



South Slave Region
P.O. Box 900
Fort Smith, NT, X0E 0P0

Telephone: 867-872-6421
Fax: 867-872-4250

August 14, 2014

Town of Fort Smith
PO Box 147
Fort Smith, NT X0E 0P0

Attn: Keith Morrison

**RE: MUNICIPAL Water Use MV2011L3-0001
CLASS A - MUNICIPAL
Slave River**

Dear Keith Morrison,

An inspection of the above noted operation was conducted on October 31, 2013 by Water Resource Officer Wendy Bidwell. Enclosed is a copy of the Municipal Water Use Inspection Report.

All facilities were being well maintained. Please extend my thanks to Mr. Gavin Olvera for his time and assistance during the inspection.

Please submit the 2013 annual report to the Mackenzie Valley Land and Water Board at your earliest convenience.

If you have any questions, please contact me at 867-872-6421.

Sincerely,

Original Signed

Wendy Bidwell
Water Resource Officer
Environment and Natural Resources-GNWT
South Slave Region

Cc: Water Resources Division-ENR_GNWT
Mackenzie Valley Land and Water Board



MUNICIPAL WATER USE INSPECTION REPORT

LICENCE #:	MV2011L3-0001	EXPIRY DATE:	October 31, 2026
LICENCEE:	Town of Fort Smith	PREVIOUS INSPECTION:	May 30, 2012
COMPANY REP:	Keith Morrison	INSPECTION DATE:	October 31, 2013

WATER SUPPLY

Source:	Slave River	Quantity Used:	519 m3
Owner/Operator:	Town of Fort Smith	Meter Reading:	

Indicate: **A - Acceptable** **U - Unacceptable** **N/A - Not Applicable** **N/I - Not Inspected**

Intake Facilities	A	Storage Structures	A	Treatment Systems	A	Recycling	N/A
Flow Meas. Device	A	Conveyance Lines	A	Pumping Stations	A	Chem. Storage	A
						Modifications	N/A

Water Supply Comments:

The water treatment plant was neat and tidy and operating smoothly at the time of the inspection. Reagents on hand included approximately 5794 Kg PAC Plus, 259 Kg Hydrofluosilicic acid (fluoride), 313 Kg Chlorine gas, and 2432 Kg Caustic Soda. Approximately 519 m3/day of water is being used. All three filters were running and working well at the time of inspection. There is currently only one pump running for the backwash waste tank as Town staff are awaiting shipment of a part for the second pump.

WASTE DISPOSAL – SEWAGE

Disposal Method	3 Cell Lagoon						
Mechanical	N	Camp Sump	N	Natural Water Body	N	Wetland Treatment	N
Continuous Discharge	Y	Intermittent Discharge	N	Seasonal Discharge	N	Land Spread	N
Accelerated Biological	N	Other					

Indicate: **A - Acceptable** **U - Unacceptable** **N/A - Not Applicable** **N/I - Not Inspected**

Discharge Quality	A	Decant Process & Structures	A	Discharge Measurement Device	A
Freeboard	A	Sludge Disposal Method	N/I		
Periods Of Discharge	Continuous to Slave River			SNP Samples Collected	567-1 & 567-2
Effluent Discharge Rates	4.5" over "V" Notch Weir				

Sewage Comments:

All lift stations were operating well at the time of the inspection. The retrofit at the Frontier station is now complete and the lift station building has been removed. The station is now fenced and gated around the perimeter. Effluent quality samples were collected at station 567-2 for physicals, nutrients, bacteria, visible oil & grease and BOD. Due to unforeseen circumstances, the collected samples arrived at the lab past the recommended hold times for bacteria and BOD. Analysis for these parameters was requested regardless of expired hold times. Results showed all regulated parameters to be within approved licence criteria. Primary sewage lagoon cells 1 & 2 are ice free, but the larger secondary cell is starting to freeze over. Discharge is continuous through a pipeline to a mound of rocks at the edge of the Slave River where it is diffused to the water. The flow volume was measured using a 90 degree "V" Notch weir which had a head of 4.5". Cattails growing around lagoon cells make it difficult to determine the amount of freeboard. Removal of cattails will take place in all three cells next summer when a contractor is secured.

WASTE DISPOSAL – SOLID WASTE

Disposal Method	Landfill
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MUNICIPAL WATER USE INSPECTION REPORT

Open Dump	N	Landfill	Y	Burn & Landfill	Y	Underground	N
Offsite Removal	N	Other					
Owner / Operator	Town of Fort Smith						

Indicate: **A - Acceptable** **U - Unacceptable** **N/A - Not Applicable** **N/I - Not Inspected**

Runoff Diversion		SNP Samples Collected	567-4
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Solid Waste Comments:

The solid waste landfill site was being well managed with waste separated by type. The lined Comtaminated Soil Area is being used as temporary storage for hazardous wastes (i.e. palettes of paint and barrels of waste oil). It was relayed that a new hazardous waste storage area is planned for the area by the tire disposal pile. This new area will be fenced, but not lined.

NON-COMPLIANCE/VIOLATIONS OF ACT OR LICENCE

None.

Inspector's Signature: Original Signed _____

MUNICIPAL WATER USE INSPECTION REPORT

Inspection Images:

Figure 1

Waste Tank that collects backwash from Water Treatment Plant.



Figure 2

Filters #1, 2 & 3 at Water Treatment Plant.



Figure 3
Frontier Lift Station - Retrofit Complete.



Figure 4
SNP Station 567-2 - Site of Compliance.



Figure 5
Sewage Lagoon Cell#3 - Secondary cell starting to freeze over.



Figure 6
Contaminated Soil Containment Area at Landfill - Temporary storage for Hazardous Waste.





Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130994

- FINAL REPORT -

Prepared For: Fort Smith District Office
AANDC Operations

Address: Box 658
Fort Smith, NT
X0E 0P0

Attn: Wendy Bidwell

Facsimile: (867) 872-3472

Final report has been reviewed and approved by:

Angelique Ruzindana
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) 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: Monday, November 18, 2013

Print Date: Monday, November 18, 2013



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Taiga Batch No.:
130994

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **567-1**

Taiga Sample ID: **001**

Client Project: Town of Fort Smith
Sample Type: Freshwater
Received Date: 01-Nov-13
Sampling Date: 31-Oct-13
Sampling Time: 10:12
Location: 567-1 (Water Treatment Plant)
Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
<u>Inorganics - Physicals</u>						
Alkalinity, Total (as CaCO ₃)	85.1	0.4	mg/L	01-Nov-13	SM2320:B	
Colour, Apparent	434	5	CU	01-Nov-13	SM2120:B	
Conductivity, Specific (@ 25°C)	231	0.4	µS/cm	01-Nov-13	SM2510:B	
pH	7.91		pH units	01-Nov-13	SM4500-H:B	
Solids, Total Dissolved	148	10	mg/L	04-Nov-13	SM2540:C	
Solids, Total Suspended	78	3	mg/L	04-Nov-13	SM2540:D	
Turbidity	68.8	0.05	NTU	01-Nov-13	SM2130:B	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	07-Nov-13	SM4500-NH3:	
Nitrate+Nitrite as Nitrogen	0.19	0.01	mg/L	04-Nov-13	SM4110:B	
Phosphorous, Total	0.101	0.002	mg/L	05-Nov-13	SM4500-P:D	
<u>Major Ions</u>						
Calcium	31.3	0.1	mg/L	04-Nov-13	SM4110:B	
Chloride	8.0	0.7	mg/L	04-Nov-13	SM4110:B	

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Client Sample ID: **567-1**

Taiga Sample ID: **001**

Fluoride	< 0.1	0.1	mg/L	04-Nov-13	SM4110:B
Hardness	112	0.7	mg/L	04-Nov-13	SM2340:B
Magnesium	8.1	0.1	mg/L	04-Nov-13	SM4110:B
Nitrate as Nitrogen	0.17	0.01	mg/L	04-Nov-13	SM4110:B
Nitrite as Nitrogen	0.02	0.01	mg/L	04-Nov-13	SM4110:B
Potassium	1.0	0.1	mg/L	04-Nov-13	SM4110:B
Sodium	9.4	0.1	mg/L	04-Nov-13	SM4110:B
Sulphate	23	1	mg/L	04-Nov-13	SM4110:B

Trace Metals, Total

Cadmium	< 0.1	0.1	µg/L	14-Nov-13	EPA200.8
Chromium	4.1	0.1	µg/L	14-Nov-13	EPA200.8
Cobalt	1.0	0.1	µg/L	14-Nov-13	EPA200.8
Copper	4.4	0.2	µg/L	14-Nov-13	EPA200.8
Iron	2860	5	µg/L	14-Nov-13	EPA200.8
Lead	2.3	0.1	µg/L	14-Nov-13	EPA200.8
Manganese	90.9	0.1	µg/L	14-Nov-13	EPA200.8
Nickel	4.1	0.1	µg/L	14-Nov-13	EPA200.8
Zinc	23	5	µg/L	14-Nov-13	EPA200.8

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Taiga Batch No.:
130994

- CERTIFICATE OF ANALYSIS -

Client Sample ID: 567-2

Taiga Sample ID: 002

Client Project: Town of Fort Smith
Sample Type: Treated Sewage
Received Date: 01-Nov-13
Sampling Date: 31-Oct-13
Sampling Time: 11:42
Location: 567-2 (Sewage Lagoon Outflow)
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
<u>Inorganics - Physicals</u>						
pH	7.39		pH units	01-Nov-13	SM4500-H:B	
Solids, Total Suspended	34	3	mg/L	04-Nov-13	SM2540:D	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	32.7	0.005	mg/L	07-Nov-13	SM4500-NH3:	
Biochemical Oxygen Demand	38	2	mg/L	01-Nov-13	SM5210:B	
CBOD			mg/L		SM5210:B	97
Nitrate+Nitrite as Nitrogen	0.22	0.01	mg/L	04-Nov-13	SM4110:B	
Phosphorous, Total	6.21	0.002	mg/L	05-Nov-13	SM4500-P:D	
<u>Microbiology</u>						
Coliforms, Fecal (other)	12000	1000	CFU/100mL	01-Nov-13	SM9222:D	88
Coliforms, Total	112000	100	MPN/100mL	01-Nov-13	SM9223:B	88
Escherichia coli	14100	10.0	MPN/100mL	01-Nov-13	SM9223:B	88
Fecal streptococcus	6130	10.0	MPN/100mL	01-Nov-13	SM9223:B	88
<u>Organics</u>						

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- CERTIFICATE OF ANALYSIS -

Client Sample ID: **567-2**

Taiga Sample ID: **002**

Oil and Grease, visible Non-visible 08-Nov-13 Visual Exam

Trace Metals, Total

Cadmium	< 0.1	0.1	µg/L	14-Nov-13	EPA200.8
Chromium	2.0	0.1	µg/L	14-Nov-13	EPA200.8
Cobalt	0.2	0.1	µg/L	14-Nov-13	EPA200.8
Copper	10.8	0.2	µg/L	14-Nov-13	EPA200.8
Iron	318	5	µg/L	14-Nov-13	EPA200.8
Lead	0.4	0.1	µg/L	14-Nov-13	EPA200.8
Manganese	57.4	0.1	µg/L	14-Nov-13	EPA200.8
Nickel	2.0	0.1	µg/L	14-Nov-13	EPA200.8
Zinc	11	5	µg/L	14-Nov-13	EPA200.8

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Taiga Batch No.:
130994

- CERTIFICATE OF ANALYSIS -

Client Sample ID: **567-4**

Taiga Sample ID: **003**

Client Project: Town of Fort Smith
 Sample Type: Runoff
 Received Date: 01-Nov-13
 Sampling Date: 31-Oct-13
 Sampling Time: 11:42
 Location: 567-4 (Runoff Landfill)
 Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Physicals</u>						
Conductivity, Specific (@ 25°C)	788	0.4	µS/cm	01-Nov-13	SM2510:B	
pH	7.54		pH units	01-Nov-13	SM4500-H:B	
Solids, Total Suspended	4	3	mg/L	04-Nov-13	SM2540:D	
<u>Inorganics - Nutrients</u>						
Biochemical Oxygen Demand	3	2	mg/L	01-Nov-13	SM5210:B	
CBOD			mg/L		SM5210:B	97
<u>Microbiology</u>						
Coliforms, Fecal (other)	2	1	CFU/100mL	01-Nov-13	SM9222:D	88
<u>Organics</u>						
Oil and Grease, visible	Non-visible			08-Nov-13	Visual Exam	
<u>Trace Metals, Total</u>						
Arsenic	1.4	0.2	µg/L	14-Nov-13	EPA200.8	
Cadmium	< 0.1	0.1	µg/L	14-Nov-13	EPA200.8	
Chromium	1.3	0.1	µg/L	14-Nov-13	EPA200.8	

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- CERTIFICATE OF ANALYSIS -

Client Sample ID: **567-4**

Taiga Sample ID: **003**

Copper	< 0.2	0.2	µg/L	14-Nov-13	EPA200.8
Iron	1240	5	µg/L	14-Nov-13	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Nov-13	EPA200.8
Mercury	0.04	0.01	µg/L	14-Nov-13	EPA200.8
Nickel	1.5	0.1	µg/L	14-Nov-13	EPA200.8
Zinc	< 5	5	µg/L	14-Nov-13	EPA200.8

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- CERTIFICATE OF ANALYSIS -

Client Sample ID: **567-4**

Taiga Sample ID: **003**

- DATA QUALIFIERS -

Data Qualifier Descriptions:

- 88** *Samples analysed past holding time, as per client request.*
- 97** *Analyst error, analysis was not completed.*

*** 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