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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

File No.: 2AM-DOH1323

To: Doris North Distribution List

Date: July 7, 2016

Subject: Pre-Hearing Conference Decision Report Regarding an Application for Amendment of Type “A” Water Licence 2AM-DOH1323

On July 5, 2016 by Motion No. 2016-06-P7-03, the members of the Doris North Panel (P7), duly appointed by the Nunavut Water Board (NWB or Board) to consider the Application for an amendment of the Type “A” Water Licence 2AM-DOH1323 approved and directed the release of this Pre-Hearing Conference Decision Report (PHC Report) and procedural direction associated with the upcoming in-person Public Hearing to be held in the community of Cambridge Bay during the second week of September 2016.

In order to facilitate the licensing process for considering the Type “A” Water Licence 2AM-DOH1323 Amendment Application (Amendment Application), submitted to the Board by TMAC Resources Inc. (TMAC or the Applicant or the Proponent) the Panel in a preceding direction, instructed that, in accordance with Rule 14 of the NWB Rules of Practice and Procedure (the Rules), the staff of the NWB hold a Technical Meeting (TM) and a Pre-Hearing Conference (PHC) for the Amendment Application.

On June 15, 2015, TMAC submitted an application to the Nunavut Impact Review Board (NIRB) and the NWB for a joint amendment/reconsideration of the Project Certificate No. 003 and the existing Type “A” Water Licence 2AM-DOH1323, respectively. The application reflects proposed changes to the originally approved Doris North Project.

On November 4, 2015, the NWB and the NIRB issued jointly a letter regarding the co-ordinated process of the NIRB considering an Amendment Proposal for the Doris North Project Certificate No. 003 and the NWB considering the amendment to Licence No. 2AM-DOH1323. Accordingly, NIRB Technical Meetings were held on January 26 and 27, 2016 and the NWB Technical Meetings followed on January 28 and 29, 2016, in Cambridge Bay, Nunavut. On the evening of January 28, 2016, the Board’s staff also hosted a Community Session regarding the Amendment Application.



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As the NWB has stated in previous correspondence, with respect to the NIRB and NWB coordinated technical review approach, while the NIRB process to reconsider the terms and conditions of the Project Certificate No. 003 is ongoing pursuant to Article 12 of the Nunavut Land Claims Agreement, the NWB shall not approve any water licence application that forms part of that review until the assessment requirements have been met. Accordingly, at the time of the NIRB and NWB coordinated TM and Community Session during the week of January 26th, 2016, the NWB directed that it will not proceed beyond the technical review stage of considering the Amendment Application until the NIRB’s reconsideration process was complete.

On June 13, 2016, the NIRB issued its Public Hearing Report and recommendations regarding the requested amendments to the Project for the consideration of the Minister. As outlined in the Public Hearing Report, the NIRB has recommended to the Minister of Indigenous and Northern Affairs (Minister) that the Doris North Gold Mine Project, as proposed to be amended by TMAC should be allowed to proceed in accordance with several amendments and additions to the NIRB Project Certificate No. 003. As of the date of this PHC Report, the Minister has yet to issue a decision with respect to the above referenced recommendation from NIRB.

On June 15, 2016, following the NIRB’s issuance of the Public Hearing Report, the NWB Doris North Panel directed that the NWB Pre-Hearing Conference was to be held by way of teleconference on June 24, 2016.

The following parties attended the Pre-Hearing Conference:

- The Applicant, TMAC Resources Inc. (TMAC or the Applicant);
- The Kitikmeot Inuit Association (KIA);
- Indigenous and Northern Affairs Canada (INAC);
- Environment and Climate Change Canada (ECCC);
- Department of Fisheries and Oceans (DFO);
- Natural Resources Canada (NRCan);
- Northern Projects Management Office (NPMO);
- Technical Staff of the Nunavut Impact Review Board;
- Chamber of Mines.



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For the purpose of brevity, KIA, INAC, ECCC, DFO, NRCan, NPMO collectively may be referred to as Interveners from time to time in this Report.

The Agendas for the TM, Community Session and PHC are attached as [Appendix A](#) to this Decision.

1.0 The Application before the Board

The Amendment Application being considered by the Board was filed by TMAC Resources Inc. (TMAC or the Applicant or the Proponent) on June 15, 2015, seeking an amendment to the existing Type “A” Water Licence 2AM-DOH1323 (the Licence) issued by the Nunavut Water Board (NWB or Board) in August 2013.

The 2AM-DOH1323 Water Licence authorizes TMAC to the use of waters and deposit of waste in relation to the construction, operation, closure and reclamation of the Doris North Project.

As originally approved under the NIRB’s Project Certificate No. 003, the Doris North Project (the original Project) is located on Inuit Owned Lands (IOL) in the West Kitikmeot Region of Nunavut, approximately 125 kilometers (km) south of Cambridge Bay and 150 north of Omingmaktok (Bay Chimo). The original Project is also referred to as Phase 1 of the Hope Bay Belt Project, which comprises three significant gold deposits, Doris, Madrid and Boston. According to TMAC, the Doris North Project is a stand-alone operation and does not depend on development of Madrid/Boston (Phase 2) for the operation of either the Doris Mine or the changes being proposed in the Amendment Application.

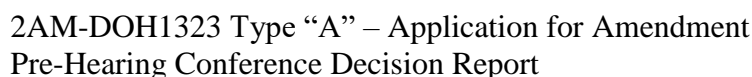
Pursuant to TMAC’s application to amend the Project Certificate No. 003 and the existing Type “A” Water Licence 2AM-DOH1323, the Applicant sought to make several amendments to the original scope of the approved Project; these amendments will be discussed in further details below.

The original Project was under care and maintenance during 2011 – 2013. Since 2013, construction activities have re-started and operation is planned to start at the end of 2016.

Application and Supporting Materials Submitted by the Applicant

On June 15, 2015, TMAC submitted the application and supporting documentation for the amendment of the existing Type “A” Water Licence No. 2AM-DOH1323.

[Appendix B](#) provides a listing of the information provided with the Amendment Application, all of which is available from the Nunavut Water Board’s public registry at the following link:



open.ca/1%20PRUC%20PUBLIC%20REGISTRY/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-DOH1323%20TMAC/1%20APPLICATION/

Under the original Project Certificate No. 003, the approved Project included the development of an underground gold mine (Doris Hinge) with a single ramp access and an overall project footprint of approximately 62 hectares. The original Project, if it had proceeded, would operate for two (2) years, processing roughly 458,000 tonnes (t) of ore to yield about 306,830 ounces of gold.¹

- An initial mining and milling rate of 1,000 tonnes per day (tpd); this rate will ultimately increase up to 2,000 tpd.
- The Doris Camp will be enlarged to a capacity from 180 to 280 personnel.
- Laydown areas and temporary ore storage areas will be expanded.
- The mine plan includes Doris North, Doris Central and Doris Connector.
- TMAC anticipates that saline groundwater will be encountered during mining; any groundwater encountered during mining will be reused within the mine to the extent possible, with the remainder directed to the marine outfall in Roberts Bay through an overland pipeline.
- Approximately 94% of the tailings (flotation tailings) will be disposed of through subaerial deposition in the Tailings Impoundment Area (TIA), behind a newly constructed dike designed to retain solids. Cyanide tailings will be treated to reduce cyanide to 0.5 mg/L and the cyanide treated tailings will be deposited underground as backfill following destruction of residual cyanide, and in conjunction with waste rock.
- As in previous plans, TMAC will use the water in the TIA as process water in the mill.

² For a detailed listing of the requested changes to the Existing Licence, see the Type “A” Amendment submission filed by TMAC on June 15, 2015



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- Excess Water will be discharged directly to Roberts Bay via pipeline and a diffuser to be located on the ocean floor. The process water may be mixed with the saline groundwater and treated, if needed, prior to discharge.
- An additional 550 m of road and pipe length will extend to the northwest of the existing jetty and laydown area, terminating at a point on shore where the pipe will enter the marine environment, armored by riprap. The pipeline will run approximately 2 km from shore to the 40 m bathymetric contour.
- TMAC states that an onsite laboratory is no longer necessary and requests the removal of the Licence condition related to this requirement.
- A non-hazardous waste landfill will be located in Quarry 3, to contain both operational and closure non-hazardous waste.

2.0 Procedural History

Licence history

On September 19, 2007 the Nunavut Water Board (NWB or Board) issued Type “A” Water Licence 2AM-DOH0713 to Miramar Hope Bay Ltd. (later Miramar Northern Mining Limited) to use Water and deposit Waste associated with the Mining and Milling Undertaking at the Doris North Project. The licence which expired on September 30, 2013 was amended three times:

- Amendment No. 1 related to the relocation of the Explosives Mixing and Storage Facility;
- Amendment No. 2 related to infrastructure expansion, it also set new monitoring stations; and
- Amendment No. 3 related to conditions applying to waste rock management.

On January 23, 2008 the NWB authorized the assignment of Water Licence 2AM-DOH0713 from Miramar Northern Mining Limited to Hope Bay Mining Limited.

On Jun 18, 2013 the NWB authorized the assignment of Water Licence 2AM-DOH0713 from Hope Bay Mining Limited to TMAC Resources Inc.

On August 16, 2013 the NWB issued Water Licence 2AM-DOH1323 to TMAC Resources Inc. with a Licence expiry on August 15, 2023. The existing Licence authorizes TMAC to use Waters and deposit Waste in support of a Mining Undertaking³ at the Doris North Project.

Pre-Licensing Requirements

³ As per Schedule 1 of the Nunavut Waters Regulations SOR/2013-69.



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With respect to this Amendment Application, the following pre-licensing requirements have been completed:

- **NPC**

On December 16, 2015, the Board received an email from the NPC⁴ confirming that the Amendment Application had been previously assessed by the NPC and the NIRB under the Nunavut Land Claims Agreement (NLCA) before July 9th, 2016. On this basis, the NPC indicated that the amended project proposal is exempt from processing under the requirements of the *Nunavut Planning and Project Assessment Act*, S.C. 2013, c. 14, s. 2 (NuPPAA) under the transition provisions of the Act, s. 235(1)(a). Further to that, the NPC stated that the correspondence from 2010 confirming that the Project is in an area without an approved land use plan still applies, and therefore a conformity determination by the NPC under the NLCA is not required.

- **NIRB**

On August 21, 2015, the Nunavut Impact Review Board (NIRB) initiated the public technical review period for TMAC’s proposed amendment to the Doris North Gold Mine Project Certificate No. 003 (NIRB File No. 05MN047). On November 4, 2015, the NIRB and the NWB in a joint letter provided confirmation that TMAC’s Amendment Proposal and subsequent submissions both complied with the NIRB requirements and was determined to be a complete water licence application by the NWB, and informed the commencement of the NIRB and the NWB coordinated public technical review period. A process map with anticipated timelines was also provided.

NIRB Technical Meetings were held in Cambridge Bay on January 26 and 27, 2016. Representatives from the NWB were in attendance at the NIRB Technical Meetings.

The NIRB assessment process concluded with a three-day Public Hearing in Cambridge Bay on April 12, 13 and 14, 2015. Further to that, on June 13, 2016, the NIRB issued its Public Hearing Report and recommendations regarding the requested amendments to the original Project, to the Minister of Indigenous and Northern Affairs Canada (Minister) for consideration. As outlined in the Public Hearing Report, the NIRB has recommended to the Minister that the Doris North Gold Mine Project, as proposed to be amended by TMAC should be allowed to proceed in accordance with the recommended revised and additional terms and conditions of the Project Certificate No. 003.

Procedural History – Existing Type “A” Water Licence 2AM-DOH1323 Amendment Application

⁴ Email from J. Savoy, NPC to NWB on September 16, 2015.



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The following includes a brief overview of the procedural history for the Amendment Application. It should be noted that the following listing captures only the major procedural steps associated with the Application.

All documentation and the complete history of the NWB component of the licensing file are available from the NWB’s ftp site at the link provided in Section 1.0 of this decision.

- **June 15, 2015**
TMAC submitted the application and supporting documentation for the amendment of the Existing Type “A” Water Licence No. 2AM-DOH1323 (Amendment Application).
- **June 23, 2015**
The NIRB received a submission from TMAC which requested a reconsideration of the terms and conditions of the Doris Project Certificate No.003.
- **August 21, 2015**
The NWB acknowledged receipt of the Amendment Application and asked interested persons to review the scope and completeness of information provided, as well as to identify any deficiencies by September 11, 2015; following a party’s request, the deadline was extended to September 18, 2015.
- **September 18, 2015**
The NWB received comments on the completeness of the Amendment Application and information requests (IRs) from Indigenous and Northern Affairs Canada (INAC), Environment and Climate Change Canada (ECCC), Fisheries and Oceans Canada (DFO), the Kitikmeot Inuit Association (KIA) and Natural Resources Canada (NRCan).
- **October 8, 2015**
The NWB acknowledged TMAC’s response to information requests (IRs) and invited parties to provide any comment on TMAC’s submission by October 20, 2015, following party request the deadline was extended to October 30. Comments provided by parties indicated that the Amendment Application was considered complete and able to proceed to the Technical Review period.
- **November 4, 2015**
The NWB and the NIRB issued jointly a letter regarding the coordinated process of the NIRB considering the Amendment Proposal for the Doris North Project Certificate No. 003 and the NWB considering the Amendment Application for Licence No. 2AM-DOH1323 filed by TMAC. The letter informed the commencement of a coordinated public technical review period of the Application and invited parties to make representations to the NWB on or before December 7, 2015, following a request made by INAC. This deadline was extended to December 8, 2015.
- **November 5, 2015**
The NWB issued a letter providing parties with greater details regarding the NWB’s expectations for the technical review period and the NWB’s next steps in the consideration of the Amendment Application.
- **November 10, 2011**



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The NWB gave Public Notice of TMAC’s Amendment Application and invited interested persons to make representations before the Board on or before December 7, 2015.

- **December 8, 2015**
NWB received technical review comments from KIA, INAC, ECCC and DFO.
- **December 21, 2015**
The NWB received TMAC’s submission responding to the NWB’s Technical Comments.
- **January 8, 2016**
The NWB received additional technical review comments from ECCC.
- **January 20, 2016**
The Board confirmed the venue and dates of the Technical Meeting, and Community Session being January 28 and 29, 2016 in Cambridge Bay, and provided parties with a proposed Agenda. Also TMAC was requested to provide a response to ECCC comments submitted on January 8, 2016. Interested parties were asked to provide comments on the proposed Agenda by January 22, 2016. On January 22, 2016, ECCC commented on the proposed NWB’s agenda and recommended to organize meetings on a theme basis.
- **January 26, 2016**
TMAC submitted response to ECCC’s technical review comment on January 8, 2016.
- **January 26, 2016**
NWB issued Technical Meeting Final Agenda and confirmed attendance of the following interveners: ECCC, DFO, KIA, INAC, TMAC and NWB.
- **January 28&29, 2016**
The NWB hosted the Technical Meeting and Community Session in Cambridge Bay.
- **March 15, 2016**
TMAC hosted the Doris North Aquatic Monitoring Workshop in Edmonton.
- **May 18, 2016**
NWB hosted a meeting in Iqaluit to review submissions and commitments.
- **May 25, 2016**
TMAC’s correspondence to the NWB on timing of NWB notice of PH, timing of review of additional technical information and timing of the NWB Pre-Hearing Conference.
- **June 1, 2016**
TMAC submitted revised Aquatic Effects Monitoring Program (AEMP), revised Surveillance Network Monitoring Program (SNMP), Groundwater Management Plan (GMP), Tailings Impoundment Area (TIA) Operations, Maintenance and Surveillance Manual.
- **June 6, 7 & 8, 2016**
TMAC hosted technical workshops in Iqaluit.
- **June 15, 2016**
NWB issued letter on Notice of teleconference PHC.
- **June 22, 2016**
Parties submitted comments on the AEMP, SNMP, GMP, TIA M&S Manual.
- **June 24, 2016**
NWB held the teleconference PHC.
- **June 28, 2016**



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ECCC submitted via email, comments on the AEMP and SNMP

- **June 29, 2016**

TMAC submitted written response to parties’ comments.

3.0 Technical Review Comments Received by the Board

Prior to the Technical Meeting (TM) and Pre-hearing Conference (PHC), the NWB provided two opportunities for public review and comment submission with respect to the Amendment Application. On August 21, 2016, the NWB invited interested parties to review the submission for completeness and identify any Information Requests (IRs) required to carry out a full technical review. On November 4, 2015, the NIRB and the NWB in a joint letter announced the NIRB and the NWB commencement of a coordinated public technical review period, and at the same time the NWB invited interested parties to submit technical review comments on the Application.

On June 1, 2016 TMAC submitted the following Management Plans: revised Aquatic Effects Monitoring Program (AEMP), revised Surveillance Network Monitoring Program (SNP), Groundwater Management Plan (GMP), Tailings Impoundment Area (TIA) Operations, and Maintenance and Surveillance Manual. TMAC submitted the Management Plans in response to parties’ request and to fulfill commitments that it made during the NIRB’s Public Hearing. The NWB requested the Interveners to review the Management Plans and provide their comments by June 22, 2016, in advance of the Pre-Hearing Conference teleconference, scheduled for June 24, 2016. TMAC responded to Interveners comments during the PHC and submitted its written response on June 29, 2016.

Kitikmeot Inuit Association (KIA)

KIA is the Regional Inuit Association representing the Inuit beneficiaries of the Nunavut Land Claim Agreement (NLCA) and also is the owner of the surface Inuit Owned Lands (IOL) upon which the Doris Project is constructed and will be operated. In addition, KIA is the Designated Inuit Association (DIO) for purpose of Article 20 of the NLCA for the Kitikmeot Region. In this general context, below is a summary of the key issues highlighted/recommendations made in KIA’s technical comment submissions.

- Surface and Groundwater Quality Predictions:
 - Effects of climate change should be incorporated into the water and load balance modelling;
 - Use of the 75th percentile (75%) background concentrations for all input parameters to predict TIA water quality is regarded as more adequate than the use of median concentrations;



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- Inclusion of mercury, cyanide and selenium predictions into the TIA water and load balance;
 - Inclusion of mercury in the effluent discharging to Roberts Bay from the Marine Outfall Box;
 - Provide a discussion on the expected peak volume of saline groundwater, management details of groundwater inflows during mining operations.
- Roberts Bay’s discharge:
 - Regarding the predictions/ mixing zone delineation, the effects assessment of deriving water quality targets for Roberts Bay and comparing predicted effluent concentrations (for all three discharge scenarios) and the baseline concentration used as input to the model;
 - The concentration of the parameters of concern (Nitrate, Salinity, Arsenic, Cadmium, Chromium, Mercury) are close or above their respective CCME WQG after 6 years of production for what appears to be up to a month;
 - The lack of Nitrate prediction in modeling Robert’s Bay surface water;
 - Additional AEMP monitoring changes to expand sample locations for diffuser outfall monitoring, and should increase the frequency of sampling near the diffuser, including sampling of marine sediments and wildlife dietary items such as bivalves.
 - Waste Rock Management and Tailing Management:
 - Regarding tailings management, long term humidity cell tests done on flotation tailings (to be sub-aerially deposited) indicated that after the initial flushing of the samples of contaminants (of Arsenic, Lead, Phosphorus, Chromium, Copper, Selenium, Cadmium, Aluminum, Molybdenum, and Zinc) there was an increased tendency for long term neutral pH metal leaching of Arsenic from the Doris North flotation tailings, and of Copper and Lead from the central flotation tailings.
 - Mine Closure:
 - TIA elevated parameters of potential concern upon closure and TIA NPAG tailings cover depth;
 - Inclusion of discussion on the use of median values from the humidity cell tests as input to the model to predict the source load from the tailings, as opposed to 75th percentile concentrations;
 - Inclusion of a discussion on the NPAG tailings cover of 0.3 m of quarry rock suitability regarding to allow the establishment of a stable permafrost cap;
 - Clarification on how elevated parameters in the TIA will impact Doris Lake or Doris Creek during post closure, and treatment options if water quality standards are not met.
 - Mitigation Measures: Reduction in Doris Lake water levels:
 - The updated fisheries baseline for Doris Lake should be assessed in conjunction with the hydrological baseline data to accurately quantify potential effects, and any subsequent protection/mitigation/offsetting and monitoring plans.



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- Madrid Advanced Exploration (MAE) Project and Doris Project:
 - Some consideration for future developments such as the Madrid Advanced Exploration Program should be considered at this point. The MAE Program requires the shipping of saline mine water from the Madrid North and South pollution control ponds to the TIA. TMAC should provide reasonable assurance that the TIA has the required expansion capacity for this future development.

Additionally, on June 22, 2016, KIA provided review comments regarding the AEMP and the SNP revisions. Regarding the AEMP, KIA commented on the monitoring sites, reference stations, water quality parameters, and QA/QC program. Regarding the SNP, KIA commented that the Program appears to be adequate, requiring no further comments.

Indigenous and Northern Affairs Canada (INAC)

INAC administers Crown land and resources and enforces regulatory permits affecting land and water resources in Nunavut, including enforcing the provisions of the Existing Licence. With respect to the Amendment Application, in addition to the Completeness Review comments and the Technical Review comments, INAC submitted to the Board the following reports: Independent Cost Estimate (submitted on December 8, 2015) and Geotechnical Site Inspection Report (submitted on December 15, 2015). In this general context, the below is a summary of the key issues that were highlighted/recommendations made in INAC’s technical review comment submissions.

- Surface and Groundwater Quality Predictions:
 - Process water effluent source terms;
 - Removal of on-site water quality monitoring laboratory;
 - Underground mine sources modelling;
 - Exposed tailing beaches and input for ore and waste rock stockpiles.
- Roberts Bay Discharge Monitoring:
 - Proposed effluent discharge criteria based on the Metal Mining Effluent Regulations and the Canadian Council of Ministers of the Environment.
- Waste Rock and Tailings Management:
 - Tailings impoundment area storage capacity;
 - Tailing management strategies and environmentally suitable chemical dust suppressants;
 - Tailings management plan and suitable permafrost conditions;
 - Waste rock for construction use;
 - Waste Rock and Ore Management Plan;
 - Monitoring of mineralized rock, waste rock segregation plan, and potential for acid rock drainage and metal leaching from “non-mineralized” rock;



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- Filtering capability of the Interim Dyke, requested clarification.
- Mine Closure and Reclamation Cost Estimate:
 - Regarding permafrost maintenance of thermal rock pads after closure, measures to be taken to ensure that water will not pond against the edges of the thermal rock fill pads after closure;
 - A tailings final cover system design should be provided to the Nunavut Water Board for approval prior to its construction;
 - Interim Closure and Reclamation Plan Final design;
 - Requested for details on reclamation cost estimate, including interim care and maintenance costs, mobilization / demobilization costs, post-closure monitoring and maintenance costs.
- Water Treatment:
 - Sewage and effluent treatment;
 - Regarding water management and treatment, recommended pro-active identification of early warning signals and water quality criteria failure in water management plan.
- Madrid Advanced Exploration (MAE) Project and Doris Project:
 - Recommended further discussion /consideration on the future development of Hope Bay Belt and its impact on the Doris North Project.

Of note, INAC recommended that the NWB Public Hearing should not be held until the NIRB Project Certificate has been amended.

On June 22, 2016, INAC provided review comments and discussion regarding TMAC’s submitted Management Plans. INAC comments/ recommendations regarding the Plans are summarized below:

- SNP:
 - Recommended that the overall rationale for changing the SNP should be fully explained; Noted that the proposed changes reduce the overall sampling strategy without providing sufficient detail on why sample sites have been removed or sampling frequency reduced;
 - Recommended appropriate number of monitoring stations and sampling parameters and in order to ensure completeness of the monitoring strategy.
- AEMP:
 - Commented on Doris Lake downstream monitoring, sediment sampling, testing parameters, reference stations, biological monitoring and monitoring during care and maintenance.
- Groundwater Management Plan (GWMP):
 - Recommended the inclusion of more monitoring parameters for groundwater (total ammonia, nitrite, pH, electrical conductivity, etc);



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- Recommended TMAC to list all remedial actions for managing mine inflow in the updated version of the GWMP;
 - Recommended that the licence limit the allowable pumping rate for groundwater to 3,000 m³/day because impacts of pumping at a higher rate have not been assessed.
- Tailings Impoundment Area (TIA) Operations, Maintenance and Surveillance Manual:
 - Recommended that the Licensee provide a Surface Emergency Response Plan within 30 days of licence issuance;
 - Recommended that the Licensee provide the cover design to be applied at closure; the design should ensure long-term physical and chemical stability of the TIA;
 - Recommended that the Licensee provide assurance that the Project would not cause the release of tails or tailings dewatering through the South Dam;
 - Recommended that if water treatment becomes necessary, the licensee provide a plan for review with the treatment method they propose to implement;
 - Recommends that the updated version for the WMP correct an apparent inconsistency regarding discharging TIA water to Doris Creek;
 - Recommended the licensee provide details on the management of the detoxified tailings.

Department of Fisheries and Oceans Canada (DFO)

The mandate of the Fisheries Protection Program is to maintain the sustainability and ongoing productivity of commercial, recreational and Aboriginal fisheries. DFO is responsible for regulating coastal and inland fisheries as well as administering habitat and serious harm provisions under the Federal *Fisheries Act*. DFO provided review comments regarding the Roberts Bay outfall berm and pipeline (marine environment) and Doris Lake water levels and water crossings (freshwater environment), which are summarized below.

- Mitigation Measures:
 - Mitigation measures for construction and operation of the outfall berm and discharge pipeline;
 - Mitigation measures to avoid and mitigate serious harm to fish in Doris Lake due to drawdown in the Lake.
- Monitoring of Water Levels in the Aquatic Effects Monitoring Program;
 - Potential impacts to Roberts Lake outflow and any habitat offsetting measures.
- Water Crossings:
 - Available best management practices in water crossing construction, operation and decommissioning, detailed plans to be provided before construction.



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On June 10, 2016 DFO, provided review comments and discussion regarding the submitted AEMP and the SNP revisions. The main comments/ recommendations regarding the Plans are summarized below.

- Low action level trigger:
 - Recommended that the low action level trigger for water levels represent the mean total drawdown for ice and water levels combined.
- Medium and High Action Level mitigation options:
 - Recommended that the mitigation options that may be implemented in the event that Medium and High Action Levels are exceeded should be more specifically described.
- Commitments and recommendations at the NIRB Public Hearing:
 - No further comments on water levels and outflows as well as evaluation of thresholds beyond which localized effects to fish populations and fish habitat may occur are fully addressed in the AEMP.
- Duty to notify DFO:
 - Regarding TMAC’s proposal that if the Project operations have adverse effects on fish in the area, it could require offsetting. DFO noted that it is not possible to offset unauthorized serious harm to fish, proponents have a duty to notify DFO and the duty to take corrective measures. DFO recommended that TMAC revise the Plan by removing references to offsetting, compensation or mitigation where the report of potential unauthorised serious harm to fish is being discussed.

Environment and Climate Change Canada (ECCC)

The focus of Environment and Climate Change Canada’s (ECCC) involvement in respect of the Amendment Application is based on their jurisdiction under the *Canadian Environmental Protection Act, 1999*, the *Species at Risk Act* and ECCC’s jurisdiction under the pollution prevention provisions of the *Fisheries Act*. ECCC also provides comments based on its review development and remediation proposals for environmental impacts falling within ECCC’s mandate and recommendations and expert advice to the NIRB and NWB. ECCC also enforces compliance with legislation that falls within its mandate. The key issues that were highlighted in ECCC’s technical review comment submissions are summarized below.

- Effluent discharge in Roberts Bay:
 - Selection of sampling locations in RB should consider ocean currents and tides to ensure the sampling program can detect project related effects;



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- ECCC recommends that contaminants in the effluent which are not included in the CCME marine water quality guideline should also be assessed, as they have the potential to impact the Roberts Bay receiving environment.
- Surface and Groundwater Quality Predictions:
 - Regarding the expected groundwater quality, a review of the groundwater quality modelling indicated that not all contaminants with the potential to cause negative impacts on Roberts Bay were fully modelled;
 - Regarding the Effluent Quality Modelling for Free Cyanide, Mercury, and Selenium, the Proponent did not model the concentration of free cyanide in the tailings impoundment area nor mercury or selenium in the mill effluent water.
- CCME Guidelines and MMER Discharge Limits:
 - Total Chromium guideline and inappropriate use of MMER limits as objectives for As, Cu, Pb, Ni, and Zn;
 - Recommended that Licence limits should be updated for new discharge location and effluent management;
 - Dissolved and total metal concentrations are used with no difference in the documents, which is inconsistent with Guidelines and MMER values, which are based on total metal concentrations.
- Toxicity Testing Results:
 - Toxicity testing results and inputs were not provided.
- Aquatic Effects Monitoring Program:
 - Aquatic Effects Monitoring Program (AEMP) has not been updated for the amendment application. The submitted version does not include appropriate monitoring sites in Roberts Bay.
- Sediment Quality and Effluent Buoyancy:
 - Potential impacts to marine sediments during periods of groundwater only discharge.

On June 28, 2016, ECCC provided via email, review comments and discussion regarding the submitted AEMP and the SNP revisions. The key comments and recommendations regarding the Plans are summarized below.

- Schedule J of the Water Licence (monitoring):
 - The Water Licence amendments include addition of the clause allowing for modification of the terms and conditions contained in the Schedules to the Licence;
 - TIA sampling and characterization be done monthly for metals, major ions, pH, TSS, nutrients and Total Petroleum Hydrocarbons. Data should be provided to the Water Board



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- on an ongoing basis, whether this is regulated through Schedule J or through the water management plan;
- Regarding TL-3 – Doris Outflow Creek downstream of the falls,
 - 1. retain oil and grease;
 - 2. sampling frequency post closure is proposed to be annual; Recommended deferring setting the frequency to later versions of the closure plan;
 - Regarding TL-12 – underground mine-water, recommended retaining Schedule J requirements for monthly analysis of ammonia, pH, TSS, and add major ions.
- AEMP:
- Recommended data for the two Doris Lake sites showing comparability;
 - Monitoring for sediment or biological monitoring in Doris Lake;
 - Changes to biota in response to low levels of nutrient inputs;
 - Recommended continue chl *a* (chlorophyll *a*) monitoring as indicator of eutrophication on at least annual basis,
 - monitoring of benthic invertebrates in Doris Lake and in the reference lake,
 - sampling of Doris Lake North surficial sediments for metals every 3 years,
 - Doris Creek monitoring should be resumed prior to breaching of the Tail Lake dike and characterize Doris Creek for 2 years in advance of the closure breaching.

Natural Resources Canada (NRCan)

Natural Resources Canada (NRCan) seeks to enhance the responsible development and use of Canada’s natural resources and the competitiveness of Canada’s natural resources products. Although not a participant in the TM, NRCan provided initial review comments with respect to the Completeness of the Amendment Application, which are summarized below.

- Tailings Management:
- Design and stability of the proposed Tailings Impoundment Area (TIA);
 - Seepage from the proposed TIA.
- Mine Closure:
- Post-mining groundwater flow regime around the underground mine;
 - Time required for the underground mine to fill; and
 - Post-mining groundwater regime (flow directions and rates) and potential impacts to the groundwater quality.

NRCan staff attended the PHC and was requested by the NWB to review the Management Plans submitted by TMAC, in particular the Applicant’s submissions relating to or giving rise to issues concerning permafrost, and to advise the NWB whether there are any issues or concerns that



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NRCan believe would require its expertise or further participation in the NWB water licensing process of the Amendment Application.

4.0 Technical Meeting (TM)

Introduction and Registration

The following parties registered and attended the Technical Meeting (TM) and Community Session in Cambridge Bay:

- The Applicant, TMAC Resources Inc. (TMAC or the Applicant or the Proponent);
- The Kitikmeot Inuit Association (KIA);
- Indigenous and Northern Affairs Canada (INAC);
- Environment and Climate Change Canada (ECCC);
- Department of Fisheries and Ocean Canada (DFO);
- Northern Projects Management Office (NPMO); and
- Technical Staff of the Nunavut Impact Review Board.

The Board also benefitted from the attendance at the TM/Community Session of several community members who asked questions and provided comments about the Amendment Application. Section 5.0 of this Report provides a summary of the questions, comments and issues raised by community members. The listing of attendees at the TM/Community Session held in Cambridge Bay (summarized from the sign in sheets recorded at these sessions) is attached as [Appendix E](#) to this Report.

The TM for the Amendment Application was held in person in the community of Cambridge Bay, Nunavut on January 28 and in the morning of January 29, 2016. As is the Board’s practice, the meetings were informal and chaired by David Hohnstein, the Board’s Director of Technical Services. The meetings were attended by the Board staff, the Applicant, interveners and community members. It should also be noted that, as is the Board’s normal practice, the Panel Members of the Board (Doris North Panel, P7), the decision-makers for the Amendment Application, were not present at the TM having delegated the conduct of these meetings to the Board’s staff.

The objectives of the TM were outlined by the NWB’s Director of Technical Services as follows:



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- Examine technical data and other materials submitted as part of the Application, including Interveners’ submissions that the Board had received to date for the Application;
- Informally discuss and resolve – to the extent possible –, any technical matters / issues raised between Interveners and the Applicant, particularly those matters that could affect the Board’s determination of any Pre-Hearing Conference (PHC) issues;
- Provide an opportunity for the Applicant and Interveners to identify for the Board the issues and concerns that have been resolved and to discuss any unresolved or ongoing issues related to the Application;
- Identify opportunities for streamlining the issues and process so as to eliminate existing or potential duplication or delay; and
- Document any commitments made by the various parties involved in this TM, with the aim of carrying forward those commitments, if a Pre-Hearing Conference (PHC) is scheduled.

At the TM, the following topics were discussed:

- Water Quality Predictions: Site-Wide Water and Load Balance, Groundwater Quality and Volume Predictions, Roberts Bay Discharge.
- Roberts Bay Discharge Monitoring: Aquatic Effects Monitoring Program, Effluent Discharge Criteria, Marine Water Quality Objectives.
- Waste Rock and Tailings: Use of Waste Rock in construction, Waste Rock Segregation Plan, Tailings Management, Tailings Monitoring.
- Closure: Tailings Impoundment Area Water Quality, Groundwater Quality, Tailings cover, Cost Estimate.
- Mitigation Measures: Doris Lake Water Level, Construction and Operation of Roberts Bay Discharge Pipeline, Road Water Crossings, Sediment Quality and Effluent Buoyancy.
- Water Treatment: Water and Sewage Treatment.
- Madrid Advanced Exploration Project (MAEP) and Doris North (DN) Project: Impact of MAEP to DN Facilities, Tailings Impoundment Area Expansion Capacity.
- Fisheries Act Authorization: Life-of-Mine and Fisheries Act Authorization Conditions.

The intervening parties in attendance at the TM confirmed that none of the issues for discussion associated with the Amendment Application and the related information requirements should prevent the Board from proceeding with the next stage of the Licensing process, the Pre-Hearing Conference. As a result of the TM, a list of commitments and a list of issues were compiled to carry forward to the PHC. These commitments have been summarized in the Table of Commitments provided in [Appendix C](#) and attached to this Report. The List of Issues is also attached to this Report as provided in [Appendix D](#).



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5.0 Community Session

The NWB hosted a Community Session regarding the Amendment Application on the evening of January 28, 2016. Approximately eight (8) members of the public attended the Session. The Session commenced with an overview of the NWB process by the Board’s technical staff, an overview of the Application provided by the TMAC and short presentations summarizing their technical review comments from the Interveners, including the KIA, INAC, ECCC and DFO.

The Session concluded with a question and answer session during which community members from Cambridge Bay were invited to ask questions to the Applicant, Interveners and the Board staff and express their concerns and provide comments with respect to the Amendment Application. Table 1 that follows provides a summary of the comments, issues and concerns expressed by members of the community throughout the Community Session.

Table 1 Key Issues as Raised by Community Members at the Community Session

Topic	Issues/Concerns/Comments
Community Consultation Engagement and Expectations	<p>Since mining projects may affect nearby communities, members of the Community request to be informed and participate in decision making.</p> <p>Community elders should be consulted and their input should be used in the decision making.</p> <p>Members of the Community expect to share part of the benefits of the Project through employment.</p>
Adverse impact of mining	Community has the perception that muskox population has declined as consequence of mining



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6.0 Pre-Hearing Conference (PHC)

The Pre-Hearing Conference (PHC) was held on June 24, 2016 by the way of teleconference, which was scheduled following the NIRB’s Issuance of the Public Hearing Report and recommendations regarding the requested amendments to the Project Certificate No. 003.

The PHC was chaired by David Hohnstein, Director of Technical Services, assisted by Cindy Kieu, Legal Counsel. The following parties attended the PH by teleconference:

- The Applicant, TMAC Resources Inc;
- The Kitikmeot Inuit Association (KIA);
- Indigenous and Northern Affairs Canada (INAC);
- Environment and Climate Change Canada (ECCC);
- Department of Fisheries and Ocean Canada (DFO);
- Natural Resources Canada (NRCan);
- Northern Projects Development Office (NPMO);
- Technical Staff of the Nunavut Impact Review Board; and
- Chamber of Mines

The listing of attendees at the teleconference PHC is attached as [Appendix F](#) to this Report.

Technical Meeting Recap and Update

Before commencement of the PHC, the NWB’s staff facilitated an overall review of the TM and a discussion of any technical issues that may have arisen in the intervening period between the TM/Community Session in January 2016 and the Pre-hearing Conference in June of 2016. While the representative of KIA was not able to join the call until the afternoon, the parties took the morning to discuss and update the list of commitments generated from the TM/Community Session. The following technical issues were discussed:

- TMAC’s commitment to submit the revised Management Plans comprising of the Aquatic Effects Monitoring Plan (AEMP), Revised Monitoring Program (SNP), the Groundwater



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Management Plan (GWMP), Tailings Impoundment Area Operations, Maintenance and Surveillance Manual (TIA OMS Manual) and the Interim Dike Trade-off Study;

- INAC’s concerns regarding TMAC use of pumping rates greater than 3,000 m³/day in Doris Lake;
- NRCan participation in the NWB Process Review of the Amendment Application;
- Security Cost Estimate.

Below is a summary of the main areas of discussion prior to commencing the PHC.

Regarding TMAC’s commitment to submit the revised AEMP, SNP and the GWMP, TIA OMS Manual, the parties noted that TMAC submitted all of the listed documents with the exception of the Interim Dike Trade-off Study. In response, TMAC committed to submit the Dike Trade-off Study by the last week of June.

Generally, the parties agreed that the information provided by TMAC in the revised Management Plans seems adequate, though the submission of certain information and further discussion on certain topics may be required. However, the parties agreed that these outstanding issues do not prevent the Amendment Application from proceeding to Public Hearing.

INAC expressed concerns with respect to the groundwater model but agreed with TMAC that a groundwater management plan would be reviewed in the water licensing process to develop contingency plans to address uncertainty in the model.

Regarding the GWMP, INAC raised concern with TMAC’s use of pumping rates that may be greater than 3000 m³/day in Doris Lake. INAC indicated that at such a rate, the resulting impacts on the Lake and Lake’s outflows would mean greater impacts than what was considered during the NIRB processes. TMAC committed to discussing this topic with INAC with the view of resolving the issue before the Public Hearing.

Regarding NRCan participation in the Water License Process, the NWB’s staff noted that during NIRB Public Hearing, NRCan had raised certain concerns with respect to groundwater management, permafrost and hydrogeology and identified that these were unresolved issues requiring to be followed up. On that basis, TMAC committed to provide a comprehensive adaptive management plan during the NWB water licensing process. This issue was discussed during the PHC and NRCan committed to reviewing the Management Plans submitted by TMAC. On June 30, 2016, NRCan submitted its comments and specifically on the Groundwater Management Plan and the Tailings Management Plan, indicating that it is satisfied that TMAC has addressed



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NRCan’s recommendations related to hydrogeology and permafrost. To that end, NRCan has no further recommendations to provide to the NWB.

Regarding the issues concerning reclamation security costs estimate, INAC, TMAC and KIA agreed to work towards providing their final submissions according to the deadlines for Public Hearing. KIA indicated that would also address the issue of double bonding in its final submissions.

On the basis of the discussion as summarized above, the NWB’s staff updated and revised the Table of Commitments to reflect those commitments that have been resolved or are pending. The updated Table of Commitments was circulated to the parties following the PHC and further revised based on comments received from TMAC; no other comments were received by the NWB. The final Table of Commitments is attached as [Appendix C](#).

Commencement of Pre-Hearing Conference

At the conclusion of the recap and update of the TM, the PHC portion of the agenda proceed on the afternoon of June 24, 2016. KIA representative was able to attend and participate throughout this part of the PHC discussion.

The purpose of the PHC was to discuss the various matters as set out in Rule 14 of the Rules in preparation for the Public Hearing. Pursuant to Rule 14, the following matters were addressed through the PHC:

- Identify any issues preventing application from proceeding to a hearing;
- Discuss form, timing and location of the Public Hearing;
- Establish timetable for the pre-hearing exchange of information;
- Finalize list of issues to be dealt with at the Hearing;
- Identify interested parties;
- Identify any changes to Application for the purposes of clarification;
- Final procedures to be followed at the Hearing; and
- Consider any other matters that may aid in the simplification and disposition of the Application at the Hearing.

Issues preventing the Amendment Application from proceeding to a Hearing

The Applicant and parties did not identify any issues that would prevent the Amendment Application from proceeding to the Public Hearing.

The NWB notes that the Applicant requested that the Public Hearing for the Amendment Application should take place in late August or early September of 2016. In this regard, the Applicant submitted that the Board is not prevented from setting the dates for the Public Hearing



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in the absence of a decision from the Minister regarding the NIRB’s recommendations that the proposed amendments to the Doris North Gold Mine Project should proceed.

No Interveners commented on the issue of whether the NWB should wait to set the dates for Public Hearing until the Minister has issued her decision and/or when NIRB has issued an amended Project Certificate No. 003.

As the Board has emphasized in previous correspondence, pursuant to section 38(1) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act, the Board may not issue, renew or amend a licence until the NIRB has completed the screening, consideration, or where a review is required, issued an amended Project Certificate.

The Board recognizes that the NIRB has completed its assessment process in issuing its Public Hearing Report and recommendations regarding the requested amendments to the Project for the consideration of the Minister that the Project, as proposed to be amended by TMAC should be allowed to proceed in accordance with several amendments and additions to the NIRB Project Certificate No. 003. However, at the date of this Pre-Hearing Conference Decision Report, the Minister has yet to issue a decision regarding NIRB recommendations.

In the interests of ensuring that the application to amend the Type “A” Water Licence 2AM-DOH1323 is dealt with in a timely manner, while recognizing the absence of a decision from the Minister, the Board will continue with its processing of the Amendment Application to the extent possible at this time. The Board recognizes that planning and preparation for an in person Public Hearing in Cambridge Bay is underscored by a host of requirements and practical considerations, many of which require time and advance notice. In particular, the Board must meet the statutory requirements to provide a minimum of sixty (60) days’ notice in advance of a public hearing. However, it must be understood that the Board’s directions with respect to the Public Hearing, including setting the tentative dates and location, are made subject to the decision of the Minister in response to the NIRB’s recommendations. To be clear, the Board draws no conclusions about the directions that the Minister may or may not make regarding the NIRB’s recommendations and reserves the rights to cancel, adjourn or reschedule the Public Hearing, as appropriate.

Procedures for the Public Hearing

The Applicant and Interveners participating in the PHC were polled on the issue of the timing for the Public Hearing. Generally, the parties were in agreement that the weeks of September 5th or September 12th would work with their respective schedules. TMAC indicated that while the week of September 5th was the preferred option, it would accept the week of September 12th. The NWB’s



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staff also asked the parties to consider the week of September 26th, with INAC expressing some concerns regarding staff availability in that week.

The Parties were asked for their views on the location and form of the Public Hearing (written, teleconference or in-person). Recognizing the importance of public engagement in this phase of the project’s licensing and recognizing that Cambridge Bay is the most directly affected community, all parties favored an in person Public Hearing in Cambridge Bay.

At present, based on the time commitments outlined in the discussion of the exchange of documents set out below and subject to the Minister’s decision regarding the NIRB’s recommendation as mentioned above, the Board’s Doris North Panel, P7, has decided, by Motion 2016-06-P7-04, that an in person Public Hearing in respect of the Application to amend Type “A” Water Licence 2AM-DOH1323 should be held in the Hamlet of Cambridge Bay, tentatively scheduled for the week of September 12th, 2016, noting, however, that the Public Hearing may be cancelled, adjourned or rescheduled as may be necessary to accommodate a decision from the Minister of Indigenous and Northern Affairs in response to the NIRB’s Public Hearing Report and Recommendations issued on June 13th, 2016.

Further, the Board reserves the right to adjust the scheduling if hearing logistics dictate, if the documentation required to be supplied in advance of the Hearing has not been provided, etc.

The parties have confirmed that they do not anticipate that any deviations from the Board’s normal Rules of Practice and Procedure for Public Hearings (May, 2005) will be required, and as such, the Board directs all parties that the Public Hearing will be conducted in accordance with Parts III and IV of the Rules.

Timetable for Pre-Hearing Exchange of Information

As required by s. 55(2) of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*, the NWB must give the public and parties a minimum of sixty (60) days’ notice in advance of a Public Hearing.

Further, in order to give the Board, all parties, and community members the opportunity to fully consider and respond to information in advance of the Public Hearing, the NWB staff encouraged parties intending to file submissions for the Public Hearing to do so at least 3 weeks in advance of the date of the Public Hearing (Final Submissions). Further, it was noted that parties generally benefit from the opportunity to provide written responses to Final Submissions. To this end, staff of the NWB strongly encouraged parties intending to file responses to the Final Submissions, to



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do so at least 2 weeks in advance of the Public Hearing. It was observed that this timeline should allow adequate lead time for parties to prepare for the Public Hearing.

Regarding the outstanding information requirements that must be supplied in advance of a Public Hearing, the information is provided in the Table of Commitments attached in [Appendix C](#).

On this basis, the Board has established a proposed timetable for the pre-hearing exchange of information as set below. However, the Board reserves the right to revisit the timing set out below in the event that parties are unable to meet the deadlines in the commitments, in response to the requests of the parties, the community, or as may subsequently be considered necessary by the Board.

In establishing the following schedule, the Board has taken into account that the most feasible timing for an in person Public Hearing is the week of September 12, 2016 (potentially September 13 & 14). Unless modified as outlined above, the Board requires the participants to observe the following timetable:

- All further and final written submissions to be provided by Interveners must be filed with the Board on or before **August 2, 2016**;
- All further and final responses of the Applicant to the information filed to date must be filed with the Board on or before **August 15, 2016**;
- Any presentations (e.g. PowerPoint Presentations, etc.) upon which interveners intend to rely at the Public Hearing must be filed with the Board on or before **August 22, 2016**;
- Any presentations (e.g. PowerPoint Presentations, etc.) upon which the Applicant intends to rely at the Public Hearing must be filed with the Board on or before **August 29, 2016**;
- If the Interveners and/or the Applicant file additional written submissions, final responses and presentation materials as outlined above, they are also required to provide an Executive Summary of their written submissions in **English, Inuktitut and Inuinnaqtun** and fully translated copies of their presentation materials or final responses in English, Inuktitut and Inuinnaqtun at the same time as they file the full submission; and
- The Board requires any party requesting French translation of any other component of the parties' submissions, presentation materials and/or requesting the Board to provide simultaneous French translation at the Public Hearing to make such requests to the Board in writing on or before **July 15, 2016**.

All submissions will be posted on the NWB's ftp-site (<ftp://ftp.nwb-oen.ca/>) and in the public registry upon receipt. A copy of the public registry as it relates to the Amendment Application will be available for review at the Public Hearing.



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List of Issues

The parties in attendance at the PHC confirmed that none of the issues for discussion associated with the Amendment Application and the related information requirements should prevent the Board from proceeding with the Public Hearing.

In reviewing the List of Issues generated following the Technical Meeting in January of 2016 and attached as [Appendix D](#), the parties agreed it represents all the issues discussed throughout the review process and that most of them have been resolved. However, the parties will review these issues at the Public Hearing with the view of informing the public about the subject matters and related issues that have been discussed and dealt with throughout the water licensing process to consider the Amendment Application.

With respect to the unresolved issues, these are highlighted in the Table of Commitments and attached as [Appendix C](#).

Additionally, INAC indicated that in the course of enforcing the terms and conditions of the existing Licence, its enforcement officers have identified a number of minor drafting errors with the existing Licence comprising of grammatical, spelling, and incorrect references. To this end, INAC indicated that it will provide before or as part of its final submission, a list of proposed errata to be considered by the NWB as consequential amendments to the existing Licence.

Identification of Interested Parties

During the PHC, the following parties confirmed their participation and attendance at the Public Hearing:

- The Applicant, TMAC Resources Inc.
- The Kitikmeot Inuit Association, KIA;
- The Indigenous and Northern Affairs Canada, INAC;
- Fisheries and Ocean, DFO; and
- Environment and Climate Change Canada, ECCC

Changes to the Amendment Application for the Purposes of Clarification



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The Applicant and Interveners in attendance were canvassed regarding any potential changes to the Application, and they responded that there were no anticipated changes.

Should any changes become necessary, any additional information that the parties wish the Board to consider during their review of the Amendment Application must be filed with the Board in advance of the Public Hearing and in accordance with the timelines outlined above under the heading “Pre-hearing Exchange of Information”.

Other Procedural Matters including Language Requirements

The Applicant and parties in attendance were polled and confirmed that there are no additional procedural matters or issues for consideration at the Public Hearing.

In addition, as a practice, the Board will provide notice of the Public Hearing in the official languages. The Board also invite any parties planning to participate at the Public Hearing to advise the Board of any language requirements, including translation and interpretation requirements by a specified date.

Measures to Simplify the Disposition of the Amendment Application

No measures to simplify the disposition of the Amendment Application were identified at the PHC.

Steps following the Public Hearing

No comments or issues were identified with respect to steps following the Public Hearing.

When the Panel has reached a decision, which is typically within thirty (30) to forty-five (45) days of the close of the Hearing Record, the Board will issue its Record of Proceedings and Decision to the Minister of Aboriginal Affairs and Northern Development Canada. If the Panel recommends that the amendments requested through the Amendment Application be granted, a draft Licence (with included amendments) would also be provided for the Minister’s consideration with the decision.

If you require additional information related to technical matters regarding this Application, please contact the technical advisor associated to this file Sonia Aredes at 867-979-3079 or by email at sonia.aredes@nwb-oen.ca or the NWB’s Director of Technical Services, David Hohnstein at david.hohnstein@nwb-oen.ca. Should you have any questions or require clarification on the



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above or any procedural inquiries, please contact Stephanie Autut, Executive Director for the NWB, at stephanie.autut@nwb-oen.ca. For any administrative matters related to the Amendment Application, please contact the Acting Manager of Licensing, Karén Kharatyan, at licensing@nwb-oen.ca.

Regards,

Stephanie Autut
Executive Director
Nunavut Water Board

Attachments:

Appendix A: Technical Meeting, Community Session and Pre-Hearing Conference Agendas
Appendix B: List of Applicant Submissions
Appendix C: Updated Table of Commitments
Appendix D: List of Issues
Appendix E: Listing of Attendees at the NWB’s TM and Community Session
Appendix F: Listing of Attendees at the NWB’s PHC Teleconference



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APPENDIX A: AGENDAS

**TECHNICAL MEETING & COMMUNITY SESSION
DORIS NORTH PROJECT
TYPE “A” WATER LICENCE 2AM-DOH1323; AMENDMENT APPLICATION**

JANUARY 28 & 29, 2016

Venue: Luke Novoligak Community Hall, Cambridge Bay

Technical Meeting Segment

1. Opening Remarks (15 Minutes)
 - a. Opening Prayers
 - b. Introduction of Participants
 - c. Purpose of the Technical Meeting
 - d. Overview of Scope and Procedural History of Application
 - e. Identification of Interested Parties
2. Presentation by the Applicant (40 Minutes)
 - a. Presentation by TMAC on the Application before the Board
 - b. Questions from Parties and the NWB Regarding TMAC’s Presentation
3. Presentation by Intervening Parties (30 Minutes / Party)
 - a. Presentation by the Kitikmeot Inuit Association (KIA).
 - b. Presentation by Indigenous and Northern Affairs Canada (INAC)
 - c. Presentation by Environment and Climate Change Canada (EC)
 - d. Presentation by the Department of Fisheries and Ocean Canada (DFO)
 - e. Presentation by Interested Parties / Persons Wanting to Make Representations
4. Discussions of Relevant Topics Related to the Application
 - a. Water Quality Predictions: Site-Wide Water and Load Balance, Groundwater Quality and Volume Predictions, Roberts Bay Discharge.
 - b. Roberts Bay Discharge Monitoring: Aquatic Effects Monitoring
 - c. Roberts Bay Discharge Monitoring: Aquatic Effects Monitoring Program, Effluent Discharge Criteria, Marine Water Quality Objectives
 - d. Waste Rock and Tailings: Use of Waste Rock in construction, Waste Rock Management Plan, Tailings Management, Tailings Monitoring
 - e. Closure: Tailings Impoundment Area Water Quality, Groundwater Quality, Tailings cover, Cost Estimate
 - f. Mitigation Measures: Doris Lake Water Level, Construction and Operation of Roberts Bay Discharge Pipeline, Road Water Crossings, Sediment Quality and Effluent Buoyancy



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- g. Water Treatment: Water and Sewage Treatment
 - h. Madrid Advanced Exploration Project (MAEP) and Doris North (DN) Project: Impact of MAEP to DN Facilities, Tailings Impoundment Area Expansion Capacity
 - i. Fisheries Act Authorization: Life-of-Mine and Fisheries Act Authorization Conditions
 - j. Additional topics as requested by the Interveners/Applicant
- 5. Identification and Review of the Parties’ Commitments to Resolve Relevant Technical Issues
 - 6. Formulation of Outstanding Issues
 - 7. Closing of Technical Meeting
 - 8. Discussion of NWB Process and Timing Following Completion of NIRB Reconsideration Process



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AGENDA

**TECHNICAL MEETING & COMMUNITY SESSION
DORIS NORTH PROJECT**

TYPE “A” WATER LICENCE 2AM-DOH1323, AMENDMENT APPLICATION

Venue: Luke Novoligak Community Hall, Cambridge Bay

January 28, 2016, 7:00 PM – 10:00 PM (MST)

Community Meeting Segment

1. Opening remarks by the Nunavut Water Board (10 Minutes)
 - a. Opening Prayers
 - b. Introduction of Participants
 - c. Overview of the Purpose of the TM and the Community Session
2. Brief Presentations by the Nunavut Water Board and Parties:
 - a. Nunavut Water Board’s Presentation (15 Minutes, Excluding Questions and Answers)
Questions from Community Members and Interested Parties/Persons
 - b. The Applicant, TMAC’s Presentation (15 Minutes, Excluding Questions and Answers)
Questions from Community Members and Interested Parties/Persons
 - c. Kitikmeot Inuit Association’s Pres. (15 Minutes, Excluding Questions and Answers)
Questions from Community Members and Interested Parties/Persons
 - d. Indigenous and Northern Affairs Canada’s Pres. (15 Minutes, Excluding Questions and Answers)
Questions from Community Members and Interested Parties/persons
 - e. Environment and Climate Change Canada’s Pres. (15 Minutes, Excluding Questions and Answers)
Questions from Community Members and Interested Parties/Persons
 - f. Fisheries and Oceans Canada’s Presentation (15 Minutes, Excluding Questions and Answers)
Questions from Community Members and Interested Parties/Persons
3. Questions from Community Members regarding the Application to any of the parties at the Meeting
4. Closing of the Community Session



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AGENDA

PRE-HEARING CONFERENCE

NWB File No. 2AM-DOH1323, Type “A” Licence

Teleconference (1-888-289-4573; Access 9860851)

Application: Type “A” Licence –Amendment – Doris North Gold Mine Project

Applicant: TMAC Resources Inc.

June 24, 2016, 9:00 AM – 3:00 PM MST (June 27, 2016, 9:00 – 3:00 MST if required)

1. Introduction of Participants
2. NWB’s Opening Remarks (15 min.)
3. Follow up regarding additional submissions provided after Technical Meeting
 - a. Review of Commitments List submissions
 - b. Discussion of other additional submissions provided to date
4. Identification and discussion of outstanding/resolved technical issues
 - a. Aquatic Effects Monitoring Plan (AEMP);
 - b. Revised Monitoring Program (SNP) revisions;
 - c. Groundwater Management Plan (GWMP);
 - d. Tailings Impoundment Area Operations, Maintenance and Surveillance Manual (TIA OMS Manual);
 - e. Interim Dike Trade-off Study;
 - f. Security estimate
5. Purpose of the Pre-Hearing Conference
6. Pre-Hearing Conference:
 - a. Identify any issues preventing application from proceeding to a hearing
 - b. Discuss form, timing and location of the Public Hearing
 - c. Establish timetable for the pre-hearing exchange of information, including:
 - a. preparation and service of documents to parties (deadlines, form, public registry); and
 - b. document translation requirements;
 - c. documentation to be included in the hearing record
7. Finalize list of issues to be dealt with at the Hearing



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8. Identify interested parties
9. Identify any changes to Application for the purposes of clarification
10. Final procedures to be followed at the Hearing, including:
 - a. requested modifications to the applicable NWB Rules of Practice and Procedure for Public Hearing (May 2005); and
 - b. language requirements at the Hearing
11. Consider any other matters that may aid in the simplification and disposition of the Application at the Hearing.



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APPENDIX B:

List of Application Submissions: List of documents submitted by the Proponent regarding the Application

On June 15, 2015:

- Cover letter, to R. Barry, NIRB and David Hohnstein, NWB; Re: Updates to Application for Doris North Mine Modifications and Related Amendments to Project Certificate No.003 and Type “A” Water Licence No. 2AM-DOH1323
- Project Summary and Submission Outline (Package 1), including:
 - Plain Language Summary (P1-1),
 - Maps (P1.2); Schedule for Implementation (P1.3),
 - Regulatory Submission Outline (P1-4)
- Project Description (Package 2) including:
 - Project Description with Executive Summary (P2.1)
- NIRB and NWB Application Documents (Package 3), including:
 - NIRB Amendment Application Documents (P3-1),
 - NWB Amendment Application Documents (P3-2),
 - NPC Conformity Determination (P3-3)
- Environmental Effects Assessment (Package 4), including:
 - Environmental Effects Assessment (P4-1)
- Management and other Plans (Package 5), including:
 - Air Quality Management Plan (P5-1),
 - Interim Closure and Reclamation Plan (P5-2),
 - Water Management Plan (P5-3),
 - Waste Rock and Ore Management Plan (P5-4)
- Engineering and Design Documents (Package 6), including:
 - Doris Central and Vent Raise Pad and Access Road (P6-1),
 - Doris Connector Vent Raise Pad and Access Road (P6-2),
 - Groundwater inflow and Quality Model (P6-3),
 - Landfill (P6-4),
 - Reclamation and Security (P6-5),
 - Roberts Bay Discharge System Water Management Options (P6-6),
 - Roberts Bay Discharge System: Surface Infrastructure (P6-7),
 - Roberts Bay Discharge System: Pump and Pipe Requirements (P6-8),
 - Roberts Bay Expanded Laydown Pads (P6-9),
 - Site-Wide Water and Load Balance (P6-10),
 - Storage Pad U (P6-11),
 - Tailings Geochemistry (P6-12),
 - Tailings Management System (P6-13),
 - Waste Rock and Ore Geochemistry, Static Testing (P6-14),
 - Waste Rock and Ore Geochemistry, Kinetic Testing (P6-15)



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- Proponent Information (Package 7)

On July 14, 2015:

- Letter to NWB, Re: Revisions to TMAC Resources Inc. Amendment Application No. 1 of Project Certificate 003 and Water Licence 2AM-DOH1323 – Application Deficiencies, on July 14 2015
- Figures 3 & 4 of Project Summary
- 2014 2AM-DOH1323 Type “A” Water Licence Annual Report Supplemental Document Doris North Project (to satisfy SIG Block No.61)
- Doris North Mine Interim Closure and Reclamation Plan July 2015 – Detailed Cost Estimate

On October 8, 2015:

- Cover letter to NWB & NIRB, Re: Revisions to TMAC Resources Inc. Amendment Application No. 1 of Project Certificate No. 003 and Water Licence No. 2AM-DOH1323: Proponent’s Response to Information Requests.
- Appendix B1
- TMAC IR Tables: TMAC Resources Inc. Responses to IR Comments on the Doris North Project Terms and Conditions within Project Certificate No.003 and application to amend the Water Licence 2AM-DOH1323
- Appendix 1.0
- In response to KIA-7: Figures 2 and 3
- Appendix 2.0
- In Response to KIA-28: T1240 Part II: Detox Testwork Report
- Appendix 3.0
- In Response to EC IR#14: Hope Bay Oil Pollution Prevention Plan/Oil Pollution Emergency Plan
- Appendix 4.0
- In Response to AANDC-NIRB #19 – Table 1. Volume of Estimated Non-Hazardous Solid Waste
- Appendix 5.0
- In Response to GN IR#1 and GN IR#2: Inuit Impact and Benefit Agreement Report
- Appendix 6.0
- In Response to AANDC-NIRB #26: Figures 5, 6 and 7
- Appendix 7.0
- In Response to KIA-46: DWG DN-WRE-03 Figure
- Appendix 8.0
- In Response to AANDC-NIRB #7: Hope Bay Stage 2 Overburden Characterization Report
- On November 20, 2015
- Tailings Geochemistry, supporting information, document P6-12b
- Geochemical Characterization of Tailings from the Doris Deposits, Hope Bay – Supporting Data
- Appendix A - Tailings Sample Details
- Appendix B – Methodology for Sub-Aqueous Column Tests
- Appendix C – SRK Aging Test Protocol



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- Appendix D – Colorado School of Mines Aging Test Protocol
- Appendix E – Mineralogy Reports
- Mineralogy for HC-1, HC 1-b and HC-15
- Mineralogy for HC-57
- Mineralogy for HC-66 and HC-67
- Mineralogy for HC-68
- Mineralogy for HC-69
- Appendix F – ICP-Metals, Humidity Cell Samples
- Appendix G – Kinetic Data, Humidity Cell Tests
- Appendix H – Figures, Humidity Cell Tests
- Appendix I – Kinetic Data, Sub-aqueous Column Tests
- Appendix J – Figures, Sub-aqueous Column Tests
- Appendix K – Process Water Data
- Appendix L – Raw Data, Aging Tests
- Appendix M – Figures, Aging Tests
- Waste Rock and Ore Geochemistry, Static Testing, Supporting Information (document P6-14b)
- Static Testing and Mineralogical Characterization of Waste Rock and Ore from the Doris Deposit, Hope Bay – Supporting Data
- Appendix A: Geochemical Data – Historic Samples
- Appendix B: Geochemical Data – NMS Samples
- Appendix C: Geochemical Data – SRK Samples
- Appendix D: Geological Attributes and Economic Classifications of Samples
- Appendix E: HBML’s 2008 Standard Lithology Codes
- Appendix F: XRD Data – Doris
- Appendix G: ABA Data Used for ARD Classifications
- Appendix H: Statistical Analysis of Solid-Phase Elemental Data by Lithology – Doris Central Deposit
- Waste Rock and Ore Geochemistry, Kinetic Testing, Supporting Information (document P6-15b)
- Appendix A – Humidity Cell and Barrel Test Sample Intervals
- Appendix B – SRK Humidity Cell and Barrel Test Mineralogy
- Appendix B1 – SRK Humidity Cell and Barrel Test Carbonate and Sulphide Mineralogy by XRD, SEM, and MLA
- Appendix B2 – SRK Humidity Cell and Barrel Test XRD Dataset
- Appendix B3 – SRK Humidity Cell Test MLA Dataset
- Appendix B4 – Newmont Metallurgical Services Mineralogy Report
- Appendix B5-Characterization of Crushed Rock Hope Bay Project, Nunavut, Canada
- Appendix C – SRK Humidity Cell and Barrel Test Static Data
- Appendix C1 – SRK Humidity Cell and Barrel Test ABA Dataset
- Appendix C2 – SRK Humidity Cell and Barrel Test Solid-Phase Trace Metal Dataset (ICP Metals by Aqua Regia Digestion)
- Appendix D – Humidity Cell Test Concentration Charts



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- Appendix D1 – SRK Humidity Cell Test Concentration Charts
- Appendix D2 – Selected Rescan Humidity Cell Test Concentration Charts
- Appendix E – SRK Humidity Cell Test Results
- Appendix E1 – SRK Humidity Cell Test Summary of Key ABA and Kinetic Testing Results
- Appendix E2 – SRK Humidity Cell Test Stable Release Rates
- Appendix E3 – SRK Humidity Cell Test Summary of Depletion Calculations
- Appendix E4 – Low Level Sulphate Data for Final Cycles of Selected Humidity Cell Tests
- Appendix E5 – SRK Humidity Cell Test Leachate Concentration Raw Data
- Appendix F1 – SRK Humidity Cell Test Residue ABA Data
- Appendix F2 – SRK Humidity Cell Test Residue Solid-Phase Trace Metal Data ((ICP Metals by Aqua Regia Digestion)
- Appendix G – Barrel Test Leachate Concentration Charts
- Appendix H – Barrel Test Leachate Raw Concentration Data

On December 1, 2015

- Memo on tailings pore water expulsion and its effect on shallow groundwater (in response to NRCan IR #1d and KIA IR's #38)

On December 4, 2015

- Memo discussing frost heave and the tailings cover, NRCan IR# 1c
- Memo discussing the time required for the mine to flood, in response to NRCan IR#3 and INAC IR#13

On December 21, 2015

- TMAC Resources Inc.'s Revisions to Amendment Application No. 1 of Project Certificate No. 003 and Water Licence No. 2AM-DOH1323: Proponent's Response to NWB Technical Comments
- Doris Mine: Responses to Technical Comments, Nunavut Water Board
- Appendix A Reports
- Appendix B Figures
- On January 26, 2016
- Proponent's Response to ECCC Letter (January 8, 2016)

On January 27, 2016

- 05MN047 and 2AM-DOH1323 Additional Materials: Water and Load Balance Sensitivity Analysis (document P6-10b)

On February 3, 2016

- 2AM-DOH1323 Doris Technical Meetings Additional Material: TIA Capacity
- 2AM-DOH1323 Doris Technical Meetings Additional Material: Closure Plan
- 2AM-DOH1323 & 05MN047 Doris Amendment Tech Meetings Additional Materials: Water and Load Balance

On February 4, 2016

- 2AM-DOH1323 & 05MN047 Doris Amendment Tech Meetings Additional Materials: Water and Load Balance –MARINE

On February 11, 2016

- Memo: Doris North Project Water Licence Amendment – Interim Water Management Plan



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On March 7, 2016

- 2AM-DOH1323 & 05MN047 Alternate Water Management Strategy V2

On March 10, 2016

- Aquatic Monitoring Meeting Agenda and Sampling outline

On March 15, 2016

- Presentation aquatic monitoring

On April 28, 2016

- 2AM-DOH1323 & 05MN047 Doris Aquatic Working Group Meeting Minutes
- On April 29, 2016
- Metal Mining Effluent Regulations Notification

On May 25, 2016

- Letter: TMAC’s Amendment Application: Water License 2AM-DOH1323

On May 31, 2016

- 2AM-DOH1323 Doris Amendment-Effects to Water Quality Arising From Mine Reflooding

On June 1&2 2016

- 2AM-DOH1323 Doris AEMP and SNP revisions
- 2AM-DOH1323 Doris Groundwater Management Plan
- 2AM-DOH1323 Doris Tailings Impoundment Area Operations, Maintenance and Surveillance Manual

On June 7, 2016

- Agenda for the meeting week June 7
- Flowsheets: barren bleed flowsheet

On June 14, 2016

- Email: 2AM-DOH1323: Follow-up to Iqaluit Meetings; letter with updates in MP

On June 17, 2016

- Email: Nunavut Water Board Pre-Hearing Conference

On June 29, 2016

- 2AM-DOH1323 TMAC Response to Party Comments on Management Plans

On July 5, 2016

- 05MN047& 2AM-DOH1323 Doris Amendment Interim Dike Trade-off Study

On July 5, 2016

- Review of June 6th Aquatic Monitoring Workshop notes

On July 6, 2016

- 2AM-DOH1323 TMAC Response to Party Comments on Management Plans



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APPENDIX C: Updated Table of Commitments

No	Issue	Commitment	Provided/ Received By	Due Date	Associated NWB Technical Comment	Status June 16 2016	Current Status June 27, 2016
1.	Concerns about the capacity of the TIA to accept saline groundwater	Receipt of memo from TMAC to detail TIA capacity (combined with commitment under item 4)	TMAC/ NWB	3-Feb	ID# INACTC6	Memo: Response to EC IR #10 – Closure Water Management – UPDATED to Reflect the Alternate Water Management Strategy of Discharging High NaCl Concentration (>10,000 mg/L) Mine Water to the TIA by SRK on Feb 3 2016	RESOLVED
2.	Satisfactory explanation of measures that will be implemented to ensure that water will not pond against the edges of the thermal rock fill pads after closure	Provide a letter to update the Interim Closure Plan to address any ponding of water near pads	TMAC/ NWB	3-Feb	ID# INACTC10	Memo: Addendum to Document P5-2 – Interim Closure and Reclamation Plan by SRK, Feb 3 2016	PARTIALLY RESOLVED. The C&R Plan to be updated with this addendum prior to operations
3.	The Tailings Management Plan - TMP should be revised to include the use of environmentally suitable chemical dust suppressants	Tailings Management Plan needs to be revised to include procedures for the use of appropriate dust suppression products. Submit 6 months in advance of operations as per current water license	TMAC/ NWB	30-Jun	ID# INACTC11	TMP submitted on June 2, Appendix A “Dust Management” submitted on June 13.	RESOLVED



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4.	Water Treatment management and water treatment plans if the TIA storage capacity is insufficient due to not meeting discharge criteria	Receipt of memo from TMAC to detail TIA capacity (combined with commitment under item 1)	TMAC/ NWB	3-Feb	ID# INAC TC13	TMAC Memo: Response to EC IR #10 – Closure Water Management – UPDATED to Reflect the Alternate Water Management Strategy of Discharging High NaCl Concentration (>10,000 mg/L) Mine Water to the TIA by SRK on Feb 3 2016	RESOLVED
5.	INAC questions whether storage volume is sufficient for increased waste rock storage underground	To confirm resolution of outstanding issue with INAC EA (i.e. that NIRB process will be adequate to address	INAC/ TMAC	3-Feb	ID# INAC IR#12	Resolved as per INAC letter on June 1. Conditions to be incorporated into the Amended licence.	RESOLVED
6.	Final cover system design to be submitted prior to construction	Tailings Management Plan and TIA cover design to be submitted prior to construction; if progressive reclamation to be implemented provide engineer drawings in advance	TMAC/ NWB	over Project Life	ID# INAC IR#14		Over Project Life
7.	Concern about interconnection between Madrid Advanced Exploration Project in the Doris North Type “A” Water Licence	Confer with INAC EA group and confirm via e-mail resolution of handling of Doris and Madrid applications in NWB/NIRB processes	INAC/ All parties	3-Feb	ID# INAC IR#16	Resolved as per INAC letter on June 1.	RESOLVED
8.	Require more information about	Provide maps showing effluent pipeline corridor and	TMAC/ NWB	With submissi	ID# NWB-1	Engineering drawings to include Surface	With submission of engineer



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	surface water features along the effluent pipeline corridor that could be impacted if there was a leak/failure along the pipeline	nearby freshwater streams, ponds and lakes. Including topographic contours to show flow direction.		on of engineer drawings (60 days prior to construction)		water features; drawings, to be submitted 60 days prior to construction (May 18 Meeting)	drawings (60 days prior to construction)
9.	Require more information regarding spill response and spill prevention measures along the effluent pipeline corridor	Update Spill Response Plan to include measures to protect watercourses	TMAC/ NWB	15-Sept (90 days prior to operations)	ID# NWB-2	TMAC (May 18): 1-Spill prevention along the tailings pipeline to be addressed in the TMP (submitted on June 2); 2- Spill prevention along the effluent pipeline corridor to be addressed during the detailed design phase	RESOLVED
10.	Development of alternate strategies to manage saline groundwater contacted to the mine	TMAC to direct groundwater to TIA until alternate toxicity test suitable for saline groundwater conditions is introduced by ECCC and ECCC to make best efforts to find alternate toxicity test	TMAC/ ECC		ID# EC- (supplement)	Memo: DNP- WL Amendment – Interim Water Management Plan, on February 11 2016. Description of an interim strategy to manage saline groundwater until the toxicity testing protocol amendments to the Metal Mining Effluent Regulation (MMER) are complete	RESOLVED



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11.	Development of monitoring locations, parameters and overall aquatic effects monitoring program	Regarding development of the Aquatic Monitoring Framework (AMF): a. Invite Parties, including the KIA, ECCC and INAC, to participate in the AMF Working Group. TMAC to send out invitations by Feb 14 . Proposed meeting date: week of Mar 14	TMAC/ KIA, ECCC, INAC	Invitations sent by – February 14 Meeting date – Week of March 14	ID# EC-1 ID# EC-2 ID# EC-8 ID# KIA-12 ID# KIA-6 ID# KIA-8	First AMF meeting was held on March 15. Water Monitoring of RB to be addressed in the EEM. AEMP to address the freshwater monitoring. The revised version of AEMP to include: TIA Water Quality Monitoring, list of parameters and frequency of monitoring, monitoring requirements for DL water and ice levels and outflow discharge levels and determine thresholds beyond which additional mitigation measures must be taken to avoid serious harm to fish TMAC’s submitted 2AM-DOH1323 Doris AEMP and SNP revisions on June 1. The Plan was discussed during the week of June 7 meetings in Iqaluit. Plan currently under review until June 22.	RESOLVED
12.	Development of monitoring locations, parameters and overall aquatic effects monitoring program	b. Provide an outline of the AMF in its preliminary form in advance of submissions for the Technical Hearing on or before Mar 14, 2016 ;	TMAC/ KIA, ECCC, INAC	On or before March 14			RESOLVED
13.	Development of monitoring locations, parameters and overall aquatic effects monitoring program	c. Ensure that the AMF includes monitoring the quality of the TIA and groundwater discharges and the waters of Roberts Bay for non CCME and MMER parameters.	TMAC/ KIA, ECCC, INAC	Prior to completion of AMF			RESOLVED
14.	Development of monitoring locations, parameters and overall aquatic effects monitoring program	d. Through the Working Group, establish the list of parameters and frequency of monitoring that will support the objectives of the monitoring program (AEMP & SNP)	TMAC/ KIA, ECCC, INAC	Prior to completion of AMF			PENDING



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15.	DFO requires clarification of footprint due to reductions in water level of Doris Lake	Calculate the area of potential drawdown beyond the natural range of ice	TMAC/ DFO	Completed	ID# DFO 3.2.1 ID# KIA-13		RESOLVED
16.	Monitor water levels in Doris Lake and outflows to determine whether serious harm to fish occurs	Revisit Aquatic Monitoring Framework with working group to determine monitoring requirements for Doris Lake water and ice levels and outflow discharge levels and determine thresholds beyond which additional mitigation measures must be taken to avoid serious harm to fish	TMAC/ DFO	Working Group meeting in Q1, 2016, Revised AMF in Q4, 2016	ID# DFO 3.2.3	Monitoring of Water levels in DL included under the 2AM-DOH1323 Doris AEMP and SNP revisions submitted on June 1 and currently under review	RESOLVED
17.	Determine whether serious harm to fish will occur downstream of Doris Lake due to reductions in discharge	Evaluate pathways of effects for reduced flow conditions following field work in Doris Creek and little Roberts Lake outflow in summer of 2016; Data and a report to DFO in Q4, 2016	TMAC/ DFO	Report submitted in Q4 2016	ID# DFO 3.2.1	This issue to be discussed under the DFO regulatory process	RESOLVED (This issue to be discussed under the DFO regulatory process)
18.	Demonstrate effluent discharge to Roberts Bay will not cause harm to marine life	TMAC commits to provide a technical memorandum of the near field mixing model of marine CCME water quality parameters.	TMAC/ ECCC, KIA	TMAC to provide by 29-Feb ECCC & KIA to provide review by 14-Mar	ID# EC-3 ID# KIA #6 ID# KIA #8 ID# KIA #12	Resolved – as per May Meeting	RESOLVED



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19.	Demonstrate effluent discharge to Roberts Bay will not cause harm to marine life	TMAC commits to providing 3-dimensional hydrodynamic modeling that simulates the far field dispersion of the most sensitive CCME parameter in Roberts Bay.	TMAC/ KIA	TMAC to provide by 29-Feb KIA to provide review by 14-March	ID# KIA #6 ID# KIA #8 ID# KIA #12	Completed as per May 18 Meeting	RESOLVED
20.	Improving accuracy of effluent quality modelling through sampling and analysis using lower detection limits for free cyanide, mercury and selenium	TMAC commits to provide an updated sensitivity analysis memo which includes the results of the base case and sensitivity analysis for Doris Creek at TL-3	TMAC/ KIA, ECCC	TMAC to provide 29-Jan ECCC & KIA to review 5-Feb	ID# ECCC-4 ID# ECCC-5 ID# KIA 4 ID# KIA-5 ID# KIA-6 ID# KIA-11B	Memo: Document P6-10b, Water and Load Balance Model – Results of Sensitivity Analysis for TIA and Doris Creek, SRK dated Jan 28 2016. ECCC is ok with the document , email on February 4, 2016	RESOLVED
21.	Improving accuracy of effluent quality modelling by refining inputs	TMAC commits to providing a memo outlining the concentration of various parameters at the mill mixing box comprising TIA water, groundwater and a mixture of TIA and groundwater.	TMAC/ KIA, ECCC	TMAC to provide by 3-Feb ECCC & KIA to review by 8-Feb	ID# KIA 11C ID# ECCC-2 ID# ECCC-4	Resolved: TMAC’s Document P6-10b, Water and Load Balance Model – Results of Sensitivity Analysis for TIA and Doris Creek, dated Jan 28 2016. ECCC is ok with the document , email on February 4, 2016	RESOLVED



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22.	Water and Load Balance Model: For exposed tailings beaches, provide the basis for the selection of the median humidity cell test release rates and demonstrate that this is appropriate (conservative) for both operations and post-closure	<p>TMAC provided sensitivity analysis of the water load balance using the 75 percentile for background concentrations and other input sources</p> <p>INAC to provide direction on resolution of the issue</p>	<p>TMAC/ INAC</p> <p>INAC/ NWB</p>	<p>27-Jan</p> <p>3-Feb</p>	<p>ID#</p> <p>INAC TC4</p>	<p>Resolved: TMAC’s Document P6-10b, Water and Load Balance Model – Results of Sensitivity Analysis for TIA and Doris Creek, dated Jan 28 2016.</p>	RESOLVED
23.	Ground Water Management Plan	<p>TMAC to provide a detailed groundwater management plan (GMP) consistent with the agreed upon outline submitted by INAC to TMAC in January 2016.</p> <p>The GMP should also include a discussion on the underground disposal of hydrocarbon impacted waste rock and the ground water quality. The final draft is required for approval with the issuance of the licence.</p>	TMAC/ NWB	1 June	NIRB Hearing	<p>The GWMP to include GW quality monitoring (May 18)</p> <p>TMAC’s Doris GroundWater Management Plan submitted on June 1, currently under review</p>	PENDING – TMAC has fulfilled the commitment but the issue is still to be resolved
24.	Interim Dike filter design tradeoff study	TMAC to submit the Interim Dike filter design tradeoff study and detailed design of the selected filtering method in June for distribution, review and discussion by interested parties prior to the Water	TMAC/ NWB	In June	NIRB Hearing	To be submitted in June and distributed for review prior to the Public Hearing, (INAC, May 20 2016 email)	PENDING- TMAC has fulfilled the commitment but the issue is still to be resolved



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		Licence Public Hearing; final draft should be available before the issuance of the licence.					
25.	INAC questions whether a groundwater flowrate higher than 3,000 m3 per day is beyond the groundwater flowrate assessed during the NIRB's review	TMAC to confirm resolution of outstanding issue with INAC by email to NWB	TMAC/INAC				PENDING
26.	Security Estimate	TMAC & INAC & KIA to provide final submissions on security cost estimate(s) according to filing deadlines for Public Hearing.	TMAC/INAC				PENDING



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Appendix D

LIST OF ISSUES

TECHNICAL MEETING

TYPE “A” WATER LICENCE 2AM-DOH1323 AMENDMENT APPLICATION

JANUARY 28-29, 2016

List of Issues

- Water Quality Predictions:
 - Site-Wide Water and Load Balance
 - Groundwater Quality and Volume Predictions
 - Roberts Bay Discharge
- Roberts Bay Discharge Monitoring:
 - Aquatic Monitoring Framework (including Aquatic Effects Monitoring Program and Environmental Effects Monitoring)
 - Effluent Discharge Criteria
 - Marine Water Quality Objectives
- Waste Rock and Tailings:
 - Use of Waste Rock in construction
 - Waste Rock Management Plan
 - including volume predictions for underground disposal
 - Tailings Management
 - Tailings Monitoring
 - Underground Disposal of Impacted Waste Rock
- Mitigation Measures:
 - Doris Lake and Outflow Water Levels
 - Construction and Operation of Roberts Bay Discharge Pipeline
 - Road and Water Crossings
 - Sediment Quality
 - Effluent Buoyancy
 - Dust Suppressants on Tailings



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- Water Treatment:
 - Water and Sewage Treatment
- Management Plans and Reports
 - Content of plans
 - Updates to plans
 - Approval of plans
- Closure and Reclamation Planning:
 - Tailings Impoundment Area Water Quality,
 - Groundwater Quality,
 - Tailings cover,
 - Updates to the Interim Closure and Reclamation Plan
 - Security Cost Estimate
- Water User Compensation:
 - Confirmation from the KIA and TMAC that there are no outstanding issues of water user compensation



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APPENDIX E

Technical Meetings: List of Attendees

Cambridge Bay — January 28 & 29, 2016

No.	First Name	Last Name	Organization/ Representing	Phone	E-mail
1.	John	Roberts	TMAC		john.roberts@tmacresources.com
2.	Katsky	Venter	TMAC		katsky.venter@tmacresources.com
3.	Sharleen	Hamm	TMAC		sharleen.hamm@tmacresources.com
4.	Alex	Buchan	TMAC		alex.buchan@tmacresources.com
5.	Mike	Henry	TMAC/ ERM		
6.	Nicole	Bishop	TMAC/ ERM	604-689-9460	
7.	Fraser	Ross	TMAC/ ERM		Fraser.ross@erm.com
8.	Maritz	Rykaart	TMAC/SRK	604-928-1552	
9.	Kelli	Sexsmith	TMAC/SRK	604-601-8405	
10.	Kent	Gustavson	TMAC	778-667-7267	
11.	Derek	Chubb	TMAC/ERM	416-927-8490	
12.	Leslie	Bol	TMAC	778-990-4908	
13.	Gregory	Fagerlund	TMAC/SRK	778-987-8211	
14.	Elizabeth	Sherlock	TMAC/ERM		Elizabeth.Sherlock@erm.com
15.	Rick	Hoos	Tetra Tech		
16.	Colin	Kyte	Tetra Tech		
17.	Tineka	Simmons	CanNor		Tineka.Simmons@canor.gc.ca
18.	Stephanie	Autut	NWB		
19.	Dave	Hohnstein	NWB		
20.	Ida	Porter	NWB		



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No.	First Name	Last Name	Organization/ Representing	Phone	E-mail
21.	Sonia	Aredes	NWB		
22.	Teresa	Meadows	NWB		
23.	Ryan	Dempster	PIDO		
24.	James	Panioyak	Interpreter		
25.	Nick	Amautinuar	Interpreter		
26.	David	Abernathy	INAC		David.Abernathy@aandc-aadnc.gc.ca
27.	Scott	Burgess	INAC		Scott.Burgess@aandc-aadnc.gc.ca
28.	Jane	Doucette	INAC	902-564-1110	
29.	Chris	Milley	INAC (teleconference)		
30.	Tracey	Cochrane	INAC (teleconference)		
31.	Mark	Dahl	ECCC		mark.dahl@canada.ca
32.	Meagan	Tobin	ECCC		Meagna.Tobin@ec.gc.ca
33.	Chris	Doiron	ECCC (teleconference)		
34.	Myra	Robertson	ECCC (teleconference)		
35.	Julie	Marentette	DFO		Julie.Marentette@dfo-mpo.gc.ca
36.	John	Roesch	KIA		srproject@kitia.ca
37.	Heather	Bears	KIA	604-353-6226	
38.	Deborah	Sinclair	KIA	519-576-1711	
39.	Harry	Maksagak	Gov. of NU	867-983-4160	hmaksagak@gov.nuv.ca
40.	Michelle	Gillis	KIA	867-983-2458	
41.	Tara	Arko	NIRB		tarko@nirb.ca
42.	Kelli	Gillard	NIRB		kgillard@nirb.ca



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Community Session: List of Attendees

Cambridge Bay — January 28, 2016

No.	First Name	Last Name	Organization/ Representing	Phone	E-mail
1.	Tineka	Simmons	CanNor		
2.	Noah	Kudlak	From C.B		
3.	Sharleen	Hamm	TMAC		
4.	Nicole	Bishop	TMAC		
5.	Fraser	Ross	TMAC		
6.	Mike	Henry	TMAC		
7.	John	Roberts	TMAC		
8.	Katsky	Venter	TMAC		
9.	Maritz	Rykaart	TMAC		
10.	Goran	Riffi	From CB		
11.	Stephanie	Autut	NWB		
12.	Dave	Hohnstein	NWB		
13.	Ida	Porter	NWB		
14.	Sonia	Aredes	NWB		
15.	Teresa	Meadows	NWB		
16.	Ryan	Dempster	PIDO		
17.	Derek	Chubb	TMAC		
18.	Mark	Dahl	ECCC		
19.	Meagan	Tobin	ECCC		
20.	John	Roesch	KIA		
21.	Heather	Bears	KIA		
22.	Deborah	Sinclair	KIA		



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No.	First Name	Last Name	Organization/ Representing	Phone	E-mail
23	Edward	Toasi	CB	867- 899- 4082	
24	David	Abernathy	INAC		
25	Scott	Burgess	INAC		
26	Jane	Doucette	INAC		
27	Heather	Ramussen	CB		
28	Kelli	Gillard	NIRB		
29	Alex	Buchan	TMAC		
30	Gregory	Fagerlund	TMAC		
31	Elizabeth	Sherlock	TMAC		
32	Ashley	Otokiak	CB		
33	Anthony	Otokialk	CB		
34	Avalak	Atatahak	CB		
35	Navalik	Tologaknak	CB		



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APPENDIX F

Pre-Hearing Conference

List of Attendees, Teleconference — June 24, 2016

The Applicant, TMAC Resources Inc.:

- John Roberts
- Sharleen Hamm
- Maritz Rykaart
- Oliver Curran
- Katsky Venter
- Alex Buchan
- Derek Chubb
- Christine Kowbel

The Kitikmeot Inuit Association (KIA)

- John Roesch

The Indigenous and Northern Affairs Canada (INAC)

- Scott Burgess
- Karen Costello
- Sara Forte
- Felexce Ngwa
- Amjad Tariq

Fisheries and Ocean (DFO)

- Julie. Marentette

Environment and Climate Change Canada (ECCC)

- Mark Dahl

Natural Resources Canada (NRCan):

- Rachelle Besner

Northern Projects Development Office (NPMO):

- Tineka Simmons
- Agnes Simonflavy



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Technical Staff of the Nunavut Impact Review Board (NIRB)

- Kelli Gillard

Nunavut Chamber of Mines

- Elizabeth Kingston

Nunavut Water Board (NWB)

- David Hohnstein
- Karen Kharatyan
- Ida Porter
- Cindy Kieu (legal counsel to the NWB)