

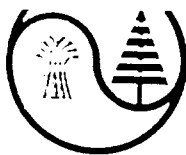
**ASSESSMENT STUDY OF  
WATER AND WASTEWATER SYSTEMS  
AND ASSOCIATED  
WATER MANAGEMENT PRACTICES  
AT SODA CREEK**

**A  
REPORT  
TO  
INDIAN AND NORTHERN AFFAIRS CANADA  
BC REGION**

** NovaTec Consultants Inc.**  
*Environmental Engineers and Scientists*

006536

**Appendix C**  
**Water Testing Results**



Client Code: NOVCOI

Name: NOVATEC CONSULTANTS INC. Address: 224 WEST 8TH AVE.  VANCOUVER, BC V5Y 1N5 Attn: Martin Vogel Phone: (604) 873-9262 Fax: (604) 873-2353	Workorder: <b>31344</b> WO (Other): PO Num: Project: Date Sampled: Date Received: 21-Nov-97 Date Reported: 01-Dec-97
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## Metal Analysis

Detection Limit	Units	31344-1	31344-2	
		SAMPLE #34R	SAMPLE #36R	
<b>Total ICP Metals Scan in Water</b>				
Aluminum	0.008	mg/L	0.08	0.08
Antimony	0.005	mg/L	Not Detected	Not Detected
Arsenic	0.01	mg/L	Not Detected	Not Detected
Barium	0.0001	mg/L	0.042	0.0296
Beryllium	0.0005	mg/L	Not Detected	Not Detected
Bismuth	0.007	mg/L	Not Detected	Not Detected
Boron	0.002	mg/L	0.027	0.098
Cadmium	0.005	mg/L	Not Detected	Not Detected
Calcium	0.2	mg/L	78.6	41.1
Chromium	0.0008	mg/L	Not Detected	Not Detected
Cobalt	0.0007	mg/L	Not Detected	Not Detected
Copper	0.001	mg/L	Not Detected	Not Detected
Iron	0.003	mg/L	0.265	0.136
Lead	0.002	mg/L	Not Detected	Not Detected
Lithium	0.00006	mg/L	0.00566	0.00207
Magnesium	0.05	mg/L	77.3	46.2
Manganese	0.0002	mg/L	0.158	0.111
Molybdenum	0.001	mg/L	0.003	0.009
Nickel	0.001	mg/L	Not Detected	Not Detected
Phosphorus	0.006	mg/L	0.056	0.036
Potassium	0.4	mg/L	6.64	3.41
Selenium	0.003	mg/L	Not Detected	Not Detected
Silicon	0.004	mg/L	18.3	8.2
Silver	0.001	mg/L	Not Detected	Not Detected
Sodium	0.4	mg/L	13.9	19.8
Strontium	0.0001	mg/L	0.55	0.425
Sulphur	0.008	mg/L	46.5	16.9
Thallium	0.004	mg/L	Not Detected	Not Detected
Tin	0.003	mg/L	Not Detected	Not Detected
Titanium	0.0004	mg/L	Not Detected	Not Detected
Vanadium	0.001	mg/L	Not Detected	Not Detected
Zinc	0.0005	mg/L	0.0099	0.0017
Mercury	0.0001	mg/L	Not Detected	Not Detected

Approved By:

Randy Neumann, B.Sc.  
Lab Manager



# NORWEST LABS

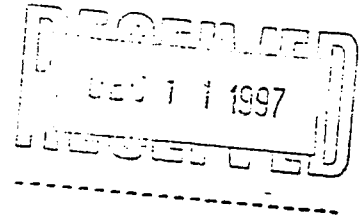
Langley Ph (604) 514-3322 FAX (604) 514-3323  
 Edmonton Ph (403) 438-5522 FAX (403) 438-0396  
 Calgary Ph (403) 291-2022 FAX (403) 291-2021  
 Lethbridge Ph (403) 329-9266 FAX (403) 327-8527  
 Winnipeg Ph (204) 982-8630 FAX (204) 275-6019


Client Code: NOVCOI

Name: NOVATEC CONSULTANTS INC. Address: 224 WEST 8TH AVE.  VANCOUVER, BC V5Y 1N5 Attn: Martin Vogel Phone: (604) 873-9262 Fax: (604) 873-2353	Workorder: <b>31344</b> WO (Other): PO Num: Project: Date Sampled: Date Received: 21-Nov-97 Date Reported: 01-Dec-97
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## Water Analysis

	Detection Limit	Units	31344-1	31344-2
			SAMPLE #34R	SAMPLE #36R
<b>Alkalinity, total</b>				
Total Alkalinity	5	g CaCO3/	206	148
<b>Colour</b>				
Colour	5	TCU	7	Not Detected
<b>Electrical Conductivity</b>				
Electrical Conductivity	0.01	µS/cm	930	590
<b>Major Anions</b>				
Chloride	1	mg/L	na	Not Detected
Chloride	3	mg/L	Not Detected	na
Fluoride	2	mg/L	na	Not Detected
Fluoride	5	mg/L	Not Detected	na
Nitrate-N	0.2	mg/L	na	Not Detected
Nitrate-N	0.5	mg/L	Not Detected	na
Nitrite-N	1	mg/L	na	Not Detected
Nitrite-N	3	mg/L	Not Detected	na
Sulphate	0.1	mg/L	136	51
<b>pH in Water</b>				
pH	0.01	pH	8.3	8.36
<b>Tannin &amp; Lignin in Water</b>				
Tannin & Lignin	0.1	mg/L	Not Detected	Not Detected
<b>Total Dissolved Solids</b>				
Total Dissolved Solids	5	mg/L	612	519
<b>Total Mercury in Water</b>				
Mercury	0.0001	ppm	Not Detected	Not Detected
<b>Turbidity</b>				
Turbidity	1	NTU	5	Not Detected



Approved By:   
 Randy Neumann, B.Sc  
 Lab Manager

PAGE 2 of 2  
 Accredited By: CANADIAN ASSOCIATION OF ENVIRONMENTAL LABORATORIES (CAEL)  
 For specific tests registered with the Association

na = not available

006539



RESULTS OF ANALYSIS - Water

File No. L3939

Sample ID	Deep Ck. Well #36	Deep Ck. Treated
Sample Date	00 01 12	00 01 12
Sample Time	11:00	11:00

**Physical Tests**

Colour	(CU)	<5	-
Conductivity	(umhos/cm)	615	-
Total Dissolved Solids		332	-
Hardness	CaCO3	290	-
pH		8.29	-
Turbidity	(NTU)	1.6	-

**Dissolved Anions**

Alkalinity-Total		CaCO3	293	-
Chloride	Cl		0.8	-
Fluoride	F		0.14	-
Sulphate	SO4		48	-

**Nutrients**

Nitrate Nitrogen		N	<0.1	-
Nitrite Nitrogen		N	<0.1	-

**Total Metals**

Aluminum	T-Al		0.08	-
Arsenic	T-As		0.0023	-
Barium	T-Ba		0.031	-
Boron	T-B		<0.3	-
Cadmium	T-Cd		<0.001	-
Calcium	T-Ca		35.4	-
Chromium	T-Cr		<0.005	-
Copper	T-Cu		<0.005	-
Iron	T-Fe		0.36	-
Lead	T-Pb		<0.005	-
Magnesium	T-Mg		48.9	-
Manganese	T-Mn		0.122	0.100
Mercury	T-Hg		<0.00005	-
Potassium	T-K		3.0	-
Selenium	T-Se		<0.005	-
Sodium	T-Na		17.6	-
Uranium	T-U		0.00078	-
Zinc	T-Zn		<0.03	-

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. I1900

DEEP  
CAGEK

Well #36  
Soda Ck.  
98 01 21

Shirley  
Bowe  
Soda Ck.  
98 01 20

Slow  
Sand  
Soda Ck.  
98 01 21

BEFORE OR  
AFTER?

Physical Tests

Colour	(CU)	<5	14	<5
Conductivity	(umhos/cm)	579	660	755
Total Dissolved Solids		329	379	441
Hardness	CaCO3	308	204	395
pH		7.82	6.99	7.80
Turbidity	(NTU)	0.9	2.7	9.9

Dissolved Anions

Alkalinity-Total	CaCO3	299	270	345
Chloride	Cl	0.6	<0.5	0.7
Fluoride	F	0.18	0.15	0.14
Sulphate	SO4	49	3	100

Nutrients

Nitrate Nitrogen	N	<0.005	<0.005	<0.005
Nitrite Nitrogen	N	<0.001	<0.001	0.002

Total Metals

Aluminum	T-Al	<0.2	<0.2	<0.2
Arsenic	T-As	0.0027	0.0012	0.0059
Barium	T-Ba	0.03	0.06	0.03
Boron	T-B	<0.1	<0.1	<0.1
Cadmium	T-Cd	<0.0002	<0.0002	<0.0002
Calcium	T-Ca	35.9	47.4	48.5
Chromium	T-Cr	<0.01	<0.01	<0.01
Copper	T-Cu	<0.01	0.07	0.02
Iron	T-Fe	0.23	0.88	1.93
Lead	T-Pb	<0.001	0.002	0.001
Magnesium	T-Mg	53.0	20.8	66.5
Manganese	T-Mn	0.110	1.69	0.105
Mercury	T-Hg	<0.00005	<0.00005	<0.00005
Potassium	T-K	3	4	4
Selenium	T-Se	<0.0005	<0.0005	<0.0005
Sodium	T-Na	18	67	18
Zinc	T-Zn	<0.005	0.078	0.016

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.

Community :: DEEP CREEK

Sampling Year :: 1999

DATE	LOCATION	GB	TC	FC
02/02/99		0	0	0
02/02/99	Health Clinic (Soda Creek)	0	0	0
02/09/99		2	0	0
02/09/99		0	0	0
03/08/99	Band Office	0	0	0
03/08/99	School	0	0	0
02/03/99	Reservoir (Soda Creek)	0	0	0
02/03/99	Filter # 1 Top (Soda Creek)	16	2	0
02/03/99	Filter # 2 Outlet (Soda Creek)	0	0	0
02/03/99	Filter # 2 Top (Soda Creek)	56	6	0
02/03/99	CiC Tank Clear (Soda Creek)	0	0	0
02/03/99	Filter # 2 Outlet (Soda Creek)	0	0	0
04/28/99		1796	0	0
04/28/99		0	0	0
05/11/99		0	0	0
05/11/99		0	0	0
05/11/99		6	2	0
06/17/99		0	0	0
06/17/99		0	0	0
06/17/99	Soda Creek Well	0	0	0
06/17/99	Health Clinic (Soda Creek)	0	0	0
06/17/99		18	0	0
06/23/99	Whispering Willows (Private Well)	0	0	0

*soda*

*SI*

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Community :: DEEP CREEK

Sampling Year :: 2000

DATE	LOCATION	GB	TC	FC	
01/04/00	Sample # 6 Contract 2	1314	0	0	
01/05/00	Sample # 7 Contract 2	218	0	0	
1	01/06/00	Sample # 8 Well # 36	42	0	0
01/09/00	Sample # 9 Contract 1	0	0	0	
01/09/00	Sample # 10 Contract 1	0	0	0	
01/09/00	Sample # 11 Contract 1	0	0	0	
01/09/00	Sample # 12 Contract 2	0	0	0	
01/10/00	Sta 1 + 850 (Contract 1)	24	0	0	
01/10/00	Sta 0 + 530 (Contract 1)	0	0	0	
01/10/00	Sta 7 + 920 (Contract 1)	0	0	0	
2	01/10/00	Sta 5 + 900 (Contract 1)	0	0	0
01/10/00	Sta 4 + 200 (Contract 1)	0	0	0	
01/10/00	Sta 0 + 420 (Contract 1)	0	0	0	
01/12/00	Well # 36 (hose)	30	0	0	
01/12/00	Well # 36 (No Hose)	28	0	0	
3	01/12/00	Treatment Plant	0	0	0
01/12/00	South Reservoir	0	0	0	
01/13/00		0	0	0	
01/13/00		0	0	0	
4	01/13/00		0	0	0
01/13/00		0	0	0	
01/13/00		0	0	0	
01/13/00		0	0	0	

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01/20/00		0	0	0
01/19/00		0	0	0
01/19/00		0	0	0
01/20/00		0	0	0
01/20/00		0	0	0
01/20/00		20	0	0
01/20/00		0	0	0
01/30/00		0	0	0
01/30/00		0	0	0
01/30/00		20	0	0
01/30/00		0	0	0
01/30/00		510	0	0
01/30/00		0	18	0
01/30/00		2	0	0
01/30/00		0	0	0
01/30/00		0	0	0
01/30/00		10	0	
01/31/00		0	0	0
01/31/00		6	0	0
01/31/00		0	0	0
01/31/00		0	0	0
01/31/00		0	0	0
01/31/00		0	0	0
01/31/00		266	0	0
01/31/00		0	0	0
02/07/00		0	0	0
02/07/00		0	4	0
02/07/00		0	0	0

D:  
24

P  
5/5

	02/07/00			3000	0
	02/07/00		238	0	0
	02/07/00		2251	0	0
	02/07/00		0	0	0
11	02/08/00		0	0	0
	02/08/00		0	0	0
	02/15/00	Treatment Plant	0	0	0
12	02/15/00	Band Office	46	0	0
	02/15/00		0	0	0
	02/17/00		0	0	0
13	02/17/00		0	0	0
	02/17/00	Band Office	0	0	0
	02/17/00		0	0	0
	02/17/00		0	0	0
	02/22/00		0	0	0
14	02/22/00	Band Office Deep Creek	0	0	0
	02/22/00	(So. a?)	0	0	0
	02/22/00		26	0	0
	02/22/00		2	0	0
	03/07/00	Treatment Plant	0	0	0
15	03/07/00	Band Office	0	0	0
	03/07/00		0	0	0
	03/14/00		0	0	0
16	03/14/00	Band Office	8	0	0
	03/21/00	Treatment Plant	0	0	0
17	03/21/00	Band Office	38592	0	0
	03/21/00		0	0	0
18	03/28/00	Treatment Plant	0	0	0

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03/28/00	Band Office	3000	0	0
03/28/00		0	0	0
03/28/00		0	0	0
05/01/00	Band Office	0	0	0
05/08/00	Treatment Plant	2707	0	0
05/08/00	Band Office	6	0	0
05/08/00		0	0	0
05/08/00		0	0	0
05/08/00		0	0	0
05/08/00		0	0	0
06/13/00	Band Office	0	0	0
06/13/00	Band Office Bottled Water	4288	0	0
07/25/00	Whispering Willows	0	0	0
07/25/00		0	0	0
09/12/00	Band Office	10	0	0
09/12/00	Whispering Willows	0	0	0
09/12/00		0	0	0
10/03/00	Whispering Willows	2680	0	
10/03/00		3000	0	
10/03/00		0	0	0
10/03/00		0	0	0
11/08/00	Treatment Plant	0	0	0
11/08/00	Band Office	0	0	0
11/08/00		0	0	0
11/08/00		0	0	0
11/08/00		0	0	0
11/16/00	Zone 2 Reservoir	3000	0	0
11/16/00	Zone 1 Reservoir	4878	0	0



Community :: DEEP CREEK

Sampling Year :: 2001

DATE	LOCATION	GB	TC	FC
01/16/01	Nenqayni	2	0	0
01/16/01	Band Office	2	0	0
01/16/01		0	0	0
01/23/01	Band Office	0	0	0
01/23/01	Water Plant	0	0	0
01/23/01	PRV Station	0	0	0
01/23/01		0	0	0
01/23/01		0	0	0
01/23/01	Plant Sink	0	0	0
03/02/01	Band Office	0	0	0
03/02/01		0	0	0
03/02/01	Treatment Plant Sink	0	0	0
03/02/01	PRV Station	0	0	0
03/02/01	Band Office	0	0	0
04/03/01	Band Office	0	0	0
04/03/01		0	0	0
04/03/01		6	0	0
04/03/01	Clinic Soda Creek	0	0	0
05/09/01		0	0	0
05/09/01	Band Office	0	0	0
05/09/01	Nenqayni	0	0	0
05/09/01	Education Center Soda Creek	0	0	0
05/09/01		0	0	0

05/09/01	Health Center Soda Creek	0	0	0
06/19/01	Nenqayni	0	0	0
06/19/01	Xatsall Village	4	0	0
06/19/01		0	0	0
06/19/01	Whispering Willows	8	0	0
07/31/01	Nenqayni	68	0	0
07/31/01	Band Office	0	0	0
07/31/01	Health Center Soda Creek	172	18	0
07/31/01	Restaurant Soda Creek	326	12	0
08/01/01		0	0	0
08/01/01	Community Center Deep Creek	18	6	0
08/01/01		0	0	0
08/01/01	Health Station Soda Creek	408	14	0
08/01/01	Band Office	0	0	0
08/01/01		86	0	0
08/01/01		0	0	0
08/01/01		10	0	0
08/01/01	Nenqayni	0	0	0
09/05/01	Nenqayni	0	0	0
09/05/01		0	0	0
09/05/01	Band Office	0	0	0
09/05/01		10	0	0
09/05/01		16	0	0
09/05/01	Community Center Soda Creek	184	0	0
09/05/01		0	0	0
09/05/01		0	0	0
10/10/01		264	72	0
10/10/01	Nenqayni	0	0	0

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