



**Mackenzie Valley Land and Water Board**  
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October 4, 2018

File: MV2011L3-0001

Mr. Keith Morrison  
Senior Administrative Officer, Town of Fort Smith  
P.O. Box 147  
Fort Smith, NT X0E 0P0

Email: [kmorrison@fortsmith.ca](mailto:kmorrison@fortsmith.ca)

Dear Mr. Morrison,

**Re: 2016 and 2017 Annual Water Licence Reports – Acceptance  
Town of Fort Smith – Municipal Water Licence**

The Mackenzie Valley Land and Water Board (the Board) met on October 4, 2018 and reviewed the Town of Fort Smith's (Town) 2016 and 2017 Annual Water Licence Reports, submitted to fulfill Part B, condition 1 and Schedule 1, condition 1 of municipal Water Licence MV2011L3-0001 (Licence).

The Board hereby accepts the 2016 and 2017 Annual Water Licence Reports, as submitted.

The Board commends the Town for their inclusion of SNP Compliance Summary tables in their annual reporting, and requests that the Town specifically list missing data parameters with these tables in future annual reports.

Revisions to the 2016 and 2017 Annual Reports as identified during this review shall be submitted concurrently with the 2018 Annual Report (due March 18, 2019), and include the following:

- Listing of missing data parameters with the SNP Compliance Summary tables;
- Correction of the typo in Table 5 in the 2016 Annual Report; and
- Revision of Table 7 in the 2017 Annual Report to indicate the missed faecal coliform sample.

As per the Board's October 4, 2018 Approval letter of the Sewage Disposal Facilities Operation and Maintenance Plan, Version 1.1, the Board requires the Town to report on the sources (including a description) and volumes (or estimated volumes) of non-sewage wastes deposited to the SDF in the 2018 Annual Water Licence Report, as per Schedule 1, condition 1(q) of MV2011L3-0001. The Board notes that following the submission and subsequent review of non-sewage waste discharge details the 2018 Annual Report, further discussions on alternative disposal options may occur.

The Board encourages the Town to discuss GNWT-ENR's requests to provide water quality data in an accessible file type and to complete their metadata template for posting to the Board's public registry, with GNWT-ENR staff.

The Board notes and appreciates the Town's efforts to report in accordance with Licence requirements. The Town shall adhere to the commitments made in their responses to reviewer comments dated June 20, 2018.

The full cooperation of the Town of Fort Smith is anticipated and appreciated. If you have any questions or concerns, please contact Erica Janes at (867) 766-7466 or email [ejanes@mvlwb.com](mailto:ejanes@mvlwb.com).

Yours sincerely,



Mavis Cli-Michaud  
MVLWB, Chair

Copied to: Distribution list

Attached: Review Comment Summary Table

**Review Comment Table**

<b>Board:</b>	MVLWB
<b>Review Item:</b>	Town of Fort Smith - 2016 and 2017 Annual Water Licence Reports (MV2011L3-0001)
<b>File(s):</b>	<a href="#">MV2011L3-0001</a>
<b>Proponent:</b>	Town of Fort Smith
<b>Document(s):</b>	<a href="#">MV2011L3-0001 - Ft Smith - 2016 Annual Report - Feb21-18</a> (23.4 MB) <a href="#">MV2011L3-0001 - Ft Smith - 2017 Annual Water Licence Report - Apr6-18</a> (14.6 MB) <a href="#">MV2011L3-0001 - Town of Fort Smith - Acceptance - 2013 2014 2015 Annual Reports - Nov3-16</a> (112.8 KB)
<b>Item For Review Distributed On:</b>	Apr 24 at 08:50 <a href="#">Distribution List</a>
<b>Reviewer Comments Due By:</b>	May 31, 2018
<b>Proponent Responses Due By:</b>	June 20, 2018
<b>Item Description:</b>	<p><b>June 12, 2018 Update: The Town of Fort Smith has requested and been granted an extension to respond to reviewer comments on the 2016 and 2017 Annual Reports. The new response deadline is June 20, 2018.</b></p> <p>-----</p> <p>The Town of Fort Smith (Town) has submitted their 2016 and 2017 Annual Water Licence Reports in accordance with Part B, condition 1 and Schedule 1, condition 1 of municipal Water Licence MV2011L3-0001, and in accordance with Board direction provided in the November 3, 2016 acceptance letter for the 2013, 2014 and 2015 Annual Reports (see link).</p> <p>Although formal approval of Annual Reports is not required under the Licence, the Board must be satisfied that the City has reported in accordance with the requirements of their Licence.</p> <p>Reviewers are invited to submit questions, comments and recommendations on the 2016 and 2017 Annual Water Licence Reports by <b>May 31, 2018</b>. As these two Annual Reports are posted for review together; please note which Annual Report your comments pertain to when providing comments.</p> <p>If you have questions or comments regarding this review or the Online Review System, please contact Erica Janes at (867)766-7466 or <a href="mailto:ejanes@mvlwb.com">ejanes@mvlwb.com</a>.</p>
<b>General Reviewer Information:</b>	In addition to the email distribution list, the following organizations received review materials by fax:

	<ul style="list-style-type: none"> <li>• Hay River Metis Council - Trevor Beck, President (867)874-4472; and</li> <li>• NWT Metis Nation - Tim Heron, NWTMN IMA Coordinator (867)872-3586.</li> </ul>
<b>Contact Information:</b>	Erica Janes 867-766-7466 Heather Scott 867-766-7463 Jen Potten 867-766-7468

### Comment Summary

Environment and Climate Change Canada: Gabriel Bernard-Lacaille				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Analysis
4	General File	<b>Comment</b> <a href="#">(doc)</a> ECCC Comments Cover Letter <b>Recommendation</b>	--	Noted.
1	ECCC 1- QA/QC field sampling; 2016 and 2017 Annual Water Licence Reports	<b>Comment</b> Quality Assurance/Quality Control (QA/QC) field sampling was not described in the annual reports. Sampling locations, dates and results for field blanks, travel blanks and duplicate field samples should be included in the annual report. <b>Recommendation</b> Environment and Climate Change Canada (ECCC) recommends that the Town of Fort Smith's (the Proponent) QA/QC field sampling protocol be provided in the annual report.	<b>June 20:</b> QA/QC procedures for field blanks and duplicates are presented in the O&M Manual. As the O&M Manual is publically available, the Town does not see the need to include this information in the annual report.	Acceptable response.  Board staff also note that QA/QC requirements are also outlined in the SNP Annex to the Licence.
2	ECCC 2-Field parameters; 2016 and 2017 Annual Water Licence Reports	<b>Comment</b> The summary tables provided in Appendix A do not provide data for field pH or field temperature. Collecting this data would assist in interpreting other monitoring results. <b>Recommendation</b> ECCC recommends that the Proponent sample field pH	<b>June 20:</b> The Town is implementing improved record keeping of field conditions during sampling events. Field pH and temperature are not required per the licence.	Acceptable response.

		and field temperature during monitoring events, and that future annual report summary tables provide this data.		
3	ECCC 3- General comment; 2016 and 2017 Annual Water Licence Reports	<b>Comment</b> Recording field notes at the time of sampling is important to support the interpretation of monitoring data. <b>Recommendation</b> ECCC recommends that the Proponent records field notes at the time of sampling (e.g. weather conditions, river conditions, effluent observations), and uses this information to support the interpretation of monitoring data.	<b>June 20:</b> The Town is implementing improved record keeping of field conditions during sampling events.	Acceptable response.

**GNWT - ENR: Central Email GNWT**

<b>ID</b>	<b>Topic</b>	<b>Reviewer Comment/Recommendation</b>	<b>Proponent Response</b>	<b>Board Staff Analysis</b>
10	General File	<b>Comment</b> ( <a href="#">doc</a> ) Attachment: 2018 Appendix A Water Quality Sample Metadata Template <b>Recommendation</b>	--	Noted.
1	Topic 1: Provide Rationale for Variations in Estimated Sewage Effluent Volumes Discharged to Receiving Environment	<b>Comment</b> In Table 2, Section B of the 2016 and 2017 Annual Reports (Sewage Discharged) it was noted that in 2016 more sewage effluent was discharged than deposited in the lagoon system, and in 2017 less was discharged than deposited. ENR would like to know the reason(s) there is such variation from one year to the next. Typically, losses in the system are anticipated and discharge volumes are expected to be less than volumes deposited, but this is not the case in 2016. Please provide rationale as to why	<b>June 20:</b> It is believed this variation is primarily due to measurement methodology and accuracy. V-notch weir flows will present relatively large changes in flow rates for small increases in height. Prior to 2017, weir measurements were taken once per month only - (refer to comments below table of 2016 report). Daily measurements were instituted in 2017 (when access permitted). Consistency and accuracy of measurement is expected to improve in subsequent years. Discharge flows in subsequent years are expected to be	Board staff note that the Town is actively working toward implementing more accurate measurement methods for reporting on waste volumes, and are of the opinion that the Town has sufficiently explained the variation in volumes measured (i.e. measurement method has changed).

		<p>there is such variation in the figures and volumes provided in these above noted tables, and explain the 53% increase in sewage effluent discharged in 2016 and the 33. 8% decrease in 2017.</p> <p><b>Recommendation 1)</b> ENR requests that a rationale is provided to explain the variation in the figures and volumes provided in Table 2, Part b, of the 2016 and 2017 Annual Reports, and explain why there was a 53% increase in sewage effluent discharged in 2016 and a 33. 8% decrease in 2017. Both reports should be updated to include this information.</p>	<p>more consistent with the flows deposited into the lagoon in Table 4.</p>	
2	<p>Topic 2: Missing Data Parameters in SNP Regulatory Compliance Summary Tables to be Included in Comments Section</p>	<p><b>Comment</b> Tables 5-7 in Section M of the 2016 and 2017 Annual Reports (SNP Regulatory Compliance) note the number of missing data parameters, but don't specify which parameters are missing. ENR recommends that in future reports the missing data parameters be listed in the comments section below the tables. It was noted that this information was included in Tables 1-3 in Appendix A, but including these data parameters in the comments section below the Compliance Summary tables would be a helpful reference for reviewers. In addition, a minor typo in Table 5 (SNP Station 567-2 - Regulatory Compliance) of the 2016 report was noted. The figure (105) in the 'Number of Analyses Performed' column</p>	<p><b>June 20:</b> Comments below Tables 5 and 6 of section M do discuss missing parameters. Comments will be elaborated for Tables 5 and 6, and will be added for Table 7. The typo will be addressed.</p>	<p>Acceptable response.</p> <p>The Town could revise the 2016 and 2017 Annual Reports as follows:</p> <ul style="list-style-type: none"> <li>• Tables 5 and 6 to include more details regarding missing parameters,</li> <li>• Table 7 to include the same detail on missing parameters, and</li> <li>• Fix the typo in Table 5 of the 2016 AR.</li> </ul> <p>Board staff suggest that in future annual reports, missing data</p>

		and the 'Compliant: Below Effluent Quality Criteria' row should be 103. Please update the table with the correct figure. ENR would like to note that these tables were well done and provide an informative summary of SNP compliance. ENR highly recommends inclusion of these tables in future reports. <b>Recommendation 1)</b> ENR recommends that in future reports the missing data parameters be specifically listed in the comments section below the SNP Compliance Summary tables.		parameters be specifically listed, and that the revisions be submitted at the same time as the 2018 Annual Report.
3	None	<b>Comment None</b> <b>Recommendation 2)</b> ENR recommends that the above noted typo in Table 5 (SNP Station 567-2 Regulatory Compliance) of the 2016 Annual Report be corrected.	<b>June 20:</b> Refer to response above to ENR Topic 2.	See Comment ID GNWT-ENR 2.
4	Topic 3: Rationale for No Data Results for Fecal Coliforms for SNP 567-4 Sample in September 2017	<b>Comment</b> In Appendix A - Table 3 (SNP Results Summary - Station 567-4 - Run-off below Solid Waste Disposal Facilities) of the 2017 Annual Report it was noted that no data was collected for the Fecal Coliform parameter on September 25th. ENR requests that the Town provide rationale as to why this parameter was not collected. The explanation for this missing data should be updated in the comments section under the SNP Compliance Summary table for SNP 567-4 (Table 7). If the sample exceeded viable hold time for that parameter, ENR recommends that the lab analysis be run regardless and	<b>June 20:</b> The coliform sample was inadvertently missed by the lab. We will add to the comments for Table 7 per above.	Acceptable response.  The Town could also revise Table 7 in the 2017 Annual Report to indicate that the faecal coliform sample for September 25 was inadvertently missed by the lab; Board staff suggest the revised 2017 Annual Report be submitted with the 2018 Annual Report.

		<p>the resulting data provided. This omission stresses the importance of good note taking in the field, a recommendation ENR made during previous Annual Report reviews.</p> <p><b>Recommendation 1)</b> ENR requests that the Town provide rationale as to why sample data for the Fecal Coliform parameter was not collected during the September 25th 2017 sampling event for SNP 567-4. The explanation for this missing data should be updated in the comments section under the SNP Compliance Summary table for SNP 567-4 (Table 7).</p>		
5	Topic 4: Water Quality Data	<p><b>Comment</b> The Town provided its 2016 water quality sampling results in Appendices A and B in a PDF format. However, the utility of this data is limited by third parties in its current format (i.e. pdf).</p> <p><b>Recommendation 1)</b> ENR recommends that the Town submit all water quality data associated with the Surveillance Network Program stations and sewage lagoon stations to the public registry in an accessible file type (e.g., csv or xls).</p>	<b>June 20:</b> The Town will provide available xls files from Taiga to the Board.	The Board could encourage the Town to discuss GNWT-ENR's request with them.
6	Topic 5: Metadata Template	<p><b>Comment</b> ENR appreciates that the Town provided all monitoring sampling results in Appendices A and B of the 2016 Annual Report. However, to ensure consistency among reporting by proponents, ENR encourages the use of a</p>	<b>June 20:</b> The Town notes ENR's request, but feels completion of metadata templates represents a significant recordkeeping burden not currently required by the licence. The Town respectfully submits that it might be more appropriate to	The Board could encourage the Town to discuss GNWT-ENR's request with them.



		<p>standard metadata template. Metadata sets the context for the water quality data, providing a description of data that was collected as part of a water quality sampling program and includes field conditions and a description of laboratory analyses conducted. Metadata standards are required to ensure the proper use and interpretation of the data by the users. Also, as with the water quality data itself, ENR encourages that the metadata be available in an accessible file type.</p> <p><b>Recommendation 1)</b> ENR recommends that the Town complete the attached metadata template and provide it with the associated water quality data to the public registry in an accessible file type (e.g., csv or xls).</p>	<p>have Taiga provide results, with associated metadata, in a format ENR finds useful.</p>	
7	<p>Topic 6: Current Sewage Disposal Facilities Performance CBOD &amp; TSS</p>	<p><b>Comment</b> A trend analysis of the past 10 years from 2008-2017 at SNP 567-2 (Compliance Point) showed a progressive concentration increase for TSS, as follows: . ~ 35 mg/L (2008-2009) . 40-50 mg/L (2010-2014) . 55-68 mg/L (2015-2016) . 79 mg/L (2017), including an exceedance event of 385 mg/L on August 29th. ENR notes that the TSS concentrations discharged from the Town's system are higher than are typically present at other treatment systems in the NWT. Previous studies on the Town facility have identified the main factors affecting</p>	<p><b>June 20:</b> The TSS exceedance event recorded in August of 2017 of 385 mg/L is not believed to be representative of the effluent quality. It is believed that the sample was contaminated. A grab sample that included sediments could have produced an elevated TSS reading like the one in August - which is the only reading over the referenced time period that exceeded 200 mg/L, and more than double the next highest reading in that same 10 year period. Excluding that measurement, 2017's average for TSS was 51.2 mg/L, making it unclear that there is an increasing TSS trend.</p>	<p>Acceptable response.</p> <p>Board staff note that the Town's response is in keeping with the Board's Reason for Decision at Issuance, which discuss the rationale behind the selection of the site-specific water quality objective for TSS in the Slave River.</p>

		<p>wastewater/sewage treatment performance as an insufficient cells storage volume to foster longer hydraulic retention time [estimated to 24 days in winter, and 106 days in summer - Ammonia Discussion Paper, Section 2.2]; and the absence of a wetland to allow polishing treatment.</p> <p><b>Recommendation 1)</b> ENR recommends the Town submit the reasons in the Annual Report for the progressive increase in concentrations of TSS in wastewater discharges to the Slave River since 2010, and identify migration strategies that could be used to stop this increasing TSS trend.</p>	<p>Regardless, increases in TSS from Fort Smith's wastewater effluent would not noticeably impact TSS levels in the Slave River given the dilution ratio of 1:400,000.</p>	
8	<p>Topic 7: Best Practices for Improving Quality of Wastewater Discharges to the Environment</p>	<p><b>Comment</b> During the 2011 Fort Smith Water Licence renewal process, conditions were developed to foster ammonia treatment options [Ammonia Discussion Paper (Part D, Item 13)] and sewage treatment improvement [Sewage Treatment Improvement Plan (Part D, Item 14)]. Through the Ammonia Discussion Paper, it was established that while ammonia levels discharged at SNP 567-2 would be meeting WSER based on yearly averages, concentrations of CBOD and TSS monitored at the compliance point would not be meeting WSER treatment standards, being 3 to 4 times higher. In their Sewage Treatment Improvement Plan, the Town specified that since effluent</p>	<p><b>June 20:</b> The Town will review improvement measures, including enzyme application from time to time, and implement when determined to be cost effective and agreeable to, or as mandated by, the Board and the terms of the licence.</p>	<p>Acceptable response. Further research and application of improved treatment measures may be discussed during the licence renewal process.</p>

		<p>quality was meeting EQC limits of their Water Licence, there is currently no evidence supporting that improved wastewater is required to protect species in the Slave River based on a 1:400,000 dilution ratio, and WSER regulations are expected to be drafted/implemented in the next few years. The Town will not advance any particular option to improve wastewater treatment until such time as a comprehensive regulatory framework exists for the Far North. Comments and recommendations made by the MVLWB (see Staff Report on Ammonia Discussion Paper, p. 21 of 30) stated that it was not clear if and when the WSERs would be adopted and/or legislated in the NWT, and that the Town's improvement of sewage treatment facilities should not wait for the implementation of WSER. ENR notes that the next Water Licence renewal process is set to occur in October 2026. In their response to aeration enhancement options such as a pilot study conducted in Behchoko (Staff Report, p. 22 of 30), the Town specified that their consultants had significant experience with lagoon aeration, and identified other treatment processes that were more effective in northern locations. ENR commends the Town for the removal of approximately 400 m<sup>3</sup> of sludge from the anaerobic</p>		
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		<p>cells in July 2016. ENR notes that other communities in the NWT, such as the Town of Inuvik, have had success with supplementing their lagoon cells treatment with enzyme application. Inuvik has used this supplement since 1993, which has reportedly decreased the amount of sludge generated (and associated need for removal), and likely also positively influence effluent treatment.</p> <p><b>Recommendation 1)</b> ENR recommends that the Town demonstrate best practices by continuing to research and adopt intermediate enhancement methods, techniques and technology to improving the quality of their wastewater discharges to the environment.</p>		
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**GNWT - ENR: Patrick Clancy**

<b>ID</b>	<b>Topic</b>	<b>Reviewer Comment/Recommendation</b>	<b>Proponent Response</b>	<b>Board Staff Analysis</b>
1	General File	<p><b>Comment</b> (<a href="#">doc</a>) ENR Letter with Comments, Recommendations and Attachment</p> <p><b>Recommendation</b></p>	--	Noted.

**MVLWB: Erica Janes**

<b>ID</b>	<b>Topic</b>	<b>Reviewer Comment/Recommendation</b>	<b>Proponent Response</b>	<b>Board Staff Analysis</b>
1	2016 & 2017 Annual Reports: Laboratory analytical results	<p><b>Comment</b> Board staff note that the analytical results provided by Taiga Labs consistently reference the wrong Licence number.</p> <p><b>Recommendation</b> Please ensure that Town staff and Taiga Labs reference the correct Licence number: MV2011L3-0001</p>	<p><b>June 20:</b> Noted - the Town will confirm with Taiga that the correct licence is referenced.</p>	Acceptable response.

2	2016 & 2017 Annual Reports: SNP summary data	<p><b>Comment</b> Board staff note that SNP results at station 567-4 (summary table 3) show high concentrations for Fecal Coliforms and Iron (2016) and Iron (2017).</p> <p><b>Recommendation</b> Is the Town able to provide an explanation for these high concentrations of Fecal Coliforms and Iron in the surface run-off from the Solid Waste Disposal Facilities? Does the Town have any environmental concerns based on these results?</p>	<p><b>June 20:</b> The TNTC coliform reading was followed by measurements of 100 and 84 CFUs on the two subsequent readings. It is believed the TNTC coliform reading was nonrepresentative (i.e., contaminated). Iron readings at SNP-567-4 have fluctuated between 506 and 2120 µg/L since 2013. The Town does not have any environmental concerns but will continue to monitor.</p>	Acceptable response.
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