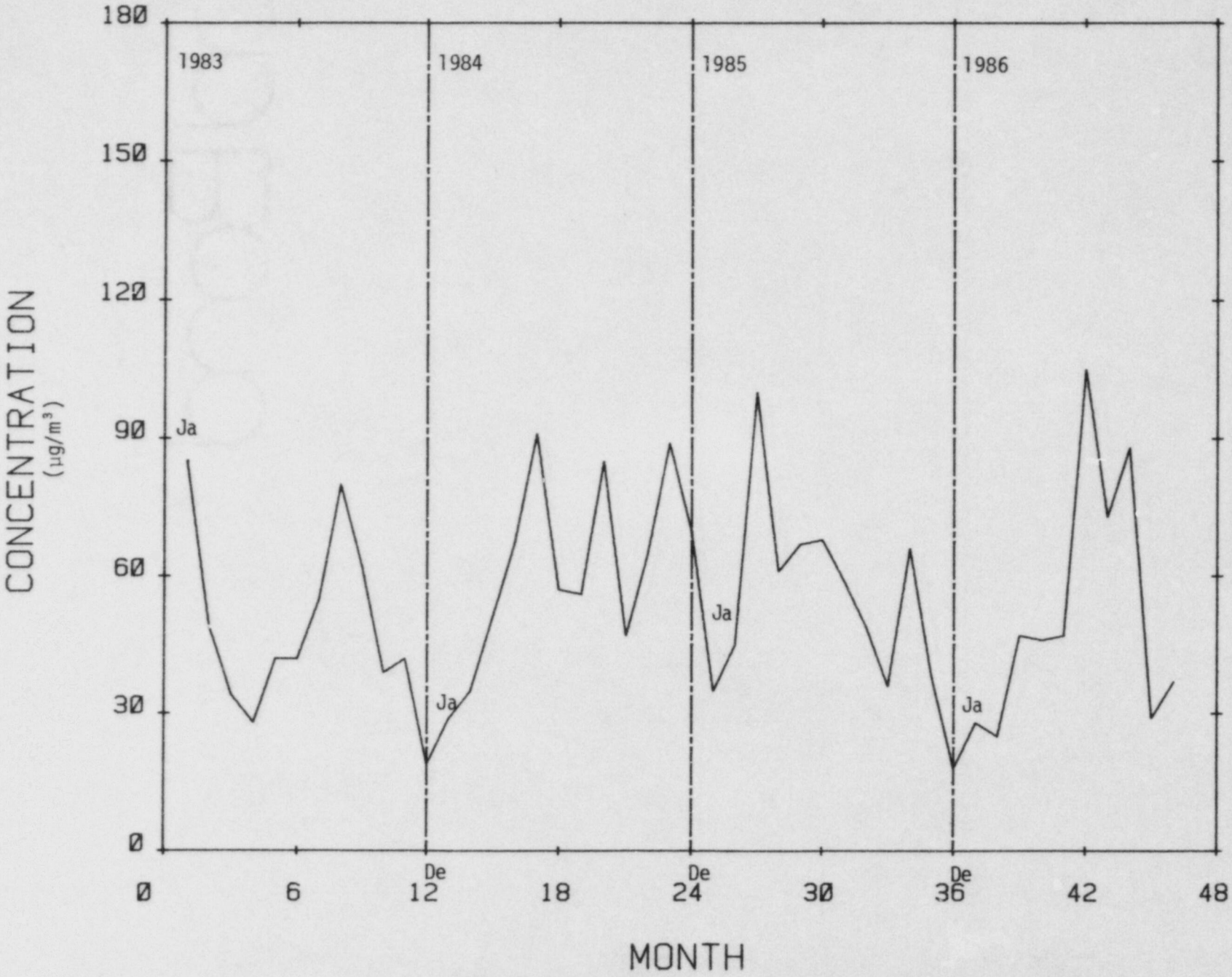


Figure B-5. Monthly Average TSP Concentration for January 1983-October 1986 at Monitoring Station EG-04.

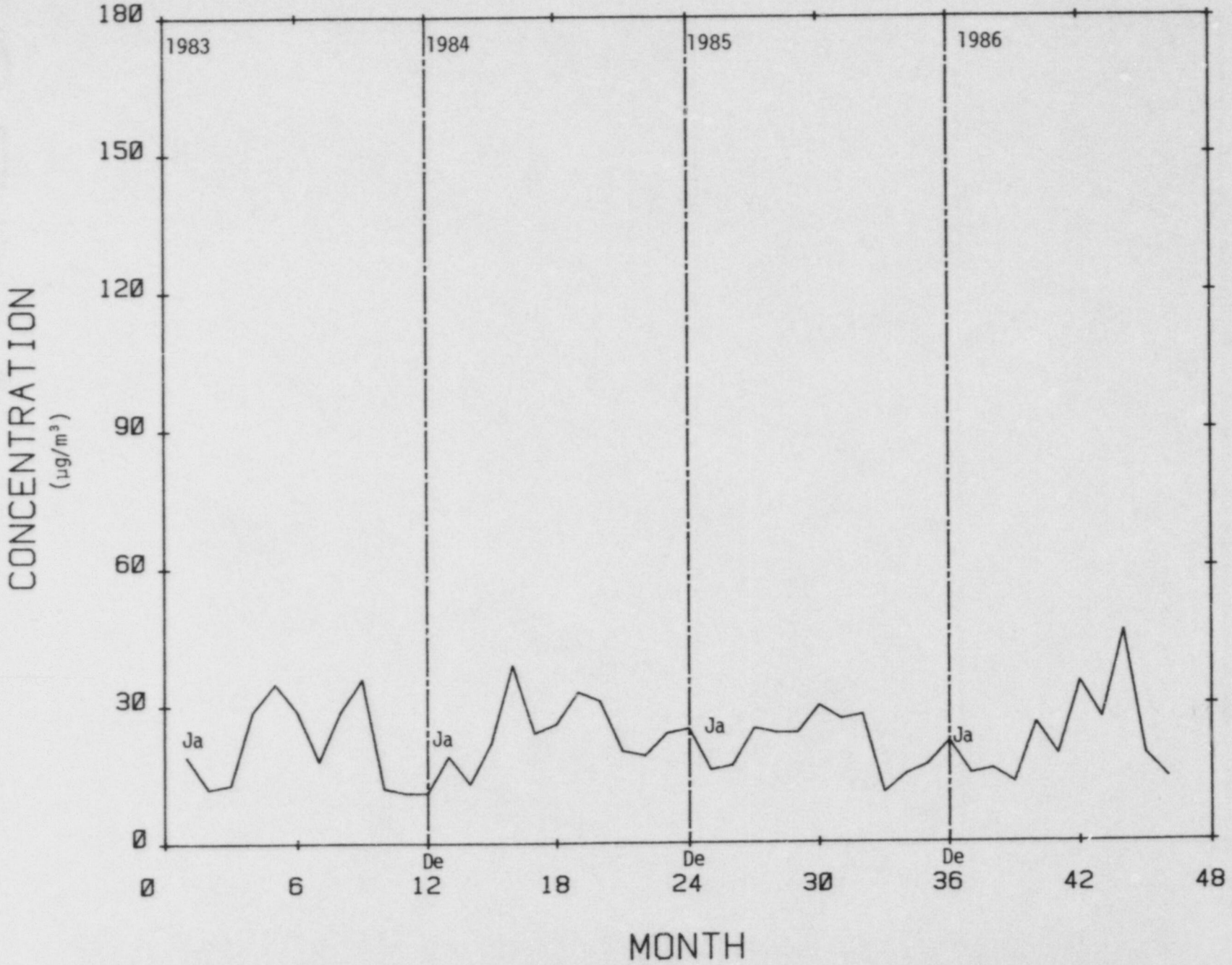
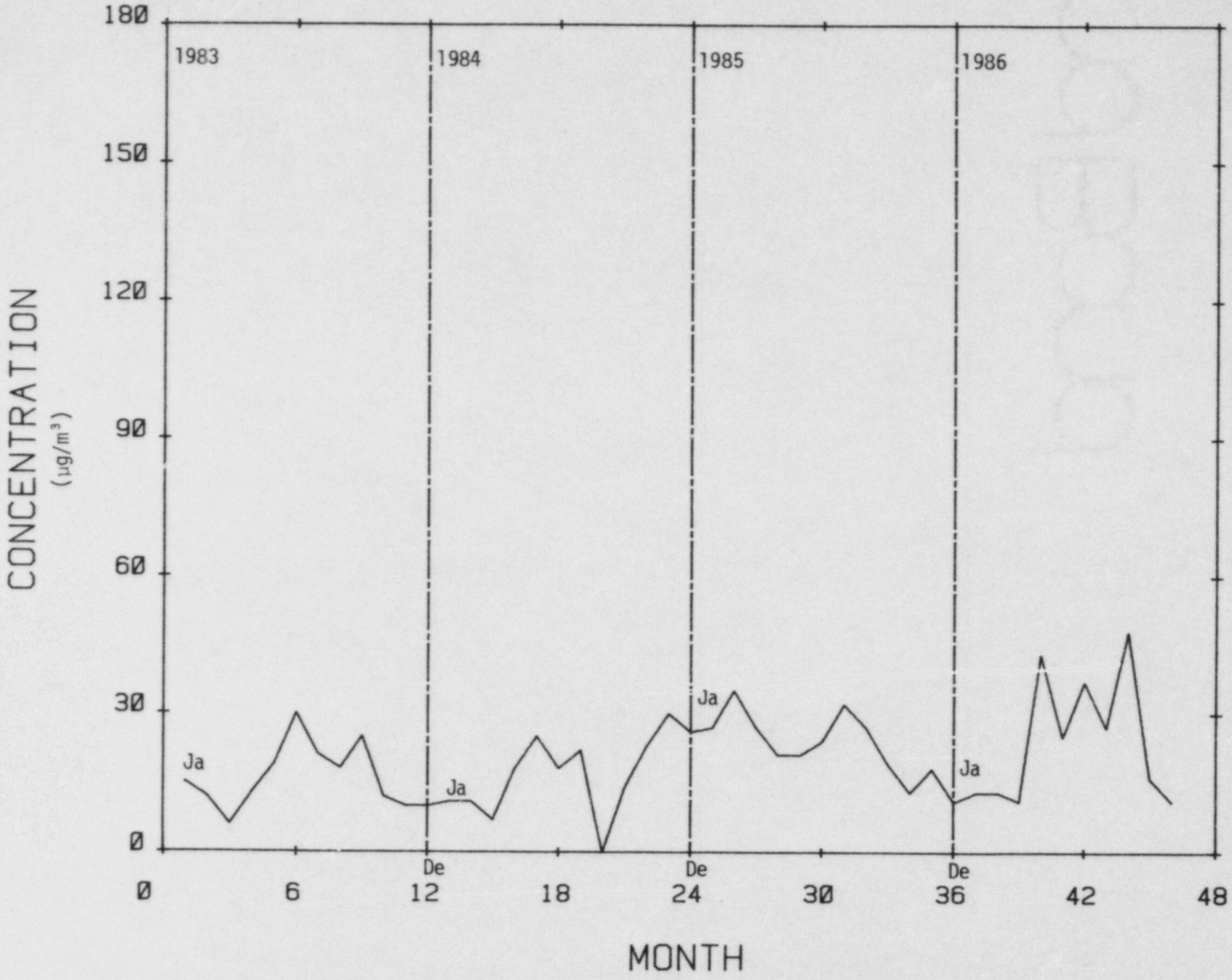


Figure B-6. Monthly Average TSP Concentrations for January 1983-October 1986 at Monitoring Station EG-05.



C. NONRADIOLOGICAL WATER QUALITY AND QUANTITY MONITORING

1.0 Surface Water

1.1 Program Description

The NRC project FES presents the overall Water Quality Monitoring Program for decommissioning activities. The subsequent project license amendment (SUA-816, April 6, 1983) authorizing the decommissioning references the December 29, 1982 TVA submittal to NRC in establishing specific locations for the water quality monitors. The overall program and monitoring objectives remain unchanged as presented in these documents. However, a change in several monitoring station locations and the justification for these changes were presented in the November 1, 1982-April 30, 1983 semiannual report.
Figure C-1 delineates the present sampling station locations.

CRC Station
CRC (latitude 43 degrees, 18 minutes, 27 seconds; longitude 103 degrees, 49 minutes, 26 seconds) - located approximately 200 yards upstream from the U.S. Highway 18 bridge.

CCC Station
CCC (latitude 43 degrees, 17 minutes, 22 seconds; longitude 103 degrees, 49 minutes, 25 seconds) - located at a county highway bridge.

CRE Station
CRE (latitude 43 degrees, 18 minutes, 23 seconds; longitude 103 degrees, 48 minutes, 43 seconds) - located approximately halfway between the mouth of Cottonwood Creek and the outfall for the sewage treatment plant on the left bank.

1.2 Monitoring

On May 12 of this year, movement of tailings from the mill site to the disposal site began. Consequently, all water quality samples collected before May 12 are designated as baseline (pre-decommissioning) and all samples collected on or after May 12 are decommissioning samples. TVA collected 15 sets of water quality samples during the May through October 1986 sample period, 10 sets of baseflow samples collected at two week intervals, and 5 sets of storm event samples. Three of the storm events occurred on dates when baseflow samples had been scheduled to be collected. The first set of baseflow samples was collected on May 5 and the last on October 13. The first set of storm event samples was collected on May 9 and the last on October 29. Thus the first set of baseflow and storm event samples represents baseline, and the remaining 13 sample sets are decommissioning samples.

1.2 Monitoring (Cont'd)

Calculations for the baseflow samples collected at CRE on August 25 indicated that the criteria for performing laboratory analyses was exceeded for both turbidity and conductivity. The violation was caused by two very high spike samples, without which neither the turbidity nor the conductivity criteria would have been exceeded. Consequently, only the spike samples were sent to the laboratory for analyses. However, the spike samples were not analyzed because they were believed to be caused by animals in the stream rather than decommissioning activities. The spikes occurred at 9:55 p.m. and 4:55 a.m.. No decommissioning activities were occurring during this time. The May 5, June 30, and October 13 baseflow and four storm event samples were composited and sent to the laboratory for analyses. All samples were analyzed on site for pH, turbidity, and conductivity. Laboratory analyses consisted of chlorides, sulfates, dissolved solids, suspended solids, arsenic, manganese, molybdenum, nickel, selenium, and vanadium. Results are shown in Tables C-1 through C-7.

Some difficulties have been experienced with the stream monitoring program. The cross section of the Cheyenne River changes so often that it has proven impossible to accurately measure flow at sampling stations CRC and CRE. Thus flow reported for CRC are those for the USGS station at the U.S. Highway 18 bridge and flows reported for CRE are calculated based on adding flow for stations CRC and CCC.

1.3 Criteria for Laboratory Analyses

In accordance with the Edgemont Decommissioning License (SUA-816), condition 14, laboratory analysis of the composite baseflow samples is required when the calculated 24-hour turbidity at the Cheyenne River Effects Station (CRE) is greater than at the Cottonwood Creek Control Station (CCC) and 1.5 times greater than at the Cheyenne River Control Station (CRE), or when the calculated 24-hour conductivity at CRE is greater than CCC and 1.1 times as great as at CRC. These conditions occurred on August 25 as shown in Table C-5. The high turbidities frequently shown at the start of the 24-hour sampling period (Figures C-4 through C-18) are the result of sediment building up at the sampler intake, and are discounted for the purpose of determining if the samples should be analyzed. Three sets of composited samples are to be analyzed annually in the laboratory even if these criteria are not met. Spike samples (discrete high values at CRE without corresponding high values at CRC or CCC) are also to be analyzed. As shown in Table C-6 and Figures C-4 through C-18, the only spikes at CRE occurred on August 25 and resulted in spike samples being sent to the laboratory for analyses. Grab samples were collected at each of the three sampling stations across the stream cross section to determine if the automatic sampler is collecting representative stream samples. Laboratory analysis is required when turbidity varies by more than 50 percent, or conductivity differs by 10 percent across a cross section. The results are shown in Table C-7.

1.4 Results of Laboratory Analyses

Baseline data collection was completed on May 9, 1986. The samples collected after this date are in the decommissioning period. The results of only six of the seven sample sets sent to the laboratory for analysis are included in this report due to delays in analysis. The results of the seventh sample will be included in the next report.

Table C-1 summarizes pH data for 1986. Cottonwood Creek and Cheyenne River range from neutral to slightly basic in pH, with all values in the expected range. There is no difference in median baseline and decommissioning values.

Table C-2 summarizes the four non-metal water quality parameters. Three of the six analyzed sample sets are storm events. The other three were collected during periods of high flow on the Cheyenne River. As reported in previous reports, chlorides, sulfates, and dissolved solids decrease during high stream flows, while suspended solids greatly increase. Thus the comparisons between baseline and decommissioning samples include both baseflow and storm flow conditions. The May 5, August 11, and October 13 samples are considered baseflow for station CCC, but storm flow for the two Cheyenne River stations. Consequently, there are no baseflow decommissioning samples for CRC or CRE.

A comparison of stormflow baseline and decommissioning samples at CRE shows similar results for the two periods. The differences at CRE are less than at CRC for each parameter and are consistent with the expected differences due to much higher flows measured on the Cheyenne River during the decommissioning period (162 cfs compared to 18 cfs).

Table C-3 shows the total concentrations for the six metals analyzed. As with nonmetals, the data are summarized as baseflow and stormflow samples. Stormflow samples were higher than baseflow for all parameters except selenium, for which all samples were at or slightly above detection limits. At CRE, decommissioning concentrations were higher for manganese, molybdenum, and vanadium, and lower for arsenic and nickel compared to baseline samples. There was no change in selenium concentrations. The CRE samples were similar to the CRC samples, thus these samples do not show any impact from decommissiong activities.

Table C-4 summarizes dissolved concentrations for the six metals analyzed. Only stormflow samples are analyzed for dissolved metals. Only three sample sets had been collected prior to 1986. Differences between baseline and decommissioning samples for five of the metals were small at CRC and CRE, but very large for manganese at both stations, with all 1986 samples below detection limits (5.0 mg/L) while previous samples averaged 185 mg/L. Dissolved manganese at CCC varied from <5.0 mg/L to 146 mg/L in 1986, indicating it will not be useful in determining impacts of decommissioning on water quality.

1.4 Results of Laboratory Analyses (Cont'd)

Table C-5 summarizes the turbidity, conductivity, and flow data collected in 1986. High flows resulted in an increase in suspended solids (turbidity) and a decrease in dissolved solids (conductivity).

Table C-6 is a more detailed presentation of conductivity and turbidity data at CRE in 1986. A comparison of the maximum and mean values during each 24-hour sampling period reveals turbidity spikes occurred on August 25 (maximum of 381 JTU, mean of 73 JTU). As previously indicated, these high values are attributed to animals wading the river.

Table C-7 is a comparison of two sampling techniques. Grab samples were collected along a cross section of the stream at the three sampling stations and compared to the last of the discrete samples measured by the automatic sampler. The analyses were done five times in 1985 and nine times in 1986.

The average of the cross sections is divided into the automatic sampler value to obtain the ratio shown in the sixth and eleventh columns. A ratio of 1.00 means the cross section and automatic samplers were identical. Except for the July 14, 1986 samples at CCC and CRE, the two techniques agreed closely for conductivities. Measured turbidities generally agreed at higher values, but differed at lower values. The accuracy of turbidity sampling during low flow conditions, when low turbidity occurs, is suspect because of the difficulty of collecting a sample without picking up stream sediment. At low turbidities, a very small amount of stream sediment will greatly increase the error. The purpose of this comparison is to determine if the automatic sampler is providing a representative sample of the streamflow, and to determine if the data is consistent along the cross section. To date, the data have been similar along the cross section and the two sampling techniques are comparable except for very low flow turbidities.

2.0 Groundwater Monitoring

2.1 Program Description

The original groundwater level monitoring program provided for quarterly water level measurements in 14 existing wells at the mill site in accordance with the commitment made in the FES (Section 4.2.6.2, pp 4-36). Since that time, the monitoring program was expanded to some 40 wells located across the mill site. In May 1986, a total of 37 wells were sampled as was the case in October 1986. However, during the period, nine wells were destroyed as a result of the decommissioning activities and sampling begun at nine new wells. TVA will continue to monitor the remaining wells as long as they are available.

2.1 Program Description (Cont'd)

TVA implemented a groundwater water quality program on August 17, 1986 to monitor impacts of decommissioning activities on the alluvial groundwater underlying the millsite. Twelve monthly samples will be collected during the first 12 months, and then sampling will be changed to semiannually.

The nine wells shown in Figure C-3 will be sampled for arsenic, chloride, nitrate, selenium, sulfate, pH, specific conductance, and total dissolved solids. The water quality monitoring program for groundwater is described in License Amendment No. 23, dated October 20, 1986.

2.2 Groundwater Depth Monitoring Results

Groundwater depth data for April through October 1986 are presented in Table C-8. Data for all wells for which data are shown in the table are plotted on Figures C-19 through C-27 for their respective periods of record. The monitor wells are combined so that each figure shows wells associated with a particular pond. The groundwater monitoring well numbers M-2, M-7, M-8, M-11, M-12, M-13, M-14, M-102, and M-103 referenced in license condition 14 correspond directly to the new wells which are numbered M-115, M-120, M-113, M-111, M-116, M-119, M-110, M-112, and M-118, respectively, in this report.

The monitor wells were examined to determine whether any significant changes occurred to groundwater depths during the period and whether any changes which did occur might be attributed to the decommissioning activities. Water level changes during the May-October period amounted to less than 0.5 foot at 16 of the 28 wells with continuous records for the period; increased more than 0.5 foot at 6 wells; and decreased more than 0.5 foot at 6 wells. In general, significant increases in water levels were associated with upgradient wells recharged from ground-water originating offsite (for example, background well M102 had the largest increase, 2.2 feet). This typical seasonal recharge is attributable to above normal rainfall recorded at the site during the period.

Wells which showed significantly lower water levels were, in general, located in the proximity of Cottonwood Creek or the Cheyenne River and reflect seasonal decreases in these surface water systems. Figures C-19 through C-27 were examined to determine whether the decommissioning activities during the period had a significant effect on ground-water levels at any of the wells. No effects on the ground-water levels are evident at any of the wells in the vicinity of where decommissioning activities occurred.

2.3 Groundwater Quality Monitoring Results

The results of the first two months of groundwater quality sampling are shown in Table C-9. The wells are generally listed from upgradient to downgradient. M112 is a background well which should not be affected by decommissioning activities. At the bottom of the table is the change in concentration from August to September. This limited data indicates that chlorides will probably be the best indicator of change in groundwater quality, as concentrations were virtually unchanged (less than 20 percent) in any of the wells. Specific conductance, total dissolved solids, and pH were also relatively unchanged. However, pH is unlikely to be changed by decommissioning activities while specific conductance and total dissolved solids, which measure the same thing and should vary accordingly are so high in some wells to mask impacts. Sulfates were consistent in all wells except the background well. The wide flucutation in the background well means that changes in other wells during decommissioning could be explained as natural fluctuations. Changes in nitrates and selenium may be useful, although the percentage change was large in some cases, the numbers were all small. Arsenic variations are probably too large to be of any use.

3.0 Sediments

3.1 Program Description

3.1.1 Millsite

Sediment samples are collected at six locations in the millsite area as shown in Figure A-1. In addition to analyzing these samples for radionuclides, they are also analyzed for SO_4, Cl, V, Ni, Mn, Se, As, and Mo.

3.1.2 Disposal Site

Sediment from two ponds (see Figure C-2) downgradient from the disposal site area are analyzed to characterize any changes in composition due to runoff from the stockpiles and other land disturbances in this area. One sample per pond is collected annually at approximately the deepest wadeable point in the ponds. The top three inches is analyzed for grain size distribution and the following analyses are performed for the portion with particle sized below 63 um (silt and clay): Ag, Al, As, B, Ba, Be, Ca, Cd, Cl, Co, CO_3 (total), Cr, Cu, F, Fe, Hg, Li, K, Mg, Mn, Mo, N (Kjeldahl), Ni, NO_2, NO_3, P (total), Pb, pH, S, Se, SO_4, Sr, V, and Zn. After baseline is established the parameters may be reduced to key indicators based on spoil characteristics.

3.2 Monitoring Results

3.2.1 Millsite

Sediments were collected on June 9 and during November. The November sediment analyses will be reported in the next semi-annual report because it was collected in the November to April sampling period. Table C-10 contains the results of the June 9 samples and shows the ranges of all previous samples. Concentrations vary widely between sampling dates and locations, especially for sulfates. However, baseline concentrations of all parameters except sulfates and manganese tended to be higher in Cottonwood Creek at the county bridge (CCC) than at any other location. This changed in 1986 because concentrations of chlorides, arsenic, and selenium were lower at this control station than previously. Concentrations of sulfates, manganese, nickel, and vanadium at the mouth of Cottonwood Creek (CCM) were higher than concentrations at that station during baseline. However, concentrations of all parameters except vanadium were much lower at CCM than previous concentrations sampled upstream at CCC. The mouth of Cottonwood Creek is the first station that would be impacted by decommissioning activities. Although one relatively high sample can not be considered significant, vanadium concentrations will be examined closely in subsequent samples.

Table C-11 lists the concentrations of eight parameters in sediments along a cross section at each of the six sediment stations, the average along each cross section, the analyzed composite sample at each station, and the ratio of the calculated average to the composite. At many stations, the concentrations along the cross sections vary widely, even when the average and composites agree. Duplicate samples were collected at CCC and a one sample duplicate was collected at CCM.

These samples were collected to determine if composite samples provide as reliable a result as analyzing individual samples along a cross section. This comparison analyses has been done three times. A difference of less than 25 percent (ratio of 0.80 to 1.25) can be considered good agreement, and greater than 50 percent (0.66 to 1.50) poor agreement. On June 7, only 31 percent of the composite samples differed less than 25 percent from the cross section averages, and 35 percent differed more than 50 percent. These are much poorer results than the previous two samples, when 50 percent differed by less than 25 percent, and only 23 percent differed by 50 percent.

3.2.1 Millsite (Cont'd)

A total of 56 duplicate cross section samples were collected on two sampling days. Using the same criteria as above, 46 percent of the duplicate samples differed by less than 25 percent, and 23 percent differed by more than 50 percent. For the duplicate composite samples, 50 percent differed by less than 25 percent, and 12 percent differed by more than 50 percent. These results show a better ability to duplicate the results of a composite sample than of an individual sample. However, a comparison of the averages of the cross section duplicate samples shows 62 percent differ by less than 25 percent, and none more than 50 percent. Thus it appears that averaging individual samples in a cross section will provide a result which is more readily duplicated than compositing samples, and thus provides a more reliable result.

3.2.2 Disposal Site

Sediment samples were collected on October 29 from the ponds downgradient from the disposal site. Analyses of these sediments were not available in time for inclusion in this report, but will be included in the next report.

4.0 Changes in Water Use

To our knowledge, there has been no significant nonproject changes in water use in the project vicinity since our monitoring program was initiated. Therefore, no changes to the environmental program are warranted on this basis.

TABLE C-1
SUMMARY OF pH VALUES
CHEYENNE RIVER AND COTTONWOOD CREEK

(Standard Units)

	CCC			CRC			CRE		
DATE *	HIGH	LOW	MEDIAN	HIGH	LOW	MEDIAN	HIGH	LOW	MEDIAN
1983 SUMMARY	7.8	7.0	7.5	8.0	7.5	7.9	8.2	7.2	7.9
1984 SUMMARY	8.4	7.3	7.9	8.5	7.4	8.0	8.3	7.6	8.0
1985 SUMMARY	8.5	6.8	7.9	8.3	6.9	7.9	8.4	6.7	7.9
1986									
MAY 5	8.2	8.0	8.1	8.4	8.3	8.4	8.4	8.3	8.4
MAY 9	8.0	7.9	7.9	8.3	8.1	8.3	8.3	8.0	8.3
MAY 19	8.3	8.0	8.1	8.4	8.3	8.4	8.4	8.3	8.4
JUNE 2	8.2	7.9	8.0	8.3	8.2	8.2	8.2	8.1	8.2
JUNE 9	7.8	7.4	7.7	8.2	8.0	8.0	8.1	7.3	8.1
JUNE 17	8.2	8.0	8.1	8.4	8.1	8.3	8.5	8.2	8.3
JUNE 30	8.0	7.9	8.0	8.4	8.0	8.3	8.4	8.3	8.4
JULY 14	8.4	8.0	8.2	8.3	8.1	8.2	8.3	8.2	8.3
JULY 28	8.4	8.1	8.2	8.3	8.2	8.3	8.4	8.2	8.3
AUGUST 11	8.7	8.2	8.4	8.7	8.2	8.4	8.1	7.5	7.9
AUGUST 25	8.7	7.9	8.3	8.9	8.1	8.4	8.4	7.9	8.2
SEPTEMBER 22	8.0	7.3	7.7	8.0	7.6	7.9	8.0	7.6	7.8
OCTOBER 3	7.5	7.0	7.4	7.5	7.0	7.4	7.5	7.2	7.4
OCTOBER 13	7.5	7.1	7.4	7.6	7.3	7.4	7.7	7.3	7.4
OCTOBER 20	7.1	6.6	6.9	7.4	6.9	7.2	7.4	6.8	7.1
SUMMARY **									
BASELINE	8.5	6.8	7.9	8.5	6.9	8.0	8.4	6.7	8.0
DECOMMISSIONING	8.7	6.6	7.9	8.9	6.9	8.0	8.5	6.8	8.0

* Twenty-four samples were collected on each date at each station; the median value is the 13th highest value.

** Baseline is a summary of all data collected prior to May 12, 1986. Decommissioning is a summary of all data collected after that date.

TABLE C-2

WATER QUALITY ANALYSIS
CHEYENNE RIVER AND COTTONWOOD CREEK
Non-metals (mg/L)

PARAMETER-DATE	STREAMFLOW *	CCC	CRC	CRE
CHLORIDE				
MAY 5, 1986	CR ST	110	180	180
MAY 9, 1986	STORM	114	190	180
JUNE 9, 1986	STORM	73	150	160
JUNE 30, 1986	STORM	100	99	183
AUGUST 11, 1986	CR ST	170	50	60
OCTOBER 13, 1986	CR ST	162	110	175
SUMMARY				
BASELINE **		236	424	362
DECOMMISSIONING		126	102	145
BASEFLOW				
BASELINE		248	562	444
DECOMMISSIONING		166		
STORMFLOW				
BASELINE		114	183	144
DECOMMISSIONING		87	102	145
SULFATES				
MAY 5, 1986	CR ST	3200	1300	1300
MAY 9, 1986	STORM	1800	1200	1200
JUNE 9, 1986	STORM	2400	1200	1200
JUNE 30, 1986	STORM	2400	950	800
AUGUST 11, 1986	CR ST	2000	450	410
OCTOBER 13, 1986	CR ST	2500	910	860
SUMMARY				
BASELINE		2250	2040	1701
DECOMMISSIONING		2325	878	818
BASEFLOW				
BASELINE		2295	2514	1963
DECOMMISSIONING		2250		
STORMFLOW				
BASELINE		1800	1210	1003
DECOMMISSIONING		2400	878	818

TABLE C-2
(Continued)
WATER QUALITY ANALYSIS
CHEYENNE RIVER AND COTTONWOOD CREEK

Non-metals (mg/L)

PARAMETER-DATE	STREAMFLOW *	CCC	CRC	CRE
DISSOLVED SOLIDS				
MAY 5, 1986	CR ST	5200	2400	2400
MAY 9, 1986	STORM	4800	2200	2400
JUNE 9, 1986	STORM	3800	1800	1900
JUNE 30, 1986	STORM	4200	1900	2200
AUGUST 11, 1986	CR ST	3900	1000	930
OCTOBER 13, 1986	CR ST	3800	1800	1800
SUMMARY				
BASELINE		4264	4027	3482
DECOMMISSIONING		3925	1625	1708
BASEFLOW				
BASELINE		4210	5071	4050
DECOMMISSIONING		3850		
STORMFLOW				
BASELINE		4800	2200	1967
DECOMMISSIONING		4000	1625	1708
SUSPENDED SOLIDS				
MAY 5, 1986	CR ST	25	280	290
MAY 9, 1986	STORM	42	190	280
JUNE 9, 1986	STORM	4700	2900	3200
JUNE 30, 1986	STORM	65	1800	1100
AUGUST 11, 1986	CR ST	36	9300	11000
OCTOBER 13, 1986	CR ST	21	170	130
SUMMARY				
BASELINE		19	806	895
DECOMMISSIONING		1206	3543	3858
BASEFLOW				
BASELINE		16	42	35
DECOMMISSIONING		29		
STORMFLOW				
BASELINE		42	2143	3190
DECOMMISSIONING		2383	3543	3858

* STORM - Storm event, local rainfall activates automatic samplers. CR ST - High flow on the Cheyenne River but not a local storm event.

** BASELINE - Includes all samples collected prior to May 12, 1986. Decommissioning includes all subsequent samples.

TABLE C-3

WATER QUALITY ANALYSIS
CHEYENNE RIVER AND COTTONWOOD CREEK

Metals (µg/L)

PARAMETER-DATE	STREAMFLOW *	CCC	CRC	CRE
ARSENIC				
MAY 5, 1986	CR ST	4	4	4
MAY 9, 1986	STORM	4	3	4
JUNE 9, 1986	STORM	11	4	4
JUNE 30, 1986	STORM	2	4	3
AUGUST 11, 1986	CR ST	< 1	1	1
OCTOBER 13, 1986	CR ST	4	4	2
SUMMARY				
BASELINE **		2	5	5
DECOMMISSIONING		4	3	3
BASEFLOW				
BASELINE		2	2	2
DECOMMISSIONING		3		
STORMFLOW				
BASELINE		4	10	12
DECOMMISSIONING		6	3	3
MANGANESE				
MAY 5, 1986	CR ST	270	259	294
MAY 9, 1986	STORM	412	321	432
JUNE 9, 1986	STORM	1620	2140	2430
JUNE 30, 1986	STORM	285	645	476
AUGUST 11, 1986	CR ST	245	3240	4170
OCTOBER 13, 1986	CR ST	360	91	91
SUMMARY				
BASELINE		225	497	511
DECOMMISSIONING		628	1529	1792
BASEFLOW				
BASELINE		206	333	362
DECOMMISSIONING		303		
STORMFLOW				
BASELINE		412	786	771
DECOMMISSIONING		953	1529	1792

TABLE C-3
(Continued)
WATER QUALITY ANALYSIS
CHEYENNE RIVER AND COTTONWOOD CREEK

Metals (µg/L)

PARAMETER-DATE	STREAMFLOW *	CCC	CRC	CRE
MOLYBDENDUM				
MAY 5, 1986	CR ST	< 20	< 20	20
MAY 9, 1986	STORM	< 20	< 20	< 20
JUNE 9, 1986	STORM	70	40	70
JUNE 30, 1986	STORM	< 20	< 20	< 20
AUGUST 11, 1986	CR ST	20	240	290
OCTOBER 13, 1986	CR ST	< 20	< 20	< 20
SUMMARY				
BASELINE		35	28	25
DECOMMISSIONING		33	80	100
BASEFLOW				
BASELINE		37	26	21
DECOMMISSIONING		20		
STORMFLOW				
BASELINE		20	33	33
DECOMMISSIONING		45	80	100
NICKEL				
MAY 5, 1986	CR ST	31	14	15
MAY 9, 1986	STORM	34	15	16
JUNE 9, 1986	STORM	116	66	78
JUNE 30, 1986	STORM	22	17	10
AUGUST 11, 1986	CR ST	12	3	3
OCTOBER 13, 1986	CR ST	19	13	8
SUMMARY				
BASELINE		12	23	25
DECOMMISSIONING		42	25	25
BASEFLOW				
BASELINE		10	5	5
DECOMMISSIONING		16		
STORMFLOW				
BASELINE		34	54	59
DECOMMISSIONING		69	25	25

TABLE C-3
(Continued)
WATER QUALITY ANALYSIS
CHEYENNE RIVER AND COTTONWOOD CREEK

Metals (µg/L)

PARAMETER-DATE	STREAMFLOW *	CCC	CRC	CRE
SELENIUM				
MAY 5, 1986	CR ST	7	1.9	2.7
MAY 9, 1986	STORM	5.5	2.1	2.4
JUNE 9, 1986	STORM	7	2.5	3.1
JUNE 30, 1986	STORM	4.9	3	3
AUGUST 11, 1986	CR ST	< 1	< 1	< 1
OCTOBER 13, 1986	CR ST	6	1	< 1
SUMMARY				
BASELINE		5	4	3
DECOMMISSIONING		5	2	2
BASEFLOW				
BASELINE		5	5	3
DECOMMISSIONING		4		
STORMFLOW				
BASELINE		6	2	4
DECOMMISSIONING		6	2	2
VANADIUM				
MAY 5, 1986	CR ST	10	10	10
MAY 9, 1986	STORM	< 10	< 10	< 10
JUNE 9, 1986	STORM	200	100	90
JUNE 30, 1986	STORM	< 10	40	20
AUGUST 11, 1986	CR ST	10	670	820
OCTOBER 13, 1986	CR ST	< 10	< 10	< 10
SUMMARY				
BASELINE		30	29	25
DECOMMISSIONING		58	205	235
BASEFLOW				
BASELINE		32	20	10
DECOMMISSIONING		10		
STORMFLOW				
BASELINE		10	45	53
DECOMMISSIONING		105	205	235

* STORM - Storm event, local rainfall activates automatic samplers. CR ST - High flow on the Cheyenne River but not a local storm event.

** Baseline includes all samples collected prior to May 12, 1986. Decommissioning includes all subsequent samples.

TABLE C-4
DISSOLVED METAL CONCENTRATIONS (µg/L)

PARAMETER	DATE	CCC	CRC	CRE
ARSENIC	MAY 9, 1986	1.4	<1.0	2.9
	JUNE 9, 1986	< 1.0	<1.0	<1.0
	JUNE 30, 1986	1.8	1.8	1.2
	PREVIOUS	1.7	1.3	1.3
	BASELINE *	1.6	1.3	1.7
	DECOMMISSIONING	1.4	1.4	1.1
MANGANESE	MAY 9, 1986	< 5.0	<5.0	<5.0
	JUNE 9, 1986	27	<5.0	<5.0
	JUNE 30, 1986	146	<5.0	<5.0
	PREVIOUS	148	185	184
	BASELINE	113	125	139
	DECOMMISSIONING	87	<5.0	<5.0
MOLYBDENUM	MAY 9, 1986	< 20	< 20	< 20
	JUNE 9, 1986	< 20	< 20	< 20
	JUNE 30, 1986	30	20	< 20
	PREVIOUS	20	30	< 20
	BASELINE	20	28	< 20
	DECOMMISSIONING	25	20	< 20
NICKEL	MAY 9, 1986	12.3	<1.0	<1.0
	JUNE 9, 1986	16.0	1.7	1.2
	JUNE 30, 1986	16.0	5.4	4.7
	PREVIOUS	3.3	2.0	3.5
	BASELINE	5.6	1.7	2.7
	DECOMMISSIONING	16.0	3.6	3.0
SELENIUM	MAY 9, 1986	5.0	2.1	1.7
	JUNE 9, 1986	3.4	1.7	1.2
	JUNE 30, 1986	3.6	1.2	<1.0
	PREVIOUS	6.0	2.0	3.0
	BASELINE	5.8	2.0	2.7
	DECOMMISSIONING	3.5	1.5	1.1
VANADIUM	MAY 9, 1986	< 10	< 10	< 10
	JUNE 9, 1986	< 10	10	10
	JUNE 30, 1986	< 10	< 10	< 10
	PREVIOUS	10	23	< 10
	BASELINE	10	20	10
	DECOMMISSIONING	< 10	10	10

* BASELINE - Includes all samples collected prior to May 12, 1986. Decommissioning includes all subsequent samples.

TABLE C-5

AVERAGE TURBIDITIES AND CONDUCTIVITIES
CHEYENNE RIVER AND COTTONWOOD CREEK
1986

		TURBIDITY			CONDUCTIVITY			FLOW (CFS)		
DATE		CCC	CRC	CRE	CCC	CRC	CRE	CCC	CRC	CRE
MAY 5	ST CR *	5	87	87	4224	2280	2266	3	71	73
MAY 9	STORM	15	66	88	3800	1759	1960	4	83	86
MAY 19	ST CR	8	52	56	4185	2390	2345	4	97	101
JUNE 2		4	4	3	5668	4340	4317	1	37	37
JUNE 9	STORM	946	628	648	3403	1762	1929	30	230	260
JUNE 17	ST CR	19	428	436	3416	1222	1185	14	388	403
JUNE 30	STORM	41	259	221	3885	2318	2941	4	162	161
JULY 14	ST CR	9	31	30	3909	3030	3116	5	77	82
JULY 28		31	170	173	2974	3045	2959	9	39	48
AUGUST 11	ST CR	26	5122	5133	3663	774	914	4	95	99
AUGUST 25		18	34	73	4271	4164	4582	4	14	18
SEPT. 22	ST CR	24	2016	2021	2491	658	662	8	122	130
OCT. 3	STORM	60	1920	1937	2886	1007	1041	15	515	530
OCT. 13	ST CR	16	151	135	3062	1526	1510	7	122	129
OCT. 20	STORM	5779	908	980	941	218	1405	**	219	**
BASEFLOW AVERAGE		16	70	83	3786	3850	3953	6	30	34
STORMFLOW AVERAGE		1368	97[illegible]	981	2983	1579	1773	13	182	171

* STORM - Storm event, local rainfall activates automatic samplers.
ST CR - High flow on the Cheyenne River but not a local storm event.

** Stream gage at CCC malfunctioned. Flow at CRE is sum of CCC and CRC.

TABLE C-6

RANGE OF TURBIDITIES AND CONDUCTIVITIES
CHEYENNE RIVER EFFECTS STATION
1986

		TURBIDITY			CONDUCTIVITY		
DATE		MAXIMUM	MINIMUM	MEAN	MAXIMUM	MINIMUM	MEAN
MAY 5	ST CR *	114	58	86	2350	2070	2272
MAY 9	STORM	92	82	88	2190	1860	1960
MAY 19	ST CR	69	45	55	2400	2200	2347
JUNE 2		5	2	3	4440	4180	4315
JUNE 9	STORM	728	568	665	2180	1870	1935
JUNE 17	ST CR	568	360	438	1280	1070	1190
JUNE 30	STORM	244	180	221	3140	2740	2941
JULY 14	ST CR	67	21	30	3350	2860	3118
JULY 28		232	114	171	3080	2840	2962
AUG. 11	ST CR	5765	3660	5209	1150	720	940
AUG. 25		381	20	73	4970	4290	4577
SEPT. 22	ST CR	2314	1120	1994	890	440	676
OCT. 3	ST CR	2026	1760	1937	1120	940	1041
OCT. 13	ST CR	162	113	130	1600	1420	1511
OCT. 20	ST CR	1065	861	993	1690	1260	1405

* STORM - Storm event, local rainfall activates automatic samplers. CR ST - High flow on Cheyenne River but not a local storm event.

TABLE C-7
COMPARISON OF GRAB SAMPLES ALONG CROSS SECTIONS
WITH AUTOMATIC SAMPLER ANALYSES
CHEYENNE RIVER AND COTTONWOOD CREEK

	TURBIDITIES					CONDUCTIVITIES				
		GRAB SAMPLES					GRAB SAMPLES			
DATE-PARAMETER	AUTO. SAMPLER	MEAN	MAX.	MIN.	AUTO/ MEAN *	AUTO. SAMPLER	MEAN	MAX.	MIN.	AUTO/ MEAN *
CCC										
MAY 6, 1985	14	5	6	4	2.92	5020	5800	5820	5790	0.87
JULY 15, 1985	1	1	1	1	1.10	5670	5900	5920	5860	0.96
AUGUST 12, 1985	1	1	1	1	0.83	5500	5380	5380	5380	1.02
AUGUST 26, 1985	1	1	1	1	1.00	6200	5830	5900	5700	1.06
OCTOBER 14, 1985	10	3	3	3	3.45	3210	3050	3070	3040	1.05
MAY 5, 1986	5	3	3	3	1.69	4170	4920	4960	4900	0.85
MAY 19, 1986	7	7	7	7	0.93	4210	4950	4990	4920	0.85
JUNE 2, 1986	3	2	2	2	1.19	5680	6063	6090	6020	0.94
JUNE 17, 1986	10	42	43	42	0.24	3530	3637	3670	3600	0.97
JULY 14, 1986	4	10	11	10	0.44	3850	5763	5800	5730	0.67
AUGUST 11, 1986	23	19	20	18	1.21	3820	3563	3580	3550	1.07
AUGUST 25, 1986	27	8	11	7	3.21	4380	4627	4690	4580	0.95
SEPTEMBER 22, 19	12	10	11	8	1.24	2350	2450	2500	2410	0.96
OCTOBER 13	6	6	8	5	0.95	2990	3013	3030	3000	0.99
MAXIMUM					3.45					1.07
MINIMUM					0.24					0.67
MEAN					1.45					0.94
CRC										
MAY 6, 1985	1	5	6	3	0.23	4800	5720	5730	5700	0.84
JULY 15, 1985	1	2	2	2	0.81	7270	7930	7970	7870	0.92
AUGUST 12, 1985	2	1	1	1	2.29	8000	6910	6910	6900	1.16
AUGUST 26, 1985	1	1	1	1	1.00	7930	8030	8100	8000	0.99
OCTOBER 14, 1985	1	2	2	2	0.50	5470	4700	4750	4650	1.16
MAY 5, 1986	60	115	118	112	0.52	2380	2498	2520	2460	0.95
MAY 19, 1986	43	59	59	58	0.73	2460	2883	2920	2860	0.85
JUNE 2, 1986	3	2	2	2	1.73	4300	4757	4760	4750	0.90
JUNE 17, 1986	512	544	568	512	0.94	1320	1060	1070	1050	1.25
JULY 14, 1986	20	23	23	23	0.87	3070	4443	4460	4430	0.69
AUGUST 11, 1986	3440	4870	4970	4780	0.71	1050	643	660	630	1.63
AUGUST 25, 1986	22	13	14	12	1.72	4650	4690	4720	4670	0.99
SEPTEMBER 22, 19	1230	1102	1120	1088	1.12	850	907	910	900	0.94
OCTOBER 13	114	108	109	107	1.06	1620	1717	1800	1640	0.94
MAXIMUM					2.29					1.63
MINIMUM					0.23					0.69
MEAN					1.02					1.02

TABLE C-7
(Continued)
COMPARISON OF GRAB SAMPLES ALONG CROSS SECTIONS
WITH AUTOMATIC SAMPLER ANALYSES
CHEYENNE RIVER AND COTTONWOOD CREEK

	TURBIDITIES					CONDUCTIVITIES				
		GRAB SAMPLES					GRAB SAMPLES			
DATE-PARAMETER	AUTO. SAMPLER	MEAN	MAX.	MIN.	AUTO/ MEAN *	AUTO. SAMPLER	MEAN	MAX.	MIN.	AUTO/ MEAN *
CRE										
MAY 6, 1985	1	1	1	1	1.00	4990	5700	5760	5700	0.88
JUNE 3, 1985	2	1	1	1	1.70	5320	5270	5310	5210	1.01
JUNE 30, 1985	2	2	2	2	0.75	5850	5860	5870	5840	1.00
JULY 15, 1985	2	2	2	2	1.15	5240	5070	5130	4990	1.03
AUGUST 12, 1985	2	2	2	2	1.13	5000	4250	4260	4240	1.18
AUGUST 26, 1985	2	2	2	1	1.47	4900	4860	4900	4800	1.01
OCTOBER 14, 1985	1	3	3	3	0.54	4460	4450	4500	4400	1.00
MAY 5, 1986	58	111	112	110	0.52	2350	2543	2600	2520	0.92
MAY 19, 1986	45	59	59	59	0.76	2370	2857	2890	2820	0.83
JUNE 2, 1986	2	2	2	2	1.15	4210	4923	4960	4890	0.86
JUNE 17, 1986	504	573	584	568	0.88	1270	1043	1050	1040	1.22
JULY 14, 1986	21	22	22	21	0.95	3110	4463	4510	4440	0.70
AUGUST 11, 1986	5050	5090	5190	4980	0.99	1150				
AUGUST 25, 1986	20	13	13	13	1.53	4920	4780	4830	4750	1.03
SEPTEMBER 22, 19	1120	1075	1087	1066	1.04	890	967	980	960	0.92
OCTOBER 13	113	104	105	103	1.09	1600	1603	1640	1560	1.00
MAXIMUM					1.53					1.22
MINIMUM					0.52					0.70
MEAN					1.00					0.98

* The last discreet sample collected divided by the mean of the grab samples. Ratios were calculated before rounding of turbidities shown. Required laboratory analyses is bases on the ratio of the maximum to the minimum along the cross section at CRE. This criteria has not been met in any sample to date.

TABLE C-8

EDGEMONT MILLSITE GROUND-WATER DEPTHS

		APR-86	MAY-86	JUN-86	JUL-86	AUG-86	SEP-86	OCT-86
POND 2	G-16	23.84	23.52	23.69	23.83	23.85	23.85	23.64
	G-44	16.87	16.87	16.78	16.76	16.91	17.07	17.02
	G-45	16.46	16.32	15.31	15.12	15.49	15.84	15.19
	G-14	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	G-14A	DRY	DRY	DRY	DRY	DRY	DRY	DRY
MILL SITE	G-48	22.56	22.33	22.16	22.84	22.83	23.16	23.12
	M-8.5	19.92	19.94	19.92	20.00	20.70	20.20	20.25
	M-8	12.97	12.71	12.06	12.34	12.60	12.72	12.65
	G-4	21.72	21.75	22.20	22.30	22.16	22.27	22.33
	G-13	24.20	24.86	25.23	25.53	DESTROYED	-	-
	M-113					12.47	12.98	12.59
SAND	G-2A	29.53	29.32	DESTROYED	-	-	-	-
TAILINGS	G-2	28.97	28.75	DESTROYED	-	-	-	-
	G-43	26.61	25.59	25.51	25.97	DESTROYED	-	-
	G-41	18.29	18.07	DESTROYED	-	-	-	-
POND 1	G-12	20.96	20.90	20.60	DESTROYED	-	-	-
	M-1	15.61	15.48	15.27	15.37	15.57	15.37	15.23
	M-2	9.26	8.80	8.70	8.97	9.05	9.42	9.06
	M-3	8.09	6.92	7.40	8.39	8.49	8.30	8.00
	M-4	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	M-5	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	M-115					8.64	8.84	8.44
POND 3	G-21	DESTROYED	-	-	-	-	-	-
	G-22	DESTROYED	-	-	-	-	-	-
	G-22A	DESTROYED	-	-	-	-	-	-
	M-7	25.19	25.15	25.09	25.28	25.47	25.79	25.60
	M-120						20.30	22.00
POND 7	G-29	13.94	13.79	13.32	12.98	12.76	12.55	DESTROYED
	G-27	15.64	15.24	14.80	14.25	13.78	14.00	14.05
	G-24A	21.02	20.95	21.00	20.73	20.87	21.07	21.26
	G-29A	14.38	13.25	13.44	13.22	12.99	12.75	DESTROYED
	G-27A	6.85	6.58	6.37	6.25	6.43	6.92	6.83
	M-11	13.90	13.93	13.80	13.58	13.22	13.52	13.24
	G-28	22.35	22.03	21.59	21.35	20.96	20.92	DESTROYED
	G-37	10.18	9.38	8.82	8.82	8.37	8.93	8.76
	M-111					13.24	13.28	13.08
POND 8	M-13	13.91	13.67	13.56	13.61	12.83	13.10	12.65
	G-34	13.53	13.25	13.13	13.10	12.38	12.99	12.85
	M-12	4.35	4.63	4.85	4.94	5.00	5.37	5.39
	M-116					6.65	5.24	7.00
	M-119					14.00	14.41	13.76
POND 10	G-31	26.83	26.87	27.08	27.18	27.22	27.16	27.19
	G-32	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	M-14	20.64	19.82	20.37	20.65	21.40	19.47	20.90
	M-110					19.95	21.44	20.22
BACKGROUND	M-102	22.94	22.10	20.96	20.75	20.56	20.73	19.90
	M-112					19.50	20.30	19.37
	M-103	26.12	26.10	26.10	26.34	26.18	26.24	26.78
	M-118					27.78	24.90	24.75

TABLE C-9

GROUNDWATER QUALITY
EDGEMONT URANIUM MILL SITE

WELLS

DATE - PARAMETER	UNITS	BACKGROUND M112	M119	M116	M110	M111	M120	M113	M115	M118
August 17, 1986										
Arsenic	µg/L	2	< 1	2	10	13	17	2	3	23
Barium	mg/L	0.2	0.08	0.02	0.04	0.03	0.02	0.05	0.04	0.24
Cadmium	µg/L	1.1	0.2	0.2	0.2	0.4	0.5	0.3	6.2	0.9
Chloride	mg/L	9	580	400	150	550	850	250	880	560
Chromium	µg/L	11	6	2	4	5	4	5	5	12
Cobalt	µg/L	340	4	6	4	10	12	2	96	13
Iron	mg/L	119	0.93	0.06	2.57	1.13	0.35	0.41	0.94	15.6
Lead	µg/L	6	1	2	2	2	3	1	< 1	6
Manganese	mg/L	26.5	0.18	0.45	0.29	0.79	0.18	0.48	7.98	0.42
Molybdenum	mg/L	0.03	0.04	0.04	0.03	0.17	0.13	0.02	0.13	0.12
Nickel	µg/L	520	18	17	20	26	25	11	41	36
Nitrate	mg/L	0.07	4	0.42	0.65	0.13	3.2	90	115	3.8
Selenium	µg/L	< 1	18	6	26	91	29	160	190	71
Silver	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sulfate	mg/L	2700	3800	4000	6500	19000	14000	2000	12000	14000
Vanadium	mg/L	0.05	0.02	0.02	0.02	0.07	0.06	0.01	0.71	0.07
Zinc	mg/L	0.22	0.01	< 0.01	0.03	0.02	0.01	< 0.01	0.04	0.05
pH	SU	6.3	6.9	7.5	7.5	7.3	6.9	7.1	7.1	7.4
Conductivity	µmhos/cm2	3700	6800	6400	8900	21000	20000	4500	17000	17000
Dissolved Solids	mg/L	4300	6800	6900	9900	29000	23000	4000	21000	23000
SEPTEMBER 18, 1986										
Arsenic	ug/L	9	8	12	11	6	9	6	2	5
Chloride	mg/L	9	482	400	156	588	800	208	835	585
Nitrate	mg/L	0.05	3.9	0.04	0.28	0.98	5.1	40	130	5.5
Selenium	ug/L	1	26	4	9	35	29	13	60	88
Sulfate	mg/L	6800	5000	4300	7700	25000	14000	2100	14000	16000
pH	SU	6.1	6.7	7.4	7.5	7.2	7.1	7	6.8	7.2
Conductivity	µmhos/cm2	3900	8000	7000	10000	25000	19000	4200	19000	18000
Dissolved Solids	mg/L	4300	8300	6900	10000	33000	22000	3900	22000	22000

TABLE C-9
(continued)
GROUNDWATER QUALITY
EDGEMONT URANIUM MILL SITE

WELLS

DATE - PARAMETER	UNITS	BACKGROUND M112	M119	M116	M110	M111	M120	M113	M115	M118
SEPTEMBER 18, 1986										
CHANGE IN CONCENTRATIONS										
Arsenic	%	350	700	500	10	-54	-47	200	-33	-78
Chloride	%	0	-17	0	4	7	-6	-17	-5	4
Nitrate	%	-29	-3	-90	-57	654	59	-56	13	45
Selenium	%	0	44	-33	-65	-62	0	-92	-68	24
Sulfate	%	152	32	8	18	32	0	5	17	14
pH	%	-3	-3	-1	0	-1	3	-1	-4	-3
Conductivity	%	5	18	9	12	19	-5	-7	12	6
Dissolved Solids	%	0	22	0	1	14	-4	-3	5	-4

TABLE C-10

SEDIMENT ANALYSES
CHEYENNE RIVER AND COTTONWOOD CREEK
Concentrations (µg/g)

	Cheyenne River				Cottonwood Creek	
PARAMETER-DATE	RR BRIDGE	BELOW COTTONWOOD CREEK	SITE BOUNDARY	MOUTH OF RED CANYON	County Bridge	At Mouth
CHLORIDES						
JUNE 9, 1986	126	132	122	111	46	172
PREVIOUS MAXIMUM	310	270	220	160	310	180
PREVIOUS MINIMUM	75	29	28	25	160	24
SULFATES						
JUNE 9, 1986	1500	220	1200	3600	2800	2400
PREVIOUS MAXIMUM	1700	3360	1360	600	2900	1100
PREVIOUS MINIMUM	400	300	380	380	890	680
ARSENIC						
JUNE 9, 1986	11	9.3	5	8.2	12	13
PREVIOUS MAXIMUM	11	14	10	13	44	19
PREVIOUS MINIMUM	6.3	9.5	5.8	5.5	16	6.4
MANGANESE						
JUNE 9, 1986	580	330	370	280	410	510
PREVIOUS MAXIMUM	560	400	440	240	640	440
PREVIOUS MINIMUM	320	370	320	220	350	270
MOLYBDENUM						
JUNE 9, 1986	11	12	7	< 1	18	15
PREVIOUS MAXIMUM	15	4	5	6	19	18
PREVIOUS MINIMUM	2	2	2	2	2	2
NICKEL						
JUNE 9, 1986	17	25	13	12	50	41
PREVIOUS MAXIMUM	14	28	10	10	60	28
PREVIOUS MINIMUM	10	5	5	5	25	20
SELENIUM						
JUNE 9, 1986	< 0.05	1.1	0.08	0.05	0.6	1.5
PREVIOUS MAXIMUM	0.6	1.4	0.4	0.4	5.2	3.1
PREVIOUS MINIMUM	0.2	0.26	0.2	0.2	2.3	0.2
VANADIUM						
JUNE 9, 1986	27	45	34	13	73	98
PREVIOUS MAXIMUM	30	21	16	18	56	94
PREVIOUS MINIMUM	10	14	10	10	41	20

TABLE C-11

SEDIMENT ANALYSES
A COMPARISON OF AVERAGE AND COMPOSITED VALUES
CHEYENNE RIVER AND COTTONWOOD CREEK
June 9, 1986

	Cheyenne River					Cottonwood Creek		
PARAMETER	RR BRIDGE	Below Cottonwood Creek	Site Boundary	Mouth of Red Canyon	County Bridge	At Mouth	At Mouth Duplicate	County Bridge Duplicate
CHLORIDES (µg/g)								
left	72	84	193	41	180	114	149	75
middle	83	50	70	103	51	79		84
right	140	154	310	100	50	92		112
average*	98	96	193	81	94	95		90
composite	126	132	122	111	46	172		81
avg/comp **	0.78	0.73	1.58	0.73	2.04	0.55		1.12
SULFATES (µg/g)								
left	500	970	2300	910	3300	1100	1500	2600
middle	600	460	620	670	1800	780		1900
right	2100	3900	3400	660	960	1900		3400
average*	1067	1777	2107	747	2020	1260		2633
composite	1500	220	1200	3600	2800	2400		3800
avg/comp **	0.71	8.08	1.76	0.21	0.72	0.53		0.69
ARSENIC (µg/g)								
left	12	9.7	8.2	11	14	9.7	6.4	6.8
middle	9.4	7.6	7	7.4	28	13		31
right	5	8.6	6.4	6.5	16	13		17
average*	9	8.6	7	8	19	12		18
composite	11	9.3	5	8.2	12	13		15
avg/comp **	0.80	0.93	1.44	1.01	1.61	0.92		1.22
MANGANESE (µg/g)								
left	570	330	740	540	440	370	520	660
middle	490	310	300	440	600	700		650
right	280	360	500	290	450	320		440
average*	447	333	513	423	497	463		583
composite	580	330	370	280	410	510		500
avg/comp **	0.77	1.01	1.39	1.51	1.21	0.91		1.17
MOLYBDENUM µg/g)								
left	10	6	< 1	9	17	< 1	5	33
middle	10	< 1	4	9	22	12		32
right	9	14	10	7	20	28		22
average*	10	7	5	8	20	14		29
composite	11	12	7	< 1	18	15		21
avg/comp **	0.88	0.58	0.71	8.33	1.09	0.91		1.38

TABLE C-11
(Continued)
SEDIMENT ANALYSES
A COMPARISON OF AVERAGE AND COMPOSITED VALUES
CHEYENNE RIVER AND COTTONWOOD CREEK
June 9, 1986

	Cheyenne River				Cottonwood Creek			
PARAMETER	RR BRIDGE	Below Cottonwood Creek	Site Boundary	Mouth of Red Canyon	County Bridge	At Mouth	At Mouth Duplicate	County Bridge Duplicate
NICKEL (µg/g)								
left	13	12	28	18	50	15	13	60
middle	12	11	11	12	72	23		62
right	13	36	23	8	52	44		52
average*	13	20	21	13	58	27		58
composite	17	25	13	12	50	41		55
avg/comp **	0.75	0.79	1.59	1.06	1.16	0.67		1.05
SELENIUM (µg/g)								
left	<0.05	<0.05	<0.05	0.14	0.48	0.19	0.28	0.22
middle	<0.05	<0.05	<0.05	<0.05	1.1	0.42		1.4
right	0.09	0.93	0.18	0.19	1.2	2.1		1.2
average*	0.06	0.34	0.09	0.13	0.9	0.9		1
composite	<0.05	1.1	0.08	0.05	0.6	1.5		0.78
avg/comp **	1.27	0.31	1.17	2.53	1.54	0.60		1.21
VANADIUM (ug/g)								
left	16	10	42	15	64	10	29	70
middle	19	17	28	13	64	31		66
right	22	75	49	21	77	100		84
average*	19	34	40	16	68	47		73
composite	27	45	34	13	73	98		83
avg/comp **	0.70	0.76	1.17	1.26	0.94	0.48		0.88

* Averages shown may not exactly equal the average of the three cross sections because of rounding of numbers presented. Averages are calculated before rounding.

** The average of the three cross section stations divided by the composited sample.

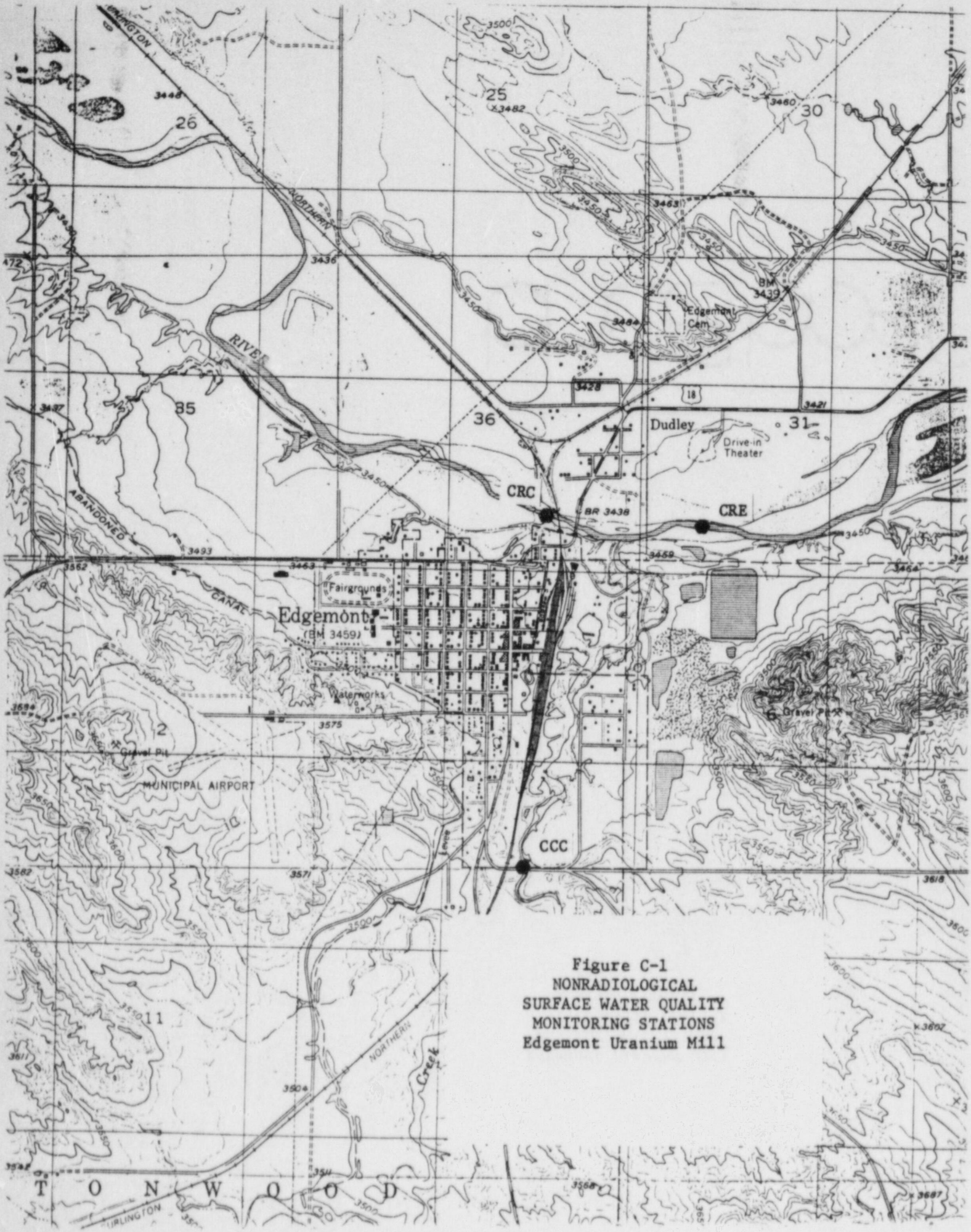


Figure C-1
NONRADIOLOGICAL
SURFACE WATER QUALITY
MONITORING STATIONS
Edgemont Uranium Mill

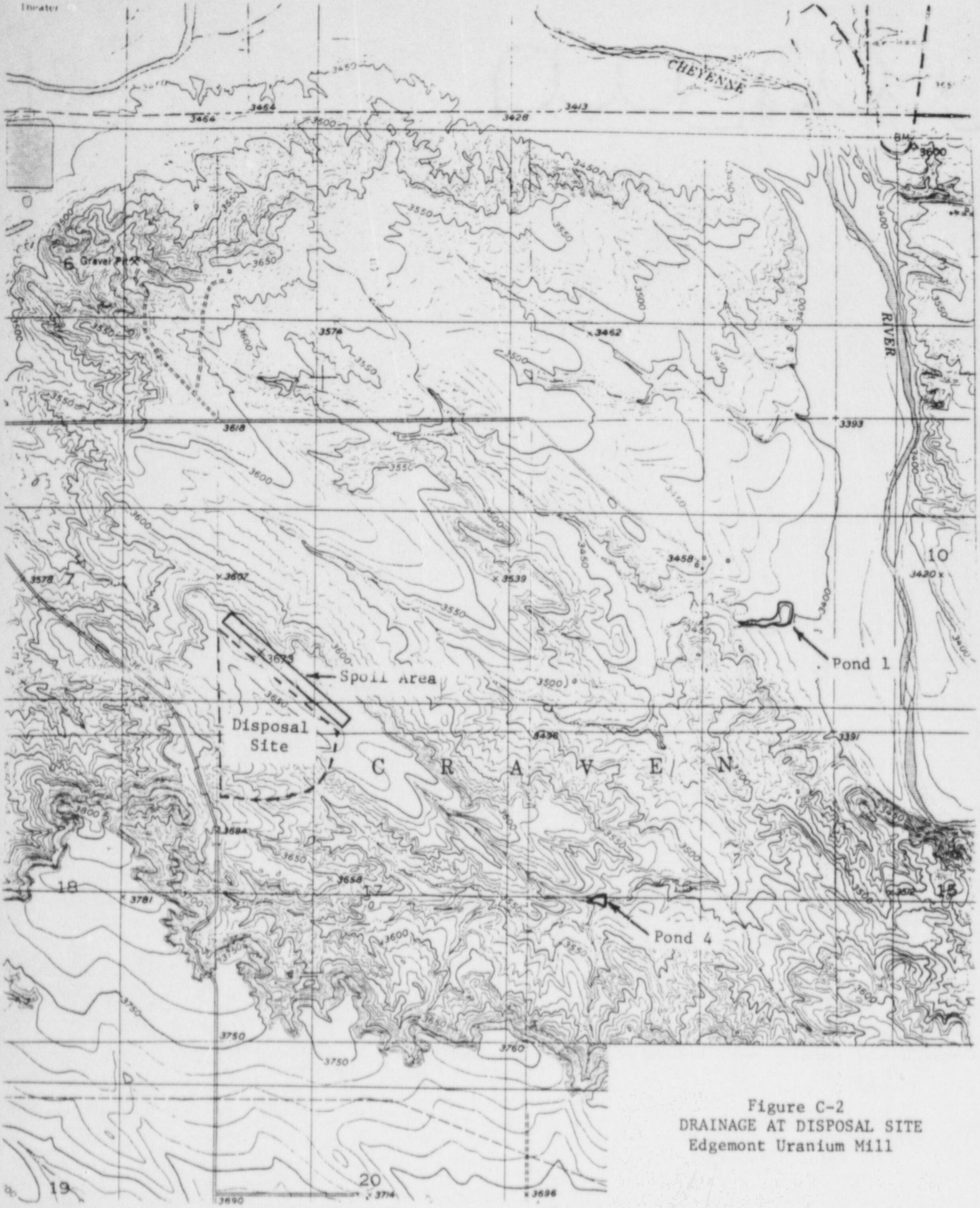


Figure C-2
DRAINAGE AT DISPOSAL SITE
Edgemont Uranium Mill

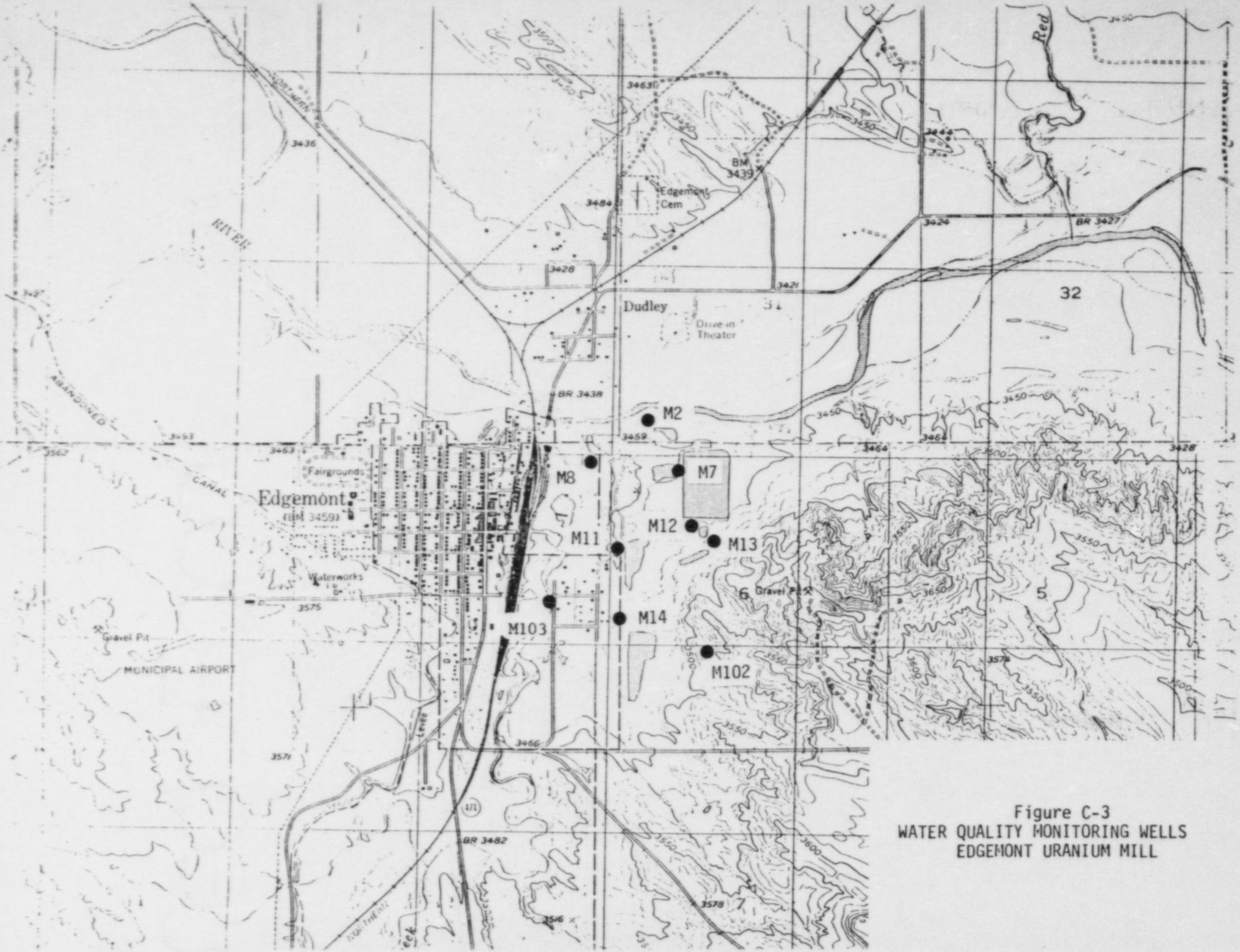
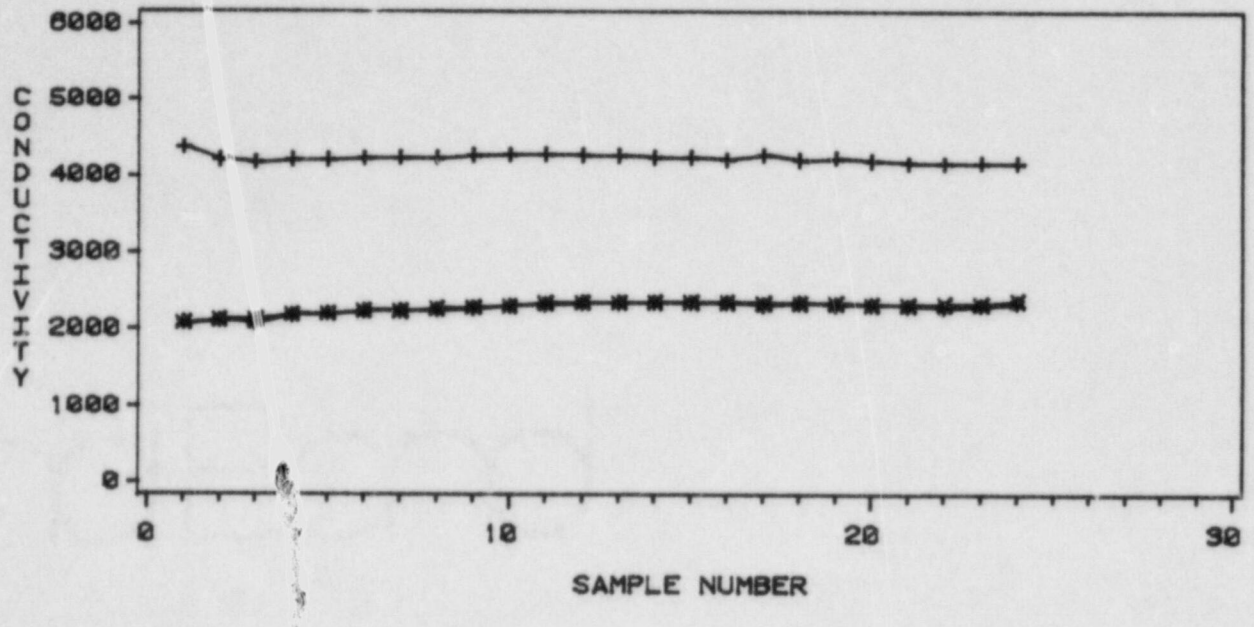


Figure C-3
WATER QUALITY MONITORING WELLS
EDGEMONT URANIUM MILL

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=05MAY86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=05MAY86

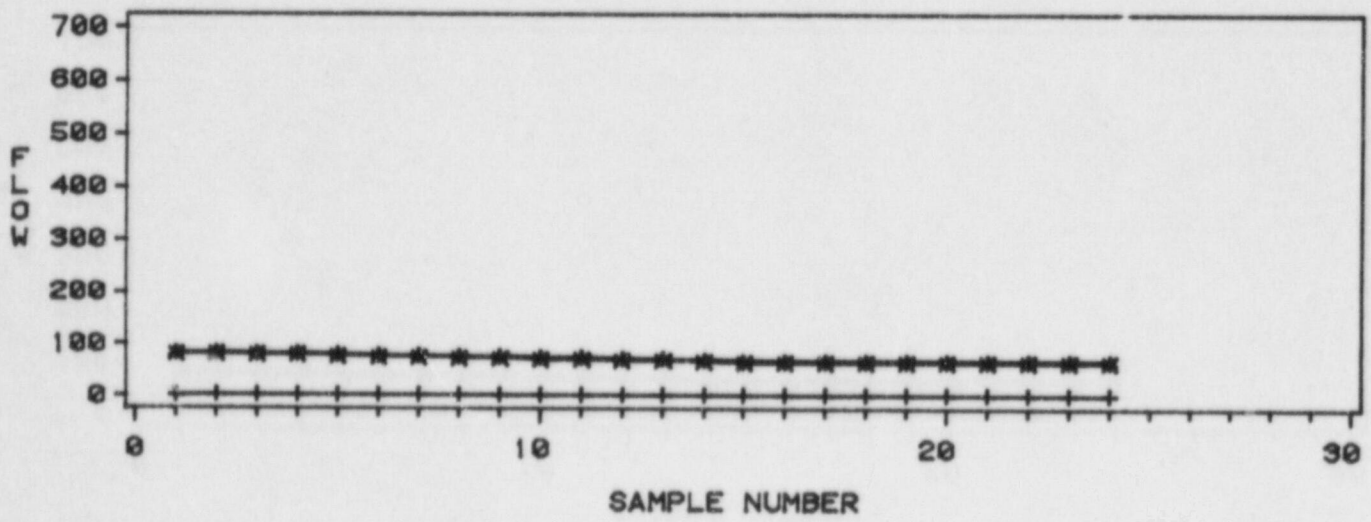
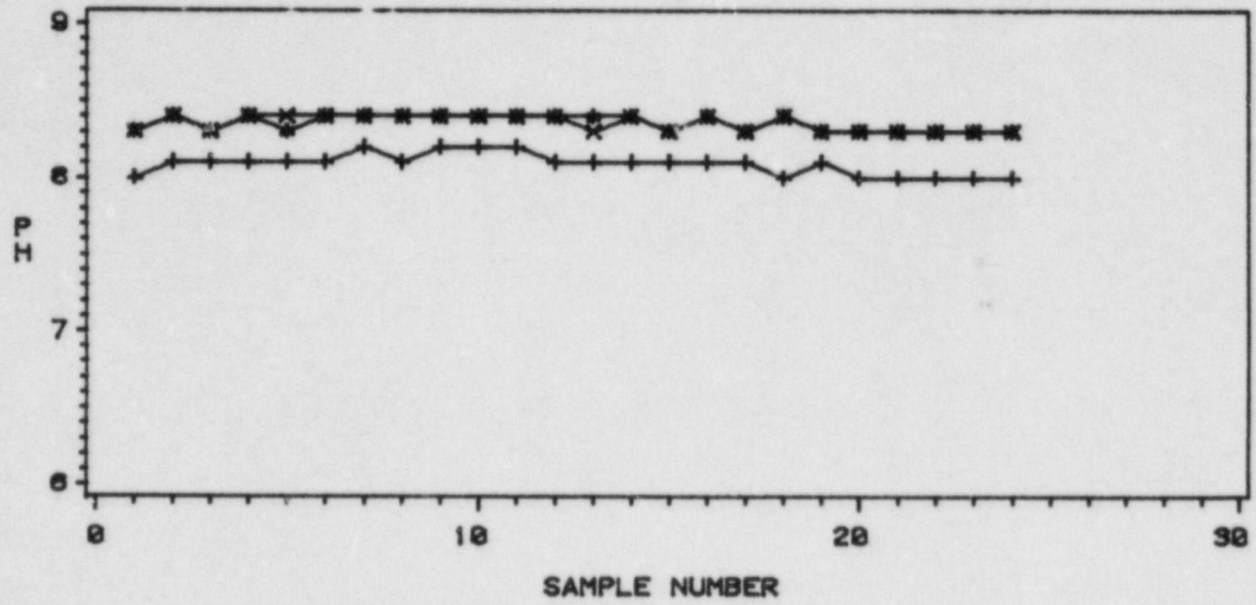


FIGURE C-4

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=05MAY88



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=05MAY88

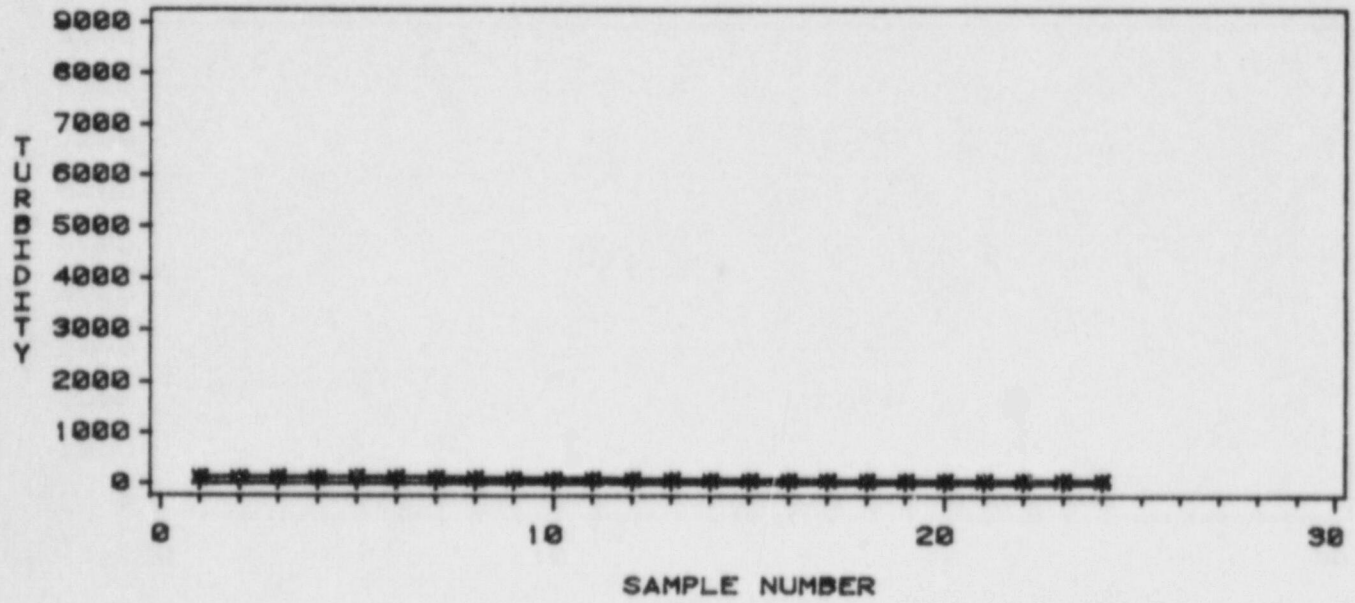
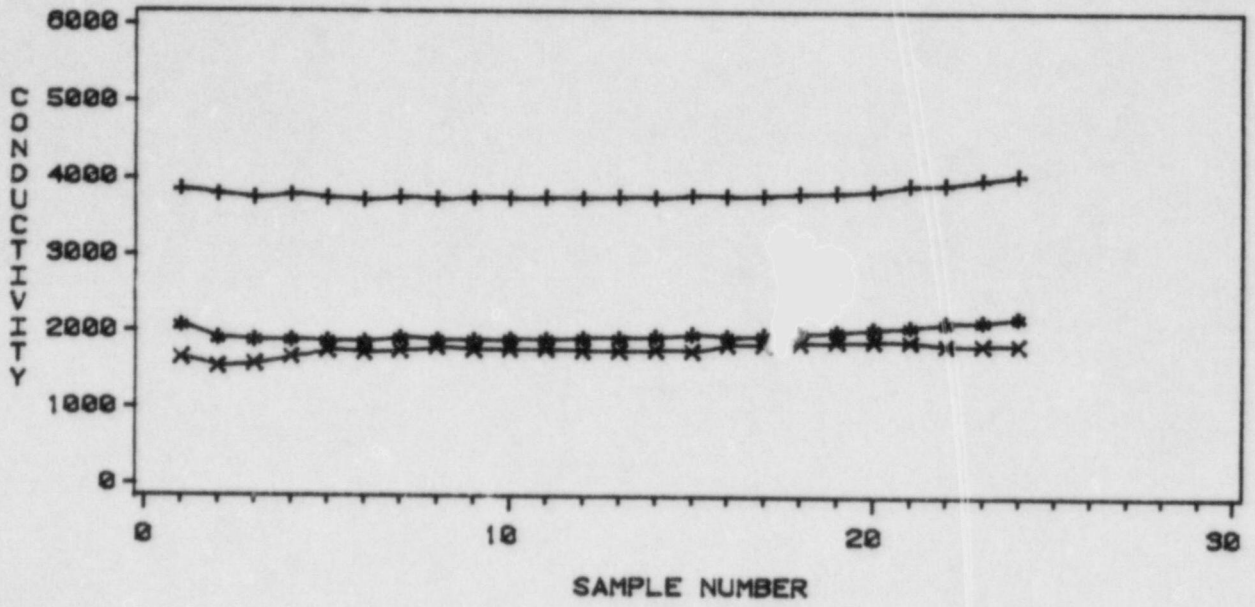


FIGURE C-4 (continued)

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=09MAY86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=09MAY86

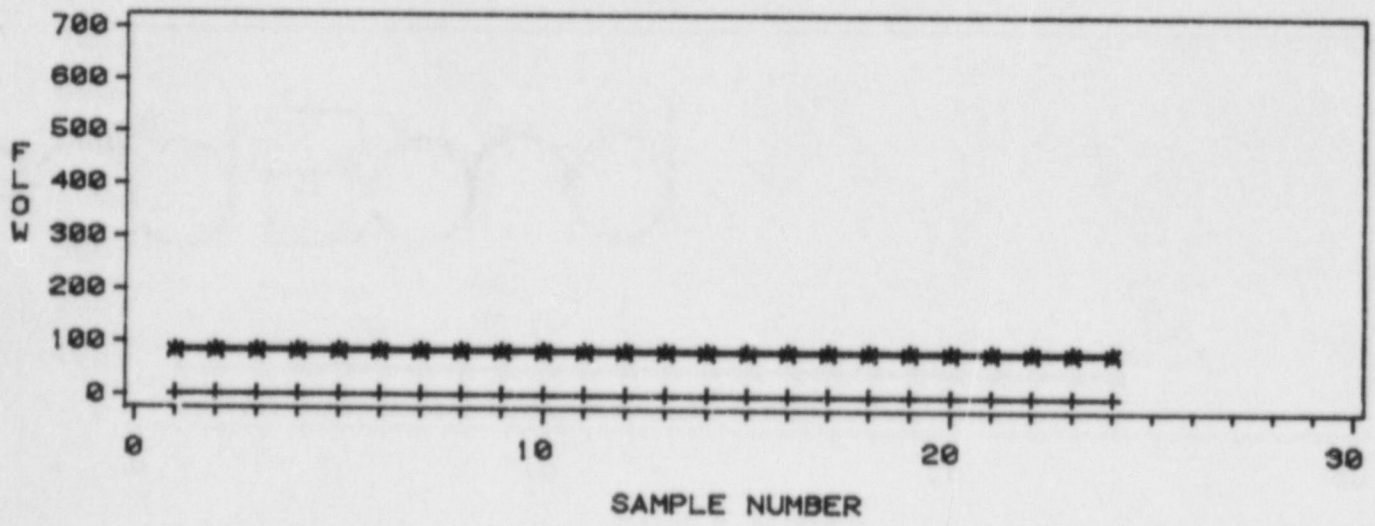
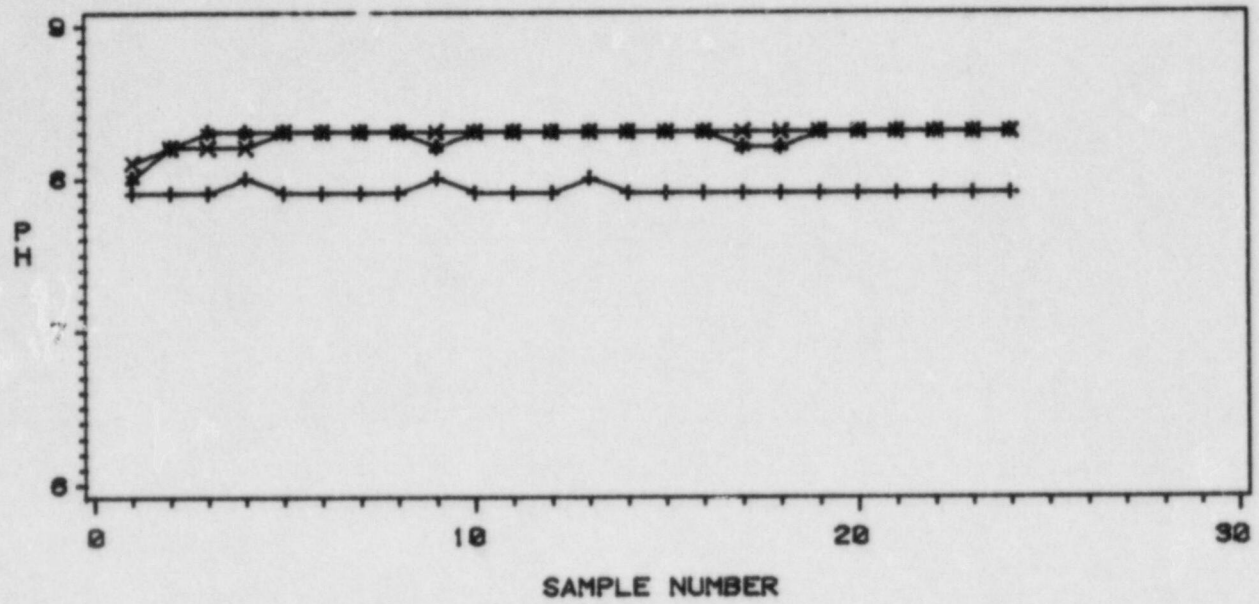


FIGURE C-5

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=09MAY86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=09MAY86

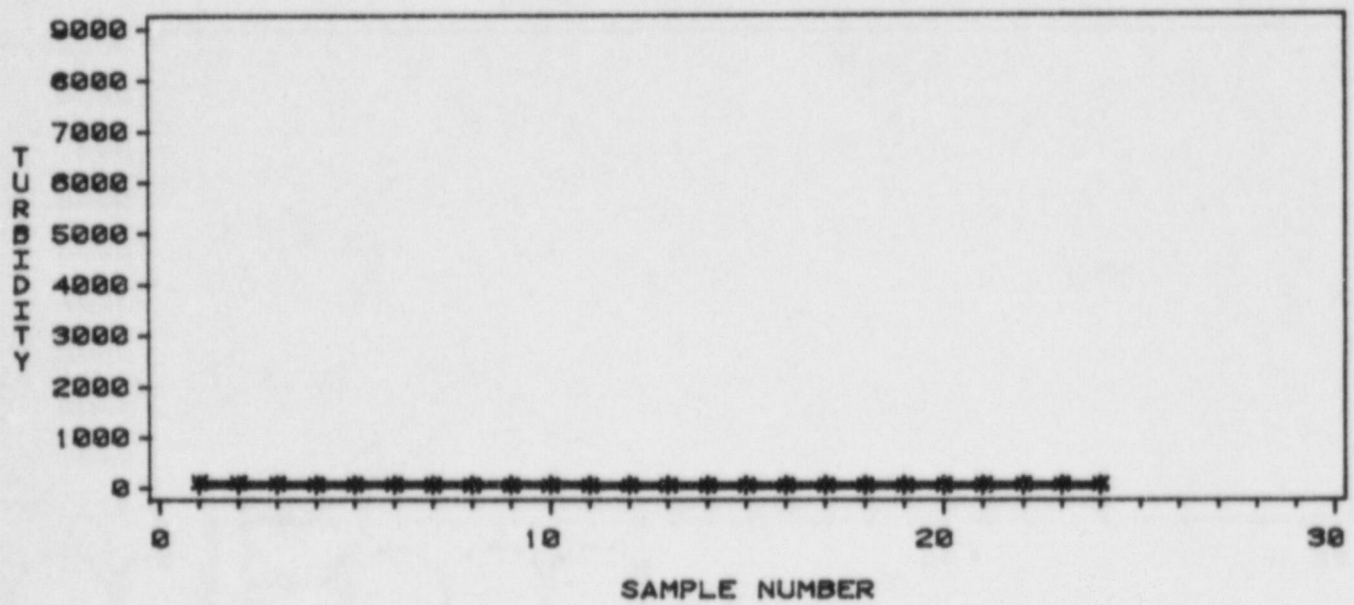
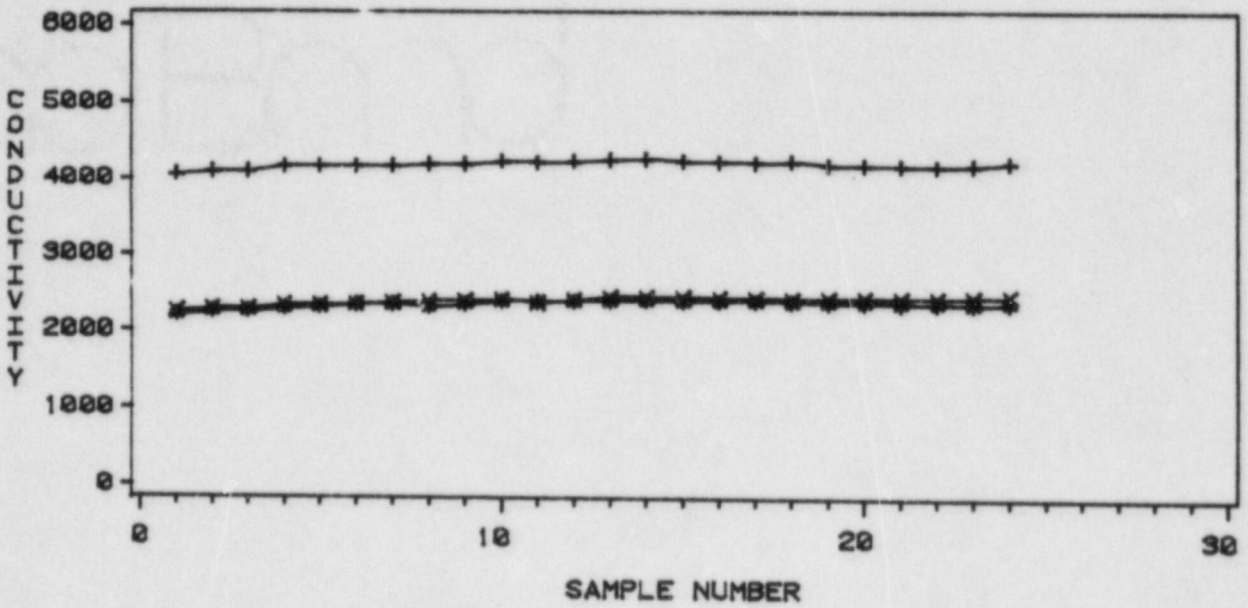


FIGURE C-5 (continued)

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=19MAY88



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=19MAY88

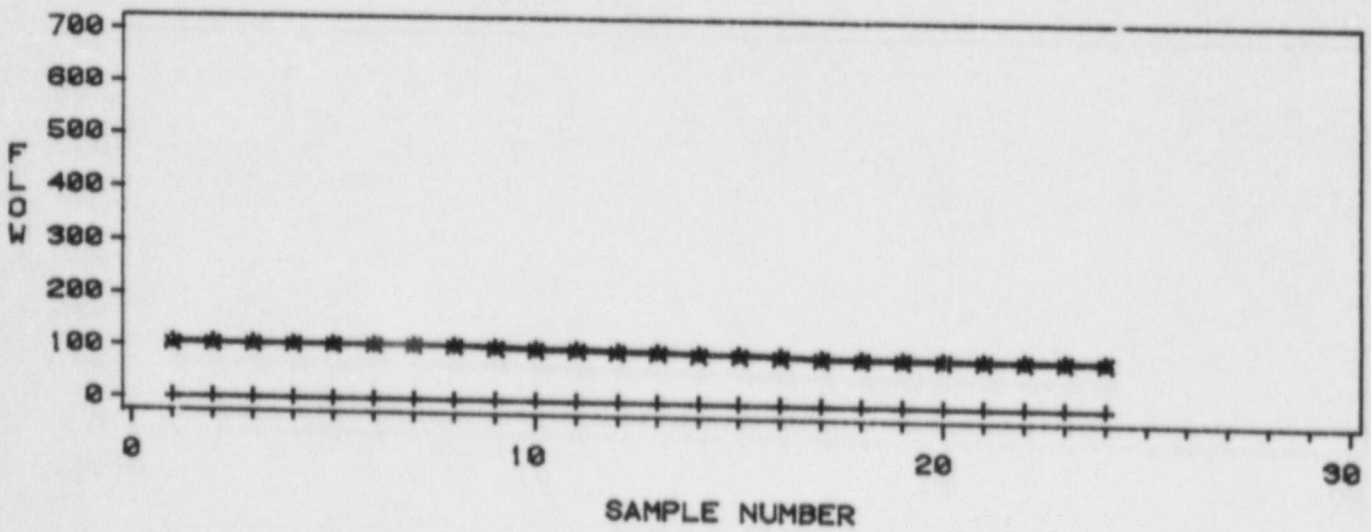
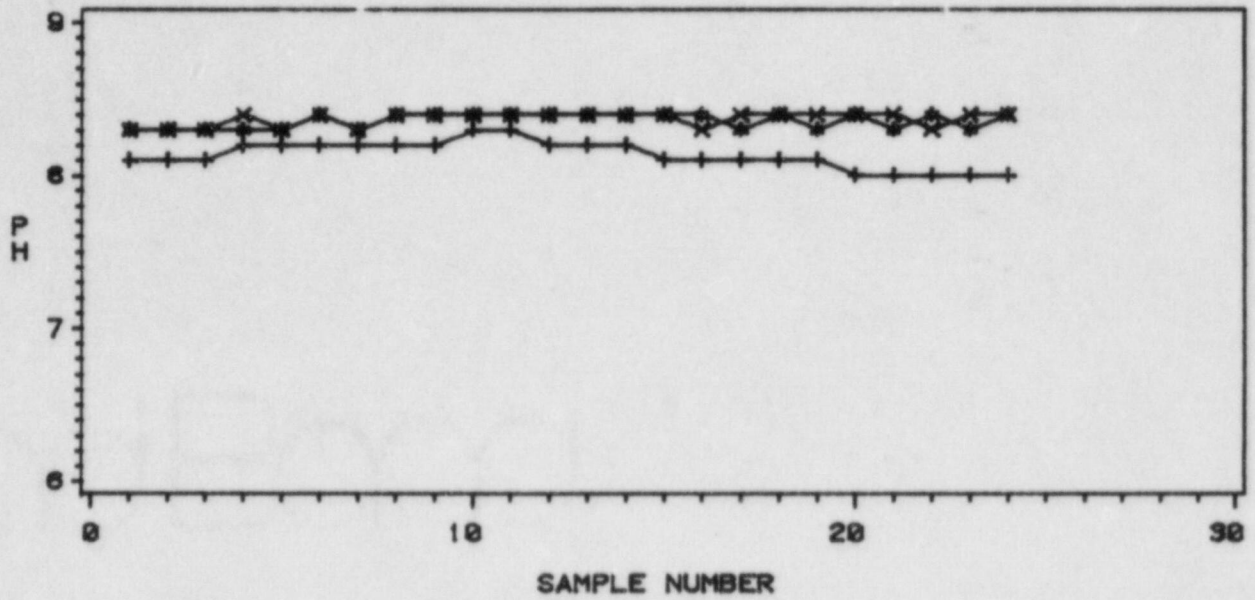


FIGURE C-6

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=19MAY86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=19MAY86

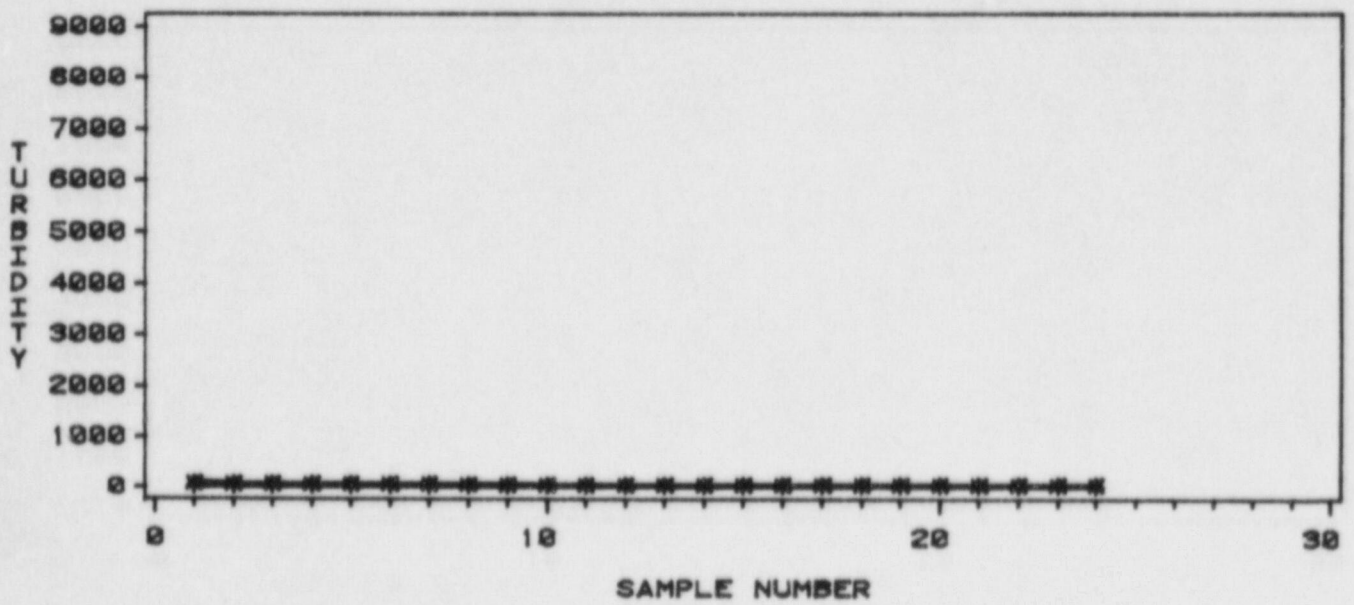
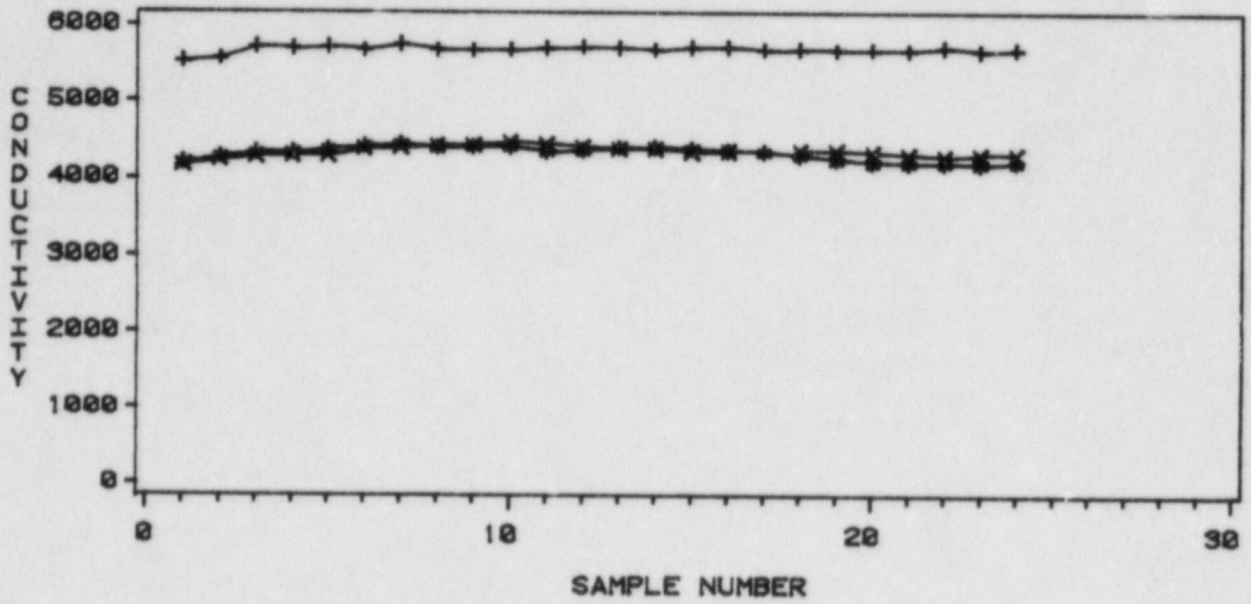


FIGURE C-6 (continued)

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=02JUN88



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=02JUN88

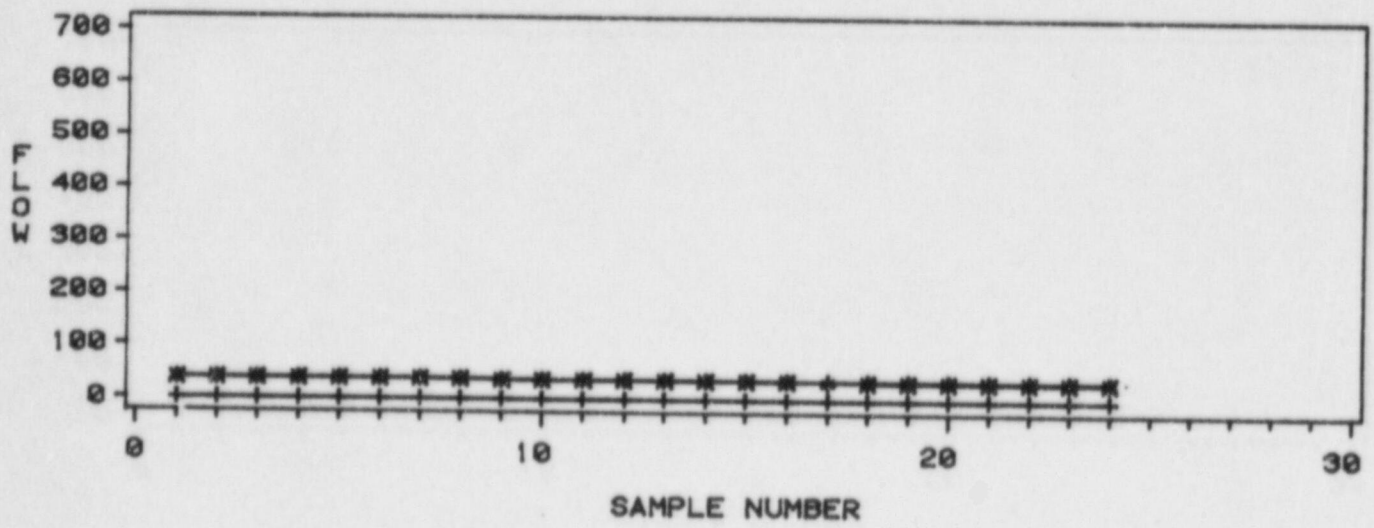
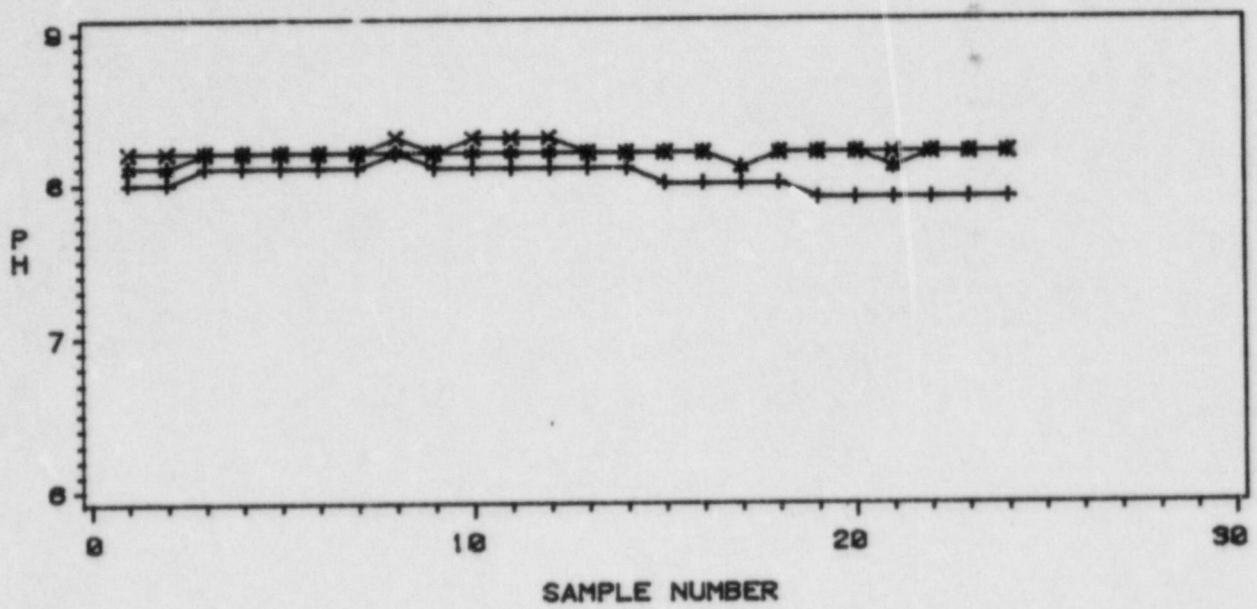


FIGURE C-7

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=02JUN86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=02JUN86

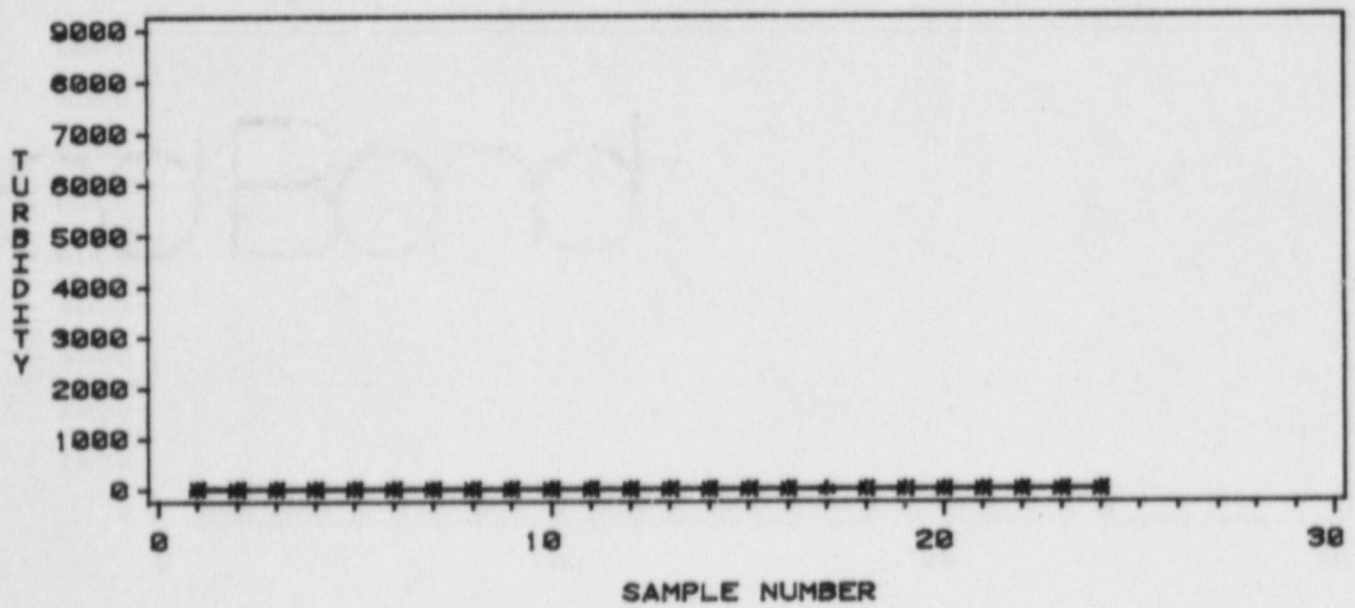
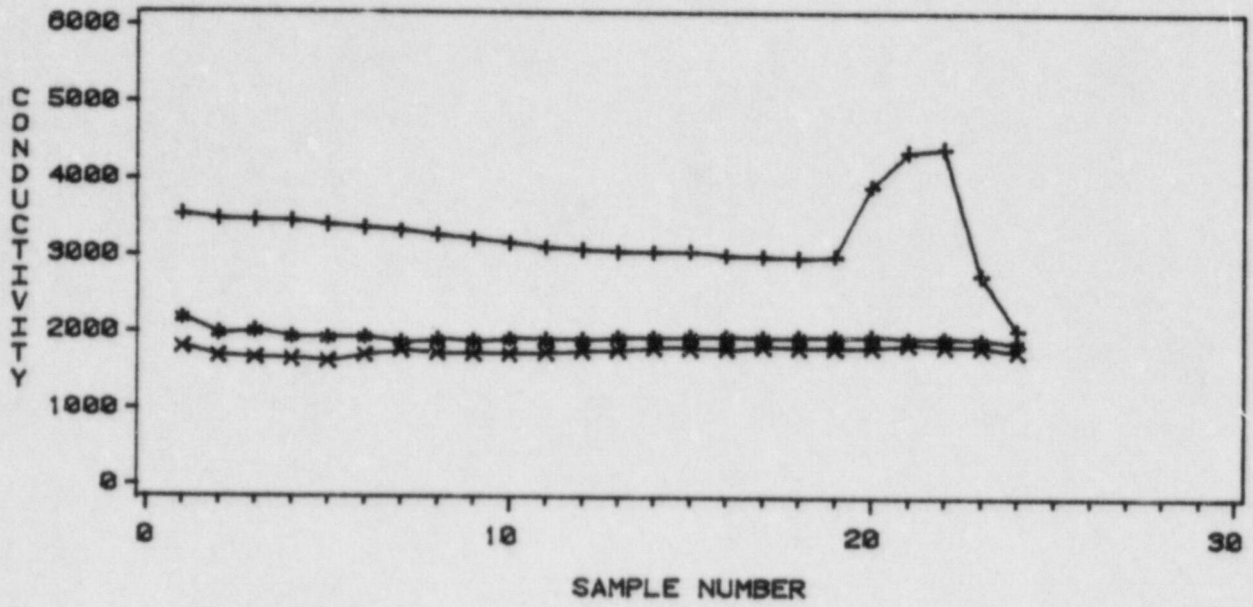


FIGURE C-7 (continued)

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=09JUN88



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=09JUN88

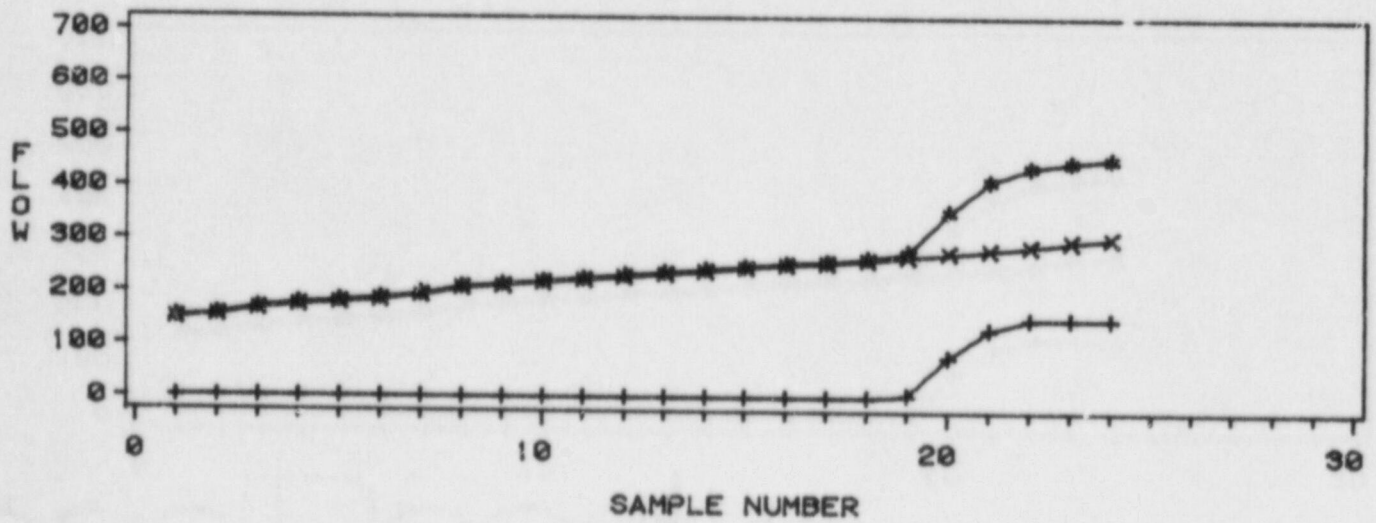
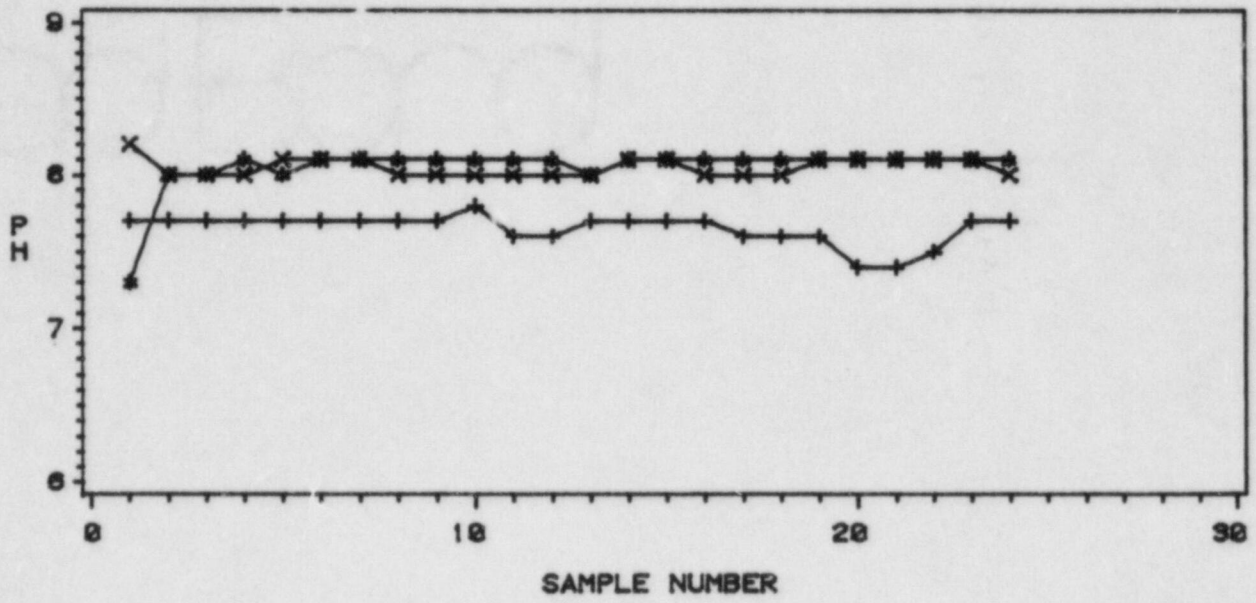


FIGURE C-8

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=09JUN88



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=09JUN88

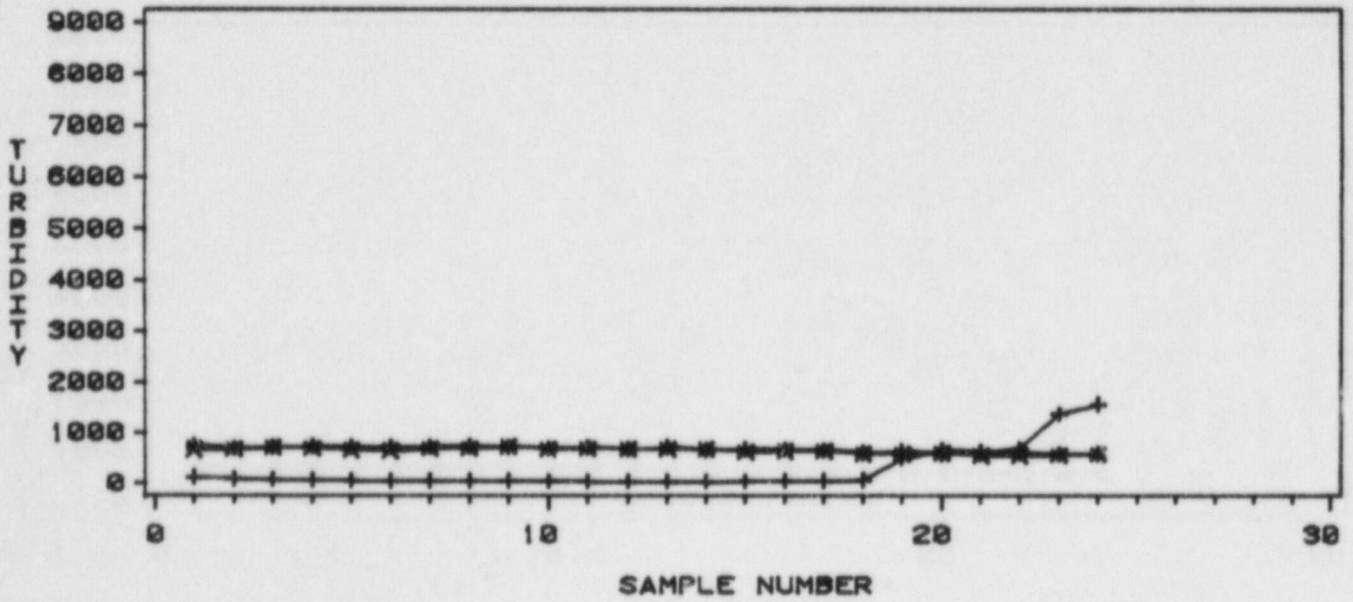
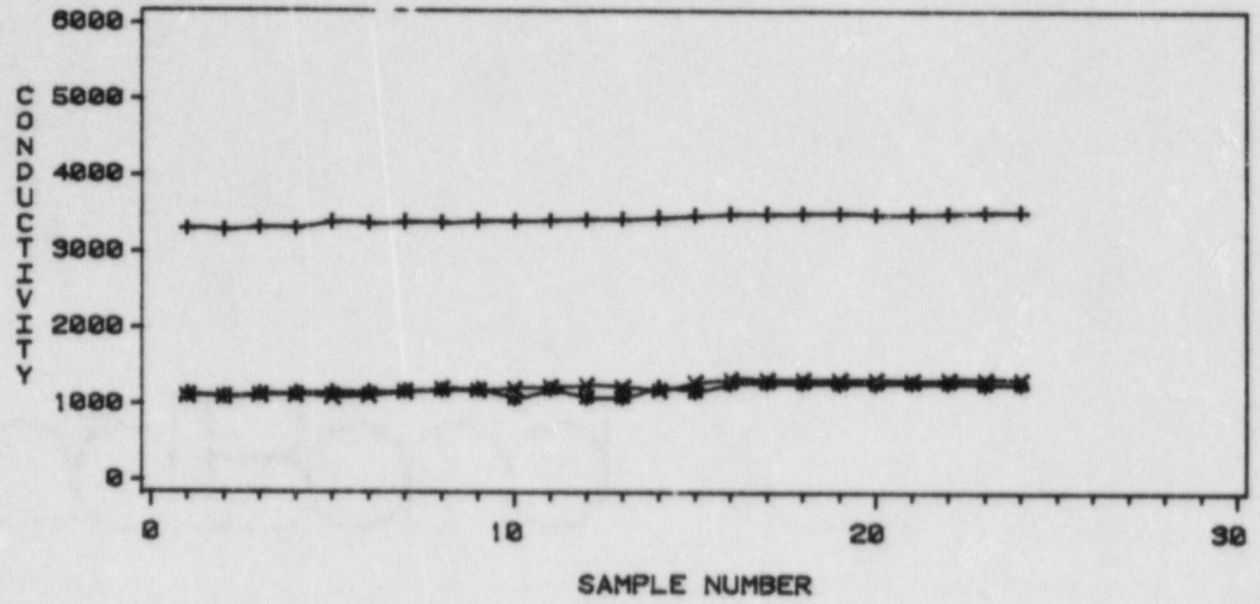


FIGURE C-8 (continued)

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=17JUN88



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=17JUN88

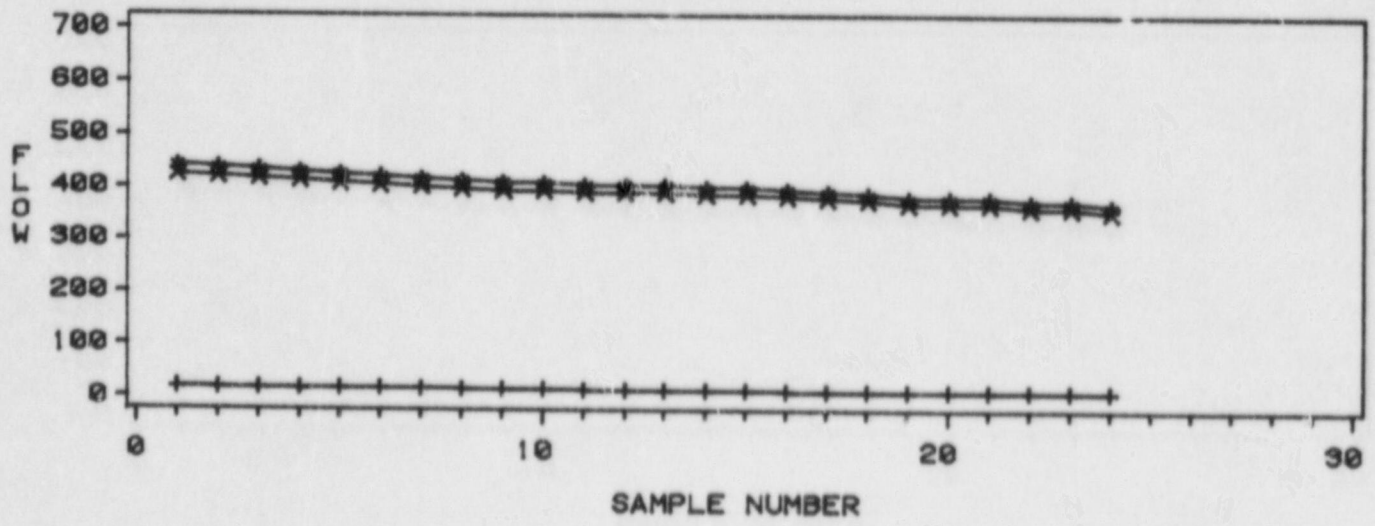
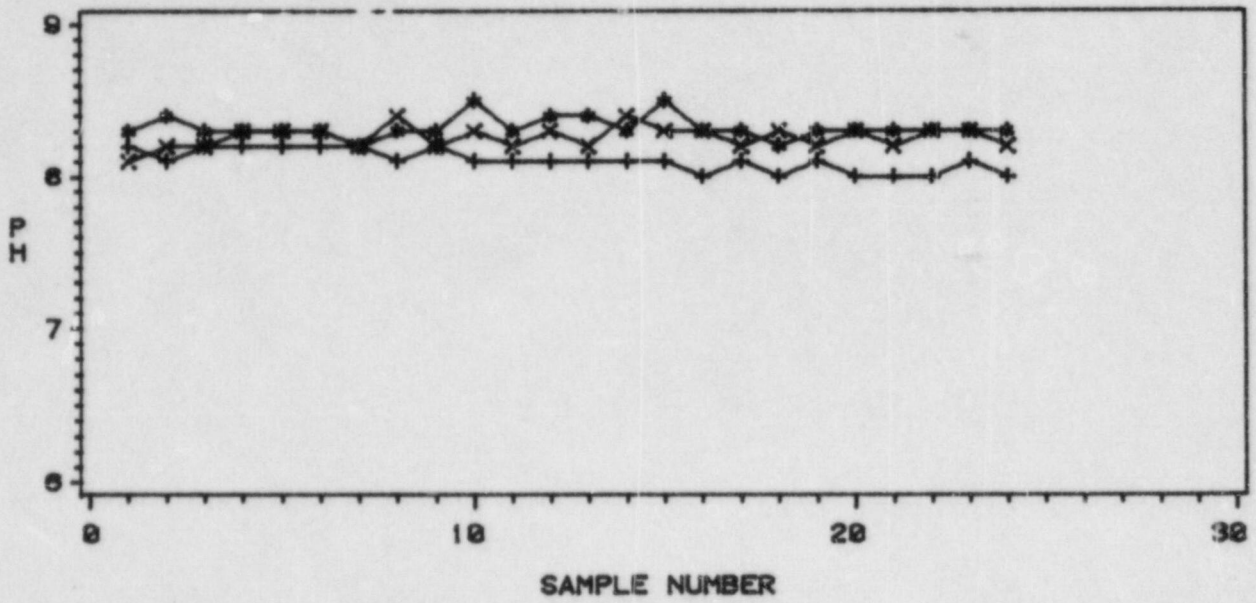


FIGURE C-9

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=17JUN88



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=17JUN88

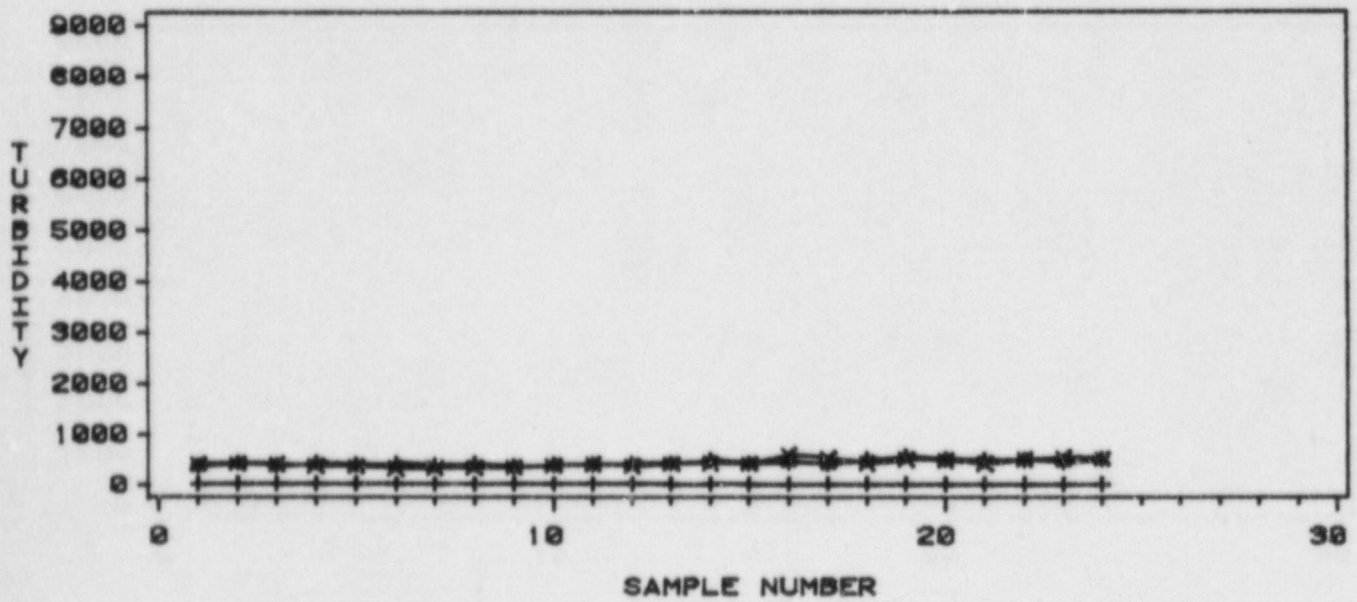
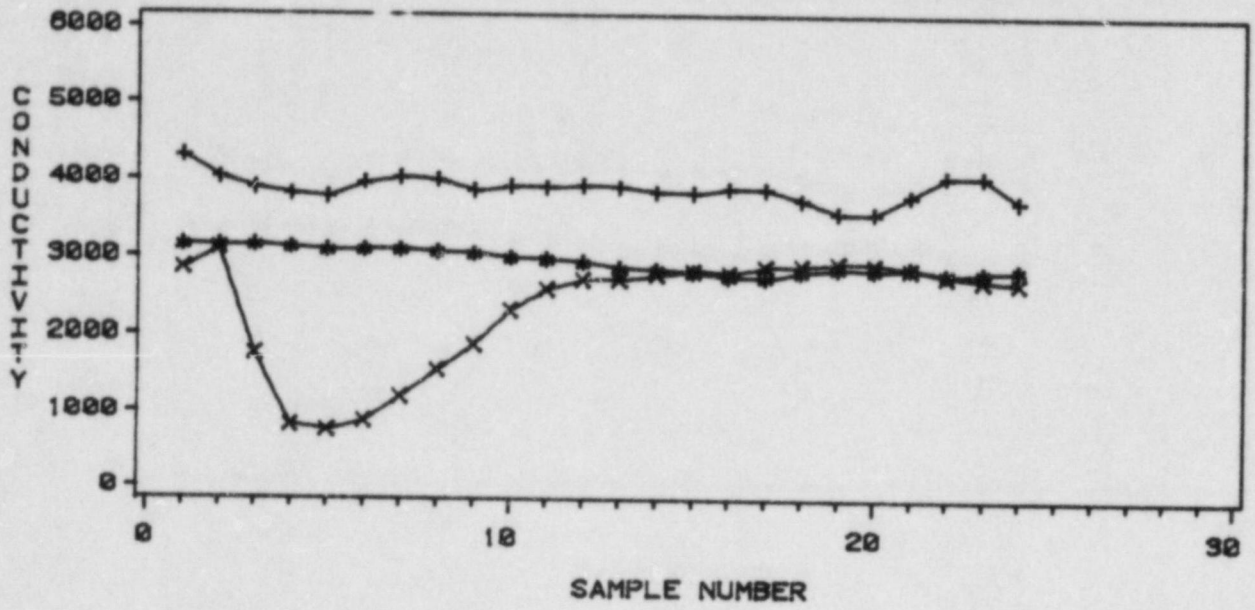


FIGURE C-9 (continued)

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=30JUN86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=30JUN86

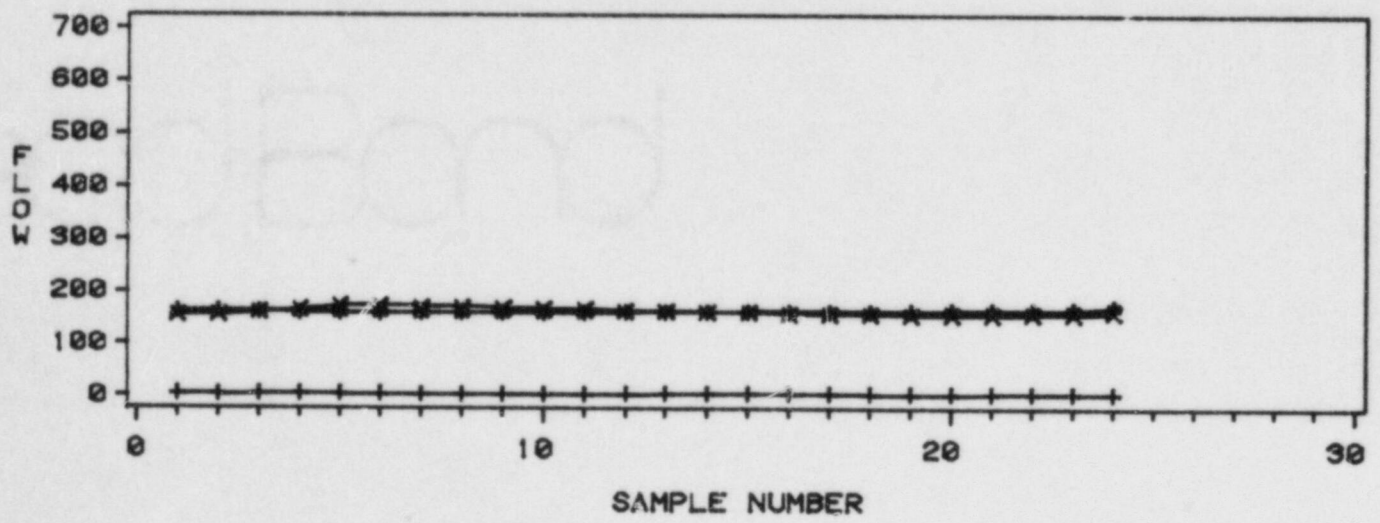
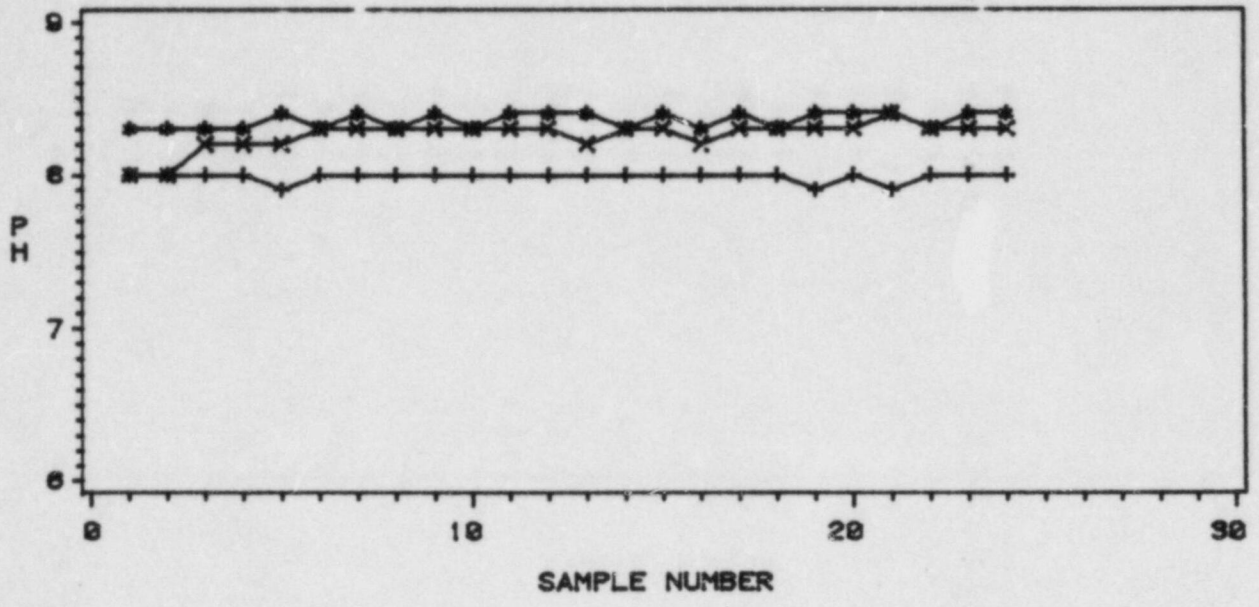


FIGURE C-10

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=30JUN86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=30JUN86

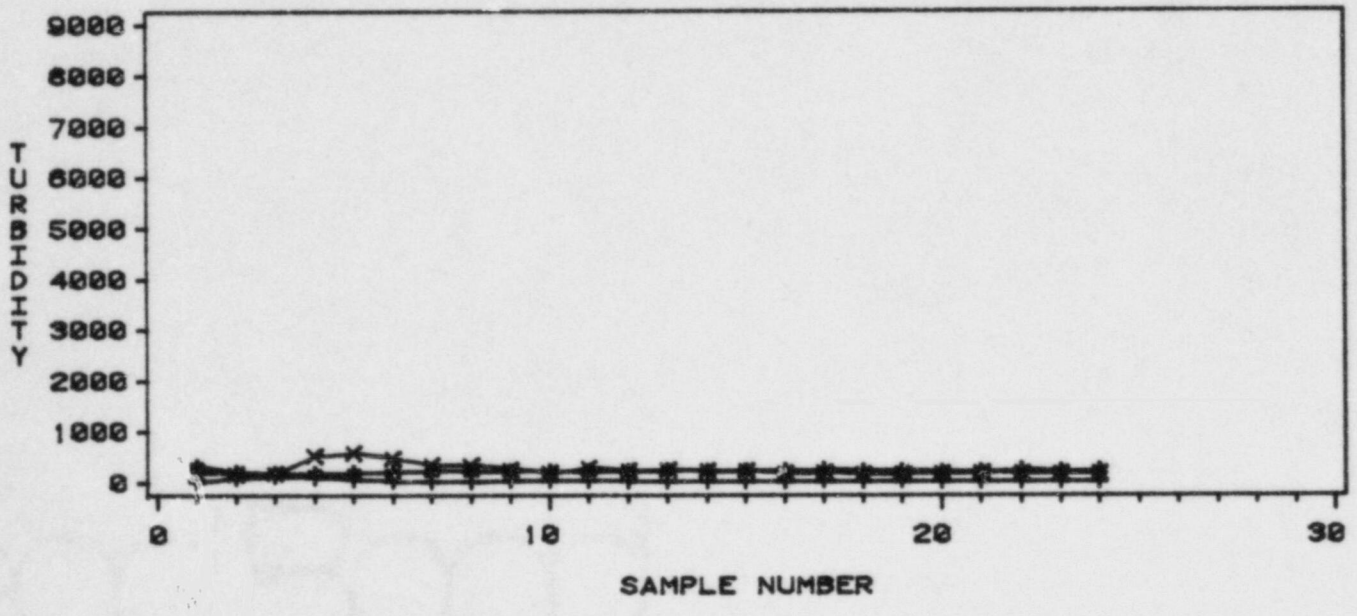
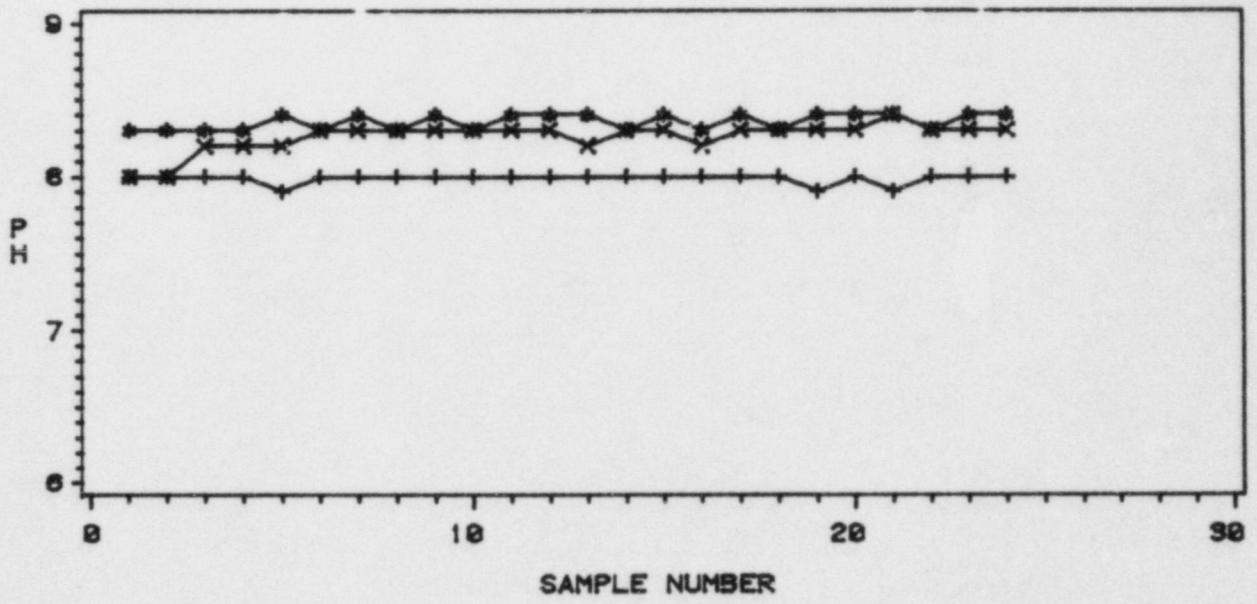


FIGURE C-10 (continued)

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=30JUN86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=30JUN86

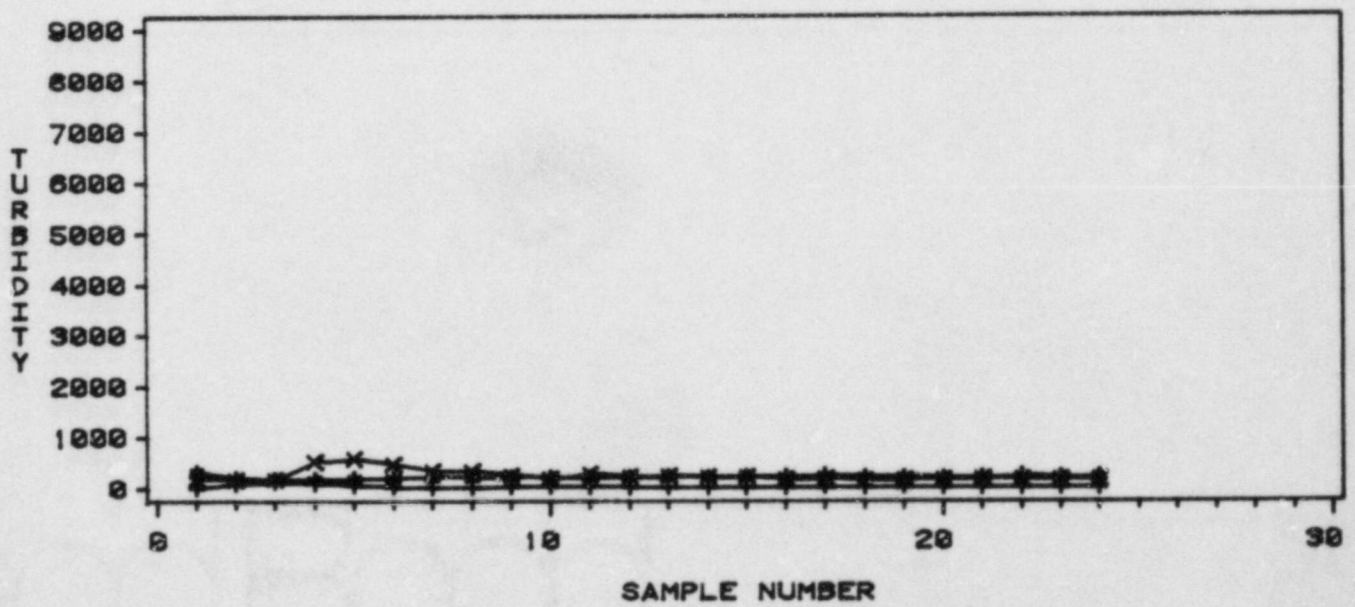
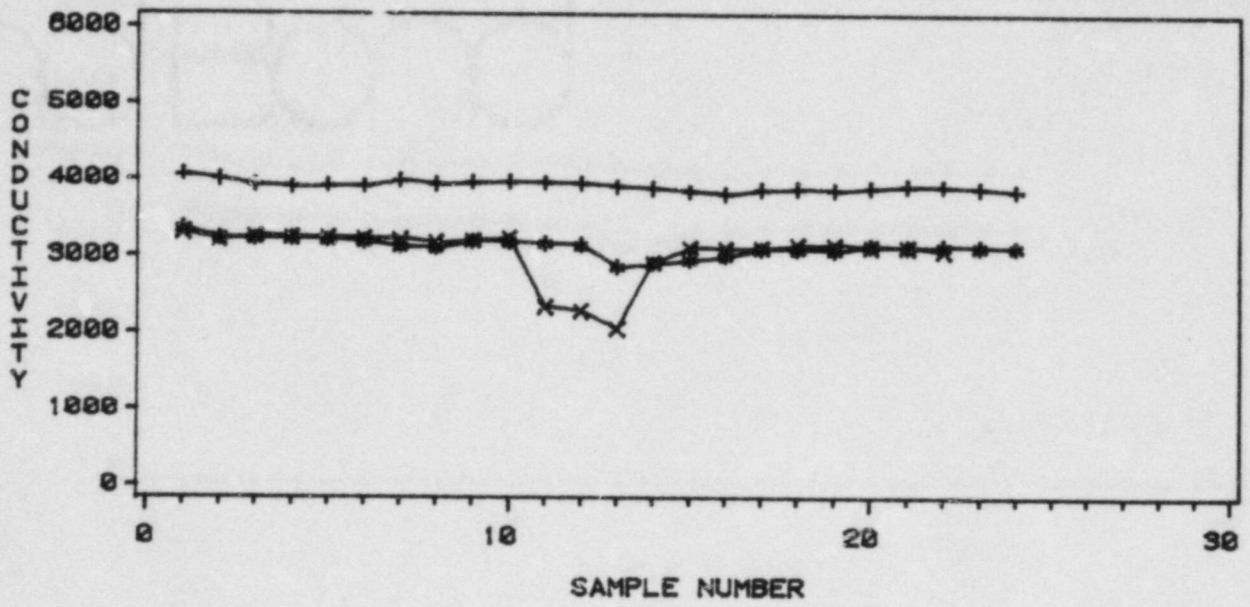


FIGURE C-10 (continued)

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=14JUL86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=14JUL86

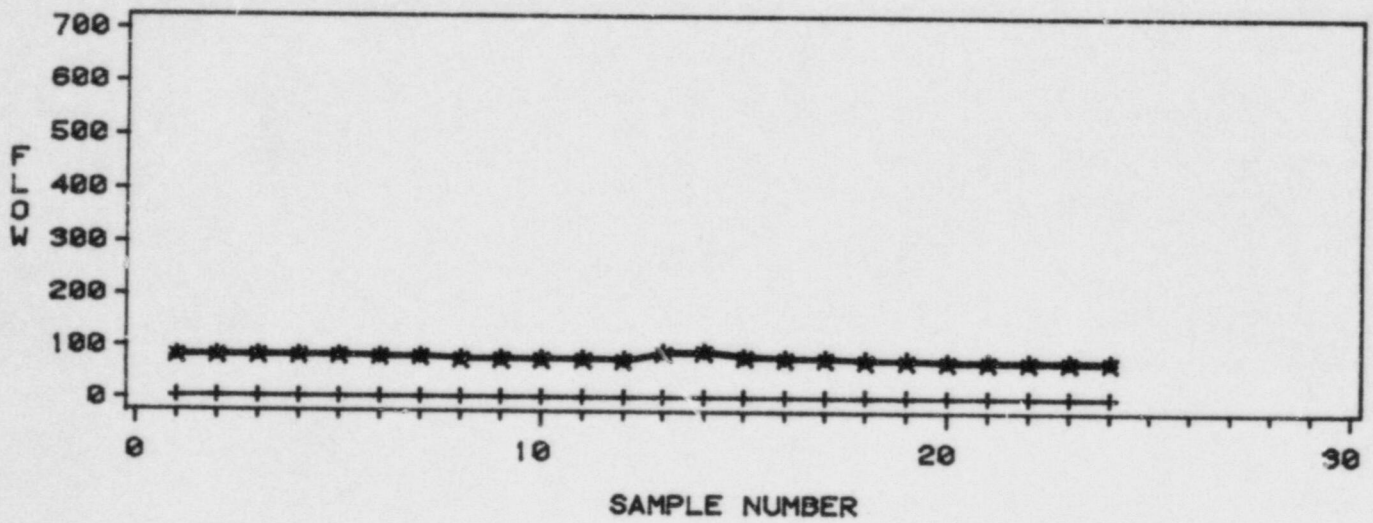
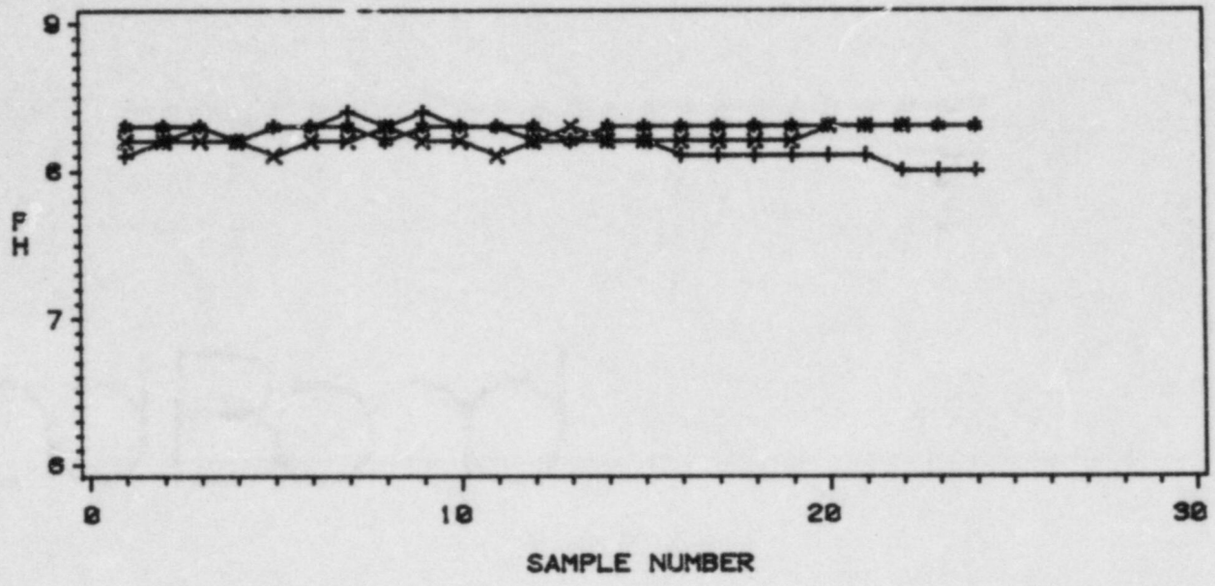


FIGURE C-11

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=14JUL88



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=14JUL88

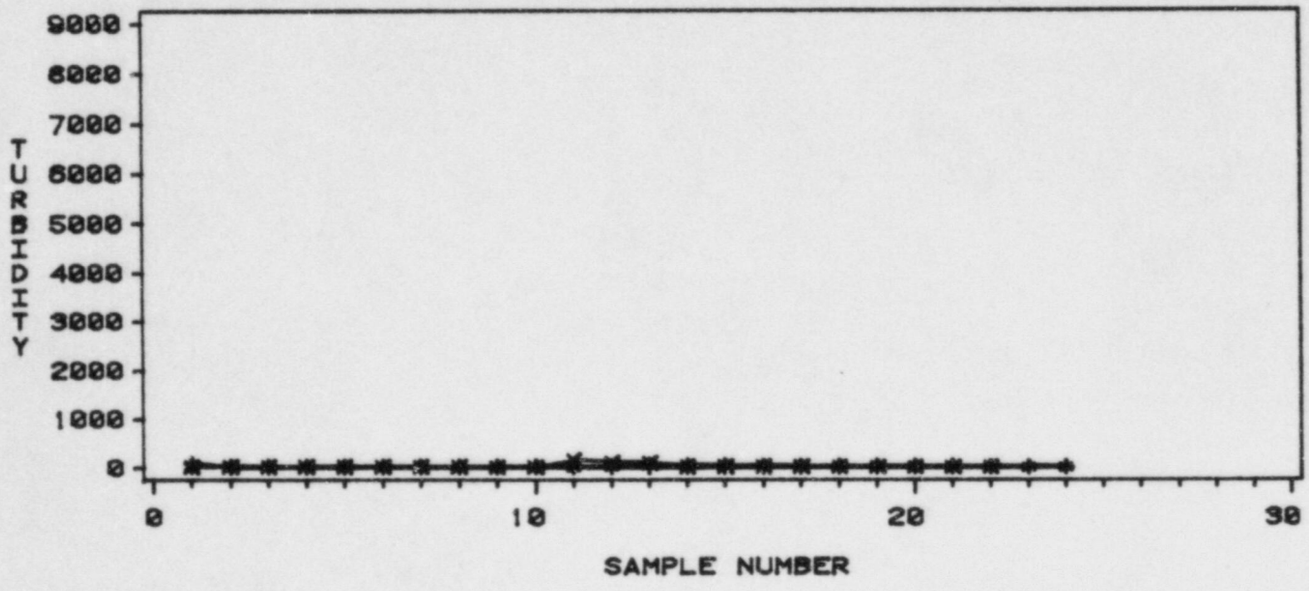
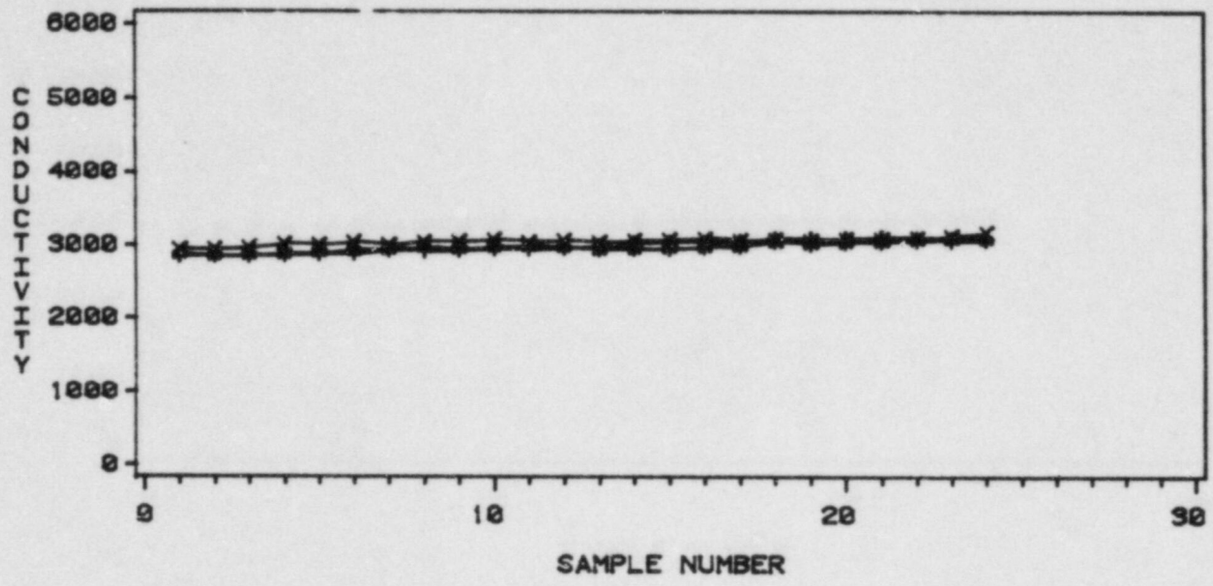


FIGURE C-11 (continued)

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=26JUL86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=26JUL86

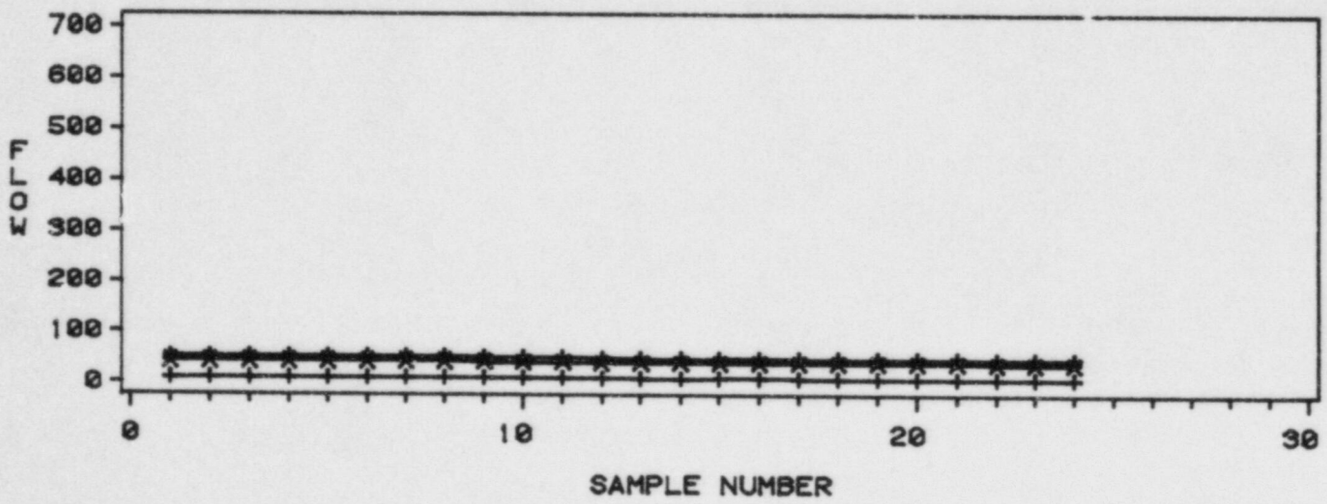
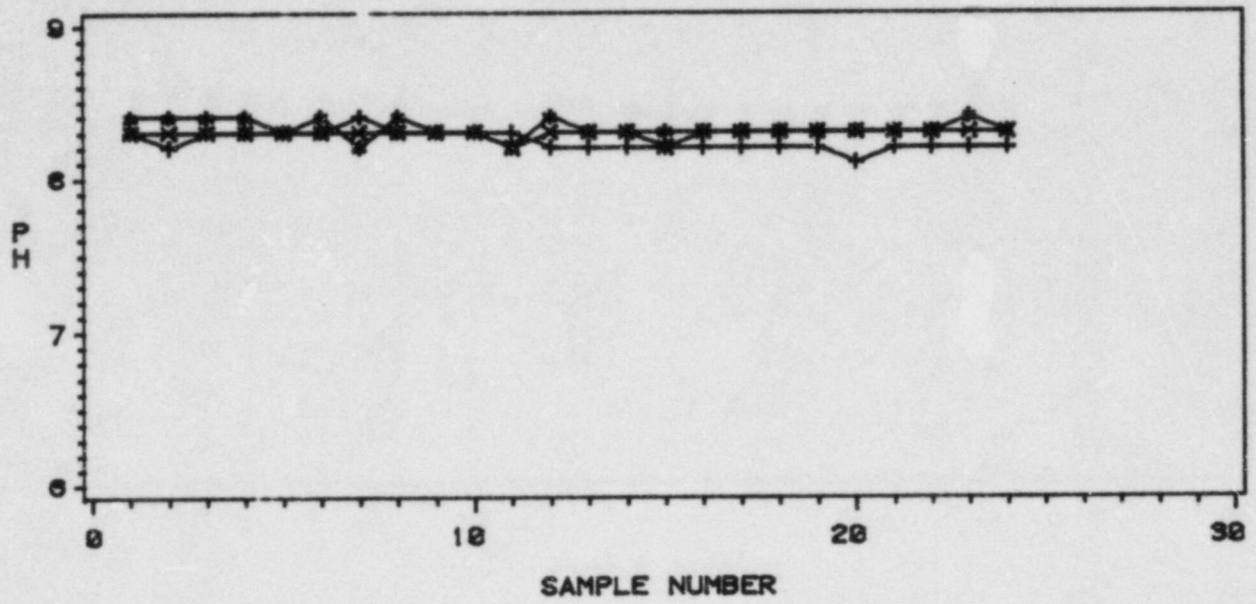


FIGURE C-12

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=26JUL86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=26JUL86

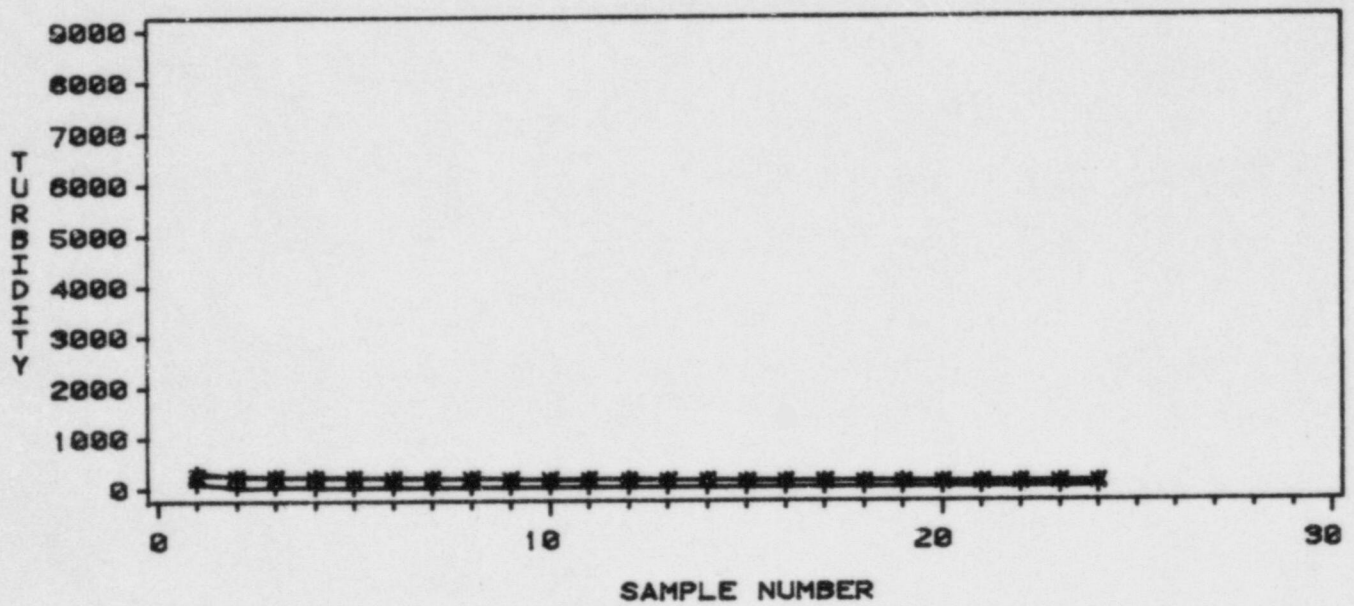
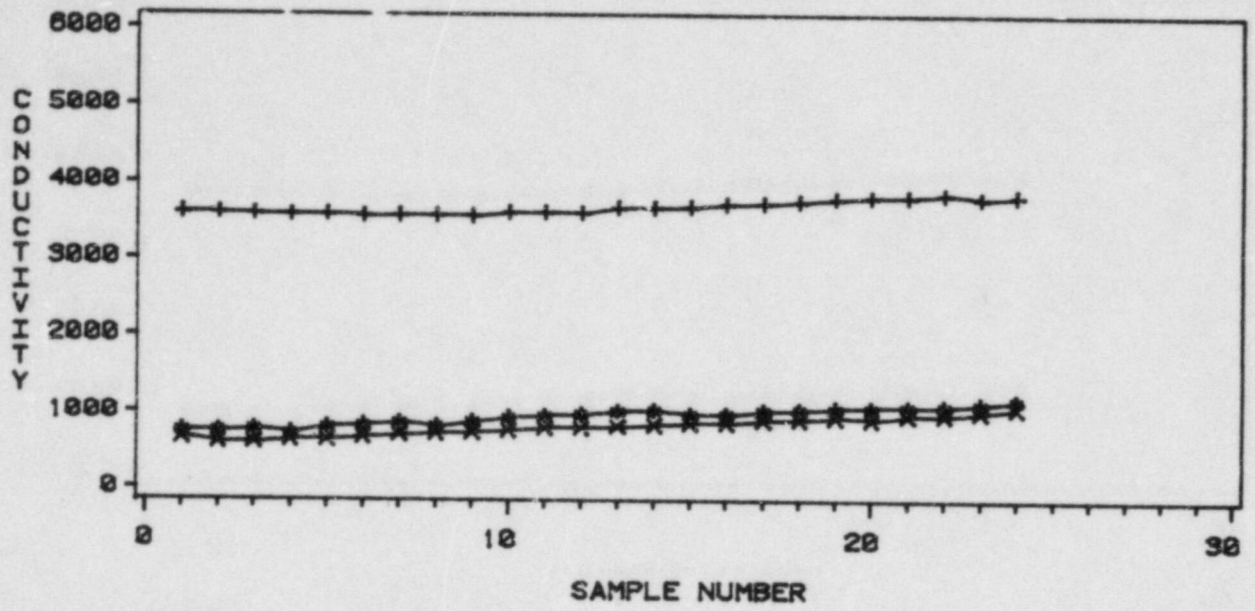


FIGURE C-12 (continued)

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=11AUG86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=11AUG86

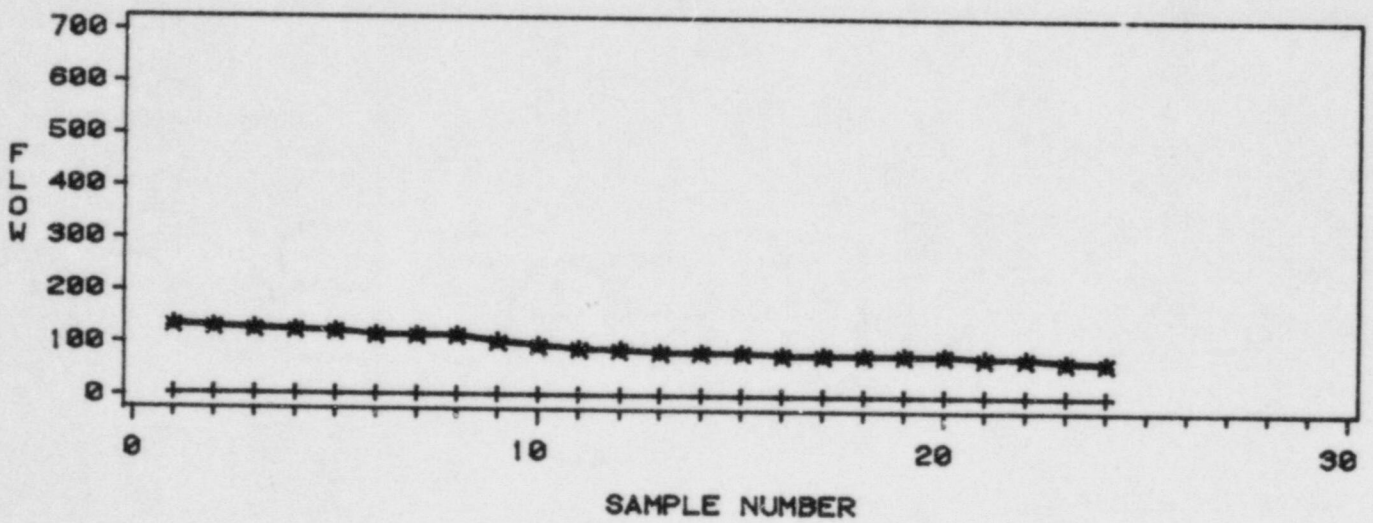
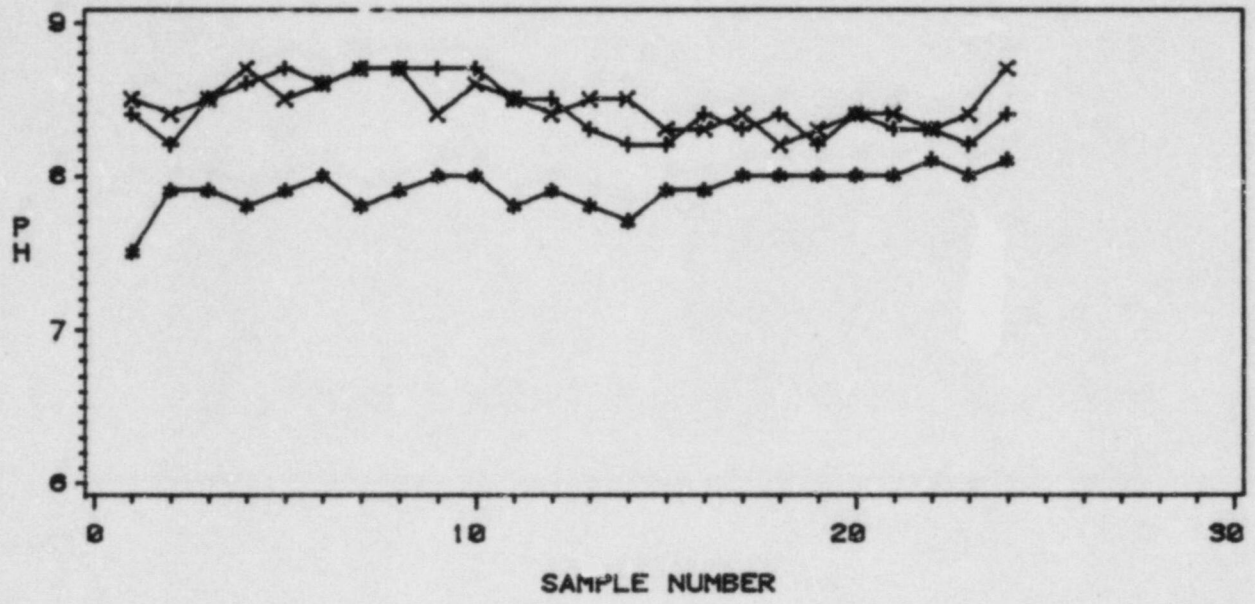


FIGURE C-13

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=11AUG86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=11AUG86

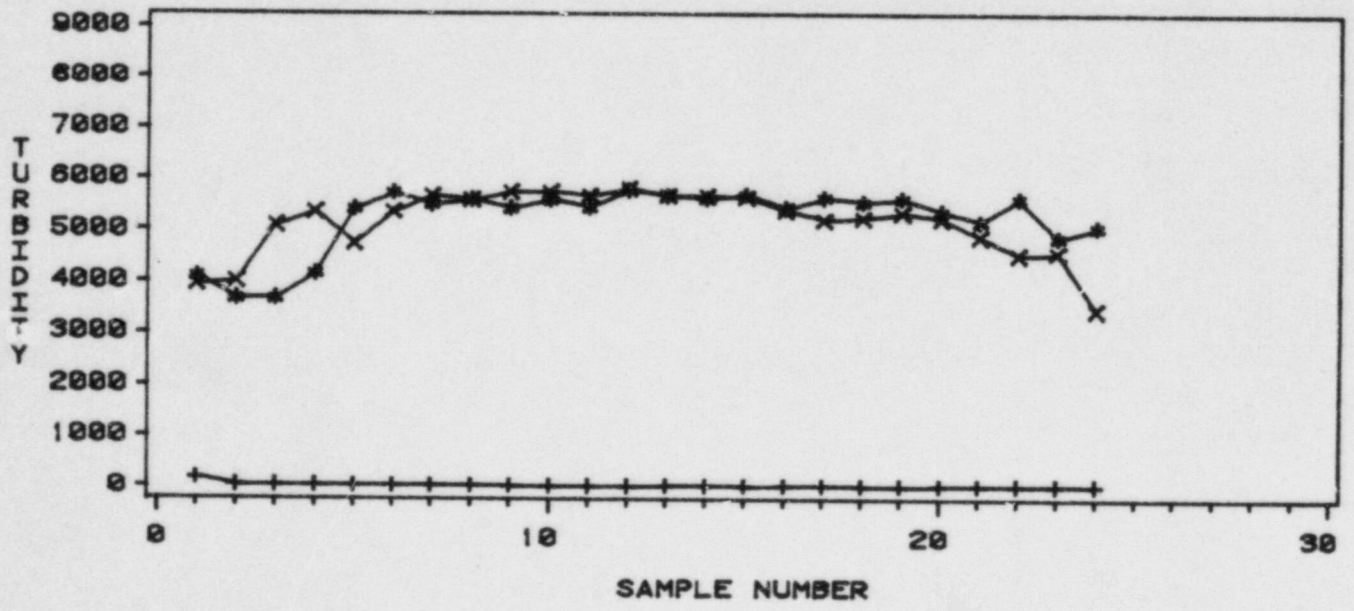
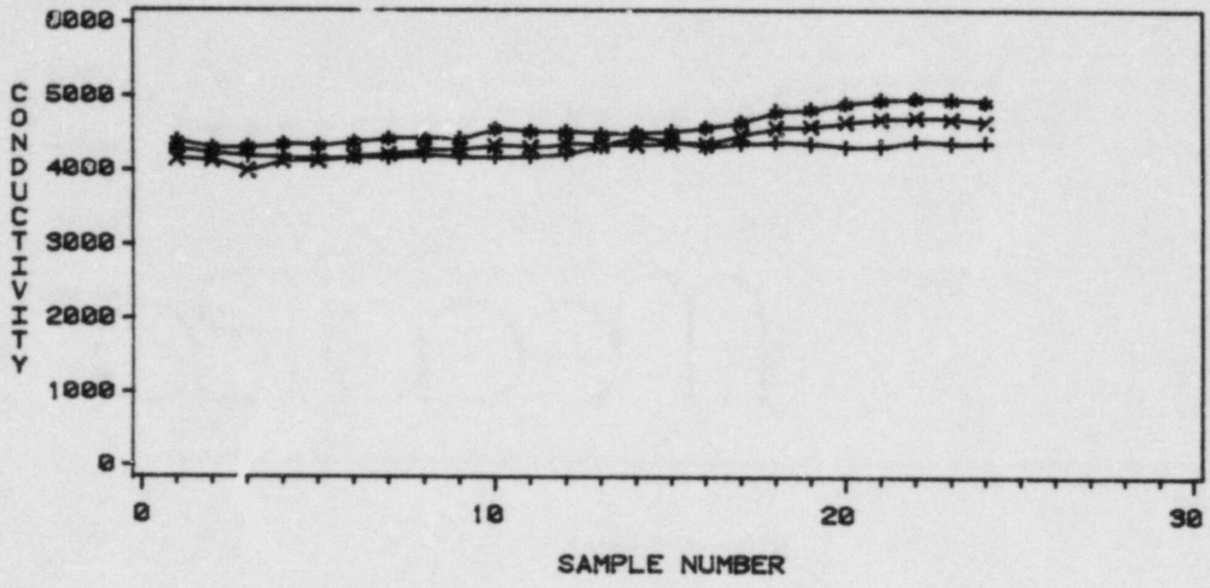


FIGURE C-13 (continued)

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=25AUG88



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=25AUG88

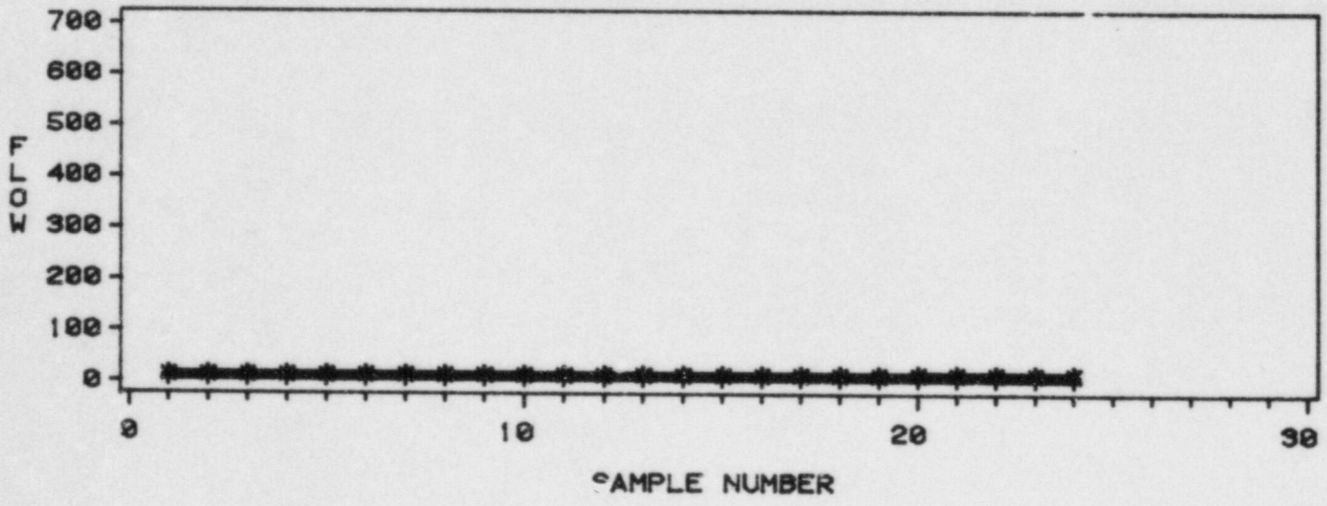
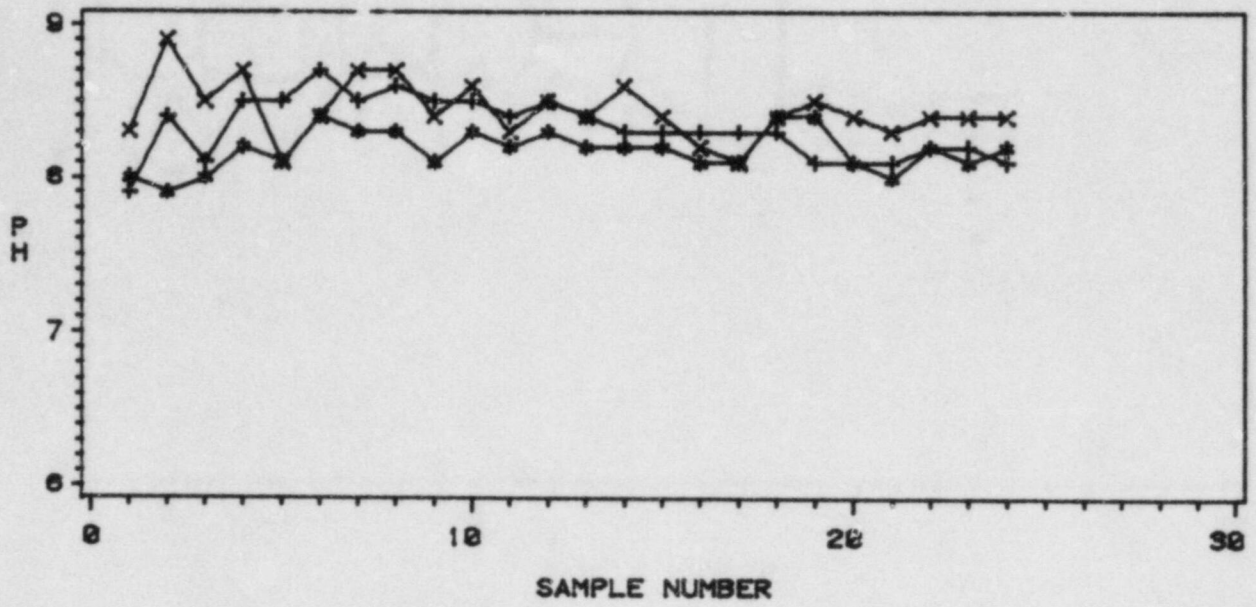


FIGURE C-14

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=25AUG86



LEGEND: + = CCC X = CRC * = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=25AUG86

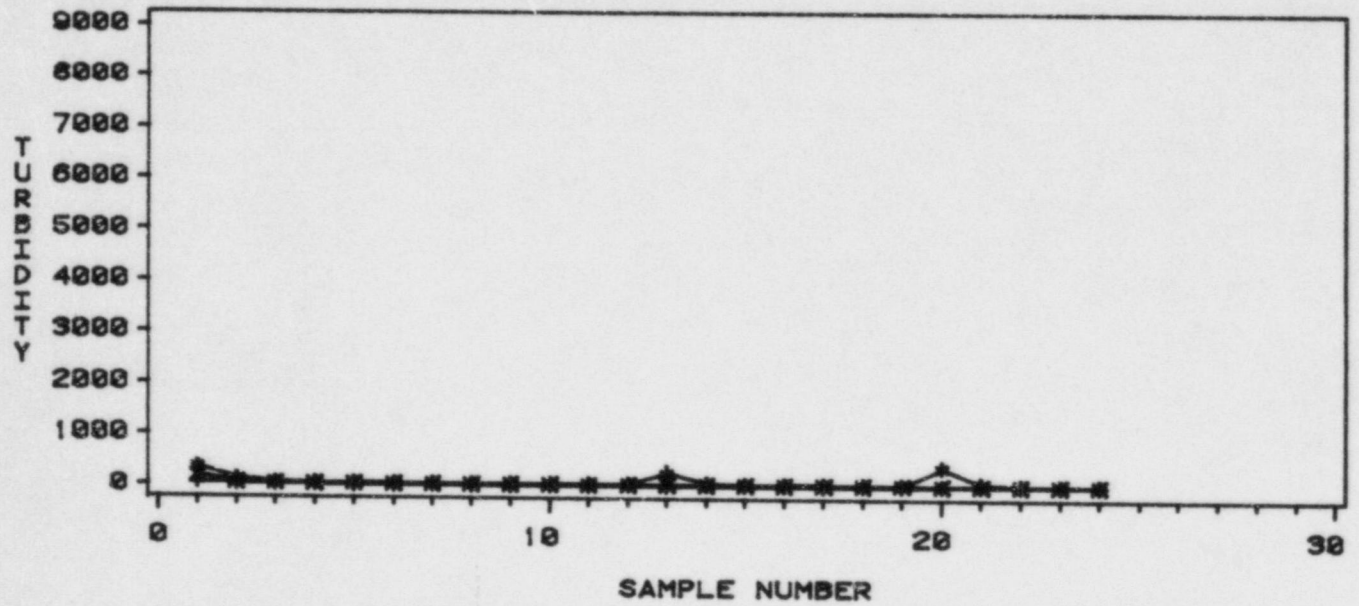
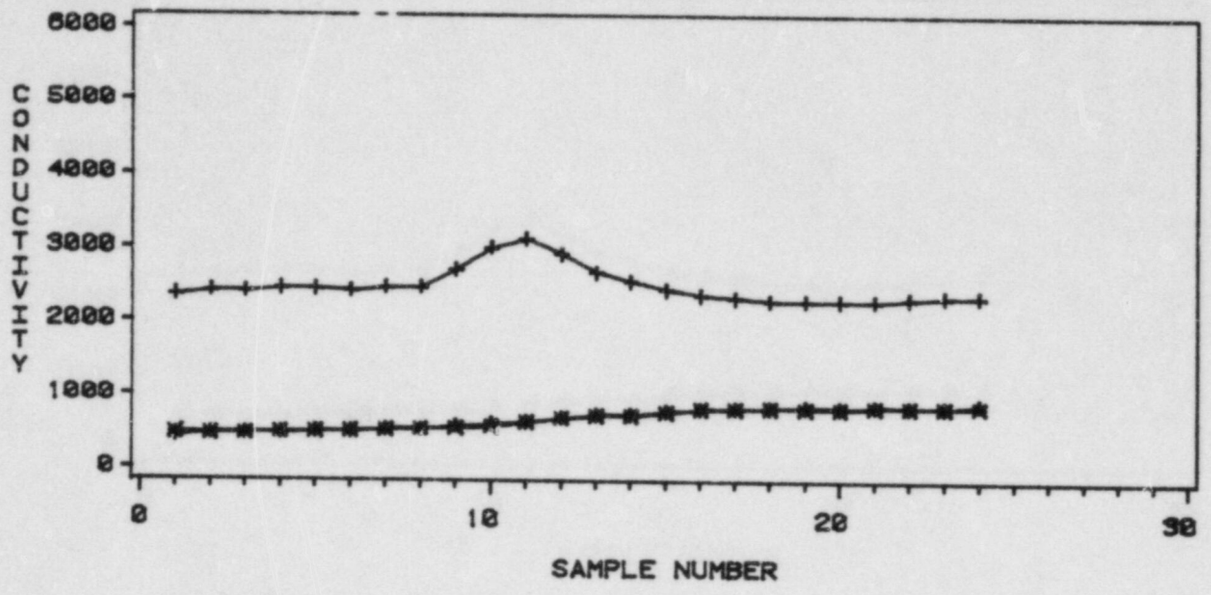


FIGURE C-14 (continued)

LEGEND: + = CCC X = CRC * = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=22SEP88



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=22SEP88

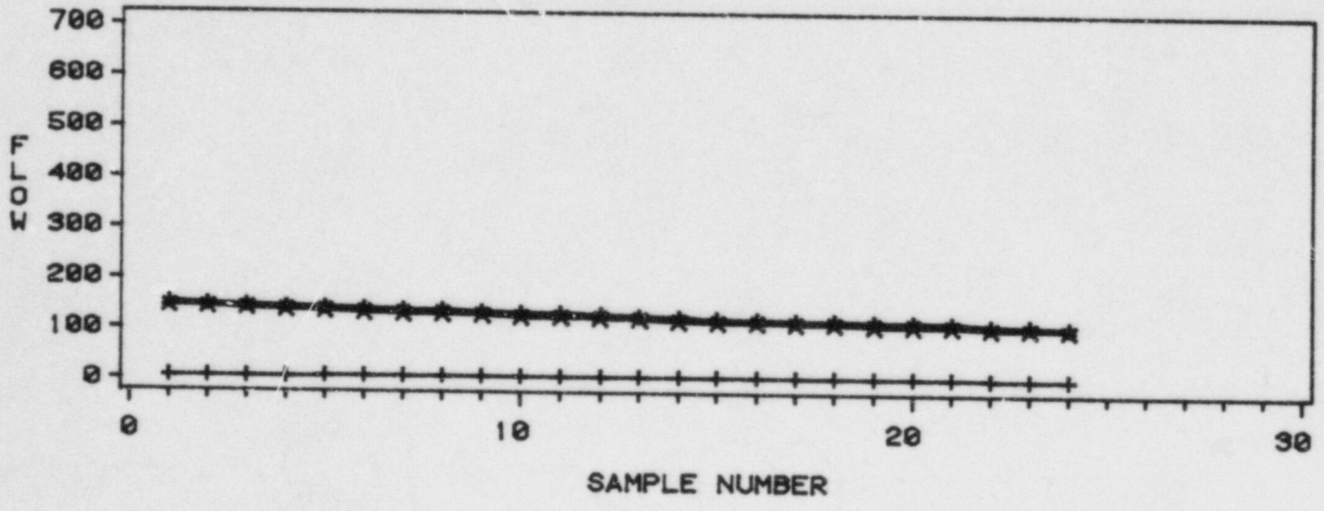
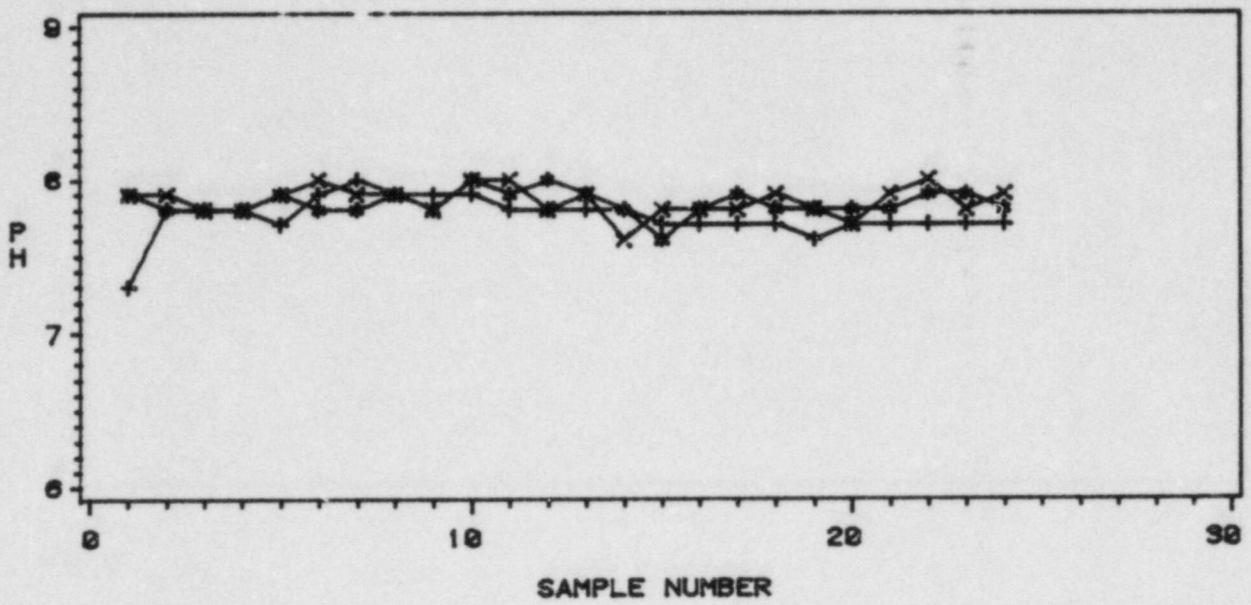


FIGURE C-15

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=22SEP86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=22SEP86

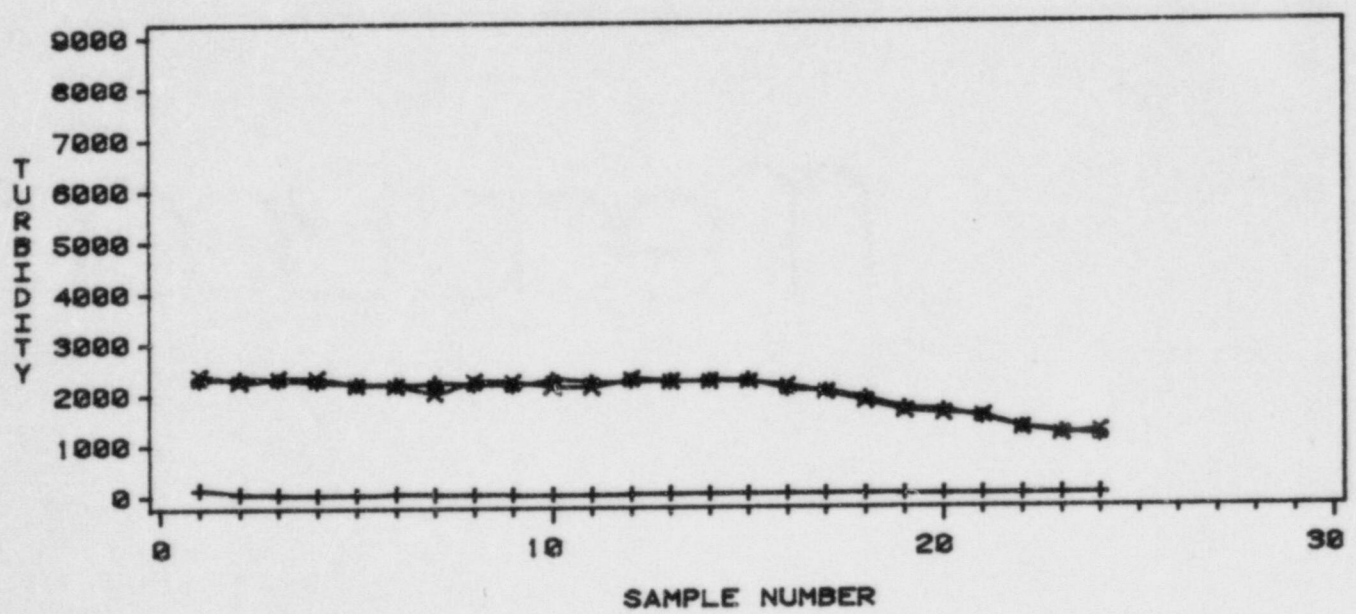
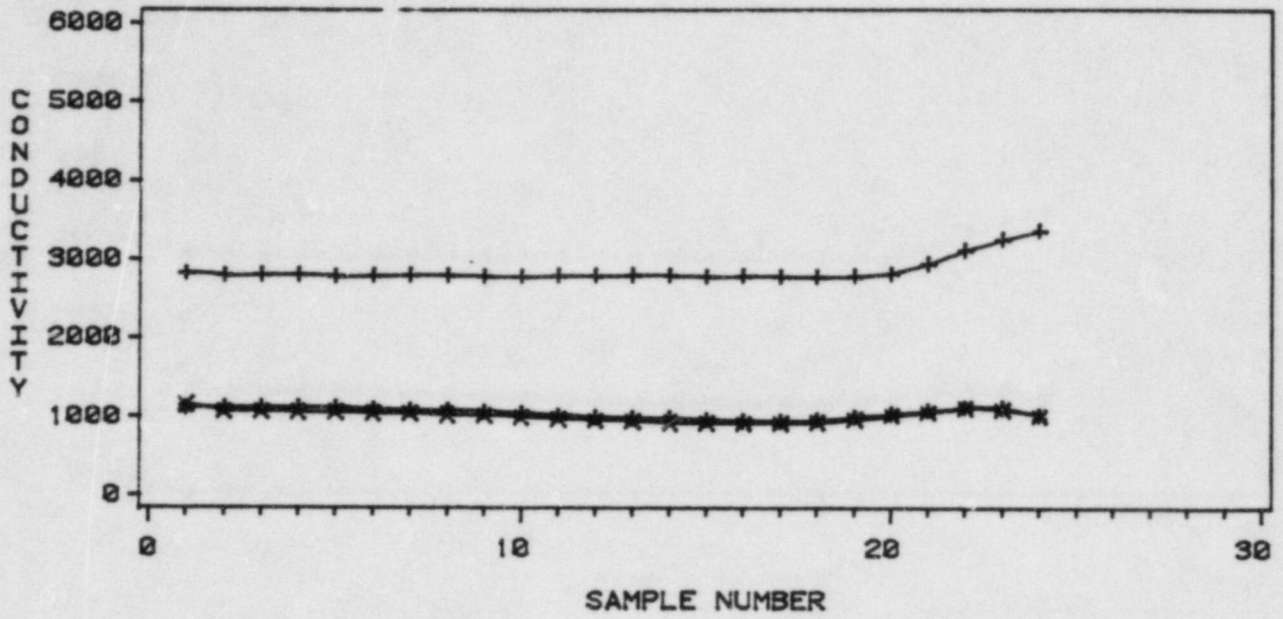


FIGURE C-15 (continued)

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=03OCT86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=03OCT86

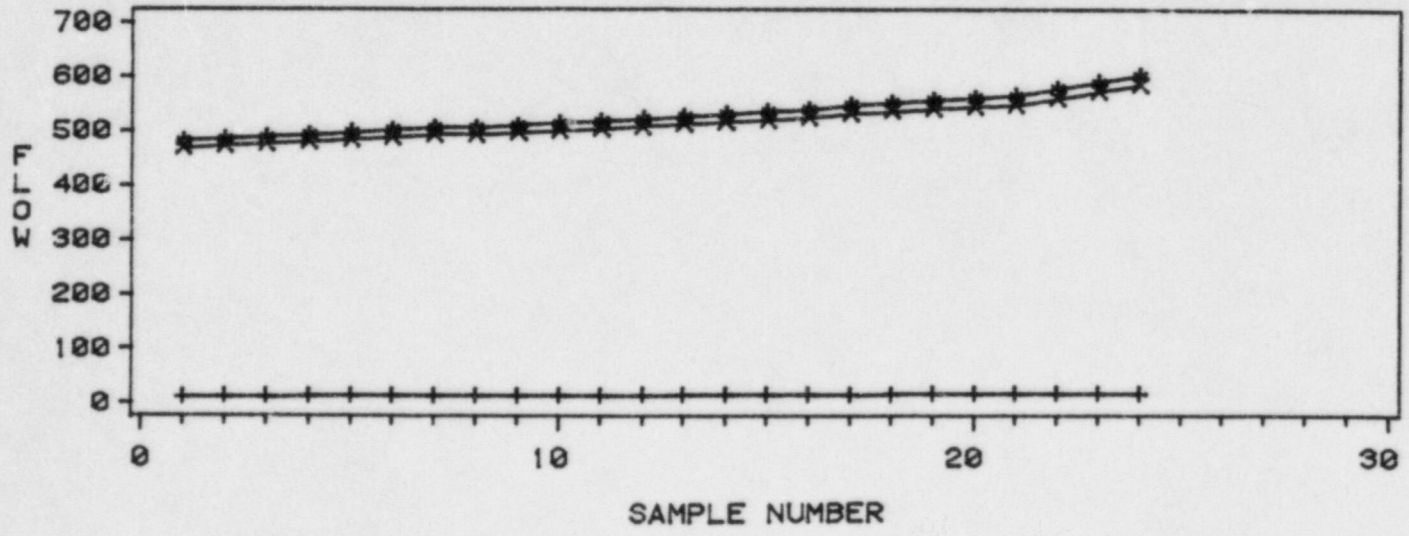
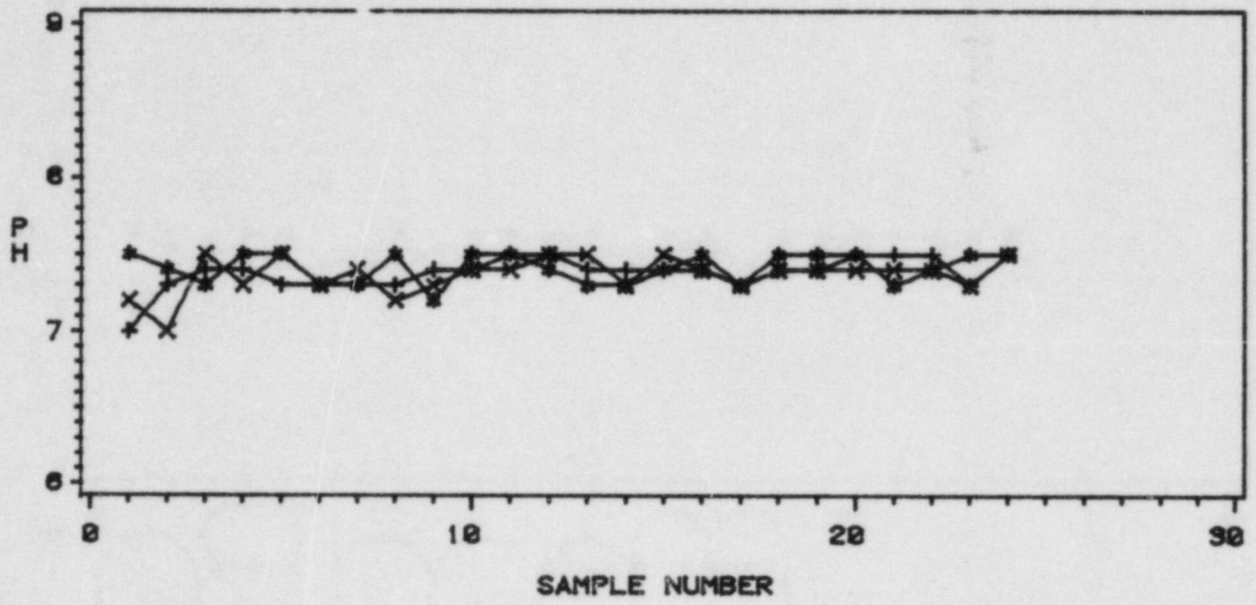


FIGURE C-16

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=03OCT86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=03OCT86

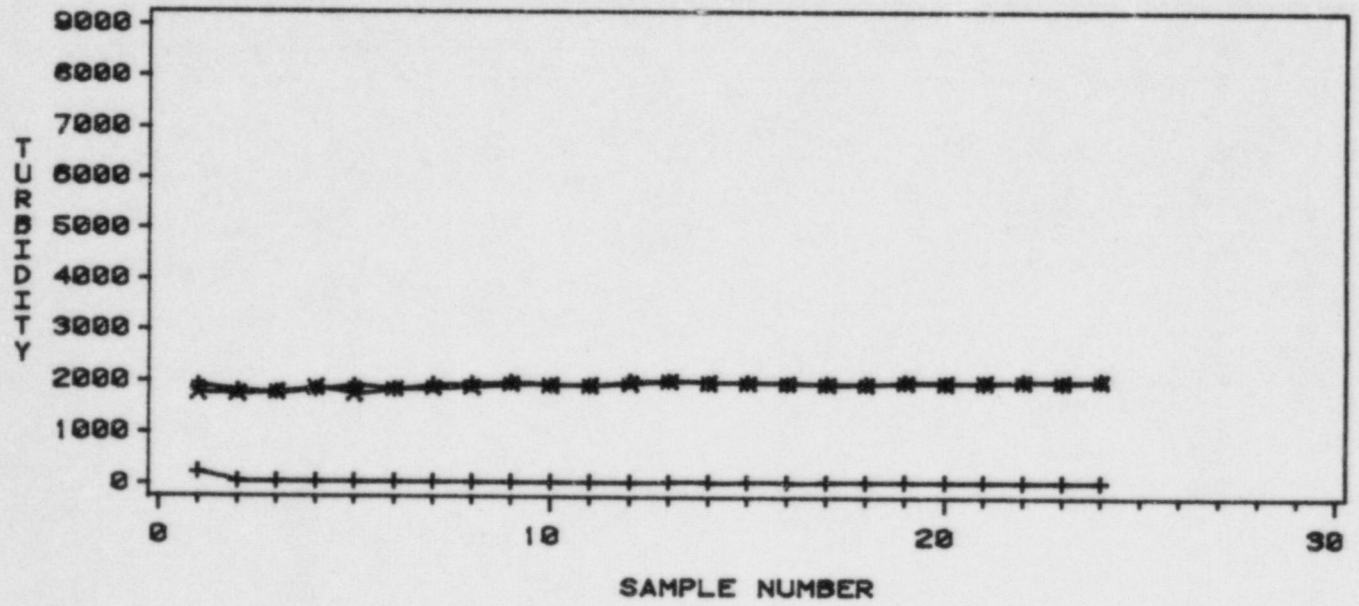
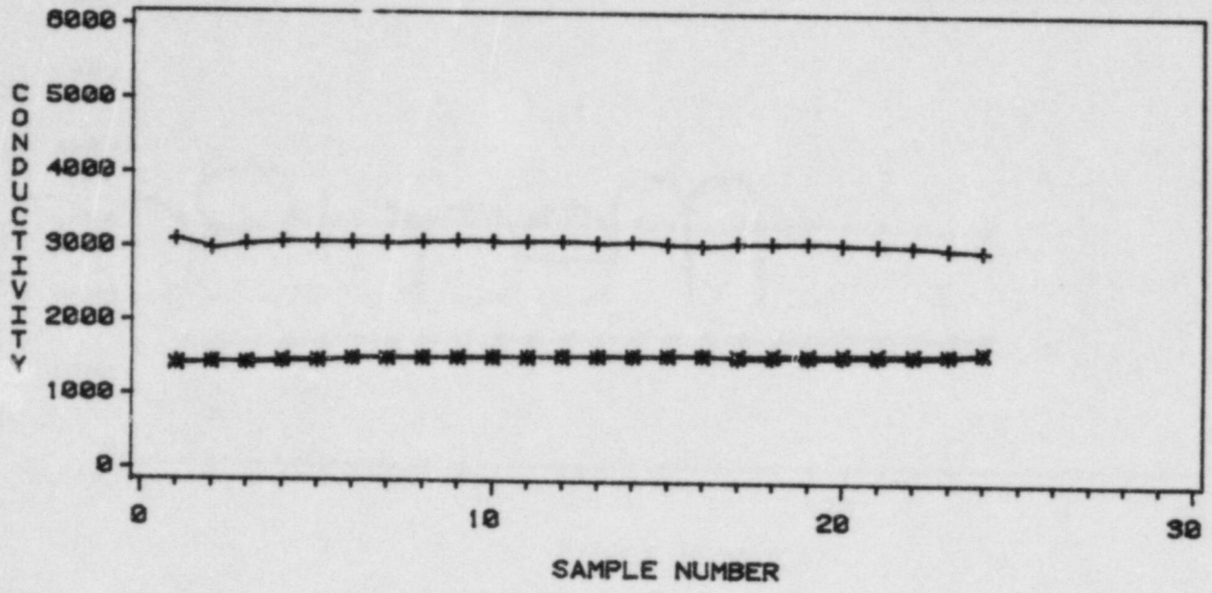


FIGURE C-16 (continued)

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=13OCT86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=13OCT86

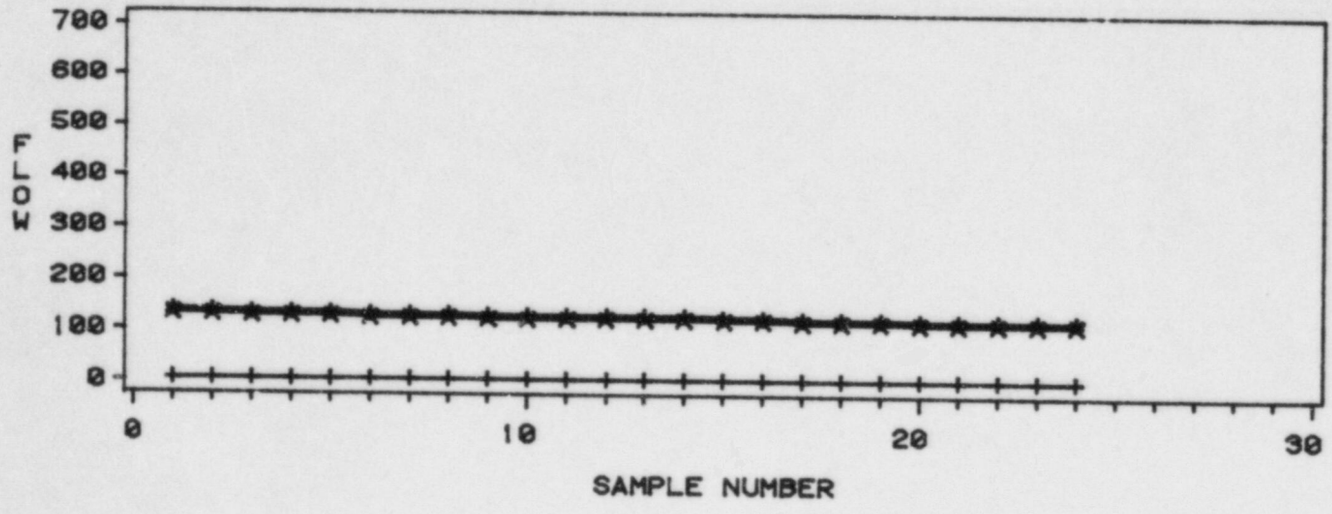
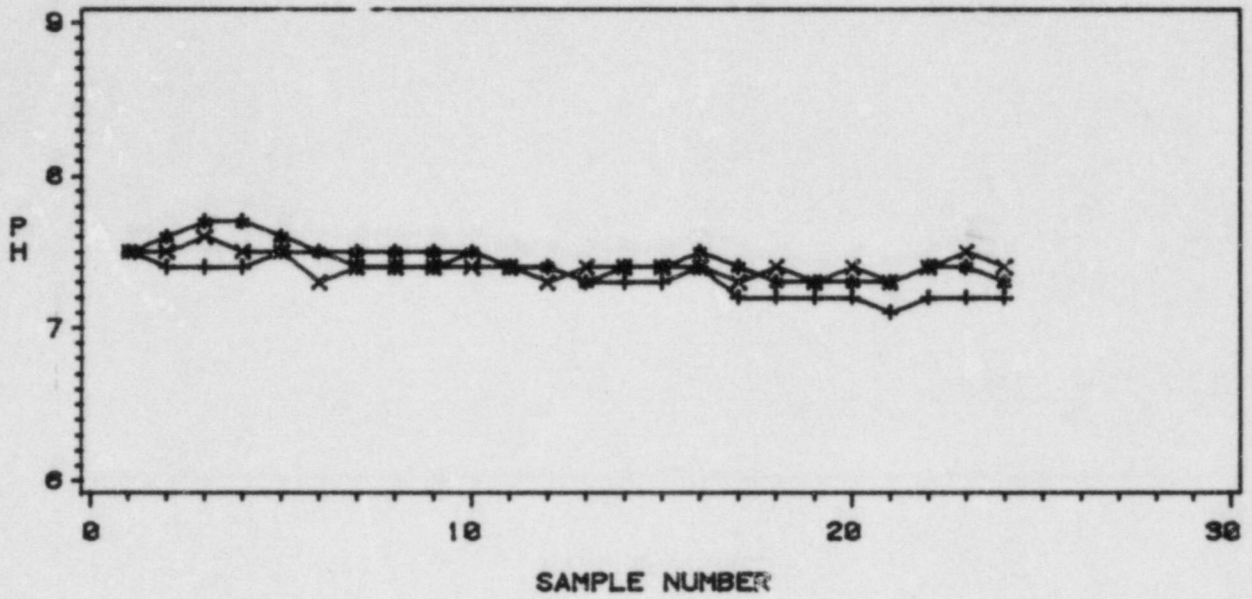


FIGURE C-17

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=13OCT88



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=13OCT88

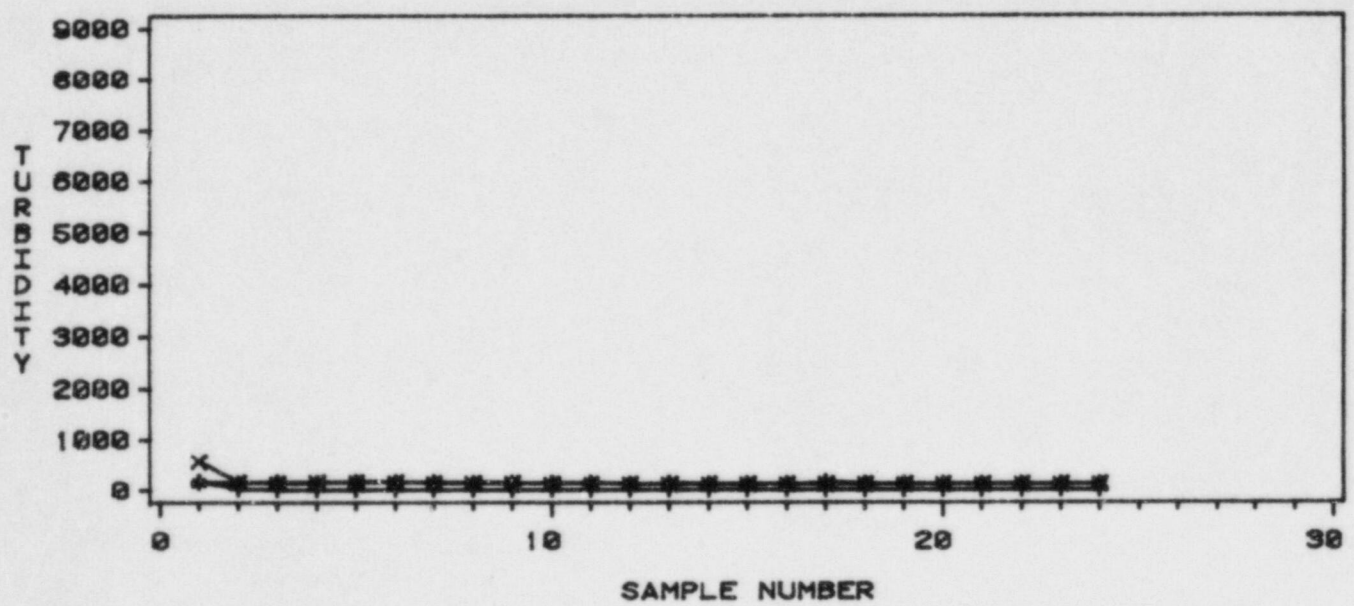
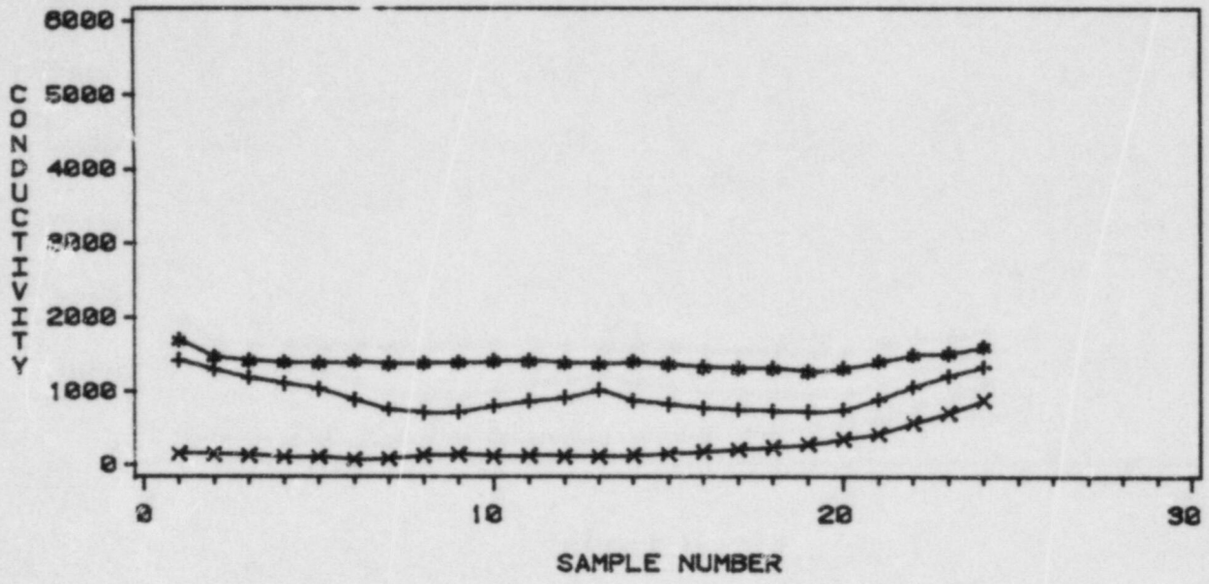


FIGURE C-17 (continued)

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=20OCT86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=20OCT86

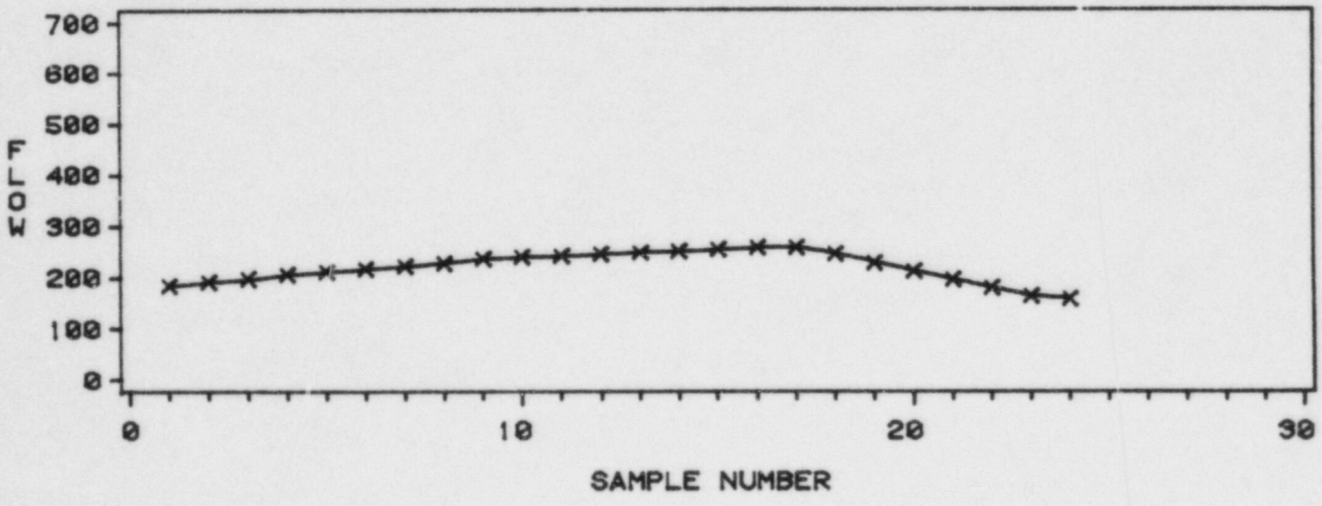
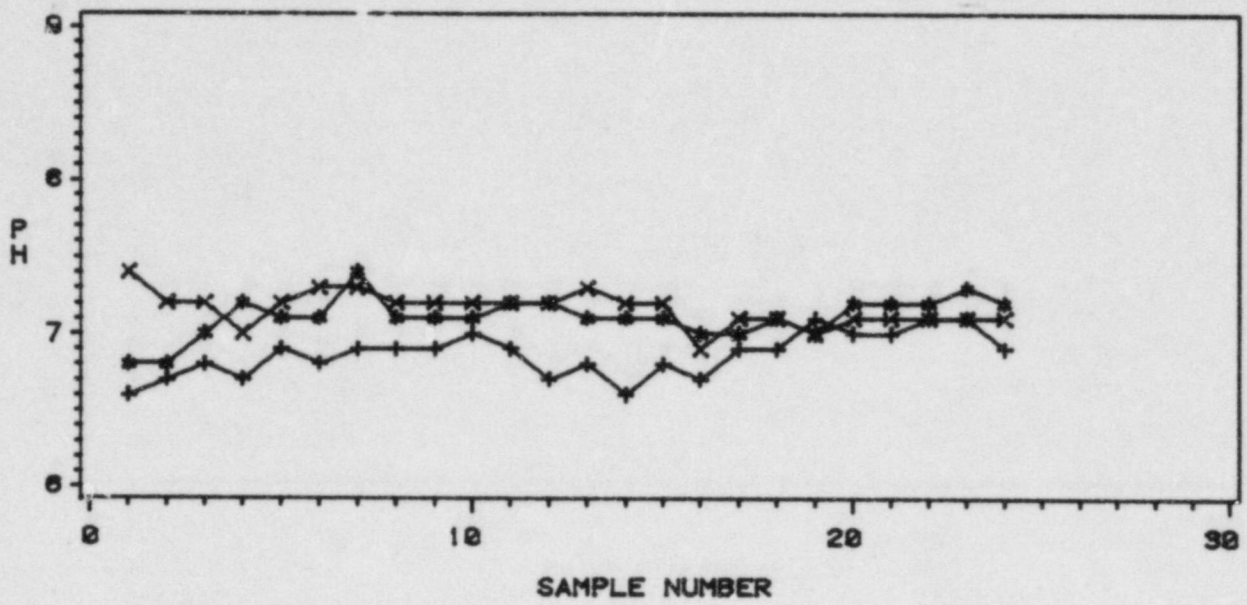


FIGURE C-18

LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=20OCT86



LEGEND: + = CCC X = CRC • = CRE

EDGEMONT SAMPLE ANALYSIS REPORT

DATE=20OCT86

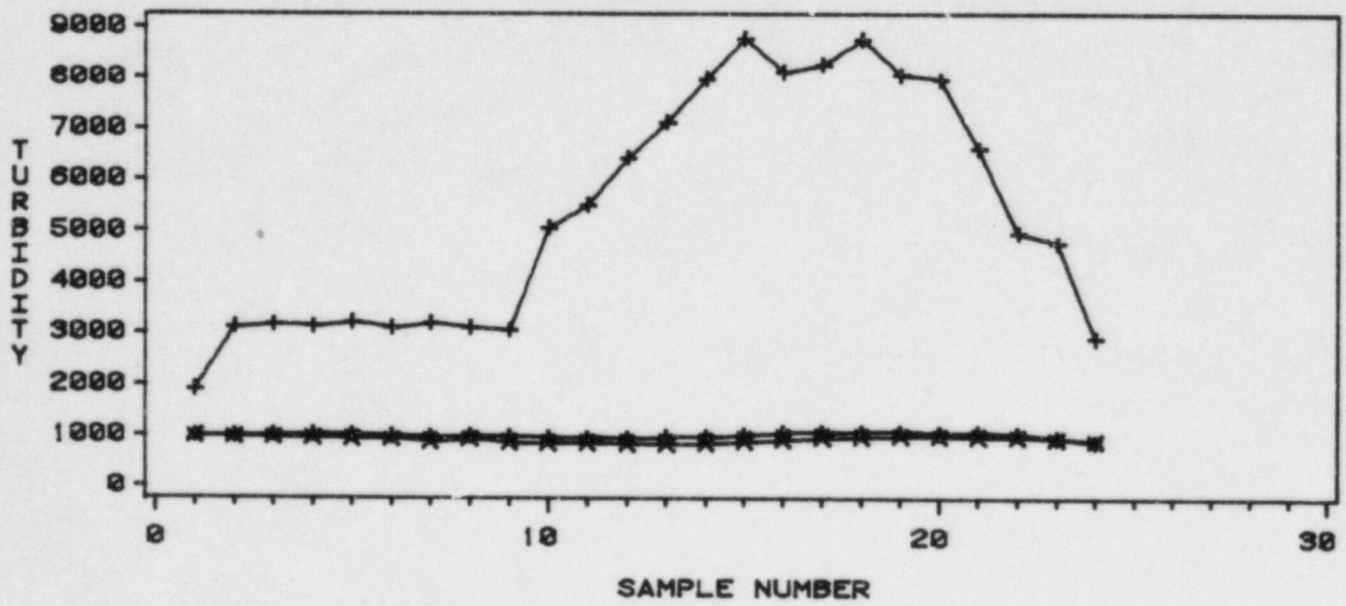
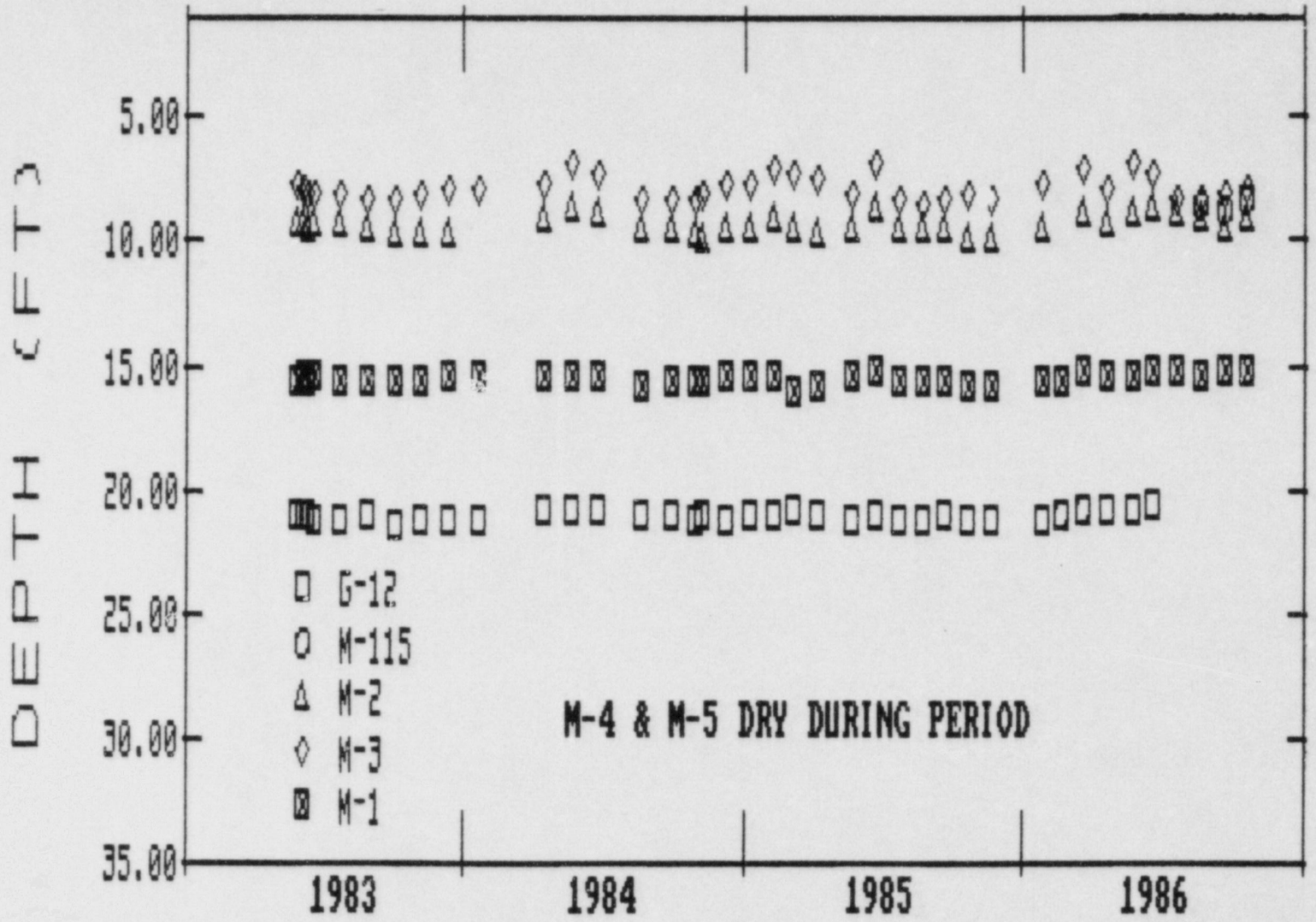


FIGURE C-18 (continued)

LEGEND: + = CCC X = CRC • = CRE



POND 1

Figure C-19

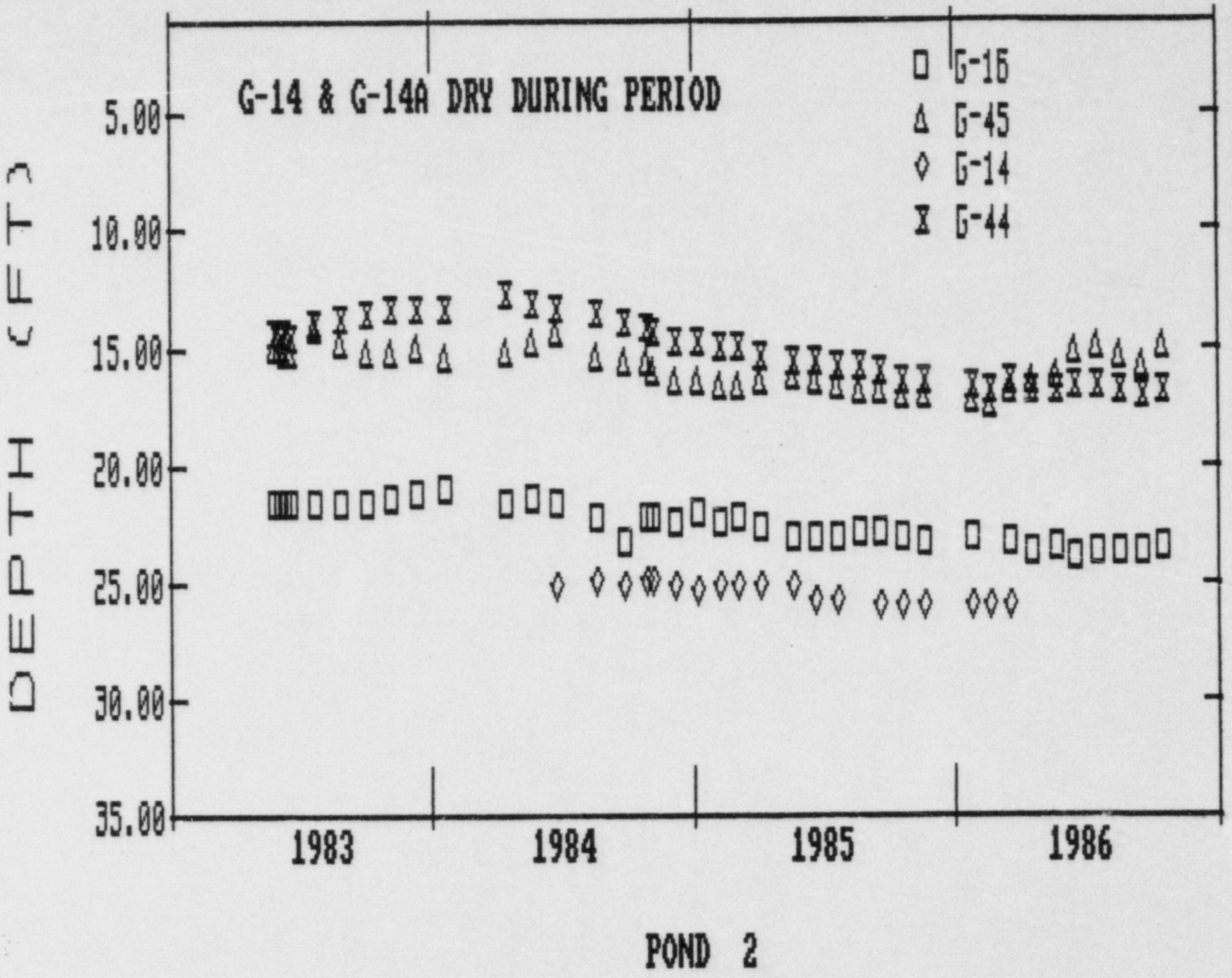
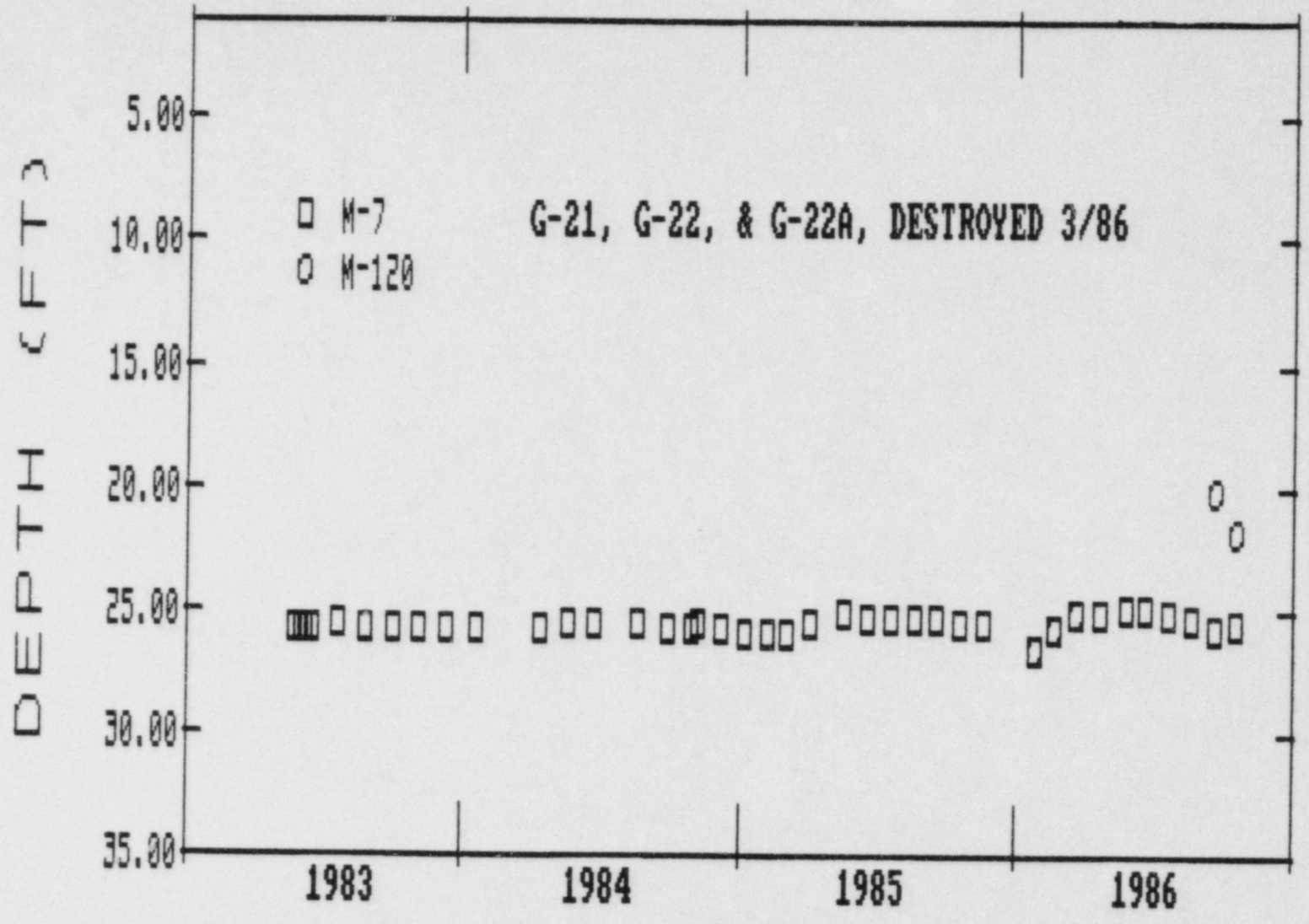
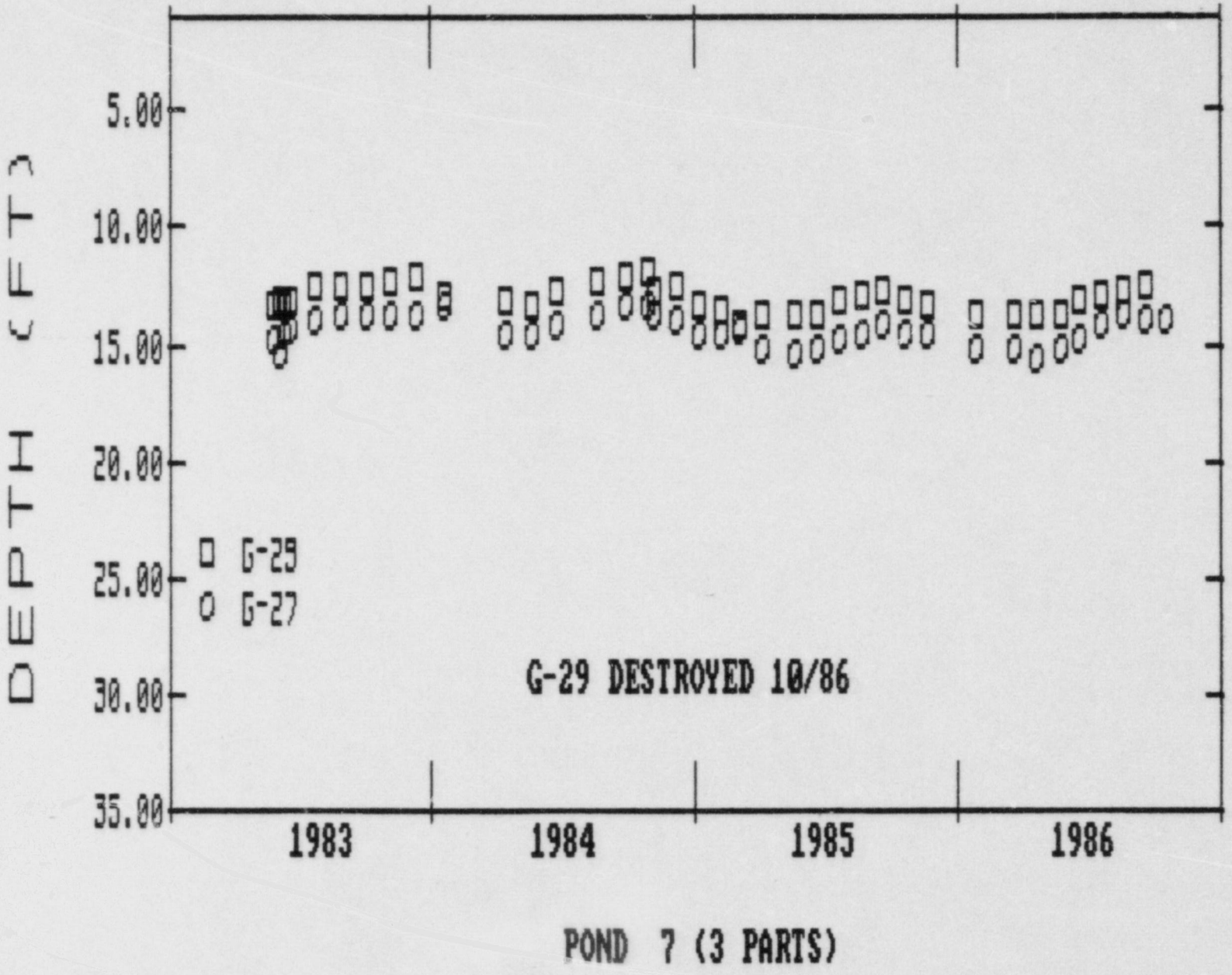

G-14 & G-14A DRY DURING PERIOD
G-16
G-45
G-14
G-44
DEPTH (FT)
5.00
10.00
15.00
20.00
25.00
30.00
35.00
1983
1984
1985
1986
POND 2

Figure C-20



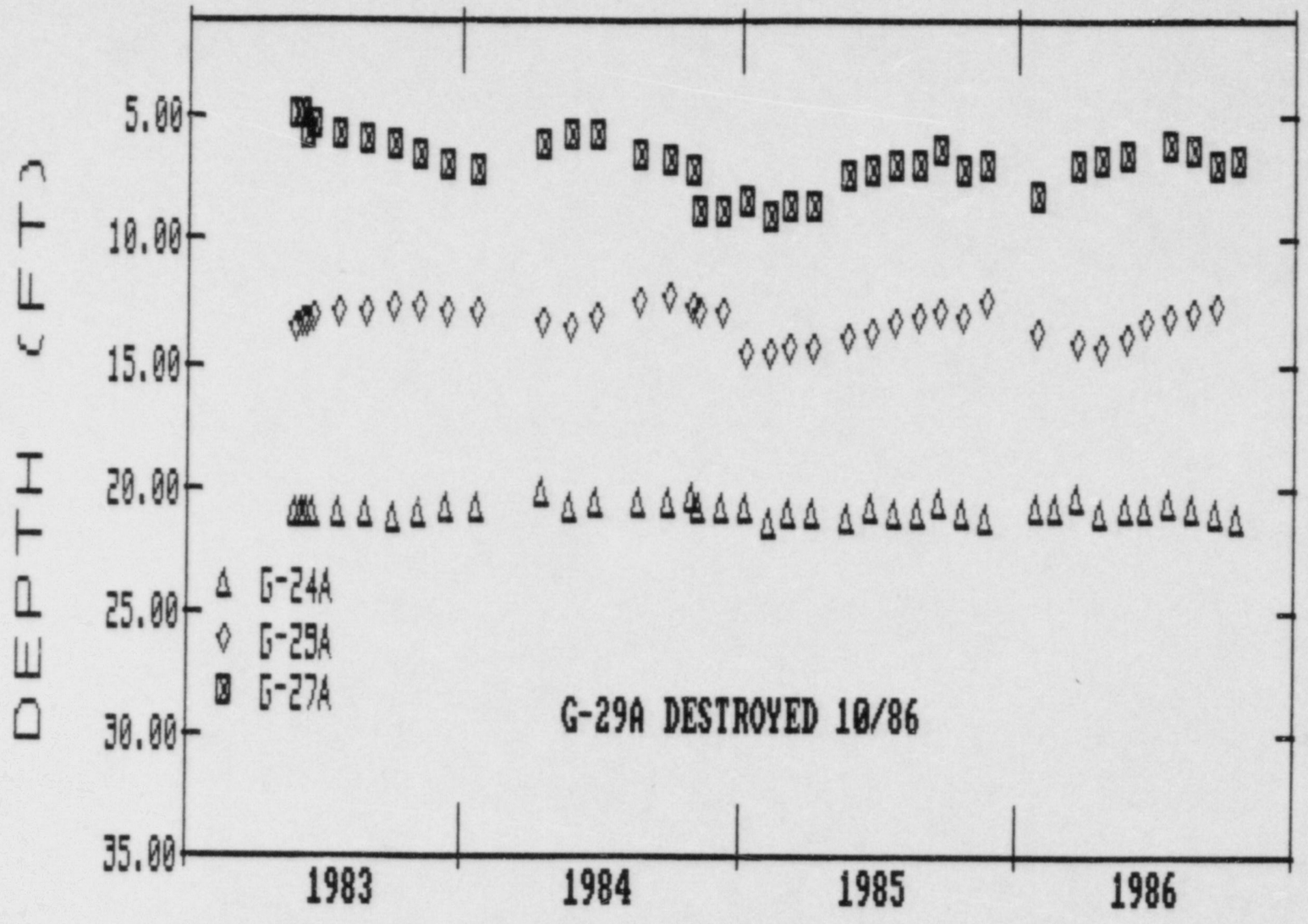
POND 3

Figure C-21



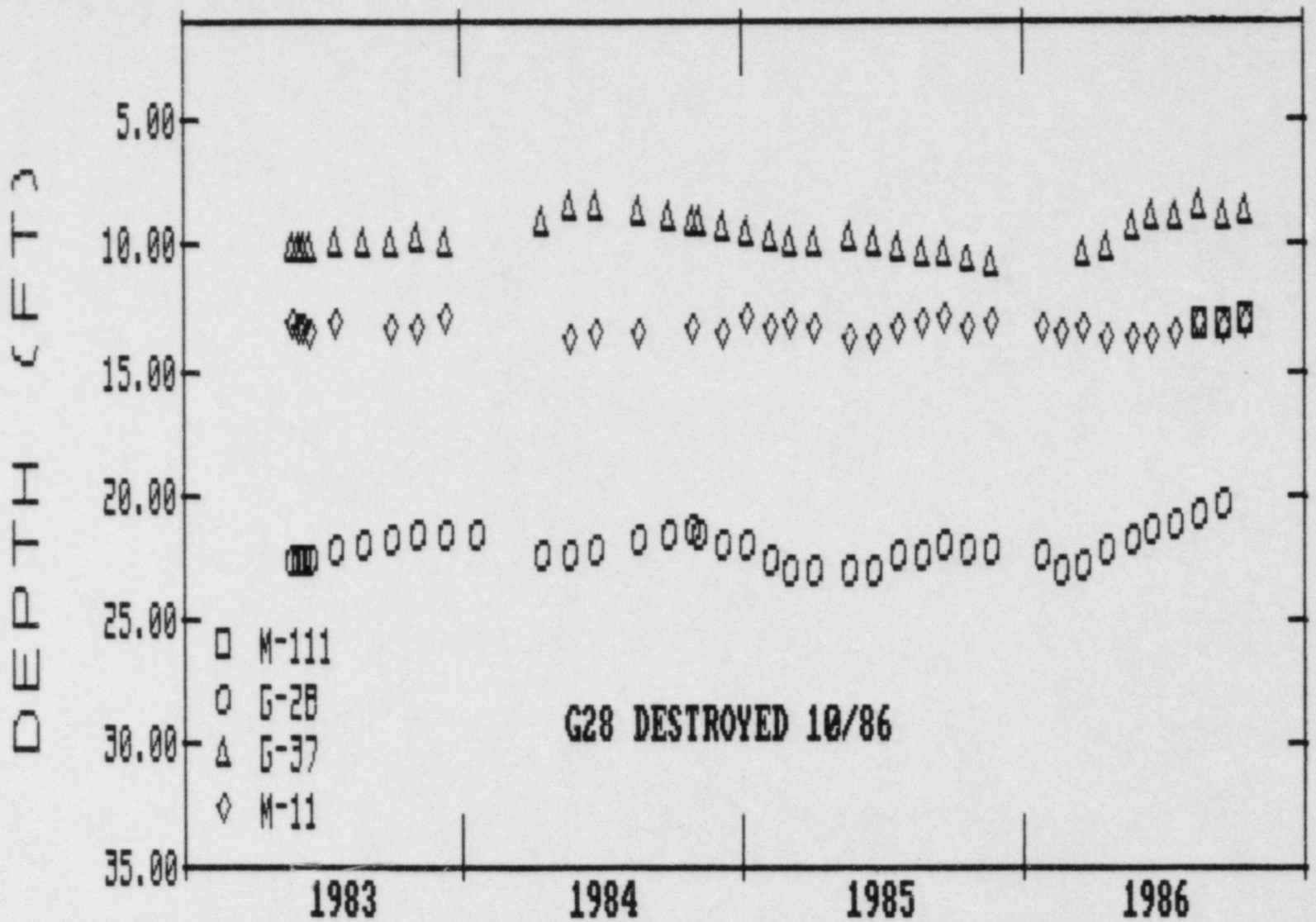
POND 7 (3 PARTS)

Figure C-22
1 of 3



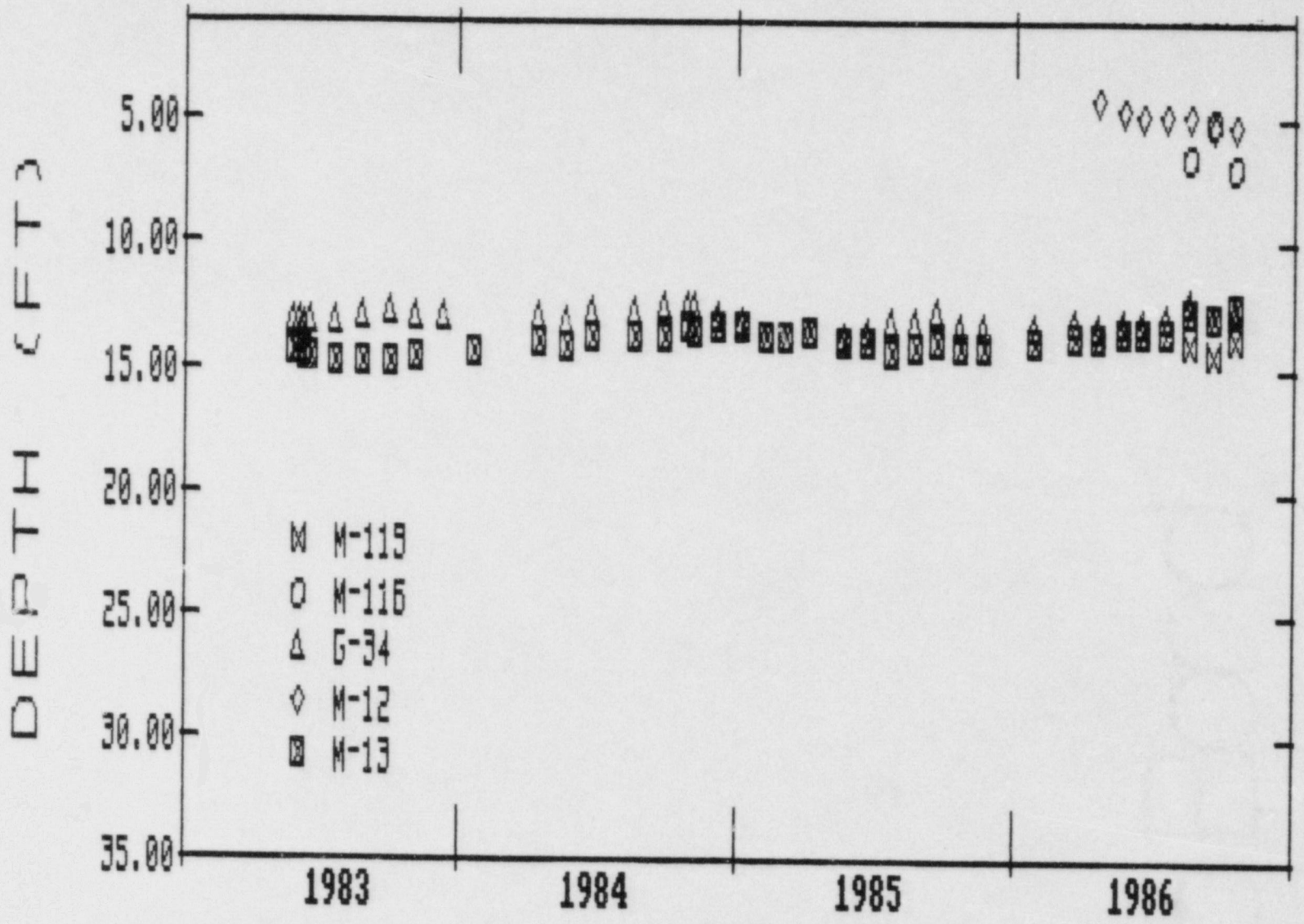
POND 7 (3 PARTS)

Figure C-22
2 of 3



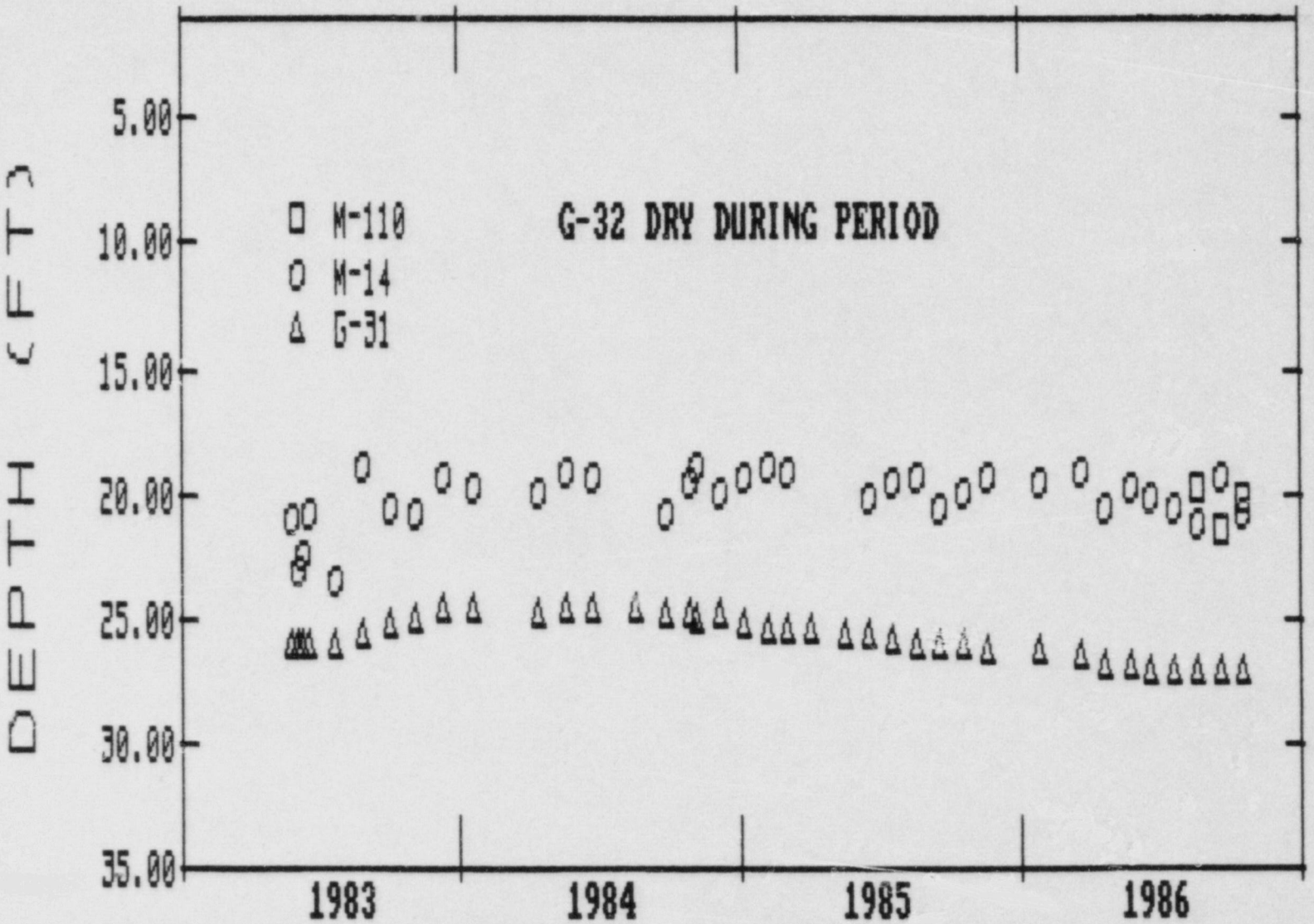
POND 7 (3 PARTS)

Figure C-22
3 of 3



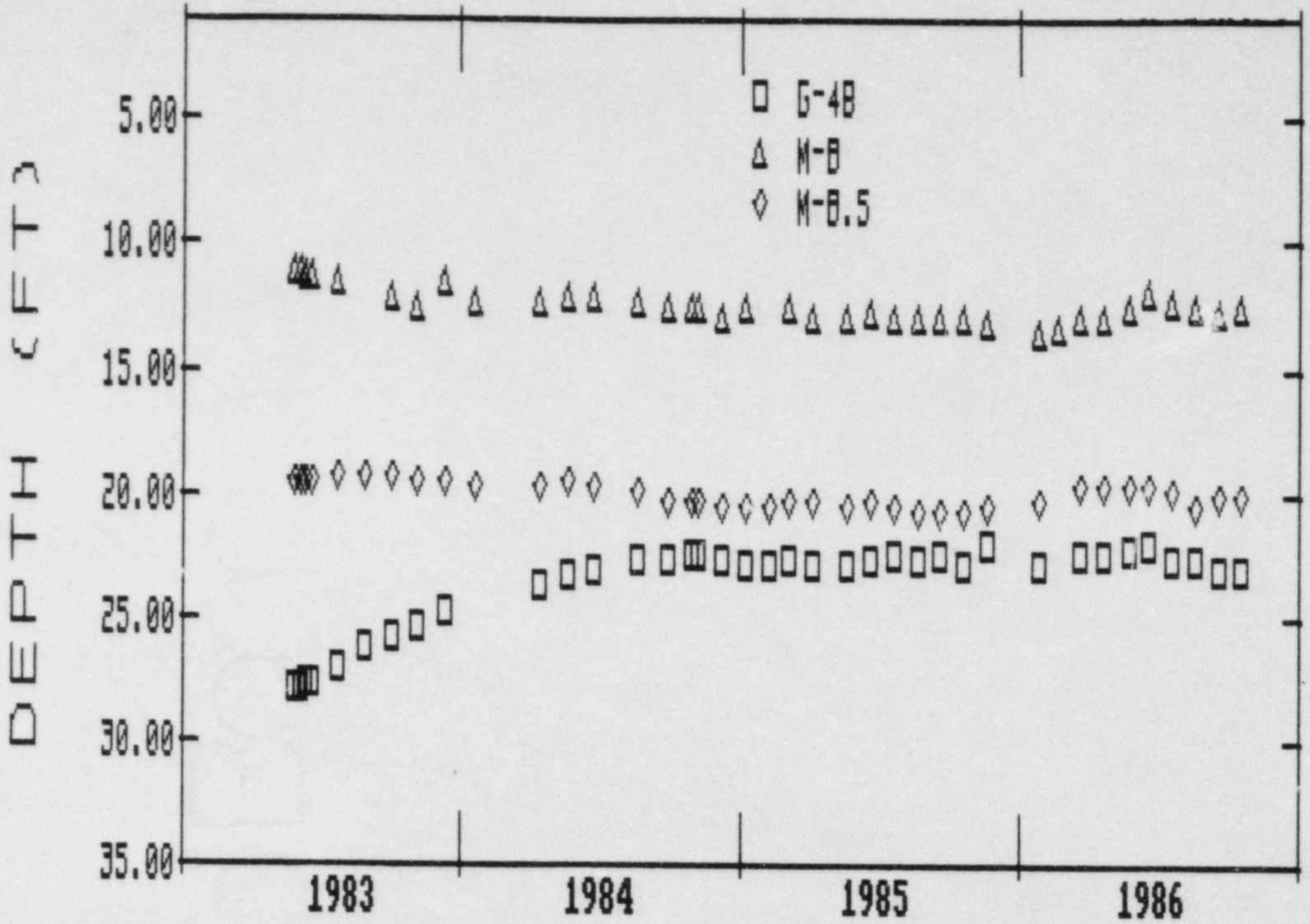
POND 8

Figure C-23



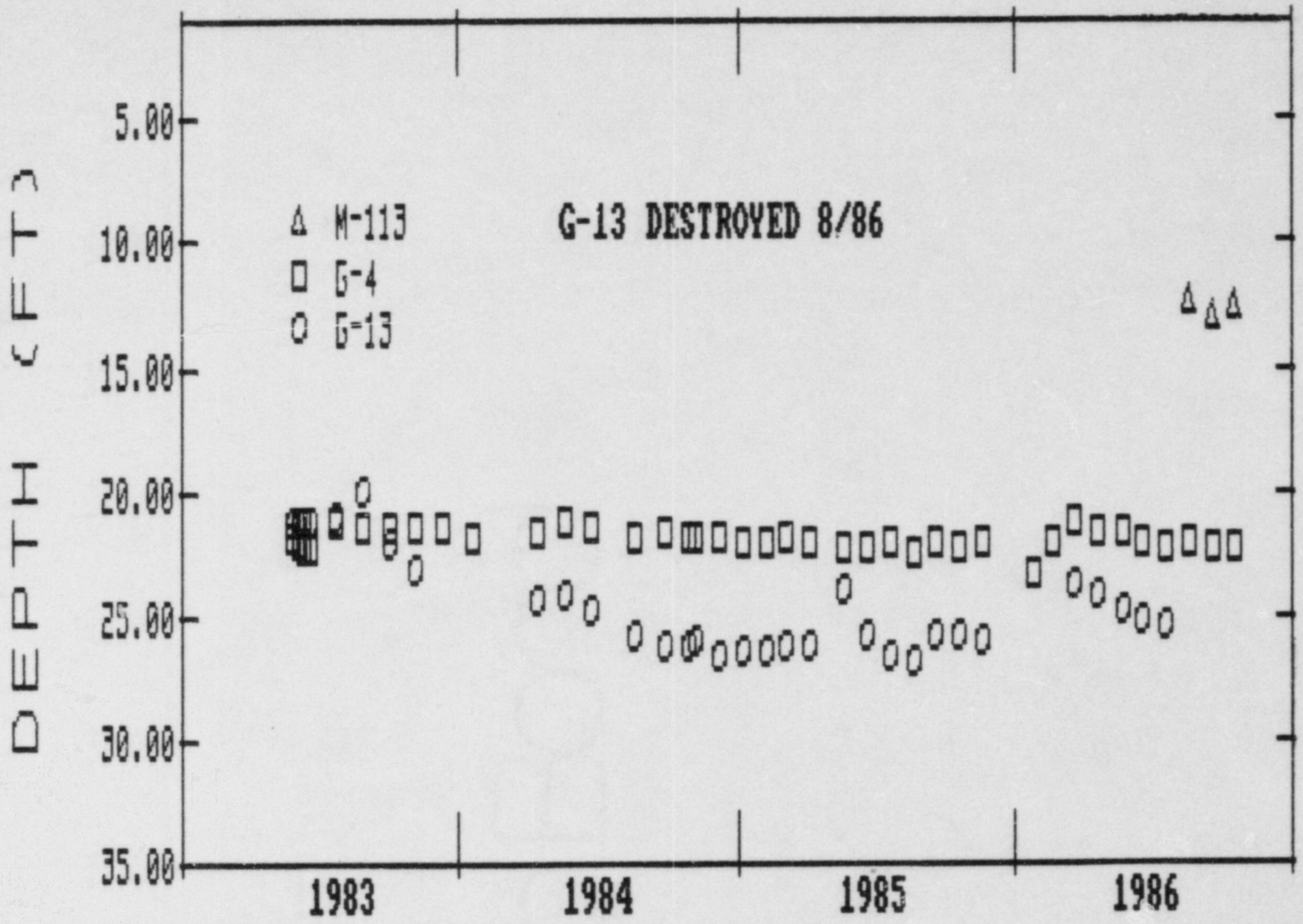
POND 10

Figure C-24



MILL SITE WELLS (2 PARTS)

Figure C-25
1 of 2



MILL SITE WELLS (2 PARTS)

Figure C-25
2 of 2

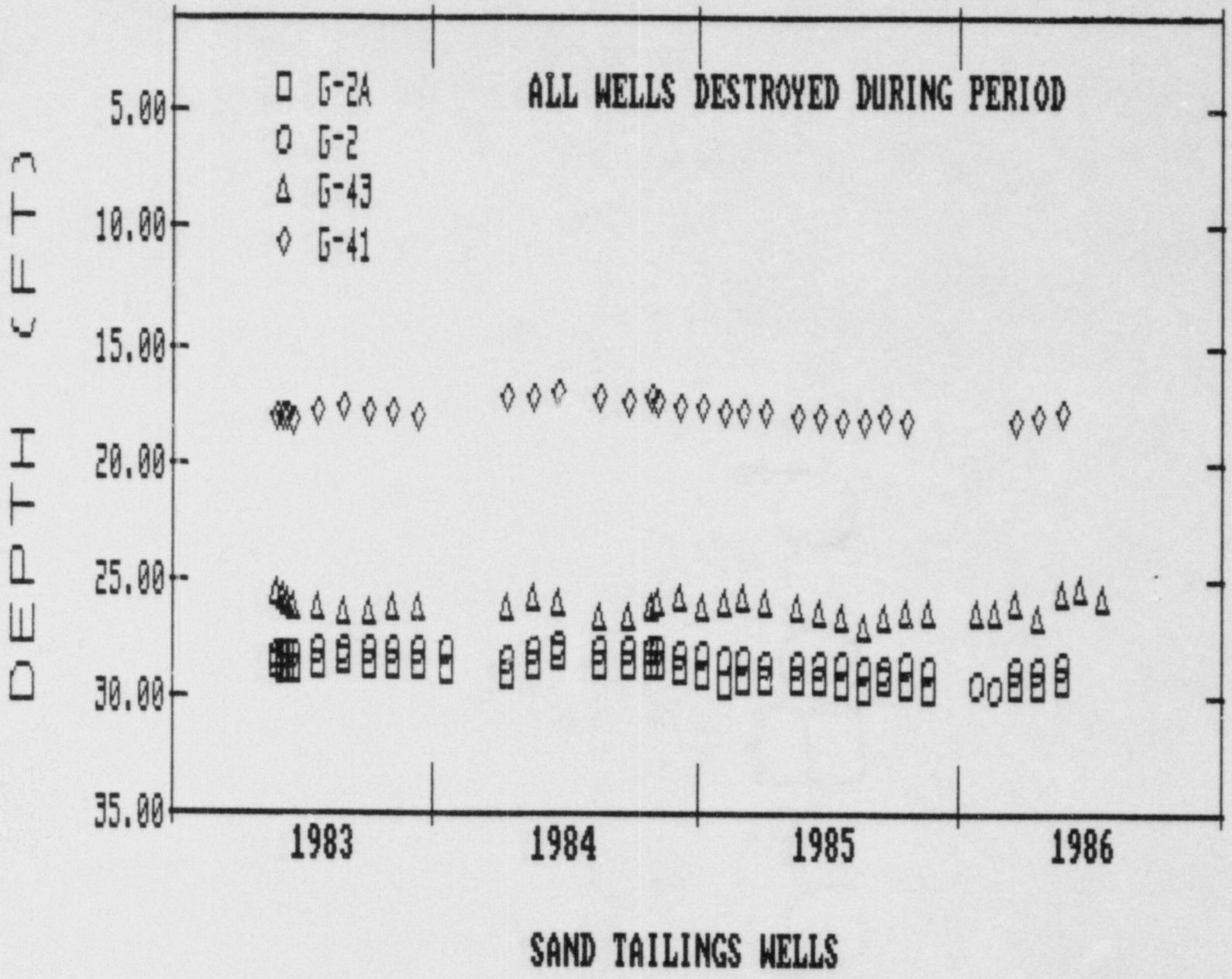

ALL WELLS DESTROYED DURING PERIOD
G-2A
G-2
G-43
G-41
DEPTH (FT)
5.00
10.00
15.00
20.00
25.00
30.00
35.00
1983
1984
1985
1986
SAND TAILINGS WELLS

Figure C-26

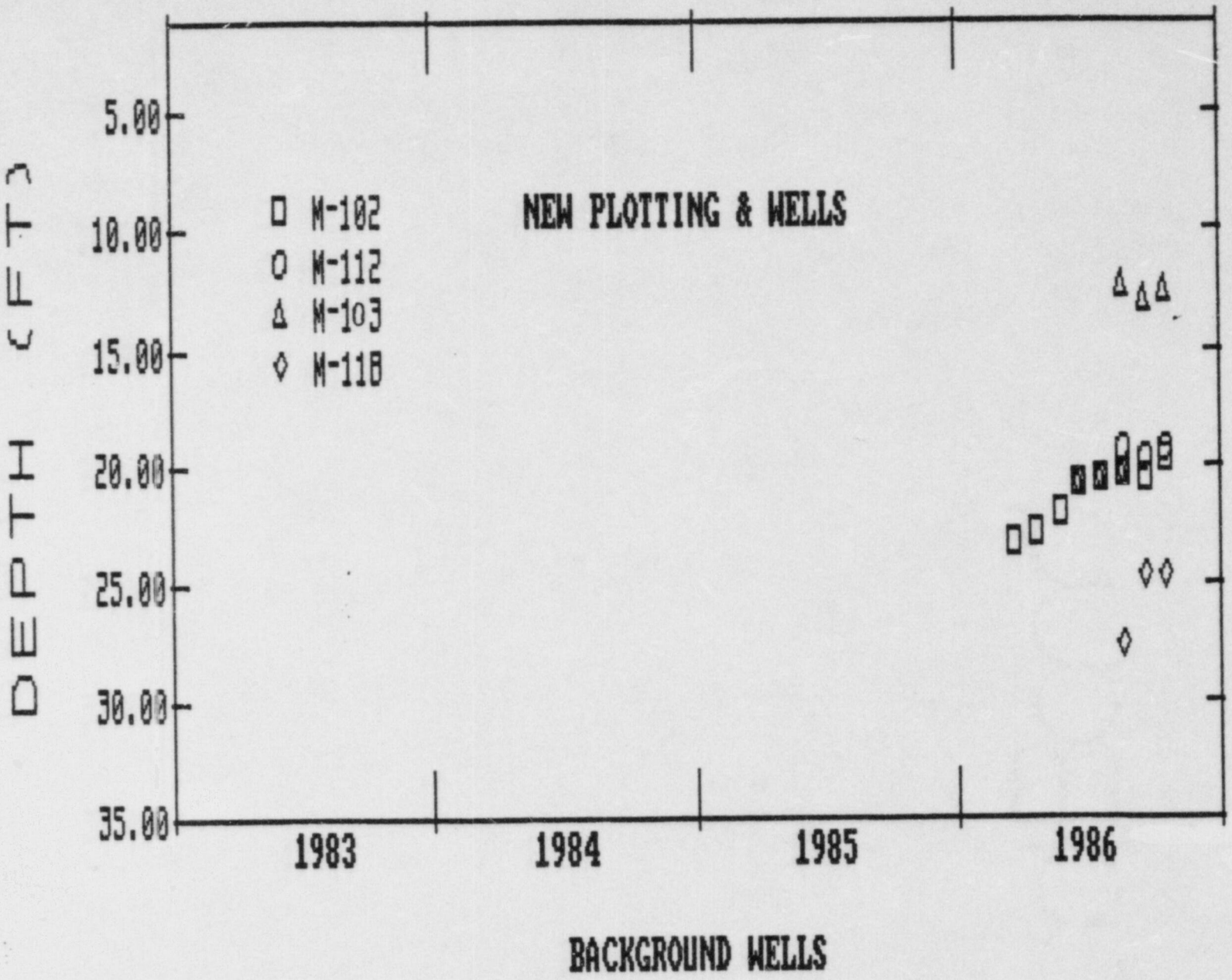

NEW PLOTTING & WELLS
M-102
M-112
M-103
M-118
DEPTH (FT)
5.00
10.00
15.00
20.00
25.00
30.00
35.00
1983
1984
1985
1986
BACKGROUND WELLS

Figure C-27

D. BIOLOGICAL

1.0 Terrestrial

Approximately 8,900 yd^3 of topsoil were excavated in two areas to provide additional space for stockpile of shale material. The first area is along the south side of the present shale stockpile and the second area is along the west side of the disposal basin.

1.1 Changes in Land Use

There have been two minor changes in land use outside of the control area. A culvert was installed in the ditch along the county road and a service road was constucted to the fueling station of the support facility for improved access. This construction will have little impact upon the surrounding area and is located on the maintenance yard, therefore, no environmental monitoring program will be needed for these changes.

2.0 Aquatic

Benthic samples were collected at four sites on the Cheyenne River and Cottonwood Creek during June and October 1986. Fish samples were collected at the same locations on the same day that benthic sampleswere collected.

Sampling Locality

Surface waters in the Edgemont vicinity are inhabited by a variety of aquatic biota. Abundance and diversity of species in streams in the area are greatly influenced by stream hydrology, i.e., minimum flow; number, frequency, and seasonality of floods; and, percent coverage and depth of winter ice formation. In the study area, Cottonwood Creek is a perennial stream which drainsan area south of the town of Edgemont into the Cheyenne River. One monitoring station (Station 5) is upstream of the mill property and a second (Station 4) is on the mill property at the confluence of Cottonwood Creek and the Cheyenne River. Water depth is generally less than 0.5 meters and width varies from 0.5-2.0 meters. Mud and sand substrate dominate.

The Cheyenne River originates in eastern Wyoming and is classified by the State of South Dakota as suitable for propagation of warm-water,semipermanent fish life; limited contact recreation; wildlife and stock watering; and irrigation. The river varies seasonally from isolated pools two to six meters wide to a flowing river 30 meterswide. Depth ranges from zero to two meters. Sample Station 3 is upstream from the millsite with Station 6 located several kilometers downstream from the millsite and confluence with Cottonwood Creek. The substrate in the Cheyenne River is primarily sand.

2.1 Aquatic Macroinvertebrates

Aquatic macroinvertebrates were collected utilizing a 0.1 square meter (square-foot) Surber sampler at the four stations (Figure D-1). Four replicate samples were taken at each station in water less than 0.4 meters deep. Detailed site descriptions are in the November to April 1983 semiannual report (TVA 1983).

Samples were preserved in formalin, placed in plastic containers, and shipped to Dr. James A. Gore, University of Tulsa, for identification. Aquatic macroinvertebrates were identified using the following literature: Baumann et al, (1977); Beck (1979); Brown (1976); Burch (1982); Edmunds et al, (1976); Leech and Chandler (1956); Mason (1973); Morihara and McCafferty (1979); Pennak (1978); Peterson (1960); Schuster and Etnier (1978); Szczytko and Steward (1977); and Wiggins (1977).

A total of 21 taxa were collected in the two quarterly samples (Table D-1). Species collected are found throughout the great plains and more specifically the Cheyenne River and its tributaries. June samples showed the highest number of taxa and numbers per unit area at Station 6 and Station 5. Station 3 on the Cheyenne River upstream from the millsite had the fewest species and numbers present.

During the October sampling, Station 5 (upstream from the millsite) on Cottonwood Creek had the highest number of species and individuals per unit area. The other three stations showed a paucity of species reflecting large population decreases in the Cheyenne River and the mouth of Cottonwood Creek. This decrease may be due to perturbations in the flow of the Cheyenne River or to other unknown factors but does not appear to be due to any influence of decommissioning activity because Station 3 upstream from the millsite also had reduced numbers.

2.2 Fish

During the June and October sampling periods, species present were found during previous collections. The plains minnow, sand shiner, and plains killifish continue to comprise the majority of the catch. Species present and numbers collected at each of the stations showed no effects of decommissioning activities.

Although not found during regular sampling, the State listed threatened plains topminnow (Fundulus sciaticus) was found on and just upstream of the millsite on July 15, 1986. Nine individuals were found on the the millsite and 12 upstream from the site boundary. On September 8, 1986, the entire reach of Cottonwood Creek to the upper site boundary was seined to collect the plains topminnow for relocation to an area upstream from decommissioning activities. Efforts were concentrated in the area to be cleaned up during the fall and winter 1986-1987. A total of four plains topminnows were collected and moved.

Table D-1

Aquatic Macroinvertebrate Assemblages Collected Near Edgemont, South Dakota - June and October 1986

Taxa	June 1986 Station 3	4	5	6	October 1986 Station 3	4	5	6
Annelida								
Niadidae								
Nias sp.	-	1	-	-	-	1	1	-
Ephemeroptera								
Caenidae								
Caenis similans	-	-	-	-	-	-	3	-
Brachycerus nr. Prudens	-	-	-	1	-	-	-	-
Trichoptera								
Hydroptilidae								
Hydroptila occidentalis	1	1	4	5	-	-	196	-
Ceratopsyche bifida	-	1	-	-	-	-	37	-
Cheumatopsyche sp.	-	-	-	2	-	-	21	-
Leptoceridae								
Oecetis sp.	-	-	-	2	-	-	21	-
Hydroptilidae								
Hydroptila sp.	-	-	-	-	-	-	5	-
Coleoptera								
Elmidae								
Dubiraphia sp.	-	-	-	-	1	-	-	-
Diptera								
Chironomidae								
Pupae	-	1	5	3	-	-	-	-
Polypedilum halterale	1	-	-	-	-	-	-	-
Polypedilum fallix	-	-	8	8	-	-	-	-
Polypedilum sp.	-	1	5	1	-	-	-	-
Pentaneura sp.	-	1	2	3	-	-	-	-
Orthocladius sp.	-	-	3	7	-	-	-	-
Psectrocladius	-	-	-	1	-	-	-	-
Ceratopogonidae								
Bezzia-Probezzia grp.	-	-	-	1	-	-	-	-
Tipulidae								
Tipula sp.	-	-	-	-	-	-	1	-
Simuliidae								
Simulium vittatum	-	-	-	-	-	-	11	-
Simulium sp.	-	1	-	11	-	-	13	-
Mollusca								
Gastropoda								
Physa sp.	-	-	-	-	-	-	91	-
Average Number of Individuals/0.1m^2	0.5	1.8	6.8	11.3	0.3	.03	100.0	-
Total Taxa	2	7	6	12	1	1	11	0

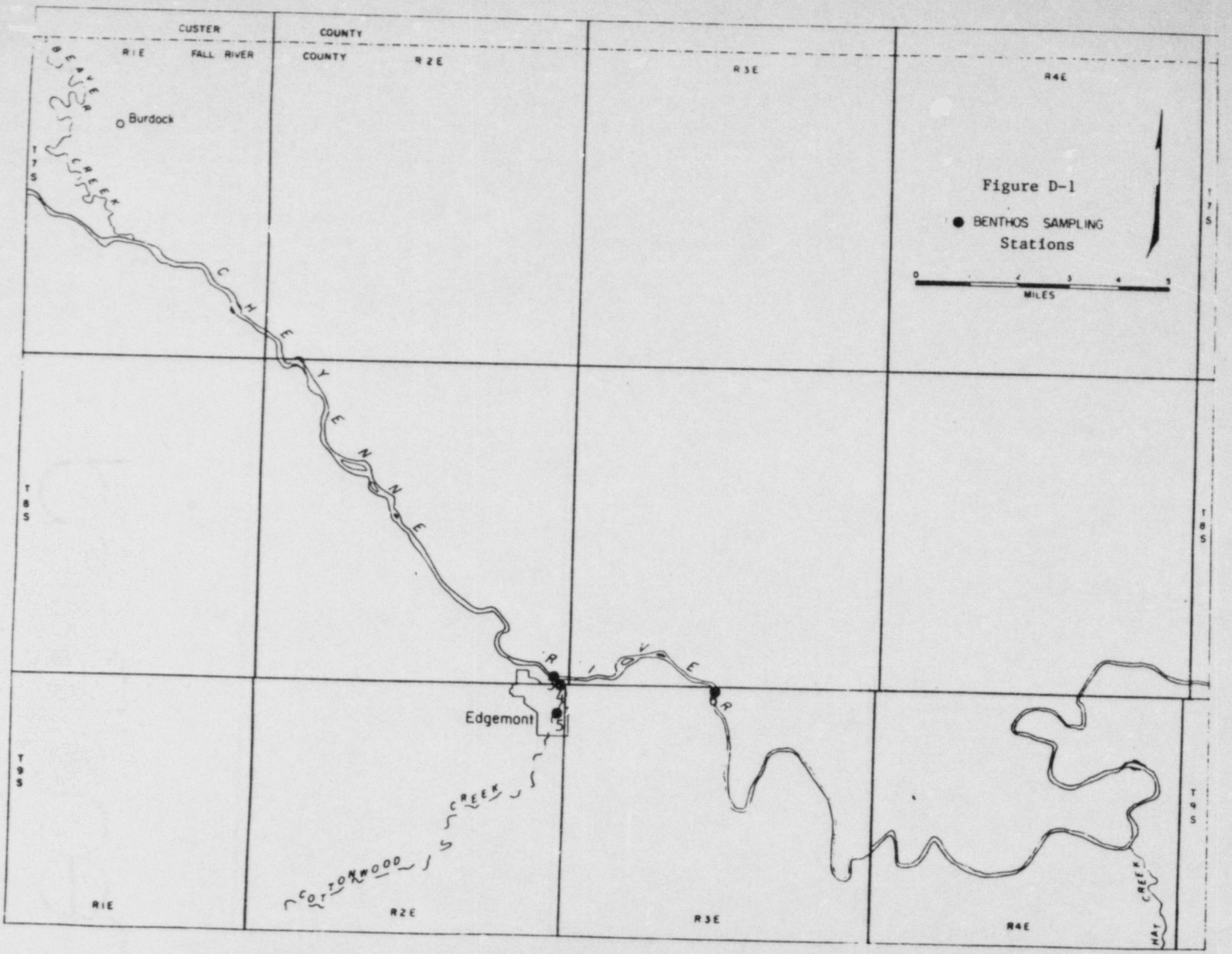
- = not collected

Table D-2

Species Composition and Number of Fish Collected in the Cheyenne River and Cottonwood Creek During June and October 1986

Species	June Station 3	June Station 4	June Station 5	June Station 6	October Station 3	October Station 4	October Station 5	October Station 6
Flathead Chub (Hybopsis gracilis)	-	1	1	-	-	-	-	-
Plains Minnow (Hybognathus placitus)	2	1	1	-	46	123	69	74
Sand Shiner (Notropis stramineus)	2	2	3	3	54	141	80	77
Longnose Dace (Rhinichthys cataractae)	3	-	7	-	-	-	3	-
Plains Killifish (Fundulus kansae)	2	23	5	127	8	37	57	56
River Carpsucker (Carpoides carpio)	-	1	-	-	-	-	-	-
White Sucker (Catostomus commersoni)	-	2	2	7	-	-	-	-
Green sunfish (Lepomis cyanellus)	-	-	-	-	-	4	-	2
Channel catfish (Ictalurus punctatus)	-	-	-	-	-	-	-	2

- = not collected


CUSTER COUNTY
FALL RIVER COUNTY
R1E
R2E
R3E
R4E
Burdock
BEAVER CREEK
CHEYENNE RIVER
Edgemont
COTTONWOOD CREEK
HAY CREEK
T7S
T8S
T9S
Figure D-1
BENTHOS SAMPLING Stations
0 1 2 3 4 5
MILES

E. ENVIRONMENTAL AUDITS

No State audits were conducted during this monitoring period. An internal audit of decommissioning activities was conducted during the period July 28 through August 28, 1986, with the onsite portion of the review occurring on July 30 and 31. Only one audit finding was observed and it concerned the lack of a Spill Prevention Control and Countermeasures Plan (SPCC) at the project. This situation has since been rectified as the SPCC plan was put in place on November 26.

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Appendix 1

Radiological Procedures

General

All the radiochemical and instrumental analyses were conducted in TVA's Western Area Radiological Laboratory (WARL) located in Muscle Shoals, Alabama. Alpha and beta analyses were performed on Beckman Low Beta II or Tennelec LB 5100 low background proportional counters. For all uranium results, natural uranium is assumed to have a specific activity of 0.677 pCi/g. Samples of soils and sediments are routinely counted for uranium and radium with germanium detection systems. If sufficient quantities of samples are not obtained or if there are questions concerning the gamma spectral results, uranium or radium analyses of soil and sediment samples may be performed by the techniques listed below. All other samples are routinely counted for the appropriate radionuclide as follows:

1. Uranium: Chemical separation is performed on the sample, and the results are measured on a Gerald-Ash Model 26/000 fluorimeter. Results are reported in p-mpg of uranium per unit of sample.

2. Th-230: Chemical separation is performed on the sample, and the results are counted on a Nuclear Measurement Corporation PC-5 internal proportional counter or Tennelec LB 5100 low background proportional counter.

3. Ra-226: A radon de-emanation technique is used on the sample. It is then counted in a scintillation counter using a Lucas Cell.

4. Po-210: Chemical separation is performed on the sample; it is then electroplated and counted on by alpha spectrometry.

5. Pb-210: Chemical separation is performed on the sample, and the daughters are allowed to ingrow. The sample is then electroplated and counted by alpha spectrometry.

The detection capabilities for environmental analysis given as the nominal LLD are listed in Table A-26.

All LLD values are calculated by the method developed by Pasternack and Harley as described in HASL-300. Factors such as sample size,

decay time, chemical yield, and counting efficiency may vary for a given sample; these variations may change the LLD value for the given sample.

Data were entered in computer storage for processing specific to the analysis conducted. The data obtained by germanium detectors for uranium and radium were resolved using the appropriate analyzer software. Data obtained using other systems were resolved using calculational techniques on an HP-1000 microcomputer.

TVA's WARL facility participates in the Environmental Radioactivity Laboratory Intercomparison Studies Program conducted by EPA-Las Vegas. This program provides periodic cross-check samples of the type and radionuclide composition normally analyzed in an environmental monitoring program. Routine sample handling and analysis procedures were employed in the evaluation of these samples. The results received during calendar year 1986 are shown in Table A-27. The $\pm 3\sigma$ limits based on one measurement were divided by the square root of 3 to correct for triplicate determinations.

The environmental monitoring results show that concentrations of radioactive materials are generally below MPCs listed in Table A-28.

1.0 Atmospheric

1.1 Air Particulate Sampling Procedures

Air flow rates are calibrated once every 6 months in accordance with established procedures. When changing the filter, all appropriate flow and timing information is recorded before removing the air particulate filter from the sample holder. The filter is carefully removed by the edges only, using tweezers, and placed in an appropriate container (that is, an envelope or plastic bag). A new filter is placed on the filter holder, and the starting time and flow are recorded. All appropriate time and flow information accompanies the filter to the laboratory in addition to the regular label features.

1.2 Radon Sampling Procedures

1.2.1 Initial development--Initally three track etch detectors were mounted at each of the five atmospheric monitoring stations. Each cup is positioned inside a field canister designed to protect the detector from the elements. Each field canister is mounted at a height of about 5 feet with the open mouth of the canister facing down. The field canisters are identified as A, B, or C. At the end of the first month, detector A is changed out, with detectors B and C changed out at the end of the second and third months, respectively. For the initial period, detector A was in the field for one month, detector B for two months, and detector C for three months. Every month thereafter one of the

cups is changed out at each location, so that each detector represents a 3-month monitoring period with overlapping periods.

1.2.2 Routine Changeout--Each month one of the three track etch detectors is changed out at each station. The field detector is removed from the canister and replaced with an unexposed detector. The date, time, and location are recorded, and the detectors are packaged for shipment to the vendor for processing. Any abnormalities are noted.

2.0 Vegetation

2.1 Vegetation Sampling Procedures

Vegetation is cut or broken at ground level and placed into a plastic bag. Vegetation representative of the type normally consumed by animals in the pathway to humans is sampled. Approximately 1-2 kilograms (enough to fill a 45 x 50-cm plastic bag) is obtained for complete analysis. The sample container is sealed and labeled with the sample type and location, date, time sample was collected, and the name of the sample collector.

3.0 Soil

3.1 Soil Sampling Procedures

Soil is collected by removing the top 5 cm (2 in.) of soil from an area of about 100-150 cm^2 (15-23 $in.^2$). This is done by removing one large plug or two to five smaller ones. If a "cookie cutter" or auger type soil sampler is available, it is used. The sample is placed in an appropriate container (that is, plastic bag) and sealed. All samples are double bagged to reduce the likelihood of breakage. A label indicating the type of sample, sampling location, date time of collection, and the name of the collector is attached.

4.0 Sediment

4.1 Sediment Sample Procedures

Sedimentary material from the stream bed is scooped up with a small (approximately 1/2-liter) container along transects across the stream, with three to five discrete sample sites along each transect. After settling, excess water is decanted from the sample. The sample is transferred to a strong plastic bag or a 1-liter (1-quart) widemouthed plastic bottle. Bagged samples are double bagged and/or placed into a separate plastic container to prevent breakage. The container is sealed securely with tape. A label is attached denoting the type of sample, sampling location, date and time of sample collection, and the name of the sample collector.

5.0 Water

5.1 Surface Water Sampling Procedures

Surface water is collected either from the stream bank or by wading in the stream. A clean plastic bucket is used to retrieve all portions of the sample. The bucket is rinsed well (with water similar to that to be sampled) before collecting each sample. The bucket is either attached to a rope, tossed out into the stream and retrieved, or the bucket is dipped below the water level and allowed to fill. Care is taken to ensure that debris, stream bottom, or other materials are not allowed to contaminate the sample. Four liters (1 gallon) or more of sample is transferred to a 1-gallon container or, if appropriate, a 2 and 1/2-gallon container and labeled with the sample type, location, date, time of collection, and the name of the collector. A cubitainer or similar plastic container is usually used for the water samples.

5.2 Groundwater Sampling Procedures

Groundwater samples are taken by pumping water from the well or by lowering a container into the well and taking a grab sample. The pump method is used when practicable. When this method is used, the well is pumped for at least a few minutes to allow it to stabilize before sampling. At least 4 liters (1 gallon) of sample is collected and labeled as outlined in the section on surface water sampling.

6.0 Direct Radiation (TLDs)

6.1 Direct Radiation Sampling Procedures

Bulb-type Victoreen manganese-activated calcium fluoride (Ca_2F:Mn) thermoluminescent dosimeters (TLDs) are used to determine the gamma exposure rates. The TLDs are provided by Radiological Control (RC). The TLDs are placed at the designated locations and secured with electrical tape. The TLDs are deployed as close to one meter above the ground as is practical. The date, time, location, sample collector's name, and TLD numbers are recorded. Recovered TLDs are returned to RC in Muscle Shoals, Alabama, where they are annealed and read with a Victoreen Model 2810 TLD reader. The values are corrected for gamma response, self-irradiation, and fading with individual gamma response calibrations and self-irradiation factors determined for each TLD.

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40-1341

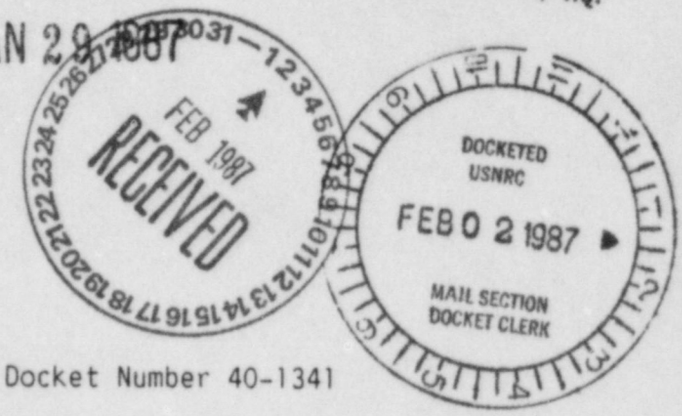
TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

RETURN ORIGINAL TO PDR, HQ.

JAN 29 1987



Mr. R. Dale Smith
U.S. Nuclear Regulatory Commission
Uranium Recovery Field Office
P.O. Box 25325
Denver, Colorado 80225

Dear Mr. Smith:

In the Matter of) Docket Number 40-1341
Tennessee Valley Authority)

In accordance with requirements of the Edgemont Uranium Mill Decommissioning Project Source Material License (SUA-816), the Semiannual Environmental Monitoring Report for the Edgemont Decommissioning Project is enclosed. This report is for the period of May 1, 1986 through October 31, 1986 and is the eighth project monitoring report. This monitoring program report covers environmental monitoring for the project based on: (1) the requirements of the NRC Final Environmental Statement (FES) related to the decommissioning of the Edgemont Uranium Mill (NUREG-0846), (2) the conditions of the Source Material License, SUA-816, as amended in its entirety August 23, 1986 and subsequent license amendments, and (3) discussions between our respective staffs. The program addresses both the mill site and the disposal site and considers radiological and nonradiological factors for each. The monitoring program covers the following areas in detail: (a) radiological, (b) air, (c) water quality, (d) biological and (e) nonradiological compliance monitoring.

If you have any questions concerning the enclosed report, please telephone D. H. Level at (615) 751-2699 in Chattanooga.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. A. Domer

R. L. Gridley, Director
Nuclear Safety and Licensing

Enclosure: (4)
cc (Enclosure):
Mr. Joel Smith, Administrator (Enclosure)
Office of Air Quality and Solid Waste
Joe Foss Building
Pierre, South Dakota 57501

FEE NOT REQUIRED

DESIGNATED ORIGINAL

Certified By Mary C. Wood

87-305