WATER QUALITY STATUS REPORT

ABERDEEN DRAIN

(Bingham County)

1978-1979

Department of Health & Welfare
Division of Environment
Boise, ID 83720

January 1981

Report No. WQ-45

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(Bingham County)

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Data Collected By:

Mike McSorley

Report Prepared By:

Mike McSorley

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Department of Health & Welfare
Division of Environment
Statehouse
Boise, Idaho 83720

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ABSTRACT

A water quality survey was conducted on the Aberdeen Drain, a tributary to American Falls Reservoir, during 1978 and 1979. Flow conditions depend on application of irrigation water. During the irrigation season discharge is approximately 30 cfs and is reduced to approximately 2-5 cfs during the non-irrigation season. The City of Aberdeen sewage treatment plant is a source of nutrients and bacteria to the drain. During the non-irrigation season phosphorus, nitrates, ammonia, bacteria, and dissolved solids are high. Bacterial concentrations exceed standards for the protection of secondary contact recreation throughout the year. Irrigation return flows are comparatively high in quality and dilute the effluent from the sewage treatment plant during the irrigation season. Except for fecal coliform bacteria, water quality was high enough during the irrigation season so as not to inhibit protected uses of recreation, cold water biota, and agricultural water supply. It was recommended that stream conditions are not suitable for the protection of salmonid spawning and that this use should be deleted from the Idaho Water Quality Standards.

I. INTRODUCTION

Purpose of Study:

The purpose of the survey was to assess the effect of Aberdeen Sewage Treatment Plant and nonpoint sources on the drain and to determine the present water quality status of the drainage.

Background and Drainage Description:

Aberdeen Drain is a tributary of American Falls Reservoir. In the Idaho Water Quality Standards and Wastewater Treatment Requirements (1980) the drain is identified as segment USB-440 and is protected for Agricultural Water Supply and Secondary Contact Recreation. Also, the future protected uses of Cold Water Biota and Salmonid Spawning are listed. Only during the irrigation season (April 15-Oct. 1) is there generally a high enough flow to support these stream uses (Fig. 1)

Aberdeen Drain is affected by the City of Aberdeen Wastewater Treatment Plant effluent and nonpoint sources. The drain begins as a series of small canals on the north side of the City of Aberdeen (Fig. 2) and flows in a south-southeast direction through the City ending in the northwest side of American Falls Reservoir at Little Hole Bay.

Location: Latitude 42°55'27", Longitude 112°48'36", in the southwest corner of Bingham County. Total length of the drain is approximately 4.2 miles from the maximum capacity level of American Falls Reservoir to the inflow of the North Aberdeen Drain (Station D-2).

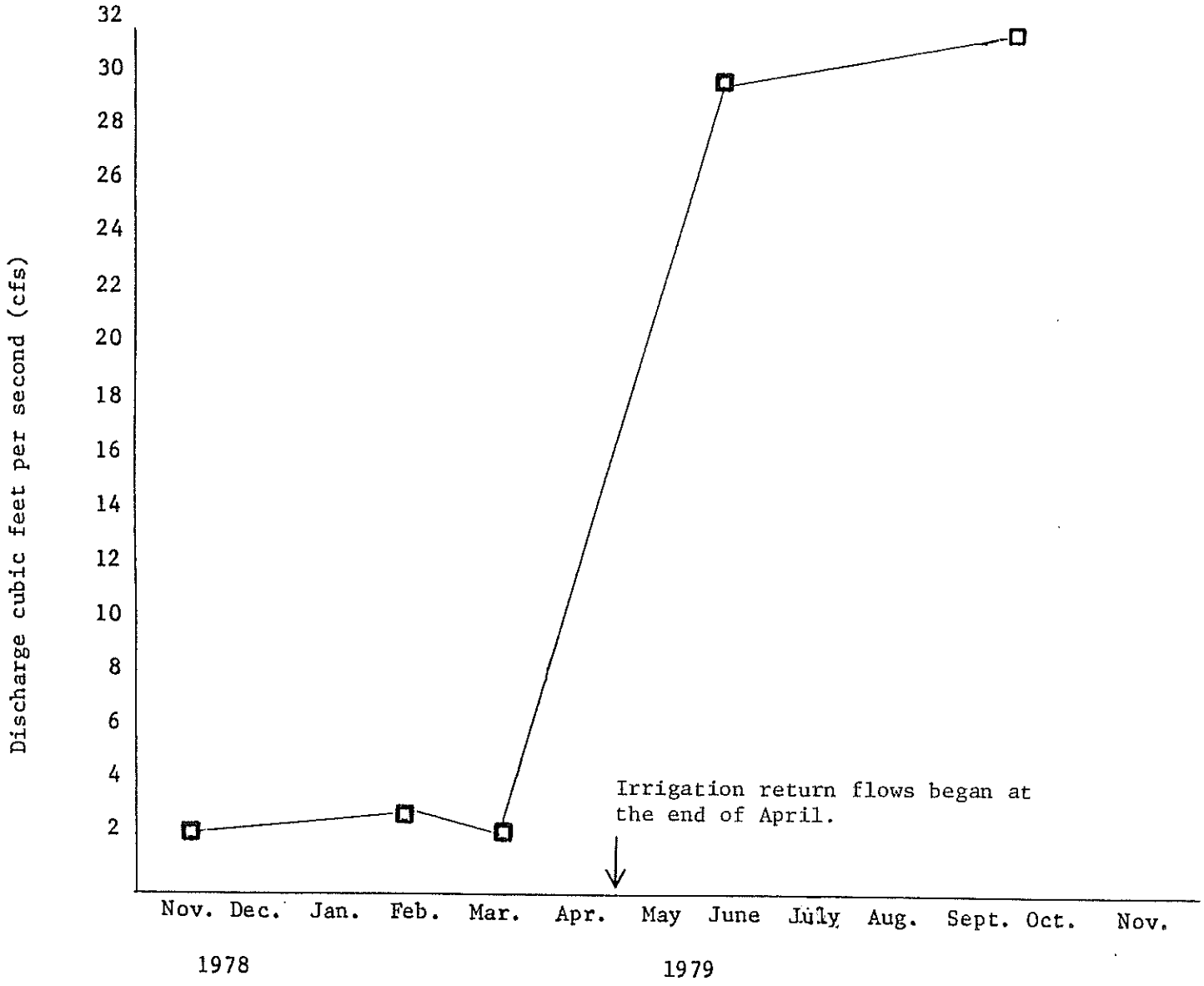


Fig. 1. Hydrograph for Station S-1, Aberdeen Drain near the confluence with American Falls Reservoir.

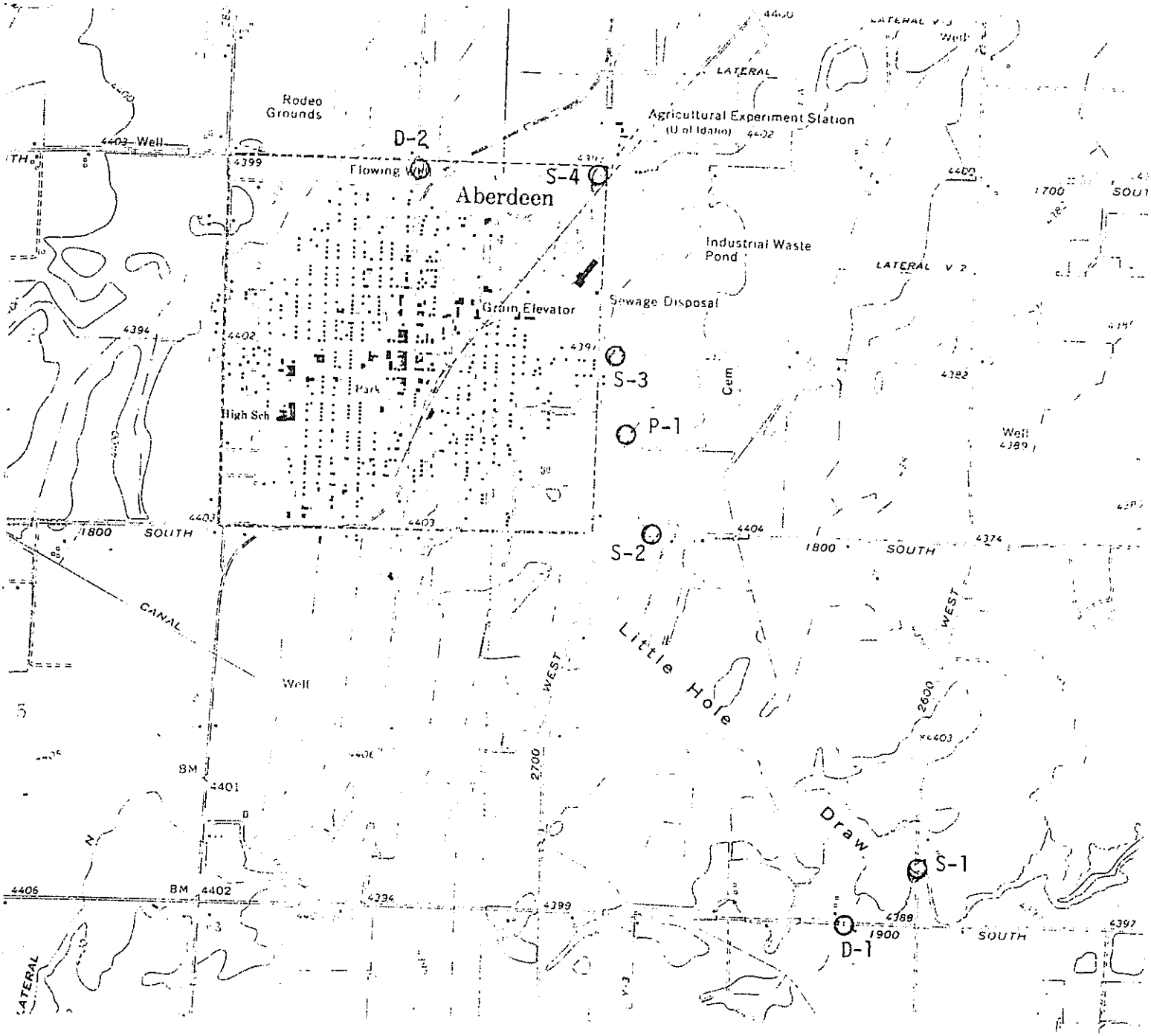


FIGURE 2. Aberdeen Drain Sampling Stations
NOTE: Little Hole Draw is now called Aberdeen Drain

Station #		STORET #
S-1	Aberdeen Drain near Mouth	2080225
D-1	Waste from Low Line Canal	2080232
S-2	Aberdeen Drain at 1800 South	2080226
S-3	Aberdeen Drain above Aberdeen Discharge	2080227
P-1	City of Aberdeen Discharge	2080236
S-4	Aberdeen Drain below Low Line Feeder Canal	2080228
D-2	Drain in North Aberdeen	2080233

II. MATERIALS AND METHODS

The study plan in Appendix A shows the water quality parameters measured and sampling frequency. The location of survey stations are shown in Figure 2. Flow was measured using a Marsh-McBirney Model 201 Electromagnetic Current Meter. Water quality samples were taken and preserved according to methods outlined in the Idaho Department of Health and Welfare's Technical Procedures Manual. Macroinvertebrate samples were taken qualitatively using a kick net sampler.

III. WASTE SOURCES

Point Sources:

The City of Aberdeen has a secondary sewage treatment plant that discharges at River Mile 1.0 to the Aberdeen Drain. Design flow is 0.6 MGD (0.9 cfs). Daily average flow in the plant is approximately 0.2-0.3 MGD (0.31 cfs-0.46 cfs). A Compliance Monitoring Inspection conducted at the plant on November 14, 1979 indicates an effluent concentration for BOD and suspended solids of 11 mg/l and 3.5 mg/l, respectively. Effluent loadings were 21.1 ppd BOD and 6.7 suspended solids. Both concentrations and loadings were well within their NPDES permit limitations. Total ammonia concentration was 16.4 mg/l and the total phosphorus effluent level was 3.8 mg/l. The fecal coliform level was 2/100 ml.

Nonpoint Sources:

Nonpoint sources are mostly attributed to irrigation return flows from three canals:

1. Low Line Canal - enters near Station S-1.

2. Low Line Feeder Canal - enters the drain from north of Aberdeen.

3. Low Line Lateral Canal - enters Aberdeen Drain 20 meters upstream of the above mentioned Feeder Canal.

All three waste canals feed from the Main Low Line Canal which is the major irrigation canal in the Aberdeen-Springfield agricultural area.

IV. RESULTS AND DISCUSSION

Temperature, Dissolved Oxygen, pH:

Temperature and dissolved oxygen values measured in the drain are generally within recommended limits to support a cold water biota. Temperatures probably approach the upper limit ($19^{o}C$) for salmonids during the summer as indicated by the June sample period (Fig. 3). Dissolved oxygen values exceeded minimum criteria of 6 mg/l throughout the year (Fig. 4).

pH values remained within water quality standards during all sampling periods and at all stations. Figure 5 shows pH values at the mouth of Aberdeen Drain.

Bacteria:

According to the Idaho Water Quality Standards, Aberdeen Drain is protected for secondary contact recreation. This specifies that fecal coliform bacteria not exceed 800/100 ml at any time or a geometric mean of 200/100 ml during the swimming season. Both standards were exceeded at stations (S-1, S-2) downstream from Aberdeen but the bacterial counts were highly variable (Fig. 6). During the low flow period during

the non-irrigation season the Aberdeen Sewage Treatment Plant caused the bacterial standard violations. This was attributed to malfunctioning of the sewage treatment plant's chlorination system. High bacterial counts were also recorded during the irrigation season. However, bacterial numbers in the drains above Aberdeen were much lower. This indicates that the source of bacteria during the irrigation season is between Aberdeen and the mouth.

Nutrients:

In general, all inorganic ions were high during low flow and decreased by dilution during the irrigation season. Total phosphorus and nitrogen forms (nitrate and ammonia) exceeded in-stream criteria during low flow at the mouth of the drain (Fig. 7-9). This is due to the discharge from the Aberdeen Sewage Treatment Plant as shown in Figure 10 for phosphorus. The ammonia discharged by the sewage treatment plant during low flow exceeds criteria for toxicity to salmonids. The maximum criteria for salmonids is 0.02 mg/l of unionized ammonia per liter. On November 21, 1978 the calculated unionized ammonia concentration was 0.11 mg/l.

Dissolved and Suspended Solids:

Dissolved solids as indicated by conductivity measurements are high during low flow and are diluted during the irrigation season (Fig. 11). The high dissolved solids concentrations are likely due to subsurface return flows during low flow. This is a common effect on shallow groundwater in irrigation tracts. The salts are not high enough to inhibit irrigation as indicated by Sodium Absorption Ratios. Calculated Sodium Absorption Ratios at the mouth were 0.74 in June

and 1.87 in February. A Sodium Absorption Ratio above 4.0 is considered indicative of salt problems.

Suspended solids were generally low in the drain (Fig. 12) and did not increase during the irrigation season. Water clarity as measured by turbidity is fairly good most of the year (Fig. 13).

Aquatic Life:

A sample for macroinvertebrates was taken at Station S-1 during the irrigation season on May 17, 1979. Depth was 42 inches. Stream velocity was 1.0 fps. Eight chironomids and two tubifex worms were identified. The chironomids were in the genus Chironomus and the tubifex worms were Branchiura spp. This represents an extremely poor macroinvertebrate community.

Radiation:

Gross alpha and beta radiation were measured from the March 26, 1979 and November 21, 1978 samples. Values for gross alpha were 5.96 pC_i/L and 9.2 pC_i/L. The gross beta levels were 13.7 pC_i/L and 11.7 pC_i/L. There are no in-stream radiation standards. However, for comparison, the Idaho Drinking Water Standards are a maximum of 5 pC_i/L gross alpha and 50 pC_i/L gross beta.

Irrigation Return Flows: (Station D-1)

Irrigation return flow analyses indicate a very low level of turbidity (1.4 JTU) and a fairly low level of nutrients. Total nitrogen was 1.2 mg/l and total phosphorus was 0.04 mg/l which is lower than in the Aberdeen Drain.

Flows during the non-irrigation season at Station S-1 ranged from 2.5 to 3.1 cfs. Maximum depth recorded was 11 inches. Substrate in the drain ranged from 6-12 inch rock at S-1 to mud at S-3 and S-4. Only one reach of stream had suitable substrate for salmonid spawning (between S-3 and S-4) and the flow measured during the non-irrigation ranged from 0.6 cfs to 1.3 cfs. These low flows coupled with the poor macroinvertebrate species diversity makes unsuitable salmonid spawning habitat.

V. OBSERVATIONS

The J.R. Simplot Company has a fresh-pak potato washing plant in Aberdeen with waste ponds next to the drain. It is not known if these are sufficiently sealed to prevent leakage to the drain.

VI. CONCLUSIONS

Flows are high enough only during the irrigation season to support recreation and a fisheries. During this period water quality is generally high enough to support these protected uses. Fecal coliform bacteria was the only parameter to consistently exceed standards for secondary contact recreation. The source of the bacteria is partly from the wastewater treatment plant and partly from surrounding agricultural lands. Fecal coliform bacteria to fecal strep ratios indicate a possible human source for the fecal coliform bacteria at Station S-1.

During the non-irrigation season when flows are low, water quality is very poor. Fecal bacteria, phosphorus, nitrogen, and dissolved solids are high in concentration and exceed standards. The Aberdeen

Sewage Treatment Plant is a source of some of these pollutants. Total ammonia concentrations were 2.5 to 26 times higher downstream of the sewage treatment plant than upstream during the non-irrigation season. During the irrigation season, this is reduced to a factor of 1.8. The sewage treatment plant also contributed phosphorus and fecal bacteria. The sewage treatment plant contributed a substantial amount of nutrients to American Falls Reservoir.

In addition to the sewage treatment plant, subsurface irrigation return flows contribute dissolved solids to the drain during low flow. The increase in conductivity noted during low flows cannot be accounted for by the other known sources of pollution.

VII. RECOMMENDATIONS

The Aberdeen Drain under the Water Quality Standards and Wastewater Treatment Requirements which were adopted January 31, 1980 has been given future protected uses which will provide for salmonid spawning and cold water biota. With naturally low flows in the drainage in the non-irrigation season and the non-existence of adequate substrate, the salmonid spawning use should be eliminated from consideration. A planted trout fishery could possibly be sustained during the irrigation season, however the City of Aberdeen discharge loadings of ammonia and chlorine could impact a fisheries use. The City of Aberdeen would be wise to monitor and record unionized ammonia and total residual chlorine concentrations in the receiving water below the mixing zone for their discharge.

LITERATURE CITED

Idaho Department of Health and Welfare 1977. Idaho Regulations for Public Drinking Water Systems, IDHW-Environment, 44p.

Idaho Department of Health and Welfare 1980. Idaho Water Quality Standards and Wastewater Treatment Requirements, IDHW-Environment, 56p.

APPENDIX A

Final Study Plan

___ Draft

STUDY PLAN

XX Final

Name: Aberdeen Drain
Survey Period: Nov. 1978 - Oct. 1979

BACKGROUND:

Aberdeen Drain is affected by nonpoint sources, and is a source of nutrients to American Falls Reservoir. Data is needed to define the water quality status of the stream and to assess the effect of point and nonpoint sources on the stream segment.

PURPOSE:

The purpose of the survey is to assess the effect of point sources, to locate and assess nonpoint sources, and to determine the present water quality status of the drainage.

SAMPLE FREQUENCY/SUGGESTED SCHEDULE:

Samples will be collected six times during the year at six stream stations and the Aberdeen effluent.

Fall Base Flow (Nov.)
Winter Base Flow (Jan. or Feb.)
Pre-Irrigation (Late March or Early April)
Irrigation Season (May)
Irrigation Season (June)
Irrigation Season (August)

Field parameters, bacteria, nutrient parameters and solids will be sampled at each period. Heavy metals, radioactivity, and major ions will be analyzed quarterly at Aberdeen Drain near mouth.

Additional stations will be established on other drains in the irrigation season if they appear to be significant sources.

QUALITY ASSURANCE:

Replicate samples will be collected at station S-1 near the mouth of Aberdeen Drain during each monitoring trip.

SPECIAL STUDIES, BIOLOGICAL MONITORING, COMMENTS:

Macroinvertebrate samples will be collected for species identification and species diversity.

Periphyton samples will be collected for ash-free dry weight and chlorophyll determination.

If possible, two composite resident fish (bottom feeders (5) and predators (5)) samples should be collected for trace organic analysis of tissue.

MANPOWER REQUIREMENTS:

	CREW			
Purpose	EQS	EQS	Env. Tech. EQS	Days	Man-Days
Presurvey		1			1
Preparation		6			6
Field Work					
Flows and Water Quality		6	4*		10
Biological		2			2
Special Studies					
Macroinvertebrate Analysis		3			3
Report, Draft		10			10
Final		5			5
TOTAL		33	4		37

*Assistance with flow measurement.

SPECIAL EQUIPMENT:

Macroinvertebrate Samplers
Periphyton Samplers

COORDINATION WITH OTHER AGENCIES:

Idaho Department of Fish & Game - fish collection
Soil Conservation District

REPORT REQUIREMENTS:

A data summary report will be prepared in Water Year 1980.

A = All Samplings
Q = Quarterly (seasonal)
Digit = number of samplings

FLOW

(A)	flow, instantaneous by development of a rating table based on measurement from a fixed point	00061

Temperature

(A)	temperature Deq-c	00010

Oxygen

(A)	dissolved oxygen mg/l	00299/00300
( )	dissolved oxygen % sat.	00301

pH

(A)	field	00400
( )	lab	00403

Bacteria

(A)	fecal coliform	31616
(A)	total coliform	31501
(A)	fecal streptococci	31679

Trophic

(A)	BOD	00310
(A)	COD	00335/00340
(A)	t. ammonia as N	00610
( )	unionized ammonia as N	00619
(A)	t. nitrite as N	00615
(A)	t. nitrate as N	00620
( )	t. NO_2 + NO_3 as N	00630
(A)	t. Kjeldahl nitrogen	00625
(A)	t. phosphorus as P	00665
( )	t. hydrolyzable phosphorus as P	00669
(A)	orthophosphate as P	70507
( )	total organic carbon	00680

( )	chlorophyll a (water) ug/l	32209
(1)	chlorophyll a (substrate) mg/m^2	32229
( )	chlorophyll b (water) ug/l	
(1)	chlorophyll b (substrate) mg/m^2	
( )	chlorophyll c (water) ug/l	
(1)	chlorophyll c (substrate) mg/m^2	

Organic Toxicity

	Fish	Sediment Dry Wt. ug/kg	Water (ug/l)
aldrin	(1)	( ) 39333	( ) 39330
chlordane	(1)	( ) 39351	( ) 39350
DDT	(1)	( ) 39359	( ) 39370
dieldrin	(1)	( ) 39383	( ) 39380
endrin	(1)	( ) 39393	( ) 39390
ethion	(1)	( ) 39399	( ) 39398
methoxychlor	(1)	( ) 39481	( ) 39480
diazinon	(1)	( ) 39571	( ) 39570
malathion	(1)	( ) 39531	( ) 39530
parathion	(1)	( ) 39541	( ) 39540
PCB's	(1)	( ) 39519	( ) 39516
toxaphene	(1)	( ) 39403	( ) 39400
2, 4, 5-T	(1)	( ) 39741	( ) 39740
scan, organo-Cl comp.	(1)	( ) _____	( ) _____
scan, organo-P comp.	( )	( ) _____	( ) _____

Inorganic Toxicity*

(Q) arsenic, total	1002	(Q) lead, total	1051
( ) arsenic, dissolved	1000	( ) lead, dissolved	1049
(Q) boron, total	1022	(Q) manganese, total	1055
( ) boron, dissolved	1020	( ) manganese, dissolved	1056
(Q) cadmium, total	1027	(Q) mercury, total	71900
( ) cadmium, dissolved	1025	( ) mercury, dissolved	71890
(Q) chromium, total	1034	( ) nickel, total	1067
( ) chromium, dissolved	1030	( ) nickel, dissolved	1065
( ) chromium, hexavalent	1032	( ) silver, total	1077
(Q) copper, total	1042	( ) silver, dissolved	1075
( ) copper, dissolved	1040	(Q) zinc, total	1092
(Q) iron, total	1045	( ) zinc, dissolved	1090
( ) iron, dissolved	1046		
( ) _____			
( ) _____			
( ) _____			
( ) _____			
( ) _____			
( ) _____			
( ) _____			
( ) _____			
( ) _____			
( ) _____			
( ) cyanide, total	00720		
(A) chlorine residual**	50050		

* Station S-1 only.
** Aberdeen effluent and stations below only.

Aesthetic

(A)	turbidity ftu	00076
( )	oil & grease mg/l	00550

Solids

(A)	total solids	00500
(A)	suspended solids	00530
( )	dissolved solids	70300
(A)	suspended sediment (when possible)	80154
( )	volatile solids	00505
( )	volatile suspended solids	00535
( )	settleable solids	00545

(A)	specific conductance umhos/cm	00095
* (Q)	hardness (as $CaCO_3$)	00900
* (Q)	t. alkalinity (as $CaCO_3$)	00410
* (Q)	bicarbonate alkalinity (as $CaCO_3$)	00425
* (Q)	carbonate alkalinity (as $CaCO_3$)	00430
* (Q)	calcium	00916
* (Q)	magnesium	00927
* (Q)	sodium	00929
* (Q)	potassium	00937
* (Q)	chloride	00940
* (Q)	fluoride	00950
* (Q)	sulphate (as SO_4)	00945
* (Q)	silica (as SiO_2)	00956

Dissolved Gas

( )	total dissolved gas % sat.	00048

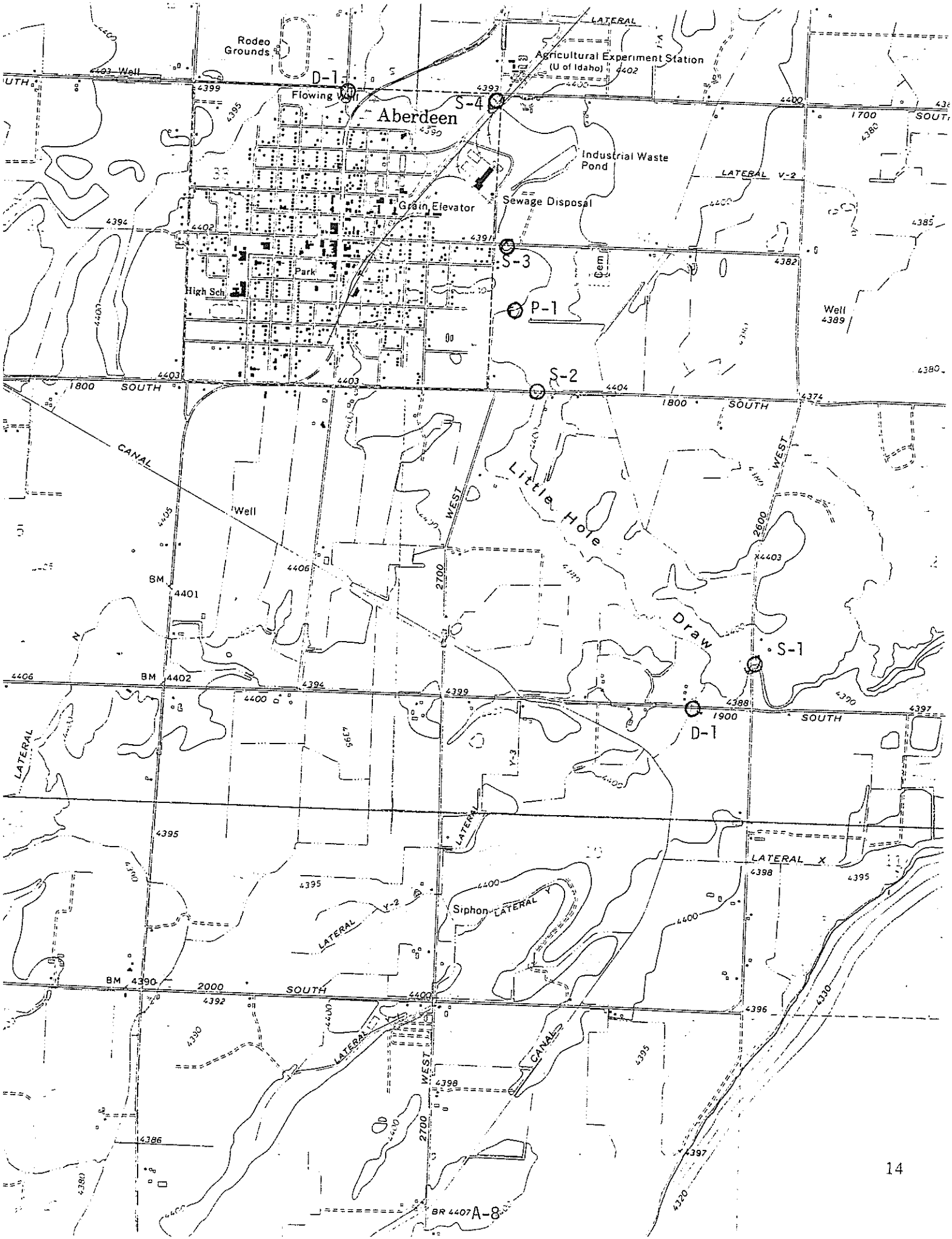
Radioactivity *

(Q)	total alpha pc/l	01501
(Q)	total beta pc/l	03501

* Station S-1 only.

SURVEY STATIONS

Station #	Description	Elevation	Latitude	Longitude	River Mile		STORET #
S-1	Aberdeen Drain near Mouth	4360'	42°55'20"	112°48'40"	726.1	1.5	2080225
D-1	Wasteway between Low Line Canal and Aberdeen Drain	4390'	42°55'05"	112°48'55"	"	1.7/0.1	2080232
S-2	Aberdeen Drain at 1800 South	4380'	42°56'15"	112°49'30"	"	3.2	2080226
S-3	Aberdeen Drain above Aberdeen Discharge	4380'	42°56'55"	112°49'40"	"	3.9	2080227
P-1	City of Aberdeen Discharge	4380'	42°56'35"	112°49'35"	"	3.7	2080236
S-4	Aberdeen Drain below Low Line Feeder Canal	4385'	42°57'10"	112°49'45"	"	4.8	2080228
D-2	Drain in North Aberdeen	4385'	42°57'10"	112°50'15"	"	5.4/0.1	2080233


Rodeo Grounds
Agricultural Experiment Station (U of Idaho)
D-1
Flowing Well
Aberdeen
S-4
Industrial Waste Pond
Grain Elevator
Sewage Disposal
Park
High Sch
S-3
P-1
Well
S-2
1800 SOUTH
CANAL
Well
Little Hole Draw
WEST
BM 4401
BM 4402
S-1
1900 SOUTH
D-1
LATERAL
LATERAL V-2
LATERAL Y-3
LATERAL X
Siphon
LATERAL Y
BM 4390
2000 SOUTH
LATERAL Y-2
CANAL
2700
2600
BR 4407
A-8

APPENDIX B

Raw Data: STORET Inventory

STORET RETRIEVAL DATE 80/09/18 - INVENT - VERSION OF AUG. 1980

2080225
42 55 20.0 112 48 40.0 2
ABERDEEN DRAIN NEAR MOUTH
16011 IDAHO BINGHAM
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
21IDSURV 791222
0000 CLASS 00

/TYPA/AMBNT/STREAM

INDEX 1310001 002740 09190
MILES 0324.30 0726.10 001.50

PARAMETER				NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT	5	10.1000	38.3000	6.18870	.612743	2.76767	19.0000	5.00000	78/11/21	79/10/01
00042	ALTITUDE	FEET	AB MSL	1	4360.00					4360.00	4360.00	01/01/01	01/01/01
00061	STREAM	FLOW,	INST-CFS	4	16.9050	265.583	16.2967	.964017	8.14835	32.0000	2.62000	78/11/21	79/10/01
00076	TURB	TRBIDMTR	HACH FTU	4	6.62500	92.3224	9.60846	1.45033	4.80423	21.0000	1.00000	78/11/21	79/10/01
00095	CNDUCTVY	AT 25C	MICROMHO	5	849.000	132039	363.371	.427999	162.504	1168.00	413.000	78/11/21	79/10/01
00116	INTNSVE	SURVEY	IDENT	6	791613	.000000	.000000		.000000	791613	791613	01/01/01	79/10/01
00300	DO		MG/L	5	8.70000	2.18005	1.47650	.169713	.660311	10.2000	6.60000	78/11/21	79/10/01
00310	BOD	5 DAY	MG/L	4	5.30000	11.5134	3.39314	.640215	1.69657	10.0000	2.40000	78/11/21	79/06/27
00335	COD	LOWLEVEL	MG/L	4	14.0750	4.46256	2.11248	.150087	1.05624	16.9000	11.8000	78/11/21	79/10/01
00400	PH		SU	5	7.66000	.328125	.572822	.074781	.256174	8.40000	7.00000	78/11/21	79/10/01
00403	LAB	PH	SU	2	7.75500	.042068	.205106	.026448	.145032	7.90000	7.61000	79/06/27	79/10/01
00410	T ALK	CACO3	MG/L	5	240.600	6693.83	81.8158	.340049	36.5891	312.000	148.000	78/11/21	79/10/01
00425	HCO3 ALK	CACO3	MG/L	5	240.600	6693.83	81.8158	.340049	36.5891	312.000	148.000	78/11/21	79/10/01
00430	CO3 ALK	CACO3	MG/L	5	1.00000	.000000	.000000		.000000	1.00000	1.00000	78/11/21	79/10/01
00500	RESIDUE	TOTAL	MG/L	5	575.000	69204.0	263.067	.457507	117.647	791.000	257.000	78/11/21	79/10/01
00530	RESIDUE	TOT NFLT	MG/L	5	21.8000	531.701	23.0586	1.05774	10.3121	61.0000	4.00000	78/11/21	79/10/01
00610	NH3+NH4-	N TOTAL	MG/L	5	1.34940	1.45117	1.20465	.892729	.538735	2.86000	.092000	78/11/21	79/10/01
00615	NO2-N	TOTAL	MG/L	5	.317400	.452431	.672630	2.11919	.300809	1.52000	.001000	78/11/21	79/10/01
00620	NO3-N	TOTAL	MG/L	5	.427599	.218339	.467267	1.09277	.208968	1.10000	.010000	78/11/21	79/10/01
00625	TOT KJEL	N	MG/L	5	2.31200	2.56796	1.60249	.693117	.716654	4.33000	.670000	78/11/21	79/10/01
00665	PHOS-TOT		MG/L P	5	.601999	.233370	.483083	.802465	.216041	1.09000	.110000	78/11/21	79/10/01
00900	TOT HARD	CACO3	MG/L	5	323.200	16675.2	129.133	.399544	57.7499	428.000	176.000	78/11/21	79/10/01
00916	CALCIUM	CA-TOT	MG/L	5	70.0800	417.240	20.4264	.291473	9.13499	88.0000	46.0000	78/11/21	79/10/01
00927	MGNSIUM	MG,TOT	MG/L	5	36.7800	326.912	18.0807	.491591	8.08594	51.7000	14.4000	78/11/21	79/10/01
00929	SODIUM	NA,TOT	MG/L	5	54.9400	977.526	31.2654	.569083	13.9823	88.5000	18.7000	78/11/21	79/10/01
00937	PTSSIUM	K,TOT	MG/L	5	7.52000	12.9320	3.59611	.478206	1.60823	10.4000	3.20000	78/11/21	79/10/01
00940	CHLORIDE	CL	MG/L	5	34.0000	285.500	16.8967	.496963	7.55645	54.0000	15.0000	78/11/21	79/10/01
00945	SULFATE	SO4-TOT	MG/L	5	130.000	4279.50	65.4179	.503215	29.2558	198.000	55.0000	78/11/21	79/10/01
00951	FLUORIDE	F,TOTAL	MG/L	4	.537500	.019692	.140327	.261074	.070164	.690000	.350000	79/02/07	79/10/01
00956	SILICA	TOTAL	MG/L	5	24.8400	109.528	10.4656	.421319	4.68035	34.0000	13.0000	78/11/21	79/10/01
01002	ARSENIC	AS,TOT	UG/L	4	10.0000	.000000	.000000		.000000	10.0000	10.0000	78/11/21	79/10/01
01022	BORON	B,TOT	UG/L	3	290.000	26800.0	163.707	.564507	94.5163	430.000	110.000	79/02/07	79/06/27
01027	CADMIUM	CD,TOT	UG/L	4	1.00000	.000000	.000000		.000000	1.00000	1.00000	78/11/21	79/10/01
01034	CHROMIUM	CR,TOT	UG/L	4	50.0000	.000000	.000000		.000000	50.0000	50.0000	78/11/21	79/10/01
01042	COPPER	CU,TOT	UG/L	4	10.0000	.000000	.000000		.000000	10.0000	10.0000	78/11/21	79/10/01
01045	IRON	FE,TOT	UG/L	4	595.000	292033	540.401	.908237	270.200	1260.00	140.000	78/11/21	79/10/01
01051	LEAD	PB,TOT	UG/L	4	50.0000	.000000	.000000		.000000	50.0000	50.0000	78/11/21	79/10/01
01055	MANGNESE	MN	UG/L	4	185.000	19766.7	140.594	.759967	70.2970	380.000	50.0000	78/11/21	79/10/01
01092	ZINC	ZN,TOT	UG/L	4	3.75000	10.2500	3.20156	.853750	1.60078	7.00000	1.00000	78/11/21	79/10/01

STORET RETRIEVAL DATE 80/09/18 * INVENT - VERSION OF AUG. 1980

2080225
42 55 20.0 112 48 40.0 2
BERDEEN DRAIN NEAR MOUTH
6011 IDAHO BINGHAM
ACIFIC NORTHWEST 130600
PPER SNAKE RIVER
21IDSURV 791222
0000 CLASS 00

/TYPA/AMBNT/STREAM

INDEX 1310001 002740 09190
MILES 0324.30 0726.10 001.50

PARAMETER				NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
01501	ALPHA	TOTAL	PC/L	3	5.92000	10.8912	3.30018	.557464	1.90536	9.20000	2.60000	78/11/21	79/10/01
03501	BETA	TOTAL	PC/L	3	9.33333	35.0033	5.91636	.633896	3.41581	13.7000	2.60000	78/11/21	79/10/01
31501	TOT COLI	MFIMENDO	/100ML	5	2828.00	4600920	2144.98	.758478	959.262	5300.00	540.000	78/11/21	79/10/01
31616	FEC COLI	MFM-FCBR	/100ML	5	352.000	69320.0	263.287	.747974	117.745	780.000	100.000	78/11/21	79/10/01
31679	FECSTREP	MF M-ENT	/100ML	5	273.600	160335	400.418	1.46352	179.073	980.000	18.0000	78/11/21	79/10/01
50060	CHLORINE	TOT RESD	MG/L	1	.000000					.000000	.000000	78/11/21	78/11/21
70300	RESIDUE	DISS-180	C MG/L	2	502.000	133128	364.867	.726827	258.000	760.000	244.000	79/03/26	79/10/01
70507	PHOS-T	ORTHO	MG/L P	5	.534800	.255725	.505692	.945574	.226153	1.08000	.034000	78/11/21	79/10/01
71900	MERCURY	HG,TOTAL	UG/L	4	.500000	.000000	.000000		.000000	.500000	.500000	78/11/21	79/10/01
80154	SUSP SED	CONC	MG/L	1	325.000					325.000	325.000	79/06/27	79/06/27

STORET RETRIEVAL DATE 80/09/18 - INVENT - VERSION OF AUG. 1980

2080226
42 56 15.0 112 49 30.0 2
ABERDEEN DRAIN AT 1800 SOUTH
16011 IDAHO BINGHAM
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
21IDSURV 791222
0000 CLASS 00

/TYPA/AMBNT/STREAM

INDEX 1310001 002740 09190
MILES 0324.30 0726.10 003.20

PARAMETER			NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010 WATER	TEMP	CENT	5	8.60000	53.6750	7.32633	.851898	3.27643	18.0000	.500000	78/11/21	79/10/01
00042 ALTITUDE	FEET	AB MSL	1	4380.00					4380.00	4380.00	01/01/01	01/01/01
00061 STREAM	FLOW,	INST-CFS	4	8.75000	67.4768	8.21443	.938792	4.10721	20.0000	.800000	78/11/21	79/10/01
00076 TURB	TRBIDMTR	HACH FTU	4	8.07500	130.976	11.4445	1.41727	5.72223	25.0000	.700000	79/01/29	79/10/01
00095 CNDUCTVY	AT 25C	MICROMHO	5	1075.20	206842	454.799	.422990	203.392	1570.00	558.000	78/11/21	79/10/01
00116 INTNSVE	SURVEY	IDENT	6	791564-	.209E+06	.000000		.000000	791613	791316	01/01/01	79/10/01
00300 DO		MG/L	5	7.77999	1.30713	1.14330	.146953	.511298	8.90000	6.50000	78/11/21	79/10/01
00310 BOD	5 DAY	MG/L	3	22.0000	577.000	24.0208	1.09185	13.8684	49.0000	3.00000	79/01/29	79/06/27
00335 COD	LOWLEVEL	MG/L	4	33.7000	1078.87	32.8462	.974665	16.4231	82.7000	14.6000	78/11/21	79/10/01
00400 PH		SU	5	7.82000	.077026	.277536	.035491	.124118	8.10000	7.40000	78/11/21	79/10/01
00403 LAB	PH	SU	2	7.70500	.018066	.134411	.017445	.095043	7.80000	7.61000	79/06/27	79/10/01
00410 T ALK	CACO3	MG/L	1	339.000					339.000	339.000	79/01/29	79/01/29
00425 HCO3 ALK	CACO3	MG/L	1	339.000					339.000	339.000	79/01/29	79/01/29
00430 CO3 ALK	CACO3	MG/L	1	1.00000					1.00000	1.00000	79/01/29	79/01/29
00500 RESIDUE	TOTAL	MG/L	5	758.600	123369	351.239	.463010	157.079	1115.00	357.000	78/11/21	79/10/01
00530 RESIDUE	TOT NFLT	MG/L	5	16.8000	118.701	10.8950	.648511	4.87238	34.0000	4.00000	78/11/21	79/10/01
00610 NH3+NH4-	N TOTAL	MG/L	5	3.06340	12.4369	3.52659	1.15120	1.57714	8.80000	.380000	78/11/21	79/10/01
00615 NO2-N	TOTAL	MG/L	5	.750599	2.38741	1.54512	2.05852	.691000	3.51000	.001000	78/11/21	79/10/01
00620 NO3-N	TOTAL	MG/L	5	.362000	.108456	.329326	.909741	.147279	.850000	.001000	78/11/21	79/10/01
00625 TOT KJEL	N	MG/L	5	5.37200	32.6427	5.71337	1.06355	2.55510	14.8000	.500000	78/11/21	79/10/01
00665 PHOS-TOT		MG/L P	5	1.65400	3.13947	1.77186	1.07125	.792398	4.55000	.270000	78/11/21	79/10/01
00900 TOT HARD	CACO3	MG/L	1	532.000					532.000	532.000	79/01/29	79/01/29
00916 CALCIUM	CA-TOT	MG/L	1	112.000					112.000	112.000	79/01/29	79/01/29
00927 MGNSIUM	MG,TOT	MG/L	1	61.5000					61.5000	61.5000	79/01/29	79/01/29
00929 SODIUM	NA,TOT	MG/L	1	137.000					137.000	137.000	79/01/29	79/01/29
00937 PTSSIUM	K,TOT	MG/L	1	11.4000					11.4000	11.4000	79/01/29	79/01/29
00940 CHLORIDE	CL	MG/L	1	88.0000					88.0000	88.0000	79/01/29	79/01/29
00945 SULFATE	SO4-TOT	MG/L	1	400.000					400.000	400.000	79/01/29	79/01/29
00951 FLUORIDE	F,TOTAL	MG/L	1	.670000					.670000	.670000	79/01/29	79/01/29
00956 SILICA	TOTAL	MG/L	1	34.0000					34.0000	34.0000	79/01/29	79/01/29
01002 ARSENIC	AS,TOT	UG/L	2	10.0000	.000000	.000000		.000000	10.0000	10.0000	79/01/29	79/10/01
01022 BORON	B,TOT	UG/L	1	310.000					310.000	310.000	79/01/29	79/01/29
01027 CADMIUM	CD,TOT	UG/L	2	1.00000	.000000	.000000		.000000	1.00000	1.00000	79/01/29	79/10/01
01034 CHROMIUM	CR,TOT	UG/L	1	50.0000					50.0000	50.0000	79/01/29	79/01/29
01042 COPPER	CU,TOT	UG/L	2	10.0000	.000000	.000000		.000000	10.0000	10.0000	79/01/29	79/10/01
01045 IRON	FE,TOT	UG/L	2	345.000	54450.0	233.345	.676363	165.000	510.000	180.000	79/01/29	79/10/01
01051 LEAD	PB,TOT	UG/L	2	50.0000	.000000	.000000		.000000	50.0000	50.0000	79/01/29	79/10/01
01055 MANGNESE	MN	UG/L	1	270.000					270.000	270.000	79/01/29	79/01/29
01092 ZINC	ZN,TOT	UG/L	2	28.5000	1300.50	36.0624	1.26535	25.5000	54.0000	3.00000	79/01/29	79/10/01

STORET RETRIEVAL DATE 80/09/18 - INVENT - VERSION OF AUG. 1980

2080226
42 56 15.0 112 49 30.0 2
ABERDEEN DRAIN AT 1800 SOUTH
16011 IDAHO BINGHAM
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
21IDSURV 791222
0000 CLASS 00

/TYPA/AMBNT/STREAM

INDEX 1310001 002740 09190
MILES 0324.30 0726.10 003.20

PARAMETER				NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
01501 ALPHA	TOTAL		PC/L	1	3.50000					3.50000	3.50000	79/10/01	79/10/01
03501 BETA	TOTAL		PC/L	1	3.50000					3.50000	3.50000	79/10/01	79/10/01
31501 TOT COLI	MFIMENDO		/100ML	5	8128.40	.756E+08	8696.37	1.06987	3889.13	19000.0	42.0000	78/11/21	79/10/01
31616 FEC COLI	MFM-FCBR		/100ML	5	12801.0	.698E+09	26438.1	2.06531	11823.5	60000.0	1.00000	78/11/21	79/10/01
31679 FECSTREP	MF M-ENT		/100ML	5	4152.80	.785E+08	8863.08	2.13424	3963.69	20000.0	2.00000	78/11/21	79/10/01
50060 CHLORINE	TOT RESD		MG/L	1	.200000					.200000	.200000	78/11/21	78/11/21
70300 RESIDUE	DISS-180	C	MG/L	3	577.666	103957	322.423	.558147	186.151	944.000	337.000	79/03/26	79/10/01
70507 PHOS-T	ORTHO		MG/L P	5	1.22420	1.31203	1.14544	.935663	.512256	2.83000	.121000	78/11/21	79/10/01
71900 MERCURY	HG,TOTAL		UG/L	1	.500000					.500000	.500000	79/10/01	79/10/01
80154 SUSP SED	CONC		MG/L	1	17.0000					17.0000	17.0000	79/01/29	79/01/29

STORET RETRIEVAL DATE 80/09/18 - INVENT - VERSION OF AUG. 1980

2080227
42 56 55.0 112 49 40.0 2
ABERDEEN DRAIN AB ABERDEEN DISCHARGE
16011 IDAHO BINGHAM
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
21IDSURV 791222
0000 CLASS 00

/TYPA/AMBNT/STREAM

INDEX 1310001 002740 09190
MILES 0324.30 0726.10 003.90

PARAMETER				NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT	4	12.7500	30.4167	5.51513	.432559	2.75756	19.5000	8.00000	78/11/21	79/10/01
00042	ALTITUDE	FEET	AB MSL	1	4380.00					4380.00	4380.00	01/01/01	01/01/01
00061	STREAM	FLOW,	INST-CFS	4	7.15000	73.9567	8.59981	1.20277	4.29990	19.0000	.600000	78/ 1/21	79/10/01
00076	TURB	TRBIDMTR	HACH FTU	3	1.50000	1.11000	1.05357	.702378	.608277	2.60000	.500000	79/03/26	79/10/01
00095	CNDUCTVY	AT 25C	MICROMHO	4	878.750	193440	439.818	.500504	219.909	1330.00	465.000	78/11/21	79/10/01
00116	INTNSVE	SURVEY	IDENT	5	791613	.000000	.000000		.000000	791613	791613	01/01/01	79/10/01
00300	DO		MG/L	4	10.00000	1.75342	1.32417	.132417	.662084	11.0000	8.10000	78/11/21	79/10/01
00310	BOD	5 DAY	MG/L	2	6.85000	19.8450	4.45477	.650332	3.15000	10.0000	3.70000	79/03/26	79/06/27
00335	COD	LOWLEVEL	MG/L	3	13.9000	33.8700	5.81979	.418690	3.36006	20.6000	10.1000	78/11/21	79/10/01
00400	PH		SU	4	7.97499	.109263	.330550	.041448	.165275	8.30000	7.60000	78/11/21	79/10/01
00403	LAB	PH	SU	2	7.75000	.005005	.070745	.009128	.050024	7.80000	7.70000	79/06/27	79/10/01
00500	RESIDUE	TOTAL	MG/L	4	626.500	115239	339.469	.541850	169.734	958.000	319.000	78/11/21	79/10/01
00530	RESIDUE	TOT NFLT	MG/L	4	33.7500	2200.25	46.9068	1.38983	23.4534	104.000	8.00000	78/11/21	79/10/01
00610	NH3+NH4-	N TOTAL	MG/L	4	.292250	.045408	.213092	.729145	.106546	.582000	.114000	78/11/21	79/10/01
00615	NO2-N	TOTAL	MG/L	4	.023750	.001730	.041596	1.75142	.020798	.086000	.001000	78/11/21	79/10/01
00620	NO3-N	TOTAL	MG/L	4	.349250	.178849	.422906	1.21090	.211453	.957000	.020000	78/11/21	79/10/01
00625	TOT KJEL	N	MG/L	4	.965000	.716633	.846542	.877246	.423271	2.20000	.300000	78/11/21	79/10/01
00665	PHOS-TOT		MG/L P	4	.242500	.047558	.218079	.899294	.109039	.510000	.050000	78/11/21	79/10/01
01002	ARSENIC	AS,TOT	UG/L	1	10.0000					10.0000	10.0000	79/10/01	79/10/01
01027	CADMIUM	CD,TOT	UG/L	1	1.00000					1.00000	1.00000	79/10/01	79/10/01
01042	COPPER	CU,TOT	UG/L	1	10.0000					10.0000	10.0000	79/10/01	79/10/01
01045	IRON	FE,TOT	UG/L	1	190.000					190.000	190.000	79/10/01	79/10/01
01051	LEAD	PB,TOT	UG/L	1	50.0000					50.0000	50.0000	79/10/01	79/10/01
01092	ZINC	ZN,TOT	UG/L	1	1.00000					1.00000	1.00000	79/10/01	79/10/01
01501	ALPHA	TOTAL	PC/L	1	2.06000					2.06000	2.06000	79/10/01	79/10/01
03501	BETA	TOTAL	PC/L	1	5.80000					5.80000	5.80000	79/10/01	79/10/01
31501	TOT COLI	MFIMENDO	/100ML	4	85560.0	.287E+11	169627	1.98255	84813.5	340000	400.000	78/11/21	79/10/01
31616	FEC COLI	MFM-FCBR	/100ML	4	90.0000	8802.66	93.8225	1.04247	46.9113	190.000	8.00000	78/11/21	79/10/01
31679	FECSTREP	MF M-ENT	/100ML	4	670.000	1045667	1022.58	1.52624	511.289	2200.00	90.0000	78/11/21	79/10/01
70300	RESIDUE	DISS-180	C MG/L	3	547.000	145003	380.792	.696147	219.851	986.000	306.000	79/03/26	79/10/01
70507	PHOS-T	ORTHO	MG/L P	4	.116500	.019663	.140225	1.20364	.070112	.313000	.003000	78/11/21	79/10/01
71900	MERCURY	HG,TOTAL	UG/L	1	.500000					.500000	.500000	79/10/01	79/10/01

STORET RETRIEVAL DATE 80/09/18 - INVENT - VERSION OF AUG. 1980

2080228
42 57 10.0 112 49 45.0 2
ABERDEEN DRAIN BELOW LOW LINE FEEDER CANAL
16011 IDAHO BINGHAM
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
211DSURV 791222
0000 CLASS 00

/TYPA/AMBNT/STREAM

INDEX 1310001 002740 09190
MILES 0324.30 0726.10 004.80

PARAMETER				NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT	5	12.5000	20.5000	4.52769	.362215	2.02484	19.0000	7.50000	78/11/21	79/10/01
00042	ALTITUDE	FEET	AB MSL	1	4385.00					4385.00	4385.00	01/01/01	01/01/01
00061	STREAM	FLOW,	INST-CFS	3	3.00000	12.4900	3.53412	1.17804	2.04043	7.00000	.300000	78/11/21	79/10/01
00076	TURB	TRBIDMTR	HACH FTU	4	20.5000	1322.15	36.3614	1.77373	18.1807	75.0000	.600000	79/03/26	79/10/01
00095	CNDUCTVY	AT 25C	MICROMHO	5	634.000	87008.5	294.972	.465255	131.915	988.000	390.000	78/11/21	79/10/01
00116	INTNSVE	SURVEY	IDENT	6	791613	.000000	.000000		.000000	791613	791613	01/01/01	79/10/01
00300	DO		MG/L	5	10.5800	9.85211	3.13881	.296674	1.40372	16.0000	8.00000	78/11/21	79/10/01
00310	BOD	5 DAY	MG/L	3	21.1667	1131.08	33.6316	1.58889	19.4172	60.0000	1.50000	79/03/26	79/06/27
00335	COD	LOWLEVEL	MG/L	4	9.76749	2.64030	1.62490	.166358	.812450	11.8000	7.87000	78/11/21	79/10/01
00400	PH		SU	5	8.14000	.058105	.241051	.029613	.107801	8.40000	7.80000	78/11/21	79/10/01
00403	LAB	PH	SU	3	8.01666	.115921	.340472	.042471	.196571	8.40000	7.75000	79/05/31	79/10/01
00500	RESIDUE	TOTAL	MG/L	5	512.800	138214	371.771	.724984	166.261	1104.00	237.000	78/11/21	79/10/01
00530	RESIDUE	TOT NFLT	MG/L	5	93.0000	34456.5	185.625	1.99596	83.0139	425.000	6.00000	78/11/21	79/10/01
00610	NH3+NH4-	N TOTAL	MG/L	5	.197200	.008789	.093751	.475409	.041927	.331000	.084000	78/11/21	79/10/01
00615	NO2-N	TOTAL	MG/L	5	.027400	.001277	.035732	1.30410	.015980	.079000	.001000	78/11/21	79/10/01
00620	NO3-N	TOTAL	MG/L	5	.443400	.217338	.466195	1.05141	.208489	1.12000	.050000	78/11/21	79/10/01
00625	TOT KJEL	N	MG/L	5	1.04000	.377601	.614493	.590859	.274809	1.94000	.500000	78/11/21	79/10/01
00665	PHOS-TOT		MG/L P	5	.138000	.024970	.158019	1.14506	.070668	.410000	.030000	78/11/21	79/10/01
01002	ARSENIC	AS,TOT	UG/L	1	10.0000					10.0000	10.0000	79/10/01	79/10/01
01027	CADMIUM	CD,TOT	UG/L	1	1.00000					1.00000	1.00000	79/10/01	79/10/01
01042	COPPER	CU,TOT	UG/L	1	10.0000					10.0000	10.0000	79/10/01	79/10/01
01045	IRON	FE,TOT	UG/L	1	140.000					140.000	140.000	79/10/01	79/10/01
01051	LEAD	PB,TOT	UG/L	1	50.0000					50.0000	50.0000	79/10/01	79/10/01
01092	ZINC	ZN,TOT	UG/L	1	3.00000					3.00000	3.00000	79/10/01	79/10/01
01501	ALPHA	TOTAL	PC/L	1	2.00000					2.00000	2.00000	79/10/01	79/10/01
03501	BETA	TOTAL	PC/L	1	1.80000					1.80000	1.80000	79/10/01	79/10/01
31501	TOT COLI	MFIMENDO	/100ML	5	370.400	63880.9	252.747	.682362	113.032	570.000	2.00000	78/11/21	79/10/01
31616	FEC COLI	MFM-FCBR	/100ML	5	36.8000	2272.70	47.6728	1.29546	21.3199	90.0000	1.00000	78/11/21	79/10/01
31679	FECSTREP	MF M-ENT	/100ML	5	90.4000	9171.30	95.7669	1.05937	42.8283	215.000	1.00000	78/11/21	79/10/01
70300	RESIDUE	DISS-180	C MG/L	4	353.750	31957.6	178.767	.505348	89.3834	618.000	225.000	79/03/26	79/10/01
70507	PHOS-T	ORTHO	MG/L P	5	.142400	.077729	.278799	1.95786	.124683	.640000	.002000	78/11/21	79/10/01
71900	MERCURY	HG,TOTAL	UG/L	1	.500000					.500000	.500000	79/10/01	79/10/01

STORET RETRIEVAL DATE 80/09/18 - INVENT - VERSION OF AUG. 1980

2080232
42 55 05.0 112 48 55.0 2
WASTE WAY BETWEEN LOW LINE CANAL & ABERDEEN DRN
16011 IDAHO BINGHAM
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
21IDSURV 791222
0000 CLASS 00

/TYPA/AMBNT/STREAM

INDEX 1310001 002740 00010
MILES 0324.30 0726.10 001.80

PARAMETER				NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT	3	15.1667	20.5835	4.53690	.299136	2.61938	20.0000	11.0000	79/05/31	79/10/01
00042	ALTITUDE	FEET	AB MSL	1	4390.00					4390.00	4390.00	01/01/01	01/01/01
00061	STREAM	FLOW,	INST-CFS	1	10.0000					10.0000	10.0000	79/06/27	79/06/27
00076	TURB	TRBIDMTR	HACH FTU	3	1.60000	.160001	.400002	.250001	.230941	2.00000	1.20000	79/05/31	79/10/01
00095	CNDUCTVY	AT 25C	MICROMHO	3	331.000	244.000	15.6205	.047192	9.01850	349.000	321.000	79/05/31	79/10/01
00116	INTNSVE	SURVEY	IDENT	4	791613	.000000	.000000		.000000	791613	791613	01/01/01	79/10/01
00300	DO		MG/L	3	8.73333	1.16343	1.07862	.123507	.622744	9.50000	7.50000	79/05/31	79/10/01
00310	BOD	5 DAY	MG/L	2	5.90000	5.12001	2.26274	.383516	1.60000	7.50000	4.30000	79/05/31	79/06/27
00335	COD	LOWLEVEL	MG/L	3	13.8333	6.30334	2.51065	.181492	1.44952	16.2000	11.2000	79/05/31	79/10/01
00400	PH		SU	3	7.86666	.303467	.550878	.070027	.318050	8.50000	7.50000	79/05/31	79/10/01
00403	LAB	PH	SU	2	7.55000	.245010	.494985	.065561	.350007	7.90000	7.20000	79/06/27	79/10/01
00500	RESIDUE	TOTAL	MG/L	3	206.667	52.3750	7.23706	.035018	4.17832	215.000	202.000	79/05/31	79/10/01
00530	RESIDUE	TOT NFLT	MG/L	3	14.3333	74.3335	8.62169	.601513	4.97773	22.0000	5.00000	79/05/31	79/10/01
00610	NH3+NH4-	N TOTAL	MG/L	3	.085667	.000332	.018230	.212801	.010525	.102000	.066000	79/05/31	79/10/01
00615	NO2-N	TOTAL	MG/L	3	.003000	.000001	.001000	.333335	.000577	.004000	.002000	79/05/31	79/10/01
00620	NO3-N	TOTAL	MG/L	3	.130667	.003801	.061655	.471850	.035597	.200000	.082000	79/05/31	79/10/01
00625	TOT KJEL	N	MG/L	3	1.58667	.970432	.985105	.620865	.568751	2.71000	.870000	79/05/31	79/10/01
00665	PHOS-TOT		MG/L P	3	.070000	.001900	.043589	.622701	.025166	.120000	.040000	79/05/31	79/10/01
01002	ARSENIC	AS,TOT	UG/L	1	10.0000					10.0000	10.0000	79/10/01	79/10/01
01027	CADMIUM	CD,TOT	UG/L	1	1.00000					1.00000	1.00000	79/10/01	79/10/01
01042	COPPER	CU,TOT	UG/L	1	10.0000					10.0000	10.0000	79/10/01	79/10/01
01045	IRON	FE,TOT	UG/L	1	120.000					120.000	120.000	79/10/01	79/10/01
01051	LEAD	PB,TOT	UG/L	1	50.0000					50.0000	50.0000	79/10/01	79/10/01
01092	ZINC	ZN,TOT	UG/L	1	8.00000					8.00000	8.00000	79/10/01	79/10/01
01501	ALPHA	TOTAL	PC/L	1	3.27000					3.27000	3.27000	79/10/01	79/10/01
03501	BETA	TOTAL	PC/L	1	2.20000					2.20000	2.20000	79/10/01	79/10/01
31501	TOT COLI	MFIMENDO	/100ML	3	262.000	49392.0	222.243	.848256	128.312	490.000	46.0000	79/05/31	79/10/01
31616	FEC COLI	MFM-FCBK	/100ML	3	96.0000	10588.0	102.898	1.07185	59.4082	210.000	10.0000	79/05/31	79/10/01
31679	FECSTREP	MF M-ENT	/100ML	3	146.000	18508.0	136.044	.931809	78.5451	280.000	8.00000	79/05/31	79/10/01
70300	RESIDUE	DISS-180	C MG/L	3	197.000	37.0000	6.08276	.030877	3.51188	201.000	190.000	79/05/31	79/10/01
70507	PHOS-T	ORTHO	MG/L P	3	.007000	.000027	.005196	.742308	.003000	.010000	.001000	79/05/31	79/10/01
71900	MERCURY	HG,TOTAL	UG/L	1	.500000					.500000	.500000	79/10/01	79/10/01

STORET RETRIEVAL DATE 80/09/18 - INVENT - VERSION OF AUG. 1980

2080233
42 57 10.0 112 50 15.0 2
DRAIN IN NORTH ABERDEEN
16011 IDAHO BINGHAM
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
21IDSURV 791222
0000 CLASS 00

/TYPA/ANNNI/STREAM

INDEX 1310001 002740 09190 0080
MILES 0324.50 0726.10 005.40 000.10

PARAMETER				NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT	3	15.1667	18.0835	4.25247	.280383	2.45516	19.5000	11.0000	79/05/31	79/10/01
00042	ALTITUDE	FEET	AB MSL	1	4285.00					4285.00	4285.00	01/01/01	01/01/01
00061	STREAM	FLOW,	INST-CFS	1	4.00000					4.00000	4.00000	79/10/01	79/10/01
00076	TURB	TRBIDMTR	HACH FTU	3	2.73333	8.70333	2.95014	1.07932	1.70326	6.10000	.600000	79/05/31	79/10/01
00095	CNDUCTVY	AT 25C	MICROMHO	3	331.333	506.437	22.5042	.067920	12.9928	349.000	306.000	79/05/31	79/10/01
00116	INTRSVE	SURVEY	IDENT	4	791613	.000000	.000000		.000000	791613	791613	01/01/01	79/10/01
00300	DO		MG/L	3	10.6667	4.33350	2.08170	.195160	1.20187	13.0000	9.00000	79/05/31	79/10/01
00310	BOD	5 DAY	MG/L	2	2.90000	.319992	.565678	.195061	.399995	3.30000	2.50000	79/05/31	79/06/27
00335	COD	LOWLEVEL	MG/L	3	11.0533	4.49084	2.11916	.191722	1.22350	13.5000	9.80000	79/05/31	79/10/01
00400	PH		SU	3	7.96666	.043427	.208390	.026158	.120314	8.20000	7.80000	79/05/31	79/10/01
00403	LAB	PH	SU	3	7.87333	.216225	.465000	.059060	.268468	8.40000	7.52000	79/05/31	79/10/01
00500	RESIDUE	TOTAL	MG/L	3	206.333	526.375	22.9429	.111193	13.2461	222.000	180.000	79/05/31	79/10/01
00530	RESIDUE	TOT NFLT	MG/L	3	10.0000	37.0000	6.08276	.608276	3.51188	14.0000	3.00000	79/05/31	79/10/01
00610	NH3+NH4-	N TOTAL	MG/L	3	.117333	.004600	.067826	.578061	.039159	.181000	.046000	79/05/31	79/10/01
00615	NO2-N	TOTAL	MG/L	3	.004333	.000005	.002309	.532939	.001333	.007000	.003000	79/05/31	79/10/01
00620	NO3-N	TOTAL	MG/L	3	.048667	.000585	.024194	.497130	.013968	.076000	.030000	79/05/31	79/10/01
00625	TOT KJEL	N	MG/L	3	1.16000	1.03570	1.01769	.877324	.587566	2.33000	.480000	79/05/31	79/10/01
00665	PHOS-TOT		MG/L P	3	.050000	.000100	.010000	.200005	.005774	.060000	.040000	79/05/31	79/10/01
01002	ARSENIC	AS,TOT	UG/L	1	10.0000					10.0000	10.0000	79/10/01	79/10/01
01027	CADMIUM	CD,TOT	UG/L	1	1.00000					1.00000	1.00000	79/10/01	79/10/01
01042	COPPER	CU,TOT	UG/L	1	10.0000					10.0000	10.0000	79/10/01	79/10/01
01045	IRON	FE,TOT	UG/L	1	140.000					140.000	140.000	79/10/01	79/10/01
01051	LEAD	PB,TOT	UG/L	1	50.0000					50.0000	50.0000	79/10/01	79/10/01
01092	ZINC	ZN,TOT	UG/L	1	10.0000					10.0000	10.0000	79/10/01	79/10/01
01501	ALPHA	TOTAL	PC/L	1	.940000					.940000	.940000	79/10/01	79/10/01
03501	BETA	TOTAL	PC/L	1	1.70000					1.70000	1.70000	79/10/01	79/10/01
31501	TOT COLI	MFIMENDO	/100ML	3	1556.67	2839637	1685.12	1.08252	972.906	3500.00	500.000	79/05/31	79/10/01
31616	FEC COLI	MFM-FCBR	/100ML	3	96.0000	2212.00	47.0319	.489916	27.1539	150.000	64.0000	79/05/31	79/10/01
31679	FECSTREP	MF M-ENT	/100ML	3	854.000	1372948	1171.73	1.37205	676.498	2200.00	62.0000	79/05/31	79/10/01
70300	RESIDUE	DISS-180	C MG/L	3	197.000	436.000	20.8806	.105993	12.0554	211.000	173.000	79/05/31	79/10/01
70507	PHOS-T	ORTHO	MG/L P	3	.010333	.000090	.009504	.919779	.005487	.020000	.001000	79/05/31	79/10/01
71900	MERCURY	HG,TOTAL	UG/L	1	.500000					.500000	.500000	79/10/01	79/10/01

STORET RETRIEVAL DATE 80/09/18 - INVENT - VERSION OF AUG. 1980

2080236
42 56 35.0 112 49 35.0 2
CITY OF ABERDEEN DISCHARGE
16011 IDAHO BINGHAM
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
21IDSURV 791222
0000 CLASS 00

/TYPA/AMBNT/STREAM

INDEX 1310001 002740 09190
MILES 0324.30 0726.10 003.70

PARAMETER				NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
00010	WATER	TEMP	CENT	5	10.9000	22.5500	4.74869	.435660	2.12368	16.0000	6.50000	78/11/21	79/10/01
00042	ALTITUDE	FEET	AB MSL	1	4380.00					4380.00	4380.00	01/01/01	01/01/01
00061	STREAM	FLOW,	INST-CFS	3	.280000	.005200	.072111	.257538	.041633	.340000	.200000	78/11/21	79/06/27
00076	TURB	IRBIDMTR	HACH FTU	4	9.07500	29.1825	5.40209	.595271	2.70104	15.0000	1.90000	79/01/29	79/10/01
00095	CNDUCTVY	AT 25C	MICROMHO	5	1123.20	22642.5	150.474	.133969	67.2941	1266.00	900.000	78/11/21	79/10/01
00116	ININSVE	SURVEY	IDENT	6	791613	.000000	.000000		.000000	791613	791613	01/01/01	79/10/01
00300	DO		MG/L	5	7.21999	5.13715	2.26653	.313924	1.01362	9.30000	4.00000	78/11/21	79/10/01
00310	BOD	5 DAY	MG/L	4	43.5750	1801.71	42.4465	.974103	21.2233	105.000	11.1000	78/11/21	79/06/27
00335	COD	LOWLEVEL	MG/L	4	65.2250	3661.73	60.5122	.927746	30.2561	155.000	23.9000	78/11/21	79/10/01
00400	PH		SU	5	7.64000	.068115	.260989	.034161	.116718	8.00000	7.40000	78/11/21	79/10/01
00403	LAB	PH	SU	3	7.33666	.161125	.401404	.054712	.231751	7.80000	7.10000	79/03/26	79/10/01
00410	T ALK	CACO3	MG/L	1	272.000					272.000	272.000	79/01/29	79/01/29
00425	HCO3 ALK	CACO3	MG/L	2	286.000	392.000	19.7990	.069227	14.0000	300.00	272.000	79/01/29	79/03/26
00430	CO3 ALK	CACO3	MG/L	1	1.00000					1.0000	1.00000	79/01/29	79/01/29
00500	RESIDUE	TOTAL	MG/L	5	713.800	4156.75	64.4729	.090323	28.8331	756.00	601.000	78/11/21	79/10/01
00530	RESIDUE	TOT NFLT	MG/L	5	15.8000	173.200	13.1606	.832946	5.88558	33.000	2.00000	78/11/21	79/10/01
00610	NH3+NH4-	N TOTAL	MG/L	5	11.6360	48.1404	6.93833	.596282	3.10292	19.4000	3.88000	78/11/21	79/10/01
00615	NO2-N	TOTAL	MG/L	4	.674500	1.37243	1.17151	1.73686	.585754	2.43000	.019000	78/11/21	79/06/27
00620	NO3-N	TOTAL	MG/L	5	.221800	.164412	.405478	1.82813	.181335	.940000	.001000	78/11/21	79/10/01
00625	TOT KJEL	N	MG/L	5	15.0220	64.0707	8.00442	.532847	3.57968	25.6000	6.93000	78/11/21	79/10/01
00665	PHOS-TOT		MG/L P	5	5.05799	4.39464	2.09634	.414460	.937511	6.95000	2.49000	78/11/21	79/10/01
00900	TOT HARD	CACO3	MG/L	1	260.000					260.000	260.000	79/01/29	79/01/29
00916	CALCIUM	CA-TOT	MG/L	1	62.0000					62.0000	62.0000	79/01/29	79/01/29
00927	MGNSIUM	MG,TOT	MG/L	1	25.4000					25.4000	25.4000	79/01/29	79/01/29
00929	SODIUM	NA,TOT	MG/L	1	99.0000					99.0000	99.0000	79/01/29	79/01/29
00937	PTSSIUM	K,TOT	MG/L	1	11.7000					11.7000	11.7000	79/01/29	79/01/29
00940	CHLORIDE	CL	MG/L	1	114.000					114.000	114.000	79/01/29	79/01/29
00945	SULFATE	SO4-TOT	MG/L	1	150.000					150.000	150.000	79/01/29	79/01/29
00951	FLUORIDE	F,TOTAL	MG/L	1	.630000					.630000	.630000	79/01/29	79/01/29
00956	SILICA	TOTAL	MG/L	1	35.7000					35.7000	35.7000	79/01/29	79/01/29
01002	ARSENIC	AS,TOT	UG/L	2	10.0000	.000000	.000000		.000000	10.0000	10.0000	79/01/29	79/10/01
01022	BORON	B,TOT	UG/L	1	270.000					270.000	270.000	79/01/29	79/01/29
01027	CADMIUM	CD,TOT	UG/L	2	1.00000	.000000	.000000		.000000	1.00000	1.00000	79/01/29	79/10/01
01032	CHROMIUM	HEX-VAL	UG/L	1	50.0000					50.0000	50.0000	79/10/01	79/10/01
01034	CHROMIUM	CR,TOT	UG/L	2	50.0000	.000000	.000000		.000000	50.0000	50.0000	79/01/29	79/10/01
01042	COPPER	CU,TOT	UG/L	2	10.0000	.000000	.000000		.000000	10.0000	10.0000	79/01/29	79/10/01
01045	IRON	FE,TOT	UG/L	2	180.000	16200.0	127.279	.707107	90.0000	270.000	90.0000	79/01/29	79/10/01
01051	LEAD	PB,TOT	UG/L	2	50.0000	.000000	.000000		.000000	50.0000	50.0000	79/01/29	79/10/01
01055	MANGNESE	MN	UG/L	2	40.0000	200.000	14.1421	.353553	10.0000	50.0000	30.0000	79/01/29	79/10/01

STORET RETRIEVAL DATE 80/09/18 - INVENT - VERSION OF AUG. 1980

2080236
42 56 35.0 112 49 35.0 2
CITY OF ABERDEEN DISCHARGE
16011 IDAHO BINGHAM
PACIFIC NORTHWEST 130600
UPPER SNAKE RIVER
211DSURV 791222
0000 CLASS 00

/TYPA/AMBNT/STREAM

INDEX 1310001 002740 09190
MILES 0324.30 0726.10 003.70

PARAMETER				NUMBER	MEAN	VARIANCE	STAN DEV	COEF VAR	STAND ER	MAXIMUM	MINIMUM	BEG DATE	END DATE
01092 ZINC	ZN,TOT		UG/L	2	64.0000	6498.00	80.6102	1.25953	57.0000	121.000	7.00000	79/01/29	79/10/01
01501 ALPHA	TOTAL		PC/L	1	4.60000					4.60000	4.60000	79/10/01	79/10/01
03501 BETA	TOTAL		PC/L	1	7.00000					7.00000	7.00000	79/10/01	79/10/01
31501 TOT COLI	MFIMENDO		/100ML	5	329021	.505E+12	710765	2.16024	317864	1600000	2.00000	78/11/21	79/10/01
31616 FEC COLI	MFM-FCBR		/100ML	5	226621	.238E+12	488442	2.15533	218438	1100000	1.00000	78/11/21	79/10/01
31679 FECSTREP	MF M-ENT		/100ML	5	56525.6	.156E+11	124930	2.21015	55870.6	280000	1.00000	78/11/21	79/10/01
50060 CHLORINE	TOT RESD		MG/L	2	1.35000	.045002	.212137	.157138	.150003	1.50000	1.20000	78/11/21	79/03/26
70300 RESIDUE	DISS-180	C	MG/L	3	657.333	5194.50	72.0729	.109644	41.6113	709.000	575.000	79/03/26	79/10/01
70507 PHOS-T	ORTHO		MG/L P	5	4.50399	4.84995	2.20226	.488957	.984881	7.10000	2.16000	78/11/21	79/10/01
71900 MERCURY	HG,TOTAL		UG/L	1	.500000					.500000	.500000	79/10/01	79/10/01
80154 SUSP SED	CONC		MG/L	1	24.0000					24.0000	24.0000	79/01/29	79/01/29

APPENDIX C

Graphics

STORET STATION 2080225
ABERDEEN DRAIN NEAR MOUTH

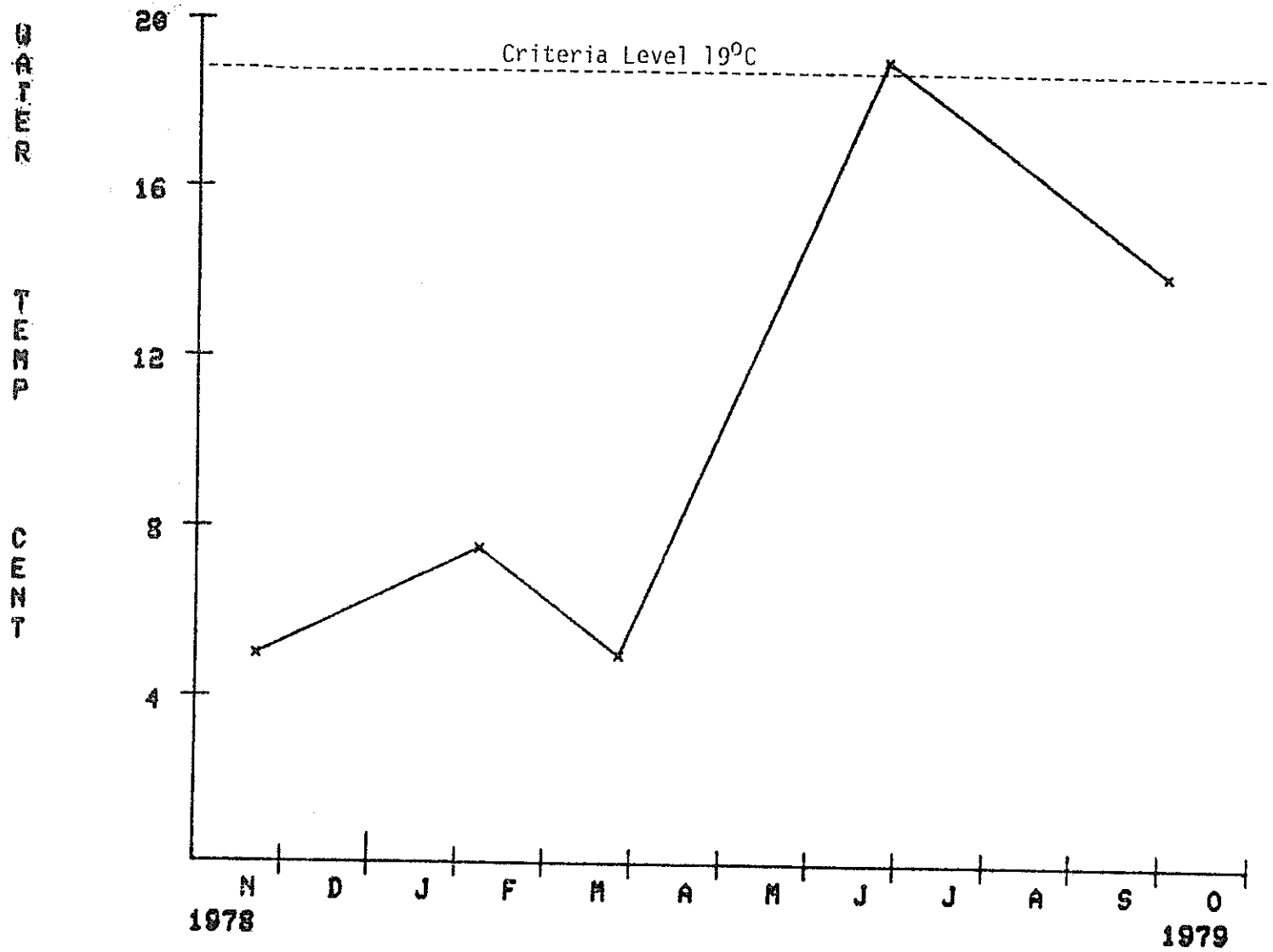


Figure 3

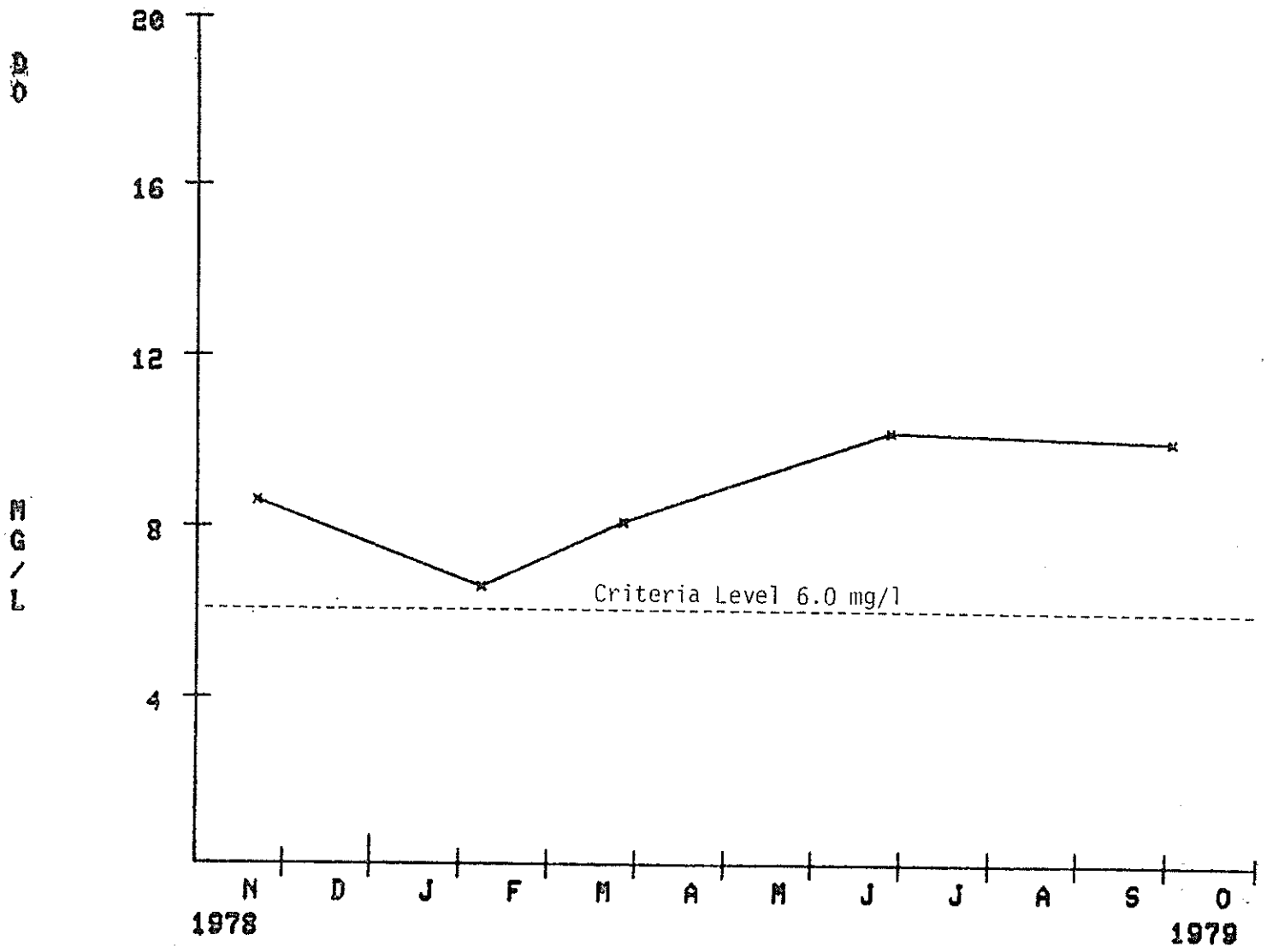

STORET STATION 2080225
ABERDEEN DRAIN NEAR MOUTH
DO
MG/L
20
16
12
8
4
Criteria Level 6.0 mg/l
N
D
J
F
M
A
M
J
J
A
S
O
1978
1979

Figure 4

STORET STATION 2080225
ABERDEEN DRAIN NEAR MOUTH

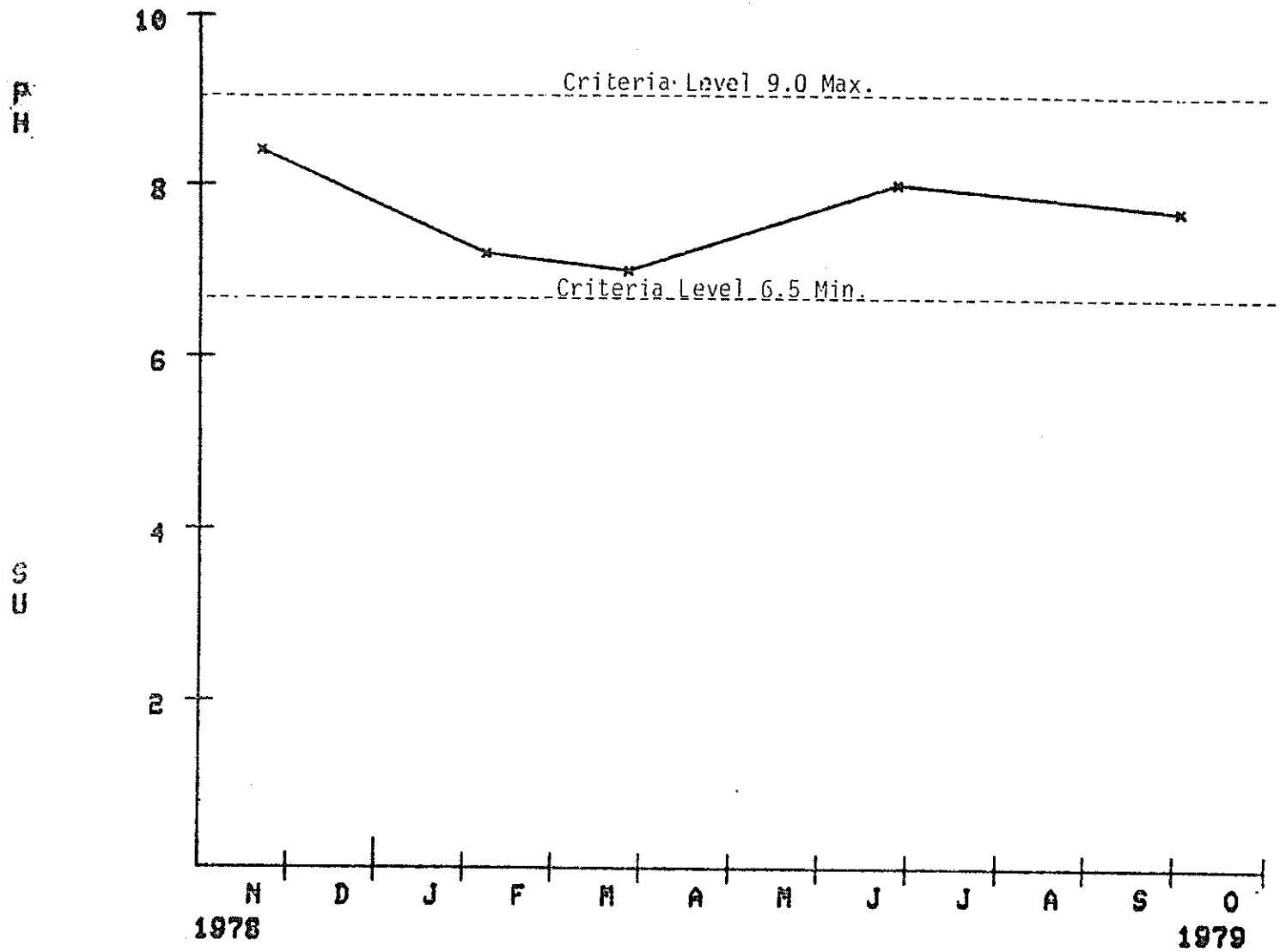


Figure 5

STORET STATION 2080225
ABERDEEN DRAIN NEAR MOUTH

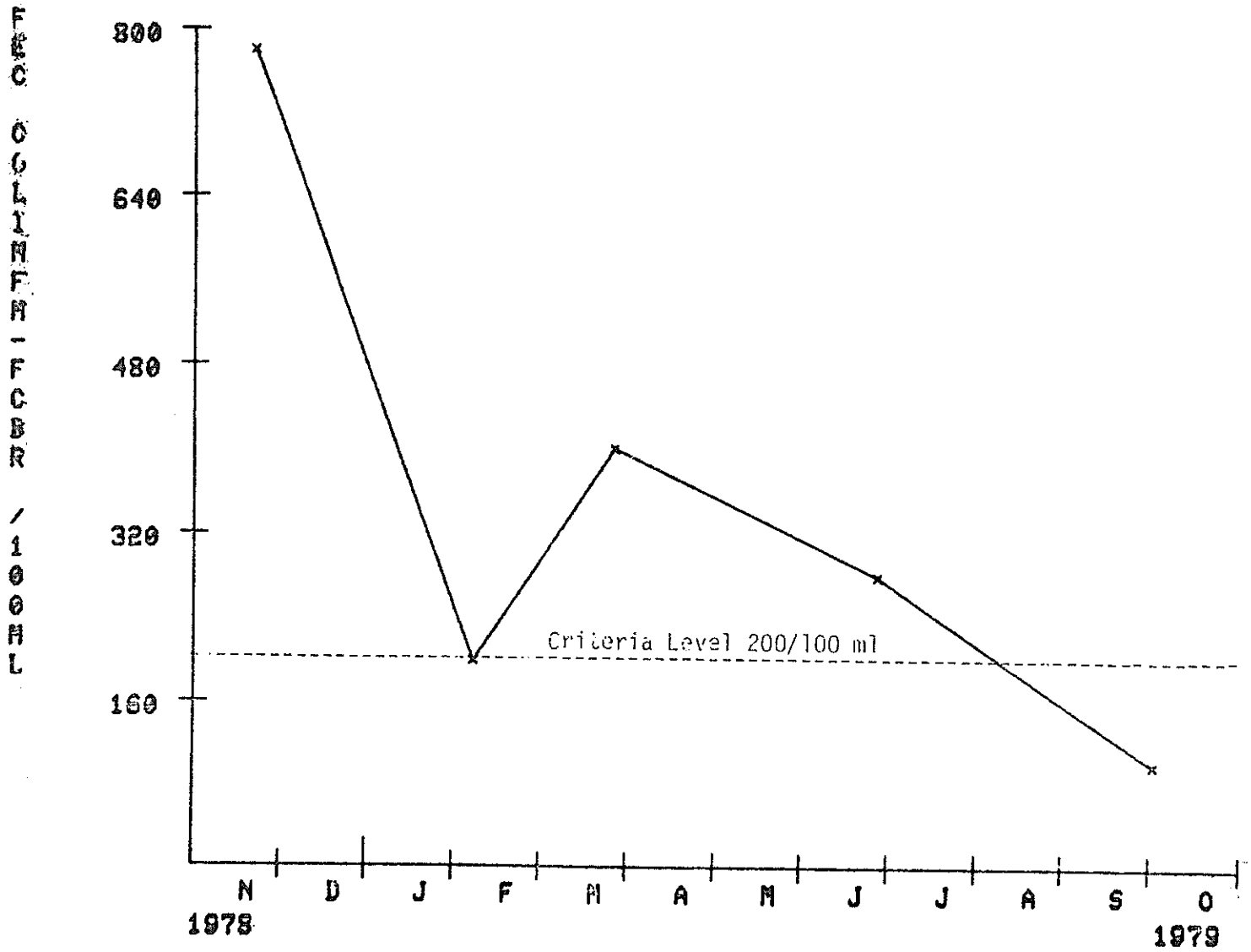


Figure 6

STORET STATION 2080226
ABERDEEN DRAIN NEAR MOUTH

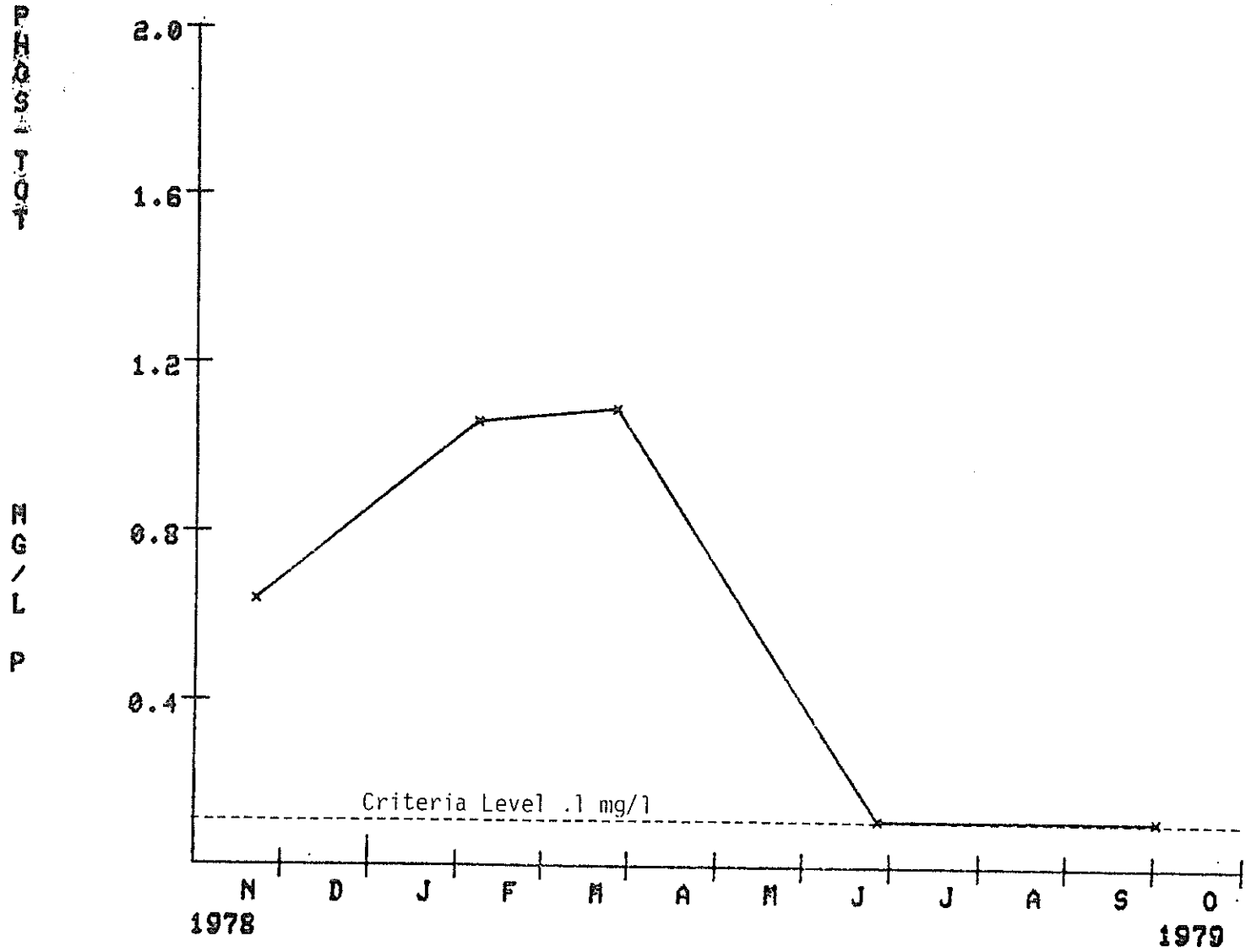


Figure 7

STORET STATION 2080225
ABERDEEN DRAIN NEAR MOUTH

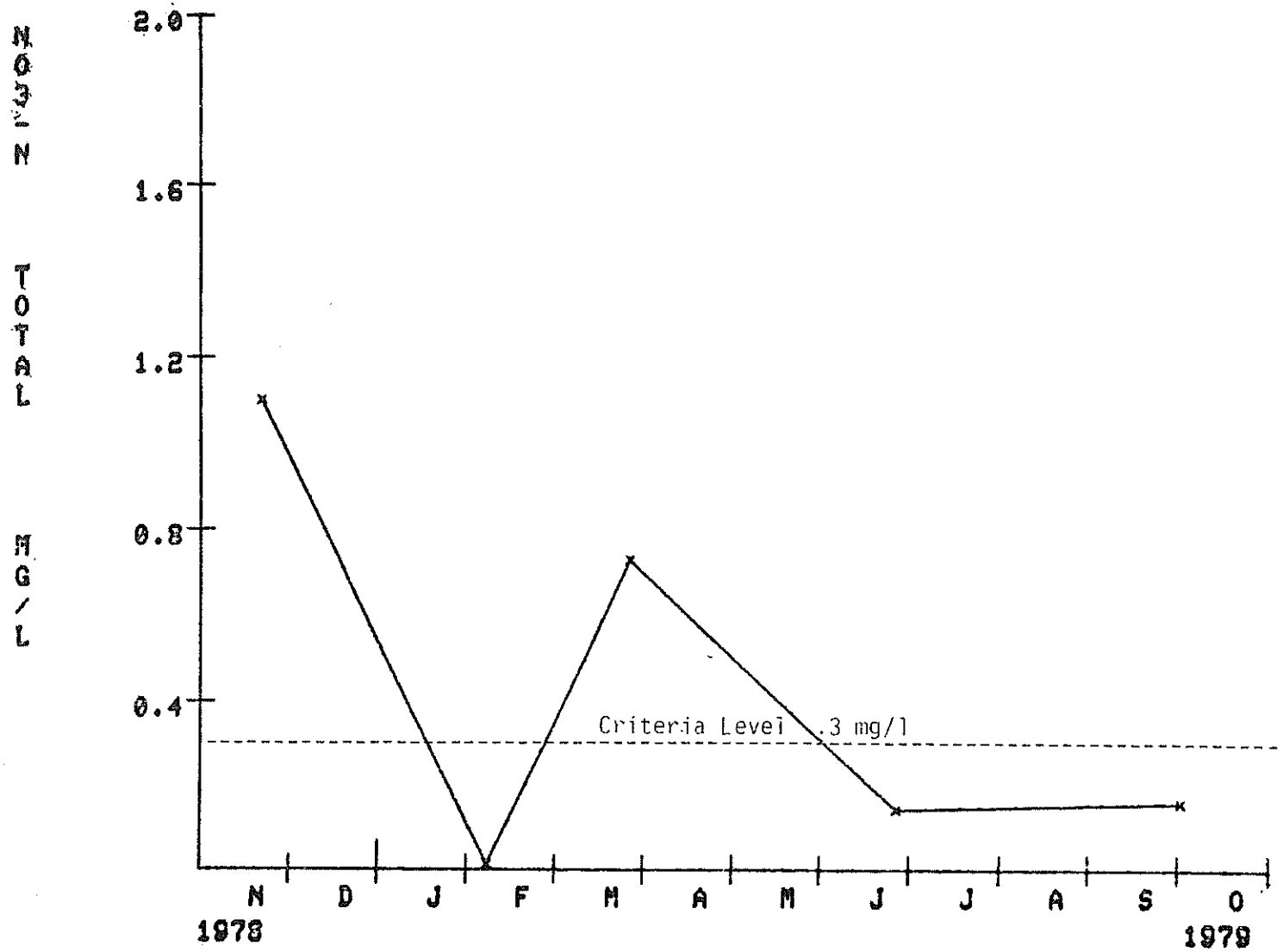


Figure 8

STORET STATION 2080225
ABERDEEN DRAIN NEAR MOUTH

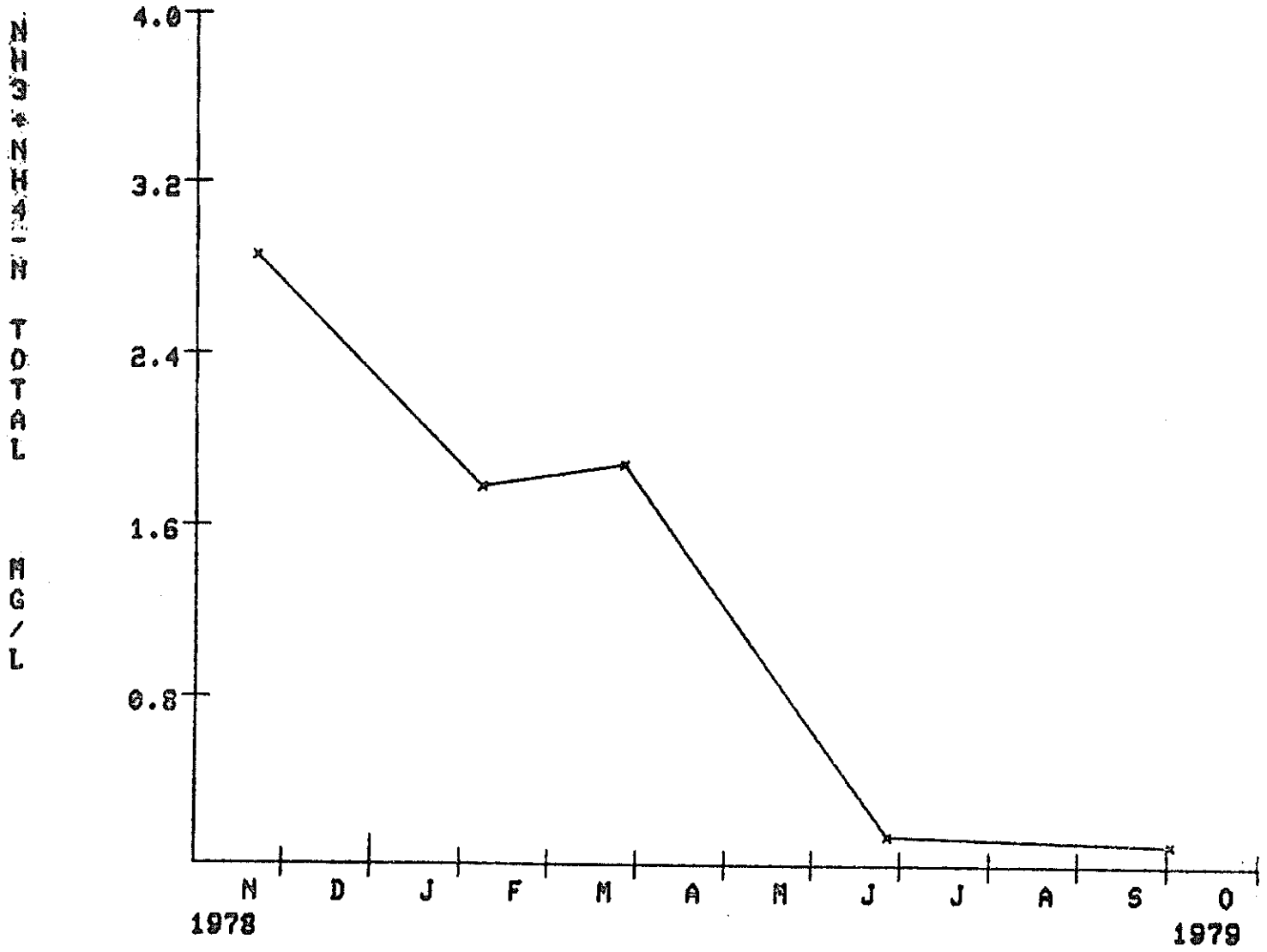


Figure 9

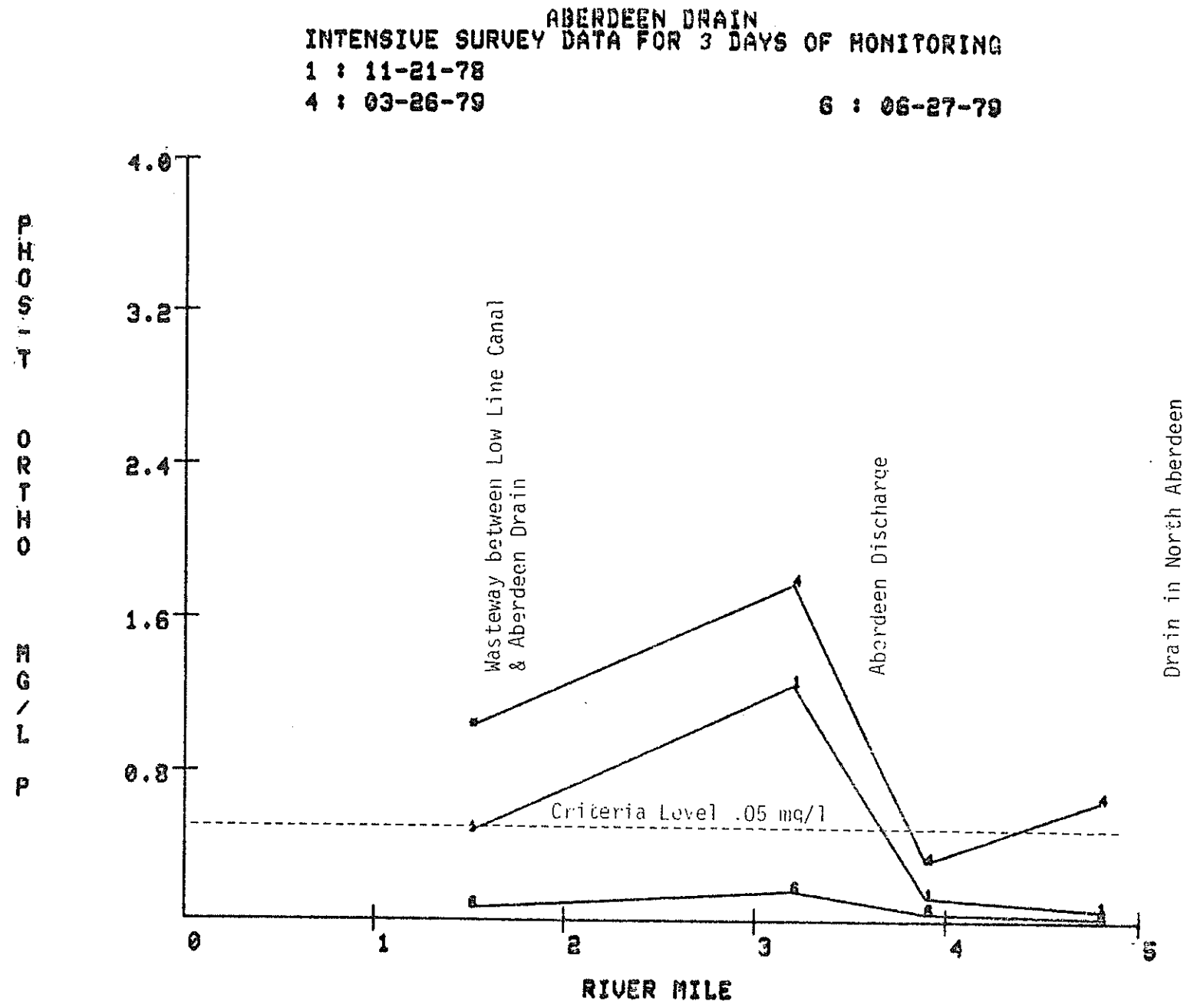

ABERDEEN DRAIN
INTENSIVE SURVEY DATA FOR 3 DAYS OF MONITORING
1 : 11-21-78
4 : 03-26-79
6 : 06-27-79
PHOSPHORTHO MG/L P
4.0
3.2
2.4
1.6
0.8
Wasteway between Low Line Canal & Aberdeen Drain
Aberdeen Discharge
Drain in North Aberdeen
Criteria Level .05 mg/l
0
1
2
3
4
5
RIVER MILE

Figure 10

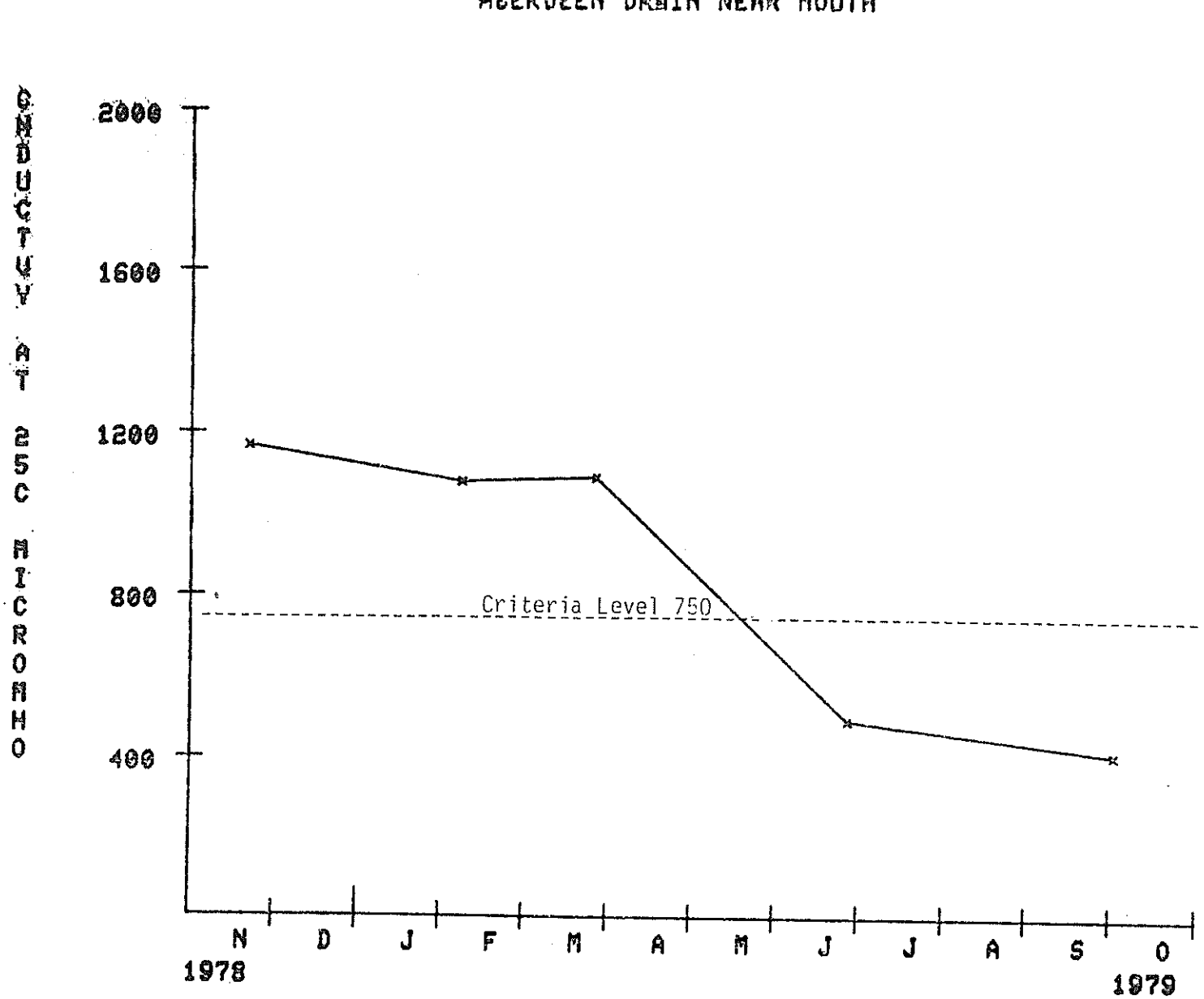

STORET STATION 2080225
ABERDEEN DRAIN NEAR MOUTH
CONDUCTVY AT 25C MICROMHO
2000
1600
1200
800
400
Criteria Level 750
N
D
J
F
M
A
M
J
J
A
S
O
1978
1979

Figure 11

STORET STATION 2080225
ABERDEEN DRAIN NEAR MOUTH

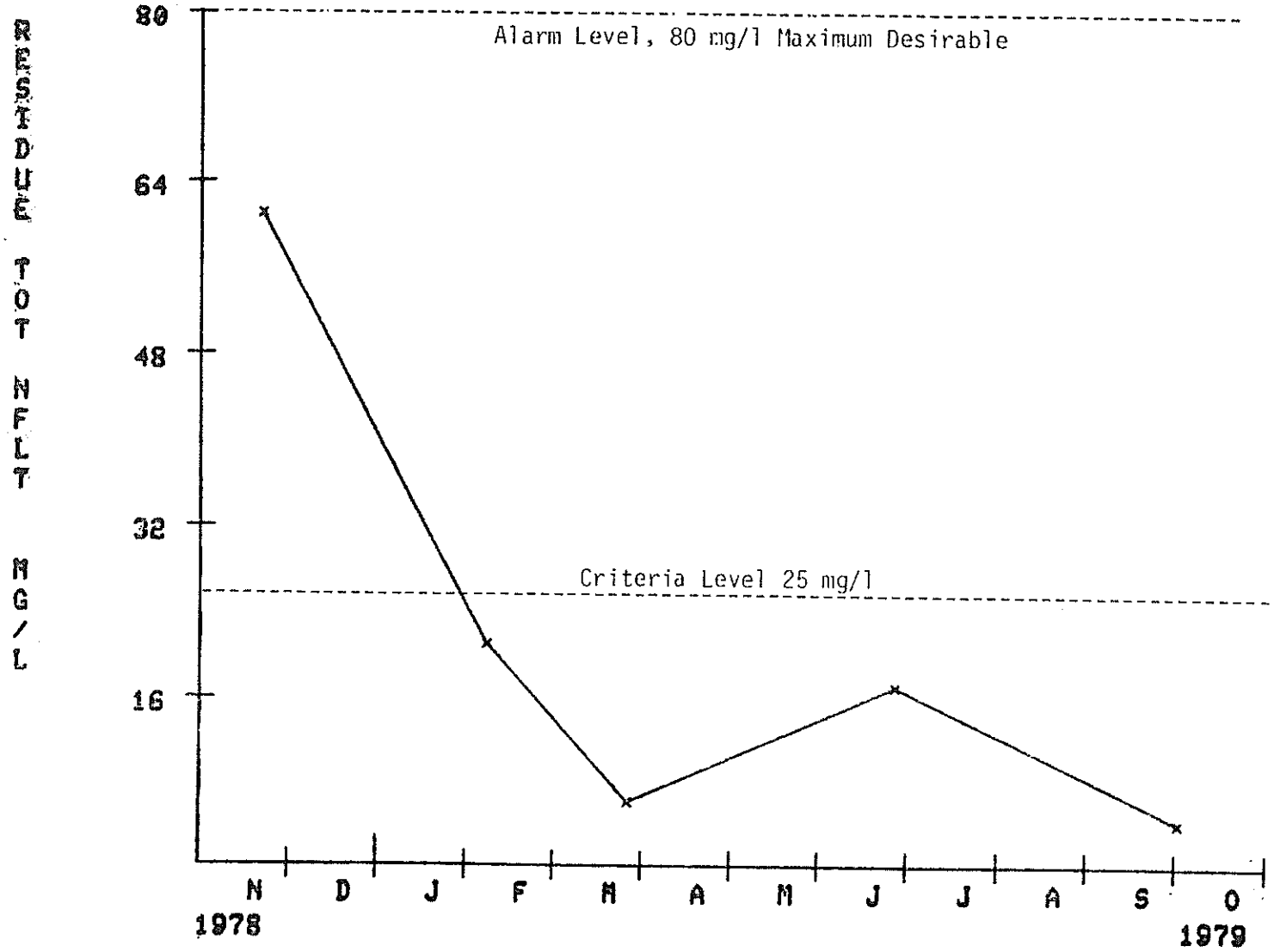


Figure 12

STORET STATION 2080225
ABERDEEN DRAIN NEAR MOUTH

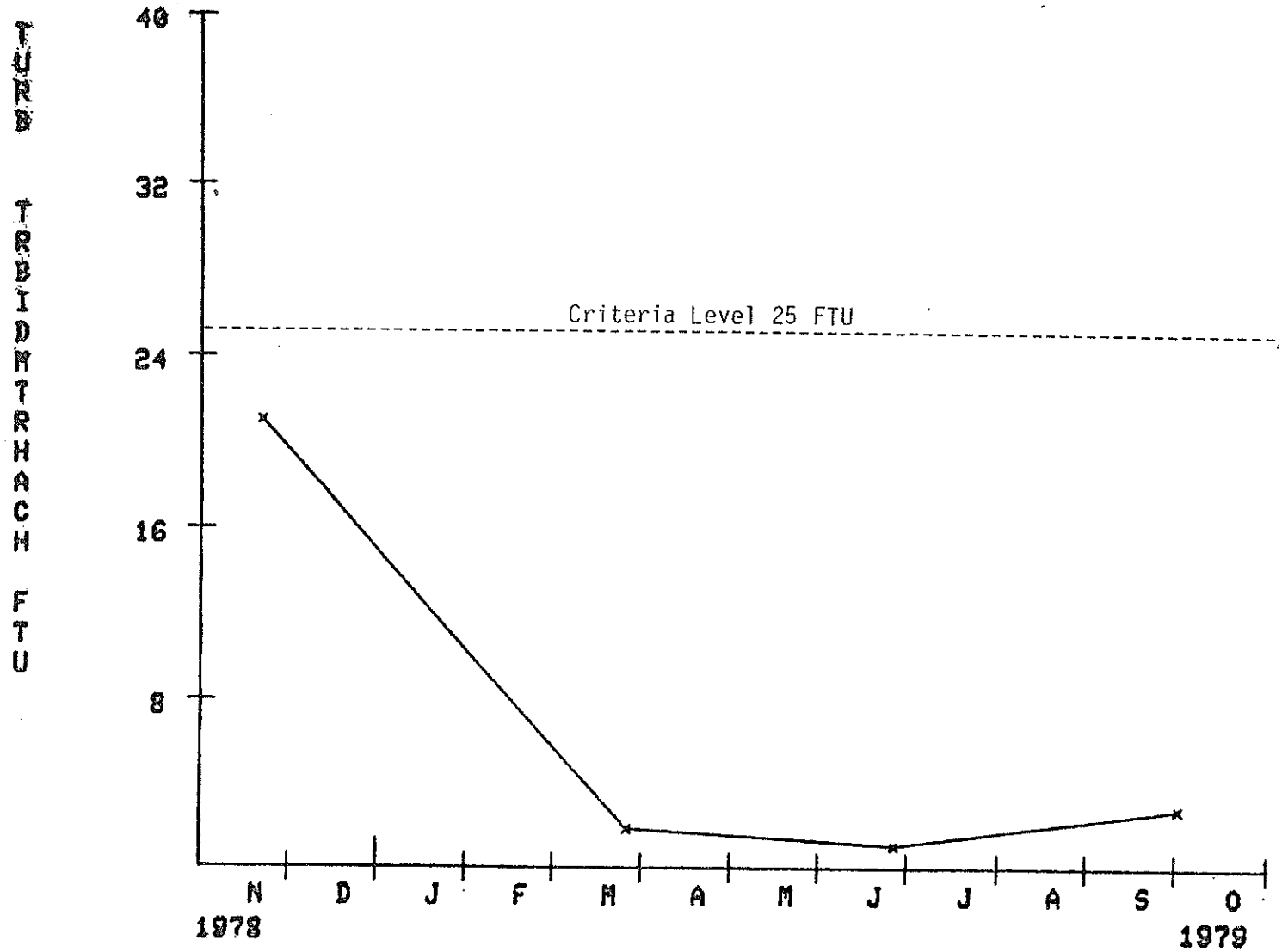


Figure 13