



Sarah Belisle

Senior Drinking Water Officer
Office of Drinking Water
Conservation and Water Stewardship
Unit B – 284 Reimer Avenue
Steinbach, MB R5G 0R5

March 1, 2023

Ms. Belisle,

Re: 2022 Grunthal Public Water System Report

Please find attached our annual Public Water System Report for the Community of Grunthal.

This report was posted on our website at www.hanovermb.ca on March 10, 2023 and hard copies were made available from our R.M.'s office at 28 Westland Drive in Mitchell, Manitoba. We notified residents that this report is available through our Facebook page.

If you have any questions or concerns, please contact Rob Driedger.

Sincerely,

A handwritten signature in black ink, appearing to read "Rob Driedger", written in a cursive style.

Rob Driedger, C.E.T.

Manager of Engineering & Utilities
Phone: 204-346-7121
E-Mail: rob.driedger@hanovermb.ca

Grunthal Public Water System Annual Report

2022

Rural Municipality of Hanover
March 1, 2023

Public Water System Annual Report

LUD of Grunthal – 2022

March 1, 2023

Name of Public Water System: Grunthal Public Water System

Name of legal owner: The Rural Municipality of Hanover

Contact: Rob Driedger, C.E.T., Manager of Engineering & Utilities
Phone: (204) 346-7121
E-Mail: rob.driedger@hanovermb.ca

Website: www.hanovermb.ca

Water Systems Emergency #: (204) 326-4488

Name of Operators: Barry Broesky, Utility Operator, Class II
Phone: (204) 371-0484
E-Mail: barry.broesky@hanovermb.ca

Rob Friesen, Utility Operator, Class II
Phone: (204) 371-8236
E-Mail: rob.friesen@hanovermb.ca

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Introduction

The 2022 Annual Report for the Grunthal Public Water Systems ability to produce safe potable water and to meet Provincial regulations.

1. Description of Water System

The Grunthal Water Treatment Plant provides potable drinking water to approximately 2125 residents within the community. Treated water produced at the water plant meets all health and aesthetic objectives as set forth in the Guidelines for *Canadian Drinking Water Quality*.

1.1 Water Supply Source

The Grunthal Water Treatment Plant receives groundwater from one main drilled well as well as a back-up well. Both wells draw from a water source at roughly 80 feet to 90 feet below the ground surface. The main well in use at the time produces water at approximately 14.8 liters per second and this raw water is pumped to the water treatment plant reservoir. The raw water does contain some iron that it picks up in the rock aquifer but these metals do not pose any health concerns.

1.2 Intake Structures

Not applicable.

1.3 Water Treatment Process

As the raw water enters the water treatment plant it is immediately treated with Chlorine for disinfection along with HIB-5, which is an iron sequester which keeps any iron particles from settling out of the water causing staining in the piping. Once treated, the water is then stored in a 295.5 m³ reservoir and a 1,195.62 m³ reservoir from where it can then be distributed throughout the watermain system.

1.4 Distribution System

Treated water from the reservoir is pumped through the mains into the distribution system via three 20hp variable drive duty pumps. The duty pumps distribute the water at pressures of around 60psi through 150mm and 200mm watermains throughout the community. The watermains currently consists of either an AC or poly high density pipe construction.

1.5 Storage Reservoirs

As indicated above the storage reservoirs include a 295.5 m³ and 1,195.62 m³ reservoir that are above ground reservoirs.

1.6 Number of Connections, Population Served and Types of Water Users

There are approximately 629 water connections with the Grunthal Menno Home and Carleton Hatcheries being the largest users to date. Estimated population use is about 2125 people.

1.7 Classification and Certification

The Grunthal Water Treatment Plant is classified as a Class 1 Water Treatment Facility and is currently operated by two utility operators with certification under the Environmental Act's Water and Wastewater Facility Operators Regulation. (See Appendix A – Operator Certification)

In addition the plant is regulated under license number PWS-09-325-02 and complies with The Drinking Water Safety Act.

2. Disinfection System in Use

2.1 Type of Disinfection System Used

The Grunthal Water Treatment Plant disinfects by adding 12% sodium hypochlorite solution to the water via a chlorinator pump.

2.2 Equipment Redundancy and Monitoring Requirements

As required by the *Drinking Water Safety Act*, the Grunthal Public Water System ensures continuous disinfection as maintained at the plant by keeping stock of all spare parts required for the chlorinator. In addition, a complete spare chlorinator is kept at the plant.

Disinfectant residuals are monitored daily at the water treatment plant and periodically in the distribution system and recorded on the appropriate monitoring forms. Monthly chlorination report forms are sent to the regional Drinking Water Officer at the end of each month.

2.3 Disinfectant Residual Overall Performance Results

For 2022, the Grunthal Public Water System was compliant in the audited time period.

3. List of Water Quality Standards

The Province of Manitoba has adopted a number of water quality standards from the *Guidelines for Canadian Drinking Water Quality*, developed by Health Canada. The parameters are health-based and they express the maximum acceptable concentration for a groundwater supply source. Concentration values in excess constitute a health-related issue and require corrective actions. The 2020 results for the Grunthal Public Water System are summarized in the following table.

SOURCE	PARAMETER	STANDARD	FREQUENCY	TEST RESULTS
GROUND WATER	TC & EC*	No TC of EC	Bi-Weekly	100%
	Disinfectant	WTP (>0.5 mg/l)	Daily	100%
		Distribution (0.1 mg/l)	Bi-Weekly	100%
	Lead	0.01 mg/l	As per instructions of the Drinking Water Officer	.000086mg/l Raw .000065mg/l Treated
	Arsenic	0.01 mg/l	One Raw and One Treated water sample once every three years	.00038mg/l Raw .00043 mg/l Treated
	Benzene	.005 mg/l		.00050 mg/l Raw
	Fluoride	1.5 mg/l		.194mg/l Raw .194 mg/l Treated
	Nitrate	As Nitrate: 45 mg/l		Passed
		As Nitrogen: 10 mg/l		.0929mg/l Raw .117mg/L Treated
	Trichloroethylene	0.005 mg/l		<0.00050
	Tetrachloroethylene	0.03 mg/l		<0.00050
	Uranium	0.02 mg/l		0.000752 Raw
0.000750 Treated				

**Bacterial Testing: We test the raw water (untreated well water, the treated water leaving the treatment facility and the water in the distribution system within the Town of Grunthal, every two weeks (bi-weekly) for the presence of Total Coliform (TC) and E. Coli (EC) bacteria. If these bacteria are present in the water, it is an indication that disease-causing organisms may also be present.*

4. Water System Failures and Corrective Actions in 2022

– August 9, 2022 there was a un planned pump shut down at the plant. The drinking water officer was not notified as soon as it happened.

Corrective actions: The emergency reporting guideline was reviewed, the DWO will be notified as soon as possible in the future, and the advisory notification plan was updated to include emergency reporting procedures.

5. Additional Records Required

6. Drinking Water Safety Order on your System and Actions Taken in Response

None

7. Warnings Issues or Charges Laid on the System in Accordance with the Drinking Water Safety Act

None

8. Major Expenses Incurred in 2022

None

9. Future System Expansion and/or Increased Population

In 2022, there is a new development being constructed in the NW corner of the community.

10. Appendix

- a. Operators Certification
- b. Compliance Audit
- c. Testing Summary
- d. Analyses
- e. Operating License for Public Water System
- f. *Disinfection Reports*

Appendix A

Operators Certification

This is to certify

Barry A. Broesky

has qualified as a

Water Treatment Class II
Water Distribution Class II
Wastewater Treatment Class II
Wastewater Collection Class II

Operator

in accordance with the Water and Wastewater Facility Operators Regulation under *The Environment Act*.

Dated at Winnipeg, Manitoba this 7th day of April 2020.

Certificate No.: 2009-312

Expires: 2025 April 7

Operator ID: 00107

S. Kowalen

Director

Manitoba Conservation and Climate

This is to certify

Robert J. Friesen

has qualified as a

Water Treatment

Class II

Water Distribution

Class II

Wastewater Treatment

Class II

Wastewater Collection

Class II

Operator

in accordance with the Water and Wastewater Facility Operators Regulation under *The Environment Act*.

Dated at **Winnipeg, Manitoba** this **9th** day of **December 2020**.

Certificate No.: 2015-260

Expires: 2025 December 9

Operator ID: 02505

S. Kowlem

Director

Manitoba Conservation and Climate

Appendix B

Testing Summary

DWO Officer	Community Code	TC	EC	Collection Date	Sample Identification	Sample Number
SARAH	86.00	0	0	11-Jan-22	GRUNTHAL 1 - RAW	L-2678275
SARAH	86.00	0	0	11-Jan-22	GRUNTHAL 2 - TREATED	L-2678275
SARAH	86.00	0	0	11-Jan-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2678275
SARAH	86.00	0	0	25-Jan-21	GRUNTHAL 1 - RAW	L-2681354
SARAH	86.00	0	0	25-Jan-21	GRUNTHAL 2 - TREATED	L-2681354
SARAH	86.00	0	0	25-Jan-21	GRUNTHAL 3 - COTTONWOOD RD.	L-2681354
SARAH	86.00	0	0	08-Feb-21	GRUNTHAL 1 - RAW	L-2684495
SARAH	86.00	0	0	08-Feb-21	GRUNTHAL 2 - TREATED	L-2684495
SARAH	86.00	0	0	08-Feb-21	GRUNTHAL 3 - COTTONWOOD RD.	L-2684495
SARAH	86.00	0	0	22-Feb-21	GRUNTHAL 1 - RAW	L-2687578
SARAH	86.00	0	0	22-Feb-21	GRUNTHAL 2 - TREATED	L-2687578
SARAH	86.00	0	0	22-Feb-21	GRUNTHAL 3 - COTTONWOOD RD.	L-2687578
SARAH	86.00	0	0	08-Mar-21	GRUNTHAL 1 - RAW	L-2691019
SARAH	86.00	0	0	08-Mar-21	GRUNTHAL 2 - TREATED	L-2691019
SARAH	86.00	0	0	08-Mar-21	GRUNTHAL 3 - COTTONWOOD RD.	L-2691019
SARAH	86.00	0	0	22-Mar-21	GRUNTHAL 1 - RAW	L-2694040
SARAH	86.00	0	0	22-Mar-21	GRUNTHAL 2 - TREATED	L-2694040
SARAH	86.00	0	0	22-Mar-21	GRUNTHAL 3 - COTTONWOOD RD.	L-2694040
SARAH	86.00	0	0	05-Apr-21	GRUNTHAL 1 - RAW	L-2697200
SARAH	86.00	0	0	05-Apr-21	GRUNTHAL 2 - TREATED	L-2697200
SARAH	86.00	0	0	05-Apr-21	GRUNTHAL 3 - COTTONWOOD RD.	L-2697200
SARAH	86.00	0	0	19-Apr-21	GRUNTHAL 1 - RAW	L-2700019
SARAH	86.00	0	0	19-Apr-21	GRUNTHAL 2 - TREATED	L-2700019
SARAH	86.00	0	0	19-Apr-21	GRUNTHAL 3 - COTTONWOOD RD.	L-2700019
SARAH	86.00	0	0	03-May-21	GRUNTHAL 1 - RAW	L-2703243
SARAH	86.00	0	0	03-May-21	GRUNTHAL 2 - TREATED	L-2703243
SARAH	86.00	0	0	03-May-21	GRUNTHAL 3 - COTTONWOOD RD.	L-2703243
SARAH	86.00	0	0	17-May-21	GRUNTHAL 1 - RAW	L-2707311
SARAH	86.00	0	0	17-May-21	GRUNTHAL 2 - TREATED	L-2707311
SARAH	86.00	0	0	17-May-21	GRUNTHAL 3 - COTTONWOOD RD.	L-2707311
SARAH	86.00	0	0	31-May-21	GRUNTHAL HANOVER AG GROUNDS	L-2711161
SARAH	86.00	0	0	01-Jun-21	GRUNTHAL HANOVER AG GROUNDS	L-2711878
SARAH	86.00	0	0	31-May-21	GRUNTHAL 1 - RAW	L-2711139
SARAH	86.00	0	0	31-May-21	GRUNTHAL 2 - TREATED	L-2711139
SARAH	86.00	0	0	31-May-21	GRUNTHAL 3 - COTTONWOOD RD.	L-2711139
SARAH	86.00	0	0	14-Jun-22	GRUNTHAL 1 - RAW	L-2715168
SARAH	86.00	0	0	14-Jun-22	GRUNTHAL 2 - TREATED	L-2715168
SARAH	86.00	0	0	14-Jun-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2715168
SARAH	86.00	0	0	28-Jun-22	GRUNTHAL 1 - RAW	L-2718996
SARAH	86.00	0	0	28-Jun-22	GRUNTHAL 2 - TREATED	L-2718996
SARAH	86.00	0	0	28-Jun-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2718996
SARAH	86.00	0	0	12-Jul-22	GRUNTHAL 1 - RAW	L-2721955
SARAH	86.00	0	0	12-Jul-22	GRUNTHAL 2 - TREATED	L-2721955
SARAH	86.00	0	0	12-Jul-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2721955
SARAH	86.00	0	0	26-Jul-22	GRUNTHAL 1 - RAW	L-2725056
SARAH	86.00	0	0	26-Jul-22	GRUNTHAL 2 - TREATED	L-2725056
SARAH	86.00	0	0	26-Jul-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2725056
SARAH	86.00	0	0	09-Aug-22	GRUNTHAL 1 - RAW	L-2727552
SARAH	86.00	0	0	09-Aug-22	GRUNTHAL 2 - TREATED	L-2727552
SARAH	86.00	0	0	09-Aug-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2727552
SARAH	86.00	0	0	10-Aug-22	GRUNTHAL 1 - RAW	L-2727596
SARAH	86.00	0	0	10-Aug-22	GRUNTHAL 2 - TREATED	L-2727596
SARAH	86.00	0	0	10-Aug-22	GRUNTHAL 3 - 30-5 BIRCH ST.	L-2727596
SARAH	86.00	0	0	11-Aug-21	GRUNTHAL 1 - TREATED	L-2727903
SARAH	86.00	0	0	11-Aug-21	GRUNTHAL 2 - 30-5 BIRCH ST.	L-2727903
SARAH	86.00	0	0	11-Aug-21	GRUNTHAL 3 - COTTONWOOD RD.	L-2727903
SARAH	86.00	0	0	23-Aug-22	GRUNTHAL 1 - RAW	L-2729842
SARAH	86.00	0	0	23-Aug-22	GRUNTHAL 2 - TREATED	L-2729842
SARAH	86.00	0	0	23-Aug-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2729842
SARAH	86.00	0	0	30-Aug-22	GRUNTHAL 1 - RAW	L-2730939
SARAH	86.00	0	0	30-Aug-22	GRUNTHAL 2 - TREATED	L-2730939
SARAH	86.00	0	0	30-Aug-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2730939
SARAH	86.00	0	0	06-Sep-22	GRUNTHAL 1 - RAW	L-2731709
SARAH	86.00	0	0	06-Sep-22	GRUNTHAL 2 - TREATED	L-2731709
SARAH	86.00	0	0	06-Sep-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2731709
SARAH	86.00	0	0	20-Sep-22	GRUNTHAL 1 - RAW	L-2733657

SARAH	86.00	0	0	20-Sep-22	GRUNTHAL 2 - TREATED	L-2733657
SARAH	86.00	0	0	20-Sep-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2733657
SARAH	86.00	0	0	04-Oct-22	GRUNTHAL 1 - RAW	L-2735588
SARAH	86.00	0	0	04-Oct-22	GRUNTHAL 2 - TREATED	L-2735588
SARAH	86.00	0	0	04-Oct-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2735588
SARAH	86.00	0	0	18-Oct-22	GRUNTHAL 1 - RAW	L-2737246
SARAH	86.00	0	0	18-Oct-22	GRUNTHAL 2 - TREATED	L-2737246
SARAH	86.00	0	0	18-Oct-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2737246
SARAH	86.00	0	0	01-Nov-22	GRUNTHAL 1 - RAW	L-2739029
SARAH	86.00	0	0	01-Nov-22	GRUNTHAL 2 - TREATED	L-2739029
SARAH	86.00	0	0	01-Nov-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2739029
SARAH	86.00	0	0	15-Nov-22	GRUNTHAL 1 - RAW	L-2740494
SARAH	86.00	0	0	15-Nov-22	GRUNTHAL 2 - TREATED	L-2740494
SARAH	86.00	0	0	15-Nov-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2740494
SARAH	86.00	0	0	29-Nov-22	GRUNTHAL 1 - RAW	L-2741980
SARAH	86.00	0	0	29-Nov-22	GRUNTHAL 2 - TREATED	L-2741980
SARAH	86.00	0	0	29-Nov-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2741980
SARAH	86.00	0	0	13-Dec-22	GRUNTHAL 1 - RAW	L-2743170
SARAH	86.00	0	0	13-Dec-22	GRUNTHAL 2 - TREATED	L-2743170
SARAH	86.00	0	0	13-Dec-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2743170
SARAH	86.00	0	0	28-Dec-22	GRUNTHAL 1 - RAW	L-2743981
SARAH	86.00	0	0	28-Dec-22	GRUNTHAL 2 - TREATED	L-2743981
SARAH	86.00	0	0	28-Dec-22	GRUNTHAL 3 - COTTONWOOD RD.	L-2743981

Appendix C

Analyses



RM of Hanover - Grunthal PWS
ATTN: BARRY BROESKY
Grunthal - PWS
28 Westland Drive
Mitchell MB R5G 2N9

Date Received: 28- AUG- 20
Report Date: 04- SEP- 20 13:16 (MT)
Version: FINAL

Client Phone: 204- 371- 0484

Certificate of Analysis

Lab Work Order #: L2495655
Project P.O. #: NOT SUBMITTED
Job Reference: GRUNTHAL - PWS 86.00
C of C Numbers:
Legal Site Desc: 6700

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: + 1 204 255 9720 | Fax: + 1 204 255 9721
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

Physical Tests (WATER)

		ALS ID		L2495655-1	L2495655-2
		Sampled Date		27-AUG-20	27-AUG-20
		Sampled Time		11:30	11:30
		Sample ID		GRUNTHAL 1 - RAW	GRUNTHAL 2 - TREATED
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Colour, True	CU	15	-	28.2	<5.0
Conductivity	umhos/cm	-	-	754	771
Hardness (as CaCO3)	mg/L	-	-	386 ^{HTC}	388 ^{HTC}
Langelier Index (4 C)	No Unit	-	-	0.79	0.82
Langelier Index (60 C)	No Unit	-	-	1.6	1.6
pH	pH units	7.00-10.5	-	8.00	8.03
Total Dissolved Solids	mg/L	500	-	431	458
Transmittance, UV (254 nm)	%T/cm	-	-	89.5	90.8
Turbidity	NTU	-	-	1.59	0.64

Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)

#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)

#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)

Anions and Nutrients (WATER)

		ALS ID		L2495655-1	L2495655-2
		Sampled Date		27-AUG-20	27-AUG-20
		Sampled Time		11:30	11:30
		Sample ID		GRUNTHAL 1 - RAW	GRUNTHAL 2 - TREATED
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Alkalinity, Total (as CaCO3)	mg/L	-	-	373	369
Ammonia, Total (as N)	mg/L	-	-	0.498	<0.010
Bicarbonate (HCO3)	mg/L	-	-	455	451
Bromide (Br)	mg/L	-	-	0.037	<0.010
Carbonate (CO3)	mg/L	-	-	<0.60	<0.60
Chloride (Cl)	mg/L	250	-	22.0	29.7
Fluoride (F)	mg/L	-	1.5	0.194	0.194
Hydroxide (OH)	mg/L	-	-	<0.34	<0.34
Nitrate (as N)	mg/L	-	10	0.0929	0.117
Nitrite (as N)	mg/L	-	1	<0.0010	<0.0010
Sulfate (SO4)	mg/L	500	-	40.8	40.8

Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)

#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)

#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)

Organic / Inorganic Carbon (WATER)

		ALS ID		L2495655-1	L2495655-2
		Sampled Date		27-AUG-20	27-AUG-20
		Sampled Time		11:30	11:30
		Sample ID		GRUNTHAL 1 - RAW	GRUNTHAL 2 - TREATED
Analyte	Unit	Guide Limit #1	Guide Limit #2		
Dissolved Organic Carbon	mg/L	-	-	2.09	2.04
Total Organic Carbon	mg/L	-	-	2.04	1.97

Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)

#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)

#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)

 Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
 Analytical result for this parameter exceeds Guide Limit listed on this report.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Total Metals (WATER)

Analyte	Unit	ALS ID		L2495655-1	L2495655-2	L2495655-3
		Sampled Date	Sampled Time	27-AUG-20 11:30	27-AUG-20 11:30	27-AUG-20 13:00
		Guide Limit #1	Guide Limit #2	GRUNTHAL 1 - RAW	GRUNTHAL 2 - TREATED	GRUNTHAL 3 - DISTRIBUTION MID-POINT
Aluminum (Al)-Total	mg/L	0.1	-	<0.0030	<0.0030	<0.0030
Antimony (Sb)-Total	mg/L	-	0.006	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	mg/L	-	0.01	0.00038	0.00043	0.00038
Barium (Ba)-Total	mg/L	-	2	0.352	0.347	0.333
Beryllium (Be)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	mg/L	-	-	<0.000050	<0.000050	<0.000050
Boron (B)-Total	mg/L	-	5	0.088	0.084	0.085
Cadmium (Cd)-Total	mg/L	-	0.005	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca)-Total	mg/L	-	-	87.2	88.0	87.8
Cesium (Cs)-Total	mg/L	-	-	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Total	mg/L	-	0.05	<0.00010	<0.00010	0.00016
Cobalt (Co)-Total	mg/L	-	-	0.00022	0.00020	0.00014
Copper (Cu)-Total	mg/L	1	2	0.00227	0.00979	0.0106
Iron (Fe)-Total	mg/L	0.3	-	0.340	0.354	0.106
Lead (Pb)-Total	mg/L	-	0.005	0.000086	0.000065	0.000358
Lithium (Li)-Total	mg/L	-	-	0.0190	0.0192	0.0190
Magnesium (Mg)-Total	mg/L	-	-	40.8	40.8	41.3
Manganese (Mn)-Total	mg/L	0.02	0.12	0.0638	0.0565	0.0172
Molybdenum (Mo)-Total	mg/L	-	-	0.000744	0.000776	0.000780
Nickel (Ni)-Total	mg/L	-	-	<0.00050	<0.00050	0.00050
Phosphorus (P)-Total	mg/L	-	-	<0.050	0.540	0.420
Potassium (K)-Total	mg/L	-	-	4.28	4.26	4.39
Rubidium (Rb)-Total	mg/L	-	-	0.00195	0.00199	0.00191
Selenium (Se)-Total	mg/L	-	0.05	<0.000050	0.000056	0.000061
Silicon (Si)-Total	mg/L	-	-	9.43	9.45	9.42
Silver (Ag)-Total	mg/L	-	-	<0.000010	<0.000010 ^{RRV}	<0.000010
Sodium (Na)-Total	mg/L	200	-	21.6	28.2	28.2
Strontium (Sr)-Total	mg/L	-	7	0.479	0.479	0.472
Sulfur (S)-Total	mg/L	-	-	-	-	14.5
Tellurium (Te)-Total	mg/L	-	-	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total	mg/L	-	-	<0.000010	<0.000010	<0.000010
Thorium (Th)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010

Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)

#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)

#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.

Analytical result for this parameter exceeds Guide Limit listed on this report.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Total Metals (WATER)

		ALS ID		L2495655-1	L2495655-2	L2495655-3
		Sampled Date		27-AUG-20	27-AUG-20	27-AUG-20
		Sampled Time		11:30	11:30	13:00
		Sample ID		GRUNTHAL 1 - RAW	GRUNTHAL 2 - TREATED	GRUNTHAL 3 - DISTRIBUTION MID-POINT
Analyte	Unit	Guide Limit #1	Guide Limit #2			
Titanium (Ti)-Total	mg/L	-	-	<0.00030	<0.00030	<0.00030
Tungsten (W)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010
Uranium (U)-Total	mg/L	-	0.02	0.000752	0.000750	0.000758
Vanadium (V)-Total	mg/L	-	-	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total	mg/L	5	-	0.0059 ^{RRV}	0.0095 ^{RRV}	0.0067 ^{RRV}
Zirconium (Zr)-Total	mg/L	-	-	<0.00020	<0.00020	<0.00020

Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)

#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)

#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)

Volatile Organic Compounds (WATER)

		ALS ID		L2495655-1
		Sampled Date		27-AUG-20
		Sampled Time		11:30
		Sample ID		GRUNTHAL 1 - RAW
Analyte	Unit	Guide Limit #1	Guide Limit #2	
Benzene	mg/L	-	0.005	<0.00050
1,1-dichloroethene	mg/L	-	0.014	<0.00050
Dichloromethane	mg/L	-	0.05	<0.0050
Ethylbenzene	mg/L	0.0016	0.14	<0.00050
MTBE	mg/L	0.015	-	<0.00050
Tetrachloroethene	mg/L	-	0.01	<0.00050
Toluene	mg/L	0.024	0.06	<0.00050
Trichloroethene	mg/L	-	0.005	<0.00050
o-Xylene	mg/L	-	-	<0.00050
M+P-Xylenes	mg/L	-	-	<0.00040
Xylenes (Total)	mg/L	0.02	0.09	<0.00064
Surrogate: 4-Bromofluorobenzene (SS)	%	-	-	92.7
Surrogate: 1,4-Difluorobenzene (SS) %		-	-	96.8

Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)

#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)

#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.

Analytical result for this parameter exceeds Guide Limit listed on this report.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
RRV	Reported Result Verified By Repeat Analysis
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION
<p>The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO₃ 2-/L.</p>			
ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION
<p>The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO₃-/L.</p>			
ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION
<p>The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.</p>			
ALK-TITR-WP	Water	Alkalinity, Total (as CaCO ₃)	APHA 2320B
<p>The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO₃⁻ and H₂CO₃ endpoints indicated electrometrically.</p>			
BR-L-IC-N-WP	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod)-LR
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
C-DOC-HTC-WP	Water	Dissolved Organic Carbon by Combustion	APHA 5310 B-WP
<p>Filtered (0.45 um) sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO₂ which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.</p>			
C-TOC-HTC-WP	Water	Total Organic Carbon by Combustion	APHA 5310 B-WP
<p>Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO₂ which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.</p>			
CL-L-IC-N-WP	Water	Chloride in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
COLOUR-TRUE-WP	Water	Colour, True	APHA 2120C
<p>True Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method (450 - 465 nm) after filtration of sample through a 0.45 um filter. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.</p>			
EC-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510
<p>Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc</p>			
EC-WP	Water	Conductivity	APHA 2510B
<p>Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.</p>			
ETL-LANGELIER-4-WP	Water	Langelier Index 4C	Calculated
ETL-LANGELIER-60-WP	Water	Langelier Index 60C	Calculated
F-IC-N-WP	Water	Fluoride in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B
<p>Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO₃ equivalents.</p>			

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
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IONBALANCE-CALC-WP	Water	Ion Balance Calculation	APHA 1030E
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Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance (as % difference) cannot be calculated accurately for waters with very low electrical conductivity (EC), and is reported as "Low EC" where EC < 100 uS/cm (umhos/cm). Ion Balance is calculated as:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)
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Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F
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Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2-L-IC-N-WP	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WP	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-WP	Water	pH	APHA 4500H
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The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TDS-WP	Water	Total Dissolved Solids (TDS)	APHA 2540 SOLIDS C,E
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A well-mixed sample is filtered through a glass fiber filter paper. The filtrate is then evaporated to dryness in a pre-weighed vial and dried at 180 – 2C. The increase in vial weight represents the total dissolved solids.

TURBIDITY-WP	Water	Turbidity	APHA 2130B (modified)
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Turbidity in aqueous matrices is determined by the nephelometric method.

UV-%TRANS-WP	Water	UV Transmittance (Calculated)	APHA 5910B
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Test method is adapted from APHA Method 5910B. A sample is filtered through a 0.45 um polyethersulfone (PES) filter and its UV Absorbance is measured in a quartz cell at 254 nm. UV Transmittance is calculated from the UV Absorbance result and reported as UV Transmittance per cm. The analysis is carried out without pH adjustment.

VOC+F1-HSMS-WP	Water	VOC plus F1 by GCMS	EPA 8260C / EPA 5021A
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In this method samples are analyzed using a headspace autosampler interfaced to a dual column gas chromatograph with MS and Flame Ionization detectors.

XYLENES-SUM-CALC-WP	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
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Total xylenes represents the sum of o-xylene and m&p-xylene.

*ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.



Quality Control Report

Workorder: L2495655

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Client: RM of Hanover - Grunthal PWS
 Grunthal - PWS 28 Westland Drive
 Mitchell MB R5G 2N9

Contact: BARRY BROESKY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
LK-TITR-WP Water								
Batch R5205048								
WG3394834-25	DUP	L2495601-2						
Alkalinity, Total (as CaCO3)		294	294		mg/L	0.1	20	28-AUG-20
WG3394834-24	LCS							
Alkalinity, Total (as CaCO3)			107.9		%		85-115	28-AUG-20
WG3394834-21	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	28-AUG-20
R-L-IC-N-WP Water								
Batch R5208621								
WG3393905-15	DUP	L2495655-1						
Bromide (Br)		0.037	0.039		mg/L	7.2	20	28-AUG-20
WG3393905-14	LCS							
Bromide (Br)			99.4		%		85-115	28-AUG-20
WG3393905-13	MB							
Bromide (Br)			<0.010		mg/L		0.01	28-AUG-20
WG3393905-16	MS	L2495655-1						
Bromide (Br)			99.8		%		75-125	28-AUG-20
-DOC-HTC-WP Water								
Batch R5209771								
WG3397334-7	DUP	L2495603-8						
Dissolved Organic Carbon		1.55	1.57		mg/L	1.3	20	02-SEP-20
WG3397334-6	LCS							
Dissolved Organic Carbon			104.2		%		80-120	02-SEP-20
WG3397334-5	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	02-SEP-20
WG3397334-8	MS	L2495603-8						
Dissolved Organic Carbon			108.0		%		70-130	02-SEP-20
-TOC-HTC-WP Water								
Batch R5209758								
WG3397434-3	DUP	L2495584-1						
Total Organic Carbon		1.60	1.50		mg/L	6.5	20	02-SEP-20
WG3397434-2	LCS							
Total Organic Carbon			105.5		%		80-120	02-SEP-20
WG3397434-1	MB							
Total Organic Carbon			<0.50		mg/L		0.5	02-SEP-20
WG3397434-4	MS	L2495584-2						
Total Organic Carbon			108.4		%		70-130	02-SEP-20
L-L-IC-N-WP Water								



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Client: RM of Hanover - Grunthal PWS
 Grunthal - PWS 28 Westland Drive
 Mitchell MB R5G 2N9
 Contact: BARRY BROESKY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
L-L-IC-N-WP Water								
Batch R5208621								
WG3393905-15	DUP	L2495655-1						
Chloride (Cl)		22.0	22.0		mg/L	0.0	20	28-AUG-20
WG3393905-14	LCS		99.6		%		90-110	28-AUG-20
Chloride (Cl)								
WG3393905-13	MB		<0.10		mg/L		0.1	28-AUG-20
Chloride (Cl)								
WG3393905-16	MS	L2495655-1	106.3		%		75-125	28-AUG-20
Chloride (Cl)								
COLOUR-TRUE-WP Water								
Batch R5204661								
WG3393567-3	DUP	L2495512-1	20.9		CU	7.9	20	28-AUG-20
Colour, True		22.6						
WG3393567-6	DUP	L2495655-2	<5.0	RPD-NA	CU	N/A	20	28-AUG-20
Colour, True								
WG3393567-2	LCS		98.9		%		85-115	29-AUG-20
Colour, True								
WG3393567-5	LCS		100.3		%		85-115	28-AUG-20
Colour, True								
WG3393567-1	MB		<5.0		CU		5	28-AUG-20
Colour, True								
WG3393567-4	MB		<5.0		CU		5	29-AUG-20
Colour, True								
C-WP Water								
Batch R5205048								
WG3394834-25	DUP	L2495601-2	3240		umhos/cm	0.3	10	28-AUG-20
Conductivity		3250						
WG3394834-23	LCS		99.4		%		90-110	28-AUG-20
Conductivity								
WG3394834-21	MB		<1.0		umhos/cm		1	28-AUG-20
Conductivity								
-IC-N-WP Water								
Batch R5208621								
WG3393905-15	DUP	L2495655-1	0.189		mg/L	2.7	20	28-AUG-20
Fluoride (F)		0.194						
WG3393905-14	LCS		102.6		%		90-110	28-AUG-20
Fluoride (F)								
WG3393905-13	MB							



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Client: RM of Hanover - Grunthal PWS
 Grunthal - PWS 28 Westland Drive
 Mitchell MB R5G 2N9
 Contact: BARRY BROESKY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
-IC-N-WP	Water							
Batch	R5208621							
WG3393905-13 MB								
Fluoride (F)			<0.020		mg/L		0.02	28-AUG-20
WG3393905-16 MS		L2495655-1						
Fluoride (F)			105.6		%		75-125	28-AUG-20
IET-T-CCMS-WP	Water							
Batch	R5208572							
WG3394876-4 DUP		WG3394876-3						
Aluminum (Al)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	01-SEP-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-SEP-20
Arsenic (As)-Total		0.00277	0.00280		mg/L	1.2	20	01-SEP-20
Barium (Ba)-Total		0.145	0.144		mg/L	1.0	20	01-SEP-20
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-SEP-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-SEP-20
Boron (B)-Total		0.137	0.146		mg/L	6.2	20	01-SEP-20
Cadmium (Cd)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	01-SEP-20
Calcium (Ca)-Total		67.8	71.3		mg/L	5.0	20	01-SEP-20
Cesium (Cs)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-SEP-20
Chromium (Cr)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-SEP-20
Cobalt (Co)-Total		0.00053	0.00051		mg/L	3.0	20	01-SEP-20
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-SEP-20
Iron (Fe)-Total		1.24	1.25		mg/L	0.9	20	01-SEP-20
Lead (Pb)-Total		0.000052	0.000050		mg/L	4.0	20	01-SEP-20
Lithium (Li)-Total		0.0299	0.0303		mg/L	1.3	20	01-SEP-20
Magnesium (Mg)-Total		51.0	51.9		mg/L	1.8	20	01-SEP-20
Manganese (Mn)-Total		0.0141	0.0142		mg/L	0.6	20	01-SEP-20
Molybdenum (Mo)-Total		0.000584	0.000583		mg/L	0.1	20	01-SEP-20
Nickel (Ni)-Total		0.00154	0.00153		mg/L	0.4	20	01-SEP-20
Potassium (K)-Total		5.17	5.25		mg/L	1.4	20	01-SEP-20
Phosphorus (P)-Total		<0.050	<0.030	RPD-NA	mg/L	N/A	20	01-SEP-20
Rubidium (Rb)-Total		0.00273	0.00279		mg/L	2.0	20	01-SEP-20
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	01-SEP-20
Silicon (Si)-Total		5.55	5.65		mg/L	1.8	20	01-SEP-20
Silver (Ag)-Total		0.000013	<0.000010	RPD-NA	mg/L	N/A	20	01-SEP-20
Sodium (Na)-Total		18.6	19.1		mg/L	2.8	20	01-SEP-20



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 Grunthal - PWS 28 Westland Drive
 Mitchell MB R5G 2N9
 Contact: BARRY BROESKY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
IET-T-CCMS-WP		Water						
Batch	R5208572							
WG3394876-4 DUP		WG3394876-3						
Strontium (Sr)-Total		0.590	0.602		mg/L	2.1	20	01-SEP-20
Sulfur (S)-Total		2.82	2.90		mg/L	3.0	20	01-SEP-20
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	01-SEP-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	01-SEP-20
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-SEP-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-SEP-20
Titanium (Ti)-Total		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	01-SEP-20
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	01-SEP-20
Uranium (U)-Total		0.000913	0.000923		mg/L	1.1	20	01-SEP-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	01-SEP-20
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	01-SEP-20
WG3394876-2 LCS								
Aluminum (Al)-Total			101.4		%		80-120	01-SEP-20
Antimony (Sb)-Total			97.5		%		80-120	01-SEP-20
Arsenic (As)-Total			98.8		%		80-120	01-SEP-20
Barium (Ba)-Total			97.8		%		80-120	01-SEP-20
Beryllium (Be)-Total			98.7		%		80-120	01-SEP-20
Bismuth (Bi)-Total			97.4		%		80-120	01-SEP-20
Boron (B)-Total			98.5		%		80-120	01-SEP-20
Cadmium (Cd)-Total			99.0		%		80-120	01-SEP-20
Calcium (Ca)-Total			99.1		%		80-120	01-SEP-20
Cesium (Cs)-Total			93.4		%		80-120	01-SEP-20
Chromium (Cr)-Total			99.6		%		80-120	01-SEP-20
Cobalt (Co)-Total			97.1		%		80-120	01-SEP-20
Copper (Cu)-Total			97.9		%		80-120	01-SEP-20
Iron (Fe)-Total			96.8		%		80-120	01-SEP-20
Lead (Pb)-Total			96.5		%		80-120	01-SEP-20
Lithium (Li)-Total			96.8		%		80-120	01-SEP-20
Magnesium (Mg)-Total			111.5		%		80-120	01-SEP-20
Manganese (Mn)-Total			100.5		%		80-120	01-SEP-20
Molybdenum (Mo)-Total			97.7		%		80-120	01-SEP-20
Nickel (Ni)-Total			100.2		%		80-120	01-SEP-20
Potassium (K)-Total			101.3		%		80-120	01-SEP-20



Quality Control Report

Workorder: L2495655

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Client: RM of Hanover - Grunthal PWS
 Grunthal - PWS 28 Westland Drive
 Mitchell MB R5G 2N9
 Contact: BARRY BROESKY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
IET-T-CCMS-WP	Water							
Batch	R5208572							
WG3394876-2 LCS								
Phosphorus (P)-Total			103.1		%		80-120	01-SEP-20
Rubidium (Rb)-Total			99.96		%		80-120	01-SEP-20
Selenium (Se)-Total			100.0		%		80-120	01-SEP-20
Silicon (Si)-Total			104.3		%		80-120	01-SEP-20
Silver (Ag)-Total			95.0		%		80-120	01-SEP-20
Sodium (Na)-Total			104.0		%		80-120	01-SEP-20
Strontium (Sr)-Total			97.2		%		80-120	01-SEP-20
Sulfur (S)-Total			102.7		%		80-120	01-SEP-20
Tellurium (Te)-Total			96.0		%		80-120	01-SEP-20
Thallium (Tl)-Total			97.2		%		80-120	01-SEP-20
Thorium (Th)-Total			91.8		%		80-120	01-SEP-20
Tin (Sn)-Total			94.9		%		80-120	01-SEP-20
Titanium (Ti)-Total			96.4		%		80-120	01-SEP-20
Tungsten (W)-Total			96.6		%		80-120	01-SEP-20
Uranium (U)-Total			98.7		%		80-120	01-SEP-20
Vanadium (V)-Total			100.5		%		80-120	01-SEP-20
Zirconium (Zr)-Total			91.3		%		80-120	01-SEP-20
WG3394876-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	01-SEP-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	01-SEP-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	01-SEP-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	01-SEP-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	01-SEP-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	01-SEP-20
Boron (B)-Total			<0.010		mg/L		0.01	01-SEP-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	01-SEP-20
Calcium (Ca)-Total			0.055	B	mg/L		0.05	01-SEP-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	01-SEP-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	01-SEP-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	01-SEP-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	01-SEP-20
Iron (Fe)-Total			<0.010		mg/L		0.01	01-SEP-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	01-SEP-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	01-SEP-20



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Client: RM of Hanover - Grunthal PWS
 Grunthal - PWS 28 Westland Drive
 Mitchell MB R5G 2N9
 Contact: BARRY BROESKY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
IET-T-CCMS-WP Water								
Batch R5208572								
WG3394876-1 MB								
Magnesium (Mg)-Total			0.0074	B	mg/L		0.005	01-SEP-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	01-SEP-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	01-SEP-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	01-SEP-20
Potassium (K)-Total			<0.050		mg/L		0.05	01-SEP-20
Phosphorus (P)-Total			<0.030		mg/L		0.03	01-SEP-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	01-SEP-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	01-SEP-20
Silicon (Si)-Total			<0.10		mg/L		0.1	01-SEP-20
Silver (Ag)-Total			0.000011	B	mg/L		0.00001	01-SEP-20
Sodium (Na)-Total			<0.050		mg/L		0.05	01-SEP-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	01-SEP-20
Sulfur (S)-Total			<0.50		mg/L		0.5	01-SEP-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	01-SEP-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	01-SEP-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	01-SEP-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	01-SEP-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	01-SEP-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	01-SEP-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	01-SEP-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	01-SEP-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	01-SEP-20
WG3394876-5 MS								
WG3394876-3								
Aluminum (Al)-Total			93.0		%		70-130	01-SEP-20
Antimony (Sb)-Total			87.9		%		70-130	01-SEP-20
Arsenic (As)-Total			93.6		%		70-130	01-SEP-20
Barium (Ba)-Total			N/A	MS-B	%		-	01-SEP-20
Beryllium (Be)-Total			94.0		%		70-130	01-SEP-20
Bismuth (Bi)-Total			85.2		%		70-130	01-SEP-20
Boron (B)-Total			N/A	MS-B	%		-	01-SEP-20
Cadmium (Cd)-Total			91.3		%		70-130	01-SEP-20
Calcium (Ca)-Total			N/A	MS-B	%		-	01-SEP-20
Cesium (Cs)-Total			88.5		%		70-130	01-SEP-20
Chromium (Cr)-Total			94.1		%		70-130	01-SEP-20



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Client: RM of Hanover - Grunthal PWS
 Grunthal - PWS 28 Westland Drive
 Mitchell MB R5G 2N9
 Contact: BARRY BROESKY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
IET-T-CCMS-WP		Water						
Batch R5208572								
WG3394876-5 MS		WG3394876-3						
Cobalt (Co)-Total			90.2		%		70-130	01-SEP-20
Copper (Cu)-Total			89.0		%		70-130	01-SEP-20
Iron (Fe)-Total			92.8		%		70-130	01-SEP-20
Lead (Pb)-Total			86.0		%		70-130	01-SEP-20
Lithium (Li)-Total			90.4		%		70-130	01-SEP-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	01-SEP-20
Manganese (Mn)-Total			90.3		%		70-130	01-SEP-20
Molybdenum (Mo)-Total			94.4		%		70-130	01-SEP-20
Nickel (Ni)-Total			89.9		%		70-130	01-SEP-20
Potassium (K)-Total			N/A	MS-B	%		-	01-SEP-20
Phosphorus (P)-Total			98.8		%		70-130	01-SEP-20
Rubidium (Rb)-Total			92.9		%		70-130	01-SEP-20
Selenium (Se)-Total			94.4		%		70-130	01-SEP-20
Silicon (Si)-Total			89.4		%		70-130	01-SEP-20
Silver (Ag)-Total			88.2		%		70-130	01-SEP-20
Sodium (Na)-Total			N/A	MS-B	%		-	01-SEP-20
Strontium (Sr)-Total			N/A	MS-B	%		-	01-SEP-20
Sulfur (S)-Total			100.1		%		70-130	01-SEP-20
Tellurium (Te)-Total			84.7		%		70-130	01-SEP-20
Thallium (Tl)-Total			87.1		%		70-130	01-SEP-20
Thorium (Th)-Total			90.8		%		70-130	01-SEP-20
Tin (Sn)-Total			89.3		%		70-130	01-SEP-20
Titanium (Ti)-Total			95.2		%		70-130	01-SEP-20
Tungsten (W)-Total			92.1		%		70-130	01-SEP-20
Uranium (U)-Total			90.1		%		70-130	01-SEP-20
Vanadium (V)-Total			96.5		%		70-130	01-SEP-20
Zirconium (Zr)-Total			91.1		%		70-130	01-SEP-20
H3-COL-WP		Water						
Batch R5208683								
WG3396547-7 DUP		L2495645-1						
Ammonia, Total (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	01-SEP-20
WG3396547-6 LCS								
Ammonia, Total (as N)			99.7		%		85-115	01-SEP-20
WG3396547-5 MB								



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Client: RM of Hanover - Grunthal PWS
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 Mitchell MB R5G 2N9
 Contact: BARRY BROESKY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
O4-IC-N-WP Water								
Batch R5208621								
WG3393905-13 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	28-AUG-20
WG3393905-16 MS		L2495655-1						
Sulfate (SO4)			104.4		%		75-125	28-AUG-20
DS-WP Water								
Batch R5207782								
WG3392901-6 DUP		L2495130-13						
Total Dissolved Solids		2330	2300		mg/L	1.3	20	28-AUG-20
WG3392901-5 LCS								
Total Dissolved Solids			91.6		%		85-115	28-AUG-20
WG3392901-4 MB								
Total Dissolved Solids			<4.0		mg/L		4	28-AUG-20
Batch R5209595								
WG3395986-3 DUP		L2495584-1						
Total Dissolved Solids		336	340		mg/L	1.2	20	02-SEP-20
WG3395986-2 LCS								
Total Dissolved Solids			97.2		%		85-115	02-SEP-20
WG3395986-1 MB								
Total Dissolved Solids			<4.0		mg/L		4	02-SEP-20
URBIDITY-WP Water								
Batch R5208596								
WG3396454-3 DUP		L2495603-8						
Turbidity		0.16	0.15		NTU	3.9	15	01-SEP-20
WG3396454-2 LCS								
Turbidity			100.5		%		85-115	01-SEP-20
WG3396454-1 MB								
Turbidity			<0.10		NTU		0.1	01-SEP-20
V-%TRANS-WP Water								
Batch R5204493								
WG3393568-3 DUP		L2495512-1						
Transmittance, UV (254 nm)		61.8	62.1		%T/cm	0.5	20	28-AUG-20
WG3393568-6 DUP		L2495655-2						
Transmittance, UV (254 nm)		90.8	91.6		%T/cm	0.9	20	28-AUG-20
WG3393568-1 IRM		BLANK						
Transmittance, UV (254 nm)			100.2		%		99.5-100.5	28-AUG-20
WG3393568-4 IRM		BLANK						
Transmittance, UV (254 nm)			100.0		%		99.5-100.5	28-AUG-20



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Client: RM of Hanover - Grunthal PWS
 Grunthal - PWS 28 Westland Drive
 Mitchell MB R5G 2N9
 Contact: BARRY BROESKY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
V-%TRANS-WP Water								
Batch R5204493								
WG3393568-2 LCS								
Transmittance, UV (254 nm)			99.8		%		85-115	28-AUG-20
WG3393568-5 LCS								
Transmittance, UV (254 nm)			103.0		%		85-115	28-AUG-20
OC+F1-HSMS-WP Water								
Batch R5208746								
WG3394914-3 DUP								
		L2495584-1						
Benzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	31-AUG-20
1,1-dichloroethene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	31-AUG-20
Dichloromethane		<0.0050	<0.0050	RPD-NA	mg/L	N/A	30	31-AUG-20
Ethylbenzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	31-AUG-20
MTBE		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	31-AUG-20
Tetrachloroethene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	31-AUG-20
Toluene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	31-AUG-20
Trichloroethene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	31-AUG-20
M+P-Xylenes		<0.00040	<0.00040	RPD-NA	mg/L	N/A	30	31-AUG-20
o-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	31-AUG-20
WG3394914-2 LCS								
Benzene			87.5		%		70-130	31-AUG-20
1,1-dichloroethene			87.0		%		70-130	31-AUG-20
Dichloromethane			88.7		%		70-130	31-AUG-20
Ethylbenzene			86.4		%		70-130	31-AUG-20
MTBE			101.1		%		70-130	31-AUG-20
Tetrachloroethene			98.6		%		70-130	31-AUG-20
Toluene			89.0		%		70-130	31-AUG-20
Trichloroethene			87.5		%		70-130	31-AUG-20
M+P-Xylenes			92.4		%		70-130	31-AUG-20
o-Xylene			93.1		%		70-130	31-AUG-20
WG3394914-1 MB								
Benzene			<0.00050		mg/L		0.0005	31-AUG-20
1,1-dichloroethene			<0.00050		mg/L		0.0005	31-AUG-20
Dichloromethane			<0.0050		mg/L		0.005	31-AUG-20
Ethylbenzene			<0.00050		mg/L		0.0005	31-AUG-20
MTBE			<0.00050		mg/L		0.0005	31-AUG-20
Tetrachloroethene			<0.00050		mg/L		0.0005	31-AUG-20



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Client: RM of Hanover - Grunthal PWS
 Grunthal - PWS 28 Westland Drive
 Mitchell MB R5G 2N9
 Contact: BARRY BROESKY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OC+F1-HSMS-WP	Water							
Batch	R5208746							
WG3394914-1 MB								
Toluene			<0.00050		mg/L		0.0005	31-AUG-20
Trichloroethene			<0.00050		mg/L		0.0005	31-AUG-20
M+P-Xylenes			<0.00040		mg/L		0.0004	31-AUG-20
o-Xylene			<0.00050		mg/L		0.0005	31-AUG-20
Surrogate: 4-Bromofluorobenzene (SS)			92.1		%		70-130	31-AUG-20
Surrogate: 1,4-Difluorobenzene (SS)			88.7		%		70-130	31-AUG-20

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2495655

Report Date: 04-SEP-20

Client: RM of Hanover - Grunthal PWS
 Grunthal - PWS 28 Westland Drive
 Mitchell MB R5G 2N9
 Contact: BARRY BROESKY

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Turbidity	1	27-AUG-20 11:30	01-SEP-20 10:00	3	5	days	EHT
	2	27-AUG-20 11:30	01-SEP-20 10:00	3	5	days	EHT
pH	1	27-AUG-20 11:30	28-AUG-20 12:00	0.25	24	hours	EHTR-FM
	2	27-AUG-20 11:30	28-AUG-20 12:00	0.25	24	hours	EHTR-FM

Legend & Qualifier Definitions:

- EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
- EHTR: Exceeded ALS recommended hold time prior to sample receipt.
- EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
- EHT: Exceeded ALS recommended hold time prior to analysis.
- Rec. HT: ALS recommended hold time (see units).

Notes*:
 Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
 Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2495655 were received on 28-AUG-20 10:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Conservation and Climate
Office of Drinking Water
11007 Century Street, Winnipeg, Manitoba,
Canada R3H 0W4



L2495655-COFC

er Systems

Report to Operator (email PDF):		Report to Owner (email PDF):	
Contact:	Barry Broesky	Contact:	Luc Lahaie
Address:	28 Westland Drive, Mitchell, MB R5G 2N9	Address:	28 Westland Drive, Mitchell, MB R5G 2N9
Phone:		Phone:	(204) 346-7121
Email:	barry.broesky@hanovermb.ca	Email:	luc.lahaie@hanovermb.ca

If an update in Owner or Operator contact information is required, please

Client / Project Information:	Lab:	Account:	Agency Code: 38
Operation Name:	GRUNTHAL - PWS		Expected Sample Tir
Operation Code:	86.00		
Operation ID:	6700		
Sampled by:	<i>[Signature]</i>		

Please record Free & Total Chlorine residuals for Distribution By-product Samp
**DO NOT COPY or RE-USE this form. Sample Number are unique to the Office of
and provided by Drinking Water Officer.**

Sample Number	Station Number	Sample Identification	Free Chlorine (mg/L)	Total Chlorine (mg/L)	Sample dd-mm
2007SB5003	MB05OED021	Grunthal 1 - Raw			27-08
2007SB5004	MB05OED022	Grunthal 2 - Treated	0.90	1.26	27-08
2007SB5005	MB05OED023	Grunthal 3 - Distribution mid-point	0.68	0.91	27-08

Failure to complete all portions of this form may delay analysis.	Sample Matrix: 6-Raw
Please fill in this form LEGIBLY.	Sample Type: 1-Gr

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified by the Laboratory
For ALL other testing, please use Laboratory specific forms.

Relinquished By:		Date & Time:		Validated By (lab use only)	
Received By: (lab use only)	<i>[Signature]</i>	Date & Time: (lab use only)	Aug 28/22 10:45 AM	Sample Condition (lab use only)	Temperature 16.1°C

Appendix D

Operating License for Public Water System



Conservation and Climate

Office of Drinking Water
1007 Century Street, Winnipeg, Manitoba R3H 0W4

**OPERATING LICENCE FOR
A PUBLIC WATER SYSTEM**

LICENCE NUMBER: PWS-09-325-02

**THE DRINKING WATER SAFETY ACT
CHAPTER D101, C.C.S.M.**

WATER SYSTEM CODE: 86.00
OPERATION ID: 6700
EFFECTIVE DATE: MAY 1, 2018
EXPIRY DATE: MAY 31, 2023

IN ACCORDANCE WITH *THE DRINKING WATER SAFETY ACT*, THIS OPERATING LICENCE IS ISSUED PURSUANT TO SUBSECTION 8(1) TO:

RURAL MUNICIPALITY OF HANOVER: "THE LICENSEE"

FOR THE OPERATION OF THE **GRUNTHAL PUBLIC WATER SYSTEM**, WHICH INCLUDES SECURE WELLS, TREATMENT FACILITIES, WATER STORAGE RESERVOIRS, AND DISTRIBUTION LINES, SUBJECT TO THE ATTACHED TERMS AND CONDITIONS.

THIS LICENCE DOES NOT AFFECT THE LICENSEE'S OBLIGATIONS WITH RESPECT TO COMPLIANCE WITH ALL APPLICABLE MUNICIPAL, PROVINCIAL, AND FEDERAL LEGISLATION. THIS LICENCE SUPERSEDES ALL PREVIOUS LICENSES FOR THIS PUBLIC WATER SYSTEM.

DATE: April 30, 2020


Kim Philip, P.Eng.
Director

TERMS AND CONDITIONS

1. GENERAL

- 1.1. The Licensee shall operate the public water system in accordance with all applicable requirements of *The Drinking Water Safety Act* and its regulations, and the requirements of this Licence. In the event that specific terms and conditions of this Licence imposed under the authority of subsection 8(3) of the Act exceed the general requirements of the Act and regulations, the specific requirements of this Licence shall apply.
- 1.2. The Licensee shall obtain approval from the Office of Drinking Water prior to making any significant alterations to the water source, the water treatment process, the water storage facilities, or the water distribution system.
- 1.3. This Licence may be amended by the Director where, in the opinion of the Director, an amendment is necessary and the amendment will not negatively impact the safety of water obtained from the water system, or effective environmental management.
- 1.4. The Licensee may request an amendment to this licence by submitting an amendment application to the Office of Drinking Water.
- 1.5. This Licence may be suspended or cancelled by the Director for any of the reasons identified in Section 11 of *Manitoba Regulation 40/2007, Drinking Water Safety Regulation* or due to a failure to comply with any term or condition of this Licence.
- 1.6. The Licensee shall provide written notice to the Office of Drinking Water of any change in ownership of the water system within seven days of the transfer of ownership.
- 1.7. The Licensee shall provide written notice to the Office of Drinking Water of any changes in the operational status of the water system, such as a permanent cessation of service, or changing the length of service from year-round to seasonal or the opposite.
- 1.8. The Director of the Office of Drinking Water, Medical Officer of Health or Drinking Water Officer may enter any water system facility as necessary to carry out the provisions of *The Drinking Water Safety Act* and its regulations.
- 1.9. The Licensee shall post a copy of the first page of this Licence at the water treatment facility.
- 1.10. The Licensee shall keep a copy of this Licence in its entirety at a location established by the Drinking Water Officer and ensure all operators are familiar with its terms and conditions.
- 1.11. The Licensee shall apply for renewal of this Licence at least 60 days prior to its expiry.

2. OPERATION - GENERAL

- 2.1. The Licensee shall operate all water system facilities, control systems and equipment as efficiently as possible, inspect them on a regular basis, maintain them in good working order, and ensure that the water system is protected from the risks associated with cross-contamination.
- 2.2. The Licensee shall ensure that all chemicals and components that may come into contact with potable water are certified safe for potable water use through AWWA Standards, ANSI/NSF Standard 60 or 61, Health Canada, or other standards acceptable to the Director.
- 2.3. No alternate water source shall be brought into service without the consent of the Drinking Water Officer and the maintenance of adequate cross connection control between the alternate source and the primary source.
- 2.4. The Licensee shall follow the requirements as specified in Operational Guideline ODW-OG-02 Seasonal Water Systems Start-up Shut-down Procedures for any portion(s) of the distribution system that operate on a seasonal basis.
- 2.5. The Licensee shall have re-assessments of the water system infrastructure and water supply sources completed by a qualified person, who is not an employee of the water system, in accordance with assessment checklist GW by March 1, 2025, and every five years thereafter. The Licensee may instead have the assessment completed by a qualified professional engineer, who is not an employee of the water system, in accordance with terms of reference for engineering assessments.
- 2.6. The Licensee shall, upon request from the Office of Drinking Water, submit or re-submit a compliance plan, in a form satisfactory to the Director, to address any non-compliance issues identified at the time.

3. OPERATION – EMERGENCIES

- 3.1. The Licensee shall ensure that disinfection is undertaken following construction, repair or maintenance activities on the water system, in accordance with applicable AWWA standards, or Manitoba Water Services Board specifications, or any other standards approved by the Director. A copy of all associated test results must be kept available for review by the Office of Drinking Water for a minimum of 24 months.
- 3.2. The Licensee shall ensure that all equipment used for disinfection is maintained in effective working order and keep available for immediate use all spare parts and chemical supplies as may be necessary to ensure continuous disinfection, including a spare disinfection unit, if necessary.
- 3.3. The Licensee shall immediately notify the Office of Drinking Water of any condition that may affect the ability of the water system to produce or deliver safe drinking water including but not limited to treatment upsets or bypass conditions, contamination of the source water or treated water, a disinfection system failure, or a distribution system failure.
- 3.4. If a Medical Officer of Health, the Director of the Office of Drinking Water, or a Drinking Water Officer issues a water advisory on the water system, the Licensee shall provide notice of the advisory to all water users in accordance with the Advisory Notification Plan.

4. WATER QUALITY/TREATMENT STANDARDS

- 4.1. The Licensee shall operate the water system in a manner that achieves the water quality/treatment standards specified in Table 1, as determined through the monitoring requirements specified in Table 2:

Table 1: Water Quality/Treatment Standards

Parameter	Quality Standard
Total coliform	Less than one total coliform bacteria detectable per 100 mL in all treated and distributed water
<i>E. coli</i>	Less than one <i>E. coli</i> bacteria detectable per 100 mL in all treated and distributed water
Chlorine Residual	A free chlorine residual of at least 0.5 mg/L in water entering the distribution system following a minimum contact time of 20 minutes A free chlorine residual of at least 0.1 mg/L at all times at any point in the water distribution system
Arsenic	Less than or equal to 0.01 mg/L
Benzene	Less than or equal to 0.005 mg/L
Ethylbenzene	Less than or equal to 0.14 mg/L
Fluoride	Less than or equal to 1.5 mg/L
Lead	Less than or equal to 0.01 mg/L in the water distribution system
Nitrate	Less than or equal to 45 mg/L measured as nitrate (10 mg/L measured as nitrogen)
Nitrite	Less than or equal to 3 mg/L measured as nitrite (1 mg/L measured as nitrogen)
Trichloroethylene	Less than or equal to 0.005 mg/L
Tetrachloroethylene	Less than or equal to 0.01 mg/L
Toluene	Less than or equal to 0.06 mg/L
Total Xylenes	Less than or equal to 0.09 mg/L
Uranium	Less than or equal to 0.02 mg/L

- 4.2. If a bacteriological standard is not met, the Licensee shall immediately undertake the applicable corrective actions as listed in "Schedule A" of Manitoba Regulation 41/2007, *Drinking Water Quality Standards Regulation*.
- 4.3. If a microbial, chemical, radiological, or physical standard is not met, the Licensee shall immediately undertake the applicable corrective actions specified in "Schedule C" of Manitoba Regulation 41/2007, the *Drinking Water Quality Standards Regulation*.
- 4.4. The Licensee shall maintain in effective working order chlorination and treated water storage equipment and controls designed to achieve a minimum of 20 minutes of chlorine contact time prior to water entering the distribution system.

5. WATER QUALITY MONITORING

5.1. The Licensee shall ensure monitoring is completed as set out in Table 2.

Table 2: Monitoring Schedule

Parameter	Monitoring Requirement
Bacteriological (total coliform and <i>E. coli</i>)	Biweekly sampling program with each set of samples consisting of one raw, one treated, and a minimum of one distribution sample Consecutive sample sets to be separated by at least 12 days
Free Chlorine (treated water)	One sample per day of water entering the distribution system following at least 20 minutes of contact time
Free Chlorine (distribution system)	At the same times and location(s) as bacteriological distribution system sampling
Total Chlorine (treated water)	One sample per day of water entering the distribution system following at least 20 minutes of contact time
Total Chlorine (distribution system)	At the same times and location(s) as bacteriological distribution system sampling
General Chemistry (parameter list provided by Office of Drinking Water)	One raw and one treated water sample once every three years
Total Metals (distribution system)	One sample taken at the same time(s) as General Chemistry sampling at a mid-point in the distribution system
Other Parameters	As per the instructions of the Drinking Water Officer
Lead	As per the instructions of the Drinking Water Officer

5.2. The Licensee shall ensure that an accredited laboratory, as specified in section 35 of Manitoba Regulation 40/2007 the *Drinking Water Safety Regulation*, undertake the following analysis required in Table 2:

- a) bacteriological (total coliform and *E. coli*)
- b) general chemistry
- c) total metals
- d) any other parameter required by the Drinking Water Officer

and that all samples are collected, handled, and submitted in a manner that is satisfactory to the accredited laboratory.

5.3. The Licensee shall ensure that parameters listed in Table 2 but not specified in clause 5.2 are measured utilizing certified water quality monitoring equipment and methods approved by the latest edition of Standard Methods for the Examination of Water and Wastewater published jointly by the American Public Health Association, the American Water Works Association and the Water Environment Federation.

5.4. The Licensee shall ensure that raw water samples are taken on an alternating basis in instances where more than one water supply source is used.

5.5. The Licensee shall ensure that all water quality monitoring equipment is properly maintained and calibrated by a qualified person according to manufacturer recommendations and that records are maintained to that effect.

5.6. The Licensee shall ensure that sampling within the distribution system takes place at varied locations acceptable to the Drinking Water Officer.

6. RECORD-KEEPING AND REPORTING

- 6.1. The Licensee shall maintain in a secure location all construction drawings for the life of the water system components.
- 6.2. The Licensee shall retain in chronological order for a minimum of 24 months all information specified in subsection 34(2) of *Manitoba Regulation 40/2007, Drinking Water Safety Regulation*.
- 6.3. The Licensee shall ensure the information identified in clause 6.2 is available for inspection by any member of the public during normal business hours at the office of the water supplier or at a location convenient to the users of the system.
- 6.4. The Licensee shall record disinfectant residual measurements on the monthly disinfection report or other forms satisfactory to the Director.
- 6.5. The Licensee shall keep one copy of all monthly report forms required in this licence, and forward the original copy to the Drinking Water Officer within seven days after the end of each calendar month.
- 6.6. The Licensee shall record all distribution system measurements specified in *Table 2: Monitoring Schedule* on the chain of custody form (laboratory submission form) which accompanies the bacteriological sample bottles to the laboratory.
- 6.7. The Licensee shall ensure that water metering devices at the water treatment plant or storage reservoir are maintained in good working order and that flow meter readings are recorded on a daily basis and such records are made available for inspection by a Drinking Water Officer.
- 6.8. The Licensee shall submit an annual report to the Director by March 31st of each year on the operation of the water system in the immediately preceding calendar year. The report shall include the information as set out in subsection 32(2) of *Manitoba Regulation 40/2007, Drinking Water Safety Regulation*.
- 6.9. The Licensee shall inform the public, in a form satisfactory to the Director, when an annual report has been prepared and identify how a free copy can be obtained.
- 6.10. The Licensee shall make a copy of each annual report available to the public at no charge on an internet website within two weeks of the issuance of the report, unless otherwise approved by the Director. The annual report shall remain available to the public for at least one year.
- 6.11. The Licensee shall maintain and submit an Advisory Notification Plan to the Drinking Water Officer by May 1st of each year. The plan must include a detailed description of communication tools and methods to be used to notify the public of a drinking water emergency, considering key contacts, fan-outs, critical customers, susceptible or difficult-to-reach sub-groups, and template notices where applicable.

Appendix E

Disinfection Reports



Monthly Water Chlorination Report

Community Grunthal
 Month/Year January 2022

Plant Code 86.0
 Operators Barry Broesky; Rob Friesen

Date	Time	Operator's Initial	Chlorine Residual (mg/L)		Distribution (m ³)		Raw (m ³)	
			Free	Total	Daily	Cumulative	Daily	Cumulative
1	9:45	B.B.	0.79	1.11	539	1,948,046	548	2,412,091
2	9:30	B.B.	0.77	1.09	455	1,948,501	483	2,412,574
3	8:30	B.B.	0.79	1.13	430	1,948,931	417	2,412,991
4	7:45	B.B.	0.76	1.09	477	1,949,408	479	2,413,470
5	6:30	B.B.	0.76	1.14	454	1,949,862	467	2,413,937
6	8:00	B.B.	0.80	1.09	522	1,950,384	534	2,414,471
7	8:00	B.B.	0.73	1.08	497	1,950,881	530	2,415,001
8	8:00	B.B.	0.68	1.01	475	1,951,356	460	2,415,461
9	10:30	B.B.	0.60	0.91	539	1,951,895	541	2,416,002
10	7:45	B.B.	0.60	0.88	402	1,952,297	412	2,416,414
11	7:45	B.B.	0.73	1.08	507	1,952,804	504	2,416,918
12	7:00	B.B.	0.72	1.08	468	1,953,272	485	2,417,403
13	8:00	B.B.	0.77	1.07	515	1,953,787	535	2,417,938
14	7:45	B.B.	0.78	1.14	556	1,954,343	566	2,418,504
15	10:00	R.F.	0.73	1.26	581	1,954,924	571	2,419,075
16	7:00	R.F.	0.95	1.17	429	1,955,353	474	2,419,549
17	8:00	B.B.	0.79	1.13	499	1,955,852	485	2,420,034
18	8:00	B.B.	0.78	1.10	517	1,956,369	523	2,420,557
19	6:45	B.B.	0.80	1.10	502	1,956,871	496	2,421,053
20	8:00	B.B.	0.76	1.11	507	1,957,378	517	2,421,570
21	7:30	B.B.	0.79	1.11	507	1,957,885	544	2,422,114
22	7:45	B.B.	0.79	1.13	472	1,958,357	445	2,422,559
23	9:30	B.B.	0.82	1.10	507	1,958,864	526	2,423,085
24	7:45	B.B.	0.84	1.19	435	1,959,299	450	2,423,535
25	8:00	B.B.	0.80	1.18	480	1,959,779	502	2,424,037
26	6:00	R.F.	0.88	1.19	425	1,960,204	436	2,424,473
27	8:00	R.F.	0.83	1.05	509	1,960,713	523	2,424,996
28	9:30	R.F.	0.85	1.11	592	1,961,305	567	2,425,563
29	10:45	R.F.	0.82	1.15	516	1,961,821	516	2,426,079
30	9:30	R.F.	0.91	1.07	452	1,962,273	454	2,426,533
31	7:00	B.B.	0.75	1.12	404	1,962,677	425	2,426,958
					15,170		15,415	

Operator Comments:



Monthly Water Chlorination Report

Community Grunthal
 Month/Year February 2022

Plant Code 86.0
 Operators Barry Broesky; Rob Friesen

Date	Time	Operator's Initial	Chlorine Residual (mg/L)		Distribution (m ³)		Raw (m ³)	
			Free	Total	Daily	Cumulative	Daily	Cumulative
1	08:00	B.B.	0.72	0.97	510	1,963,187	514	2,427,472
2	05:45	B.B.	0.67	0.97	434	1,963,621	468	2,427,940
3	08:00	B.B.	0.64	0.91	510	1,964,131	485	2,428,425
4	08:00	B.B.	0.63	0.93	470	1,964,601	479	2,428,904
5	07:00	B.B.	0.66	0.92	467	1,965,068	493	2,429,397
6	08:30	B.B.	0.83	1.09	519	1,965,587	513	2,429,910
7	08:00	B.B.	0.85	1.16	491	1,966,078	520	2,430,430
8	08:00	B.B.	0.84	1.22	514	1,966,592	485	2,430,915
9	06:00	B.B.	0.89	1.25	449	1,967,041	488	2,431,403
10	07:45	B.B.	0.96	1.26	527	1,967,568	539	2,431,942
11	08:00	B.B.	0.98	1.31	485	1,968,053	504	2,432,446
12	10:00	R.F.	0.96	1.22	535	1,968,588	505	2,432,951
13	07:00	R.F.	0.93	1.20	415	1,969,003	464	2,433,415
14	07:00	B.B.	0.93	1.25	498	1,969,501	507	2,433,922
15	08:00	B.B.	0.89	1.09	556	1,970,057	533	2,434,455
16	07:00	B.B.	0.90	1.20	498	1,970,555	521	2,434,976
17	08:00	B.B.	0.80	1.10	524	1,971,079	522	2,435,498
18	08:30	B.B.	0.77	1.09	511	1,971,590	545	2,436,043
19	07:15	B.B.	0.71	1.02	442	1,972,032	450	2,436,493
20	09:00	B.B.	0.68	0.94	501	1,972,533	473	2,436,966
21	08:00	B.B.	1.41	1.83	441	1,972,974	450	2,437,416
22	07:00	B.B.	>2.00	>2.00	494	1,973,468	515	2,437,931
23	05:45	B.B.	1.54	1.98	479	1,973,947	518	2,438,449
24	08:00	B.B.	1.02	1.39	521	1,974,468	490	2,438,939
25	08:15	B.B.	>2.00	>2.00	483	1,974,951	484	2,439,423
26	09:45	R.F.	1.45	1.69	520	1,975,471	569	2,439,992
27	07:45	R.F.	0.97	1.14	408	1,975,879	405	2,440,397
28	07:00	B.B.	0.78	1.06	461	1,976,340	441	2,440,838
29								
30								
31								
					13,663			13,880

Operator Comments:



Monthly Water Chlorination Report

Community Grunthal
 Month/Year March 2022

Plant Code 86.0
 Operators Barry Broesky; Rob Friesen

Date	Time	Operator's Initial	Chlorine Residual (mg/L)		Distribution (m ³)		Raw (m ³)	
			Free	Total	Daily	Cumulative	Daily	Cumulative
1	8:30	B.B.	0.72	1.02	554	1,976,894	566	2,441,404
2	7:00	B.B.	0.74	1.03	480	1,977,374	502	2,441,906
3	8:00	B.B.	0.78	1.02	511	1,977,885	505	2,442,411
4	8:00	B.B.	0.74	0.99	514	1,978,399	535	2,442,946
5	7:30	B.B.	0.72	0.98	487	1,978,886	525	2,443,471
6	9:00	B.B.	0.69	0.95	537	1,979,423	536	2,444,007
7	8:00	B.B.	0.66	0.99	489	1,979,912	462	2,444,469
8	8:15	B.B.	1.71	>2.00	529	1,980,441	545	2,445,014
9	5:45	B.B.	1.30	1.69	438	1,980,879	460	2,445,474
10	8:00	B.B.	1.00	1.36	541	1,981,420	536	2,446,010
11	7:00	B.B.	0.56	0.70	473	1,981,893	507	2,446,517
12	10:15	R.F.	0.93	1.23	571	1,982,464	553	2,447,070
13	7:30	R.F.	1.24	1.56	408	1,982,872	439	2,447,509
14	8:00	B.B.	1.20	1.62	490	1,983,362	493	2,448,002
15	9:45	B.B.	1.17	1.52	582	1,983,944	582	2,448,584
16	5:45	B.B.	0.94	1.30	407	1,984,351	423	2,449,007
17	8:00	B.B.	0.64	0.88	562	1,984,913	590	2,449,597
18	8:45	B.B.	0.65	0.96	542	1,985,455	542	2,450,139
19	8:15	B.B.	1.00	1.34	484	1,985,939	483	2,450,622
20	11:15	B.B.	0.99	1.30	555	1,986,494	589	2,451,211
21	8:15	B.B.	0.72	1.01	432	1,986,926	419	2,451,630
22	8:00	B.B.	0.69	0.99	535	1,987,461	534	2,452,164
23	5:45	B.B.	0.76	1.13	503	1,987,964	542	2,452,706
24	8:00	B.B.	1.37	1.85	632	1,988,596	640	2,453,346
25	8:30	B.B.	1.46	1.93	575	1,989,171	560	2,453,906
26	10:00	R.F.	1.43	1.82	572	1,989,743	579	2,454,485
27	6:30	R.F.	1.32	1.70	437	1,990,180	453	2,454,938
28	7:15	B.B.	1.16	1.48	530	1,990,710	555	2,455,493
29	7:45	B.B.	0.96	1.34	583	1,991,293	566	2,456,059
30	5:45	B.B.	0.99	1.30	510	1,991,803	566	2,456,625
31	8:00	B.B.	0.93	1.30	631	1,992,434	595	2,457,220
					16,094		16,382	

Operator Comments:



Monthly Water Chlorination Report

Community Grunthal
 Month/Year April 2022

Plant Code 86.0
 Operators Barry Broesky; Rob Friesen

Date	Time	Operator's Initial	Chlorine Residual (mg/L)		Distribution (m ³)		Raw (m ³)	
			Free	Total	Daily	Cumulative	Daily	Cumulative
1	8:15	B.B.	0.86	1.17	582	1,993,016	617	2,457,837
2	9:30	B.B.	0.80	1.13	552	1,993,568	563	2,458,400
3	11:00	B.B.	0.72	1.07	569	1,994,137	585	2,458,985
4	7:45	B.B.	0.72	1.02	442	1,994,579	452	2,459,437
5	8:00	B.B.	0.57	0.80	606	1,995,185	620	2,460,057
6	8:00	B.B.	0.65	0.90	565	1,995,750	545	2,460,602
7	7:45	B.B.	0.75	1.04	533	1,996,283	546	2,461,148
8	7:00	B.B.	0.84	1.12	520	1,996,803	530	2,461,678
9	10:00	R.F.	0.90	1.21	624	1,997,427	626	2,462,304
10	7:15	R.F.	1.00	1.36	458	1,997,885	474	2,462,778
11	8:00	B.B.	1.06	1.45	570	1,998,455	572	2,463,350
12	7:00	B.B.	1.12	1.46	564	1,999,019	581	2,463,931
13	5:45	B.B.	1.07	1.51	539	1,999,558	574	2,464,505
14	7:00	B.B.	1.05	1.41	578	2,000,136	577	2,465,082
15	8:00	B.B.	0.97	1.39	560	2,000,696	556	2,465,638
16	9:30	B.B.	1.00	1.32	550	2,001,246	570	2,466,208
17	11:15	B.B.	1.04	1.33	579	2,001,825	578	2,466,786
18	5:45	B.B.	0.97	1.30	375	2,002,200	400	2,467,186
19	5:45	B.B.	0.96	1.31	574	2,002,774	599	2,467,785
20	5:45	B.B.	0.96	1.28	541	2,003,315	537	2,468,322
21	5:45	B.B.	0.93	1.26	550	2,003,865	573	2,468,895
22	5:45	B.B.	0.94	1.21	528	2,004,393	509	2,469,404
23	6:30	R.F.	0.51	0.80	554	2,004,947	564	2,469,968
24	11:00	S.D.	0.53	0.79	651	2,005,598	642	2,470,610
25	6:00	B.B.	0.56	0.85	416	2,006,014	447	2,471,057
26	8:00	B.B.	0.53	0.81	597	2,006,611	585	2,471,642
27	5:45	B.B.	0.56	0.81	486	2,007,097	518	2,472,160
28	8:00	B.B.	0.95	1.26	576	2,007,673	562	2,472,722
29	8:00	B.B.	0.95	1.29	554	2,008,227	551	2,473,273
30	6:30	B.B.	0.86	1.26	503	2,008,730	557	2,473,830
31								
					16,296		16,610	

Operator Comments:



Monthly Water Chlorination Report

Community Grunthal
 Month/Year May 2022

Plant Code 86.0
 Operators Barry Broesky; Rob Friesen

Date	Time	Operator's	Chlorine Residual (mg/L)		Distribution (m ³)		Raw (m ³)		
			Free	Total	Daily	Cumulative	Daily	Cumulative	
1	10:00	B.B.	0.90	1.20	626	2,009,356	591	2,474,421	
2	7:00	B.B.	0.84	1.12	456	2,009,812	477	2,474,898	
3	7:30	B.B.	0.65	0.92	603	2,010,415	621	2,475,519	
4	6:30	B.B.	0.80	1.07	594	2,011,009	579	2,476,098	
5	7:45	B.B.	0.81	1.14	638	2,011,647	638	2,476,736	
6	7:30	B.B.	0.84	1.16	640	2,012,287	601	2,477,337	
7	7:00	R.F.	0.83	1.08	613	2,012,900	586	2,477,923	
8	5:30	R.F.	0.61	0.89	609	2,013,509	764	2,478,687	
9	8:30	B.B.	0.57	0.86	616	2,014,125	581	2,479,268	
10	8:00	B.B.	0.54	0.81	555	2,014,680	584	2,479,852	
11	6:00	B.B.	0.56	0.85	505	2,015,185	502	2,480,354	
12	6:00	B.B.	0.69	0.94	573	2,015,758	579	2,480,933	
13	8:00	B.B.	0.70	1.03	657	2,016,415	648	2,481,581	
14	8:00	B.B.	0.84	1.11	570	2,016,985	570	2,482,151	
15	10:30	B.B.	0.79	1.14	656	2,017,641	654	2,482,805	
16	8:00	B.B.	0.74	1.03	488	2,018,129	481	2,483,286	
17	8:00	B.B.	0.56	0.86	551	2,018,680	586	2,483,872	
18	7:30	B.B.	0.55	0.82	560	2,019,240	581	2,484,453	
19	8:00	B.B.	0.56	0.84	802	2,020,042	839	2,485,292	
20	7:00	B.B.	0.53	0.85	804	2,020,846	702	2,485,994	
21	10:00	R.F.	0.86	1.19	642	2,021,488	661	2,486,655	
22	6:45	R.F.	1.10	1.34	490	2,021,978	524	2,487,179	
23	9:45	R.F.	1.09	1.40	626	2,022,604	640	2,487,819	
24	8:00	B.B.	0.99	1.28	557	2,023,161	524	2,488,343	
25	8:00	B.B.	0.91	1.20	628	2,023,789	598	2,488,941	
26	8:30	B.B.	0.67	0.97	613	2,024,402	602	2,489,543	
27	7:00	B.B.	0.72	1.13	570	2,024,972	565	2,490,108	
28	6:15	B.B.	0.94	1.24	565	2,025,537	568	2,490,676	
29	10:00	B.B.	0.87	1.25	693	2,026,230	684	2,491,360	
30	8:00	B.B.	0.85	1.18	532	2,026,762	539	2,491,899	
31	7:45	B.B.	0.80	1.17	585	2,027,347	586	2,492,485	
					18,617		18,655		

Operator Comments:



Monthly Water Chlorination Report

Community Grunthal
 Month/Year June 2022

Plant Code 86.0
 Operators Barry Broesky; Rob Friesen

Date	Time	Operator's Initial	Chlorine Residual (mg/L)		Distribution (m ³)		Raw (m ³)	
			Free	Total	Daily	Cumulative	Daily	Cumulative
1	06:00	B.B.	0.79	1.09	547	2,027,894	552	2,493,037
2	08:15	B.B.	0.93	1.28	609	2,028,503	687	2,493,724
3	08:15	B.B.	0.96	1.35	577	2,029,080	593	2,494,317
4	10:00	R.F.	0.71	0.88	636	2,029,716	640	2,494,957
5	07:00	R.F.	0.55	0.72	546	2,030,262	561	2,495,518
6	08:30	B.B.	0.53	0.69	675	2,030,937	673	2,496,191
7	08:45	B.B.	0.54	0.74	681	2,031,618	671	2,496,862
8	05:45	B.B.	0.55	0.78	609	2,032,227	638	2,497,500
9	08:45	B.B.	0.51	0.76	778	2,033,005	790	2,498,290
10	07:30	B.B.	0.66	1.08	652	2,033,657	649	2,498,939
11	07:00	B.B.	1.00	1.33	672	2,034,329	707	2,499,646
12	09:00	B.B.	1.02	1.40	720	2,035,049	704	2,500,350
13	08:00	B.B.	0.99	1.30	594	2,035,643	623	2,500,973
14	08:15	B.B.	0.94	1.34	692	2,036,335	691	2,501,664
15	06:45	B.B.	0.91	1.26	585	2,036,920	582	2,502,246
16	07:30	R.F.	0.91	1.29	664	2,037,584	697	2,502,943
17	10:00	R.F.	0.94	1.31	746	2,038,330	733	2,503,676
18	10:15	R.F.	0.92	1.28	739	2,039,069	777	2,504,453
19	07:00	R.F.	0.83	1.15	553	2,039,622	557	2,505,010
20	08:15	B.B.	0.82	1.12	771	2,040,393	787	2,505,797
21	08:15	B.B.	0.85	1.09	711	2,041,104	706	2,506,503
22	05:45	B.B.	0.74	0.88	606	2,041,710	618	2,507,121
23	08:00	B.B.	0.61	0.81	767	2,042,477	773	2,507,894
24	07:00	B.B.	0.54	0.77	755	2,043,232	764	2,508,658
25	08:30	B.B.	0.57	0.98	660	2,043,892	652	2,509,310
26	09:45	B.B.	0.63	1.04	681	2,044,573	707	2,510,017
27	07:00	B.B.	0.56	0.84	554	2,045,127	547	2,510,564
28	08:30	B.B.	0.66	1.00	696	2,045,823	707	2,511,271
29	05:45	B.B.	0.72	1.02	608	2,046,431	622	2,511,893
30	07:00	B.B.	0.67	0.98	681	2,047,112	709	2,512,602
31								
					19,765			20,117

Operator Comments:



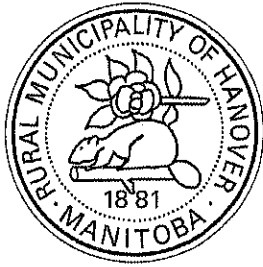
Monthly Water Chlorination Report

Community Grunthal
 Month/Year July 2022

Plant Code 86.0
 Operators Barry Broesky; Rob Friesen

Date	Time	Operator's Initial	Chlorine Residual (mg/L)		Distribution (m ³)		Raw (m ³)	
			Free	Total	Daily	Cumulative	Daily	Cumulative
1	10:00	R.F.	0.77	1.13	752	2,047,864	765	2,513,367
2	10:00	R.F.	0.53	0.75	675	2,048,539	745	2,514,112
3	7:00	R.F.	0.69	0.97	599	2,049,138	529	2,514,641
4	8:15	B.B.	0.74	1.01	754	2,049,892	777	2,515,418
5	8:00	B.B.	0.72	1.07	628	2,050,520	634	2,516,052
6	5:45	B.B.	0.76	1.02	625	2,051,145	638	2,516,690
7	8:30	B.B.	0.69	1.04	786	2,051,931	799	2,517,489
8	8:30	B.B.	0.76	1.01	747	2,052,678	750	2,518,239
9	8:15	B.B.	0.62	1.02	656	2,053,334	650	2,518,889
10	10:15	B.B.	0.68	0.96	735	2,054,069	764	2,519,653
11	8:30	B.B.	0.68	1.02	614	2,054,683	610	2,520,263
12	8:00	B.B.	0.72	0.92	616	2,055,299	641	2,520,904
13	5:30	B.B.	0.75	0.96	588	2,055,887	573	2,521,477
14	8:00	B.B.	0.67	1.01	699	2,056,586	726	2,522,203
15	7:00	B.B.	0.70	0.94	599	2,057,185	625	2,522,828
16	10:00	R.F.	0.68	0.95	818	2,058,003	815	2,523,643
17	7:00	R.F.	0.64	0.86	529	2,058,532	544	2,524,187
18	8:30	B.B.	0.65	0.93	747	2,059,279	749	2,524,936
19	8:45	B.B.	0.62	0.78	701	2,059,980	700	2,525,636
20	7:15	B.B.	0.62	0.89	536	2,060,516	487	2,526,123
21	8:15	B.B.	0.57	0.81	825	2,061,341	907	2,527,030
22	7:15	B.B.	0.58	0.83	687	2,062,028	699	2,527,729
23	9:30	B.B.	0.56	0.84	660	2,062,688	594	2,528,323
24	10:45	B.B.	0.61	0.89	659	2,063,347	26	2,528,349
25	8:00	B.B.	0.58	0.84	532	2,063,879	1,246	2,529,595
26	7:45	B.B.	0.56	0.83	652	2,064,531	682	2,530,277
27	9:00	B.B.	0.90	1.22	614	2,065,145	1,047	2,531,324
28	8:00	R.F.	0.66	0.94	549	2,065,694	554	2,531,878
29	8:30	R.F.	0.58	0.80	648	2,066,342	656	2,532,534
30	10:15	R.F.	0.60	0.88	646	2,066,988	669	2,533,203
31	6:30	R.F.	0.64	0.88	493	2,067,481	487	2,533,690
					20,369		21,088	

Operator Comments:



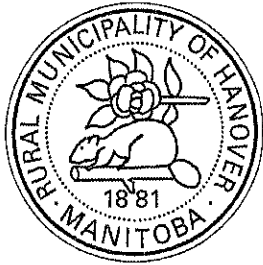
Monthly Water Chlorination Report

Community Grunthal
 Month/Year August 2022

Plant Code 86.0
 Operators Barry Broesky; Rob Friesen

Date	Time	Operator's Initial	Chlorine Residual (mg/L)		Distribution (m ³)		Raw (m ³)	
			Free	Total	Daily	Cumulative	Daily	Cumulative
1	10:30	R.F.	0.67	0.98	650	2,068,131	664	2,534,354
2	8:30	B.B.	0.65	0.97	553	2,068,684	584	2,534,938
3	7:00	B.B.	0.51	0.76	596	2,069,280	579	2,535,517
4	8:15	B.B.	0.53	0.71	665	2,069,945	707	2,536,224
5	7:00	B.B.	1.00	1.40	644	2,070,589	1,049	2,537,273
6	9:00	B.B.	0.76	1.05	763	2,071,352	768	2,538,041
7	12:00	B.B.	0.76	1.12	770	2,072,122	784	2,538,825
8	7:00	R.F.	0.82	1.15	544	2,072,666	555	2,539,380
9	8:00	R.F.	0.66	0.94	854	2,073,520	351	2,539,731
10	5:30	R.F.	1.26	1.62	609	2,074,129	1,023	2,540,754
11	8:00	R.F.	0.78	1.12	876	2,075,005	1,007	2,541,761
12	7:15	R.F.	0.83	1.24	817	2,075,822	844	2,542,605
13	10:00	R.F.	1.24	1.46	952	2,076,774	973	2,543,578
14	7:30	R.F.	0.54	0.76	662	2,077,436	670	2,544,248
15	8:30	R.F.	0.92	1.29	790	2,078,226	778	2,545,026
16	7:30	R.F.	0.99	1.35	765	2,078,991	785	2,545,811
17	6:00	R.F.	0.91	1.25	695	2,079,686	703	2,546,514
18	7:30	R.F.	0.85	1.23	764	2,080,450	794	2,547,308
19	7:45	R.F.	0.82	1.12	733	2,081,183	721	2,548,029
20	9:30	B.B.	0.74	1.05	825	2,082,008	855	2,548,884
21	10:45	B.B.	0.60	0.94	766	2,082,774	754	2,549,638
22	8:00	B.B.	0.54	0.89	599	2,083,373	620	2,550,258
23	9:00	B.B.	0.78	1.13	787	2,084,160	817	2,551,075
24	7:00	B.B.	0.77	1.14	670	2,084,830	656	2,551,731
25	8:45	B.B.	0.74	1.03	770	2,085,600	789	2,552,520
26	8:00	B.B.	0.70	1.05	682	2,086,282	706	2,553,226
27	8:15	R.F.	0.66	0.92	727	2,087,009	763	2,553,989
28	7:30	R.F.	0.52	0.84	648	2,087,657	631	2,554,620
29	9:30	B.B.	0.53	0.84	796	2,088,453	802	2,555,422
30	8:00	B.B.	0.70	1.05	670	2,089,123	1,142	2,556,564
31	7:30	B.B.	0.74	1.05	703	2,089,826	782	2,557,346
					22,345		23,656	

Operator Comments:



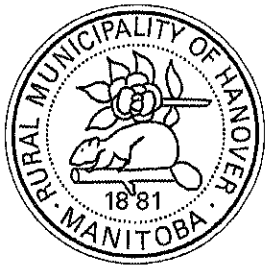
Monthly Water Chlorination Report

Community Grunthal
 Month/Year September 2022

Plant Code 86.0
 Operators Barry Broesky; Rob Friesen

Date	Time	Operator's Initial	Chlorine Residual (mg/L)		Distribution (m ³)		Raw (m ³)	
			Free	Total	Daily	Cumulative	Daily	Cumulative
1	8:00	B.B.	1.08	1.44	740	2,090,566	787	2,558,133
2	8:15	B.B.	1.14	1.46	719	2,091,285	517	2,558,650
3	7:30	B.B.	1.14	1.58	703	2,091,988	721	2,559,371
4	9:30	B.B.	1.15	1.47	728	2,092,716	733	2,560,104
5	7:30	B.B.	1.06	1.40	590	2,093,306	591	2,560,695
6	6:00	R.F.	0.84	1.27	709	2,094,015	710	2,561,405
7	6:00	R.F.	0.96	1.34	722	2,094,737	749	2,562,154
8	8:00	R.F.	1.04	1.45	815	2,095,552	824	2,562,978
9	6:30	R.F.	1.09	1.40	661	2,096,213	656	2,563,634
10	6:45	R.F.	1.00	1.39	696	2,096,909	727	2,564,361
11	10:00	R.F.	0.87	1.20	749	2,097,658	764	2,565,125
12	7:15	B.B.	0.87	1.15	599	2,098,257	591	2,565,716
13	7:45	B.B.	0.86	1.24	776	2,099,033	795	2,566,511
14	7:00	B.B.	0.96	1.34	666	2,099,699	660	2,567,171
15	7:30	B.B.	0.95	1.34	685	2,100,384	699	2,567,870
16	6:45	B.B.	0.98	1.29	655	2,101,039	662	2,568,532
17	7:15	B.B.	0.95	1.30	677	2,101,716	691	2,569,223
18	8:30	B.B.	0.92	1.29	676	2,102,392	700	2,569,923
19	8:30	B.B.	0.84	1.17	654	2,103,046	664	2,570,587
20	8:00	B.B.	0.53	0.84	652	2,103,698	665	2,571,252
21	7:00	B.B.	0.75	1.06	641	2,104,339	632	2,571,884
22	8:00	B.B.	0.95	1.28	904	2,105,243	911	2,572,795
23	7:45	B.B.	0.99	1.36	784	2,106,027	805	2,573,600
24	10:15	R.F.	1.01	1.31	723	2,106,750	736	2,574,336
25	7:00	R.F.	0.95	1.28	545	2,107,295	572	2,574,908
26	7:30	B.B.	0.96	1.27	699	2,107,994	705	2,575,613
27	8:00	B.B.	0.91	1.29	711	2,108,705	703	2,576,316
28	7:15	B.B.	0.82	1.09	663	2,109,368	672	2,576,988
29	8:00	B.B.	0.77	1.11	716	2,110,084	752	2,577,740
30	7:00	B.B.	0.73	1.03	635	2,110,719	626	2,578,366
31					-		-	
					20,893		21,020	

Operator Comments:



Monthly Water Chlorination Report

Community Grunthal
 Month/Year October 2022

Plant Code 86.0
 Operators Barry Broesky; Rob Friesen

Date	Time	Operator's Initial	Chlorine Residual (mg/L)		Distribution (m ³)		Raw (m ³)	
			Free	Total	Daily	Cumulative	Daily	Cumulative
1	7:30	B.B.	0.72	1.00	701	2,111,420	703	2,579,069
2	10:15	B.B.	0.69	0.97	849	2,112,269	887	2,579,956
3	7:45	B.B.	0.70	0.97	662	2,112,931	652	2,580,608
4	7:30	B.B.	0.72	0.99	732	2,113,663	754	2,581,362
5	7:30	B.B.	0.78	1.04	697	2,114,360	717	2,582,079
6	8:15	B.B.	0.68	1.00	730	2,115,090	714	2,582,793
7	8:00	B.B.	0.65	0.90	686	2,115,776	710	2,583,503
8	9:45	R.F.	0.69	0.94	811	2,116,587	829	2,584,332
9	6:00	R.F.	0.70	0.90	675	2,117,262	578	2,584,910
10	7:00	R.F.	0.60	1.04	602	2,117,864	709	2,585,619
11	8:00	B.B.	0.86	1.16	817	2,118,681	840	2,586,459
12	7:00	B.B.	0.88	1.23	721	2,119,402	739	2,587,198
13	7:30	B.B.	0.87	1.23	747	2,120,149	745	2,587,943
14	7:45	B.B.	0.85	1.24	702	2,120,851	702	2,588,645
15	7:30	B.B.	0.86	1.15	655	2,121,506	685	2,589,330
16	10:00	B.B.	0.82	1.22	785	2,122,291	794	2,590,124
17	8:00	B.B.	0.85	1.14	631	2,122,922	638	2,590,762
18	5:45	B.B.	0.76	1.13	677	2,123,599	678	2,591,440
19	6:00	B.B.	0.74	1.08	821	2,124,420	834	2,592,274
20	7:45	R.F.	0.89	1.18	899	2,125,319	902	2,593,176
21	7:45	R.F.	0.93	1.19	903	2,126,222	940	2,594,116
22	9:45	R.F.	0.84	1.13	844	2,127,066	841	2,594,957
23	6:30	R.F.	0.95	1.20	627	2,127,693	643	2,595,600
24	9:00	B.B.	0.88	1.17	803	2,128,496	829	2,596,429
25	8:15	B.B.	0.80	1.08	723	2,129,219	714	2,597,143
26	5:45	B.B.	0.80	1.19	667	2,129,886	706	2,597,849
27	5:45	B.B.	0.83	1.12	763	2,130,649	750	2,598,599
28	6:45	B.B.	0.80	1.17	815	2,131,464	828	2,599,427
29	8:00	B.B.	0.83	1.15	776	2,132,240	800	2,600,227
30	10:00	B.B.	0.75	1.10	810	2,133,050	841	2,601,068
31	8:30	B.B.	0.8	1.20	662	2,133,712	646	2,601,714
					22,993		23,348	

Operator Comments:



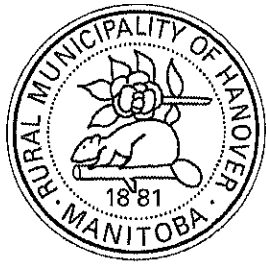
Monthly Water Chlorination Report

Community Grunthal
 Month/Year November 2022

Plant Code 86.0
 Operators Barry Broesky; Rob Friesen

Date	Time	Operator's Initial	Chlorine Residual (mg/L)		Distribution (m3)		Raw (m ³)	
			Free	Total	Daily	Cumulative	Daily	Cumulative
1	8:15	B.B.	0.77	1.08	720	2,134,432	731	2,602,445
2	7:15	B.B.	0.75	1.13	712	2,135,144	729	2,603,174
3	8:00	B.B.	0.82	1.05	776	2,135,920	803	2,603,977
4	7:00	B.B.	0.87	1.17	728	2,136,648	731	2,604,708
5	10:30	R.F.	1.04	1.42	863	2,137,511	858	2,605,566
6	6:45	R.F.	1.00	1.36	636	2,138,147	651	2,606,217
7	7:45	B.B.	0.99	1.28	768	2,138,915	790	2,607,007
8	8:15	B.B.	1.02	1.43	753	2,139,668	765	2,607,772
9	5:30	B.B.	1.02	1.33	663	2,140,331	674	2,608,446
10	7:00	B.B.	0.91	1.32	788	2,141,119	811	2,609,257
11	7:30	B.B.	0.94	1.20	737	2,141,856	729	2,609,986
12	8:00	B.B.	0.78	1.10	718	2,142,574	722	2,610,708
13	10:00	B.B.	0.77	1.08	796	2,143,370	832	2,611,540
14	8:00	R.F.	0.78	1.00	683	2,144,053	670	2,612,210
15	8:00	B.B.	0.79	1.13	759	2,144,812	803	2,613,013
16	5:45	B.B.	0.77	1.11	740	2,145,552	728	2,613,741
17	8:00	B.B.	0.82	1.12	745	2,146,297	781	2,614,522
18	8:30	B.B.	1.04	1.50	766	2,147,063	756	2,615,278
19	10:30	R.F.	1.13	1.52	814	2,147,877	843	2,616,121
20	6:45	R.F.	1.04	1.44	626	2,148,503	648	2,616,769
21	8:00	B.B.	1.06	1.39	826	2,149,329	843	2,617,612
22	8:00	B.B.	0.93	1.34	762	2,150,091	774	2,618,386
23	5:45	B.B.	0.87	1.17	691	2,150,782	672	2,619,058
24	8:00	B.B.	0.80	1.13	805	2,151,587	837	2,619,895
25	8:45	B.B.	0.76	1.10	797	2,152,384	801	2,620,696
26	8:00	B.B.	1.00	1.44	730	2,153,114	741	2,621,437
27	10:30	B.B.	0.91	1.24	839	2,153,953	859	2,622,296
28	7:00	B.B.	0.83	1.13	635	2,154,588	655	2,622,951
29	8:00	B.B.	0.81	1.15	809	2,155,397	836	2,623,787
30	6:30	B.B.	0.77	1.09	737	2,156,134	756	2,624,543
31								
					22,422			22,829

Operator Comments:



Monthly Water Chlorination Report

Community Grunthal
 Month/Year December 2022

Plant Code 86.0
 Operators Barry Broesky; Rob Friesen

Date	Time	Operator's Initial	Chlorine Residual (mg/L)		Distribution (m3)		Raw (m ³)	
			Free	Total	Daily	Cumulative	Daily	Cumulative
1	8:00	B.B.	0.79	1.03	845	2,156,979	857	2,625,400
2	8:00	B.B.	0.71	1.08	823	2,157,802	838	2,626,238
3	10:30	R.F.	0.75	1.03	882	2,158,684	887	2,627,125
4	7:00	R.F.	0.71	1.08	660	2,159,344	678	2,627,803
5	5:30	B.B.	0.77	1.08	722	2,160,066	790	2,628,593
6	8:30	B.B.	0.68	1.04	914	2,160,980	877	2,629,470
7	6:00	B.B.	0.75	1.00	682	2,161,662	671	2,630,141
8	8:00	B.B.	0.69	1.06	851	2,162,513	897	2,631,038
9	8:15	B.B.	0.74	1.01	787	2,163,300	775	2,631,813
10	7:30	B.B.	0.78	1.04	742	2,164,042	773	2,632,586
11	10:30	B.B.	0.74	1.06	885	2,164,927	883	2,633,469
12	8:30	B.B.	0.70	1.04	710	2,165,637	753	2,634,222
13	7:45	B.B.	0.72	0.99	784	2,166,421	778	2,635,000
14	6:00	B.B.	0.72	1.08	721	2,167,142	749	2,635,749
15	7:30	B.B.	0.71	0.99	862	2,168,004	857	2,636,606
16	7:15	B.B.	0.69	1.04	791	2,168,795	808	2,637,414
17	9:30	R.F.	0.75	1.04	872	2,169,667	885	2,638,299
18	7:00	R.F.	0.75	1.12	693	2,170,360	726	2,639,025
19	8:00	B.B.	0.71	1.00	835	2,171,195	831	2,639,856
20	8:00	B.B.	0.69	1.06	805	2,172,000	822	2,640,678
21	6:00	B.B.	0.76	1.02	740	2,172,740	770	2,641,448
22	8:30	B.B.	0.71	1.07	910	2,173,650	898	2,642,346
23	8:00	B.B.	0.65	0.99	792	2,174,442	813	2,643,159
24	7:30	B.B.	0.63	1.00	799	2,175,241	808	2,643,967
25	7:00	B.B.	0.74	1.10	791	2,176,032	810	2,644,777
26	7:45	B.B.	0.77	1.08	788	2,176,820	801	2,645,578
27	10:00	B.B.	1.00	1.40	874	2,177,694	887	2,646,465
28	8:15	B.B.	1.15	1.62	760	2,178,454	765	2,647,230
29	7:45	B.B.	0.74	1.10	786	2,179,240	795	2,648,025
30	7:15	B.B.	0.81	1.16	786	2,180,026	799	2,648,824
31	10:30	R.F.	0.72	1.01	924	2,180,950	939	2,649,763
					24,816		25,220	

Operator Comments:

Appendix F

Letter of Direction



Environment, Climate and Parks

Office of Drinking Water

Unit B – 284 Reimer Avenue, Steinbach, Manitoba, Canada R5G 0R5

T 204-371-5065 F 204-326-2472

<http://www.manitoba.ca/drinkingwater>

Sent via electronic mail: no hard copy to follow

November 25, 2022

Code 86.00

Rural Municipality of Hanover
28 Westland Drive
Mitchell MB R5G 2N9
rob.driedger@hanovermb.ca

Grunthal Public Water System Letter of Direction

Dear Rob Drieger:

The purpose of this letter is to address a non-compliance incident associated with the Grunthal public water system. The system's Operating Licence (PWS-09-325-02) requires the following:

Operation - Emergencies

Clause 3.3: The Licensee shall immediately notify the Office of Drinking Water of any condition that may affect the ability of the water system to produce or deliver safe drinking water including but not limited to treatment upsets or bypass conditions, contamination of the source water or treated water, a disinfection system failure, or a distribution system failure.

The Grunthal public water system failed to immediately report the distribution pump shutdown and ability for the water system to produce and deliver safe water on August 9, 2022.

As a result of the failure to meet the above requirement of the Operating Licence, the Office of Drinking Water is directing the Grunthal public water system to:

- (1) Review Emergency Reporting guideline ODW-OG-04 ;
- (2) Immediately notify the Office of Drinking Water of any condition that may affect the ability of the water system to produce or deliver safe water, including a distribution pump shutdown. Immediate notification requires live voice conversation; 24-Hr Emergency Line: 204-944-4888 or 1-855-944-4888.
- (3) Update the Advisory Notification Plan to include Emergency Reporting procedure

Be aware that penalties for failure to meet the above requirements carry a set fine amount of \$2,542.00 for each offence. Continued failure to meet the requirements identified in the system's operating licence will result in enforcement action being initiated against the Grunthal public water system.

If you have any questions, please do not hesitate to contact me at 204-371-5065.

Sincerely,

Sarah Belisle
Senior Regional Drinking Water Officer

cc Colin Nakata, Compliance and Enforcement Specialist
Marc Balcaen, Supervisor Drinking Water Officer
Barry Broesky, Operator
Rob Friesen, Operator

Attachment Emergency Reporting Guideline