



**Mackenzie Valley Land and Water Board**  
**7th Floor - 4922 48th Street**  
**P.O. Box 2130**  
**YELLOWKNIFE NT X1A 2P6**  
**Phone (867) 669-0506**  
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### Staff Report

<b>Applicant:</b> De Beers Canada Inc.	
<b>Location:</b> Kennady Lake, NT	<b>Application:</b> MV2005L2-0015
<b>Date Prepared:</b> May 20, 2015	<b>Meeting Date:</b> May 26, 2015
<b>Subject:</b> Dyke Construction and Management Plan, Dykes A1, F, G, H, I, J, K, and L	

#### 1. Purpose/Report Summary

The purpose of this Report is to present to the Mackenzie Valley Land and Water Board (MVLWB or the Board) the Dyke Construction and Management Plan, Dykes A1, F, G, H, I, J, K, and L, (Plan) for consideration for approval, as submitted by De Beers Canada Inc. (De Beers) under Water Licence (Licence) MV2005L2-0015.

#### 2. Background

- August 11, 2014 – Board submits recommendation for approval of the Licence to the Minister of Environment and Natural Resources;
- September 23, 2014 – Minister of Environment and Natural Resources approves Licence;
- September 24, 2014 – Board issues Licence to De Beers;
- March 27, 2015 – De Beers submits the Plan;
- March 30, 2015 – Plan sent out for review;
- May 7, 2015 – Review comments due;
- May 14, 2015 – De Beers’ responses due; and
- May 26, 2015 – Plan presented to the Board.

#### 3. Discussion

##### Dyke Construction and Management Plan

On August 11, 2014 the Board included a condition in the Licence relating to the Dyke Construction and Management Plan (Plan). Part G, item 16 states that “All other dykes shall be addressed under the **Dyke Construction and Management Plan**, which shall be submitted to the Board for approval sixty (60) days prior to commencement of Construction of any dykes other than Dyke A. This Plan shall meet the objectives listed in Part G, item 1, and satisfy the requirements of Schedule 5, item 8. This Plan shall address the Construction and Operation phases of the Project. The Licensee shall not commence Construction of these remaining dykes until the Board has approved the Plan.”

De Beers submitted the Plan (Version 1) on March 27, 2015 as additional supporting documentation as was required under the Licence. A total of 14 dykes

will be constructed during the life of the mine. This Plan covers the construction of 8 of these (Dykes A1, F, G, H, I, J, K, and L). The remaining dykes (Dykes B, D, E, M, and N) will be covered under separate cover as the detailed design process is developed.

#### **4. Comments**

Not applicable.

#### **5. Reviewer Comments**

By May 7, 2015, comments and recommendations on the Plan were received from three reviewers:

- GNWT – Environment and Natural Resources;
- Environment Canada; and
- Board staff

Proponent responded on May 14, 2015. The reviewer comment summary table (attached) presents the concerns identified through the review of the Program.

#### **6. Security**

Not applicable.

#### **7. Conclusion**

Board staff concludes that the Dyke Construction and Management Plan has addressed the requirements of the Licence and will be updated to address the reviewer comments.

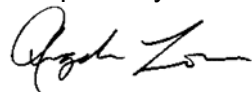
#### **8. Recommendation**

Board staff recommends that the Board conditionally approve the Dyke Construction and Management Plan, Dykes A1, F, G, H, I, J, K, and L (Version 1) provided that De Beers incorporates the agreed upon changes in the Reviewer Comment Summary Table.

#### **9. Attachments**

- [Dyke Construction and Management Plan, Dykes A1, F, G, H, I, J, K, and L](#);
- Reviewer Comment Summary Table; and,
- Draft Decision Letter.

Respectfully Submitted,



Angela Love  
Regulatory Officer

## Review Comment Table

<b>Board:</b>	MVLWB												
<b>Review Item:</b>	De Beers - Gahcho Kue - Dyke Construction and Management Plan - Version 1 (MV2005L2-0015)												
<b>File(s):</b>	<a href="#">MV2005L2-0015</a>												
<b>Proponent:</b>	De Beers Canada Inc - Gahcho Kue												
<b>Document(s):</b>	<a href="#">Dyke Construction and Management Plan</a> (23 MB)												
<b>Item For Review Distributed On:</b>	Mar 30 at 16:51 <a href="#">Distribution List</a> Mar 30 at 16:51 <a href="#">Distribution List</a>												
<b>Reviewer Comments Due By:</b>	May 7, 2015												
<b>Proponent Responses Due By:</b>	May 14, 2015												
<b>Item Description:</b>	<p>In accordance with the requirements of Water Licence MV2005L2-0015, De Beers Canada Inc. has submitted their Dyke Construction and Management Plan to the Mackenzie Valley Land and Water Board for Board approval.</p> <p>Please submit comments using the Online Review System by downloading the excel comment table or using the "add comment" button.</p> <p>If you have any questions or comments regarding this Plan or using the Online Review System, please contact Angela Love at 867-766-7456 or <a href="mailto:angela.love@mvlwb.com">angela.love@mvlwb.com</a>.</p>												
<b>General Reviewer Information:</b>	<p>In addition to the email distribution list, faxes were sent to the Akaitcho fax distribution list:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Fort Resolution Métis Council</td> <td style="width: 15%;">Trudy King</td> <td style="width: 15%;"></td> <td style="width: 45%;">(867)394-3322; <a href="mailto:Fieldworker.frmc53@northwestel.net">Fieldworker.frmc53@northwestel.net</a></td> </tr> <tr> <td>Hay River Metis Council</td> <td>Wally Shuman</td> <td>President</td> <td>(867)874-4472; <a href="mailto:hrcm@northwestel.net">hrcm@northwestel.net</a></td> </tr> <tr> <td>NWT Metis Nation</td> <td>Tim Heron</td> <td>NWTMN IMA Coordinator</td> <td>(867)872-3586; <a href="mailto:rcc.nwtmn@northwestel.net">rcc.nwtmn@northwestel.net</a>;</td> </tr> </table>	Fort Resolution Métis Council	Trudy King		(867)394-3322; <a href="mailto:Fieldworker.frmc53@northwestel.net">Fieldworker.frmc53@northwestel.net</a>	Hay River Metis Council	Wally Shuman	President	(867)874-4472; <a href="mailto:hrcm@northwestel.net">hrcm@northwestel.net</a>	NWT Metis Nation	Tim Heron	NWTMN IMA Coordinator	(867)872-3586; <a href="mailto:rcc.nwtmn@northwestel.net">rcc.nwtmn@northwestel.net</a> ;
Fort Resolution Métis Council	Trudy King		(867)394-3322; <a href="mailto:Fieldworker.frmc53@northwestel.net">Fieldworker.frmc53@northwestel.net</a>										
Hay River Metis Council	Wally Shuman	President	(867)874-4472; <a href="mailto:hrcm@northwestel.net">hrcm@northwestel.net</a>										
NWT Metis Nation	Tim Heron	NWTMN IMA Coordinator	(867)872-3586; <a href="mailto:rcc.nwtmn@northwestel.net">rcc.nwtmn@northwestel.net</a> ;										
<b>Contact Information:</b>	<p>Angela Love 867-766-7456 Jen Potten 867-766-7468 Marc Casas 867-766-7466</p>												

## Comment Summary

Environment Canada: Sarah-Lacey McMillan				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Response
1	General File	<b>Comment</b> <a href="#">(doc)</a> EC no comment letter <b>Recommendation</b>		N/A
GNWT - Environment and Natural Resources: Central Email GNWT				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Response
10	General File	<b>Comment</b> <a href="#">(doc)</a> ENR Letter with Comments and Recommendations <b>Recommendation</b>		N/A
1	Topic 1: Dyke A Construction	<b>Comment</b> Comment(s): De Beers has previously submitted the Dyke A Construction and Management Plan and construction was slated to commence last fall. ENR notes that details related to the approval of that plan and any information on construction to date completed at Dyke A (construction constraints, mitigation effectiveness, lessons learned) should be included in the current Dyke Construction and Management Plan. Also, the last column in Table 1 is titled "Corresponding Section in Dyke A Construction Management Plan and/or Other Document(s)" however this appears to be referencing the current plan, not the Dyke A Plan. <b>Recommendation</b> Recommendation(s): 1) ENR recommends that the Dyke A Construction and Management Plan be noted as a related document in Section 1.5. As well, any relevant information	<b>May 14:</b> Reference to the Dyke A Construction Management Plan and Construction activities will be added to the DCMP in Section 1.5. The construction of Dyke A proceeded as planned and therefore the same construction techniques have been incorporated into the construction and management of the remainder of the dykes	De Beers to resubmit with the agreed upon changes.

		that was obtained during the approval of the Dyke A Plan and/or the construction of Dyke A should be included in the current Plan where applicable.		
2	None	<b>Comment</b> None <b>Recommendation</b> 2) ENR requests clarification regarding Table 1 and the Dyke A Construction and Management Plan.	<b>May 14:</b> Table 1 Column Description will be changed to reflect the Dyke A1, G, F, H, I, J, K and L Construction Management Plan. Title of Table 1 continuation on Page 7 will also be changed to reference the current Dyke Construction Management Plan	De Beers to resubmit with the agreed upon changes.
3	Topic 2: Mitigation Measures	<b>Comment</b> Comment(s): Section 3.3 outlines the construction sequence related to the various dykes. Of note, while Dykes H, I, J and L reference the installation of silt curtains, the construction of Dykes A1, F, G and K does not include the installation silt curtains. ENR understands the rationale for the installation of silt curtains for Dykes H, I, J and L is that these dykes are all proximal to Areas 3 and 5 which will be dewatering into Lake N11 during construction, therefore sediment loading will have to be managed to ensure TSS EQCs are met at the pump intake. However, rationale for the exclusion of silt curtains from the installation of the other dykes is unclear. Dyke K is located between Area 6 and Area 7. Will any further discharge from Area 7 to Area 8 (receiving environment) occur during the installation of Dyke K? Will water from Area 6 have opportunity to reach Area 3 and 5? If either of these possibilities exist, a silt curtain should be	<b>May 14:</b> Dykes A1, F, and G are to be constructed under dry conditions and are designed to eliminate seasonal ephemeral downstream flow from Lakes E1, D2, and D1 into Kennady Lake. Table 5 of the Plan indicates that the approximate distance of Dykes A1, F, and G from their respective lakes is sufficiently distant to inhibit sediment transport. Should construction be undertaken during winter, it is expected that the ephemeral streams will consist of grounded ice therefore eliminating the potential for TSS impacts to fish. Therefore silt curtains are not expected to be required for the construction of dykes A1, F and G. If, during construction, conditions indicate a potential for elevated TSS in Lakes E1, D2, and D1, silt fences and/or good construction practices will be used to minimize the sediment transport to the	De Beers to resubmit with the additional clarification.

		<p>required for the construction of Dyke K. Regarding Dykes A1, F and G, these are water diversion dykes used to isolate watersheds from entering into the mine area. That being said, the upstream sides of these dykes are connected to undisturbed aquatic environment. Therefore, there is risk for sediment from these dykes reaching the aquatic environment at those locations.</p> <p><b>Recommendation</b>  Recommendation(s): 1) ENR requests additional rationale on the selection of mitigation measures for the various dykes, i.e. inclusion/exclusion of silt curtains. Additionally, contingencies should be discussed should rationales be linked to specific construction conditions that may not be present. As fish will be overwintering under ice, TSS conditions during winter construction should also be further explained and mitigations rationalized.</p>	<p>adjacent water bodies. Dyke K is intended to be constructed after Area 7 has been dewatered therefore silt curtains are not required. If the construction and Area 7 dewatering schedule is modified such that Dyke K construction coincides with water discharge from Area 7 to Area 8, the need for silt curtains will be re-evaluated. The above clarifications will be added to the Construction Management Plan</p>	
4	<p>Topic 3: Monitoring Locations</p>	<p><b>Comment</b> Comment(s): Similar to comments above, related to the installation of silt curtains, there is also a difference in monitoring requirements between Dykes H, I, J and L and Dykes A1, F, G and K. Specifically, no monitoring stations are identified for Lakes A1, F, G and H. As noted previously, these are water diversion dykes used to isolate watersheds from entering into the mine area and the upstream sides of these dykes are connected to undisturbed aquatic environment. There is</p>	<p><b>May 14:</b> Dykes A1, F, and G are to be constructed under dry conditions and are designed to eliminate seasonal ephemeral flow from Lakes E1, D2, and D1 into Kennady Lake. Table 5 of the Plan indicates the approximate distance of Dykes A1, F, and G from their respective lakes is sufficiently distant to inhibit sediment transport. Should construction be undertaken during winter, it is expected that the ephemeral streams will consist of grounded ice</p>	<p>De Beers to resubmit with the additional clarification.</p>

		<p>arguably a higher risk for sediment from these dykes reaching the aquatic environment at these locations.</p> <p><b>Recommendation</b>  Recommendations: 1) ENR recommends that De Beers include temporary monitoring stations downstream of Dykes A1, F, G and K or rationale provided as to their exclusion.</p>	<p>therefore eliminating the potential for TSS impacts to fish. Therefore water quality monitoring is not expected to be required during construction for dykes A1, F and G. If, during construction, conditions are such that there is a potential for elevated TSS in E1, D2 and D1, water quality monitoring as described for Dykes H, I, J and L will be used to monitor for sediment in the adjacent water bodies. Dyke K is intended to be constructed after Area 6 and 7 have been dewatered and there is no longer any discharge to Area 8. Therefore water quality monitoring should not be required. If the construction and Area 7 dewatering schedule is modified such that Dyke K construction coincides with water discharge from Area 7 to Area 8, the need for water quality monitoring will be re-evaluated. The above clarifications will be added to the Construction Management Plan</p>	
5	Topic 4: Water Management	<p><b>Comment</b> Comment(s): During construction, for some dykes, water containing high TSS will be contained within the silt curtain, however it is unclear how this water will be managed prior to the removal of the curtains (e.g. disposal, settling, etc).</p> <p><b>Recommendation</b>  Recommendation(s): 1) ENR recommends De Beers provide additional information on the</p>	<p><b>May 14:</b> Silt curtains will remain in the water until such time as any turbid water trapped between the dyke and the silt curtain returns to levels that are below the action thresholds identified in Table 6.</p>	Appropriate response.

		management of water containing high TSS within the silt curtains. If the preferred method is to allow the TSS to settle, this should be outlined in the plan as well as the time anticipated for the TSS to return to normal conditions.		
6	Topic 5: Fish-Out	<p><b>Comment</b> Comment(s): It is noted throughout the Plan that a "higher" level of TSS may be permissible within Kennady Lake provided that final EQCs are met prior to discharge into Lake N11 and/or Area 8. However, the specific limits for Kennady Lake prior to completing the fish-out activities are not clear. Also, clarity is required regarding the stages and status of the fish-out in Kennady Lake at this time (e.g. current phase). There seems to be some uncertainty in the phasing of activities.</p> <p><b>Recommendation</b>  Recommendation(s): 1) ENR is seeking clarification regarding the phase and status of the fish-out of Kennady Lake. Please explain the various phases of the construction and fish-out strategy.</p>	<p><b>May 14:</b> Phase 1 of the Fish-Out was completed during the summer of 2014. During the month of July 2015 a second phase Fish-Out program is scheduled to remove fish from the lake. Dependant on the results from phases 1 and 2, and after consultation with Fisheries and Oceans Canada, a third phase may be implemented during the month of August, 2015 to complete the Fish-out of Kennady Lake. Table 4 of the Dyke Construction and Management Plan provides a summary of the construction schedule for the dykes. Dyke F will be constructed in 2015 and it is anticipated that this will be undertaken during frozen conditions (section 3.3). Construction of Dykes H, I and J is also scheduled for construction in 2015 (Table 4). As shown in Figure 2, silt curtains will be installed on both sides of these dykes during construction. Turbid waters will be allowed to settle to levels below the action thresholds listed in Table 6 before the silt curtains are removed. During this time, TSS-turbidity monitoring as described within the Plan will</p>	Appropriate response.



			be carried out when fill materials are being placed in the lake.	
7	Topic 6: TSS/Turbidity Relationship	<p><b>Comment</b> Comment(s): Section 4.2 outlines information on a site specific TSS-turbidity correlation however it is unclear precisely how this correlation information will be implemented at site in terms of mitigation monitoring and water management. While it is stated that information has been collected and is outlined in the TSS-Turbidity Monitoring Technical Memo, October 2014, little information about the relationship and the correlation of the regression from the memo is provided in the Plan. Furthermore, it is mentioned that turbidity will be monitored in conjunction with TSS however the frequencies of the monitoring for each is unclear. As well, Table 6 outlines TSS action levels and effluent quality criteria however no information on turbidity levels that relate to these action levels is provided. ENR notes that substrate conditions are a driving factor in the TSS/Turbidity relationship and given the distance between the dykes it is likely that substrate conditions will differ between dyke locations. Of note, effluent quality criteria contained within the licence require laboratory testing of TSS and cannot be replaced with a turbidity surrogate.</p> <p><b>Recommendation</b> Recommendation(s): 1) ENR recommends that the TSS-Turbidity Memo noted be</p>	<p><b>May 14:</b> The TSS-Turbidity Memo was also presented in the Dyke A Construction Management Plan. The memo includes the correlation regression and the memo will be added as an appendix to the Dyke Construction Management Plan.</p>	<p>De Beers to update text of the document to clearly describe how the Turbidity measurements will be used to estimate TSS to compare to the action levels.</p> <p>De Beers to attach the memo, as an appendix, in the resubmission.</p>

		included as an appendix to the Plan for reference. Information about the existing relationship and the correlation of the regression should be outlined in the document.		
8	None	<b>Comment</b> None <b>Recommendation</b> 2) ENR recommends that additional clarification is provided regarding the frequencies of TSS sampling and turbidity sampling and how this relates to action levels. These data will be necessary to calibrate and verify the regression.	<b>May 14:</b> When fill materials are being placed within the water body, the frequency of TSS and Turbidity monitoring will include one monitoring event per day when discharge from Kennady Lake is occurring and once per week when no discharge is occurring, as stated in Section 4.5.	Appropriate response.
9	Topic 7: Figure 2	<b>Comment</b> Comments: Several of the labels in Figure 2 are indistinguishable due to font and background colours. <b>Recommendation</b> Recommendation(s): 1) These items should be corrected in future versions of the Plan or other Plans.	<b>May 14:</b> Figure 2 will be updated in the next version of the plan.	De Beers to resubmit with the agreed upon changes.

**MVLWB: Lindsey Cymbalsty**

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Response
1	Section 3.8 : Instrumentation and Monitoring Section 3.10: Reporting	<b>Comment</b> These sections reference the annual inspection, required under Part G, item 23 of WL MV2005I2-0015. <b>Recommendation</b> Note that a Dam Safety Review is also required for the dykes as per Part G, item 25. This review is required within three years of commencing construction, and then every seven years thereafter.	<b>May 14:</b> Noted. The dykes will undergo a dam safety review as per Part G, item 25 of the water licence.	Appropriate response.
2	Section 4.5: SOP for Monitoring and Management	<b>Comment</b> Item 1 in this section states that TSS/turbidity will be measured at one or more established stations during a	<b>May 14:</b> All established stations near dykes undergoing construction will be monitored. Stations	Appropriate response.

		<p>monitoring event. Item 2 then states that "stations adjacent to dykes undergoing construction will be sampled at each event". Some clarification is required.</p> <p><b>Recommendation</b> Will all established stations near dykes undergoing construction be included in each monitoring event? If not, Board staff request clarification on how De Beers will determine which established stations would be included in a given monitoring event.</p>	<p>where no construction is ongoing will not be monitored. This is reflected in the statement in Section 4.5 "During periods when fill materials are being placed in the water body"</p>	
3	Section 4.1: Table 6	<p><b>Comment</b> Water Sampling Station (WSS) 10 has not been included in this table, but it appears in Figure 2. However, there is a reference to WSS 13.</p> <p><b>Recommendation</b> Please confirm the Action Levels and EQC for TSS for WSS 10 and if there is to be a WSS 13 (which should also be added to Figure 2) or if this was a typo and reference to WSS 13 is actually WSS 10.</p>	<p><b>May 14:</b> WSS #10 will be sampled, not WSS #13. The table will be corrected.</p>	<p>De Beers to resubmit with the agreed upon changes.</p>



Environment  
Canada

Environnement  
Canada

Environmental Protection Operations Directorate (EPOD)  
Prairie and Northern Region (PNR)  
5019 52<sup>nd</sup> Street, 4<sup>th</sup> Floor  
P.O. Box 2310  
Yellowknife, NT X1A 2P7

May 7, 2015

EC file: 5100 000 013 /007  
MVLWB: MV2005L2-0015

Angela Love  
Regulatory Officer  
Mackenzie Valley Land and Water Board  
7<sup>th</sup> Floor, 4922 48<sup>th</sup> St  
PO Box 2130  
Yellowknife, NT X1A 2P6

Via Online Registry

**RE: MV2005L2-0015 – De Beers Canada Inc. – Gahcho Kue Mine – Dyke  
Construction and Management Plan**

Environment Canada (EC) has reviewed the information submitted to the Mackenzie Valley Land and Water Board (MVLWB) regarding the above-mentioned Management Plan and has no comments to provide at this time. The Proponent is still required to comply with its obligations under legislation, including the *Canadian Environmental Protection Act, 1999*, the pollution prevention provisions of the *Fisheries Act*, the *Migratory Birds Convention Act, 1994*, and the *Species at Risk Act*.

Should you require further information, please do not hesitate to contact me at (867) 669-4724 or [sarah-lacey.mcmillan@ec.gc.ca](mailto:sarah-lacey.mcmillan@ec.gc.ca).

Sincerely,

Sarah-Lacey McMillan  
Senior Environmental Assessment Coordinator

cc: Loretta Ransom, A/Head Environmental Assessment North (NT & NU), EPOD  
EC Review Team

May 7, 2015

Angela Love  
Regulatory Officer  
Mackenzie Valley Land and Water Board  
7<sup>th</sup> Floor – 4910 50<sup>th</sup> Avenue  
P.O. Box 2130  
Yellowknife, NT  
X1A 2P6

Dear Ms. Love,

**Re: DeBeers Canada Inc. – Gahcho Kue  
Water Licence – MV2005L2-0015  
Dyke Construction and Management Plan - Version 1  
Request for Comments**

The Department of Environment and Natural Resources has reviewed the plan at reference based on its mandated responsibilities under the *Environmental Protection Act*, the *Forest Management Act*, the *Forest Protection Act*, *Waters Act* and the *Wildlife Act* and provides the following comments and recommendations for the consideration of the Board.

### **Topic 1: Dyke A Construction**

#### **Comment(s):**

De Beers has previously submitted the Dyke A Construction and Management Plan and construction was slated to commence last fall. ENR notes that details related to the approval of that plan and any information on construction to date completed at Dyke A (construction constraints, mitigation effectiveness, lessons learned) should be included in the current Dyke Construction and Management Plan.

Also, the last column in Table 1 is titled “Corresponding Section in Dyke A Construction Management Plan and/or Other Document(s)” however this appears to be referencing the current plan, not the Dyke A Plan.

**Recommendation(s):**

- 1) ENR recommends that the Dyke A Construction and Management Plan be noted as a related document in Section 1.5. As well, any relevant information that was obtained during the approval of the Dyke A Plan and/or the construction of Dyke A should be included in the current Plan where applicable.
- 2) ENR requests clarification regarding Table 1 and the Dyke A Construction and Management Plan.

**Topic 2: Mitigation Measures****Comment(s):**

Section 3.3 outlines the construction sequence related to the various dykes. Of note, while Dykes H, I, J and L reference the installation of silt curtains, the construction of Dykes A1, F, G and K does not include the installation silt curtains.

ENR understands the rationale for the installation of silt curtains for Dykes H, I, J and L is that these dykes are all proximal to Areas 3 and 5 which will be dewatering into Lake N11 during construction, therefore sediment loading will have to be managed to ensure TSS EQCs are met at the pump intake.

However, rationale for the exclusion of silt curtains from the installation of the other dykes is unclear. Dyke K is located between Area 6 and Area 7. Will any further discharge from Area 7 to Area 8 (receiving environment) occur during the installation of Dyke K? Will water from Area 6 have opportunity to reach Area 3 and 5? If either of these possibilities exist, a silt curtain should be required for the construction of Dyke K.

Regarding Dykes A1, F and G, these are water diversion dykes used to isolate watersheds from entering into the mine area. That being said, the upstream sides of these dykes are connected to undisturbed aquatic environment. Therefore, there is risk for sediment from these dykes reaching the aquatic environment at those locations.

**Recommendation(s):**

- 1) ENR requests additional rationale on the selection of mitigation measures for the various dykes, i.e. inclusion/exclusion of silt curtains. Additionally, contingencies should be discussed should rationales be linked to specific construction conditions that may not be present. As fish will be overwintering under ice, TSS conditions during winter construction should also be further explained and mitigations rationalized.

### **Topic 3: Monitoring Locations**

#### **Comment(s):**

Similar to comments above, related to the installation of silt curtains, there is also a difference in monitoring requirements between Dykes H, I, J and L and Dykes A1, F, G and K. Specifically, no monitoring stations are identified for Lakes A1, F, G and H. As noted previously, these are water diversion dykes used to isolate watersheds from entering into the mine area and the upstream sides of these dykes are connected to undisturbed aquatic environment. There is arguably a higher risk for sediment from these dykes reaching the aquatic environment at these locations.

#### **Recommendations:**

- 1) ENR recommends that De Beers include temporary monitoring stations downstream of Dykes A1, F, G and K or rationale provided as to their exclusion.

### **Topic 4: Water Management**

#### **Comment(s):**

During construction, for some dykes, water containing high TSS will be contained within the silt curtain, however it is unclear how this water will be managed prior to the removal of the curtains (e.g. disposal, settling, etc).

#### **Recommendation(s):**

- 1) ENR recommends De Beers provide additional information on the management of water containing high TSS within the silt curtains. If the preferred method is to allow the TSS to settle, this should be outlined in the plan as well as the time anticipated for the TSS to return to normal conditions.

### **Topic 5: Fish-Out**

#### **Comment(s):**

It is noted throughout the Plan that a “higher” level of TSS may be permissible within Kennady Lake provided that final EQCs are met prior to discharge into Lake N11 and/or Area 8. However, the specific limits for Kennady Lake prior to completing the fish-out activities are not clear. Also, clarity is required regarding the stages and status of the fish-out in Kennady Lake at this time (e.g. current phase). There seems to be some uncertainty in the phasing of activities.

**Recommendation(s):**

- 1) ENR is seeking clarification regarding the phase and status of the fish-out of Kennady Lake. Please explain the various phases of the construction and fish-out strategy.

**Topic 6: TSS/Turbidity Relationship****Comment(s):**

Section 4.2 outlines information on a site specific TSS-turbidity correlation however it is unclear precisely how this correlation information will be implemented at site in terms of mitigation monitoring and water management. While it is stated that information has been collected and is outlined in the TSS-Turbidity Monitoring Technical Memo, October 2014, little information about the relationship and the correlation of the regression from the memo is provided in the Plan.

Furthermore, it is mentioned that turbidity will be monitored in conjunction with TSS however the frequencies of the monitoring for each is unclear. As well, Table 6 outlines TSS action levels and effluent quality criteria however no information on turbidity levels that relate to these action levels is provided. ENR notes that substrate conditions are a driving factor in the TSS/Turbidity relationship and given the distance between the dykes it is likely that substrate conditions will differ between dyke locations.

Of note, effluent quality criteria contained within the licence require laboratory testing of TSS and cannot be replaced with a turbidity surrogate.

**Recommendation(s):**

- 1) ENR recommends that the TSS-Turbidity Memo noted be included as an appendix to the Plan for reference. Information about the existing relationship and the correlation of the regression should be outlined in the document.
- 2) ENR recommends that additional clarification is provided regarding the frequencies of TSS sampling and turbidity sampling and how this relates to action levels. These data will be necessary to calibrate and verify the regression.

**Topic 7: Figure 2****Comments:**

Several of the labels in Figure 2 are indistinguishable due to font and background colours.



**Recommendation(s):**

- 1) These items should be corrected in future versions of the Plan or other Plans.

Comments and recommendations were provided by ENR technical experts in the Water Resources Division and the North Slave 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) 920-6118 or email at [patrick.clancy@gov.nt.ca](mailto:patrick.clancy@gov.nt.ca).

Sincerely,



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