



Indigenous and
Northern Affairs Canada

Affaires autochtones
et du Nord Canada

TMAC Resources Inc. Amendment Application No. 1 to Water Licence No. 2AM- DOH1323

Technical Presentation
Nunavut Water Board Public Hearing
Cambridge Bay, NU

September 13, 2016



Canada

INAC·AANC



Outline

1. Overview
2. Roles and Responsibilities
3. Contribution to the Review Process
4. Technical Review
5. Security Management
6. Compliance Record
7. Consequential Amendments – Proposed Errata
8. Conclusion



Doris Camp, August 2015

INAC Photo



1. Overview

TMAC Resources Inc. (TMAC) has adequately addressed most of the recommendations made by Indigenous and Northern Development Canada (INAC or Department) through the submission of clarifications and commitments. INAC will continue to work with TMAC to resolve outstanding issues.

The Water Licence Amendment Application should be accepted with consideration of the Department's comments.



1. Overview

Security requirements under the Water Licence:

- \$13,090,000 – Current Water Licence security requirement (2013 Renewal).
- \$43,421,405 – INAC recommendation based on updated total reclamation cost estimate (2016 Update).

The Department is interested in continuing discussions with the Kitikmeot Inuit Association (land owner) on co-managing reclamation security.



2. Roles and Responsibilities

INAC's responsibilities, mandate, and obligations stem from legislation.

- *Nunavut Waters and Nunavut Surface Rights Tribunal Act and the Nunavut Water Regulations;*
- *The Department of Indian and Northern Development Act;*
- *The Nunavut Land Claims Agreement Act;*
- *The Territorial Lands Act and the associated regulations; and*
- *The Arctic Waters Pollution Prevention Act and the associated regulations.*



3. Contribution to the Review Process

Item	Contribution	Date
1	2015 Geotechnical Site Inspection	Aug. 25-28, 2015
2	Completeness Review and Initial Technical Assessment	Sept. 18, 2015
3	Reply to TMAC Response to Information Request	Oct. 30, 2015
4	Technical Review Submission	Dec. 8, 2015
5	2015 Closure Cost Estimate	Dec. 8, 2015
6	2015 Geotechnical Site Inspection Report	Dec. 23, 2015
7	Participation in NWB Technical Meeting	Jan. 28-29, 2016



3. Contribution to the Review Process

Item	Contribution	Date
8	Participation in Aquatic Effects Monitoring Workshop	Mar. 15, 2016
9	Participation in NWB meeting on outstanding technical issues	May 18, 2016
10	Participation in Management Plan Workshop	June 6-8, 2016
11	Comments on three management plans: a) Tailings Impoundment Area Operations, Maintenance and Surveillance Manual; b) Groundwater Management Plan; and c) Aquatic Effects Monitoring Plan and Proposed Surveillance Network Program Revisions	June 22, 2016



3. Contribution to the Review Process

Item	Contribution	Date
12	Participation in NWB Pre-Hearing Conference	June 24, 2016
13	2015 Reclamation Cost Estimate, 2016 Update	July 22, 2016
14	Comments on Tailings Impoundment Area Interim Dike Trade-off Study	July 25, 2016
15	Final Written Submission	Aug. 3, 2016



4. Technical Review

- a) Water Quality and Quantity Predictions
- b) Roberts Bay Discharge Monitoring
- c) Waste Rock and Tailings
- d) Mitigation Measures
- e) Water Treatment
- f) Management Plans and Reports
 - Plan Equivalencies
 - Reporting
- g) Closure and Reclamation Planning
 - Reclamation Cost Estimate, 2016 Update
 - Tailings Impoundment Area Final Cover Design
- h) Other

4. Technical Review

Summary

Issues	Total
Resolved	31
Resolved. Follow-up required.	24
Partially resolved. Follow-up required.	2
Unresolved	16
Total number of issues	73



4. Technical Review

INAC issue categories used in this presentation:

- **INAC IR:** Information Request
- **INAC TC:** Technical Comment
- **INAC R:** Recommendation on four submitted management plans:
 - Aquatic Effects Monitoring Plan and Proposed Surveillance Network Program Revisions;
 - Groundwater Management Plan;
 - Tailings Impoundment Area Operations, Maintenance and Surveillance Manual; and
 - Tailings Impoundment Area Interim Dike Trade-off Study

4. Technical Review

a) Water Quality and Quantity Predictions

Issues	Total
Resolved	9
Resolved. Follow-up required.	2
Partially resolved. Follow-up required.	0
Unresolved	1
Total number of issues	12



4. Technical Review

a) Water Quality and Quantity Predictions (continued)

Resolved. Follow-up required.

- INAC R10: Sulphate and major ions analysis
- INAC R22: Numerical analysis to demonstrate robustness of management plan

Unresolved

- INAC R8: Reference point monitoring

4. Technical Review

b) Roberts Bay Discharge Monitoring

Issues	Total
Resolved	1
Resolved. Follow-up required.	0
Partially resolved. Follow-up required.	0
Unresolved	0
Total number of issues	1

4. Technical Review

c) Waste Rock and Tailings

Issues	Total
Resolved	6
Resolved. Follow-up required.	5
Partially resolved. Follow-up required.	0
Unresolved	7
Total number of issues	18



Doris Lake and TIA North Dam, August 2015

INAC Photo



Tailings Impoundment Area, August 2015

INAC Photo



4. Technical Review

c) Waste Rock and Tailings (continued)

Resolved. Follow-up required.

- INAC IR10: Backfilling of Ammonia Nitrate Fuel Oil (ANFO) and hydrocarbon impacted materials
- INAC IR12: Excavated and available underground volumes
- INAC R1: References for Tailings Impoundment Area (TIA) Operations, Maintenance, and Surveillance Manual
- INAC R13: Interim Dike/filter as an integral feature of the TIA
- INAC R14: Geochemical characterization of tailings deposited in the TIA



4. Technical Review

c) Waste Rock and Tailings (continued)

Unresolved

- INAC R37: Deposition of tailings before and during Interim Dike construction
- INAC R38: Construction methodology of Interim Dike
- INAC R39: Construction of Interim Dike
- INAC R40: Timing of dike construction
- INAC R41: Characterization of tailings for filter design – 1
- INAC R42: Characterization of tailings for filter design – 2
- INAC R43: Interim Dike crest elevation

4. Technical Review

d) Mitigation Measures

Issues	Total
Resolved	2
Resolved. Follow-up required.	1
Partially resolved. Follow-up required.	0
Unresolved	1
Total number of issues	4



4. Technical Review

d) Mitigation Measures (continued)

Resolved. Follow-up required.

- INAC R6: Sediment sampling in Aquatic Effects Monitoring Plan

Unresolved

- INAC R18: Approval of dust suppressants for Tailings Impoundment Area

4. Technical Review

e) Water Treatment

Issues	Total
Resolved	4
Resolved. Follow-up Required.	0
Partially resolved. Follow-up required.	0
Unresolved	0
Total number of issues	4

4. Technical Review

f) Management Plans and Reports

Issues	Total
Resolved	4
Resolved. Follow-up required.	13
Partially resolved. Follow-up required.	2
Unresolved	7
Total number of issues	26



Doris Creek, August 2015

INAC Photo



4. Technical Review

f) Management Plans and Reports (continued)

Resolved. Follow-up required.

- INAC R2: Contingency plans for dewatering increased mine inflow
- INAC R3: Monitoring mine inflow water quality
- INAC R7: Water quality testing parameters
- INAC R19: Tailings Impoundment Area shoreline erosion monitoring transects
- INAC R23: Remedial stage actions for mine inflow management
- INAC R24: Mine groundwater discharge management
- INAC R25: Source of increased mine inflow



4. Technical Review

f) Management Plans and Reports (continued)

Resolved. Follow-up required (continued).

- INAC R27: Chlorophyll *a* monitoring in Aquatic Effects Monitoring Plan
- INAC R28: Monitoring during Care and Maintenance
- INAC R29: Monitoring station at Tailings Impoundment Area (TIA) discharge pump (TL-1)
- INAC R32: Water component of tailings discharged into TIA (TL-5)
- INAC R34: Underground mine water (TL-11 and TL-12)
- INAC R No Number: TIA Operations, Maintenance and Surveillance Manual responsible persons



4. Technical Review

f) Management Plans and Reports (continued)

Partially resolved. Follow-up required.

- INAC R20: Discharge of Tailings Impoundment Area water to Doris Creek
- INAC R21: Detoxified tailings management



4. Technical Review

f) Management Plans and Reports (continued)

Unresolved

- INAC R4: Downstream monitoring in Doris Creek
- INAC R11: Emergency Response Plan updates
- INAC R26: Doris Lake sampling locations
- INAC R30: Contact water disposal locations
- INAC R31: Doris Creek monitoring stations (TL-2, TL-3, TL-4)
- INAC R33: Sampling station TL-9 (efficacy of cyanide destruction)
- INAC R35: Discharge from sumps (ST-3, ST-4, ST-5, ST-6, ST-11 and ST-13)



4. Technical Review

f) Management Plans and Reports (continued)

Plan Equivalencies

- September 18, 2015 INAC recommended TMAC submit 11 additional management plans for review.
- June 4, 2016 TMAC submitted a letter identifying plan equivalencies.
- The Department is satisfied with TMAC's response, with the exception of addressing Annual Spring Freshet management.



4. Technical Review

f) Management Plans and Reports (continued)

Reporting

- TMAC suggested moving certain monitoring station requirements from the licence to management plans.
- TMAC should maintain a stand-alone document identifying monitoring programs incorporated into management plans and report data as would be done under Part J of the licence.

4. Technical Review

g) Closure and Reclamation Planning

Issues	Total
Resolved	4
Resolved. Follow-up required.	3
Partially resolved. Follow-up required.	0
Unresolved	0
Total number of issues	7



4. Technical Review

g) Closure and Reclamation Planning (continued)

Resolved. Follow-up required.

- INAC TC4: Tailings beach source terms
- INAC TC10: Preventing water ponding along rock fill pads
- INAC R9: Doris outflow creek water sampling



4. Technical Review

g) Closure and Reclamation Planning (continued)

Reclamation Cost Estimate

- \$13,090,000 – Current Water Licence security requirement (2013 Renewal).
- \$43,421,405 – INAC's updated total reclamation cost estimate (2016 Update).



4. Technical Review

g) Closure and Reclamation Planning (continued)

Tailings Impoundment Area Final Cover Design

- TMAC committed to provide a final cover design for its Tailings Impoundment Area prior to construction (INAC IR14). Adequate time is needed for review and approval.
- The final cover design should ensure long-term physical and chemical stability of the Tailing Impoundment Area.



4. Technical Review

h) Other

Resolved

INAC IR16: Madrid Advanced Exploration Project Cumulative Impacts

- The Madrid Advanced Exploration Project is not included in the scope of the Type A Water Licence Amendment Application.
- The Madrid Advanced Exploration Project's Type B Water Licence Application requires further review.



5. Security Management

- The Department is interested in continuing discussions with the Kitikmeot Inuit Association on co-managing reclamation security.
- Sufficient reclamation security is required under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* to remediate the site in an unforeseen and undesired situation whereby the operator cannot fulfill this responsibility and it falls on the Crown to do so.
- In order for the total reclamation security amount to be discounted in the Water Licence, evidence must be presented that clearly shows that the reclamation security instrument held by the Kitikmeot Inuit Association is considered equal (in legal status and purpose) to the form that would be held by the Minister.



6. Compliance Record

Regular inspections carried out by Departmental Water Resource Officers who are designated as inspectors under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*.

April 5-7, 2016 inspection findings:

1. Water use for winter road construction reported separately from licensed water usage.
2. Need for seasonal backhauls of hazardous waste materials.



7. Consequential Amendments – Proposed Errata

Table of errata included in August 3, 2016 final written submission presents suggested revisions to the existing Water Licence (minor drafting errors comprising of grammatical, spelling, and incorrect references).



8. Conclusion

The Water Licence Amendment Application should be accepted with consideration of the Department's comments.

Security requirements under the Water Licence:

- \$13,090,000 – Current Water Licence security requirement (2013 Renewal).
- \$43,421,405 – INAC recommendation based on updated total reclamation cost estimate (2016 Update).

The Department is interested in continuing discussions with the Kitikmeot Inuit Association on co-managing reclamation security.



Thank you

INAC Photo