



Mackenzie Valley Land and Water Board
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November 8, 2018

File: MV2009L3-0007

Mr. Rene Hawkes
Municipal Engineer, Public Works and Engineering
City of Yellowknife
P.O. Box 580
Yellowknife NT X1A 2N4

Email: rhawkes@yellowknife.ca

Dear Mr. Hawkes:

Re: Interim Closure and Reclamation Plan for the Solid Waste Disposal Facilities, Version 3 – Approved
City of Yellowknife Municipal Water Licence MV2009L3-0007

The Mackenzie Valley Land and Water Board (the Board) met on November 8, 2018 and reviewed the City of Yellowknife's (City) Interim Closure and Reclamation Plan for the Solid Waste Disposal Facilities, Version 3 (ICRP V3), submitted to satisfy Part F, condition 1 and Schedule 3, condition 1 of municipal Water Licence (Licence) MV2009L3-0007.

The Board hereby approves the Interim Closure and Reclamation Plan for the Solid Waste Disposal Facilities, Version 3, as submitted.

The Board is not currently requiring the City to submit a revised ICRP; however, the Board reminds the City to ensure that future iterations of the ICRP include accurate timelines for current and future closure activities, and that additional details should be provided in future revisions of the ICRP to address final plans, details and monitoring for any landfill component that the City plans to close, and be submitted for approval 6 months prior to closure of that component. Any revisions to the Licence Surveillance Network Program will also result in a requirement to revise the ICRP.

In addition, as per Part G of MV2009L3-0007, signed and stamped drawings must be submitted to the Board at least 60 days prior to Construction and within 90 days following completion of structures. The drawings for final capping of the existing landfill cell should include details as to the depth of layers making up the system being employed, as well as details related to landfill gas mitigation and monitoring infrastructure; these timelines should be built into the future ICRP revisions. The Board reminds the City to update the Interim Groundwater Monitoring Plan with action levels based on background groundwater concentrations (once they are derived from data obtained from MW-9) and to provide a comparison with Federal Interim Groundwater Quality Guidelines.

The City shall include the following details in the next iteration of the Plan, when it is submitted:

1. Reflect the information on landfill gas monitoring provided during the review, as well as additional details related to implementation and use of portable landfill gas (LFG) instruments and locations, as well as locations, rationale and installation timelines for passive LFG vents;
2. Reference to an expert in the field of landfill gas generation having determined LFG monitoring locations;
3. Specify the basis of choosing groundwater monitoring parameters based on regulatory guidance from other jurisdictions in Canada;
4. Specify the total number of leachate management sumps used at the SWDF;
5. Ensure consistency between leachate management measures in the ICRP and the SWDF Operation and Maintenance Plan;
6. Provide a timeline and details for capping and closing the old landfill cell, including liner installation over the remaining sections of the SWDF and associated landfill gas and other monitoring that accounts for the requirements of Part G of MV2009L3-0007;
7. Retitle section 2.4 as 'Surface Water Management' rather than 'Water Management' for clarity;
8. Accurate and current status of remaining infrastructure at the contaminated soil and water treatment facility, and descriptions of activities under years already past;
9. Clarify that the cap beneath the Compost Facility is already in place;
10. Reference Licence SNP surface water monitoring stations;
11. A clear response to each recommendation included in the appended Dillon Consulting Landfill Gas Monitoring Plan, with rationale; and
12. The depth of the layers making up the final cover system for each type of cover system used.

When additional changes are requested from the Board, details of how the information is provided should be included in a concordance table to illustrate how the City has addressed each requested change.

The Board encourages the City to reference Environment and Climate Change Canada's *Solid Waste Management for Northern and Remote Communities, Planning and Technical Guidance Document* (March 2017) in the preparation of future iterations of the ICRP.

The Board notes and appreciates the City's efforts to submit requirements in accordance with Licence MV2009L3-0007, and further notes that The Board notes that some topics raised during this and other reviews may be discussed during the renewal process for the City's Licence. The City shall adhere to the commitments made in their responses to reviewer comments dated June 8, 2018.

If you have any questions or concerns, please contact Erica Janes at (867) 766-7466 or email ejanes@mvlwb.com.

Yours sincerely,



Mavis Cli-Michaud
MVLWB, Chair

Copied to: Distribution list
Nahum Lee, Water Resource Officer, GNWT-ENR

Attachment: Review Comment Summary Table

Review Comment Table

Board:	MVLWB
Review Item:	City of Yellowknife - Interim Closure and Reclamation Plan Version 3 (MV2009L3-0007)
File(s):	MV2009L3-0007
Proponent:	City of Yellowknife
Document(s):	MV2009L3-0007 - City of YK - Interim Closure and Reclamation Plan V3 - Mar29-18 (3.5 MB) MV2009L3-0007 - City of YK - Deferral - Interim Landfill Closure and Reclamation Plan - Jul21-16 (123.3 KB) MV2009L3-0007 City of YK - WL Meeting Summary Notes - Oct27-16 (227.5 KB) MV2009L3-0007 - City of YK - Interim Groundwater Monitoing Plan V1-1 - Nov17-17 (5.7 MB) MV2009L3-0007 - City of YK - Staff confirmation of conformity for changes to Interim GW Monitoring Plan V1.1 - Jan9-18 (206KB)
Item For Review Distributed On:	Apr 13 at 10:08 Distribution List
Reviewer Comments Due By:	May 10, 2018
Proponent Responses Due By:	May 24, 2018
Item Description:	<p>May 22, 2018 Update: the City has requested and been granted additional time to respond to reviewer comments. The new comment response deadline is June 8, 2018.</p> <p>-----</p> <p>The City of Yellowknife has submitted a revised Interim Closure and Reclamation Plan (ICRP, Version 3), in accordance with Part F, condition 1 and Schedule 3, condition 1 of their municipal Water Licence MV2009L3-0007.</p> <p>Three previous versions of the ICRP have been submitted since issuance of the City’s Licence. Following the submission and review of Version 2, the Board deferred its decision on the ICRP Version 2 and directed a meeting of interested parties for the fall of 2016, to discuss the ICRP, submission timelines and outstanding issues. Additional direction for the ICRP was also provided in the July 21, 2016 letter from the Board (see link).</p> <p>The meeting of interested parties was held October 27, 2016 (see link for summary notes), and summary notes sent to the distribution list for review and feedback; no feedback was received. The City has submitted the ICRP Version 3 in accordance with the timeline they indicated in October 2016, and including the Landfill Gas Monitoring Plan as Section 4. Version 1.1 of the interim Groundwater Monitoring Plan (see link) was previously approved on January 9, 2018 (see link).</p> <p>Reviewers are invited to submit questions, comments and recommendations on the Interim Closure and Reclamation Plan Version 3 by May 10, 2018. If you have questions or comments regarding this Plan or using the Online Review System, please contact Erica Janes at 867-766-7466 or ejanes@mvlwb.com.</p>

General Reviewer Information:	In addition to the email distribution list, the following organizations received review materials by fax: <ul style="list-style-type: none"> • Hay River Metis Council: Trevor Beck, President - (867)874-4472; and • NWT Metis Nation - Tim Heron, NWTMN IMA Coordinator - (867)872-3586.
Contact Information:	Erica Janes 867-766-7466 Heather Scott 867-766-7463 Jen Potten 867-766-7468

Comment Summary

Environment and Climate Change Canada: Petrel Liu				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Analysis
2	General File	Comment (doc) ECCC Cover Letter Recommendation	--	Noted
1	Section 6.3.1 - Leachate Monitoring	Comment The report indicates that the Proponent attempted to dispose of collected leachate in 2015 by pumping it back over the landfill but that this approach had limited success. It is stated that the city is investigating additional disposal alternatives for leachate, including disposal at the lagoon. However, no discussion is provided on how leachate is currently being managed given the lack of success with pumping it back over the landfill. Recommendation ECCC recommends that the proponent provide a description of how leachate from the Solid Waste Facility is currently being managed. In addition, prior to disposal of leachate in the lagoon, an assessment of whether leachate will impair biological treatment should be undertaken.	June 8: As leachate has historically been disposed of in the lagoon without issue, the City continues this practice. A sample is taken prior to disposal for analysis and the results are provided to the inspector once received. In response to Board requirements, the City has expanded its parameters for analyses for samples collected from SNP Stations 0032-F1 and 0032-F3 in order to determine if its disposal is having an adverse effect on the lagoon.	Acceptable response. The issue of disposing of non-sewage wastes in the Sewage Disposal Facilities may be discussed during the renewal process of the City's Licence.

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Analysis
9	General File	Comment (doc) ENR Letter with Comments and Recommendations with Figure 1 Attachment Recommendation	--	Noted.
10	General File	Comment (doc) Attachment: Figure 1:Map of Monitoring Wells Recommendation	--	Noted.
1	Topic 1: Interim Groundwater Monitoring Plan (v1.1) Standards/Guidelines for Groundwater Performance Monitoring Assessment	Comment In June 2017 (MVLWB Staff report), it was requested that the next version of the Interim Groundwater Monitoring Plan Version 1.1 (IGMP) specify which standards/guidelines would be selected as a comparative tool for data assessment and performance monitoring (6 b), and that future Annual Reports (including 2017's) clearly identify these guidelines (and associated exceedances) in the groundwater monitoring results' tabular summary section/appendix (p. 9 of report). The IGMP (v1.1), Section 9, specifies that Standards for Landfills in Alberta and the Ontario Ministry of the Environments Landfill Standards (2012) are being used as comparative tools for data assessment. While guidance on groundwater parameter selection and other useful information is provided in the Standards for Landfills in Alberta and Ontario Guidelines, neither document may be providing specific groundwater limits against which monitoring data from the Yellowknife site could be assessed. ENR further notes that the	June 8: The Standards for Landfills in Alberta (Section 5.2) and the Ontario Ministry of the Environment Landfill Standards (Section 4.5) require the establishment of background water quality as a comparative tool for assessing the quality of the groundwater around a landfill. As noted in the Interim Groundwater Monitoring Plan, the City plans to drill a background monitoring well (MW-9) near highway 4, upstream of the groundwater flow. As the landfill is already active, this well will be sampled for at least 3 years to establish ambient background levels, from which groundwater quality control limits will be established. The generic guidelines in the FIGQG do not take into account the existing background groundwater quality for the SWF and will not be used by the City to establish groundwater quality control limits.	The City should update IGMP with action levels based on background concentrations (once they are derived from data obtained from MW-9) and provide a comparison with FIGQG.

		<p>unidentified first column provided with the 2017 Annual Report results (Appendix D) appear to correspond to the Federal Interim Groundwater Quality Guidelines (FIGQG) standards, and that exceedances within this table were not identified as requested. FIGQG limits are available for Agricultural, Residential/Parkland and Commercial/Industrial Land Uses, which frequently recommend the same limit across these three categories. Section 9 of the IGMP does not specify that parameters were based on regulatory guidance from other jurisdiction in Canada, specifically Ontario and Alberta (MVLWB Staff Report Recommendation 6 c).</p> <p>Recommendation 1) ENR recommends the IGMP include a list of parameters and associated limits, or at a minimum, a link as to where these numerical standards can be accessed, to assess the quality of groundwater at the Yellowknife facility. If limits are not provided within the Standards for Landfills in Alberta and the Ontario Ministry of the Environments Landfill Standards (2012), ENR recommends the use of FIGQG standards.</p>		
2	None	<p>Comment None</p> <p>Recommendation 2) ENR recommends Section 9 of the IGMP specify that groundwater monitoring parameter selection was based on regulatory guidance from other</p>	<p>June 8: In future versions of the Plan, the City will modify Section 9 of the IGMP to specify the basis for choosing the groundwater monitoring parameters.</p>	Acceptable response.

		jurisdictions in Canada, specifically Ontario and Alberta, or as otherwise specified by the MVLWB.		
3	Topic 2: Interim Closure and Reclamation Plan (v2) Monitoring of New Groundwater Monitoring Wells in 2018?	<p>Comment P. 33 of the ICRP (v3) identifies planned new groundwater monitoring wells (MV-9, MV-10, MW-11 and MW-12) to be established around the perimeter of the site. As elevated concentrations of several contaminants have already been identified in 2010, 2011, and confirmed with subsequent monitoring events in 2016 and 2017 (Annual Reports), monitoring at the new groundwater monitoring wells will be crucial to identifying whether contaminated leachate is migrating from the site towards receiving end points such as Fault Lake, Back Bay and Jackfish Lake. In their reply to Comment #3 in June 2016 during the review period of the ICRP (v2), the City specified that additional groundwater monitoring wells were to be installed in 2016, but for various reasons these wells were not installed. Information provided in both the ICRP (v3) and the IGMP (v1.1) indicate that new groundwater wells will be installed in 2018. However, conflicting information regarding the sampling of these wells was provided. As such, Section 7 (table) of the IGMP (v1.1) specifies that monitoring of the new wells will begin in 2019, while Section 15 of the same plan describes wells installation in 2018 - with commencement</p>	<p>June 8: The City plans to drill the new wells (MV-9, MV-10, MW-11 and MW-12) during the 2018 construction season, and will begin monitoring the wells starting in 2019. There is an error in the table in section 15 of the IGMP (v1.1). The Commencement of Monitoring will start in 2019, not 2018. This will be corrected in a future version of the IGMP. As noted above, background groundwater quality must be established first before groundwater quality control limits are set and it can be said that the concentration of any parameter is "elevated".</p>	<p>Board staff note that the City was issued Permit MV2018X0015 on September 20, 2018, for the drilling of groundwater monitoring wells MW-10, MW-11 and MW-12, which are along Highway #4 on the Ski Club lease. A Permit has not been issued for the background well (MW-9), as the City did not have eligibility to apply to drill a well on Commissioner's Lands. Board staff are of the understanding that once the City can prove eligibility for this location, they will apply for an amendment to the Permit to drill MW-9.</p> <p>The City should ensure that accurate dates for planned activities are included in the most recent versions of plans.</p>

		<p>of monitoring in 2018 also. The ICRP (v3)'s Implementation Schedule (Section 7) also appears to indicate proactive monitoring of new wells in 2018 (Monitoring programs to continue - with new wells as part of the program). Maps provided in Appendix C of the IGMP (v1.1) specify that wells will be installed in 2018 - but that sampling will be initiated in 2019 (p. 24 of 109). ENR remains very concerned of the possibility that landfill leachate may be migrating off-site, and urges the City to initiate monitoring, once the new wells have been installed, as part of their 2018 Groundwater Monitoring Program.</p> <p>Recommendation 1) ENR recommends the City initiate monitoring of their new perimeter (and background) groundwater monitoring wells MV-9, MV-10, MW-11 and MW-12, in 2018.</p>		
4	<p>Topic 3: ICRP (v2) New Groundwater Monitoring Wells, Part 2</p>	<p>Comment Section 2.4 of the Landfill Drainage Study specifies that "Regionally, the groundwater flow direction has been determined to be to the southeast towards Jackfish Lake, Great Slave Lake and Fault Lake." It appears that no perimeter well is currently located to capture groundwater that may be migrating from the landfill site towards Jackfish Lake. Groundwater monitoring at this site may help address public concerns on potential SWF drainage to Jackfish Lake. ENR notes that a groundwater well could be</p>	<p>June 8: The City's Engineering consultant (Dillon Consulting) assessed the groundwater flow at the SWF and determined that MW-8 (existing well that was renamed) can be used to characterize the groundwater near the southeastern boundary. As noted in table 4.1 of the "Groundwater Monitoring Plan Review" by Dillon, MW-8 serves as "Protection for Jackfish Lake Receptor"</p>	<p>Board staff note that MW8, as illustrated in the figure on page 33 of 81 of the City's ICRP V3, was installed in 2012 and is close to ENR's recommended location for an addition well to the south of the SWDF, in order to capture potential groundwater flow to Jackfish Lake.</p>

		<p>added at a lower descending elevation, such as indicated in the attached Figure 1.</p> <p>Recommendation 1) ENR recommends the addition of one groundwater monitoring perimeter well to the southern limit, in order to capture potential groundwater flow to Jackfish Lake.</p>		
5	<p>Topic 4: ICRP V3 Leachate Management Sumps Cell A, Cell B</p>	<p>Comment Section 2.5.4 specifies that at the present time, the measures used by the City to promote run-off from Cell A, and limit exposure to waste when Cell B opens, include having an intermediate cover on this cell during usual operations and continuing to clear the area of snow to limit spring run-off. Section 6.1.3 specifies that "Cell A and Cell B has a sump that is used to collect and remove leachate from the cell and any future cells that are designed and built will also have this provision. These sump locations ." It is unclear if the City is referring to one sump for all Cells, or one sump for each Cell. This section further specifies that ".. the City may need to look at other methods of disposal moving forward, including disposal at the lagoon. If the City plans to dispose of the leachate at an off-site location, the City will test the leachate at this time for parameters listed in the City's Water Licence, and dispose of it in a safe, approved manner."</p> <p>Recommendation 1) To facilitate closure planning activities, ENR recommends that the total number of</p>	<p>June 8: Information regarding the total number of sumps being used for leachate management will be provided in the next version of the ICRP.</p>	<p>Acceptable response.</p>

		sumps that are being used for leachate management at the SWF (and associated vocation) be specified in ICRPs.		
6	None	Comment None Recommendation 2) ENR recommends the City's ICRP align with management measures as outlined in their SWF O&M Plan including, but not limited to, sampling to confirm the acceptability of disposing of leachate/effluents to the City's sewage lagoon.	June 8: The City will review both the SWF O&M Plan and the ICRP and ensure that the information contained in both are consistent.	Acceptable response.
7	Topic 5: IGMP (v1.1) Old Cell Capping Timeline Timeline Unspecified	Comment Significant concentrations of Chloride, Sulphate, Arsenic, Boron, Iron, Manganese and Zinc, as compared to the Federal Interim Groundwater Quality Guidelines (FIGQG) were consistently monitored underneath the City's SWF in 2010 and 2011 (Landfill Drainage Study (LDS)), and again in 2016 and 2017 as the City initiated the monitoring procedures from their IGMP. The capping program to reduce the amount of infiltration and leachate generation is identified as the main preventative measure to limit potential migration of contaminated landfill leachate (Section 13 of the IGMP (v1.1)). As indicated under Leachate Monitoring (section 6.1.3 of ICRP (v3)), capping of the Old Landfill Cell will further reduce leachate production from this location- and is considered as the main leachate management option for the Old Cell. The City specifies (section 7 - ICRP) that the closure	June 8: The City is currently working to establish a timeline for capping of the old landfill cell which, once finalized, will be included in the ICRP. This timeline is still being developed as the area is still receiving waste.	Acceptable response. The City should ensure that future iterations of the ICRP include accurate timelines for current and future closure activities. Furthermore, the ICRP should be revised to include final plans, details and monitoring for any landfill component that the City plans to close, and submitted for approval 6 months prior to closure of that component. Board staff note that as per Part C of MV2009L3-0007, signed and stamped drawings for this type of structure must be submitted to the

		<p>process of this initial cell is expected to take years to complete, and that an overview of the expected timeline for the major closure activities at the SWF over the next few years is shown there below. However, the timing information regarding to planned Capping of the Old Landfill Cell provided in Section 7 was "2019 and beyond". Most closure activities provided in that section occurred in the past and repeated the timeline provided in the 2015 version of the plan - which then forecasted until 2018 and for general capping of the rest of the Old Landfill Cell.</p> <p>Recommendation 1) ENR recommends for the City to provide a timeline for Capping of the Old Landfill Cell within Section 7 of the current Interim Closure and Reclamation Plan (v3). Information should include the current planned timeline for the installation of impermeable Low Density Polyethylene liner (as per Section 5) over the rest (or remaining section(s)) of the SWF, as these sections will be tying into the liner of the Composting Facility.</p>		<p>Board at least 60 days prior to Construction and within 90 days following completion; these timelines should be built into the ICRP.</p>
8	<p>Topic 6: ICRP V3 Water Management and Other Miscellaneous Items</p>	<p>Comment Current information provided in the Section 2.4 of the ICRP (v3) on "Water Management" such as "capping of a large area of the SWF should not have a significant impact on drainage" used to refer only to Surface Water Management in previous ICRP versions, and may be confusing when applied to a</p>	<p>June 8: The City will rename this section in the next version of the ICRP.</p>	<p>Acceptable response.</p>

		<p>groundwater management context. ENR notes that information on surface water monitoring provided in Section 2.4 was also specified in section 6.1.1. As surface water drainage patterns at the SWF encompasses most of Section 2.4 (as illustrated in Appendix B), the City may rename this part of their ICRP as "Drainage Patterns at the SWF" (or similar), where the SWF determined groundwater flow (as per p. 95 of 109 of the GMP) may also be described and/or illustrated.</p> <p>Recommendation 1) ENR recommends the current title heading of section 2.4 be modified to specify Surface Water Management - or Drainage Patterns at the SWF (or similar) [with integration of groundwater drainage patterns details], for clarity purposes.</p>		
MVLWB: Erica Janes				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Analysis
1	Section 2.5.3 Areas Changing Operations	<p>Comment Board staff note the sentence under subsection i), 'The remaining infrastructure from these operations will be cleaned up and removed from site in 2016.' is out of date.</p> <p>Recommendation Please provide an update on the current status of remaining infrastructure at the contaminated soil and water treatment facility.</p>	<p>June 8: The contaminated soil and water treatment facility was decommissioned in 2016 and no contaminated soils are present. The pad area is currently being used as a holding area for vehicles before the liquids in the vehicles are drained and the vehicles processed and removed.</p>	<p>Acceptable response.</p> <p>The City should ensure current information is included in the next version of the ICRP.</p>
2	Section 3.1 Current Regulations	<p>Comment This section states the that old landfill construction cell is expected to reach capacity 'soon'.</p>	<p>June 8: It is anticipated that the old landfill cell will reach capacity in 2018.</p>	<p>Noted.</p> <p>See Comment ID GNWT-ENR 7.</p>

		Recommendation Is this a current statement? Is there an estimated date for closing the old landfill cell?		
3	4.2.1 Current Safety Measures for Landfill Gas	<p>Comment This section lists three ways of detecting landfill gas: odour issues, hissing noises or bubbling of ponded water. The City states that staff have been briefed on these possible occurrences, but doesn't list any additional monitoring being currently conducted. In a review of Dillon's 2015 Landfill Gas letter to the City (see the public registry for 'third party engineering review of proposed Landfill Gas Study - Apr20-15.), an engineer states that '... it is not possible to confirm that there is no subsurface gas migration occurring without instituting a monitoring program specific to that purpose...'. Section 4.2.2 outlines the future LFG monitoring plan and summarizes its implementation, but few details and no timelines are provided, as were required in the Board's July 21, 2016 letter to the City (along with a discussion of uncertainties and factors that could affect their plan).</p> <p>Recommendation Please include additional details, rationale and approximate timelines for the proposed LFG monitoring activities listed in Section 4.2.2, including but not limited to: when instrument vs visual inspections will be used and where; how and why meteorological data from the Yellowknife Airport will be used; where passive LFG</p>	<p>June 8: City staff are currently trained to be on the lookout for stressed vegetation as a indication of LFG as part of their daily work activities. The City will look at purchasing a portable LFG detection instrument as part of the 2019 budget, to be used by City staff as part of their daily work activities. Meteorological data, including atmospheric pressure and wind speed/direction, will be used to give an indication of the likelihood of gas migration occurring. The location of the passive LFG collection vents will be determined during the final design of the cap for the old landfill cell. The criteria that will determine whether the landfill is no longer a hazard are those set by the "Standards for Landfill in Alberta (2010)", section 6.3:Post-closure</p>	<p>The City should revise Section 4.2.1 in the next iteration of the Plan to reflect the information provided during the review, as well as additional details related to implementation of use of portable LFG instruments and locations, rationale and installation timelines for passive LFG vents.</p> <p>The City should also ensure that the next iteration of the ICRP provides a timeline for the final design of the cap for the old landfill cell that accounts for the requirements of Part C of MV2009L3-0007.</p> <p>As in Comment ID GNWT-ENR 7, if the City plans to close a component of the landfill, a revised ICRP must be submitted to the Board for approval 6 months in advance of closure of that component.</p>

		collection vents will be located, with rationale and installation timelines; what the criteria for deeming the landfill to no longer be a hazard to the environment will be.		
4	Table 1: Monitoring frequencies	<p>Comment Table 1 illustrates that odour complaints are the only type of monitoring undertaken outside of monitoring structures, on an 'as received' basis. The third party review of the proposed LFG study referenced in the comment above states: 'Relying on odour complaints to assess the occurrence of off-site migration on its own should not form the basis for assessing the occurrence of gas migration in the subsurface.'</p> <p>Recommendation Please provide rationale for using odour complaints as the only type of monitoring for LFG.</p>	<p>June 8: The bailing facility is the most low lying area near the old landfill cell, where LFG is likely to accumulate. This facility is monitored by the Armstrong Gas Monitor. Once the old landfill cell is capped, the measures in Table 1 under "Future Monitoring" will be implemented.</p>	<p>The City could be reminded ICRP 6 months prior, Construction drawings</p> <p>Final capping details and associated monitoring should addressed LFG – see ENR 7.</p>
5	Section 5.2 Centralized Compost Facility Cap	<p>Comment This section refers to the cap beneath the Compost Facility providing a few additional layers of support and protection.</p> <p>Recommendation Please clarify whether this cap is already in place, or whether the City plans to move the compost windrows at a future date in order to install the cap.</p>	<p>June 8: The cap underneath the Compost Facility is already in place.</p>	<p>Noted.</p> <p>The City should provide this clarification in the next version of the Plan.</p>
6	Section 6.1 Water Monitoring	<p>Comment This section describes the water monitoring on site, but does not refer to Licence SNP requirements for surface and groundwater monitoring.</p> <p>Recommendation Please revise this section to include reference to the Licence SNP water monitoring requirements.</p>	<p>June 8: The section will be revised to include reference to the Licence SNP water monitoring requirements in future versions of the ICRP. At this time, only the surface water sites are SNP stations.</p>	<p>Acceptable response for reference to the surface water SNP requirements in future versions of the ICRP. However, the City should revise the ICRP following any revisions to the Licence SNP</p>

				that include groundwater monitoring at the SWDF.
7	Section 6.1 Water Monitoring	<p>Comment This section further refers to the Landfill Drainage Study's recommendation to implement a long term monitoring program to assess changes in surface water and groundwater quality at the SWDF.</p> <p>Recommendation Please include an explanation of whether and when this recommendation will be implemented by the City.</p>	<p>June 8: The City currently monitors SWF surface water at SNP 0032-13, 00013a, 0032-14, 0032-15a, 0032-16, 0032-20 and 0032-21, twice a year as required by the City's water licence. The results are included in the City's quarterly and annual reports. This program will continue for the foreseeable future. The City currently samples the groundwater at the SWF twice a year with additional monitoring wells planned to be drilled during the summer of 2018. As there is no background groundwater quality data available, one of the new wells (MW9) will be used to establish groundwater quality control limits after completion of 3 years of monitoring.</p>	Noted.
8	Section 6.1.3 Leachate Monitoring	<p>Comment The City refers to the old landfill cell not having a sump for leachate collection, but that 'the monitoring of surface and subsurface water run-off will allow the City to monitor and minimize any off-site migration of contaminants.'</p> <p>Recommendation Sections 11 and 12 of the City's Interim Groundwater Monitoring Plan indicate action levels and a response plan for subsurface water quality results. Can the City provide a link between this section of the ICRP and the requirements under the Interim Groundwater Monitoring Plan?</p>	<p>June 8: The City plans to drill a background monitoring well (MW-9) near highway 4, upstream of the groundwater flow. As the landfill is already active, this well will be sampled for at least 3 years to establish ambient background levels, from which groundwater quality control limits will be established. Once the quality control limits (action levels) are established, the City will be able to determine if any off-site migration of contaminants is occurring and implement the appropriate response plan.</p>	The City should revise the ICRP and the IGMP following completion of 3 years of sampling at groundwater well MW-9 (control well), to include established quality control limits (action levels) with rationale. Board staff note that this timing may result in this revision being discussed during the proceedings

				to renew the City's current Licence.
9	Section 7 Implementation Schedule	<p>Comment Board staff note that this section includes descriptions of activities under years passed.</p> <p>Recommendation Please revise this section according to current site status, and clarify whether the activities listed for 2015, 2016 and 2017 have occurred, or are still planned to be undertaken.</p>	<p>June 8: The activities in 2015, 2016 and 2017 have occurred. The activities in 2018 and later are planned to be undertaken.</p>	<p>Noted.</p> <p>See Comment ID MVLWB 1: the City should ensure current information is included in the next version of the ICRP.</p>
10	Appendix A: Dillon Consulting Landfill Gas Monitoring Plan (Jan 2016)	<p>Comment The City has appended this Plan to the ICRP V3. Some of its recommendations are clearly included in the ICRP V3, but it could be clearer which recommendations the City is adopting, and which they are not.</p> <p>Recommendation Please provide a clear response (table, list, etc.) to each recommendation included in the Dillon Plan, along with rationale for whether or not it will be adopted, and when.</p>	<p>June 8: Future revisions of this Plan will include a clear response to each recommendation included in the Dillon Plan, with rationale for whether or not it will be adopted, and when. At this point, this City is planning on implementing all the recommendations described in Section 5.0: Landfill Gas Collection/Monitoring and Section 6.0: Landfill Gas Monitoring Plan, of the Dillon Report.</p>	<p>City should revise the Plan to reflect the information provided during the review.</p>

From: [Amanda Gauthier](mailto:Amanda.Gauthier@yellowknife.ca)
To: rhawkes@yellowknife.ca
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Subject: MV2009L3-0007 – City of Yellowknife – Approved - Solid Waste Disposal Facilities ICRP V.3
Date: November 9, 2018 3:01:16 PM
Attachments: [MV2009L3-0007 – City of Yellowknife – Approved – Solid Waste Disposal Facilities ICRP V.3.pdf](#)

Good day,

Please see the attached document. if you have any questions, please contact Erica Janes at (867) 766-7466 or email ejanes@mvlwb.com.

Regards,

Amanda Gauthier

Executive Coordinator

Mackenzie Valley Land and Water Board

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