



7th Floor - 4922 48th Street,
P.O. Box 2130, Yellowknife NT X1A 2P6

Tel: 867-669-0506 Fax: 867-873-6610
www.mvlwb.com

March 2, 2020

MV2014F0013
MV2014L8-0006
MV2019L8-0002

Mr. David Harpley
Canadian Zinc Corporation
SUITE 1710-650 West Georgia Street
Vancouver BC V6B 4N9

Sent via Email

Dear Mr. Harpley:

**Sediment and Erosion Control Plan – Version 2 – Resubmission required
Canadian Zinc Corporation – Prairie Creek All Season Road Project**

The Mackenzie Valley Land and Water Board (MVLWB or the Board) met on February 27, 2020 to review your Sediment and Erosion Control Plan, Version 2, which was submitted under Condition 45 of Land Use Permit (Permit) MV2014F0013, Part F, condition 7 of Water Licence (Licence) MV2014L8-0006, and Part E, condition 7 of Licence MV2019L8-0002.

The Sediment and Erosion Control Plan, Version 2, is considered approved as an interim submission, and upon resubmission the Plan will require a public review and a confirmation of conformity from the Board. Please include a conformity table in the Plan. The Board requires that Canadian Zinc Corporation resubmit the Sediment and Erosion Plan, Version 2, in accordance with comments made during this review, as summarized in Table 1 (attached).

The Board notes Canadian Zinc Corporation's News Release dated February 4, 2020 regarding the change in Project schedule, and would like to remind CZN to update the name "Pioneer Winter Road" in the next version of all relevant Management Plans for the 2020-2021 Winter Road, if applicable. If this is not applicable, the name used for the Winter Road should be consistent in all Management Plans. The Board also reminds Canadian Zinc Corporation to submit the Design and Construction Plan accepted by the Independent Technical Review Panel to inform the review of the revised Sediment and Erosion Control Plan. If the accepted Design and Construction Plan will not be available at the same time the revised Sediment and Erosion Control Plan is submitted, CZN shall include all sediment and erosion mitigation measures for reviewer information from the Design and Construction Plan in the Sediment and Erosion Control Plan.

Based on the information in the News Release about the Project schedule, the Board directs CZN to submit the revised Sediment and Erosion Control Plan, Version 2, **90 days prior to commencement of Phase 1**. However, if an approved Sediment and Erosion Control Plan is required for any activities conducted in the Summer of 2020, the Board directs CZN to submit the Plan by **March 30, 2020**. Please contact Board staff to confirm the submission date of the Sediment and Erosion Control Plan.

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If you have any questions or concerns, please contact Kimberley Murray at (867) 766 7458 or email kmurray@mvlwb.com.

Yours sincerely,



Mavis Cli-Michaud
MVLWB, Chair

Copied to: Distribution List

Attached: Table 1: Board Directives on Sediment and Erosion Control Plan, Version 2

Table 1: Canadian Zinc Corporation – Prairie Creek All Season Road Project – Board Directives from review of the Sediment and Erosion Control Plan, Version 2

Item	Outstanding items requiring updating	Review comment reference
1.	Update with the water level trigger for Tetcela River, include the rationale for not having a trigger for Grainger River, clarify the method used to determine the water level triggers, and provide the km range for the Winter Road that will be associated with each hydrometric station trigger.	DFO-2; ENR-1; ENR-2; PC-11
2.	Update the Plan to include a section on training, including: information on roles and responsibilities; Dene Monitor training; review of best practices; review of the monitoring plan; and reporting procedures in the event erosion is observed.	ENR-4; MVLWB-17; PC-9
3.	Update to refer to figures not embedded in the text as “attached”.	MVLWB-4
4.	Update Access road Map Book (Appendix A) link so that it works correctly.	MVLWB-5
5.	Update Figure A so that the text is legible.	MVLWB-7
6.	Correct the wording of the last sentence of Section 5.2.4 (“...riparian vegetation along is not intended for heavy sediment load filtration, high volume discharge, or as a sole source for construction runoff control”).	MVLWB-8; PC-19
7.	Update with further information on the turbidity-TSS relationships (including: location and details of bucket tests; representative sites and additional crossings to which CZN proposes the representative conversion factors will be applied; turbidity to TSS conversion factors for each of the representative drainages; and plots showing regression lines in an Appendix).	MVLWB-9; MVLWB-12; PC-12
8.	Update sentence about adjusting the Plan as necessary based on Winter Road experience to clarify that review and approval is required for any Plan updates.	MVLWB-10
9.	Update to incorporate proposed updated action levels for moderate and high action levels for the $\geq 80\%$ NTU natural conditions (>15% for the moderate action level and >25% for the high action level).	MVLWB-13
10.	Update the Plan clarifying protocols for reporting action level exceedances to the MVLWB and Parks Canada.	MVLWB-15
11.	Update the Inspection Form B (Appendix C) and Figure C to indicate that monitoring will occur every 48 hours/2 days following a high action level exceedance.	MVLWB-16; PC-16
12.	Update Section 3.0 to include snow/soil mixture as a sediment source and apply BMPs for operations and deactivations in later sections.	PC-1
13.	Update the Plan with erosion control methods suitable for winter.	PC-3
14.	Update Section 5.2.1 to clarify how often breaks will be created in windrows.	PC-4
15.	Elaborate Section 5.2.2, including noting the risks associated with snow/soil mixtures.	PC-5

16.	Update the Inspection Forms (Appendix C) to include visual monitoring of the construction area and adjacent lands for signs of sedimentation and erosion issues or mitigation failures.	PC-6
17.	Consider including a section for monitoring during operations that will include weather, operations modifications, and deactivation preparedness, if applicable.	PC-7
18.	Indicate that weekly monitoring performed by the Construction Manager would be a maximum timeframe in Section 6.1.1.	PC-8
19.	Provide a list, and map noting the locations, of the watercourses that will be monitored/inspected during the deactivation period, and provide further description on how the monitor will decide if a watercourse is to undergo inspection and monitoring.	PC-10
20.	Include a statement in Section 6.1.2 that indicates that an evaluation into the use of the hydrometric stations to inform freshet flows along the length of the road corridor will occur following Phase 1.	PC-11
21.	Update Section 6.3 to indicate that a small number of streams may have water flow in winter, either under ice or as open beads, and that such streams would be crossed with temporary spans or with the use of steel pipes to maintain flow, with snow packed over the top. Further indicate that it is possible that the installation of crossings may cause a limited amount of localized sediment suspension for a short duration, and that water sampling downstream after installation to confirm the absence of on-going sedimentation, subject to sampling feasibility in terms of ice/snow cover and safety, could occur.	PC-13
22.	Consider updating Section 7.0 to include visual monitoring of sedimentation and erosion control during construction and post-construction of the Winter Road and adjacent land as a method to identify sedimentation and erosion issues and to inform adaptive management.	PC-14
23.	Update to include adaptive management for anticipated erosion and anticipated failure of mitigation measures.	PC-15
24.	Update Inspection Form A: Put "Downstream" and "Upstream" before "Turbidity (NTU)" in their respective columns to help prompt the monitor to measure the downstream site first; Specify how the "Turbidity difference" should be calculated (i.e. Downstream – Upstream); Under footer 1, define what is considered a "Clear flow" or a "High flow" event; and replace "Parks Canada Inspector" with "Nahanni National Park Reserve Superintendent".	PC-17
25.	Update Inspection Form B to address the recommendations: Section 2: Put the "Downstream" Turbidity Measurements (NTU) on the left, and "Upstream" measurements on the right to help prompt the monitor to measure the downstream site first; Section 3/4: Include the definition of low/moderate/high action levels; Reduce duplication: mitigations are described under Section 6, and do not also need to be described under Section 4; Section 6: Clarify additional mitigations being proposed for "Describe subsequent mitigative action (assuming new measures will be required on next visit)" or reduce duplication under Section 7; Section	PC-18

	7: Clarify if the "Preliminary observations of mitigation effectiveness" relates to the effectiveness of mitigations installed on the initial or subsequent visit; Section 7: Clarify whether the "Turbidity Measurements after implementing new mitigation (NTU)" are to be taken on the second visit, or the third (if new mitigations are implemented on the second visit), or if CZN is expecting any new mitigations to be immediately effective; Section 7: Add a line to record the relevant photo numbers; and Section 9: Include a line for "Date report submitted".	
26.	Update to fix the typographical error in Figure C under the low action level flow chart (box should read "...repeat taking the average of 5".	PC-19
27.	Include a statement in Section 7.2.4 to indicate that the results of reporting from Phase 1 for sediment and erosion control monitoring and adaptive management will be used in the Phase 2 Plan with the goal of using lessons learned from construction of the Winter Road to inform construction of the All Season Road.	Racher-3
28.	Revise the Plan to include further details on erosion prevention methods including live silt fencing, French drains, and blanket drains, including best management practices for these methods.	PC-4*

*Note that this proposed Board Directive is from the public review of the Geochemical Verification Program (Proponent Response January 20, 2020; review comment: PC-4)