June 20, 2017

AlecSandra Macdonald
Land and Water Technician
Gwich'in Land and Water Board
Box 2018
Inuvik, NT
X0E 0T0

Dear Ms. Macdonald,

RE: KBL Environmental Ltd. (KBL)
Type B Water Licence Application – G17L1-002
Soil Treatment Facility - Inuvik
Request for Review and Comment

The Department of Environment and Natural Resources, Government of the Northwest Territories has reviewed the application 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: Draft Water Licence - Treatment of Water from Outside Sources (in the form of Snow)

Comment(s):

The current application is specifically for petroleum hydrocarbon contaminated soil. However, contaminated snow received during winter months is also planned to be accepted for treatment at the Soil Treatment Facility (STF). As such, KBL is planning to use the Water Retention Plan not only to receive leachate from the contaminated soil deposited for treatment on the Biotreatment Pad, but also for the reception of contaminated snow/water from outside those generated at the facility.

Details provided in the application indicates the Water Retention Pond is of a depth of approximately 1 metre, and a working water level capacity of 205 m3, including the 0.9 m freeboard. KBL also suggests the use of two above storage tanks (AST) tanks of 63,000 L with the function to:

1) Store excess water from the water retention ponds and maintain sufficient freeboard (0.9 m);
2) Hold pond water prior to application to the treatment pad;
3) Hold pond water until water treatment events have been conducted; and
4) Hold pond water during pond maintenance and inspection.

ENR is aware of Hay River Biotreatment Facility Retention Pond capacity issues, also managed by KBL, where leachate from the Water Retention Pond was ultimately discharged to the municipal sewage lagoon due to poor leachate management issues and excessive ponded surface runoff (drainage).

While KBL's intention is to accommodate for reception and treatment of hydrocarbon spills on snow, further extending facility operations from contaminated soil treatment to include contaminated water treatment should require further planning to determine the acceptable quantity of snow that can be accepted at the facility, if any. Leachate or water management details at the Water Retention Pond should be providing specific details surrounding the management of the Water Retention Pond such as: the volume of effluent planned for application on the Biotreatment pile (maximum volume), the pond level at which transfer to holding tanks will occur, how one AST tank will be empty at all time and dedicated to receive Water Retention Pond water, and emergency scenarios if the total holding capacity was exceeded from water treatment difficulties, etc. ENR further reminds KBL that the Town of Inuvik's Water Licence does not permit the use of the municipal sewage lagoon facilities as a disposal location for industrial waste streams, such as effluent that would be discharged from the KBL facility.

Recommendation(s):

1) ENR recommends that the Board state that contaminated snow cannot be accepted at the facility until the Proponent can provide acceptable management details, to be provided within the Operations and Maintenance Plan. The updated plan should be submitted for public review and comment.

2) ENR recommends the draft Water Licence specify that treated effluent which does not meet EQCs, and exceeds water retention pond and tanks capacities, must be discharged at an approved facility.

Topic 2: Draft Water Licence – Leachate (Schedule 2 & Schedule 3)

Comment(s):

The Application Form specifies, p. 18 of 22, that "Water generated through surface runoff, leachate or snow melt will be captured in an engineered, LLDPE lined, water retention pond." "Where pond levels are determined to be approaching operating capacity, pond water will be pumped to above ground storage tanks located on-site."

ENR notes that storage ponds should be used as contingency storage only, in the event that water collected in the retention pond does not meet EQC. Using the tanks as part of the operation of the facility will result in no contingency storage for water within the retention pond and the release of water to the environment that does not meet EQC.

Further, the Environmental Monitoring Program required under schedule 2, Item 1 requests that KBL describe how leachate related to the biotreatment pad water retention pond will be monitored. As well, Schedule 3 - Closure and Reclamation, Item 1 c), also requires the future Closure and Reclamation Plan to provide "Plans to minimize the potential for leachate to contaminate groundwater and surface runoff."

ENR notes that there is currently no definition for leachate or runoff within Part A of the draft Water Licence. A definition for leachate should be included in the Water Licence. More information should also be provided on the monitoring required within the facility (i.e. water quality and water level within the retention pond) and at the proposed groundwater wells (i.e. leachate detection). The frequency of monitoring should also be described.

Recommendation(s):

1) ENR recommends that the operation of the facility be modified to ensure that the storage tanks are used for contingency purposes only and not part of general operations at the Landfarm Facility.

2) ENR recommends that Schedule 1 specifies reporting on the water level and remaining capacity within the Water Retention Pond and both AST tanks.

3) ENR recommends that a definition for leachate be added to Part A of the Water Licence.

4) ENR recommends that a definition for runoff be added within Part A of the Water Licence.

Topic 3: Draft Water Licence - Stormwater Collecting Pond for Surface Runoff

Comment(s):

The application specifies that the proposed facility is designed to direct all surface water runoff into a storm water retention pond, which will enable regular sampling and reporting of any water collecting within the pond prior to determine pump-off or off-site disposal requirements, as per the appropriate regulatory requirements. ENR has some concerns on the lack of details associated with this section, including on how results will be reported.

ENR also notes that the Maps and Drawing in Appendix A submitted with this application properly identified the Water Retention Pond. However, it is not clear if the Water Retention Pond is the same as the Stormwater Collection Pond that is referenced elsewhere in the application.

Recommendation(s):

1) ENR recommends adding details, in Schedule 1 of the Water Licence, regarding the submission of monitoring results and tabular summaries from all sampling at all water collection and retaining facilities.

2) ENR recommends that the Stormwater Collection Pond details be included within KBL Operations and Maintenance Plan with respect to monitoring, submission of laboratory results to the Board and Inspector, and any other management procedures.

3) ENR recommends that drawings be provided to identify/clarify the Stormwater Collection Pond, as well as any related documents specific to the Stormwater Collection Pond.

4) ENR recommends that a sign identifying the "Water Retention Pond" be installed at the most appropriate location near the pond.

Topic 4: Draft Water Licence – Environmental Monitoring Program, Schedule 2

Comment(s):

Part B, Item 8 of the draft Water Licence requires KBL to submit an Environmental Monitoring Program, of which the required components are outlined in Schedule 2.

The information to be included in the Environmental Monitoring Program does not currently require KBL to conduct/complete a pre-operation baseline assessment. This is something that was described in the Application Form (p. 16 of 22), where is states "The assessment will facilitate being able to differentiate between pre-existing impacts and any potential future impacts created by the operation of the STF, if necessary." Given the timeline associated with construction of the facility, it is important to start this assessment as soon as possible. Note, this assessment will also provide guidance during the preparation of the Closure and Reclamation Plan for the facility.

This baseline assessment could also help determine if permafrost exists in the area proposed for construction of the facility. If permafrost is present, it is important to assess its ice content, depth and temperature. This would help ensure the facility is designed and constructed appropriately and that potential climate warming would not compromise the facility.

Recommendation(s):

1) ENR recommends that Condition B, Item 8 of the draft Water Licence refer to Schedule 2, rather that Schedule 3 as currently specified.

2) ENR recommends that provisions be added to Schedule 2 of the Water Licence to characterize and delineate pre-existing conditions (baseline pre-operations) for soil, water/groundwater and permafrost. This would help assess, as well as differentiate, between pre-existing impacts and any potential future impacts from the STF.

3) ENR recommends that the following be added to Schedule 3 of the Water Licence regarding Closure and Reclamation: "A summary compilation of pre-existing conditions including assessments of soil, water and permafrost";

4) Finally, ENR recommends that Schedule 1, Item 1 c) refer to Part B, Item 8 and Schedule 2 of the Water Licence, when referring to the Environmental Monitoring Plan.

Topic 5: Draft Water Licence – SNP Section (Annex A) - Reference to KBL Environmental Ltd.

Comment(s):

The heading of the SNP section of the draft Water Licence, Annex A, refers to the Town of Inuvik.

Recommendation(s):

1) ENR recommends that the heading be revised to G17L1-002 KBL Soil Treatment Facility.

Topic 6: Draft Water Licence - Management Plans Summary of Revision(s)

Comment(s):

Several Water Licence conditions refer to the submission of an updated version of management plans (i.e. D.4, E.2 & H.3).

Past reviews of these types of submissions have shown that the following text should be added in order to prevent confusion and clarify expectations: "The proposed updates shall be submitted to the board for approval, and shall include a summary of revisions **in the introductory section of the plan."**

Recommendation(s):

1) ENR recommend that the bolded text above (or similar terms) be added to condition D.4, E.2 and H.3.

Topic 7: Management Plans Details to align with Water Licence Conditions

Comment(s):

Terms and conditions were selected for the current draft Water Licence which may not align with details provided in management plans and operational procedure submissions. For example, while section 6.3.1 of the O&M plan specifies that upon comparison against EQCs, treated water may be discharged on-site at a discharge location identified in Appendix A which consists of a shallow trench with riprap. The draft Water Licence clarifies in D.10 that "Treated water shall only be used for application on the Biotreatment Pad, unless otherwise authorized by the Board."

KBL specifies, in pg. 18 of 22 of the Application Form package, that regular groundwater monitoring will be completed unless conditions indicate that a groundwater gradient and meaningful direction of flow cannot be determined (therefore providing no reliable means of distinguishing impacts from KBL operations from that of the SWDF). ENR considers groundwater monitoring of KBL facility as a mandatory feature to inform/detect any possible structural failure of the facility containment liner. Should the breach of the liner occur in the future, impacts differentiations between KBL operations and the SWDF operations could be determined by comparing groundwater flow results from upstream and downstream KBL facility footprint.

ENR Notes that Part B, Item 1 of the draft Licence specifies that: "The Licencee shall operate in accordance with the plans and programs approved pursuant to the conditions of this Licence and with any revisions to the plans and programs as may be made pursuant to the conditions of this Licence and as approved by the Board. If a plan is not approved by the board, the Licencee shall revise the plan as directed by the board and resubmit it to the board for approval."

Recommendation(s):

1) ENR recommends that the Board not approve these management plans at this time, as they do not align with the current provisions within the draft Water Licence. (see below for additional comments).

2) ENR supports condition D.10 of the draft Water Licence towards application of treated water on the Biotreatment Pad only, and notes that similar best practices are also used by KBL at its Yellowknife Soils and Water Treatment Facility.

3) ENR recommends that all surface runoff path(s) flowing from the STF be properly identified and captured under Water Licence SNP stations for monitoring purposes.

4) ENR recommends that groundwater monitoring wells be installed upstream and downstream of the Soil Treatment Facility.

Topic 8: Management Plan Approval

Comment(s):

It is ENR's experience that a Water Licence should be issued prior to the submission and approval of plans and submissions that are required under that Water Licence. This is ENR's understanding of the requirements for such plans and submissions and any associated detail required in such plans are not final until the Water Licence is issued. ENR understands that the submission of draft plans does facilitate a comprehensive review process of the application and draft Water Licence.

ENR has previously noted above several items where additional detail should be provided in the plans and submissions that may have already been provided to the Board with the application. ENR notes that construction of the STF is expected shortly but suggests that operation, management and monitoring plans are not required immediately for the STF. ENR expects that these plans will be required as part of the Licence and would request that they be provided for review and approval under the Water Licence within a specified timeframe (e.g. 30 days, 60 days, prior to operation, etc.).

For this reason, ENR has not been provided sufficient opportunity to submit thorough and detailed comments of such plans at this time. ENR requests that these operational plans be provided after the Licence is approved and that they include any and all required information which should be specified in the final Water Licence. ENR notes that this may include any items ENR has identified above.

Recommendation(s):

1) ENR recommends that the Board revise and finalize the Water Licence for the construction of the KBL facility. Operation, management and monitoring plans should be submitted to ENR for review and approval as part of the Licence.

Topic 9: General Management Plans Overview Comments

Comment(s):

In Section 6.4 of the Operation and Maintenance Plan (O&M) (pg. 11) it is stated that the facility can store up to 11,000 m^3 of soil. The engineered drawings indicate soil placement setbacks from the toe of the berm (5.0 m on the North, West, South, and

2.0 m on the East side). Section 6.2 of the O&M plan state that soils will be placed up to the toe of the berm. Thus the square meters of working area are not outlined in the application.

It is not clear in the application if the intent is to store 11,000 m^3 of soil inside the cell while maintaining simultaneous soil remediation in windrows. ENR is concerned that the storage of 11,000 m3 within the cell does not leave enough room for adequate soil remediation activities or results in stockpile of excessive height, greater than 4 m.

ENR notes that soil stockpiles in excess of 4 m have limited opportunity for bioremediation compared to windrows, and contaminants are more susceptible to off-site migration as they are transported by wind.

Recommendation(s):

1) ENR recommends that KBL outline the correct square meters of working area in the application and base the total storage capacity (i.e. volume of soil) for the facility, to include the actual square meters available, as well as the area needed for drainage, ramps, and vehicle access.

2) ENR recommends that stockpiles of soil awaiting treatment do not exceed a height of 4 m.

Topic 10: Security Estimate

Comment(s):

The board has requested input on Part C of the Water Licence, Conditions Applying to Security Requirements. ENR has prepared Reclaim estimate for the project as proposed using the most recent Oil and Gas RECLAIM Model (v.7.0). In this estimate ENR has assumed that the maximum capacity of the STF is 11,000 m3 of contaminated soil at the point of abandonment of the structure due to insolvency.

Recommendation(s):

1) ENR recommends that the amount of $760,000 be held as a security requirement. This could be separated into water related liability of $417,000.00 and land related liability of $343,000.00. Please see attached Reclaim estimate, including a description of assumptions.

Comments and recommendations were provided by ENR technical experts in the Water Resources Division and the Inuvik Region and were coordinated and collated by the Environmental Impact Assessment Section, Conservation, Assessment and Monitoring Division (CAM).

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,

Patrick Clancy
Environmental Regulatory Analyst
Environmental Impact Assessment Section
Conservation Assessment and Monitoring Division
Department of Environment and Natural Resources
Government of the Northwest Territories

Att: Reclaim Security Estimate
Reclaim Estimate – Descriptions and Assumptions