

Review Comment Table

Board:	MVLWB
Review Item:	Prairie Creek Mine - Mineral Exploration, Type B Licence Amendment Request DRAFT Conditions
File(s):	MV2019L2-0006
Proponent:	CanZinc Corporation
Document(s):	DRAFT Water Licence Conditions (387 KB)
Item For Review Distributed On:	Feb 22 at 11:27 Distribution List
Reviewer Comments Due By:	Mar 8, 2021
Proponent Responses Due By:	Mar 15, 2021
Item Description:	<p>Canadian Zinc Corporation (the Applicant) submitted a complete application to amend Water Licence (Licence) MV2019L2-0006. The Applicant requested to amend the effluent quality criteria (EQC) in the Licence (Part E, Condition 16). Specifically, the Applicant requested that: the EQC for total zinc be changed to dissolved zinc; the EQC for total petroleum hydrocarbons (TPH) be changed to extractable petroleum hydrocarbons (EPH); and the EQC for ammonia and TPH only apply when underground activities are occurring. The Applicant also requested Surveillance Network Program (SNP) changes to the Licence. Specifically, the Applicant requested that: hardness, dissolved organic carbon (DOC), and dissolved zinc be added to the sampling parameters for a new Prairie Creek downstream SNP station; that SNP station 3-11 be closed (downstream from the confluence of Prairie Creek and Harrison Creek); and that the requirement to measure Benzene, Toluene, Ethyl benzene, and Xylene (BTEX) be deleted for SNP station 3-12 (Tank Farm dewatering Discharge). Canadian Zinc Corporation (the Applicant).</p> <p>Based on the comments and recommendations on the Amendment Application (received by the Board on February 9, 2021) and the Applicant's responses (received by the Board on February 17, 2021), Board staff have drafted Licence Conditions for the Type B Licence Amendment Request.</p> <p>The purpose of the draft Licence conditions is to allow reviewers to comment on possible conditions. These draft materials are not intended to limit, in any way, the scope of reviewers' comments.</p> <p>The Board is not bound by the contents of the draft Licence and will make its decision at the close of the proceeding on the basis of all the evidence and arguments filed by all parties. Please note that review comments and recommendations on the draft Licence must not introduce new evidence at this point in the proceeding.</p>

Using the Online Review System (ORS), reviewers are invited to submit comments and recommendations on the document linked below by the review comment deadline specified. Please clearly indicate which condition you are commenting on.	<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>
Contact Information:	<p>Andy Wheeler 867.766.7467 Katherine Harris Kim Murray (867) 766-7458</p>

Comment Summary

Acho Dene Koe First Nation: Scott Mackay			
ID	Topic	Reviewer Comment/Recommendation	Proponent Response
1	MV2019L2-0006 Type B Water License draft conditions Annex A Part B	<p>Comment ADKFN is concerned with the downstream risks to aquatic life that our members harvest and consume as a consequence of the Project. The draft conditions in the new water license propose changing the zinc effluent quality criteria from total zinc to dissolved zinc. However not all Surveillance Network Program (SNP) monitoring sites have been revised in the draft conditions to include dissolved zinc as a sampled parameter. To ensure that the transport and fate of dissolved zinc at the Prairie Creek mine is adequately understood, it must be sampled consistently at all monitoring sites around the project along with the other parameters that are part of the formula that determines the zinc water quality guideline from the Canadian Council of Ministers of the Environment.</p> <p>Recommendation The Board should revise the Conditions on the Water License so that SNP stations 3-5, 3-6, 3-7 and 3-11a include hardness, dissolved organic carbon and dissolved zinc as sampling parameters required for all sampling events.</p>	<p>Mar 10: Other reviewers comments, and our responses, address most of these recommendations, except no one else is proposing DOC at station 3-7, and we don't think it's necessary.</p>

2	MV2019L2-0006 Type B Water License draft conditions Annex A Part B	<p>Comment ADKFN is concerned with the frequency of sampling at SNP stations 3-11a and 3-11b. Sampling every second month is too infrequent to be considered consistent, reliable monitoring while activities are occurring on site. ADKFN also agree that sampling frequency should be further increased during low flow periods in Prairie Creek, such as during late fall. Increasing monitoring frequencies at the downstream SNP sites will demonstrate to ADKFN that risks to our members through harvesting fish is being adequately monitored by CZN.</p> <p>Recommendation At a minimum, the Board should require monthly sampling for all parameters at SNP station 3-11b. Please note that it is ADKFN's strong preference that SNP station 3-11a is sampled monthly as well. ADKFN recommend that water sampling at SNP station 3-11b increase to twice a month for the remainder of the open water season.</p>	<p>Mar 10: See Racher 7. Station 3-11a is being retained during a transition period to Station 3-11b. We, and other reviewers, are OK with the sampling frequency for Station 3-11a in the draft amended WL. For Station 3-11b, we also agree with the sampling frequency in the draft amended WL, except we proposed a single season frequency of twice a month from October onwards in response to previous review comments by ENR re mixing as this coincides with reduced flows and dilution in Prairie Creek.</p>
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GNWT - ENR - EAM (Environmental Assessment and Monitoring): Central Email GNWT

ID	Topic	Reviewer Comment/Recommendation	Proponent Response
9	General File	<p>Comment (doc) ENR Letter with Comments and Recommendations</p> <p>Recommendation</p>	
1	Topic: Part E, Condition 17 and Annex A, Part B	<p>Comment ENR has no objection with the total ammonia and EPH EQCs being confined to "during Decline Operations"; however, it would be preferred that the Board expand Part E, Condition 17 to also apply when ANFO is being stored on-site and persist until sampling over a six-month period indicates total ammonia is consistently equal to or less than 50% of the EQC. The former could be clarified within the text of Part E, Condition 17 and the latter can be addressed through a revision of the sampling frequency for SNP station 3-4</p>	<p>Mar 10: We're OK in general with this proposal, however we propose 3 changes: - The wording should be "when ANFO is stored underground" because if it isn't stored underground, there is no way for any ammonia related to ANFO to report to station 3-4; - Weekly ammonia for 6 months after decline operations if ANFO is stored would be excessive. Monthly should suffice; - Condition 17 relates to both ammonia and EPH, whereas the concern is ammonia only related to ANFO, therefore changes to the condition and SNP</p>

		<p>outlined in Annex A, Part B as indicated in Board staff comments.</p> <p>Recommendation 1) ENR recommends that Part E, Condition 17 be expanded to also include instances when ANFO is stored on-site and persist until sampling over a six-month period indicates total ammonia is consistently equal to or less than 50% of the EQC.</p>	<p>should reflect that. We also noticed some overlap/confusion in the sampling for SNP Station 3-4. Re column 4, EPH and ammonia would be required "twice during open water after 'operations' (which operations?) have ceased", while these analyses aren't required during site operations. Recommend delete that portion of the frequency. Re column 5, this should be changed to reflect ammonia monthly for 6 months after decline operations if ANFO is stored, and not 'nutrients'.</p>
2	<p>Topic: Annex A, Part B SNP Station 3-5 and SNP station 3-6</p>	<p>Comment ENR agrees with ECCC's recommendation to add dissolved zinc, DOC and hardness to Stations 3-5 and 3-6. This will allow tracking dissolved zinc on route to and at Prairie Creek. Additionally, it would be valuable to include these parameters at SNP 3-10 to provide a better understanding of natural conditions of these variables in the upstream station.</p> <p>Recommendation 1) ENR recommends that dissolved zinc, DOC and hardness be added to SNP Stations 3-5, 3-6 and 3-10.</p>	<p>Mar 10: We had further interaction with ENR on this point as we were not sure that DOC would be useful in site samples (3-5 through 3-7). Following the interaction, we have decided to go along with ENR's recommendation. Please note that dissolved zinc is being proposed, not dissolved metals.</p>
3	<p>Topic: Annex A, Part B SNP Station 3-7</p>	<p>Comment Part of CZN's rationale for shifting to the dissolved zinc EQC is their understanding of the total versus dissolved fraction within their site, as well as the fractions leaving the site. Adding dissolved zinc to this station will provide a better idea of how the fraction changes across the site.</p> <p>Recommendation 1) ENR recommends adding dissolved zinc to the portal final mine water discharge SNP station at 3-7.</p>	<p>Mar 10: OK</p>
4	<p>Topic: Annex A, Part B - SNP Station 3-11a</p>	<p>Comment Sampling parameters at SNP 3-11a should be updated to reflect those proposed at SNP 3-11b. This will help provide an understanding of whether particulate zinc in the effluent at SNP stations 3-4 and 3-11b are resolubilizing further downstream at 3-</p>	<p>Mar 10: OK.</p>

		<p>11a. As well, it would be valuable to maintain station 3-11a to confirm that particulate zinc is not resolubilizing under variable conditions. While maintaining this station in perpetuity may not be required, a three year monitoring period is likely sufficient. The station may be discontinued if dissolved zinc concentrations measured at 3-11a are consistently equal to or below those measured at 3-11b and below the CCME WQO. As well, there is a potential that the SNP nomenclature may be confusing in future with the elimination of 3-11a. It may provide more clarity to provide a new SNP number for the SNP 3-11b noted in the draft Water Licence, i.e. SNP 3-13 given that 3-12 already exists.</p> <p>Recommendation 1) ENR recommends that the sampling parameters at SNP 3-11a be updated to reflect those proposed at SNP 3-11b.</p>	
5	None	<p>Comment None</p> <p>Recommendation 2) ENR recommends that SNP 3-11a be maintained for a three year monitoring period at minimum. The station may be discontinued if dissolved zinc concentrations measured at 3-11a are consistently equal to or below those measured at 3-11b and below the CCME WQO.</p>	Mar 10: Agreed
6	None	<p>Comment None</p> <p>Recommendation 3) ENR recommends that the SNP stations denoted as 3-11a and 3-11b be renamed to 3-11 and 3-13 respectively, i.e. to maintain the previous 3-11 and designate the new SNP station as 3-13.</p>	Mar 10: Agreed
7	Topic: BTEX	<p>Comment ENR staff had a discussion with CZN staff regarding the requirement at 3-5 and 3-6 for BTEX weekly sampling during decline operations. CZN advises that gasoline is not used in the underground but it is used to fuel light trucks and ATVs and</p>	Mar 10: In the further interaction we had with ENR, ENR were OK with sampling monthly at station 3-5 only for BTEX i.e. not 3-6 also. This is intended as a 'screening' on site discharge.

		<p>that weekly sampling may be a little excessive. ENR agrees with CZN that BTEX could be reduced to monthly frequency given a) diesel is the predominant fuel source on-site, and b) EPH sampling gives us an idea of whether there are petroleum hydrocarbons from other sources. One additional stipulation could be that if there are elevated concentrations noted in the EPH analysis, and there is any suspicion that it may be from a gasoline source, CZN should submit the sample for BTEX analysis as an adaptive response.</p> <p>Recommendation 1) ENR recommends that BTEX sampling be conducted monthly at 3-5 and 3-6 as opposed to weekly as indicated in the draft Water Licence.</p>	
8	None	<p>Comment None</p> <p>Recommendation 2) ENR also recommends that if elevated EPH levels are noted at these stations, CZN should submit the sample for BTEX analysis as an adaptive response.</p>	Mar 10: OK, for 3-5. Suggest >50% of the EQC be considered 'elevated'.
Racher Consulting: Kathy Racher			
ID	Topic	Reviewer Comment/Recommendation	Proponent Response
1	Joint submission of ŁÍDLJ KÚĘ FIRST NATION (LKFN) and NAH?A DEHÉ DENE BAND (NDDB)	<p>Comment Note that KRacher Consulting is submitting these comments on behalf of the LKFN and the NDDB.</p> <p>Recommendation None</p>	
2	SNP Station 3-4, Polishing Pond Discharge (point of compliance for EQC)	<p>Comment 1) As worded, there seems like there is a loophole where weekly sampling and analysis during Decline Operations does not cover the EQC in Condition E.16, total metals, sulphate, or other standard parameters. 2) ECCC has recommended adding hardness and DOC to the sampling parameter list so that the dissolved zinc guideline value can be calculated for that station.</p> <p>Recommendation We recommend that in the column with requirements</p>	Mar 10: OK with wording. We followed up with Ms Racher and she confirmed that she is OK with DOC at one of 3-4 or 3-5. Since we have gone along with ENR's request for DOC at 3-5 and 3-6, DOC is not needed at 3-4.

		for sampling parameters during Decline Operations, change the text to read: eQC outlined in Part E, Conditions 16 and 17, Total Metals, Standard, Sulphate. Also, we agree with ECCC's recommendation for adding hardness and DOC to the list of parameters.	
3	SNP Station 3-5 (Catchment Pond Discharge) and SNP Station 3-6 (Final Discharge from Harrison Creek to Prairie Creek)	<p>Comment We note that ECCC has recommended adding hardness and DOC to the list of sampling parameters at these two stations. Presumably this has been recommended as a way of tracking all the constituents that affect the toxicity of dissolved zinc. However, we do not believe that tracking these parameters at these stations will serve any real value, especially if they are already measured in SNP 3-4. Overall, the focus should be on the point of compliance (SNP 3-4) and the SNP stations in Prairie Creek.</p> <p>Recommendation We do not see the necessity of analyzing samples at these stations for DOC or hardness.</p>	Mar 10: We don't either, but we decided to go along with ENR's recommendation.
4	SNP Station 3-5 (Catchment Pond Discharge) and SNP Station 3-6 (Final Discharge from Harrison Creek to Prairie Creek)	<p>Comment Both of the stations require weekly sampling for BTEX and EPH during Decline Operations. Given that TPH analysis is already required at SNP 3-4, it isn't clear why it is also necessary at stations 3-5 or 3-6. If the reason for TPH analysis at SNP 3-5 is to monitor for spills around the Catchment Pond, it still doesn't make sense why TPH would also be analyzed at 3-6. As well, it isn't clear what the benefit is of sampling for BTEX at both SNP 3-5 and 3-6. As the BTEX compounds are volatile, they do not last a long time in surface waters and so the analyses will give limited information. They are also hard to sample for as the sampling containers must not have any headspace (i.e., no air in the bottle).</p> <p>Recommendation We recommend reconsideration of the need for TPH</p>	Mar 10: Agreed - EPH at 3-5 only. Agreed - monthly BTEX at 3-5 only.

		sampling at both 3-5 and 3-6; if there is a concern about spills or seeps into the Catchment Pond, then analysis of TPH at SNP 3.5 should be sufficient. For the same reason, we also recommend that BTEX analysis not be required at SNP 3-6. In all cases, weekly sampling of BTEX is unnecessary, monthly sampling would be sufficient.	
5	SNP Station 3-10, Prairie Creek upstream from the Airstrip	Comment We note that ECCC has recommended adding hardness, DOC and dissolved zinc to the list of sampling parameters at this station. Recommendation We agree with ECCC's recommendation: add hardness, DOC, and dissolved zinc to the list of sampling parameters at SNP 3-10.	Mar 10: OK
6	SNP Station 3-11a, Prairie Creek downstream of confluence from Harrison Creek	Comment We note that several parties have recommended adding hardness, DOC and dissolved zinc to the list of sampling parameters at this station. Recommendation We agree with the recommendations to add hardness, DOC, and dissolved zinc to the list of sampling parameters at SNP 3-11.	Mar 10: See our responses to ENR 4 and 5.
7	SNP Station 3-11b, Prairie Creek 100 m downstream of confluence from Harrison Creek	Comment We note that this station is new and was recommended by CZN as it will help us understand the potential toxicity of dissolved zinc at the end of a 100 m "mixing zone". In response to comments, CZN said they were ok with sampling here monthly during the summer but twice a month starting in October. Recommendation We support the addition of an SNP station in Prairie Creek at 100 m downstream of the confluence from Harrison Creek. We recommend: 1) adopting CZN's recommendations on sampling frequency at this site; 2) including DOC, hardness and dissolved zinc to the list of sampled parameters; and 3) giving the station a new number instead of just "3-11b". With respect to the last recommendation: there is already a lot	Mar 10: 1) We're OK with monthly sampling for site and decline operations. The twice monthly from October proposal was to address uncertainty regarding mixing during lower flows. We see that as a single season occurrence, i.e. assuming the expected mixing is confirmed in 2021, only monthly sampling would be necessary in 2022. 2) Agreed. 3) Agreed.

		of data on the record for SNP 3-11 and, in future, reviewers may get confused as to whether that old data is consistent with SNP 3-11a or 3-11b.	
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