

Review Comment Table

Board:	WLWB
Review Item:	Community Government of Gameti - Water Licence Amendment - Waste Discharge from Water Treatment Plant (W2018L3-0001)
File(s):	W2018L3-0001
Proponent:	Community Government of Gameti
Document(s):	Draft Amended Water Licence (0.3 MB) Preliminary Screening (0.098 MB) O&M Plan - Version 3.0 - Cover Letter (0.154 MB) O&M Plan - Version 3.0 - Part 1 (4.9 MB) O&M Plan - Version 3.0 - Part 2 (16.9 MB) O&M Plan - Version 3.0 - Part 3 (13.4 MB) O&M Plan - Version 3.0 - Part 4 (15.3 MB) O&M Plan - Version 3.0 - Part 5 (16.4) O&M Plan - Version 3.0 - Part 6 (21.5 MB) O&M Plan - Version 3.0 - Part 7 (16.2 MB) O&M Plan - Version 3.0 - Part 8 (19.6 MB) O&M Plan - Version 3.0 - Response to Board's Directive re. Backwash Quality (0.1)
Item For Review Distributed On:	July 8 at 16:12 Distribution List
Reviewer Comments Due By:	July 22, 2019
Proponent Responses Due By:	July 29, 2019
Item Description:	The Community Government of Gameti is constructing a new Water Treatment Plant (WTP). As per paragraph 72.12(1)(b) of the <i>Mackenzie Valley Resource Management Act</i> (MVRMA) and paragraph 36(b) of the <i>Waters Act</i> , the Board may amend the conditions of a Water Licence on its own motion if it appears to the Board to be in the public interest. The Board understands that the new WTP is necessary to come into compliance with the new Canadian Drinking Water Quality Guidelines, and recognizes that a functioning WTP is essential for the community

in order to have access to drinking water. To address the proposed discharge of waste from the WTP and its revised Operations and Maintenance Plan, the Board is commencing a Water Licence Amendment process.

Board staff are suggesting amending Part D, Condition 11, to reflect the Board's July 2, 2019, Reasons for Decision. Board staff are also suggesting the amendment of Part H, Condition 1, to ensure that the Operations and Maintenance Plan for the WTP is included in the Water Licence.

Reviewers are invited to submit comments and recommendations using the Online Review System (ORS) by the review comment deadline specified below. Notices of application for water compensation must also be submitted by the review comment deadline. If reviewers seek clarification on the submission, they are encouraged to correspond directly with the Licensee prior to submitting comments and recommendations.

Please provide comments and recommendations on the documents linked below. Reviewers may also wish to consider providing an overarching recommendation regarding whether the Board should approve the submission, that will also provide context for the comments and recommendations and ultimately assist the Board with its decision.

The purpose of this draft Licence is to allow reviewers to comment on possible amended conditions. These draft materials are not intended to limit in any way the scope of Parties' comments. The Board is not bound by the contents of the draft Licence and will make its decision at the close of the proceeding on the basis of all the evidence and arguments filed by all Parties.

Under the *Preliminary Screening Requirement Regulations of the Mackenzie Valley Resource Management Act (MVRMA)*, the Board must conduct a preliminary screening for an amendment request, unless it is exempt from preliminary screening in accordance with the *Exemption List Regulations*. Reviewers are encouraged to provide comments and recommendations (e.g., on impacts and mitigation measures) to assist with the completion of the preliminary screening. The most recent preliminary screening for the Community Government of Gameti is located under Document(s) below.

Please be advised that comments made by reviewers regarding impacts of this proposed amendment to wildlife and wildlife habitat in this preliminary screening may inform the GNWT Minister of Environment and Natural Resources' determination regarding whether a Wildlife Management and Monitoring Plan will be required for this project as per Section 95 of the *Wildlife Act*.

	All documents that have been uploaded to this review are also available on the WLWB's public Registry. If you have any questions or comments about the ORS or this review, please contact the Board staff identified below.
Contact Information:	Anneli Jokela 867-765-4588 Brodie Costello 867-765-4583

Comment Summary

Community Government of Gameti (Proponent)			
ID	Topic	Reviewer Comment/Recommendation	Proponent Response
1	General File	Comment (doc) O&M Plan - Part 1 (revised), as referenced in proponent responses. Recommendation PROPGENFILE	
GNWT - ENR: Central Email GNWT			
ID	Topic	Reviewer Comment/Recommendation	Proponent Response
12	General File	Comment (doc) ENR Letter with Comments and Recommendations Recommendation	
1	Topic 1: Rae Lake “Both Water Source and Receiving Environment	Comment ENR notes that water treated at Gameti Water Treatment plant (WTP) is extracted from Rae Lake, also acting as a receiving environment for treated wastewater from Gameti Sewage Disposal Facilities (SDF). Rae Lake may also indirectly be receiving some of the WTP backwash discharges, considering the close proximity of WTP backwash discharge path to the lake (see Design Drawings). As such, ENR supports that the water licence provide provisions to oversee protective management of wastes released into or near Rae Lake, to minimize risks and facilitate source water protection. ENR suggests that it would be most helpful to clarify water licence conditions and current case details as much as possible, prior to requesting ENR inspector	July 29: Noted.

		<p>reinforcement guidance as currently suggested in the draft water licence Part D, Item 11. ENR recommendations were prepared to foster sound protective management practices of WTP wastes streams disposal. ENR also wishes that a balanced review process can be orchestrated and achieved, while ensuring that that no delays are experienced by Gameti community members in accessing good clean drinking water.</p> <p>Recommendation 1) In recognizing information gaps relating to wastes management from WTPs and to foster informed decisions towards source water protection, ENR supports the proposed amendment to Gameti water licence on the basis that Rae Lake is being used as both a drinking water source and a receiving environment for waste.</p>	
2	Topic 2: Water Treatment Clarifications	<p>Comment A July 2, 2019 memo (the memo) by AWC Water Solutions Ltd submitted to the Board specified that no chemical addition other than chlorine will be used in the operations of the new WTP using ultrafiltration technology (as per former GE by Suez, with Z Box membranes). Gameti WTP O&M Plan Template submitted on July 5th, 2019 also clarified that no sludge was to be produced. Following a discussion with MACA, it was further specified that aluminum salts treatment were not planned for Gameti WTP, that no coagulant system will be installed, and that backwash discharged from the WTP will be similar to the quality of the lake raw water. Documents reviewed as part of the current process however still allow for the potential usage of Alum or Polyaluminum Chloride (PAC) "if required" in the future (Gameti Technical O&M Plan - Part 1), under Chemical Dosing and Flocculation (p. 30-32).</p>	<p>July 29: The water treatment plant was designed to be upgradeable in future. It is possible that climate change may increase raw water turbidity, new regulations come into force, or there are emerging contaminates that the community may have to deal with in the future. Referencing that the plant could be upgraded to use coagulants in the future to deal with these changes should have no impact on the communities water licence.&nbsp; in the O&M manual, wherever the coagulant or alum is mentioned, refrence to future has been added.&nbsp;</p>

		<p>As well, the memo enumerated other NWT communities where similar plants using the same technology were commissioned in the past such as Samba K'e (Trout Lake). ENR notes that Aluminum Chlorhydrate for coagulation and flocculation are used at Samba K'e WTP, as enumerated in their O&M Plan Template. A June 18 2019 e-mail to the Board (by Stantec) specified that some sections of the WTP O&M Plan will be updated after Gameti plant installation, which for waste management facilities are typically to be submitted to the Board prior to construction.</p> <p>Recommendation 1) To provide clarity as per the type of water treatment (and associated waste generated) that will be occurring at Gameti WTP, ENR recommends that all references to usage of aluminum salts (in WTP O&M Plans and/or else) be removed, if not planned and to reflect above specifications</p>	
3	None	<p>Comment None</p> <p>Recommendation 2) Should aluminum salts be required in the future to ensure drinking water quality, ENR recommends that the WTP O&M Plan be updated and that reviewers be provided an opportunity to review and provide recommendations for additional mitigation measures as appropriate.</p>	<p>July 29: This is acceptable. Upgrading to use coagulants would require installation of pumps, injection ports, and programing changes to the PLC. There would also be changes to the operating procedures and the O&M Manual should be upgraded at that time. This point has been added in the section 3.2 of the O&M manual.</p>
4	Topic 3: WTP Wastes Management – CIPs Stream	<p>Comment Section 3.1.3 of Gameti Technical O&M Plan - Part 1 (p. 35-39 of 188) describes the 'Clean in Place' (CIP) membranes cleaning process occurring typically at one to three month intervals, by using 500 mg/L sodium hypochlorite and 2 g/L citric acid to remove foulants that are not removed during backwashes. The waste stream generated from the</p>	<p>July 29: Water discharged from inline analyzers and CIP process are significantly different. The analyzers used in this WTP include turbidity, free chlorine, flow, temperature, and ph. All measurements are passive without the use of reagents. Turbidity uses a light, chlorine and pH is measured via conductivity, temperature and flow are</p>

		<p>CIP treatment process is estimated at 2.75 m3 per month (Section 7 of the O&M Plan Template). A six-month supply of citric acid used for the CIP is contained in 20 L pails. CIP chemicals and analyzer wastewater 'method of disposal' are specified in Section 7, as Hazardous material disposal. ENR notes that sewage facilities were intended for municipal sewage wastes which can be degraded naturally in the environment. In the past, communities planning for final disposal of non-sewage wastes to their municipal sewage lagoons have been requested to establish the chemical composition/characterization for each of these wastes, prior to discharge. Lab results from sampling these non-sewage wastes have been required by the Board, and submitted by communities within their Annual Reports. ENR notes that monthly/annual quantities of all and each wastes discharges are also to be reported in Annual Reports (as per W2018L3-0003, Schedule 1 item b), which includes analyzer wastewater discharges.</p> <p>Recommendation 1) ENR recommends that the Proponent clarify the disposal process for the substances used for the CIP process.</p>	<p>even more passive measurements that do not interact with the water. In many NWT analyzer water is recycled directly into the treated water tank as water is not modified in anyway. The exact plumbing of these systems will be finalized during commissioning. The only chemical added to the analyzer water during treatment is sodium hypochlorite (chlorine for disinfection). If the analyzer water goes into the overland discharge stream, that pipe has a basket of a ascorbic acid (aka vitamin c) to dechlorinate any water flowing through it.</p> <p>o There are two types of CIP, acid and chlorine. Acid washes use citric acid to clean the membranes, which is then neutralized using sodium hydroxide (lye), before being transferred to the wastewater tank and being pumped to the lagoon. The chlorine clean use high strength chlorine, which is then neutralized using ascorbic acid (vitamin c) before being transferred to the wastewater tank and being pumped to the lagoon.&nbsp; For CIP neutralization, the details are included on O&M, section 3.14, page 24.&nbsp;</p>
5	None	<p>Comment None</p> <p>Recommendation 2) ENR recommends that each non-sewage waste stream planned for disposal at Gameti sewage lagoon to be characterized prior to discharge, or as otherwise deemed most acceptable by the Board. Discussions may be required between MACA, ENR, WLWB and Gameti to finalize the details (duration, etc.) of this characterization.</p>	<p>July 29: MACA will engage ENR and the WLWB through a separate process to address these concerns. A sampling program of similar water streams from a similar system occurred on July 24, 2019 and results are expected in early August. Field analysis of post CIP wastewater indicated a pH of 6.9 and total chlorine of 0 ppm.</p>
6	Topic 4: WTP Wastes Management “	<p>Comment The Technical O&M Plan - Part 1 submitted for the current review further specifies that neutralization and dechlorination is confirmed</p>	<p>July 29: Please see above response to item 4 for additional information on analyzer wastewater. The</p>

	Analyzer Wastewater Stream	<p>by measuring pH and chlorine levels with portable analyzers. When the chlorine and pH reach acceptable ranges, the tank contents are discharged to a sump within the WTP (p. 35 of 188). An estimated 7.8 m3 volume of analyzer wastewater will be transferred each month to the 7.9 m3 wastewater holding tank, subsequently emptied and hauled by a truck to Gameti municipal sewage lagoon for final disposal. The frequency of analyzer wastewater transfers to the holding tank and to the sewage lagoon depends on day to day operations.</p> <p>Recommendation 1) Should analyzers used at Gameti WTP differ from those specified in the submitted Technical O&M Plan (as above described), ENR recommends for those details to be updated for clarity.</p>	O&M manual will be updated following commissioning and re-submitted to the WLWB.
7	None	<p>Comment None</p> <p>Recommendation 2) ENR recommends that each non-sewage waste stream planned for disposal at Gameti sewage lagoon to be characterized prior to discharge, or as otherwise deemed most acceptable by the Board. Discussions may be required between MACA, ENR, WLWB and Gameti to finalize the details (duration, etc.) of this characterization. To help with this characterization, past results from other communities (within or outside of the NWT) using similar technologies may also be considered.</p>	July 29: Please see response to item 4.
8	None	<p>Comment None</p> <p>Recommendation 3) ENR recommends that the acceptable range numbers (to be reached during neutralization and dechlorination) to be specified.</p>	July 29: O&M Manual to be update to specify chlorine levels must be below 0.02 mg/L free chlorine and pH between 6.5 - 8.5. Mentioned in Section 3.14 of O&M manual.
9	None	<p>Comment None</p> <p>Recommendation 4) At a time deemed most</p>	July 29: This is acceptable.

		appropriate to the Board, ENR recommends for Gameti Spill Contingency Plan to be updated in order to include all chemicals stored at the WTP, such as (but not limited to) citric acid and chlorine.	
10	None	<p>Comment None</p> <p>Recommendation 5) Pending results from the aforementioned characterizations the analyzer wastewater storage tank may also be included within an updated Spill Contingency Plan as deemed most appropriate to the Board, along with details on the type of tank used (secondary containment) and storage location specifying the distance to Rae Lake.</p>	<p>July 29: This should not be required. The wastewater tank at the WTP will contain sump water from in plant washing and neutralized/dechlorinated CIP water. This water is significantly less hazardous than a typically household sewage tank.</p>
11	Topic 5: Gameti WTP Waste Management “Backwash Characterization	<p>Comment Clarifications from Stantec's June 18 e-mail estimated backwash quality for TSS at 330 mg/L, while additional documents references that TSS would not exceed 150 mg/L (the memo). Both documents specified that it was understood that analytical tests of backwash water samples could be required/provided once the WTP system is in operation - at a frequency suggested by AWC of weekly (initially), followed by monthly and annually, in order to confirm [backwash] water quality and negligible associated impacts on land. An estimated 1,240 L per day (1.24 m³) of backwash will be generated and released to land (or 37.2 m³/month), into a 12.9 meter discharge path towards Rae Lake (WTP Design Drawings). In the context of water source protection, the composition of the backwash should be estimated prior to WTP operations. Backwash characterization should also be monitored in a manner deemed most practical considering the frequency of discharges. ENR notes that monthly/annual quantities of all waste discharges are also to be reported in Annual Reports (as per</p>	<p>July 29: MACA has completed sampling on a similar system. Results should be available in early August. Additional sampling of the Gameti system can be completed during commissioning. MACA will engage ENR and WLWB under a separate process to address this item.</p>

		<p>Schedule 1 item b), which includes backwash discharges.</p> <p>Recommendation 1) ENR recommends that the backwash from the new WTP be estimated and characterized. To help estimate Gameti backwash characterization, past results from other communities (within the NWT or elsewhere) using similar technologies and with similar initial raw water lake quality used in the backwash process could be referenced. Discussions between MACA, ENR, WLWB and Gameti may be required to finalize the details (duration, etc.) of this characterization.</p>	
WLWB: Brodie Costello			
ID	Topic	Reviewer Comment/Recommendation	Proponent Response
1	3.5 Membrane Ultrafiltration Process Unit	<p>Comment Section 3.5 (Membrane Ultrafiltration Unit) states that "wastewater from the holding tank is emptied and hauled by a truck to the nearby lagoon for final disposal. All of the wastewater containing chemicals produced from the plant are released into the sump which is hauled by a truck to the nearby lagoon." It is not clear which lagoon wastewater will be discharged to.</p> <p>Recommendation Please confirm whether the lagoon referred to in the O&M Plan is the Sewage Disposal Facilities.</p>	<p>July 29: All community wastewater is treated at the same lagoon site, the community sewage disposal facility located at 64°N, 7°21.35'N, 117°16'52.66"W.</p>
2	3.14 Neutralization	<p>Comment As per section 3.5 (Membrane Ultrafiltration Unit), wastewater will be transported and discharged to the nearby lagoon. Section 3.14 (Neutralization) states that for wastewater generated from the membrane tanks, that, "final pH and free chlorine residual are verified with portable analyzers and must meet waste quality objectives (i.e. neutral and dechlorinated) before being drained to the</p>	<p>July 29: The chemical composition wastewater tank will be similar to that of lake water and treated drinking water. It is not practical to sample for all chemicals that may occur in the natural lake environment. Added chemicals include sodium hypochlorite (chlorine), sodium hypochlorite (lye), ascorbic acid (vitamin c), and citric acid. These chemicals are neutralized prior to being deposited in</p>

		<p>wastewater sump." Section 3.19.9 (Wastewater Sump and Tank) then states that "various waste volumes include process uses such as analyzers, Clean in Place (CIP), backwash, and in-plant uses such as testing, cleaning and general housekeeping". While it appears that some wastewater will be tested for final pH and residual chlorine prior to being discharged to the wastewater tank, it is not clear whether chlorine, citric acid, or other chemicals can enter the wastewater tank from other in-plant processes.</p> <p>Recommendation a) Provide a list of chemicals that may be present in the wastewater discharged to the lagoon. b) Provide anticipated concentrations of these chemicals and an explanation of whether these concentrations could affect lagoon processes (e.g. bacteria breaking down effluent) and the quality of water leaving the lagoon. c) If effects are possible, please identify how these will be mitigated.</p>	<p>the water water tank. MACA has engaged ENR under a separate process to provide sampling for some common parameters in similar systems and those results should be available in early August.</p>
3	Memo re. WTP Backwash Water Quality	<p>Comment The memo states that backwash "is expected to occur two to three times every day based on water demand", with "about 620L of wastewater is released" during each backwash, and "on average, 1,240 L per day of wastewater" being generated. However, section 3.5 (Membrane Ultrafiltration Unit) states that "five backwashes per operational day are anticipated", which would be an estimated 3100 L of backwash being discharged daily.</p> <p>Recommendation a) Please confirm how frequently backwash is expected to occur daily. b) If backwash is expected to occur more than two times per day, please provide a revised backwash volume estimate.</p>	<p>July 29: It was an error and has been changed to 2-3 times backwash per day. The backwash water generated will be on average 1240 L per day.</p>
4	Future versions of the O&M Plan	<p>Comment Board staff understand that the Community Government of Gameti is planning for</p>	<p>July 29: a) No technology changes are anticipated, but minor issues are resolved through the</p>

		<p>the new Water Treatment Plant to be operational by mid-August.</p> <p>Recommendation a) Will there be any further updates to the O&M Plan, due to changes in operation or technology, following the completion of construction of the Water Treatment Plant? b) If so, please describe the nature of these updates and indicate when the Community Government of Gameti would submit an updated O&M Plan.</p>	<p>commissioning process and an update O&M Manual will be provided. B) An updated O&M Manual will be provided approximately 1 month following commissioning.</p>
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June 22, 2019

Joseph Mackenzie
Chair
Wekeezhii Land and Water Board
#1-4905 48th Street
Yellowknife, NT
X1A 3S3

Dear Mr. Mackenzie,

**Re: Community Government of Gameti
Type B Water Licence Amendment Application – W2018L3-0001
Waste Discharge from Water Treatment Plant
Request for Review and Comments**

The Department of Environment and Natural Resources, Government of the Northwest Territories has reviewed the amendment at reference based on its mandated responsibilities under the *Environmental Protection Act*, the *Forest Management Act*, the *Forest Protection Act*, the *Species at Risk (NWT) Act*, the *Waters Act* and the *Wildlife Act* and provides the following comments and recommendations for the consideration of the Board.

Topic 1: Rae Lake – Both Water Source and Receiving Environment

Comment(s):

ENR notes that water treated at Gameti Water Treatment plant (WTP) is extracted from Rae Lake, also acting as a receiving environment for treated wastewater from Gameti Sewage Disposal Facilities (SDF). Rae Lake may also indirectly be receiving some of the WTP backwash discharges, considering the close proximity of WTP backwash discharge path to the lake (see Design Drawings).

As such, ENR supports that the water licence provide provisions to oversee protective management of wastes released into or near Rae Lake, to minimize risks and facilitate source water protection. ENR suggests that it would be most helpful to clarify water licence conditions and current case details as much as possible, prior to requesting ENR inspector reinforcement guidance as currently suggested in the draft water licence Part D, Item 11.

ENR recommendations were prepared to foster sound protective management practices of WTP wastes streams disposal.

ENR also wishes that a balanced review process can be orchestrated and achieved, while ensuring that that no delays are experienced by Gameti community members in accessing good clean drinking water.

Recommendation(s):

- 1) In recognizing information gaps relating to wastes management from WTPs and to foster informed decisions towards source water protection, ENR supports the proposed amendment to Gameti water licence on the basis that Rae Lake is being used as both a drinking water source and a receiving environment for waste.

Topic 2: Water Treatment Clarifications

Comment(s):

A July 2, 2019 memo (the memo) by AWC Water Solutions Ltd submitted to the Board specified that no chemical addition other than chlorine will be used in the operations of the new WTP using ultrafiltration technology (as per former GE by Suez, with Z Box membranes). Gameti WTP O&M Plan Template submitted on July 5th, 2019 also clarified that no sludge was to be produced.

Following a discussion with MACA, it was further specified that aluminum salts treatment were not planned for Gameti WTP, that no coagulant system will be installed, and that backwash discharged from the WTP will be similar to the quality of the lake raw water.

Documents reviewed as part of the current process however still allow for the potential usage of Alum or Polyaluminum Chloride (PAC) “*if required*” in the future (Gameti *Technical O&M Plan – Part 1*), under *Chemical Dosing and Flocculation* (p. 30-32). As well, the memo enumerated other NWT communities where similar plants using the same technology were commissioned in the past such as Sambaa K’e (Trout Lake). ENR notes that Aluminum Chlorhydrate for coagulation and flocculation are used at Sambaa K’e WTP, as enumerated in their O&M Plan Template.

A June 18 2019 e-mail to the Board (by Stantec) specified that some sections of the WTP O&M Plan will be updated after Gameti plant installation, which for waste management facilities are typically to be submitted to the Board prior to construction.

Recommendation(s):

- 1) To provide clarity as per the type of water treatment (and associated waste generated) that will be occurring at Gameti WTP, ENR recommends that all references to usage of aluminum salts (in WTP O&M Plans and/or else) be removed, if not planned and to reflect above specifications
- 2) Should aluminum salts be required in the future to ensure drinking water quality, ENR recommends that the WTP O&M Plan be updated and that reviewers be provided an opportunity to review and provide recommendations for additional mitigation measures as appropriate.

Topic 3: WTP Wastes Management – CIPs Stream

Comment:

Section 3.1.3 of Gameti Technical O&M Plan - Part 1 (p. 35-39 of 188) describes the 'Clean in Place' (CIP) membranes cleaning process occurring typically at one to three month intervals, by using 500 mg/L sodium hypochlorite and 2 g/L citric acid to remove foulants that are not removed during backwashes. The waste stream generated from the CIP treatment process is estimated at 2.75 m³ per month (Section 7 of the O&M Plan Template). A six-month supply of citric acid used for the CIP is contained in 20 L pails. CIP chemicals and analyzer wastewater 'method of disposal' are specified in Section 7, as *Hazardous material disposal*.

ENR notes that sewage facilities were intended for municipal sewage wastes which can be degraded naturally in the environment. In the past, communities planning for final disposal of non-sewage wastes to their municipal sewage lagoons have been requested to establish the chemical composition/characterization for each of these wastes, prior to discharge. Lab results from sampling these non-sewage wastes have been required by the Board, and submitted by communities within their Annual Reports. ENR notes that monthly/annual quantities of all and each wastes discharges are also to be reported in Annual Reports (as per W2018L3-0003, Schedule 1 item b), which includes analyzer wastewater discharges.

Recommendations:

- 1) ENR recommends that the Proponent clarify the disposal process for the substances used for the CIP process.
- 2) ENR recommends that each non-sewage waste stream planned for disposal at Gameti sewage lagoon to be characterized prior to discharge, or as otherwise

deemed most acceptable by the Board. Discussions may be required between MACA, ENR, WLWB and Gameti to finalize the details (duration, etc.) of this characterization.

Topic 4: WTP Wastes Management – Analyzer Wastewater Stream

Comment(s):

The Technical O&M Plan – Part 1 submitted for the current review further specifies that neutralization and dechlorination is confirmed by measuring pH and chlorine levels with portable analyzers. When the chlorine and pH reach acceptable ranges, the tank contents are discharged to a sump within the WTP (p. 35 of 188). An estimated 7.8 m³ volume of analyzer wastewater will be transferred each month to the 7.9 m³ wastewater holding tank, subsequently emptied and hauled by a truck to Gameti municipal sewage lagoon for final disposal. The frequency of analyzer wastewater transfers to the holding tank and to the sewage lagoon depends on day to day operations.

Recommendation(s):

- 1) Should analyzers used at Gameti WTP differ from those specified in the submitted Technical O&M Plan (as above described), ENR recommends for those details to be updated for clarity.
- 2) ENR recommends that each non-sewage waste stream planned for disposal at Gameti sewage lagoon to be characterized prior to discharge, or as otherwise deemed most acceptable by the Board. Discussions may be required between MACA, ENR, WLWB and Gameti to finalize the details (duration, etc.) of this characterization. To help with this characterization, past results from other communities (within or outside of the NWT) using similar technologies may also be considered.
- 3) ENR recommends that the acceptable range numbers (to be reached during neutralization and dechlorination) to be specified.
- 4) At a time deemed most appropriate to the Board, ENR recommends for Gameti Spill Contingency Plan to be updated in order to include all chemicals stored at the WTP, such as (but not limited to) citric acid and chlorine.
- 5) Pending results from the aforementioned characterizations the analyzer wastewater storage tank may also be included within an updated Spill Contingency Plan as deemed most appropriate to the Board, along with details

on the type of tank used (secondary containment) and storage location specifying the distance to Rae Lake.

Topic 5: Gameti WTP Waste Management – Backwash Characterization

Comment(s):

Clarifications from Stantec's June 18 e-mail estimated backwash quality for TSS at 330 mg/L, while additional documents references that TSS would not exceed 150 mg/L (the memo). Both documents specified that it was understood that analytical tests of backwash water samples could be required/provided once the WTP system is in operation – at a frequency suggested by AWC of weekly (initially), followed by monthly and annually, in order to confirm [backwash] water quality and negligible associated impacts on land. An estimated 1,240 L per day (1.24 m³) of backwash will be generated and released to land (or 37.2 m³/month), into a 12.9 meter discharge path towards Rae Lake (WTP Design Drawings).

In the context of water source protection, the composition of the backwash should be estimated prior to WTP operations. Backwash characterization should also be monitored in a manner deemed most practical considering the frequency of discharges.

ENR notes that monthly/annual quantities of all waste discharges are also to be reported in Annual Reports (as per Schedule 1 item b), which includes backwash discharges.

Recommendation(s):

- 1) ENR recommends that the backwash from the new WTP be estimated and characterized. To help estimate Gameti backwash characterization, past results from other communities (within the NWT or elsewhere) using similar technologies and with similar initial raw water lake quality used in the backwash process could be referenced. Discussions between MACA, ENR, WLWB and Gameti may be required to finalize the details (duration, etc.) of this characterization.

Comments and recommendations were provided by ENR technical experts in the Water Management and Monitoring Division and the North Slave Region and were coordinated and collated by the Environmental Assessment and Monitoring Section (EAM), Environmental Stewardship and Climate Change Division.

Should you have any questions or concerns, please do not hesitate to contact Patrick Clancy, Environmental Regulatory Analyst at (867) 767-9233 Ext: 53096 or email patrick.clancy@gov.nt.ca.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Clancy', written in a cursive style.

Patrick Clancy
Environmental Regulatory Analyst
Environmental Assessment and Monitoring Section
Environmental Stewardship and Climate Change Division
Department of Environment and Natural Resources
Government of the Northwest Territories