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Project
Leaders

Annual Report 2020/2021

Submission: October 4, 2021



Hamlet of Fort Providence

Water Licence MV2016L3-0001

Municipal Water Licence Annual Report

Village of Fort Providence

Licence #: MV2016L3-0001

Reporting year: 2020-2021

Expires: July 6, 2026

*Part B, item 4: The Licensee shall file an Annual Water Licence Report with the Board not later than **June 30th** of the year following the calendar year reported (April 1 – March 31), which shall contain the following information (as set out in Schedule 1):*

a) Water Use

Licensed Water Volume Withdrawal: not to exceed 60,000 m³ annually

Approximate total yearly volume of water used: 27,619.20 m³

Table 1: Monthly and annual water quantities obtained from all sources

Month	Volume from main source: Raw Water intake at Water Supply Facilities (m ³)	Volume from any other source (m ³)	TOTAL Volume (m ³)
April	2298.5	-	2298.5
May	2236.7	-	2236.7
June	2481.7	-	2481.7
July	2554.8	-	2554.8
August	2398.3	-	2398.3
September	2255.1	-	2255.1
October	2196.1	-	2196.1
November	2586.0	-	2586.0
December	2623.9	-	2623.9
January	2252.4	-	2252.4
February	2238.7	-	2238.7
March	1497.0	-	1497.0
TOTALS	27,619.20	-	27,619.20
% Increase / decrease from previous year	-1.72% 2019-2020: 28,101.80 m ³	-	-1.72% 2019-2020: 28,101.80 m ³

Reasons for increase/decrease in water withdrawn:

Between the 2019-2020 and 2020-2021 fiscal years there was a net decrease in water consumption of 1.72%. No significant events or changes within the Hamlet's population or operations occurred within the 2020-2021 fiscal year that could have affected the water supply to residents and businesses. The 1.72% decrease can be considered to a part of the nominal fluctuations within annual water usage. The reporting period for the 2020-2021 fiscal year aligns with the beginning of the COVID-19 Pandemic within Canada (March 2020).

Reasons for exceeding licensed withdrawal volumes (if applicable):

Not Applicable

Name and location of other water source used (if any), and reason for its use:

Not Applicable

General information (e.g. information regarding any modifications to the water withdrawal procedure or facilities) should be included here. If necessary, please attach any relevant reports as an appendix to this report.

A small modification to the existing water treatment plant took place in 2020/2021. Due to its aging condition the fuel/day tank for the water treatment plant was replaced, including the associated fuel lines. This small upgrade completed improved the operations of the existing water treatment plant and was done in accordance with the Water Licence and communication with the Inspector. Photos of the new tank can be seen within Appendix D. A memo summary of the work completed was requested from the contractor, to date the Hamlet has not received any memo.

Stantec (consultant) continues working with the Hamlet and the GNWT (MACA) to develop designs for WTP upgrades, intake upgrades/repairs, and wet well repairs.

b) Waste Disposal

i) Solid Waste

Approximate total yearly volume of solid waste deposited: 3865.35 m³

*GNWT – MACA has provided a standard formula for estimating the amount of solid waste deposited into a Solid Waste Facility in the absence of a metered Garbage Truck. The following can be used: **Volume per person per day X number of days X population***

*e.g. **0.015 m³** X 30 days X 860 people = 387 m³ of domestic trash
deposited into Solid Waste Facility in a 30 day month*

Table 2: Monthly and annual quantities of solid waste deposited at the Fort Providence Solid Waste Disposal Facilities

Month	Volume of solid waste deposited (m ³)	Volume of sludge from the Water Supply Facility (m ³)
April	317.70	-
May	328.29	-
June	317.70	-
July	328.29	-
August	328.29	-
September	317.70	-
October	328.29	-
November	317.70	-
December	328.29	-
January	328.29	-
February	296.52	-
March	328.29	-
TOTALS	3865.35	
% Increase / decrease from previous year	1.44% 2019-2020: 3,810.60m ³	

Reasons for increase / decrease: (e.g. an industrial project close to the Hamlet of Fort Providence, or a large influx of people into town)

Through the 2020-2021 fiscal year no significant changes to the Hamlet's population or solid waste facilities occurred. The 2020-2021 quantities calculated above were based on the above recommended equation and the 2020 estimated population of 706 residents (From the NWT Bureau of Statistics July 1 2020 Population Estimate). The 1.44% increase in solid waste deposited is directly due to this population estimate for the 2020-2021 year. The 2019-2020 population estimate used was 696 residents which had a 1.44% decrease from the 706 residents used to calculate the above 2020-2021 solid waste volumes.

The volume of sludge from the Water Treatment Plant deposited at the Solid Waste Disposal Facilities is not currently being recorded. The Board has previously requested the development of a sludge monitoring process, as defined in Part 7 of the *Water Treatment Plan O&M Plan – Version 3* to provide information on sludge composition, estimated monthly quantities of sludge disposal, and information about how sludge is disposed of. The Hamlet has not been recording this information. Recommended practices are outlined within the Part 10 of the *Water Treatment Plan O&M Plan – Version 3*.

ii) Sewage

Table 3: Monthly and annual quantities of sewage deposited at Fort Providence Sewage Disposal Facilities

Month	Volume of sewage waste deposited (m ³)
April	2,160
May	2,151
June	2,291
July	2,445
August	2,546
September	3,223
October	2,516
November	2,061
December	2,132
January	1,844
February	1,863
March	2,120
TOTALS	27,351.87
Is this an estimated volume? (yes/no)	No
% Increase / decrease from previous year	13.15% 2019-2020: 24,173.07

To calculate monthly sewage waste deposited to the Sewage Disposal Facilities, please provide the above information if metered information is available. If metered information is not available, please fill in the table using the corresponding TOTAL water volumes from Table 1. This provides estimation only and equals water in/sewage out.

Reasons for increase / decrease: (e.g.: an industrial project close to the Hamlet of Fort Providence, or a large influx of people into town)

In 2020-2021 there was a 13.15% increase in the volume of sewage waste deposited at the facility when compared to the 2019-2020 year. This increase is likely due to high rain fall in 2020-2021 and increased sanitary operations throughout community buildings and by its residents as a result of the Covid-19 Pandemic through the 2020-2021 year.

iii) Other Waste Sources

Are there any other types or sources of waste that are being deposited at the Hamlet of Fort Providence's Waste Disposal Facilities? Please list the type/source, where it is being deposited, and monthly/annual volumes for each waste.

In the 2020-2021 year there was a home that experienced significant damage due to a fire. Components of the burnt unit were deposited in a designated area at the solid waste facility in accordance with the

guidelines outlined by the Inspector. It was advised the Hamlet staff that the burnt unit took roughly 12 end dump loads (10ftX40ft), approximately 36,000lbs (~18 tonnes). Photos of the deposited unit can be found within Appendix E.

c) Waste Removed from Waste Disposal Facilities

Please list in the table below wastes removed from Waste Disposal Facilities (e.g. recyclables, tires, household hazardous waste, scrap metal, and other wastes that are periodically shipped out.). Add additional columns to Table 4 if necessary.

Table 4: Monthly and annual quantities of waste removed from the Waste Disposal Facilities by Type

Month	Waste type 1 (m ³)	Waste type 2 (m ³)	Waste type 3 (m ³)
January	-	-	-
February	-	-	-
March	-	-	-
April	-	-	-
May	-	-	-
June	-	-	-
July	-	-	-
August	-	-	-
September	-	-	-
October	-	-	-
November	-	-	-
December	-	-	-
TOTALS			
Is this an estimated volume? (yes/no)	-	-	-
% Increase / decrease from previous year	-	-	-

No solid waste was removed from the Waste Disposal Facility in 2020-2021.

d) Waste Volume

Table 5: Monthly waste volumes deposited by commercial and industrial operators working outside the boundaries of Fort Providence

Month	Solid Waste Disposal Facility (m ³)	Sewage Disposal Facility (m ³)	TOTAL (m ³)
January	0	0	0
February	0	0	0

March	0	0	0
April	0	0	0
May	0	0	0
June	0	0	0
July	0	0	0
August	0	0	0
September	0	0	0
October	0	0	0
November	0	0	0
December	0	0	0
TOTALS	0	0	0
Is this an estimated volume? (yes/no)	-	-	-
% Increase / decrease from previous year	-	-	-

General information:

Information regarding any agreements with outside organizations to be a waste receiving facility should be outlined here along with estimates of the amounts and types of waste to be received.

No major changes were made to the Solid Waste Disposal Facility and no wastes were deposited by commercial or industrial operators working outside of the Hamlet boundaries in 2020-2021.

e) Tabular summaries of data generated under the Surveillance Network Program

Tabular summaries of all data generated under the Surveillance Network Program (SNP) should be included using the tables in Appendix A (attached).

Summaries of all data generated under the Surveillance Network Program are found in Appendix A.

f) Laboratory reports for all samples collected for the Surveillance Network Program

All laboratory reports should be attached as Appendix B to this report.

Laboratory reports for the Surveillance Network Program are found in Appendix B.

g) Geographic Coordinates for all Surveillance Network Program stations, and a map showing station locations

Table 6: SNP station details

Station Number	Geographic Coordinates	Effective date	Signage install date
2016-1	61.3499 N; -117.6373 W	2016	June 2018
2016-2	61.3524 N;	2016	June 2018

	117.6185 W		
2016-3	61.3520 N; 117.6166 W	2016	June 2018

A map showing the approximate proposed Surveillance Network Program station locations are found in Appendix C. The map has not been formally finalized and has various proposed locations. A proposal finalizing the SNP locations to be registered within the Water Licence has been submitted and is currently being reviewed for approval by the MVLWB. The Hamlet will ground truth the SNP locations to obtain accurate geographic coordinates.

h) Activities to install and maintain fencing at the Waste Disposal Facilities

Include a summary of any and all activities undertaken to install and maintain fencing at the Solid Waste Disposal Facilities and Sewage Disposal Facilities.

No activities were undertaken to install or maintain the fencing at the Solid Waste Disposal Facilities and Sewage Disposal Facilities in 2020-2021.

i) Activities to install and maintain signage at the Waste Disposal Facilities and SNP stations

Include a summary of any and all activities undertaken to install and maintain signage at the:

- Solid Waste Disposal Facilities,
- Sewage Disposal Facilities, and
- Surveillance Network Program stations.

Photos of the Signage at the Solid Waste Disposal Facilities and the Sewage Disposal Facilities can be found below. Please see **Appendix C** for the Map of the proposed SNP locations and municipal facilities.



Signage installed during 2018/2019



Signage at the Solid Waste Facility



Signage was installed in the Solid Waste Facility in 2018/2019.



Signage was installed in the Solid Waste Facility in 2018/2019.

Signage was also installed at the Surveillance Network Program stations during 2018/2019.



Image of signage at SNP 1412-2



Signage installed at SNP 2016-1



Signage installed at SNP 2016-2



Image of signage at SNP
2016-3.



Image of SNP 2016-3

j) Sludge Management Activities

Include a summary of sludge management activities, including results of depth and volume measurements, sludge removal and treatment.

No desludging activities or measurements of depths/volumes of sludge took place in the 2020/2021 fiscal year. Please refer to the updated Sludge Management Plan appended to the Operation and Maintenance Plan: Sewage Disposal Facility – Version 3.

k) Construction activities

Include a summary of construction activities conducted in accordance with Part F of this Licence. If there were no construction activities, please make note of that. If required, please attach any as-built drawings or reports as an appendix to this report.

No construction activities took place during 2020/2021.

l) Modifications and major maintenance

Include a summary of Modification activities and major maintenance work conducted on the Water Supply and Waste Disposal Facilities, including all associated structures, in accordance with Part G of the Licence. This includes any changes, repairs and modifications. If any problems occurred during the year, please note them here. If there are no changes, make note of that. If required please attach any as-built drawings or reports as an appendix to this report.

A small modification to the existing water treatment plant took place in 2020/2021. Due to its aging condition the fuel/day tank for the water treatment plant was replaced, including the associated fuel lines. This small upgrade completed improved the operations of the existing water treatment plant and

was done in accordance with the Water Licence and communication with the Inspector. Photos of the new tank can be seen within Appendix D.

m) Unauthorized Discharges

List and describe all unauthorized discharges that occurred during the previous calendar year, including the date, NWT spill number, volume, location, and summary of the circumstances and follow-up actions taken, and the status (i.e. open or closed), in accordance with the reporting requirements referred to in Part H, item 4 of the Licence. Please attach copies of spill reports, correspondence with the GNWT Water Resources Officer (Inspector) or any other pertinent documentation as an appendix to this report.

No unauthorized discharges took place during 2020/2021.

n) Spill Training and Communications Exercises

List any spill training and communications exercises that have been carried out during the previous calendar year including courses on spills prevention, waste management, SNP sampling, etc.

No spill training or communication exercises took place within the 2020/2021 year, the Hamlet is planning to do spill training in the near future.

o) Closure and Reclamation Activities

Summarize any closure and reclamation work completed during the year, and an outline of any work anticipated for the next year. Attach any relevant as-built drawings or reports as an appendix to this report.

No closure or reclamation activities took place during 2020/2021.

p) Studies requested by the Board

If the Board has requested that specific studies related to Waste disposal, Water Use or Reclamation be completed, include details of the studies in this section with a summary of the outcome. Also include a brief description of any future studies planned. Include any studies or reports as appendices to the Annual Report.

No studies were requested by the Board related to waste disposal, water use or reclamation during 2020/2021.

q) Actions taken to address concerns, non-conformances, or deficiencies identified by an Inspector

Include any non-compliance items identified in GNWT Water Licence Inspection reports and detail how the Hamlet of Fort Providence is addressing them.

No inspection reports under the Water Licence for the 2020/2021 fiscal year have been filed within the MVLWB public registry to date. On September 10th, 2020 a sample for pre-decant procedures from SNP station 1412-2 had one exceedance of Hexane Extractable Material (5.8mg/l of the 5.0mg/l effluent quality criteria). The Inspector instructed the Hamlet to sample once again and to not begin decanting until the results were received and reviewed. Additional samples at 1412-2 were taken on September 17th and September 28th and no exceedances were found. With the Inspectors guidance the Hamlet proceeded to decant.

r) Updates to Plans

Summarize any updates or revisions to the Spill Contingency Plan, Management Plans and Operations and Maintenance Plans. Add rows to the table if necessary.

Updates to the Water Treatment Plant, Spill Contingency Plan and Sewage Disposal Facilities Operation and Maintenance Plans were requested by the Board on December 4, 2017 and are updated and attached to this annual report. The updated Sludge Management Plan was also updated and appended to the Sewage Disposal Facilities Operation and Maintenance Plan.

Table 7: Updates to Plans

Plan	Summary of revisions made	Effective date
Water Treatment Plant	Updates made based on the December 4, 2017 letter from MVLWB	Version 2 – December 2018 Version 3 – October 2021
Spill Contingency Plan	Updates made based on the December 4, 2017 letter from MVLWB	Version 2 – December 2018 Version 3 – June 2 2021
Sewage Disposal Facilities	Updates made based on the December 4, 2017 letter from MVLWB The Sludge Management Plan was also updated based on March 2021 correspondence with the MVLWB and appended to the Sewage Disposal Facilities Plan.	Version 2 – December 2018 Version 3 – September 29 2021

s) Other Details Requested by the Board

If the Board has requested any other details on Water use, operating procedures, Modifications, maintenance work, or other topics, include details in this section with a summary of the outcome(s). Include any attachments as appendices to the Annual Report.

No other updates were requested by the Board.

Other Information

- Include a summary of correspondence with the Inspector, including inspection dates and identification of any issues of non-compliance. The MVLWB is interested in this information in order to facilitate discussions to resolve any issues.
- Include any other information here that may be valuable to the MVLWB.
- Include details on upcoming studies that will be completed.

- If there are any contaminated soil piles currently in use (land farming), please list the details of containment, remediation and progress in this section.

No inspection reports under the Water Licence for the 2019/2020 fiscal year have been filed within the MVLWB public registry to date.

Date (mm/dd/yr)	Inspection Correspondence	Hamlet Response
10/26/2020 10/09/2020 10/02/2020 09/23/2020 09/02/2020 07/28/2020 07/17/2020 06/29/2020	Taiga Analytical Report(s) shared	-
09/24/2020	On September 10th, 2020 a sample for pre-decant procedures from SNP station 1412-2 had one exceedance of Hexane Extractable Material (5.8mg/l of the 5.0mg/l effluent quality criteria). The Inspector instructed the Hamlet to sample once again and to not begin decanting until the results were received and reviewed.	Samples at 1412-2 were taken on September 17 th and 28 th and no exceedances were found. With the Inspectors guidance the Hamlet proceeded to decant.
09/02/2020	Inspector correspondence on lack of freeboard in most of Hamlets lagoon cells	-
06/29/2020	Inspector approves emergency decant	-

Appendix A: Tabular summaries of all data generated under the Surveillance Network Program for Fort Providence (MV2016L3-0001)

Surveillance Network Program Lab Results Summary

Surveillance Network Program (SNP) information is to be summarized in a tabular format and shall indicate date of testing, parameters tested for and any other information requested by the GNWT Water Licence Inspector or the MVLWB. Summary tables have been provided below for your convenience. Laboratory analysis results should be appended in Appendix B.

1) SNP Lab Results Summary – Station number 1412-1 (Raw water from the Water Supply Facilities)

This station monitors the monthly and annual quantities of Water withdrawn for municipal purposes. This information is reported in Table 1 of the Annual Report.

2) SNP Lab Results Summary – Station number 1412-2 (Sewage effluent from Sewage Disposal Facilities)

This station is the site of compliance, and monitors final effluent quality prior to discharge to the Receiving Environment.

Water Licence Parameters	Effluent Quality Criteria	June 18 (Pre-decant)	July 6	July 13	August 20	September 10	September 17	September 28	October 08
pH	Above 6	8.76	9.16	9.36	9.62	9.48	8.95	8.94	8.97
CBOD ₅	330mg/L	16	18	13	18	49	45	25	50
Total Suspended Solids	300mg/L	46	47	32	39	203	63	78	235
Ammonia	mg/L	41.7	9.43	6.82	0.047	0.224	3.44	4.54	6.50

Total Phosphorus	mg/L	7.23	3.88	3.29	2.17	203	6.13	5.90	7.72
Nitrate	mg/L	0.303	0.105	0.107	< 0.01	0.12	0.12	0.11	0.41
Nitrite	mg/L	0.314	0.590	1.00	< 0.01	0.32	0.15	0.44	0.20
fecal Coliforms	1x10 ⁵ CFU/100ml	< 100	10	12	9	< 10	< 10	29	10
Oil and Grease	5mg/L	< 2.0	< 2.0	< 2.0	< 2.0	Non-visible	Non-visible	< 5.0	< 5.0
		(Hexane Extractable Material)	(Hexane Extractable Material)	(Hexane Extractable Material)	(Hexane Extractable Material)	5.8mg/l (Hexane Extractable Material)	< 5.0 (Hexane Extractable Material)	(Hexane Extractable Material)	(Hexane Extractable Material)

3) SNP Lab Results Summary – Station number 1412-3 (Raw sewage from pump out truck)

This station has been discontinued.

4) SNP Lab Results Summary – Station number 2016-1 (Sewage effluent flowing through ponded area of wetland)

At issuance, this station's exact location was to be determined with the Inspector. It monitors the quality of effluent discharged from the Sewage Disposal Facilities and determines effectiveness of wetland treatment before final discharge to the Mackenzie River. Sampling frequency is at the beginning (one week following freshet) and end (before freeze-up) of the open water season.

Parameter	Sample 1* (one week following freshet)	Sample 2* (before freeze-up)
pH	-	-
CBOD₅ (mg/L)	-	-
Total Suspended Solids (mg/L)	-	-
Ammonia (mg/L)	-	-

Total Phosphorus (mg/L)	-	-
Nitrate (mg/L)	-	-
Nitrite (mg/L)	-	-
Fecal Coliforms (CFU/100mL)	-	-
Oil and Grease (mg/L)	-	-

*No 2020/2021 Analytical Reports for Station 2016-1 could be located within the MVLWB Public Registry. The Hamlet advised usually the inspector collects samples at this location.

5) SNP Lab Results Summary – Station number 2016-2 (Ponded water within or adjacent to domestic waste cells at Solid Waste Disposal Facilities)

At issuance, this station's exact location was to be determined with the Inspector. This station monitors potential impacts of the Solid Waste Disposal Facilities on groundwater and surface Water, and water quality and quantity prior to discharge. Sampling frequency is twice per year in June and September, and prior to discharge of accumulated water. Add additional columns to table if necessary.

	Sample 1 October 09 2020	Sample 2* June 17 2021
Volume of water discharged (m³)	Ponded Leachate	-
Total Suspended Solids (mg/L)	364 mg/L	-
Total Cadmium (µg/L)	4.0 µg/L	-
Total Chromium (µg/L)	31.8 µg/L	-
Total Cobalt (µg/L)	9.8 µg/L	-
Total Copper (µg/L)	16.1 µg/L	-
Total Iron (µg/L)	62600 µg/L	-
Total Lead (µg/L)	9.2 µg/L	-
Magnesium (mg/L)	-	-
Total Manganese (µg/L)	2350 µg/L	-

Total Mercury (µg/L)	0.07 µg/L	-
Total Nickel (µg/L)	43.7 µg/L	-
Oil and Grease (mg/L)	6.6 mg / L (Hexane Extractable Material)	-
Total Petroleum Hydrocarbons (mg/L)	-	-
BTEX	< 0.00050 mg/L	-
Total Phenols (mg/L)	0.6540 mg/L	-
Total Phosphate	0.103 mg/L	-
Calcium (mg/L)	505 mg/L	-
Potassium (mg/L)	322 mg/L	-
Sodium (mg/L)	650 mg/L	-
Sulphate (mg/L)	18 mg/L	-
Total Zinc (µg/L)	1090 µg/L	-
pH	6.96 pH	-
Conductivity (µS/cm)	6150 µs/cm	-

*Other sampling at the 2016-2 location during the summer of 2021 took place in June 2021 (outside of the reporting period for the 2020-2021 Annual Report, the results will be reported on in the 2021-2022 Annual Report)

6) SNP Lab Results Summary – Station number 2016-3 (Ponded Water within or adjacent to the construction waste cell at the Solid Waste Disposal Facilities)

At issuance, this station's exact location was to be determined with the Inspector. This station monitors potential impacts of the Solid Waste Disposal Facilities on groundwater and surface Water, and monitors water quality and quantity prior to discharge. Sampling frequency is twice per year in June and September, and prior to discharge of accumulated water. Add additional columns to table if necessary.

	Sample 1* (June 17 2021)
--	------------------------------------

Volume of water discharged (m³)	-
Total Suspended Solids (mg/L)	-
Total Cadmium (µg/L)	-
Total Chromium (µg/L)	-
Total Cobalt (µg/L)	-
Total Copper (µg/L)	-
Total Iron (µg/L)	-
Total Lead (µg/L)	-
Magnesium (mg/L)	-
Total Manganese (µg/L)	-
Total Mercury (µg/L)	-
Total Nickel (µg/L)	-
Oil and Grease	-
Total Petroleum Hydrocarbons (mg/L)	-
BTEX (mg/L)	-
Total Phenols (mg/L)	-
Total Phosphate	-
Calcium (mg/L)	-
Potassium (mg/L)	-
Sodium (mg/L)	-
Sulphate (mg/L)	-
Total Zinc (µg/L)	-
pH	-
Conductivity (µS/cm)	-

*Other sampling at the 2016-3 location during the summer of 2021 took place in June 2021 (outside of the reporting period for the 2020-2021 Annual Report, the results will be reported on in the 2021-2022 Annual Report)

**Appendix B: Laboratory reports for all samples collected for the Surveillance
Network Program for Fort Providence (MV2016L3-0001)**

From: [taiga](#)
To: [Susan Christie \(sao@fortprovidence.ca\)](#); [Wendy Bidwell](#); [Erica Janes](#)
Subject: Emailing: 200622 - 2021 - FINAL REPORT, 200622 - 2021 - FINAL REPORT
Date: Wednesday, September 2, 2020 11:29:49 AM
Attachments: [200622 - 2021 - FINAL REPORT.pdf](#)
[200622 - 2021 - FINAL REPORT.xls](#)

Susan,

Please see attached for final report 200622.

Have a good day.

Mársı | Kinanāskomitin | Thank you | Merci | Hai' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi
Glen Hudy
Chemist, Quality Assurance
Environmental Protection and Waste Management
Environment and Natural Resources
Government of the Northwest Territories

Taiga Environmental Laboratory
PO Box 1320
Yellowknife, NT X1A 2L9

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Fax: 867-920-8740
www.enr.gov.nt.ca

Survey: <https://www.surveymonkey.com/r/TaigaLab>

Your message is ready to be sent with the following file or link attachments:

200622 - 2021 - FINAL REPORT
200622 - 2021 - FINAL REPORT

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200622

- FINAL REPORT -

Prepared For: Hamlet of Fort Providence

Address: General Delivery
Fort Providence, NT
X0E 0L0

Attn: Susan Christie

Facsimile: (867) 699-4624

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
 - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - Environment Canada
 - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate: Wednesday, September 02, 2020

Print Date: *Wednesday, September 02, 2020*

Page 1 of 5



Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

Client Project:

Sample Type: Water

Received Date: 20-Aug-20

Sampling Date: 20-Aug-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	0.047	0.005	mg/L	24-Aug-20	SM4500-NH3:G	
CBOD	18	2	mg/L	21-Aug-20	SM5210:B	
Phosphorous, Total	2.17	0.002	mg/L	25-Aug-20	SM4500-P:D	
<u>Inorganics - Physicals</u>						
pH	9.62		pH units	20-Aug-20	SM4500-H:B	
Solids, Total Suspended	39	3	mg/L	26-Aug-20	SM2540:D	
<u>Major Ions</u>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	21-Aug-20	SM4110:B	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	21-Aug-20	SM4110:B	
<u>Microbiology</u>						
Coliforms, Fecal	9	1	CFU/100mL	20-Aug-20	SM9222:D	
<u>Organics</u>						
Hexane Extractable Material	< 2.0	2.0	mg/L	28-Aug-20	EPA1664A	

ReportDate: Wednesday, September 02, 2020

Print Date: *Wednesday, September 02, 2020*

Page 2 of 5



Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **WTP - Raw**

Taiga Sample ID: **002**

Client Project:

Sample Type: Water

Received Date: 20-Aug-20

Sampling Date: 20-Aug-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
<u>Subcontracted Organics</u>						
Bromodichloromethane	< 0.0010	0.001	mg/L	27-Aug-20	SW-846	
Bromoform	< 0.0050	0.005	mg/L	27-Aug-20	SW-846	
Chloroform	< 0.0010	0.001	mg/L	27-Aug-20	SW-846	
Dibromochloromethane	< 0.0010	0.001	mg/L	27-Aug-20	SW-846	
Trihalomethanes, Total	< 0.0050	0.005	mg/L	27-Aug-20	SW-846	

ReportDate: Wednesday, September 02, 2020

Print Date: *Wednesday, September 02, 2020*

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **WTP - Treated**

Taiga Sample ID: **003**

Client Project:

Sample Type: Water

Received Date: 20-Aug-20

Sampling Date: 20-Aug-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
<u>Subcontracted Organics</u>						
Bromodichloromethane	0.0045	0.001	mg/L	27-Aug-20	SW-846	
Bromoform	< 0.0050	0.005	mg/L	27-Aug-20	SW-846	
Chloroform	0.0562	0.001	mg/L	27-Aug-20	SW-846	
Dibromochloromethane	< 0.0010	0.001	mg/L	27-Aug-20	SW-846	
Trihalomethanes, Total	0.0607	0.005	mg/L	27-Aug-20	SW-846	

ReportDate: Wednesday, September 02, 2020

Print Date: *Wednesday, September 02, 2020*

Page 4 of 5



Taiga Environmental Laboratory
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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **WTP - Treated**

Taiga Sample ID: **003**

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

ReportDate: Wednesday, September 02, 2020

Print Date: *Wednesday, September 02, 2020*

Page 5 of 5

From: [taiga](#)
To: [Susan Christie \(sao@fortprovidence.ca\)](#); [Erica Janes](#); [Wendy Bidwell](#)
Subject: Emailing: 200827 - 2021 - FINAL REPORT, 200827 - 2021 - FINAL REPORT
Date: Friday, October 9, 2020 4:11:46 PM
Attachments: [200827 - 2021 - FINAL REPORT.pdf](#)
[200827 - 2021 - FINAL REPORT.xls](#)

Susan,

Please see attached for final report 200827.

Have a good day.

Mársı | Kinanāskomitin | Thank you | Merci | Hai' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi
Glen Hudy
Chemist, Quality Assurance
Environmental Protection and Waste Management
Environment and Natural Resources
Government of the Northwest Territories

Taiga Environmental Laboratory
PO Box 1320
Yellowknife, NT X1A 2L9

Phone: 867-767-9235 Ext. 53154
Fax: 867-920-8740
www.enr.gov.nt.ca

Survey: <https://www.surveymonkey.com/r/TaigaLab>

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4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200827

- FINAL REPORT -

Prepared For: Hamlet of Fort Providence

Address: General Delivery
Fort Providence, NT
X0E 0L0

Attn: Susan Christie

Facsimile: (867) 699-4624

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
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 - Environment Canada
 - USEPA
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ReportDate: Friday, October 09, 2020

Print Date: *Friday, October 09, 2020*

Page 1 of 5



Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200827

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

Client Project:

Sample Type: Treated Sewage

Received Date: 28-Sep-20

Sampling Date: 28-Sep-20

Sampling Time: 8:30

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	4.54	0.005	mg/L	28-Sep-20	SM4500-NH3:G	
CBOD	25	2	mg/L	30-Sep-20	SM5210:B	
Phosphorous, Total	5.90	0.002	mg/L	30-Sep-20	SM4500-P:D	
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	211	0.4	mg/L	28-Sep-20	SM2320:B	
Colour, Apparent	730	5	CU	28-Sep-20	SM2120:B	
Conductivity, Specific (@25C)	796	0.4	µS/cm	28-Sep-20	SM2510:B	
pH	8.94		pH units	28-Sep-20	SM4500-H:B	
Solids, Total Dissolved	482	10	mg/L	01-Oct-20	SM2540:C	
Solids, Total Suspended	78	3	mg/L	01-Oct-20	SM2540:D	
Turbidity	43.6	0.05	NTU	29-Sep-20	SM2130:B	
<u>Major Ions</u>						
Chloride	95.2	0.7	mg/L	28-Sep-20	SM4110:B	
Fluoride	0.2	0.1	mg/L	28-Sep-20	SM4110:B	

ReportDate: Friday, October 09, 2020

Print Date: *Friday, October 09, 2020*

Page 2 of 5



Taiga Environmental Laboratory

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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

200827

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

Nitrate as Nitrogen	0.11	0.01	mg/L	28-Sep-20	SM4110:B
Nitrate+Nitrite as Nitrogen	0.55	0.01	mg/L	28-Sep-20	SM4110:B
Nitrite as Nitrogen	0.44	0.01	mg/L	28-Sep-20	SM4110:B
Sulphate	57	1	mg/L	28-Sep-20	SM4110:B

Microbiology

Coliforms, Fecal	29	1	CFU/100mL	28-Sep-20	SM9222:D
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Organics

Oil and Grease, visible	Non-visible			28-Sep-20	Visual Exam
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Subcontracted Inorganics

Calcium	48.3	0.05	mg/L	05-Oct-20	EPA200.2
Hardness	209	0.6	mg/L	05-Oct-20	EPA200.2
Magnesium	21.5	0.005	mg/L	05-Oct-20	EPA200.2
Potassium	28.0	0.05	mg/L	05-Oct-20	EPA200.2
Sodium	83.8	0.05	mg/L	05-Oct-20	EPA200.2

Subcontracted Organics

Benzene	< 0.00050	0.0005	mg/L	05-Oct-20	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	05-Oct-20	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	05-Oct-20	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	06-Oct-20	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	06-Oct-20	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	06-Oct-20	EPA3510
Hexane Extractable Material	< 5.0	5	mg/L	05-Oct-20	APHA 5520B
Toluene	< 0.00050	0.0005	mg/L	05-Oct-20	EPA 5021
Xylenes	< 0.00075	0.00075	mg/L	05-Oct-20	EPA 5021

Trace Metals, Total

ReportDate: Friday, October 09, 2020

Print Date: *Friday, October 09, 2020*

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Taiga Environmental Laboratory
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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200827

- CERTIFICATE OF ANALYSIS -

Client Sample ID: 1412-2

Taiga Sample ID: 001

Cadmium	< 0.1	0.1	µg/L	02-Oct-20	EPA200.8
Chromium	0.3	0.1	µg/L	02-Oct-20	EPA200.8
Cobalt	0.5	0.1	µg/L	02-Oct-20	EPA200.8
Copper	1.3	0.2	µg/L	02-Oct-20	EPA200.8
Iron	179	5	µg/L	02-Oct-20	EPA200.8
Lead	0.2	0.1	µg/L	02-Oct-20	EPA200.8
Manganese	46.2	0.1	µg/L	02-Oct-20	EPA200.8
Nickel	3.1	0.1	µg/L	02-Oct-20	EPA200.8
Zinc	< 5.0	5	µg/L	02-Oct-20	EPA200.8



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Taiga Batch No.:

200827

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

ReportDate: Friday, October 09, 2020

Print Date: *Friday, October 09, 2020*

Page 5 of 5

From: [taiga](#)
To: [Susan Christie \(sao@fortprovidence.ca\)](#); [Erica Janes](#); [Wendy Bidwell](#)
Subject: FW: Emailing: 200787 - 2021 - FINAL REPORT, 200787 - 2021 - FINAL REPORT
Date: Friday, October 2, 2020 11:44:54 AM
Attachments: [200787 - 2021 - FINAL REPORT.pdf](#)
[200787 - 2021 - FINAL REPORT.xls](#)

Susan,

Please see attached for final report 200787.

Have a good day.

Mársı | Kinanāskomitin | Thank you | Merci | Hąı' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi Glen
Hudy Chemist, Quality Assurance Environmental Protection and Waste Management Environment and Natural
Resources Government of the Northwest Territories

Taiga Environmental Laboratory
PO Box 1320
Yellowknife, NT X1A 2L9

Phone: 867-767-9235 Ext. 53154
Fax: 867-920-8740
www.enr.gov.nt.ca

Survey: <https://www.surveymonkey.com/r/TaigaLab>

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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200787

- FINAL REPORT -

Prepared For: Hamlet of Fort Providence

Address: General Delivery
Fort Providence, NT
X0E 0L0

Attn: Susan Christie

Facsimile: (867) 699-4624

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
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 - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - Environment Canada
 - USEPA
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- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate: Friday, October 02, 2020

Print Date: *Friday, October 02, 2020*

Page 1 of 3



Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200787

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

Client Project:

Sample Type: Water

Received Date: 18-Sep-20

Sampling Date: 17-Sep-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	3.44	0.005	mg/L	18-Sep-20	SM4500-NH3:G	
CBOD	45	2	mg/L	18-Sep-20	SM5210:B	
Phosphorous, Total	6.13	0.002	mg/L	21-Sep-20	SM4500-P:D	
<u>Inorganics - Physicals</u>						
pH	8.95		pH units	18-Sep-20	SM4500-H:B	
Solids, Total Suspended	63	3	mg/L	25-Sep-20	SM2540:D	
<u>Major Ions</u>						
Nitrate as Nitrogen	0.12	0.01	mg/L	18-Sep-20	SM4110:B	
Nitrite as Nitrogen	0.15	0.01	mg/L	18-Sep-20	SM4110:B	
<u>Microbiology</u>						
Coliforms, Fecal	< 10	10	CFU/100mL	18-Sep-20	SM9222:D	
<u>Subcontracted Organics</u>						
Hexane Extractable Material	< 5.0	5	mg/L	30-Sep-20	APHA 5520B	

ReportDate: Friday, October 02, 2020

Print Date: Friday, October 02, 2020

Page 2 of 3



Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

200787

- CERTIFICATE OF ANALYSIS -

Client Sample ID: 1412-2

Taiga Sample ID: 001

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

ReportDate: Friday, October 02, 2020

Print Date: Friday, October 02, 2020

Page 3 of 3

From: [taiga](#)
To: [Susan Christie \(sao@fortprovidence.ca\)](#); [Erica Janes](#); [Wendy Bidwell](#)
Subject: Emailing: 200745 - 2021 - FINAL REPORT, 200745 - 2021 - FINAL REPORT
Date: Wednesday, September 23, 2020 9:49:01 AM
Attachments: [200745 - 2021 - FINAL REPORT.pdf](#)
[200745 - 2021 - FINAL REPORT.xls](#)

Susan,

Please see attached for final report 200745.

Have a good day.

Mársı | Kinanāskomitin | Thank you | Merci | Hai' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi
Glen Hudy
Chemist, Quality Assurance
Environmental Protection and Waste Management
Environment and Natural Resources
Government of the Northwest Territories

Taiga Environmental Laboratory
PO Box 1320
Yellowknife, NT X1A 2L9

Phone: 867-767-9235 Ext. 53154
Fax: 867-920-8740
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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200745

- FINAL REPORT -

Prepared For: Hamlet of Fort Providence

Address: General Delivery
Fort Providence, NT
X0E 0L0

Attn: Susan Christie

Facsimile: (867) 699-4624

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
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ReportDate: Wednesday, September 23, 2020

Print Date: *Wednesday, September 23, 2020*

Page 1 of 3



Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200745

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

Client Project:

Sample Type: Water

Received Date: 11-Sep-20

Sampling Date: 10-Sep-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	0.224	0.005	mg/L	14-Sep-20	SM4500-NH3:G	
CBOD	49	2	mg/L	11-Sep-20	SM5210:B	
Phosphorous, Total	4.58	0.002	mg/L	15-Sep-20	SM4500-P:D	
<u>Inorganics - Physicals</u>						
pH	9.48		pH units	11-Sep-20	SM4500-H:B	
Solids, Total Suspended	203	3	mg/L	14-Sep-20	SM2540:D	
<u>Major Ions</u>						
Nitrate as Nitrogen	0.12	0.01	mg/L	11-Sep-20	SM4110:B	
Nitrite as Nitrogen	0.32	0.01	mg/L	11-Sep-20	SM4110:B	
<u>Microbiology</u>						
Coliforms, Fecal	< 10	10	CFU/100mL	11-Sep-20	SM9222:D	
<u>Organics</u>						
Hexane Extractable Material	5.8	2.0	mg/L	22-Sep-20	EPA1664A	

ReportDate: Wednesday, September 23, 2020

Print Date: *Wednesday, September 23, 2020*

Page 2 of 3



Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

200745

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

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SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

ReportDate: Wednesday, September 23, 2020

Print Date: *Wednesday, September 23, 2020*

Page 3 of 3

From: [taiga](#)
To: [Susan Christie \(sao@fortprovidence.ca\)](#); [Erica Janes](#); [Wendy Bidwell](#)
Subject: Emailing: 200413 - 2021 - FINAL REPORT, 200413 - 2021 - FINAL REPORT
Date: Tuesday, July 28, 2020 1:56:12 PM
Attachments: [200413 - 2021 - FINAL REPORT.pdf](#)
[200413 - 2021 - FINAL REPORT.xls](#)

Susan,

Please see attached for final report 200413.

Have a good day.

Mársı | Kinanāskomitin | Thank you | Merci | Hai' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi
Glen Hudy
Chemist, Quality Assurance
Environmental Protection and Waste Management
Environment and Natural Resources
Government of the Northwest Territories

Taiga Environmental Laboratory
PO Box 1320
Yellowknife, NT X1A 2L9

Phone: 867-767-9235 Ext. 53154
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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200413

- FINAL REPORT -

Prepared For: Hamlet of Fort Providence

Address: General Delivery
Fort Providence, NT
X0E 0L0

Attn: Susan Christie

Facsimile: (867) 699-4624

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

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ReportDate: Tuesday, July 28, 2020

Print Date: *Tuesday, July 28, 2020*

Page 1 of 3



Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200413

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

Client Project:

Sample Type: Water

Received Date: 13-Jul-20

Sampling Date: 13-Jul-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	6.82	0.005	mg/L	21-Jul-20	SM4500-NH3:G	
CBOD	13	2	mg/L	13-Jul-20	SM5210:B	
Phosphorous, Total	3.29	0.002	mg/L	15-Jul-20	SM4500-P:D	
<u>Inorganics - Physicals</u>						
pH	9.36		pH units	14-Jul-20	SM4500-H:B	
Solids, Total Suspended	32	3	mg/L	15-Jul-20	SM2540:D	
<u>Microbiology</u>						
Coliforms, Fecal	12	1	CFU/100mL	13-Jul-20	SM9222:D	
<u>Organics</u>						
Hexane Extractable Material	< 2.0	2.0	mg/L	20-Jul-20	EPA1664A	
<u>Subcontracted Inorganics</u>						
Nitrate as Nitrogen	0.107	0.020	mg/L	17-Jul-20	EPA300.1	
Nitrite as N	1.00	0.010	mg/L	17-Jul-20	EPA300.1	

ReportDate: Tuesday, July 28, 2020

Print Date: Tuesday, July 28, 2020

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Taiga Environmental Laboratory

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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

200413

- CERTIFICATE OF ANALYSIS -

Client Sample ID: 1412-2

Taiga Sample ID: 001

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

ReportDate: Tuesday, July 28, 2020

Print Date: Tuesday, July 28, 2020

Page 3 of 3

From: [taiga](#)
To: [Susan Christie \(sao@fortprovidence.ca\)](#); [Erica Janes](#); [Wendy Bidwell](#)
Subject: Emailing: 200379 - 2021 - FINAL REPORT, 200379 - 2021 - FINAL REPORT
Date: Friday, July 17, 2020 4:15:33 PM
Attachments: [200379 - 2021 - FINAL REPORT.pdf](#)
[200379 - 2021 - FINAL REPORT.xls](#)

Susan,

Please see attached for final report 200379.

Have a good day.

Mársı | Kinanāskomitin | Thank you | Merci | Hai' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi
Glen Hudy
Chemist, Quality Assurance
Environmental Protection and Waste Management
Environment and Natural Resources
Government of the Northwest Territories

Taiga Environmental Laboratory
PO Box 1320
Yellowknife, NT X1A 2L9

Phone: 867-767-9235 Ext. 53154
Fax: 867-920-8740
www.enr.gov.nt.ca

Survey: <https://www.surveymonkey.com/r/TaigaLab>

Your message is ready to be sent with the following file or link attachments:

200379 - 2021 - FINAL REPORT
200379 - 2021 - FINAL REPORT

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200379

- FINAL REPORT -

Prepared For: Hamlet of Fort Providence

Address: General Delivery
Fort Providence, NT
X0E 0L0

Attn: Susan Christie

Facsimile: (867) 699-4624

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
 - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - Environment Canada
 - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate: Friday, July 17, 2020

Print Date: *Friday, July 17, 2020*

Page 1 of 3



Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200379

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

Client Project:

Sample Type: Water

Received Date: 07-Jul-20

Sampling Date: 06-Jul-20

Sampling Time: 13:00

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	9.43	0.005	mg/L	09-Jul-20	SM4500-NH3:G	
CBOD	18	2	mg/L	08-Jul-20	SM5210:B	
Phosphorous, Total	3.88	0.002	mg/L	08-Jul-20	SM4500-P:D	
<u>Inorganics - Physicals</u>						
pH	9.16		pH units	07-Jul-20	SM4500-H:B	
Solids, Total Suspended	47	3	mg/L	09-Jul-20	SM2540:D	
<u>Microbiology</u>						
Coliforms, Fecal	10	10	CFU/100mL	07-Jul-20	SM9222:D	92
<u>Organics</u>						
Hexane Extractable Material	< 2.0	2.0	mg/L	10-Jul-20	EPA1664A	
<u>Subcontracted Inorganics</u>						
Nitrate as Nitrogen	0.105	0.020	mg/L	10-Jul-20	EPA300.1	
Nitrite as N	0.590	0.010	mg/L	10-Jul-20	EPA300.1	

ReportDate: Friday, July 17, 2020

Print Date: Friday, July 17, 2020

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200379

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

- DATA QUALIFIERS -

Data Qualifier Descriptions:

92 *Suspect result due to improper container - client advised; parameter analysed at client request*

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

ReportDate: Friday, July 17, 2020

Print Date: *Friday, July 17, 2020*

Page 3 of 3

From: [Wendy Bidwell](#)
To: [Susan Christie](#)
Cc: provwork@ssimicro.com; [Erica Janes](#); [Albert Bourque](#); [Crystal Collins](#)
Subject: RE: Sewage Lagoon Samples Fort Providence (Officer Authorization to Emergency Decant Sewage Lagoon)
Date: Monday, June 29, 2020 3:02:36 PM
Attachments: [200302 - 2021 - PRELIMINARY REPORT.PDF](#)
Importance: High

Good afternoon Susan,

At the time of inspection on June 16th I noted there was insufficient freeboard (<2 feet) at all of the Hamlet's lagoon cells, especially cells #4 & #5 (water licence SNP 1412-2-Site of Compliance). During the inspection I told Clifford that he should sample as soon as possible and to ready equipment and staff for an emergency decant. He relayed this information to you and complied with my requests; His cooperation was appreciated. The preliminary results have been reviewed and all parameters meet licence Effluent Quality Criteria (EQC). Seeing that the pre-decant sample results meet licence EQC and the potential for an uncontrolled release is high, I am approving the decant without the final results in order to avoid an uncontrolled spill, or overtopping of the lagoons. Therefore, **the Hamlet is approved to proceed with emergency decant operations at Cell #5 of the Sewage Disposal Facilities commencing on Monday June 29, 2020.** I will review the final pre-decant results as soon as they are available to ensure EQC is met. Final results will be available later today.

In addition, **please let me know when decant commences and ends. If decant is longer than a week, a weekly sample will be required for every week that the Hamlet decants as per the licence.** Clifford should request more sample bottles from the lab, if it is anticipated that decant will take longer than a week. Total effluent discharge volumes will need to be included in the annual water licence report, so it's important that this information is tracked and recorded as well.

If you have any questions regarding emergency decant operations, don't hesitate to contact me.

Please keep me posted.

Regards,

Wendy

Mársı | Kinanāskomitin | Thank you | Merci | Hǵı' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsı
Wendy Bidwell

Water Resource Officer
South Slave Region
Department of Environment and Natural Resources
Government of the Northwest Territories

Highway #5
PO Box 900
Fort Smith, NT X0E 0P0

Phone: 867-872-6421
Cell: 867-446-3775

Fax: 867-872-4250

www.gov.nt.ca

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From: Judy Mah
Sent: Monday, June 29, 2020 1:05 PM
To: Wendy Bidwell
Cc: Susan Christie
Subject: RE: Sewage Lagoon Samples Fort Providence

Hello Wendy,

The HEM result is in the attached preliminary report. The final should be available this afternoon.

Thanks very much,
Judy

From: Wendy Bidwell
Sent: Monday, June 29, 2020 11:11 AM
To: Judy Mah
Cc: Susan Christie
Subject: RE: Sewage Lagoon Samples Fort Providence

Hi Judy,

Just curious whether the HEM results are available yet?

Thanks,

Wendy

Mársı | Kinanāskomitin | Thank you | Merci | Hąı' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi
Wendy Bidwell

Water Resource Officer
South Slave Region
Department of Environment and Natural Resources
Government of the Northwest Territories

Highway #5
PO Box 900
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From: Susan Christie [<mailto:sao@fortprovidence.ca>]
Sent: Thursday, June 25, 2020 4:09 PM
To: Wendy Bidwell
Subject: FW: Sewage Lagoon Samples Fort Providence

From: Judy Mah <Judy_Mah@gov.nt.ca>
Sent: Thursday, June 25, 2020 3:41 PM
To: Susan Christie <sao@fortprovidence.ca>
Subject: RE: Sewage Lagoon Samples Fort Providence

Hello Susan,

We are waiting on the HEM result which is being run today. I've attached the preliminary report in the meantime.

Thanks very much,
Judy

From: Susan Christie [<mailto:sao@fortprovidence.ca>]
Sent: Thursday, June 25, 2020 3:29 PM
To: Judy Mah
Subject: RE: Sewage Lagoon Samples Fort Providence

EXTERNAL: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender's name and email address and know the content is safe.

Hi Judy,

Any progress with the lab results from sewage lagoon?

Thanks,

Susan
Hamlet of Fort Providence

From: Judy Mah <Judy_Mah@gov.nt.ca>
Sent: Wednesday, June 17, 2020 3:43 PM
To: Susan Christie <sao@fortprovidence.ca>
Cc: Wendy Bidwell <Wendy_Bidwell@gov.nt.ca>
Subject: RE: Sewage Lagoon Samples Fort Providence

Hello Susan,

Thank you for the notice and we'll keep an eye out for these samples.

We can also put them through as rush.

Thanks very much,
Judy

From: Susan Christie [<mailto:sao@fortprovidence.ca>]
Sent: Wednesday, June 17, 2020 3:10 PM
To: Judy Mah
Cc: Wendy Bidwell
Subject: RE: Sewage Lagoon Samples Fort Providence

Hi Judy,

We are having to deal with our annual sewage lagoon decant on an emergency basis this year, as all cells are full. The ENR Inspector was here yesterday and requested us to go ahead with the decant as soon as lab results are cleared.

We are sending in the samples tomorrow by Tundra Transfer. They will deliver the samples to the lab for us.

Is it possible to have these samples tested asap in order that we may proceed with decanting.

Thank you,

Susan
Hamlet of Fort Providence

From: Judy Mah <Judy_Mah@gov.nt.ca>
Sent: Wednesday, August 14, 2019 2:01 PM
To: Susan Christie (sao@fortprovidence.ca) <sao@fortprovidence.ca>
Subject: Trying to reach Clifford McLeod

Hello Susan,

Cliff left a message on my phone but I didn't quite understand if he was sending in samples or if he received the bottles I shipped.

I tried reaching him at 699-4313 but there was no answer and I wanted to make sure I spoke to him to understand if we needed to pick up samples or not.

If you can, can you please ask him to call me again (767-9235, ext 53153).

Thanks very much,
Judy

Mársı | Kinanāskomitin | Thank you | Merci | Hąı' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi

Judy Mah

Client Services
Taiga Environmental Laboratory
Environment and Natural Resources
Government of the Northwest Territories

Mailing Address
4601 – 52 Avenue
P.O. Box 1320
Yellowknife, NT X1A 2L9

Shipping Address
4601 – 52 Avenue
Yellowknife, NT X1A 1L4

Direct Phone: 867-767-9235 Ext. 53153
Main Phone: 867-767-9235 Ext. 53151
Fax: 867-920-8740

Survey: <https://www.surveymonkey.com/r/TaigaLab>

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200302

- PRELIMINARY REPORT -

Prepared For: Hamlet of Fort Providence

Address: General Delivery
Fort Providence, NT
X0E 0L0

Attn: Susan Christie

Facsimile: (867) 699-4624

Final report has been reviewed and approved by:

Judy Mah
Client Service Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
 - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - Environment Canada
 - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate:

Print Date: *Monday, June 29, 2020*

Page 1 of 3



Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200302

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

Client Project:

Sample Type: Water

Received Date: 19-Jun-20

Sampling Date: 18-Jun-20

Sampling Time:

Location:

Report Status: Preliminary

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	41.7	0.005	mg/L	23-Jun-20	SM4500-NH3:G	
CBOD	16	2	mg/L	19-Jun-20	SM5210:B	
Phosphorous, Total	7.23	0.002	mg/L	24-Jun-20	SM4500-P:D	
<u>Inorganics - Physicals</u>						
pH	8.76		pH units	19-Jun-20	SM4500-H:B	
Solids, Total Suspended	46	3	mg/L	23-Jun-20	SM2540:D	
<u>Microbiology</u>						
Coliforms, Fecal	< 100	100	CFU/100mL	19-Jun-20	SM9222:D	
<u>Organics</u>						
Hexane Extractable Material	< 2.0	2.0	mg/L	25-Jun-20	EPA1664A	
<u>Subcontracted Inorganics</u>						
Nitrate as Nitrogen	0.303	0.020	mg/L	22-Jun-20	EPA300.1	
Nitrite as N	0.314	0.010	mg/L	22-Jun-20	EPA300.1	

ReportDate:

Print Date: Monday, June 29, 2020

Page 2 of 3



Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

200302

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

ReportDate:

Print Date: *Monday, June 29, 2020*

Page 3 of 3

From: [Wendy Bidwell](#)
To: [Susan Christie](#); [Clifford - Works Department](#)
Cc: [Erica Janes](#); [Heather Scott](#)
Subject: Additional Hydrocarbon Monitoring at SNP 1412-2 (Treated Sewage Effluent)
Date: Thursday, September 24, 2020 3:57:04 PM
Importance: High

Hi Susan and Clifford,

The latest round of SNP sample results for station 1412-2 indicate high Oil & Grease (HEM) results (5.8 mg/l). Typical licence Effluent Quality Criteria limit is 5 mg/l. Seeing that these results were part of weekly monitoring during the authorized decant operations that commenced in early September, I'm requesting that the Hamlet sample for the usual full suite at SNP 1412-2, plus some additional Hydrocarbon testing. Sampling is to be conducted next Monday (September 28, 2020) and will be required to be driven to the lab the same day. Otherwise, sampling would have to be delayed until next Thursday when the courier is available to pick-up and deliver samples to the lab.

Sewage Lagoon Decant operations will have to be put on hold until the next round of sample results are received and reviewed. If results are acceptable, I will re-authorize decant operations in order for the Hamlet to continue to draw down Cell #5 as the freeboard level is just at 1 m. I recommend further draw down to create more space for spring run-off.

The Hamlet will require specific bottles (2 x 40 ml glass vials) for the Total Petroleum hydrocarbon analysis. Some care will need to be taken when collecting these samples as there should be no air bubbles or trapped air in the vials. The cap will have a see through top to confirm whether or not air is present. I usually overfill the vials so that there is a meniscus of water on top, then put the cap on. This technique works to ensure no air gets trapped inside the vial. The other 1 L amber glass bottle without a yellow sticker is Extractable Hydrocarbon analysis. It won't require preservation. Just fill it up and cap it.

Taiga lab is preparing some bottle sets that include the above noted Hydrocarbon testing bottles. Bottles will be ready for pick up tomorrow.

Please don't hesitate to contact me if you have any questions with regards to the above.

Regards,

Wendy

Mársı | Kinanāskomitin | Thank you | Merci | Hąı' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi
Wendy Bidwell

Water Resource Officer
South Slave Region
Department of Environment and Natural Resources
Government of the Northwest Territories

Highway #5
PO Box 900

Fort Smith, NT XOE OPO

Phone: 867-872-6421

Cell: 867-446-3775

Fax: 867-872-4250

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200622

- FINAL REPORT -

Prepared For: Hamlet of Fort Providence

Address: General Delivery
Fort Providence, NT
X0E 0L0

Attn: Susan Christie

Facsimile: (867) 699-4624

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
 - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - Environment Canada
 - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate: Wednesday, September 02, 2020

Print Date: *Wednesday, September 02, 2020*

Page 1 of 5



Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

Client Project:

Sample Type: Water

Received Date: 20-Aug-20

Sampling Date: 20-Aug-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	0.047	0.005	mg/L	24-Aug-20	SM4500-NH3:G	
CBOD	18	2	mg/L	21-Aug-20	SM5210:B	
Phosphorous, Total	2.17	0.002	mg/L	25-Aug-20	SM4500-P:D	
<u>Inorganics - Physicals</u>						
pH	9.62		pH units	20-Aug-20	SM4500-H:B	
Solids, Total Suspended	39	3	mg/L	26-Aug-20	SM2540:D	
<u>Major Ions</u>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	21-Aug-20	SM4110:B	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	21-Aug-20	SM4110:B	
<u>Microbiology</u>						
Coliforms, Fecal	9	1	CFU/100mL	20-Aug-20	SM9222:D	
<u>Organics</u>						
Hexane Extractable Material	< 2.0	2.0	mg/L	28-Aug-20	EPA1664A	

ReportDate: Wednesday, September 02, 2020

Print Date: *Wednesday, September 02, 2020*

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **WTP - Raw**

Taiga Sample ID: **002**

Client Project:

Sample Type: Water

Received Date: 20-Aug-20

Sampling Date: 20-Aug-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
<u>Subcontracted Organics</u>						
Bromodichloromethane	< 0.0010	0.001	mg/L	27-Aug-20	SW-846	
Bromoform	< 0.0050	0.005	mg/L	27-Aug-20	SW-846	
Chloroform	< 0.0010	0.001	mg/L	27-Aug-20	SW-846	
Dibromochloromethane	< 0.0010	0.001	mg/L	27-Aug-20	SW-846	
Trihalomethanes, Total	< 0.0050	0.005	mg/L	27-Aug-20	SW-846	

ReportDate: Wednesday, September 02, 2020

Print Date: **Wednesday, September 02, 2020**

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **WTP - Treated**

Taiga Sample ID: **003**

Client Project:

Sample Type: Water

Received Date: 20-Aug-20

Sampling Date: 20-Aug-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
<u>Subcontracted Organics</u>						
Bromodichloromethane	0.0045	0.001	mg/L	27-Aug-20	SW-846	
Bromoform	< 0.0050	0.005	mg/L	27-Aug-20	SW-846	
Chloroform	0.0562	0.001	mg/L	27-Aug-20	SW-846	
Dibromochloromethane	< 0.0010	0.001	mg/L	27-Aug-20	SW-846	
Trihalomethanes, Total	0.0607	0.005	mg/L	27-Aug-20	SW-846	

ReportDate: Wednesday, September 02, 2020

Print Date: *Wednesday, September 02, 2020*

Page 4 of 5



Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **WTP - Treated**

Taiga Sample ID: **003**

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

ReportDate: Wednesday, September 02, 2020

Print Date: *Wednesday, September 02, 2020*

Page 5 of 5

From: [Susan Christie](#)
To: [Wendy Bidwell](#)
Subject: RE: Annual Fall Decant at Fort Providence Sewage Disposal Facility_Authorization to Decant_September 2 2020
Date: Wednesday, September 2, 2020 4:22:42 PM

Hi Wendy,

The decant will begin tomorrow morning. Clifford is away until Thursday next week. We can send in our sample with the weekly shuttle next Thursday. I will request him to order more samples bottles from the lab. He might be able to pick this up on his way back to Providence next week.

I am away from the office Thursday and Friday.

Thanks,

Susan
Hamlet of Fort Providence

From: Wendy Bidwell <Wendy_Bidwell@gov.nt.ca>
Sent: Wednesday, September 02, 2020 1:04 PM
To: Susan Christie <sao@fortprovidence.ca>
Cc: Clifford - Works Department <works@fortprovidence.ca>; ejanes@mvlwb.com
Subject: Annual Fall Decant at Fort Providence Sewage Disposal Facility_Authorization to Decant_September 2 2020
Importance: High

Good afternoon Susan,

Further to our recent email exchange and Clifford's call regarding the lack of freeboard (<2 feet) at most of the Hamlet's lagoon cells, especially cells #4 & #5 (water licence SNP 1412-2-Site of Compliance), **the Hamlet is approved to proceed with decant operations at Cell #5 of the Sewage Disposal Facilities commencing today, September 2, 2020.** I have attached the pre-decant sample results here. Please note that the pH level is elevated (9.62) in the results attached. It meets licence criteria as this only specifies a pH above 9. Something to keep an eye on though, especially if it continues on an upward trend.

In addition, **please let me know when decant commences and ends. If decant is longer than a week, a weekly sample will be required for every week that the Hamlet decants as per the licence (see below table).** I recommend taking the sample on the same day as last time, that way you know the samples will make it to the lab on time. Clifford should also request more sample bottles from the lab, if it is anticipated that decant will take longer than a week. Total effluent discharge volumes will need to be included in the annual water licence report, so it's important that this information is

tracked and recorded as well.

SNP station	Location	Sampling Frequency	Sampling Parameters	Rationale
1412-2	Sewage effluent from the Sewage Disposal Facilities	Prior to discharge and weekly during discharge	pH, CBOD ₅ , Total Suspended Solids, Ammonia, Total Phosphorus, Nitrate, Nitrite, Faecal Coliforms, Oil and Grease	Site of compliance. To monitor final effluent quality prior to discharge to the Receiving Environment.

If you, or Clifford have any questions regarding decant operations, don't hesitate to contact me.

Regards,

Wendy

Mársı | Kinanāskomitin | Thank you | Merci | Hąı' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi

Wendy Bidwell

Water Resource Officer

South Slave Region

Department of Environment and Natural Resources

Government of the Northwest Territories

Highway #5

PO Box 900

Fort Smith, NT X0E 0P0

Phone: 867-872-6421

Cell: 867-446-3775

Fax: 867-872-4250

www.gov.nt.ca

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From: Wendy Bidwell
Sent: Tuesday, September 01, 2020 12:02 PM
To: 'Susan Christie'
Cc: Clifford - Works Department
Subject: RE: Annual Fall Decant

Hi Susan,

Thanks for the update regarding decant. Clifford called me yesterday to notify me as well. I look forward to receiving the results, and will be in contact once I review them. In the meantime, please ensure the sewage lagoon cells are monitored for freeboard levels on a **daily** basis. If the freeboard in any of the cells gets to be 1 foot or less, please contact me and I will make arrangements to authorize an emergency decant. It's been an unprecedented rainfall year for sure! Thanks for being proactive with respect to this facility's operation and maintenance.

I also wanted to let you know that I will likely be conducting the fall water licence inspection on September 22, 2020. I hope both you and Clifford will be available to meet and assist me that day.

Regards,

Wendy

Mársı | Kinanāskomitin | Thank you | Merci | Hąı' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi

Wendy Bidwell

Water Resource Officer

South Slave Region

Department of Environment and Natural Resources

Government of the Northwest Territories

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From: Susan Christie [<mailto:sao@fortprovidence.ca>]
Sent: Tuesday, September 01, 2020 11:28 AM
To: Wendy Bidwell
Cc: Clifford - Works Department
Subject: RE: Annual Fall Decant

Hi Wendy,

Just to let you know that Clifford & crew are preparing for the annual fall decant of the lagoon.

Samples were taken and sent in to the lab last week. We will forward you the results as soon as we receive them.

The rain is practically non-stop.

Susan
Hamlet of Fort Providence

From: Wendy Bidwell <Wendy_Bidwell@gov.nt.ca>
Sent: Friday, July 24, 2020 2:47 PM
To: Susan Christie <sao@fortprovidence.ca>
Cc: Clifford - Works Department <works@fortprovidence.ca>
Subject: RE: New Email Contact for Works Department

Thanks Susan! I will use this in future.

Wendy

Mársı | Kinanāskomitin | Thank you | Merci | Hąı' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsı
Wendy Bidwell
Water Resource Officer
South Slave Region
Department of Environment and Natural Resources
Government of the Northwest Territories

Highway #5
PO Box 900
Fort Smith, NT X0E 0P0

Phone: 867-872-6421
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From: Susan Christie [<mailto:sao@fortprovidence.ca>]
Sent: Friday, July 24, 2020 2:45 PM
To: Gavin Olvera; Jean Soucy; Finance; Receptionist
Cc: Clifford - Works Department; Wendy Bidwell; Judy Mah
Subject: New Email Contact for Works Department

EXTERNAL: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender's name and email address and know the content is safe.

The Hamlet of Fort Providence Works Department has a new email contact.
Clifford can now be reached at:

works@fortprovidence.ca

Please remove the previous email address of provworks@ssimicro.com

Senior Administrative Officer
Hamlet of Fort Providence

From: [Wendy Bidwell](#)
To: [Susan Christie](#)
Cc: [Clifford - Works Department](#); [Erica Janes](#)
Subject: Annual Fall Decant at Fort Providence Sewage Disposal Facility_Authorization to Decant_September 2 2020
Date: Wednesday, September 2, 2020 1:04:12 PM
Attachments: [200622 - 2021 - FINAL REPORT_Hamlet of Fort Providence_Fall Decant Results_Sept 1 2020.pdf](#)
Importance: High

Good afternoon Susan,

Further to our recent email exchange and Clifford's call regarding the lack of freeboard (<2 feet) at most of the Hamlet's lagoon cells, especially cells #4 & #5 (water licence SNP 1412-2-Site of Compliance), **the Hamlet is approved to proceed with decant operations at Cell #5 of the Sewage Disposal Facilities commencing today, September 2, 2020.** I have attached the pre-decant sample results here. Please note that the pH level is elevated (9.62) in the results attached. It meets licence criteria as this only specifies a pH above 9. Something to keep an eye on though, especially if it continues on an upward trend.

In addition, **please let me know when decant commences and ends. If decant is longer than a week, a weekly sample will be required for every week that the Hamlet decants as per the licence (see below table).** I recommend taking the sample on the same day as last time, that way you know the samples will make it to the lab on time. Clifford should also request more sample bottles from the lab, if it is anticipated that decant will take longer than a week. Total effluent discharge volumes will need to be included in the annual water licence report, so it's important that this information is tracked and recorded as well.

SNP station	Location	Sampling Frequency	Sampling Parameters	Rationale
1412-2	Sewage effluent from the Sewage Disposal Facilities	Prior to discharge and weekly during discharge	pH, CBOD ₅ , Total Suspended Solids, Ammonia, Total Phosphorus, Nitrate, Nitrite, Faecal Coliforms, Oil and Grease	Site of compliance. To monitor final effluent quality prior to discharge to the Receiving Environment.

If you, or Clifford have any questions regarding decant operations, don't hesitate to contact me.

Regards,

Wendy

Mársı | Kinanāskomitin | Thank you | Merci | Hąı' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi

Wendy Bidwell

Water Resource Officer

South Slave Region

Department of Environment and Natural Resources

Government of the Northwest Territories

Highway #5

PO Box 900

Fort Smith, NT X0E 0P0

Phone: 867-872-6421

Cell: 867-446-3775

Fax: 867-872-4250

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I also wanted to let you know that I will likely be conducting the fall water licence inspection on September 22, 2020. I hope both you and Clifford will be available to meet and assist me that day.

Regards,

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Wendy Bidwell

Water Resource Officer

South Slave Region

Department of Environment and Natural Resources

Government of the Northwest Territories

Highway #5

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Subject: RE: Annual Fall Decant

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Hamlet of Fort Providence

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To: Susan Christie <sao@fortprovidence.ca>
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Wendy Bidwell

Water Resource Officer
South Slave Region
Department of Environment and Natural Resources
Government of the Northwest Territories

Highway #5
PO Box 900
Fort Smith, NT X0E 0P0

Phone: 867-872-6421
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works@fortprovidence.ca

Please remove the previous email address of provworks@ssimicro.com

Senior Administrative Officer

Hamlet of Fort Providence



Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200622

- FINAL REPORT -

Prepared For: Hamlet of Fort Providence

Address: General Delivery
Fort Providence, NT
X0E 0L0

Attn: Susan Christie

Facsimile: (867) 699-4624

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
 - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - Environment Canada
 - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate: Wednesday, September 02, 2020

Print Date: *Wednesday, September 02, 2020*

Page 1 of 5



Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

Client Project:

Sample Type: Water

Received Date: 20-Aug-20

Sampling Date: 20-Aug-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	0.047	0.005	mg/L	24-Aug-20	SM4500-NH3:G	
CBOD	18	2	mg/L	21-Aug-20	SM5210:B	
Phosphorous, Total	2.17	0.002	mg/L	25-Aug-20	SM4500-P:D	
<u>Inorganics - Physicals</u>						
pH	9.62		pH units	20-Aug-20	SM4500-H:B	
Solids, Total Suspended	39	3	mg/L	26-Aug-20	SM2540:D	
<u>Major Ions</u>						
Nitrate as Nitrogen	< 0.01	0.01	mg/L	21-Aug-20	SM4110:B	
Nitrite as Nitrogen	< 0.01	0.01	mg/L	21-Aug-20	SM4110:B	
<u>Microbiology</u>						
Coliforms, Fecal	9	1	CFU/100mL	20-Aug-20	SM9222:D	
<u>Organics</u>						
Hexane Extractable Material	< 2.0	2.0	mg/L	28-Aug-20	EPA1664A	

ReportDate: Wednesday, September 02, 2020

Print Date: *Wednesday, September 02, 2020*

Page 2 of 5



Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **WTP - Raw**

Taiga Sample ID: **002**

Client Project:

Sample Type: Water

Received Date: 20-Aug-20

Sampling Date: 20-Aug-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
<u>Subcontracted Organics</u>						
Bromodichloromethane	< 0.0010	0.001	mg/L	27-Aug-20	SW-846	
Bromoform	< 0.0050	0.005	mg/L	27-Aug-20	SW-846	
Chloroform	< 0.0010	0.001	mg/L	27-Aug-20	SW-846	
Dibromochloromethane	< 0.0010	0.001	mg/L	27-Aug-20	SW-846	
Trihalomethanes, Total	< 0.0050	0.005	mg/L	27-Aug-20	SW-846	

ReportDate: Wednesday, September 02, 2020

Print Date: *Wednesday, September 02, 2020*

Page 3 of 5



Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

200622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **WTP - Treated**

Taiga Sample ID: **003**

Client Project:

Sample Type: Water

Received Date: 20-Aug-20

Sampling Date: 20-Aug-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Subcontracted Organics						
Bromodichloromethane	0.0045	0.001	mg/L	27-Aug-20	SW-846	
Bromoform	< 0.0050	0.005	mg/L	27-Aug-20	SW-846	
Chloroform	0.0562	0.001	mg/L	27-Aug-20	SW-846	
Dibromochloromethane	< 0.0010	0.001	mg/L	27-Aug-20	SW-846	
Trihalomethanes, Total	0.0607	0.005	mg/L	27-Aug-20	SW-846	

ReportDate: Wednesday, September 02, 2020

Print Date: *Wednesday, September 02, 2020*

Page 4 of 5



Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: WTP - Treated

Taiga Sample ID: 003

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

ReportDate: Wednesday, September 02, 2020

Print Date: *Wednesday, September 02, 2020*

Page 5 of 5

From: [Wendy Bidwell](#)
To: [Erica Janes](#)
Cc: [Susan Christie](#); [Albert Bourque](#)
Subject: FW: Emailing: 200302 - 2021 - FINAL REPORT, 200302 - 2021 - FINAL REPORT (Pre-Decant Sample Final Results for Hamlet of Fort Providence-June 29 2020)
Date: Monday, June 29, 2020 3:19:15 PM
Attachments: [200302 - 2021 - FINAL REPORT.pdf](#)
[200302 - 2021 - FINAL REPORT.xls](#)
[RE Sewage Lagoon Samples Fort Providence \(Officer Authorization to Emergency Decant Sewage Lagoon\).msg](#)
Importance: High

Hi Erica,

As per my recent email (attached), please see attached the final results for the Hamlet's pre-decant sewage lagoon sample. All results meet licence EQC.

Regards,

Wendy

Mársı | Kinanāskomitin | Thank you | Merci | Hąı' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi
Wendy Bidwell
Water Resource Officer
South Slave Region
Department of Environment and Natural Resources
Government of the Northwest Territories

Highway #5
PO Box 900
Fort Smith, NT X0E 0P0

Phone: 867-872-6421
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-----Original Message-----

From: Susan Christie [<mailto:sao@fortprovidence.ca>]
Sent: Monday, June 29, 2020 2:31 PM
To: Wendy Bidwell
Subject: FW: Emailing: 200302 - 2021 - FINAL REPORT, 200302 - 2021 - FINAL REPORT
Importance: High

EXTERNAL: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender's name and email address and know the content is safe.

-----Original Message-----

From: taiga <taiga@gov.nt.ca>
Sent: Monday, June 29, 2020 1:39 PM
To: Susan Christie <sao@fortprovidence.ca>

Subject: Emailing: 200302 - 2021 - FINAL REPORT, 200302 - 2021 - FINAL REPORT

Susan,

Please see attached for final report 200302.

Have a good day.

Mársı | Kinanāskomitin | Thank you | Merci | Hai' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi Glen
Hudy Chemist, Quality Assurance Environmental Protection and Waste Management Environment and Natural
Resources Government of the Northwest Territories

Taiga Environmental Laboratory
PO Box 1320
Yellowknife, NT X1A 2L9

Phone: 867-767-9235 Ext. 53154
Fax: 867-920-8740
www.enr.gov.nt.ca

Survey: <https://www.surveymonkey.com/r/TaigaLab>

Your message is ready to be sent with the following file or link attachments:

200302 - 2021 - FINAL REPORT
200302 - 2021 - FINAL REPORT

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200302

- FINAL REPORT -

Prepared For: Hamlet of Fort Providence

Address: General Delivery
Fort Providence, NT
X0E 0L0

Attn: Susan Christie

Facsimile: (867) 699-4624

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
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- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate: Monday, June 29, 2020
Print Date: *Monday, June 29, 2020*

Page 1 of 3



Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200302

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

Client Project:

Sample Type: Water

Received Date: 19-Jun-20

Sampling Date: 18-Jun-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	41.7	0.005	mg/L	23-Jun-20	SM4500-NH3:G	
CBOD	16	2	mg/L	19-Jun-20	SM5210:B	
Phosphorous, Total	7.23	0.002	mg/L	24-Jun-20	SM4500-P:D	
<u>Inorganics - Physicals</u>						
pH	8.76		pH units	19-Jun-20	SM4500-H:B	
Solids, Total Suspended	46	3	mg/L	23-Jun-20	SM2540:D	
<u>Microbiology</u>						
Coliforms, Fecal	< 100	100	CFU/100mL	19-Jun-20	SM9222:D	
<u>Organics</u>						
Hexane Extractable Material	< 2.0	2.0	mg/L	25-Jun-20	EPA1664A	
<u>Subcontracted Inorganics</u>						
Nitrate as Nitrogen	0.303	0.020	mg/L	22-Jun-20	EPA300.1	
Nitrite as N	0.314	0.010	mg/L	22-Jun-20	EPA300.1	

ReportDate: Monday, June 29, 2020

Print Date: Monday, June 29, 2020

Page 2 of 3



Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:

200302

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **001**

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

ReportDate: Monday, June 29, 2020

Print Date: *Monday, June 29, 2020*

Page 3 of 3

From: [taiga](#)
To: [Susan Christie \(sao@fortprovidence.ca\)](#); [Erica Janes](#); [Wendy Bidwell](#)
Subject: Emailing: 200882 - 2021 - FINAL REPORT, 200882 - 2021 - FINAL REPORT
Date: Monday, October 26, 2020 3:41:27 PM
Attachments: [200882 - 2021 - FINAL REPORT.pdf](#)
[200882 - 2021 - FINAL REPORT.xls](#)

Susan,

Please see attached for final report 200882.

Have a good day.

Mársı | Kinanāskomitin | Thank you | Merci | Hai' | Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı | Mahsi
Glen Hudy
Chemist, Quality Assurance
Environmental Protection and Waste Management
Environment and Natural Resources
Government of the Northwest Territories

Taiga Environmental Laboratory
PO Box 1320
Yellowknife, NT X1A 2L9

Phone: 867-767-9235 Ext. 53154
Fax: 867-920-8740
www.enr.gov.nt.ca

Survey: <https://www.surveymonkey.com/r/TaigaLab>

Your message is ready to be sent with the following file or link attachments:

200882 - 2021 - FINAL REPORT
200882 - 2021 - FINAL REPORT

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200882

- FINAL REPORT -

Prepared For: Hamlet of Fort Providence

Address: General Delivery
Fort Providence, NT
X0E 0L0

Attn: Susan Christie

Facsimile: (867) 699-4624

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

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ReportDate: Monday, October 26, 2020

Print Date: *Monday, October 26, 2020*

Page 1 of 6



Taiga Environmental Laboratory

4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9

Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.:
200882

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **2016-2**

Taiga Sample ID: **001**

Client Project:

Sample Type: Ponded Leachate

Received Date: 09-Oct-20

Sampling Date: 09-Oct-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ortho-Phosphate as Phosphorus	0.103	0.002	mg/L	09-Oct-20	SM4500-P:D	
Phosphorous, Total	5.80	0.002	mg/L	14-Oct-20	SM4500-P:D	
<u>Inorganics - Physicals</u>						
Conductivity, Specific (@25C)	6150	0.4	µS/cm	09-Oct-20	SM2510:B	
pH	6.96		pH units	09-Oct-20	SM4500-H:B	
Solids, Total Suspended	364	3	mg/L	15-Oct-20	SM2540:D	
<u>Major Ions</u>						
Sulphate	18	1	mg/L	09-Oct-20	SM4110:B	
<u>Subcontracted Inorganics</u>						
Calcium	505	0.05	mg/L	21-Oct-20	EPA200.2	
Potassium	322	0.05	mg/L	21-Oct-20	EPA200.2	
Sodium	650	0.05	mg/L	21-Oct-20	EPA200.2	
<u>Subcontracted Organics</u>						
Benzene	< 0.00050	0.0005	mg/L	21-Oct-20	EPA 5021	
Ethylbenzene	< 0.00050	0.0005	mg/L	21-Oct-20	EPA 5021	

ReportDate: Monday, October 26, 2020

Print Date: *Monday, October 26, 2020*

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Taiga Batch No.:

200882

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **2016-2**

Taiga Sample ID: **001**

F1: C6-C10	< 0.10	0.1	mg/L	21-Oct-20	CCME CWS PHC
F2: C10-C16	0.67	0.1	mg/L	17-Oct-20	EPA3510
F3: C16-C34	1.65	0.25	mg/L	17-Oct-20	EPA3510
F4: C34-C50	< 0.25	0.25	mg/L	17-Oct-20	EPA3510
Hexane Extractable Material	6.6	5	mg/L	16-Oct-20	APHA 5520B
Phenols, Total	0.6540	0.001	mg/L	20-Oct-20	AB ENV.06537
Toluene	< 0.00050	0.0005	mg/L	21-Oct-20	EPA 5021
Xylenes	1.680	0.00075	mg/L	21-Oct-20	EPA 5021

Trace Metals, Total

Cadmium	4.0	0.1	µg/L	16-Oct-20	EPA200.8
Chromium	31.8	0.1	µg/L	16-Oct-20	EPA200.8
Cobalt	9.8	0.1	µg/L	16-Oct-20	EPA200.8
Copper	16.1	0.2	µg/L	16-Oct-20	EPA200.8
Iron	62600	5	µg/L	16-Oct-20	EPA200.8
Lead	9.2	0.1	µg/L	16-Oct-20	EPA200.8
Manganese	2350	0.1	µg/L	16-Oct-20	EPA200.8
Mercury	0.07	0.01	µg/L	16-Oct-20	EPA200.8
Nickel	43.7	0.1	µg/L	16-Oct-20	EPA200.8
Zinc	1090	5	µg/L	16-Oct-20	EPA200.8

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Taiga Batch No.:
200882

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **002**

Client Project:

Sample Type: Sewage Lagoon

Received Date: 09-Oct-20

Sampling Date: 08-Oct-20

Sampling Time:

Location:

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	6.50	0.005	mg/L	15-Oct-20	SM4500-NH3:G	
CBOD	50	2	mg/L	09-Oct-20	SM5210:B	
Phosphorous, Total	7.72	0.002	mg/L	14-Oct-20	SM4500-P:D	
<u>Inorganics - Physicals</u>						
pH	8.97		pH units	09-Oct-20	SM4500-H:B	
Solids, Total Suspended	235	3	mg/L	15-Oct-20	SM2540:D	
<u>Major Ions</u>						
Nitrate as Nitrogen	0.41	0.01	mg/L	09-Oct-20	SM4110:B	
Nitrite as Nitrogen	0.20	0.01	mg/L	09-Oct-20	SM4110:B	
<u>Microbiology</u>						
Coliforms, Fecal	10	10	CFU/100mL	09-Oct-20	SM9222:D	
<u>Subcontracted Organics</u>						
Benzene	< 0.00050	0.0005	mg/L	21-Oct-20	EPA 5021	
Ethylbenzene	< 0.00050	0.0005	mg/L	21-Oct-20	EPA 5021	
F1: C6-C10	< 0.10	0.1	mg/L	21-Oct-20	CCME CWS PHC	
F2: C10-C16	0.25	0.1	mg/L	17-Oct-20	EPA3510	

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Taiga Batch No.:

200882

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **1412-2**

Taiga Sample ID: **002**

F3: C16-C34	0.35	0.25	mg/L	17-Oct-20	EPA3510
F4: C34-C50	< 0.25	0.25	mg/L	17-Oct-20	EPA3510
Hexane Extractable Material	< 5.0	5	mg/L	16-Oct-20	APHA 5520B
Toluene	< 0.00050	0.0005	mg/L	21-Oct-20	EPA 5021
Xylenes	< 0.00075	0.00075	mg/L	21-Oct-20	EPA 5021
<u>Trace Metals, Total</u>					
Cadmium	< 0.1	0.1	µg/L	16-Oct-20	EPA200.8
Chromium	1.0	0.1	µg/L	16-Oct-20	EPA200.8
Cobalt	0.9	0.1	µg/L	16-Oct-20	EPA200.8
Copper	0.6	0.2	µg/L	16-Oct-20	EPA200.8
Iron	1030	5	µg/L	16-Oct-20	EPA200.8
Lead	0.5	0.1	µg/L	16-Oct-20	EPA200.8
Manganese	107	0.1	µg/L	16-Oct-20	EPA200.8
Nickel	4.1	0.1	µg/L	16-Oct-20	EPA200.8
Zinc	< 5.0	5	µg/L	16-Oct-20	EPA200.8

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Taiga Batch No.:

200882

- CERTIFICATE OF ANALYSIS -

Client Sample ID: 1412-2

Taiga Sample ID: 002

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

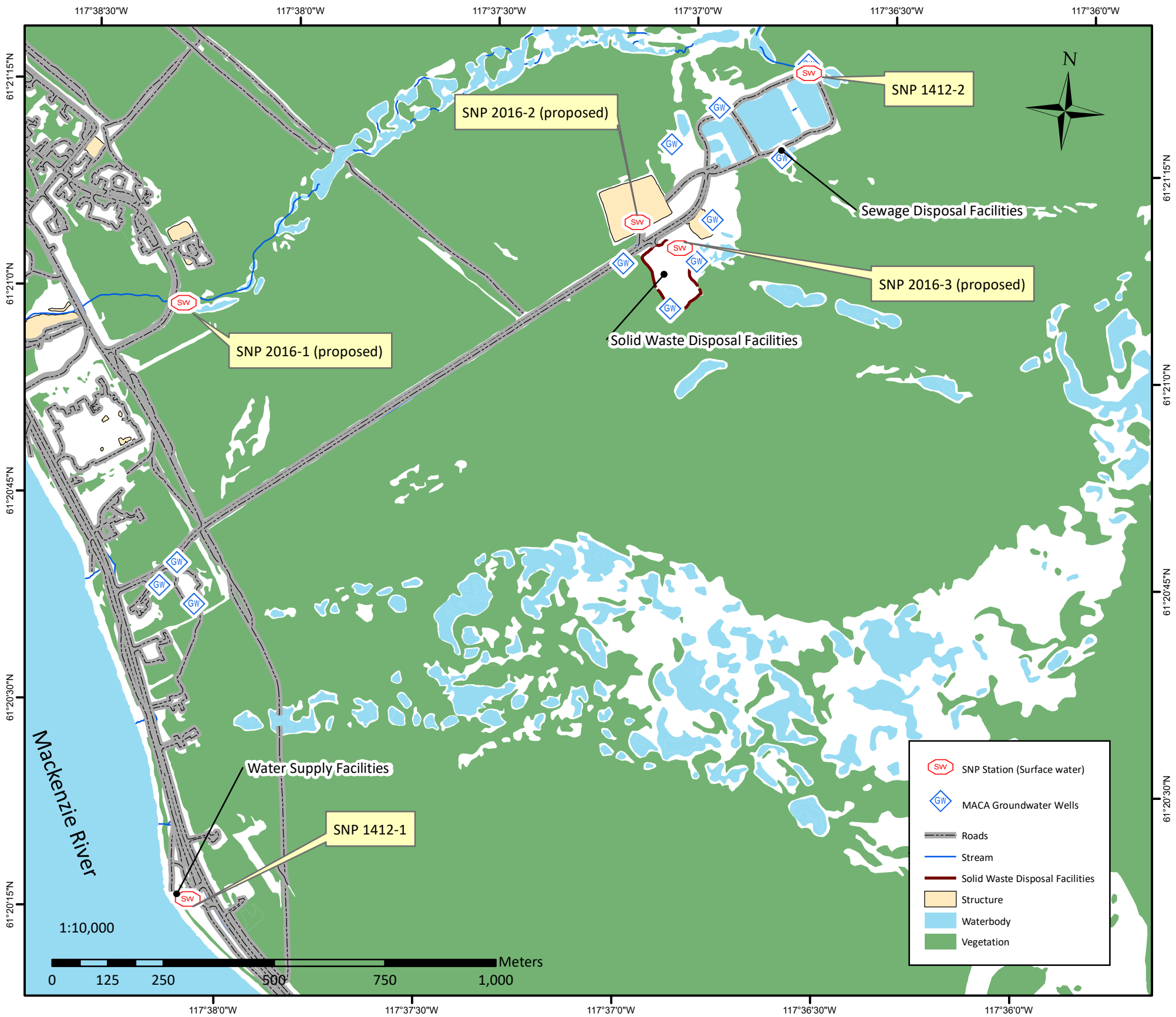
ReportDate: Monday, October 26, 2020

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**Appendix C: Map showing Surveillance Network Program stations for Fort
Providence (MV2016L3-0001)**

Hamlet of Fort Providence Surveillance Network Program (SNP) MV2016L3-0001



ID	Taiga Lab Colour Codes	SNP1412-1	SNP1412-2	SNP2016-1 (TBD)	SNP2016-2 (TBD)	SNP2016-3 (TBD)
Frequency		Monthly	Prior to discharge and weekly during discharge	Beginning and end of open water season, (i.e. one week following freshnet, and before freeze-up)	Twice per year: (1) during the months of June and September; and (2) prior to discharge of accumulated water	Twice per year: (1) during the months of June and September; and (2) prior to discharge of accumulated water
Volume in m ³		Water withdrawn			Water discharged	Water discharged
Effluent Quality Criteria (EQC)			Part D, item 7			
Parameters						
CBOD ₅			✓	✓		
Ammonia (Nitrogen)			✓	✓		
Total Phosphorous (P)			✓	✓		
Total Suspended Solids			✓	✓	✓	✓
Faecal Coliform	STERILE		✓	✓		
Calcium (Ca)					✓	✓
Conductivity					✓	✓
pH			✓	✓	✓	✓
Nitrate (NO ₃)			✓	✓		
Nitrite (NO ₂)			✓	✓		
Total Phosphate					✓	✓
Potassium (K)					✓	✓
Sodium (Na)					✓	✓
Sulphate (SO ₄)					✓	✓
Oil and grease (O+G)			✓	✓	✓	✓
Total Petroleum Hydrocarbons					✓	✓
BTEX					✓	✓
Total Phenols					✓	✓
Total Cadmium (Cd)					✓	✓
Total Chromium (Cr)					✓	✓
Total Cobalt (Co)					✓	✓
Total Copper (Cu)					✓	✓
Total Iron (Fe)					✓	✓
Total Lead (Pb)					✓	✓
Magnesium (Mg)					✓	✓
Total Manganese (Mn)					✓	✓
Total Mercury (Hg)					✓	✓
Total Nickel (Ni)					✓	✓
Total Zinc (Zn)					✓	✓

Map Description:
This map demonstrates the Surveillance Network Program (SNP) stations for the Hamlet of Fort Providence Municipal Water Licence MV2016L3-0001.

This map is for illustrative purposes only. This is not a legal document and should not be treated as such.

Coordinate System: NAD 1983 Northwest Territories Lambert
Projection: Lambert Conformal Conic
Datum: North American 1983
False Easting: 0.0000
False Northing: 0.0000
Central Meridian: -112.0000
Standard Parallel 1: 62.0000
Standard Parallel 2: 70.0000
Latitude Of Origin: 0.0000
Units: Meter

This map is created by the Mackenzie Valley Land and Water Board. For mapping related questions, please contact:

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Map Produced: December 19, 2018
Data Source: MACA (accessed June 19, 2017);
MV2016L3-0001 Current to: December 4, 2017

Appendix D: Water Treatment Plant - Modifications - 2020-2021



Figure 1 - New Tank



Figure 2 - New Tank



Figure 3 - Lines connecting to new tank

Appendix E: Solid Waste Facility – Burnt Housing Unit Deposited – 2020-2021



Figure 1 – Section of the Solid Waste Facility containing the 2020-2021 Burnt Unit