



Tantalum Mining Corporation of Canada, Limited  
Bernic Lake  
Box 2000  
Lac du Bonnet, Manitoba  
MB R0E 1A0  
Canada

May 31, 2021

Ms. Jennifer Winsor  
Environmental Approvals Branch  
Department of Sustainable Development  
1007 Century Street  
Winnipeg, MB.  
R3H 0W4

Dear Ms. Winsor:

**Re: Tantalum Mining Corporation of Canada Bernic Lake Mine – *Environment Act* Proposal Report (2021)**

Tantalum Mining Corporation of Canada (TANCO) is submitting this *Environment Act* Proposal as requested by the Environmental Approvals Branch in order to update the TANCO Bernic Lake Mine's *Environment Act* License. The Licence update is required so it is reflective of current operations and maintenance along with monitoring and reporting requirements at the Facility. There have been 30 Notice of Alterations submitted with respect to its current Licence since it was issued in 1983 that need to be consolidated as part of this process.

Within this application, TANCO is also submitting two additional alterations for approval so that once the Licence is updated; it will hopefully reflect operations at the Facility for the foreseeable future. These notices include the Mine's intentions to install a bag filling system in the mill to increase the Facilities packaging capacity for spodumene products and changes to its Cesium Processing Facility in Bernic Lake, Manitoba which will create a processing circuit to supply dry cesium crystals to the North American Market. This includes the production of two new products; cesium nitrate and cesium carbonate crystals through the conversion of cesium hydroxide, a product that is already produced at the TANCO facility.

Please find enclosed, the information required for the alteration regulatory process that details TANCO's proposed alterations at the Bernic Lake Facility. The first part of the report summarizes the notice of alterations submitted since the Licence was originally issued in 1983. The following two sections describe the environmental and human health effects associated with the two additional alterations proposed in this EAP as well as mitigation measures and follow-up plans regarding monitoring and reporting.



Tantalum Mining Corporation of Canada, Limited  
Bernic Lake  
Box 2000  
Lac du Bonnet, Manitoba  
MB R0E 1A0  
Canada

If you have any questions, or require further information on the report, please do not hesitate to contact me.

Sincerely,



Date: May 31, 2021

**Joey Champagne**  
Facility General Manager  
Tantalum Mining Corporation of Canada Limited



## Tantalum Mining Corporation of Canada – Bernic Lake Mine

### *Environmental Act Proposal Report (2021)*

---



Date:

May 31, 2021



---

**TANCO Bernic Lake Mine  
Environment Act Proposal Report (2021)**

Prepared and reviewed by:

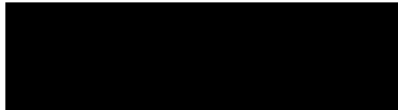


Date: May 31, 2021

---

Jerry White, M.Sc.  
Environmental Specialist  
Tantalum Mining Corporation of Canada

Reviewed by:



Date: May 31, 2021

Process/Projects Manager  
Tantalum Mining Corporation of Canada

**Disclaimer s**

The information presented in this document with respect to the Cesium Crystals Project was derived from a conceptual process design based on small batch trials. There may be modifications to the process design at the onset of commercial production in order to meet product quality specifications. If any design changes affect the overall impact of the proposed alteration in this assessment, then a notice will be sent to Manitoba Sustainable Development detailing those effects.



---

## Executive Summary

This *Environment Act* Proposal Report is intended to provide the Director with sufficient information to update the *Environment Act* Licence for the Tantalum Mining Corporation of Canada (TANCO) Mine in Bernic Lake, Manitoba as required under the *Environment Act* (S.14(1)). This document contains information outlining the NoAs that must be consolidated into the updated Licence as well as descriptions of the two additional alteration proposed at the development, a description of the environmental and human health effects associated with these proposed alterations, mitigation measures to protect the environment and human health along with residual environmental effects and follow-up plans for the development including monitoring and reporting requirements.

There have been 30 Notice of Alterations submitted to the Director detailing proposed alterations to the operations, maintenance, monitoring and reporting requirements at the Mine since the Licence was issued in 1983. The environmental and human health effects of these alterations were assessed and approved by the Environmental Approvals Branch (EAB) at Manitoba Sustainable Development prior to implementation at the Facility. Mitigation measures to protect the environment and human health and follow-up plans including monitoring and reporting requirements were included with each application and were implemented at the Facility as required upon approval of each alteration.

There is a high North American demand for dry cesium nitrate crystals used as a colorant and oxidizer in pyrotechnic compositions (decoys and illumination flares) and cesium carbonate crystals used as a stable base in organic synthesis and in the production of polymer solar cells. TANCO currently has a toll manufacturing agreement with an American company in which TANCO supplies a 50% Cesium Carbonate solution which the third-party processes into cesium-based crystals. The proposed increase in production of cesium nitrate crystals to meet market demands alone would exceed the toll manufacturer's current capacity and therefore, TANCO is developing a processing circuit at the Bernic Lake Mine to provide capacity to meet market demands for both cesium nitrate and cesium carbonate crystals. Cesium hydroxide solution which is currently produced at the CPF would be converted to cesium nitrate crystals through the addition of nitric acid. Cesium carbonate solution is already produced at the CPF by converting cesium hydroxide solution through the addition of carbon dioxide gas. The production of cesium carbonate crystals involves a slightly altered process to transform the solution into a dry crystal state.

The proposed alteration includes the installation of additional wet-processing assets (reaction vessel, stirring vessel, centrifuge, filters, etc.) and drying and packaging equipment within the existing footprint of the CPF. The new processing circuit will be designed to meet a five year sales forecast of approximately 80 metric tonnes (MT) per year (40 MT cesium nitrate and 40 MT cesium carbonate) by processing approximately six to eight 1000 kg batches per month based on market demands. The proposed expansion for the production of cesium-based crystals will not exceed production limits within the Facilities *Environment Act* Licence (No 973).



Environmental effects associated with the physical environment, emissions, water resources and ecological aspects remain virtually unchanged as the proposed development is contained within the current footprint of the CPF and current measures used at the facility are sufficient to mitigate any additional environmental effects. No anticipated increase in environmental effects should be realized with regard to water usage as any water required for processing or cooling will be taken from water currently circulated through the facility. The process design does not require any transfer of water to the West Tailings Management Area (TMA) which will result in no expected change in the volume or quality of effluent discharged from the tailings facility. Effluent quality will continue to be monitored to ensure it remains within regulatory limits outlined in the *Metal and Diamond Mining Effluent Regulations* (Government of Canada 2002) and the Mine's *Environment Act* Licence through treatment in the Tailings Management Area at the facility.

Market demand for lithium has recently increased and the TANCO Bernic Lake Mine submitted a NoA detailing the Facilities plans to resume spodumene mining and milling operations in the third quarter of 2021 which was approved by the EAB on April 26, 2021. The majority of activities required to resume spodumene operations revolve around the refurbishment of the existing infrastructure; however, in order to meet a production target of 2,000 to 2,500 tonnes/month, a new bag filling system must be designed and installed at the Facility. The proposed alteration includes the installation of a bag filling system designed by Palmatic Process within an existing structure on the site. The environmental and human health effects associated with the proposed alteration to the lithium packaging circuit are expected to be insignificant and any possible effects can be mitigate through Environmental Policies and Health and Safety Guidelines currently in place at the Facility.

The update to the Facility's *Environment Act* Licence will have no effect on the environment above existing conditions as all revisions to the Licence have received approval by the Environmental Assessments Branch and are part of the current operation, maintenance, monitoring and reporting requirements for the Facility except for the Cesium Crystals processing and lithium packaging circuits alterations proposed within this EAP.

The proposed alterations to the cesium crystals processing circuit in the CPF and the spodumene bag filling system at the TANCO Bernic Lake Mine are expected to be insignificant as any potential negative environmental and human health effects resulting from the alteration can be mitigated through TANCO's environmental and health and safety policies currently in place at the Mine.

# Table of Contents

<b>1. Introduction .....</b>	<b>1</b>
1.1 Objectives.....	1
1.2 Environmental Assessment Criteria.....	2
<b>2. Environment Act Licence Update.....</b>	<b>2</b>
<b>3. Cesium Crystals Alteration .....</b>	<b>6</b>
3.1 Proposed Alteration .....	6
3.2 Product Alterations .....	6
3.2.1 Cesium Nitrate.....	6
3.2.2 Cesium Carbonate .....	6
3.3 Physical Alterations .....	7
3.4 Process Alterations.....	7
3.4.1 Cesium Nitrate.....	7
3.4.2 Cesium Carbonate .....	11
3.4.3 Raw Materials.....	12
3.4.4 Processing Reagents .....	12
3.5 Environmental Assessment .....	14
3.5.1 Physical Environment.....	14
3.5.2 Emissions .....	17
3.5.3 Water Resources.....	18
3.5.4 Ecological .....	19
3.5.5 Sociological .....	20
<b>4. Lithium Packaging Circuit Alteration .....</b>	<b>21</b>
4.1 Proposed Alteration .....	21
4.2 Product Alterations .....	21
4.3 Physical Alterations .....	21
4.4 Process Alterations.....	21
4.1 Environmental Assessment .....	23
4.1.1 Physical Environment.....	23
4.1.2 Emissions .....	23
4.1.3 Water Resources.....	26
4.1.4 Ecological .....	27
4.1.5 Sociological .....	27
<b>5. Conclusions.....</b>	<b>28</b>
<b>6. References .....</b>	<b>30</b>



---

## Appendices

Appendix A                      Environment Act Licence Notice of Alteration Approvals

### List of Figures

Figure 1	TANCO Mine site plan.....	8
Figure 2	Proposed processing circuit engineering drawing.....	9
Figure 3	CPF cesium crystals processing circuit simplified process flow diagram.....	10
Figure 5	Process diagram big bag filling station (Palmatic Process 2021). ....	22

### List of Tables

Table 1	Significance Criteria and Levels of Significance.....	3
Table 2	Summary of alterations submitted by TANCO for the Bernic Lake Mine under Order No. 973. ....	4
Table 3	Raw materials and chemical reagents batch (1000 kg of crystals), monthly (7 batches) and annual (40 MT of cesium nitrate and 40 MT of cesium carbonate crystals) consumption estimated for the proposed additional processing circuit at the TANCO Bernic Lake Mine CPF.....	13
Table 4	Summary of potential effects associated with the proposed cesium crystals alteration at the TANCO Bernic Lake Mine. ....	15
Table 5	Summary of potential effects associated with the proposed lithium packaging circuit alteration at the TANCO Bernic Lake Mine. ....	24





---

# 1. Introduction

## 1.1 Objectives

TANCO's vision is to be a prosperous mining, milling and chemical processing facility through the development of our people, our resources and our community. Site objectives focus on strategic priorities of building strong foundations, striving for operational excellence and development of our site resources. There is currently a strong North American market demand for cesium nitrate and cesium carbonate crystals and a global demand for lithium products which TANCO believes provides a unique opportunity for growth and development that aligns with our company's vision and site objectives.

This *Environment Act* Proposal (EAP) is intended to notify the Director of proposed alterations to *Environmental Act* Licence No. 973 for the TANCO Bernic Lake Mine as required under the *Environment Act* (S.14(1); Government of Manitoba 2012). This EAP is also intended to provide an opportunity to update the Facility's *Environment Act* Licence which has not been revised since it was issued in 1983. Since 1983, there have been 30 notice of alterations (NoA) submitted for approval with the Environmental Approvals Branch of which 29 have been approved and 27 have been implemented which are not reflected in the Facility's current Licence.

This report provides details for the production of two new products including proposed additions to the processing circuit at the CPF. The document describes any potential environmental effects that are anticipated through the addition of wet- and dry-processing assets within the footprint of the CPF. It also provides supporting information describing the physical changes at the Mine and changes to process including the type and quantity of raw materials (ore and process water) and chemical reagents as a result of the installation of the new processing circuit. It also quantifies the anticipated change in environmental effects at the Mine as compared to pre-alteration levels which includes an environmental assessment resulting from the alteration on the receiving environment.

This report also provide details for the design and installation of a new bag filling system at the Facility so that the packaging of lithium concentrate can efficiently meet the targeted production rate of 2,000 to 2,500 tonnes/month. The document describes any potential environmental effects that are anticipated through the installation of the bag filling system within the Spodumene Concentration Plant (SCP) at the Mine. It also provides supporting information describing the physical changes at the Mine and changes to process as a result of the installation of the new packaging circuit. It also quantifies the anticipated change in environmental effects at the Mine as compared to pre-alteration levels which includes an environmental assessment resulting from the alteration on the receiving environment.



---

## 1.2 Environmental Assessment Criteria

Environmental significance is commonly considered in the context of its magnitude, geographic extent, duration, frequency, degree of reversibility and possibility of occurrence or any combination of these factors.

The significance criteria used in this analysis of the Cesium Crystals Processing Circuit and Lithium Packaging Circuit alterations are defined in Table 1, as well as a description of the significance level (I to III) for each criterion. Although presented as distinct levels in Table 1, significance can be a gradient between not significant (Level I) to potentially significant (Level II) to very significant (Level III).

## 2. Environment Act Licence Update

Order No. 973 for the Tantalum Mining Corporation of Canada Bernic Lake Mine was issued on February 4, 1983 by the Clean Environment Commission replacing the Order No. 396 which was issued on October 21, 1974. The order detailed the Mine's expansion of its mill capacity and the construction and operation of the SCP including monitoring and reporting requirements.

Since the Licence was first issued, there have been 30 NoAs submitted with respect to the Licence. A summary of the submissions is provided in Table 2 and copies of approved alterations are provided in Appendix A. A site re-licencing EAP (NoA #19) was submitted and approved by the EAB on October 31, 2011 which provided details regarding the Facilities operations, maintenance and monitoring and reporting requirements as well as existing environmental conditions at the site. Since that time 10 additional NoAs have been submitted, 1 of which was cancelled and 2 which were not implemented, that must also be incorporated into the updated Licence.

TANCO would also like to take this opportunity to notify the Director that although NoAs #23 and #24 related to the Cable Bolting Project were approved, the Mine would like to cancel the alterations as they have been deemed the alterations no longer necessary.



**Table 1 Significance Criteria and Levels of Significance.**

Significance Level	Context		Magnitude / Geographic Extent	Duration / Frequency	Likelihood of Occurrence	Reversibility
	Ecological / Biophysical	Socio-Cultural				
I	No meaningful adverse biophysical effects	No meaningful adverse effects to socio-economic interests	Magnitude and/or geographical extent of impact(s) considered to be minor, and primarily or solely confined to Mine site	Construction phase of Mine, or during closure phase(s)	Unlikely to Occur	Readily reversible
II	Adverse effects involve commonplace species or communities	Adverse effects would involve meaningful inconvenience to local residents or land users	Magnitude and/or geographical extent of impact(s) have the potential to meaningfully affect off-property residents, lands or receiving waters	Life of Mine	Could reasonably be expected to occur	Can be reversed with difficulty
III	Adverse effects involve locally or regionally important species or communities	Adverse effects to livelihoods and/or property values	Magnitude and/or geographical extent of impact(s) expected to meaningfully affect off-property residents, lands or receiving waters	Extends beyond life of Mine	Will occur, or is likely to occur	Not reversible



**Table 2 Summary of alterations submitted by TANCO for the Bernic Lake Mine under Order No. 973.**

<b>Approval Date</b>	<b>NoA</b>	<b>Alteration</b>	<b>Implemented</b>
22-Sep-92	1	Application to conduct dam raises and to deposit tailings into the North Bay	Yes
01-Mar-95	2	Application to build and operate CsFo pilot facility	Yes
04-Apr-97	3	Application to operate the CsFo pilot facility for up to 2 years	Yes
08-Jul-98	4	Application to construct and operate a second lined waste disposal cell for CsFo plant	Yes
26-Jun-98	5	Application to convert CsFo pilot plant to a commercial facility	Yes
04-Jul-01	6	Application to transfer residue contents from cell 1 into the Old TMA. (Cell 2 reaching capacity)	Yes
24-Jul-01	7	Application to implement alterations to CPF to 60 bbls/mnth of conventional cesium products	Yes
17-May-02	8	Application to for temporary transfer of 500 cu/mt of fluids from cell#2 to cell#1	Yes
24-Jul-02	9	Application to transfer Cell #2 residue in old TMA	Yes
02-Jun-04	10	Application to transfer Cell #1 residue in old TMA	Yes
10-May-05	11	Application to transfer Cell #2 residue in old TMA	Yes
16-May-06	12	Application to transfer Cell #1 residue in old TMA	Yes
24-May-07	13	Application to transfer Cell #2 residue in old TMA	Yes
08-Feb-08	14	Application to transfer Cell #2 residue in old TMA	Yes
02-Jul-08	15	Application to transfer Cell #1 residue in old TMA	Yes
02-Sep-09	16	Application to re-commission Cell #1	Yes
15-Sep-09	17	Application to transfer Cell #2 residue in old TMA	Yes
20-Aug-02	18	Application to raise the existing Main Dam and perimeter dykes, constructing a new dyke and access road	Yes
02-Sep-11	19	Application to update Licence and consolidate past NOA's.	No
Cancelled	20	Application for TANCO Mine Crown Pillar Mitigation Project Description - Request withdrawn before approval granted.	No
24-Oct-13	21	Application for temporary access road and vehicle turnaround area construction for Crown Pillar Mitigation Project – Road partially completed and then decommissioned after the cancellation of NoA #20	Yes
29-Sep-14	22	Project West	Yes



**Table 2(cont'd) Summary of alterations submitted by TANCO for the Bernic Lake Mine under Order No. 973.**

<b>Approval Date</b>	<b>NoA</b>	<b>Alteration</b>	<b>Implemented</b>
04-Jan-16	23	Application for TANCO Mine Cable Bolting Project	No
25-Apr-16	24	Application for TANCO Mine Cable Bolting Project Modification	No
10-Aug-16	25	Application for TANCO Mine West Discharge Compliance Project	Yes
30-Apr-20	26	Application for TANCO CPF Containment Cell #1 Effluent Transfer	Yes
15-Oct-20	27	Application for TANCO CPF plate and membrane filter press	Yes
20-Nov-20	28	Application for TANCO CPF Containment Cell #1 Effluent Transfer	Yes
26-Apr-21	29	Application to restart Spodumene Mining and Milling Operations	Yes
Not Approved	30	Application for Cesium Crystals Project – EAB requested EAP Submission to update Licence	No
Pending Approval	31	Application for Licence Update, Cesium Crystals Project, Lithium Packaging Circuit Project	No



---

## 3. Cesium Crystals Alteration

### 3.1 Proposed Alteration

The proposed alteration includes the addition of two new products to the list of substances manufactured at the facility and the installation of an additional processing circuit in the CPF. TANCO will remain within its production limits outlined in its *Environmental Act* Licence with the proposed expansion and plan to produce approximately 40 MT of cesium nitrate crystals and 40 MT of cesium carbonate crystals per year depending on market demand.

The proposed alteration to the *Environmental Act* Licence is in response to North American market demand for both cesium nitrate and cesium carbonate crystals. TANCO has a toll manufacturing contract with an American company to refine cesium carbonate supplied by the Mine into cesium nitrate crystals but increased production to meet the cesium nitrate demand alone exceeds the toll manufacturer's capacity. With the current economic conditions for the two products, TANCO believes it has a unique economic opportunity for further development of its resources, its employees and the surrounding community.

### 3.2 Product Alterations

#### 3.2.1 Cesium Nitrate

Cesium nitrate (UN1451; CAS 7789-18-6) is a colourless crystalline solid that is soluble in water. It is a strong oxidizing material and may burst into flames on contact with organic materials (NCBI 2021a). It has both industrial and consumer uses as a pyrotechnic in flares. Cesium nitrate is listed on the Domestic Substances List (DSL) and does not require notification under the New Substances Notification Regulations. The *Transportation of Dangerous Goods Regulations* lists cesium nitrate in Class 5.1 as an oxidizing substance which consists of substances that yield oxygen thereby causing or contributing to the combustion of other material (Government of Canada 2001). It is packing group III which indicates a minor degree of danger under the *Transportation of Dangerous Goods Regulations* (Transport Canada 2021). Cesium nitrate is not listed in Schedule 1 of the *Environmental Emergency Regulations* (Government of Canada 2019) and therefore, does not require an emergency response assistance plan.

#### 3.2.2 Cesium Carbonate

Cesium carbonate (CAS 534-17-8) is a white hygroscopic powder that is soluble in water. It is used as an intermediary and process regulator in organic synthesis (NCBI 2021b). Thermal annealing of cesium carbonate has also been used in the production of energy efficient polymer solar cells with an extended life-time (Huang et al. 2007). Cesium carbonate is listed on the Domestic Substances List (DSL) and does not require notification under the New Substances Notification Regulations. It is not regulated under the *Transportation of Dangerous Goods Act* (Government of Canada 2001). Cesium carbonate is not listed in



Schedule 1 of the *Environmental Emergency Regulations* (Government of Canada 2019) and therefore, does not require an emergency response plan.

### 3.3 Physical Alterations

The wet- and dry-processing assets will be installed within the CPF on the second floor above the existing bulk storage tanks (Figure 1; Figure 2).

The new processing circuit involves the installation of the following components:

- Reactor Vessel (T1)
- Recrystallization Vessel (T2)
- Filtrate Recovery Tank (T3)
- Acid Metering Pump (P2)
- Slurry Pump (P3)
- Filter Press
- Centrifuge (F1)
- Hoist
- Dryer (D1)
- Intermediate Mixing Bin
- Mill (M1)
- Air Classifier (AC1)
- Mixing Vessel (T4)
- Fines Bin (T5)
- Dust Collector (DC1)
- Scale Load-out (WT1)

The new processing circuit will have the flexibility to produce both cesium nitrate and cesium carbonate crystals from the same assets.

### 3.4 Process Alterations

There will be no alterations to the current solution processing circuits for cesium formate, cesium sulphate, cesium hydroxide and cesium carbonate. The proposed processing circuit will operate as a separate circuit to the existing processing circuits.

#### 3.4.1 Cesium Nitrate

High purity cesium hydroxide from the existing processing circuits will be directed to the agitated reactor vessel where nitric acid (67%) will be metered into the solution at a controlled rate to avoid producing excessive fuming or effervescence until a pH between 6.0 and 6.5 is reached (Figure 3). At this point, the reaction between the two compounds will be considered complete. The liquor is then stirred and heated to a boil in the tank with external heating coils until the cesium nitrate solution has been reduced

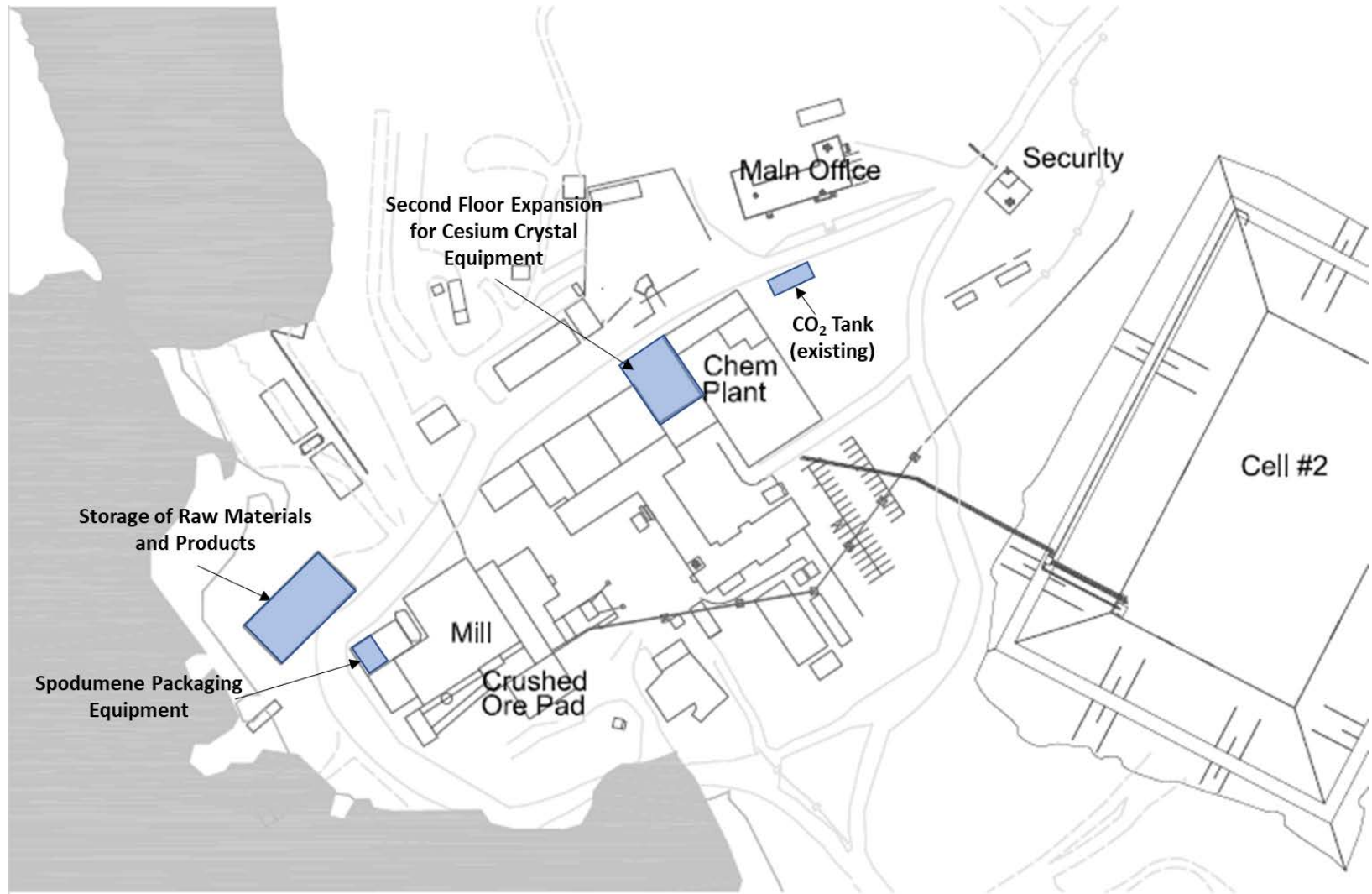


Figure 1 TANCO Mine site plan.



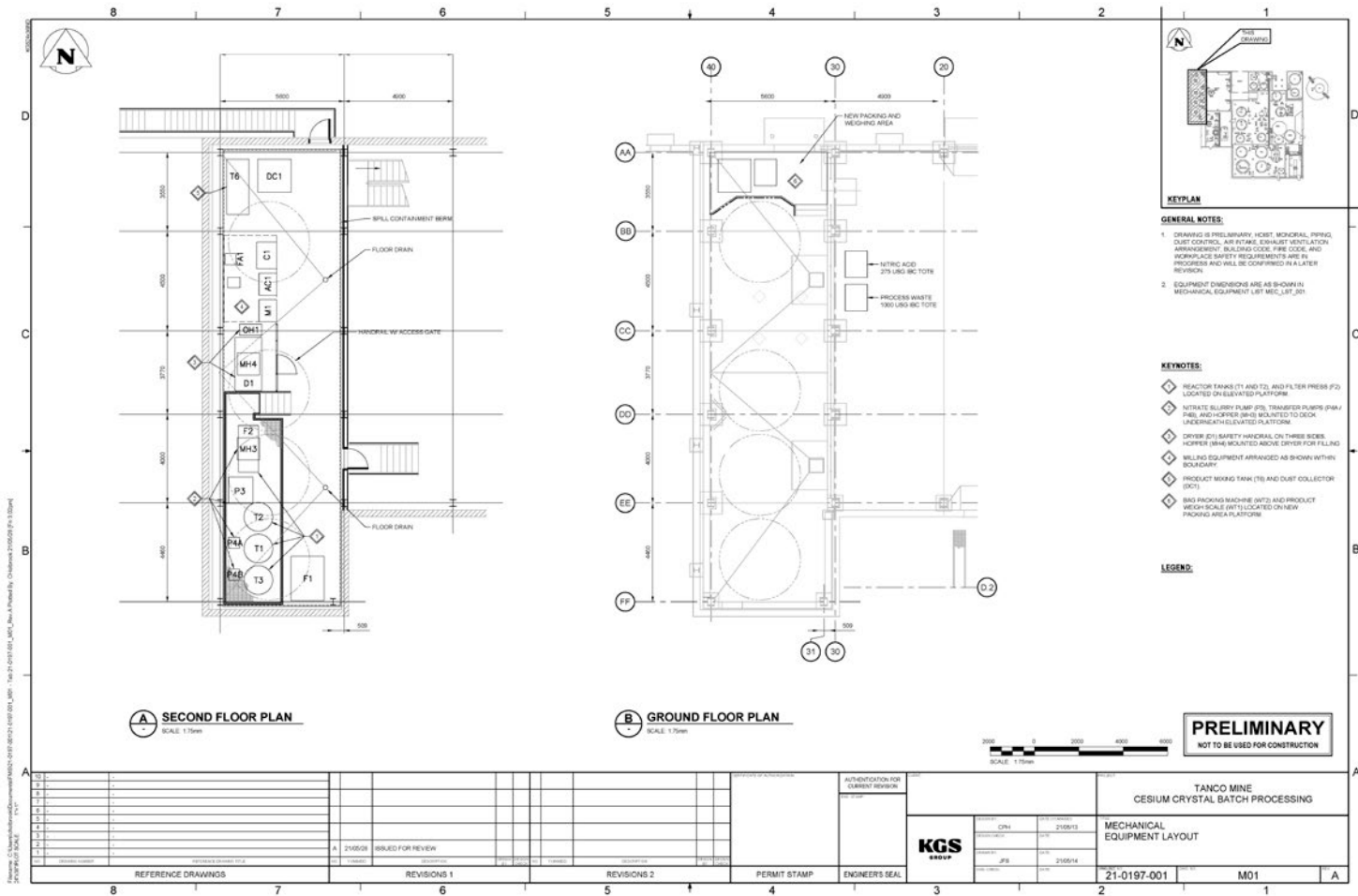


Figure 2 Proposed processing circuit engineering drawing.





to approximately 50% of its initial volume. The solution will then be cooled to a target of 10°C (20°C in the summer), which will induce the crystallization of cesium nitrate.

Part (1/3 to 1/4) of the slurry in the recrystallization vessel will be transferred to the inflow pipe of the open top vertical centrifuge by gravity where it will be cold filtered until sufficient liquid has been extracted from the filter cake to meet the calculated maximum weight. The centrifuge will continue to spin for a set period of time to allow for the filtrate to separate. The filter cake is then removed manually with the overhead crane hoist and the process will be repeated until the remaining slurry in the vessel has been processed.

The filtrate extracted by the centrifuge will be either further condensed to improve the recoveries of the process or disposed of as wastewater at a licensed hazardous waste facility if there are significant impurities. The solid cesium nitrate crystals in the filter cake will then be transferred to either the dryer for continued processing or to a second recrystallization vessel, if further purification is required.

The cesium nitrate crystals that have met quality standards will be transferred to a double-cone dryer to remove any remaining moisture. The dried cesium nitrate crystals will then be cooled using lake water and transferred to an intermediate vessel equipped with an agitator to prevent clumping.

The dried crystals will then be milled to meet the specified moisture and particle size distribution (PSD) standards. Any crystals (fines) that do not meet PSD standards will be recycled back into the circuit for reprocessing until the desired standards can be achieved. An anti-caking agent will be added to the solids after grinding to prevent the material from clumping. Packaging will consist of placing 22.5 kg of the product in a 20 L UN certified pail with a 4 mm polyethylene liner.

### **3.4.2 Cesium Carbonate**

High purity cesium hydroxide from the existing processing circuits will be directed to the agitated reactor vessel where carbon dioxide gas will be metered into the solution at a controlled rate to avoid pressure build up in the tank until a pH of 12.0 is reached (Figure 3). The solution will then be pumped through the filter press to remove cesium bicarbonate as a solid cake.

The filter cake from the reactor vessel will then be sent to the dryer provided it meets quality standards, while the recovered filtrate will be sent to a duplicate reactor vessel where the liquor will be heated to 120°C in order to concentrate the mixture. Carbon dioxide will then be reintroduced to the mixture where a pressure of 0.5 MPa will be maintained for 30 minutes. After 30 minutes, the temperature will be raised to 135°C to boil down the mixture after which it will be cooled to ambient temperature.

The cesium bicarbonate mixture will be gravity-fed into a centrifuge in weight-limited batches to separate the solids from the liquids. The solids will be transferred to the dryer to convert the cesium bicarbonates into cesium carbonates and to remove the remaining moisture, while, the filtrate from the centrifuge will be collected to be potentially reprocessed in a subsequent batch. Depending on the thickness of the slurry a filter plate may be used in lieu of the centrifuge to separate the solids and liquids.



After the drying is completed, the cesium carbonate crystals will be transferred into an intermediate mixing tank where it will be stirred until it is sent to another mixing tank for packing. Packaging will consist of placing 22.5 kg of the product in a 20 L UN certified pail with a 4 mm polyethylene liner.

### 3.4.3 Raw Materials

There will no additional increase in ore (pollucite) utilization as a result of the cesium crystals production. The raw material for the production of cesium nitrate and cesium carbonate crystals will be pulled from the Mine's existing purified products inventory.

Water used for cooling will be removed from the stream already extracted and cycled through the facility and returned to Bernic Lake following treatment in the West TMA. The majority of water required in the production of cesium nitrate and cesium carbonate crystals will be contained within the reagents (aqueous cesium hydroxide and nitric acid); however, an additional ½ litre of water per litre of cesium hydroxide solution must also be added to calm the chemical reaction during the production of cesium nitrate crystals. Water added as a reagent will be mostly generated from processes within the CPF as steam generated during production will be condensed and reused which provides a purified source for the chemical reactions. Any additional water that will be required for chemical reactions will be drawn from the lake. Excess process condensate will be transferred into the Containment Cells and recycled in the production of other cesium products. Water utilized in the process will be mostly boiled off as steam. A small amount (~2,500 kg per year) of water removed as filtrate will eventually be transferred to the Containment Cells from the cesium carbonate crystals circuit or an external Licenced Hazardous Waste Facility (Miller Environmental Corporation, Winnipeg MB) from the cesium nitrate circuit once impurity levels become too high for reuse in the process.

### 3.4.4 Processing Reagents

Aqueous Cesium hydroxide (50%; UN2681; CAS 21351-79-1) produced at the facility will be the source of cesium in the chemical reactions for the production of the two new substances (Table 3). Cesium hydroxide is not listed in Schedule 1 of the *Environmental Emergency Regulations* (Government of Canada 2019) but is listed as a dangerous good in Schedule 1 of *The Transportation of Dangerous Goods Regulations* in Class 8 as a corrosive substance (Government of Canada 2001). It is packing group III which indicates a minor degree of danger under the *Transportation of Dangerous Goods Regulations* (Transport Canada 2021). All current TANCO Health and Safety Guidelines will be strictly adhered to with respect of the additional storage, handling and transportation of cesium hydroxide in the new processing circuit.

Carbon dioxide gas (UN1013; CAS 124-38-9) will be used in reactions with cesium hydroxide in the production of cesium carbonate crystals. Carbon dioxide gas is not listed in Schedule 1 of the *Environmental Emergency Regulations* (Government of Canada 2019) but is listed as a dangerous good in Schedule 1 of *The Transportation of Dangerous Goods Regulations* in Class 2.2 as a non-flammable and non-toxic gases transported at an absolute pressure greater than or equal to 280 kPa at 20°C (Government of Canada 2001). All federal and provincial regulations and TANCO Health and Safety



**Table 3** Raw materials and chemical reagents batch (1000 kg of crystals), monthly (7 batches) and annual (40 MT of cesium nitrate and 40 MT of cesium carbonate crystals) consumption estimated for the proposed additional processing circuit at the TANCO Bernic Lake Mine CPF.

<b>Substance</b>	<b>Batch</b>	<b>Monthly</b>	<b>Annual</b>
<b><i>Cesium nitrate</i></b>			
CsOH (aq) kg	885	6195	35400
HNO <sub>3</sub> (aq)	372	2604	14880
SiO <sub>2</sub> (colloidal)	1.5	10.5	60
<b><i>Cesium Carbonate</i></b>			
CsOH (aq)	920	6441	36808
CO <sub>2</sub> (g)	270	1891	10806



Guidelines will be strictly adhered to with respect to the storage, handling and transportation of carbon dioxide gas in the new processing circuit. A licenced contractor (Praxair, Winnipeg, MB) will be used for the transportation of carbon dioxide gas to the facility.

The operation of the proposed processing circuit will require the use of additional chemical reagents above those used to operate the existing processing circuits in the CPF. This includes nitric acid and colloidal silicon dioxide which will be used in the production of cesium nitrate crystals.

A solution of 67% nitric acid (non-fuming; UN2031; CAS 7697-37-2) will be used in the production of cesium nitrate. Nitric acid is listed in Schedule 1 Part 2 of the *Environmental Emergency Regulations* (Government of Canada 2019) but will be used at a concentration below the concentration regulated (80% mass/mass) and will only be stored in limited quantities well below the minimum quantity (6.80 tonnes) requiring an emergency response plan. It is also listed in Schedule 1 of *The Transportation of Dangerous Goods Regulations* in Class 8 as a corrosive substance (Government of Canada 2001). It is packing group II which indicates a moderate degree of danger under the *Transportation of Dangerous Goods Regulations* (Transport Canada 2021). All federal and provincial regulations and TANCO Health and Safety Guidelines will be strictly adhered to with respect to the storage, handling and transportation of nitric acid in the new processing circuit. A licenced contractor (Big Freight Systems, Winnipeg MB) will be used for the transportation of nitric acid to the facility and any nitric acid waste will be disposed of according to the *Hazardous Waste Regulations* (Government of Manitoba 2015) at a Licenced Hazardous Waste Facility (Miller Environmental Corporation, Winnipeg MB).

Silicon dioxide (colloidal) will be used as an anti-caking agent in the production of the crystals. Silicon dioxide is not listed in Schedule 1 of the *Environmental Emergency Regulations* (Government of Canada 2019) or as a dangerous good in Schedule 1 of *The Transportation of Dangerous Goods Regulations*. All precautions outlined on the safety data sheet for silicon dioxide will be followed with respect to the safe storage, handling and transportation of the substance. Silicon dioxide will be transported to the facility by Praxair.

## **3.5 Environmental Assessment**

### **3.5.1 Physical Environment**

#### ***Topography***

The proposed alteration will be entirely contained within the current structure of the CPF, therefore, no change in environmental effects from current conditions with respect to site topography are associate the proposed development (Table 4). The level of significance associated with the processing circuit alteration with respect to topography is deemed to be no higher than Level I. Accordingly, the summary evaluation for this potential impact is deemed to be not significant.



**Table 4 Summary of potential effects associated with the proposed cesium crystals alteration at the TANCO Bernic Lake Mine.**

Classification of Potential Effect	Alteration Phase	Potential Effect	Magnitude of Effect	Direction of Effect	Duration of Effect	Frequency of Effect	Scope of Effect	Mitigation Measures	Residual Effects	Reversibility	Significance
<b>Physical</b>											
Topography	Construction	Modification in topography	Negligible	Negative	Long Term	None	Project Site	Not applicable – No construction activity outside any existing structures.	Negligible	Reversible	Not significant
Soils	Construction	Soil contamination	Negligible	Negative	Long Term	Rare	Project Site	Clean up any hydrocarbon or chemical spills immediately. Use current best practices in material handling and appropriate containment measures.	Negligible	Reversible	Not significant
	Operation	Soil contamination	Negligible	Negative	Long Term	Rare	Project Site		Negligible	Reversible	Not significant
Geology	Construction	Bedrock excavation	Negligible	Negative	Long Term	None	Project Site	Not applicable – No construction activity outside any existing structures.	Negligible	Reversible	Not significant
<b>Emissions</b>											
Air Quality	Construction	Dust	Minor onsite and negligible offsite	Negative	Short Term	Intermittent	Project Site	Use current Best Management Practices for Control of Fugitive Dust/ Minimize disturbed areas and use dust suppression if required.	Minor onsite and negligible offsite	Reversible	Not significant
	Construction	Noise	Minor onsite and negligible offsite	Negative	Short Term	Intermittent	Project Site	Construction activities short-term and noise will be generally limited to developed area/Remote location limits socio-cultural effects.	Minor onsite and negligible offsite	Reversible	Not significant
	Operation	Dust	Negligible	Negative	Long Term	Rare	Project Site	Use current Best Management Practices for Control of Fugitive Dust in dry-processing areas.	Negligible	Reversible	Not significant
	Operation	Noise	Negligible	Negative	Long Term	Rare	Project Site	Noise levels similar to other equipment currently located in the area.	Negligible	Reversible	Not significant
	Operation	GHG Emissions	Negligible	Negative	Long Term	Rare	Global	Quantity of GHG emitted from the new processing circuits is minuscule.	Negligible	Reversible	Not significant
<b>Water Resources</b>											
Groundwater	Construction	Groundwater Drawdown/Quality	Negligible	Negative	Short Term	None	Project Site	Not applicable – No construction activity outside any existing structures.	Negligible	Reversible	Not significant
	Operation	Groundwater Quality	Negligible	Negative	Long Term	None	Project Site	Not applicable – Operations contained within existing structures/No solid or liquid waste disposed of onsite.	Negligible	Reversible	Not significant
Surface Water	Construction	Surface Runoff	Negligible	Negative	Short Term	Intermittent	Project Site	Control surface water runoff during construction phase	Negligible	Reversible	Not significant
	Operation	Surface Runoff	Negligible	Negative	Long Term	None	Project Site	No anticipated change in topography that would affect current conditions	Negligible	Reversible	Not significant
	Operation	Surface water usage	Negligible	Negative	Long Term	Intermittent or continuous	Project Site	Water used for the proposed processing circuit will be drawn from the lake under the Mine's current permit and it is anticipated there will be no increase in the volume of water already withdrawn from the lake. Water used for cooling will be directed to the West TMA and will be treated to meet guidelines in current licence and the <i>MDMER</i> . No increase in effluent discharge is anticipated as water used for cooling will be drawn from the stream already that is already recirculated through the facility and returned to the lake after treatment. Water used in the production of the cesium crystals will either be boiled off as steam, sent to the Containment Cells for reuse or transferred offsite to a disposal facility.	Negligible	Reversible	Not significant
Operation	Surface water quality	Negligible	Negative	Long Term	Intermittent or continuous	Project Site		Negligible	Reversible	Not significant	



**Table 4(cont'd) Summary of potential environmental effects associated with the proposed cesium crystals alteration at the TANCO Bernic Lake Mine.**

Classification of Potential Effect	Alteration Phase	Potential Effect	Magnitude of Effect	Direction of Effect	Duration of Effect	Frequency of Effect	Scope of Effect	Mitigation Measures	Residual Effects	Reversibility	Significance
<b>Ecological</b>											
Flora and Fauna	Construction/ Operation	Habitat disturbance	Negligible	Negative	Long Term	None	Project Site	All required equipment will be located within the current footprint of the Project.	Negligible	Not applicable	Not significant
	Construction/ Operation	Noise	Negligible	Negative	Long Term	Intermittent or continuous	Project Site	Construction will be short-term and increased noise levels will be generally limited to within site boundaries. Operational noise levels similar to other equipment currently located in the area All reagents and final products will be handled and transported according to regulations contained within Manitoba's <i>Workplace Safety and Health Act</i> and the <i>Federal Transportation of Dangerous Goods Regulations</i> and the <i>Provincial Dangerous Goods Handling and Transportation Act</i> .	Negligible	Not applicable	Not significant
	Transportation	Habitat disturbance	Negligible to Major	Negative	Short to long term	Rare	Project Site/Local Highways	All reagents and final products will be handled and transported according to regulations contained within Manitoba's <i>Workplace Safety and Health Act</i> and the <i>Federal Transportation of Dangerous Goods Regulations</i> and the <i>Provincial Dangerous Goods Handling and Transportation Act</i> .	Negligible to Major	Reversible depending on incident	Not significant
<b>Sociological</b>											
Employment	Construction	Increased Employment	Minor	Positive	Short Term	Continuous	Project Site	Recruit from the local workforce for construction, if possible	Minor	Not applicable	Significant
	Operation	Employment Stability	Minor	Positive	Long Term	Continuous	Project Site	Operational flexibility allows production to adjust to markets demands reducing the potential for lay-offs.	Minor	Not applicable	Significant
<b>Health and Safety</b>											
	Construction/ Operation	Safety of workers	Negligible to Major	Negative	Short to long term	Rare	Project Site	All work conducted in accordance to Manitoba's <i>Workplace Safety and Health Act</i> All workers receive appropriate training/ Workers must wear appropriate PPE at all times and follow all TANCO Health and Safety guidelines associated with proposed alteration during construction and operation.	Negligible to Major	Reversible depending on incident	Not significant
	Transportation	Safety of workers and community	Negligible to Major	Negative	Short to long term	Rare	Project Site/Local Highways	All reagents and final products will be handled and transported according to regulations contained within Manitoba's <i>Workplace Safety and Health Act</i> and the <i>Federal Transportation of Dangerous Goods Regulations</i> and the <i>Provincial Dangerous Goods Handling and Transportation Act</i> .	Negligible to Major	Reversible depending on incident	Not significant





---

### **Soils**

The risk of soil contamination during the construction and operation of the processing circuit is negligible and equal to the current level of risk associated with the Project. Existing Spill Response Protocols and Best Management Practices for Materials Handling at the facility are sufficient mitigation measures for dealing with the potential environmental effects (Table 4). Therefore, a Level I level of significance (not significant) is assigned to the potential environmental effects on soil associated with the proposed alterations.

### **Geology**

Construction activities will be limited to the second floor of the CPF. Since, no construction activity will occur at ground level which could affect bedrock in the area, a Level I significance is assigned to the potential environmental effects on bedrock and is deemed not significant (Table 5-2).

## **3.5.2 Emissions**

### **Air Quality**

Short-term intermittent increases in hydrocarbon, dust and noise emissions may be observed during construction of the additional processing circuit; however, these emissions will be limited to the area immediately adjacent to the CPF. TANCO will employ Best Management Practices for Control of Fugitive Dust, minimize the size of disturbed areas and use dust suppression, if necessary, during construction as mitigation measures. Noise emissions will increase for the short-term during construction due to the use of heavy equipment and power tools but given the remote location of the facility, it is not anticipated to have any socio-cultural effects and any ecological effects would be short in duration.

Best Management Practices for Control of Fugitive Dust will be employed in area used for dry processing once the circuit becomes operational. Mine staff working in dry processing areas will be required to wear the appropriate personal protective equipment as mandated by the TANCO Health and Safety Department and dust collectors and ventilation fans will be used to protect indoor and outdoor air quality. Traffic in this area will be very limited and the increase in dust emissions should be negligible. No increases in noise above current levels are anticipated from the operation of the new processing circuit operation as the current equipment in the area has similar noise levels.

Carbon dioxide gas used as a reagent in the production of cesium carbonate crystals is a greenhouse gas. Some gas will be lost to the atmosphere during production but the expected quantity of gas lost will be minimal. Approximately, 0.135 kg per batch, 0.945 kg per month and 5.4 kg per year of carbon dioxide gas will be released to the atmosphere and not incorporated in the final product.

Construction is short-term and mitigation measures should control dust emissions during this period. Increased noise during construction will also be short-term and generally limited to within site boundaries. Once the circuit becomes operational, mitigation measures should also control dust emissions and noise levels will remain comparable to pre-alteration levels. The quantity of greenhouse gases released during



productions is also minimal and therefore, it is deemed that the alterations are insignificant with respect to air quality and assigned Level I significance (Table 4).

### **3.5.3 Water Resources**

#### ***Groundwater***

Because the location of the proposed processing circuit is contained within the CPF, no additional effects on groundwater from construction and the operation of the proposed alteration are expected. Existing Spill Response Protocols and Best Management Practices for Materials Handling at the facility are sufficient mitigation measures for dealing with the potential environmental effects related to groundwater contamination.

As there is no change in the risk to groundwater sources above current levels during construction or operation of the new milling circuit, a significance Level I is assigned with respect to potential environmental effects to groundwater and has been deemed not significant (Table 4).

#### ***Surface Water***

No potential environmental effects are anticipated with respect to surface water runoff at the site as the topography in the area will remain relatively unchanged and site runoff should continue to follow current drainage paths on the Property. Suspended solids in the Polishing Pond in the West TMA will continue to be monitored by the Mine's Environmental Department during construction activities and control measures will be implemented should an increase in suspended solids be observed. Existing Spill Response Protocols and Best Management Practices for Materials Handling at the facility are sufficient mitigation measures for dealing with the potential environmental effects related to surface water contamination.

The majority of water required for the production of cesium nitrate and cesium carbonate crystals will be contained within the reagents (aqueous cesium hydroxide and nitric acid). An additional ½ litre of water per litre of cesium hydroxide solution must also be added to calm the chemical reaction during the production of cesium nitrate crystals. The majority water added as a reagent in chemical reagents will be captured as process condensate from steam released from the processing circuits within the CPF. In a worse-case scenario in which all the water used in the chemical reactions in the new processing circuits was drawn from the lake, it would only amount to approximately 885 L per batch, 6195 L per month and 35,400 L per year of additional water usage while producing cesium nitrate crystals. A small amount of water may also be required for rinsing/washing the process equipment. The water required for this step will also be condensate captured within processes contained in the CPF and will likely not require any additional water to be drawn from the lake. Water used for cooling will be recycled back to the lake after treatment in the West TMA and should not affect the overall water balance of the lake. Any additional water that may be required for the additional circuit will consist entirely of water already drawn from Bernic Lake under the Mine's Licence to Use Water for Industrial-Mining Purposes (No. 2015-010; Table 5-2). The volume allowed under the Licence provides sufficient capacity for the minimal requirements of the additional processing circuit.



Effluent quality and quantity are expected to remain unchanged as there are no additional transfers of waste water or tailings into either the East or West TMAs included in the process designs for the project. The filtrate recovered from the separation of solids and liquids in the process design for both the cesium nitrate and cesium carbonate circuits will be recycled and reprocessed until the liquid becomes saturated with impurities. It is expected approximately 10% (~2,500 kg per year) of the filtrate generated from each process will become wastewater with wastewater from the cesium nitrate circuit being directed to Licenced Hazardous Waste Facility (Miller Environmental Corporation, Winnipeg MB) for disposal and wastewater from the cesium carbonate circuit being directed to one of the two containment cells on the property. The wastewater from the cesium carbonate circuit will have a similar chemical composition as the liquors already in the cells and can be recycled and used in the production of the other cesium products. Should a water imbalance occur in the cells and require a transfer anytime in the future, an assessment of the effect on effluent quality will be conducted and notification will be provided to Manitoba Sustainable Development as has been done in the past.

Because potential environmental effects to surface water runoff, surface water usage and effluent discharge are expected to be negligible with respect to the proposed alterations, a Level I significance has been assigned and the potential effects have been deemed not significant (Table 4).

#### **3.5.4 Ecological**

Environmental effects with regard to flora and fauna due to habitat disturbance are not expected as construction and operation of the proposed alteration will occur within the current footprint of the Mine. The increase in noise anticipated during construction will be short-term and mostly limited to the current footprint of the development. No noise increase is anticipated in relation to the operation of the proposed alteration to the processing circuit as the entire circuit will be contained within the CPF and current equipment in the area have similar noise levels.

There is also the potential for effects regarding the environment related to the safe handling of reagents and the finished products associated with the alteration. The handling and transportation of reagents and finished products will be carried out in accordance to Manitoba's *Workplace Safety and Health Act* and the Federal *Transportation of Dangerous Goods Regulations* and the Provincial *Dangerous Goods Handling and Transportation Act*. TANCO staff and external contractors (Big Freight Systems, Winnipeg, MB.) currently utilize a large number of chemicals at the facility and are familiar with the safe handling of these types of goods. Additional training will be provided for any new chemicals used in the proposed alteration and Health and Safety Guidelines will be amended accordingly to ensure the protection of the environment at the Mine and along transportation corridors.

Because there is no anticipated increase in habitat disturbance and noise levels, it is deemed that the alterations are insignificant with respect to ecological environmental effects and assigned Level I significance (Table 4).



---

### 3.5.5 Sociological

#### ***Employment***

Positive potential sociological effects related to employment opportunities will be associated with both the construction and operations phases of the alteration (Table 5-2). A request will be made to the contractor to hire local labour, if at possible, during construction of the new infrastructure. Although no additional manpower will be required above current staffing levels during the operational phase, the increased flexibility to alter production based on market conditions for the additional products should provide increased stability for the current workforce when demands fluctuate for the various products produced at the facility.

Both these potential effects are positive and significant creating a number of short term employment positions during constructions and increased job security during the operational phase (Table 4).

#### ***Health and Safety***

There is a potential for negative effects to worker safety during the construction and operation of additional processing circuit. These effects can range from negligible to major depending on the severity of the incident; however, the potential for these effects to occur are minimal as Health and Safety Guidelines at the TANCO Bernic Lake Mine are strictly adhered to and enforced. These guidelines include:

- All construction and operational activities will be carried out in accordance with the *Workplace Safety and Health Act*,
- All workers associated with the construction and operation of the new processing circuit will receive appropriate training for the activities being undertaken including activities undertaken by outside contractors,
- TANCO's Best Management Practice for the Control of Fugitive Dust will be followed to limit worker exposure to dust emissions,
- Appropriate personal protective equipment will be worn by workers during all phases of the project to limit exposure to noise and dust of or any additional negative effects.

There is also the potential for effects regarding the safety of workers and the community related to the safe handling of reagents and the finished products associated with the alteration. The handling and transportation of reagents and finished products will be carried out in accordance to Manitoba's *Workplace Safety and Health Act* and the Federal *Transportation of Dangerous Goods Regulations* and the Provincial *Dangerous Goods Handling and Transportation Act*. TANCO staff and external contractors (Big Freight Systems, Winnipeg, MB.) currently utilize a large number of chemicals at the facility and are familiar with the safe handling of these types of goods. Additional training will be provided for any new chemicals used in the proposed alteration and Health and Safety Guidelines will be amended according to ensure the safety of workers and the community.



Continued use of TANCO's Health and Safety Guidelines should result in no increased risk of negative effects regarding worker and community safety above pre-alteration levels. For this reason, the change in environmental effects associated with health and safety is deemed not significant (Table 4).

## **4. Lithium Packaging Circuit Alteration**

### **4.1 Proposed Alteration**

The proposed alteration includes the addition of a bag filling system to improve efficiencies and ergonomics of the SCP's packaging circuit. TANCO will remain within its production limits outlined in its *Environmental Act* Licence with the current plan to produce approximately 25,000 MT of lithium concentrate per year depending on market demand.

### **4.2 Product Alterations**

There are no changes proposed to the products produced in the milling circuit at the Mine. Lithium concentrate is the only product produced and shipped from the SCP.

### **4.3 Physical Alterations**

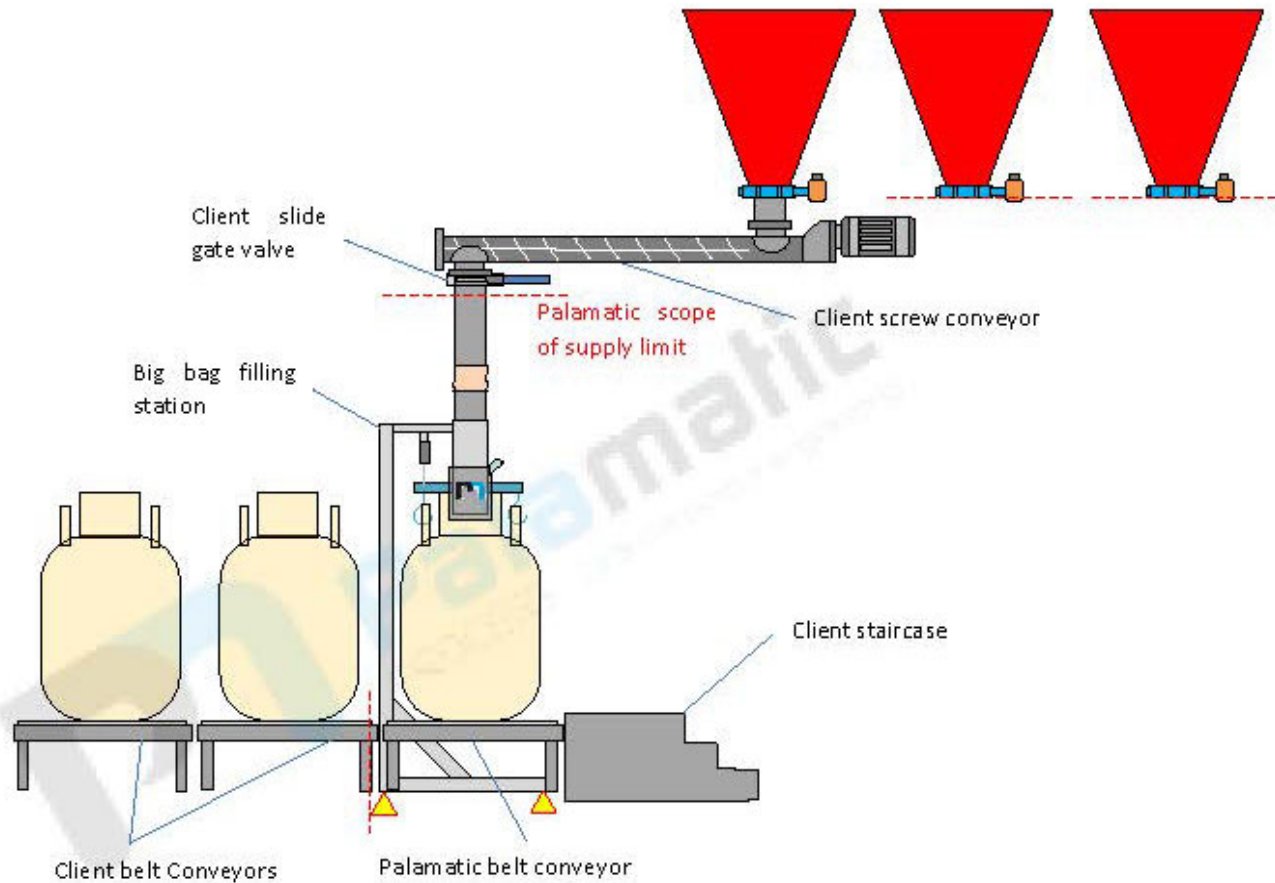
The proposed alteration to the spodumene milling circuit involves the installation of bag filling system within the current footprint of the SCP (Figure 1). The bag filling system was designed by Palmatic Process and includes the following equipment (Figure 4):

- One (1) dosing screw
- One (1) FlowMatic 04 Bag Filling Station
- One (1) Big Bag belt conveyors
- Operations access staircase
- Electrical control cabinet

### **4.4 Process Alterations**

There are no alterations to the spodumene milling process. There are also no changes to the raw materials or reagents used in the spodumene milling process.

**Process Diagram Big Bag filling stations Palamatic Process**



**Figure 4 Process diagram big bag filling station (Palamatic Process 2021).**



---

## 4.1 Environmental Assessment

### 4.1.1 Physical Environment

#### *Topography*

The proposed alteration will be entirely contained within the current structure of the SCP, therefore, no change in environmental effects from current conditions with respect to site topography are associated with the proposed development (Table 5). The level of significance associated with the processing circuit alteration with respect to topography is deemed to be no higher than Level I. Accordingly, the summary evaluation for this potential impact is deemed to be not significant.

#### *Soils*

The risk of soil contamination during the construction and operation of the packaging circuit is negligible and equal to the current level of risk associated with the Project. Existing Spill Response Protocols and Best Management Practices for Materials Handling at the facility are sufficient mitigation measures for dealing with the potential environmental effects (Table 5). Therefore, a Level I level of significance (not significant) is assigned to the potential environmental effects on soil associated with the proposed alterations.

#### *Geology*

Construction activities will be limited to inside the SCP. Since, no heavy construction activity will occur at ground level which could affect bedrock in the area, a Level I significance is assigned to the potential environmental effects on bedrock and is deemed not significant (Table 5).

### 4.1.2 Emissions

#### *Air Quality*

Short-term intermittent increases in hydrocarbon, dust and noise emissions may be observed during construction of the additional processing circuit; however, these emissions will be limited to the area immediately adjacent to the SCP. TANCO will employ Best Management Practices for Control of Fugitive Dust, minimize the size of disturbed areas and use dust suppression, if necessary, during construction as mitigation measures. Noise emissions will increase for the short-term during construction due to the use of heavy equipment and power tools but given the remote location of the facility, it is not anticipated to have any socio-cultural effects and any ecological effects would be short in duration.

Best Management Practices for Control of Fugitive Dust will be employed in bag filling area once the circuit becomes operational. Mine staff working in dry processing areas will be required to wear the appropriate personal protective equipment as mandated by the TANCO Health and Safety Department and dust collectors and ventilation fans will be used to protect indoor and outdoor air quality. Traffic in this area will be very limited and the increase in dust emissions should be negligible. No increases in noise



**Table 5 Summary of potential effects associated with the proposed lithium packaging circuit alteration at the TANCO Bernic Lake Mine.**

Classification of Potential Effect	Alteration Phase	Potential Effect	Magnitude of Effect	Direction of Effect	Duration of Effect	Frequency of Effect	Scope of Effect	Mitigation Measures	Residual Effects	Reversibility	Significance
<b>Physical</b>											
Topography	Construction	Modification in topography	Negligible	Negative	Long Term	None	Project Site	Not applicable – No construction activity outside any existing structures.	Negligible	Reversible	Not significant
Soils	Construction	Soil contamination	Negligible	Negative	Long Term	Rare	Project Site	Clean up any hydrocarbon or chemical spills immediately. Use current best practices in material handling and appropriate containment measures.	Negligible	Reversible	Not significant
	Operation	Soil contamination	Negligible	Negative	Long Term	Rare	Project Site		Negligible	Reversible	Not significant
Geology	Construction	Bedrock excavation	Negligible	Negative	Long Term	None	Project Site	Not applicable – No construction activity outside any existing structures.	Negligible	Reversible	Not significant
<b>Emissions</b>											
Air Quality	Construction	Dust	Minor onsite and negligible offsite	Negative	Short Term	Intermittent	Project Site	Use current Best Management Practices for Control of Fugitive Dust/ Minimize disturbed areas and use dust suppression if required. Construction activities short-term and noise will be generally limited to developed area/Remote location limits socio-cultural effects.	Minor onsite and negligible offsite	Reversible	Not significant
	Construction	Noise	Minor onsite and negligible offsite	Negative	Short Term	Intermittent	Project Site		Minor onsite and negligible offsite	Reversible	Not significant
	Operation	Dust	Negligible	Negative	Long Term	Rare	Project Site	Use current Best Management Practices for Control of Fugitive Dust in bag filling areas.	Negligible	Reversible	Not significant
	Operation	Noise	Negligible	Negative	Long Term	Rare	Project Site	Noise levels similar to other equipment currently located in the area.	Negligible	Reversible	Not significant
	Operation	GHG Emissions	Negligible	Negative	Long Term	None	Global	No GHG emitted from the new bag filling system.	Negligible	Reversible	Not significant
<b>Water Resources</b>											
Groundwater	Construction	Groundwater Drawdown/Quality	Negligible	Negative	Short Term	None	Project Site	Not applicable – No construction activity outside any existing structures.	Negligible	Reversible	Not significant
	Operation	Groundwater Quality	Negligible	Negative	Long Term	None	Project Site	Not applicable – Operations contained within existing structures/No solid or liquid waste disposed of onsite as a result of the installation or operation of the bag filling system.	Negligible	Reversible	Not significant
Surface Water	Construction	Surface Runoff	Negligible	Negative	Short Term	Intermittent	Project Site	Control surface water runoff during construction phase. No anticipated change in topography that would affect current conditions.	Negligible	Reversible	Not significant
	Operation	Surface Runoff	Negligible	Negative	Long Term	Intermittent	Project Site		Negligible	Reversible	Not significant
	Operation	Surface water usage	Negligible	Negative	Long Term	None	Project Site	No water usage required for bag filling system.	Negligible	Reversible	Not significant
	Operation	Surface water quality	Negligible	Negative	Long Term	None	Project Site	No water discharge from bag filling system.	Negligible	Reversible	Not significant





**Table 5(cont'd) Summary of potential environmental effects associated with the proposed lithium packaging circuit alteration at the TANCO Bernic Lake Mine.**

<b>Classification of Potential Effect</b>	<b>Alteration Phase</b>	<b>Potential Effect</b>	<b>Magnitude of Effect</b>	<b>Direction of Effect</b>	<b>Duration of Effect</b>	<b>Frequency of Effect</b>	<b>Scope of Effect</b>	<b>Mitigation Measures</b>	<b>Residual Effects</b>	<b>Reversibility</b>	<b>Significance</b>
<b>Ecological</b>											
Flora and Fauna	Construction/ Operation	Habitat disturbance	Negligible	Negative	Long Term	None	Project Site	All required equipment will be located within the current footprint of the Project.	Negligible	Not applicable	Not significant
	Construction/ Operation	Noise	Negligible	Negative	Long Term	Intermittent or continuous	Project Site	Construction will be short-term and increased noise levels will be generally limited to within site boundaries. Operational noise levels similar to other equipment currently located in the area	Negligible	Not applicable	Not significant
	Transportation	Habitat disturbance	Negligible to Major	Negative	Short to long term	None	Project Site/Local Highways	Bag filling system does not alter risk associated with current transportation practice of final product.	Negligible	Reversible depending on incident	Not significant
<b>Sociological</b>											
Employment	Construction	Increased Employment	Minor	Positive	Short Term	Continuous	Project Site	Indirect effects associated with the resumption of lithium mining and processing at the Mine.	Minor	Not applicable	Significant
	Operation	Employment Stability	Minor	Positive	Long Term	Continuous	Project Site	Indirect effects associated with the resumption of lithium mining and processing at the Mine.	Minor	Not applicable	Significant
Health and Safety	Construction/ Operation	Safety of workers	Negligible to Major	Negative	Short to long term	Rare	Project Site	All work conducted in accordance to Manitoba's <i>Workplace Safety and Health Act</i> / All workers receive appropriate training/ Workers must wear appropriate PPE at all times and follow all TANCO Health and Safety guidelines associated with proposed alteration during construction and operation.	Negligible to Major	Reversible depending on incident	Not significant
	Transportation	Safety of workers and community	Negligible to Major	Negative	Short to long term	None	Project Site/Local Highways	Bag filling system does not alter risk associated with current transportation practice of final product.	Negligible	Reversible depending on incident	Not significant



above current levels are anticipated from the operation of the new processing circuit operation as the current equipment in the area has similar noise levels.

Construction is short-term and mitigation measures should control dust emissions during this period. Increased noise during construction will also be short-term and generally limited to within site boundaries. Once the circuit becomes operational, mitigation measures should also control dust emissions and noise levels will remain comparable to pre-alteration levels and therefore, it is deemed that the alterations are insignificant with respect to air quality and assigned Level I significance (Table 5).

### **4.1.3 Water Resources**

#### ***Groundwater***

Because the location of the proposed processing circuit is contained within the SCP, no additional effects on groundwater from construction and the operation of the proposed alteration are expected. Existing Spill Response Protocols and Best Management Practices for Materials Handling at the facility are sufficient mitigation measures for dealing with the potential environmental effects related to groundwater contamination.

As there is no change in the risk to groundwater sources above current levels during construction or operation of the new milling circuit, a significance Level I is assigned with respect to potential environmental effects to groundwater and has been deemed not significant (Table 5).

#### ***Surface Water***

No potential environmental effects are anticipated with respect to surface water runoff at the site as the topography in the area will remain relatively unchanged and site runoff should continue to follow current drainage paths on the Property. Suspended solids in the Polishing Pond in the West TMA will continue to be monitored by the Mine's Environmental Department during construction activities and control measures will be implemented should an increase in suspended solids be observed. Existing Spill Response Protocols and Best Management Practices for Materials Handling at the facility are sufficient mitigation measures for dealing with the potential environmental effects related to surface water contamination.

Effluent quality and quantity are expected to remain unchanged as there is no requirement for water in the bag filling circuit and therefore, there will be no additional transfers of waste water into either the East or West TMAs included in the process design for the project.

Because potential environmental affects to surface water runoff, surface water usage and effluent discharge are expected to be negligible with respect to the proposed alterations, a Level I significance has been assigned and the potential effects have been deemed not significant (Table 5).



#### 4.1.4 Ecological

Environmental effects with regard to flora and fauna due to habitat disturbance are not expected as construction and operation of the proposed alteration will occur within the current footprint of the Mine. The increase in noise anticipated during construction will be short-term and mostly limited to the current footprint of the development. No noise increase is anticipated in relation to the operation of the proposed alteration to the packaging circuit as the entire circuit will be contained with the SCP and current equipment in the area have similar noise levels.

Because there is no anticipated increase in habitat disturbance and noise levels, it is deemed that the alterations are insignificant with respect to ecological environmental effects and assigned Level I significance (Table 5).

#### 4.1.5 Sociological

##### ***Employment***

No sociological effects related to employment opportunities will be associated with the construction and operations phases of the alteration as internal labour will be used in the installation and operation of the system. Although no additional manpower will be required above current staffing levels for the operation of the bag filling system, there is a significant increase in employment levels associated with the resumption of lithium mining and processing operations at the Mine. The bag filling system is required so the maximum production levels can be achieved which would allow for the hiring of approximately 42 additional full-time employees which 90% will be from the local workforce.

Although increased employment is not directly the result of the construction or operation of the bag filling system, there is a significant indirect positive effect from the resumption of lithium operations (Table 5).

##### ***Health and Safety***

There is a potential for negative effects to worker safety during the construction and operation of additional packaging circuit. These effects can range from negligible to major depending on the severity of the incident; however, the potential for these effects to occur are minimal as Health and Safety Guidelines at the TANCO Bernic Lake Mine are strictly adhered to and enforced. These guidelines include:

- All construction and operational activities will be carried out in accordance with the *Workplace Safety and Health Act*,
- All workers associated with the construction and operation of the new processing circuit will receive appropriate training for the activities being undertaken including activities undertaken by outside contractors,
- TANCO's Best Management Practice for the Control of Fugitive Dust will be followed to limit worker exposure to dust emissions,
- Appropriate personal protective equipment will be worn by workers during all phases of the project to limit exposure to noise and dust of or any additional negative effects.



The Palamatic Process design includes a risk analysis of the integrated equipment to ensure the safety of the operations meets Ism-ATEX certification. Any health and safety recommendations provided in the assessment will be incorporated into TANCO's Health and Safety Guidelines.

Continued use of TANCO's Health and Safety Guidelines should result in no increased risk of negative effects regarding worker and community safety above pre-alteration levels. For this reason, the change in environmental effects associated with health and safety is deemed not significant (Table 5).

## 5. Conclusions

The update to the Facility's *Environment Act* Licence will have no effect on the environment above existing conditions as all revisions to the Licence have received approval by the Environmental Assessments Branch and are part of the current operation, maintenance, monitoring and reporting requirements for the Facility except for the Cesium Crystals processing and lithium packaging circuit alterations proposed within this EAP.

A detailed review of physical and process alterations to the processing circuit at the CPF and the packaging circuit at the SCP has indicated that the proposed changes have been deemed as not significant when compared to existing conditions at the Facility for all components except employment related sociological effects. It should be noted that positive sociological effects are anticipated at the CPF through increased employment during the construction phase and increased job security for the workforce once operational due to the extra flexibility in production provided by the two new products, while, indirect positive sociological effects are anticipated at the SCP once lithium mining and processing operations resume at the Mine..

Effects associated with the physical environment, emissions, water resources and ecological and sociological (health and safety) aspects remain virtually unchanged as the proposed development is contained within the current footprints of the CPF and SCP and measures currently used at the facility are sufficient to mitigate any additional adverse effects. No anticipated increase in environmental effects are expected with regard to water usage or surface water quality in the receiving environment as no water is required for the proposed bag filling alteration and the water currently withdrawn from Bernic Lake is sufficient to supply the extra process water required for the additional processing circuit in the CPF. No expected change in the volume of effluent discharged from the tailings facility is anticipated as cooling water for the proposed alteration to the CPF will be drawn and returned to the West TMA in the stream currently cycled through the facility. Effluent quality will continue to remain within regulatory limits outlined in the Mine's *Environment Act* Licence and the *MDMER* (Government of Canada 2002) through treatment in the Tailings Management Area at the facility and therefore, possess no additional potential environmental effects to the receiving environment.

The proposed alterations to the processing circuit in the CPF and the packaging circuit in the SCP at the TANCO Bernic Lake Mine are expected to be insignificant as any potential negative environmental and



---

human health effects resulting from the alteration can be mitigated through TANCO's environmental and health and safety policies currently in place at the Mine.

## 6. References

- Huang; Jinsong, Zheng Xu; Yang Yang (2007). Low-Work-Function Surface Formed by Solution-Processed and Thermally Deposited Nanoscale Layers of Cesium Carbonate. *Advanced Functional Materials*. 17 (19). doi:10.1002/adfm.200700051. Retrieved 2021-03-02.
- Government of Canada. 2001. *Transportation of Dangerous Goods Act*. Retrieved March 2, 2021 from <https://laws-lois.justice.gc.ca/eng/regulations/sor-2001-286/index.html>.
- Government of Canada. 2002. *Metal and Diamond Mining Effluent Regulations*. Retrieved March 2, 2021 from <https://laws-lois.justice.gc.ca/eng/Regulations/SOR-2002-222/index.html>.
- Government of Canada. 2019. *Environmental Emergency Regulations*. Retrieved March 2, 2021 from <https://laws-lois.justice.gc.ca/eng/regulations/SOR-2019-51/index.html>.
- Government of Manitoba. 2012. *The Environment Act*. Available from <http://web2.gov.mb.ca/laws/statutes/ccsm/e125e.php>. [Accessed February 2012].
- Government of Manitoba. 2015. *Hazardous Waste Regulations*. Available from: <https://web2.gov.mb.ca/laws/regs/current/pdf-regs.php?reg=195/2015> [Accessed March 6, 2021].
- National Center for Biotechnology Information (2021a). PubChem Compound Summary for CID 62674, Cesium nitrate. Retrieved March 2, 2021 from: <https://pubchem.ncbi.nlm.nih.gov/compound/Cesium-nitrate>.
- National Center for Biotechnology Information (2021b). PubChem Compound Summary for CID 10796, Cesium carbonate. Retrieved March 2, 2021 from: <https://pubchem.ncbi.nlm.nih.gov/compound/Cesium-carbonate>.
- Transport Canada. (2021, March 2). Classification Scheme. Retrieved from <https://tc.canada.ca/en/dangerous-goods/classification-scheme>.



---

## Appendix A

### *Environment Act Licence* Notice of Alteration Approvals

EA-10



RECEIVED

OCT 5 1992

TANCO

Bldg. 2, 139 Tuxedo Ave. Winnipeg, Manitoba R3N 0H6 Tel. 945-7071 Fax 945-5229

NOA # 1

DISPOSITION OF PROPOSED ALTERATION (Pursuant to Section 14 of The Environment Act)

Proponent: Tantalum Mining Corporation of Canada Limited Box 2000, Lac Du Bonnet, MB. R0E 1A0 Attention: Mr. W.J. Neal Surface Superintendent

Client file: 1906.2

Date of receipt of proposed alteration: September 9, 1992

Nature of proposed alteration:

The existing tailings disposal management plan has been altered by the construction of retention dams #1, #3 and #4 to elevations of 1103', 1114' and 1114', respectively, and increasing the heights of existing dams #1, #2 and #5 to elevations of 1104', 1115' and 1114', respectively. Also, a new "Future Storage Area" is proposed within the 1090' elevation contour on the north shore of North Bay, requiring another new dam.

Supporting Information:

[X] sufficient

[ ] insufficient

Departmental evaluation:

[ ] major alteration

[X] minor alteration

[ ] pending more information

Alteration approval status:

[ ] not approved

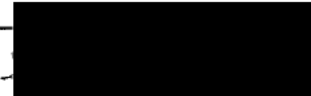
[ ] under consideration

[X] approved under Section 14(2) of The Environment Act

Comments / Conditions:

This approval is conditional upon:

- 1) TANCO receiving surface rights to all the additional Crown Land areas, outside of the current surface rights boundary zone, which would be encroached upon by the "Future Storage Area" 1090' elevation contour and the proposed new dam identified in green on the submitted plan;
2) all the affected dams being approved by the Mines Inspection Branch for structural stability;
3) dams #1, #2, #3, #4, #5 and the proposed new dam on the 1090' contour elevation being so constructed so as to ensure no loss of fluids from the tailings ponds either through, under or over these dams; and
4) the "Future Storage Area" on the north shore of the North Bay never receiving any acid generating tailings solids.



Larry Strachan, P. Eng. Director, Environment Act

Date: Sept 22/92

cc ROB RAS SKV

original in main file

c.c. D. DesRivieres, Regional Director, Eastern-Interlake Region c.c. R. Glassford, P. Eng., Director, Mines Inspection Branch, Dept. of Labour

W.L. Best

6/10/92






**Manitoba**

 FOR: ALISTAIR GIBB.  
 FROM: PETER V.

Environment

Environmental Management

 Building 2  
 139 Tuxedo Avenue  
 Winnipeg, Manitoba, CANADA  
 R3N 0H6

File: 1906.2

March 1, 1995

N/A #2

 Mr. R.O. Burt, P. Eng.  
 Director and General Manager  
 Tantalum Mining Corporation of Canada Limited  
 Box 2000  
 Lac du Bonnet MB R0E 1A0

**FAXED**

Dear Mr. Burt:

**Re: Cesium Formate Pilot Plant**

Thank you for meeting with me and other staff members on February 23, 1995, to present your proposal for the possible establishment and limited operation of a cesium formate pilot plant at your existing and licensed mining development at Bernic Lake. This letter is in response to your written and verbal request for an approval of this proposed alteration to your mining development.

Based on the information received on this proposed alteration, I regard the alteration to be a minor alteration. As such, I conditionally approve of the implementation of the proposed alteration pursuant to the provisions of Section 14(2) of The Environment Act, meaning that no changes need to be made to the existing Environment Act Licence No. 973. The conditions of this approval are:

- 1) that I am informed of the dates that the pilot plant commences operation and subsequently ceases operation;
- 2) that the operation of the pilot plant is monitored and evaluated by an independent consultant, and that any environmental impacts above and beyond any existing impacts as may be imposed by the existing operations at the mine site are identified; and,
- 3) that I am informed immediately of any environmental concerns as might be identified in the course of the monitoring activities.

I trust that the foregoing is to your satisfaction, and wish you success in this endeavour should the decision be made to proceed with the proposed pilot plant.

Yours truly,


 L. Strachan, P. Eng.  
 Director  
 Environmental Approvals

c.c. D. DesRivieres, Regional Director, Eastern-Interlake Region (enclosure included)



EA-14  
**Manitoba**

{COPPE NoA}

 NoA #3

Environment

Environmental Management

Suite 160 VIA STATION  
123 Main Street  
Winnipeg MB R3C 1A5  
CANADA

Our File: 1906.2  
Your File: 0402-A-03

Internet: <http://www.gov.mb.ca/environ>

April 4, 1997

Mr. William Ferguson  
General Manager  
Tantalum Mining Corporation of Canada Limited (Tanco)  
Box 2000  
Lac du Bonnet MB R0E 1A0

Dear Mr. Ferguson:

**Re: Cesium Products Pilot Facility - Notice of Alteration**

This letter is in response to Tanco's Notice of Alteration (NoA) dated December 31, 1996, and your the Initial Environmental Assessment (IEA) submitted under cover of your Feb. 28/97 letter in support of the NoA. It is understood that this NoA stems from the initial NoA dated February 22, 1995, and approved on March 1, 1995, and outlines changes made to the size, scope and manner of operation of the facility compared to the initial proposal, and that the IEA has been prepared to address the detailed nature of the proposed changes and their environmental significance. In regards to the NoA dated February 22, 1995 and approved on March 1, 1995, it is hereby acknowledged that all of the environmental commitments offered by Tanco, as well as the applicable conditions stipulated in that alteration approval, have to date been fully satisfied.

In consideration of the information provided in the IEA, and the mitigation measures taken to minimize and contain the potential impacts of the operation of this facility, I regard the proposed pilot operation of the Cesium Products Pilot Facility to constitute a minor alteration to the NoA approved on March 1, 1995. Accordingly, pursuant to Section 14(2) of The Environment Act, I hereby approve the implementation of the alteration and operation of the revised pilot facility for a period of two years commencing with the first date of pilot phase production, subject to the conditions that:

- 1) the Licencee notifies the Director in writing of the date of commencement of pilot phase production at the Cesium Products Pilot Facility;
- 2) the Licencee uses the Cesium Products Pilot Facility only to produce 83 wt% cesium formate solution;
- 4) the Licencee produces no more than 3,600 tonnes of 83 wt% cesium formate solution for the purposes of the four deep-well drilling tests;
- 5) the Licencee does not produce any cesium formate solution during the pilot phase for purposes other than the four deep-well drilling tests;
- 6) the Licencee upgrades the overall mine site's Emergency Response Plan (ERP) as soon as possible to address all the new potential hazards associated with the operation of the proposed facility and the handling, storage or spill of any hazardous materials, with the ERP prepared in a manner consistent with CAN/CSA standard Z731-95 - Emergency Planning For Industry;

Letter from Strachan to Ferguson

April 4, 1997

Page - 2 -

- 7) the Licencee submits a copy of the revised ERP to the Director as soon as it is completed, and maintains the ERP in a current status;
- 8) the Licencee monitors: the process waste containment cell for any leakage; the thermal load released with the digester coolant into the Tailings Management Area and its impact upon the receiving environment; and any other environmental uncertainties in advance of the commercial production phase; and
- 9) the Licencee submits to the Director semi-annual (i.e. once every six months) reports outlining the results of the previous six months of environmental monitoring carried out pursuant to condition 8) as well as the running total of tonnes of 83 wt% cesium formate produced up to the date of each report.

We anticipate that, before the Cesium Products Pilot Facility is dedicated to commercial production, at least one more NoA will be submitted to the Department to convert the facility from a pilot facility to a full-scale commercial production facility for cesium formate or other cesium products. At such time, we expect to review and update the existing Environment Act Licence No. 973 so that it fully captures and addresses all changes which have occurred at the mine site since February 7, 1983, when the Licence was issued. In the meantime, I wish you every success in your endeavours to establish a broad commercial market for your cesium formate solution.

Yours truly,



Larry Strachan, P. Eng.  
Director  
Environmental Approvals

- c. J.M. McKernan, Principal, TetrES Consultants Inc.  
D. Brown, Regional Director, Eastern-Interlake Region (enclosure included)



NoA # 4

File: 1906.2

Internet: <http://www.gov.mb.ca/environ>

July 8, 1998

DISTRIBUTION

Mr. William Ferguson  
General Manager  
Tantalum Mining Corporation of Canada Limited (Tanco)  
Box 2000  
Lac du Bonnet MB R0E 1A0

J. Pavitt  
B. Bakke  
A. Gibb  
T. Tonner ✓

Dear Mr. Ferguson:

**Re: Cesium Products Pilot Facility - Notice of Alteration**

This letter is in response to Tanco's Notice of Alteration (NoA) dated May 29, 1998, and the supporting "Environmental Protection Plan" and "Initial Environmental Assessment" (IEA, Report No. 2), each prepared by TetrEs Consultants Inc. and dated June, 1998. It is our understanding that this NoA, referenced as NoA No. 4, expresses an alteration to the NoA No. 3 filed on December 31, 1996, which was conditionally approved on April 4, 1997. The essence of the NoA No. 4 is the construction of a second double-HDPE-lined process waste containment cell to provide an additional 2 years of storage capacity, beyond the capacity limits of the existing Cell No. 1 for the ongoing disposal needs of the cesium formate pilot facility while alternative waste management strategies are being explored.

In consideration of the information provided in support of the NoA No. 4, and the mitigation measures being proposed to minimize and contain the potential impacts of the operation of this facility, I regard the proposed construction of a second double-HDPE-lined process waste containment cell within the Tailings Management Area to constitute a minor alteration to NoA No. 3. Accordingly, pursuant to Section 14(2) of The Environment Act, I hereby approve the implementation of the alteration, together with the ongoing operation of the cesium formate production facility as a pilot plant until August 15, 1999, subject to the conditions that:

- 1) the Licencee uses the Cesium Products Pilot Facility only to produce 83 wt% cesium formate solution;
- 2) the Licencee produces no more than 3,600 tonnes of 83 wt% cesium formate solution for the purposes of the four deep-well drilling tests;
- 3) the Licencee does not produce any cesium formate solution during the pilot phase for purposes other than the four deep-well drilling tests;
- 4) the Licencee upgrades the overall mine site's Emergency Response Plan (ERP) as soon as possible to address all the new potential hazards associated with the operation of the proposed facility and the handling, storage or spill of any hazardous materials, with the ERP prepared in a manner consistent with CAN/CSA standard Z731-95 - Emergency Planning For Industry;
- 6) the Licencee submits a copy of the revised ERP to the Director by no later than July 31, 1998, and maintains the ERP in a current status;



- 7) the Licencee monitors the liners of process waste containment cell #1 and cell #2, as well as the receiving groundwater, for evidence of any leakage, and continues to monitor any other environmental uncertainties in advance of the filing of a commercial production proposal; and
- 8) the Licencee submits reports to the Director, once every six months, outlining the results of the previous six months of environmental monitoring carried out pursuant to condition (7) as well as the running total of tonnes of 83 wt% cesium formate produced up to the date of each report.

The foregoing conditions supercede the conditions which were specified in the conditional NoA approval dated April 4, 1997.

We anticipate that, before the Cesium Products Pilot Facility is dedicated to commercial production, at least one more NoA will be submitted to the Department to convert the facility from a pilot facility to a full-scale commercial production facility for cesium formate or other cesium products. At such time, we expect to review and update the existing Environment Act Licence No. 973 so that it fully captures and addresses all changes which have occurred at the mine site since February 7, 1983, when Licence No. 973 was issued.

Yours truly,



Larry Strachan, P. Eng.  
Director  
Environmental Approvals

- c. J.M. McKernan, Principal, TetrES Consultants Inc.  
D. Brown, Regional Director, Eastern-Interlake Region (enclosures included)



Environment

Environmental Management

123 Main Street, Suite 160  
Winnipeg MB R3C 1A5  
CANADA

File: 1906.2

Fax: (204) 945-5229

Internet: <http://www.gov.mb.ca/enviro>

January 4, 1999

Mr. William Ferguson  
General Manager  
Tantalum Mining Corporation of Canada Limited (Tanco)  
Box 2000  
Lac du Bonnet MB R0E 1A0

Dear Mr. Ferguson:

**Re: Cesium Products Pilot Facility - Notice of Alteration No. 5**

This letter is in response to Tanco's Notice of Alteration (NoA) submitted on July 14, 1998, and the supporting "Initial Environmental Assessment" (IEA, Report No. 3) submitted on November 24, 1998. It is our understanding that this NoA, referenced as NoA No. 5, expresses a proposed alteration to the existing Cesium Products Pilot Facility (CPPF) to the extent of converting to commercial production for cesium formate solution, and expanding the facility to double its cesium formate solution production capacity from 500 oilfield barrels (183 tonnes) per month to 1,000 oilfield barrels (366 tonnes) per month, while continuing to function in a pilot plant capacity for the production of new cesium products (e.g. cesium acetate, cesium hydroxide).

In consideration of the information provided in support of the NoA No. 5, the proactive initiatives outlined in the Pollution Prevention Memorandum of Understanding (P2 MOU) signed by Manitoba Environment and the Licencee, and the mitigation measures proposed to minimize and contain the potential impacts of the operation of this facility, I regard the potential environmental effects of NoA No. 5 to be insignificant. Accordingly, pursuant to Section 14(2) of The Environment Act, I hereby approve the implementation of NoA No. 5 subject to the conditions that:

- 1) a long-term solution, satisfactory to the Director, respecting the management of process waste from the Cesium Products Facility is developed through the P2 MOU by August 31, 2000;
- 2) the Licencee agrees to the development of a new and updated Environment Act licence which would replace the existing Licence No. 973 and would address:
  - (a) the operation of the existing mine and mill;
  - (b) the operation of the Cesium Products Facility;
  - (c) all the alterations filed by the Licencee since February 7, 1983; and
  - (d) outstanding environmental uncertainties identified through the IEA, Report No. 3;whereby the new licence would be developed in consultation with Tanco and an interdepartmental Technical Advisory Committee;
- 3) the Licencee provides such information, in a timely manner, as may be requested by the Director to facilitate the development of the new licence;

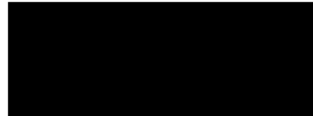


- 4) the Licencee does not commercially produce any other product in the Cesium Products Facility other than cesium formate solution unless so approved by the Director;
- 5) the Licencee does not carry out any pilot production of other cesium products, unless individually approved by the Director;
- 6) the Licencee continually maintains the Emergency Response Plan in a current status and in a format consistent with CAN/CSA standard Z731-95 - Emergency Planning For Industry;
- 7) the Licencee continues to monitor the liners of process waste containment cell #1 and cell #2, as well as the receiving groundwater, for evidence of any leakage; and
- 8) the Licencee continues to submit reports to the Director, once every six months, outlining the results of the previous six months of environmental monitoring carried out pursuant to condition (7), supported with a technical interpretation compiled by a qualified person.

The foregoing conditions hereby supercede the conditions which were specified in the conditional NoA No. 4 approved on July 8, 1998.

Should you wish to discuss this approval, please do not hesitate to contact me.

Yours truly,



Larry Strachan, P. Eng.  
Director  
Environmental Approvals

- c. T. Tonner, P. Eng., Environmental/Safety Manager, Tanco  
D. Brown, Regional Director, Eastern-Interlake Region  
S. Scrafield/Attn: J. Spiegel

# Manitoba

EA-25



Conservation

Environmental Stewardship Division

123 Main Street, Suite 160  
Winnipeg MB R3C 1A5  
CANADA

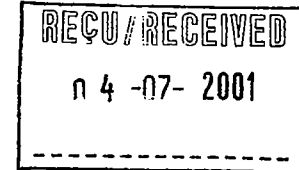
Fax: (204) 945-5229

Internet: <http://www.gov.mb.ca/environ>

File: 1906.2

**FAXED**  
(884-220)

July 4, 2001



Mr. William Ferguson  
General Manager  
Tantalum Mining Corporation of Canada Limited (Tanco)  
Box 2000  
Lac du Bonnet MB R0E 1A0

Dear Mr. Ferguson:

**Re: Cesium Products Facility - Notice of Alteration No. 6**

This letter is in response to Tanco's Notice of Alteration (NoA) No. 6 submitted on June 6, 2001, and the supporting environmental effects report dated May, 2001. It is our understanding that in the circumstance of no long-term solution having been developed to-date through the Pollution Prevention Memorandum of Understanding for the management of the process wastes from the Cesium Products Facility (CPF), and whereby Disposal Cell #1 is full and Disposal Cell #2 is reaching full capacity, Tanco wishes to alter its CPF process waste management program by:

- dewatering the double-lined Disposal Cell #1 to the double-lined Disposal Cell #2;
- removing about 45,000 m<sup>3</sup> of CPF solid residues from the lined Disposal Cell #1 and transporting and depositing them into an unlined pit to be developed elsewhere within the existing Old Tailings Management Area (TMA); and
- preparing the emptied Disposal Cell #1 for re-use as soon as Disposal Cell #2 had been filled to capacity.

In consideration of the environmental effects study provided in support of the NoA, and the measures proposed to address any potential impacts stemming from the NoA, I regard the potential environmental effects of the NoA to be insignificant. Accordingly, pursuant to Section 14(2) of The Environment Act, I hereby approve the implementation of the NoA subject to the conditions that:

- 1) the removal, transfer and burial of the CPF solid residues is carried out as proposed, and deposited into a pit in the Old TMA at a location identified in the NoA as the "preferred disposal location";
- 2) subsequent to the removal of the CPF solid residues from Disposal Cell #1, the integrity of the inner liner of that cell is tested by transferring liquor from Disposal Cell #2 into Disposal Cell #1 to a depth of at least 2.5 metres and testing the leakage rate into the interstitial space between the inner and outer liner of Cell #1;



Letter from Strachan to Ferguson

July 4, 2001

Page 2 of 2

- 3) a report on the leakage rate of fluids into the interstitial space between the inner and outer liner of Disposal Cell #1 is provided to the Director, with the results compared to the manufacturer's maximum leakage rate specifications, as well as compared to the leakage rates determined during the past operating period of Disposal Cell #1;
- 4) no new CPF solid residues are deposited into the emptied Disposal Cell #1 until:
  - (a) any necessary inner liner repairs are completed; and
  - (b) the Director has expressed satisfaction, in writing, with the leakage rate results provided through item 3 above;
- 5) upon completion of the transfer of the CPF solid residues to the proposed pit, the transferred residue is covered with a 0.6 metre thick cap of the existing on-site tailings/feldspar material; and
- 6) a pre-placement and post-placement (of the CPF solid residues) groundwater sampling program is undertaken, as proposed, at the proposed monitoring wells in the vicinity of the "preferred disposal location", and at any additional monitoring wells as may be requested by the Director, with the results submitted to the Director annually, within 45 days of the collection of those annual sample runs taken for the comprehensive chemical analyses.

Should you require any clarification of any condition of this NoA approval, please do not hesitate to contact me at (204) 945-7071.

Yours truly,



Larry Strachan, P. Eng.  
Director  
Environmental Approvals

cc. T. Tonner, P. Eng., Environmental/Safety Manager, Tanco  
D. Ramsey, Agassiz North Associates Limited  
G. Prouse, Director, Eastern Region (enclosure included)

# Manitoba

EA-18



Conservation

Environmental Stewardship Division

123 Main Street, Suite 160  
Winnipeg MB R3C 1A5  
CANADA

Fax: (204) 945-5229

Internet: <http://www.gov.mb.ca/envirom>

File: 1906.2

July 24, 2001

Mr. William Ferguson  
General Manager  
Tantalum Mining Corporation of Canada Limited (Tanco)  
Box 2000  
Lac du Bonnet MB R0E 1A0

Dear Mr. Ferguson:

**Re: Cesium Products Facility - Notice of Alteration No. 7**

This letter is in response to Tanco's Notice of Alteration (NoA) No. 7 dated June 1, 2001 and submitted on June 5, 2001, and the supporting "Capital Project Submission Document" and "Conventional Cesium Project Conceptual Design Basis Report". It is our understanding that Tanco wishes to implement alterations within the existing Cesium Products Facility to augment the current 500 barrels/month production of cesium formate solution with 500,000 lbs/year (equivalent to 60 barrels/month of cesium formate solution) of technical grade cesium sulphate contained in the form of conventional cesium products of either cesium sulfate, cesium chloride, cesium hydroxide or cesium carbonate, while continuing to produce cesium formate solution at a production rate of 500 oilfield barrels/month.

Whereas: Condition #4 of the approval for NoA No. 5, dated January 24, 1999, requires the approval of the Director for the production of any other product other than cesium formate solution; the overall production of cesium products on an equivalency basis of cesium formate solution will remain less than the approved 1,000 oilfield barrels per month; and no new or significant environmental impacts resulting from the proposed alterations are anticipated by Tanco; I hereby approve the proposed NoA No. 7 pursuant to Condition #4 of the approved NoA No.5.

Should you require any clarification of any condition of this NoA approval, please do not hesitate to contact me at (204) 945-7071.

Letter from Strachan to Ferguson

July 24, 2001

Page 2 of 2

Yours truly,



Larry Strachan, P. Eng.  
Director  
Environmental Approvals

cc. T. Tonner, P. Eng., Environmental/Safety Manager, Tanco  
G. Prouse, Regional Director, Eastern Region (enclosure included)

# Manitoba



Conservation

Environmental Stewardship Division

123 Main Street, Suite 160  
Winnipeg MB R3C 1A5  
CANADA

Fax: (204) 945-5229

Internet: <http://www.gov.mb.ca/environ>

File: 1906.2

July 24, 2001

Mr. William Ferguson  
General Manager  
Tantalum Mining Corporation of Canada Limited (Tanco)  
Box 2000  
Lac du Bonnet MB R0E 1A0

Dear Mr. Ferguson:

**Re: Cesium Products Facility - Notice of Alteration No. 7**

This letter is in response to Tanco's Notice of Alteration (NoA) No. 7 dated June 1, 2001 and submitted on June 5, 2001, and the supporting "Capital Project Submission Document" and "Conventional Cesium Project Conceptual Design Basis Report". It is our understanding that Tanco wishes to implement alterations within the existing Cesium Products Facility to augment the current 500 barrels/month production of cesium formate solution with 500,000 lbs/year (equivalent to 60 barrels/month of cesium formate solution) of technical grade cesium sulphate contained in the form of conventional cesium products of either cesium sulfate, cesium chloride, cesium hydroxide or cesium carbonate, while continuing to produce cesium formate solution at a production rate of 500 oilfield barrels/month.

Whereas: Condition #4 of the approval for NoA No. 5, dated January 24, 1999, requires the approval of the Director for the production of any other product other than cesium formate solution; the overall production of cesium products on an equivalency basis of cesium formate solution will remain less than the approved 1,000 oilfield barrels per month; and no new or significant environmental impacts resulting from the proposed alterations are anticipated by Tanco; I hereby approve the proposed NoA No. 7 pursuant to Condition #4 of the approved NoA No.5.

Should you require any clarification of any condition of this NoA approval, please do not hesitate to contact me at (204) 945-7071.

# Manitoba

EA-19



Conservation

Environmental Stewardship Division

123 Main Street, Suite 160  
Winnipeg MB R3C 1A5  
CANADA

Fax: (204) 945-5229

Internet: <http://www.gov.mb.ca/environ>

File: 1906.2

**FAXED**  
884-2211

William Ferguson

General Manager

Tantalum Mining Corporation of Canada Limited

Box 2000

Lac Du Bonnet MB R0E 1A0

May 17, 2002

*Best Not what I  
was lead to believe!*

*AEJ*

Dear Mr. Ferguson:

**Re: Temporary Transfer of Excess Fluids - Notice of Alteration No. 8**

In response to your letter dated May 15, 2002, I acknowledge the circumstance that TANCO is presently at risk of exceeding the holding capacity of the active Cesium Products Facility (CPF) Containment Cell #2 due to difficulties being experienced in reducing the fluid level in Cell #2 by the method normally used to date. It is also understood that the proposed emergency response to manage the situation is to transfer a volume of 300 to 500 cubic metres of fluids from Cell #2 to the CPF Containment Cell #1, with the transferred fluid to be returned from Cell #1 to Cell #2 as soon as conditions permit. Whereas the double lined Cell #1 had been decommissioned, cleaned out, and not yet re-commissioned for re-use but still possessing an operable inter-layer recovery system, I hereby approve the temporary transfer of up to 500 cubic metres of fluids from Cell #2 to Cell #1 conditional upon TANCO:

- 1) implementing the inter-layer recovery system in Cell #1, as necessary, and for the duration until all the transferred fluids been returned to Cell #2;
- 2) providing notification to the Director upon the completion of having returned all the transferred fluids from Cell #1 back to Cell #2, together with information on:
  - (a) the amount of fluids transferred from Cell #2 to Cell #1;
  - (b) the amount of fluids returned from Cell #1 to Cell #2; and
  - (c) the quantity of fluids required recovered from the inter-layer recovery system.

Please keep me informed if any difficulties are encountered throughout this approved undertaking.

*CC: F. Tonner*

Yours truly,



Larry Strachan, P. Eng.  
Director  
Environment Act

cc. B. Bremner

**Conservation**Environmental Stewardship Division  
Environmental Approvals Branch[www.gov.mb.ca/conservation/envapprovals](http://www.gov.mb.ca/conservation/envapprovals)123 Main Street, Suite 160  
Winnipeg MB R3C 1A5  
CANADA

Fax: (204) 945-5229

July 24, 2002  
File 1906.20

Mr. William Ferguson  
General Manager  
Tantalum Mining Corporation of Canada Limited (Tanco)  
Box 2000  
Lac du Bonnet MB R0E 1A0

Dear Mr. Ferguson:

**Re: Cesium Products Facility – Notice of Alteration No. 9  
- Placement of Containment Cell No. 2 Residue in Old TMA**

This letter is in response to Tanco's Notice of Alteration (NOA) submitted on July 8, 2002 and supporting technical and environmental effects report. You indicated that you want to extend the same plan that was previously approved for residue (i.e. NOA No. 6) from Containment Cell No. 1 of the Cesium Products Facility (CPF) to residue from Containment Cell No. 2. The work that would be undertaken would include:

- dewatering Containment Cell No. 2 with the transfer of water to Containment Cell No. 1;
- removing solid residue from Containment Cell No. 2, transporting and depositing it into an area within the existing Old Tailings Management Area (TMA) where residue from Containment Cell 1 was previously placed;
- covering the residue with a tailing/feldspar cap; and
- preparing the emptied Containment Cell No. 2 for re-use.


.../2

In consideration of the environmental effects outlined in the supporting report, I regard the potential environmental effects of the NOA to be insignificant. Accordingly, pursuant to Section 14(2) of The Environment Act, I hereby approve the implementation of the NOA subject to the following conditions:

1. removal, transfer and burial of the CPF solid residue is carried out as proposed;
2. subsequent to the removal of the CPF solid residue from Containment Cell No. 2, the integrity of the inner liner of that cell is tested by transferring liquor from Cell No. 1 into Cell No. 2 to a depth of at least 2.5 metres and testing the leakage rate into the interstitial space between the inner and outer liner of Cell No. 2;
3. a report on the leakage rate of fluids into the interstitial space between the liners is provided to the Director, with the results compared to the manufacturer's maximum leakage rate specifications, as well as compared to the leakage rates determined during the past operating period of Cell No. 2;
4. new CPF residue shall not be deposited into the emptied Cell No. 2 until:
  - a) any necessary inner liner repairs are completed; and
  - b) the Director has expressed satisfaction, in writing, with the leakage rate results provided through item 3 above;
5. CPF residue placed in the Old TMA area shall be covered with a 0.6 metre thick cap of tailing/feldspar material; and
6. the groundwater-monitoring program in the area of the disposal site shall be continued, with the results submitted to the Director annually, within 45 days of the collection of those annual sample runs taken for the comprehensive chemical analyses.

Should you require any clarification of any condition of this approval, please call me at (204)-945-7071.

Yours truly,

  
Larry Strachan, P. Eng.  
Director  
Environmental Approvals

- c. Robert Cameron, A/Director, Eastern Region



Conservation

Environmental Stewardship Division  
Environmental Approvals Branch

123 Main Street, Suite 160  
Winnipeg MB R3C 1A5  
CANADA

www.gov.mb.ca/conservation/envapprovals

Fax: (204) 945-5229

File 1906.20

COPY IN FILE 3.5.2.12

June 30, 2004

JUL - 6 2004

Mr. William Ferguson  
General Manager  
Tantalum Mining Corporation of Canada Limited (Tanco)  
A Cabot Corporation Company  
Box 2000  
Lac du Bonnet, MB R0E 1A0

cc: T. Tonner ✓  
S. Pavitt  
- 6 July 04

## COPY

Dear Mr. Ferguson:

**Re: Cesium Products Facility – Notice of Alteration No. 10  
Placement of Containment Cell No. 1 Residue into the old TMA**

This letter is in response to Tanco's Notice of Alteration (NoA) dated June 2, 2004, wherein you request authorization to remove 45,000 m<sup>3</sup> of the Cesium Products Facility (CPF) residue from Containment Cell #1 for transport and placement into the existing and approved residue dry-stacking area established in the old tailings management area (TMA). The work that would be undertaken would include:

- dewatering Containment Cell No. 1 with the transfer of water to Containment Cell No. 2;
- removing solid residue from Containment Cell No. 1, and transporting and depositing it onto the existing DPF residue depository area in the old TMA where residue from Containment Cells #1 and #2 has previously been placed;
- capping the residue with non reactive feldspar waste rock; and
- preparing the emptied Containment Cell No. 1 for re-use.

In consideration of the most recent "CPF Residue Placement Groundwater Monitoring Data, 2001-2003" report dated May 25, 2004, I regard the potential environmental effects of the NoA to be insignificant. Accordingly, pursuant to Section 14(2) of The Environment Act, I hereby approve the implementation of the NoA subject to the conditions that:

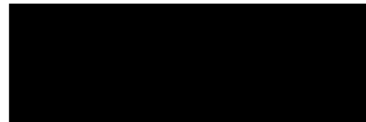
1. the removed residue is placed in the old TMA, on top of the previously deposited residue, and covered with a 0.6 metre thick cap of non reactive feldspar waste rock;
2. the resultant increase in surficial elevation of the deposited residue in the old TMA does not give rise to the release of fugitive emissions of particulate matter into the environment beyond the boundary of the old TMA;



3. the effectiveness of the feldspar cover is substantiated with actual air quality data collected beyond the boundary of the old TMA in a dry weather period and under gusty wind conditions in the direction of the air monitoring unit(s), and submitted to the Director within 3 months of the date this letter;
4. subsequent to the removal of the CPF solid residue from Containment Cell No. 1, the integrity of the inner liner of that cell is tested by transferring liquor from Cell No. 2 into Cell No. 1 to a depth of at least 2.5 metres and testing the leakage rate into the interstitial space between the inner and outer liner of Cell No. 1;
5. a report on the leakage rate of fluids into the interstitial space between the liners is provided to the Director, with the results compared to the manufacturer's maximum leakage rate specifications, as well as compared to the leakage rates as determined to date over the operating period of Cell No. 1;
6. new CPF residue is not deposited into the emptied Cell No. 1 until:
  - a) any necessary inner liner repairs are completed; and
  - b) the Director has expressed satisfaction, in writing, with the most current leakage rate results provided through item 3 above; and
7. a groundwater monitoring program, satisfactory to the Director, is maintained in the area of the residue disposal site, with the results submitted to the Director annually, within 45 days of the collection of those annual sample runs taken for the comprehensive chemical analyses.

Should you require any clarification of any condition of this approval, please call me at (204)-945-7071.

Yours truly,



*for*

Larry Strachan, P. Eng.  
Director  
Environmental Approvals

- c. B. Bremner, Eastern Region  
B. Edirmanasinghe, Mines Branch


**Conservation**

Environmental Stewardship Division  
 Environmental Assessment and Licensing Branch  
 CANADA  
[www.gov.mb.ca/conservation/envapprovals](http://www.gov.mb.ca/conservation/envapprovals)

123 Main Street, Suite 160  
 Winnipeg MB R3C 1A5

Fax: (204) 945-5229

File: 1906.2

May 10, 2005

Mr. William Ferguson  
 General Manager  
 Tantalum Mining Corporation of Canada Limited (Tanco)  
 Box 2000  
 Lac du Bonnet, MB R0E 1A0

Dear Mr. Ferguson,

**Re: Cesium Products Facility – Notice of Alteration No. 11  
 - Placement of Containment Cell No. 2 Residue into Old TMA**

This letter is in response to the Notice of Alteration (NoA) submitted on February 16, 2005, by SEACOR Environmental Inc. on behalf of Tanco, along with a supporting technical and environmental effects report. The nature of the described alteration concerns the excavation and transfer of 80,000 cubic metres of accumulated residue from Cell No. 2 of the Cesium Products Facility (CPF) to the existing disposal/storage site within the old Tailings Management Area (TMA). The work that would be undertaken would include:

- dewatering Containment Cell No. 2 with the transfer of the fluids to Containment Cell No. 1;
- excavating the solid residue from Containment Cell No. 2, and transporting and depositing it onto the existing CPF residue depository area in the old TMA where residue from Containment Cells No. 1 and No. 2 has previously been placed;
- capping the newly deposited residue with non reactive feldspar waste rock; and
- preparing the emptied Containment Cell No. 2 for re-use.

In consideration of the environmental effects outlined in the supporting report, I regard the potential environmental effects of the NoA to be insignificant. Accordingly, pursuant to Section 14(2) of The Environment Act, I hereby approve the implementation of the NoA subject to the conditions that:

1. the removed residue is placed in the old TMA, on top of the previously deposited residue, and covered with a 0.6 metre thick cap of non reactive feldspar waste rock immediately following the completion of the residue transfer activity;
2. the resultant increase in surficial elevation of the deposited residue in the old TMA does not give rise to the release of fugitive emissions of particulate matter into the environment beyond the boundary of the old TMA;
3. the effectiveness of the feldspar cover is substantiated with actual air quality data that is collected beyond the boundary of the old TMA during a dry weather period, under gusty wind conditions in the direction of the air monitoring unit(s), with the data and

Letter from Hreno to Ferguson  
May 10, 2005

- an interpretation of the data submitted to the Director within 3 months of the completion of condition No. 1;
4. subsequent to the removal of the CPF solid residue from Containment Cell No. 2, the integrity of the inner liner of that cell is tested by transferring liquor from Cell No. 1 into Cell No. 2 to a depth of at least 2.5 metres and testing the leakage rate into the interstitial space between the inner and outer liner of Cell No. 2;
  5. a report on the leakage rate of fluids into the interstitial space between the liners is provided to the Director, with the results compared to the manufacturer's maximum leakage rate specifications, as well as compared to the leakage rates as determined to date over the operating period of Cell No. 2;
  6. new CPF residue is not deposited into the emptied Cell No. 1 until:
    - a) any necessary inner liner repairs are completed; and
    - b) the Director has expressed satisfaction, in writing, with the most current leakage rate results provided through item 3 above; and
  7. a groundwater monitoring program, satisfactory to the Director, is maintained in the area of the residue disposal site, with the results submitted to the Director annually, within 45 days of the collection of those annual sample runs taken for the comprehensive chemical analyses.

Should you require any clarification of any condition of this approval, contact Clem Moche at (204)-945-7013.

Yours truly,



J. Trent Hreno

A/Director

Environmental Assessment and Licensing

c.c. D. Ramsey (SEACOR)  
B. Bremner  
E. Armitt

EA-23

# Manitoba



## Conservation

- 1) M. Van Den Broek
- 2) C. Moche

Environmental Stewardship Division  
Environmental Assessment and Licensing Branch  
CANADA  
[www.gov.mb.ca/conservation/envapprovals](http://www.gov.mb.ca/conservation/envapprovals)

123 Main Street, Suite 160  
Winnipeg MB R3C 1A5

Phone 945-8321  
Fax: (204) 945-5229

→ 3) File: 1906.2

May 16, 2006

Mr. William Ferguson  
General Manager  
Tantalum Mining Corporation of Canada Limited  
Box 2000  
Lac du Bonnet, MB R0E 1A0

Dear Mr. Ferguson:

**Re: Cesium Products Facility – Notice of Alteration No. 12  
Placement of Containment Cell No. 1 Residue into the old TMA**

This letter is in response to the letter dated May 10, 2006, which was submitted to us by Wardrop on behalf of Tantalum Mining Corporation. Consistent with previous similar requests, the letter is being treated as a Notice of Alteration (specifically NoA No. 12) received on May 12, 2006, from Wardrop on behalf of Tantalum Mining Corporation, together with supporting technical information supplied by Wardrop and dated May 11, 2006.

The nature of the described alteration concerns the excavation and transfer of accumulated residue (volume unspecified) from within Cell No. 1 of the Cesium Products Facility (CPF) to the existing disposal/storage site within the old Tailings Management Area (TMA). The work to be undertaken is understood to include:

- dewatering Containment Cell No. 1 with the transfer of the fluids to Containment Cell No. 2;
- excavating the solid residue from Containment Cell No. 1, and transporting and depositing it onto the existing CPF residue depository area in the old TMA where residue from Containment Cells No. 1 and No. 2 has previously been placed and capped;
- capping the newly deposited residue with non reactive feldspar waste rock; and
- preparing the emptied Containment Cell No. 1 for re-use.

Whereas the change in the environmental effects, as based on the supporting technical information is considered to be insignificant, I hereby approve the implementation of NoA No. 12 pursuant to Section 14(2) of The Environment Act subject to the conditions that:

1. the removed residue is placed in the old TMA, on top of the previously deposited residue, and covered with a 0.6 metre thick cap of non reactive feldspar waste rock immediately following the completion of the residue transfer activity;
2. the additional material added to the existing mound does not compromise it's slope stability;
3. the resultant increase in surficial elevation of the deposited residue in the old TMA does not give rise to the release of fugitive emissions of particulate matter into the environment beyond the boundary of the old TMA;

4. the effectiveness of the feldspar cover is substantiated with actual air quality data that is collected in the Fall of 2006 beyond the boundary of the old TMA during a dry weather period, under gusty wind conditions in the direction of the air monitoring unit(s), with the data and an interpretation of the data submitted to the Director within 3 months of the completion of the air monitoring activity;
5. subsequent to the removal of the CPF solid residue from Containment Cell No. 1, the integrity of the inner liner of that cell is tested by transferring liquor from Cell No. 2 into Cell No. 1 to a depth of at least 2.5 metres and testing the leakage rate into the interstitial space between the inner and outer liner of Cell No. 1;
6. a report on the leakage rate of fluids into the interstitial space between the liners is provided to the Director the results compared to the manufacturer's maximum leakage rate specifications, as well as compared to the leakage rates as determined to date over the operating period of Cell No. 1;
7. no new CPF residue is deposited into the emptied Cell No. 1 until:
  - a) any necessary inner liner repairs have been completed; and
  - b) the Director has expressed satisfaction, in writing, with the most current leakage rate results provided through item 5 above; and
8. a groundwater monitoring program, satisfactory to the Director, is maintained in the area of the residue disposal site, with the results submitted to the Director annually, within 45 days of the collection of those annual sample runs taken for the comprehensive chemical analyses.

In regards to the matter of the ongoing annual transfer of the solid residue from Containment Cell No's 1 or 2, I would appreciate receiving an update on the initiative that had been expressed in the past by Tanco whereby the Cesium Plant solid residues would be reclaimed, reprocessed, and subsequently disposed of into the new TMA. I raise this matter because the Mines Branch had last year expressed to us their concerns about creating a high and visible mound with the relocated Cesium Plant waste residue. At the current trend, the objective of maintaining as small a footprint as possible for the transferred residue may gradually become impractical due to possible slope stability issues. Other disposal options such as disposal by underground backfilling may also warrant consideration, especially if the Cesium Plant residue is reprocessed and is then no longer deemed to hold any further economic mineral value.

Should you require clarification of any condition of this approval, please contact Clem Moche at (204)-945-7013.

Yours truly,

**Original Signed by**

Tracey Braun, M.Sc.  
Director  
Environmental Assessment and Licensing

Letter from Braun to Ferguson  
May 16, 2006  
Page 3 of 3

c.c. D. Ramsey (Wardrop)  
B. Bremner  
E. Armitt



**Conservation**

Environmental Stewardship Division  
 Environmental Assessment and Licensing Branch  
 123 Main Street, Suite 180, Winnipeg, Manitoba R3C 1A5  
 T 204 945-7100 F 204 945-5229  
[www.gov.mb.ca/conservation/envapprovals](http://www.gov.mb.ca/conservation/envapprovals)

**COPY**

Mr. Henry Landry  
 General Manager  
 Tantalum Mining Corporation of Canada  
 Box 2000  
 Lac du Bonnet, MB R0E 1A0

File: 1906.2

Dear Mr. Landry:

**Re: Cesium Products Facility – Notice of Alteration No. 13  
 Placement of Containment Cell No. 2 Residue into the old TMA**

This letter is in response to the letter dated May 24, 2007, which was submitted to us by Wardrop on behalf of Tantalum Mining Corporation. Consistent with previous similar requests, the letter is being treated as a Notice of Alteration (specifically NoA No.13) respecting the ongoing management of the solid residues being generated by the Cesium Products Facility (CPF), the operation which in itself was the object of an approved Notice of Alteration. In future correspondence respecting the ongoing management of the CPF solid wastes, please be sure to submit the requests as a Notice of Alteration so as to add clarity to the public record.

The nature of the described alteration concerns the excavation and transfer of accumulated residue from within Cell No. 2 of the (CPF) to a location adjacent to the existing disposal/storage site within the old Tailings Management Area (TMA). The work to be undertaken is understood to include:

- dewatering Containment Cell No. 2 with the transfer of the fluids to Containment Cell No. 1;
- excavating the solid residue from Containment Cell No. 2, and transporting and depositing it to a location adjacent to the existing CPF residue depository area in the old TMA, where residue from Containment Cells No. 1 and No. 2 has previously been placed and capped;
- capping the newly deposited residue with non reactive feldspar waste rock; and
- preparing the emptied Containment Cell No. 2 for re-use.

Based on the technical information provided by Wardrop, I have concluded that the change in environmental effects is insignificant. I therefore approve NoA No. 13 as a minor alteration pursuant to Section 14(2) of The Environment Act subject to the conditions that:


1. the removed residue is placed in the old TMA, at the identified area adjacent to the previously deposited residue, and covered with a 0.6 metre thick cap of non reactive feldspar waste rock immediately following the completion of the residue transfer activity;

**Manitoba**  
 spirited energy

2. the resultant increase in surficial elevation of the deposited residue in the old TMA does not give rise to the release of fugitive emissions of particulate matter into the environment beyond the boundary of the old TMA;
3. the effectiveness of the feldspar cover is substantiated with actual air quality data that will be collected in the fall of 2007 beyond the boundary of the old TMA during a dry weather period, under gusty wind conditions in the direction of the air monitoring unit(s), with the data and an interpretation of the data submitted to the Director within 3 months of the completion of the air monitoring activity;
4. subsequent to the removal of the CPF solid residue from Containment Cell No. 2, the integrity of the inner liner of that cell is tested by transferring liquor from Cell No. 1 into Cell No. 2 to a depth of at least 2.5 metres and testing the leakage rate into the interstitial space between the inner and outer liner of Cell No. 2;
5. a report on the leakage rate of fluids into the interstitial space between the liners is provided to the Director with the results compared to the manufacturer's maximum leakage rate specifications, as well as compared to the leakage rates as determined to date over the operating period of Cell No. 2;
6. no new CPF residue is deposited into the emptied Cell No. 2 until:
  - a) any necessary inner liner repairs have been completed; and
  - b) the Director has expressed satisfaction, in writing, with the most current leakage rate results provided through item 4 above; and
7. a groundwater monitoring program, satisfactory to the Director, is maintained in the area of the residue disposal site, with the results submitted to the Director annually, and within 45 days of the collection of those annual sample runs taken for the comprehensive chemical analyses.

Should you require clarification of any condition of this approval, please contact Clem Moche at (204) 945-7013.

Yours truly,

  
Tracey Braun, M.Sc.  
Director  
Environmental Assessment and Licensing

c.c. M. Walker (E. Region)  
E. Armitt  
D. Ramsey (Wardrop)

**COPY**



Environmental Stewardship Division  
Environmental Assessment and Licensing Branch  
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5  
T 204 945-7100 F 204 945-5229  
[www.gov.mb.ca/conservation/envapprovals](http://www.gov.mb.ca/conservation/envapprovals)

February 08, 2008

Henry Landry  
General Manager  
Tantalum Mining Corporation of Canada  
Box 2000  
Lac du Bonnet, MB R0E 1A0

File: 1906.2

Dear Mr. Landry:

**Re: Notice of Alteration No. 14 - CPF Cell No. 2 Re-Commissioning Request**

I acknowledge the receipt of a letter from Wardrop, dated January 17, 2008, which was submitted on behalf of Tantalum Mining Corporation, and which I am treating as Notice of Alteration No. 14 to the ongoing management of the CPF tailings stream.

I am satisfied that the potential environmental effects resulting from the requested alteration are insignificant and so do hereby approve the requested alteration as a minor alteration, subject to the condition that the Cell 2 area is also captured during the next scheduled groundwater monitoring program, respecting the overall groundwater impacts from the Tailings Management Area.

Yours truly,



Tracey Braun, M.Sc.  
Director  
Environmental Assessment and Licensing

Enclosure

cc: D. Ramsey  
M. Walker A/Director, Eastern Region

*EA-27***Conservation**

Environmental Stewardship Division  
Environmental Assessment and Licensing Branch  
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5  
T 204 945-7100 F 204 945-5229  
www.gov.mb.ca/conservation/eal

File: 1906.2  
July 2, 2008

Mr. Michael Enns  
Project Manager  
Tantalum Mining Corporation of Canada Limited  
Box 2000  
Lac du Bonnet, MB R0E 1A0

Dear Mr. Enns:

*NoA-15*      **Re: Residue Transfer from Containment Cell No. 1**

This letter is in response to two letters, both dated May 23, 2008, which were jointly submitted to us by Wardrop on behalf of Cabot Specialty Fluids (a subsidiary of Cabot Corporation) which operates the Cesium Products Facility (CPF) located on the site of the Tantalum Mine, whereby one letter requested permission to transfer drained residue from storage Cell #1 to the previously approved site in Tanco's Tailings Management Area (TMA), (which I am treating as NoA No.15), and the other letter contained a report on the findings of a dust survey conducted in fulfillment of a condition of a previous Notice of Alteration approval in support of continuing depositions of the CPF residue within the previously approved drained CPF residue storage site within the TMA.

Whereas the change in the environmental effects, as based on the supporting Dust Survey report, is considered to be insignificant, I hereby approve the implementation of NoA No. 15 as a minor alteration pursuant to Section 14(2) of The Environment Act subject to the conditions that:

1. the removed residue is placed in the old TMA, on top of the previously deposited similar residues, and covered with a 0.6 metre thick cap of non reactive feldspar waste rock immediately following the completion of the residue transfer activity;
2. the additional material added to the existing mound does not compromise it's slope stability;
3. the resultant increase in surficial elevation of the deposited residue in the old TMA does not give rise to future release of fugitive emissions of particulate matter into the environment beyond the boundary of the old TMA;
4. subsequent to the removal of the CPF solid residue from Containment Cell No. 1, the integrity of the inner liner of Cell No. 1 is tested by transferring liquor from Cell No. 2 into Cell No. 1 to a depth of at least 2.5 metres and testing the leakage rate into the interstitial space between the inner and outer liner of Cell No. 1;

-2-

5. a report on the leakage rate of fluids into the interstitial space between the liners is provided to the Director the results compared to the manufacturer's maximum leakage rate specifications, as well as compared to the leakage rates as determined to date over the operating period of Cell No. 1;
6. no new CPF residue is deposited into the emptied Cell No. 1 until:
  - a) any necessary inner liner repairs have been completed; and
  - b) the Director has expressed satisfaction, in writing, with the most current leakage rate results provided through item 5 above; and
7. a groundwater monitoring program, satisfactory to the Director, is maintained in the area of the residue disposal site, with the results submitted to the Director annually, within 45 days of the collection of those annual sample runs taken for the comprehensive chemical analyses.

Should you require clarification of any condition of this approval, please contact Clem Moche at (204)-945-7013.

Yours truly,



Tracey Braun, M.Sc.  
Director  
Environmental Assessment and Licensing

c.c. D. Ramsey (Wardrop)  
J. Irwin  
E. Armitt



EA-28

Environmental Stewardship Division  
Environmental Assessment and Licensing Branch  
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5  
T 204 945-7100 F 204 945-5229  
www.gov.mb.ca/conservation/eal

September 2, 2009  
File: 1906.2

Michael Enns, P.Eng.  
Project Manager  
Tantalum Mining Corporation of Canada  
Box 2000  
Lac du Bonnet MB R0E 1A0


Dear Mr. Landry:

**Re: Notice of Alteration No. 16 - CPF Cell No. 1 Re-Commissioning Request**

I acknowledge the receipt of a letter dated August 21, 2009 from Wardrop Engineering Inc., which was submitted to me on behalf of Cabot Specialty Fluids respecting the ongoing use Cell No.1, as part of the ongoing management of the CPF tailings stream. This letter is considered Notice of Alteration No. 16 to Environment Act Licence No. 973

I am satisfied by the submitted report that the Cell No. 1 inner liner has been adequately repaired and that the potential environmental effects resulting from the requested alteration will be insignificant. I hereby approve the requested alteration to place the repaired Cell No. 1 back into service as a minor alteration, subject to the condition that the Cell 1 area is captured, during the next scheduled groundwater monitoring program respecting the overall groundwater impacts from the Tailings Management Area.

Yours truly,



Tracey Braun, M.Sc.  
Director  
Environmental Assessment and Licensing

cc. P. Solylo, P. Geo. (Wardrop Engineering Inc.)  
D. Labossiere

Environmental Stewardship Division  
Environmental Assessment and Licensing Branch  
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5  
T 204 945-7100 F 204 945-5229  
[www.gov.mb.ca/conservation/eal](http://www.gov.mb.ca/conservation/eal)

September 15, 2009  
File: 1906.2

Colleen Bugslag  
Safety, Health & Environment Manager  
Tantalum Mining Corporation of Canada Ltd.  
Box 2000  
Lac du Bonnet MB R0E 1A0

Dear Ms. Bugslag:

**Re: Notice of Alteration No. 17 - Re-Transfer of Residue from CPF Cell # 2**

I acknowledge the receipt of a letter dated August 12, 2009, together with a report labeled "CPF Residue Placement Groundwater monitoring Data, 2008", both having been submitted to me by Wardrop Engineering Inc., on behalf of Cabot Specialty Fluids, for permission to transfer the existing residue solids from within CPF Cell No. 2 to the existing approved 2001-2008 residue placement area within the old Tailings Management Area.

I have reviewed the submission and am treating it as Notice of Alteration No. 17 to Environment Act Licence No. 973. Accordingly, and in consideration of the continuing satisfactory groundwater monitoring results, I am satisfied that the change in the environmental effects will be negligible and therefore do hereby approve NoA No. 17, as a minor alteration conditional upon the licensee repeating the annual groundwater monitoring program in 2009, within the old tailings area and reporting the results and interpretation of the data to the Director in 2010.

Yours truly,



Tracey Braun, M.Sc.  
Director  
Environmental Assessment and Licensing

cc. P. Solylo P. Geo. (Wardrop)  
D. Labossiere

Manitoba



**Conservation**

Climate Change and Environmental Protection Division  
Environmental Assessment and Licensing Branch  
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5  
T 204 945-7100 F 204 945-5229  
www.gov.mb.ca/conservation/eal

**File: 1906.20**  
October 21, 2010

Ms. Colleen Bugslag, CRSP  
Safety, Health and Environment Manager  
Tantalum Mining Corporation of Canada Ltd.  
P.O. Box 2000  
Lac Du Bonnet, MB R0E 1A0

Dear Ms. Bugslag:

**Re: CPF Cell No. 2**

This letter is in response to the e-mail dated October 6, 2010 requesting approval to operate CPF Cell No. 2 temporarily with a single liner pending the results of a study to determine what is required to restore the two-liner system.

Following a review of the information provided I am prepared to approve the temporary use of the cell as described in your e-mail with the following conditions:

1. Prior to operating the cell, the test data for the inner liner repairs must be submitted to the Director for approval.
2. Prior to operating the cell, a leak monitoring program must be submitted to the Director for approval. The leak monitoring program shall include the location, parameters and frequency of testing.
3. The Licencee shall submit a monitoring report to the Director every two weeks for the duration of the use of the cell in a single liner configuration. The monitoring report shall include the results of the leak monitoring program, observations and a status update pertaining to the long term solution as specified below.
4. The Licencee shall submit for approval, on or before February 1, 2011, a repair and maintenance plan for the CPF facility that includes but is not limited to a description of how the Licencee will provide sufficient capacity to operate the facility during maintenance and repair operations.
5. This approval expires on February 28, 2011 unless a later date is approved by the Director in accordance with the approved repair and maintenance plan.

Yours truly,



Tracey Braun, M.Sc.  
Director  
Environmental Assessment and Licensing Branch

c. Diane Oertel, Manitoba Conservation  
Doug Ramsey, Tetra Tech

*CRAMP MESSAGE  
- TO CONSERVATION*

*BRN LICENSOR*

*Tracey.Braun@gov.mb.ca*



**Conservation**

Climate Change and Environmental Protection Division  
Environmental Assessment and Licensing Branch  
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5  
T 204 945-8321 F 204 945-5229  
[www.gov.mb.ca/conservation/eal](http://www.gov.mb.ca/conservation/eal)

**File: 1906.20**  
October 31, 2011

Mr. Blair C. Skinner  
General Manager  
Tantalum Mining Corporation of Canada Limited  
P.O. Box 2000  
Lac Du Bonnet, MB R0E 1A0

Dear Mr. Skinner:

I am writing to you in response to your submission of a Notice of Alteration identified as "NoA #19" which I received September 6, 2011 pursuant to Section 14(2) of *The Environment Act*. NoA #19 includes a request to receive an updated Environment Act Licence.

NoA #19 consists of 18 individual NoAs which had each been previously and separately approved as minor alterations pursuant to Section 14(2) of *The Environment Act*. Therefore, I approve the proposed NoA #19 as a minor alteration to the Development. Accordingly, an updated Environment Act Licence will be developed and issued to replace Environment Act Licence No. 973. Once developed, a draft Licence will be provided to you for your review prior to its issuance.

Please contact Jennifer Winsor at 204-945-7012, if you have any questions regarding the foregoing.

Yours truly,



Tracey Braun, M.Sc.  
Director  
Environmental Assessment and Licensing Branch



**Conservation and Water Stewardship**

Climate Change and Environmental Protection Division  
Environmental Approvals Branch  
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5  
T 204 945-8321 F 204 945-5229  
[www.gov.mb.ca/conservation/eal](http://www.gov.mb.ca/conservation/eal)

**File: 1906.30**

October 24, 2013

Mr. Will Brits  
General Manager  
Tantalum Mining Corporation of Canada Ltd.  
Bernic Lake, Box 2000  
Lac du Bonnet, MB R0E 1A0

Dear Mr. Brits:

**Re: Tantalum Mining Corporation of Canada Limited (Tanco) – Temporary Access Road and Vehicle Turnaround Area Construction**

Receipt of your September 23, 2013 letter and October 11, 2013 letter and memorandum from Tetra Tech is acknowledged as notice of alteration in accordance with Section 14 of *The Environment Act*. Specifically, you ask approval for the construction and operation of a temporary access road to the narrows of Bernic Lake. Further, a small vehicle turnaround area is required.

Based on a review of the proposed temporary access road construction, it is determined that the environmental impacts will be insignificant. Therefore, approval is granted subject to following all of the mitigation measures proposed in your Notice of Alteration and the following additional conditions:

- 1) The Licencee shall:
  - a) consult with local First Nations community members and trappers who may be affected by the temporary access road construction; and
  - b) provide a report to the Director demonstrating consultation and outcomes.
- 2) The Licencee shall engage a member of Sagkeeng First Nation to be present during road clearing to provide guidance with respect to traditional knowledge.
- 3) The Licencee shall obtain all necessary federal, provincial and/or municipal licences, authorizations, permits and/or approvals for clearing the temporary access road prior to commencement of clearing.



- 4) The Licencee shall not locate any petroleum storage tank within 100 metres of the shoreline of any waterway or water body.
- 5) The Licencee shall construct and maintain silt fences in the drainage routes transporting surface runoff off the property adjacent to the temporary access road until vegetation has been re-established on the cleared areas.
- 6) The Licencee shall collect, transport and store used oil or hydraulic fluids removed from on-site machinery in secure, properly labeled, non-leaking containers and shall regularly send them to a recycling or disposal facility approved to accept hazardous wastes.
- 7) The Licencee shall, following decommissioning of the temporary access road, restore any wetland disturbance resulting from the construction and operation of the temporary access road to maintain a zero net-loss of wetlands at the development.
- 8) The Licencee shall remove the temporary access road and vehicle turnaround area and fully restore the cleared area to the satisfaction of the Director and in a timeframe prescribed by the Director.

The approval for construction and operation of a temporary access road is restricted to the land area designated in the Notice of Alteration. Further, approval for construction of the temporary access road does not, in any way, presume that the work to mitigate the crown pillar will be approved as filed. The environmental assessment of the proposed crown pillar mitigation project remains ongoing and additional information must be provided and assessed prior to any licensing decision. The cost of the temporary access road construction is a risk accepted by TANCO should the larger project not be approved. Should the crown pillar mitigation project not be approved, the temporary access road must be removed and the area fully restored to the satisfaction of the Director.

If you have any questions, please contact me at 204-945-7071.

Yours truly,

*“Originally signed by”*

Tracey Braun, M.Sc.  
Director  
Environmental Approvals Branch

- c. Chris Beaumont-Smith, A/Director – Mines Branch, Innovation, Energy and Mines  
Lori Stevenson, Director – Lands Branch, Manitoba Conservation and Water Stewardship  
Don Labossiere, Director – Environmental Compliance and Enforcement Branch,  
Manitoba Conservation and Water Stewardship  
Public Registries



**Conservation and Water Stewardship**

Environmental Stewardship Division  
Environmental Approvals Branch  
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5  
T 204 945-8321 F 204 945-5229  
[www.gov.mb.ca/conservation/eal](http://www.gov.mb.ca/conservation/eal)

**File: 1906.20**

September 29, 2014

Mr. Wentzel Coetzer  
Facility General Manager  
Tantalum Mining Corporation of Canada Ltd.  
Bernic Lake, Box 2000  
Lac du Bonnet, MB R0E 1A0

Dear Mr. Coetzer:

**Re: Tantalum Mining Corporation of Canada Ltd. (Tanco) – Environment Act Licence No. 973 – Notice of Alteration – Project West**

Receipt of your August 27, 2014 and September 9, 2014 letters is acknowledged as a notice of alteration in accordance with Section 14 of *The Environment Act*.

The August 27, 2014 letter states that Tanco would like to withdraw the notice of alteration submitted on August 19, 2013 for the Crown Pillar Mitigation Project and is requesting approval to proceed with an alternative alteration to the development. The letter states that Tanco will be decommissioning the temporary access road that was approved on October 24, 2013 in accordance with the conditions provided in that letter.

The proposed alteration to the development as licensed is to secure and stabilize the west zone of the mine such that mining could resume in that area. In order to stabilize the west zone, backfilling would be required that would in turn require the development of a quarry, temporary crusher and ore storage buildings. The letter states that a quarry lease application has been filed with the Manitoba Mineral Resources Branch.

The September 9, 2014 addendum letter states that in addition to the work proposed in the August 27, 2014 notice of alteration, additional instrumentation to enhance the crown pillar rock mass monitoring system is required. Specifically, the installation of Time Domain Reflectometry (TDR) cables from the surface of the mine site into the crown pillar above the fall of ground area is proposed.

The potential environmental effect of the requested changes to the development as Licensed is insignificant and considered to be a minor alteration in accordance with section 14(2) of *The Environment Act*. Approval is hereby granted for the backfill raise, temporary crusher, ore storage buildings and fuel storage and construction trailers as described in the August 27,

2014 letter and for the installation of additional instrumentation as described in the September 9, 2014 letter subject to the following condition:

1. The Licencee shall not cause or permit a noise nuisance to be created as a result of the construction, operation or alteration of the Development, and shall take such steps as the Director may require to eliminate or mitigate a noise nuisance.

where:

**“noise nuisance”** means an unwanted sound, in an affected area, which is annoying, troublesome, or disagreeable to a person:

- a) residing in an affected area;
- b) working in an affected area; or
- c) present at a location in an affected area which is normally open to members of the public;

if the unwanted sound

d) is the subject of at least 5 written complaints, received by the Director in a form satisfactory to the Director and within a 90-day period, from 5 different persons falling within clauses a), b) or c), who do not live in the same household; or

e) is the subject of at least one written complaint, received by the Director in a form satisfactory to the Director, from a person falling within clauses a), b) or c) and the Director is of the opinion that if the unwanted sound had occurred in a more densely populated area there would have been at least 5 written complaints received within a 90-day period, from 5 different persons who do not live in the same household.

As requested, the notice of alteration for the Crown Pillar Mitigation Project submitted on August 19, 2013 is hereby withdrawn. If you have any questions, please contact Jennifer Winsor, P.Eng. at 204-945-7012.

Yours truly,

*“original signed by”*

Tracey Braun, M.Sc.  
Director

- c. Don Labossiere, Director – Environmental Compliance and Enforcement Branch, Manitoba Conservation and Water Stewardship  
Donna Smiley, Provincial Manager – Environmental Compliance and Enforcement Branch, Manitoba Conservation and Water Stewardship  
Diane Oertel, Regional Supervisor - Environmental Compliance and Enforcement Branch, Manitoba Conservation and Water Stewardship  
Chris Beaumont-Smith, A/Director – Mines Branch, Manitoba Mineral Resources Branch  
Public Registries

Environmental Stewardship Division  
Environmental Approvals Branch  
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5  
T 204 945-8321 F 204 945-5229  
www.gov.mb.ca/conservation/eal

**File: 1906.20**

January 4, 2016

Mr. Wentzel Coetzer  
Mine Operations Manager  
Cabot  
Tantalum Mining Corporation of Canada Ltd.  
Bernic Lake, Box 2000  
Lac du Bonnet, MB R0E 1A0

Dear Mr. Coetzer:

**Re: Tantalum Mining Corporation of Canada Ltd. (Tanco) – Environment Act Licence No. 973 – Notice of Alteration – Cable Bolting Project**

Receipt of your December 9, 2015 letter and report is acknowledged as a notice of alteration in accordance with section 14 of *The Environment Act*.

The proposed alteration to the development as licensed is to undertake a cable bolting project to secure and improve the stability of the Fall of Ground (FOG) area of the mine under Bernic Lake. The project would improve the safety of the mine and secure potential future extraction of the remaining ore from the mining zone identified as the East Zone.

The proposed cable bolting project would utilize two drilling barges located on Bernic Lake to drill and secure a total of ninety-six cable bolts and two Time Domain Reflectometry (TDR) cables above the East Main Zone in the FOG area.

The potential environmental effect of the requested changes to the development as Licensed is insignificant and considered to be a minor alteration in accordance with section 14(2) of *The Environment Act*. Approval is hereby granted for the undertaking of the cable bolting project as described in the December 9, 2015 letter and report and subject to the following condition:

1. The Licencee shall not cause or permit a noise nuisance to be created as a result of the construction, operation or alteration of the Development, and shall take such steps as the Director may require to eliminate or mitigate a noise nuisance.

where:

**“noise nuisance”** means an unwanted sound, in an affected area, which is annoying, troublesome, or disagreeable to a person:

a) residing in an affected area;  
b) working in an affected area; or  
c) present at a location in an affected area which is normally open to members of the public;

if the unwanted sound

d) is the subject of at least 5 written complaints, received by the Director in a form satisfactory to the Director and within a 90-day period, from 5 different persons falling within clauses a), b) or c), who do not live in the same household; or

e) is the subject of at least one written complaint, received by the Director in a form satisfactory to the Director, from a person falling within clauses a), b) or c) and the Director is of the opinion that if the unwanted sound had occurred in a more densely populated area there would have been at least 5 written complaints received within a 90-day period, from 5 different persons who do not live in the same household.

If you have any questions, please contact Jennifer Winsor, P.Eng. at 204-945-7012.

Yours sincerely,

***“original signed by”***

Tracey Braun, M.Sc.  
Director

- c. Don Labossiere/Donna Smiley/Diane Oertel – Environmental Compliance and Enforcement Branch, Manitoba Conservation and Water Stewardship  
Jennifer Winsor – Environmental Approvals Branch, Manitoba Conservation and Water Stewardship  
Chris Beaumont-Smith, Director – Mines Branch, Mineral Resources Public Registries



Conservation and Water Stewardship

Environmental Stewardship Division  
Environmental Approvals Branch  
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5  
T 204 945-8321 F 204 945-5229  
www.gov.mb.ca/conservation/eal

**File: 1906.20**

April 25, 2016

Mr. Wentzel Coetzer  
Mine Operations Manager  
Cabot  
Tantalum Mining Corporation of Canada Ltd.  
Bernic Lake, Box 2000  
Lac du Bonnet, MB R0E 1A0

Dear Mr. Coetzer:

**Re: Tantalum Mining Corporation of Canada Ltd. (Tanco) – Environment Act Licence No. 973 – Notice of Alteration – Cable Bolting Project Modification**

Receipt of your April 1, 2016 letter is acknowledged as a notice of alteration in accordance with section 14 of *The Environment Act*.

The letter states that following the completion of the feasibility study, it was determined that a 2.5 meter by 2.5 meter grid pattern should be implemented for the bolt installations, resulting in a total of 130 bolts to be installed instead of the 96 bolts originally proposed. The proposed alteration is a modification to the Tanco cable bolting project which was approved on January 4, 2016.

The potential environmental effect of the requested change to the development as Licensed is insignificant and considered to be a minor alteration in accordance with section 14(2) of *The Environment Act*. Approval is hereby granted for the undertaking of the cable bolting project as described in the April 1, 2016 letter.

If you have any questions, please contact Jennifer Winsor, P.Eng. at 204-945-7012.

Yours sincerely,  
“original signed by”

Tracey Braun, M.Sc.  
Director

- c. Don Labossiere/Donna Smiley/Diane Oertel – Environmental Compliance and Enforcement Branch, Manitoba Conservation and Water Stewardship  
Jennifer Winsor – Environmental Approvals Branch, Manitoba Conservation and Water Stewardship  
Public Registries



## Sustainable Development

Environmental Stewardship Division  
Environmental Approvals Branch  
123 Main Street, Suite 160, Winnipeg, Manitoba, Canada R3C 1A5  
T 204 945-8321 F 204-945-5229  
www.gov.mb.ca/conservation/eal

**File: 1906.20**

August 10, 2016

Mr. Wentzel Coetzer  
Tantalum Mining Corporation of Canada, Ltd.  
Bernic Lake, Box 2000  
Lac du Bonnet, MB R0E 1A0

Dear Mr. Coetzer:

**Re: Tantalum Mining Corporation of Canada Ltd. (Tanco) – Environment Act Licence No. 973 – Notice of Alteration – West Discharge Compliance Project**

Receipt of your June 30, 2016 letter and the report prepared by AECOM Canada Ltd. on behalf of Tanco is acknowledged as a notice of alteration in accordance with section 14 of *The Environment Act*.

The requested change to the Development as Licensed is for the installation and operation of a water treatment system to treat mine water and polishing pond water. The additional treatment system would be installed in order to reduce phosphorus and total suspended solids (TSS) to ensure compliance with effluent discharge requirements. No changes to the effluent discharge location or volume of effluent to be discharged are proposed.

The water treatment system will provide final polishing of the mine water effluent stream continuously throughout the year to remove phosphorus and polishing pond water will be treated for both TSS and phosphorus during periods of elevated algal growth. Waste solids from the water treatment system will be filter pressed and buried within the tailings and any decant will become part of the settling pond water and part of the treatment cycle.

The potential environmental effect of the requested change to the development as Licensed is insignificant and considered to be a minor alteration in accordance with section 14(2) of *The Environment Act*. Approval is hereby granted for the installation and operation of the water treatment system as described in the June 30, 2016 letter and report.

If you have any questions, please contact Jennifer Winsor, P.Eng. at 204-945-7012.

Yours sincerely,

Tracey Braun, M.Sc.  
Director

- c. Don Labossiere/Donna Smiley/Diane Oertel – Environmental Compliance and Enforcement Branch, Manitoba Sustainable Development  
Jennifer Winsor – Environmental Approvals Branch, Manitoba Sustainable Development  
Public Registries



**Conservation and Climate**

Environmental Stewardship Division  
Environmental Approvals Branch  
1007 Century Street, Winnipeg Manitoba R3H 0W4  
T 204-945-8321 F 204-945-5229  
[www.gov.mb.ca/sd](http://www.gov.mb.ca/sd)

**File: 1906.20**

April 30, 2020

Mr. Patrick Ferens  
Tantalum Mining Corporation of Canada Ltd.  
P.O. Box 2000  
Lac du Bonnet, MB R0E 1A0

Dear Mr. Ferens:

**Re: Tantalum Mining Corporation of Canada Ltd. –Environment Act Licence No. 973 – Notice of Alteration**

Receipt of your September 24, 2019 submission and October 21, 2019 and March 27, 2020 additional information is acknowledged as a notice of alteration in accordance with Section 14 of The Environment Act.


The requested change to the Development as Licensed is the transfer of approximately 7500 m<sup>3</sup> of wastewater effluent from Containment Cell #1 to the West Tailings Management Area (West TMA). The existing groundwater pumphouse will not be used for the transfer of wastewater effluent.

Specifically, the request to transfer effluent currently in Containment Cell #1 to the West TMA is a result of changes to the management plan which require the recommissioning of Cell #1 to effectively manage the water balance in the containment cells. The information provided states that all effluent discharge parameters will remain below effluent limits at the TMA discharge point.

The potential environmental effect of the requested change to the Development as Licensed is insignificant and considered to be a minor alteration in accordance with Section 14(2) of The Environment Act. Approval is hereby granted for the transfer of approximately 7500 m<sup>3</sup> of wastewater effluent from Containment Cell #1 to the West TMA as described in the September 24, 2019 letter and October 21, 2019 and March 27, 2020 additional information.

If you have any questions, please contact Jennifer Winsor, P.Eng. at [Jennifer.Winsor@gov.mb.ca](mailto:Jennifer.Winsor@gov.mb.ca).

Yours sincerely,

  
Shannon Kohler  
Director  
Environment Act

- c. Yvonne Hawryliuk / Larry Markwart – Environmental Compliance and Enforcement Branch  
Jennifer Winsor – Environmental Approvals Branch  
Public Registries





**Conservation and Climate**

Environmental Stewardship Division  
Environmental Approvals Branch  
1007 Century St. Winnipeg MB R3H 0W4  
T 204-945-8321 F 204-945-5229

**File No.: 1906.20**

October 15, 2020

Joey Champagne  
TANCO  
P.O. Box 2000  
Lac du Bonnet MB R0E 1A0

Dear Joey Champagne:

**Re: Tantalum Mining Corporation of Canada Ltd. – Environment Act Licence No. 973 – Notice of Alteration**

Receipt of your September 14, 2020 submission is acknowledged as a Notice of Alteration in accordance with Section 14 of The Environment Act.

The requested change to the Development as Licensed is the installation and operation of a plate and membrane filter press for the purposes of removing aluminum contaminants during processing in the chemical plant. The filter press will not change the chemistry or characteristics of waste from the plant.

The potential environmental effect of the requested change to the Development as Licensed is insignificant and considered to be a minor alteration in accordance with Section 14(2) of The Environment Act. Approval is hereby granted for the installation and operation of the filter press as described in your September 12, 2020 submission.

If you have any questions, please contact Jennifer Winsor, Environmental Engineer, Manitoba Conservation and Climate at [Jennifer.Winsor@gov.mb.ca](mailto:Jennifer.Winsor@gov.mb.ca).

Sincerely,

*Original Signed By*

Shannon Kohler, Director  
Environment Act

cc. Kristal Harman, Yvonne Hawryliuk – Environmental Compliance and Enforcement  
Siobhan Burland Ross, Jennifer Winsor – Environmental Approvals  
Public Registries



**Conservation and Climate**  
Environmental Stewardship Division  
Environmental Approvals Branch  
1007 Century St.  
Winnipeg Manitoba R3H 0W4  
T 204-945-8321 F 204-945-5229  
[www.gov.mb.ca/sd](http://www.gov.mb.ca/sd)

File: 1906.20

November 20, 2020

Joey Champagne  
TANCO  
P.O. Box 2000  
Lac du Bonnet MB R0E 1A0

Dear Joey Champagne:

**Re: Tantalum Mining Corporation of Canada Ltd. – Environment Act Licence No. 973 –  
Notice of Alteration**

Receipt of your September 16, 2020 submission is acknowledged as a notice of alteration in accordance with Section 14 of The Environment Act.

The requested change to the Development as Licensed is the transfer of 32,000 m<sup>3</sup> of effluent from Containment Cell #1 to the West Tailings Management Area.

Specifically, the transfer of effluent from Containment Cell #1 will be pumped directly into the tailings line to the West Tailings Management Area. Water quality will continue to be measured at the West Discharge Compliance Point and it is expected that water quality will not be affected.

The potential environmental effect of the requested change to the Development as Licensed is insignificant and considered to be a minor alteration in accordance with Section 14(2) of The Environment Act. Approval is hereby granted for the transfer of 32,000 m<sup>3</sup> of effluent from Containment Cell #1 to the West Tailings Management Area as described in your September 16, 2020 submission.

If you have any questions, please contact Jennifer Winsor, P.Eng.,  
Environmental Engineer, at [Jennifer.Winsor@gov.mb.ca](mailto:Jennifer.Winsor@gov.mb.ca).

Yours sincerely,

Original Signed by Kristal Harman  
For  
Shannon Kohler, Director  
Environment Act

cc.: Kristal Harman, Yvonne Hawryliuk – Environmental Compliance and Enforcement  
Siobhan Burland Ross, Jennifer Winsor – Environmental Approvals  
Public Registries



**Manitoba**  
**Conservation and Climate**  
Environmental Stewardship Division  
Environmental Approvals Branch  
1007 Century St.  
Winnipeg Manitoba R3H 0W4  
T 204-945-8321 F 204-945-5229  
[www.gov.mb.ca/sd](http://www.gov.mb.ca/sd)

File No.: 1906.20

April 26, 2021

Joey Champagne  
TANCO  
P.O. Box 2000  
Lac du Bonnet MB R0E 1A0

Dear Joey Champagne:

**Re: Tantalum Mining Corporation of Canada Ltd. – Environment Act Licence  
No. 973 – Notice of Alteration**

Receipt of your March 5, 2021 submission is acknowledged as a notice of alteration in accordance with Section 14 of The Environment Act.

The requested change to the Development as Licensed is the restart of the spodumene mining and milling operations at the Tanco mine site in accordance with existing Environment Act Licence No. 973.

Specifically, the proposed changes include the repair and refurbishment of existing equipment within the mine and milling site to support the restart of the room and pillar mining of spodumene. The information provided states that the production rates of 350 T/day will remain within the current production limits of the Environment Act Licence. Additionally, all tailings produced will be sent to the existing Tailings Management Area and all effluent and water quality limits will be met consistent with the Licence parameters and federal Metal and Diamond Mining Effluent Regulations.

The potential environmental effect of the requested changes to the Development as Licensed is insignificant and considered to be a minor alteration in accordance with Section 14(2) of The Environment Act. Approval is hereby granted for the restart of the spodumene mining and milling as described in your February 23, 2021 submission and March 5, 2021 additional information and conditional upon acceptance of a new Environment Act Licence which will be forthcoming at a later date.

If you have any questions, please contact Jennifer Winsor, P.Eng., Senior Environmental Engineer, at [Jennifer.Winsor@gov.mb.ca](mailto:Jennifer.Winsor@gov.mb.ca) or 204-945-7012.

Yours sincerely,



Shannon Kohler, Director  
The Environment Act

cc: Kristal Harman, Yvonne Hawryliuk – Environmental Compliance and Enforcement  
Siobhan Burland Ross, Jennifer Winsor – Environmental Approvals  
Public Registry