



**Indian and Northern Affairs
Canada – BC Region**

**Assessment Studies of Water and
Wastewater Systems and Associated Water
Management Practices at First Nation
Communities**

Esketeme First Nation

Prepared by:

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December 19, 2001
1-17-40700

APPENDIX B
Water Testing Results

Community :: ESKETEMC (Alkali Lake)

Sampling Year :: 1999

s.19(1)

DATE	LOCATION	GB	TC	FC
03/17/99	Community Well	0	0	0
03/17/99		0	0	0
03/17/99		12	0	0
03/17/99		0	0	0
03/17/99		2	4	4
03/17/99		0	0	0
03/17/99		4	0	0
03/17/99		0	0	0
03/17/99		1045	0	0
04/22/99		0	0	0
04/22/99		130	0	0
04/22/99		4	0	0
04/22/99		0	0	0
04/22/99		136	0	0
04/22/99		0	0	0
04/22/99		3000	0	0
04/22/99		62	0	0
04/22/99		0	0	0
04/22/99		0	0	0
04/22/99		0	0	0
04/22/99		0	0	0
04/22/99		0	0	0
05/10/				
05/				

Community :: ESKETEMC (Alkali Lake)

Sampling Year :: 1999

DATE	LOCATION	GB	TC	FC
03/17/99	Community Well	0	0	0
03/17/99		0	0	0
03/17/99		12	0	0
03/17/99		0	0	0
03/17/99		2	4	4
03/17/99		0	0	0
03/17/99		4	0	0
03/17/99		0	0	0
03/17/99		1045	0	0
04/22/99		0	0	0
04/22/99		130	0	0
04/22/99		4	0	0
04/22/99		0	0	0
04/22/99		136	0	0
04/22/99		0	0	0
04/22/99		3000	0	0
04/22/99		62	0	0
04/22/99		0	0	0
04/22/99		0	0	0
04/22/99	Health Trailer	6	0	0
04/22/99	Elder Complex # 8	0	0	0
05/10/99		0	0	0
05/10/99		0	0	0

s.19(1)

05/10/99		2	0	0
05/10/99		0	0	0
05/10/99		0	0	0
05/10/99		8	2	0
05/10/99		0	0	0
05/10/99		0	0	0
05/10/99		0	0	0
05/10/99		174	0	0
05/10/99		0	0	0
s.19(1) 05/10/99		0	0	0
05/10/99		3000	0	0
05/10/99		0	0	0
06/16/99	Medical Trailer	6	0	0
06/16/99	Medical Trailer (Water Cooler)	15276	0	0
06/16/99	Firehall	456	0	0
06/16/99		0	0	0
06/16/99		1662	6	0
06/16/99		20	0	0
06/16/99		2	0	0
06/16/99		0	0	0
s.19(1) 07/14/99		250	0	0
07/14/99		64	0	0
07/14/99	AL Social Services	0	0	0
07/14/99		66	0	0
07/14/99		0	0	0
07/14/99		22	0	0
07/14/99		3000	0	0
07/14/99	Alkali Lake Restaurant	0	0	0

07/14/99		3000	0	0
07/19/99	IR # 1 Well 99-02	1072	0	0
07/19/99	Pow Wow Grounds Well	0	0	0
08/09/99	Elders Complex # 8	0	0	0
08/09/99		70	0	0
08/09/99	s.19(1)	0	0	0
08/09/99		2	0	0
08/09/99		242	0	0
08/09/99	Restaurant	0	0	0
08/09/99	s.19(1)	4	0	0
08/09/99		14	0	0
09/15/99	School Staff Room	16	0	0
09/15/99	Alkali Lake Restaurant	20	0	0
09/15/99		0	0	0
09/15/99	s.19(1)	252	0	0
09/15/99		30	2	0
09/15/99	Elders Complex	0	0	0
09/15/99		2	0	0
09/27/99		0	0	0
09/27/99		18	0	0
09/27/99		778	0	0
09/27/99	s.19(1)	0	0	0
09/27/99		0	0	0
09/27/99		0	0	0
09/27/99		418	0	0
09/27/99		2	0	0
09/27/99		0	0	0
09/27/99		0	0	0

09/27/99			0	0	0
09/27/99			2	0	0
09/27/99			0	0	0
09/27/99			8	0	0
09/27/99			0	0	0
09/27/99			6	0	0
11/17/99	Social Services		0	0	0
11/17/99	Esket Day Care		158	0	0
11/17/99	Restaurant		70	0	0
11/17/99			16	0	0
11/17/99			3000	0	0
11/17/99			0	0	0
11/17/99		s.19(1)	0	0	0
11/17/99			0	0	0
11/17/99			0	0	0
11/17/99			538	0	0
11/17/99			8	0	0
11/17/99			0	0	0
11/17/99			0	0	0
12/06/99	Creek Bridge - Y2K Back-up		3000	0	0
12/06/99		s.19(1)	6	0	0
12/06/99			44	0	0
12/06/99	Medical Trailer		0	0	0
12/06/99			318	0	0
12/06/99			10	0	0
12/06/99		s.19(1)	0	0	0
12/06/99			3000	0	0
12/06/99			1528	43	2

Community :: ESKETEMC (Alkali Lake)

Sampling Year :: 2000

DATE	LOCATION	GB	TC	FC
01/04/00	Health Center	0	0	0
01/04/00		3000	0	0
01/04/00	s.19(1)	0	0	0
01/04/00		0	0	0
01/04/00		142	0	0
03/06/00	Elders Complex	0	0	0
03/06/00	Health Trailer	0	0	0
03/06/00		0	0	0
03/06/00	s.19(1)	4	0	0
03/06/00		0	0	0
03/06/00		0	0	0
03/06/00	Restaurant	0	0	0
03/06/00		0	0	0
03/06/00		3000	2	0
03/06/00		0	0	0
03/06/00		0	0	0
03/06/00	s.19(1)	418	0	0
03/06/00		0	0	0
03/06/00		0	0	0
03/06/00		2	0	0
03/06/00		0	0	0
03/06/00		0	0	0
03/06/00		0	0	0

02/14/01			544	0	0
02/14/01		s.19(1)	3216	0	0
03/14/01	School Staffroom		0	0	0
03/14/01	Treat Office		0	0	0
03/14/01			2	0	0
03/14/01			2	0	0
03/14/01		s.19(1)	10	0	0
03/14/01			6	0	0
03/14/01			0	0	0
03/14/01	Restaurant		0	0	0
03/14/01			0	0	0
03/14/01			0	0	0
04/11/01		s.19(1)	3000	0	0
04/11/01			6	0	0
04/11/01			46	0	0
04/11/01			0	0	0
04/11/01	Elders Complex		0	0	0
04/11/01	Adult Ed Center		0	0	0
04/11/01			0	0	0
04/11/01	School Teacherage		2	0	0
04/11/01			4	0	0
04/11/01			0	0	0
04/11/01			2	0	0
04/11/01		s.19(1)	10	282	0
04/11/01			0	0	0
04/11/01			13936	0	0
04/11/01			10	0	0
04/11/01	Restaurant		0	0	0

05/09/01			0	0	0
05/09/01			0	0	0
05/09/01		s.19(1)	4	0	0
05/09/01			10988	0	0
05/09/01			46	0	0
05/09/01	Social Services		0	0	0
05/09/01	Adult Ed Centre		14	0	0
05/09/01			28	0	0
05/09/01	Health Trailer		0	0	0
05/09/01		s.19(1)	0	0	0
05/09/01			2	0	0
05/09/01	Restaurant		0	0	0
05/09/01			92	0	0
05/15/01	Day Care		2	0	0
05/15/01	Restaurant		0	0	0
05/15/01			130	0	0
05/15/01			24	0	0
05/23/01			0	0	0
05/23/01			0	0	0
05/23/01			0	0	0
05/23/01			12	0	0
05/23/01		s.19(1)	16	0	0
05/23/01			2	0	0
05/23/01			4	0	0
05/23/01			14	0	0
05/23/01			0	0	0
05/23/01			0	0	0
05/23/01			0	0	0

06/06/01		0	0	0
06/06/01		0	0	0
06/06/01		0	0	0
06/06/01		300	0	0
06/06/01		2	0	0
06/06/01	s.19(1)	0	0	0
06/06/01		1874	0	0
06/06/01		2	0	0
06/06/01		0	0	0
06/06/01		0	0	0
06/06/01		164	0	0
07/10/01	Headstart	0	0	0
07/10/01	Headstart (Water Cooler)	3000	0	0
07/10/01	Restaurant	0	0	0
07/10/01	Elders Complex	0	0	0
07/10/01	PowWow Concession (Private Well)	3350	0	0
07/10/01		0	0	0
07/10/01		0	0	0
07/10/01		0	0	0
07/10/01		18	0	0
09/05/01		30	0	0
09/05/01		1072	0	0
09/05/01	s.19(1)	3000	0	0
09/05/01		0	0	0
09/05/01		510	0	0
09/05/01		72	0	0
09/05/01		3000	0	0
09/05/01		28	0	0



PHILIP ANALYTICAL

13-Feb-01
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ANALYTICAL REPORT
Form 08084789

Client : HEALTH CANADA
Project : ALKALI LAKE
Sampling site :
Submitted by : PATTI JOYCE

Philip ID : 11005600
Client ID : ~~11005600~~
WF11(2)

s.19(1)

11005601

Sparcode	Parameter	Unit	MDL	GCDWQ CBWG		
PHYSICAL						
00041220	pH	pH units	0.1	6.5-8.5	7.7	7.7
00021300	Color True	Col.Unit	5	15	< 5	< 5
00111160	Specific Conductance	uS/cm	1	---	1800	1810
SCCACALC	Computed Conductance	uS/cm		---	2690	2710
CCPDCALC	Conductance % Diff.	%		---	39.8	39.8
007H1035	Residue Filterable 1.0u (TDS)	mg/L	10	500	1400	1520
CTDSCALC	Computed TDS	mg/L		---	1390	1400
TDSRCALC	TDS % Diff.	%		---	-0.7	-8.3
00151140	Turbidity	NTU	0.10	1.0	3.60	0.32
0107CALC	Hardness Total -T	mg/L		500	1040	1040
GENERAL INORGANICS						
01011211	Alkalinity Phen. 8.3 as CaCO3	mg/L	1	---	< 1	< 1
01021210	Alkalinity Total as CaCO3	mg/L	1	---	323	309
CO3-CALC	Carbonate as CO3 =	mg/L		---	< 0.5	< 0.5
HCO3CALC	Bicarbonate as HCO3-	mg/L		---	394	377
OH--CALC	Hydroxide as OH-	mg/L		---	< 0.5	< 0.5
ANIONS						
11041334	Chloride Dissolved	mg/L	1.0	< 250	4.8	4.7
11061341	Fluoride Dissolved	mg/L	0.10	1.5	0.25	0.29
IonBCALC	Ion Balance	%		---	0.5	0.7
AnnsCALC	Total Anions	meq/L		---	23.46	23.49
CtnsCALC	Total Cations	meq/L		---	23.69	23.84
LangCALC	Langelier Index	pH units		---	0.8	0.8
pHSACALC	Saturation pH	pH units		---	6.9	6.9
NITROGEN						
1110CALC	Nitrate Nitrogen Dissolved (N)	mg/L		10.0	< 0.02	< 0.02
11091350	Nitrate + Nitrite (N)	mg/L	0.02	10.0	< 0.02	< 0.02
11111354	Nitrite Nitrogen (N)	mg/L	0.005	1.0	< 0.005	< 0.005

Matrix : Water
Sampled on: 01/02/01 16:00 Water 01/02/01 16:00

CONTINUED on page 3



PHILIP ANALYTICAL

13-Feb-01
Page 3 of 8

ANALYTICAL REPORT
Form 08084789

Client : HEALTH CANADA
Project : ALKALI LAKE
Sampling site :
Submitted by : PATTI JOYCE

s.19(1)

Philip ID : 11005600
Client ID : ~~LABBY~~ 11005601
WELL(2)

GCDWQ
CDWG

Sparcode	Parameter	Unit	MDL			
SULFATE 11211405	Sulfate	mg/L	1.0	< 500	811	825
METALS TOTAL						
Al-T0031	Aluminum	mg/L	0.02	---	< 0.02	< 0.02
As-TMS31	Arsenic	mg/L	0.001	0.025	0.001	< 0.001
Ba-T0031	Barium	mg/L	0.001	1.0	0.007	0.008
B--T0031	Boron	mg/L	0.008	5.0	0.023	0.019
Cd-TMS31	Cadmium	mg/L	0.0001	0.005	< 0.0001	< 0.0001
Ca-T0031	Calcium	mg/L	0.05	---	154	150
Cr-T0031	Chromium	mg/L	0.002	0.05	0.002	< 0.002
Cu-T0031	Copper	mg/L	0.001	1.0	0.004	< 0.001
Fe-T0031	Iron	mg/L	0.005	0.3	0.357	0.024
Pb-TMS31	Lead	mg/L	0.001	0.01	< 0.001	< 0.001
Mg-T0031	Magnesium	mg/L	0.05	---	160	161
Mn-T0031	Manganese	mg/L	0.001	0.05	0.048	0.006
Hg-T0310	Mercury	mg/L	0.00005	0.001	< 0.00005	< 0.00005
K_T0031	Potassium	mg/L	0.4	---	3.0	2.2
Se-TMS31	Selenium	mg/L	0.001	0.01	< 0.001	< 0.001
Na-T0031	Sodium	mg/L	0.010	200	63.8	70.3
U-TLLMS	Uranium	mg/L	0.00001	0.1	0.00304	0.00080
Zn-T0031	Zinc	mg/L	0.002	5.0	0.048	0.012

Matrix : Water
Sampled on: 01/02/01 16:00 Water 01/02/01 16:00

RESULTS OF ANALYSIS - Water

File No. LS774

Sample ID	s.19(1)				
Sample Date	(110)				
Sample Time	00 01 05	00 01 05	00 01 05	00 01 05	
	10:00	10:00	10:00	10:00	
Physical Tests					
Colour	(CU)	<5	<5	<5	<5
Conductivity	(umhos/cm)	1590	1980	1940	1760
Total Dissolved Solids		1180	1630	1580	1400
Hardness	CaCO3	817	1120	968	881
pH		7.96	7.68	7.59	7.73
Turbidity	(NTU)	10.6	0.8	2.9	1.5
Dissolved Anions					
Alkalinity-Total	CaCO3	366	321	401	377
Chloride	Cl	5.9	7.2	9.2	8.7
Fluoride	F	0.47	0.53	0.85	0.36
Sulphate	SO4	622	957	878	764
Nutrients					
Nitrate Nitrogen	N	<0.1	<0.1	0.2	0.2
Nitrite Nitrogen	N	<0.1	<0.1	<0.1	<0.1
Total Metals					
Aluminium	T-Al	<0.03	<0.03	<0.03	<0.03
Arsenic	T-As	0.0023	<0.0005	<0.0005	<0.0005
Barium	T-Ba	0.014	0.010	0.011	0.012
Boron	T-B	<0.3	<0.3	<0.3	<0.3
Cadmium	T-Cd	<0.001	<0.001	<0.001	<0.001
Calcium	T-Ca	78.9	206	184	146
Chromium	T-Cr	<0.005	<0.005	<0.005	<0.005
Copper	T-Cu	<0.005	<0.005	0.007	<0.005
Iron	T-Fe	1.00	0.14	0.41	0.12
Lead	T-Pb	<0.005	<0.005	<0.005	<0.005
Magnesium	T-Mg	152	147	124	125
Manganese	T-Mn	0.109	0.039	<0.005	0.043
Mercury	T-Hg	<0.00005	<0.00005	<0.00005	<0.00005
Potassium	T-K	12.1	4.0	3.4	2.6
Selenium	T-Se	<0.005	<0.005	<0.005	0.007
Sodium	T-Na	87.4	74.2	98.0	77.2
Uranium	T-U	0.00210	0.00357	0.00149	0.00113
Zinc	T-Zn	<0.03	0.04	0.10	0.04

Remarks regarding the analyses appear at the beginning of this report.
 Results are expressed as milligrams per litre except for pH, Colour (CU),
 Conductivity (umhos/cm), and Turbidity (NTU).
 < - Less than the detection limit indicated.



RESULTS OF ANALYSIS - Water

File No. K7716

Sample ID

Well #99-01
99 07 15
10:00

s.19(1)

Sample Date
Sample Time

Physical Tests

Colour	(CU)	<5
Conductivity	(umhos/cm)	1790
Total Dissolved Solids		1470
Hardness	CaCO3	964
pH		7.51
Turbidity	(NTU)	1.2

Dissolved Anions

Alkalinity-Total	CaCO3	307
Chloride	Cl	4.1
Fluoride	F	<0.02
Sulphate	SO4	864

Nutrients

Nitrate Nitrogen	N	<0.1
Nitrite Nitrogen	N	<0.1

Total Metals

Aluminum	T-Al	<0.05
Arsenic	T-As	0.0005
Barium	T-Ba	0.01
Boron	T-B	<0.5
Cadmium	T-Cd	<0.002
Calcium	T-Ca	139
Chromium	T-Cr	<0.01
Copper	T-Cu	<0.01
Iron	T-Fe	<0.03
Lead	T-Pb	<0.01
Magnesium	T-Mg	150
Manganese	T-Mn	0.02
Mercury	T-Hg	<0.00005
Potassium	T-K	2.3
Selenium	T-Se	<0.01
Sodium	T-Na	79.0
Uranium	T-U	0.0024
Zinc	T-Zn	<0.05

Remarks regarding the analyses appear at the beginning of this report. Results are expressed as milligrams per litre except for pH, Colour (CU), Conductivity (umhos/cm), and Turbidity (NTU).
< = Less than the detection limit indicated.



ANALYTICAL SERVICES

25-MBY-01

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ANALYTICAL REPORT
Form 08051167

Client : HEALTH CANADA

Sampling site :

Submitted by : P JOYCE

 Print ID : 11026502
 Client ID : ESHET. CS

Sparcode	Parameter	Unit	MDL	CDWG	
PHYSICAL					
00041220	pH	pH units	0.1	6.5-8.5	8.2
00021300	Color True	Col. Unit	5	15	< 5
00111160	Specific Conductance	uS/cm	1	---	1040
SCCACALC	Computed Conductance	uS/cm	---	---	1370
CCPDCALC	Conductance % Diff.	%	---	---	27.1
007H1035	Residue Filterable 1.0u (TDS)	mg/L	10	500	594
CTDSCALC	Computed TDS	mg/L	---	---	698
TDSRCALC	TDS % Diff.	%	---	---	0.6
00151140	Turbidity	NTU	0.10	1.0	0.15
0107CALC	Hardness Total -T	mg/L	---	500	499
GENERAL INORGANICS					
01011211	Alkalinity Phos. 8.3 as CaCO3	mg/L	1	---	< 1
01021210	Alkalinity Total as CaCO3	mg/L	1	---	378
CO3-CALC	Carbonate as CO3=	mg/L	---	---	< 0.5
HCO3CALC	Bicarbonate as HCO3-	mg/L	---	---	461
OH-CALC	Hydroxide as OH-	mg/L	---	---	< 0.5
ANIONS					
11041334	Chloride Dissolved	mg/L	1.0	< 250	4.6
11061341	Fluoride Dissolved	mg/L	0.10	1.5	0.16
IonBCALC	Ion Balance	%	---	---	4.5
AnoC-CALC	Total Anions	meq/L	---	---	12.55
CtioC-CALC	Total Cations	meq/L	---	---	13.74
LangC-CALC	Langlier Index	pH units	---	---	1.0
pHSACALC	Saturation pH	pH units	---	---	7.2
NITROGEN					
1110CALC	Nitrate Nitrogen Dissolved (N)	mg/L	---	10.0	0.09
11091350	Nitrate + Nitrite (N)	mg/L	0.02	10.0	0.09
11111354	Nitrite Nitrogen (N)	mg/L	0.005	1.0	< 0.005
SULFATE					
11211405	Sulfate	mg/L	1.0	< 500	233

 Matrix : Water
 Sampled on: 01/05/15 16:00

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ANALYTICAL SERVICES

25-May-01
Page 3 of 8ANALYTICAL REPORT
Form 08031167Client : HEALTH CANADA
Sampling site :
Submitted by : PJOYCEPhilip ID : 11026502
Client ID : ESHET. CS

Sparcode	Parameter	Unit	MDL	CDWG	
METALS TOTAL					
Al-T0031	Aluminum	mg/L	0.02	---	< 0.02
As-TMS31	Arsenic	mg/L	0.001	0.025	0.004
Ba-T0031	Barium	mg/L	0.001	1.0	0.012
B--T0031	Boron	mg/L	0.008	5.0	0.033
Cd-TMS31	Cadmium	mg/L	0.0001	0.005	< 0.0001
Ca-T0031	Calcium	mg/L	0.05	---	56.5
Cr-T0031	Chromium	mg/L	0.002	0.05	0.003
Cu-T0031	Copper	mg/L	0.001	1.0	0.100
Fe-T0031	Iron	mg/L	0.005	0.3	0.006
Pb-TMS31	Lead	mg/L	0.001	0.01	< 0.001
Mg-T0031	Magnesium	mg/L	0.05	---	86.8
Mn-T0031	Manganese	mg/L	0.001	0.05	0.043
Hg-T0310	Mercury	mg/L	0.00005	0.001	< 0.00005
K_T0031	Potassium	mg/L	0.4	---	8.2
Se-TMS31	Selenium	mg/L	0.001	0.01	< 0.001
Na-T0031	Sodium	mg/L	0.010	200	82.0
U-TLLMS	Uranium	mg/L	0.00001	0.1	0.00252
Zn-T0031	Zinc	mg/L	0.002	5.0	0.004
				Matrix :	Water
				Sampled on:	01/05/15 16:00