



31 March 2021

Mr. Ryan Fequet
Executive Director
Wek'èezhii Land and Water Board
#1-4905 48th Street
Yellowknife, NT X1A 3S3
Via email: rfequet@wlwb.ca, mmacintyre-newell@wlwb.ca

Dear Mr. Fequet:

RE: Information Request (IR) regarding Nighthawk Gold Corp.'s Interim Closure and Reclamation Plan Version 3.3 (W2018L2-0003)

On February 26, 2021 Nighthawk Gold Corp. (Nighthawk) received notification from Meaghan MacIntyre-Newell, Regulatory Specialist with the WLWB regarding the above and stating that, a formal response to the IR is due on or before March 12, 2021 at 5 PM MST. A request for an extension to the March 12, 2021 deadline was requested by Nighthawk on March 2, 2021 and was granted until 5 PM MST on April 1, 2021.

Please find attached a detailed response to the Information Request. Nighthawk Gold Corp. appreciated the opportunity to address these concerns and looks forward to any opportunities to engage regulators and all stakeholders. I am available at anytime should you have any questions (604-340-4756).

Sincerely,

NIGHTHAWK GOLD CORP.

Denise Lockett, Manager,
Stakeholder Relations, Licensing and Permitting

Attachment: Golder Report

Cc: Damian Panayi, Golder, Patrick Clancy GNWT, Victoria Shore ECCC, Longinus Ekwe Tłıchq Gov't

31 March 2021

W2018L2-0003 – Nighthawk Gold Corp

Denise Lockett

Manager, Stakeholder Relations, Licensing and Permitting
NIGHTHAWK GOLD CORP
141 Adelaide Street. West, Suite 301
Toronto, ON
M5H 3L5

**INFORMATION REQUEST FOR NIGHTHAWK'S INTERIM CLOSURE AND RECLAMATION PLAN
VERSION 3.3 (W2018L2-0003)**

Dear Ms. Lockett,

Nighthawk Gold Corp. (Nighthawk) submitted its interim Closure and Reclamation Plan (CRP) Version 3.3 to the Wek'èezhìi Land and Water Board (WLWB or the Board) on 28 August 2020. The following transmittal is in response to an information request from the Wek'èezhìi Land and Water Board issued on 26 February 2021 to Nighthawk, the Government of the Northwest Territories – Environment and Natural Resources (GNWT-ENR), Environment and Climate Change Canada (ECCC), and the Tłı̨chǫ Government (TG) to obtain clarity around the additional information outlined below to assist the Board in its decision-making process on Version 3.3 of the interim CRP.

Information Request to Nighthawk - Schedule of Closure Activities

Board staff asked several questions regarding Section 5.3 of the CRP (Future Progressive Reclamation; WLWB staff comment 43). These questions relate to environmental conditions that would trigger commencement of reclamation of the rock piles. In Nighthawk's response, it stated that if rock piles are left in their current configuration, water quality will be similar to current conditions. Nighthawk also acknowledged that pH has been outside of the acceptable range in the Licence Effluent Quality Criteria (EQC) at SNP Station 5-10 and that metal concentrations have exceeded chronic guidelines for the protection of aquatic life at SNP station 5-4 in Lardass Lake. Nighthawk has not provided a response to what environmental conditions would trigger the reclamation of the rock piles to begin (i.e., independent of a decision on operations at Colomac) and what the long-term environmental effects of leaving the rock piles in their current configuration would be, if any.

- a) *Describe how Nighthawk has evaluated whether the current water quality and plan to maintain the Damoti Site in temporary closure for an undefined period would have acceptable effects on the Receiving Environment. If Nighthawk has determined that maintaining current site conditions would not have acceptable effects on the Receiving Environment, describe proposed mitigation measures along with the proposed timing for implementation with rationale; and*

- b) *If water quality were to change during temporary closure, can Nighthawk describe what, if any environmental conditions would trigger commencement of remediation of the Damoti site; independent of the decision to commence operations at Colomac.*

Board staff asked several questions regarding Section 5.3 of the CRP (Future Progressive Reclamation; WLWB staff comment 43). These questions relate to environmental conditions that would trigger commencement of reclamation of the rock piles. In Nighthawk's response, it stated that if rock piles are left in their current configuration, water quality will be similar to current conditions. Nighthawk also acknowledged that pH has been outside of the acceptable range in the Licence Effluent Quality Criteria (EQC) at SNP Station 5-10 and that metal concentrations have exceeded chronic guidelines for the protection of aquatic life at SNP station 5-4 in Lardass Lake. Nighthawk has not provided a response to what environmental conditions would trigger the reclamation of the rock piles to begin (i.e., independent of a decision on operations at Colomac) and what the long-term environmental effects of leaving the rock piles in their current configuration would be, if any.

Response

- a) Nighthawk evaluated current water quality in the interim CRP using the existing SNP dataset (see ICRP Section 2.4, Appendix A, and Appendix G). Based on review of the dataset from the Lardass Lake receiving environment, drainage from the Site is not causing adverse or unacceptable effects in the receiving environment and water quality has not deteriorated over time. As shown in Appendix G-3 of the interim CRP, pH has been stable over time and total metals do not show upward trends.

Results from SNP 5-4 near the drainage outlet have been consistently below closure criteria for this station (acute guidelines for the protection of aquatic life or wildlife guidelines). At SNP 5-5 (approximately 50 m west of the drainage outlet), there have been instances where results did not meet chronic guidelines in 2019 and 2020. However, these were isolated occurrences that did not persist across more than one sampling event. Results that did not meet the chronic guidelines at SNP 5-5 in 2019 and 2020 were:

- total aluminum in June 2019 and June 2020 (0.11 mg/L in both years compared with a guideline of 0.1 mg/L)
- field pH in June 2020 (6.4 compared with a guideline range of 6.5 to 9.0)

Recent SNP results from September 2020 are provided in Table 1 and confirm the interpretation in the interim CRP that the Site is not causing adverse effects on the receiving environment. Table 1 includes results from:

- the drainage from the waste rock piles (SNP 5-14)
- Lardass Lake SNP stations (SNP 5-4 and SNP 5-5)
- a proposed station at the edge of the mixing zone (SNP 5-15)

Parameter concentrations in September 2020 were generally below acute and chronic guidelines for the protection of aquatic life and wildlife health guidelines at all stations (CCME 1999, Golder 2020). Dissolved oxygen concentrations at SNP 5-14 were below the minimum guideline but, as noted in the SNP report (Golder 2020), this is thought to be a function of site conditions in the drainage (shallow ponded water) and is not related to runoff from the rock piles.

Table 1: Surveillance Network Program Sample Results Downstream of the Waste Pile Rock Area Compared to CCME Guidelines, 10 September 2020

Parameter	Unit	Guidelines for the protection of:			Station				
		Aquatic Life		Wildlife Health (Livestock)	SNP 5-4	SNP 5-5	SNP 5-14	SNP 5-15-S (surface)	SNP 5-15-M (mid-depth)
		Acute	Chronic						
Field Measured									
pH	-	-	6.5 - 9.0	-	6.7	7.3	6.5	7.4	7.5
Specific conductivity	µS/cm	-	-	-	98	61	265	112	112
Temperature	°C	-	-	-	11	10	5.7	10	10
Dissolved oxygen	mg/L	-	6.5	-	6.7	9.5	4.5	9.8	9.5
Dissolved oxygen	%	-	-	-	61	86	36	87	83
Conventional Parameters									
pH	-	-	6.5 - 9.0	-	7.3	7.6	7	7.7	7.8
Specific conductivity	µS/cm	-	-	-	118	116	268	115	115
Hardness (as CaCO ₃)	mg/L	-	-	-	60	55	124	53	53
Total suspended solids	mg/L	-	-	-	9	22	3.6	1.7	1.4
Major Ions									
Calcium	mg/L	-	-	1,000	16	15	31	14	14
Magnesium	mg/L	-	-	-	4.7	4.3	11	4.3	4.1
Potassium	mg/L	-	-	-	1.4	1.4	2.4	1.3	1.3
Sodium	mg/L	-	-	-	2.9	2.6	4.7	2.7	2.7
Sulphate	mg/L	-	-	1,000	17	15	78	14	14

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		Aquatic Life		Wildlife Health (Livestock)	SNP 5-4	SNP 5-5	SNP 5-14	SNP 5-15-S (surface)	SNP 5-15-M (mid-depth)
		Acute	Chronic						
Nutrients									
Total ammonia	mg-N/L	-	2.7 ^(a)	-	0.018	0.023	0.0093	0.021	0.021
Total phosphorus	mg-P/L	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
Dissolved phosphorus	mg-P/L	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
Total Metals									
Aluminum	mg/L	-	0.10 ^(b,c)	5	0.070	0.062	0.024	0.043	0.045
Antimony	mg/L	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic	mg/L	-	0.005	0.025	0.00027	0.0013	0.00021	0.00037	0.00051
Barium	mg/L	-	-	-	0.0097	0.0084	0.011	0.008	0.0081
Beryllium	mg/L	-	-	0.1	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Bismuth	mg/L	-	-	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Boron	mg/L	29	1.5	5	<0.01	<0.01	0.015	<0.01	<0.01
Cadmium	mg/L	0.0011 - 0.0026 ^(d)	0.000094 - 0.00019 ^(d)	0.08	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Cesium	mg/L	-	-	-	0.000024	0.000032	0.00027	0.00003	0.000027
Chromium	mg/L	-	0.001	0.05	0.00018	0.00017	0.00022	0.0001	<0.0001
Cobalt	mg/L	-	-	1	0.00018	0.00018	<0.0001	<0.0001	<0.0001
Copper	mg/L	-	0.0020 - 0.0028 ^(d)	0.5	0.00091	0.0011	<0.0005	0.00087	0.0013
Iron	mg/L	-	0.3	-	0.12	0.10	0.077	0.019	0.02

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		Aquatic Life		Wildlife Health (Livestock)	SNP 5-4	SNP 5-5	SNP 5-14	SNP 5-15-S (surface)	SNP 5-15-M (mid-depth)
		Acute	Chronic						
Lead	mg/L	-	0.0010 - 0.0042 ^(d)	0.1	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Lithium	mg/L	-	-	-	0.0028	0.0022	0.0086	0.002	0.0021
Manganese	mg/L	3.8 – 8.0 ^(e,f)	0.43 – 0.64 ^(e,f)	-	0.048	0.039	0.0016	0.0096	0.0097
Mercury	mg/L	-	0.000026	0.003	0.0000014	<0.000002	0.0000014	0.00000077	0.00000094
Molybdenum	mg/L	-	0.073	0.5	0.00011	0.00015	0.000099	0.00012	0.00012
Nickel	mg/L	-	0.025 - 0.11 ^(d)	1	0.0015	0.0017	0.0087	0.0012	0.0012
Rubidium	mg/L	-	-	-	0.0024	0.0023	0.005	0.0022	0.0022
Selenium	mg/L	-	0.001	0.05	<0.00005	0.000088	<0.00005	<0.00005	<0.00005
Silicon	mg/L	-	-	-	0.59	0.6	4.7	0.17	0.16
Silver	mg/L	-	0.00025	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Strontium	mg/L	-	-	-	0.039	0.039	0.078	0.036	0.038
Sulphur	mg/L	-	-	-	6.7	5.3	27	5.0	5.1
Tellurium	mg/L	-	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Thallium	mg/L	-	0.0008	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Thorium	mg/L	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tin	mg/L	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Table 1: Surveillance Network Program Sample Results Downstream of the Waste Pile Rock Area Compared to CCME Guidelines, 10 September 2020

Parameter	Unit	Guidelines for the protection of:			Station				
		Aquatic Life		Wildlife Health (Livestock)	SNP 5-4	SNP 5-5	SNP 5-14	SNP 5-15-S (surface)	SNP 5-15-M (mid-depth)
		Acute	Chronic						
Titanium	mg/L	-	-	-	0.00048	0.00054	0.00057	<0.0003	<0.0003
Tungsten	mg/L	-	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Uranium	mg/L	0.033	0.015	0.2	0.000095	0.00011	0.000026	0.000076	0.000082
Vanadium	mg/L	-	-	0.1	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Zinc	mg/L	0.035 - 0.070 ^(e,g)	0.0060 - 0.030 ^(e,g)	50	<0.003	<0.003	<0.003	<0.003	<0.003
Zirconium	mg/L	-	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Notes:

Bolded concentrations are outside the recommended pH, DO or total alkalinity range.

a) The ammonia guideline is dependent on pH and temperature. Only the minimum guideline (2.7 mg-N/L) is reported and is based on the combination of field pH of 7.5 and water temperature of 10.1°C. The guideline is calculated based on the individual field pH and temperature measurements for each sample.

b) Guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (6.5 to 7.5). The guideline is calculated based on the individual pH for each sample.

c) Guideline is pH dependent: 0.005 mg/L at pH < 6.5 and 0.1 mg/L at pH ≥ 6.5.

d) Guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (53 to 124 mg/L). The guideline is calculated based on the individual hardness value for each sample.

e) Guidelines are for dissolved concentrations, but comparisons to total concentrations are appropriate when no dissolved concentrations are available.

f) The acute and chronic dissolved manganese guidelines are dependent on pH and hardness. The minimum acute (3.8 mg/L) and chronic (0.43 mg/L) manganese guideline is based on the combination of field pH (7.4) and hardness (53.0 mg/L). The guidelines are calculated based on the individual pH and hardness measurements in each sample.

g) The dissolved zinc guidelines are dependent on pH (chronic only), hardness, and dissolved organic carbon (DOC). The minimum acute (0.035 mg/L) and chronic (0.006 mg/L) zinc guidelines are based on the combination of field pH (7.5), hardness (53.0 mg/L), and DOC (0.3 mg/L). The guidelines are calculated based on the individual pH and hardness measurements in each sample and an assumed DOC concentration of 0.3 mg/L.

CCME = Canadian Council of Ministers of the Environment; µS/cm = microsiemens per centimetre; mg/L = milligrams per litre; mg-N/L = milligrams as nitrogen per litre; % = percent; °C = degrees Celsius; <= less than; - = no guideline or no data.

Maintaining the Site in its current configuration until a decision is made on whether to consolidate the waste rock pile or commence operations at Colomac is not anticipated to cause any additional risk of adverse effects to the receiving environment. There will be no new sources of potential acid generating material, and the water quality of runoff from the existing rock piles is expected to continue to stabilize over time. Modelling of the existing rock pile was described in version 3.2 of the interim CRP (Section 3.2.8.2 and Appendix J) to describe water quality of seepage and runoff if no mitigation measures were undertaken. This was a highly conservative approach because all runoff from the waste rock pile catchment was assigned contact water quality. In the model, the first flush humidity cell test results were used to simulate worst case conditions, and the steady state leachate chemistry was used to simulate moderate case conditions. Parameters that exceeded water quality guidelines in the predicted water quality from the waste rock area included pH, aluminum, chromium, copper and iron. Once the site runoff was mixed into Lardass Lake, all parameter concentrations were predicted to be below chronic aquatic life guidelines, which is consistent with recent results from the edge of the mixing zone at SNP 5-15 (Table 1).

- b) In the pre-closure period, Nighthawk will continue to monitor for any changes in the receiving environment that would indicate potential adverse effects in the receiving environment (per the monitoring program in Section 4.8.2 of the interim CRP). This will include Surveillance Network Program sampling at SNP 5-4 and SNP 5-5, as required by Water Licence W2018L2-0003 (WLWB 2019), as well as two supplemental samples in September 2020 and June 2021 at SNP 5-15 to characterize water quality at the edge of the proposed mixing zone in Lardass Lake, 50 m offshore from the drainage outlet.

Results from SNP 5-15 in September 2020 are presented in Table 1. In June 2021, additional surface and mid-depth samples will be collected at SNP 5-15 to confirm results from September 2020 and further characterize water quality at the proposed mixing zone boundary. This program will include two additional surface grab samples equidistant from the point where the drainage enters Lardass Lake (i.e., three samples total including SNP 5-15), and a series of specific conductivity transects to characterize dilution within the proposed mixing zone.

The following action levels and enhanced monitoring requirements are proposed to detect changes in water quality that would trigger further mitigation or remediation of the site:

In drainage pathway (SNP 5-14):

- If parameter concentrations are above the closure criteria (acute/wildlife guidelines), collect a sample for acute toxicity testing. If water is confirmed to be acutely toxic, mitigation is required.

OR

In Lardass Lake within the proposed mixing zone (SNP 5-4 at the drainage outlet):

- If a parameter concentration is above the closure criteria (acute/wildlife guideline), sampling must be initiated at SNP 5-15 (edge of the proposed mixing zone) twice yearly as part of the SNP sampling events.

In Lardass Lake at SNP 5-15, based on the average of the surface and mid-depth samples:

- If parameter concentrations in three consecutive sampling events are above the applicable closure criteria (chronic guidelines)¹

AND

- parameter concentrations in three consecutive sampling events are above 95th percentile of the historical dataset from Lardass Lake (using data from SNP 5-5 from 2013 onwards)

AND

- parameter concentrations are trending upwards, and the increase is linked to waste rock piles

then mitigation must proceed

Nighthawk will complete an assessment of the above action level as part of the twice-yearly SNP reports. Further sampling and analysis will be initiated, as applicable, based on the results.

The next spring 2021 SNP report will also present results from the mixing zone boundary (SNP 5-15) from September 2020 and June 2021. This summary will include analytical water quality, field profiles, and specific conductivity transects between the drainage outlet and mixing zone boundary. Results from SNP 5-15 will be compared with closure criteria at the mixing zone boundary (i.e., chronic guidelines).

References:

CCME (Canadian Council of Ministers of the Environment). 1999. Canadian Environmental Quality Guidelines 1999, with updates to 2020. Winnipeg, MB. Accessed June 2020.

Golder (Golder Associates Ltd.). 2020. Damoti Lake Surveillance Network Program – Results from the September 2020 Monitoring Event. Submitted to Nighthawk Gold Corp., 28 October 2020.

WLWB (Wek'èezhì Land and Water Board). 2019. Type B Water Licence W2018L2-0003. Issued 15 February 2019.

¹ Or below the pH range of 6.5 to 9.0 at SNP 5-5