



The City of Terrace Annual Water System Report for 2018

The City of Terrace Community Water System serves a population of approximately 12,000 people with 3,943 water connections. There are three sources of water that the system draws from: Frank St. Wells, Deep Creek and the Skeena River. The Frank St. Wells provide over 99% of the water delivered to its customers with Deep Creek and the Skeena River serving as emergency backup sources. Storage is provided at two reservoir sites; Wilson Street reservoirs which services most of the community as well as Brauns Island and the Halliwell Reservoir that services the bench neighborhoods and some areas of the Regional District to the north of town. The Halliwell reservoir which is located on the side of Terrace Mountain is the largest of the three with a capacity of 2,727m³ and a maximum winter turnover of 48hrs. The two reservoirs at Wilson Street operate conjointly and have a combined volume of 2,712m³ with a maximum winter turnover rate of 30hrs.

The City of Terrace operates under Permit conditions set by the Environmental Health Officer (Northern Health Authority) and as such requires the system to maintain free chlorine residuals to ensure disinfection capabilities within the potable water system. Fluoride is also added to the water to provide dental care for the City of Terrace's younger residents.

To measure ongoing water quality The City of Terrace collects three Bacteriological samples at representative sites within the system each week and delivers them to Northern Health for analysis. A total of 150 Bacteriological samples were taken in 2018, as well as daily free chlorine tests done. There were no positive results for the presence of Coli form or E. coli bacteria in 2018. Bacteriological results can be viewed at www.healthspace.ca/nha. The City of Terrace also gauges water quality by measuring turbidity (NTU~s) units, with a maximum allowable NTU of one. The water system averages 0.15 NTU, well below permit levels as most of the systems water comes from the ground source at Frank St Wells.

A chemical analysis of the Frank St. Wells done on June 25, 2018 and is attached to this report. All parameters tested were in compliance with the Canadian drinking water guidelines.

The flushing of water main dead ends is another practice that promotes refreshing of potable water. This exercise is done twice a year in the spring and the fall.

In 2018, City of Terrace undertook several improvements to its water system. A Supervisory Control And Data Acquisition (SCADA) upgrade was continued from 2017. This will enable the City of Terrace water system operators to have remote control and viewing capabilities. This SCADA project will continue to be implemented over the next couple of years; however



the bulk of the initial work has been done. Planning and engineering work was done for an additional reservoir to increase capacity for the lower grid. There was also 30m of 200mm and 515m of 150mm water main replaced during Greg and Pheasant Ave. reconstruction projects. 3 Hydrants were up-graded to new Canada Valve hydrants within these projects as well.

In 2018 the City of Terrace also undertook a leak detection project, acoustic listening equipment was purchased and comprehensive street by street listening work was completed in the summer months. Results showed that many leaks can go un-detected by simply flowing into porous ground and not showing on the road surface. This Capital project will be continued in the spring of 2019 as well.

The City of Terrace's community water system is a safe, reliable source of potable water that meets its needs, in addition providing fire protection capabilities.

The City of Terrace and its Water System operators expect the challenge and responsibility of providing a Community Water System that will always be transforming due to technical improvements and increasing demand on the system.

For more information and inquiries, contact Robert Hoekstra, Environmental Services Foreman at 250-635-6871 or via email at rhoekstra@terrace.ca

ANALYTICAL REPORT

City of Terrace
5003 Graham Avenue
Terrace, BC V8G 1B3
rhoekstra@terrace.ca

Work Order: N806163

RECEIVED: 26-Jun-18

Project: Frank Street Wells
Project Number: -
Project Manager: Robert Hoekstra

REPORTED: 24-Jul-18

All analyses were performed in accordance with standard procedures published by BC MoE, Health Canada, Environment Canada, the American Public Health Association, or the US EPA.

Northern Laboratories (2010) Ltd.



Jesse Newton
Laboratory Manager

ANALYTICAL REPORT

City of Terrace - Frank Street Wells

Work Order: N806163

LAB #	N806163-01	N806163-02	N806163-03
SAMPLED DATE	25-Jun-18	25-Jun-18	25-Jun-18
SAMPLED TIME	13:40	13:25	13:15
SAMPLE ID	Well #1	Well #2	Well #3

MRL Units CDWG

Anions (Water)

Chloride	1.0 mg/L	AO <= 250	40.4	38.8	35.9
Fluoride	0.05 mg/L	MAC = 1.5	<0.10	<0.10	<0.10
Nitrite (as N)	0.01 mg/L	MAC = 1	<0.01	<0.01	<0.01
Nitrate + Nitrite (as N)	0.10 mg/L	MAC = 10	0.65	0.85	0.42
Sulfate	1.0 mg/L	AO <= 500	13.7	12.2	15.5

General Parameters (Water)

pH	1.0 pH units	7.0-10.5	7.6	7.5	7.7
Alkalinity (total, as CaCO3)	1 mg/L	-	170	150	180
Conductivity	1.0 uS/cm	-	459	421	460
Colour	1 PtCo units	AO <= 15	2	4	5
Turbidity	0.05 NTU	MAC = 1	0.12	0.26	0.19
Solids, Total Dissolved / TDS	1.0 mg/L	AO <= 500	280	240	220
Cyanide, Total	0.0020 mg/L	MAC = 0.2	<0.0020	<0.0020	<0.0020
Phosphorus (total)	0.05 mg/L	-	<0.1	<0.1	<0.1

Calculated Parameters (Water)

Nitrate (as N)	0.10 mg/L	MAC = 10			0.42
Nitrate (as N)	0.50 mg/L	MAC = 10	0.65	0.85	
Hardness, Total (as CaCO3)	0.500 mg/L	-	189	171	207

Total Metals (Water)

Aluminum, total	0.0050 mg/L	OG < 0.1	0.0064	<0.0050	0.0065
Antimony, total	0.00020 mg/L	MAC = 0.006	<0.00020	<0.00020	<0.00020
Arsenic, total	0.00050 mg/L	MAC = 0.01	0.00053	<0.00050	0.00071
Barium, total	0.0050 mg/L	MAC = 1	0.0968	0.0787	0.113
Beryllium, total	0.00010 mg/L	-	<0.00010	<0.00010	<0.00010
Bismuth, total	0.00010 mg/L	-	<0.00010	<0.00010	<0.00010
Boron, total	0.0050 mg/L	MAC = 5	0.0172	0.0173	0.0158
Cadmium, total	0.000010 mg/L	MAC = 0.005	0.000018	0.000036	0.000022
Calcium, total	0.20 mg/L	-	64.3	57.7	71.1
Chromium, total	0.00050 mg/L	MAC = 0.05	<0.00050	<0.00050	<0.00050
Cobalt, total	0.00010 mg/L	-	<0.00010	<0.00010	<0.00010
Copper, total	0.00040 mg/L	AO <= 1	0.00293	0.00590	0.00559
Iron, total	0.010 mg/L	AO <= 0.3	<0.010	0.043	0.012
Lead, total	0.00020 mg/L	MAC = 0.01	0.00031	0.00181	0.00046
Lithium, total	0.00010 mg/L	-	0.00200	0.00168	0.00215

Northern Laboratories (2010) Ltd.

Mailing Address: P.O. Box 1035 Prince Rupert, BC V8J 4B7 • Shipping Address: 251 Kaien Rd. Prince Rupert, BC
 Phone: 250.627.1906 • Fax: 250.627.8214 • www.norlabsltd.com • info@norlabsltd.com

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SAMPLED DATE	25-Jun-18	25-Jun-18	25-Jun-18
SAMPLED TIME	13:40	13:25	13:15
SAMPLE ID	Well #1	Well #2	Well #3

	MRL Units	CDWG			
Total Metals (continued)					
Magnesium, total	0.010 mg/L	-	6.82	6.55	7.18
Manganese, total	0.00020 mg/L	AO <= 0.05	0.00030	0.00076	0.00523
Mercury, total	0.000010 mg/L	MAC = 0.001	<0.000010	<0.000010	<0.000010
Molybdenum, total	0.00010 mg/L	-	0.00043	0.00036	0.00060
Nickel, total	0.00040 mg/L	-	<0.00040	<0.00040	0.00043
Phosphorus, total	0.050 mg/L	-	<0.050	<0.050	<0.050
Potassium, total	0.10 mg/L	-	2.30	2.07	2.48
Selenium, total	0.00050 mg/L	MAC = 0.05	<0.00050	<0.00050	<0.00050
Silicon, total	1.0 mg/L	-	6.7	7.1	6.8
Silver, total	0.000050 mg/L	-	<0.000050	<0.000050	<0.000050
Sodium, total	0.10 mg/L	AO <= 200	14.4	14.7	13.1
Strontium, total	0.0010 mg/L	-	0.213	0.204	0.232
Sulfur, total	3.0 mg/L	-	4.4	3.5	5.4
Tellurium, total	0.00050 mg/L	-	<0.00050	<0.00050	<0.00050
Thallium, total	0.000020 mg/L	-	<0.000020	<0.000020	<0.000020
Thorium, total	0.00010 mg/L	-	<0.00010	<0.00010	<0.00010
Tin, total	0.00020 mg/L	-	0.00023	<0.00020	<0.00020
Titanium, total	0.0050 mg/L	-	<0.0050	<0.0050	<0.0050
Tungsten, total	0.0010 mg/L	-	<0.0010	<0.0010	<0.0010
Uranium, total	0.000020 mg/L	MAC = 0.02	0.000281	0.000225	0.000333
Vanadium, total	0.0010 mg/L	-	<0.0010	<0.0010	<0.0010
Zinc, total	0.0040 mg/L	AO <= 5	0.0172	0.0209	0.0073
Zirconium, total	0.00010 mg/L	-	<0.00010	<0.00010	<0.00010

BCMOE Aggregate Hydrocarbons (Water)

VHw (6-10)	100 ug/L	-	<100	<100	<100
VPHw	100 ug/L	-	<100	<100	<100

Volatile Organic Compounds (VOC) (Water)

Benzene	0.5 ug/L	MAC = 5	<0.5	<0.5	<0.5
Ethylbenzene	1.0 ug/L	AO <= 1.6	<1.0	<1.0	<1.0
Methyl tert-butyl ether	1.0 ug/L	AO <= 15	<1.0	<1.0	<1.0
Styrene	1.0 ug/L	-	<1.0	<1.0	<1.0
Toluene	1.0 ug/L	AO <= 24	<1.0	<1.0	<1.0
Xylenes (total)	2.0 ug/L	AO <= 20	<2.0	<2.0	<2.0
Toluene-d8	70-130 [surr]	-	87%	88%	87%
4-Bromofluorobenzene	70-130 [surr]	-	68% [1]	68% [1]	68% [1]

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Special Notes

- 1 = Surrogate recovery outside of control limits. Data accepted based on acceptable recovery of other surrogates.

Glossary of Terms

MRL	Method Reporting Limit
<	Less than the reported detection limit (RDL)
mg/L	Milligrams per Litre
NTU	Nephelometric Turbidity Units
pH units	pH units
PtCo units	Platinum Colbalt colour units
ug/L	Micrograms per Litre
uS/cm	Micro Siemens per centimeter
MAC	Maximum Acceptable Concentration. Values above MAC are formatted with red text and solid outline.
AO	Aesthetic Objective (not health related). Values above AO are formatted with a dashed outline.
OG	Operational guideline (for treated water)

Standards / Guidelines Referenced

CDWG	Canadian Drinking Water Quality Guidelines (2014) http://www.hc-sc.gc.ca/ewh-semt/alt_formats/pdf/pubs/water-eau/sum_guide-res_recom/sum_guide-res_recom-eng.pdf
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