

Memorandum

Date: February 2, 2021

Pages: 4

Re: Estimated Haul Traffic, Expanded Project, Prairie Creek Mine

Background and Summary

To offset increasing capital costs, Canadian Zinc (CZN) is proposing to increase daily ore mining from approximately 1,600 tonnes per day (tpd) to approximately 2,400 tpd. This increase will mean more tonnes will be milled per day, and more concentrates will be hauled out on the proposed All Season Road (ASR).

The amount of concentrate to be hauled will depend on mining rates and the grades of ore mined. However, concentrate production will be approximately 25% of the ore mined. The average annual concentrate haulage is projected to vary from 2,009 to 2,407 tpd.

The information below provides estimates of average daily haul traffic per year, compares this to previous estimates, and considers the implications in terms of ASR planning and potential effects.

The new transportation plan includes an approximate 30% increase in haul days per year, from 221 to 286. Previously, the average number of daily loads by year varied from 7.3 to 19.8 (42.5 tonne truck capacity). The new plan indicates an average number of daily loads by year from 1.2 to 21.4 (40 tonne truck capacity). There may be an increase in daily haul numbers immediately after annual Liard River ice bridge opening. We note that in EA0809-02, the expectation was for up to 70 loads per day in winter.

Haul Periods

The number of daily loads is strongly influenced by the haul periods. CZN has evaluated this further since the ASR environmental assessment (EA1415-01). The annual haul periods expected for the expanded mine are defined in Table 1.

A comparison of the assumed haul periods for the 1,600 tpd mine and the expanded 2,400 tpd mine is provided in Table 2. The key differences are:

Table 1: Estimated Annual Haul Periods, 2,400 tonnes/day Project			
From	To	Description	Number haul days
Barge Operation Non Winter Period			
21-Apr	30-Jun	Operations limited by Hwy 7 load restrictions, assume 70% haul days	49
01-Jul	31-Oct	Full Operation	123
01-Nov	30-Nov	Modified barge operation, full capacity	30
Ice Bridge Operation Winter Period			
01-Jan	04-Apr	Will require enhanced ice construction approach to enable Jan 1 start	94
Non Operational Periods			
05-Apr	20-Apr	Spring Freshet, no barge or ice bridge operation	0
01-Dec	31-Dec	Early winter ice development, no barge or bridge operation	0
Estimated weather lost days			-10
Total Estimated Annual Haul Days			286

- In the spring after break-up from late April to the end of June when a 70% haul capacity is now assumed as opposed to no hauling. This is based on an expected agreement between the NWT government and CZN to allow limited hauling operations over the period, and on actual and projected Highway 7 improvements which should limit seasonal load restrictions; and,
- In November when extended operations using a modified barge¹ are projected. Note that the barge crossing location typically has an open bead of water early in the winter due to the greater channel depth at that location, and that the barge crossing location differs from the ice bridge location which is approximately 100 m further downstream where the channel is not as deep and an early winter open water bead does not occur. As such, it will be possible to continue barge operations while initial work is occurring on the ice bridge.

The net result is that the previously estimated number of annual haul days has been increased from 221 to 286 days.

Daily Loads

The projected number of daily loads by year for the expanded project is defined in Table 3. Concentrates would be hauled in two 20-tonne containers per truck, so 40 tonnes of concentrates per truck. Non-concentrate loads are also reflected in Table 3. Note that supplies would be brought in by the concentrate haul trucks also on the back-haul, including diesel.

¹ Coopers Barging has advised that a clamshell attached to the barge can be used to break up early winter ice, thereby enabling continued barge operation.

Table 2: Comparison of Haul Periods, 1,600 vs 2,400 tonnes/day Projects

Tonnes per day	January	February	March	April	May	June	July	August	September	October	November	December						
	Weeks																	
	1-14				15-16	17-26			27-43				44-47	48-52				
1,600 ¹	Green				Red		Red			Green				Red				
2,400 ²	Green				Red		Orange		70 % capacity		Orange		Green				modified barge ops	
Full ASR Operation		No ASR operation				¹ 221 annual haul days				² 286 annual haul days								

Table 3: Projected Number of Daily Loads by Year, 2,400 tonnes/day Project

Item	Avg/YR	Operational Year														
		YR 1*	YR 2	YR3	YR 4	YR 5	YR 6	YR 7	YR 8	YR 9	YR 10	YR 11	YR 12	YR 13	YR 14	YR 15 [#]
Ore Mined (t x1000)	864.2	44.6	852.8	876.0	876.0	876.0	878.4	876.0	876.0	876.0	878.4	876.0	876.0	876.0	878.4	610.8
Avg Daily Production (t)	2,368	1,440	2,337	2,400	2,400	2,400	2,407	2,400	2,400	2,400	2,407	2,400	2,400	2,400	2,407	2,009
Concentrates (t x1000)	201.0	13.6	244.6	223.1	236.3	225.0	223.7	217.9	205.8	232.3	226.3	240.4	230.9	189.7	182.3	122.8
Avg Daily Haul Loads	17.6	1.2	21.4	19.5	20.7	19.7	19.6	19.0	18.0	20.3	19.8	21.0	20.2	16.6	15.9	10.7
Reagents/Consumables	0.4															
Camp supplies	0.5															
Generator Gas	1.2															
Average Daily Loads	19.7	3.3	23.5	21.6	22.8	21.8	21.7	21.1	20.1	22.4	21.9	23.1	22.3	18.7	18.0	12.8
	* 1 month		# 10 months													

After periods of no hauling, there may be an increase in daily loads to reduce the back-log. A 'surge' when the barge starts operating in the spring would not occur because loads will be restricted by Highway 7 limitations. An increase in daily loads would occur in winter when the ice bridge opens.

In a letter dated April 1, 2016 submitted by CZN to the Mackenzie Valley Environmental Impact Review Board, the expected daily number of concentrate loads only was projected. For the 42.5 tonne truck capacity scenario, the average number of daily loads by year varied from 7.3 to 19.8. This compares to the projection in Table 3 which indicates an average number of daily loads by year varied from 1.2 to 21.4.

ASR Planning

The haul estimates provided above indicate that there will be little difference in daily haul numbers with project expansion. Suitable road design for the expected traffic will be detailed in the Design and Construction Plan, which will be subject to review by the Independent Technical Review Panel, appointed in compliance with Measure 5-1 in the Reasons for Decision (RfD) of EA1415-01. Similarly, traffic mitigation will be defined in the Traffic Control Mitigation, Operations and Maintenance Plan (TCMOMP), also subject to Panel review and consistent with RfD Measure 5-2. As such, suitable planning and mitigation for the expanded project traffic is already provided for.

The longer haul periods and increased number of total annual loads may mean that there will be an increase in demand for ASR maintenance. This will also be detailed in the TCMOMP.

Potential Effects

As in the April 1, 2016 letter, the revised daily haul numbers are considered to be immaterial in terms of the effects assessments for wildlife and air quality. We refer to the section in the letter titled "Significance in Terms of Effects", which remains applicable.

Regarding the possible increase in daily haul numbers immediately after annual Liard River ice bridge opening, we note that hauling in winter was assessed in EA0809-02, with an expectation for up to 70 loads per day.