



Mackenzie Valley Land and Water Board
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October 25, 2017

File: MV2016L8-0004

Mr. Ron Breadmore
Department of Indian Affairs and Northern Development
Contaminants and Remediation Division
4923-52nd Street, P.O. Box 1500
YELLOWKNIFE NT X1A 2R3

Email: ron.breadmore@canada.ca

Dear Mr. Breadmore:

Bullmoose Creek Channel Design and Reconstruction Plan Rev.3 – Interim Approval
DIAND-CARD – Bullmoose-Ruth Remediation Project

The Mackenzie Valley Land and Water Board (MVLWB or the Board) met on October 25, 2017 and reviewed your Bullmoose Creek Channel Design and Reconstruction Plan, Rev.3, which was submitted to fulfill Part D, item 12 of Water Licence MV2016L8-0004 on September 15, 2017.

The Board hereby grants interim approval of the Channel Design and Reconstruction Plan, Rev.3, and requires the submission of a revised Plan. The revised Plan will be considered approved, and construction may commence, upon written confirmation of conformity from Board staff. Revisions shall include the following:

- Construction drawings signed and stamped by a Professional Engineer, as required by Part D, item 12 and Schedule 2, item 4(e) of Licence MV2016L8-0004, prior to construction on the channel project;
- A description of how construction will be limited to months of reduced flow in Bullmoose Creek (i.e. September to April) (GNWT comment IDs 1, 4, 5); and
- An explanation of how monitored values of Total Particulate Matter will be compared to Canadian Council of Ministers for the Environment (CCME) guidelines for Total Particulate Matter and reported on in SNP Reports (GNWT comment IDs 6 and 7).

The Board directs DIAND-CARD to adhere to commitments made in their responses to reviewer comments in the Reviewer Comment Summary Table (attached).

If you have any questions or concerns, please contact David Finch at (867) 766-7467 or email dfinch@mvlwb.com.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Mavis Cli-Michaud".

Mavis Cli-Michaud
MVLWB, Chair

Copied to: Distribution List
Attached: Review Comment Table

Review Comment Table

Board:	MVLWB
Review Item:	INAC-CARD - Bullmoose-Ruth Remediation Project - Bullmoose Creek Channel Design and Reconstruction Plan (MV2016L8-0004)
File(s):	MV2016L8-0004
Proponent:	INAC - Contaminants and Remediation Directorate
Document(s):	MV2016L8-0004 - DIAND-CARD - Bullmoose Creek Channel Design and Reconstruction Plan Sep15 17 (3.2MB)
Item For Review Distributed On:	Sep 15 at 16:52 Distribution List
Reviewer Comments Due By:	Oct 4, 2017
Proponent Responses Due By:	Oct 11, 2017
Item Description:	<p>Indigenous and Northern Affairs Canada - Contaminants and Remediation Division has submitted the Bullmoose Creek Channel Design and Reconstruction Plan, in accordance with Part D, Item 12 of Water Licence MV2016L8-0004. The Plan is required to comply with Schedule 2, Item 4 of the Licence.</p> <p>Reviewers are invited to submit questions, comments, and recommendations on this Plan using the Online Review System (ORS) by the review comment deadline specified below.</p> <p>All documents that have been uploaded to this review are also available on our public registry. If you have any questions or comments about the ORS or this review, please contact Board staff identified below.</p>
General Reviewer Information:	<p>This review item has also been distributed by fax to the following organizations:</p> <p>Fort Resolution Métis Council Trudy King (867)394-3322; Fieldworker.frnc53@northwestel.net;</p> <p>Hay River Metis Council Trevor Beck President (867)874-4472; hrmc@northwestel.net;</p> <p>NWT Metis Nation Tim Heron NWTMN IMA Coordinator (867)872-3586; rcc.nwtmn@northwestel.net;</p>
Contact Information:	<p>Jen Potten 867-766-7468 Julian Morse 867-766-7453</p>

Comment Summary

Environment and Climate Change Canada: Gabriel Bernard-Lacaille				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Analysis
1	General	<p>Comment ECCC has reviewed in accordance with its mandate and doesn't have any comments at this time.</p> <p>Recommendation Not applicable.</p>	<p>Oct 11: Thank you for your review and comment.</p>	Noted.
Fisheries and Oceans Canada: Laura Phalen				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Analysis
1	Fisheries and Oceans Canada Review	<p>Comment As mentioned in the cover letter associated with "Bullmoose Creek Channel Design and Reconstruction Plan," these work plans were finalized with input from Fisheries and Oceans Canada (DFO). After concerns were addressed, DFO issued a Letter of Advice (17-HCAA-00427). A DFO representative has reviewed this version of the work plan and finds no inconsistencies with the plans that were reviewed and considered in the generation of the Letter of Advice. Therefore, DFO has no further concerns or recommendations associated with the designs and plans described in this document.</p> <p>Recommendation No recommendations from DFO.</p>	<p>Oct 11: Thank you for your review and comment.</p>	Noted.
GNWT - ENR: Central Email GNWT				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Analysis
8	General File	<p>Comment (doc) ENR Letter with Comments and Recommendations</p>		Noted.

1	Topic 1: Aquadam Installation	<p>Comment It is noted within Section 3.0 that an aquadam will be installed to facilitate the excavation of the impacted sediment zone. As a component of this, it is noted that a temporary pool will be excavated upstream to allow for installation of the aquadam. ENR is not clear on the necessity or the magnitude of the proposed temporary pool. It is our understanding that during aquadam utilization, flows can often be diverted around the work area to achieve dry conditions without the need for a temporary pool. This could be achieved by pumping the isolated water (potentially containing high TSS) through a filter sock onto a vegetated area. There would be some initial costs for the filter sock but this would remove the requirement to construct and then remediate a holding pond full of water. If the contractor does decide to go with a holding pond, ENR would like to confirm the required volume of this pool. The stated dimensions (15m x 15m by 1m) result in a volume of 225,000l, not 30,000l as stated. If 30,000 l is the required maximum capacity for the diversion, a significantly smaller holding pond could be constructed. Additionally, Bullmoose Creek appears relatively shallow during freshet conditions and would likely contain even less water when work would be completed. INAC CARD</p>	<p>Oct 11: A small sump will be constructed upstream of the aquadam, and bypass pumps will be operated during Creek reconstruction, with discharge back to the Creek channel downstream of the reconstructed section to a check dam. TSS is not expected to be significant through construction in ponded/pumped water, and erosion and sediment control measures including a turbidity curtain at the Creek mouth, will be in place and have been proved effective in other applications. Once the reconstruction is complete, the reconstructed channel will be sequentially hydrated from downstream to upstream while erosion and sediment control measures are maintained, as some wash out of fines from creekbed materials is expected, and then the bypass to the sump will be removed, the aquadam will be removed, and the channel will gradually fill (flows are small). Once flows are clear, the erosion and sediment control measures will be removed.</p> <p>Oct 16: It looks like a math error in the text of the plan, ie. someone was trying to back-calculate from 30,000l to get the dimensions. The volume is correct, the dimensions are wrong. The correct dimensions should be ~5.5m x ~5.5m x 1m, which is approximately 30,000l (30,250l, exactly). This is likely now a moot point, as now all</p>	<p>Satisfactory response. The Licence specifically authorizes CARD to construct a dam for diversion, so identifying alternatives was not strictly necessary.</p> <p>Construction season has been changed to winter low-flow periods so the dam and retention pond will no longer be necessary.</p>
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		<p>(CARD) should verify the volumes required comparing the pond size and the isolated site in addition to continual sump water that will also be going into the pond over the duration of the isolated work. Furthermore, ENR requests additional information detailing how water will drain out of the holding pond and an outline of any plans to remediate the area upon project completion. Finally, if the pool is in fact required the specific location of this excavation is not clear. An approximate location is denoted on Figure BM 4-1 but specific details are not included regarding location and ground type.</p> <p>Recommendation 1) ENR requests that CARD consider alternatives for the diversion of Bullmoose Creek that would eliminate the excavation of the holding pond.</p>	<p>construction will be under frozen conditions, or flows so low that they do not have to be diverted. We will not be constructing a holding pond going forward.</p>	
2	None	<p>Comment None</p> <p>Recommendation 2) Should a holding pond still be the preferred option, ENR requests information detailing how water will drain out of the holding pond (e.g. aggregate filter, check dams, etc) and how the area will be remediated.</p>	<p>Oct 11: As noted above, the bypass to the sump will be removed, remaining water will be pumped around the reconstructed channel as it has been, and then the sump will be backfilled.</p> <p>Oct 16: This is likely now a moot point, as now all construction will be under frozen conditions, or flows so low that they do not have to be diverted. We will not be constructing a holding pond going forward.</p>	Satisfactory response.

3	None	<p>Comment None</p> <p>Recommendation 3) ENR recommends that additional rationale and clarification be provided on the size, location and ground type in the area</p>	<p>Oct 11: As Built drawings of the reconstructed creek will be provided in the project Annual Remediation Report.</p>	<p>High-level information on the pre-existing environment is provided in Section 2.2 of Plan.</p> <p>The reference to the “Annual Remediation Report” is not a requirement of the Licence. It refers to the Annual Water Licence Report which does require the type of information that the proponent is discussing.</p>
4	Topic 2: Timing	<p>Comment In the previous comment, ENR has raised concerns regarding construction of temporary holding ponds which is linked to the amount of water that will be managed during stream diversion. This water amount is directly linked to the timing of the undertaking, as stream diversions are preferably done under low flow conditions to minimize the amount of water on site. Fish habitat assessment and other flow measurements for Bullmoose Creek appear to have been done in May and July so it isn't clear as to conditions that may be present later in the year (late summer when work is proposed). ENR notes that timing of the excavation work is slated for August (Section 3.5.1) however Section 3.1 notes that higher</p>	<p>Oct 11: Low flow conditions have been observed throughout Bullmoose Creek throughout the fall. The aquadam is intended to be installed on a precautionary basis, but will likely not be required, as the small 2m x 2m sump and bypass pumping will be more than adequate for the observed flow.</p> <p>Oct 16: This is likely now a moot point, as now all construction will be under frozen conditions, or flows so low that they do not have to be diverted. We will not be constructing a holding pond going forward.</p>	<p>Satisfactory response. Anticipated and peak volumes are listed in Section 2.2 of the report are adequate.</p> <p>The work plan has now been shifted to winter, the period of lowest flow, and retention/diversion is no longer planned.</p>

		<p>precipitation periods in this area typically occur in late summer. Furthermore, mitigations outlined in Section 3.5.1 include "conduct in-water activities during dry periods when low flows are anticipated (to reduce the risk of downstream sediment transport during in-water works)." It isn't clear if the proposed timing of the excavation of a watercourse is during a low flow period.</p> <p>Recommendation 1) ENR requests additional information from CARD on anticipated water levels during the proposed work period (August) and how this relates to low flows.</p>		
5	None	<p>Comment None</p> <p>Recommendation 2) ENR recommends that work related to Bullmoose Creek be carried out during low flow or frozen conditions to minimize impacts to the receiving environment.</p>	<p>Oct 11: See comment above - flows have been low to negligible (less than 1 to a few L per sec) throughout the fall.</p> <p>Oct 16: [All] construction will be under frozen conditions, or flows so low that they do not have to be diverted. We will not be constructing a holding pond going forward.</p>	<p>Satisfactory response. Board staff recommend that construction activity be limited to periods of lowest flow (i.e. August/September and into winter).</p>
6	Topic 3: Monitoring	<p>Comment It is noted in the application that as "(p)er the Construction Monitoring Plan (CMP) (Stantec 2017b), during the construction monitoring phase, should sediment discharge be identified as a risk to water quality in Bullmoose Lake, the discharge flow will be reduced or the discharge point may be relocated." Section 3.6.1 expands upon this by stating that construction activity monitoring will occur in Bullmoose Lake, to confirm</p>	<p>Oct 11: There are four monitoring locations in Bullmoose Lake, as outlined in the Construction Monitoring and Verification Plan (CMVP), which have been monitored as part of the Surveillance Network Program (SNP) since the start of summer construction in June. Monitoring results are provided in monthly SNP Reports. TSS monitoring was added to the monitoring program in August, per the Adaptive Management Plan</p>	<p>Satisfactory response. Monitoring to be conducted at multiple SNP locations. ENR recommendation regarding use of CCME guidelines for Total Particulate Matter are addressed in (7) below.</p>

		<p>that construction activities are not resulting in new impacts (CMP Section 5.2.3.1, SNP 2016-10). Should sediment discharge to Bullmoose Lake be identified, then the responses (per the CMP) are to firstly reduce discharge flows, and secondly to relocate the discharge. Section 3.6.4 notes that "(s)hould the level of solids in the surface water sampled exceed those within Bullmoose Lake, the discharge flow rate will be adjusted and/or the discharge location will be relocated." Specifics related to monitoring locations or how baseline in Bullmoose Lake will be determined are not clear. It is assumed that monitoring will occur in Bullmoose Lake and this will in essence become a criterion that discharge water is not to exceed. ENR notes that Bullmoose Lake water will likely be of high clarity/low TSS so using background conditions as a TSS limit may not be practical. A more appropriate limit may be the CCME guideline for Total Particulate Matter which recommends a maximum increase of 25 mg/L from background levels for any short-term exposure (24 hrs) and 5 mg/L for longer term exposures (e.g. inputs lasting from 24 hrs to 30 days).</p> <p>Recommendation 1) ENR requests that CARD clarify the methods for management response related to sediment</p>	<p>(AMP) section of the CMVP, for Bullmoose Lake stations. This was in response to an identified increase in metals concentrations at station BullLake1 in July, which is at the outlet of the Bullmoose Portal Wetland, north of Bullmoose Creek. Station BullLake3 is just south of the Bullmoose Creek mouth, while BullLake4 is further south. September monitoring of these stations was completed, and should further triggers under the AMP be experienced, the actions outlined in the CMVP will be taken.</p>	
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		discharge including sampling locations and frequencies, action levels and proposed response actions.		
7	None	<p>Comment None</p> <p>Recommendation 2) ENR recommends a that a TSS limit for discharge water should reflect CCME guidelines for Total Particulate Matter which are a maximum increase of 25 mg/L from background levels for any short-term exposure (24 hrs) and 5 mg/L for longer term exposures (e.g. inputs lasting from 24 hrs to 30 days).</p>	<p>Oct 11: Stantec agrees that the CCME guideline for total particulate matter pertaining to short-term and long-term exposures (up to 30 days) are relevant and applicable to monitoring the effects of Bullmoose Creek reconstruction on Bullmoose Lake, and will include comparison to these guidelines in the September and October SNP Reports.</p>	Satisfactory response.