Indigenous and Northern Affairs Canada | Affaires autochtones et du Nord Canada

Water Resources Division
Nunavut Regional Office
Iqaluit, NU X0A 0H0

Your file - Votre référence
2AM-MRY1325

February 12, 2018

Our file - Notre référence
CIDM#1211362

Stephanie Autut
Executive Director
Nunavut Water Board
Gjoa Haven, NU X0B 1J0

Re: Indigenous and Northern Affairs Canada's reclamation cost estimate for the 2018 Annual Security Review of Baffinland Iron Mines Corporation 2AM-MRY1325 Type A Water Licence

Dear Ms. Autut,

Indigenous and Northern Affairs Canada (INAC) has had the opportunity to review information provided by Baffinland Iron Mines Corporation (Baffinland). We have revised the reclamation cost estimate for the Mary River Project using the RECLAIM model produced last year and submitted to the Nunavut Water Board (NWB) on December 2, 2016. We collaborated with Arcadis Canada Inc., who prepared a reclamation estimate which we endorse. It is provided as a separate document in annex A of this submission.

Work Plan items currently approved under the Type A water licence

The 2017 Work Plan considered in the 2017 Annual Security Review (ASR) included work items that required modifications under the licence, or licence amendments. This led to complications and posting of security for work items which could not be executed.

In an attempt to avoid similar difficulties with the 2018 Work Plan, parties participating in the ASR; Baffinland, the Qikiqtani Inuit Association (QIA), the NWB and ourselves, discussed the scope of the security review at the outset. The culmination is Appendix B: *Category 1 Items from the 2018 Work Plan* from the NWB's December 5, 2017 letter[1], which we have been instructed to assess for the 2018 ASR. Baffinland considers Category 1 items as currently approved under their type A water licence.

[1] Nunavut Water Board, Re: Type "A" Water Licence 2AM-MRY1325 - Amendment No.1, Mary River Project; 2018 Annual Security Review Process – General Correspondence Follow-up, December 5, 2017.

As expressed in our December 1, 2017 letter to the NWB[2], INAC does not believe certain Work Plan items included in the Category 1 list are presently authorized under the licence. NWB staff suggested we include information requests directed to the NWB to ask for clarification, which we did in a December 13, 2017 letter[3]. No response was provided.

Our biggest concern is Baffinland's work item #3, which is described as "*Development of seven (7) laydowns in the Port area totaling 282,000 m^2 to improve the efficiency of material storage and management. The laydowns will be constructed by filling directly over undisturbed ground including filling in low lying areas that collect water. The lay down will be constructed utilizing blasted rock with granular topping to a total maximum thickness of 1 m, free draining to appropriate ditches and water courses.*"

Figure A.1 provided in the 2018 Work Plan shows these laydown areas covering several water bodies and streams. During a site visit in August 2017, Baffinland staff presented the argument implied here, that "*low lying areas that collect water*" at the Milne Port site are not water bodies. They suggested that their site map should be updated to remove the water bodies. Though we did not walk along all the streams and ponds, what we could see in those areas visited matched the site map, apart from those water bodies that had been diverted by pads or ditches.

Part D Item 9 of the water licence[4] specifies "*The Licensee shall locate equipment storage areas on gravel, sand or other durable land, at a distance of at least thirty-one meters above the ordinary High Water Mark of any Water body to minimize impacts on surface drainage and Water quality*." Building these pads as presented is therefore not permitted by the licence, and though their cost is included in our reclamation estimate, Baffinland must amend the water licence before they begin to construct the pads as presented in Figure A.1 of the 2018 Work Plan.

Security reclamation estimate for 2018

Documents and files provided by Baffinland in November 2017 and January 2018 considered in this review include:

- 2018 Work Plan (November 6, 2017)
- 2018 Marginal Closure and Reclamation Financial Security Estimate (November 22, 2017)
- 2018 Estimate Breakdown Structure (EBS) (November 22, 2017) Excel file

[2] Indigenous and Northern Affairs Canada, Re: Scope of Activities to Consider for 2018 Annual Security Review of Baffinland Iron Mines Corporation's 2AM-MRY1325 Type A Water Licence, December 1, 2017.
[3] Indigenous and Northern Affairs Canada, Re: Information Requests for 2018 Annual Security Review of Baffinland Iron Mines Corporation's 2AM-MRY1325 Type A Water Licence, December 13, 2017.
[4] Nunavut Water Board, LICENCE NO. 2AM-MRY1325 – AMENDMENT NO. 1, July 21, 2015.

- Responses to Information Requests, 2018/19 Annual Security Review (January 10, 2018)
- 2018 Marginal Closure and Reclamation Financial Security Estimate, Revision 1 (January 16, 2018)
- 2018 EstimateBreakdownStructure (EBS) Revision 1 (January 16, 2018) Excel file

INAC notes that when preparing the security estimate for 2018, Baffinland modified their intermediate estimate for the 2017 Annual Security Review (ASR) rather than modifying the value of their final joint submission with QIA or the reclamation security set out in the NWB's January 20, 2017 decision letter[5].

On the basis of the information presently available, our consultant developed a reclamation cost estimate of $75,035,673 for the project. The splitting of this cost based on land ownership and land-water reclamation activities is detailed in Table 1.

Table 1: Splitting of total reclamation cost estimate

Total cost	Crown land liability	Inuit-owned land liability	Water liability	Land liability
$75,035,673	$1,315,159	$73,720,514	$11,011,051	$64,024,622
percentage	*1.8%*	*98.2%*	*14.7%*	*85.3%*

Recommendations

INAC recommends that Baffinland not be authorized to build laydown pads over water bodies without obtaining appropriate approvals.

Based on the material provided by Baffinland, the work of our consultant, and from our own analysis, INAC is of the opinion that a security of $75,035,673 would ensure that the project is secured for the peak-projected reclamation costs for 2018.

Given that this is less than the global security amount for 2017-2018 of $52,682,555 set by the NWB in its January 20, 2017 decision, INAC recommends increasing the global security amount by $24,184,445, as proposed by Baffinland.

Presently INAC holds $1,298,555 in financial security for reclamation purposes. It is INAC's submission that an additional $16,680 in the amount held by the Minister would cover the estimated increase in Crown land liability.

[5] Nunavut Water Board, Re: Type "A" Water Licence No. 2AM-MRY1325, Baffinland Iron Mines Corporation Licence, Mary River Project: Direction from Nunavut Water Board Under the 2017 Annual Security Review Process Established Under Part C and Schedule C of the Water Licence, January 20, 2017.

Please do not hesitate to contact me at 867-975-3876 or sarah.forte@canada.ca for any additional information.

Regards,

Sarah Forté
Water Management Specialist

c.c.: Christopher Murray, Environmental & Regulatory Compliance Manager, Baffinland
Stephen Williamson Bathory, Director of Department of Major Projects, QIA

Annex A

2018 reclamation cost estimate for the Mary River Project
Water licence 2AM-MRY1325 - Amendment #1
prepared by Arcadis Canada Inc.

ARCADIS Design & Consultancy for natural and built assets

INDIGENOUS AND NORTHERN AFFAIRS CANADA

RECLAIM ESTIMATE FOR 2018 ANNUAL SECURITY REVIEW MARY RIVER MINE

Water Licence
2AM-MRY1325

9 February 2018

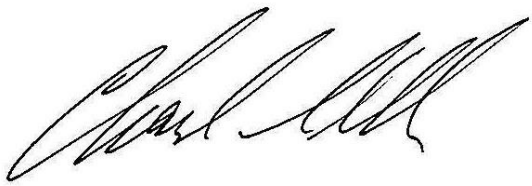
702751-000

RECLAIM ESTIMATE FOR 2018 ANNUAL SECURITY REVIEW

MARY RIVER MINE

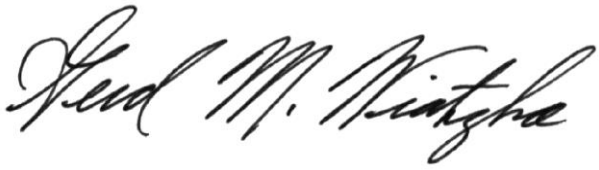
Water Licence

2AM-MRY1325



Charles Gravelle, M.Sc.E., P.Eng.

Principal



Gerd Wiatzka, P.Eng.

Project Engineer

Prepared for:

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702751-000

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VERSION CONTROL

Issue	Revision No	Date Issued	Page No	Description	Reviewed by
Draft	0	31 Jan. 2018	54	Quantum of Security Estimate for Mary River Mine Project	Gerd Wiatzka
Final	1	9 February 2018	54	Quantum of Security Estimate for Mary River Mine Project	Gerd Wiatzka

CONTENTS

TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

Arcadis	Arcadis Canada Inc.
ASR	Annual Security Review
BIMC	Baffinland Iron Mine Corporation
EBS	Estimate Breakdown Structure
INAC	Indigenous and Northern Affairs Canada
IOL	Inuit Owned Lands
NWB	Nunavut Water Board
QIA	Qikiqtani Inuit Association

EXECUTIVE SUMMARY

Further to the request of INAC, Arcadis was retained to complete an independent quantum of security estimate for the closure and reclamation works required under Part C and Schedule C of BIMC's Type A Water Licence No. 2AM-MRY1325 for the Mary River Mine Project.

In order to prepare the quantum of security estimate, Arcadis reviewed the following documents;

- 2018 Marginal Closure and Reclamation Financial Security Estimate, prepared by BIMC and dated 10 January 2018;
- 2018/19 ASR Estimate Breakdown Structure (EBS);
- 2018 Work Plan Layouts (as prepared by Knight Piesold);
- 2018 Work Plan (Table 3-1) Rev.1;
- other supporting documentation provided by BIMC with the above reference estimate; and
- 2017 Annual Security Review prepared by SNC-Lavalin for INAC.

In preparing the estimate, Arcadis used the latest version of the RECLAIM model as provided by INAC. In general, the material, equipment and labour quantities, and reclamation activities outlined in the EBS document prepared by BIMC, in conjunction with their consultants, were used in preparing this quantum of security estimate.

A summary of the direct and indirect costs with a comparison to the BIMC 2018/19 ASR Closure and Reclamation Security Estimate is provided in Table 1. Based on the outcome of the Arcadis review, it is recommended that the quantum of security estimate for the 2018 Annual Security Review (Global + Marginal) should be set at $75,035,673.

TABLE 1: SUMMARY OF COSTS

Liability	BIMC 2018/19 Security	Arcadis 2018 Security
Land Ownership		
IOL	$75,673,000	$73,720,514
Crown	$1,194,000	$1,315,159
Total Security Amount	***$76,867,000***	***$75,035,673***
Liability Split		
Water Allocation	1,384,000	$11,011,051
Land Allocation	75,483,000	$64,024,622

The quantum of security currently held for the Type A Water Licence, per the 20 January 2017 NWB decision letter, is $ 52,682,555 with $51,384,000 assigned to IOL land holdings and $1,298,555 assigned to Crown land holdings.

1 INTRODUCTION

1.1 General

Arcadis was retained by Indigenous and Northern Affairs Canada (INAC) to complete a quantum of security evaluation for the Mary River Mine Project. The security estimate was prepared based on information provided by Baffinland Iron Mines Corporation (BIMC) as part of their annual security review submission as allowed under the existing water licence for the site.

1.2 Background

The Mary River Project is located in Nunavut, on the northern end of Baffin Island, 160 km south of Pond Inlet. This project is an iron ore mine owned and managed by BIMC. It has been in production since the Fall of 2014. Ore is hauled from the mine site along the Tote Road to Milne Port. The first ore shipments were made in the Summer of 2015. BIMC is operating under a Nunavut Impact Review Board Project Certificate and NWB Type A Water Licence (2AM-MRY1325 Amendment #1). The Type A water licence is required for project construction and operations.

INAC's Mine Site Reclamation Policy for Nunavut (INAC, 2002) requires that financial security be held for the highest reclamation liability for both land and water for a mine project. The assumptions for determining the security amount are detailed in the 2002 Policy.

For the Mary River Project, the financial security estimate for site development and related activities was previously completed by BIMC, the QIA and SNC-Lavalin (working on behalf of INAC). Financial security for the undertakings permitted under the Project Water Licence is held by either the QIA (IOL liabilities) or INAC (Crown liabilities), as a function of land ownership and activity type.

On 10 January 2018, BIMC filed information for the 2018 ASR with the NWB in accordance with relevant sections of Schedule C, Item 2 of the Type A Water Licence. The 2018 ASR, provided by BIMC, builds upon commentary provided on earlier ASR submissions and provides a step by step summary of the works planned and allowed for under the Type A Water Licence in relation to previously planned work (ie 2017 workplan) that was not completed in 2017 but is still planned for 2018. More details on the BIMC's 2018/19 ASR are discussed herein.

1.3 Scope of Work

The scope of work (SOW) developed by INAC for the quantum of security evaluation is outlined in Section 2 of this report. In general, the SOW for this task was to review existing documentation on the closure and reclamation of the Mary River Mine Project and prepare a quantum of security estimate based on the RECLAIM Version 7.0 model for the costing of mine reclamation programs.

2 METHODOLOGY

2.1 General Approach

Arcadis' approach to this quantum of security review consisted of the following:

- review of the Mary River EBS and Project Description as prepared by BIMC and its consultants (includes the overall reclamation program as initially derived in 2014 to execute the objectives outlined in the Interim Mine Closure reclamation Plan (BAF-PH1-830-P16-0012));
- review of the 2017/18 ASR Reconciliation prepared by BIMC;
- review of the 2018 Work Plan Security Estimate;
- review of the 2017 ASR completed by SNC-Lavalin for INAC; and
- review of the RECLAIM Version 7.0 Manual.

The security review was completed considering the application of the financial security provisions of the Mine Site Reclamation Policy for Nunavut (INAC, 2002) summarized as follows:

- Total financial security for final reclamation should be equal to the total outstanding reclamation liability for land and water combined. The financial security should be sufficient to cover the highest liability over the applicable time period.
- Reclamation cost estimates for financial security should be based on the cost of having the reclamation work completed by a third-party contractor if the operator defaults.
- Estimates should include a contingency that is appropriate to the particular work to be undertaken.
- A recognized methodology such as RECLAIM or some other appropriate model should be used to calculate reclamation costs.
- Consideration should be given to alternate or innovative forms of security.
- Financial security requirements should be clearly set out in water licences, land leases and other regulatory instruments. Alternatively, the security requirements can be specified within a separate agreement if this approach is more applicable.
- Mine operators should be credited for approved progressive reclamation, and the value of financial security required should be adjusted in a timely fashion.

2.2 Limitations

The quantum of security estimate is based on the information provided by INAC to Arcadis and, as such, the assessment is primarily based on the EBS and ASR documents prepared by BIMC for the Mary River Mine program. Should any of the underlying assumptions outlined in the EBS or ASR documents change over the lifetime of the mine site or there an errors or omissions therein, then the quantum of security estimate should be reviewed in light of any new information. It is understood that for this particular program annual updates to the quantum of security are required under the licence and as such the proponent has been amending the quantum of security based on changes to the site works and infrastructure as well as progressive reclamation works.

3 FINDINGS

3.1 General

The RECLAIM worksheets detailing the direct and indirect costs used to develop the quantum of security estimate are provided in Appendix A. A summary of the security estimate as prepared by BIMC and presented in their 2018 marginal Closure and Reclamation Financial Security Estimate is provided in Appendix B. Further discussion on each major cost item is provided below, organized based on the RECALIM 7.0 layout developed and used by INAC.

3.2 BIMC Security Estimate Development

The 2018 Marginal Closure and Reclamation Financial Security Estimate represents BIMC's proposed annual adjustment to the reclamation security for 2018. It is BIMC's position that the aggregate of the 2018 Marginal Closure and Reclamation Financial Security Estimate and the previous 2017 Project Closure and Reclamation Security represents the Total Global Closure and Reclamation costs required under the Licence. The estimate is intended to address all disturbed areas, project components and project activities existing on the Mary River Mine Project site upon conclusion of the 2018 Work Plan.

These security cost estimates were all developed by BIMC using Hatch Engineering's Estimate Breakdown Structure (EBS) approach. The EBS and unit rates developed therein are described in the 2014 Complete Project Financial Security Assessment Report (H349000-1000-07-126-0018, Rev.1, October 31, 2014) form the starting point for all subsequent ASR Closure and Reclamation Financial Security Estimates.

3.2.1 BIMC 2017 Global Security Estimate

As presented in Table 4-1 of the 2018 Marginal Closure and Reclamation Financial Security (copy provided in Appendix B), the total Global Security Estimate from the 2017/18 ASR under the Type A (2AM-MRY1325) Licence is $49,271,000 however pursuant to the NWB decision letter of 20 January 2017 the security held under the Type A water licence has been set at $52,682,555.

3.2.2 BIMC 2017/18 Annual Security Review Reconciliation

Further to the initial 2017 Marginal Closure and Reclamation Financial Security submission an amendment was made to the Global Estimate provided in Section 3.2.1. The amendment was based on the reconciliation of activities planned and executed in 2017. As reported in the 2018 BIMC submission there were three components to the quantum of security liability assessment reconciliation, namely;

- activities with Security Allocated, but no longer planned to be executed;
- activities with Security Allocated and planned to be conducted, but have not occurred; and
- activities executed but with no security explicitly allocated to them.

Under Bullet 1 BIMC has removed the activities related to the installation of the Cross Conveyor set at 0.17 of a unit in the 2017 work plan with a rate of $1,329,441.31 from the 2017 ASR.

Under Bullet 2 BIMC has assigned a security amount of $9,571,000 (split $42,000 as a water liability and $9,529,000 as a land liability) as an IOL liability. This amount is identified as the 2017/18 ASR Addendum liability and is reported under Column D of Table 4-1 in Appendix B.

The assignment of security under Bullet 3 included three activities, as provided in Section 2.3 of the 2018 BIMC submission, that addresses site specific grading/re-contouring ($1,482,500), building and foundation reclamation ($31,200), and mechanical/mobile equipment decommissioning ($1,071,000). These costs are part of the aggregate 2018/19 ASR Estimate (Column E of Table 4-1 in Appendix B) which also includes 2018 Work Plan work.

3.2.3 BIMC 2018 Work Plan Components

Pursuant to the conditions outlined in Appendix B of the NWB December 5, 2017 letter, only Category 1 activities are to be considered in the BIMC 2018 ASR. Work items that require a modification to the Water Licence (Category 2) or work items which have not been fully assessed and deferred for future consideration (Category 3) have not been

included in this evaluation of security. The respective components of the work are summarized in Table 2 below.

Table 2 – Summary of 2018 Work Plan Security Review

Activity	Cost ($)
Direct Cost	
Buildings and Foundations	746,900
Mechanical and Mobile Equipment	839,000
Site Works	629,500
Storage Tanks	207,000
Demobilization Allocation for Expansion Project Equipment and Materials	7,100,000
Fill Application	178,300
Indirect Cost	
On-Site Fuel Demobilization and Reclamation Fuel Mobilization	138,000
Mobilization of Workers	263,000
Worker Accommodation & Camp Operation	719,000
Mobilization and Remobilization of Equipment & Materials	573,000
Supervision, Project Management and Contract Administration	1,206,000
Engineering Fees	500,000
Contingency (12.5% of Direct and all other Indirect Costs)	1,798,000
2017/18 ASR Reconciliation	2,584,700
Grand Total	17,482,400
Amount carried in Table 4-1 under Column E	18,024,000

All security amounts have been assigned to an IOL land ownership and Land usage liability.

3.2.4 Total Global Estimated Security for 2018/19

The aggregate of the 2017/18 ASR, 2017/18 ASR Addendum, 2017/18 ASR Reconciliation ASR and 2018 Work Plan liability is valued by BIMC at $76,867,000. The distribution of liabilities by land ownership land use is tabulated below:

Table 3 – Summary of Total Global Estimates from 2018/19 ASR

Authorization	Liability	Global Estimate from 2018/19 ASR ($)
Type A 2AM-MRY1325	IOL	75,673,000
	Crown	1,194,000
	Water	1,342,000
	Land	75,483,000
Sub-total Type A		76,867,000

This amount is shown under Column F of Table 4-1 in Appendix B. Note $1,000 was added to the amount shown in Table 4-1 to reflect the correct aggregate cost.

3.3 Direct Costs

The Direct Costs for the Arcadis RECLAIM estimate are provided in the RECLAIM worksheets found in Appendix A. For the purposes of this evaluation Arcadis has:

- reviewed the EBS and SNC-Lavalin Global Estimates from 2017/18 ASR;
- prepared a stand-alone RECLAIM Global Estimate (see Appendix A.1); and
- prepared a Marginal 2018 RECLAIM Model Estimate using the quantities and information provided by BIMC in their 2017ASR Addendum and 2018/19 ASR Estimate (see Appendix A.2).

The RECLAIM Global Estimate, as presented in Appendix A.1, is consistent with the earlier End-of-2017 RECLAIM Model prepared by SNC-Lavalin in their 1 December 2016 security review with minor variances related to some rounding to the nearest cent on the unit rates presented.

The Land and Water Liability costs are presented in these worksheets.

In summary, the Land Liability (Global + Marginal) has been calculated to be $64,024,622 while the Water Liability has been calculated to be $11,011,051. Given that

the site almost entirely contained within the IOL lands the majority of the liability has been assigned to the IOL (97.4%) while the balance or 2.6% has been assigned to the Crown. These percentages translate to $73,720,514 for the IOL and $1,315,159 for the Crown.

The following sections a divided into the respective work groupings used in the RECLAIM model. The quantities used within the respective worksheets are based on information provided by BIMC and Arcadis' review of the site during the 2017 geotechnical site inspection and existing information. Unit rates for the work are consistent with the rates provided in the EBS. Some differences were noted in the various BIMC submissions however for the purposes of this evaluation the rates provided in the 2018 portion of the EBS have been used in completing this evaluation.

Of note, an inflation factor has not been applied to the Global security estimate (currently based on the 2014 evaluation of security) as the costs for equipment, labour and materials have not materially changed since 2014 and the difference is covered in the contingency assigned in this evaluation.

3.3.1 Open Pit

Global 2017 RECLAIM

The assumptions and conclusions outlined in the SNC-Lavalin evaluation dated 1 December 2016 remain valid for the purposes of this assessment and as such the costs provided in the 2017 ASR RECLAIM model for the Global security have been used herein.

Marginal 2018 RECLAIM

The work outlined in the BIMC 2018/2019 Marginal Estimate includes:

- Undertaking work in the Q13 and QMR2 Quarries as proposed in the 2017 Work Plan Addendum;
- The actual area of work within the Q1 Quarry in 2017 not previously included in the Marginal Estimate; and
- The work proposed in the 2018 Work Plan for the Q5 Quarry.

The unit rates used by BIMC are sufficiently conservative and have been used by Arcadis in the RELCAIM assessment (See Appendix A.2)

3.3.2 Underground Mine

Not applicable to this water licence application.

3.3.3 Tailings Facility

Not applicable to this water licence application.

3.3.4 Waste Rock Pile

Global 2017 RECLAIM

The assumptions and conclusions outlined in the SNC-Lavalin evaluation dated 1 December 2016 remain valid for the purposes of this assessment and as such the costs provided in the 2017 ASR RECLAIM model for the Global security have been used herein.

Marginal 2018 RECLAIM

No costs have been carried in the Marginal 2018 RECLAIM model for work related to the management of waste rock and associated water. It has been noted from the results of the geotechnical inspection completed by Arcadis in 2017 that some repairs to containment structures will be required along with some form of water treatment due to elevated pH concerns. Further to recent discussions with INAC, it is understood that BIMC is in a process of amending their 2018 work plan to include repair work and some form of treatment for water that collects within the waste rock containment structure.

In order to provide some security to address the above referenced concern, the contingency percentage assigned in this evaluation has been increased from 15% to 20% as noted in Section 3.4.7.

3.3.5 Buildings and Equipment

Global 2017 RECLAIM

The assumptions and conclusions outlined in the SNC-Lavalin evaluation dated 1 December 2016 remain valid for the purposes of this assessment and as such the costs provided in the 2017 ASR RECLAIM model for the Global security have been used herein.

Marginal 2018 RECLAIM

The work outlined in the BIMC 2018/2019 Marginal Estimate includes:

- Removing work that will no longer be completed i.e. removal of the costs associated with the Cross Conveyor;
- Undertaking work outlined in the 2017 Work Plan Addendum;
- The actual areas of work undertaken in 2017 not previously included in the Marginal Estimate; and
- The work proposed in the 2018 Work Plan.

Note that the costs associated with the completion of the landfill have been assigned under the Mine Site costs rather than a stand alone cost as previously reported by SNC-Lavalin in their 2017 evaluation.

Details on the work being completed are outlined in the RECLAIM worksheets provided in Appendix A.2 for the Milne Port, Mine Site and Tote Road work areas. In general, the quantities of work are consistent with the information provided in the BIMC 2018/2019 Marginal Estimate and the unit rates derived by BIMC are sufficiently conservative such that they have been used by Arcadis in the RELCAIM assessment (See Appendix A.2). Where new unit rates were introduced by BIMC, Arcadis used rates previously entered in the ASR reviews for the same work.

3.3.6 Chemicals and Contaminated Soil Management

Global 2017 RECLAIM

The assumptions and conclusions outlined in the SNC-Lavalin evaluation dated 1 December 2016 remain valid for the purposes of this assessment and as such the costs provided in the 2017 ASR RECLAIM model for the Global security have been used herein. The BIMC 2017/2018 Global Estimate includes a cost for the management and treatment of petroleum hydrocarbon impacted soils at the Milne Port Bulk Fuel Tank Farm as observed by Arcadis staff during the 2017 site inspection.

Marginal 2018 RECLAIM

For this security estimate Arcadis has assumed an additional 2,000 m^3 of petroleum hydrocarbon PHC impacted soil at both the Port Milne and Mine Site locates will be required and as such a total volume of 4,000 m^3 has been entered into the Marginal security estimate.

The unit rates used by BIMC are sufficiently conservative and have been used by Arcadis in the RELCAIM assessment (See Appendix A.2).

3.3.7 Surface and Groundwater Management

Global 2017 RECLAIM

The assumptions and conclusions outlined in the SNC-Lavalin evaluation dated 1 December 2016 remain valid for the purposes of this assessment and as such the costs provided in the 2017 ASR RECLAIM model for the Global security have been used herein.

Marginal 2018 RECLAIM

As noted in the section for Waste Rock the results of the 2017 site inspection identified some surface water containment structures that require repair and observations relating to the pH of the water within the containment structures may, going forward, require

treatment in order to comply with the site water licence requirements. It is understood that the 2018 work plan will be amended to address these issues as the current marginal estimate does not have any basis on which to assign a security estimate. In order to provide some level of security the contingency percentage assigned for this evaluation has been changed from 15% to 20% as noted in Section 3.4.7.

3.3.8 Interim Care and Maintenance

Global 2017 RECLAIM

For the purposes of the 2018 RECLAIM model, the assumptions used to prepare the 2017 ASR have been carried forward on the premise that INAC has accepted the 18-month interim care and maintenance period outlined therein.

BIMC has carried a comparable cost for this activity within their Indirect Cost models.

Marginal 2018 RECLAIM

Given the nature of the work outlined in the 2018 work plan an Interim Care and Maintenance cost has not been applied to the marginal 2018 RECLAIM model.

3.3.9 Summary of Direct Cost Review

The net result of the Arcadis Global RECLAIM assessment was a total capital or direct cost of $28,253,579 as compared to a cost of $23,975,000 reported by BIMC for the Global Estimate. The $4,278,579 difference is primarily due to the difference between how the EBS and RECLAIM models work. In general, the work prescribed in the Global Estimate are based on the Interim Closure and Reclamation program proposed by BIMC and the overall security is sufficient for a project of this magnitude.

The net result of the Arcadis Marginal RECLAIM assessment was a total capital or direct cost of $9,807,204 as compared to a cost of $16,875,512 reported by BIMC for the Marginal Estimate. The main reason for the difference between the RECLAIM and EBS estimate relates to BIMC carrying $7 M of cost for demobilization of expansion project equipment and material as a direct cost rather than an indirect cost. The balance of the difference between the EBS and RECLAIM model costs are not related to quantity or unit rate concerns but simply how the two costs roll up.

3.4 Indirect Costs

The Indirect Costs for the Arcadis Global and Marginal RECLAIM estimates are provided in the RECLAIM worksheets found in Appendix A. For the purposes of this evaluation we have reviewed the EBS and SNC-Lavalin Global Estimates from 2017 ASR and have prepared a stand-alone RECLAIM Global Estimate (see Appendix A.1)

and have prepared a Marginal 2018 RECLAIM Model Estimate using the quantities and information provided by BIMC in their 2017 Addendum and 2018/19 ASR Estimate (see Appendix A.2). The Land and Water Liability costs are presented in these worksheets.

In summary, the Land Liability (Global and Marginal) has been calculated to be $32,084,504 while the Water Liability has been calculated to be $4,899,800. Given that the site almost entirely contained within the IOL lands the majority of the liability has been assigned to the IOL (97.4%) while the balance or 2.6% has been assigned to the Crown. These percentages translate to $36,410,147 for the IOL and $574,157 for the Crown.

As noted for the Direct Costs, the work groupings provided in the RECLAIM model have been used for the respective section headings herein.

3.4.1 Mobilization and Demobilization

Global 2017 RECLAIM

The assumptions and conclusions outlined in the SNC-Lavalin evaluation dated 1 December 2016 remain valid for the purposes of this assessment and as such the costs provided in the 2017 ASR RECLAIM model for the Global security have been used herein.

Marginal 2018 RECLAIM

The work outlined in the BIMC 2018/2019 Marginal Estimate includes:

- Undertaking work outlined in the 2017 Work Plan Addendum;
- The actual areas of work undertaken in 2017 not previously included in the Marginal Estimate; and
- The work proposed in the 2018 Work Plan.

Details of what has been included are provided in Appendix A.2. In general, the quantities of work are consistent with the information provided in the BIMC 2018/2019 Marginal Estimate and the unit rates derived by BIMC are sufficiently conservative such that they have been used by Arcadis in the RELCAIM assessment (See Appendix A.2).

The only discrepancy relates to the mobilization of fuel. Arcadis staff could not reproduce the quantities of fuel costed in the BIMC Marginal estimate and as such used the EBS 2017 Work Plan Addendum cost of $1,213,000 and recalculated the volume of fuel for the 2018 Work Plan based on the formula provided by BIMC in the 2018/2019 Marginal Cost (345,000L compared to 504,105 L using the formula provide by BIMC) to derive a cost of $201,642 compared to $138,000 used by BIMC. Given the inconsistency on how the volume of fuel was calculated by BIMC we have been conservative and used the higher of the two dollar amounts in calculating to total cost associated with the mobilization of fuel.

3.4.2 Post-Closure Monitoring and Maintenance

Global 2017 RECLAIM

The assumptions and conclusions outlined in the SNC-Lavalin evaluation dated 1 December 2016 remain valid for the purposes of this assessment and as such the costs provided in the 2017 ASR RECLAIM model for the Global security have been used herein.

Marginal 2018 RECLAIM

This cost item is not applicable under the current security model for this site.

3.4.3 Engineering

The amount of engineering work required to implement the closure and reclamation plan as set out by BIMC for both the Global and Marginal Cost estimates is minimal given the amount of plant and infrastructure that will be on site during operations. For this reason, the use of 3.9% of direct costs, as used by BIMC, is considered acceptable. This is also consistent with the approach taken by Arcadis in the Global and Marginal RECLAIM estimates.

3.4.4 Project Management

Given the relatively minimal amount of work required to reclaim this site a project management percentage of 9.4%, as used by BIMC for both the Global and Marginal Estimates, is reasonable. This level of effort was also used by Arcadis in the Global and Marginal RECLAIM estimates.

3.4.5 Health and Safety Plans/Monitoring and QA/QC

For the purposes of this evaluation Arcadis has assumed that the costs associated with these activities are carried under Engineering and Project Management and as such have been set to $0 in the RECLAIM estimate.

3.4.6 Bonding/Insurance

The percentage used by Arcadis in the RECLAIM models for bonding and insurance is 2%. While this amount has not been explicitly carried by BIMC, the assigning of contingency across all Direct and most of the Indirect Cost elements provides sufficient security to cover the amount of bonding and insurance derived by Arcadis using the RECLAIM model which only assigns contingency across Direct Costs.

3.4.7 Contingency

On the basis of observations made during the 2017 geotechnical inspection regarding the potential for an acid rock drainage concern at the waste rock stockpile (i.e. pH of the water contained within the waste rock containment structure was measured to be lower than allowable for direct discharge to the environment) the contingency for the Marginal security evaluation has been set at 20%. Given the level of uncertainty with respect to the recently identified surface water concern this level of contingency is considered appropriate understanding that the amount of contingency can be amended once the issues relating to water discharge from the waste rock stockpile is better understood. This is approach is consistent with that used at other mines in Nunavut.

3.4.8 Market Factor Adjustment

No market factor adjustment was used in the Arcadis estimate as the costs for equipment, labour and materials, on aggregate, have not materially changed . This is consistent with the approach used by BIMC.

3.4.9 Summary of Indirect Cost Review

The net result of the Arcadis assessment was a total indirect cost of $36,564,986 as compared to a cost of $34,510,000 reported by BIMC. The $2,054,986 difference relates primarily due to the difference in how the respective estimates were prepared.

4 CONCLUSIONS AND RECOMMENDATIONS

On the basis of the review completed by Arcadis, the quantum of security measured as the aggregate of the RECLAIM Global ASR and the 2018/2019 RECLAIM Marginal ASR has been assessed to be $75,352,428. This estimate is approximately $1.5 M lower than the BIMC estimate and by extension is lower than the value of the security BIMC is proposing to post based on the calculations in Table 4-1 of their 2018 Marginal Closure and Reclamation Financial Security Estimate. A comparison of the EBS based ASR evaluation completed by BIMC and the RECLAIM estimates (Global and Marginal) is provided in Table 4.

On the basis of the information provided to date, the quantum of security to be provided by BIMC is adequate to cover the liabilities identified on site now and in the near future. As previously noted under the Contingency discussion, the only concerns identified by Arcadis during the 2017 geotechnical inspection of the site related to the stability of the earthworks at certain discrete containment structures and the water quality in one of the containment structures which was reported to have a low pH which is indicative of an

acid rock drainage concern within the waste rock stockpile area. How this will influence future quantum of security estimates is unclear however it is understood that BIMC is looking to amend the 2018 Work Plan once a course of action is planned for this coming Summer. It is understood that the amendment to the 2018 Work Plan will also include an amendment to the security being held for the project to address the possibility of future and long-term surface water management within the vicinity of the waste rock stockpile.

RECLAIM ESTIMATE FOR BAFFINLAND MARY RIVER MINE PROJECT

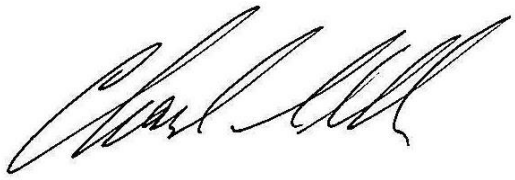
Table 4: SUMMARY OF COSTS

	A	B	C	D	E	F	G
	Authorization	**Liability**	**BIMC ASR**		**Arcadis 2018ASR**		
			Total 2018/2019 ASR	**Total Posted Security[1]**	**Global RECLAIM 2017 ASR**	**Marginal RECLAIM 2018 ASR**	**Total RECLAIM 2018ASR**
1	Type A 2AM-MRY1325	IOL	$ 75,673,000	$ 51,384,000	$ 48,633,679	$ 25,086,835	$ 73,720,514
2		Crown	$ 1,194,000	$ 1,298,555	$ 1,298,478	$ 16,681	$ 1,315,159
3		Water	$ 1,384,000		$ 10,341,489	$ 669,562	$ 11,011,051
4		Land	$ 75,483,000		$ 39,590,668	$ 24,433,954	$ 64,024,622
5	Total Type A		$ 76,867,000	$ 52,682,555	$ 49,932,157	$ 25,103,516	$ 75,035,673

Note 1 – the posted security amounts listed are based on those included in the NWB letter of 20 January 2017.

5 CLOSURE

We trust the information provided herein meets your current needs. Should you require any additional information please do not hesitate to contact us.



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Charles F. Gravelle, M.Sc.E., P.Eng.

Principal Engineer

APPENDIX A

ARCADIS RECLAIM Worksheets

Appendix A.1 – Global Estimate from 2017/2018 ASR

Appendix A.2 – Marginal Estimate for the 2018/2019 ASR and 2017/2018 Addendum.

Appendix A.1 – Global Estimate from 2017/2018 ASR

SUMMARY OF COSTS

CAPITAL COSTS	COMPONENT NAME	COST	LAND LIABILITY	WATER LIABILITY	IOL LIABILITY	CROWN LIABILITY
OPEN PIT	Mary River Mine Pit	$3,912,546	$3,912,546	$0	$3,771,692	$140,854
UNDERGROUND MINE		$0	$0	$0	$0	$0
TAILINGS FACILITY		$0	$0	$0	$0	$0
ROCK PILE	Mine Site Waste Rock Pile	$343,900	$343,900	$0	$343,900	$0
BUILDINGS AND EQUIPMENT	Mine Site	$7,663,933	$7,456,636	$207,297	$7,663,933	$0
	Milne Port	$5,944,920	$5,884,430	$60,489	$5,944,920	$0
	Tote Road	$2,357,047	$1,130,507	$1,226,541	$1,950,489	$406,559
	Project Wide/Other	$828,077	$828,077	$0	$828,077	$0
CHEMICALS AND CONTAMINATED SOIL MANAGEMEN		$2,838,397	$2,838,397	$0	$2,764,585	$73,812
SURFACE AND GROUNDWATER MANAGEMENT		$1,563,200	-	$1,563,200	$1,522,549	$40,651
INTERIM CARE AND MAINTENANCE		$2,792,145	-	$2,792,145	$2,719,535	$72,609
	SUBTOTAL: Capital Costs	**$28,244,165**	**$22,394,493**	**$5,849,671**	**$27,509,680**	**$734,485**
	PERCENT OF SUBTOTAL		**79.3%**	**20.7%**	**97.4%**	**2.6%**

INDIRECT COSTS		COST	LAND LIABILITY	WATER LIABILITY	IOL LIABILITY	CROWN LIABILITY
MOBILIZATION/DEMOBILIZATION		$11,570,010	$9,173,736	$2,396,274	$11,269,134	$300,876
POST-CLOSURE MONITORING AND MAINTENANCE		$1,560,000	$1,236,907	$323,093	$1,519,432	$40,568
ENGINEERING	4%	$1,101,522	$873,385	$228,137	$1,072,878	$28,645
PROJECT MANAGEMENT	9%	$2,654,951	$2,105,082	$549,869	$2,585,910	$69,042
HEALTH AND SAFETY PLANS/MONITORING & QA/QC	0%	$0	$0	$0	$0	$0
BONDING/INSURANCE	2%	$564,883	$447,890	$116,993	$550,194	$14,690
CONTINGENCY	15%	$4,236,625	$3,359,174	$877,451	$4,126,452	$110,173
MARKET PRICE FACTOR ADJUSTMENT	0%	$0	$0	$0	$0	$0
	SUBTOTAL: Indirect Costs	**$21,687,992**	**$17,196,175**	**$4,491,817**	**$21,123,999**	**$563,993**
TOTAL COSTS		**$49,932,157**	**$39,590,668**	**$10,341,488**	**$48,633,679**	**$1,298,478**

1 **Open Pit Name:** **Mary River Mine Pit** **Pit # *1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs		each		SH	$37.08	$0		$0	$0
Berm at crest		m3		#N/A	$0.00	$0		$0	$0
Block roads		m3		RB1H	$17.05	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
STABILITY STUDY									
Conduct stability and setback study		allow		EA	$0.00	$0		$0	$0
STABILIZE SLOPES									
COVER/CONTOUR SLOPES									
CONSTRUCT DIVERSION DITCHES									
CONSTRUCT SPILLWAY									
RECLAIM QUARRIES (the unit cost is inclusive of backfill, compaction and scarification with a dozer)									
P10 Borrow Source	2016/2017 ASR Reconciliation	m2		15GCS	$1.81	$0		$0	$0
P13 Borrow Source	2016/2017 ASR Reconciliation	m2		15GCS	$1.81	$0		$0	$0
P14 Borrow Source	2016/2017 ASR Reconciliation	m2		15GCS	$1.81	$0		$0	$0
P15 Borrow Source	2016/2017 ASR Reconciliation	m2		15GCS	$1.81	$0		$0	$0
P5 Borrow Source	2016/2017 ASR Reconciliation	m2		15GCS	$1.81	$0		$0	$0
P6 Borrow Source	2016/2017 ASR Reconciliation	m2		15GCS	$1.81	$0		$0	$0
P7 Borrow Source	2016/2017 ASR Reconciliation	m2		15GCS	$1.81	$0		$0	$0
P8 Borrow Source	2016/2017 ASR Reconciliation	m2		15GCS	$1.81	$0		$0	$0
Q13 Quarry	In 2016 Work Plan but deferred to 2017	m2	6350	15GCS	$1.81	$11,494	100%	$11,494	$0
Q14 Quarry	2016/2017 ASR Reconciliation	m2		15GCS	$1.81	$0		$0	$0
Q15 Quarry	2016/2017 ASR Reconciliation	m2		15GCS	$1.81	$0		$0	$0
Q16A Quarry	In 2016 Work Plan but deferred to 2017	m2	11240	15GCS	$1.81	$20,344	100%	$20,344	$0
Q9 Quarry	2016/2017 ASR Reconciliation	m2		15GCS	$1.81	$0		$0	$0
D1Q2 Quarry	2016 Work Plan	m2	109807	15GCS	$1.81	$198,751	100%	$198,751	$0
Q1 Quarry	2017 work plan marginal increase Add 6000 m2	m2	70200	15GCS	$1.81	$127,062	100%	$127,062	$0
Q11 Quarry	2017 work plan marginal increase Add 2000 m2	m2	52433	15GCS	$1.81	$94,904	100%	$94,904	$0
Q18 Quarry (on Crown Land)	**2017 Work Plan new quarry Add 2000 m2 (100% Crown Lan**	**m2**	**2000**	**15GCS**	**$1.81**	**$3,620**	**100%**	**$3,620**	**$0**
Q19 Quarry		m2	18760	15GCS	$1.81	$33,956	100%	$33,956	$0
Q7 Quarry	2017 work plan marginal increase Add 2000 m2	m2	55050	15GCS	$1.81	$99,641	100%	$99,641	$0
QMR2 Quarry	2017 work plan marginal increase Add 6000 m2	m2	264580	15GCS	$1.81	$478,890	100%	$478,890	$0
Pit 1		m2	55000	15GCS	$1.81	$99,550	100%	$99,550	$0
Pit 1 marginal increase		m2	214450	15GCS	$1.81	$388,155	100%	$388,155	$0
P1 Borrow Source (on Crown Land)	**100% on Crown Land**	**m2**	**75820**	**15GCS**	**$1.81**	**$137,234**	**100%**	**$137,234**	**$0**
Km 2 Borrow Source	2017 work plan marginal increase Add 1000 m2	m2	42795	15GCS	$1.81	$77,459	100%	$77,459	$0
Borrow Development Areas		m2	42080	15GCS	$1.81	$76,165	100%	$76,165	$0
Unidentified Borrow Sources		m2	697910	15GCS	$1.81	$1,263,217	100%	$1,263,217	$0
GRADING AND CONTOURING SIGNIFICANTLY DISTURBED AREAS (the unit cost is inclusive of backfill, compaction and scarification with a dozer)									
Km 97 Borrow Source	2017 work plan marginal increase Add 1000 m2	m2	158012	15GCDS	$2.72	$429,793	100%	$429,793	$0
Type A Quarry		m2	136880	15GCDS	$2.72	$372,314	100%	$372,314	$0
FLOOD PIT-Captital									
FLOOD PIT-Annual Cost									
Other				#N/A	$0.00	$0		$0	$0
					Annual pumping costs	$0			
Number of years of pump flooding		years							
					Total pumping costs	$0		$0	$0
					Total	$3,912,546		$3,912,546	$0
					% of Total			100%	0%

1 **Rock Pile Name:** **Mine Site Waste Rock Pile**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
STABILIZE SLOPES									
COVER ROCK PILE									
VERY LOW PERMEABILITY COVER (in addition to above)									
CONSTRUCT DIVERSION DITCHES									
CONSTRUCT SEEPAGE COLLECTION POND									
INSTALL GROUNDWATER COLLECTION SYSTEM									
RELOCATE DUMPS									
SPECIALIZED ITEMS									
Install permanent instrumentation		allow		#N/A	$0.00	$0		$0	$0
Install permanent instrumentation, drilling		each		#N/A	$0.00	$0		$0	$0
Grade and Contour Waste Rock dump		m2	190000	15GCS	$1.81	$343,900	100%	$343,900	$0
TREAT ROCK PILE SEEPAGE - see "Water Management"									
HEAP LEACH SEEPAGE TREATMENT - Cyanide Detox									
					Annual treatment costs	$0			
Number of years of treatment		years							
					Total treatment costs	$0			$0
HEAP LEACH SEEPAGE TREATMENT - ARD/ML**									
Upgrade/modify pumping system - report to WTP		allow		#N/A	$0.00	$0		$0	$0
					Total	$343,900		$343,900	$0
					% of Total			100%	0%

* For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

**Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

1 **Chemicals/Soil Area Name:**

Note: The procedures, equipment and packaging for clean up and removal of chemicals or contaminated soils are highly dependent on the nature of the chemicals and their existing state of containment. Government guidelines should be consulted on an individual chemical basis. Any estimate made here should be considered very rough unless specific evaluations have been conducted.

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
HAZARDOUS MATERIALS AUDIT									
BUILDING DECONTAMINATION & CONSOLIDATION OF HAZARDOUS MATERIALS									
HAZARDOUS MATERIALS REMOVAL									
HAZARDOUS MATERIALS									
CONTAMINATED SOILS									
CONTAMINATED SOIL REMOVAL									
Contaminated Soil Treatment		m3	16164	15CSTS	$14.78	$238,904	100%	$238,904	$0
Contaminated Soil Treatment (2017 Work Plan)	Marginal increase associated with 2017 Work Plan. Spill 16-283 at Milne Port Bulk Fuel Tank Farm	m3	4232	15CSTS	$14.78	$62,549	100%	$62,549	$0
Excavate and transport		m3		#N/A	$0.00	$0		$0	$0
Manage hydrocarbon remediation		m3		#N/A	$0.00	$0		$0	$0
Reagents/stabilizing agent		m2		#N/A	$0.00	$0		$0	$0
Excavate and transport to offsite facility		m3		#N/A	$0.00	$0		$0	$0
Contour decontaminated area		m3		#N/A	$0.00	$0		$0	$0
CONTAMINATED SOIL VERY LOW PERMEABILITY COVER									
OTHER									
Ammonium nitrate (explosive material)		m3	2343	16AN1S	$358.00	$838,794	100%	$838,794	$0
Pre-package explosives		kg	716519	16AN2S	$2.37	$1,698,150	100%	$1,698,150	$0
				#N/A	$0.00	$0		$0	$0
					Total	$2,838,397		$2,838,397	$0
					% of Total			100%	0%

1 **Building / Equip Name:** **Mine Site** **Bldg / Equip #:** 1

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light Mobile Equipment	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Includes forklifts, picks up, vehicles around five (5) tonnes and under, scissor lift, man lifts, and small garbage bins (Ref 1, pg 24-25). 2017 Work Plan add 6 units.	each	154	15MOLS	$941.09	$144,928	95%	$137,681	$7,246
Medium Mobile Equipment	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions.Includes vehicles around 10 tonnes, trailers, buses, tow trucks, large garbage bins and water trucks (Ref 1, pg 24-25). 2017 Work Plan add 10 units.	each	147	15MOMS	$1,494.13	$219,637	98%	$215,244	$4,393
Heavy Mobile Equipment	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions.Includes vehicles over 10 tonnes, boom trucks, large front end loaders, dump trucks, graders and cranes (Ref 1, pg 24-25). 2017 Work Plan add 21 units.	each	212	15MOHS	$2,616.87	$554,776	98%	$543,681	$11,096
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions.Light equipment includes pumps, fuel dispenser, laboratory equipment, and sample bins (Ref 1, pg 23). 2017 Work Plan add 20 units.	each	77	15LMES	$1,980.80	$152,522	98%	$149,471	$3,050
Medium mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Medium equipment includes aerodrome equipment, generators, shop / maintenance equipment, screens, and chutes (Ref 1, pg 23). 2017 Work Plan add 2 units.	each	15	15MMES	$4,261.34	$63,920	100%	$63,920	$0
Heavy mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Heavy equipment includes crusher, feeder, power plant generators, large screens, conveyors, and stackers (Ref 2, pg 23). 2017 Work Plan add 1 unit (Truck Wash system).	each	23	15MEHS	$41,205.45	$947,725	100%	$947,725	$0
Light Tanks	Light non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26).	each	6	15TLS	$2,148.33	$12,890	0%	$0	$12,890
Medium Tanks	Medium non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26).	each	12	15MTS	$7,387.31	$88,648	0%	$0	$88,648
Light Diesel Tanks	Small fuel tanks (10,000-20,000L) (Ref 1, pg 27)	each	5	15LiDTS	$3,693.66	$18,468	100%	$18,468	$0
Medium Diesel Tanks	Medium fuel tanks (500,000-750,000L). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27).	each	4	15MDTS	$16,166.40	$64,666	100%	$64,666	$0
Misc. Items	On-site disposal. Miscellaneous (minor) items were defined as any item less than 200 kg not captured in other unit costs (Ref 1, pg 42).	Lot	0	15MEIS	$529.83	$0	100%	$0	$0
Fuelk tanks - On-site disposal of medium mobile fuel tanks (3,000 to 500,000 L)	On-site disposal of medium-mobile fuel tanks (3,000 to 500,000L).	each	2	15MMFTS	$10,481.05	$20,962	100%	$20,962	$0
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular	Trailers and Pre-fabricated buildings	m2	9027	15RBMS	$59.38	$536,023	89%	$477,061	$58,963
Fold Away Buildings		m2	709	15RBFS	$41.57	$29,473	100%	$29,473	$0
Soft-Walled		m2	6017	15RBSS	$47.51	$285,868	100%	$285,868	$0
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	30	15RBIS	$29.69	$891	100%	$891	$0
Water and Wastewater Treatment Facilities		each	1	15WWTS	$11,035.58	$11,036	0%	$0	$11,036
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Modular	Trailers and pre-fabricated buildings. (Ref 1, pg 29).	m2	1556	15RCBMS	$143.42	$223,162	100%	$223,162	$0
Fold Away Buildings	**2017 Work Plan add 1500 m2 Truck wash Building**	m2	10227	15RCBFS	$142.41	$1,456,427	100%	$1,456,427	$0
ISO Shipping Containers (Shelters, Comm. Facilities)	**2017 Work Plan add 500 m2 Tire Shop**	m2	604	15RCBIS	$143.42	$86,626	100%	$86,626	$0
Temporary Construction Warehouse and Office Allowance		m2	1	15RCBTS	$25,000.00	$25,000	100%	$25,000	$0
BREAK FOUNDATIONS									
Precast Foundations	Includes load and transport of precast concrete foundations (Ref 1, pg 34). **Add 2017 Work Plan Truck Wash Building foundation of 1500 m2.**	m2	9024	15FCS	$38.47	$347,153	100%	$347,153	$0
Slab on Grade	Includes perforating the concrete slabs on grade	m2	15704	15FSS	$33.11	$519,959	100%	$519,959	$0
Timber Cribbing	Includes disassemby load and transport of the timber cribbing	m2	1102	15TCS	$20.78	$22,900	100%	$22,900	$0
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Grade and contour laydown areas		m2	62193	15GCS	$1.81	$112,569	100%	$112,569	$0
Grade and contour building footprints		m2	223	15GCS	$1.81	$404	100%	$404	$0
Grade and contour infrastructure pads		m2	157201	15GCS	$1.81	$284,534	100%	$284,534	$0
Aerodome Facilities		m2	5776	15GCS	$1.81	$10,455	100%	$10,455	$0
Road		m2	121619	15GCS	$1.81	$220,130	100%	$220,130	$0
Stockpiles	**Add 2017 Work Plan Increase in Crusher Pad Storage Area - Ph 1: 8,200m2 & Ph 2: 17,500m2**	m2	30800	15GCS	$1.81	$55,748	100%	$55,748	$0
Truck weigh facility distributed area		m2	13000	15GCS	$1.81	$23,530	100%	$23,530	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
Waste Disposal		m2	900	15GCLS	$5.31	$4,779	100%	$4,779	$0
Fuel tank farm dyke		m2	1911	15GCLS	$5.31	$10,147	100%	$10,147	$0
Hazardous waste berm		m2	2106	15GCLS	$5.31	$11,183	100%	$11,183	$0
Bulk fuel storage facility (Bladder Farm)		m2	5788	15GCLS	$5.31	$30,734	100%	$30,734	$0
Other		m2	5812	15GCLS	$5.31	$30,862	100%	$30,862	$0
LANDFILL FOR DEMOLITION WASTE									
Place fill material over demolition waste (Mine Site Landfill)	Includes drill and blasting of material aggregated crushing, excavation of fill, load and haul of fill material, backfill and compact source of material, and fill application. Assumes avg fill depth 1.5m over 6m of demolition waste (Ref 1, pg 17).	m2	11120	15PFS	$44.37	$493,394	100%	$493,394	$0
SPECIALIZED ITEMS									
Electrical Cable	Includes the removal, loading, hauling and disposal of cable (Ref 1, pg 41). **2017 Work Plan add 3500 m of cable.**	m	19700	15ECS	$26.49	$521,853	100%	$521,853	$0
Incinerator	Waste Incinerator. Includes disassembly, decontamination (if required), load and transport (2015 Security Assessment, pg 37).	each	1	15FIS	$9,975.93	$9,976	100%	$9,976	$0
Potable Water	Includes disassembly, decontamination (if required), load and transport (2015 Security Assessment, pg 38).	each	1	15PWS	$9,975.93	$9,976		$0	$9,976
					Total	$7,663,933		$7,456,636	$207,297
					% of Total			97%	3%

Note:

1 **Building / Equip Name:** **Milne Port** **Bldg / Equip #:** 2

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost	
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill										
Light Mobile Equipment	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Includes forklifts, picks up, vehicles around five (5) tonnes and under, scissor lift, man lifts, and small garbage bins (Ref 1, pg 24-25). **2017 Work Plan add 6 units.**	each	104	15MOLS	$941.09	$97,873	98%	$95,916	$1,957	
Medium Mobile Equipment	Includes vehicles around 10 tonnes, trailers, buses, tow trucks, large garbage bins and water trucks (Ref 1, pg 24-25).	each	48	15MOMS	$1,494.13	$71,718	95%	$68,132	$3,586	
Heavy Mobile Equipment	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Includes vehicles over 10 tonnes, boom trucks, large front end loaders, dump trucks, graders and cranes (Ref 1, pg 24-25). **2017 Work Plan add 4 units.**	each	63	15MOHS	$2,616.87	$164,863	100%	$164,863	$0	
Other (reclaim conveyor)	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Conveyors have been classified as large mobile equipment, with the exception of the reclaim conveyor (850m in length). (Ref 1, pg 40). **For 2017 Work Plan add 0.1667 units for for cross conveyor which is 1/6th of Reclaim**	each	1.1667	15MORS	$1,329,441.31	$1,551,059	100%	$1,551,059	$0	NOTE THIS Additional work never happened
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill										
Light mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Light equipment includes pumps, fuel dispenser, laboratory equipment, and sample bins (Ref 1, pg 23). **2017 Work Plan add 20 units.**	each	58	15LMES	$1,980.80	$114,886	98%	$112,589	$2,298	
Medium mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Medium equipment includes aerodrome equipment, generators, shop / maintenance equipment, screens, and chutes (Ref 1, pg 23). **2017 Work Plan add 16 units.**	each	19	15MMES	$4,261.34	$80,965	100%	$80,965	$0	
Heavy mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Heavy equipment includes crusher, feeder, power plant generators, large screens, conveyors, and stackers (Ref 2, pg 23). **2017 Work Plan add 1 unit (Cone Crusher).**	each	4	15MEHS	$41,205.45	$164,822	100%	$164,822	$0	
Light Tanks	Light non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26).	each	3	15TLS	$2,148.33	$6,445	0%	$0	$6,445	
Medium Tanks	Medium non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26).	each	0	15MTS	$7,387.31	$0	0%	$0	$0	
Light Diesel Tanks	Small fuel tanks (10,000-20,000L) (Ref 1, pg 27)	each	1	15LiDTS	$3,693.66	$3,694	100%	$3,694	$0	
Medium Diesel Tanks	Medium fuel tanks (500,000-750,000L). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27).	each	0	15MDTS	$16,166.40	$0	100%	$0	$0	
Large Diesel Tanks	Large fuel tanks (5M L): The cleaning, plugging, disassembly, and removal of all associated pipeline infrastructure is included (Ref 1, pg 27).	each	0	15LDTS	$106,338.74	$0	100%	$0	$0	
Largest Diesel Tanks	Large fuel tanks (10M to 12 M L): The cleaning, plugging, disassembly, and removal of all associated pipeline infrastructure is included (Ref 1, pg 27).	each	0	15XLDTS	$171,468.15	$0	100%	$0	$0	
Misc. Items	On-site disposal. Miscellaneous (minor) items were defined as any item less than 200 kg not captured in other unit costs (Ref 1, pg 42).	each	0	15MEIS	$529.83	$0	100%	$0	$0	
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport										
Modular	Trailers and pre-fabricated buildings. (Ref 1, pg 29). **Add 2017 Work Plan 49-person Camp (ATCO, not soft-walled, 950 m2)**	m2	6471	15RBMS	$59.38	$384,248	100%	$384,248	$0	
Fold Away Buildings		m2	1525	15RBFS	$41.57	$63,394	100%	$63,394	$0	
Soft-Walled		m2	5392.34	15RBSS	$47.51	$256,190	100%	$256,190	$0	
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	15	15RBIS	$29.69	$445	100%	$445	$0	
Water and Wastewater Treatment Facilities	2015 Security Assessment pg 39	each	1	15WWTS	$11,035.58	$11,036	0%	$0	$11,036	
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport										
Modular	Trailers and pre-fabricated buildings. (Ref 1, pg 29).	m2	1171	15RCBMS	$143.42	$167,945	85%	$142,753	$25,192	
Fold Away Buildings		m2	3194	15RCBFS	$142.41	$454,858	100%	$454,858	$0	
Soft-Walled		m2	2131	15RCBSS	$148.35	$316,134	100%	$316,134	$0	
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	134	15RCBIS	$143.42	$19,218	100%	$19,218	$0	
Temporary Construction Warehouse and Office Allowance		m2	1	15RCBTS	$25,000.00	$25,000	100%	$25,000	$0	
BREAK FOUNDATIONS										
Precast Foundations	Includes load and transport of precast concrete foundations (Ref 1, pg 34).	m2	3513	15FCS	$38.47	$135,145	100%	$135,145	$0	
Slab on Grade	Includes perforating the concrete slabs on grade	m2	1766	15FSS	$33.11	$58,472	100%	$58,472	$0	
Timber Cribbing	Includes disassemby load and transport of the timber cribbing	m2	732	15TCS	$20.78	$15,211	100%	$15,211	$0	
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer										
Grade and contour laydown areas		m2	312921	15GCS	$1.81	$566,387	100%	$566,387	$0	
Grade and contour building footprints		m2	14306	15GCS	$1.81	$25,894	100%	$25,894	$0	
Grade and contour infrastructure pads		m2	66536	15GCS	$1.81	$120,430	100%	$120,430	$0	
Road		m2	12149	15GCS	$1.81	$21,990	100%	$21,990	$0	
Stockpiles	**Add 2017 Work Plan Increase in Ore Stockpile Storage Area - Ph 1: 36,900m2 & Ph 2: 45,100m2**	m2	216046	15GCS	$1.81	$391,043	100%	$391,043	$0	
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer										
Hazardous waste berm		m2	4417	15GCLS	$5.31	$23,454	100%	$23,454	$0	
Weatherhaven genset fuel bladder berm		m2	500	15GCLS	$5.31	$2,655	100%	$2,655	$0	
Storage Area		m2	1971	15GCLS	$5.31	$10,466	100%	$10,466	$0	
Fuel tank farm dyke		m2	25893	15GCLS	$5.31	$137,492	100%	$137,492	$0	
Landfarm		m2	14083	15GCLS	$5.31	$74,781	100%	$74,781	$0	
LANDFILL FOR DEMOLITION WASTE										
Place fill material over demolition waste		m2	0	15PFS	$44.37	$0	100%	$0	$0	
SPECIALIZED ITEMS										
Electrical Cable	Includes the removal, loading, hauling and disposal of cable (Ref 1, pg 41). **2017 Work Plan add 3500 m of cable.**	m	14600	15ECS	$26.49	$386,754	100%	$386,754	$0	
Incinerator	Waste Incinerator. Includes disassembly, decontamination (if required), load and transport (2015 Security Assessment, pg 37).	each	1	15FIS	$9,975.93	$9,976	100%	$9,976	$0	
Potable Water	Includes disassembly, decontamination (if required), load and transport (2015 Security Assessment, pg 38).	each	1	15PWS	$9,975.93	$9,976		$0	$9,976	
					Total	$5,944,920		$5,884,430	$60,489	
					% of Total			99%	1%	

Note:

1 **Building / Equip Name:** **Tote Road** **Bldg / Equip #:** ***3***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light Mobile Equipment		each	0	15MOLS	$941.09	$0	95%	$0	$0
Medium Mobile Equipment		each	0	15MOMS	$1,494.13	$0	98%	$0	$0
Heavy Mobile Equipment		each	0	15MOHS	$2,616.87	$0	98%	$0	$0
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular		m2	0	15RBMS	$59.38	$0	89%	$0	$0
Fold Away Buildings		m2	0	15RBFS	$41.57	$0	100%	$0	$0
ISO Shipping Containers (Shelters, Comm. Facilities)	**Assume 7% on Crown Land**	**m2**	**223**	**15RBIS**	**$29.69**	**$6,621**	**100%**	**$6,621**	**$0**
Water and Wastewater Treatment Facilities		each	0	15WWTS	$11,035.58	$0	0%	$0	$0
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Modular		m2	0	15RCBMS	$143.42	$0	100%	$0	$0
Fold Away Buildings	**Mobile Maintenance Depot (100% on Crown Land)**	**m2**	**682**	**15RCBFS**	**$142.41**	**$97,124**	**100%**	**$97,124**	**$0**
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	0	15RCBIS	$143.42	$0	100%	$0	$0
Temporary Construction Warehouse and Office Allowance		m2	0	15RCBTS	$25,000.00	$0	100%	$0	$0
BREAK FOUNDATIONS									
Slab on Grade	**Mobile Maintenance Depot (100% on Crown Land)**	m2	682	15FSS	$33.11	$22,581	100%	$22,581	$0
Timber Cribbing	Includes disassemby load and transport of the timber cribbing. Assume 7% on Crown Land	m2	59	15TCS	$20.78	$1,226	100%	$1,226	$0
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Grade and contour laydown areas		m2	0	15GCS	$1.81	$0	100%	$0	$0
Grade and contour building footprints	**Assume 7% on Crown Land**	**m2**	**13040**	**15GCS**	**$1.81**	**$23,602**	**100%**	**$23,602**	**$0**
Grade and contour infrastructure pads	**Assume 7% on Crown Land**	**m2**	**6760**	**15GCS**	**$1.81**	**$12,236**	**100%**	**$12,236**	**$0**
Aerodome Facilities		m2	0	15GCS	$1.81	$0	100%	$0	$0
Road	**Assume 7% on Crown Land**	**m2**	**533000**	**15GCS**	**$1.81**	**$964,730**	**100%**	**$964,730**	**$0**
Stockpiles		m2		15GCS	$1.81	$0	100%	$0	$0
Remove Liner	**Mobile Maintenance Depot (100% on Crown Land)**	**m2**	**682**		**$3.50**	**$2,387**	**100%**	**$2,387**	**$0**
Grade and Contour Significant Disturbed Areas		m2		15GCDS	$2.72	$0	100%	$0	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
LANDFILL FOR DEMOLITION WASTE									
		m2		15PFS	$44.37	$0	100%	$0	$0
RECLAIM ROADS									
Remove bridges (IOL)	The unit cost is inclusive of the demolition and removal of a bridge. Assumed not contaminated (Ref 1, pg 36).	each	3	15BRS	$201,838.77	$605,516	0%	$0	$605,516
Remove bridges (CROWN)	**The unit cost is inclusive of the demolition and removal of a bridge. Assumed not contaminated (Ref 1, pg 36).**	**each**	**1**	**15BRS**	**$201,838.77**	**$201,839**	**0%**	**$0**	**$201,839**
Remove Culverts (IOL)	The unit cost is inclusive of the travel time to and from the culvert location, the earthwork necessary expose a culvert and the removal of the culvert material (Ref 1, pg 21).	each	372	15CRS	$1,094.48	$407,147	0%	$0	$407,147
Remove Culverts (CROWN)	**The unit cost is inclusive of the travel time to and from the culvert location, the earthwork necessary expose a culvert and the removal of the culvert material (Ref 1, pg 21).**	**each**	**11**	**15CRS**	**$1,094.48**	**$12,039**	**0%**	**$0**	**$12,039**
Scarifying and install water breaks		ha		#N/A	$0.00	$0		$0	$0
Scarifying Airstrip		ha		#N/A	$0.00	$0		$0	$0
Scarifying Laydown Areas		ha		#N/A	$0.00	$0		$0	$0
vegeation		ha		#N/A	$0.00	$0		$0	$0
Other		ha		#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
Consumables		each		#N/A	$0.00	$0		$0	$0
Electrical Cable		m		15ECS	$26.49	$0		$0	$0
Incinerator		each		15FIS	$9,975.93	$0		$0	$0
Potable Water		each		15PWS	$9,975.93	$0		$0	$0
					Total	$2,357,047		$1,130,507	$1,226,541
					% of Total			48%	52%

Note:

1 **Building / Equip Name:** **Project Wide/Other** **Bldg / Equip #:** 4

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light Mobile Equipment		each	0	15MOLS	$941.09	$0	95%	$0	$0
Medium Mobile Equipment		each	0	15MOMS	$1,494.13	$0	98%	$0	$0
Heavy Mobile Equipment		each	0	15MOHS	$2,616.87	$0	98%	$0	$0
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular		m2	0	15RBMS	$59.38	$0	89%	$0	$0
Fold Away Buildings		m2	0	15RBFS	$41.57	$0	100%	$0	$0
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	0	15RBIS	$29.69	$0	100%	$0	$0
Water and Wastewater Treatment Facilities		each	0	15WWTS	$11,035.58	$0	0%	$0	$0
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Modular		m2	0	15RCBMS	$143.42	$0	100%	$0	$0
Fold Away Buildings		m2	0	15RCBFS	$142.41	$0	100%	$0	$0
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	0	15RCBIS	$143.42	$0	100%	$0	$0
Temporary Construction Warehouse and Office Allowance		m2	0	15RCBTS	$25,000.00	$0	100%	$0	$0
BREAK FOUNDATIONS									
Slab on Grade		m2	0	15FSS	$33.11	$0	100%	$0	$0
Timber Cribbing		m2	0	15TCS	$20.78	$0	100%	$0	$0
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Grade and contour laydown areas		m2	0	15GCS	$1.81	$0	100%	$0	$0
Grade and contour building footprints		m2	0	15GCS	$1.81	$0	100%	$0	$0
Grade and contour infrastructure pads		m2	0	15GCS	$1.81	$0	100%	$0	$0
Aerodome Facilities		m2	0	15GCS	$1.81	$0	100%	$0	$0
Road		m2	0	15GCS	$1.81	$0	100%	$0	$0
Stockpiles		m2	0	15GCS	$1.81	$0	100%	$0	$0
Remove Liner		m2	0		$3.50	$0	100%	$0	$0
Grade and Contour Significant Disturbed Areas		m2	0	15GCDS	$2.72	$0	100%	$0	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
LANDFILL FOR DEMOLITION WASTE									
Place fill material over demolition waste	Includes drill and blasting of material aggregated crushing, excavation of fill material, load and haul of fill material, backfill and compact source of material, and fill application. Assumes avg fill depth of 1.5m over 6m of demolition waste (Ref 1, pg 17). **2017 Work Plan and BIMC Nov. 24 EBS revision add 1192 m2 for disposal of 2017 mobile and mechanical equipment (107 units in total)**	m2	18663	15PFS	$44.37	$828,077	100%	$828,077	$0
RECLAIM ROADS									
Remove bridges (IOL)		each	0	15BRS	$201,838.77	$0	0%	$0	$0
Remove bridges (CROWN)		each	0	15BRS	$201,838.77	$0	0%	$0	$0
Remove Culverts (IOL)		each	0	15CRS	$1,094.48	$0	0%	$0	$0
Remove Culverts (CROWN)		each	0	15CRS	$1,094.48	$0	0%	$0	$0
Scarifying and install water breaks		ha		#N/A	$0.00	$0		$0	$0
Scarifying Airstrip		ha		#N/A	$0.00	$0		$0	$0
Scarifying Laydown Areas		ha		#N/A	$0.00	$0		$0	$0
vegeation		ha		#N/A	$0.00	$0		$0	$0
Other		ha		#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
Consumables		each		#N/A	$0.00	$0		$0	$0
Electrical Cable		m		15ECS	$26.49	$0		$0	$0
Incinerator		each		15FIS	$9,975.93	$0		$0	$0
Potable Water		each		15PWS	$9,975.93	$0		$0	$0
					Total	$828,077		$828,077	$0
					% of Total			100%	0%

Note:

1 **Capital Expenditures and Short Term Water Treatment identified in 'Instructions' worksheet**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
BREACH DYKE EMBANKMENT						
Remove fill		m3		sc3l	$8.90	$0
Contour water intake area		m3		#N/A	$0.00	$0
STABILIZE SEDIMENT PONDS/WATER MANAGEMENT PONDS						
Place soil cover		m3		#N/A	$0.00	$0
Doze & spread excavated material		m3		#N/A	$0.00	$0
Vegetate spread material		ha		#N/A	$0.00	$0
Rip rap in channel base		each		#N/A	$0.00	$0
Grade and Contour with liner	Includes liner removal and disposal (Ref 1, pg 21) and backfill, compaction and scarifcation with a dozer (Ref 1, pg 19).	m2	49636.2	15GCLS	$5.31	$263,568
REDIRECT RUNOFF/CONSTRUCT DIVERSION DITCHES						
Excavate ditches -soil		m3		sc3l	$8.90	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0
Stabilize side slopes		m3		#N/A	$0.00	$0
Rip rap in channel base		m3		rr2l	$14.20	$0
BREACH DITCHES						
Excavate breaches		m3		#N/A	$0.00	$0
Backfill/recontour		m3		SB3l	$5.10	$0
Install flow dissipation		m3		#N/A	$0.00	$0
Vegetate remainder of ditch		m2		#N/A	$0.00	$0
DECOMISSION FRESH WATER SUPPLY						
Breach embankment		m		#N/A	$0.00	$0
Remove pump		LS		AE	$20,000.00	$0
Remove pipeline		LS		AE	$40,000.00	$0
WATER CONTROL IN RECLAMATION QUARRY						
Install pumping system		LS		#N/A	$0.00	$0
Remove pumping system		LS		#N/A	$0.00	$0
REMOVE PIPELINES						
Remove pipes	The unit cost includes the cleaning, plugging, disassembly, loading, hauling and disposal of piping (Ref 1, pg 41).	m	19623	15RPS	$66.23	$1,299,631
Concrete plug deep pipes		m3		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
GROUNDWATER COLLECTION SYSTEM						
Excavate/install sumps		m3		#N/A	$0.00	$0
Install pumping wells		m3		#N/A	$0.00	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0
CONSTRUCT CONTAMINATED WATER STORAGE POND						
Excavate pond		m3		#N/A	$0.00	$0
Doze & spread excavated material		m3		#N/A	$0.00	$0
Vegetate spread material		ha		#N/A	$0.00	$0
Bedding layer		m3		#N/A	$0.00	$0
Supply geomembrane		m2		#N/A	$0.00	$0
Install geomembrane		m2		#N/A	$0.00	$0
Erosion protection layer		m3		#N/A	$0.00	$0
CONSTRUCT PASSIVE TREATMENT SYSTEM (e.g. Constructed Wetland)						
Construct access roads		km		#N/A	$0.00	$0
Install HDPE piping system from collection pond		m		#N/A	$0.00	$0
Inter-cell flow structures		allow		#N/A	$0.00	$0
Install liners		m2		#N/A	$0.00	$0
Install growth media		m3		#N/A	$0.00	$0
Wetland vegetation		ha		#N/A	$0.00	$0
CONSTRUCT WATER TREATMENT PLANT						
Build treatment plant		LS		#N/A	$0.00	$0
Build sludge containment facility		LS		#N/A	$0.00	$0
					Total	$1,563,200

For cost of long-term/post-closure water treatment see "WATER TREATMENT" Worksheet"

1 **Interim Care and Maintenance (18 Month duration)**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
INTERIM CARE & MAINTENANCE						
on-site caretaker	Three caretakers for 18 months (assume 2 at 3w/1w and 1 at 2w/2w rotation). Assume 36 days of travel for each caretaker over 18-months.10-hr days.	hr	11160	15BLS	100	$1,116,000
extra personnel	Assume crew of 15 people for 56, 10-hr days, to stabalize site and equipment at both the Mine Site, and Milne Port. Blended unit rate is used to allow for different skill levels that would make up the crew.	hr	8400	15BLS	100	$840,000
-electrician		manmonths	0	elech	95	$0
-mechanic		manmonths	0	mechh	72.85	$0
annual fuel		litre	0	fcdh	1.39	$0
Mobilization of Workers Required for Stabilization Period (from northern communities)	Assume two rotations per worker, 30% from northern communities and 70% from southern communities. Mobilization from the south is $85.45/person days on site, and from the north $75/person-days on site (Ref 1).	person-days	252	15NWS	$75.00	$18,900
Mobilization of Workers Required for Stabilization Period (from southern communities)	Assume two rotations per worker, 30% from northern communities and 70% from southern communities. Mobilization from the south is $85.45/person days on site, and from the north $75/person-days on site (Ref 1).	person-days	588	15SWS	$85.45	$50,245
Mobilization of caretakers	Assume mobilize from the north	person-days	1,080	15NWS	$75.00	$81,000
Camp accomodations- stabilization period	15 workers for 56 days	person-days	840	15WACS	$225	$189,000
Camp accomodations for caretakers	18 month duration full time	person-days	1,080	15WACS	$225	$243,000
Equipment - site stabilizaiton	Assume 1 dozer, 56 days, 10 hr/day	hr	560	15BES	$150	$84,000
misc. supplies		allow		accmh	0	$0
pick-up truck		each		#N/A	0	$0
small dozer		allow		#N/A	0	$0
small excavator		allow		#N/A	0	$0
snow machine		allow		#N/A	0	$0
communications		allow	0	#N/A	0	$0
SNP/AEMP water sampling & reporting		each	3	15MCWL	30000	$90,000
geotechnical assessment		each	3	15GTS	20000	$60,000
environmental assessment	Assumes spending 1st year budget for this type of activity for interim care	each	1	RPTH	20000	$20,000
interim water treatment				#N/A		$0
other		each		#N/A	0	$0
			18 Month Interim C&M Cost			$2,792,145
Number of years of ICM		years	1.5		**Total**	$2,792,145

1 Post-Closure Monitoring & Maintenance:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MONITORING & INSPECTIONS						
Annual geotechnical inspection	Assume 2 geotech inspections are specified at year 4 and 8 (Ref 2, pg 81).	each	2	15GTS	$20,000.00	$40,000
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs*	Annual reporting over 8 years. Unit rate from RECLAIM.	each	8	RPTL	$10,000.00	$80,000
Site water monitoring (AEMP and SNP)	Two sampling events per year for 8 years, at 20 sample locations.	each	16	15MCWL	$30,000.00	$480,000
- Active closure and flooding		each		#N/A	$0.00	$0
- Post pit flooding		each		#N/A	$0.00	$0
Air Quality Monitoring Program (AQMP)	Assume 3 sampling events specified at year 2, year 4 and year 7 (Ref 2, pg 81). Unit rate from RECLAIM.	each	3	RPTH	$20,000.00	$60,000
Wildlife Effects Monitoring Program (WEMP)	Assume 2 sampling events specified at year 5 and year 7 (Ref 1, pg 81). Unit rate from RECLAIM.	each	2	RPTH	$20,000.00	$40,000
Vegetation Monitoring		each		#N/A	$0.00	$0
Project Environmental Assessment	Assume carried once (1x) during closure/post closure period year 4; at Mine site, Tote Road and Milne Port (Ref 2, pg 81). Unit rate from RECLAIM.		3	RPTH	$20,000.00	$60,000
COVER MAINTENANCE						
Maintenance Allowance	According to the PDW closure plan, maintenance costs are estimated at $100,000 per year (Ref 1, pg 103).This allowance expected to cover all maintenance activities at the sites.	allow	8	15MCAL	$100,000.00	$800,000
Repair erosion - infill gullies		allow		#N/A	$0.00	$0
Repair erosion - upgrade diversion ditches		allow		#N/A	$0.00	$0
Remove problem vegetation		allow		#N/A	$0.00	$0
Repair animal damage		allow		#N/A	$0.00	$0
Repair/upgrade access controls		allow		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
SPILLWAY MAINTENANCE						
Repair erosion		m3		#N/A	$0.00	$0
Clear spillway		each		#N/A	$0.00	$0
CWTS MAINTENANCE						
Maintain flow, restore vegetation		allow		#N/A	$0.00	$0
POST-CLOSURE WATER TREATMENT						
water treatment - refer to water treatment tab			1	wt tab	$0.00	$0
Subtotal, Annual post-closure costs						$1,560,000
Discount rate for calculation of net present value of post-closure cost, %				0.00%		
Number of years of post-closure activity				8	years	
Present Value of payment stream						$1,560,000

*Regulatory costs - annual reporting, management plans, progress reports etc.

1 **Mobilization/Demobilization:**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MOBILIZE HEAVY EQUIPMENT						
Excavators		km		#N/A	0	$0
Dump trucks		km		#N/A	0	$0
Dozers		km		#N/A	0	$0
Demolition shears		km		#N/A	0	$0
Crane		km		#N/A	0	$0
Loader		km		#N/A	0	$0
Compactor		km		#N/A	0	$0
Light duty vehicles		km		#N/A	0	$0
MOBILIZE MISC. EQUIPMENT						
Mobilization and Demobilization of Equipment and Materials by Sealift		LS	1		2180000	$2,180,000
Mobilization and Demobilization of Equipment and Materials for 2017 Work Plan	Assumed 10% of marginal 2017 Work Plan Direct costs(minus Soil and Water management and ICM components) i.e., $1,308,348 from RECLAIM 2017 Marginal Summary Worksheet.	LS	1	#N/A	130835	$130,835
Off-site Disposal of Waste	Ref 1 pg 59	m3	5500	15ODS	358	$1,969,000
Consumables (**2017 Work Plan** marginal increase)	Cost to remove additional 49 bed spaces delivered to site in **2017 Work Plan**.	Ea	49	15CONS	700.8	$34,339
Consumables	Cost to remove consumables delivered to site in 2015 (lubricants, grease, detergents, boosters, EZ Dets, dry goods, food, household supplies, etc.) (2015 Security Assessment, pg 18).	Ea	550	15CONS	700.8	$385,440
Truck tires		allow		#N/A	0	$0
Other				#N/A	0	$0
MOBILIZE CAMP						
MOBILIZE WORKERS						
Mobilization of Workers Required for Reclamation (from northern communities, **2017 Work Plan**)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	155	15NWS	75	$11,625
Mobilization of Workers Required for Reclamation (from southern communities, **2017 Work Plan**)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	362	15SWS	85.45	$30,933
Mobilization of Workers Required for Reclamation (from northern communities, 2016 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	937	15NWS	75	$70,275
Mobilization of Workers Required for Reclamation (from southern communities, 2016 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	2185	15SWS	85.45	$186,708
Mobilization of Workers Required for Reclamation (2014 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1). Based on a blended unit rate of $82.315, which assumes 70% of hires from southern communities at a rate of $85.45/ person-day, and 30% from northern communities at $75/ person-day.	man hours	7921		82.32	$652,057
Mobilization of Workers Required for Reclamation (2015 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1). Based on a blended unit rate of $82.315, which assumes 70% of hires from southern communities at a rate of $85.45/ person-day, and 30% from northern communities at $75/ person-day.	each	559		82.32	$46,017
Mobilization of Workers Required for Reclamation (2015 A Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1). Based on a blended unit rate of $82.315, which assumes 70% of hires from southern communities at a rate of $85.45/ person-day, and 30% from northern communities at $75/ person-day.	each	207		82.32	$17,040
WORKER ACCOMODATIONS						
Worker Accommodation & Camp Operation		person-days	11,186	15WACS	225	$2,516,850
Worker Accommodation & Camp Operation	For the Post-Closure Monitorong and Reporting System (from 2016 Work Plan)	person-days	216	15WACS	225	$48,600
Worker Accommodation & Camp Operation (**2017 Work Plan**)	For marginal reclamation activities (517 person-days) associated with **2017 Work Plan**. Includes maintenance, catering,, housekeeping & fuel costs.	person-days	517	15WACS	225	$116,325
Long term reclamation activities (eg pump flooding)		manmonths		#N/A	0	$0
MOBILIZE FUEL						
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents the fuel mobilization cost associated with the 2014 Work Plan as provided in Oct 30, 2015 EBS	$	2,888,000	#N/A	1	$2,888,000
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents marginal increase in fuel for 2015 provided in Oct 30, 2015 EBS	$	30,000	#N/A	1	$30,000
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents marginal increase in fuel for the 2015 Addendum provided in September 23rd, 2015 EBS	$	9,000	#N/A	1	$9,000
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents marginal increase in fuel for 2015 R provided in September 23rd, 2015 EBS	$	203,000	#N/A	1	$203,000
Fuel Required for Reclamation (2016 Work Plan)	Ref 1, pg 61	litre	35,435	15MF1S	0.4	$14,174
Fuel Required for Reclamation **(2017 Work Plan)**	**2017 Work Plan**, Appendix B, pg 9. Mobilize 50% of fuel required. Reclamation activities in Nov. 24, 2016 EBS = 90,987L. Heat & power = 116L per 517 person days x $0.40/L for mobilization. Fuel cost be captured under Worker Accom. & Camp Operation.	litre	74,480	15MF1S	0.4	$29,792
WINTER ROAD						
DEMOBILIZE HEAVY EQUIPMENT						
DEMOBILIZE CAMP						
DEMOBILIZE WORKERS						
WINTER ROAD						
					Total	**$11,570,010**

Appendix A.2 – Marginal Estimate for the 2018/2019 ASR and 2017/2018 Addendum.

SUMMARY OF COSTS

CAPITAL COSTS	COMPONENT NAME	COST	LAND LIABILITY	WATER LIABILITY	IOL LIABILITY	CROWN LIABILITY
OPEN PIT	Mary River Mine Pit	$1,745,745	$1,745,745	$0	$1,745,745	$0
UNDERGROUND MINE		$0	$0	$0	$0	$0
TAILINGS FACILITY		$0	$0	$0	$0	$0
ROCK PILE	Mine Site Waste Rock Pile	$0	$0	$0	$0	$0
BUILDINGS AND EQUIPMENT	Mine Site	$5,633,923	$5,472,744	$161,179	$5,633,923	$0
	Milne Port	$2,275,883	$2,175,484	$100,399	$2,275,883	$0
	Tote Road	$92,534	$92,534	$0	$86,056	$6,477
					$0	$0
CHEMICALS AND CONTAMINATED SOIL MANAGEMEN		$59,120	$59,120	$0	$59,081	$39
SURFACE AND GROUNDWATER MANAGEMENT		$0	-	$0	$0	$0
INTERIM CARE AND MAINTENANCE		$0	-	$0	$0	$0
	SUBTOTAL: Capital Costs	**$9,807,204**	**$9,545,626**	**$261,578**	**$9,800,687**	**$6,517**
	PERCENT OF SUBTOTAL		**97.3%**	**2.7%**	**99.93%**	**0.07%**

INDIRECT COSTS		COST	LAND LIABILITY	WATER LIABILITY	IOL LIABILITY	CROWN LIABILITY
MOBILIZATION/DEMOBILIZATION		$11,834,369	$11,518,723	$315,647	$11,826,506	$7,864
POST-CLOSURE MONITORING AND MAINTENANCE		$0	$0	$0	$0	$0
ENGINEERING	3.9%	$382,481	$372,279	$10,202	$382,227	$254
PROJECT MANAGEMENT	9.4%	$921,877	$897,289	$24,588	$921,265	$613
HEALTH AND SAFETY PLANS/MONITORING & QA/QC	0%	$0	$0	$0	$0	$0
BONDING/INSURANCE	2%	$196,144	$190,913	$5,232	$196,014	$130
CONTINGENCY	20%	$1,961,441	$1,909,125	$52,316	$1,960,137	$1,303
MARKET PRICE FACTOR ADJUSTMENT	0%	$0	$0	$0	$0	$0
	SUBTOTAL: Indirect Costs	**$15,296,312**	**$14,888,329**	**$407,984**	**$15,286,148**	**$10,164**
TOTAL COSTS		**$25,103,516**	**$24,433,954**	**$669,561**	**$25,086,835**	**$16,681**

1 **Open Pit Name:** **Mary River Mine Pit** **Pit # *1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
CONTROL ACCESS									
STABILITY STUDY									
STABILIZE SLOPES									
COVER/CONTOUR SLOPES									
CONSTRUCT DIVERSION DITCHES									
CONSTRUCT SPILLWAY									
RECLAIM QUARRIES (the unit cost is inclusive of backfill, compaction and scarification with a dozer)									
Q13 Quarry	In 2017 Work Plan Addendum	m2	25000	15GCS	$1.81	$45,250	100%	$45,250	$0
Q1 Quarry	2017 work plan addendum marginal increase Add 50000 m2. 2017 Actual add 824,500 m2	m2	874500	15GCS	$1.81	$1,582,845	100%	$1,582,845	$0
Q5 Quarry	2018 Work Plan See Table 3-3 of Marginal Estimate	m2	15000	15GCS	$1.81	$27,150	100%	$27,150	$0
QMR2 Quarry	2017 work plan addendum marginal increase Add 50000 m2	m2	50000	15GCS	$1.81	$90,500	100%	$90,500	$0
GRADING AND CONTOURING SIGNIFICANTLY DISTURBED AREAS (the unit cost is inclusive of backfill, compaction and scarification with a dozer)									
Km 97 Borrow Source	2017 work plan marginal increase Add 1000 m2	m2		15GCDS	$2.72	$0	100%	$0	$0
Type A Quarry		m2		15GCDS	$2.72	$0	100%	$0	$0
FLOOD PIT-Captital									
FLOOD PIT-Annual Cost									
Other				#N/A	$0.00	$0		$0	$0
					Annual pumping costs	$0			
Number of years of pump flooding		years							
					Total pumping costs	$0		$0	$0
					Total	$1,745,745		$1,745,745	$0
					% of Total			100%	0%

1 **Chemicals/Soil Area Name:**

Note: The procedures, equipment and packaging for clean up and removal of chemicals or contaminated soils are highly dependent on the nature of the chemicals and their existing state of containment. Government guidelines should be consulted on an individual chemical basis. Any estimate made here should be considered very rough unless specific evaluations have been conducted.

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
HAZARDOUS MATERIALS AUDIT									
BUILDING DECONTAMINATION & CONSOLIDATION OF HAZARDOUS MATERIALS									
HAZARDOUS MATERIALS REMOVAL									
HAZARDOUS MATERIALS									
CONTAMINATED SOILS									
CONTAMINATED SOIL REMOVAL									
Contaminated Soil Treatment		m3		15CSTS	$14.78	$0	100%	$0	$0
Contaminated Soil Treatment	Assumes a 2,000 cu.m spil at both the Milne Port Bulk Fuel Tank Farm and Mine Site Fuel Tank Farm	m3	4000	15CSTS	$14.78	$59,120	100%	$59,120	$0
Excavate and transport		m3		#N/A	$0.00	$0		$0	$0
Manage hydrocarbon remediation		m3		#N/A	$0.00	$0		$0	$0
Reagents/stabilizing agent		m2		#N/A	$0.00	$0		$0	$0
Excavate and transport to offsite facility		m3		#N/A	$0.00	$0		$0	$0
Contour decontaminated area		m3		#N/A	$0.00	$0		$0	$0
CONTAMINATED SOIL VERY LOW PERMEABILITY COVER									
OTHER									
Ammonium nitrate (explosive material)		m3		16AN1S	$358.00	$0	100%	$0	$0
Pre-package explosives		kg		16AN2S	$2.37	$0	100%	$0	$0
				#N/A	$0.00	$0		$0	$0
					Total	$59,120		$59,120	$0
					% of Total			100%	0%

1 **Building / Equip Name:** **Mine Site** **Bldg / Equip #:** 1

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 30 units.	each	30	15MOLS	$941.09	$28,233	95%	$26,821	$1,412
Light Mobile Equipment	2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate	each	34	15MOLS	$941.09	$31,997	95%	$30,397	$1,600
	2018 Work Plan see Table 3-2	each	189	15MOLS	$941.09	$177,866	95%	$168,973	$8,893
	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 40 units.	each	40	15MOMS	$1,494.13	$59,765	98%	$58,570	$1,195
Medium Mobile Equipment	2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate	each	117	15MOMS	$1,494.13	$174,813	98%	$171,317	$3,496
	2018 Work Plan see Table 3-2	each	131	15MOMS	$1,494.13	$195,731	98%	$191,816	$3,915
	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 92 units.	each	92	15MOHS	$2,616.87	$240,752	98%	$235,937	$4,815
Heavy Mobile Equipment	2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate	each	-30	15MOHS	$2,616.87	($78,506)	98%	($76,936)	-$1,570
	2018 Work Plan see Table 3-2	each	99	15MOHS	$2,616.87	$259,070	98%	$253,889	$5,181
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light mechanical equipment - Decontaminate and dispose on-site	2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate	each	14	15LMES	$1,980.80	$27,731	98%	$27,177	$555
	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 12 units.	each	12	15MMES	$4,261.34	$51,136	100%	$51,136	$0
Medium mechanical equipment - Decontaminate and dispose on-site	2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate	each	93	15MMES	$4,261.34	$396,305	100%	$396,305	$0
	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 4 units.	each	4	15MEHS	$41,205.45	$164,822	100%	$164,822	$0
Heavy mechanical equipment - Decontaminate and dispose on-site	2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate	each	6	15MEHS	$41,205.45	$247,233	100%	$247,233	$0
	2018 Work Plan see Table 3-2	each	5	15MEHS	$41,205.45	$206,027	100%	$206,027	$0
Light Tanks	Light non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (see Tables 2-4 & 3-4 of 2018 Marginal Estimate).	each	7	15TLS	$3,335.00	$23,345	100%	$23,345	$0
Medium Tanks	Medium non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (see Tables 2-4 & 3-4 of 2018 Marginal Estimate).	each	2	15MTS	$11,371.00	$22,742	100%	$22,742	$0
Light Diesel Tanks	Small fuel tanks (10,000-20,000L) 2017 actual not previously allocated (see Tables 2-4 & 3-4 of 2018 Marginal Estimate)	each	10	15LiDTS	$5,907.87	$59,079	100%	$59,079	$0
Medium Mobile Diesel Tank	Medium fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Tables 2-4 & 3-4 of 2018 Marginal Estimate).	each	5	15MMMTS	$16,407.00	$82,035	100%	$82,035	$0
Fuelk tanks - On-site disposal of medium mobile fuel tanks (3,000 to 500,000 L)	On-site disposal of medium-mobile fuel tanks (3,000 to 500,000L). See table 3-4 of 2018 marginal Estimate	each	16	15MMFTS	$10,481.05	$167,697	100%	$167,697	$0
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular	2017 Work Plan Addendum includes 800 person temp hardwall camp , construction offices, lunch rooms and washcars at both Mine Site and Milne Port	m2	13216	15RBMS	$59.38	$784,766	89%	$698,442	$86,324
	2018 Work Plan see table 3-1	m2	1218	15RBMS	$59.38	$72,325	89%	$64,369	$7,956
Fold Away Buildings		m2		15RBFS	$41.57	$0	100%	$0	$0
Soft-Walled	2017 Work Plan Addendum soft Walled Buildings includes 50 person camp and 35 person Norse man style camp at Mine Site only	m2	1900	15RBSS	$47.51	$90,269	89%	$80,339	$9,930
ISO Shipping Containers (Shelters, Comm. Facilities)		m2		15RBIS	$29.69	$0	100%	$0	$0
Office/washcars	2017 Actual work not previously allocated. See Table 2-4 of 2018 Marginal Estimate.	m2	576	15RBIS	$102.05	$58,781	89%	$52,315	$6,466
Water and Wastewater Treatment Facilities	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	1	15WWTS	$11,035.58	$11,036	0%	$0	$11,036
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Fold Away Buildings	2018 Work Plan see table 3-1	m2	4230	15RCBFS	$142.41	$602,394	100%	$602,394	$0
Soft-Walled	2017 Work Plan Addendum Maintenance Garage at Mine Site	m2	2046	15RCBSS	$148.35	$303,524	100%	$303,524	$0
BREAK FOUNDATIONS									
Precast Foundations	Includes load and transport of precast concrete foundations (Ref 1, pg 34). **Add 2017 Work Plan addendum 800 person temp hard walled camp at mine 4333 m2.**	m2	4333	15FCS	$38.47	$166,691	100%	$166,691	$0
Slab on Grade	Includes perforating the concrete slabs on grade 2017 Work Plan Addendum for pre-cast conrete foundation and Maintenance Garages at Mine Site	m2	2046	15FSS	$33.11	$67,743	100%	$67,743	$0
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrification with a dozer									
	In 2017 Work Plan Addendum - Mine Site	m2	60000	15GCS	$1.81	$108,600	100%	$108,600	$0
	Removed in 2018 Work Plan for Mine Site (reconciliation of 2017 work plan addendum)	m2	-15000	15GCS	$1.81	($27,150)	100%	($27,150)	$0
Grade and contour laydown areas	2018 Work Plan See Table 3-3 in Marginal Estimate	m2	11400	15GCS	$1.81	$20,634	100%	$20,634	$0
	2017 Actual work not previously allocated (laydown 1, 2A and 2B)	m2	44250	15GCS	$1.81	$80,093	100%	$80,093	$0
Grade and contour infrastructure pads	In 2017 Work Plan Addendum - Camp pad	m2	45000	15GCS	$1.81	$81,450	100%	$81,450	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrification with a dozer									
Crusher Pad Sedimentation Pond	2018 Work Plan See Table 3-3 in Marginal Estimate	m2	4500	15GCLS	$5.31	$23,895	100%	$23,895	$0
Mine Site Soft Wall Maintenance Garages	2017 Work Plan Addendum	m2	2046	15GCLS	$5.31	$10,864	100%	$10,864	$0
Other		m2		15GCLS	$5.31	$0	100%	$0	$0
LANDFILL FOR DEMOLITION WASTE									
Place fill material over demolition waste (Mine Site Landfill)	Includes drill and blasting of material aggregated crushing, excavation of fill, load and haul of fill material, backfill and compact source of material, and fill application. Assumes avg fill depth 1.5m over 6m of demolition waste (Ref 1, pg 17). For 2018 work plan see table 3-9 in the Marginal estimate for quantity and 2017 Work Plan	m2	8948	15PFS	$44.37	$397,023	100%	$397,023	$0
SPECIALIZED ITEMS									
Incinerator	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	1	15FIS	$9,975.93	$9,976	100%	$9,976	$0
Potable Water	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	1	15PWS	$9,975.93	$9,976		$0	$9,976
					Total	$5,633,923		$5,472,744	$161,179
					% of Total			97%	3%

Note:

1 **Building / Equip Name:** **Milne Port** **Bldg / Equip #:** **2**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Other (reclaim conveyor)	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Conveyors have been classified as large mobile equipment, with the exception of the reclaim conveyor (850m in length). (Ref 1, pg 40). **For 2017 Work Plan add 0.1667 units for for cross conveyor which is 1/6th of Reclaim Conveyor length. 2017 Work Plan Addendum this work was removed**	each	-0.1667	15MORS	$1,329,441.31	($221,618)	100%	($221,618)	$0
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Medium Diesel Tanks	Medium fuel tanks (500,000-750,000L). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27). Add a tank from the 2017 Work Plan Addendum - Milne Port	each	1	15MDTS	$16,166.40	$16,166	100%	$16,166	$0
Large Diesel Tanks	Large fuel tanks (3ML-5ML). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27). Add a tank from the 2017 Work Plan Addendum - Milne Port	each	1	15LDTS	$106,338.74	$106,339	100%	$106,339	$0
Largest Diesel Tanks	Largest fuel tanks (>5ML-15ML). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27). Add a tank from the 2017 Work Plan Addendum - Milne Port	each	1	15LDTS	$171,468.00	$171,468	100%	$171,468	$0
Misc. Items	On-site disposal. Miscellaneous (minor) items were defined as any item less than 200 kg not captured in other unit costs (Ref 1, pg 42).	each	0	15MEIS	$529.83	$0	100%	$0	$0
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular	2017 Work Plan Addendum includes 380 person temp hardwall camp , construction offices, lunch rooms and washcars at both Mine Site and Milne Port	m2	10936	15RBMS	$59.38	$649,380	89%	$577,948	$71,432
	2018 Work Plan see table 3-1	m2	1218	15RBMS	$59.38	$72,325	89%	$64,369	$7,956
Water and Wastewater Treatment Facilities	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	1	15WWTS	$11,035.58	$11,036	0%	$0	$11,036
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Modular	Trailers and pre-fabricated buildings. (Ref 1, pg 29).	m2		15RCBMS	$143.42	$0	85%	$0	$0
Fold Away Buildings		m2		15RCBFS	$142.41	$0	100%	$0	$0
Soft-Walled	2017 Work Plan Addendum Maintenance Garage at Milne Port	m2	2046	15RCBSS	$148.35	$303,524	100%	$303,524	$0
BREAK FOUNDATIONS									
Precast Foundations	Includes load and transport of precast concrete foundations (Ref 1, pg 34).	m2		15FCS	$38.47	$0	100%	$0	$0
Slab on Grade	Includes perforating the concrete slabs on grade 2017 Work Plan Addendum for pre-cast conrete foundation and Maintenance Garages at Milne Site	m2	10046	15FSS	$33.11	$332,623	100%	$332,623	$0
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Grade and contour laydown areas	Removed in 2017 Work Plan addendum for Milne Por	m2	-150000	15GCS	$1.81	($271,500)	100%	($271,500)	$0
	In 2017 Work Plan Addendum - Milne Port	m2	150000	15GCS	$1.81	$271,500	100%	$271,500	$0
	2018 Work Plan See Table 3-3 in Marginal Estimate	m2	308000	15GCS	$1.81	$557,480	100%	$557,480	$0
	2017 actual work not previously allocated (W1,W3,W6, W7, W10B, W11, W14 AND W15) see table 2-2 of 2018 work plan	m2	81730	15GCS	$1.81	$147,931	100%	$147,931	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
Milne Port Soft Wall Maintenance Garages	2017 Work Plan Addendum	m2	2046	15GCLS	$5.31	$10,864	100%	$10,864	$0
Weatherhaven genset fuel bladder berm		m2		15GCLS	$5.31	$0	100%	$0	$0
Storage Area		m2		15GCLS	$5.31	$0	100%	$0	$0
Fuel tank farm dyke		m2		15GCLS	$5.31	$0	100%	$0	$0
Landfarm		m2		15GCLS	$5.31	$0	100%	$0	$0
LANDFILL FOR DEMOLITION WASTE									
Place fill material over demolition waste	2017 Work Plan Addendum	m2	2218	15PFS	$44.37	$98,413	100%	$98,413	$0
SPECIALIZED ITEMS									
Incinerator	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	1	15FIS	$9,975.93	$9,976	100%	$9,976	$0
Potable Water	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	1	15PWS	$9,975.93	$9,976		$0	$9,976
					Total	$2,275,883		$2,175,484	$100,399
					% of Total			96%	4%

Note:

1 **Building / Equip Name:** **Tote Road** **Bldg / Equip #:** 3

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light Mobile Equipment		each	0	15MOLS	$941.09	$0	95%	$0	$0
Medium Mobile Equipment		each	0	15MOMS	$1,494.13	$0	98%	$0	$0
Heavy Mobile Equipment		each	0	15MOHS	$2,616.87	$0	98%	$0	$0
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular		m2	0	15RBMS	$59.38	$0	89%	$0	$0
Fold Away Buildings		m2	0	15RBFS	$41.57	$0	100%	$0	$0
ISO Shipping Containers (Shelters, Comm. Facilities)	2017 Actual work not previously allocated (see Table 2-3 of 2018 Marginal cost)	m2	1050	15RBIS	$29.69	$31,175	100%	$31,175	$0
Water and Wastewater Treatment Facilities		each	0	15WWTS	$11,035.58	$0	0%	$0	$0
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Modular		m2	0	15RCBMS	$143.42	$0	100%	$0	$0
Fold Away Buildings	**Mobile Maintenance Depot (100% on Crown Land)**	**m2**		**15RCBFS**	**$142.41**	**$0**	**100%**	**$0**	**$0**
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	0	15RCBIS	$143.42	$0	100%	$0	$0
Temporary Construction Warehouse and Office Allowance		m2	0	15RCBTS	$25,000.00	$0	100%	$0	$0
BREAK FOUNDATIONS									
Slab on Grade	**Mobile Maintenance Depot (100% on Crown Land)**	m2		15FSS	$33.11	$0	100%	$0	$0
Timber Cribbing	Includes disassemby load and transport of the timber cribbing. Assume 7% on Crown Land	m2		15TCS	$20.78	$0	100%	$0	$0
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Grade and contour laydown areas	In 2017 Actual work not previous allocated - IT tower upgrades KM7, KM26,KM40, KM49, KM69, KM80 & KM88 (see table 2-2 of 2018 Marginal Estimate)	m2	33900	15GCS	$1.81	$61,359	100%	$61,359	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
LANDFILL FOR DEMOLITION WASTE									
		m2		15PFS	$44.37	$0	100%	$0	$0
RECLAIM ROADS									
SPECIALIZED ITEMS									
					Total	$92,534		$92,534	$0
					% of Total			100%	0%

Note:

1 Mobilization/Demobilization:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MOBILIZE HEAVY EQUIPMENT						
Excavators		km		#N/A	0	$0
Dump trucks		km		#N/A	0	$0
Dozers		km		#N/A	0	$0
Demolition shears		km		#N/A	0	$0
Crane		km		#N/A	0	$0
Loader		km		#N/A	0	$0
Compactor		km		#N/A	0	$0
Light duty vehicles		km		#N/A	0	$0
MOBILIZE MISC. EQUIPMENT						
Mobilization and Demobilization of Equipment and Materials for 2017 Work Plan addendum	Assumed 10% of marginal 2017 Work Plan Addendum Direct costs(minus Soil and Water management and ICM components) i.e., $5,554,000 from BIMC 2018 Marginal Summary Worksheet.	LS	1	#N/A	555400	$555,400
Mobilization and Demobilization of Equipment and Materials for 2018 Work Plan	Assumed 10% of marginal 2018 Work Plan Direct costs(minus Soil and Water management and ICM components) i.e., $2,600,700 from BIMC 2018 Marginal Summary Worksheet.	LS	1	#N/A	260070	$260,070
Consumables (**2017 Work Plan** marginal increase)	2017 Work Plan addendum (table 3-7) increases this to a 800 person and 50 person camp structures at the Mine Site and a 380 person camp at Milne Port	Ea	1230	15CONS	700.8	$861,984
MOBILIZE CAMP						
MOBILIZE WORKERS						
Mobilization of Workers Required for Reclamation (from northern communities, **2017 Work Plan Addendum**)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	644	15NWS	75	$48,300
Mobilization of Workers Required for Reclamation (from southern communities, **2017 Work Plan Addendum**)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	1502	15SWS	85.45	$128,346
Mobilization of Workers Required for Reclamation (from northern communities, **2018 Work Plan**)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 13 of Marginal Estimate).	person-days	957	15NWS	75	$71,775
Mobilization of Workers Required for Reclamation (from southern communities, **2018 Work Plan**)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 13 of Marginal Estimate).	person-days	2233	15SWS	85.45	$190,810
WORKER ACCOMODATIONS						
Worker Accommodation & Camp Operation (**2018 Work Plan**)	For marginal reclamation activities (3190 person-days) associated with **2018 Work Plan (Page 13 of Marginal Estimate)**. Includes maintenance, catering,, housekeeping & fuel costs.	person-days	3,190	15WACS	225.5	$719,345
Worker Accommodation & Camp Operation (**2017 Work Plan addendum**)	For marginal reclamation activities (2145 person-days) associated with **2017 Work Plan addendum**. Includes maintenance, catering,, housekeeping & fuel costs.	person-days	2,145	15WACS	225.5	$483,698
MOBILIZE FUEL						
Fuel Required for Reclamation **(2017 Work Plan Addendum)**	**2017 Work Plan Addendum page 8**. Mobilize 50% of fuel required. Reclamation activities for Marginal increase = 1,144,276L. Heat & power = 116L per 2145 person days x $0.40/L for mobilization. Fuel cost be captured under Worker Accom. & Camp Operation. Correction made to $1,213,000 per EBS not $1,216,000 as noted in the addendum. BIMC information does not clarify how the volume of fuel was derived so cost provided used to back out a volume of fuel.	litre	3,032,500	15MF1S	0.4	$1,213,000
Fuel Required for Reclamation (2018 Work Plan)	**2018 Work Plan page 13**. Mobilize 50% of fuel required. Reclamation activities for Marginal increase = 638,170L. Heat & power = 116L per 3190 person days x $0.40/L for mobilization. Fuel cost be captured under Worker Accom. & Camp Operation.	litre	504,105	15MF1S	0.4	$201,642
WINTER ROAD						
DEMOBILIZE HEAVY EQUIPMENT (includes disassembly, demob as well as worker accommodations and mob/demob)						
Crushing Module	2018 Work Plan (see Table 3-6 in Marginal Estimate)	lot	1	EBS	1500000	$1,500,000
Screening Module		lot	1	EBS	1400000	$1,400,000
Car Dumper Module		lot	1	EBS	2200000	$2,200,000
BMH Conveyors		lot	1	EBS	1500000	$1,500,000
Rail Construction Materials		lot	1	EBS	500000	$500,000
DEMOBILIZE CAMP						
DEMOBILIZE WORKERS						
WINTER ROAD						
					Total	**$11,834,369**

APPENDIX B

Summary of Baffinland 2018 Marginal Closure and Reclamation Financial Security Estimate (Table 4-1)

Baffinland

Table 4-1: Mary River Project 'Global' Closure and Reclamation Security Summary[1] – 2018 Category 1 Activities

	A	B	C	D	E	F	G	H
	Authorization	**Liability**	**Global Estimate from 2017/18 ASR ($)**	**2017/18 ASR Addendum ($)**	**2018/19 ASR Estimate ($)**	**Total 'Global' Estimated Security for 2018/19 ($)**	**Total Posted ($)**	**Adjustment to be Posted ($)**
						C + D + E		**F - G**
1	Type A 2AM-MRY1325	IOL[2]	48,078,000	9,571,000	18,024,000	75,673,000	61,642,000	14,031,000
2		Crown	1,194,000	-	-	1,194,000	1,210,000	(16,000)
3		Water	1,342,000	42,000	-	1,384,000	-	-
4		Land	47,930,000	9,529,000	18,024,000	75,483,000	-	-
5	*Subtotal Type A*		*49,271,000*	*9,571,000*	18,024,000	*76,866,000*	62,852,000	*14,014,000*
6	Type B Exploration 2BE-MRY1421 [3]	IOL	165,000	-	-	165,000	-	165,000
7		Crown	1,082,000	-	-	1,082,000	1,250,000	(168,000)
8		Water	18,000	-	-	18,000	-	-
9		Land	1,229,000	-	-	1,229,000	-	-
10	*Subtotal Type B Exploration*		*1,247,000*	-		*1,247,000*	*1,247,000*	*(3,000)*
11	DFO Security Associated with Ore Dock	IOL[2]	-	-	-	-	-	-
12		Crown	563,000	-	-	563,000	563,000	-
13		Water	563,000	-	-	563,000	563,000	-
14		Land	-	-	-	-	-	-
15	*Subtotal DFO*		*563,000*	-		*563,000*	*563,000*	-
16	AANDC Land Lease 47H/16-1-2 [4]	IOL[2]	-	-	-	-	-	-
17		Crown	4,975,000	-	-	4,975,000	4,975,000	-
18		Water	-	-	-	-	-	-
19		Land	4,975,000	-	-	4,975,000	4,975,000	-
20	*Subtotal AANDC Land Lease*		*4,975,000*	-	-	*4,975,000*	*4,975,000*	-
21	**GRAND TOTAL**		**56,056,000**	**9,571,000**	**18,024,000**	**83,651,000**	**69,637,000**	**14,011,000**

NOTES:

1) Totals rounded to nearest '000 in CAD
2) Security relating to IOL held by Qikiqtani Inuit Association (QIA) under Commercial Lease No. Q13C301
3) As per Mary River Exploration Project Closure and Reclamation Plan (BAF-PH1-830-P16-0038, Rev 1)
4) As per Closure and Reclamation Strategy and Financial Security Estimate for Nunavut Lease #47H/16-1-2 (H349001-2000-07-126-0001, Rev.0)

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