INTERIM COMPILATION OF 1976 SUSPENDED SEDIMENT DATA FOR THE AOSERP STUDY AREA

by

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for

ALBERTA OIL SANDS
ENVIRONMENTAL RESEARCH PROGRAM

HY 1.3

March 1979

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ABSTRACT

This compilation report contains all the available 1976 suspended sediment concentration and particle size data collected in the Alberta Oil Sands Environmental Research Program study area.

ACKNOWLEDGEMENTS

This research project HY 1.3 was funded by the Alberta Oil Sands Environmental Research Program, a joint Alberta - Canada research program established to fund, direct and co-ordinate environmental research in the Athabasca Oil Sands area of northeastern Alberta.

1. INTRODUCTION

This report contains all the available suspended sediment discharge information for 1976 that was collected by Water Survey of Canada and by Alberta Oil Sands Environmental Research Program (AOSERP) personnel within the AOSERP study boundaries. Information on suspended sediment concentrations at twelve stream gauging station locations and at an additional twenty-two miscellaneous sites are contained within the Appendices. Suspended sediment discharge information and/or particle size data are available for some of these locations.

The data have been collected and analysed according to prescribed Water Survey of Canada standards. No details on procedures are contained herein but this information may be obtained by referring to the Annual Sediment Data for Canadian Rivers publications.

Some suspended sediment data have been collected prior to 1976. Table 1 indicates what historical data are available. This data may be obtained from the annual Sediment Data for Canadian Rivers publications or, if more detail is required, may be obtained upon request to:

Regional Chief
Water Survey of Canada
Environment Canada
110 - 11th Avenue S.W.
Calgary, Alberta
T2R 0B8

Sampling locations for stream gauging stations are indicated in Figure 1 by gauging station number. No information is available in this report regarding locations of the AOSERP sampled sites. Locations and streamflow discharge information

for these miscellaneous sites are available from the AOSERP office.

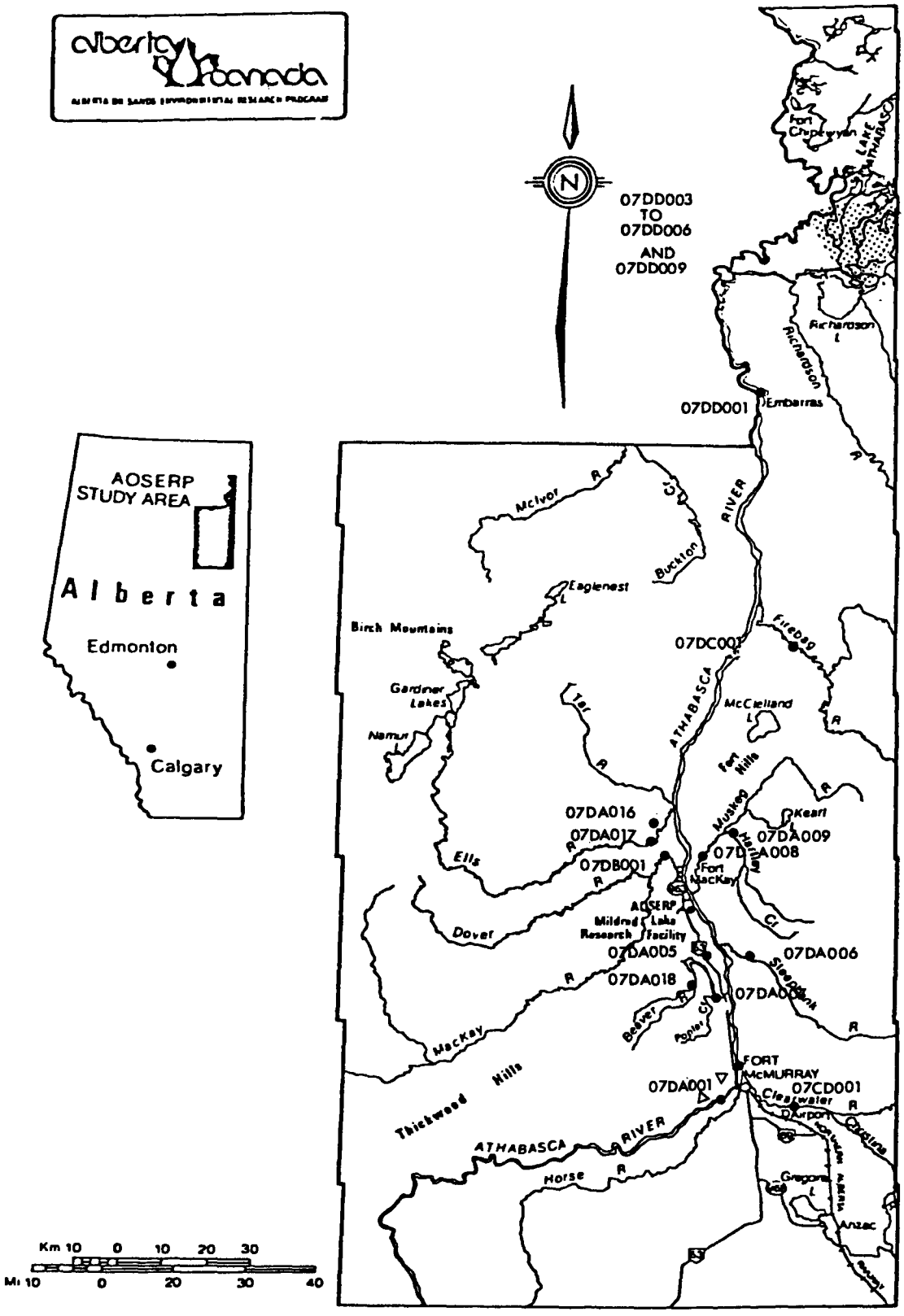


Figure 1. The AOSERP study area with sediment sampled gauging stations indicated.

Table 1. List of available sediment information in AOSERP study area prior to 1976.

STATION NUMBER	STATION NAME	AVAILABLE DATA[a]
07DD001	Athabasca River at Embarras Airport	1971-73 Misc. 1974
	Athabasca River at McMurray	1973-75
07DA001	Athabasca River below McMurray	1967-68 Misc. 1969-72
07DA005	Beaver River near Fort Mackay	1974-75 Misc.
07DD006	Big Point Channel below Divergence	1971-75 Misc.
07CD001	Clearwater River at Draper	1967-68 Misc. 1969-75
07DD003	Embarras River below Divergence	1971-74 Misc.
07DD004	Fletcher Channel below Divergence	1971-74 Misc.
07DD005	Goose Island Channel below Divergence	1971-73 Misc.
07DD009	Jackfish Creek above Athabasca River	1972-73 Misc.
07DA007	Poplar Creek near Fort McMurray	1974-75 Misc.
07DA006	Steepbank River near Fort McMurray	1975 Misc.

[a] Symbols: Misc. = Miscellaneous sediment data only.

2. REFERENCES CITED

Environment Canada. Annually. Sediment Data Canadian Rivers. Ottawa, Ontario

3. APPENDICES

These Appendices contain suspended sediment information for twelve stream gauging locations and for twenty-two miscellaneous sites. Data that are listed include temperature, concentration and daily streamflow and suspended sediment discharge. In addition particle size information is available for five of the stream gauging locations and for four of the miscellaneous sites sampled by AOSERP personnel.

SEDIMENT SURVEY ATHABASCA RIVER AT EMBARRAS AIRPORT - STATION NO. 07DD001
MAY 11 1978 PAGE 290
CALGARY, ALTA.

SUSPENDED SEDIMENT FOR 1976

DAY	JAN TEMP. (C)	JAN DAILY DISCHARGE (CFS)	JAN MEAN CON-CENTRATION (MG/L)	JAN TONS PER DAY	FEB TEMP. (C)	FEB DAILY DISCHARGE (CFS)	FEB MEAN CON-CENTRATION (MG/L)	FEB TONS PER DAY	MAR TEMP. (C)	MAR DAILY DISCHARGE (CFS)	MAR MEAN CON-CENTRATION (MG/L)	MAR TONS PER DAY	DAY
1		10700 B				7800 B				6700 B			1
2		10500 B				7850 B				6600 B			2
3		10300 B				7900 B				6500 B			3
4		10100 B				7950 B				6400 B			4
5		10000 B				8000 B				6400 B			5
6		9800 B				8100 B				6300 B			6
7		9600 B				8200 B				6200 B			7
8		9440 B				8200 B				6100 B			8
9		9300 B				8200 B				6070 B			9
10		9000 B				8220 B				6100 B			10
11		8900 B				8200 B				6100 B			11
12		8800 B				8200 B				6100 B			12
13		8600 B				8100 B				6200 B			13
14		8400 B				8000 B				6200 B			14
15		8300 B				8000 B				6200 B			15
16		8200 B				7900 B				6700 B			16
17		8100 B				7900 B				6200 B			17
18		8000 B				7800 B				6300 B			18
19		7900 B				7700 B				6300 B			19
20		7850 B				7700 B				6300 B			20
21		7800 B				7600 B				6400 B			21
22		7750 B				7500 B				6400 B			22
23		7700 B				7400 B				6500 B			23
24		7650 B				7300 B				6500 B			24
25		7600 B				7200 B				6600 B			25
26		7600 B				7100 B				6600 B			26
27		7600 B				7000 B				6700 B			27
28		7450 B				6900 B				6800 B			28
29		7700 B				6800 B				7000 B			29
30		7750 B								7200 B			30
31		7800 B								7300 B			31
TOTAL		266790				224720				199560			TOTAL
MEAN		8590				7750				6440			MEAN

SEDIMENT SURVEY ATHABASCA RIVER AT EMBARRAS AIRPORT - STATION NO. 07DD001
MAY 11 1978 PAGE 291
CALGARY, ALTA.

SUSPENDED SEDIMENT FOR 1976

DAY	APR TEMP. (C)	APR DAILY DISCHARGE (CFS)	APR MEAN CON-CENTRATION (MG/L)	APR TONS PER DAY	MAY TEMP. (C)	MAY DAILY DISCHARGE (CFS)	MAY MEAN CON-CENTRATION (MG/L)	MAY TONS PER DAY	JUN TEMP. (C)	JUN DAILY DISCHARGE (CFS)	JUN MEAN CON-CENTRATION (MG/L)	JUN TONS PER DAY	DAY
1		7900 B				34000 E	130	11900		25300	72	4920	1
2		8500 B				33000 E	127	11300	18.0	27100	59 S	4510	2
3		9500 B				32900 E	124	10900		27900	85	6380	3
4		10900 B				32000 E	121	10500	16.0	26400	68 S	4920	4
5		12000 B				31500 E	118	10000		26500	68	4870	5
6		14000 B				30500 E	115	9470	17.0	27000	67 S	4880	6
7		16000 B				30000 E	112	9070		26700	60	4330	7
8		18000 B				29500 E	109	8680	18.0	26300	58 S	4120	8
9		21000 B				29000 E	106	8300		26100	61	4300	9
10		23000 B				29000 E	103	8060	20.0	25000	67 S	4520	10
11		27500 B				27900 A	100	7530		24000	74	4800	11
12		30000 B				28000	102	7710	18.0	23200	82 S	5140	12
13		35000 B				28400	105	8050		22700	76	4660	13
14		39000 B				28400	108	8280	17.0	23000	62 S	3850	14
15		42000 B			13.0	28000	107 S	8090		23500	61	3870	15
16		50000 B				27500	106	7870	18.0	24000	71 S	4600	16
17		56000 B			12.0	27900	111 S	8360		25700	68	4720	17
18		65000 B				29500	119	9480	19.0	27400	58 S	4290	18
19		69000 B			12.0	31200	119 S	10000		26600	62	4460	19
20		76000 B				31300	106	8960	19.0	28600	70 S	5410	20
21		78000 B			14.0	29900	95 S	7670		27700	65	4860	21
22		66000 E				28700	87	6740	20.0	26900	60 S	4360	22
23		55700			14.0	27600	87 S	6480		27000	55	4010	23
24		52000 E				26400	87	6200	18.0	29000	57 S	4460	24
25		47000 E			17.0	25700	83 S	5760		32400	89	7790	25
26		43000 E				25300	78	5330	17.0	36300	142 S	13900	26
27		40000 E			10.0	24700	69 S	4600	18.0	41600	220 S	24700	27
28		38000 E				24200	59	3860	19.0	44100	275 S	32700	28
29		36000 E			10.0	23900	55 S	3550	20.0	44000	269 S	32100	29
30		35000 E				23800	52	3340	20.0	46600	284 S	35700	30
31					17.0	24000	57 S	3690					31
TOTAL		1113000				883300		239750		874700		260580	TOTAL
MEAN		37100				28500		7730		29100		8680	MEAN

SEDIMENT SURVEY — ATHABASCA RIVER AT EMBARRAS AIRPORT — STATION NO. 07DD001
MAY 11 1978 PAGE 292
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	JUL TEMP. (C)	JUL DAILY DISCHARGE (CFS)	JUL MEAN CONCENTRATION (MG/L)	JUL TONS PER DAY	AUG TEMP. (C)	AUG DAILY DISCHARGE (CFS)	AUG MEAN CONCENTRATION (MG/L)	AUG TONS PER DAY	SEP TEMP. (C)	SEP DAILY DISCHARGE (CFS)	SEP MEAN CONCENTRATION (MG/L)	SEP TONS PER DAY	DAY
1	20.0	49700	354 S	47300		39600	119	12300		74400	938	188000	1
2	20.0	51500	360 S	51200		41000	148	16400	10.0	76000	488 S	104000	2
3	20.0	52600	362 S	54300		41400	140	15500		72100	654	88000	3
4	20.0	51500	340	48400		40700	124	13600	20.0	67000	598 S	79900	4
5		49000	274	36300		38900	122	12000		62400	719	54100	5
6	20.0	47500	224 S	29200		38100	135	13900	19.0	59800	263 S	41900	6
7		52200	367	37600		36700	144	14200		46400	225	14400	7
8	20.0	57700	298 S	45200		39100	203	21400	18.0	55200	199 S	29700	8
9		55100	318	46300		40300	223	24300		46100	217	32900	9
10	20.0	50500	350 S	48000		44400	262	31400	18.0	56100	216 S	32700	10
11		46000	376	47900		43700	349	46000		54200	181	26500	11
12	20.0	46500	266 S	33400		50600	367	50400	17.0	52600	174 S	24900	12
13		47500	229	29400		48900	336	44400		50800	201	24300	13
14	20.0	48400	210 S	26500		47700	304	39200	16.0	93000	163 S	23700	14
15		50900	217	29600		46900	320	42200		51200	144	19900	15
16	20.0	53000	222 S	32200		49200	329	43200	16.0	48000	138 S	17900	16
17		54200	220	33700	22.0	44000	294 S	34100		45400	122	15000	17
18	20.0	52700	221 S	31700		43600	294	31300	13.0	43700	121 S	14300	18
19		51200	220	30400	22.0	42000	283 S	23900		42700	147	16900	19
20	20.0	49800	227 S	30500		41000	145	16100	12.0	41300	191 S	21300	20
21		49100	224	29700	21.0	41300	113 S	12600		39800	185	19900	21
22		48200	208	27100		40800	140	15900	15.0	38000	142 S	14600	22
23		46600	189	23800	19.0	63300	209 S	35700		36300	106	10400	23
24		46000	173	21500		82700	301	51000	13.0	34700	90 S	8430	24
25		46700	163	20600	20.0	96000	401 S	60600		33300	83	7460	25
26		46400	162	20000		98200	417	56500	12.0	32300	69 S	7760	26
27		45800	158	19200	18.0	67000	398 S	60500		31000	90	7530	27
28		43900	151	17900		58200	429	58100	13.0	30600	88 S	7270	28
29		42600	140	16400	18.0	59500	394 S	55400		29400	97	7800	29
30		40900	148	16300		63400	613	105000	9.0	29100	104 S	8170	30
31		39900	119	12900	16.0	60100	388 S	100000					31
TOTAL		1913100		996100		1404600		1199100		1457200		906540	TOTAL
MEAN		48600		32100		47900		38700		48600		30200	MEAN

SEDIMENT SURVEY — ATHABASCA RIVER AT EMBARRAS AIRPORT — STATION NO. 07DD001
MAY 11 1978 PAGE 293
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	OCT TEMP. (C)	OCT DAILY DISCHARGE (CFS)	OCT MEAN CONCENTRATION (MG/L)	OCT TONS PER DAY	NOV TEMP. (C)	NOV DAILY DISCHARGE (CFS)	NOV MEAN CONCENTRATION (MG/L)	NOV TONS PER DAY	DEC TEMP. (C)	DEC DAILY DISCHARGE (CFS)	DEC MEAN CONCENTRATION (MG/L)	DEC TONS PER DAY	DAY
1		26600	94	7260		22400							1
2	6.0	27900	75 S	5950		22900							2
3		27900	87	6550		21900							3
4	8.0	26200	98 S	7460		22200							4
5		28600	103	7950		20900							5
6	9.0	29400	102	7930									6
7		28000	97	7370									7
8	9.0	29800	98 S	7440									8
9		29700	79	6340									9
10	6.0	30700	56 S	4640									10
11		31000	56	4690									11
12	5.0	31100	72 S	6090									12
13		30900	86	7170									13
14	6.0	30900	98 S	7410									14
15		30300	89	7280									15
16	2.0	30800	98 S	7290									16
17		29700	79	6340									17
18	2.0	29500	93 S	6220									18
19		28900	68	5060									19
20		28900	106 S	8270									20
21		28400	78	5980									21
22		27400	36 S	2660									22
23		26400	24	1710									23
24		25900	20	1370									24
25		25400	19	1300									25
26		25700	16	1110									26
27		26000	15	1090									27
28		25100	17	1150									28
29		24400	16	1050									29
30		23600	16	1020									30
31		22900	16	989									31
TOTAL		849900		198100									TOTAL
MEAN		28100		6410									MEAN

TYPE OF GAUGE — RECORDING
LOCATION - LAT 58 12 10 N
LONG 111 23 24 W
DRAINAGE AREA 99800 SQ MILES
NATURAL FLOW

A - MANUAL GAUGE B - ICE CONDITIONS E - ESTIMATED S - SAMPLE(S) COLLECTED THIS DAY

SEDIMENT SURVEY
JUN 30 1978 PAGE 1
CALGARY, ALTA.

ATHABASCA RIVER AT MCMURRAY - STATION NO. 07CD002

SUSPENDED SEDIMENT FOR 1976

DAY	JAN TEMP. (C)	JAN DAILY DISCHARGE (CFS)	JAN MEAN CONCENTRATION (MG/L)	JAN TONS PER DAY	FEB TEMP. (C)	FEB DAILY DISCHARGE (CFS)	FEB MEAN CONCENTRATION (MG/L)	FEB TONS PER DAY	MAR TEMP. (C)	MAR DAILY DISCHARGE (CFS)	MAR MEAN CONCENTRATION (MG/L)	MAR TONS PER DAY	DAY
1			10				11				11		1
2			10				11				11		2
3			10				11				11		3
4			10				12				10		4
5			9				12				10		5
6			9				12				10		6
7			9				12				9		7
8			9				12		1.0		9 S		8
9			8				13				9		9
10			8				13				9		10
11			7				13				9		11
12			7				13				9		12
13			7				14				9		13
14			6				14				9		14
15			6				14				9		15
16	1.0		6 S				14				9		16
17			6				14				9		17
18			7				15				9		18
19			7				15				9		19
20			7		1.0		15 S				8		20
21			8				15				8		21
22			8				14				8		22
23			8				14				8		23
24			9				13				8		24
25			9				13		1.0		8 S		25
26			9				13				8		26
27	1.0		10 S				12				9		27
28			10				12				9		28
29			10				12				10		29
30			11								11		30
31			11								11		31
TOTAL MEAN													TOTAL MEAN

SEDIMENT SURVEY
JUN 30 1978 PAGE 2
CALGARY, ALTA.

ATHABASCA RIVER AT MCMURRAY - STATION NO. 07CD002

SUSPENDED SEDIMENT FOR 1976

DAY	APR TEMP. (C)	APR DAILY DISCHARGE (CFS)	APR MEAN CONCENTRATION (MG/L)	APR TONS PER DAY	MAY TEMP. (C)	MAY DAILY DISCHARGE (CFS)	MAY MEAN CONCENTRATION (MG/L)	MAY TONS PER DAY	JUN TEMP. (C)	JUN DAILY DISCHARGE (CFS)	JUN MEAN CONCENTRATION (MG/L)	JUN TONS PER DAY	DAY
1	1.0		12				77 S				74		1
2			14				68 S				65		2
3			16				59 S				65		3
4			18				57 S				66		4
5			20				55 S				52		5
6			36				50				46		6
7			88				49 S				45 S		7
8			145				48 S				37		8
9			187				84 S				28		9
10			246				67 S				84 S		10
11			329				82 S				87 S		11
12			421				84 S				34 S		12
13			540				77 S				33 S		13
14			677				73 S				51 S		14
15			819				83		17.0		53 S		15
16			964				106 S				54 S		16
17			1100				140 S				55 S		17
18			1120				166				51		18
19	1.0		732 S				152 S				46 S		19
20			431				131				44		20
21			331				109 S				44 S		21
22	2.0		282 S				86 S		20.0		42 S		22
23			231				68 S				120 S		23
24			221				48		16.0		169 S		24
25			193				42 S				266		25
26			166				43 S				328		26
27			139 S				41 S				315		27
28			121 S				40				321		28
29			97 S				41				345		29
30			90 S				48				380		30
31							84						31
TOTAL MEAN													TOTAL MEAN

SEDIMENT SURVEY — ATHABASCA RIVER AT MCMURRAY - STATION NO. 07CC002
JUN 30 1978 PAGE 3
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	JUL TEMP. (C)	JUL DAILY DISCHARGE (CFS)	JUL MEAN CONCENTRATION (MG/L)	JUL TONS PER DAY	AUG TEMP. (C)	AUG DAILY DISCHARGE (CFS)	AUG MEAN CONCENTRATION (MG/L)	AUG TONS PER DAY	SEP TEMP. (C)	SEP DAILY DISCHARGE (CFS)	SEP MEAN CONCENTRATION (MG/L)	SEP TONS PER DAY	DAY
1			427				94		15.0		574 S		1
2			487		21.0		98 S				458		2
3			355				83				350		3
4			312		20.0		79 S		15.0		270 S		4
5	19.0		336 S				77				201		5
6			635				78				164 S		6
7	20.0		618 S		19.0		84 S				157		7
8			519				117				157		8
9	18.0		442 S		22.0		189 S				146		9
10			377				258 S				134 S		10
11			311				242				134		11
12	18.0		283 S				237				138		12
13	19.0		246 S				243				127		13
14			258				254 S				116		14
15	18.0		278 S				247				104		15
16	18.0		263 S				221				93		16
17			248				183 S				84		17
18			215				195				75		18
19	19.0		192 S				138 S				66 S		19
20			168				274				58		20
21	20.0		139 S				1290		15.0		51 S		21
22			130				1530				48		22
23	20.0		126 S				1210 S		15.0		49 S		23
24			125				876				44		24
25			119				533				49		25
26			116				398				37		26
27	18.0		113 S				448 S				38		27
28	18.0		103 S				501 S				32		28
29			99				448 S				38		29
30	18.0		101 S				374		14.0		28 S		30
31			98				689						31
TOTAL MEAN													TOTAL MEAN

SEDIMENT SURVEY — ATHABASCA RIVER AT MCMURRAY - STATION NO. 07CC002
JUN 30 1978 PAGE 4
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	OCT TEMP. (C)	OCT DAILY DISCHARGE (CFS)	OCT MEAN CONCENTRATION (MG/L)	OCT TONS PER DAY	NOV TEMP. (C)	NOV DAILY DISCHARGE (CFS)	NOV MEAN CONCENTRATION (MG/L)	NOV TONS PER DAY	DEC TEMP. (C)	DEC DAILY DISCHARGE (CFS)	DEC MEAN CONCENTRATION (MG/L)	DEC TONS PER DAY	DAY
1			27										1
2			26										2
3			31										3
4			33										4
5			30										5
6			38										6
7	7.0		41 S										7
8			43										8
9			41										9
10			38										10
11			35										11
12			33										12
13			30										13
14			28										14
15			26										15
16			24										16
17			23										17
18	5.0		21 S										18
19			20										19
20			20										20
21	4.0		18 S										21
22	1.0		18 S										22
23			17										23
24			16										24
25	4.0		15 S										25
26			15										26
27	5.0		16 S										27
28			16										28
29			16										29
30			15										30
31			16										31
TOTAL MEAN													TOTAL MEAN

SUMMARY FOR THE YEAR 1976

SUSPENDED SEDIMENT CONCENTRATION

MAXIMUM DAILY 1530 MG/L ON AUG 22

TYPE OF GAUGE - MANUAL
LOCATION - LAT 56 44 00 N
LONG 111 22 30 W

NATURAL FLOW

S - SAMPLE(S) COLLECTED THIS DAY

REMARKS - RECORDS PRIOR TO 1973 PUBLISHED UNDER 07AD001

ALBERTA

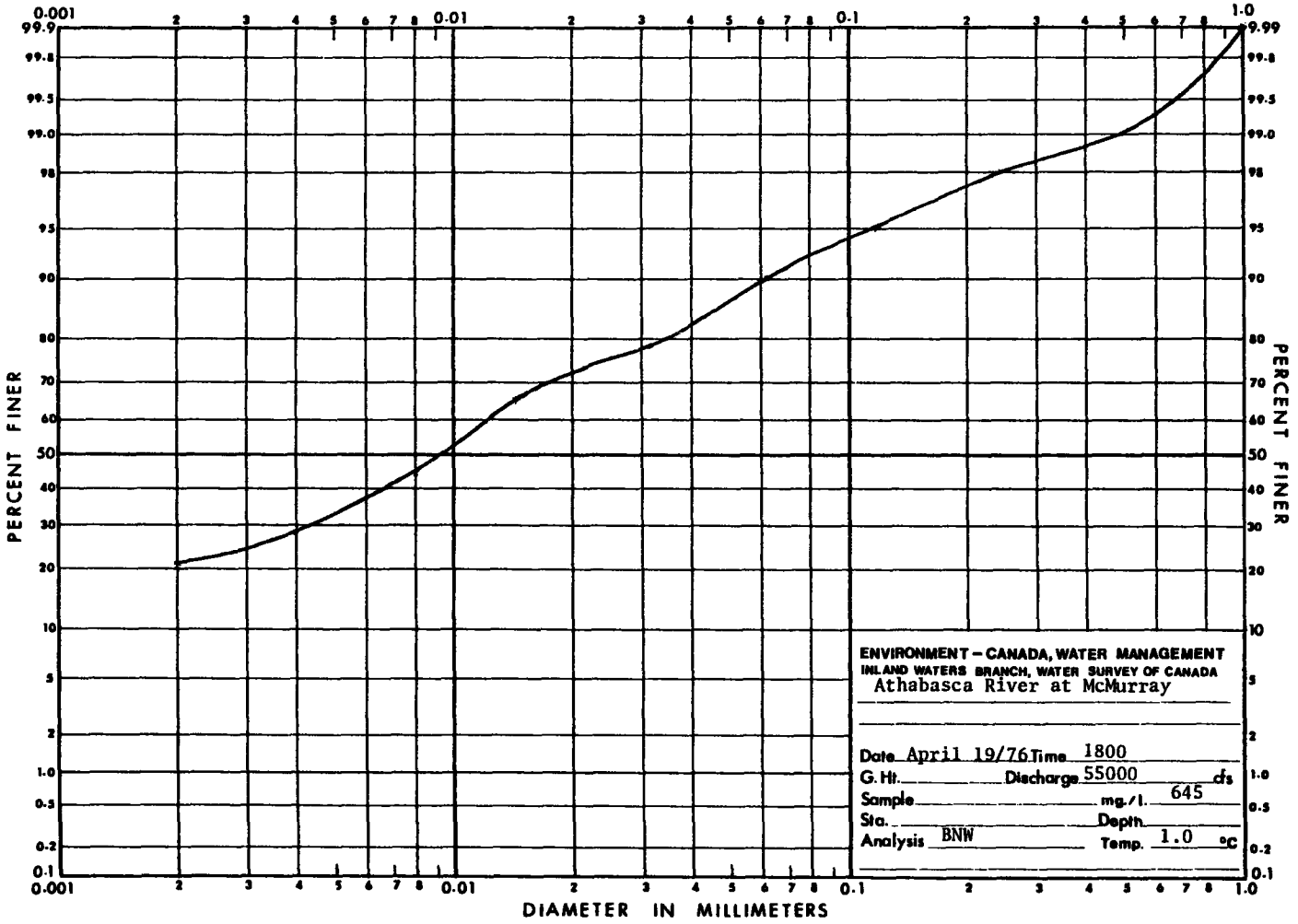
ATHABASCA RIVER AT MCMURRAY - STATION NO. 07CC002

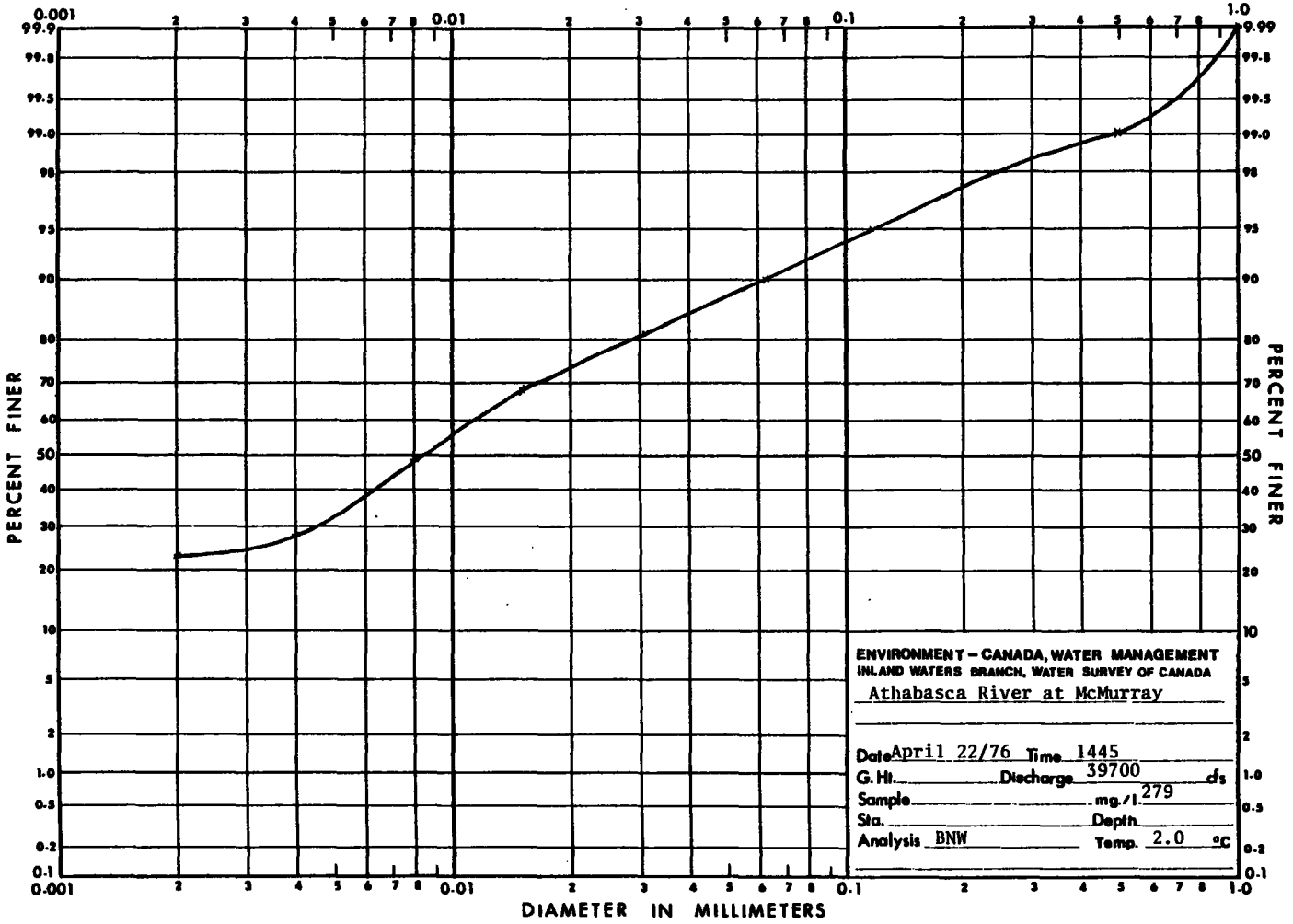
DEPTH INTEGRATING PARTICLE-SIZE ANALYSIS OF SUSPENDED SEDIMENT FOR 1976

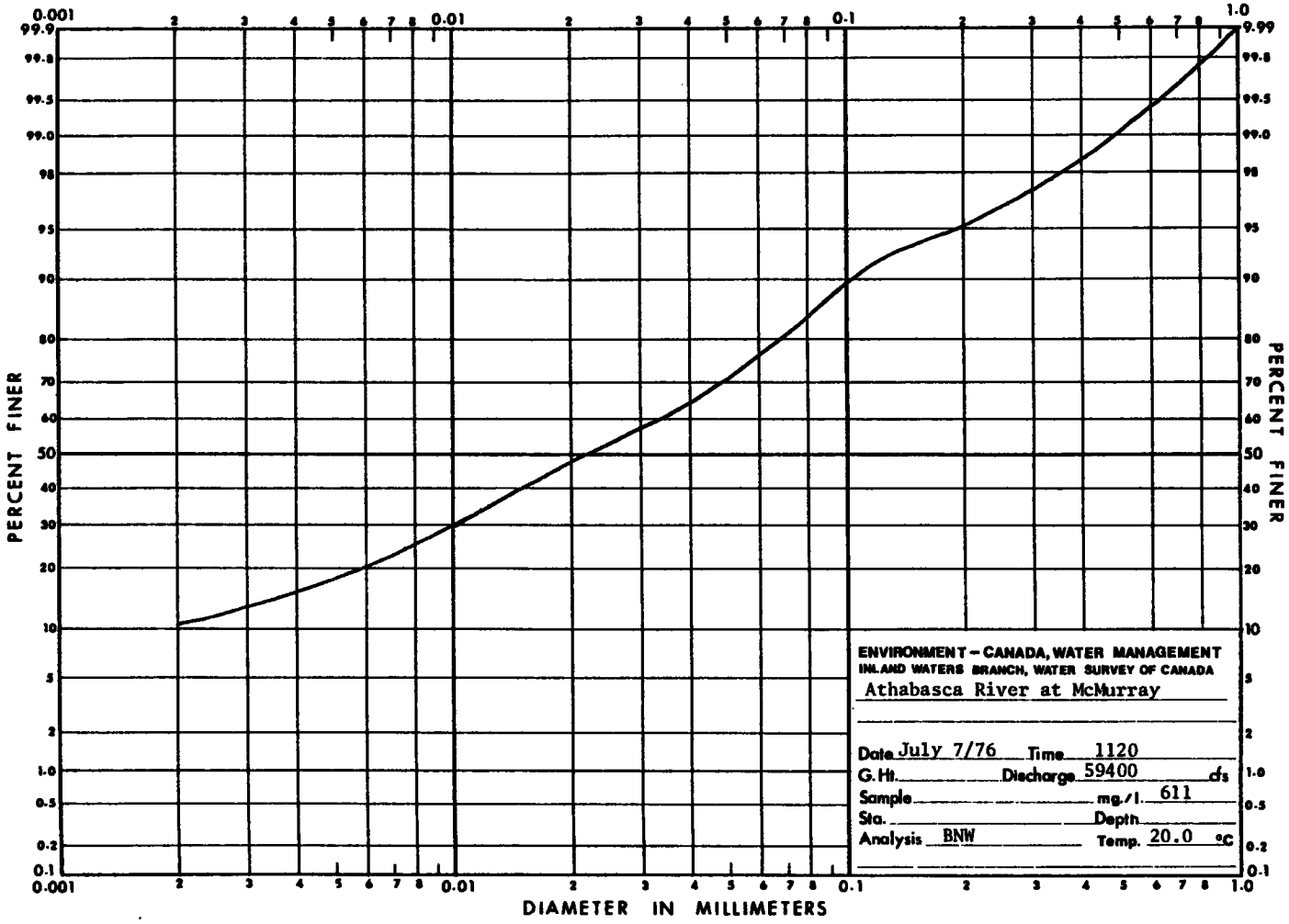
(METHOD OF ANALYSIS: B - BOTTOM WITHDRAWAL TUBE; C - CHEMICALLY DISPERSED; F - SONIC SIFTER; H - HYDROMETER; M - MECHANICALLY DISPERSED; N - IN NATIVE WATER; P - PIPETTE; S - SIEVE; V - VISUAL ACCUMULATION TUBE; W - IN DISTILLED WATER)

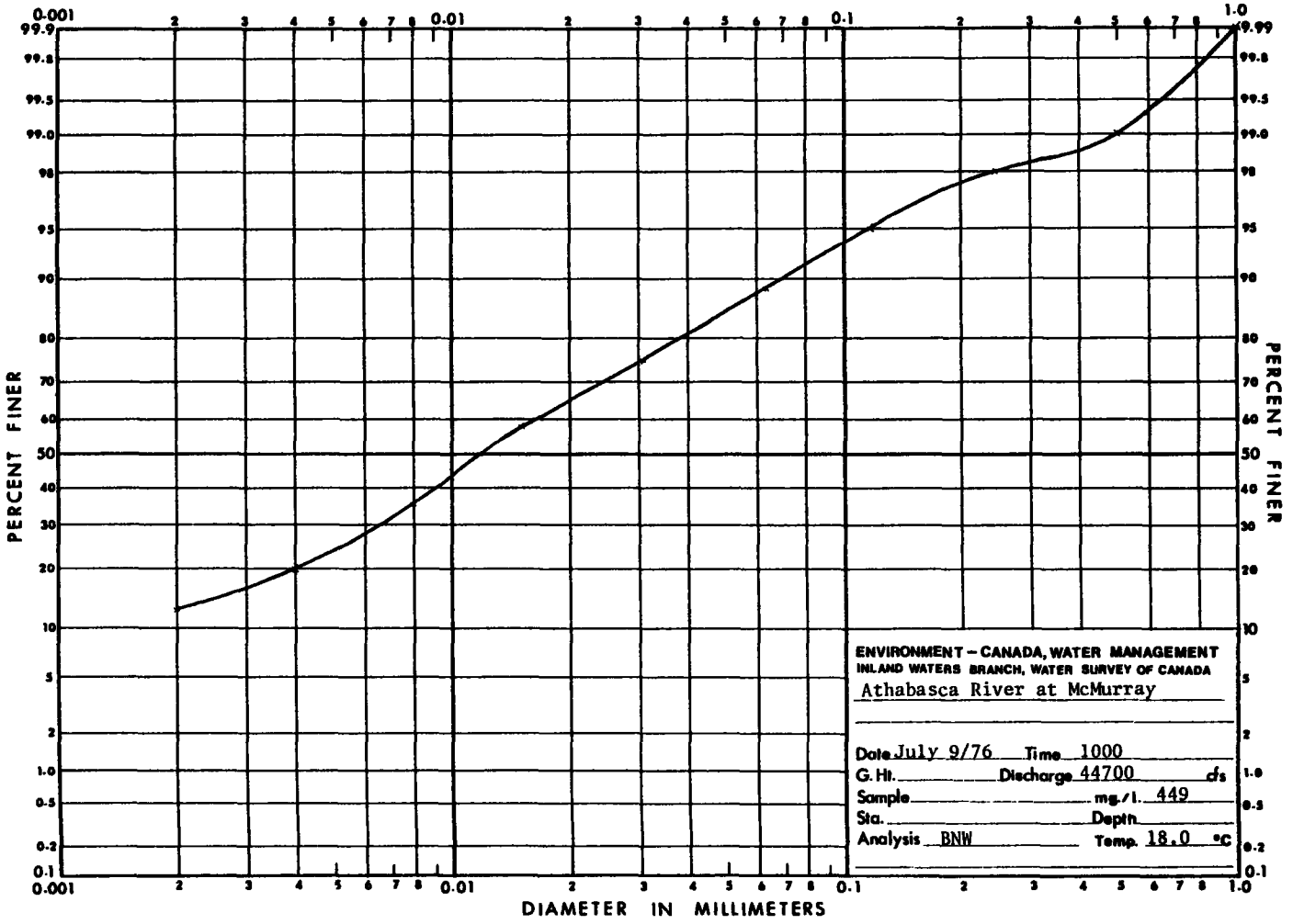
DATE	TIME	DISCHARGE MEASUREMENT (CFS)		WATER TEMP. (C)	CONCENTRATION OF SAMPLE(S) (MG/L)	PERCENT FINER THAN INDICATED SIZE, IN MILLIMETRES										METHOD OF ANALYSIS
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
APR 19	1800	55600	M	1.0	645 K	22	28	44	66	78	90	95	98	99	100		BMW
APR 22	1445	39700	M	2.0	279 K	23	28	48	68	82	90	95	98	99	100		BMW
JUL 07	1120	584900	M	20.0	611 K	11	16	26	46	58	77	92	97	99	100		BMW
JUL 09	1800	447700	M	18.0	469 K	13	20	36	56	75	88	95	98	98	100		BMW
JUL 19	1545	479000	M	19.0	187 K	20	27	44	62	74	84	90	94	96	98		BMW
AUG 23	1900	56200	M		1110 K	12	18	30	48	69	86	94	97	99	100		BMW
AUG 27	2000	53600	M		495 K	15	20	35	51	66	75	83	88	92	96		BMW
AUG 28	1400	58200	M		502 K	26	31	44	60	73	83	89	93	95	97		BMW
SEP 01	1900	76800	M	15.0	530 K	15	20	34	48	61	73	83	92	96	98		BMW

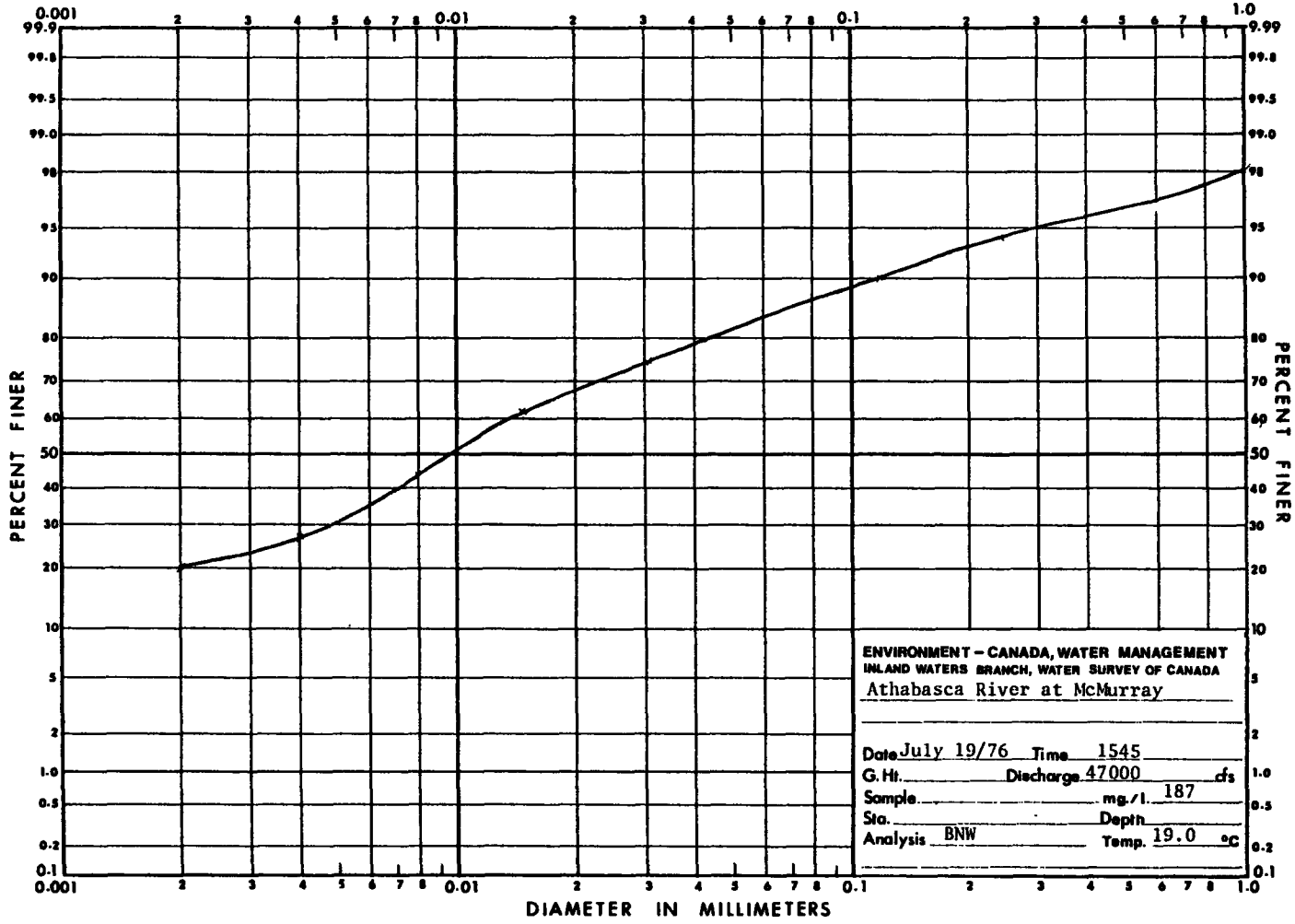
M - DAILY MEAN DISCHARGE K - SAMPLE(S) COLLECTED IN SINGLE VERTICAL

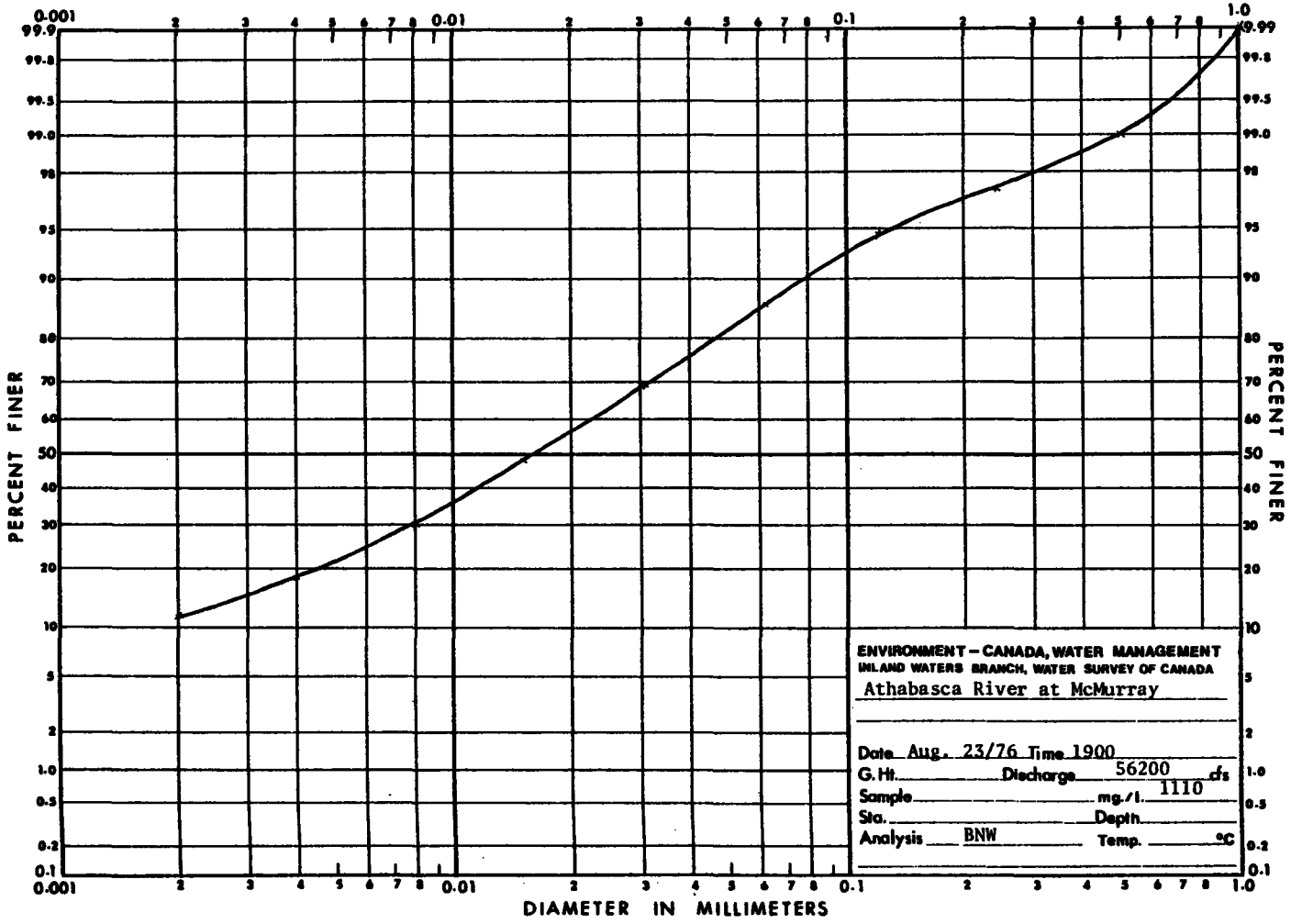

0.001
0.01
0.1
1.0
PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Athabasca River at McMurray
Date April 19/76 Time 1800
G. Ht. Discharge 55000 cfs
Sample mg./l. 645
Sta. Depth
Analysis BNW Temp. 1.0 °C

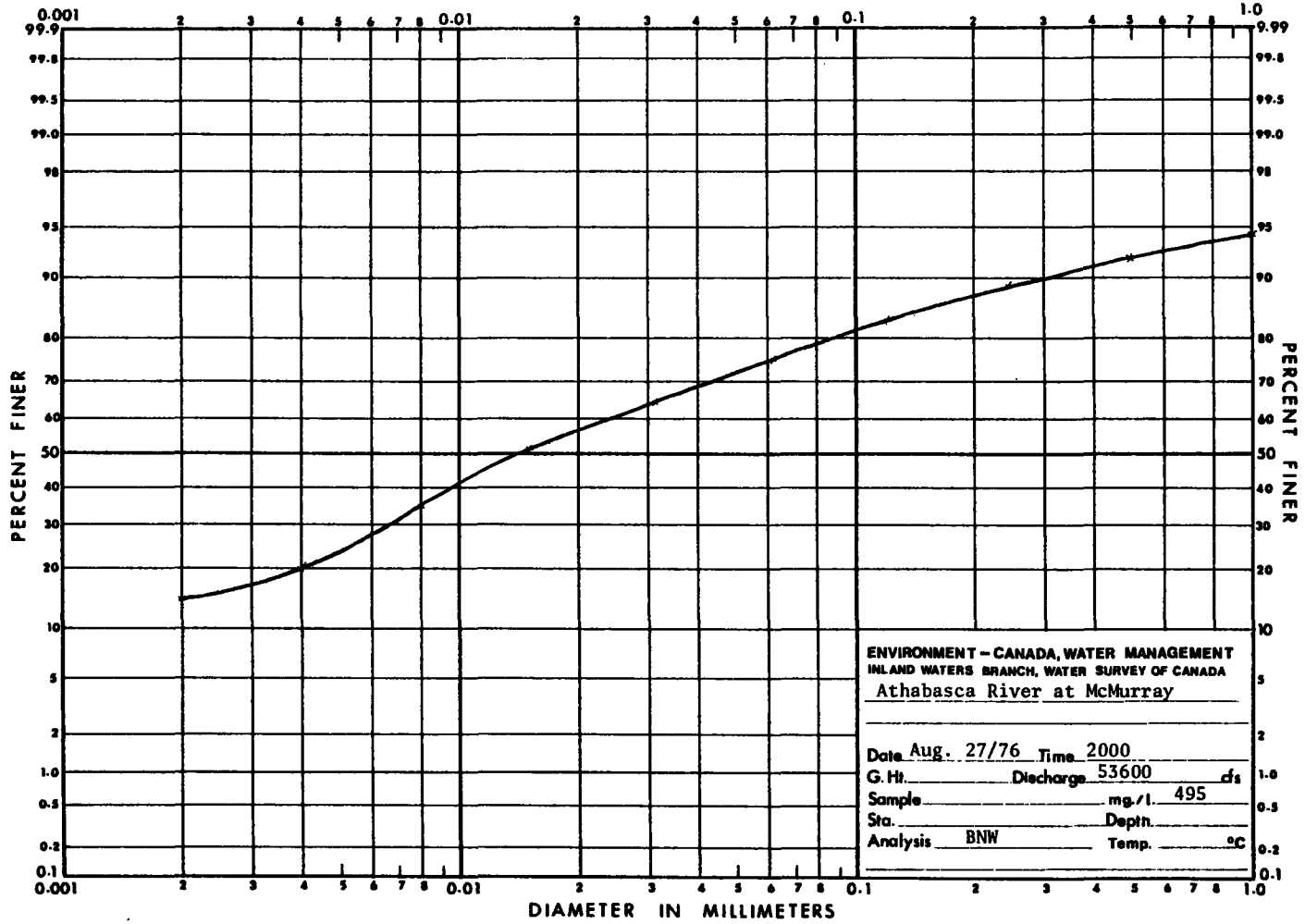

0.001
0.01
0.1
1.0
99.9
99.8
99.5
99.0
98
95
90
80
70
60
50
40
30
20
10
5
2
1.0
0.5
0.2
0.1
PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Athabasca River at McMurray
Date April 22/76 Time 1445
G. Ht. Discharge 39700 cfs
Sample mg./l. 279
Sta. Depth
Analysis BNW Temp. 2.0 °C


PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Athabasca River at McMurray
Date July 7/76 Time 1120
G. Ht. Discharge 59400 cfs
Sample mg./l. 611
Sta. Depth
Analysis BNW Temp. 20.0 °C

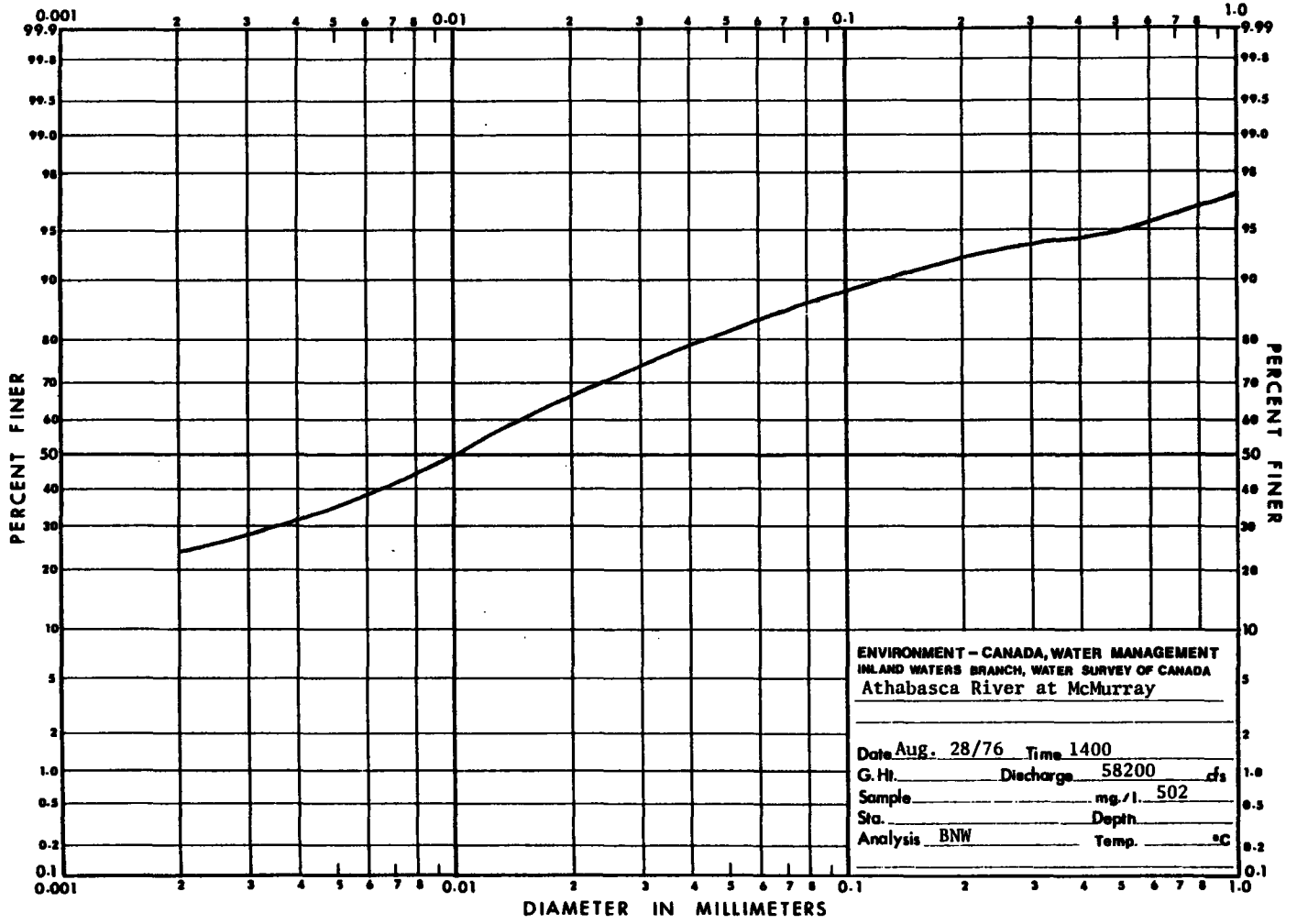

PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Athabasca River at McMurray
Date July 9/76 Time 1000
G. Ht. Discharge 44700 cfs
Sample mg./l. 449
Sta. Depth
Analysis BNW Temp. 18.0 °C

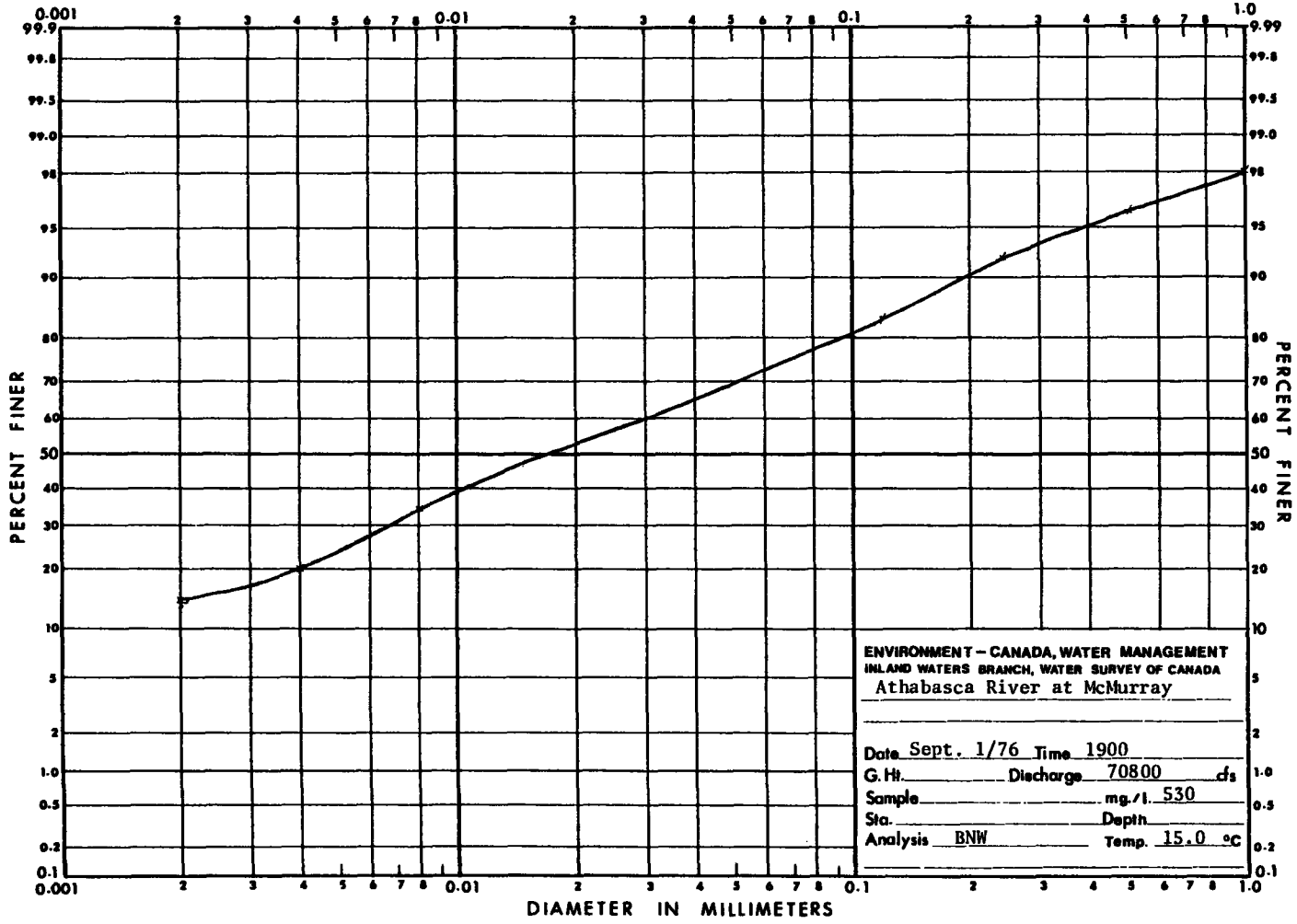

0.001
0.01
0.1
1.0
99.9
99.8
99.5
99.0
98
95
90
80
70
60
50
40
30
20
10
5
2
1.0
0.5
0.2
0.1
PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Athabasca River at McMurray
Date July 19/76 Time 1545
G. Ht. Discharge 47000 cfs
Sample mg./l. 187
Sta. Depth
Analysis BNW Temp. 19.0 °C


PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Athabasca River at McMurray
Date Aug. 23/76 Time 1900
G. Ht. Discharge 56200 cfs
Sample mg./l. 1110
Sta. Depth
Analysis BNW Temp. °C



Athabasca River at McMurray


PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Athabasca River at McMurray
Date Aug. 28/76 Time 1400
G. Ht. Discharge 58200 cfs
Sample mg./l. 502
Sta. Depth
Analysis BNW Temp. °C


PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Athabasca River at McMurray
Date Sept. 1/76 Time 1900
G. Ht. Discharge 70800 cfs
Sample mg./l. 530
Sta. Depth
Analysis BNW Temp. 15.0 °C

SEDIMENT SURVEY — BEAVER RIVER ABOVE SYNCRUDE - STATION NO. 07DA016
JAN 30 1978 PAGE 33
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	JAN TEMP. (C)	JAN DAILY DISCHARGE (CFS)	JAN MEAN CONCENTRATION (MG/L)	JAN TONS PER DAY	FEB TEMP. (C)	FEB DAILY DISCHARGE (CFS)	FEB MEAN CONCENTRATION (MG/L)	FEB TONS PER DAY	MAR TEMP. (C)	MAR DAILY DISCHARGE (CFS)	MAR MEAN CONCENTRATION (MG/L)	MAR TONS PER DAY	DAY
1		1.2 E				0 E				0 E			1
2		0.96 E				0 E				0 E			2
3		0.79 E				0 E				0 E			3
4		0.66 E				0 E				0 E			4
5		0.58 E				0 E				0 E			5
6		0.48 E				0 E				0 E			6
7		0.28 E				0 E				0 E			7
8		0.19 E				0 E				0 E			8
9		0.19 E				0 E				0 E			9
10		0 E				0 E				0 E			10
11		0 E				0 E				0 E			11
12		0 E				0 E				0 E			12
13		0 E				0 E				0 E			13
14		0 E				0 E				0 E			14
15		0 E				0 E				0 E			15
16		0 E				0 E				0 E			16
17		0 E				0 E				0 E			17
18		0 E				0 E				0 E			18
19		0 E				0 E				0 E			19
20		0 E				0 E				0 E			20
21		0 E				0 E				0 E			21
22		0 E				0 E				0 E			22
23		0 E				0 E				0 E			23
24		0 E				0 E				0 E			24
25		0 E				0 E				0 E			25
26		0 E				0 E				0 E			26
27		0 E				0 E				0.28 E			27
28		0 E				0 E				1.9 E			28
29		0 E				0 E				1.6 E			29
30		0 E								2.2 E			30
31		0 E								2.6 E			31
TOTAL		4.78				0				7.80			TOTAL
MEAN		0.15				0				0.25			MEAN

SEDIMENT SURVEY — BEAVER RIVER ABOVE SYNCRUDE - STATION NO. 07DA016
JAN 30 1978 PAGE 34
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	APR TEMP. (C)	APR DAILY DISCHARGE (CFS)	APR MEAN CONCENTRATION (MG/L)	APR TONS PER DAY	MAY TEMP. (C)	MAY DAILY DISCHARGE (CFS)	MAY MEAN CONCENTRATION (MG/L)	MAY TONS PER DAY	JUN TEMP. (C)	JUN DAILY DISCHARGE (CFS)	JUN MEAN CONCENTRATION (MG/L)	JUN TONS PER DAY	DAY
1		3.2 E				28.8				11.7			1
2		4.4 E				22.7				13.1			2
3		5.2 E				20.2				10.7			3
4		6.4 E				19.7				9.6			4
5	1.0	8.0 E	11 S	0.24		18.5				9.8			5
6		14.0 E				16.0				12.0			6
7		25.0 E				15.1				12.8			7
8	1.0	38.0 E	39 S	4.0		16.3				12.7			8
9	1.0	52.0 E	48 S	6.8		15.1				13.1			9
10		64.0 E				14.4				13.9			10
11		70.0 E				14.0				13.6			11
12	1.0	75.0 A	133 S	27.1		15.0				13.9			12
13		75.3 E				15.3				13.6			13
14		75.0 E				15.8				13.4			14
15	1.0	74.0 A	161 S	32.5		12.0				13.4			15
16		64.0				10.0				13.7			16
17		54.9				8.9				14.7			17
18		50.4				11.3				14.8			18
19		47.2				11.1				13.6			19
20		44.4				11.5				13.8			20
21		43.8				13.5				13.1			21
22	3.0	47.3	48 S	9.0		15.6				13.2			22
23		48.7				15.3				12.9			23
24		47.3				15.3				16.6			24
25		44.1				14.0 E				17.9			25
26		40.8				13.8 E				18.2			26
27		37.8				12.5 E				20.8			27
28	4.0	34.1	89 S	8.7		10.0 A	16 S	0.44		20.8			28
29		31.8				11.1				19.8			29
30		30.8				10.4				17.9			30
31						11.1							31
TOTAL		1898.1				491.8				435.1			TOTAL
MEAN		61.9				14.6				14.2			MEAN

SEDIMENT SURVEY
JUN 30 1978 PAGE 35
CALGARY, ALTA.

BEAVER RIVER ABOVE SYNCRUDE - STATION NO. 07DA018

SUSPENDED SEDIMENT FOR 1976

DAY	JUL TEMP. (C)	JUL DAILY DISCHARGE (CFS)	JUL MEAN CONCENTRATION (MG/L)	JUL TONS PER DAY	AUG TEMP. (C)	AUG DAILY DISCHARGE (CFS)	AUG MEAN CONCENTRATION (MG/L)	AUG TONS PER DAY	SEP TEMP. (C)	SEP DAILY DISCHARGE (CFS)	SEP MEAN CONCENTRATION (MG/L)	SEP TONS PER DAY	DAY
1		15.7				20.3				184			1
2		16.0				18.2			12.0	167	136 S	62.7	2
3		15.7				16.4			12.0	147 A	95 S	37.7	3
4		14.3				15.3				128			4
5		13.3				19.7				184			5
6		10.0			20.0	13.5	29 S	1.1		95.6			6
7		11.6				12.6			11.0	158	238 S	99.0	7
8		10.2				14.7				232			8
9		11.2				13.0				188			9
10		12.0				12.7				139			10
11		14.4				12.0				184			11
12	20.0	14.9	13 S	0.52		9.8				91.6			12
13		13.8				13.0				79.5			13
14		16.6				109				71.7			14
15		16.8				109			10.0	61.7	16 S	2.7	15
16		15.1				77.9				54.8			16
17		14.4				58.5				47.6			17
18		14.6				46.5				42.2			18
19		14.0				38.4			9.0	38.1	14 S	1.4	19
20		12.1				31.9				35.9			20
21		11.7				27.7				34.5			21
22		12.1				25.4				33.3			22
23		11.5				23.1				32.0			23
24		10.8				20.8				31.0			24
25		11.1				19.0				30.0			25
26		10.0				23.5				29.2			26
27		10.2				468				28.7			27
28		11.8				454				28.9			28
29		15.1				486				28.6			29
30		20.4				311				27.7			30
31		21.4				226							31
TOTAL		428.5				2845.8				2458.8			TOTAL
MEAN		13.8				91.8				81.9			MEAN

SEDIMENT SURVEY
JUN 30 1978 PAGE 36
CALGARY, ALTA.

BEAVER RIVER ABOVE SYNCRUDE - STATION NO. 07DA018

SUSPENDED SEDIMENT FOR 1976

DAY	OCT TEMP. (C)	OCT DAILY DISCHARGE (CFS)	OCT MEAN CONCENTRATION (MG/L)	OCT TONS PER DAY	NOV TEMP. (C)	NOV DAILY DISCHARGE (CFS)	NOV MEAN CONCENTRATION (MG/L)	NOV TONS PER DAY	DEC TEMP. (C)	DEC DAILY DISCHARGE (CFS)	DEC MEAN CONCENTRATION (MG/L)	DEC TONS PER DAY	DAY
1		27.1				18.5 B				1.0 B			1
2		27.1				17.0 B				0.90 B			2
3		34.6				15.5 B				0.83 B			3
4		39.0				14.5 B				0.70 B			4
5		37.7				13.5 B				0.70 B			5
6		36.1				12.5 B				0.68 B			6
7		38.1				11.5 B				0.66 B			7
8		50.9				10.5 B				0.58 B			8
9		56.1				9.5 B				0.56 B			9
10		58.8				8.7 B				0.50 B			10
11		58.6				7.5 B				0.48 B			11
12		58.3				6.6 B				0.48 B			12
13		53.1				6.0 B				0.48 B			13
14		53.6				5.2 B				0.46 B			14
15		51.0				4.7 B				0.32 B			15
16		48.1				4.2 B				0.38 B			16
17		46.8				3.8 B				0.38 B			17
18		43.8				3.4 B				0.30 B			18
19		42.5				3.1 B				0.30 B			19
20		40.3 E				2.8 B				0.29 B			20
21		38.3 E				2.5 B				0.28 B			21
22		36.3 E				2.3 B				0.28 B			22
23		33.7				2.2 B				0.28 B			23
24		32.4				2.0 B				0.28 B			24
25		29.3				1.8 B				0.28 B			25
26		27.5 B				1.6 B				0.28 B			26
27		26.8 B				1.4 B				0.28 B			27
28		24.5 B				1.3 B				0.28 B			28
29		23.0 B				1.2 B				0.28 B			29
30		21.5 B				1.1 B				0.28 B			30
31		20.8 B								0.10 B			31
TOTAL		1210.1				196.2				12.29			TOTAL
MEAN		39.0				6.8				0.40			MEAN

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 56 29 N
LONG 111 33 56 W
DRAINAGE AREA 68.0 SQ MILES
NATURAL FLOW

A - MANUAL GAUGE B - ICE CONDITIONS E - ESTIMATED S - SAMPLE(S) COLLECTED THIS DAY

SEDIMENT SURVEY — CLEARWATER RIVER AT DRAPER - STATION NO. 07CD001
JUN 30 1978 PAGE 5
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1978

DAY	JAN TEMP. (C)	JAN DAILY DISCHARGE (CFS)	JAN MEAN CONCENTRATION (MG/L)	JAN TONS PER DAY	FEB TEMP. (C)	FEB DAILY DISCHARGE (CFS)	FEB MEAN CONCENTRATION (MG/L)	FEB TONS PER DAY	MAR TEMP. (C)	MAR DAILY DISCHARGE (CFS)	MAR MEAN CONCENTRATION (MG/L)	MAR TONS PER DAY	DAY
1		3500 B				2470 B				2120 B	10	57.2	1
2		3440 B				2820 B				2060 B	10	56.4	2
3		3490 B				2530 B			1.0	2070 B	10 S	55.9	3
4		3410 B				2510 B				2050 B	10	55.4	4
5		3360 B				2510 B				2000 B	10	54.0	5
6		3320 B				2500 B				1980 B	10	53.5	6
7		3280 B				2500 B				1950 B	10	52.7	7
8		3300 B				2510 B				1940 B	10	52.4	8
9		3050 B			1.0	2500 B	13 S	87.8		1940 B	10	52.4	9
10		2970 B				2480 B				1920 B	10	51.8	10
11		2920 B				2450 B				1900 B	10	51.3	11
12		2850 B				2420 B				1890 B	10	51.0	12
13		2800 B				2390 B				1890 B	10	51.0	13
14		2760 B				2360 B				1890 B	10	51.0	14
15		2850 B				2330 B				1870 B	10	50.5	15
16		2850 B				2270 B				1850 B	10	50.0	16
17		2640 B				2260 B				1870 B	10	50.5	17
18		2620 B				2260 B				1880 B	10	50.8	18
19		2600 B				2240 B				1870 B	10	50.5	19
20		2570 B				2240 B				1850 B	10	50.0	20
21		2550 B				2230 B				1870 B	11	55.5	21
22		2540 B				2230 B				1860 B	11	55.0	22
23		2540 B				2210 B				1860 B	11	55.0	23
24		2530 B				2210 B				1960 B	11	56.4	24
25		2510 B				2200 B			1.0	1960 B	12 S	61.6	25
26		2500 B				2180 B				1890 B	12	61.2	26
27	1.0	2480 B	94 S	629		2170 B				1880 B	12	60.9	27
28		2460 B				2170 B				1890 B	12	61.2	28
29		2470 B				2130 B				1880 B	12	60.9	29
30		2450 B								1890 B	12	61.2	30
31		2450 B								1940 B	12	62.9	31
TOTAL		87660				67970				59620		1701.7	TOTAL
MEAN		2830				2340				1920		54.9	MEAN

SEDIMENT SURVEY — CLEARWATER RIVER AT DRAPER - STATION NO. 07CD001
JUN 30 1978 PAGE 6
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1978

DAY	APR TEMP. (C)	APR DAILY DISCHARGE (CFS)	APR MEAN CONCENTRATION (MG/L)	APR TONS PER DAY	MAY TEMP. (C)	MAY DAILY DISCHARGE (CFS)	MAY MEAN CONCENTRATION (MG/L)	MAY TONS PER DAY	JUN TEMP. (C)	JUN DAILY DISCHARGE (CFS)	JUN MEAN CONCENTRATION (MG/L)	JUN TONS PER DAY	DAY
1		1980 B	13	69.5		6790	171	3130		5030	87	1180	1
2		2040 B	14	75.6		6890	169	3010		4980	81	1090	2
3		2090 B	15	83.0		6430	166 S	2880		4940	75	1000	3
4		2140 B	16	92.4		6260	151	2550		4860	70	919	4
5		2230 B	17	103		6190	134	2210		4790	67	867	5
6		2470 B	19	127		5910	119	1900		4730	65	830	6
7		2920 B	27	213		5750	108 S	1660		4650	61	766	7
8		3630 B	35	343		5620	113 S	1710		4590	59	731	8
9		4280 B	43	497		5530	109 S	1630		4670	67	845	9
10		4830 B	52	678		5410	100 S	1500		4680	63 S	796	10
11		5300 B	68	891		5350	105 S	1520		4790	57 S	737	11
12		5960 B	69	1110		5270	93 S	1320		5450	110 S	1620	12
13		8870 B	251 E	6010		5270	79 S	1120		5520	132 S	1970	13
14		8360 B	285 E	9080		5310	78 S	1120		5460 A	88 S	1240	14
15		9900 B	489 E	13100		5240	79 S	998		5350 E	71 S	1030	15
16		10500 B	501 E	14200		5160	61 S	853		5310 A	72	1030	16
17		10100 B	372	10100		5120	65 S	899		5270	76 S	1120	17
18		10500 B	273	7740		5010	69 S	933	17.0	5140	78 S	1040	18
19		9660 B	229	6110		4910	56 S	742		4970	99 S	1330	19
20		9770	216	5700		4840	50 S	653		4820	72	937	20
21		9180	209	5140		4800	73 S	944		4710	62 S	788	21
22		8360	204	4620		4780	77 S	995	18.0	4670	53 S	656	22
23		8140	199	4370		4740	79 S	1010	18.0	4800	66 S	855	23
24		7960	195	4160		4700	89 S	1140	16.0	5240	114 S	1610	24
25		7690	191	3970		4770	72 S	927	25.0	9470	147 S	2170	25
26		7500	188	3810		4800	75 S	972	22.0	5720	183 S	2360	26
27		7370	184	3640		4850	80 S	1150	18.0	6170	200 S	3330	27
28		7260	181	3550		4890	95	1250	19.0	6700	282 S	5100	28
29		7150	177	3420		4940	95	1270		7140	387	6930	29
30	9.0	7000	173 S	3270		4940	95	1270		7380	377	7910	30
31						5010	92	1240					31
TOTAL		198300		112292.5		165170		44599		157990		82387	TOTAL
MEAN		6610		3740		5330		1440		5270		1750	MEAN

SEDIMENT SURVEY — CLEARWATER RIVER AT DRAPER - STATION NO. 07CD001
JUN 30 1978 PAGE 7
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	JUL TEMP. (C)	JUL DAILY DISCHARGE (CFS)	JUL MEAN CONCENTRATION (MG/L)	JUL TONS PER DAY	AUG TEMP. (C)	AUG DAILY DISCHARGE (CFS)	AUG MEAN CONCENTRATION (MG/L)	AUG TONS PER DAY	SEP TEMP. (C)	SEP DAILY DISCHARGE (CFS)	SEP MEAN CONCENTRATION (MG/L)	SEP TONS PER DAY	DAY
1		7350	352	6990		6190	93	1550	12.0	13100	620 S	21900	1
2		7220	309	6020		6190	91	1520	14.0	13100	495 S	17500	2
3		7030	271	5140	20.0	6150	88 S	1460		12900	486	16900	3
4		6840	246	4540		6030	88	1430	13.0	12500	470 S	15900	4
5	20.0	6680	227	4090	21.0	5840	94 S	1480		12100	411	13400	5
6		6430	208	3610		5690	92	1410	13.0	11800	359 S	11400	6
7	21.0	6240	186 S	3180		5800	85	1330		11900	361	11600	7
8		6050	150	2450		5770	79	1230	11.0	12000	347 S	11200	8
9	21.0	5860	121 S	1910		5570	75	1130	11.0	11900	302 S	9700	9
10		5930	106	1700		5380	71	1030		11900	286	8770	10
11		6210	101	1690		5210	67	942		11300	271	8270	11
12		6440	109	1900		5060	63	857		10900	263	7740	12
13	19.0	7070	130 S	2480	22.0	4940	59 S	787	10.0	10500	254 S	7200	13
14		7080	139	2960	24.0	4920	54 S	717		10200	236 S	6500	14
15	18.0	6290	140 S	3130		4830	50	652	12.0	9910	224 S	5990	15
16	20.0	6580	140 S	3240		4740	46	589	12.0	9550	214 S	5520	16
17	19.0	6710	138 S	3250		4640	43	539	12.0	9200	209 S	5190	17
18	20.0	6770	265 S	6270		4580	40	495	11.0	8830	197 S	4700	18
19	18.0	8530	238 S	9410	18.0	4520	37 S	452		8460	185	4230	19
20	19.0	8190	193 S	4270		4470	37	447	12.0	8110	172 S	3770	20
21	19.0	7870	232 S	4930	14.0	4430	37 S	443		7790	160	3370	21
22		7580	160	4460		4380	36	469	12.0	7480	148 S	2990	22
23	20.0	7280	149 S	2930		4270	38	446	12.0	7180	141 S	2730	23
24	20.0	7010	129 S	2440		4360	38	445		6930	143	2680	24
25	19.0	6720	126 S	2290		4380	38	449		6710	150	2720	25
26	18.0	6430	104 S	1810		5170	92	1280		6490	155	2720	26
27		6280	99	1660		9840	927	24600	10.0	6330	148 S	2530	27
28	20.0	6030	108 S	1760	11.0	11400	1260 S	38800		6180	120	2000	28
29		5970	107	1720	12.0	12100	966 S	31600	11.0	6080	96 S	1540	29
30		6060	102	1670	15.0	12400	772 S	25800		5940	90	1440	30
31		6150	97	1610		12900	680	24000					31
TOTAL		217618		101630		192210		168361		286970		222100	TOTAL
MEAN		7020		3280		6200		5430		9570		7480	MEAN

SEDIMENT SURVEY — CLEARWATER RIVER AT DRAPER - STATION NO. 07CD001
JUN 30 1978 PAGE 8
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	OCT TEMP. (C)	OCT DAILY DISCHARGE (CFS)	OCT MEAN CONCENTRATION (MG/L)	OCT TONS PER DAY	NOV TEMP. (C)	NOV DAILY DISCHARGE (CFS)	NOV MEAN CONCENTRATION (MG/L)	NOV TONS PER DAY	DEC TEMP. (C)	DEC DAILY DISCHARGE (CFS)	DEC MEAN CONCENTRATION (MG/L)	DEC TONS PER DAY	DAY
1	10.0	5810	91 S	1430		5550				1560 S			1
2		5680	94	1440		5440				1790 S			2
3		5890	97	1540		5210				2120 S			3
4		6080	98	1630		5300				2230 S			4
5		6190	102	1700		5240				2230 S			5
6		6270	105	1780		5180				2260 S			6
7		6340	107	1830		4780				2290 S			7
8		6530	115	2030		4660				2280 S			8
9		6730	131	2380		4760				2260 S			9
10		6940	161	3020		4730				2280 S			10
11		7120	189	3630		4680 S				2310 S			11
12		7230	207	4040		4480 S				2280 S			12
13		7300	215	4240		4390 S				2350 S			13
14		7360	220	4400		4250 S				2500 S			14
15		7690	225	4670		4000 S				2570 S			15
16		7740	224	4680		3980 S				2650 S			16
17		7720	216	4500		3750 S				2740 S			17
18		7620	208	4280		3690 S				2710 S			18
19	2.0	7540	197 S	4010		3390 S				2720 S			19
20		7440	186	3740		3180 S				2690 S			20
21		7160	175	3380		2850 S				2670 S			21
22		6780	161	2950		2600 S				2660 S			22
23		6350	158	2970		2170 S				2670 S			23
24		6350	144	2470		1920 S				2670 S			24
25		6320	156	2660		1650 S				2680 S			25
26		5890	141	2240		1240 S				2670 S			26
27		6290	136	2310		1270 S				2620 S			27
28		6140	129	2140		1390 S				2600 S			28
29		5990	120	1940		1420 S				2540 S			29
30		5980	113	1820		1440 S				2570 S			30
31		6010	103	1670						2570 S			31
TOTAL		206660		87250		106180				75780			TOTAL
MEAN		6670		2810		3680				2440			MEAN

SUMMARY FOR THE YEAR 1976

SUSPENDED SEDIMENT CONCENTRATION — MAXIMUM DAILY 1260 MG/L ON AUG 28

SUSPENDED SEDIMENT LOAD — MAXIMUM DAILY 38800 TONS/DAY ON AUG 28

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 40 50 N
LONG 111 15 00 W
DRAINAGE AREA 11800 SQ MILES
NATURAL FLOW

A - MANUAL GAUGE B - ICE CONDITIONS E - ESTIMATED S - SAMPLE(S) COLLECTED THIS DAY

ALBERTA

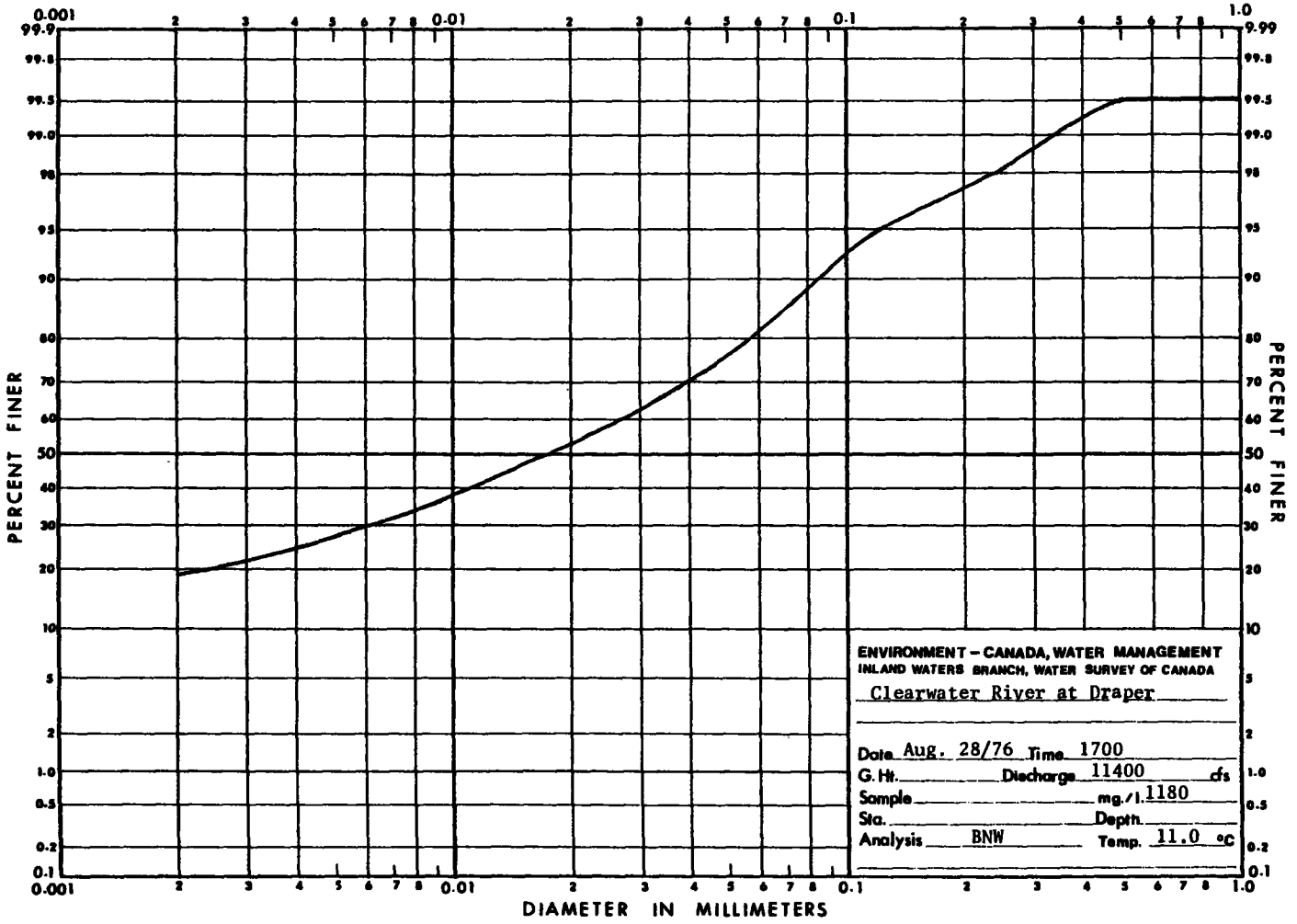
CLEARWATER RIVER AT DRAPER - STATION NO. 07CD001

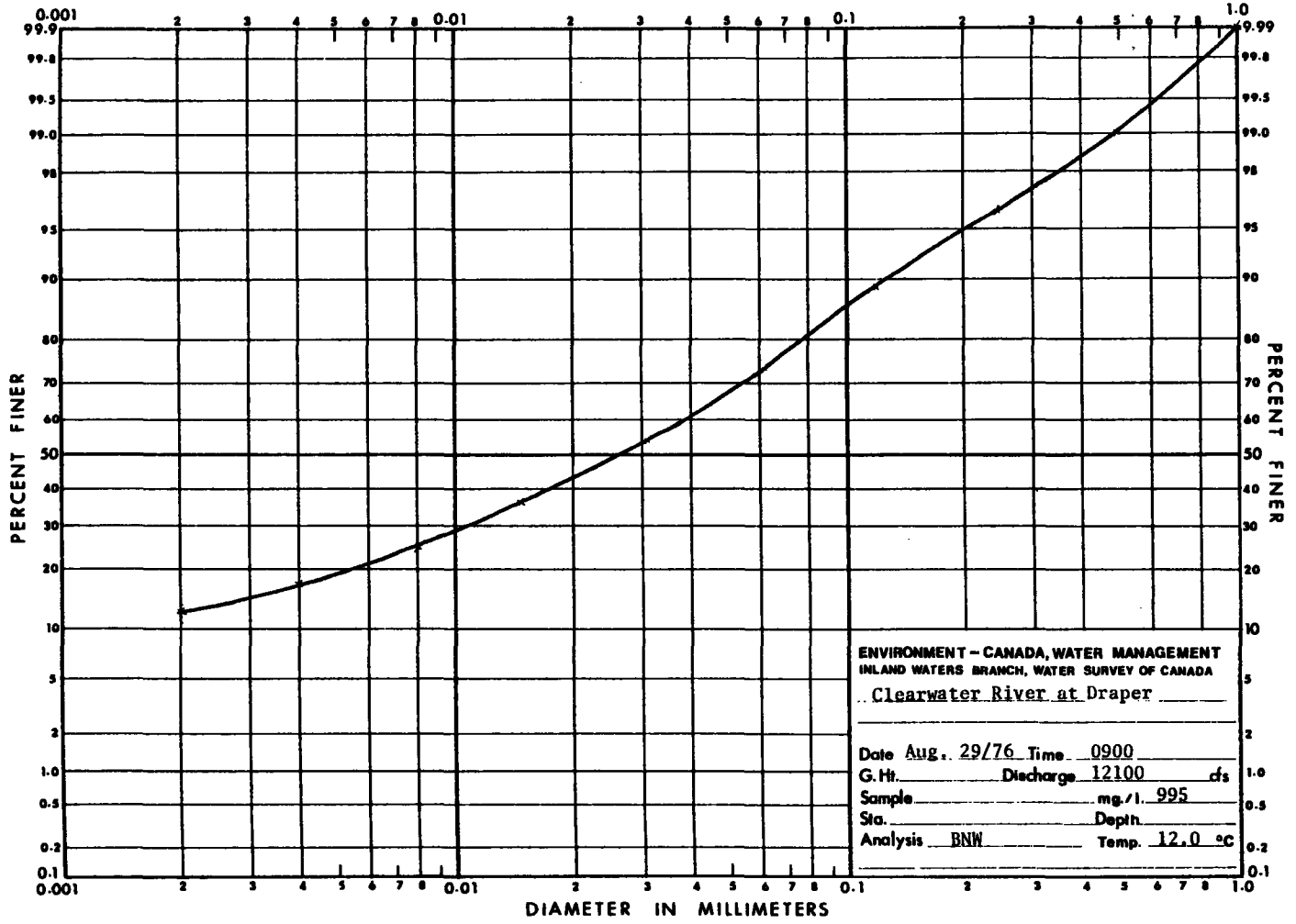
DEPTH INTEGRATING PARTICLE-SIZE ANALYSIS OF SUSPENDED SEDIMENT FOR 1976

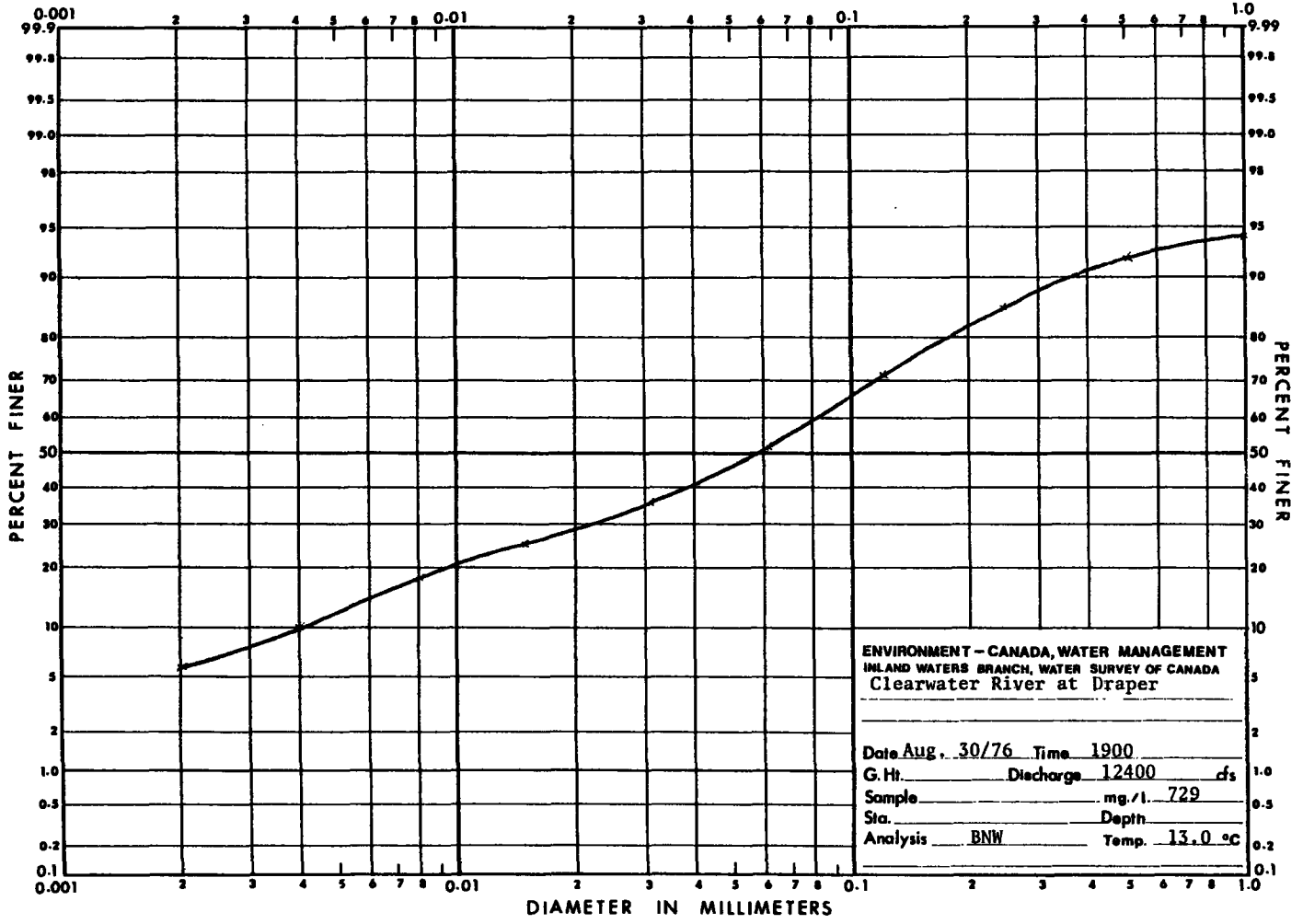
(METHOD OF ANALYSIS: B - BOTTOM WITHDRAWAL TUBE; C - CHEMICALLY DISPERSED; F - SONIC SIFTER; H - HYDROMETER; M - MECHANICALLY DISPERSED; N - IN NATIVE WATER; P - PIPETTE; S - SIEVE; V - VISUAL ACCUMULATION TUBE; W - IN DISTILLED WATER)

DATE	TIME	DISCHARGE MEASUREMENT (CFS)	WATER TEMP. (C)	CONCENTRATION OF SAMPLE(S) (MG/L)	PERCENT FINER THAN INDICATED SIZE, IN MILLIMETRES											METHOD OF ANALYSIS
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
AUG 28	1700	11400 H	11.0	1180 K	19	24	34	47	64	82	95	98	99	99		BNW
AUG 29	0900	12100 H	12.0	995 K	13	17	25	37	54	73	89	96	99	100		BNW
AUG 30	1900	12400 H	13.0	729 K	8	10	18	26	36	52	72	85	92	94		BNW

H - DAILY MEAN DISCHARGE K - SAMPLE(S) COLLECTED IN SINGLE VERTICAL


PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Clearwater River at Draper
Date Aug. 28/76 Time 1700
G. Ht. Discharge 11400 cfs
Sample mg./l. 1180
Sta. Depth
Analysis BNW Temp. 11.0 °C


0.001
0.01
0.1
1.0
99.9
99.8
99.5
99.0
98
95
90
80
70
60
50
40
30
20
10
5
2
1.0
0.5
0.2
0.1
PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Clearwater River at Draper
Date Aug. 29/76 Time 0900
G.Ht. Discharge 12100 cfs
Sample mg./l. 995
Sta. Depth
Analysis BNW Temp. 12.0 °C


PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Clearwater River at Draper
Date Aug. 30/76 Time 1900
G. Ht. Discharge 12400 cfs
Sample mg./l. 729
Sta. Depth
Analysis BNW Temp. 13.0 °C

SEDIMENT SURVEY — ELLS RIVER NEAR THE MOUTH - STATION NO. 07DA017
JAN 30 1978 PAGE 29
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	JAN TEMP. (C)	JAN DAILY DISCHARGE (CFS)	JAN MEAN CONCENTRATION (MG/L)	JAN TONS PER DAY	FEB TEMP. (C)	FEB DAILY DISCHARGE (CFS)	FEB MEAN CONCENTRATION (MG/L)	FEB TONS PER DAY	MAR TEMP. (C)	MAR DAILY DISCHARGE (CFS)	MAR MEAN CONCENTRATION (MG/L)	MAR TONS PER DAY	DAY
1		101 B				56.0 B				49.9 B			1
2		100 B				55.0 B				49.6 B			2
3		99.0 B				54.0 B				50.0 B			3
4		98.0 B				53.0 B				50.0 B			4
5		99.0 B				52.0 B				50.1 B			5
6		95.0 B				52.0 B				50.1 B			6
7		94.0 B				51.0 B				50.2 B			7
8		93.0 B				51.0 B				50.2 B			8
9		92.0 B				50.0 B				50.3 B			9
10		91.0 B				50.0 B				50.3 B			10
11		90.0 B				49.0 B				51.0 B			11
12		89.1 B				49.1 B				51.0 B			12
13		87.0 B				49.1 B				51.0 B			13
14		86.0 B				49.1 B				52.0 B			14
15		81.0 B				49.2 B				52.0 B			15
16		79.0 B				49.2 B				52.0 B			16
17		77.0 B				49.3 B				52.0 B			17
18		75.0 B				49.3 B				53.0 B			18
19		74.0 B				49.4 B				53.0 B			19
20		72.0 B				49.4 B				54.0 B			20
21		71.0 B				49.5 B				54.0 B			21
22		69.0 B				49.5 B				55.0 B			22
23		68.0 B				49.6 B				55.0 B			23
24		66.0 B				49.6 B				56.0 B			24
25		64.0 B				49.7 B				56.0 B			25
26		63.0 B				49.7 B				57.0 B			26
27		62.0 B				49.7 B				58.0 B			27
28		60.0 B				49.8 B				58.0 B			28
29		59.0 B				49.8 B				59.0 B			29
30		58.0 B								59.5 B			30
31		57.0 B								60.0 B			31
TOTAL		2464.1				1483.8				1649.8			TOTAL
MEAN		79.5				50.4				53.2			MEAN

SEDIMENT SURVEY — ELLS RIVER NEAR THE MOUTH - STATION NO. 07DA017
JAN 30 1978 PAGE 30
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	APR TEMP. (C)	APR DAILY DISCHARGE (CFS)	APR MEAN CONCENTRATION (MG/L)	APR TONS PER DAY	MAY TEMP. (C)	MAY DAILY DISCHARGE (CFS)	MAY MEAN CONCENTRATION (MG/L)	MAY TONS PER DAY	JUN TEMP. (C)	JUN DAILY DISCHARGE (CFS)	JUN MEAN CONCENTRATION (MG/L)	JUN TONS PER DAY	DAY
1		62.0 B				637				249			1
2		65.0 B				610				247			2
3		68.0 B				589				254			3
4		72.0 B				558				234			4
5		80.0 B				536				220			5
6		92.0 B				503				213			6
7		120 B				479				207			7
8		144 B				465				197			8
9		300 B				486				188			9
10		480 B				444				179			10
11		736 B				431				174			11
12		1550 B				426				171			12
13		1700 B				419				161			13
14		1760 B				410				155			14
15	1.0	1660 A	1500 S	6720		407				152			15
16		1450 E				393				172			16
17		1270 E				378				165			17
18		1130 E				363				161			18
19		990 E				347				151			19
20	4.0	867 A	330 S	787		344				148			20
21		872				327				141			21
22		889				322				136			22
23		940				307				132			23
24		918				295				136			24
25		985				288				143			25
26		831			19.0	288 A	19 S	14.4		149			26
27	6.0	731	295 S	583		278 E				148			27
28		693				262 A				188			28
29		676				253				175			29
30		657				248				169			30
31						248							31
TOTAL		22807.0				12283				5484			TOTAL
MEAN		760				396				180			MEAN

SEDIMENT SURVEY
JUN 30 1978 PAGE 31
CALGARY, ALTA.

ELLS RIVER NEAR THE MOUTH - STATION NO. 07DA017

SUSPENDED SEDIMENT FOR 1976

DAY	JUL TEMP. (C)	JUL DAILY DISCHARGE (CFS)	JUL MEAN CONCENTRATION (MG/L)	JUL TONS PER DAY	AUG TEMP. (C)	AUG DAILY DISCHARGE (CFS)	AUG MEAN CONCENTRATION (MG/L)	AUG TONS PER DAY	SEP TEMP. (C)	SEP DAILY DISCHARGE (CFS)	SEP MEAN CONCENTRATION (MG/L)	SEP TONS PER DAY	DAY
1		178				178				180			1
2		164				181				176			2
3		150				182				184			3
4		145				177				184			4
5		141				173				175			5
6		142			22.0	168	6 8	2.7		161			6
7		145				167				157			7
8	21.0	132 A	10 S	3.6		172				160			8
9		138				176				171			9
10		133				175				179			10
11		141				183				175			11
12		142				179				167			12
13		142				189				158			13
14		156				236				149			14
15		180				218				145			15
16		183				201				141			16
17		168				183				140			17
18		153				164			12.0	134	7 S	2.6	18
19		142				156				132			19
20		137				151				129			20
21	21.0	144	9 S	3.5		147				126			21
22		150				146				121			22
23		159				146				119			23
24		178				146				117			24
25		178				146				115			25
26		166				136				116			26
27		162				205				115			27
28		169				187				116			28
29		171				197				112			29
30		171				199				110			30
31		171				191							31
TOTAL		4889				5466				4346			TOTAL
MEAN		158				176				145			MEAN

SEDIMENT SURVEY
JUN 30 1978 PAGE 32
CALGARY, ALTA.

ELLS RIVER NEAR THE MOUTH - STATION NO. 07DA017

SUSPENDED SEDIMENT FOR 1976

DAY	OCT TEMP. (C)	OCT DAILY DISCHARGE (CFS)	OCT MEAN CONCENTRATION (MG/L)	OCT TONS PER DAY	NOV TEMP. (C)	NOV DAILY DISCHARGE (CFS)	NOV MEAN CONCENTRATION (MG/L)	NOV TONS PER DAY	DEC TEMP. (C)	DEC DAILY DISCHARGE (CFS)	DEC MEAN CONCENTRATION (MG/L)	DEC TONS PER DAY	DAY
1		187				114 B				58.0 B			1
2		168				110 B				59.0 B			2
3		133				104 B				59.0 B			3
4		140			1.0	99.0 B	11 S	3.0		60.0 B			4
5		131				94.0 B				60.0 B			5
6		128				89.0 B				60.0 B			6
7		136				84.0 B				60.0 B			7
8		139				80.0 B				59.0 B			8
9		143				76.0 B				59.0 B			9
10		155				72.0 B				58.0 B			10
11		164				69.0 B				57.0 B			11
12		166				66.0 B				56.0 B			12
13		168				63.0 B				54.0 B			13
14		171 B				61.0 B				52.0 B			14
15		181 B				59.0 B				51.0 B			15
16		178 B				58.0 B				49.0 B			16
17		168 B				56.0 B				48.0 B			17
18		158 B				55.0 B				47.0 B			18
19		148 B				54.0 B				45.0 B			19
20		138 B				52.0 B				44.0 B			20
21		128 B				53.0 B				43.0 B			21
22		118 B				53.0 B				42.0 B			22
23		109 B				53.0 B				41.0 B			23
24		107 B				53.0 B				39.0 B			24
25		108 B				54.0 B				38.0 B			25
26		109 B				54.0 B				37.0 B			26
27		111 B				55.0 B				36.0 B			27
28		113 B				56.0 B				35.0 B			28
29		115 B				57.0 B				34.0 B			29
30		116 B				57.6 B				33.0 B			30
31		115 B								32.0 B			31
TOTAL		4155				2062.8				1585.4			TOTAL
MEAN		134				68.8				48.6			MEAN

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 16 04 N
LONG 111 48 31 W
DRAINAGE AREA 960 80 MILES
NATURAL FLOW

A - MANUAL GAUGE B - ICE CONDITIONS E - ESTIMATED S - SAMPLE(S) COLLECTED THIS DAY

WATER SURVEY OF CANADA
JUN 30 1978 PAGE 4
CALGARY, ALTA.

ELLS RIVER NEAR THE MOUTH

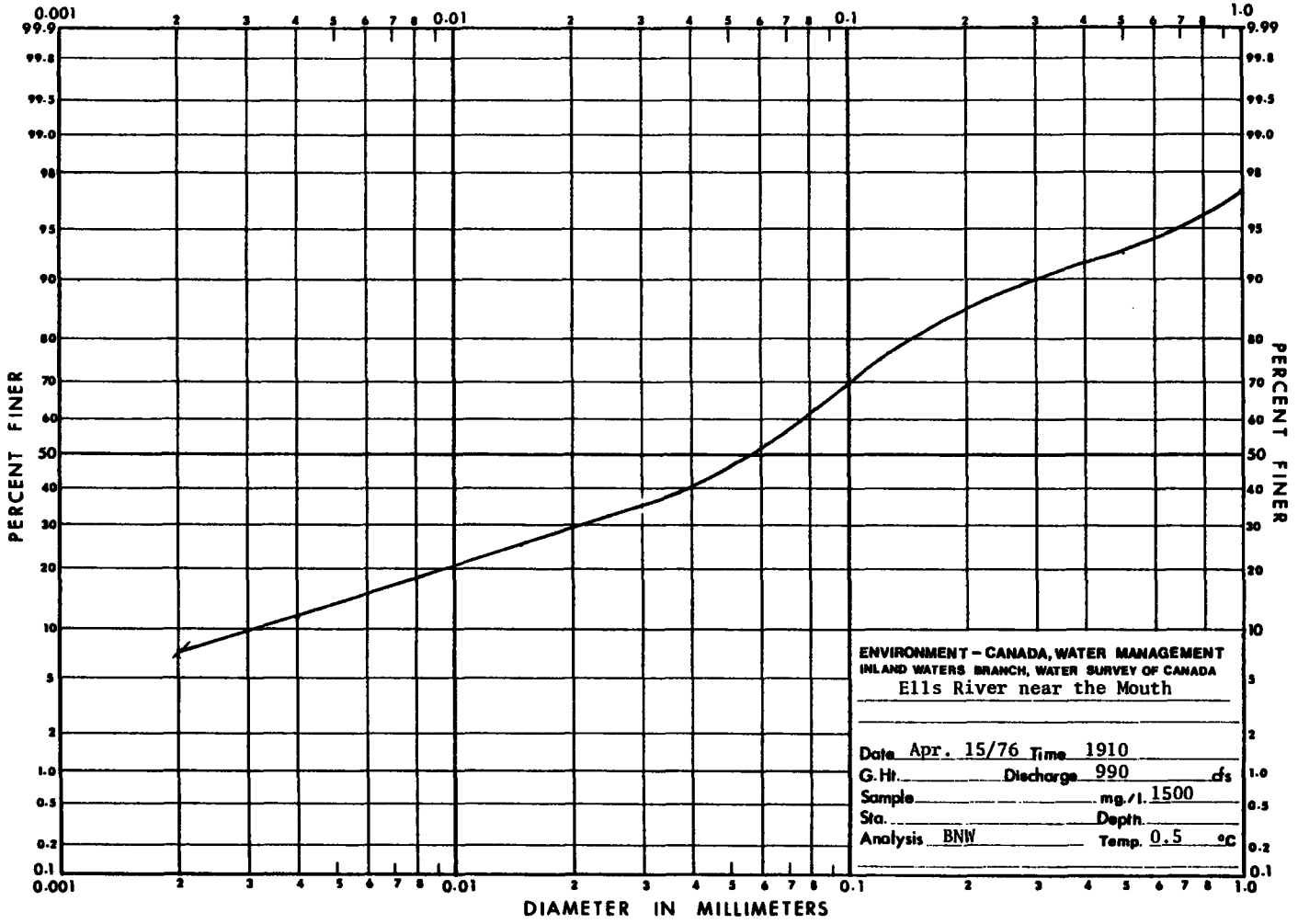
STATION NO. 07DA017

DEPTH INTEGRATING PARTICLE-SIZE ANALYSIS OF SUSPENDED SEDIMENT FOR 1976

METHOD OF ANALYSIS: B = BOTTOM WITHDRAWAL TUBE; C = CHEMICALLY DISPERSED; F = SONIC SIFTER; H = HYDROMETER; M = MECHANICALLY DISPERSED; N = IN NATIVE WATER; P = PIPETTE; S = SIEVE; V = VISUAL ACCUMULATION TUBE; W = IN DISTILLED WATER)

DATE	TIME	DISCHARGE MEASUREMENT	WATER TEMP.	CONCENTRATION OF SAMPLE(S)	PERCENT FINER THAN INDICATED SIZE, IN MILLIMETRES										METHOD OF ANALYSIS
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
		(CFS)	(C)	(MG/L)											
APR 15	1910	990 H	8.5	1500 K	8	12	18	26	36	53	75	88	93	97		BNW

H = DAILY MEAN DISCHARGE K = SAMPLE(S) COLLECTED IN SINGLE VERTICAL


0.001
0.01
0.1
1.0
99.9
99.8
99.5
99.0
98
95
90
80
70
60
50
40
30
20
10
5
2
1.0
0.5
0.2
0.1
9.99
PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Ells River near the Mouth
Date Apr. 15/76 Time 1910
G.Ht. Discharge 990 cfs
Sample mg./l. 1500
Sta. Depth
Analysis BNW Temp. 0.5 °C

SEDIMENT SURVEY — FIREBAG RIVER NEAR THE MOUTH - STATION NO. 07DC001
JAN 30 1978 PAGE 41
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	JAN TEMP. (C)	JAN DAILY DISCHARGE (CFS)	JAN MEAN CONCENTRATION (MG/L)	JAN TONS PER DAY	FEB TEMP. (C)	FEB DAILY DISCHARGE (CFS)	FEB MEAN CONCENTRATION (MG/L)	FEB TONS PER DAY	MAR TEMP. (C)	MAR DAILY DISCHARGE (CFS)	MAR MEAN CONCENTRATION (MG/L)	MAR TONS PER DAY	DAY
1		458 B				377 B				310 B			1
2		440 B				377 B				308 B			2
3		430 B				376 B				306 B			3
4		425 B				376 B				304 B			4
5		420 B				375 B				302 B			5
6		410 B				374 B				301 B			6
7		400 B				374 B				301 B			7
8		396 B				373 B				300 B			8
9		396 B				373 B				300 B			9
10		395 B				372 B				301 B			10
11		395 B				370 B				302 B			11
12		393 B				378 E				303 B			12
13		392 B				376 B				304 B			13
14		391 B				372 B				305 B			14
15		390 B				360 B				307 B			15
16		390 B				355 B				308 B			16
17		389 B				351 B				309 B			17
18		387 B				349 B				310 B			18
19		386 B				342 B				311 B			19
20		385 B				340 B				312 B			20
21		384 B				338 B				314 B			21
22		383 B				334 B				318 B			22
23		382 B				332 B				320 B			23
24		381 B				328 B				322 B			24
25		380 B				324 B				325 B			25
26		380 B				320 B				334 B			26
27		380 B				316 B				345 B			27
28		379 B				312 B				369 B			28
29		379 B				310 B				398 B			29
30		378 B								435 B			30
31		378 B								472 B			31
TOTAL		12244				10254				10839			TOTAL
MEAN		395				354				324			MEAN

SEDIMENT SURVEY — FIREBAG RIVER NEAR THE MOUTH - STATION NO. 07DC001
JAN 30 1978 PAGE 42
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	APR TEMP. (C)	APR DAILY DISCHARGE (CFS)	APR MEAN CONCENTRATION (MG/L)	APR TONS PER DAY	MAY TEMP. (C)	MAY DAILY DISCHARGE (CFS)	MAY MEAN CONCENTRATION (MG/L)	MAY TONS PER DAY	JUN TEMP. (C)	JUN DAILY DISCHARGE (CFS)	JUN MEAN CONCENTRATION (MG/L)	JUN TONS PER DAY	DAY
1		500 B				1570				1010			1
2		550 B				1490				987			2
3		600 B				1420				961			3
4		650 B				1360				944			4
5		700 B				1300				927			5
6		770 B				1230				912			6
7		860 B				1180				888			7
8		950 B				1150				849			8
9		1130 B				1120				822			9
10		1300 B				1080				826			10
11		1450 B				1050 A				857			11
12		1460 B				1050				912 A	12 S	29.5	12
13		1700 B				1060				985			13
14		1860 B				1080				1060			14
15		1900 B				1090				1120			15
16		2080 B				1080				1140			16
17		2060 B				1060				1140			17
18		2120 B				1010				1120			18
19		2150 E				972				1090			19
20		2150 E				956				1050			20
21		2100 E				941				982			21
22		2080 A				947				896			22
23		2030				951				812			23
24		1980				943				828			24
25		1930				917				930			25
26		1870				935				875			26
27		900 A				932				960 A			27
28		1760				949				980 E			28
29		1700				973				980 E			29
30		1640				1010				980 E			30
31						1020							31
TOTAL		44980				33606				28446			TOTAL
MEAN		1500				1090				947			MEAN

SEDIMENT SURVEY — FIREBAG RIVER NEAR THE MOUTH - STATION NO. 07DC001
JUN 30 1978 PAGE 43
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	JUL TEMP. (C)	JUL DAILY DISCHARGE (CFS)	JUL MEAN CONCENTRATION (MG/L)	JUL TONS PER DAY	AUG TEMP. (C)	AUG DAILY DISCHARGE (CFS)	AUG MEAN CONCENTRATION (MG/L)	AUG TONS PER DAY	SEP TEMP. (C)	SEP DAILY DISCHARGE (CFS)	SEP MEAN CONCENTRATION (MG/L)	SEP TONS PER DAY	DAY
1						862				1320			1
2						860				1350			2
3						833				1300			3
4						782				1420			4
5						731				1340			5
6						691				1260			6
7						648				1290			7
8						612				1260			8
9						590				1420			9
10						572				1440			10
11						556				1440			11
12						529				1410			12
13						525				1340			13
14						548				1260			14
15						587				1190	9 S	28.9	15
16						479				1150			16
17						478				1090			17
18						468				1020			18
19						463				950			19
20						469				890			20
21						474				847			21
22						490				829			22
23						497				794			23
24						507				764			24
25						514				761			25
26						517				735			26
27						586				717			27
28						629				714			28
29						1100				718			29
30						1240			10.0	710	9 S	9.6	30
31	18.0	833 A	10 S	22.8		1410							31
TOTAL						20356				35457			TOTAL
MEAN						687				1119			MEAN

SEDIMENT SURVEY — FIREBAG RIVER NEAR THE MOUTH - STATION NO. 07DC001
JUN 30 1978 PAGE 44
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	OCT TEMP. (C)	OCT DAILY DISCHARGE (CFS)	OCT MEAN CONCENTRATION (MG/L)	OCT TONS PER DAY	NOV TEMP. (C)	NOV DAILY DISCHARGE (CFS)	NOV MEAN CONCENTRATION (MG/L)	NOV TONS PER DAY	DEC TEMP. (C)	DEC DAILY DISCHARGE (CFS)	DEC MEAN CONCENTRATION (MG/L)	DEC TONS PER DAY	DAY
1		693				650 E				480 E			1
2		682				620 E	3 S	5.0		462 E			2
3		750				590 E				480 E			3
4		762				570 E				440 E			4
5		779				550 E				475 E			5
6		793				530 E				470 E			6
7		832				510 E				460 E			7
8		989				500 E				450 E			8
9		1060				490 E				440 E			9
10		1150				480 E				430 E			10
11		1230				470 E				420 E			11
12		1320				460 E				410 E			12
13		1390				450 E				400 E			13
14		1520				440 E				390 E			14
15		1630				435 E				385 E			15
16		1710				430 E				375 E			16
17		1760				425 E				365 E			17
18		1690				425 E				360 E			18
19		1710				420 E				350 E			19
20		1660				420 E				345 E			20
21		1510 E				415 E				340 E			21
22		1320 E				415 E				335 E			22
23		1210 E				420 E				330 E			23
24		1060 E				425 E				325 E			24
25		971 E				430 E				320 E			25
26		886 E				430 E				315 E			26
27		820 E				445 E				310 E			27
28		790 E				455 E				310 E			28
29		750 E				470 E				305 E			29
30		710 E				475 E				300 E			30
31		680 E								300 E			31
TOTAL		34697				14250				11937			TOTAL
MEAN		1120				475				385			MEAN

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 30 30 N
LONG 111 18 30 W
DRAINAGE AREA 2330 SQ MILES
NATURAL FLOW

A - MANUAL GAUGE B - ICE CONDITIONS E - ESTIMATED S - SAMPLE(S) COLLECTED THIS DAY

SEDIMENT SURVEY
JUN 30 1978 PAGE 21
CALGARY, ALTA.

HARTLEY CREEK NEAR FORT MACKAY - STATION NO. 07DA869

SUSPENDED SEDIMENT FOR 1976

DAY	JAN TEMP. (C)	JAN DAILY DISCHARGE (CFS)	JAN MEAN CONCENTRATION (MG/L)	JAN TONS PER DAY	FEB TEMP. (C)	FEB DAILY DISCHARGE (CFS)	FEB MEAN CONCENTRATION (MG/L)	FEB TONS PER DAY	MAR TEMP. (C)	MAR DAILY DISCHARGE (CFS)	MAR MEAN CONCENTRATION (MG/L)	MAR TONS PER DAY	DAY
1		1.9 B				0.88 B				0.98 B			1
2		1.8 B				0.88 B				0.98 B			2
3		1.7 B				0.88 B				0.98 B			3
4		1.6 B				0.88 B				0.98 B			4
5		1.5 B				0.89 B				0.98 B			5
6		1.4 B				0.88 B				0.98 B			6
7		1.3 B				0.88 B				0.98 B			7
8		1.2 B				0.89 B				0.97 B			8
9		1.1 B				0.86 B				0.97 B			9
10		1.0 B				0.77 B				1.0 B			10
11		1.0 B				0.88 B				1.0 B			11
12		1.0 B				0.86 B				1.0 B			12
13		1.0 B				0.88 B				1.0 B			13
14		0.91 B				0.88 B				1.0 B			14
15		0.98 B				0.88 B				1.0 B			15
16		0.98 B				0.88 B				1.1 B			16
17		0.98 B				0.88 B				1.1 B			17
18		0.88 B				0.88 B				1.1 B			18
19		0.88 B				0.88 B				1.1 B			19
20		0.88 B				0.88 B				1.1 B			20
21		0.88 B				0.88 B				1.2 B			21
22		0.88 B				0.98 B				1.2 B			22
23		0.88 B				0.98 B				1.2 B			23
24		0.88 B				0.98 B				1.3 B			24
25		0.88 B				0.98 B				1.3 B			25
26		0.88 B				0.98 B				1.4 B			26
27		0.88 B				0.98 B				1.4 B			27
28		0.88 B				0.98 B				1.5 B			28
29		0.88 B				0.98 B				1.6 B			29
30		0.88 B								1.7 B			30
31		0.88 B								1.8 B			31
TOTAL		38.31				25.97				35.27			TOTAL
MEAN		1.2				0.93				1.1			MEAN

SEDIMENT SURVEY
JUN 30 1978 PAGE 22
CALGARY, ALTA.

HARTLEY CREEK NEAR FORT MACKAY - STATION NO. 07DA869

SUSPENDED SEDIMENT FOR 1976

DAY	APR TEMP. (C)	APR DAILY DISCHARGE (CFS)	APR MEAN CONCENTRATION (MG/L)	APR TONS PER DAY	MAY TEMP. (C)	MAY DAILY DISCHARGE (CFS)	MAY MEAN CONCENTRATION (MG/L)	MAY TONS PER DAY	JUN TEMP. (C)	JUN DAILY DISCHARGE (CFS)	JUN MEAN CONCENTRATION (MG/L)	JUN TONS PER DAY	DAY
1		2.0 B				53.1				8.2			1
2		2.4 B				53.2				8.3			2
3		3.0 B				48.1				7.7			3
4		4.0 B				43.8				6.6			4
5		8.0 B				40.2				5.0			5
6		52.2 B				36.6				5.0			6
7		80.3 B				35.5				4.8			7
8	1.0	109 B	17 S	5.0		33.8				4.7			8
9		134 B				34.5				7.1			9
10		144 B				30.6				6.6			10
11	1.0	172 B	26 S	12.1		29.8				7.6			11
12		178 B				27.4				8.7			12
13	1.0	167	32 S	14.4		27.5				7.5			13
14		156				26.9				6.0			14
15	1.0	142	38 S	22.2		29.1				5.4			15
16		127				28.6				5.1			16
17		115				27.3				3.3			17
18		108				26.6				3.5			18
19		99.6				26.5				2.7			19
20	4.0	92.8	19 S	4.8		24.3				1.9			20
21		88.6				26.8				1.2			21
22		82.9				26.8				0.67			22
23		78.9				24.3				0.82			23
24		76.8				24.9				1.3			24
25		73.4				22.9				2.8			25
26		70.8				19.6				4.7			26
27		66.4				17.3				5.2			27
28		62.4			16.0	13.5	3 S	0.11		4.8			28
29		60.0				11.8				3.4			29
30		56.8				10.4				3.9			30
31						8.7							31
TOTAL		2615.7				888.8				143.69			TOTAL
MEAN		87.2				28.9				4.8			MEAN

SEDIMENT SURVEY — HARTLEY CREEK NEAR FORT MACKAY - STATION NO. 07DA009
JUN 30 1978 PAGE 23
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	JUL TEMP. (C)	JUL DAILY DISCHARGE (CFS)	JUL MEAN CONCENTRATION (MG/L)	JUL TONS PER DAY	AUG TEMP. (C)	AUG DAILY DISCHARGE (CFS)	AUG MEAN CONCENTRATION (MG/L)	AUG TONS PER DAY	SEP TEMP. (C)	SEP DAILY DISCHARGE (CFS)	SEP MEAN CONCENTRATION (MG/L)	SEP TONS PER DAY	DAY
1		3.7				18.3				66.4			1
2		3.8				15.4				70.6			2
3		2.5			21.0	13.4	3 S	0.11		73.1			3
4		2.4				11.2				69.1			4
5		3.2				9.8				65.8			5
6	21.0	2.8	6 S	0.05		8.4				63.8			6
7		2.5				7.8				88.7			7
8		2.6				10.9				129			8
9		4.5				13.4				135			9
10		4.3				12.2				120			10
11		6.7				11.4				122			11
12		9.5				9.5				115			12
13		7.7				9.5				108			13
14		7.1				25.6				103			14
15		6.9				29.8				98.4			15
16		6.5				24.8			10.8	90.9	7 S	1.7	16
17		8.1				21.4				83.9			17
18		8.4				18.6				78.8			18
19		6.7				16.2				72.6			19
20		9.1				16.0				68.2			20
21		5.5				14.8				64.7			21
22		12.0				15.1				60.7			22
23		14.7				14.4				57.3			23
24		11.9				14.9				54.5			24
25		10.8				17.1				52.9			25
26		10.7				14.6				50.8			26
27		10.7				52.8				49.3			27
28		13.6				73.8				47.8			28
29		20.4				72.4				46.8			29
30		20.8				67.4				44.8			30
31		21.8				65.7							31
TOTAL		255.1				725.9				2356.9			TOTAL
MEAN		8.2				23.4				78.6			MEAN

SEDIMENT SURVEY — HARTLEY CREEK NEAR FORT MACKAY - STATION NO. 07DA009
JUN 30 1978 PAGE 24
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	OCT TEMP. (C)	OCT DAILY DISCHARGE (CFS)	OCT MEAN CONCENTRATION (MG/L)	OCT TONS PER DAY	NOV TEMP. (C)	NOV DAILY DISCHARGE (CFS)	NOV MEAN CONCENTRATION (MG/L)	NOV TONS PER DAY	DEC TEMP. (C)	DEC DAILY DISCHARGE (CFS)	DEC MEAN CONCENTRATION (MG/L)	DEC TONS PER DAY	DAY
1		42.3				40.9 B				1.5 B			1
2		48.6				36.1 B				1.6 B			2
3		46.4				36.2 B	2 S	0.19		1.5 B			3
4		57.9				35.1 B				1.3 B			4
5		63.6				32.6 B				1.0 B			5
6		62.1				28.6 B				1.0 B			6
7		65.4				24.7 B				0.98 B			7
8		82.7				24.6 B				0.88 B			8
9		93.8				21.9 B				0.71 B			9
10		98.9				19.9 B				0.70 B			10
11		99.3				17.2 B				0.68 B			11
12		98.4				14.8 B				0.68 B			12
13		97.4				12.8 B				0.68 B			13
14		186				10.7 B				0.68 B			14
15		189				8.7 B				0.58 B			15
16		189				9.0 B				0.58 B			16
17		186				8.2 B				0.58 B			17
18		181 B				8.0 B				0.58 B			18
19		98.8 B				6.7 B				0.58 B			19
20		88.8 B				5.8 B				0.58 B			20
21		93.7 B				4.8 B				0.48 B			21
22		86.4 B				3.9 B				0.48 B			22
23		79.3 B				3.8 B				0.48 B			23
24		85.2 B				4.8 B				0.48 B			24
25		99.8 B				3.3 B				0.48 B			25
26		92.6 B				1.8 B				0.48 B			26
27		91.4 B				0.76 B				0.38 B			27
28		94.6 B				0.83 B				0.38 B			28
29		97.5 B				1.1 B				0.38 B			29
30		98.8 B				1.1 B				0.38 B			30
31		47.4 B								0.38 B			31
TOTAL		2358.7				429.80				20.31			TOTAL
MEAN		76.1				14.3				0.66			MEAN

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 15 34 N
LONG 111 27 53 W
DRAINAGE AREA 142 90 MILES
NATURAL FLOW

B - ICE CONDITIONS

S - SAMPLE(S) COLLECTED THIS DAY

SEDIMENT SURVEY
JUN 30 1978 PAGE 25
CALGARY, ALTA.

JOSLYN CREEK NEAR FORT MACKAY - STATION NO. 07DA016

SUSPENDED SEDIMENT FOR 1976

DAY	JAN TEMP. (C)	JAN DAILY DISCHARGE (CFS)	JAN MEAN CONCENTRATION (MG/L)	JAN TONS PER DAY	FEB TEMP. (C)	FEB DAILY DISCHARGE (CFS)	FEB MEAN CONCENTRATION (MG/L)	FEB TONS PER DAY	MAR TEMP. (C)	MAR DAILY DISCHARGE (CFS)	MAR MEAN CONCENTRATION (MG/L)	MAR TONS PER DAY	DAY
1		1.9 B				1.2 B				0.20 B			1
2		1.9 B				1.2 B				0.20 B			2
3		1.8 B				1.1 B				0.19 B			3
4		1.8 B				1.1 B				0.18 B			4
5		1.8 B				1.1 B				0.18 B			5
6		1.8 B				1.0 B				0.18 B			6
7		1.8 B				1.0 B				0.18 B			7
8		1.8 B				1.0 B				0.18 B			8
9		1.8 B				0.96 B				0.18 B			9
10		1.7 B				0.99 B				0.18 B			10
11		1.7 B				0.85 B				0.18 B			11
12		1.7 B				0.86 B				0.18 B			12
13		1.7 B				0.88 B				0.19 B			13
14		1.7 B				0.86 B				0.18 B			14
15		1.6 B				0.88 B				0.18 B			15
16		1.6 B				0.78 B				0.18 B			16
17		1.6 B				0.76 B				0.18 B			17
18		1.6 B				0.88 B				0.19 B			18
19		1.5 B				0.88 B				0.20 B			19
20		1.5 B				0.90 B				0.20 B			20
21		1.5 B				0.90 B				0.20 B			21
22		1.5 B				0.40 B				0.38 B			22
23		1.4 B				0.48 B				0.38 B			23
24		1.4 B				0.38 B				0.48 B			24
25		1.4 B				0.38 B				0.50 B			25
26		1.4 B				0.38 B				0.48 B			26
27		1.3 B				0.28 B				0.88 B			27
28		1.3 B				0.28 B				1.8 B			28
29		1.3 B				0.28 B				1.3 B			29
30		1.3 B								2.2 B			30
31		1.2 B								3.3 B			31
TOTAL		49.3				20.48				13.38			TOTAL
MEAN		1.6				0.71				0.43			MEAN

SEDIMENT SURVEY
JUN 30 1978 PAGE 26
CALGARY, ALTA.

JOSLYN CREEK NEAR FORT MACKAY - STATION NO. 07DA016

SUSPENDED SEDIMENT FOR 1976

DAY	APR TEMP. (C)	APR DAILY DISCHARGE (CFS)	APR MEAN CONCENTRATION (MG/L)	APR TONS PER DAY	MAY TEMP. (C)	MAY DAILY DISCHARGE (CFS)	MAY MEAN CONCENTRATION (MG/L)	MAY TONS PER DAY	JUN TEMP. (C)	JUN DAILY DISCHARGE (CFS)	JUN MEAN CONCENTRATION (MG/L)	JUN TONS PER DAY	DAY
1		5.0 B				59.9				9.6			1
2		7.4 B				53.4				10.2			2
3		11.0 B				47.3				11.6			3
4		17.0 B				41.8				11.1			4
5		25.0 B				38.9				10.0			5
6		37.0 B				31.4				8.9			6
7		56.0 B				27.2				8.3			7
8		88.7 B	80 S	17.4		30.3				8.1			8
9		130 B				25.7				7.8			9
10		220 B				22.6				7.4			10
11	1.0	344 B	329 S	329		19.9				7.1			11
12		428 B				18.1				6.7			12
13	1.0	456 A	826 S	1020		19.7				6.6			13
14		508				21.5				7.8			14
15	2.0	383 A	1100 S	1140		22.3				8.1			15
16		274				21.8				7.3			16
17		217				20.8				6.6			17
18		165				17.2				6.2			18
19		132				16.1				5.6			19
20	3.0	108 A	393 S	115		15.4							20
21		103				15.7							21
22		126				14.2							22
23		167				13.9							23
24		172				15.0							24
25		172				14.1							25
26		133				13.1	63 S	2.2					26
27		106				11.9							27
28		89.0				11.8							28
29		78.1				18.4							29
30		68.4				9.7							30
31						10.9							31
TOTAL		4838.6				716.3							TOTAL
MEAN		161				23.1							MEAN

SEDIMENT SURVEY
JUN 30 1978 PAGE 27
CALGARY, ALTA.

JOSLYN CREEK NEAR FORT MACKAY - STATION NO. 07DA016

SUSPENDED SEDIMENT FOR 1976

DAY	JUL TEMP. (C)	JUL DAILY DISCHARGE (CFS)	JUL MEAN CONCENTRATION (MG/L)	JUL TONS PER DAY	AUG TEMP. (C)	AUG DAILY DISCHARGE (CFS)	AUG MEAN CONCENTRATION (MG/L)	AUG TONS PER DAY	SEP TEMP. (C)	SEP DAILY DISCHARGE (CFS)	SEP MEAN CONCENTRATION (MG/L)	SEP TONS PER DAY	DAY
1						12.1				13.8			1
2						10.7				16.5			2
3						8.9				17.3			3
4						8.8				16.1			4
5						7.4				23.8			5
6					19.0	7.2	48 S	0.93		11.9			6
7						6.3				10.8			7
8	10.0	7.0 A	61 S	1.2		5.5				10.2			8
9		6.1				14.8				11.2			9
10		8.6				13.8				12.3			10
11		8.3				13.9				10.8			11
12		8.2				15.7				9.9			12
13		11.0				20.6				8.9			13
14		19.8				31.7				8.7			14
15		15.7				22.3				7.8			15
16		13.9				16.2				7.8			16
17		12.3				14.6				8.9			17
18		10.2				12.3			10.0	5.8	95 S	0.74	18
19		7.9				10.8				7.2			19
20		6.9				8.8				6.1			20
21		6.9				8.8				5.2			21
22		8.1				7.9				4.9			22
23		14.1				7.7				5.8			23
24		16.2				7.8				6.3			24
25		14.5				7.2				5.1			25
26		13.6				8.4				4.3			26
27		12.8				10.8				4.2			27
28		11.9				10.6				4.4			28
29		12.8				10.8				4.5			29
30		14.9				19.8				4.1			30
31		13.9				19.1							31
TOTAL						393.6				269.7			TOTAL
MEAN						12.7				9.0			MEAN

SEDIMENT SURVEY
JUN 30 1978 PAGE 28
CALGARY, ALTA.

JOSLYN CREEK NEAR FORT MACKAY - STATION NO. 07DA016

SUSPENDED SEDIMENT FOR 1976

DAY	OCT TEMP. (C)	OCT DAILY DISCHARGE (CFS)	OCT MEAN CONCENTRATION (MG/L)	OCT TONS PER DAY	NOV TEMP. (C)	NOV DAILY DISCHARGE (CFS)	NOV MEAN CONCENTRATION (MG/L)	NOV TONS PER DAY	DEC TEMP. (C)	DEC DAILY DISCHARGE (CFS)	DEC MEAN CONCENTRATION (MG/L)	DEC TONS PER DAY	DAY
1		4.1				10.4 B				0.80 B			1
2		4.5				13.0 B				0.70 B			2
3		6.8				12.9 B				0.60 B			3
4		10.0			1.0	10.6 B	37 S	1.1		0.60 B			4
5		10.3				9.7 B				0.50 B			5
6		8.6				8.8 B				0.50 B			6
7		8.2				7.9 B				0.40 B			7
8		10.3				7.2 B				0.40 B			8
9		16.4				6.7 B				0.40 B			9
10		21.6				6.1 B				0.30 B			10
11		24.3				5.7 B				0.30 B			11
12		22.9				5.4 B				0.30 B			12
13		25.6				5.1 B				0.25 B			13
14		35.1				4.8 B				0.20 B			14
15		41.9				4.4 B				0.20 B			15
16		39.0 B				4.1 B				0.20 B			16
17		38.4 B				3.9 B				0.20 B			17
18		29.2 B				3.6 B				0.20 B			18
19		29.5 B				3.3 B				0.20 B			19
20		23.5 B				3.0 B				0.20 B			20
21		24.9 B				2.7 B				0.20 B			21
22		20.3 B				2.4 B				0.20 B			22
23		17.9 B				2.2 B				0.20 B			23
24		15.6 B				1.8 B				0.20 B			24
25		14.5 B				1.5 B				0.20 B			25
26		12.5 B				1.3 B				0.20 B			26
27		13.1 B				1.1 B				0.20 B			27
28		13.6 B				1.0 B				0.20 B			28
29		14.6 B				0.98 B				0.20 B			29
30		15.8 B				0.83 B				0.30 B			30
31		11.8 B								0.30 B			31
TOTAL		578.8				152.33				9.85			TOTAL
MEAN		18.7				5.1				0.32			MEAN

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 16 27 N
LONG 111 44 38 W
DRAINAGE AREA 93.7 SQ MILES
NATURAL FLOW

A - MANUAL GAUGE B - ICE CONDITIONS S - SAMPLE(S) COLLECTED THIS DAY

WATER SURVEY OF CANADA
JUN 30 1978 PAGE 3
CALGARY, ALTA.

JOSLYN CREEK NEAR FORT MACKAY

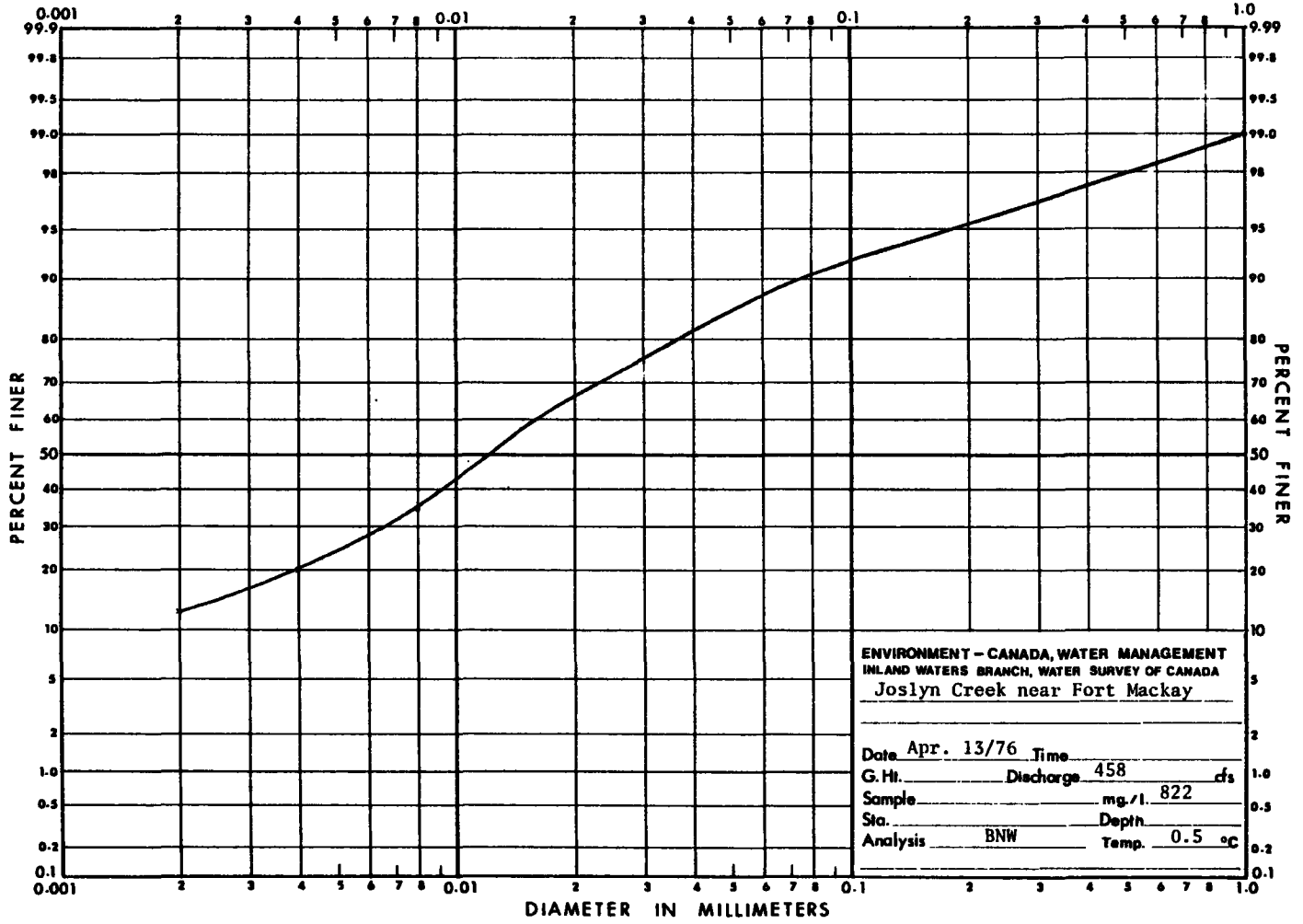
STATION NO. 07DA016

DEPTH INTEGRATING PARTICLE-SIZE ANALYSIS OF SUSPENDED SEDIMENT FOR 1976

(METHOD OF ANALYSIS: B = BOTTOM WITHDRAWAL TUBE; C = CHEMICALLY DISPERSED; F = SONIC SIFTER; H = HYDROMETER; M = MECHANICALLY DISPERSED; N = IN NATIVE WATER; P = PIPETTE; S = SIEVE; V = VISUAL ACCUMULATION TUBE; W = IN DISTILLED WATER)

DATE	TIME	DISCHARGE MEASUREMENT	WATER TEMP.	CONCENTRATION OF SAMPLE(S)	PERCENT FINER THAN INDICATED SIZE, IN MILLIMETRES										METHOD OF ANALYSIS
		(CFS)	(C)	(MG/L)	0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	
APR 13		458 M	0.5	822 K	13	20	35	58	76	88	93	96	98	99		RNW

M = DAILY MEAN DISCHARGE K = SAMPLE(S) COLLECTED IN SINGLE VERTICAL


PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Joslyn Creek near Fort Mackay
Date Apr. 13/76 Time
G. Ht. Discharge 458 cfs
Sample mg./l. 822
Sta. Depth
Analysis BNW Temp. 0.5 °C

SEDIMENT SURVEY
JUN 30 1978 PAGE 37
CALGARY, ALTA.

MACKAY RIVER NEAR FORT MACKAY - STATION NO. 07DB001

SUSPENDED SEDIMENT FOR 1976

DAY	JAN TEMP. (C)	JAN DAILY DISCHARGE (CFS)	JAN MEAN CONCENTRATION (MG/L)	JAN TONS PER DAY	FEB TEMP. (C)	FEB DAILY DISCHARGE (CFS)	FEB MEAN CONCENTRATION (MG/L)	FEB TONS PER DAY	MAR TEMP. (C)	MAR DAILY DISCHARGE (CFS)	MAR MEAN CONCENTRATION (MG/L)	MAR TONS PER DAY	DAY
1		36.5 B				22.8 B				17.7 B			1
2		36.5 B				22.7 B				17.3 B			2
3		34.0 B				22.6 B				17.0 B			3
4		33.0 B				22.5 B				16.8 B			4
5		32.0 B				22.4 B				16.9 B			5
6		31.5 B				22.3 B				16.2 B			6
7		30.5 B				22.2 B				16.0 B			7
8		30.0 B				22.1 B				15.8 B			8
9		29.0 B				22.0 B				15.6 B			9
10		28.0 B				22.0 B				19.3 B			10
11		27.5 B				21.9 B				19.4 B			11
12		27.0 B				21.8 B				18.9 B			12
13		26.3 B				21.7 B				19.8 B			13
14		26.0 B				21.6 B				19.6 B			14
15		25.8 B				21.5 B				19.7 B			15
16		25.5 B				21.3 B				19.8 B			16
17		25.2 B				21.1 B				19.9 B			17
18		25.0 B				20.9 B				19.8 B			18
19		24.8 B				20.8 B				19.1 B			19
20		24.6 B				20.1 B				19.2 B			20
21		24.4 B				20.0 B				18.4 B			21
22		24.2 B				19.8 B				18.6 B			22
23		24.0 B				19.6 B				18.8 B			23
24		23.8 B				19.2 B				17.9 B			24
25		23.6 B				19.0 B				17.1 B			25
26		23.5 B				18.7 B				17.4 B			26
27		23.3 B				18.4 B				17.6 B			27
28		23.4 B				19.1 B				17.8 B			28
29		23.8 B				17.9 B				17.9 B			29
30		23.0 B								18.0 B			30
31		22.9 B								18.3 B			31
TOTAL		836.8				686.7				513.8			TOTAL
MEAN		27.0				20.9				16.9			MEAN

SEDIMENT SURVEY
JUN 30 1978 PAGE 38
CALGARY, ALTA.

MACKAY RIVER NEAR FORT MACKAY - STATION NO. 07DB001

SUSPENDED SEDIMENT FOR 1976

DAY	APR TEMP. (C)	APR DAILY DISCHARGE (CFS)	APR MEAN CONCENTRATION (MG/L)	APR TONS PER DAY	MAY TEMP. (C)	MAY DAILY DISCHARGE (CFS)	MAY MEAN CONCENTRATION (MG/L)	MAY TONS PER DAY	JUN TEMP. (C)	JUN DAILY DISCHARGE (CFS)	JUN MEAN CONCENTRATION (MG/L)	JUN TONS PER DAY	DAY
1		19.0 B				1330				265			1
2		19.5 B				1210 E				279			2
3		23.0 B				1110 E				289			3
4		42.0 B				1010 E				291			4
5		89.0 B				930 E				389			5
6		140 B				858 E				343			6
7		308 B				788 E				304			7
8	1.0	944 B	98 S	138		730 E				354			8
9		1350 B				636 E				335			9
10	1.0	2080 B	690 S	4980		570 E				321			10
11		5590 B				520 E				313			11
12		7390 B				490 E				308			12
13		6590 B				460 E				305			13
14		5580 A	431 S	6490		440 E				305			14
15		4800 E				420 E				306			15
16		4180 E				410 E				306			16
17		3560 E				399				306			17
18		3080 E				383				308			18
19		2760 E				370				296			19
20		2500 E				347				277			20
21		2380 E				322				264			21
22	3.0	2270 A	177 S	1080		308				251			22
23		2220				294				238			23
24		2110				298				236			24
25		1990				290				255			25
26		1860			10.0	287	9 S	7.8		291			26
27		1740				281				342			27
28		1630				271				496			28
29		1510				263				613			29
30		1410				259				649			30
31						259							31
TOTAL		64687.5				16483				9796			TOTAL
MEAN		2330				532				327			MEAN

SEDIMENT SURVEY
JUN 30 1978 PAGE 39
CALGARY, ALTA.

HACKAY RIVER NEAR FORT HACKAY - STATION NO. 07084001

SUSPENDED SEDIMENT FOR 1976

DAY	JUL TEMP. (C)	JUL DAILY DISCHARGE (CFS)	JUL MEAN CONCENTRATION (MG/L)	JUL TONS PER DAY	AUG TEMP. (C)	AUG DAILY DISCHARGE (CFS)	AUG MEAN CONCENTRATION (MG/L)	AUG TONS PER DAY	SEP TEMP. (C)	SEP DAILY DISCHARGE (CFS)	SEP MEAN CONCENTRATION (MG/L)	SEP TONS PER DAY	DAY
1		669				360				2040			1
2		723				356			15.0	2030	99 S	921	2
3		744				355				1970			3
4		651				354				1810			4
5		563				342				1700			5
6		497			22.0	328	7 S	6.2		1580			6
7		443				313				1590			7
8		429				418				1760			8
9		422				479				1740			9
10		421				456				1660			10
11		533				406				1560			11
12	21.0	566	27 S	41.3		387				1430			12
13		518				404				1310			13
14		484				531				1200			14
15		526				651				1090			15
16		569				631				1010			16
17		544				576				900			17
18		541				545			11.0	814	18 S	39.6	18
19		509				484				745			19
20		493				438				677			20
21		412				398				620			21
22		348				374				572			22
23		372				344				528			23
24		346				325				500			24
25		332				312				477			25
26		335				338				456			26
27		336				1450				435			27
28		339				2270				414			28
29		344				2270				398			29
30		355				2290				377			30
31		361				2110							31
TOTAL		14498				21253				33388			TOTAL
MEAN		476				686				1118			MEAN

SEDIMENT SURVEY
JUN 30 1978 PAGE 40
CALGARY, ALTA.

HACKAY RIVER NEAR FORT HACKAY - STATION NO. 07084001

SUSPENDED SEDIMENT FOR 1976

DAY	OCT TEMP. (C)	OCT DAILY DISCHARGE (CFS)	OCT MEAN CONCENTRATION (MG/L)	OCT TONS PER DAY	NOV TEMP. (C)	NOV DAILY DISCHARGE (CFS)	NOV MEAN CONCENTRATION (MG/L)	NOV TONS PER DAY	DEC TEMP. (C)	DEC DAILY DISCHARGE (CFS)	DEC MEAN CONCENTRATION (MG/L)	DEC TONS PER DAY	DAY
1		360				205 B				23.0 B			1
2		342				195 B				23.0 B			2
3		385			1.0	185 B	8 S	4.0		22.5 B			3
4		478				175 B				21.5 B			4
5		587				165 B				21.0 B			5
6		499				155 B				20.5 B			6
7		447				145 B				20.0 B			7
8		660				140 B				19.0 B			8
9		876				130 B				18.0 B			9
10		1000				120 B				17.5 B			10
11		1060				115 B				16.5 B			11
12		1030				105 B				16.0 B			12
13		1000				100 B				15.5 B			13
14		1020				95.0 B				15.0 B			14
15		1010				86.0 B				14.5 B			15
16		938				80.0 B				14.1 B			16
17		866				73.0 B				14.0 B			17
18		796				66.0 B				14.0 B			18
19		724				59.0 B				14.0 B			19
20		695				54.0 B				13.5 B			20
21		619				49.0 B				13.5 B			21
22		569				45.0 B				13.5 B			22
23		516				40.0 B				13.5 B			23
24		455				36.0 B				13.5 B			24
25		391 B				32.0 B				13.0 B			25
26		352 B				29.0 B				13.0 B			26
27		270 B				27.0 B				13.0 B			27
28		295 B				26.5 B				13.0 B			28
29		248 B				25.5 B				13.0 B			29
30		230 B				24.0 B				13.0 B			30
31		219 B								13.0 B			31
TOTAL		18831				2783.0				498.9			TOTAL
MEAN		607				92.8				16.1			MEAN

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 12 30 N
LONG 111 41 36 W
DRAINAGE AREA 2020 SQ MILES
NATURAL FLOW

A - MANUAL GAUGE B - ICE CONDITIONS E - ESTIMATED S - SAMPLE(S) COLLECTED THIS DAY

WATER SURVEY OF CANADA
JUN 30 1976 PAGE 5
CALGARY, ALTA.

MACKAY RIVER NEAR FORT MACKAY

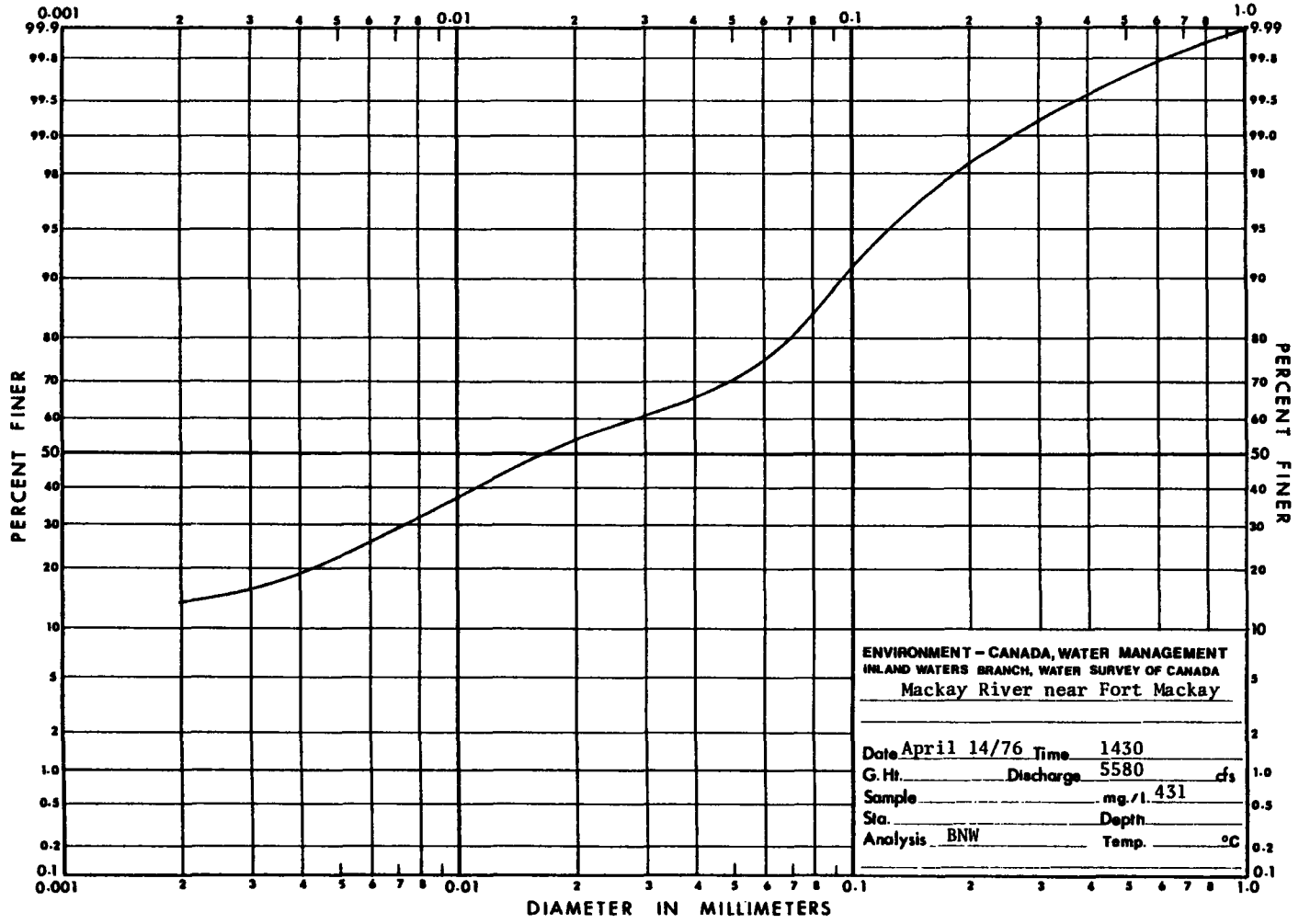
STATION NO. 07DB001

DEPTH INTEGRATING PARTICLE-SIZE ANALYSIS OF SUSPENDED SEDIMENT FOR 1976

(METHOD OF ANALYSIS) B = BOTTOM WITHDRAWAL TUBE; C = CHEMICALLY DISPERSED; F = SONIC SIFTER; H = HYDROMETER;
M = MECHANICALLY DISPERSED; N = IN NATIVE WATER; P = PIPETTE; S = SIEVE; V = VISUAL ACCUMULATION TUBE; W = IN DISTILLED WATER)

DATE	TIME	DISCHARGE MEASUREMENT (CFS)	WATER TEMP. (C)	CONCENTRATION OF SAMPLE(S) (MG/L)	PERCENT FINER THAN INDICATED SIZE, IN MILLIMETRES 0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	2.000	METHOD OF ANALYSIS
APR 14	1430	5580 M		431 K	14	19	32	47	61	76	94	99	100			BNW

M = DAILY MEAN DISCHARGE K = SAMPLE(S) COLLECTED IN SINGLE VERTICAL


PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Mackay River near Fort Mackay
Date April 14/76 Time 1430
G. Ht. Discharge 5580 cfs
Sample mg./l. 431
Sta. Depth
Analysis BNW Temp. °C

SEDIMENT SURVEY
JUN 30 1978 PAGE 17
CALGARY, ALTA.

MUSKEG RIVER NEAR FORT MACKAY - STATION NO. 07CA005

SUSPENDED SEDIMENT FOR 1976

DAY	JAN TEMP. (C)	JAN DAILY DISCHARGE (CFS)		JAN MEAN CONCENTRATION (MG/L)		JAN TONS PER DAY	FEB TEMP. (C)	FEB DAILY DISCHARGE (CFS)		FEB MEAN CONCENTRATION (MG/L)		FEB TONS PER DAY	MAR TEMP. (C)	MAR DAILY DISCHARGE (CFS)		MAR MEAN CONCENTRATION (MG/L)		MAR TONS PER DAY	DAY
1		25.3	B					16.3	B					15.5	B				1
2		24.6	B					16.2	B					15.5	B				2
3		24.4	B					16.1	B					15.5	B				3
4		24.6	B					16.1	B					15.4	B				4
5		23.6	B					16.0	B					15.4	B				5
6		23.2	B					16.0	B					15.4	B				6
7		22.7	B					15.9	B					15.4	B				7
8		22.0	B					15.9	B					15.4	B				8
9		21.3	B					15.8	B					15.4	B				9
10		20.7	B					15.8	B					15.4	B				10
11		20.1	B					15.8	B					15.4	B				11
12		19.7	B					15.8	B					15.4	B				12
13		19.2	B					15.8	B					15.4	B				13
14		18.8	B					15.8	B					15.4	B				14
15		18.5	B					15.7	B					15.4	B				15
16		18.3	B					15.7	B					15.3	B				16
17		18.1	B					15.7	B					15.3	B				17
18		17.9	B					15.7	B					15.3	B				18
19		17.8	B					15.7	B					15.3	B				19
20		17.6	B					15.7	B					15.3	B				20
21		17.4	B					15.6	B					15.3	B				21
22		17.3	B					15.6	B					15.2	B				22
23		17.2	B					15.6	B					15.3	B				23
24		17.1	B					15.6	B					15.3	B				24
25		17.0	B					15.6	B					15.3	B				25
26		16.9	B					15.6	B					15.3	B				26
27		16.8	B					15.5	B					15.4	B				27
28		16.7	B					15.5	B					15.4	B				28
29		16.6	B					15.5	B					15.4	B				29
30		16.5	B											15.4	B				30
31		16.4	B											15.4	B				31
TOTAL		603.9						487.6						477.3					TOTAL
MEAN		19.5						16.8						15.4					MEAN

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MUSKEG RIVER NEAR FORT MACKAY - STATION NO. 07CA005

SUSPENDED SEDIMENT FOR 1976

DAY	APR TEMP. (C)	APR DAILY DISCHARGE (CFS)		APR MEAN CONCENTRATION (MG/L)		APR TONS PER DAY	MAY TEMP. (C)	MAY DAILY DISCHARGE (CFS)		MAY MEAN CONCENTRATION (MG/L)		MAY TONS PER DAY	JUN TEMP. (C)	JUN DAILY DISCHARGE (CFS)		JUN MEAN CONCENTRATION (MG/L)		JUN TONS PER DAY	DAY
1		16.8	B					161						45.4					1
2		17.5	B					154						46.2					2
3		20.0	B					148						44.4					3
4		40.0	B					139						42.3					4
5		60.0	B					129						39.3					5
6		80.0	B					118						37.4					6
7		154	B					107						36.8					7
8		250	B	13	S	8.8		103						31.4					8
9	1.0	340	B	11	S	10.1		102						30.8					9
10		420	B					99.4						30.6					10
11	1.0	543	A	41	S	60.1		94.9						30.1					11
12		586	A					92.3						29.5					12
13	1.0	463	A	19	S	23.8		94.7						29.2					13
14		458	A					92.1						29.0					14
15		430	E					91.0						28.8					15
16		410	E					87.5						28.2					16
17		400	E					85.6						27.3					17
18		380	E					81.4						26.4					18
19		360	E					77.8						24.8					19
20	3.0	349	A	29	S	27.3		75.4						22.8					20
21		330	E					73.4						20.4					21
22		310	E					74.4						19.3					22
23		300	E					74.4						18.1					23
24		280	E					73.1						18.3					24
25		260	E					70.9						20.3					25
26		240	E					65.6						27.5					26
27	6.0	227	A	7	S	4.3		63.6						29.2					27
28		195					16.0	58.9		5	S	0.80		28.9					28
29		183						52.3						26.6					29
30		173						49.6						22.6					30
31								45.3											31
TOTAL		8177.3						2830.6						889.7					TOTAL
MEAN		273						91.3						29.7					MEAN

SEDIMENT SURVEY — MUSKEG RIVER NEAR FORT MACKAY - STATION NO. 07DA008
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SUSPENDED SEDIMENT FOR 1976

DAY	JUL TEMP. (C)	JUL DAILY DISCHARGE (CFS)	JUL MEAN CONCENTRATION (MG/L)	JUL TONS PER DAY	AUG TEMP. (C)	AUG DAILY DISCHARGE (CFS)	AUG MEAN CONCENTRATION (MG/L)	AUG TONS PER DAY	SEP TEMP. (C)	SEP DAILY DISCHARGE (CFS)	SEP MEAN CONCENTRATION (MG/L)	SEP TONS PER DAY	DAY
1		20.9				42.6				89.4			1
2		20.3				38.8			14.8	92.9	3 S	0.75	2
3		18.5			22.8	34.5	3 S	0.28		99.6			3
4		16.4				31.6				97.3			4
5		15.9				28.1				91.6			5
6	20.8	15.7	4 S	0.17		25.4				88.9			6
7		17.4				23.6				104			7
8		19.8				21.9				186			8
9		20.3				23.2				265			9
10		22.4				23.5				198			10
11		25.4				22.8				186			11
12		32.7				26.6				178			12
13		40.4				29.8				168			13
14		38.4				22.6				159			14
15		31.3				41.4				152			15
16		28.3				41.3			11.0	145	4 S	1.6	16
17		27.6				34.2				133			17
18		26.5				30.9				125			18
19		26.8				28.3				116			19
20		23.2				27.3				112			20
21		21.6				25.6				106			21
22		25.7				23.2				101			22
23		42.3				20.3				98.1			23
24		41.8				20.6				94.8			24
25		35.3				22.8				91.0			25
26		31.3				26.8				88.2			26
27		30.9				43.1				86.1			27
28		32.7				97.8				79.5			28
29		48.4				183				84.7			29
30		46.8				95.7				88.6			30
31		45.9				98.7							31
TOTAL		884.8				1191.4				3434.9			TOTAL
MEAN		28.5				37.1				121			MEAN

SEDIMENT SURVEY — MUSKEG RIVER NEAR FORT MACKAY - STATION NO. 07DA008
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CALGARY, ALTA.
SUSPENDED SEDIMENT FOR 1976

DAY	OCT TEMP. (C)	OCT DAILY DISCHARGE (CFS)	OCT MEAN CONCENTRATION (MG/L)	OCT TONS PER DAY	NOV TEMP. (C)	NOV DAILY DISCHARGE (CFS)	NOV MEAN CONCENTRATION (MG/L)	NOV TONS PER DAY	DEC TEMP. (C)	DEC DAILY DISCHARGE (CFS)	DEC MEAN CONCENTRATION (MG/L)	DEC TONS PER DAY	DAY
1		78.0				120 B				10.0 B			1
2		75.7			1.0	116 B	5 S	1.6		14.0 B			2
3		85.1				110 B				14.0 B			3
4		114				105 B				12.0 B			4
5		120				100 B				11.0 B			5
6		120				96.0 B				10.0 B			6
7		123				92.0 B				9.8 B			7
8		152				88.0 B				8.0 B			8
9		179				84.0 B				7.6 B			9
10		195				80.0 B				7.5 B			10
11		202				75.0 B				7.0 B			11
12		207				70.0 B				6.5 B			12
13		221				66.0 B				6.0 B			13
14		235				60.0 B				5.8 B			14
15		252				56.0 B				5.5 B			15
16		256				53.0 B				5.2 B			16
17		253				50.0 B				5.0 B			17
18		242				47.0 B				5.0 B			18
19		240				44.0 B				5.0 B			19
20		234				42.0 B				5.0 B			20
21		235 B				40.0 B				5.0 B			21
22		230 B				37.0 B				5.0 B			22
23		220 B				35.0 B				5.0 B			23
24		210 B				31.0 B				5.1 B			24
25		200 B				29.0 B				5.2 B			25
26		190 B				27.0 B				5.3 B			26
27		175 B				25.0 B				5.5 B			27
28		160 B				23.0 B				5.6 B			28
29		150 B				22.0 B				5.7 B			29
30		140 B				20.0 B				5.8 B			30
31		130 B								5.9 B			31
TOTAL		5623.8				1843.0				220.2			TOTAL
MEAN		181				61.4				7.4			MEAN

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 11 38 N
LONG 111 34 55 W
DRAINAGE AREA 862 SQ MILES
NATURAL FLOW

A - MANUAL GAUGE B - ICE CONDITIONS E - ESTIMATED S - SAMPLE(S) COLLECTED THIS DAY

SEDIMENT SURVEY — POPLAR CREEK NEAR FORT MCMURRAY - STATION NO. 07DA007
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SUSPENDED SEDIMENT FOR 1976

DAY	JAN TEMP. (C)	JAN DAILY DISCHARGE (CFS)	JAN MEAN CONCENTRATION (MG/L)	JAN TONS PER DAY	FEB TEMP. (C)	FEB DAILY DISCHARGE (CFS)	FEB MEAN CONCENTRATION (MG/L)	FEB TONS PER DAY	MAR TEMP. (C)	MAR DAILY DISCHARGE (CFS)	MAR MEAN CONCENTRATION (MG/L)	MAR TONS PER DAY	DAY
1		0 B	0	0		0 B	0	0		0 B	0	0	1
2		0 B	0	0		0 B	0	0		0 B	0	0	2
3		0 B	0	0		0 B	0	0		0 B	0	0	3
4		0 B	0	0		0 B	0	0		0 B	0	0	4
5		0 B	0	0		0 B	0	0		0 B	0	0	5
6		0 B	0	0		0 B	0	0		0 B	0	0	6
7		0 B	0	0		0 B	0	0		0 B	0	0	7
8		0 B	0	0		0 B	0	0		0 B	0	0	8
9		0 B	0	0		0 B	0	0		0 B	0	0	9
10		0 B	0	0		0 B	0	0		0 B	0	0	10
11		0 B	0	0		0 B	0	0		0 B	0	0	11
12		0 B	0	0		0 B	0	0		0 B	0	0	12
13		0 B	0	0		0 B	0	0		0 B	0	0	13
14		0 B	0	0		0 B	0	0		0 B	0	0	14
15		0 B	0	0		0 B	0	0		0 B	0	0	15
16		0 B	0	0		0 B	0	0		0 B	0	0	16
17		0 B	0	0		0 B	0	0		0 B	0	0	17
18		0 B	0	0		0 B	0	0		0 B	0	0	18
19		0 B	0	0		0 B	0	0		0 B	0	0	19
20		0 B	0	0		0 B	0	0		0 B	0	0	20
21		0 B	0	0		0 B	0	0		0 B	0	0	21
22		0 B	0	0		0 B	0	0		0 B	0	0	22
23		0 B	0	0		0 B	0	0		0 B	0	0	23
24		0 B	0	0		0 B	0	0		0 B	0	0	24
25		0 B	0	0		0 B	0	0		0 B	0	0	25
26		0 B	0	0		0 B	0	0		0 B	0	0	26
27		0 B	0	0		0 B	0	0		0 B	0	0	27
28		0 B	0	0		0 B	0	0		0 B	0	0	28
29		0 B	0	0		0 B	0	0		0 B	0	0	29
30		0 B	0	0						0 B	0	0	30
31		0 B	0	0						0 B	0	0	31
TOTAL		0		0		0		0		0		0	TOTAL
MEAN		0		0		0		0		0		0	MEAN

SEDIMENT SURVEY — POPLAR CREEK NEAR FORT MCMURRAY - STATION NO. 07DA007
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CALGARY, ALTA.

SUSPENDED SEDIMENT FOR 1976

DAY	APR TEMP. (C)	APR DAILY DISCHARGE (CFS)	APR MEAN CONCENTRATION (MG/L)	APR TONS PER DAY	MAY TEMP. (C)	MAY DAILY DISCHARGE (CFS)	MAY MEAN CONCENTRATION (MG/L)	MAY TONS PER DAY	JUN TEMP. (C)	JUN DAILY DISCHARGE (CFS)	JUN MEAN CONCENTRATION (MG/L)	JUN TONS PER DAY	DAY
1		0 B	0	0		12.6	20	0.68	14.0	4.0	21 S	0.27	1
2		0 B	0	0		11.5	19	0.59		4.6	21	0.26	2
3		0 B	0	0		11.0	18	0.53		4.0	21	0.23	3
4		0 B	0	0		11.3	20	0.61		3.6	22	0.21	4
5		0 B	0	0		10.6	19	0.54		3.2	24	0.21	5
6		0 B	0	0		9.5	19 S	0.49		3.0	26	0.21	6
7		16.0 E	100	4.3		8.8	18	0.43		2.8	26	0.20	7
8	1.0	55.4 A	342 S	81.1		7.8	18	0.38	19.0	2.7	27 S	0.20	8
9		68.0 E	400	44.8		7.5	18	0.36		3.2	27	0.23	9
10	1.0	63.4 A	92 S	15.7		8.0	19	0.41		3.0	27	0.22	10
11		55.0 E	100	14.9		7.6	20	0.41		3.0	26	0.27	11
12		49.0 E	130	17.2		7.1	17 S	0.33		3.4	25	0.23	12
13	2.0	43.6 A	120 S	14.1		8.3	19	0.43		3.0	24	0.19	13
14		41.0 E	102	11.3		9.2	20	0.50		2.9	24	0.16	14
15		38.5 E	85	8.8		9.0	18	0.44		2.2	23	0.14	15
16		35.6 A	74	7.1		9.1	18	0.44		2.1	22	0.12	16
17		40.4	78	8.2		8.3	18	0.40		2.0	21	0.11	17
18		28.8	72	5.4		7.8	18	0.38		1.8	21	0.10	18
19		30.1	71	5.8		7.1	18	0.35		1.6	20	0.09	19
20		25.7	70	4.9		7.8	19	0.38		1.4	19	0.07	20
21		27.4	75	5.5		7.1	19	0.36		1.2	18	0.06	21
22		18.8	56 S	2.8		7.8	19	0.38		1.2	18	0.06	22
23		19.1	44	2.3		7.1	19	0.36	20.0	0.95	17 S	0.04	23
24		18.7	37	1.9		6.7	19	0.34		2.4	19	0.12	24
25		18.1	31	1.5		6.4	19	0.33		3.9	19	0.20	25
26		18.2	25	1.2		6.1	20	0.33		3.7	15	0.15	26
27		17.0	22	1.0		6.1	20	0.33		4.3	13	0.15	27
28	9.0	17.0	21 S	0.96		5.6	20	0.30		4.8	13	0.17	28
29		14.8	20	0.80		5.8	20	0.31		4.6	13	0.17	29
30		13.9	20	0.75		4.9	21	0.28		4.3	12	0.14	30
31						4.5	21	0.26					31
TOTAL		784.7		288.31		248.2		12.68		90.48		4.98	TOTAL
MEAN		25.5		9.4		7.9		0.41		3.0		0.17	MEAN

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CALGARY, ALTA.

POPLAR CREEK NEAR FORT MCMURRAY - STATION NO. 07DA867

SUSPENDED SEDIMENT FOR 1976

DAY	JUL TEMP. (C)	JUL DAILY DISCHARGE (CFS)	JUL MEAN CONCENTRATION (MG/L)	JUL TONS PER DAY	AUG TEMP. (C)	AUG DAILY DISCHARGE (CFS)	AUG MEAN CONCENTRATION (MG/L)	AUG TONS PER DAY	SEP TEMP. (C)	SEP DAILY DISCHARGE (CFS)	SEP MEAN CONCENTRATION (MG/L)	SEP TONS PER DAY	DAY
1		3.9	12	0.13		36.8	16	1.6		383	148	153	1
2		3.7	12	0.12		34.8	15	1.4	16.0	354	115 S	110	2
3		3.3	12	0.11		30.5	14	1.3		336	84	76.2	3
4		2.8	12	0.09	19.0	31.3	14 S	1.2	16.0	323	56 S	48.8	4
5		2.4	12	0.08		28.2	14	1.1		292	41	32.3	5
6		2.1	12	0.07		26.3	14	0.99	14.0	266	36 S	25.9	6
7		2.1	11	0.06		27.3	14	1.0		365	97	95.6	7
8		2.3	11	0.07		28.9	13	1.0		486	113	124	8
9	21.0	2.7	11 S	0.08		30.8	12	0.97		398	111	119	9
10		2.9	12	0.09		30.1	12	0.98	12.0	376	105 S	107	10
11		6.2	34	0.57		27.7	11	0.82		336	93	84.4	11
12		6.3	33	0.56		25.8	11	0.71		293	82	64.9	12
13	16.0	10.0	78 S	2.3		27.0	22	1.6		295	60	46.8	13
14		13.6	82	3.0		32.3	34	3.0		230	54	33.5	14
15		12.0	36	1.2		32.3	35	3.1		206	42	23.4	15
16	14.0	10.7	12 S	0.35		30.0	37	3.0	14.0	185	31 S	15.5	16
17		11.7	20	0.63		49.9	43	5.3		164	28	12.4	17
18		11.3	24	0.73		61.2	51	8.4		140	25	9.5	18
19	19.0	9.8	19 S	0.46		71.0	84	16.5		126	23	7.8	19
20		7.7	14	0.29		74.2	51	10.2		113	20	6.1	20
21		9.1	13	0.32		78.8	49	9.4		99.9	18	4.9	21
22	18.0	14.8	16 S	0.64		65.8	44	7.7	13.0	90.1	17 S	4.1	22
23		13.9	21 S	0.79		68.3	40	6.5		83.7	16	3.6	23
24		16.5	26	1.2		55.2	37	5.5		77.3	15	3.1	24
25		19.3	28	1.5		52.0	33	4.6		74.2	14	2.8	25
26		18.8	25	1.3		76.9	62	12.7		69.5	13	2.4	26
27		20.8	26	1.4		132	102	36.4		67.3	12	2.2	27
28		27.4	24	1.8		213	130	74.8		68.1	11	1.9	28
29		39.3	31	3.3		418	184	208		63.0	10	1.7	29
30		37.3	24	2.4		611	263	434		60.7	9	1.5	30
31		37.1	19	1.9	13.0	923	216 S	388					31
TOTAL		381.9		27.54		3618.4		1186.57		6297.8		1224.3	TOTAL
MEAN		12.3		0.89		97.4		37.6		210		40.8	MEAN

SEDIMENT SURVEY
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CALGARY, ALTA.

POPLAR CREEK NEAR FORT MCMURRAY - STATION NO. 07DA867

SUSPENDED SEDIMENT FOR 1976

DAY	OCT TEMP. (C)	OCT DAILY DISCHARGE (CFS)	OCT MEAN CONCENTRATION (MG/L)	OCT TONS PER DAY	NOV TEMP. (C)	NOV DAILY DISCHARGE (CFS)	NOV MEAN CONCENTRATION (MG/L)	NOV TONS PER DAY	DEC TEMP. (C)	DEC DAILY DISCHARGE (CFS)	DEC MEAN CONCENTRATION (MG/L)	DEC TONS PER DAY	DAY
1		58.6	8	1.3		52.3	5	0.71		2.3 B	2	0.01	1
2		57.8	8	1.2		48.4	5	0.65		2.1 B	2	0.01	2
3		76.4	15	3.1		47.4	5	0.64		2.0 B	2	0.01	3
4		73.9	15	3.0		47.9	5	0.65		1.7 B	2	0.01	4
5		71.3	13	2.5	2.0	44.8 A	5 S	0.60		1.6 B	2	0.01	5
6	6.0	72.2	13 S	2.5		38.0 E	5	0.51		1.4 B	2	0.01	6
7		79.9	13	2.8		34.0 E	5	0.46		1.3 B	1	0	7
8		89.8	13	3.2		31.0 E	5	0.42		1.2 B	1	0	8
9		98.6	13	3.5		28.0 E	5	0.38		1.1 B	1	0	9
10		111	13	3.9		25.0 B	5	0.34		1.0 B	1	0	10
11		120	13	4.5		22.0 B	5	0.30		0.90 B	1	0	11
12		136	13	4.7		20.0 B	5	0.27		0.80 B	1	0	12
13		139	13	4.9		17.5 B	5	0.24		0.80 B	1	0	13
14		132	12	4.9		16.0 B	5	0.22		0.80 B	1	0	14
15		137	12	4.4		14.0 B	5	0.19		0.70 B	1	0	15
16		130	11	3.9		12.5 B	5	0.17		0.70 B	1	0	16
17		123	10	3.3		11.0 B	4	0.12		0.70 B	1	0	17
18		115	9	2.8		9.4 B	4	0.10		0.60 B	0	0	18
19	3.0	110	9 S	2.7		8.4 B	4	0.09		0.60 B	0	0	19
20		100	9	2.4		7.6 B	4	0.08		0.60 B	0	0	20
21		87.5	8	1.9		6.9 B	4	0.07		0.50 B	0	0	21
22		77.1	8	1.7		6.1 B	4	0.07		0.50 B	0	0	22
23		70.1	8	1.5		5.4 B	4	0.06		0.80 B	0	0	23
24		66.7	8	1.4		4.8 B	3	0.04		0.40 B	0	0	24
25		61.1	7	1.2		4.4 B	3	0.04		0.40 B	0	0	25
26		59.2	7	1.1		4.0 B	3	0.03		0.40 B	0	0	26
27		59.5	7	1.1		3.5 B	3	0.03		0.30 B	0	0	27
28		58.3	7	1.1		3.1 B	3	0.03		0.30 B	0	0	28
29		55.6	6	0.89		2.8 B	3	0.02		0.30 B	0	0	29
30		52.3	6	0.85		2.5 B	3	0.02		0.30 B	0	0	30
31		51.5	6	0.83						0.30 B	0	0	31
TOTAL		2756.8		79.07		578.7		7.55		27.28		0.06	TOTAL
MEAN		88.9		2.6		19.3		0.25		0.88		0	MEAN

SUMMARY FOR THE YEAR 1976

SUSPENDED SEDIMENT CONCENTRATION

MEAN	73 MG/L	
MAXIMUM DAILY	548 MG/L ON APR 08	
MINIMUM DAILY	0 MG/L ON JAN 01	

SUSPENDED SEDIMENT LOAD

MEAN	7.7	TONS/DAY
TOTAL	2804.98	TONS
MAXIMUM DAILY	434	TONS/DAY ON AUG 30
MINIMUM DAILY	0	TONS/DAY ON JAN 01

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 56 50 N
LONG 111 27 35 W

REGULATED FLOW SINCE 1976

A - MANUAL GAUGE B - ICE CONDITIONS E - ESTIMATED S - SAMPLE(S) COLLECTED THIS DAY

SEDIMENT SURVEY — STEEPBANK RIVER NEAR FORT MCMURRAY - STATION NO. 07DA006
JUN 30 1978 PAGE 9
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	JAN TEMP. (C)	JAN DAILY DISCHARGE (CFS)	JAN MEAN CONCENTRATION (MG/L)	JAN TONS PER DAY	FEB TEMP. (C)	FEB DAILY DISCHARGE (CFS)	FEB MEAN CONCENTRATION (MG/L)	FEB TONS PER DAY	MAR TEMP. (C)	MAR DAILY DISCHARGE (CFS)	MAR MEAN CONCENTRATION (MG/L)	MAR TONS PER DAY	DAY
1		20.4 B				15.9 B				14.5 B			1
2		20.3 B				15.8 B				14.6 B			2
3		20.2 B				15.7 B				14.8 B			3
4		20.1 B				15.6 B				14.9 B			4
5		20.0 B				15.5 B				15.0 B			5
6		19.9 B				15.4 B				15.3 B			6
7		19.8 B				15.3 B				15.7 B			7
8		19.7 B				15.2 B				16.0 B			8
9		19.6 B				15.1 B				16.3 B			9
10		19.5 B				14.9 B				16.6 B			10
11		19.3 B				14.7 B				16.6 B			11
12		19.2 B				14.5 B				16.7 B			12
13		18.9 B				14.4 B				16.8 B			13
14		18.6 B				14.3 B				16.9 B			14
15		18.2 B				14.2 B				17.0 B			15
16		18.0 B				14.2 B				17.0 B			16
17		17.9 B				14.2 B				17.0 B			17
18		17.8 B				14.1 B				17.0 B			18
19		17.7 B				14.1 B				17.1 B			19
20		17.6 B				14.1 B				17.1 B			20
21		17.5 B				14.1 B				17.1 B			21
22		17.4 B				14.1 B				17.2 B			22
23		17.3 B				14.2 B				17.2 B			23
24		17.2 B				14.2 B				17.2 B			24
25		17.0 B				14.2 B				17.3 B			25
26		16.8 B				14.3 B				17.3 B			26
27		16.6 B				14.3 B				17.3 B			27
28		16.3 B				14.4 B				17.4 B			28
29		16.2 B				14.4 B				17.4 B			29
30		16.1 B								17.6 B			30
31		16.0 B								17.8 B			31
TOTAL		567.8				428.4				513.8			TOTAL
MEAN		18.3				14.7				16.6			MEAN

SEDIMENT SURVEY — STEEPBANK RIVER NEAR FORT MCMURRAY - STATION NO. 07DA006
JUN 30 1978 PAGE 10
CALGARY, ALTA. — SUSPENDED SEDIMENT FOR 1976

DAY	APR TEMP. (C)	APR DAILY DISCHARGE (CFS)	APR MEAN CONCENTRATION (MG/L)	APR TONS PER DAY	MAY TEMP. (C)	MAY DAILY DISCHARGE (CFS)	MAY MEAN CONCENTRATION (MG/L)	MAY TONS PER DAY	JUN TEMP. (C)	JUN DAILY DISCHARGE (CFS)	JUN MEAN CONCENTRATION (MG/L)	JUN TONS PER DAY	DAY
1		18.8 B				295 E				135			1
2		19.0 B				285 E				130			2
3		20.0 B				275 E				125			3
4		21.0 B				265 E				119			4
5		22.0 B				260 E				112			5
6		28.0 B				250 E				113			6
7		44.0 B				240 E				102			7
8		63.6 B				235 E				99.8			8
9		110 B				228 E				99.7			9
10		170 B				223 E				98.7			10
11		300 B				218 E				104			11
12	1.0	485 B	198 S	260		213 E				128			12
13	1.0	552 B	272 S	405		206 E				132			13
14		600 B				199 E				137			14
15	1.0	602 A	709 S	1139		192 E				133			15
16		533				188 E				127			16
17		482				185 E				123			17
18		471				180 E				116			18
19		427				176 E				108			19
20	3.0	397	201 S	215		175 E				98.0			20
21		398				172 E				93.9			21
22		377				170 E				77.9			22
23		354				166 E				74.0			23
24		348				162 E				84.3			24
25		349				158 E				99.0			25
26		339				155 E				110			26
27		321				152 E				127			27
28		309			19.0	148 A	8 S	3.2		128			28
29		295 A	27 S	21.5		141				123			29
30		300 E				139				114			30
31						137							31
TOTAL		8719.6				6185				3362.1			TOTAL
MEAN		291				200				112			MEAN

SEDIMENT SURVEY — STEEPBANK RIVER NEAR FORT MCMURRAY - STATION NO. 07DA006
JUN 30 1978 PAGE 11
CALGARY, ALTA.
SUSPENDED SEDIMENT FOR 1978

DAY	JUL TEMP. (C)	JUL DAILY DISCHARGE (CFS)	JUL MEAN CONCENTRATION (MG/L)	JUL TONS PER DAY	AUG TEMP. (C)	AUG DAILY DISCHARGE (CFS)	AUG MEAN CONCENTRATION (MG/L)	AUG TONS PER DAY	SEP TEMP. (C)	SEP DAILY DISCHARGE (CFS)	SEP MEAN CONCENTRATION (MG/L)	SEP TONS PER DAY	DAY
1		106				202				595			1
2		97.5				189			13.0	597	88 S	132	2
3		88.6				175				547			3
4		79.3				161				510			4
5		73.2				142				468			5
6		69.0			19.0	134	9 S	3.2		442			6
7		66.5				122				516			7
8		73.9				137				577			8
9		81.6				144	11 S	4.3		582			9
10		97.9				138				559			10
11		117				128				522			11
12	18.0	151	27 S	11.0		119				482			12
13		174				112				441			13
14		207				103				416			14
15		210				98.5				398			15
16		206				92.8				364			16
17		203				86.4				338			17
18		203				87.4				315			18
19		192				87.4			9.0	294	14 S	11.1	19
20		169				82.8				283			20
21		161				74.8				266			21
22		159				68.9				252			22
23		160				64.6				239			23
24		159				64.3				227			24
25		159				57.4				216			25
26		159				107				208			26
27		164				505				208			27
28		179				637				196			28
29		197				648				198			29
30		194				647				189			30
31		207				617							31
TOTAL		4971.5				6942.7				11376			TOTAL
MEAN		147				198				379			MEAN

SEDIMENT SURVEY — STEEPBANK RIVER NEAR FORT MCMURRAY - STATION NO. 07DA006
JUN 30 1978 PAGE 12
CALGARY, ALTA.
SUSPENDED SEDIMENT FOR 1978

DAY	OCT TEMP. (C)	OCT DAILY DISCHARGE (CFS)	OCT MEAN CONCENTRATION (MG/L)	OCT TONS PER DAY	NOV TEMP. (C)	NOV DAILY DISCHARGE (CFS)	NOV MEAN CONCENTRATION (MG/L)	NOV TONS PER DAY	DEC TEMP. (C)	DEC DAILY DISCHARGE (CFS)	DEC MEAN CONCENTRATION (MG/L)	DEC TONS PER DAY	DAY
1		179				125 E				24.0 E			1
2		167				118 E				23.0 E			2
3		187				112 E				22.0 E			3
4		231				110 E				21.5 E			4
5		252				116 E	6 S	1.9		21.0 E			5
6		245				116 E				20.0 E			6
7		238				112 E				19.0 E			7
8		257				109 E				18.5 E			8
9		296				104 E				17.5 E			9
10		327				99.0 E				17.0 E			10
11		336				93.0 E				16.5 E			11
12		337				88.0 E				16.0 E			12
13		334				85.0 E				15.3 E			13
14		345				80.0 E				15.0 E			14
15		414				75.0 E				15.0 E			15
16		435				70.0 E				14.5 E			16
17		416 E				64.0 E				14.5 E			17
18		378 E				59.0 E				14.5 E			18
19		351 E				55.0 E				14.5 E			19
20		318 E				51.0 E				14.5 E			20
21		288 E				47.0 E				14.0 E			21
22		256 E				44.0 E				14.0 E			22
23		210 E				40.0 E				14.0 E			23
24		198 E				36.0 E				14.0 E			24
25		185 E				33.0 E				14.0 E			25
26		185 E				32.0 E				13.5 E			26
27		204 E				30.0 E				13.5 E			27
28		199 E				29.0 E				13.5 E			28
29		175 E				27.0 E				13.5 E			29
30		155 E				25.0 E				13.5 E			30
31		135 E								13.5 E			31
TOTAL		8225				2182.0				504.8			TOTAL
MEAN		265				72.7				16.3			MEAN

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 08 17 N
LONG 111 24 53 W
DRAINAGE AREA 530 SQ MILES
NATURAL FLOW

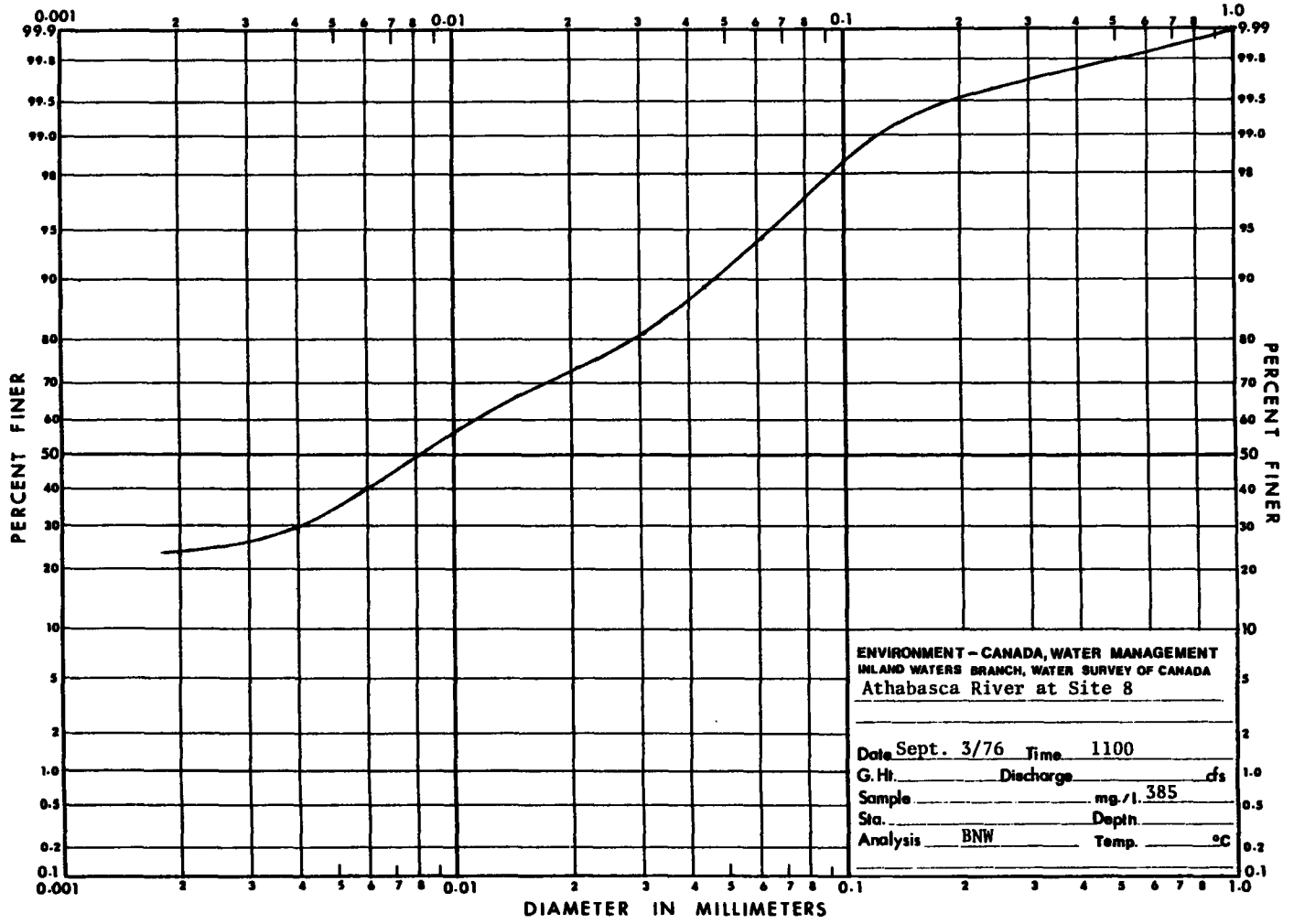
A - MANUAL GAUGE B - ICE CONDITIONS E - ESTIMATED S - SAMPLE(S) COLLECTED THIS DAY

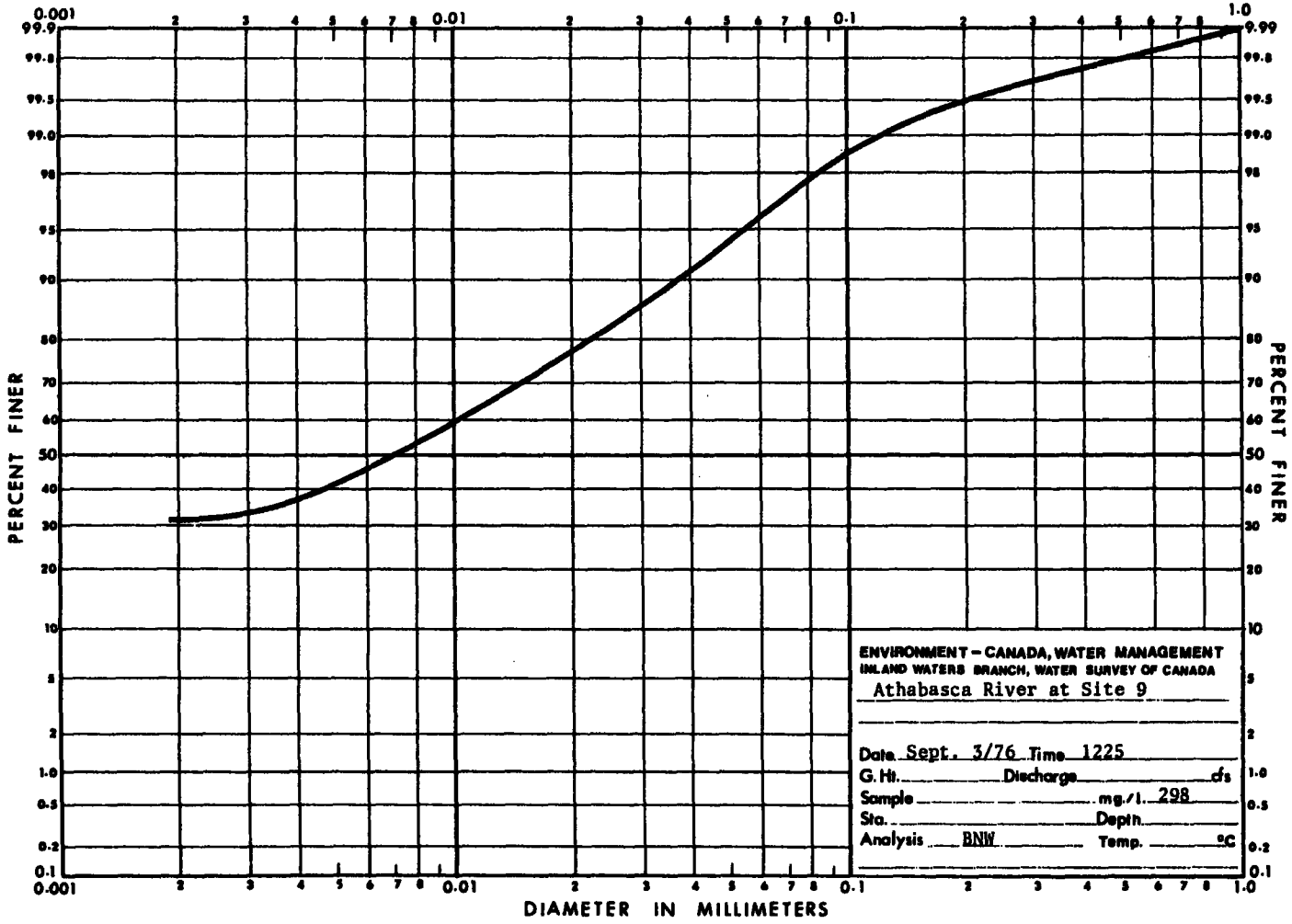
Miscellaneous Suspended Sediment Data for 1976

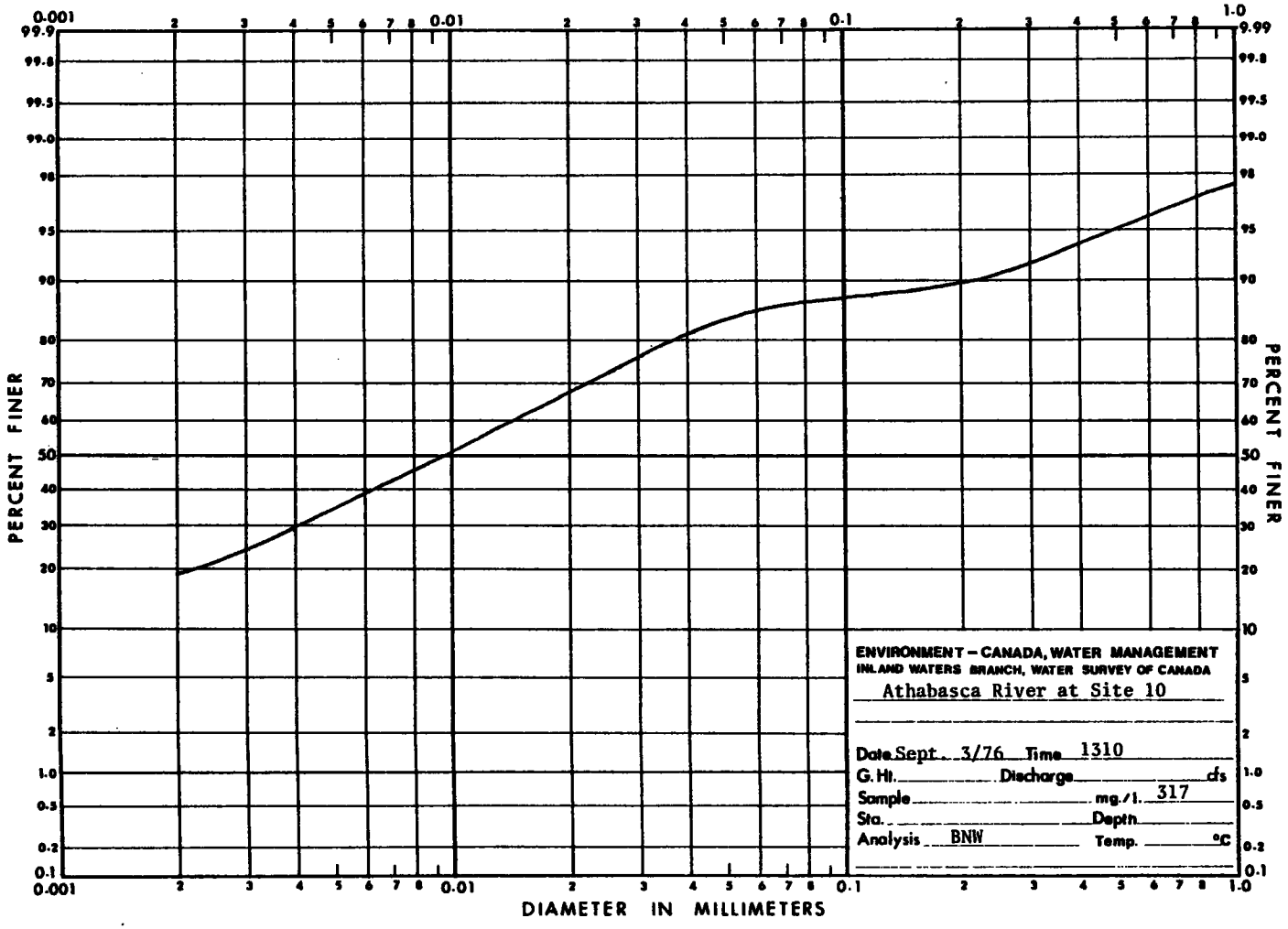
STATION	DATE	SEDIMENT CONC. (mg/ℓ)	DISSOLVED SOLIDS (mg/ℓ)	SAMPLING AGENCY
Athabasca River at Site 8	Sept. 3	385	147	AOSERP
Athabasca River at Site 9	Sept. 3	298	144	AOSERP
Athabasca River at Site 10	Sept. 3	317	163	AOSERP
Beaver Creek near Mouth at Culvert	Aug. 11	567	1322	AOSERP
Beaver River Tributary	Aug. 11	26	380	AOSERP
Hartley Creek at Site 2A	July 27	5	199	AOSERP
Hartley Creek at Site 6	July 28	4	185	AOSERP
	Sept. 8	227	175	AOSERP
Hartley Creek at Site 7	July 28	3	198	AOSERP
	Sept. 8	6	176	AOSERP
Hartley Creek at Site 13 (South Fork Upper)	July 30	15	235	AOSERP
	Sept. 9	8	195	AOSERP
Hartley Creek - Main stem	Aug. 9	12	243	AOSERP
Hartley Creek at Site 14 (North Fork Upper)	Aug. 9	8	166	AOSERP
	Sept. 9	14	135	AOSERP
MacKay River near the Mouth	Aug. 11	8	183	AOSERP
Muskeg River and Tributaries above Shell Discharge Site	Sept. 9	7	-	AOSERP
Muskeg River and Tributaries at Site 3	Sept. 8	45	262	AOSERP
Muskeg River and Tributaries at Site 8	Aug. 24	30	263	AOSERP
	Sept. 9	5	216	AOSERP

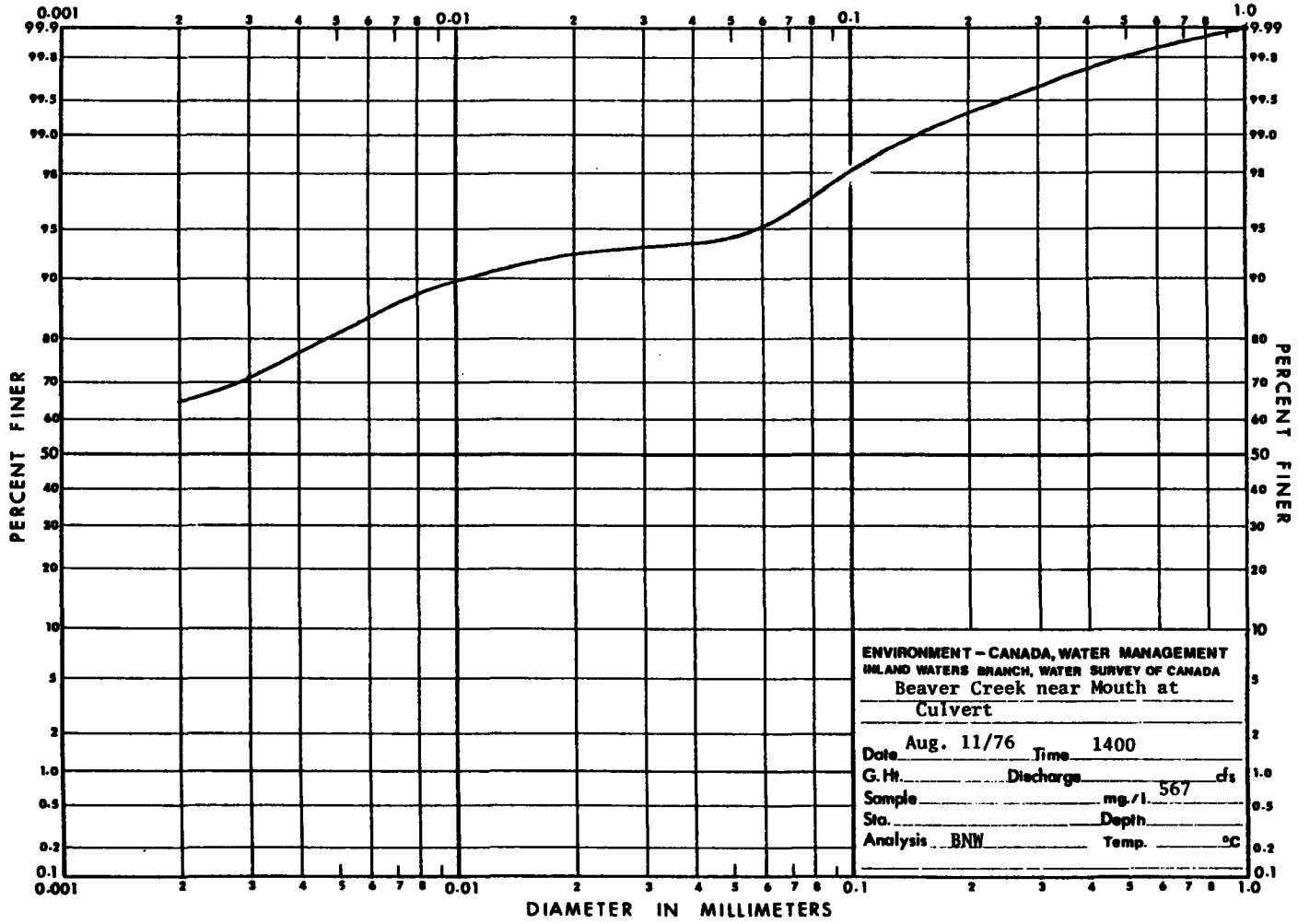
Miscellaneous Suspended Sediment Data for 1976 cont'd

STATION	DATE	SEDIMENT CONC. (mg/ℓ)	DISSOLVED SOLIDS (mg/ℓ)	SAMPLING AGENCY
Muskeg River and Tributaries at Site 11	Sept. 8	1	196	AOSERP
Muskeg River at Inflow to Kearl Lake	Aug. 10	10	210	AOSERP
Muskeg River at Site 3A	July 29	4	201	AOSERP
Muskeg River at Site 4	July 29	5	303	AOSERP
Muskeg River at WSC Site 12	July 27	5	198	AOSERP
Muskeg River at WSC Site 14	July 27	4	272	AOSERP
Muskeg River Tributary	July 29	11	277	AOSERP


PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Athabasca River at Site 8
Date Sept. 3/76 Time 1100
G. Ht. Discharge cfs
Sample mg./l. 385
Sta. Depth
Analysis BNW Temp. °C


PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Athabasca River at Site 9
Date Sept. 3/76 Time 1225
G. Ht. Discharge cfs
Sample mg./l. 298
Sta. Depth
Analysis BNW Temp. °C


PERCENT FINER
DIAMETER IN MILLIMETERS
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Athabasca River at Site 10
Date Sept. 3/76 Time 1310
G. Ht. Discharge cfs
Sample mg./l. 317
Sta. Depth
Analysis BNW Temp. °C


PERCENT FINER
DIAMETER IN MILLIMETERS
0.001
0.01
0.1
1.0
ENVIRONMENT – CANADA, WATER MANAGEMENT
INLAND WATERS BRANCH, WATER SURVEY OF CANADA
Beaver Creek near Mouth at
Culvert
Date Aug. 11/76 Time 1400
G. Ht. Discharge cfs
Sample mg./l. 567
Sta. Depth
Analysis BNW Temp. °C

AOSERP RESEARCH REPORTS

1.		AOSERP First Annual Report, 1975
2.	AF 4.1.1	Walleye and Goldeye Fisheries Investigations in the Peace-Athabasca Delta--1975
3.	HE 1.1.1	Structure of a Traditional Baseline Data System
4.	VE 2.2	A Preliminary Vegetation Survey of the Alberta Oil Sands Environmental Research Program Study Area
5.	HY 3.1	The Evaluation of Wastewaters from an Oil Sand Extraction Plant
6.		Housing for the North--The Stackwall System
7.	AF 3.1.1	A Synopsis of the Physical and Biological Limnology and Fisheries Programs within the Alberta Oil Sands Area
8.	AF 1.2.1	The Impact of Saline Waters upon Freshwater Biota (A Literature Review and Bibliography)
9.	ME 3.3	Preliminary Investigations into the Magnitude of Fog Occurrence and Associated Problems in the Oil Sands Area
10.	HE 2.1	Development of a Research Design Related to Archaeological Studies in the Athabasca Oil Sands Area
11.	AF 2.2.1	Life Cycles of Some Common Aquatic Insects of the Athabasca River, Alberta
12.	ME 1.7	Very High Resolution Meteorological Satellite Study of Oil Sands Weather: "a Feasibility Study"
13.	ME 2.3.1	Plume Dispersion Measurements from an Oil Sands Extraction Plant, March 1976
14.	HE 2.4	Athabasca Oil Sands Historical Research Project. Volume I: Design
15.	ME 3.4	A Climatology of Low Level Air Trajectories in the Alberta Oil Sands Area
16.	ME 1.6	The Feasibility of a Weather Radar near Fort McMurray, Alberta
17.	AF 2.1.1	A Survey of Baseline Levels of Contaminants in Aquatic Biota of the AOSERP Study Area
18.	HY 1.1	Interim Compilation of Stream Gauging Data to December 1976 for the Alberta Oil Sands Environmental Research Program
19.	ME 4.1	Calculations of Annual Averaged Sulphur Dioxide Concentrations at Ground Level in the AOSERP Study Area
20.	HY 3.1.1	Characterization of Organic Constituents in Waters and Wastewaters of the Athabasca Oil Sands Mining Area

21.		AOSERP Second Annual Report, 1976-77
22.	HE 2.3	Maximization of Technical Training and Involvement of Area Manpower
23.	AF 1.1.2	Acute Lethality of Mine Depressurization Water on Trout Perch and Rainbow Trout
24.	ME 4.2.1	Review of Dispersion Models and Possible Applications in the Alberta Oil Sands Area
25.	ME 3.5.1	Review of Pollutant Transformation Processes Relevant to the Alberta Oil Sands Area
26.	AF 4.5.1	Interim Report on an Intensive Study of the Fish Fauna of the Muskeg River Watershed of Northeastern Alberta
27.	ME 1.5.1	Meteorology and Air Quality Winter Field Study in the AOSERP Study Area, March 1976
28.	VE 2.1	Interim Report on a Soils Inventory in the Athabasca Oil Sands Area
29.	ME 2.2	An Inventory System for Atmospheric Emissions in the AOSERP Study Area
30.	ME 2.1	Ambient Air Quality in the AOSERP Study Area, 1977
31.	VE 2.3	Ecological Habitat Mapping of the AOSERP Study Area: Phase I
32.		AOSERP Third Annual Report, 1977-78
33.	TF 1.2	Relationships Between Habitats, Forages, and Carrying Capacity of Moose Range in northern Alberta. Part I: Moose Preferences for Habitat Strata and Forages.
34.	HY 2.4	Heavy Metals in Bottom Sediments of the Mainstem Athabasca River System in the AOSERP Study Area
35.	AF 4.9.1	The Effects of Sedimentation on the Aquatic Biota
36.	AF 4.8.1	Fall Fisheries Investigations in the Athabasca and Clearwater Rivers Upstream of Fort McMurray: Volume I
37.	HE 2.2.2	Community Studies: Fort McMurray, Anzac, Fort MacKay
38.	VE 7.1.1	Techniques for the Control of Small Mammals: A Review
39.	ME 1.0	The Climatology of the Alberta Oil Sands Environmental Research Program Study Area
40.	VE 7.1	Interim Report on Reclamation for Afforestation by Suitable Native and Introduced Tree and Shrub Species
41.	AF 3.5.1	Acute and Chronic Toxicity of Vanadium to Fish
42.	TF 1.1.4	Analysis of Fish Production Records for Registered Traplines in the AOSERP Study Area, 1970-75
43.	TF 6.1	A Socioeconomic Evaluation of the Recreational Fish and Wildlife Resources in Alberta, with Particular Reference to the AOSERP Study Area. Volume I: Summary and Conclusions
44.	VE 3.1	Interim Report on Symptomology and Threshold Levels of Air Pollutant Injury to Vegetation, 1975 to 1978
45.	VE 3.3	Interim Report on Physiology and Mechanisms of Air-Borne Pollutant Injury to Vegetation, 1975 to 1978

46.	VE 3.4	Interim Report on Ecological Benchmarking and Biomonitoring for Detection of Air-Borne Pollutant Effects on Vegetation and Soils, 1975 to 1978
47.	TF 1.1.1	A Visibility Bias Model for Aerial Surveys of Moose on the AOSERP Study Area
48.	HG 1.1	Interim Report on a Hydrogeological Investigation of the Muskeg River Basin, Alberta
49.	WS 1.3.3	The Ecology of Macrobenthic Invertebrate Communities in Hartley Creek, Northeastern Alberta
50.	ME 3.6	Literature Review on Pollution Deposition Processes
51.	HY 1.3	Interim Compilation of 1976 Suspended Sediment Data

These reports are not available upon request. For further information about availability and location of depositories, please contact:

Alberta Oil Sands Environmental Research Program
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