

SANTA CREEK STUDY

Benewah County

Data Collected 1978

Final Summary October 1980

**Department of Health and Welfare
Division of Environment
Statehouse
Boise, Idaho 83720**

**Water Quality Summary
No. 21**

SANTA CREEK STUDY

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SUMMARY OF SANTA CREEK STUDY

In 1978 a water quality study was conducted on Santa Creek in Benewah County to determine the impact of point and nonpoint pollution sources on the stream. The study included monthly sampling of five mainstem stations, the Emida domestic wastewater discharge and one tributary stream from February through September. The parameter categories to be monitored in the study were temperature, dissolved oxygen, pH, bacteria, solids and nutrients.

The study data indicates that Santa Creek water quality suffers from temperature violations, bacteria violations, and excessive turbidity. In June of 1978, the temperature of Santa Creek exceeded 21°C from River Mile 2.3 to the mouth of the stream. The elevated summer temperatures are likely caused by the loss of riparian vegetation along the stream bed which provides shading.

The bacteria and turbidity problems on Santa Creek are most prominent during winter rain storms, spring runoff, and summer thunder showers and occur throughout the stream from above Emida to the mouth. However, the bottom two river miles of the stream appear to be more affected than the upper portion. The main causes for the bacteria and turbidity problems are agricultural and silvicultural nonpoint pollution sources within the drainage.

The Emida sewage treatment plant discharge had very little impact on Santa Creek and during all except the March survey run, the Emida lagoon

did not discharge. If Emida maintains essentially a non-discharging system, they should never affect stream water quality.

The tributary to be monitored in the study was Charlie Creek and it also had several instances of excessive turbidity and bacteria violations. The sources of the problems on Charlie Creek include similar agricultural and silvicultural nonpoint sources that impact the mainstem drainage.

If Best Management Practices are applied to the nonpoint sources within the Santa Creek drainage, the turbidity and bacteria problems on the stream could be reduced during periods of runoff. Better protection of the stream channel and an increase in vegetative shade along the stream would reduce summer temperatures. A more comprehensive water quality study would be needed to locate and identify specific nonpoint sources which are impacting the stream.

DATA INVENTORY

2000141
 47 10 35.0 116 29 30.0 2
 SANTA CREEK AT MOUTH
 16009 IDAHO
 PACIFIC NORTHWEST 1303
 SPUKANE
 211DSURV 781207
 0000 CLASS 00

/IYPA/AMBN/STREAM

INDEX 1310001 006500 01150 0100 0380
 MILES 0643.00 0131.30 015.70 024.30 000.40
 PARAMETER

PARAMETER	NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010 WATER TEMP CENI	7	12.5143	47.8148	6.91483	.552555	2.61356	24.0000	2.00000	78/02/09	78/08/30
00061 STREAM FLOW, INST-CFS	1	.000000					.000000	.000000	78/09/15	78/09/15
00070 TURB JKSN JTU	7	19.5143	290.171	17.0344	.872921	6.43841	42.0000	2.80000	78/02/09	78/08/30
00094 CONDUCTIVY FIELD MICROMHO	3	19.6667	12.3340	3.51198	.178575	2.02764	23.0000	16.0000	78/02/09	78/05/15
00095 CONDUCTIVY AT 25C MICROMHO	7	32.1428	215.143	14.6678	.456330	5.54389	58.0000	16.0000	78/02/09	78/08/30
00116 INTNSVE SURVEY IDENT	8	771608	.449E+06	.000000			771608	771608	78/02/09	78/09/15
00300 DU MG/L	6	9.36666	1.95869	1.39953	.149416	.571357	11.2000	7.80000	78/03/28	78/08/30
00400 PH SU	4	8.14999	.063477	.251946	.030914	.125973	8.40000	7.80000	78/03/28	78/08/30
00403 LAB PH SU	2	6.50000	.000000	.000000			6.50000	6.50000	78/02/09	78/07/10
00410 T ALK CACU3 MG/L	2	14.5000	.500000	.707107	.048766	.500000	15.0000	14.0000	78/06/22	78/07/10
00425 HCU3 ALK CACU3 MG/L	2	14.5000	.500000	.707107	.048766	.500000	15.0000	14.0000	78/06/22	78/07/10
00430 CU3 ALK CACU3 MG/L	2	.000000	.000000	.000000			.000000	.000000	78/06/22	78/07/10
00500 RESIDUE TOTAL MG/L	7	80.0000	1421.00	37.6961	.471202	14.2478	141.000	47.0000	78/02/09	78/08/30
00530 RESIDUE TOT NFLT MG/L	7	19.8428	354.286	18.8225	.948577	7.11423	50.3000	1.00000	78/02/09	78/08/30
00610 NH3+NH4-N TOTAL MG/L	7	.035000	.000719	.026820	.766297	.010137	.081000	.002000	78/02/09	78/08/30
00615 NO2-N TOTAL MG/L	7	.001286	.571E-06	.000756	.587948	.000286	.003000	.001000	78/02/09	78/08/30
00620 NO3-N TOTAL MG/L	7	.034286	.000595	.024398	.711594	.009221	.070000	.020000	78/02/09	78/08/30
00625 TOT KJEL N MG/L	7	.545714	.041529	.203786	.373431	.077024	.800000	.220000	78/02/09	78/08/30
00665 PHOS-TOT MG/L P	7	.064286	.001229	.035051	.545239	.013248	.120000	.030000	78/02/09	78/08/30
31501 TOT COLI MFIMENDO /100ML	5	151.200	14117.2	118.816	.785819	53.1361	290.000	40.0000	78/02/09	78/08/30
31616 FEC COLI MFM-FCBR /100ML	6	136.167	38465.0	196.125	1.44033	80.0676	500.000	2.00000	78/02/09	78/08/30
31679 FECSTREP MF M-ENT /100ML	5	56.0000	6833.50	82.6650	1.47616	36.9689	200.000	1.00000	78/02/09	78/06/22
70300 RESIDUE DISS-180 C MG/L	5	53.2000	317.704	17.8242	.335042	7.97125	81.0000	36.0000	78/03/28	78/08/30
70507 PHOS-T DRTHO MG/L P	7	.015714	.000029	.005345	.340152	.002020	.020000	.010000	78/02/09	78/08/30

2000142
 47 09 10.0 116 32 10.0 2
 SANTA CR BL EMIDA AT 95 BRIDGE
 16009 IDAHO
 PACIFIC NORTHWEST 1303
 SPOKANE
 211DSURV 781207
 0000 CLASS 00

/IYPA/AMBNT/STREAM

INDEX 1310001 006500 01150 0100 0380
 MILES 0643.00 0131.30 015.70 024.30 002.30

PARAMETER	NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010 WATER TEMP CENT	7	11.6143	40.4548	6.36041	.547637	2.40401	21.0000	2.00000	78/02/09	78/08/30
00061 STREAM FLOW, INST-CFS	5	.000000	.000000	.000000		.000000	.000000	.000000	77/10/15	78/09/15
00070 TURB JKSJ JTU	7	20.3571	352.719	18.7808	.922566	7.09848	56.0000	6.10000	78/02/09	78/08/30
00094 CONDUCTIVY FIELD MICROMHO	6	27.8333	48.5672	6.96902	.250384	2.84509	39.0000	22.0000	78/02/09	78/07/10
00095 CONDUCTIVY AT 25C MICROMHO	7	39.2857	569.907	23.8727	.607670	9.02304	86.0000	22.0000	78/02/09	78/08/30
00116 INTNSVE SURVEY IDENT	12	771608	.476E+06	.000000		.000000	771608	771608	77/10/15	78/09/15
00300 DU MG/L	6	9.11666	5.70571	2.38866	.262011	.975168	12.2000	6.20000	78/03/28	78/08/30
00400 PH SU	4	8.27499	.042643	.206502	.024955	.103251	8.50000	8.00000	78/03/28	78/08/30
00403 LAB PH SU	2	6.60000	.152E-04	.000000		.000000	6.60000	6.60000	78/02/09	78/07/10
00410 T ALK CACU3 MG/L	2	21.5000	84.5000	9.19239	.427553	6.50000	28.0000	15.0000	78/06/22	78/07/10
00425 HCO3 ALK CACU3 MG/L	2	21.5000	84.5000	9.19239	.427553	6.50000	28.0000	15.0000	78/06/22	78/07/10
00430 CO3 ALK CACU3 MG/L	2	.000000	.000000	.000000		.000000	.000000	.000000	78/06/22	78/07/10
00500 RESIDUE TOTAL MG/L	7	83.2857	1237.58	35.1792	.422392	13.2965	137.000	51.0000	78/02/09	78/08/30
00530 RESIDUE TOT NFLT MG/L	7	20.7714	401.885	20.0471	.965127	7.57708	54.9000	1.00000	78/02/09	78/08/30
00610 NH3+NH4- N TOTAL MG/L	7	.030857	.000963	.031029	1.00557	.011728	.081000	.001000	78/02/09	78/08/30
00615 NO2-N TOTAL MG/L	7	.001000	.288E-11	.000002	.001697	.641E-06	.001000	.001000	78/02/09	78/08/30
00620 NO3-N TOTAL MG/L	7	.035714	.000662	.025728	.720370	.009724	.090000	.020000	78/02/09	78/08/30
00625 TOT NITR N MG/L	7	.068571	.006281	.257452	.368540	.097308	1.03000	.410000	78/02/09	78/08/30
00665 PHOS-TOT MG/L P	7	.060000	.002533	.050332	.838871	.019024	.130000	.010000	78/02/09	78/08/30
31501 TOT COLI MFIMENDU /100ML	5	210.800	19663.2	140.226	.665207	62.7108	400.000	44.0000	78/02/09	78/08/30
31616 FEC COLI MFM-FCBK /100ML	6	155.000	33511.2	183.061	1.18104	74.7342	450.000	1.00000	78/02/09	78/08/30
31679 FECSREP MF M-ENT /100ML	6	51.6667	5483.47	74.0504	1.43323	30.2310	200.000	1.00000	78/02/09	78/08/30
70300 RESIDUE DISS-180 C MG/L	5	57.2000	259.204	16.0998	.281465	7.20006	80.0000	39.0000	78/03/28	78/08/30
70507 PHOS-T URTHO MG/L P	7	.020000	.000133	.011547	.577352	.004364	.040000	.010000	78/02/09	78/08/30

2000143
 47 09 05.0 116 32 30.0 2
 SANTA CR AT LOG BRIDGE
 16009 IDAHO
 PACIFIC NORTHWEST 1303
 SPOKANE
 2110SURV 781207
 0000 CLASS 00

/TYPA/AMBNT/STREAM

INDEX 1310001 006500 01150 0100 0380
 MILES 0643.00 0131.30 015.70 024.30 003.00

PARAMETER	NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010 WATER TEMP	2	5.55000	25.2050	5.02046	.904587	3.55000	9.10000	2.00000	78/02/09	78/05/15
00061 STREAM FLOW, INST-CFS	6	.000000	.000000	.000000		.000000	.000000	.000000	78/03/28	78/09/15
00070 TURB JKSJ JTU	3	31.3333	69.3339	8.32670	.265746	4.80742	38.0000	22.0000	78/02/09	78/07/10
00094 CONDUCTVY FIELD MICROMHO	2	25.5000	12.5000	3.53553	.138648	2.50000	28.0000	23.0000	78/02/09	78/05/15
00095 CONDUCTVY AT 25C MICROMHO	1	28.0000					28.0000	28.0000	78/05/15	78/05/15
00116 INTNSVE SURVEY IDENT	8	771608	.449E+06	.000000		.000000	771608	771608	78/02/09	78/09/15
00300 DU MG/L	1	8.30000					8.30000	8.30000	78/05/15	78/05/15
00400 PH SU	1	8.00000					8.00000	8.00000	78/05/15	78/05/15
00403 LAB PH SU	1	6.70000					6.70000	6.70000	78/02/09	78/02/09
00410 I ALK CACU3 MG/L	1	28.0000					28.0000	28.0000	78/07/10	78/07/10
00425 HCU3 ALK CACU3 MG/L	1	28.0000					28.0000	28.0000	78/07/10	78/07/10
00430 CU3 ALK CACU3 MG/L	1	.000000					.000000	.000000	78/07/10	78/07/10
00500 RESIDUE TOTAL MG/L	3	111.667	110.350	10.5047	.094072	6.06492	122.000	101.000	78/02/09	78/07/10
00530 RESIDUE TOT NFLT MG/L	3	36.2667	279.611	16.7216	.461073	9.65421	47.0000	17.0000	78/02/09	78/07/10
00610 NH3+NH4- N TOTAL MG/L	3	.034000	.000133	.011533	.339196	.006658	.046000	.023000	78/02/09	78/07/10
00615 NO2-N TOTAL MG/L	3	.001667	.000001	.001155	.692823	.000667	.003000	.001000	78/02/09	78/07/10
00620 NO3-N TOTAL MG/L	3	.026667	.000133	.011547	.433014	.006667	.040000	.020000	78/02/09	78/07/10
00625 TOT KJEL N MG/L	3	.780000	.036400	.190789	.244601	.110152	.900000	.560000	78/02/09	78/07/10
00665 PHOS-TOT MG/L P	3	.073333	.003233	.056862	.775398	.032830	.120000	.010000	78/02/09	78/07/10
31501 TOT COLI MFIMENDU /100ML	1	240.000					240.000	240.000	78/02/09	78/02/09
31616 FEC COLI MFM-FCBR /100ML	2	168.000	34848.0	186.676	1.11117	132.000	300.000	36.0000	78/02/09	78/05/15
31679 FECSTREP MF M-ENT /100ML	2	138.000	29768.0	172.534	1.25025	122.000	260.000	16.0000	78/02/09	78/05/15
70300 RESIDUE DISS-180 C MG/L	2	68.0000	288.000	16.9706	.249567	12.0000	80.0000	56.0000	78/05/15	78/07/10
70507 PHOS-T ORTHO MG/L P	3	.016667	.000133	.011547	.692820	.006667	.030000	.010000	78/02/09	78/07/10

2000144
 47 07 10.0 116 35 30.0 2
 SANTA CR BL EMIDA AB SEW LAGOON
 16009 IDAHO
 PACIFIC NORTHWEST 1303
 SPOKANE
 211DSURV 781207
 0000 CLASS 00

/TYPA/AMOUNT/STREAM

INDEX 1310001 006500 01150 0100 0380
 MILES 0643.00 0131.30 015.70 024.30 009.40
 PARAMETER

PARAMETER	NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAN ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010 WATER TEMP CENT	7	11.1857	41.8581	6.46978	.578397	2.44535	20.5000	2.00000	78/02/09	78/08/30
00061 STREAM FLOW, INST-CFS	1	.000000					.000000	.000000	78/09/15	78/09/15
00070 TURB JKSJ JFU	7	28.1000	677.330	26.0256	.926177	9.83674	82.0000	7.40000	78/02/09	78/08/30
00094 CONDUCTVY FIELD MICROMHO	6	37.5000	274.700	16.5741	.441975	6.76634	60.0000	22.0000	78/02/09	78/07/10
00095 CONDUCTVY AT 25C MICROMHO	6	47.8333	555.770	23.5748	.492852	9.62436	85.0000	22.0000	78/03/28	78/08/30
00116 INTNSVE SURVEY IDENT	8	771608	.449E+06	.000000		.000000	771608	771608	78/02/09	78/09/15
00300 DN MG/L	6	8.58333	7.18569	2.68061	.312305	1.09436	12.0000	5.60000	78/03/28	78/08/30
00400 PH SU	4	8.30000	.046794	.216318	.026062	.108159	8.50000	8.00000	78/03/28	78/08/30
00403 LAB PH SU	2	6.65000	.004990	.070637	.010622	.049948	6.70000	6.60000	78/02/09	78/07/10
00410 T ALK CACU3 MG/L	2	19.5000	60.5000	7.77817	.398881	5.50000	25.0000	14.0000	78/06/22	78/07/10
00425 HCO3 ALK CACU3 MG/L	2	19.5000	60.5000	7.77817	.398881	5.50000	25.0000	14.0000	78/06/22	78/07/10
00430 CO3 ALK CACU3 MG/L	2	.000000	.000000	.000000		.000000	.000000	.000000	78/06/22	78/07/10
00500 RESIDUE TOTAL MG/L	7	79.8571	474.480	21.7826	.272769	8.23304	109.000	54.0000	78/02/09	78/08/30
00530 RESIDUE TOT NFLT MG/L	7	12.5857	162.075	12.7309	1.01153	4.81181	39.0000	1.00000	78/02/09	78/08/30
00610 NH3+NH4- N TOTAL MG/L	7	.037000	.001277	.035735	.965814	.013507	.097000	.001000	78/02/09	78/08/30
00615 NO2-N TOTAL MG/L	7	.001143	.142E-06	.000378	.330723	.000143	.002000	.001000	78/02/09	78/08/30
00620 NO3-N TOTAL MG/L	7	.027143	.000357	.018898	.696251	.007143	.070000	.020000	78/02/09	78/08/30
00625 Tot KjEL N MG/L	7	.552857	.096457	.310575	.561764	.117386	.980000	.080000	78/02/09	78/08/30
00665 PHOS-TOT MG/L P	7	.044286	.000395	.019881	.448917	.007514	.070000	.010000	78/02/09	78/08/30
31501 TOT COL1 MFIMENDD /100ML	7	151.429	21138.3	145.390	.960124	54.9523	400.000	24.0000	78/02/09	78/08/30
31616 FEC COL1 MFM-FCBR /100ML	7	91.7143	21391.6	146.259	1.59472	55.2805	400.000	2.00000	78/02/09	78/08/30
31679 FLCSTREP MF M-ENT /100ML	7	73.7143	7107.24	84.3045	1.14366	31.8641	200.000	1.00000	78/02/09	78/08/30
70300 RLSIDUE DISS-180 C MG/L	5	61.0000	210.000	14.4914	.237564	6.48074	80.0000	46.0000	78/03/28	78/08/30
70507 PHOS-T ORTHO MG/L P	7	.025714	.000229	.015119	.587946	.005714	.050000	.010000	78/02/09	78/08/30

2000145
 47 06 40.0 116 36 10.0 2
 SANTA CR AB EMIDA AT BRIDGE
 16009 IDAHO
 PACIFIC NORTHWEST 1303
 SPOKANE
 211DSURV 781207
 0000 CLASS 00

/TYP/AMUNT/STREAM

INDEX	1310001	006500	01150	0100	0380															
MILES	0643.00	0131.30	015.70	024.30	010.80															
PARAMETER						NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE					
00010	WATER	TEMP	CENT			7	11.1714	33.7357	5.80824	.519919	2.19531	19.3000	3.00000	78/02/09	78/08/30					
00061	STREAM	FLOW	INST-CFS			1	.000000					.000000	.000000	78/09/15	78/09/15					
00070	TURB	JKSN	JTU			7	20.3857	260.141	16.1289	.791185	6.09614	44.0000	4.50000	78/02/09	78/08/30					
00094	CNDUCTVY	FIELD	MICROMHO			5	35.4000	283.301	16.8315	.475467	7.52729	57.0000	20.0000	78/02/09	78/07/10					
00095	CNDUCTVY	AT 25C	MICROMHO			7	38.8571	230.479	15.1815	.390701	5.73808	57.0000	20.0000	78/02/09	78/08/30					
00116	INTNSVE	SURVEY	IDENT			8	771608-	449E+06	.000000		.000000	771608	771608	78/02/09	78/09/15					
00300	DU		MG/L			6	9.13333	4.44272	2.10778	.230779	.860496	11.8000	6.80000	78/03/28	78/08/30					
00400	PH		SU			4	8.25000	.110107	.331824	.040221	.165912	8.70000	8.00000	78/03/28	78/08/30					
00403	LAB	PH	SU			2	6.80000-	.152E-04	.000000		.000000	6.80000	6.80000	78/02/09	78/07/10					
00410	T ALK	CACO3	MG/L			2	25.5000	12.5000	3.53553	.138648	2.50000	28.0000	23.0000	78/06/22	78/07/10					
00425	HCO3 ALK	CACO3	MG/L			2	25.5000	12.5000	3.53553	.138648	2.50000	28.0000	23.0000	78/06/22	78/07/10					
00430	CO3 ALK	CACO3	MG/L			2	.000000	.000000	.000000		.000000	.000000	.000000	78/06/22	78/07/10					
00500	RESIDUE	TOTAL	MG/L			7	85.4000	1294.93	35.9851	.421372	13.6011	145.000	49.0000	78/02/09	78/08/30					
00530	RESIDUE	TOT NFLT	MG/L			7	28.6143	885.342	29.7547	1.03985	11.2462	72.0000	1.00000	78/02/09	78/08/30					
00610	NH3+NH4-	N TOTAL	MG/L			7	.049286	.006798	.082451	1.67293	.031164	.234000	.001000	78/02/09	78/08/30					
00615	NO2-N	TOTAL	MG/L			7	.001571	.000001	.001134	.721569	.000429	.004000	.001000	78/02/09	78/08/30					
00620	NO3-N	TOTAL	MG/L			7	.027143	.000357	.018898	.696251	.007143	.070000	.020000	78/02/09	78/08/30					
00625	TOT KJEL	N	MG/L			7	.728571	.081048	.284690	.390751	.107603	1.13000	.210000	78/02/09	78/08/30					
00665	PHOS-TOT		MG/L P			7	.094286	.013429	.115882	1.22905	.043799	.350000	.010000	78/02/09	78/08/30					
31501	TOT CULI	MFIMENDU	/100ML			5	166.400	32172.8	179.368	1.07793	80.2157	400.000	24.0000	78/02/09	78/08/30					
31616	FEC CULI	MFM-FCOR	/100ML			6	96.5000	16882.7	129.933	1.34646	53.0451	300.000	1.00000	78/02/09	78/08/30					
31679	FECSTREP	MF M-ENT	/100ML			7	93.7143	9766.91	98.8277	1.05456	37.3533	240.000	1.00000	78/02/09	78/08/30					
70300	RESIDUE	DISS-180	C MG/L			5	57.4000	229.805	15.1593	.264099	6.77945	74.0000	46.0000	78/03/28	78/08/30					
70567	PHOS-T	ORTHO	MG/L P			7	.017143	.000057	.007559	.440960	.002857	.030000	.010000	78/02/09	78/08/30					

2000146
 47 07 25.0 116 35 30.0 2
 EMIDA EFFLUENT
 16009 IDAHO
 PACIFIC NORTHWEST 1303
 SPOKANE
 211DSURV 781207
 0000 CLASS 00

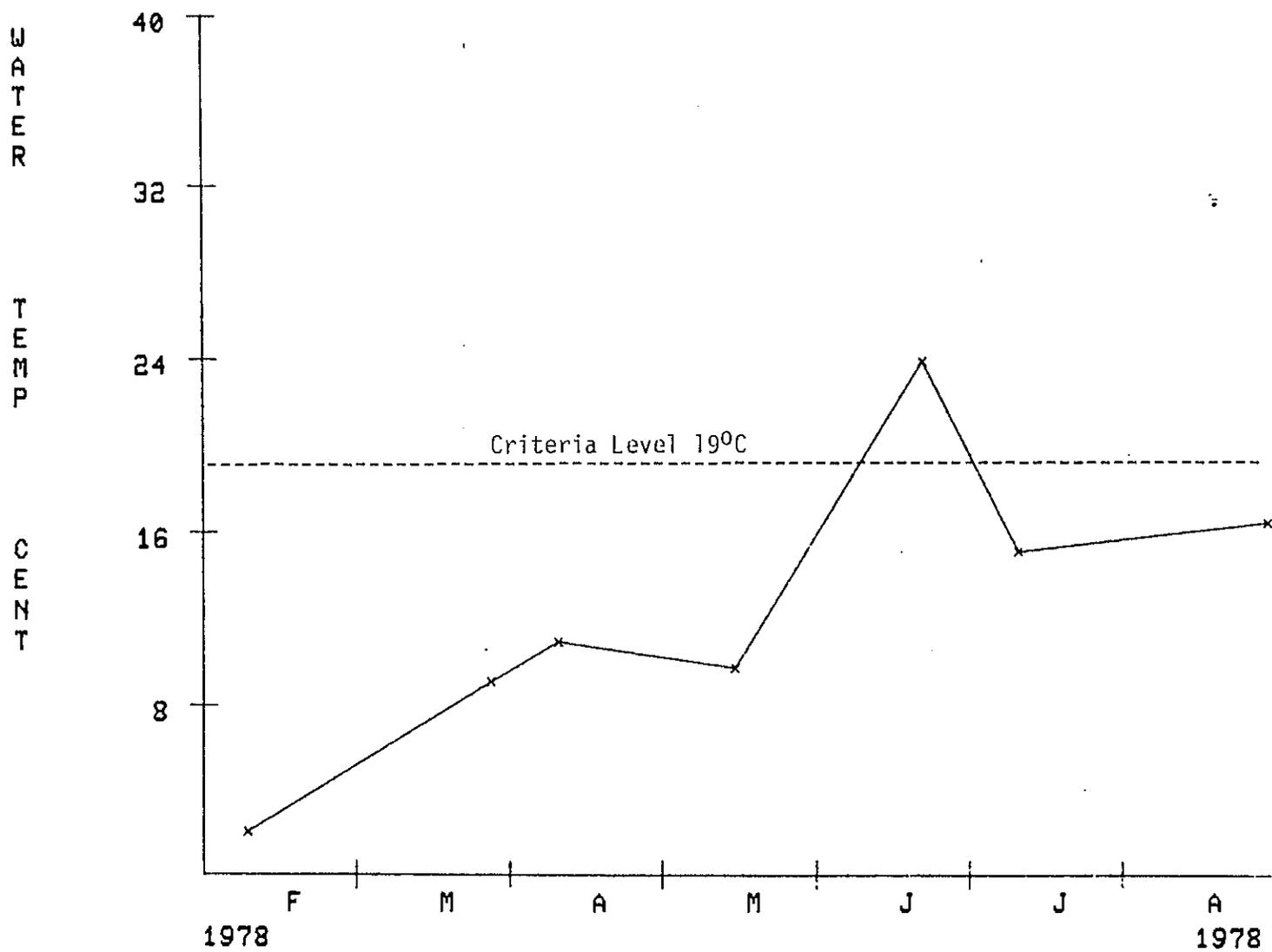
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INDEX 1310001 006500 01150 0100 0380
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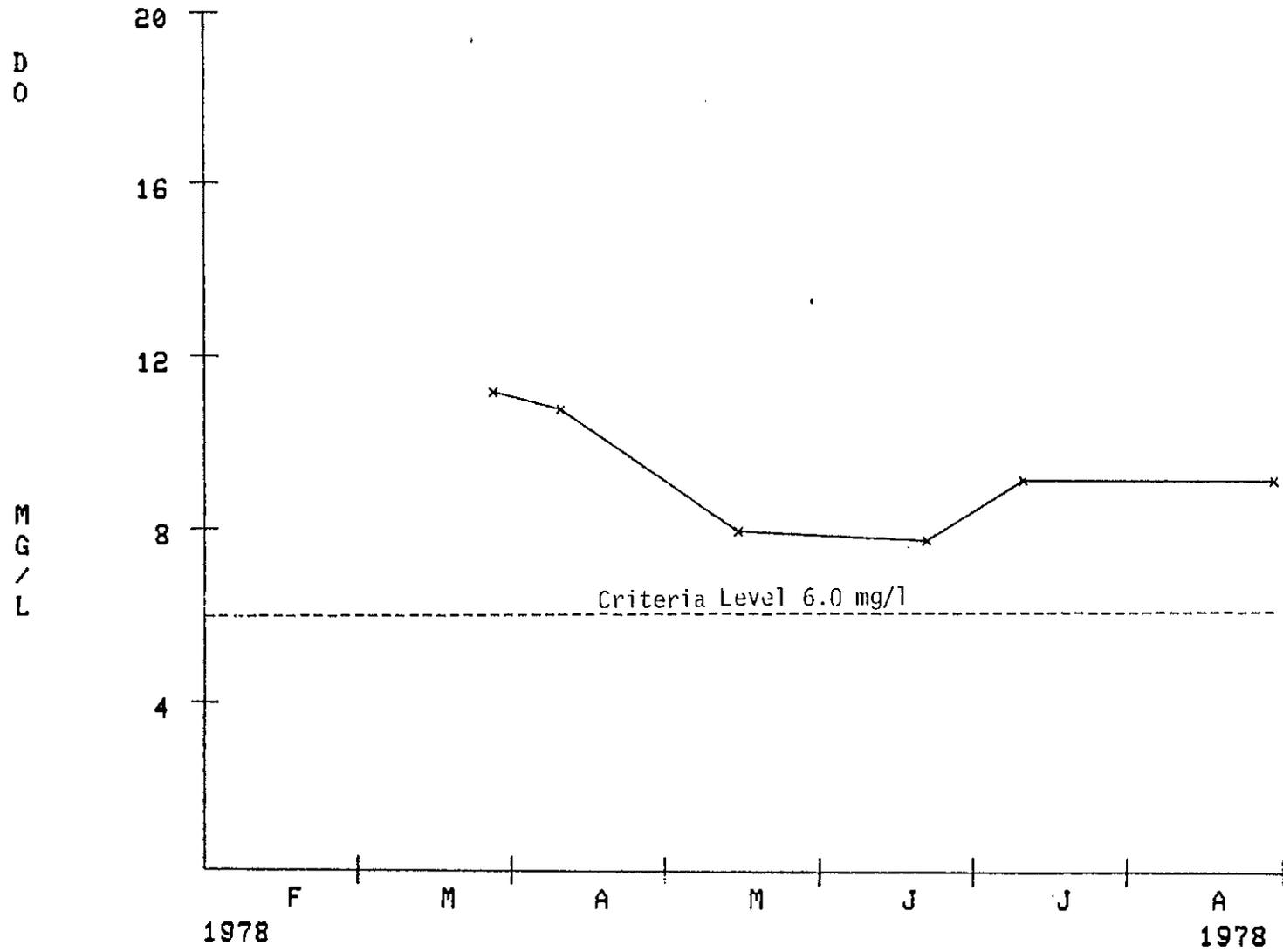
PARAMETER	NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STANDARD ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010 WATER TEMP CENT	1	13.0000					13.0000	13.0000	78/03/28	78/03/28
00061 STREAM FLOW, INST-CFS	4	.000000	.000000	.000000		.000000	.000000	.000000	78/04/10	78/09/15
00070 TURB JKSJ JTU	1	14.0000				14.0000	14.0000	78/03/28	78/03/28	
00094 CONDUCTIVY FIELD MICROMHO	1	292.000				292.000	292.000	78/03/28	78/03/28	
00095 CONDUCTIVY AT 25C MICROMHO	1	292.000				292.000	292.000	78/03/28	78/03/28	
00116 INTNSVE SURVEY IDENT	6	771608	.419E+06	.000000		.000000	771608	771608	78/02/15	78/09/15
00300 DO MG/L	1	18.4000				18.4000	18.4000	78/03/28	78/03/28	
00400 PH SU	1	7.40000				7.40000	7.40000	78/03/28	78/03/28	
00500 RESIDUE TOTAL MG/L	1	309.000				309.000	309.000	78/03/28	78/03/28	
00530 RESIDUE TUI NFLT MG/L	1	72.0000				72.0000	72.0000	78/03/28	78/03/28	
00610 NH3+NH4- N TOTAL MG/L	1	7.84300				7.84300	7.84300	78/03/28	78/03/28	
00615 NO2-N TOTAL MG/L	1	.082000				.082000	.082000	78/03/28	78/03/28	
00620 NO3-N TOTAL MG/L	1	.220000				.220000	.220000	78/03/28	78/03/28	
00625 TUI KJEL N MG/L	1	12.3000				12.3000	12.3000	78/03/28	78/03/28	
00665 PHOS-TUT MG/L P	1	5.20000				5.20000	5.20000	78/03/28	78/03/28	
31501 TUI COLI MFIMENDU /100ML	1	4000.00				4000.00	4000.00	78/03/28	78/03/28	
31616 FEC COLI MFM-FCBR /100ML	1	1.00000				1.00000	1.00000	78/03/28	78/03/28	
31679 FECSTREP MF M-ENT /100ML	1	1.00000				1.00000	1.00000	78/03/28	78/03/28	
70300 RESIDUE DISS-180 C MG/L	1	242.000				242.000	242.000	78/03/28	78/03/28	
70507 PHOS-T UTTHO MG/L P	1	4.30000				4.30000	4.30000	78/03/28	78/03/28	

GRAPHICS

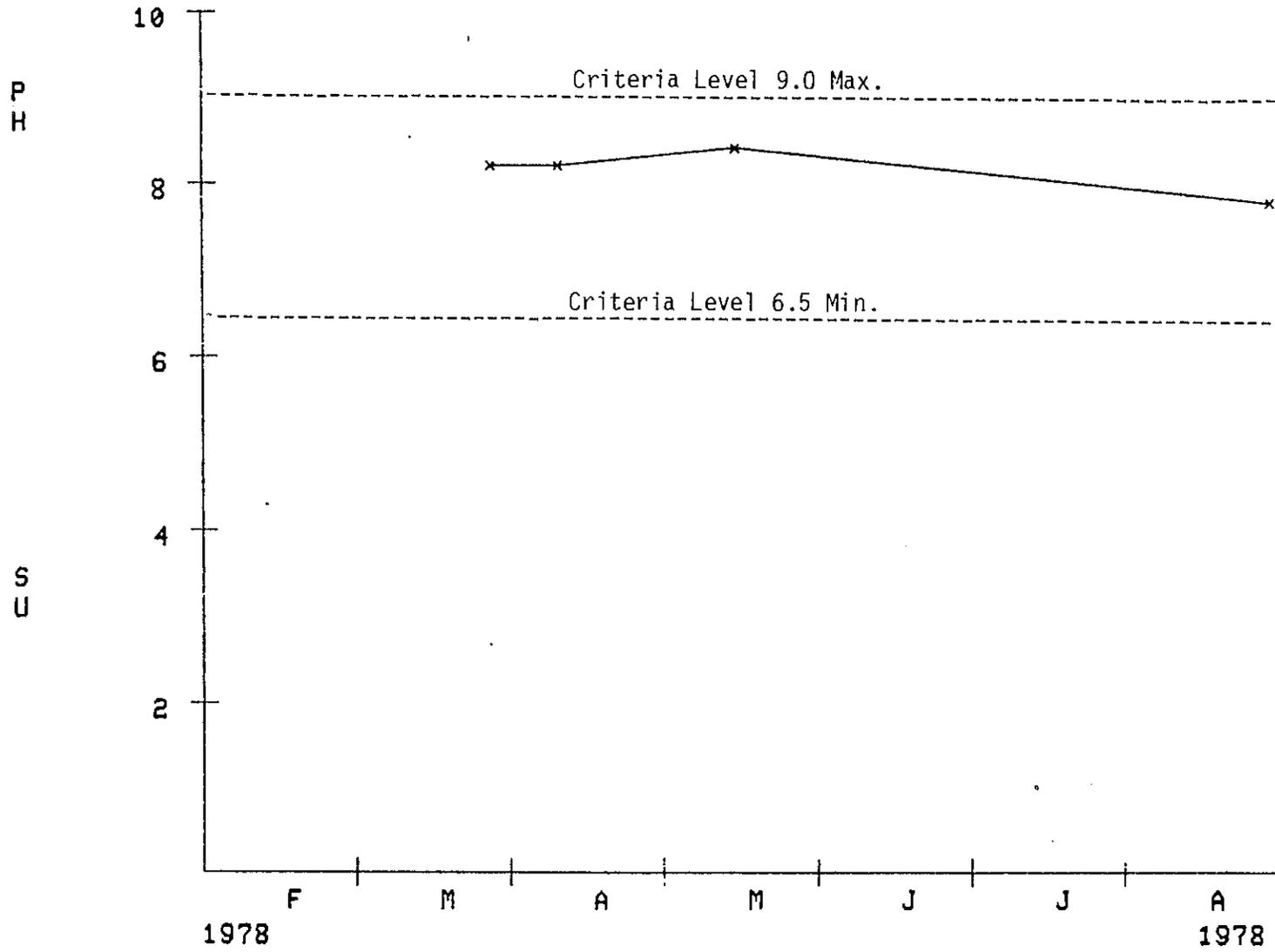
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SANTA CREEK AT MOUTH



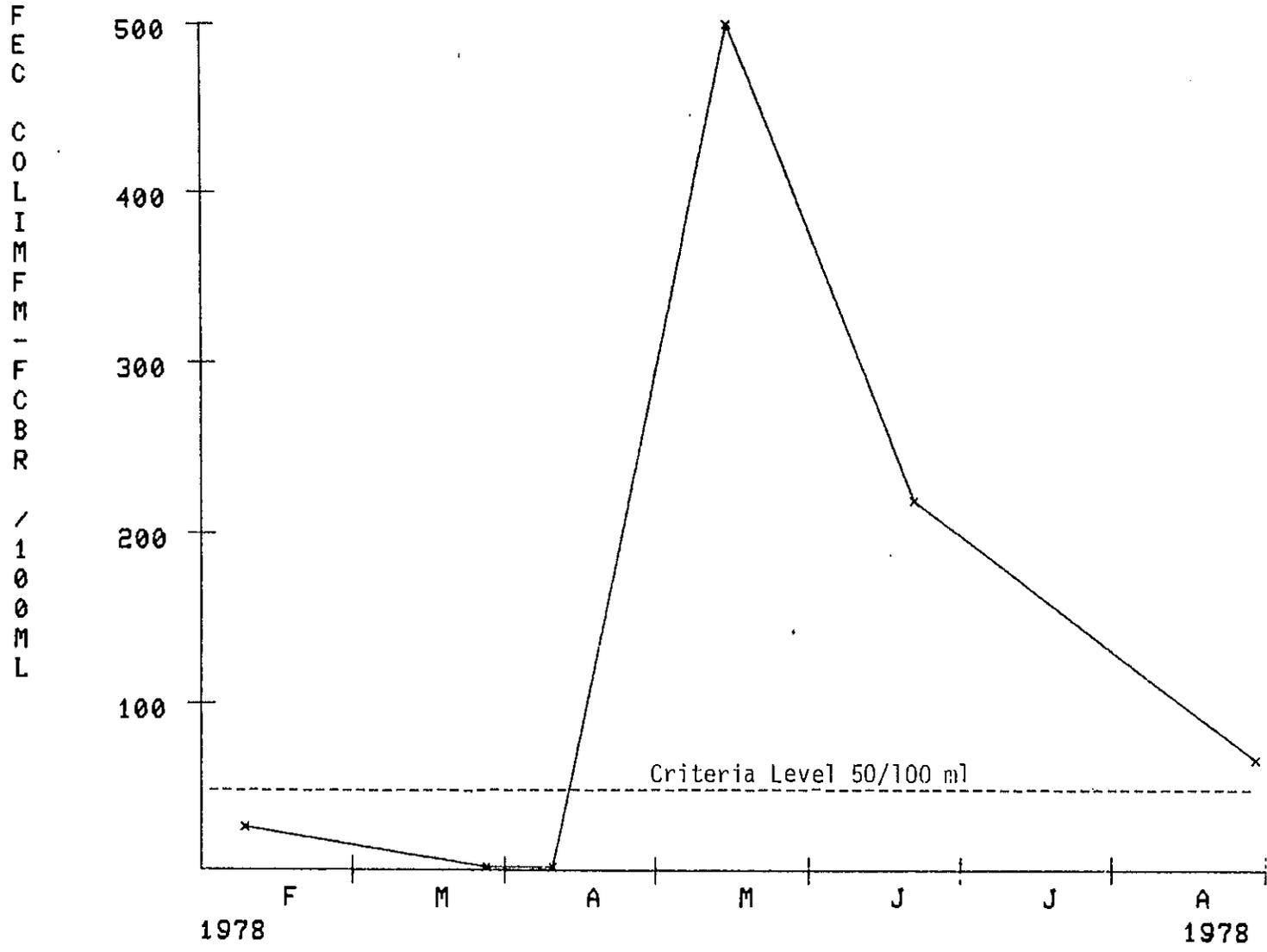
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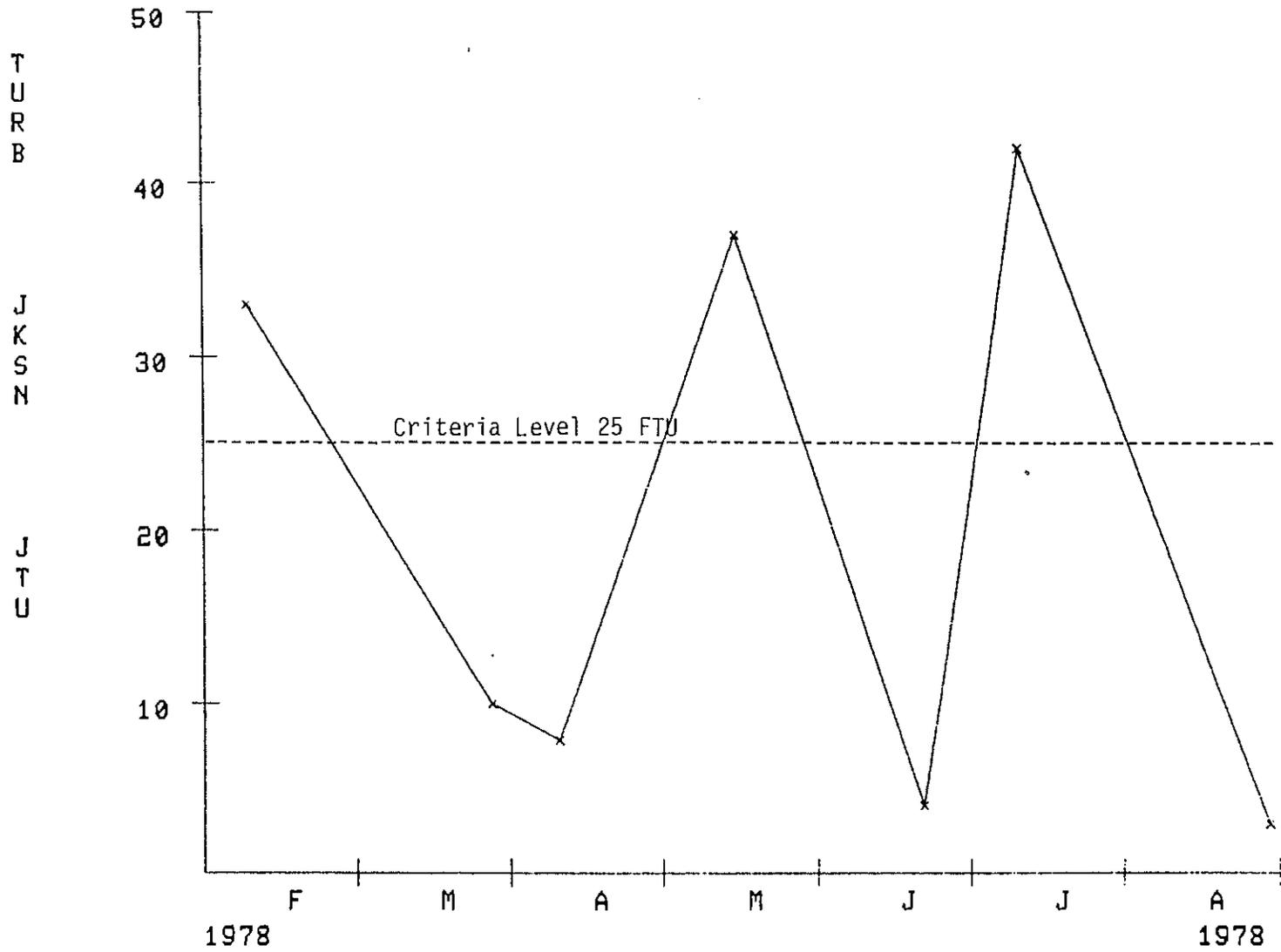
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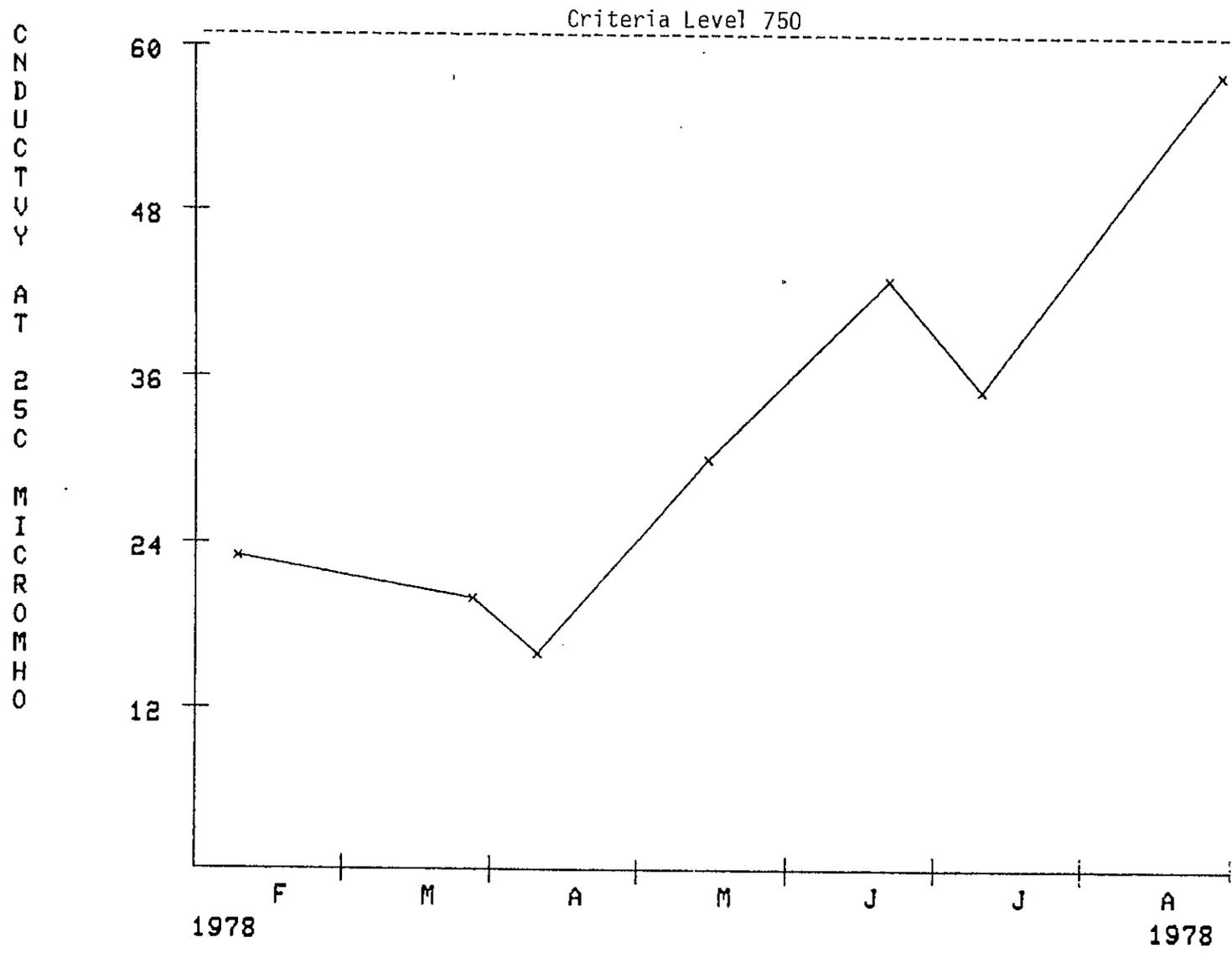
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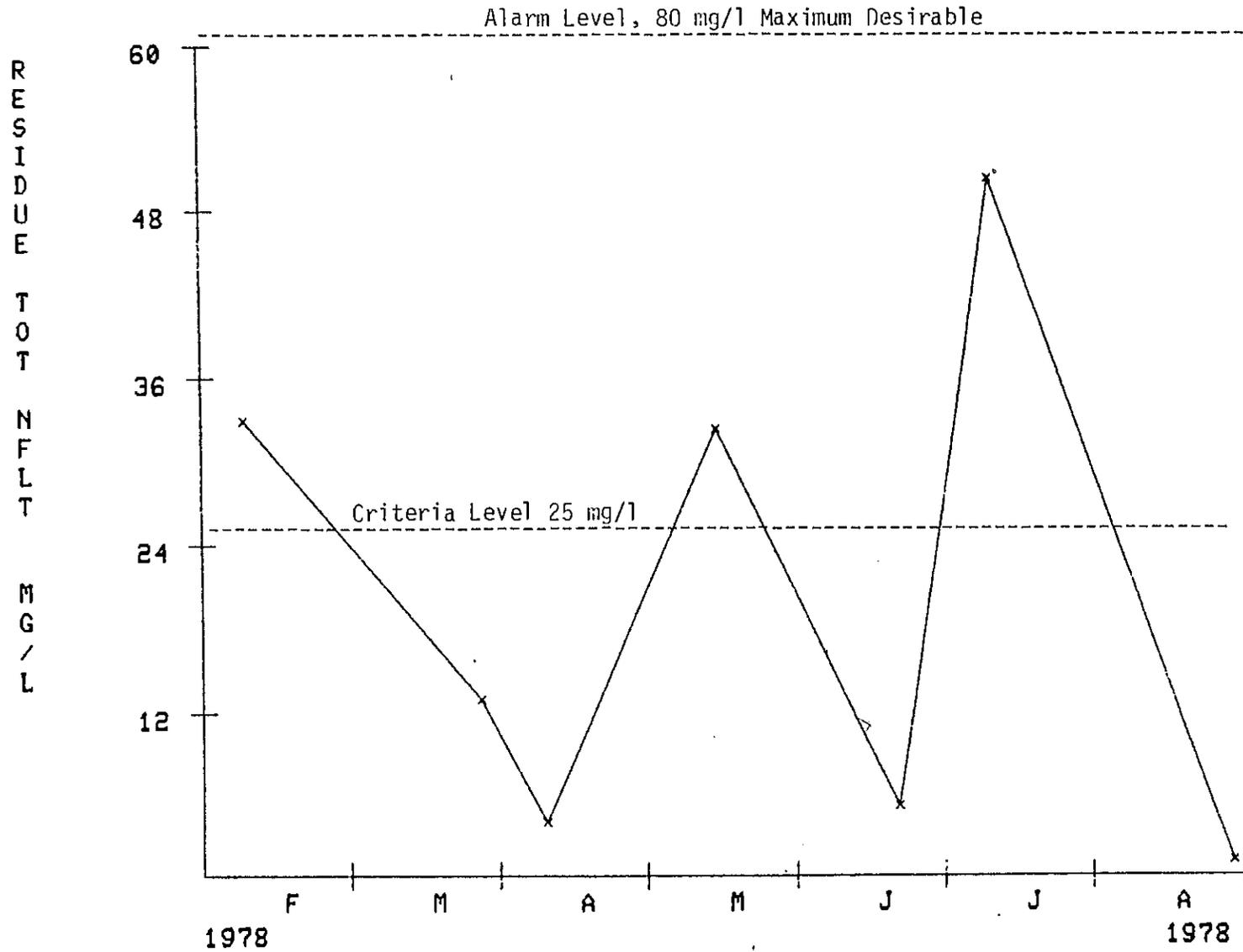
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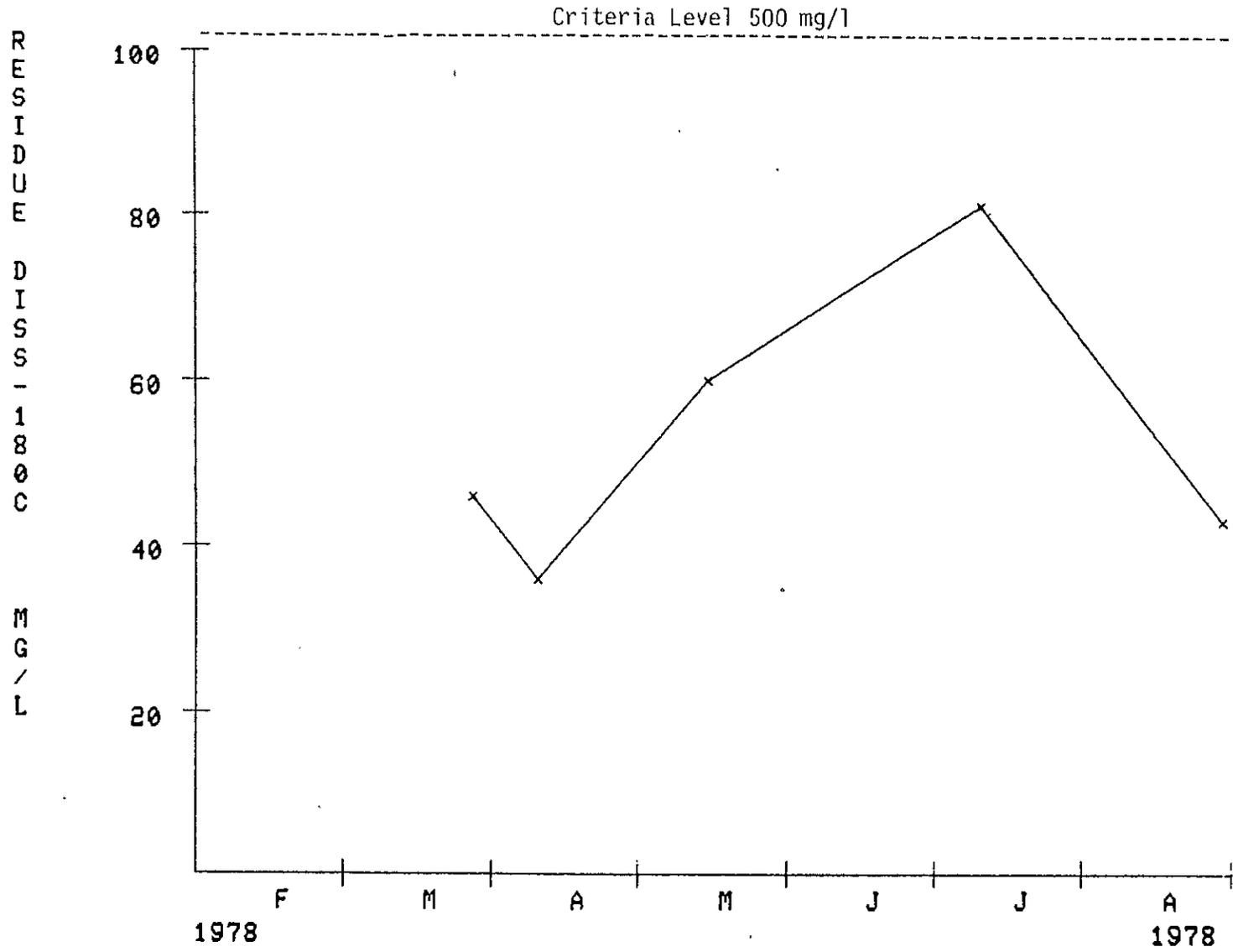
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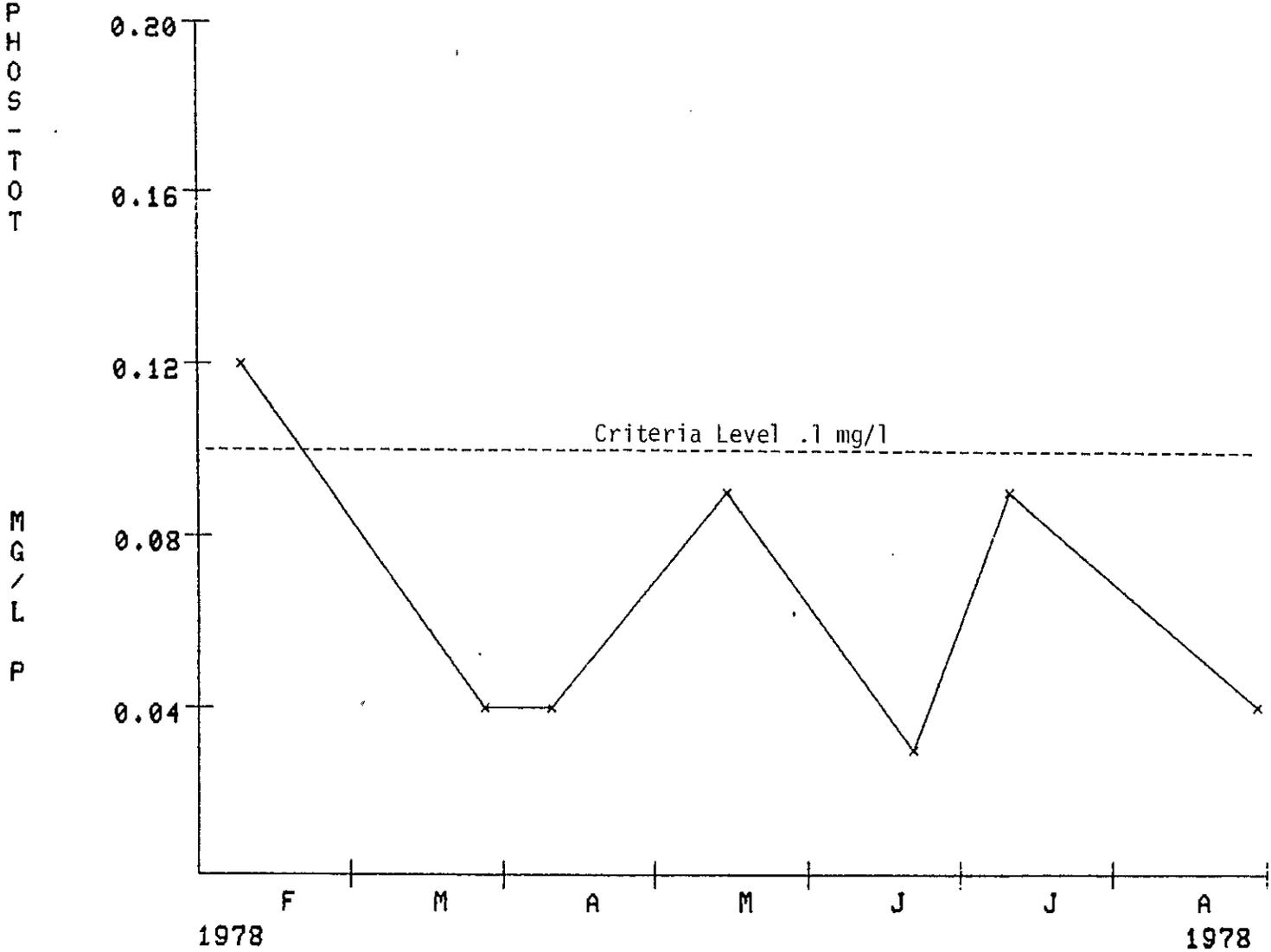
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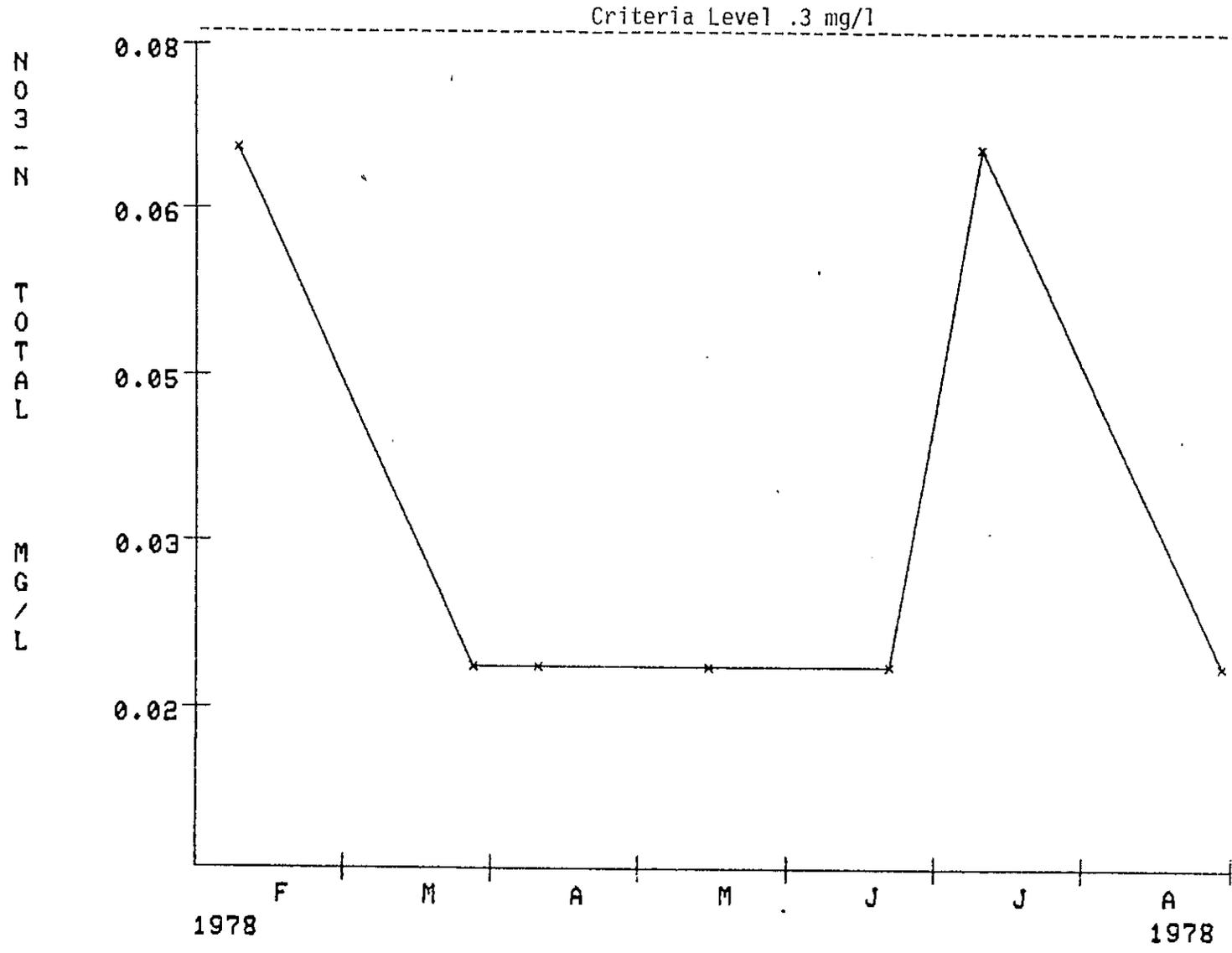
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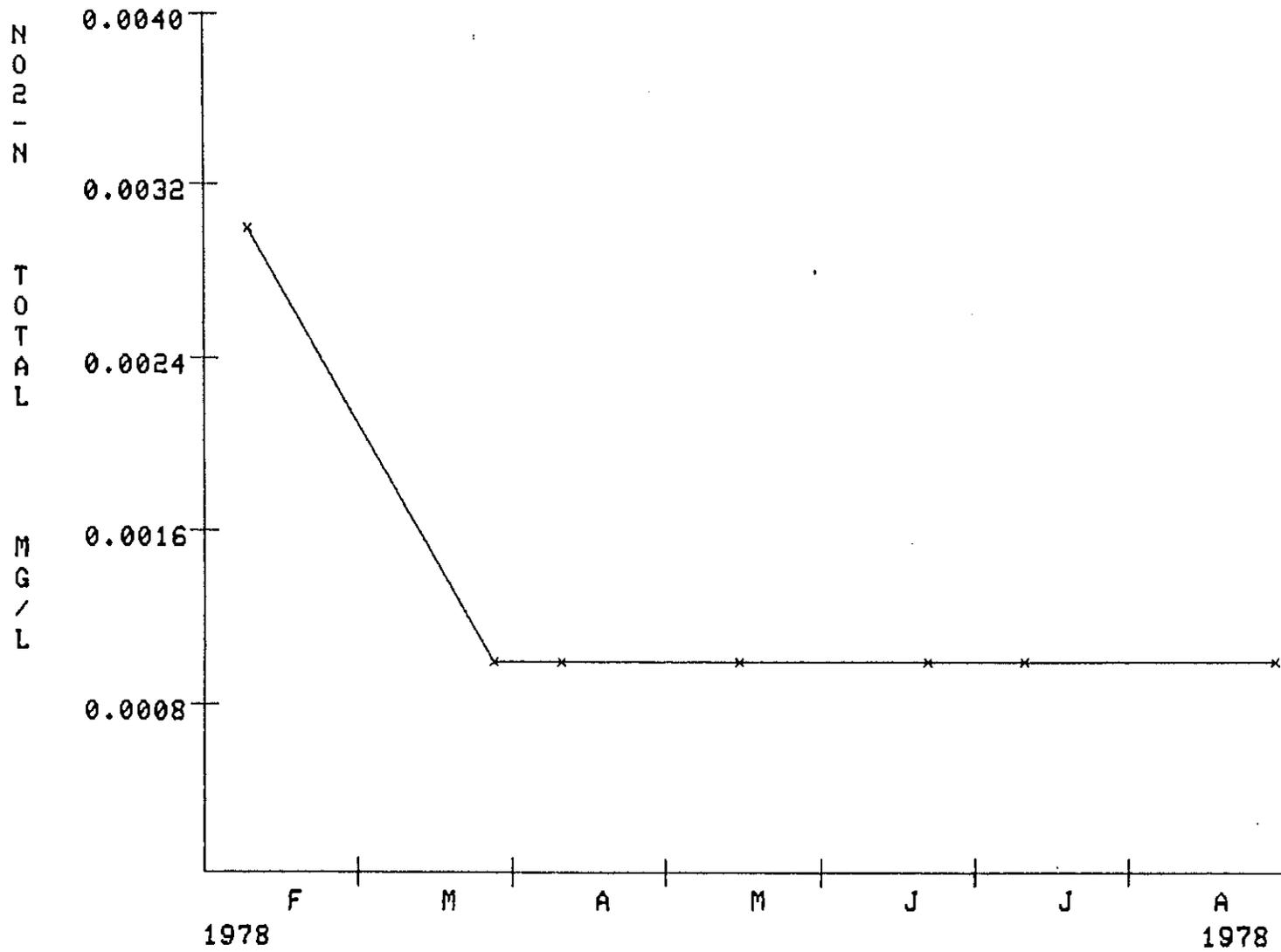
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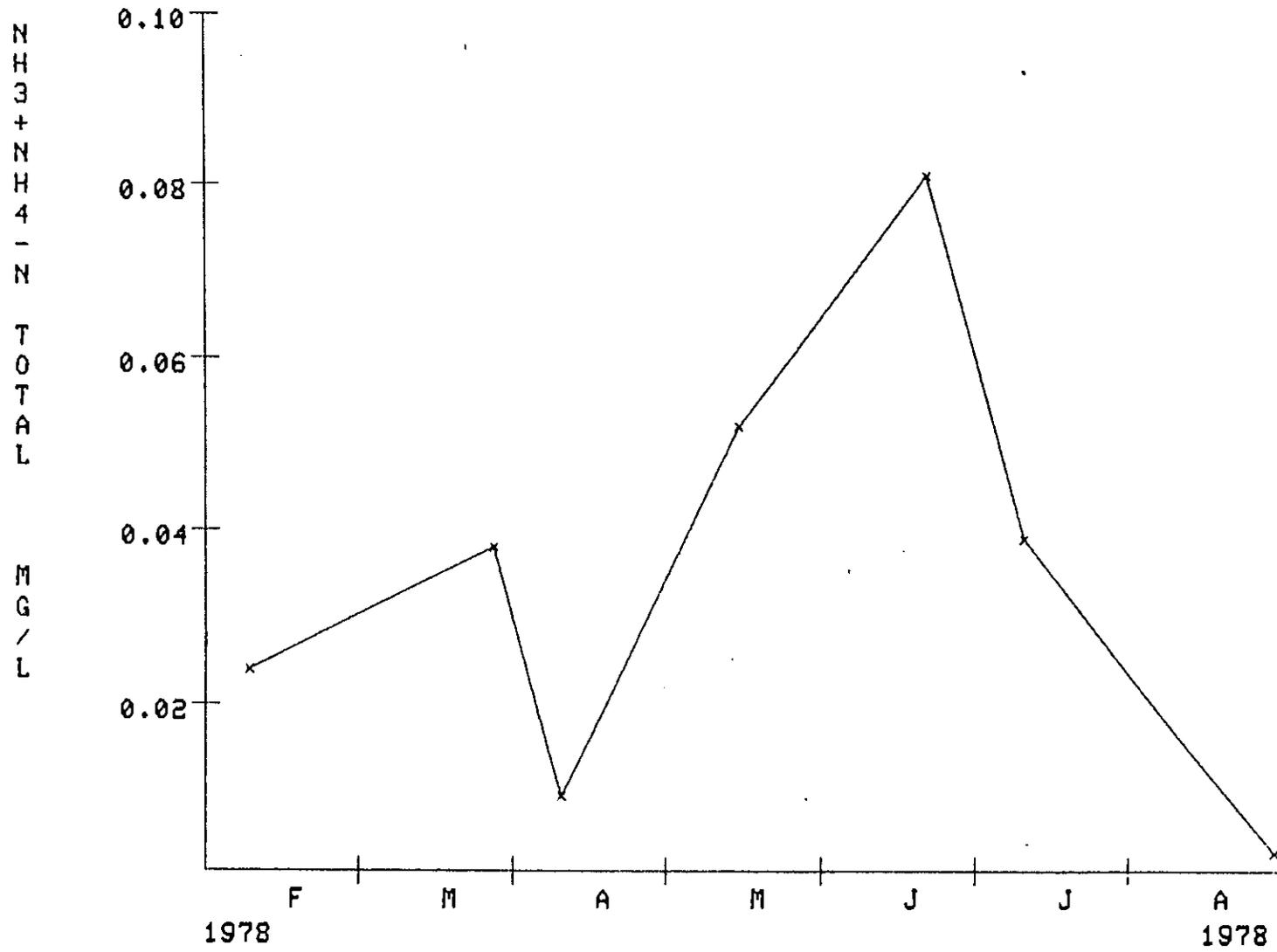
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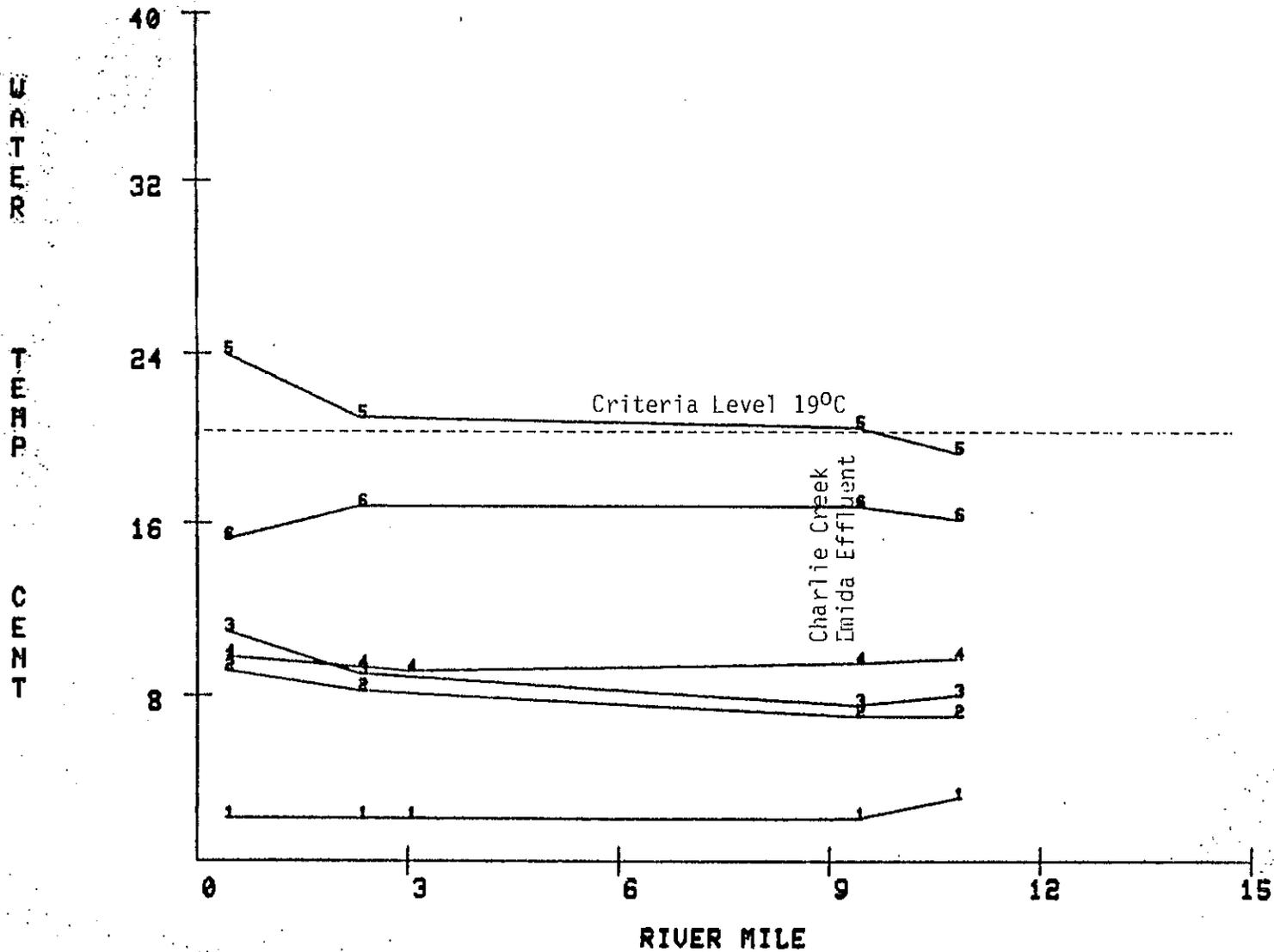
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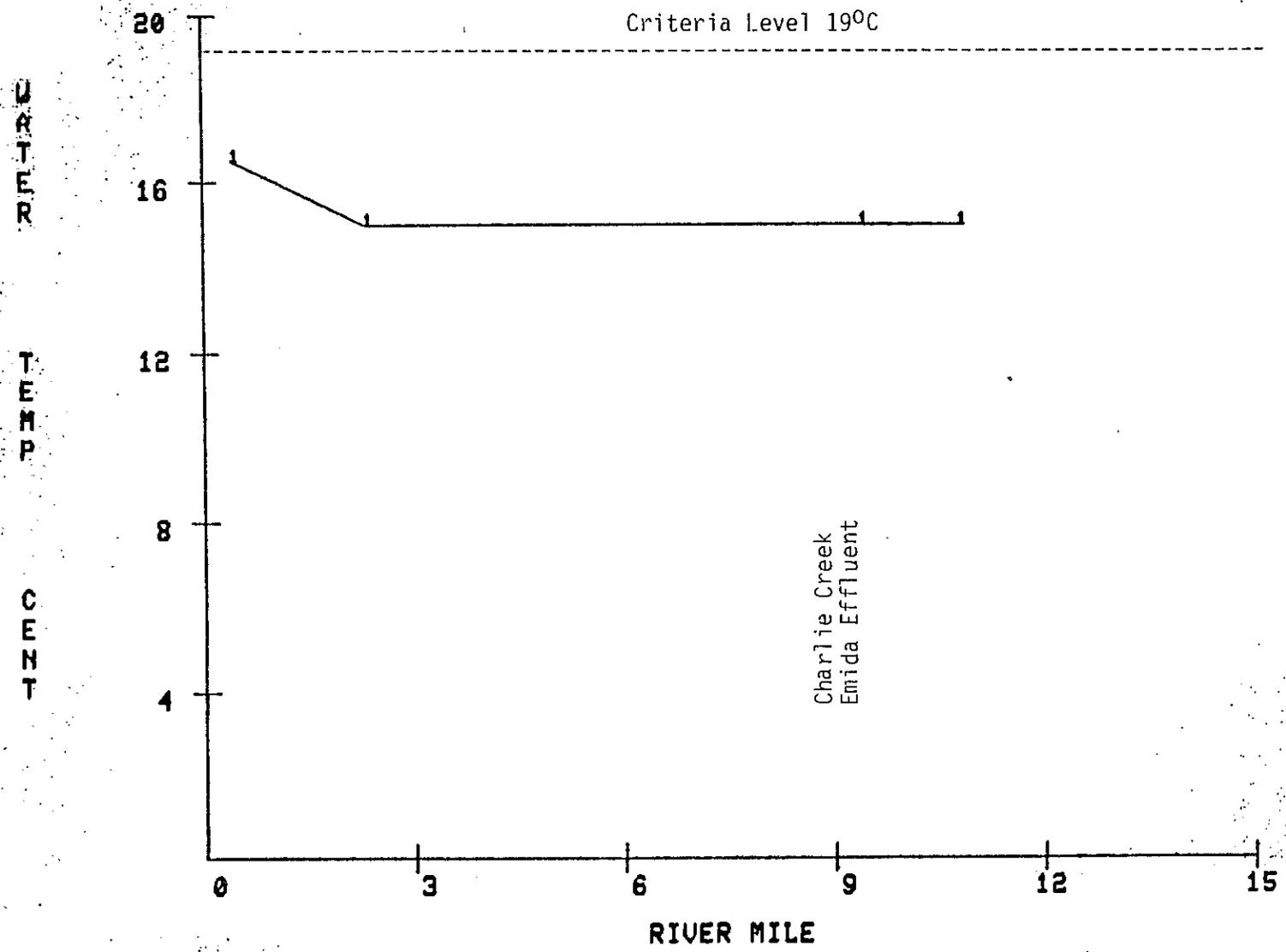
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SANTA CREEK AT MOUTH



SANTA CREEK
INTENSIVE SURVEY DATA FOR 6 DAYS OF MONITORING
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4 : 05-15-78 5 : 06-22-78 6 : 07-10-78

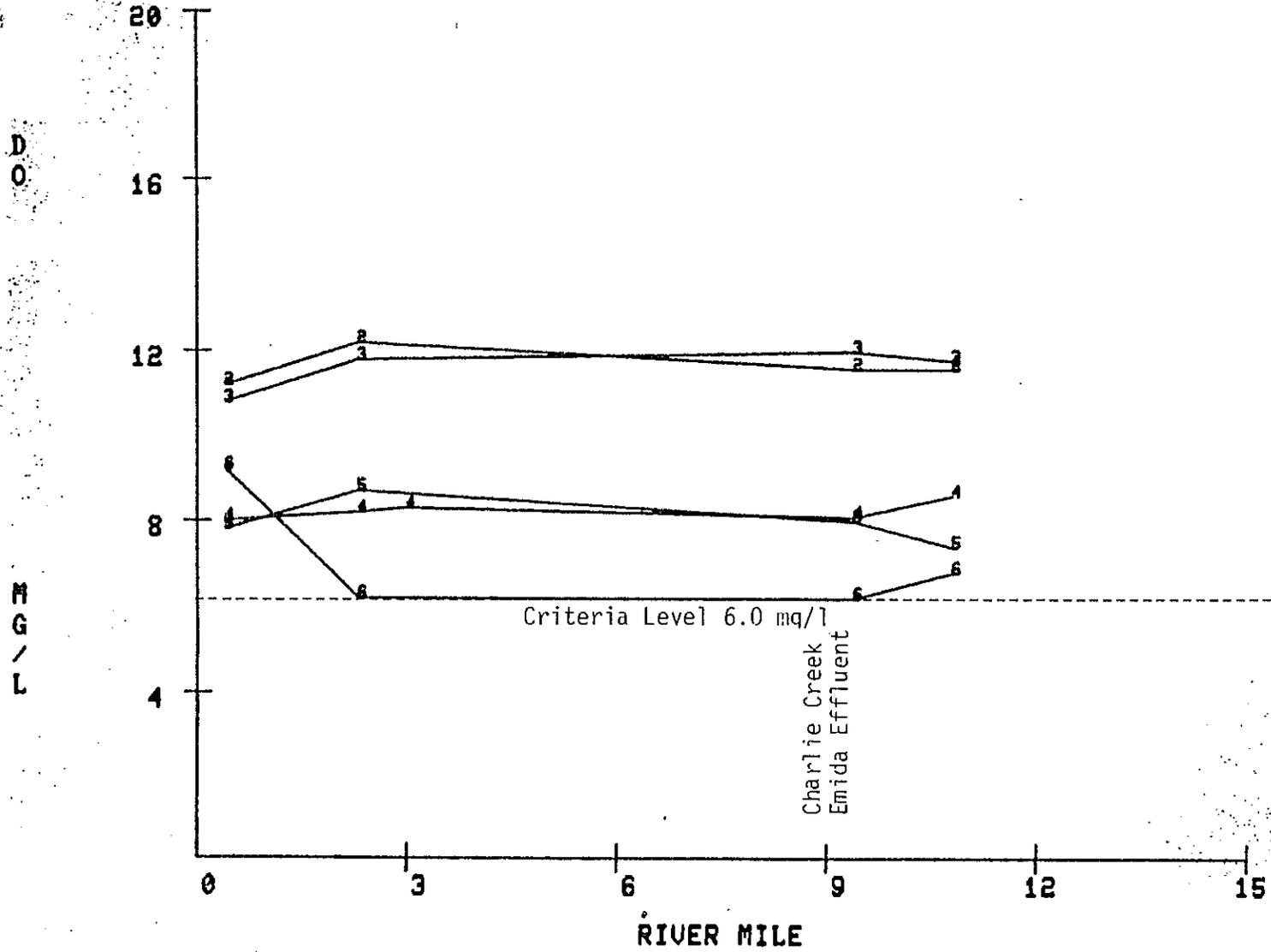


SANTA CREEK
INTENSIVE SURVEY DATA FOR 1 DAY OF MONITORING
1 : 08-30-78

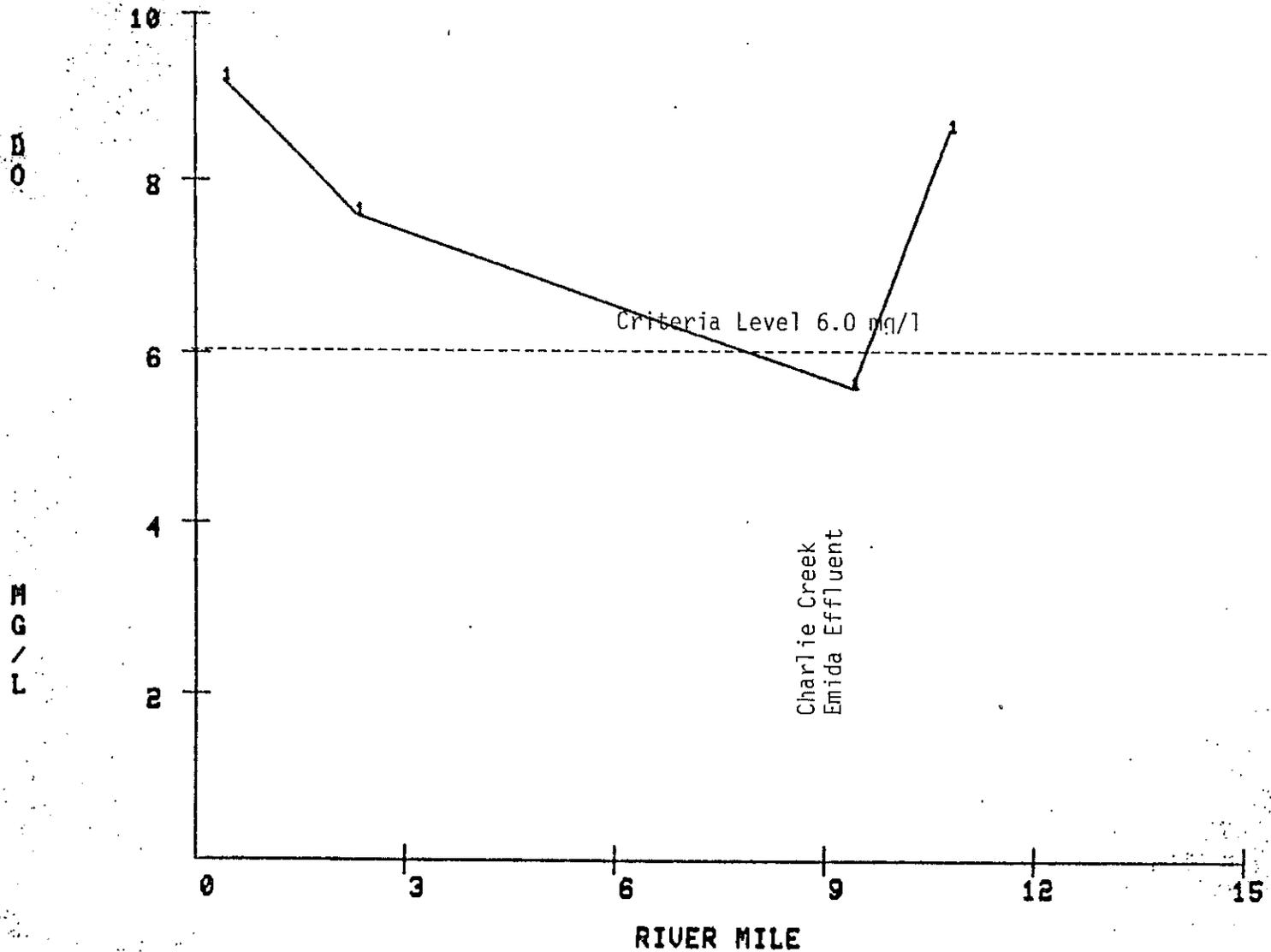


SANTA CREEK
 INTENSIVE SURVEY DATA FOR 6 DAYS OF MONITORING

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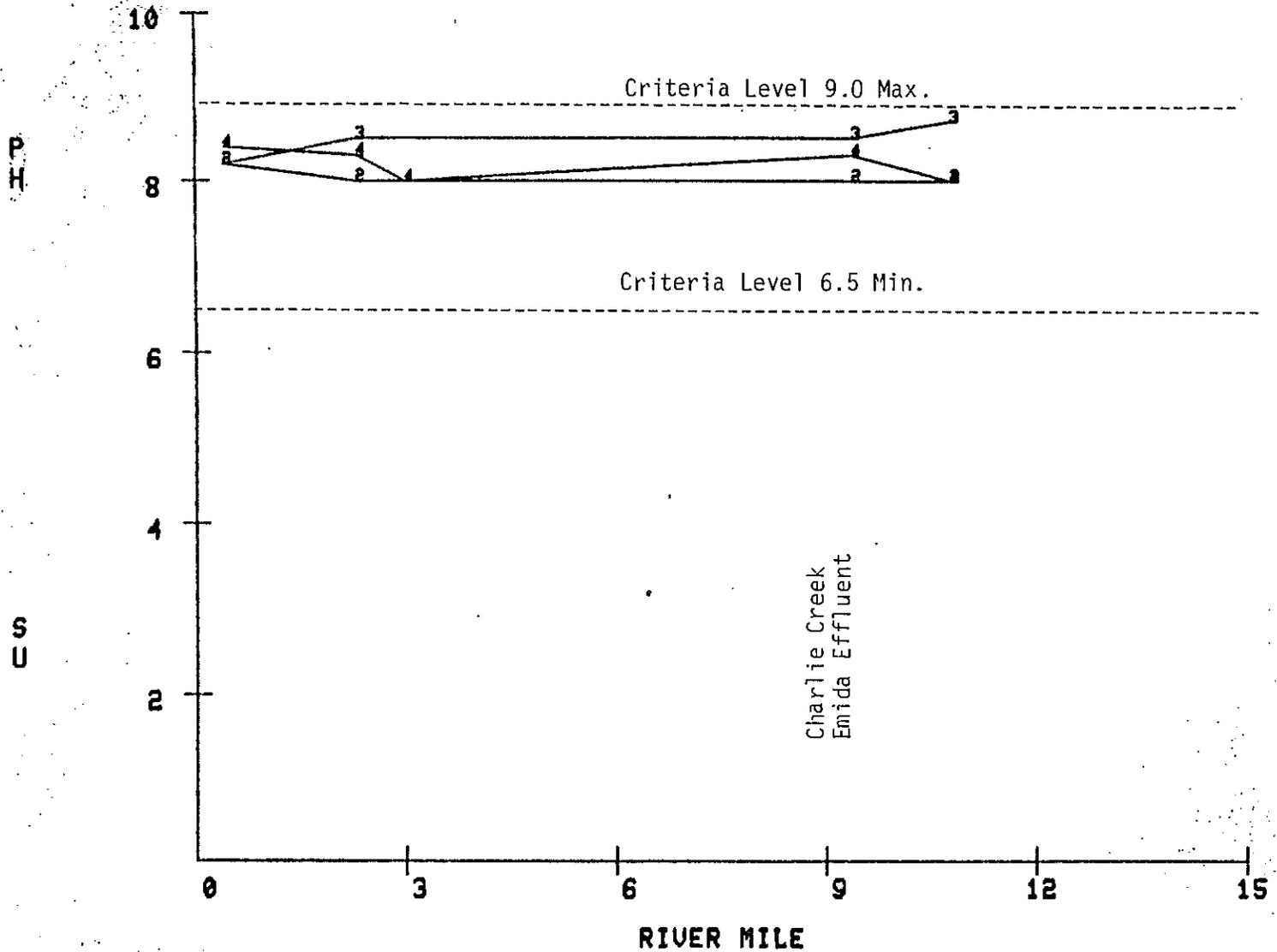


SANTA CREEK
INTENSIVE SURVEY DATA FOR 1 DAY OF MONITORING
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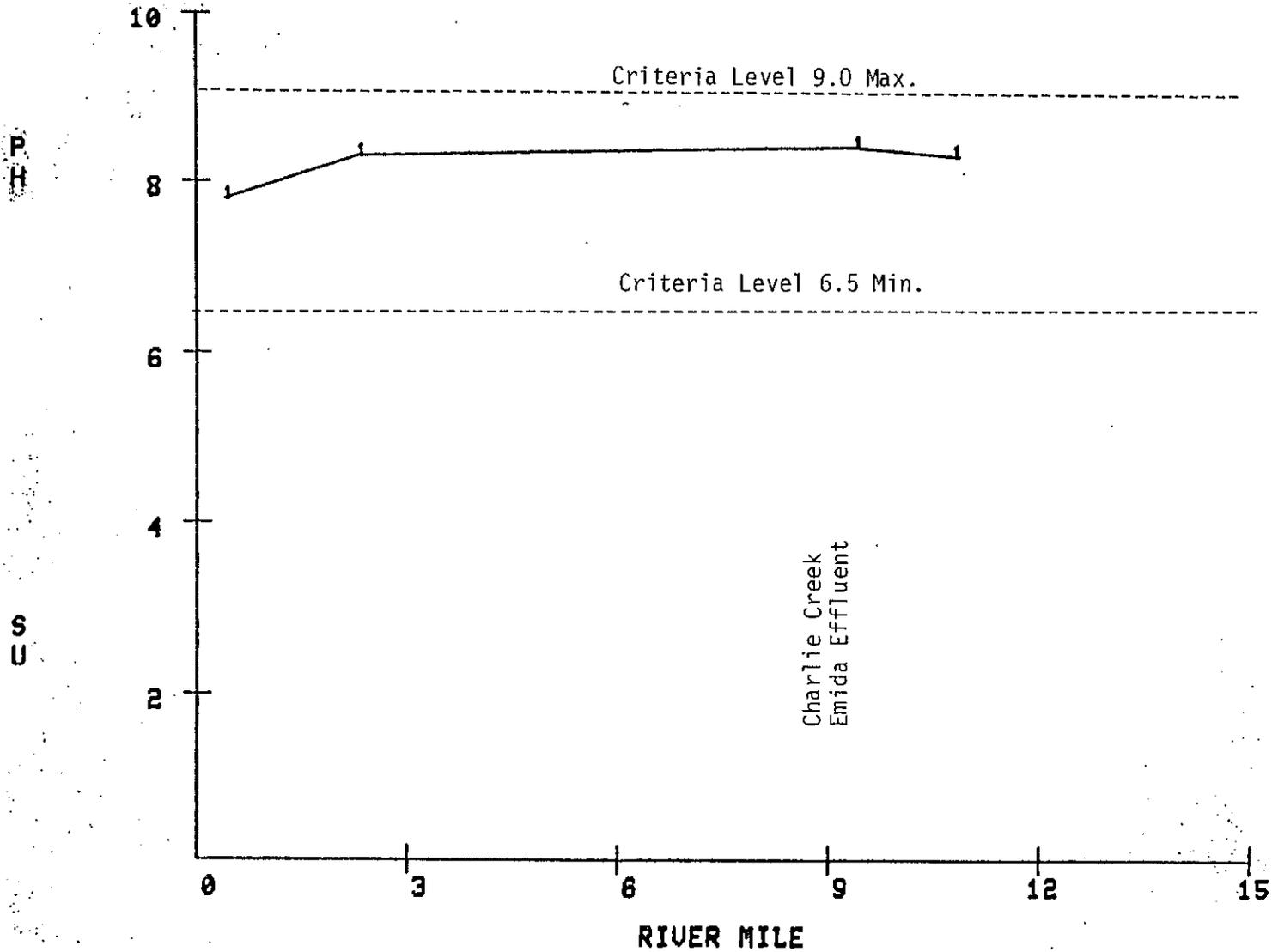


SANTA CREEK
 INTENSIVE SURVEY DATA FOR 6 DAYS OF MONITORING

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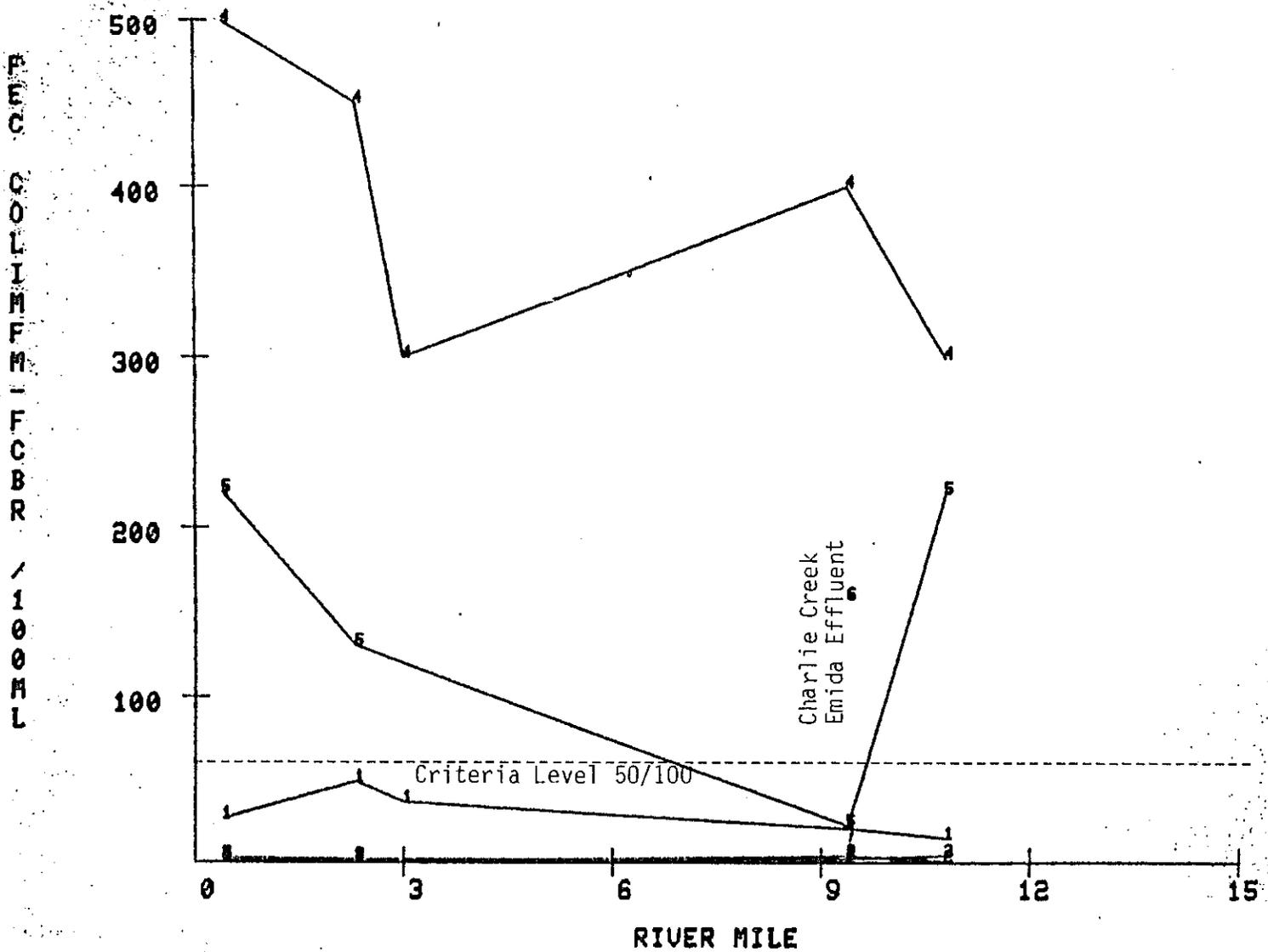


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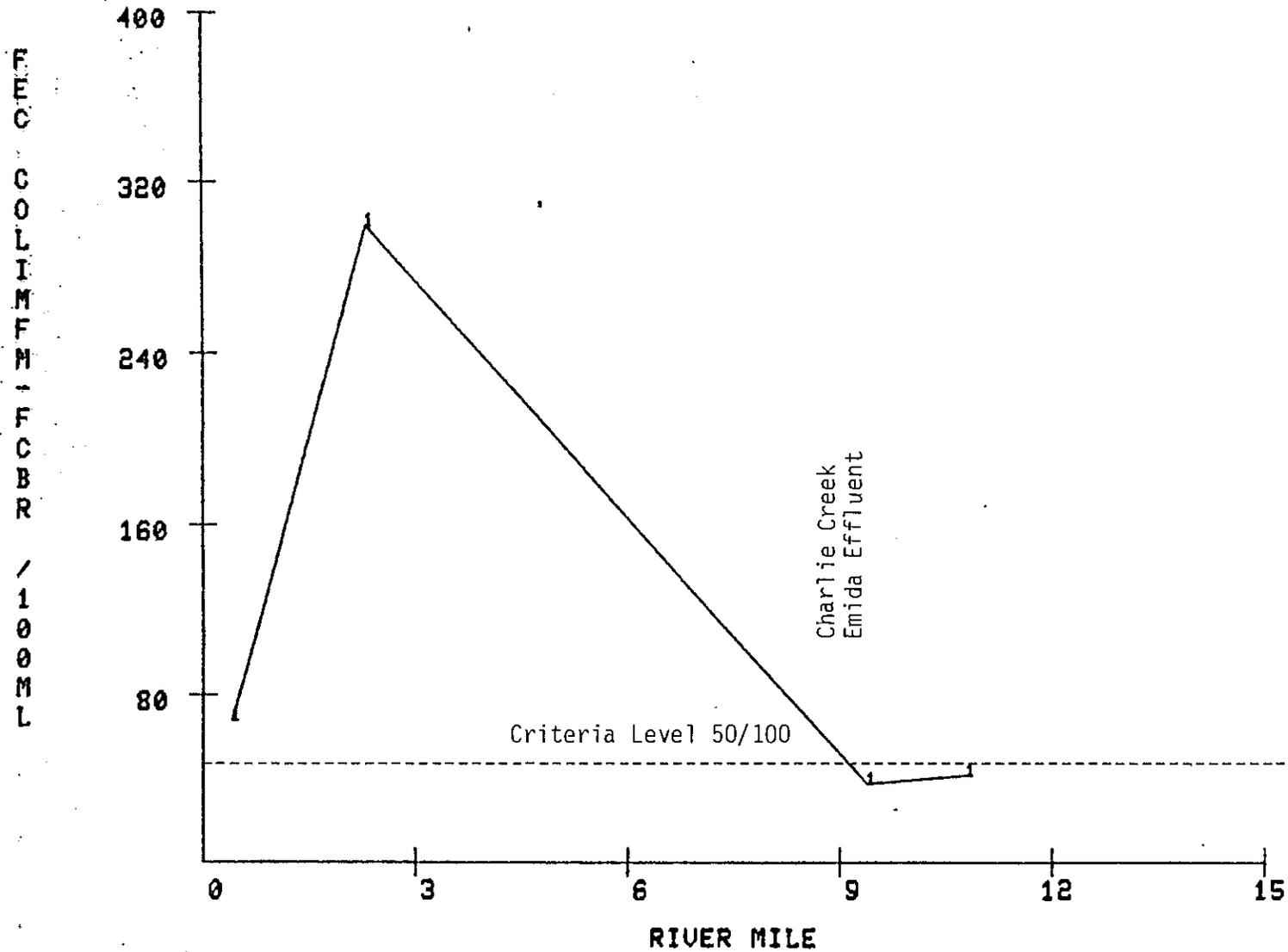


SANTA CREEK
 INTENSIVE SURVEY DATA FOR 6 DAYS OF MONITORING

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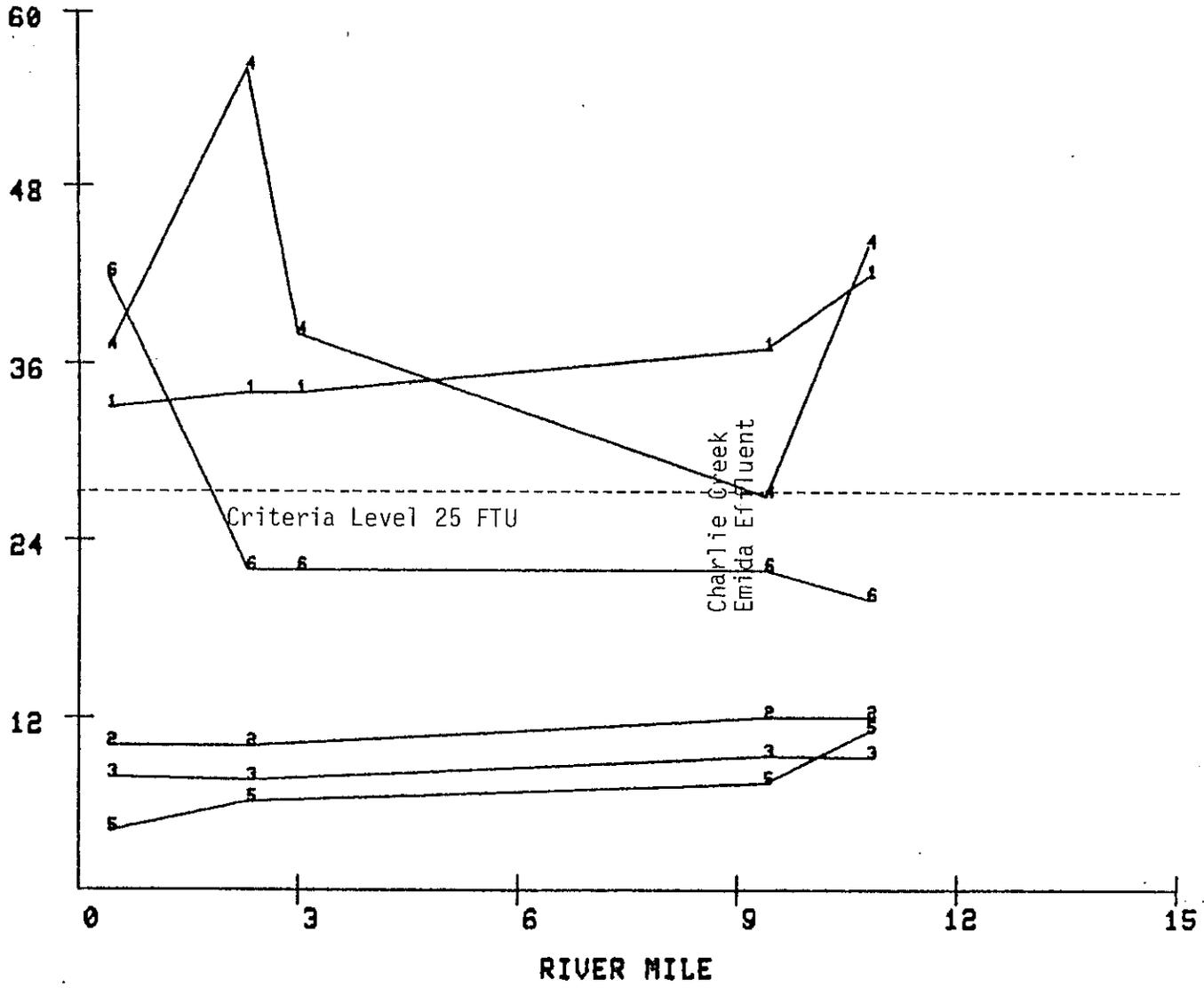
SANTA CREEK
INTENSIVE SURVEY DATA FOR 1 DAY OF MONITORING
1 : 08-30-78



SANTA CREEK
 INTENSIVE SURVEY DATA FOR 6 DAYS OF MONITORING

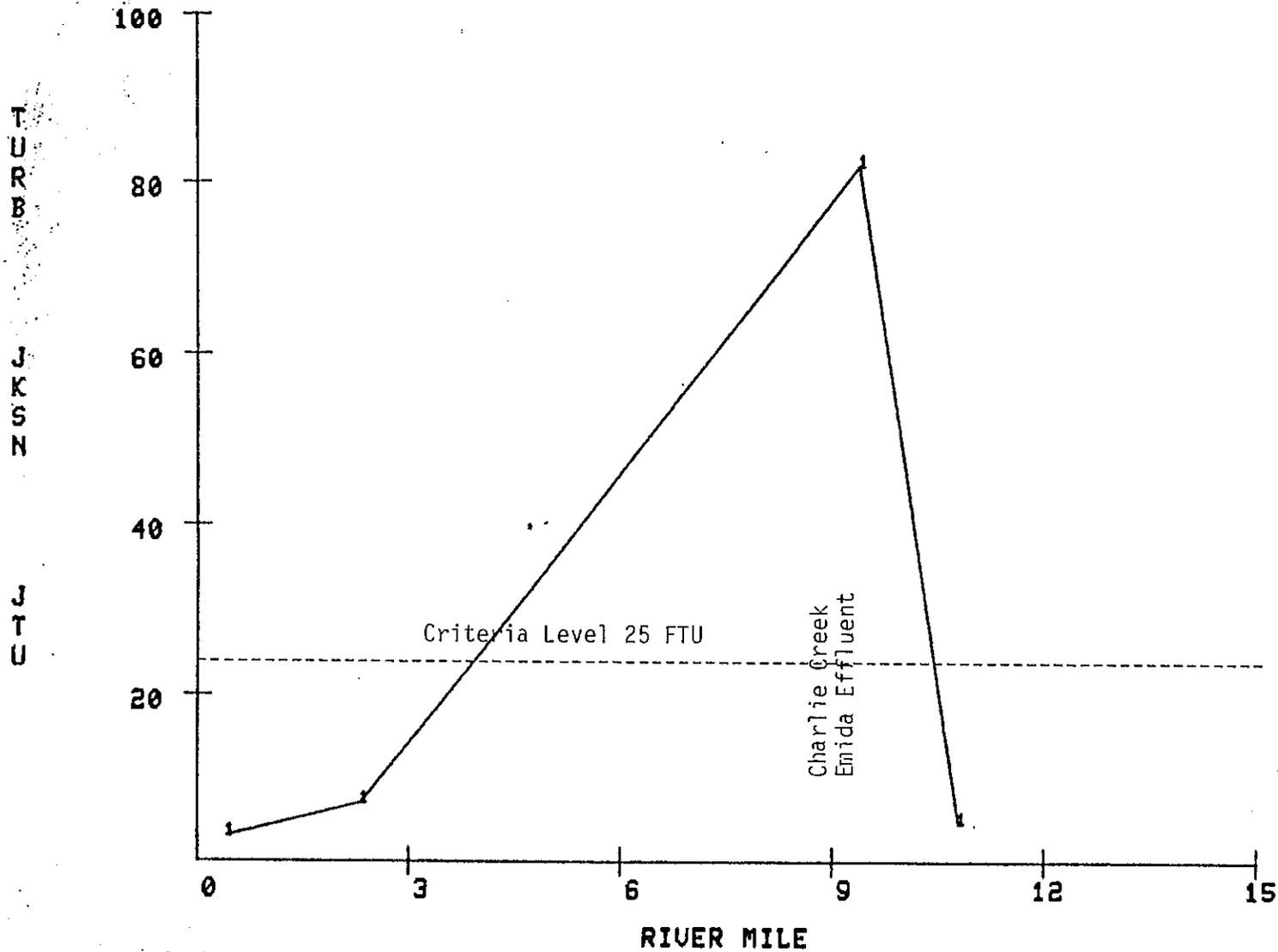
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4 : 05-15-78	5 : 06-22-78	6 : 07-10-78

TURBIDITY



Charlie Creek
Emida Effluent

SANTA CREEK
INTENSIVE SURVEY DATA FOR 1 DAY OF MONITORING
1 : 08-30-78



SANTA CREEK
 INTENSIVE SURVEY DATA FOR 8 DAYS OF MONITORING

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2 : 03-28-78

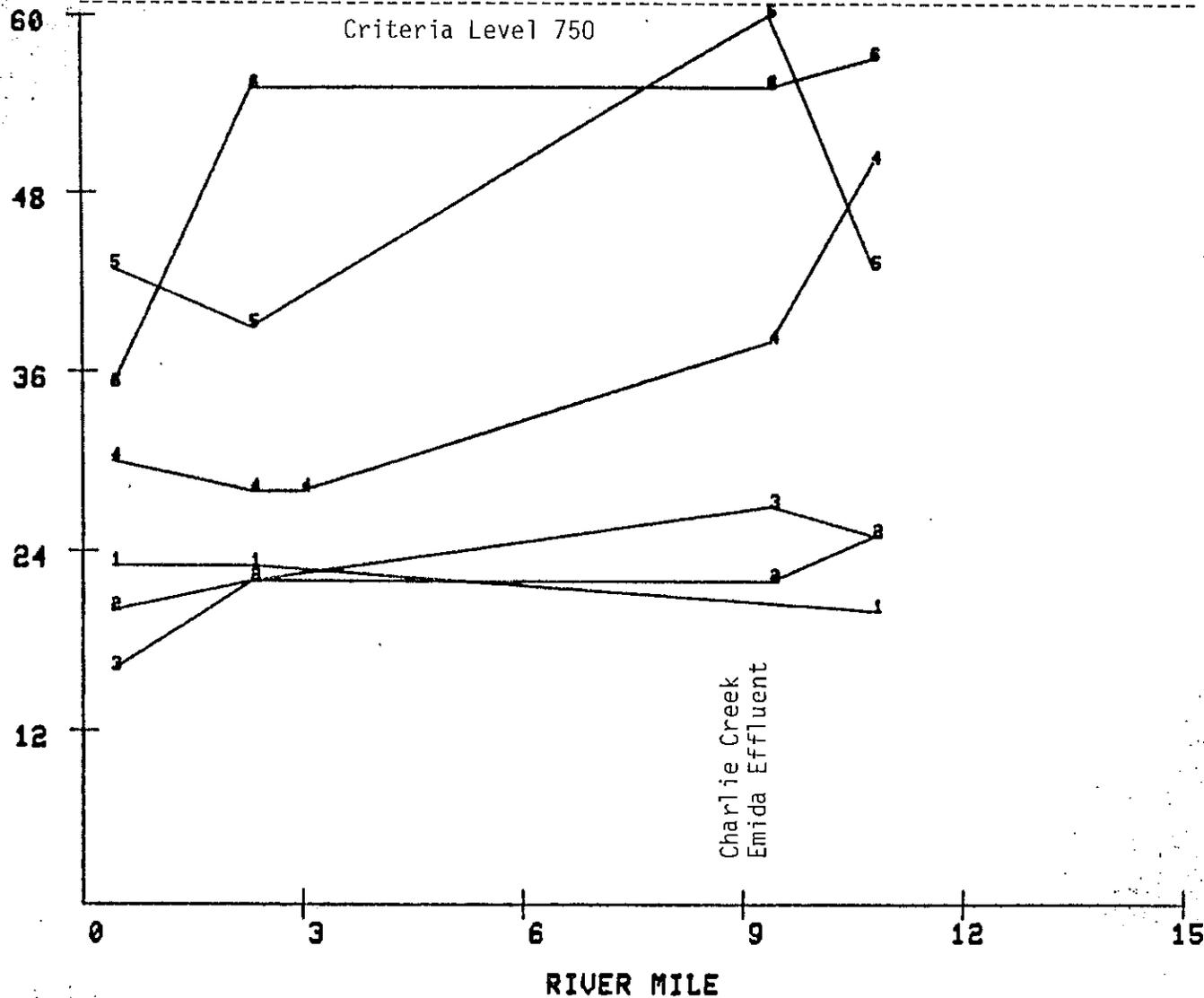
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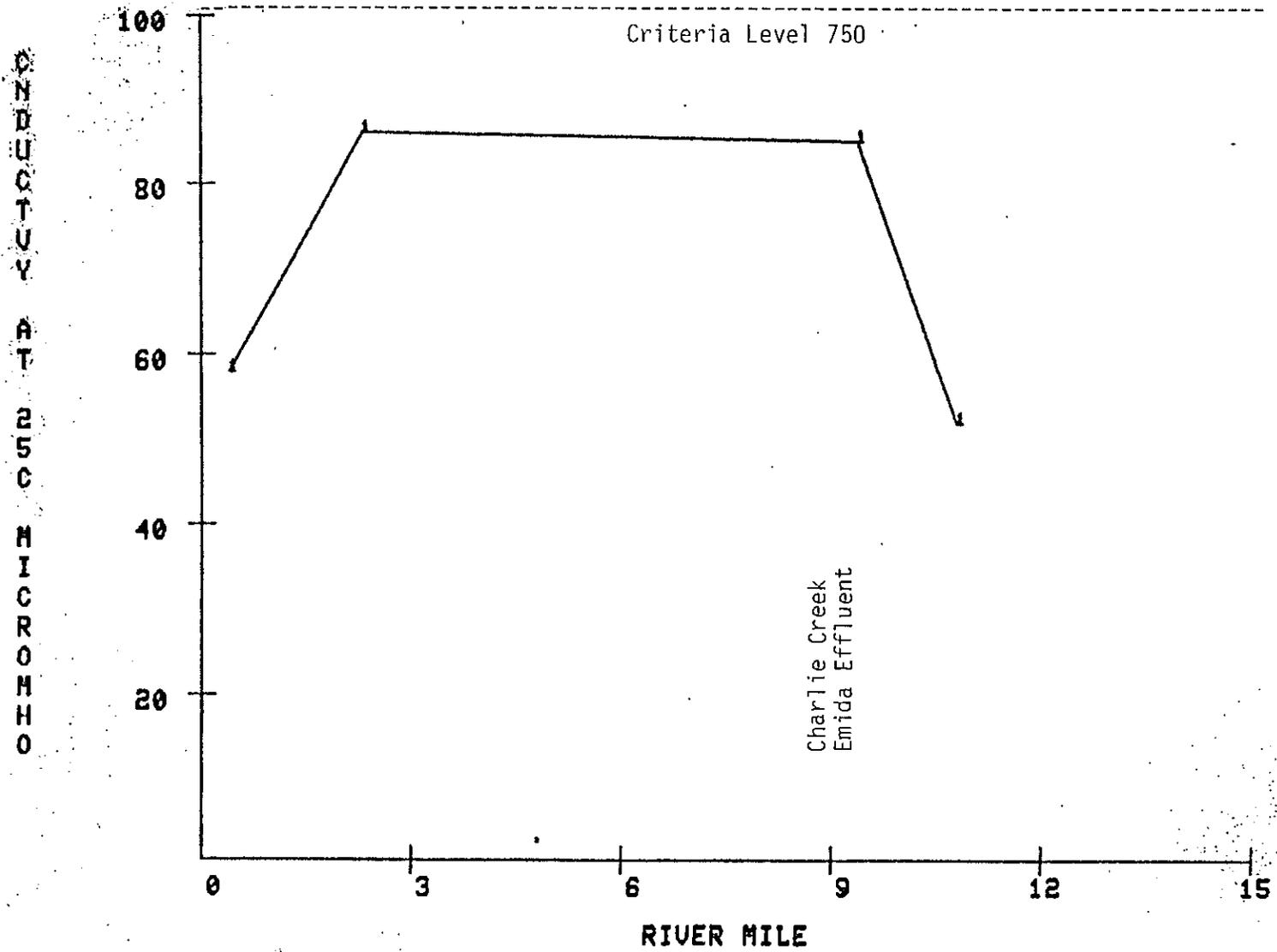
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CONDUCTIVITY AT 25°C MICROMHO



Charlie Creek
 Emida Effluent

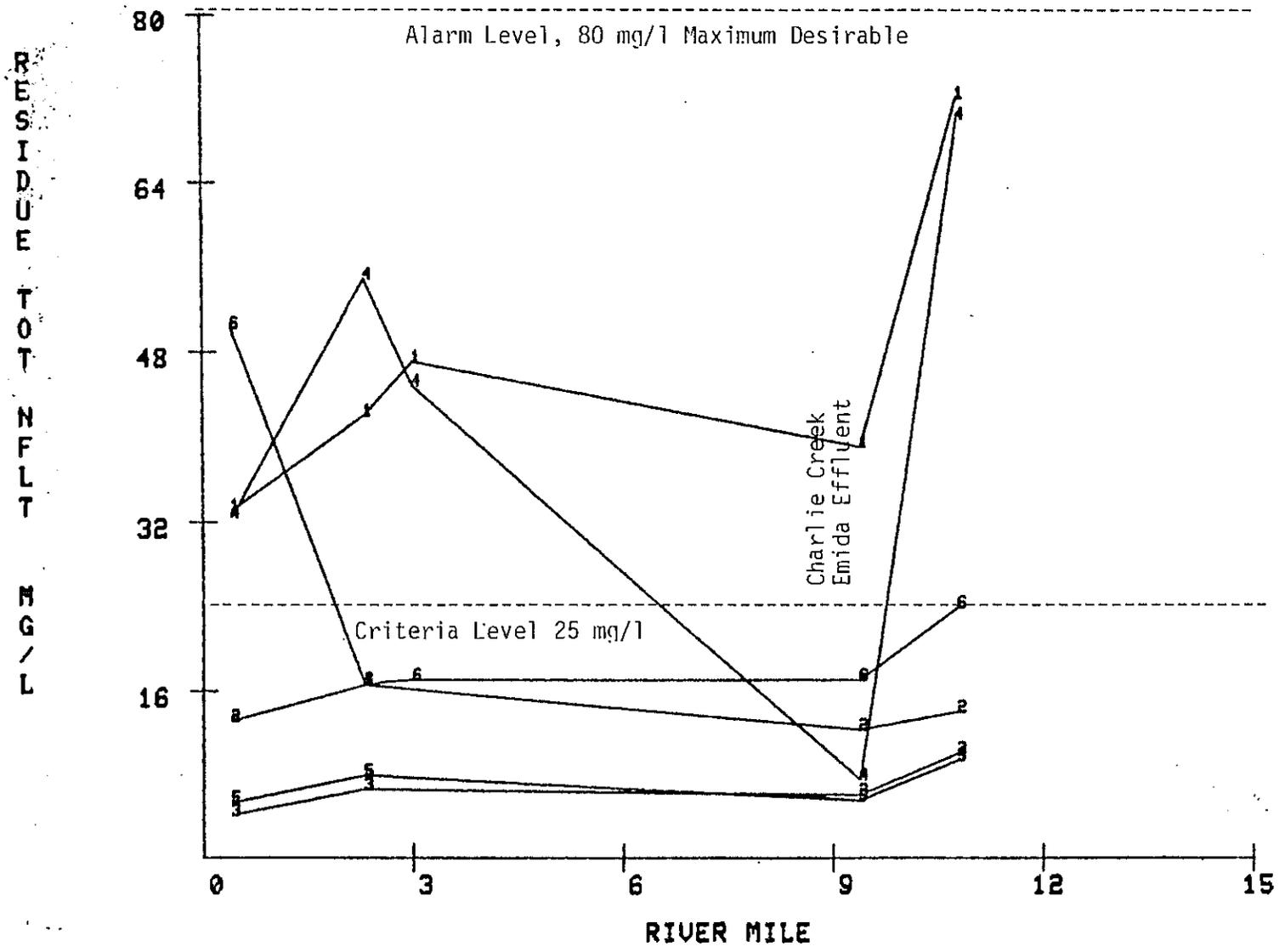
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INTENSIVE SURVEY DATA FOR 1 DAY OF MONITORING
1 : 08-30-78



Charlie Creek
Emida Effluent

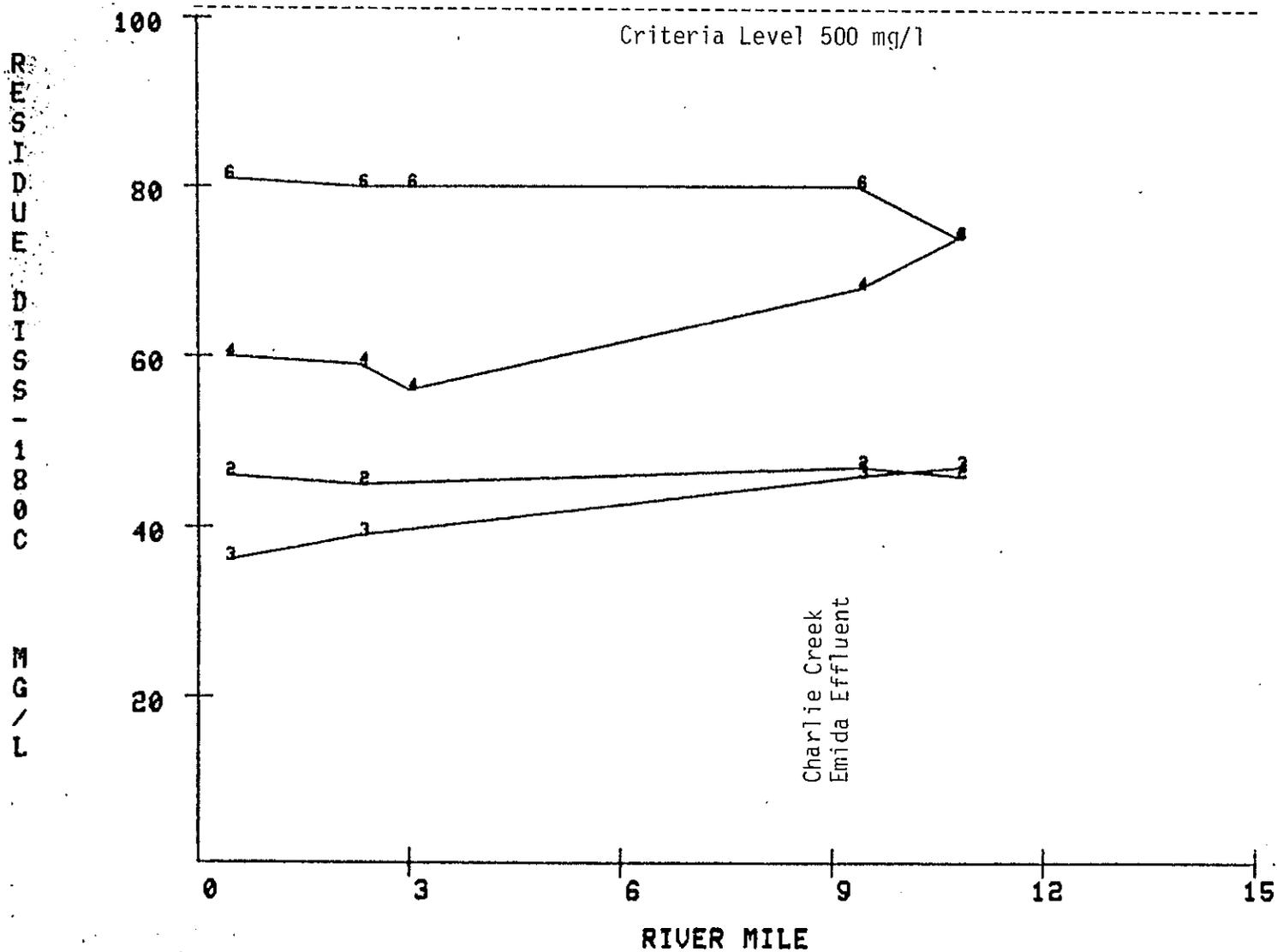
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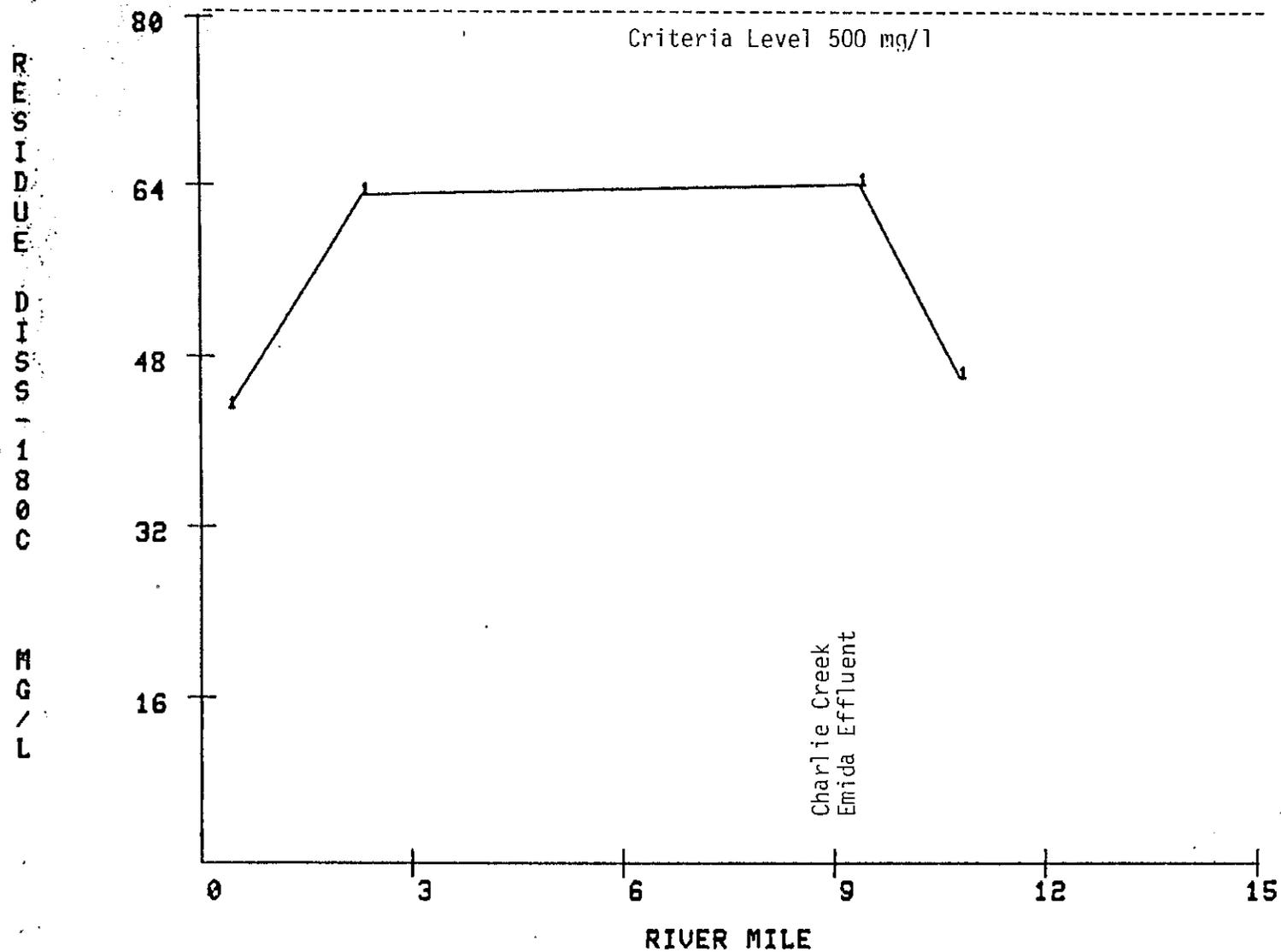


SANTA CREEK
 INTENSIVE SURVEY DATA FOR 1 DAY OF MONITORING

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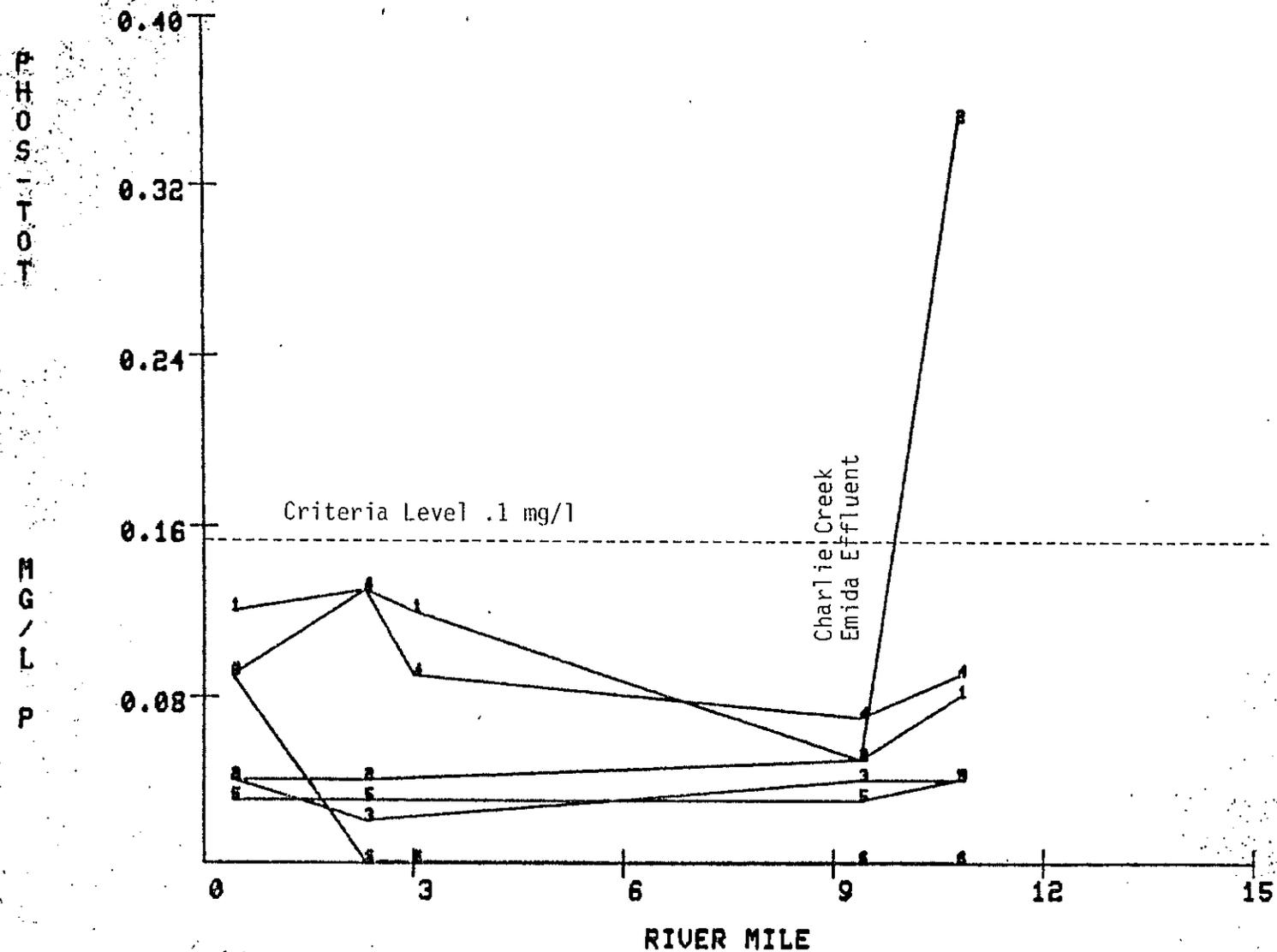


SANTA CREEK
INTENSIVE SURVEY DATA FOR 1 DAY OF MONITORING
1 : 08-30-78



SANTA CREEK
 INTENSIVE SURVEY DATA FOR 6 DAYS OF MONITORING

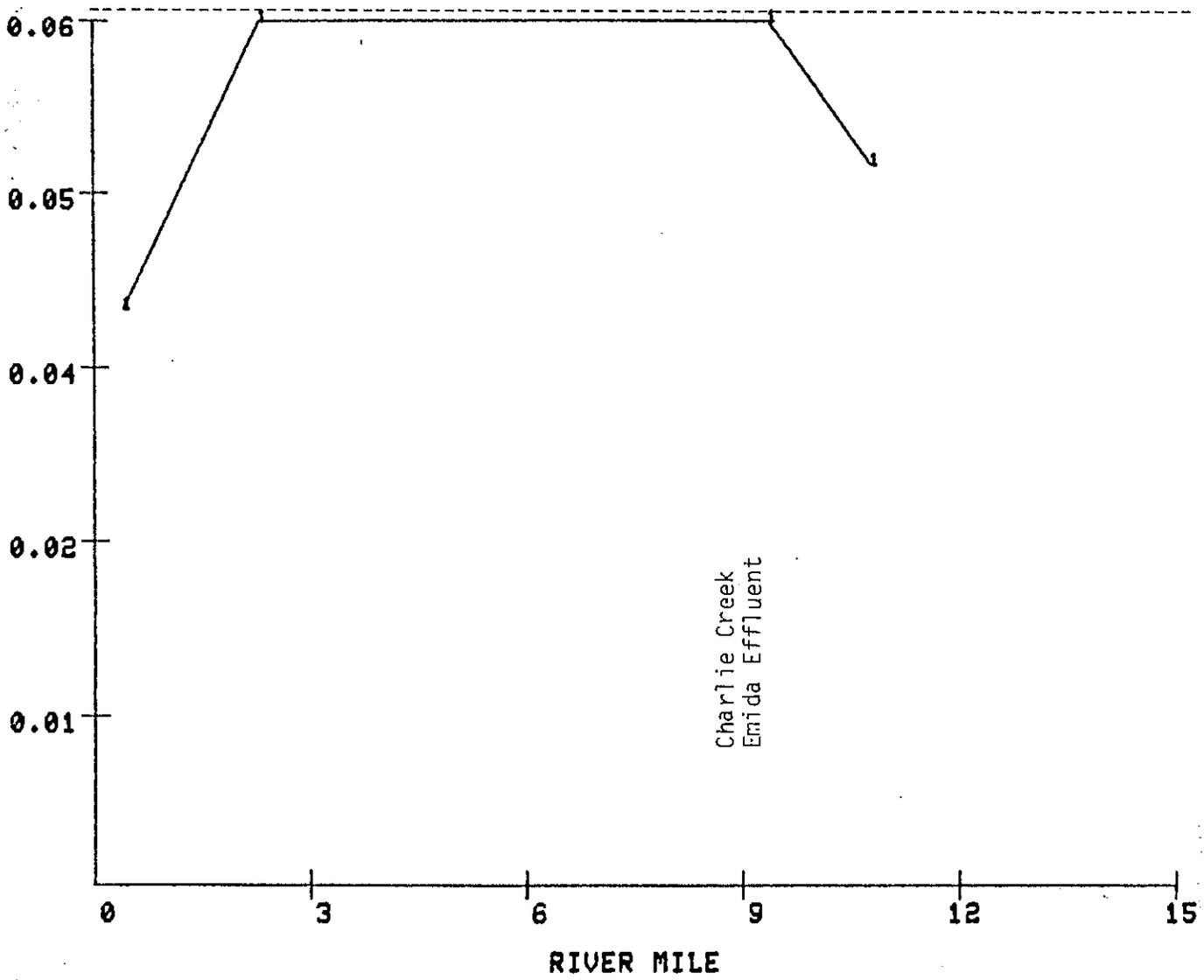
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SANTA CREEK
INTENSIVE SURVEY DATA FOR 1 DAY OF MONITORING
1 : 08-30-78

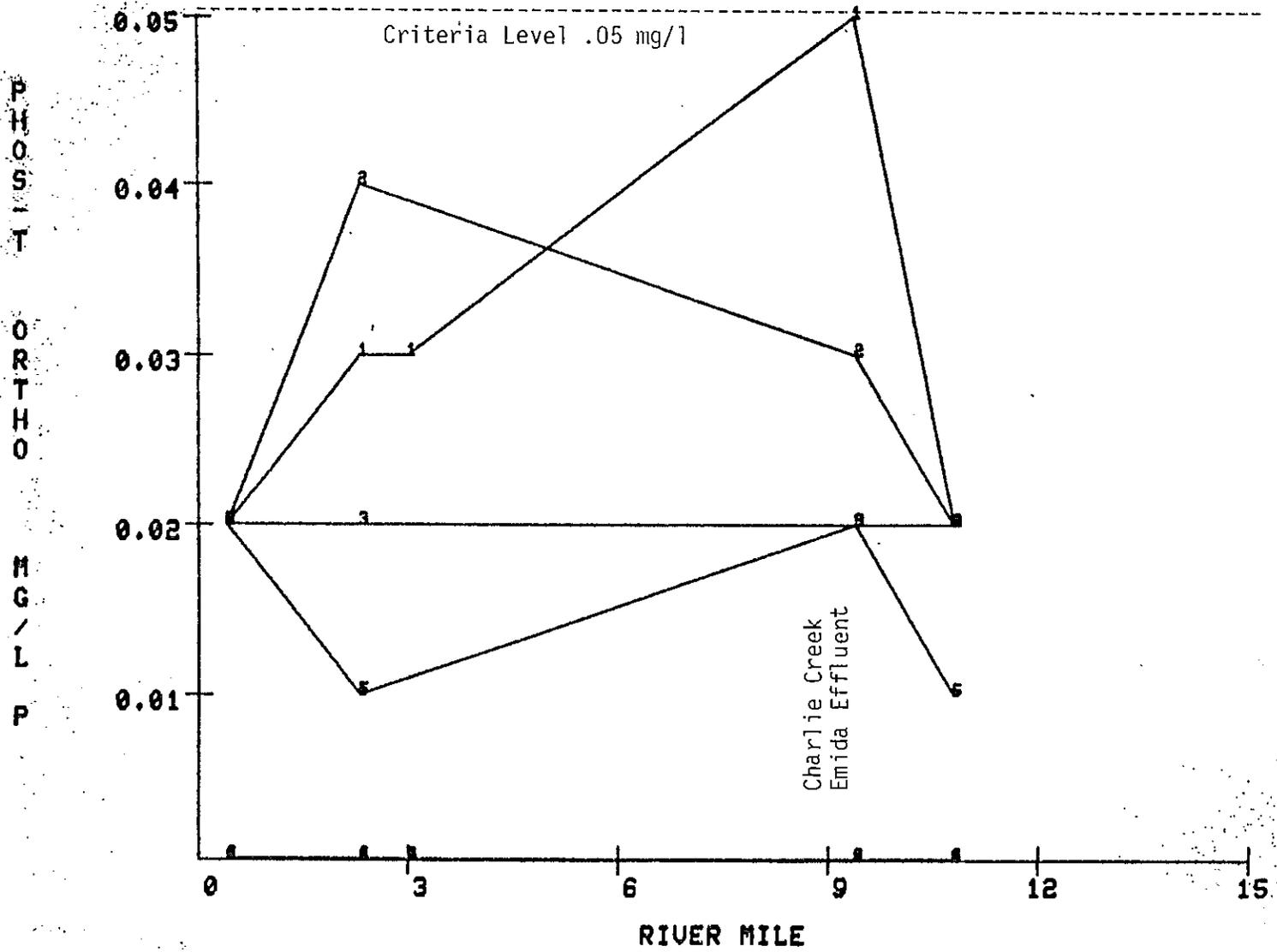
Criteria Level .1 mg/l

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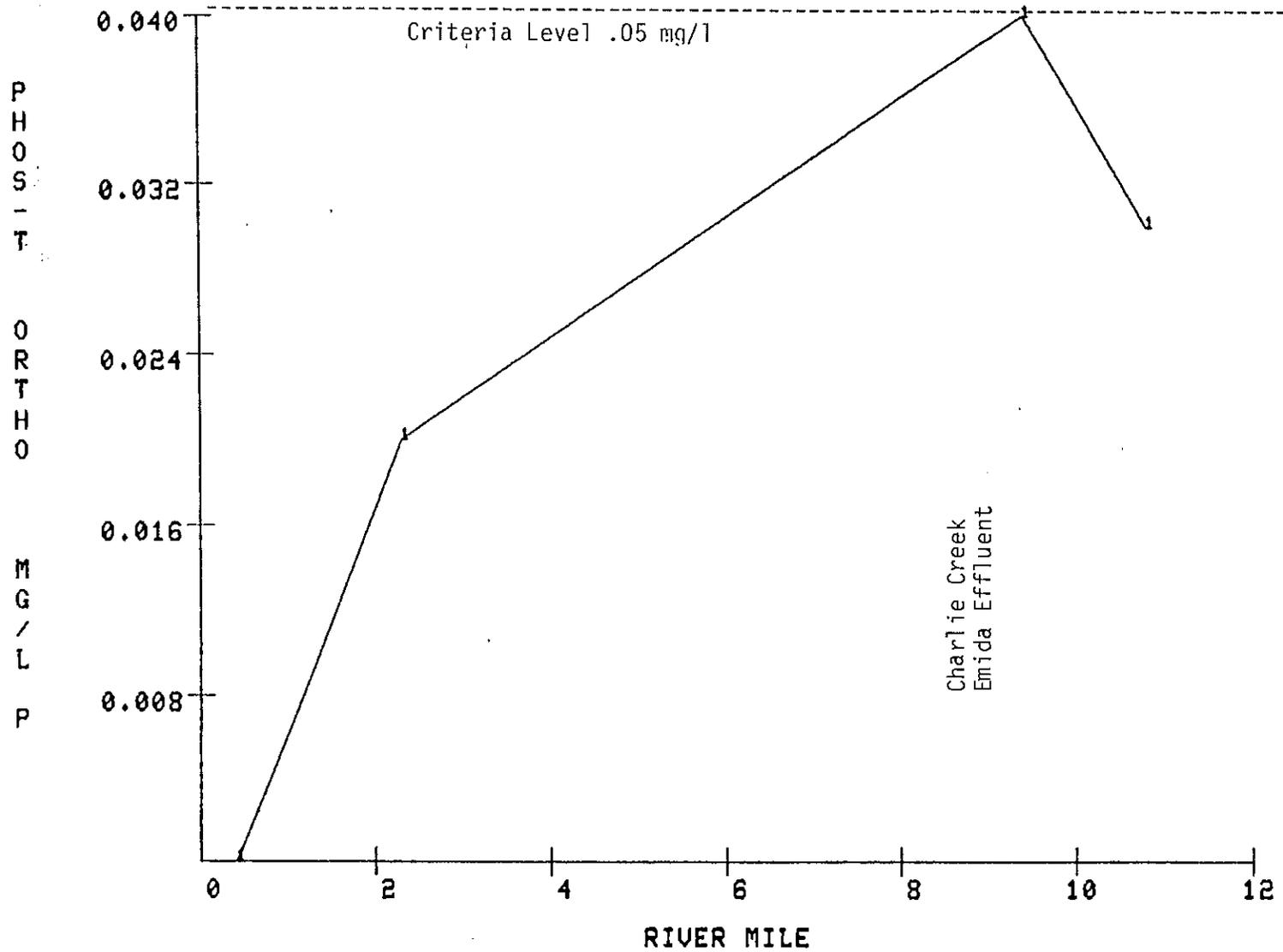


SANTA CREEK
INTENSIVE SURVEY DATA FOR 6 DAYS OF MONITORING

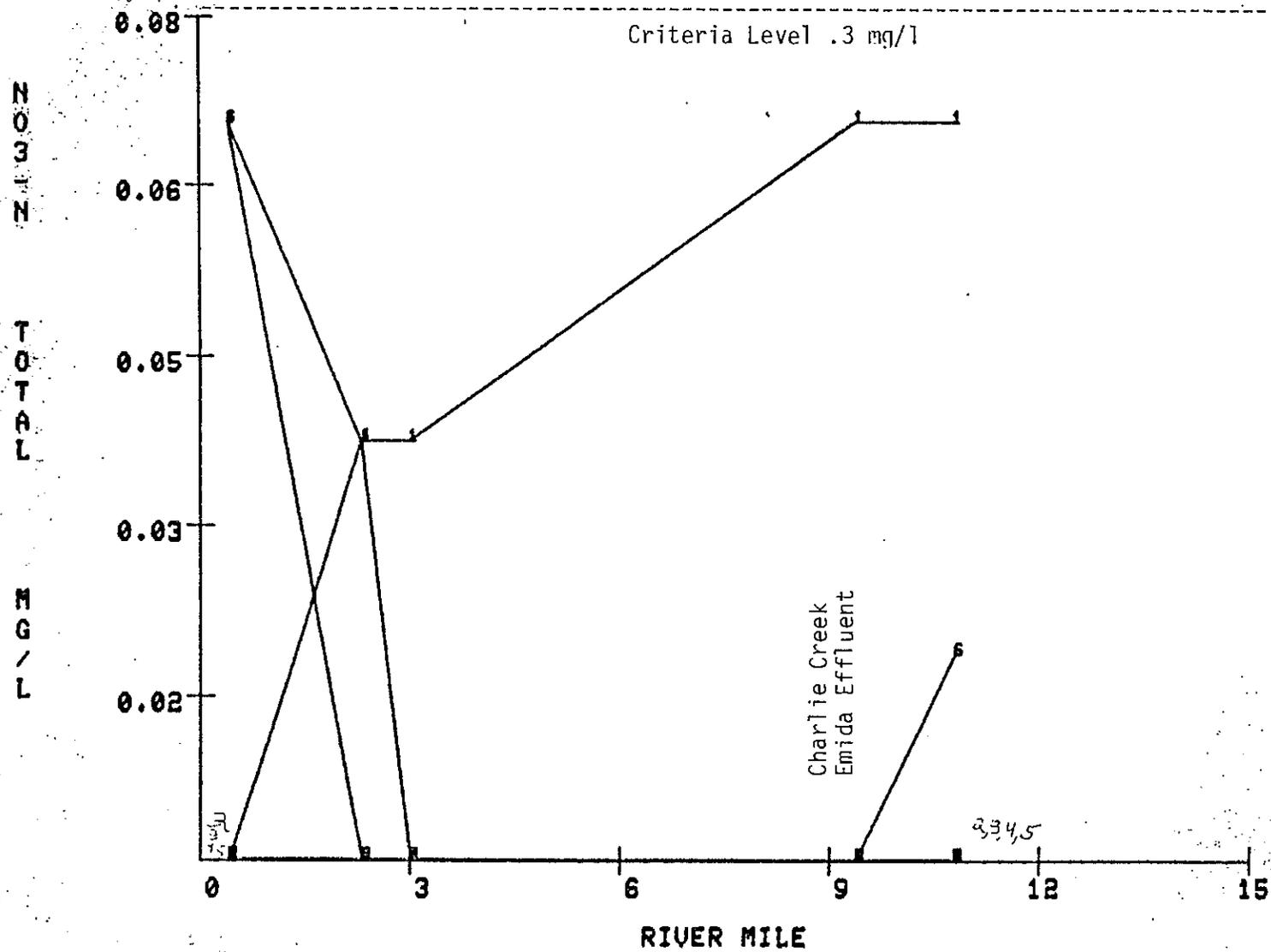
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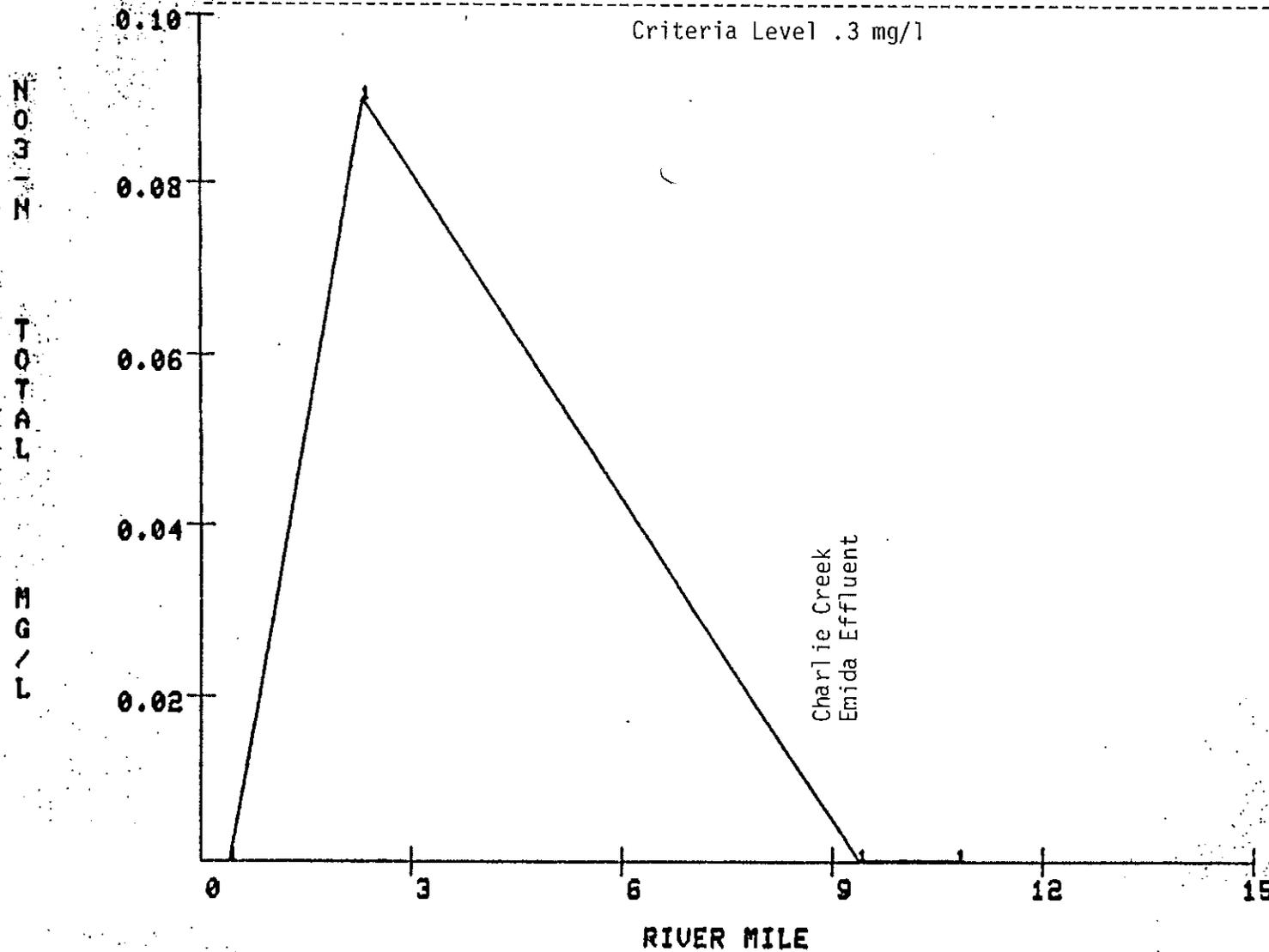
SANTA CREEK
INTENSIVE SURVEY DATA FOR 1 DAY OF MONITORING
11 08-30-78



SANTA CREEK
 INTENSIVE SURVEY DATA FOR 6 DAYS OF MONITORING
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 4 : 05-15-78 5 : 06-22-78 6 : 07-10-78



SANTA CREEK
INTENSIVE SURVEY DATA FOR 1 DAY OF MONITORING
1 : 08-30-78



SANTA CREEK
 INTENSIVE SURVEY DATA FOR 6 DAYS OF MONITORING

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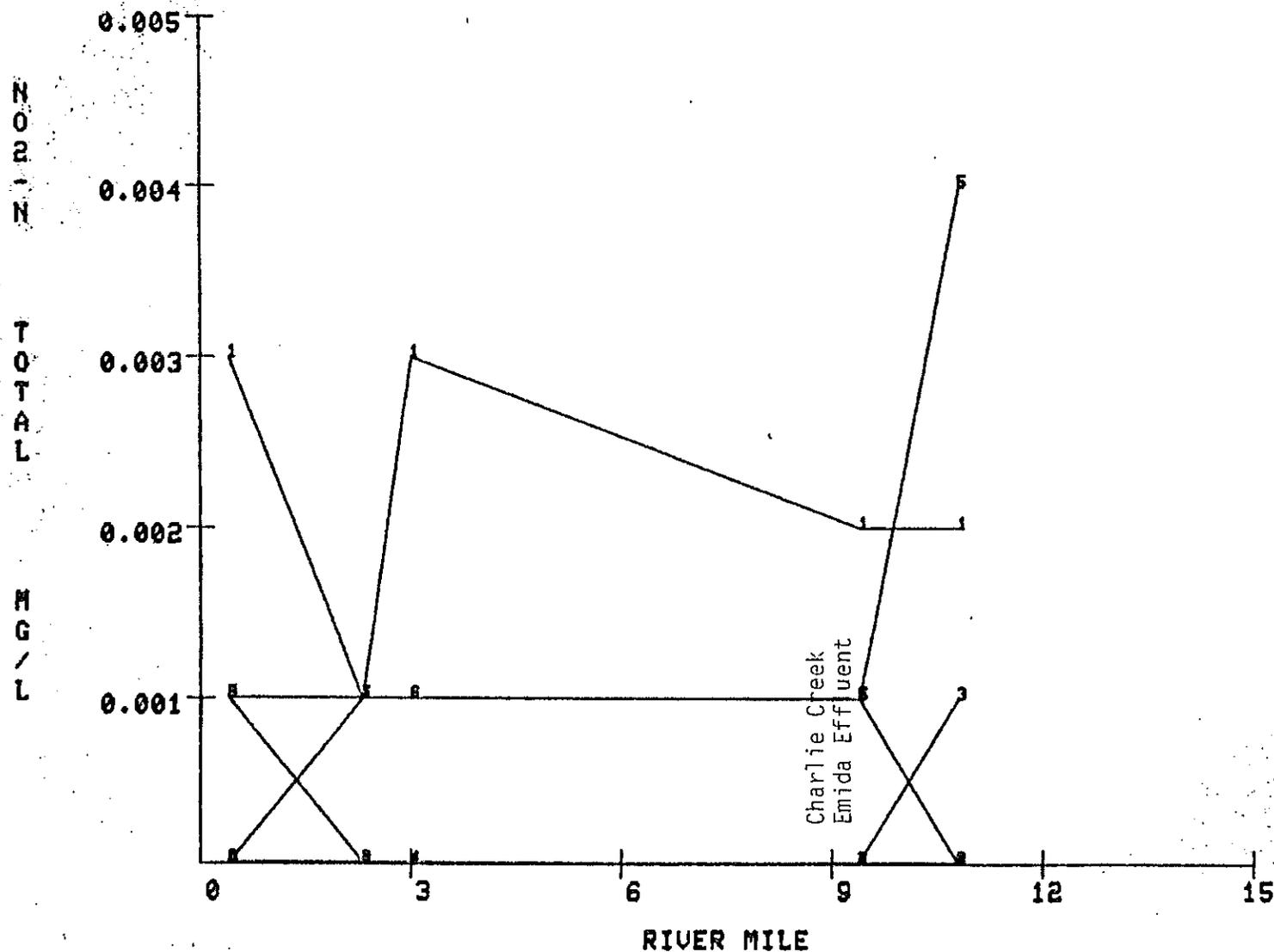
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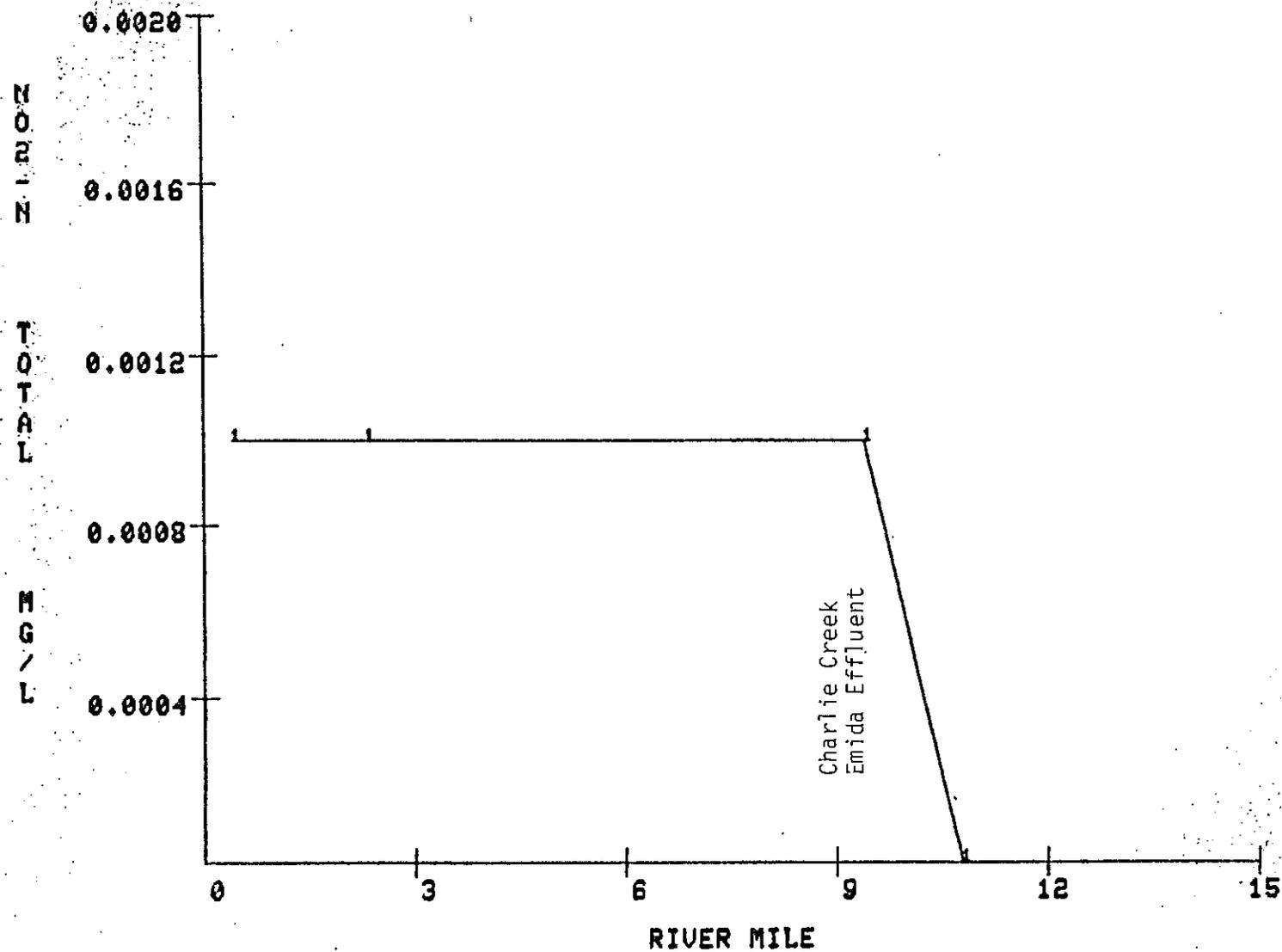
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6 : 07-10-78



SANTA CREEK
INTENSIVE SURVEY DATA FOR 1 DAY OF MONITORING
1 : 08-30-78



SANTA CREEK
 INTENSIVE SURVEY DATA FOR 6 DAYS OF MONITORING

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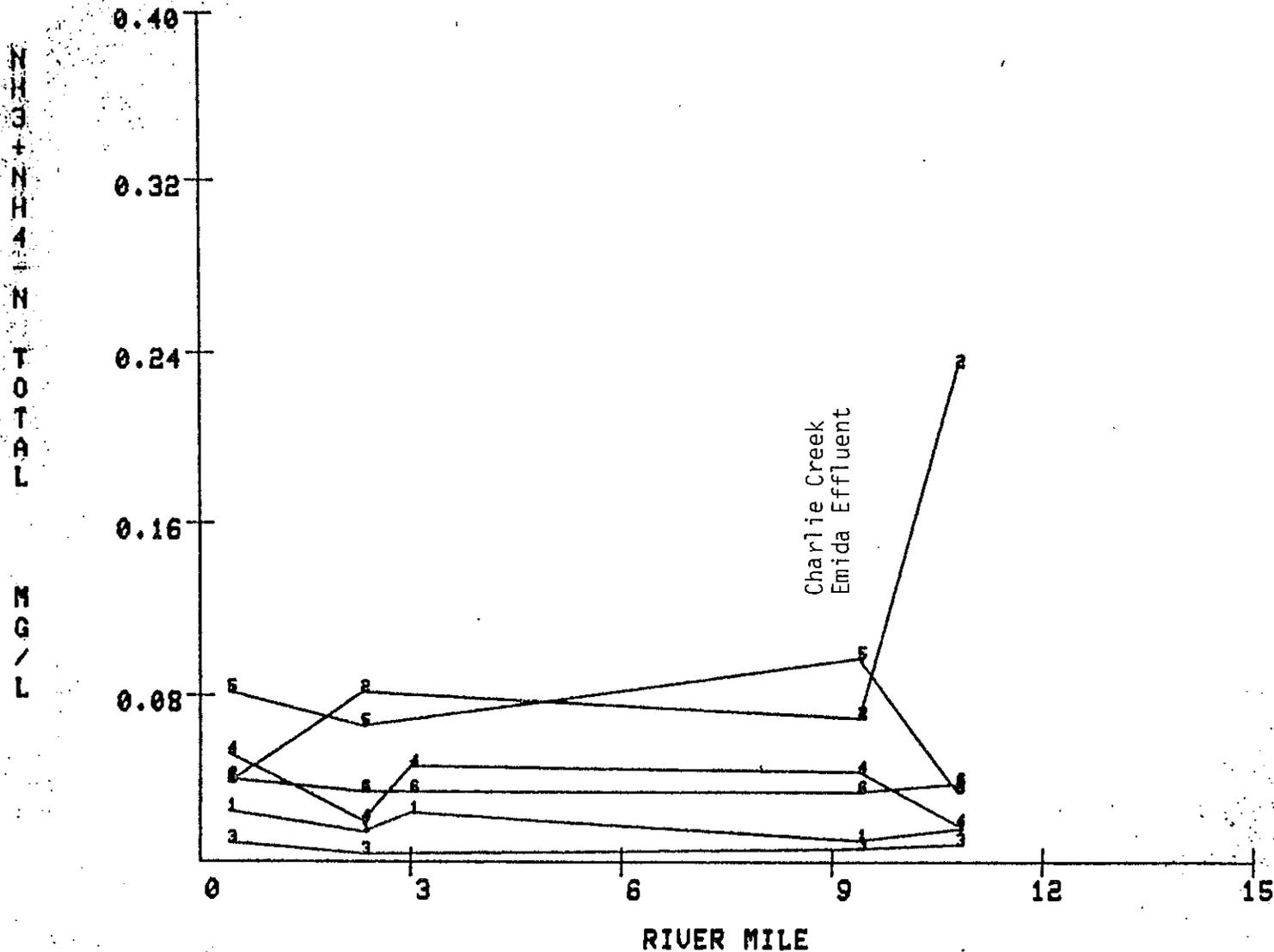
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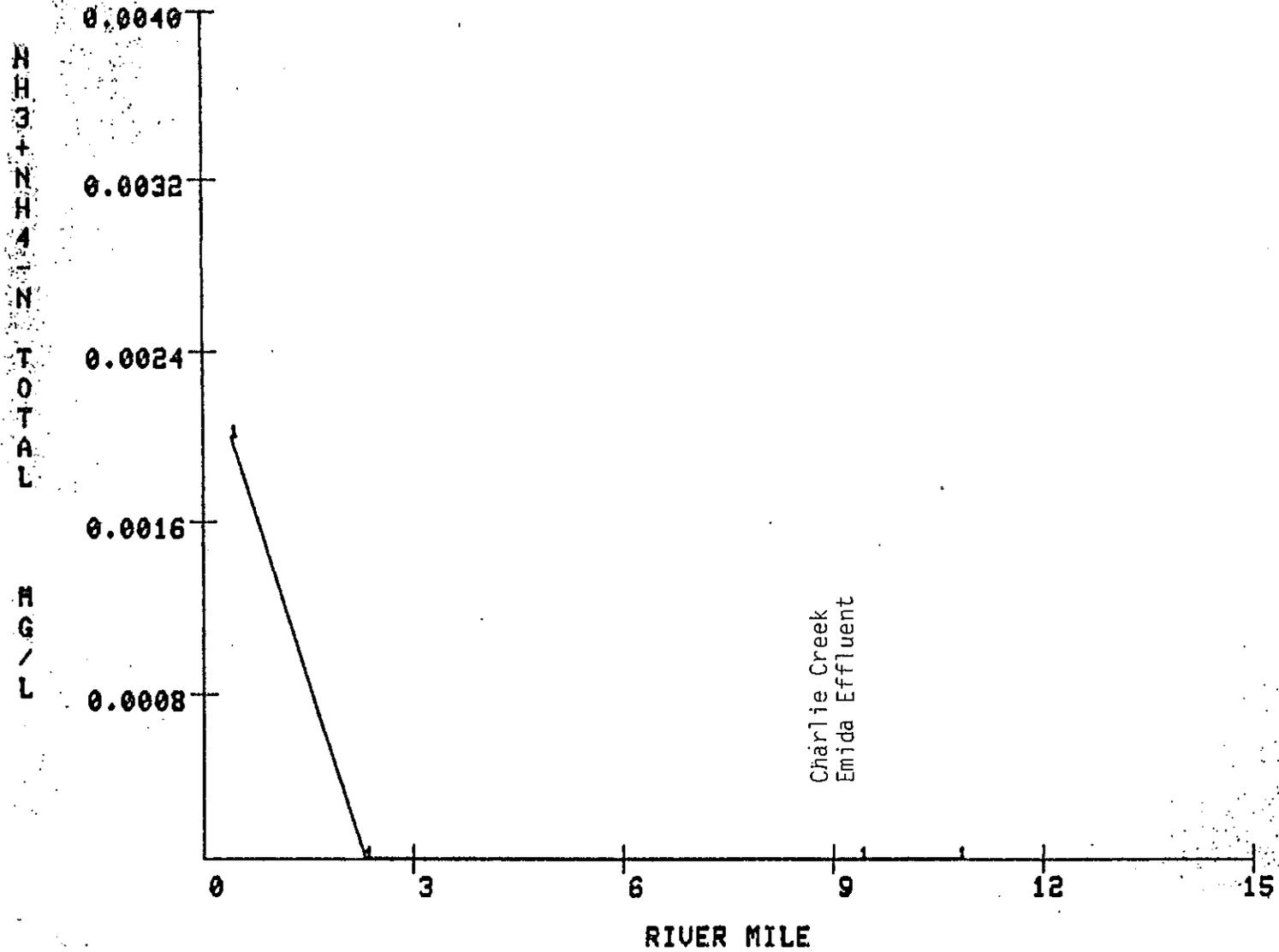
4 : 05-15-78

5 : 06-22-78

6 : 07-10-78



SANTA CREEK
INTENSIVE SURVEY DATA FOR 1 DAY OF MONITORING
1 : 08-30-78



Charlie Creek
Emida Effluent