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Kugluktuk

Bathurst Inlet
Kingaok

Bay Chimo
Umingmaktok

Cambridge Bay
Ikaluktutiak

Gjoa Haven
Okhoktok

Taloyoak

Kugaaruk

Richard Dwyer

Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, Nunavut
X0B 1J0

July 7th, 2021

Re: Review of TMAC's 2020 Annual report for Hope Bay Project.

Dear Richard Dwyer, the KIA has reviewed TMAC's 2020 Annual Report for the Hope Bay project to the NWB.

1) Compliance Monitoring:

The KIA's Framework Agreement (FA) and Inuit Impact and Benefits Agreement (IIBA) with TMAC Resources Inc. the cover terms and conditions of NIRB Project Certificate 009 and the NWB Type A water licenses.

The Framework Agreement is a confidential agreement between KIA and TMAC that supersedes and replaces all previous contractual arrangements between both parties. Section 3.1 of the FA covers Terms and conditions of land use license and reporting.

Appendix A of Section 3.1 of the Framework Agreement specifies the details of annual reporting by Sabina to the KIA, which is summarized as follows:

TMAC is to provide an annual report to KIA providing details of its operations under any land use License, Advanced Exploration Lease and/or Commercial Lease covering the location and operations area of lands affected, and the nature of facilities and equipment at these sites. In addition, TMAC is to provide details of progressive reclamation or closure activities undertaken during the year and details of all permits, licenses, and authorizations from other regulatory bodies or agencies that are required for operations.

This annual report is to provide information on:

- Ground disturbances including land use activities for camps, infrastructure, equipment, winter roads and trails.
- Fuel and Chemical storage including Chemicals of Potential Concern inventory (COPC), fuel and chemical usage, and spill records.
- Drilling programs, locations, and methods.
- Water use and effects on water.

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- Wildlife interaction, data logs, and summaries.
- Waste disposal, waste management practices, inventory of waste on site, and inventory of hazardous materials or non-combustible waste removed from site.
- Closure and reclamation progress associated with waste management, drilling, and ground disturbance along with associated costs.
- General information on annual inspection activities by staff and other agencies and their results, community consultations, future exploration work plans, submissions to NIRB, NWB, or NPC or other regulators related to mining activity, archaeological sites and burial grounds, and any incidents of storage or possession of alcohol and drugs on site.

TMAC has provided the KIA with the **Hope Bay Project 2020 Annual Report for KIA Framework Agreement** in accordance with Appendix A to Schedule 3.1 of the Framework Agreement. This report is separate from the **Hope Bay Project 2020 Annual Report to the NWB**.

Compliance Status

2) Effects of Monitoring:

a) **Whether the conclusions reached by TMAC in the Hope Bay 2020 Annual Report to the NWB are Valid.**

KIA's consultants in the areas of wildlife, aquatic sciences, fish sciences, hydrogeology and geotechnical engineering reviewed the Hope Bay 2020 Annual Report to the NWB and the following documents:

- Hope Bay Project 2020 Kitikmeot Inuit Association Annual Report
- Hope Bay Project 2020 Nunavut Water Board Annual Report
- Appendix A. Concordance Table
- Appendix B. NWB Forms
- Appendix C. Site Layouts
- Appendix D. Water Licence(s) Monitoring Data
    - Appendix D.1. 2AM-DOH1335
    - Appendix D.2. 2BE-HOP1222
    - Appendix D.3. 2BB-MAE1727
    - Appendix D.4. 2BB-BOS1727
    - Appendix D.5. 2AM-BOS1835
- Appendix E. Doris Mine Annual Water and Load Balance Assessment – 2020 Calendar Year
- Appendix H. 2020 Hope Bay Project Spill Contingency Plan
- Appendix G. Drill Hole Collar Locations.

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Overall, our consultants find Sabina's conclusions in the 2020 Annual Report are valid. TMAC has generally presented adequate information to demonstrate that the Hope Bay Belt projects have not adversely affected the aquatic environment. However, several issues were identified in our review of the 2020 Annual Reports and appendices relating to under predicted concentrations, water storage, implementation of spill corrective action, and the need for a more appropriate reference lake. These concerns should be addressed in the coming year to ensure that any trending changes in the aquatic environment from mine related impacts are managed and mitigated in a timely manner.

b) **Any areas of significance requiring further supporting information or changes to the monitoring program, which may be required.**

1.0 Hope Bay Project 2020 Annual Report to NWB

1.1 KIA-NWB-01

Review Comment Number	KIA-NWB-01
Subject/Topic	Spill Follow Up Actions
References	Hope Bay Project 2020 Kitikmeot Inuit Association Annual Report. Section 4.2 Spill Records Table 4.2-1. Summary of Reportable Spills in 2020
Summary	Broken and inferior equipment caused spills of ANFO explosives. TMAC suggested several corrective actions including requesting standard wood pallets and correct stacking orientation of seacans, however the probability of these changes occurring is unknown. Follow up is required to determine corrective actions have been implemented. Furthermore, the ultimate site of spill #2020090 was not provided nor was information on success of clean up procedures provided. Further information is needed to determine the effectiveness of TMAC's spill cleanup procedures. The chemical composition of spill #2020180 was determined by TMAC but the results of the analysis were not provided. To determine the severity of the spill it is recommended that TMAC provide laboratory results.

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Detailed Review Comment	TMAC's spill incident investigations and follow up corrective actions were detailed however, further follow up is required for several of the spills. Spill number #2020069 which occurred on March 3, 2020, with 1 kg of ANFO explosives indicated that the right fork on the tele-handler was bent. Corrective action included fixing the right fork and looking for alternative equipment options for removing pallets from seacans. The corrective actions did not include an item to ensure broken equipment is identified prior to use. It is recommended that TMAC determine a corrective/preventative action to ensure broken equipment is not used for ANFO explosive removal moving forward. Corrective actions for spill number #2020069 and #2020079 indicated that the vendor would be contacted, "to investigate options for using standard wood pallets and stacking materials for shipping explosives products" and to "request vendor pack pallets into seacan in correct orientation". To determine if corrective actions are effective in reducing future spills greater follow up is required. Please provide follow up if vendor was able to satisfy these requests or if an alternative vendor can be used moving forward or how these preventative measures were conducted. In the description of spill #2020090 which occurred on March 31, 2020, TMAC says, "Water was released from the roll-up doors on the north and south side of the 720 Building." Please indicate if water was released to the outside environment, if effluent was released to land or snow and if so, describe what was done with the impacted land/snow and how the spill was cleaned up.
Recommendation/Request	It is recommended that TMAC: 1. Indicate what corrective/preventative action has been initiated to ensure broken equipment is not used for ANFO explosive removal. 2. Provide follow up if vendor was able to satisfy the request for use of standard wood pallet and stacking of pallets in correct orientation or if an alternative vendor was found to complete these corrective action tasks. 3. Indicate if water released from the roll-up doors on the north and south side of Building 720 for spill #2020090 was released to land or snow, what clean up procedures were followed and provide data to support complete cleanup of the spill.
Importance	Moderate

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1.2 KIA-NWB-02

Review Comment Number	KIA-NWB-02
Subject/Topic	Location of Brine Mixing Facility
References	Hope Bay Project 2020 Kitikmeot Inuit Association Annual Report. Appendix D Water Licence(s) Monitoring Data Appendix D.1. 2AM-DOH1335 Figures D1-1 through D1-3 2AM-DOH1335 Sample Station Locations
Summary	Station MMS-6 the brine mixing facility is missing from Figures D1-1 through D1-3 indicating the locations of all sample stations for water licence 2AM-DOH1335.
Detailed Review Comment	Station MMS-6 the brine mixing facility which requires sampling during operations is missing from Figures D1-1 through D1-3 indicating the locations of all sample stations for water licence 2AM-DOH1335.
Recommendation/Request	Please indicate the location of MMS-6 the brine mixing facility on site figure.
Importance	Low

1.3 KIA-NWB-03

Review Comment Number	KIA-NWB-03
Subject/Topic	SNP early indicators
References	Hope Bay Project 2020 Kitikmeot Inuit Association Annual Report. Appendix D Water Licence(s) Monitoring Data
Summary	A single year's worth of the surveillance network program (SNP) station data is provided in the annual reports. Early signs of the need for additional treatment and assessing adherence to model inputs would be improved with additional years data to observe trends in water chemistry.
Detailed Review Comment	Data from SNP sites are collected based on the requirements set out in the mines Water Licence(s). Data are provided in annual reports for the past year. The SNP stations are not regulated but act as early warning indicators for potential treatment requirements and to assess model inputs. It is recommended that TMAC include previous years data in the annual reports or

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	provide data analysis (or graphical displays) of previous data so the SNP data can more easily provide early signs that additional treatment may be required, and to assess adherence with the inputs to models that generated FEIS predictions.
Recommendation/Request	Include previous years SNP data in annual reports to help detection the need for additional treatment and to assess adherence with the inputs to models that generated FEIS predictions.
Importance	High

1.4 KIA-NWB-04

Review Comment Number	KIA-NWB-04
Subject/Topic	Arsenic exceedance at BOS-5
References	Hope Bay Project 2020 Kitikmeot Inuit Association Annual Report. Appendix D Water Licence(s) Monitoring Data Appendix D.4. 2BB-BOS1727
Summary	Arsenic concentrations exceeded the maximum allowable concentration in any grab sample at BOS-5 on June 16th, 2021. To determine if arsenic concentrations are higher than anticipated or require treatment, TMAC should include 2021 exceedance information in 2022 annual report.
Detailed Review Comment	Concentrations of arsenic exceeded the maximum allowable concentration in any grab sample at BOS-5 on June 16th, 2021. Data from SNP sites act as early indicators of onsite treatment needs and evaluation of FEIS model inputs. To detect changes in water chemistry data over several years may be required. It is recommended that TMAC note the arsenic exceedance in 2021 at BOS-5 in the 2022 annual report for comparison purposes.
Recommendation/Request	It is recommended that TMAC revisit the arsenic exceedance at BOS-5 in 2021 in the 2022 annual report to determine if arsenic exceedances are an indication that treatment is required.
Importance	High

1.5 KIA-NWB-05

Review Comment Number	KIA-NWB-05
Subject/Topic	Incident and Root Cause Analysis

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References	Hope Bay Project 2020 Kitikmeot Inuit Association Annual Report. Appendix E Spill Contingency Plan Section 3.5 Incident Review and Root Cause Analysis
Summary	Results of incident and root cause analysis review should be included in annual reports to demonstrate the efficacy of remedial measures employed by TMAC for spills.
Detailed Review Comment	TMAC states, "A review of incidents and root cause analysis will be conducted by the Environmental Superintendent quarterly. The purpose of this review will be to identify trends in root cause. Lessons learned from this exercise will be used to develop additional corrective actions including awareness campaigns for site personnel, improvements to operational equipment and spill response resources." A quarterly internal audit of incidents and root cause analysis is beneficial to track improvements to operational equipment and spill response, however this information should also be provided to interested stakeholders in annual reports to demonstrate the efficacy of remedial measures.
Recommendation/Request	It is recommended that TMAC include results of their quarterly review of incidents and root cause analysis for spills on site in their annual reports.
Importance	Low

1.6 KIA-NWB-06

Review Comment Number	KIA-NWB-06
Subject/Topic	Roberts Bay Discharge System
References	Hope Bay Project 2020 Kitikmeot Inuit Association Annual Report. Appendix E Spill Contingency Plan Module A: Doris Section A4 Roberts Bay Discharge System
Summary	Changes to the location of the diffuser of the Roberts Bay Discharge System should be updated in Module A of the Spill Contingency Plan.
Detailed Review Comment	In 2020 the discharge location of the Roberts Bay Discharge System changed. The subsea diffuser now extends 1.4 km into Roberts Bay and the Marine Outfall Berm now extends from the shoreline to approximately the 20 m bathymetric contour. It is recommended that TMAC update Section A4 of Module A: Doris to reflect the recent changes to the Roberts Bay Discharge

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	System.
Recommendation/Request	It is recommended that TMAC update the description of the Roberts Bay Discharge System in Module A of the Spill Contingency Plan to reflect recent changes to the discharge location.
Importance	Low

1.7 **KIA-NWB-07**

Review Comment Number	KIA-NWB-07
Subject/Topic	Misclassification of Water Quality Parameters
References	Hope Bay Project 2020 Nunavut Water Board Annual Report Appendix E. Doris Mine Annual Water and Load Balance Assessment – 2020 Calendar Year Section 1 Introduction Section 2.2 Review of Water Quality Inputs Attachment 2 Annual WLB Assessment – 2020 - PLOTS
Summary	Several measured concentrations of sulphate, total and dissolved phosphorus and total and dissolved vanadium were greater than predicted concentrations. However, these values were considered conservative (measured values below model predictions), no efforts were made to explain the discrepancy between measured and predicted results and no efforts were made to correct the model predictions.
Detailed Review Comment	TMAC states, "*After the water balance (quantity or volume) adjustment, the model was assessed from a water quality perspective. Parameters were grouped based on the comparison of predicted and observed results for the Doris TIA. The following parameter groups were previously identified:* • *Conservative predictions (measured values below the model predictions),* • *Predictions trending well with measured data,* • *Underpredicted, and,* • *Detection limit greater than prediction (i.e., below testing detection)* *The model was considered adequate for the parameters where predictions were conservative (overestimated in the model), trending well with measured data, and where detection limits were greater than prediction.*

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	Underpredicted values were assessed individually and adjusted based on measured observations in the process water, mine water and the Doris TIA." According to Table 6: Initial Screening Assessment of Water Load Balance Parameters (reproduced below), concentrations of nitrite, total and dissolved phosphorus, and total and dissolved vanadium were all categorized indicating *"measured values are below model predictions"*. Plots presented in Attachment 2 of the Annual Water Load and Balance Assessment show a large number of measured values above the predicted concentration line. In addition, sulfate was not included in the classification table (Table 6) but based on the plotted measured and predicted concentrations should have been categorized as underpredicted. Parameters that were considered underpredicted were carried forward in the assessment and a discussion of corrective actions provided. Since sulfate, nitrite, total and dissolved phosphorus, and total and dissolved vanadium were not classified as underpredicted, they were not carried forward in the analysis and no corrective actions were discussed for the greater than predicted concentrations. It is recommended that TMAC provide a more detailed definition of classification types (number of measured values greater than the predicted value to be considered underpredicted) to support the classifications provided, or include a for sulphate and reclassify nitrite, total and dissolved phosphorus and total and dissolved vanadium. A discussion should be provided for these parameters regarding the potential causes for the underprediction, potential corrective measures if necessary, and improvements to model outputs.

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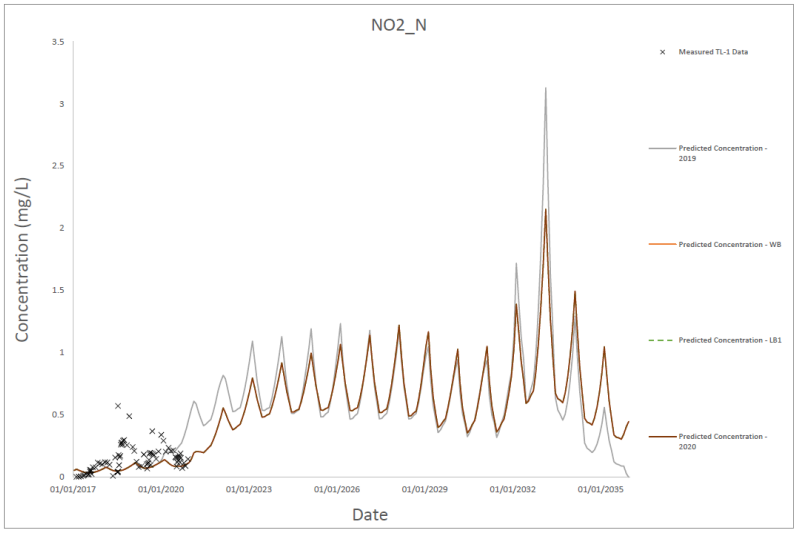
Table 6: Initial Screening Assessment of Water Load Balance Parameters

Classification Type	Parameters Included	Comparison to Model Prediction
Conservative	F, nitrate (NO_3), nitrite (NO_2) Dissolved Metals: Al, Sb, As, Ba, Cd, Ca, Cr, Fe, Pb, Li, Mn, Hg, Mo, Ni, Se, Ag, Tl, Zn, V, P Total Metals: Al, Sb, As, Ba, Cd, Ca, Cr, Fe, Pb, Li, Mn, Hg, Mo, Se, Ag, Tl, Zn, V, P	Measured values are below the model prediction. The modeled values are reflective of conservative assumptions (typically higher predictions than measured parameter values). *Note: some values may be at or close to the method detection limit and slightly above the model prediction; these parameters were still considered to be in the conservative classification type.*
Trending Well	Total dissolved solids (TDS), Cl, ammonia (NH_4) Dissolved Metals: Be, Co, Mg, Na, U Total Metals: Be, Co, Mg, Ni, Na, U,	Measured values are tracking well with the model predictions.
Underpredicted	Total suspended solids (TSS), total cyanide (CN-T), Free cyanide (CN-F), WAD cyanide (CN-WAD), cyanate (CNO), thiocyanate (SCN) Dissolved Metals: B, Cu Total Metals: B, Cu	Model predictions are lower than measured values. Corrective actions discussed in subsequent sections.

Sources: \\srk.ad\dfs\na\van\Projects\01_SITES\Hope.Bay\1CT022.066_2020 Site Wide Water Mgmt\8_2020_AnnualWLB\Inputs\HopeBay_2020Inputs_1CT022-066_R02_ajb_nf.xlsx



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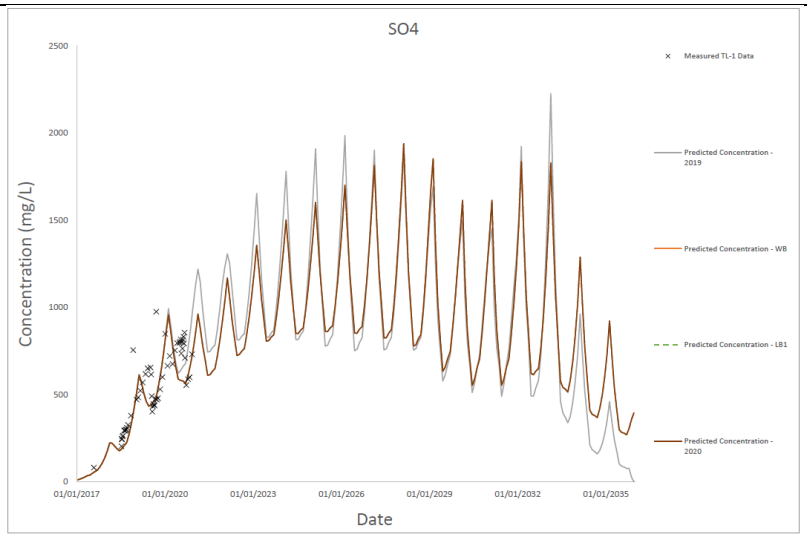

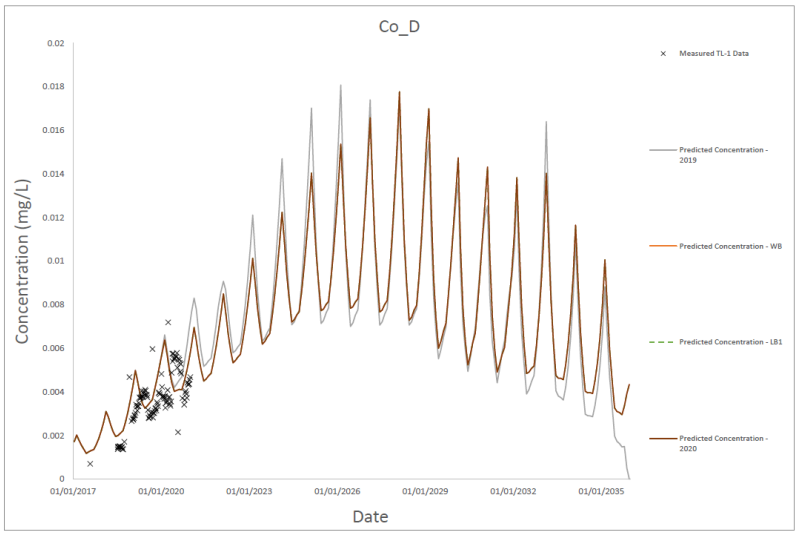

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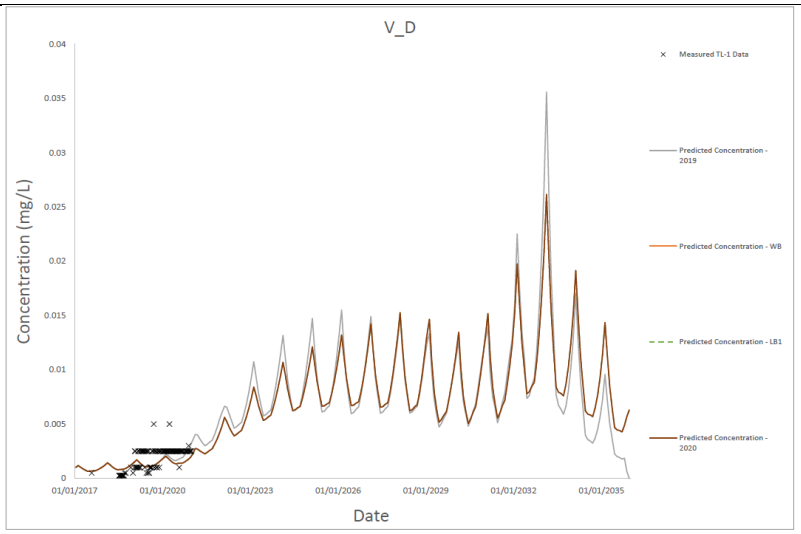

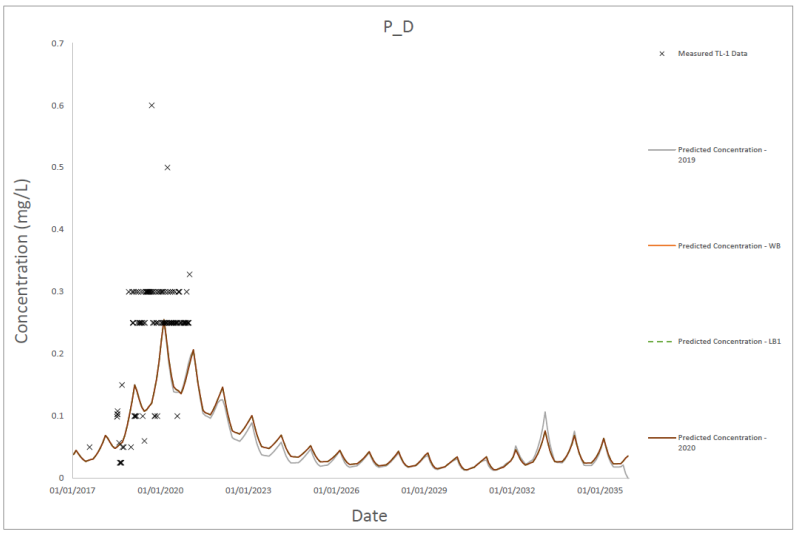

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	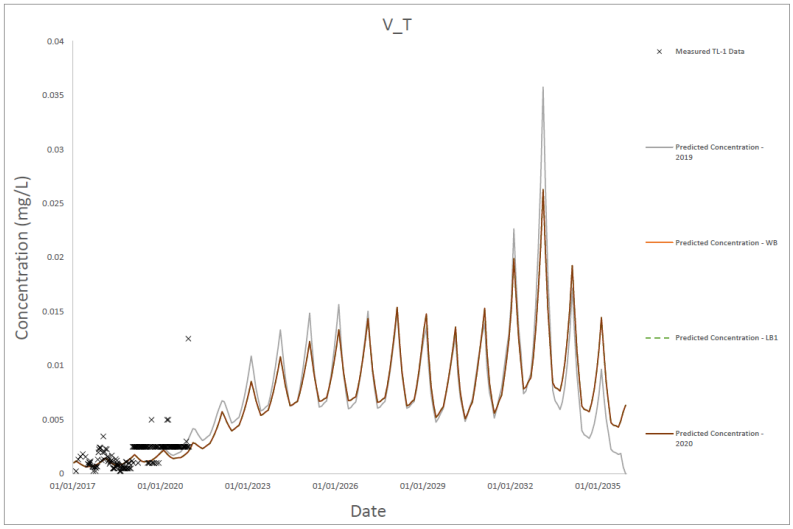 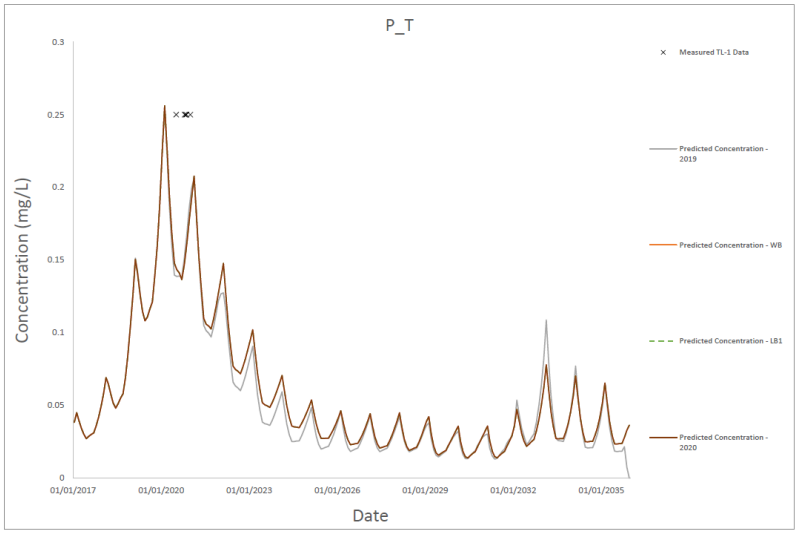
Recommendation/Request	It is recommended that TMAC provide a more detailed definition of classification types (number of measured values greater than the predicted value to be considered underpredicted) to support the classifications provided, or include a for sulphate and reclassify nitrite, total and dissolved phosphorus, and total and dissolved vanadium. A discussion should be provided for these parameters regarding the potential causes for the underprediction, potential corrective measures if necessary, and improvements to model outputs.
Importance	Moderate

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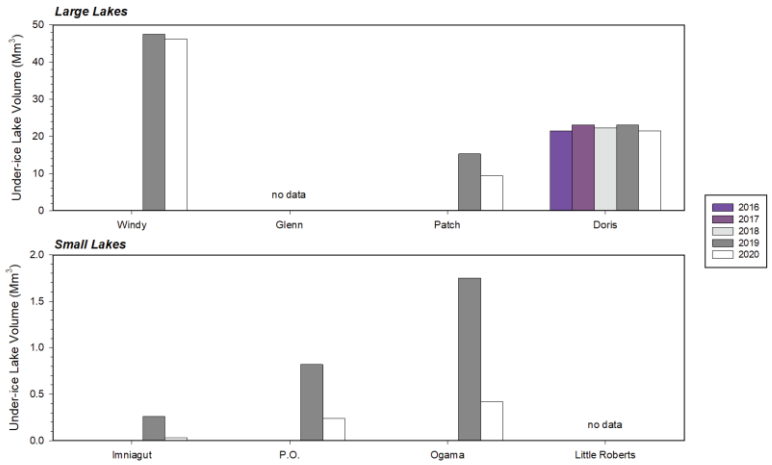
1.8 KIA-NWB-08

Review Comment Number	KIA-NWB-08
Subject/Topic	2020 Under-Ice Lake Volumes
References	Hope Bay Project 2020 Aquatic Effects Monitoring Program Report. Section 3.1.1 Water Level Fluctuation and Ice Thickness Section 3.1.2 Under-Ice Lake Volume
Summary	Under-ice Lake volumes were lower in Windy, Patch, Imniagut, P.O. and Ogama than previously measured. To ensure that these measured effects are not related to the Project a more detailed explanation is required.
Detailed Review Comment	Under-ice Lake volumes in 2020 were lower than in 2019 in Windy, Patch, Doris, Imniagut, P.O., and Ogama lakes (Figure 3.1-2, below). TMAC states the uncertainty in the methodology used, "*These include limited lake elevation referencing between local and geodetic datums for bathymetry reference elevations, rounding of elevations to identify contours, and measurement of the under-ice water elevation*." TMAC indicates that these limitations interfere with the interpretation of the data, "*Based on the limitations of the method, it is difficult to identify small changes in under-ice fish habitat year to year as being Project-related effects versus naturally occurring*."  Figure 3.1-2. Under-ice Lake Volumes, Hope Bay Project, 2016 to 2020

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	TMAC also uses the FEIS predictions as evidence to support the claim that changes in under-ice lake volumes were not project related, *"The FEIS predicted that for all assessed lakes except for Imniagut Lake, maximum annual Project-related reductions in lake volumes in the Doris and Madrid North development areas would not exceed 2% of the lake volumes, and maximum reductions were projected to occur starting in 2018 for Windy Lake, but not until 2030 to 2032 for other assessed lakes (Patch, P.O., Ogama, and Doris lakes; TMAC 2017b). Such small annual changes in lake volume would likely not be detectable given the accuracy of water elevation measurements and lake volume estimates. For Imniagut Lake, a maximum reduction in lake volume of 86% was predicted, with the maximum reduction predicted to occur in 2032. This lake has been observed to freeze to the bottom during baseline years prior to the development of Madrid North; therefore, changes in lake volume would most likely be detected through the evaluation of open-water season elevation changes (as reported in Appendix B) and not through the evaluation of under-ice season lake volume or elevation*." Baseline or reference data would be best to verify the lack of an effect from the mine. It is recommended that TMAC provide alternate lines of reasoning to substantiate assertions that smaller under-ice lake volumes in 2020 were not project related. For example, an effect pathway-based discussion may be more appropriate.
Recommendation/Request	It is recommended that TMAC provide alternate lines of reasoning to substantiate assertions that smaller under-ice lake volumes in 2020 were not project related.
Importance	Moderate

1.9 **KIA-NWB-09**

Review Comment Number	KIA-NWB-09
Subject/Topic	Suitable Refence Lakes
References	Hope Bay Project 2020 Aquatic Effects Monitoring Program Report. Section 3.2.2 Temperature
Summary	Refence Lake B did not reflect the thermal regime of deeper Project lakes in 2020. A deeper refence lake is needed for

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	suitable comparison to deep project lakes.
Detailed Review Comment	The refence lake is used to assess Project related changes to water quality and aquatic biota compared to natural regional shifts. Reference Lake B does not provide a suitable refence for larger deep lakes such as Windy and Doris. An example of this is described in Section 3.2.2 where TMAC states, "In the shallower study lakes, Patch Lake and Reference Lake B, August 2020 temperature profiles were within the range of baseline temperatures (Figure 3.2-2b). However, in the deeper lakes, Windy and Doris, temperatures were warmer than usual in the upper portion of the water column, and the water column was more strongly stratified than usual." A deeper lake with similar thermal regimes should be used for comparisons to deep Project lakes. The need for more reference lakes is particularly important given the continued expansion of the Project. It is recommended that TMAC identify additional refence lakes that reflect similar physical, chemical and biological attributes as project lakes and expedite the collection of reference data for future monitoring.
Recommendation/Request	It is recommended that TMAC identify additional refence lakes that reflect similar physical, chemical and biological attributes as project lakes and expedite the collection of reference data for future monitoring.
Importance	High

1.10 **KIA-NWB-10**

Review Comment Number	KIA-NWB-10
Subject/Topic	Water Management Infrastructure
References	Hope Bay Project 2020 Aquatic Effects Monitoring Program Report. Appendix B 2020 Hydrology Compliance Monitoring Summary
Summary	The FEIS is under predicting runoff from Windy, patch, PO and Ogama outflows suggesting on site water management infrastructure might not be sufficient to handle future conditions given the increase in wet weather extremes.
Detailed Review Comment	Under section 4.1 TMAC says, "*Table 4-2 presents the precipitation return periods used in the Climate and Hydrological Parameters Summary Report, Package P5-2 of the Hope Bay FEIS (SRK 2017). It indicates that 190 mm of precipitation corresponds to a dryer than average year with a return period less than 5 years, while 178 mm corresponds*

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	to between a 5 and 10 year dry year. The 2020 hydrologic year was likely close to a 5-year dry year." Table 4-3 displays the measured runoff in 2019, 2020, the average 2004 to 2015 runoff and the FEIS predicted runoff. The measured 2020 runoff for Windy Outflow, Patch Outflow, and PO Outflow were all higher than the FEIS Predicted Average Runoff. Given that 2020 was categorized as 5 and 10 year dry year monitored runoff would be expected to be lower than the Predicted Average. The FEIS appears to be under predicting runoff and raises concerns surrounding the size of water management infrastructure. It is recommended that TMAC provide evidence that the water management infrastructure is appropriately sized with an updated water and load balance model in the 2021 annual report. **Table 4-3: Comparison of 2020 Runoff with Historical Averages and Predicted Values**

Station	Monitored Runoff (mm)			FEIS Predicted Runoff[1]		
	2019	2020	2004-2015 Average[1]	Predicted Average Runoff	Predicted 20y Dry Runoff	Predicted 20y Wet Runoff
Windy Outflow	174	107	130	58	21	119
Patch Outflow	189	82	112	77	40	137
PO Outflow	222	102	153	80	41	143
Ogama Outflow	167	58	117	100	46	199
Doris Creek TL-2	191	75	110	101	48	213
Roberts Outflow-2	156	N/A	112	n/a	n/a	n/a
Little Roberts Outflow	175	83	93	161	64	347

[1] Data Source: V5-S1 (Table 1.2-7, 1.5-7 to 1.5-12) of the Hope Bay FEIS (TMAC 2017).

Recommendation/Request	It is recommended that TMAC provide evidence that the water management infrastructure continues to be appropriately sized within the updated water and load balance model in the 2021 annual report.
Importance	High

1.11 **KIA-NWB-11**

Review Comment Number	KIA-NWB-11
Subject/Topic	Water discharge from the Doris Sedimentation Pond (sample location ST-1) to TIA.
References	HOPE BAY PROJECT 2020 Nunavut Water Board - Annual Report "Water was transferred from ST-1 to the TIA beginning in June

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	and continued into September. The final day of discharge from the Sedimentation Pond was September 15, 2020…….. Results of water quality samples, collected from ST-1, are summarized in Table D1-3."
Summary	Water discharge quality from Doris Sedimentation Pond presents a steep increase in the concentrations of metals during the August 2, 2020, sampling event.
Detailed Review Comment	It is recommended to investigate the cause of the steep increase in metal concentrations during the August 2, 2020, sampling event.
Recommendation/Request	The reason of the steep increase of metal concentrations at this location during the August 2, 2020, sampling event should be further investigated.
Importance	Medium

1.12 **KIA-NWB-12**

Review Comment Number	KIA-NWB-12
Subject/Topic	Detoxified Tailings Solids (TL-7a)
References	*"Detoxified tailings solids (TL-7a) were collected monthly from January to December 2020 from the discharge compartment of the detox filter press inside the Process Plant (Table D1-30 and Table D1-31). Filtrate from the detoxified solids (TL-7b) was collected monthly from January to December 2020 from the receiving filtrate tank for the detox filter press inside the Process Plant (Table D1-32 and Table D1-33)."*
Summary	Table D1-30 and D1-31 present a summary of the results of the annual monitoring. Detoxified tailings solids were collected from the discharge compartment of the detox filter press inside the Process Plant. A total of 12 samples had been collected from January 2020 to December 2020 (monthly sampling).
Detailed Review Comment	It has been noted a steep increase of the Arsenic concentrations over the summer with concentration as high as 2640 mg/kg. A similar increase in Arsenic concentrations over the summer was not noticed over the past years, it is recommended to investigate the cause of the increase in Arsenic concentrations.
Recommendation/Request	The increase in Arsenic concentrations during the summer 2020 should be discussed.
Importance	Low

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1.13 KIA-NWB-13

Review Comment Number	KIA-NWB-13
Subject/Topic	TL-12 Monitoring of Underground Dewatering
References	*"Dewatering of the Doris underground workings continued in 2020. Groundwater inflow accumulating underground from mine development occurring in the Doris Connector and Doris Central zones was discharged to Roberts Bay through the Roberts Bay Discharge System (RBDS) from February to August 2020. Dewatering of the Doris underground workings to the Tailings Impoundment Area continued in 2020. Table D-36 provides the dewatering volumes for the Doris mine in 2020."*
Summary	The monthly volume of Doris dewatering for January and March 2020 was 85,742 m3 (approximately 2,766 m3/day) and 73,560 m3 (approximately 2,373 m3/day), respectively. The average dewatering rate for these two months is above the 2,000m3/day threshold for dewatering activities.
Detailed Review Comment	The 2020 January dewatering flow volume (approximately 85,742 m3) is above the FEIS forecasted value. The increase of the dewatering rate above the 2,000 m3/day threshold may require amending Type A Water Licence No. 2AM-DOH1335 especially if these higher dewatering rates are expected to occur more frequently.
Recommendation/Request	The reasons of the elevated monthly dewatering rates in January and March should be investigated and the causes identified. Monthly dewatering volumes should be analyzed and commented in relation to the ongoing underground works.
Importance	Moderate

1.14 KIA-NWB-14

Review Comment Number	KIA-NWB-14
Subject/Topic	MMS-1 Madrid North Contact Water Pond
References	"The Madrid North Contact Water Pond (MMS-1) was constructed in 2019 to support the commencement of mining activities at the Madid North site. The pond incorporates a rockfill berm with a geomembrane liner anchored to bedrock to capture contact water runoff from the Madrid North Waste Rock storage pad. Contact water is then either discharged to tundra from the Contact Water Pond if water quality meets the criteria outlined in Part F Item 18(a) of the licence or is transferred to the TIA

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	via water truck. Water quality samples were collected from this facility from June through September 2020 and results met the criteria outlined in Part F Item 18(a) of the licence. Results of this sampling is provided in Table D1-41. In 2020, a total of 58 m3 of water was discharged to tundra (location 13W 433203 7549806) from this facility. An additional 86 m3 of water was transferred to the TIA via water truck from this facility in 2020."
Summary	During the August and September 2020 water sampling events, samples were collected from the north section of pond (denoted with N) and the south section of pond (denoted with S). The N and S samples present different water chemistry.
Detailed Review Comment	The reasons of the difference in water chemistry between the north and south sections of the pond should be investigated and the causes identified. The possibility to discharge water into the tundra collecting water from the south portion of the pond should be further investigated.
Recommendation/Request	Water chemistry results should be analyzed and commented in relation to the differences between north and south sections of the pond.
Importance	Low

Thank you.

John Roesch

John Roesch, P.Eng.

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Cc Geoff Clark, Director, KIA, Department of Lands and Environment