Sabina
GOLD & SILVER CORP.

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

July 23, 2018

RE: Sabina Gold & Silver Corp. Final Submission for Back River Project Type A Water Licence Public Hearing

Dear Mr. Dwyer,

Sabina Gold & Silver Corp. (Sabina) is pleased to provide the attached final submission in advance of the Public Hearing for Water Licence Application No.: 2AM-BRP----, scheduled for August 8 and 9, 2018.

Sabina is pleased to provide responses to final submissions received from:

- Kitikmeot Inuit Association (KIA);
- Crown-Indigenous Relations and Northern Affairs Canada (CIRNA);
- Environment and Climate Change Canada (ECCC); and
- Fisheries and Oceans Canada (DFO).

Other than the matter relating to staged security described further in this letter below, Sabina has not identified any outstanding matters for resolution between the parties. Sabina thanks ECCC, KIA, DFO, and CIRNA for their engagement which has enabled us to build a very high level of consensus.

Sabina wishes to provide an update on Sabina, KIA, and CIRNA's discussions with respect to closure. We are pleased to report that all three parties have agreed that the global security amount that should be applied to the project is $43,189,351. The parties have agreed that the split should be held between KIA and CIRNAC as follows:

	Proposed %	**Proposed $**
KIA	32%	$13,820,592
CIRNA	68%	$29,368,759

The parties continue to discuss the concept of staged security based on Project phases. Currently, nine stages with associated security amounts have been presented by Sabina to KIA and CIRNA. KIA is in agreement with the stages and the suggested security amounts presented by Sabina. CIRNA is currently considering Sabina's proposal further. We have also had further detailed discussions on wording with respect to security and Sabina has submitted revised language for the Nunavut Water Board's consideration in the attached revised Water Licence Framework. We anticipate providing NWB with a further update at the upcoming hearing.

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Additional enhancements have also been proposed within the revised Water Licence Framework including some to address further KIA requests.

As well, further to Sabina's press release of April 23, 2018 (see attached), Sabina is pleased to confirm that a Water Compensation Agreement has been reached with KIA in respect of the Back River Project.

Finally, Sabina wishes to provide a summary of potential minor improvements to our plans that have been identified as detailed engineering on the Project which have proceeded in recent months. These optimizations primarily focus on the reduction of environmental and safety risks, as well as increase operational efficiency. Sabina notes these optimizations are all within the scope of the environmental assessment completed in respect of the NIRB Project Certificate, as well as the Type A Water Licence Application. I note the first two items below were communicated in our letter of June 25, 2018 to KIA, NIRB, NWB, and CIRNA, but we are including reference to these items in this letter as well for convenience of reviewers:

1) Greywater

   Sabina is proposing to shift the grey water discharge point as a result of the New Permanent Camp Pad location. The Original Greywater Discharge Location is uphill from the New Permanent Camp Pad which will create significant operational issues, especially during the winter. The new Proposed Greywater Discharge Location will be a slight downhill from the New Permanent Camp Pad and only shifts the original discharge point by approximately 100 m. The greywater would still be a land based discharge with similar residence time.

   All greywater will continue to be discharged at a distance of at least 31 m above the ordinary high water mark of any waterbody, at a location where direct flow into a waterbody is not possible. The new Proposed Greywater Discharge Location is approximately 600 m from the marine environment.

2) Pipeline

   After thorough consideration, Sabina is proposing to install a standalone Bulk Fuel Pipeline and small vehicle Access Road to pump fuel from the fuel vessel to the yet-to-be-built bulk storage tanks. Although this increases construction costs marginally, Sabina believes that it reduces risk operationally. Placing the Bulk Fuel Pipeline along the road, which was originally proposed, may result in damage due to snow removal and other operational activities. Sabina prefers to allow for a more direct Bulk Fuel Pipeline resulting in reduced operational and environmental risk.

3) Bulk Fuel Tank Sizing

   As Sabina advances detailed engineering, Sabina continues to optimize the size of the bulk fuel storage tanks at the Marine Laydown Area (MLA) and Goose Property as determined by anticipated quantities and volumes of fuel depending on the phase of the Project. Smaller bulk fuel tanks may be utilized in the early Construction years of the MLA and Goose Property as they require less construction and lead time and provide Sabina with greater fuel management versatility. The MLA and Goose Property Fuel Storage Area location and total fuel volume will remain the same as provided in the Type A Water Licence Application and will continue to be constructed to conform with the Canadian Council of Ministers of the Environment (CCME) Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied

Petroleum Products (CCME 2003), and the Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (2008).

Sabina is committed to providing detailed designs for construction of temporary and permanent fuel storage and fuel transfer facilities to the NWB at least sixty (60) days prior to construction of fuel storage facilities and associated infrastructure.

4) Winter Ice Road Alignment

Sabina notes that as detailed engineering advances, and significant Winter Ice Road planning and verification through field reconnaissance programs continues to occur, optimizations and route adjustments to the Winter Ice Road alignment are ongoing. All routes are subject to further change based on engineering, snow, topography, and transportation requirements for the Project. Sabina expects that varying amounts of snow will be identified through field reconnaissance programs annually, and Winter Ice Road alignment optimizations and changes will continue to occur. Sabina will adhere to the terms and conditions of both the NIRB Project Certificate and the Type A Water Licence as they are related to the Winter Ice Road construction and operation. Sabina does not anticipate that any change to requested water use volumes is required in relation to the potential Winter Ice Road Alignment.

Sabina looks forward to the further discussions with all Parties at the upcoming Final Hearing in Cambridge Bay. Should you have any questions, please do not hesitate to contact me at the below.

Yours truly,

Matthew Pickard
Vice President, Environment and Sustainability
Sabina Gold & Silver Corp.
#1800 – 555 Burrard Street
Box 220
Vancouver, BC V7X 1M9

CC: *Dave Baines, NWB*
Ian Parsons (CIRNA)
John Roesch (KIA)

Attachments: Final Submission Responses
Sabina Press Release of April 23, 2018
Revised Water Licence Framework (as at July 23, 2018)
Final Hearing Closure Cost Estimate

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Final Submission Responses

Sabina
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The BACK RIVER PROJECT

TYPE A WATER LICENCE
FINAL SUBMISSION RESPONSES

July 2018
NWB File No. 2AM-BRP----

Submitted to:
Nunavut Water Board
PO Box 119
Gjoa Haven, NU X0B 0C0

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The BACK RIVER PROJECT

Final Submission Responses

Kitikmeot Inuit Association

Interested Party:	KIA	**No.:**	**WF-KIA-01**
Subject/Topic:	Reclamation Security		

Reference to Type A:

N/A

Detailed Review Comment:

The KIA is open to receiving staged bonding from Sabina for the reclamation security under particular conditions stipulated in their Type A water license. The particular conditions KIA seeks in the Type A water license are:

- The KIA must receive staged security in Letters of Credit (LOC) for major mine site components on a geographic basis (construction stages) in accordance with the planned construction schedule sixty (60) days prior to construction.
- KIA's receipt of staged security must be subject to NWB review and confirmation for fulfilling Type A water license requirements.
- Sabina provide quarterly summary reports to the NWB on construction progress and costs, and reclamation security provided.
- Reclamation costs and security be updated annually by Sabina and be reviewed by the NWB with commentary by KIA and CIRNA to account for any escalation in reclamation costs.
- To provide any required additional security in LOC to KIA and/or CIRNA for anticipated escalations in reclamation costs within sixty days of review and determination by the NWB.

Recommendation/Request:

As indicated in the May 2018 Technical Meeting, the KIA has resolved all technical issues with Sabina Gold & Silver Corp. for the Back River Project concerning hydrology, hydrogeology, fisheries, aquatic environment, and water quality monitoring.

We look forward to discussing the security issues brought forward in this submission at the Public Hearing in August 2018.

Sabina Response:

Sabina acknowledges that the KIA has resolved all technical issues concerning hydrology, hydrogeology, fisheries, aquatic environment, and water quality monitoring. Sabina appreciates KIA's suggestion of additional conditions for NWB to consider.

After further discussion with KIA, Sabina agrees with the majority of KIA recommendations and has suggested additional wording to the draft water licence framework.

Sabina, KIA, and CIRNA have further discussed the request respecting annual review since KIA provided its submission to the Nunavut Water Board and all Parties have agreed that a condition requiring an annual review is not warranted at this time.

Attachment:

N/A

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The BACK RIVER PROJECT

Final Submission Responses

Crown-Indigenous Relations and Northern Affairs Canada

Interested Party:	CIRNA	**No.:**	**WF-INAC-01** **WTM-Commitment 10 (INAC-TRC-2)**
Subject/Topic:	Grading and Drainage of Tailings Storage Facility		

Reference to Type A:

N/A

Detailed Review Comment:

Concern 1 - In the three years (-1 to 2) of Phase 2, Stage 1 TSF operation when tailings are being placed, there is a risk of substantial erosion of the tailings material due to the run-on water from the upper basin, potentially exacerbating the erosion from direct precipitation on the tailings surface. The eroded tailings material would be deposited in the contact water pond, thereby reducing its live storage capacity.

Concern 2 - In the subsequent 9 years of Phase 2 operation, waste rock will be placed to a height of up to 40 m above the tailings surface (from elevation 294 m to 338 m over the TSF Containment Dam). Fill higher than elevation 303 m will block the westward drainage from the upper basin area, resulting in ponding against the western edge of the TSF/WSRA facility. This will eventually drain to the north when the water is deep enough to find an outlet. The water will flow against the edge of the stepped fill, generating a potential erosion concern. Subsequently, this flow could potentially be captured behind the TSF/WRSA diversion berm, exceeding the pump capacity for that structure.

Concern 3 – The post-closure condition (Water Management Plan Figure A-08) calls for the TSF WRSA Pond to be breached to the Goose Main TF. The flow path will follow a natural stream alignment. INAC remains concerned about potential re-mobilization and downstream release of tailings fines anticipated to build up in the pond.

Recommendation/Request:

INAC recommends that Sabina address these three remaining concerns with respect to the grading and drainage of the tailings storage facility.

Sabina Response:

Sabina acknowledges these additional concerns and will ensure that appropriate drainage pathways are included in any final designs submitted to the Nunavut Water Board prior to construction of the TSF. These final designs will also include appropriate best management practices to minimize tailings deposition within the confines of the TSF WRSA Pond. Sabina recognizes that all elements are routinely addressed in detailed engineering.

Attachment:

N/A

Interested Party:	CIRNA	**No.:**	**WF-INAC-02** **WTM-Commitment 11 (INAC-TRC-3)**
Subject/Topic:	Adequacy of Primary and Saline Ponds Sizing		

Reference to Type A:

N/A

Detailed Review Comment:

Concern 1 – The adequacy of the 24-hour event for sizing of the Primary Pond and Saline Water Pond remains of concern. Both the Primary and Saline Water ponds rely on storage to contain the design inflow event. A multi-day event will produce more volume than a 24-hour event for any particular design level (e.g. 50-year, 100-year, or PMP). It would be prudent to size the facilities to contain a quantified multi-day event rather than a 24-hour event. Such events would include runoff due to precipitation plus snowmelt over the full duration of the event.

It is recommended that the Primary and Saline Water Ponds be sized for events of at least 72-hours' duration. Considering the precipitation frequency analysis developed for the site, the precipitation total for a 100-year event would increase significantly from 67 mm for a single day to over 100 mm if the equivalent of a 10-year event occurred on an adjacent day. The snowmelt input could potentially double.

Analyses presented for the Primary Pond suggests that it could contain a 24-hour PMP event following a 24-hour 50-year event plus pumped inflow, so the question is whether this analysis can be substituted for a more rigorous multi-day assessment. Considering that pumping into the Primary Pond from other facilities is discretionary and conditional on having available capacity, we would accept that the available capacity is sufficient and additional analysis is not required. The original analysis for this pond showed that runoff from the 24-hour 50-year rain event plus snowmelt would only use 35% of the pond capacity.

With respect to the Saline Water Pond, our comments are based on Sabina's April 2018 response to technical review comment WT-INAC-TRC-3. Table 6.4-1 in that response shows that a 100-year 24-hour event (presumably with snowmelt) would produce a runoff volume of 1,100,000 m^3 filling the Saline Water Pond to 71% of capacity. The text of the response states that the pond was sized for an inflow design flood defined to be 1/3 between the 1,000-year event and the Probable Maximum Flood; it is possible that the return period indicated in Table 6.4-1 for this pond is in error.

Concern 2 – The potential for a cascading failure requires consideration given that the Primary Pond is contained by embankments and is located upstream of the Saline Water Pond (also contained by embankments) and the Umwelt Pit (without embankments). INAC is concerned that an overtopping failure of the Primary Pond would flow into the Saline Water Pond.

Recommendation/Request:

Concern 1 - INAC requests that Sabina confirm the design event used to determine the Saline Water Pond "required capacity" value in 6.4-1. INAC also requests that the design capacity be re-visited for an Inflow Design Flood for an event duration of at least 72-hours' duration. It is possible that a spillway may be required to pass the more conservative IDF.

Concern 2 - INAC recommends that either (1) the Primary Pond be designed to withstand the same

Inflow Design Flood as the Saline Water Pond or (2) the Saline Water Pond spillway be designed to accommodate the additional water that would result from a breach of the Primary Pond.

Sabina Response:

Sabina acknowledges that CIRNA accepts that the available capacity of the Primary Pond is sufficient, and additional analysis is not required.

Sabina acknowledges these additional concerns and is committed to constructing all containment ponds and dams in accordance with accepted best practice, including the Canadian Dam Association Dam Safety Guidelines which expressly stipulates inflow design flood criteria in accordance with selected dam hazard classifications for each pond or dam in question. These guidelines will inform the final selected inflow design flood, including the need for additional spillways.

Sabina also confirms that CIRNA correctly identified an error in Table 6.4-1 for the Saline Water Pond return period in Sabina's Technical Comment response, WT-INAC-TRC-3 (April 2018). The below updated Table 6.4-1 corrects this previous error.

Table 6.4-1: Goose Property Pond Capacity and Pumping Rate Summary

Pond ID	Description	Design Return Period	Required Capacity (m^3)	Available Capacity (m^3)	% Full	Dewatering Duration (days)	Pumping Rate (m^3/s)
P1	Umwelt Pit Sump	10	18,000	n/a	n/a	2	0.10
P2	Umwelt WRSA Pond	100	27,000	30,100	90%	2	0.15
P3	Ore Stockpile Pond	100	10,000	11,000	91%	2	0.06
P4	Saline Water Pond	N/A(1)	1,100,000(1)	1,550,000	71%	N/A(2)	0.06(2)
P5	Water Treatment Plant	N/A	N/A	N/A	N/A	N/A	0.12
P6	TSF WRSA Pond	100	174,000	1,163,100	15%	16	0.13
P7	Primary Pond	50	109,500	316,650	35%	23	0.06
P8	Llama WRSA Pond	100	20,000	26,000	77%	2	0.11
P9	Llama Pit Sump	10	12,000	n/a	n/a	2	0.07
P10	Goose Pit Sump	10	20,000	n/a	n/a	2	0.11
P11	Echo Pit Sump	50	5,000	n/a	n/a	2	0.03
P12	Echo Diversion Pond	50	11,000	18,000	61%	2	0.06
P13	Echo WRSA Pond	100	48,000	61,000	79%	10	0.06

Note 1: Saline Water Pond sized for a required capacity of 1,100,000 m^3, based on the 95th results of the water balance (see table 6.2-2 of the 171005 2AM-BRP----MAD App F-1_Site-WideWaterMgmtRpt-IMLE).

Note 2: Saline Water Pond is not an event pond (it is not designed to be operated empty); therefore, there is no criterion for dewatering duration. The pumping rate shown is based on site wide water balance requirements.

Attachment:

N/A

Interested Party:	CIRNA	**No.:**	**WF-INAC-03** **WTM-Commitment 12 (INAC-TRC-5)**
Subject/Topic:	Saline Water Pond Perimeter Seepage		

Reference to Type A:

N/A

Detailed Review Comment:

The potential exists for migration of saline water from the pond to the surrounding environment via shallow active layer flow. Sabina has acknowledged that this potential is possible at several locations around the pond. Sabina has indicated that the diversion berm will be built in a manner which "draws" permafrost up into the structure. This should result in permafrost being present around the pond above the operational elevation of the pond. Sabina has identified that it would be prudent to monitor the permafrost in the locations where seepage may occur. We concur with this approach and would also suggest that Sabina monitor the condition of the vegetation in the vicinity for impacts due to the presence of saline groundwater.

Recommendation/Request:

INAC is satisfied that this concern has been recognized and that Sabina will monitor the perimeter of the pond for saline seepage and its potential impacts.

Sabina Response:

Sabina agrees with this recommendation. Sabina acknowledges that CIRNA is now satisfied with perimeter monitoring of the Saline Water Pond for seepage and any potential impacts.

Attachment:

N/A

Interested Party:	CIRNA	**No.:**	**WF-INAC-04** **WTM-Commitment 13 (INAC-TRC-6)**
Subject/Topic:	TFS Perimeter Seepage		

Reference to Type A:

N/A

Detailed Review Comment:

The potential exists for migration of water from the TSF to the surrounding environment via shallow active layer flow. Sabina has acknowledged that this potential is possible at several locations around the pond. The most likely location where this could occur would be along Section 2, particularly in Area A4 where the surrounding topography is lowest. It is accepted that the seepage may not daylight for a long time. However, given that the quality of the water may be poor, there is a potential for vegetation to be impacted. Sabina has acknowledged that monitoring could be done in this area with thermistors. Sabina should also consider visual monitoring of vegetation and pore water quality sampling during the summer months when the active layer is thickest.

Recommendation/Request:

INAC is satisfied that this concern has been recognized and that Sabina will monitor the perimeter of the TSF for seepage and its potential impacts.

Sabina Response:

Sabina agrees with this recommendation. Sabina acknowledges that CIRNA is now satisfied with perimeter monitoring of the TSF for seepage and any potential impacts.

Attachment:

N/A

Interested Party:	CIRNA	**No.:**	**WF-INAC-08** **WTM-Commitment 14 (INAC-TRC-27)**
Subject/Topic:	Revegetation Planning Table		

Reference to Type A:

N/A

Detailed Review Comment:

INAC appreciates that Sabina has produced the requested summary table which provides a comparison of revegetation planning experience at other Northern mine sites. It is noted that the challenges associated with Northern revegetation planning are highlighted. Nevertheless, based on recent dialogue with Sabina, it is understood that the value of site-specific revegetation efforts to rehabilitate disturbed or damaged terrain during the life of the Sabina Project has been recognized and will be incorporated in future editions of Sabina's Interim Closure and Reclamation Plan.

Recommendation/Request:

INAC is satisfied that this concern has been recognized and that Sabina will incorporate site-specific revegetation strategies into future editions of Sabina's Interim Closure and Reclamation Plan.

Sabina Response:

Sabina agrees with this recommendation. Sabina acknowledges that CIRNA is now satisfied with incorporating site-specific revegetation strategies into future editions of Sabina's Interim Closure and Reclamation Plan (ICRP).

Attachment:

N/A

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The BACK RIVER PROJECT

Final Submission Responses

Environment and Climate Change Canada

Interested Party:	ECCC	**No.:**	**WF-ECCC-01**
Subject/Topic:	Closure Objectives and Criteria : Receiving Water Quality		

Reference to Type A:

- SD26 Interim Closure and Reclamation Plan (ICRP) Section 5.2.1.3 Closure Objectives and Criteria, Section 5.2.1.5 Engineering Work Associated with Selected Closure Activity and 5.2.9.1 Project Component Description.

Detailed Review Comment:

During the Technical Meeting, ECCC had questions about how the closure water quality objectives will be applied, where they will be met, and what the quality of water in the mined-out pits (Goose, Umwelt, Echo and Llama) will have to be in order to be acceptable for reconnection to the receiving environment. The closure objectives for water quality in Goose Main Tailings Facility (TF) should be defined or referenced explicitly.

The Proponent stated that water quality at closure will meet MDMER or SSWQO prior to release at the final discharge point, and proposes to defer discussions until a better understanding of water quality within the closed-out pits is achieved. ECCC agrees that this issue can be addressed in future iterations of the ICRP, with the benefit of additional data.

Recommendation/Request:

ECCC recommends that the Proponent, in future iterations of the ICRP, include explicit statements on receiving water quality objectives, as well as clarify discharge points and where objectives are to be met.

Sabina Response:

Sabina agrees with this recommendation. Sabina confirms that it will, in future iterations of the Interim Reclamation and Closure Plan (ICRP) include explicit statements on receiving water quality objectives, clarify discharge points and objectives.

Attachment:

N/A

Interested Party:	ECCC	**No.:**	**WF-ECCC-02**
Subject/Topic:	Saline Water Pond Closure Site Specific Water Quality Objective		

Reference to Type A:

- SD26 ICRP Section 5.2.9.1 Project Component Description
- MAD Appendix E-2 Water and Load Balance Report (WLBR) Section 6.8 Saline Water Pond and Underground Storage
- SRK Memo to Sabina dated May 29, 2018. Back River Project: Saline Water Pond Perimeter Seepage Analysis

Detailed Review Comment:

ECCC had recommended that the Proponent provide:

- Clarification of the expected water quality in the former Saline Water Pond (SWP) upon removal of sediments and refilling with runoff/natural drainage;
- Identification of objectives that will be met prior to reconnection of the refilled Umwelt Lake to surface waters;
- A description of contingencies available to manage water if quality is unacceptable for release; and
- Identification of the chloride threshold that would trigger removal of sediments.

The Proponent responded with a description of measures that could be used to reduce chloride in the sediments, including removal of the sediments and rinsing of the lake basin with fresh water. The target chloride concentration proposed by the Proponent would be 120 mg/L following the Canadian Council of the Ministers of the Environment (CCME) guideline for the Protection of Aquatic Life. The Proponent has confirmed that containment infrastructure will be maintained until water quality in the re-established Umwelt Lake meets this objective.

ECCC notes that while the Proponent discussed precipitated chloride sediments, the pore water in the sediments would be of concern (with overburden of up to 6.5 m in depth under and around the lake). As filling of the SWP progresses, monitoring of chloride levels in the sediments and underlying overburden will inform closure.

Recommendation/Request:

ECCC recommends that the Proponent include in their Saline Water Management Plan provisions for tracking sediment and pore water chloride concentrations for the SWP in order to ensure appropriate water quality for the reconnection of Umwelt Lake to surface waters.

Sabina Response:

Sabina agrees with this recommendation. Sabina agrees to update the Saline Water Management Plan to include the above information requested by ECCC. The update will incorporate agreed upon technical clarification and commitments made during the Type A Water Licence review process.

Sabina notes, for clarity, that the target chloride concentration of 120 mg/L (following the Canadian Council of the Ministers of the Environment [CCME] guideline for the Protection of Aquatic Life) would be achieved at the receiving environment (defined as per the *Fisheries Act*) rather than within the pond.

Attachment:
N/A

Interested Party:	ECCC	**TC No.:**	**WF-ECCC-03**
Subject/Topic:	Nitrite		

Reference to Type A:

- MAD Appendix F7 Technical Review of Water, Waste Rock, and Tailings Management/Design
- MAD Appendix E-2 Water and Load Balance
- Back River Project Type A Water Licence Technical Comment Responses – Supplemental Responses. April 2018 WT-ECCC-TC-3; WT-COMMITMENT 17 (ECCC-TC-1)

Detailed Review Comment:

ECCC had raised concerns with the predicted exceedances of nitrite CCME guidelines in surface waters (0.06 mg/L), particularly in Goose Lake. Previous predictions for Goose Lake were 0.31 – 0.32 mgN/L. Revised predictions in the April 27, 2018 Appendix A. Load Balance Update – Attachment 1A show a lower magnitude in predicted exceedances for PN04 (now 0.081 mg N/L), PN06 (now 0.13 mg N/L), PN09 (now 0.11 mg N/L), and Goose Lake (now 0.062 mg N/L).

The Proponent has corrected the nitrite input for wastewater sources, but has not clarified if the inputs from the stockpile and unfrozen waste rock pile, pit walls, tailings and industrial pads were included (inputs for these were shown as zero in Appendix C of MAD Appendix E-2). It is not clear to ECCC whether the reductions in predicted nitrite maximum concentrations were due to the correction of camp wastewater input concentrations.

The Proponent has also reviewed best practices for source control of blasting agents, which will seek to reduce nitrite loadings in the receiving environment.

Recommendation/Request:

ECCC recommends that the Proponent clarify nitrite inputs for rock sources and identify the reasons for reductions in predicted nitrite concentrations.

Sabina Response:

Sabina agrees with this recommendation. Sabina clarifies that ammonia, nitrate, and nitrite source terms in the water quality predictions include contributions from background water, contributions from blasting residuals in waste rock, and contributions from sewage treatment plant effluent. Sabina confirms that nitrite inputs were included from the unfrozen ore stockpiles and waste rock storage areas (WRSAs), pit walls, tailings, and all industrial pads.

Specifically for waste rock, the blasting residues will contribute to ammonia, nitrate, and nitrite loadings in the waste rock used for construction as well as waste rock placed in WRSAs. The method for estimating ammonia, nitrate, and nitrite concentrations in waste rock is documented in Section 4.2.7 of MAD Appendix E-2 Back River Project Water and Load Balance. Nitrogen species loadings were calculated for each mine area based on the amount of rock in the area on an annual basis. These concentrations are not listed in Appendix C of MAD Appendix E-2, as they are a calculated value, rather than an assumed, static input. The method of calculating ammonia, nitrate, and nitrite concentrations in waste rock was not modified in the updated water quality predictions.

As outlined in Appendix A (April 27, 2018), nitrogen species concentrations were updated in sewage treatment plant effluent to values of 22 mg-N/L (nitrate), 0.5 mg-N/L (nitrite) and 8 mg-N/L

(ammonia). The reduction in maximum nitrite concentrations in the model was only due to the correction of sewage treatment plant effluent input concentrations.

Attachment:

N/A

Interested Party:	ECCC	**No.:**	**WF-ECCC-04**
Subject/Topic:	Aquatic Effects Management Plan (AEMP)		

Reference to Type A:

- SD21 Aquatic Effects Management Plan (AEMP)

Detailed Review Comment:

The Proponent has held calls and meetings on AEMP development, and provided the data report for the 2017 field program. Additional monitoring is to take place at proposed AEMP sites in 2018, and the data for 2017 is to be provided in an interpretive report.

ECCC notes that there is further work to be done with respect to the study design and characterization of natural variability, and acknowledges the Proponent's work in this regard.

Recommendation/Request:

ECCC recommends that an updated version of the AEMP be submitted for approval following the issuance of a water licence and looks forward to further ongoing work on the AEMP.

Sabina Response:

Sabina agrees with this recommendation. Sabina is committed to updating the Aquatics Effects Management Plan (AEMP) following approval of the Type A Water Licence. The update will incorporate agreed upon technical clarification and commitments made during the Type A Water Licence review process. Sabina re-iterates our commitment to work with ECCC as the Aquatic Effects Monitoring program moves through implementation of this plan.

Attachment:

N/A

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The BACK RIVER PROJECT

Final Submission Responses

Fisheries and Oceans Canada

Interested Party:	DFO	**TC No.:**	**WF-DFO**
Subject/Topic:	Final Submission Comment		

Recommendation/Request:

DFO-FPP has no further outstanding issues or recommendations to bring forward to the NWB as part of the water licence process. DFO-FPP will await Sabina's 'Request for Review' or 'Application for *Fisheries Act* Authorization', to move forward with DFO's Regulatory Review Phase.

Sabina Response:

Sabina agrees with this recommendation. Sabina acknowledges that DFO has no outstanding concerns as part of the NWB process. Sabina looks forward to working through the final fisheries aspects of the Project with DFO.

Sabina
GOLD & SILVER CORP.

Sabina Press Release of April 23, 2018

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April 23, 2018	SBB NR 18-10	

Sabina & Kitikmeot Inuit Association Finalize Inuit Impact Benefit Agreement and Long Term Land Tenure Agreements for Back River Project

Vancouver, BC and Cambridge Bay, NU – Sabina Gold & Silver Corp. (SBB-T) ("Sabina") and the Kitikmeot Inuit Association ("KIA") announced today that they have finalized agreements relating to the Binding Term sheet announced on October 18, 2017. The parties have entered into 20 year benefit and land tenure agreements under a Framework Agreement ("FA") setting out rights and obligations with respect to surface land access on Inuit owned land on the Back River Project ("Back River" or the "Project"). Additionally, these agreements provide Inuit of the Kitikmeot Region with financial and socio-economic benefits including, training, jobs, initiatives to create additional opportunities outside of the mining industry, share ownership in Sabina and a 1% net smelter royalty on future production from the proposed mine on the Goose property.

These are comprehensive milestone agreements that provide the long-term certainty of tenure required to de-risk, finance, develop and ultimately mine at Back River. These agreements enhance KIA and Sabina's existing relationship of mutual respect and demonstrate that Nunavut is a pro-responsible development/mining region and underscore its "open for business" strategy.

"We are very pleased to have completed these agreements and to welcome the KIA as Sabina shareholders," said Bruce McLeod, President & CEO "These agreements have been negotiated in good faith with a result that benefits both Sabina shareholders and

our Nunavut stakeholders. For our shareholders we have created more value in the Company by securing tenure and further de-risking the project. Inuit of the Kitikmeot Region have the opportunity to benefit from gold production on their lands both financially and through initiatives to create long term economic sustainability in jobs and training in and outside of the mining industry. We appreciate the significant efforts of the KIA as we worked to finalize these agreements and look forward to working with them to implement the various initiatives contemplated under these agreements. We are pleased to be working in one of the world's safest mining jurisdictions."

"On behalf of the KIA Board, I would like to congratulate Sabina on the completion of these Agreements for the Back River Project," said Stanley Anablak, President of the Kitikmeot Inuit Association. "These Agreements allow a mine to be built and operated on Inuit Owned Land and will provide significant social and economic opportunities and benefits to Inuit of the Kitikmeot Region. Sabina has been very professional in these negotiations. We wish them success in their development plans for the mutual benefit of Sabina Shareholders and Kitikmeot Inuit."

The FA has a maximum term of 20 years and includes, among others, the following key provisions and agreements:

- KIA consent to operations and confirmation that KIA has been adequately consulted about Back River;
- Land use licenses which permit Sabina to conduct exploration work at Back River;
- Advanced exploration leases permitting various advanced exploration and pre-production activities at Back River;
- Commercial leases authorizing the development of mines and related operations and closure activities at the Goose Property;
- A 1% net smelter return royalty paid to the KIA on production at Back River on the properties that are subject to a commercial lease;
- A grant of 6.7 million Sabina shares to the KIA expected on or about May 20, 2018 subject to regulatory approval.
- An IIBA setting out commitments associated with Inuit employment, training and education, Kitikmeot business opportunities, formation of an Inuit Environmental Advisory Committee and investments in community infrastructure projects with the objective of supporting regional wealth creation initiatives within Kitikmeot communities;
- An initial investment of $4 million in regional wealth creation initiatives in the Kitikmeot, $2 million of which will be paid forthwith and the remainder no later than upon a production decision, with additional payments commencing the third year following commercial production if Sabina-related employment targets are not achieved. The purpose of the regional wealth creation initiative is to create new long term operating jobs outside of the mine to expand and diversify the Kitikmeot economy;

- An annual payment to the KIA of up to $1 million to cover KIAs cost of implementing the FA; and
- Water and wildlife compensation agreements including additional payments if Sabina fails to implement caribou mitigation commitments regarding calving and post-calving periods made to the Nunavut Impact Review Board.

The Kitikmeot Inuit Association

The Kitikmeot Inuit Association (KIA) was incorporated in 1976 to represent and promote the interests of the Kitikmeot Inuit. The KIA is a democratically elected not-for-profit society.

KIAs mandate is to "manage Kitikmeot Inuit lands and resources, and to protect and promote the social, cultural, political, environmental and economic well-being of Kitikmeot Inuit".

As per the Nunavut Agreement, KIA owns 106,360 Km^2 of surface Inuit Owned Land in the Kitikmeot Region. The Back River Project footprint overlays several parcels of Inuit Owned Land south of Bathurst Inlet. KIA is also designated to implement many rights from the Nunavut Agreement to represent Kitikmeot Inuit related to land management, socio-economic, water, and wildlife matters that are relevant to the Back River Project.

Sabina Gold & Silver Corp

Sabina Gold & Silver Corp. is a well-financed, emerging precious metals company with district scale, advanced, high grade gold assets in one of the world's newest, politically stable mining jurisdictions: Nunavut, Canada.

Sabina released a Feasibility Study on its 100% owned Back River Gold Project which presents a project that has been designed on a fit-for purpose basis, with the potential to produce ~200,000 ounces a year for ~11 years with a rapid payback of 2.9 years (see "Technical Report for the Initial Project Feasibility Study on the Back River Gold Property, Nunavut, Canada" dated October 28, 2015). At a US$1,150 gold price and a 0.80 (US$:C$) exchange rate, the Study delivers a potential after tax internal rate of return of approximately 24.2% with an initial CAPEX of $415 million.

The Company received its Project Certificate for the Back River Project in December 2017, concluding the Environmental Assessment process. The Company is now in the licensing phase for the Project, with its Type B water license being received in January 2018 and its Type A water license expected in Q4/2018.

In addition to Back River, Sabina also owns a significant silver royalty on Glencore's Hackett River Project. The silver royalty on Hackett River's silver production is comprised of 22.5% of the first 190 million ounces produced and 12.5% of all silver produced thereafter.

For further information please contact:

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All Sabina news releases and further information can be found on the website at www.sabinagoldsilver.com, or on SEDAR at www.sedar.com.

Forward Looking Statements

This news release contains "forward-looking information" within the meaning of applicable securities laws (the "forward-looking statements"), including our ability to negotiate and enter into definitive agreements and to complete the transactions contemplated therein. These forward-looking statements are made as of the date of this news release. Readers are cautioned not to place undue reliance on forward-looking statements, as there can be no assurance that the future circumstances, outcomes or results anticipated in or implied by such forward-looking statements will occur or that plans, intentions or expectations upon which the forward-looking statements are based will occur. While we have based these forward-looking statements on our expectations about future events as at the date that such statements were prepared, the statements are not a guarantee that such future events will occur and are subject to risks, uncertainties, assumptions and other factors which could cause events or outcomes to differ materially from those expressed or implied by such forward-looking statements. Such factors and assumptions include, among others, the effects of general economic conditions, commodity prices, changing foreign exchange rates and actions by government and regulatory authorities and misjudgments in the course of preparing forward-looking statements. In addition, there are known and unknown risk factors which could cause our actual results, performance or achievements to differ materially from any future results, performance or achievements expressed or implied by the forward-looking statements. Known risk factors include risks associated with exploration and project development; the need for additional financing; the calculation of mineral resources and reserves; operational risks associated with mining and mineral processing; fluctuations in metal prices; title matters; government regulation; obtaining and renewing necessary licences and permits; environmental liability and insurance; reliance on key personnel; the potential for conflicts of interest among certain of our officers or directors; the absence of dividends; currency fluctuations; labour disputes; competition; dilution; the volatility of the our common share price and volume; future sales of shares by existing shareholders; and other risks and uncertainties, including those relating to the Back River Project and general risks associated with the mineral exploration and development industry described in our Annual Information Form, financial statements and MD&A for the fiscal period ended December 31, 2016 filed with the Canadian Securities Administrators and available at www.sedar.com. Although we have attempted to identify important factors that could cause actual actions, events or results to differ materially from those described in forward-looking statements, there may be other factors that cause actions, events or results not to be as anticipated, estimated or intended. There can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements. We are under no obligation to update or alter any forward-

looking statements except as required under applicable securities laws. This news release has been authorized by the undersigned on behalf of Sabina Gold & Silver Corp.

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Sabina
GOLD & SILVER CORP.

Revised Water Licence Framework (as at July 23, 2018)

Sabina Gold & Silver Corp. • 555 Burrard Street, Suite 1800 • Vancouver, BC V7X 1M7 • Canada • Phone: 604.998.4175 • Fax: 604.998.1051

Proposed Back River Project
Type A Water Licence Framework

The following table outlines Sabina's comments on potential water licence conditions to proceed with the activities and infrastructure associated with the Back River Project (Project), should the Nunavut Water Board (NWB or Board) exercise its jurisdiction and authority under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act (NWNSRTA or Act)* to proceed and issue a licence. This framework incorporates conditions included in Type A Water Licences recently issued by the NWB and includes certain Back River specific conditions. This framework also incorporates the Type B Development Water Licence (2BC-BRP1819) where noted. This document (dated July 23, 2018) is intended to update and replace the previous version submitted to the Nunavut Water Board.

This table reflects information from the Application as well as the current public record (i.e., commitments from Information Requests and Technical Comment responses). Statements and conditions provided in this table are intended to support the NWB and staff in their development of a water licence for the Project.

Proposed Terms	**Sabina Comments and Annotation**
Water Licence Cover Sheet	
Licensee: Sabina Gold & Silver Corp. Mailing Address: #1800 - 555 Burrard Street, Box 220, Vancouver, BC V7X 1M9 Water Management Area: Queen Maud Gulf Watershed - 30 Location: Goose Lake and Marine Laydown Area, Back River Project, Kitikmeot Region, Nunavut Quantity of Water not to Exceed: o XXX cubic meters annually as per Part E Expiry of Licence: 2032	To be updated in revised Draft Framework taking into account final submissions
Part A: Scope, Definitions and Enforcement	
1. Scope	
a. This License authorizes the Licensee to use Waters and deposit of Waste in support of a Mining Undertaking classified as per Schedule 1 of the Regulations, at the Back River Project as outlined in the Type "A" Water Licence Application (the Application) submitted to the Nunavut Water Board (NWB) on October 5, 2017 and as reviewed throughout the regulatory process.	
The Licensee may conduct, mining, milling and associated activities at the Back River Project (Project) in the Kitikmeot Region of Nunavut, located at the following general geographical coordinates: [refer to Sabina Comments and Annotation]	**Table 2.1-1. Project Extents** **Project Extents** / **Latitude** / **Longitude** NW / 66° 42' N / 107° 50' W NE / 66° 42' N / 106° 11' W SE / 65° 29' N / 106° 12' W SW / 65° 29' N / 107° 50' W
The activities and facilities included under the scope of this Licence for construction, operations, closure and reclamation of the Project, are as follows:	
o Construction and Operation of mill for gold recovery; o Construction, Operation and maintenance of Plant Site and Fuel Storage Area Pad, Laydown Areas and fuel storage areas o Construction and Operation of Fuel Storage Facilities, fuel storage areas, dispensing storage facilities and associated secondary containment areas or berms for the bulk fuel storage facilities and day tanks; o Construction and Operation of a TSF, associated pipelines and pumping systems for water management; o Construction and Operation of all-weather airstrips (including extension); o Construct and Operation of ice airstrips o Construction and Operation of the MLA. o Construct all-weather service roads and water crossings o Realign Rascal Stream and/or install fish bearing culverts at airstrip extension	

Proposed Terms	**Sabina** **Comments and Annotation**
Access and Infrastructure o Construction and Operation of all-weather roads (i.e., service roads, haul roads); o Develop and operate Quarries; o Construction and maintenance of Project infrastructure; and o Construction and Operation of WIRs and Bathurst Inlet Port Road (BIPR) WIR connector. o Goose Exploration Camp to Umwelt Quarry/Plant Site/Airstrip Quarry o Goose Exploration Camp (or other ice road) to the Explosives Storage o Mobilize fuel, equipment, and supplies	
Water Use and Management: o Construction, Operation and Maintenance of Water Supply Facilities for all purposes; o Construction, Operation and Maintenance of water management infrastructure, including; o Watercourse crossings including pipelines, channel, and bank alterations, culverts, spurs, and erosion control; o Flood control, diversions, alteration of flow, or storage by means of dykes or dams; o Runoff management from the Ore Stockpile, WRSAs, laydown areas, and other mine infrastructure; and o Water treatment facilities.	
Waste Disposal and Management: o Construction, Operation and Maintenance of Waste Disposal Facilities o Construction, Operation and Maintenance of Landfarms for the deposition and treatment of hydrocarbon contaminated material; o Construction, Operation and Maintenance Landfills for deposition of solid waste; o Construction, Operation and Maintenance of Waste rock disposal areas; o Construction, Operation of Tailings Storage Facility and/or Facility(s); o Management of effluent discharges.	
Material Management: o The transportation, use, management, disposal, and treatment of petroleum, oils, and lubricants; o Storage and management of hazardous materials; o Containment areas for temporary storage of hazardous/nonhazardous waste (waste transfer areas) and new product storage for drums and totes; o Waste sorting facilities and temporary storage facilities for hazardous wastes; and o Operation and handing of explosives storage and explosives manufacturing facilities.	
Monitoring o Implementation of regular inspection and maintenance of all earthworks and water management and waste disposal infrastructure; and o Implementation of Environmental Management and Protection Plan.	
Closure o Implementation of remediation and reclamation including progressive reclamation.	
1 (b) This Licence is issued subject to conditions contained herein with respect to the use of Waters and the deposit of Waste of any type in any Waters or in any place under any conditions where such Waste or any other Waste that results from the deposits of such Waste may enter any Waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the Act, or other statutes imposing more stringent conditions relating to the quantity, type or manner under which any such Waste may be so deposited, this Licence shall be deemed to be subject to such requirements.	NWB Standard Terms and Conditions

Proposed Terms	**Sabina** **Comments and Annotation**
1(c) Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with all applicable legislation, guidelines and directives.	
2. Definitions The Licensee shall refer to Schedule A for definitions of terms used in this Licence.	See "Schedule A" below for revisions
3. Enforcement	
(a) Failure to comply with this Licence will be a violation of the Act, subjecting the Licensee to the enforcement measures and the penalties provided for in the Act.	NWB Standard Terms and Conditions
(b) All inspection and enforcement services regarding this Licence will be provided by Inspectors appointed under the Act.	NWB Standard Terms and Conditions
(c) For the purpose of enforcing this Licence and with respect to the use of Water and deposit of Waste by the Licensee, Inspectors appointed under the Act, hold all powers, privileges and protections that are conferred upon them by the Act or by other applicable laws.	NWB Standard Terms and Conditions
Part B: General Conditions	
1. This licence incorporates the scope of the Existing Type "B" Water Licence No. 8BC-BRP1819 and where applicable Type B Water Licence No. 2BE-GOO1520 and No. 2BE-GEO1520 in accordance with Part A, Item 1(a). To the extent that any required reports, studies or plans having not yet been received, accepted or approved by the Board, the requirements associated with such documents are now brought forward under this Licence.	NWB Standard Terms and Conditions
2. The amount of Water use fees shall be determined and payment of those fees shall be made in accordance with section 12 of the Regulations.	NWB Standard Terms and Conditions
3. The Licensee shall file an Annual Report with the Board no later than March 31th in the year following the calendar year being reported. The Annual Report shall be developed in accordance with Schedule B.	NWB Standard Terms and Conditions
4. Any communication with respect to this Licence shall be made in writing to the attention of: Manager of Licensing, Nunavut Water Board P. O. Box 119 Gjoa Haven, NU X0B 1J0 Telephone: (867) 360-6338 Fax: (867) 360-6369 Email: licensing@nwb-oen.ca	NWB Standard Terms and Conditions
5. Any notice made to an Inspector shall be made in writing to the attention of: Water Resources Officer Nunavut District, Nunavut Region P.O. Box 100 Iqaluit, NU X0A 0H0 Telephone: (867) 975-4295 Fax: (867) 979-6445	NWB Standard Terms and Conditions
6. The Licensee shall submit one (1) electronic copy of all reports, studies, and plans to the Board unless otherwise requested by the Board. Unless otherwise directed by the Board, reports or studies submitted to the Board by the Licensee shall include an executive summary in English, Inuinnaqtun, and Inuktitut.	NWB Standard Terms and Conditions
7. This Licence is assignable as provided in Section 44 of the Act.	NWB Standard Terms and Conditions
8. The Licensee shall ensure that any document(s) or correspondence submitted by the Licensee to the Board is received and acknowledged by the Manager of Licensing.	NWB Standard Terms and Conditions
9. The Licensee shall post signs in the appropriate areas to inform the public of the location of the Water Supply Facilities and the Waste Disposal Facilities. All signs must be in English, Inuinnaqtun and Inuktitut and shall be located and	NWB Standard Terms and Conditions

Proposed Terms	**Sabina** **Comments and Annotation**
10. The Licensee shall, for all Plans submitted under this Licence, include a proposed timetable for implementation. Plans submitted cannot be undertaken without subsequent written Board approval and direction, or as otherwise deemed approved in accordance with Part B, Section 12. The Board may alter or modify a Plan if necessary to achieve the legislative objectives and will notify the Licensee in writing of acceptance, rejection or alteration of the Plan.	NWB Standard Terms and Conditions
11. Unless otherwise directed by the Board in writing, if a Plan is not acceptable to the Board, the Licensee shall provide a revised version to the Board for review within thirty (30) days of notification by the Board.	NWB Standard Terms and Conditions
12. Except as otherwise reflected in this Licence, the Licensee shall, for all Plans submitted under this Licence, undertake Plans upon receipt of approval from the Board, or 60 days following Plan submission to the Board, whichever occurs first. Any changes to the plans deemed significant shall be considered as an amendment to the plan(s) or as a modification and must be submitted to the Board following the process and timelines described in this section. The Board has approved the following plans for implementation under the relevant section of this Licence.	
a. Road Management Plan (October 2017) (SD-02) b. Borrow Pits and Quarry Management Plan (October 2017) (SD-03) c. Water Management Plan (October 2017) (SD-05) d. Ore Storage Management Plan (October 2017) (SD-07) e. Mine Waste Rock Management Plan (October 2017) (SD-08) f. Tailings Management Plan (October 2017) (SD-09) g. Landfill and Waste Management Plan (October 2017) (SD-10) h. Incineration Management Plan (October 2017) (SD-11) i. Landfarm Management Plan (October 2017) (SD-12) j. Hazardous Materials Management Plan (October 2017) (SD-13) k. Risk Management and Emergency Response Plan (October 2017) (SD-15) l. Fuel Management Plan (October 2017) (SD-16) m. Spill Contingency Plan (October 2017) (SD-17) n. Environmental Management and Protection Plan (October 2017) (SD-20) o. Aquatic Effects Management Plan (October 2017) (SD-21) p. Quality Assurance / Quality Control Plan (October 2017) (SD-24) q. Interim Closure and Reclamation Plan (including Interim Closure Cost Estimate) (October 2017) (SD-26)	Sabina requests that all of these plans be approved with the issuance of the Type A Water Licence.
13. The Licensee shall update and revise for submission to the Board for review and/or approval as required under the relevant section of this Licence, the following plans and documents. The updates are to take into account commitments made with respect to submissions received during the regulatory review of the Application. a. Water Management Plan (October 2017) (SD-05)	
14. Every Plan to be carried out pursuant to the terms and conditions of this Licence shall become a part of this Licence, and any additional terms and conditions imposed upon approval of a Plan by the Board become part of this Licence. All terms and conditions of the Licence should be contemplated in the development of a Plan where appropriate.	NWB Standard Terms and Conditions
15. The Licensee shall review the Plans or Manuals referred to in this Licence as required by changes in operation and/or technology and modify the Plans or Manuals accordingly. Revisions to the Plans or Manuals are to be submitted in the form of an Addendum to be included with the Annual Report required by Part B, Item 2, complete with a revisions list detailing where significant content changes are made.	NWB Standard Terms and Conditions
16. The expiry or cancellation of this Licence does not relieve the Licensee from any obligation imposed by the Licence, or any other regulatory requirement.	NWB Standard Terms and Conditions

Proposed Terms	**Sabina** **Comments and Annotation**
17. The Schedules attached to this Licence provide details regarding the requirements associated with specific items in the main body of the Licence and are included in the Schedule to provide greater clarity and as an aid to interpretation for the Licensee. If the Board subsequently determines that an item in any of the Schedules requires revision in order to better reflect the intent and objectives of the Licence, the Board may at its discretion, and upon consulting and providing written notice to the Licensee and interested parties, revise the Schedule accordingly. Unless the Board directs otherwise, such revision may not necessarily be considered as an "Amendment" to the Licence.	NWB Standard Terms and Conditions
18. Unless otherwise stated, references in the Licence to any specific legislation, policy, guideline or other regulatory requirement are deemed to refer to the regulatory requirement as may be amended or as may be expressly replaced by successor legislation, policy, guidelines or other regulatory requirements after the Licence is approved by the Minister.	NWB Standard Terms and Conditions
Part C: Conditions Applying to Security	
1. The Licensee shall: a. within thirty (30) days following the approval of this Licence by the Minister: i. furnish and maintain security with the Minister in the amount of XXX million XXX thousand dollars ($XXX); and ii. file evidence, in writing, that is acceptable to the Board, and with notice to the Minister and the Kitikmeot Inuit Association, verifying that the Licensee has furnished and maintained reclamation security in an amount of no less than XXX million XXX hundred XXX thousand XXX hundred and XXX dollars ($XXX) with the Kitikmeot Inuit Association for the purposes of reclamation consistent with the purposes set out in s. 76(2)(b) of the Act and as applicable to reclamation of the Mining Undertaking described in the Licence. b. sixty days prior to Construction i. furnish and maintain security with the Minister in the amount of XXX million XXX thousand dollars ($XXX); and ii. file evidence, in writing, that is acceptable to the Board, and with notice to the Minister and the Kitikmeot Inuit Association, verifying that the Licensee has furnished and maintained reclamation security in an amount of no less than XXX million XXX hundred XXX thousand XXX hundred and XXX dollars ($XXX) with the Kitikmeot Inuit Association for the purposes of reclamation consistent with the purposes set out in s. 76(2)(b) of the Act and as applicable to reclamation of the Mining Undertaking described in the Licence.	The terms and conditions set out at this Part C generally mirror those found in 2AM-DOH1323. The parties have agreed that the split of the global security amount of $43,189,351 should be held between KIA and CIRNAC as follows: KIA 32% or peak global total of $13,820,592 CIRNA 68% or peak global total of $29,368,759 The Parties are continuing to discuss the specific milestones related to phased approach to security increases regarding increased activities on site. KIA and/or CIRNA shall receive staged security in Letters of Credit (LOC), or another appropriate and agreed upon mechanism, for major mine site components on a geographic basis (construction stages) in accordance with the planned construction schedule sixty (60) days prior to construction of each stage These construction stages will be defined and finalized in conjunction with KIA and CIRNA and proposed language will be presented to the Board at
2. The Licensee must ensure that the security furnished and maintained under Part C, Items 1(a) an (b), at peak construction, is no less than $43,189,351 and that the security is in the form, of the nature, subject to applicable terms and conditions, in accordance with the Regulations, or that is otherwise satisfactory to the Minister.	Per the above note at Part D, Section 1, this number is intended to reflect the agreed global security amount between KIA, CIRNAC and Sabina of $43,189,351 but it must be noted that this total amount would be posted per the milestones and schedule outlined at Part D, Section 1 (to be determined based on follow up discussions between the parties and further submissions to the Nunavut Water Board) .
3. If the Licensee fails to provide evidence of the security required under Part C, Item 1(b), or if, during the term of the Licence, the Licensee fails to maintain the security required under Part C, Item 1(b), the Licensee shall, within thirty (30) days of the Licensee's failure, furnish and maintain such additional security with the Minister as is required to ensure that the total reclamation security held under Part C, Items 1(a) and (b) is no less than the amount prescribed under Part C, Item 2.	

Proposed Terms	**Sabina** **Comments and Annotation**
4. The Licensee is required to provide the Board and the Minister with at least sixty (60) days written notice prior to any material change affecting the reclamation security arrangements between the Licensee and the Kitikmeot Inuit Association, including, but not limited to changes to the form of security, quantum of security or terms associated with holding, accessing or releasing the security. Notwithstanding this requirement, should the Licensee or the Kitikmeot Inuit Association become aware of, or cause any change to, the amount or terms of security referred to in Part C, Item 1(b), the Licensee or the Kitikmeot Inuit Association will promptly notify the Board.	
5. The Licensee shall submit to the Board for approval, one year after the commencement of Commercial Production, an updated Interim Closure and Reclamation Plan (including Interim Closure Cost Estimate) which reviews and updates sections addressing cover material for the Waste Rock Storage Areas and the Tailings Storage Facility.	
6. The Licensee shall submit to the Board for approval at least twelve (12) months prior to Closure, an updated estimate of the total mine closure restoration liability using the current version of RECLAIM, its equivalent or other similar method approved by the Board in writing, in accordance with principles of the INAC "Mine Site Reclamation Policy for Nunavut" (2002). Upon the Project entering into or being maintained in Care and Maintenance, an updated estimate of total mine closure restoration liability shall be submitted, as above, within twelve (12) months of entering Care and Maintenance and every three (3) years thereafter.	
7. The Licensee shall furnish and maintain such further or other amounts of security as may be required by the Board, based on the updated estimate of current mine reclamation liability under PART C, Item 5.	
8. The Licensee, the Minister, or the Kitikmeot Inuit Association may apply to amend the amount of security required to be held under the Licence. Any submission requesting a review of the security provisions of the Licence shall include supporting evidence to justify the amendment and will be processed by the Board as an amendment to the terms and conditions of the Licence.	
9. Upon the Board receiving a request under PART C, Item 7 to amend security, or upon receiving an updated reclamation cost estimate as required under PART C, Item 5, the Board, may on its own initiative, or upon application by the Licensee, the Minister and/or the Kitikmeot Inuit Association, conduct a periodic review of the outstanding reclamation liability associated with the Undertaking and may, as the Board considers appropriate, amend the amount of security required to be held under PART C, Items 1 and 2.	
10. If the Board determines it to be necessary, or upon the request of Licensee, the Minister and/or the Kitikmeot Inuit Association, the Board may issue further directions under this Part with respect to the process for amending the amount of security to be furnished and maintained under the Licence.	
11. The security referred to in PART C, Item 1 shall be maintained until such time as it is fully or in part refunded by the Minister pursuant to Section 76(5) of the Act. This clause shall survive the expiry of this Licence and remains in force until amended by the Board under this Part or until full and final reclamation has been completed to the satisfaction of the Minister.	
Part D: Conditions Applying to Construction and Operations	
1. The Licensee shall use fill material for construction from an approved source that shall be free of contaminants, unless otherwise approved by the Board.	
2. The Licensee shall implement preventive and mitigation measures to prevent any chemicals, fuel or Wastes associated with the undertaking from entering any Water body.	NWB Standard Term and Condition
3.The Licensee shall locate equipment storage areas on gravel, sand or other durable land, a distance of at least thirty-one (31) metres above the ordinary High Water Mark of any Water body in order to minimize impacts on surface drainage and water quality unless otherwise approved by the Board with appropriate mitigation measures implemented by the Licensee.	

Proposed Terms	**Sabina** **Comments and Annotation**
4. The Licensee shall implement sediment and erosion control measures where necessary, during all phases of the Project to prevent entry of sediment into Water.	NWB Standard Term and Condition
5. The Licensee shall undertake appropriate corrective measures to mitigate impacts on surface drainage resulting from the Licensee's operations.	NWB Standard Term and Condition
6. The Licensee shall limit any in-stream activity to the low Water period and this activity is prohibited during fish migration unless otherwise approved by the Board or Fisheries and Oceans Canada.	NWB Standard Term and Condition
7. The Licensee shall conduct construction monitoring during periods where construction activities are undertaken.	NWB Standard Term and Condition
8. The Licensee shall, during periods of Construction activities, submit an annual Construction Summary Report no later than March 31 in the year following the calendar year being reported. The report shall be developed in accordance with Schedule D, Item 1 and submitted with the Annual Report in accordance with Part B, Item 3.	Sabina recommends streamlining of the construction monitoring report to be included in the Annual report.
9. The Licensee shall identify and tag any potentially acid generating rock identified through the Borrow Pits and Quarry Management Plan for removal and disposal into the WRSAs, backfill in the undergrounds or Tailings Facility and/or Tailings Facilities or as otherwise approved by the Board.	
10. The Licensee shall monitor the underground backfill and mine Waste placement underground during Operations to confirm that the proposed closure and reclamation targets of returning waste rock into the underground are achieved.	
11. The Licensee shall construct and operate the Fuel Storage and Containment Facility(s) to meet, at a minimum, all applicable legislation and industry standards that include the following: a. Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum Products, 2003; CCME, PN 1326; and b. National Fire Code, 2010.	NWB Standard Term and Condition
12. The Licensee shall, for the purposes of bridge construction, ensure that all activities remain outside of the natural channel width by the placement of abutments, footings or armouring above the ordinary High Water Mark so that there is no restriction to the natural channel processes.	NWB Standard Term and Condition
13. The Licensee shall submit to the Board for approval, at least thirty (30) prior to Construction, final design and Construction drawings accompanied, with a detailed report, both stamped and signed by the appropriately qualified Engineer, where appropriate, for the following: a. Water Works, including: Water Intake and water control structures (dikes, berms, jetties, channels) and water crossings (culverts); b. Waste Disposal Facilities, including: Tailing Storage Facility, Water Treatment Plant, Sewage Treatment Plant, Discharge Diffuser(s), Waste Rock Storage Facilities, Ore Stockpiles, Landfarm, and Landfill, and c. Bulk Fuel Storage Facilities.	
14. The Licensee shall conduct all activities, including the construction and maintenance of the all-weather roads, in such a way as to minimize impacts on surface drainage and shall immediately undertake any corrective measures in the event the Licensee's activities cause significant pooling of Water or any impacts on surface drainage.	NWB Standard Term and Condition
15. With respect to access road, pad construction or other earthworks where direct or indirect flow into a Water body is possible, the deposition of debris or sediment into or onto any Water body is prohibited. These materials shall be disposed at a distance of at least thirty-one (31) metres from the ordinary High Water Mark in such a fashion that they do not enter the Water, unless otherwise approved by the Board with appropriate mitigation measures implemented by the Licensee.	NWB Standard Term and Condition
16. The Licensee shall monitor all activities for signs of erosion and shall implement and maintain sediment and erosion control measures prior to the undertaking to prevent entry of sediment into any Water body.	NWB Standard Term and Condition

<table>
<tr><th>Proposed Terms</th><th>Sabina
Comments and Annotation</th></tr>
<tr><td>17. The Licensee shall conduct visual inspections for all construction activity during spring freshet and during and after remarkable rainfall events with sampling of runoff/seepage where turbidity is evident.</td><td>NWB Standard Term and Condition</td></tr>
<tr><td>18 All surface runoff and/or discharge from drainage management systems, during the construction/operation of any facilities and infrastructure associated with this project, including laydown areas, where flow may directly or indirectly enter a Water body, shall not exceed the following Effluent quality limits:</td><td>NWB Standard Term and Condition</td></tr>
<tr><td></td><td><table>
<tr><th>Parameter</th><th>Maximum Average Concentration</th><th>Maximum Concentration of Any Grab Sample</th></tr>
<tr><td>Total Suspended Solids (mg/L)</td><td>50.0</td><td>100.0</td></tr>
<tr><td>Oil and Grease</td><td>No Visible Sheen</td><td>No Visible Sheen</td></tr>
<tr><td>pH</td><td>Between 6.0 and 9.5</td><td>Between 6.0 and 9.5</td></tr>
</table></td></tr>
<tr><td>19. The Licensee shall operate the Sewage Treatment Plant in accordance with conditions provided in PART G, Item 3 with Effluent compliance at monitoring station BRP-17 during discharge to the tundra.</td><td></td></tr>
<tr><td>20. The Licensee shall implement quarry seepage and runoff management in accordance with the approved Water Management Plan.</td><td>This proposed wording reflects Sabina commitments made in response to WT-KIA-NWB-11.</td></tr>
<tr><td>21. The Licensee shall provide a summary and analysis in the Annual Report submitted in the year following data collection, that presents the data collected analysis from the Quarry Rock Seepage Monitoring and Management Program conducted under PART D, Item 20.</td><td>NWB Standard Term and Condition</td></tr>
<tr><td>22. The Licensee shall use fill material for construction only from approved sources that has been demonstrated by appropriate geochemical analyses to not produce Acid Rock Drainage and to be Non-Metal Leaching, and free of contaminants, unless otherwise approved by the Board.</td><td></td></tr>
<tr><td>23. The Licensee shall construct and maintain all containment and runoff control structures to prevent non-permitted releases of Wastes to the terrestrial environment or groundwater systems.</td><td>NWB Standard Term and Condition</td></tr>
<tr><td>24. The Licensee shall submit to the Board for review, with the Construction Summary Report referred to under PART D, Item 8, and following completion of each facility designed to contain, withhold, divert or retain Waters or Wastes, a Construction Summary Report prepared by a qualified Engineer(s) that shall include as-built drawings, documentation of field decisions that deviate from original plans and any data used to support these decisions.</td><td>NWB Standard Term and Condition</td></tr>
<tr><td>25. The Licensee shall, during the construction of all engineered structures designed to contain, withhold, divert or retain Waters or Wastes, provide the required supervision and field checks by an appropriately qualified and experienced Engineer in such a manner that the project specification can be enforced and, where required, the quality control measures can be followed. The Licensee shall maintain all construction records of all engineered structures, as above, to be made available at the request of the Board and/or an Inspector.</td><td>NWB Standard Term and Condition</td></tr>
<tr><td>26.The Licensee shall direct contact water at the Goose Property to the Pollution Control Ponds for collection and transfer to the Tailings Facility(s) and/or Tailings Storage Facility and/or Underground, unless otherwise approved by the Board.</td><td></td></tr>
<tr><td>27. The Licensee shall consider the principles of Adaptive Management in Construction and Operations.</td><td>NWB Standard Term and Condition</td></tr>
</table>

Proposed Terms	**Sabina** **Comments and Annotation**
Part E: Conditions Applying to the Use of Water	
1. The Licensee shall obtain fresh Water as follows or as otherwise approved by the Board: a. For domestic and industrial use, for the Goose Property for all phases of the project, from Goose Lake at Monitoring station BRP-24, Big Lake at Monitoring Station BRP-12; de-watering phase at Monitoring station BRP-XX and BRP-XX; b. For domestic and industrial use, for the Marine Laydown Area for all phases of the project from MLA Pond S1, Pond S2, Lake 3, and Lake 4 at Monitoring station BRP-XX, BRP-XX, BRP-XX, BRP-XX; c. For Winter Ice Road construction, maintenance, and operation the use of water from all source locations proximal to the road routing shall be undertaken in accordance with Part F, Item 3 (New); d. The use of Waters from Big Lake, for all purposes, shall not exceed a total of 77,068 cubic metres per year from the Licence approval date; e. The use of Waters from Goose Lake, for all purposes, shall not exceed a total of 474,825 cubic metres per year from the Licence approval date; f. The use of Waters from Llama Lake and Umwelt Lake, for de-watering purpose, shall not exceed a total of 1.4 million cubic metres per year from the Licence approval date; g. The use of Waters from MLA Pond S1, Pond S2, Lake 3, and Lake 4, for all purposes, shall not exceed a total of 108,405 cubic metres per year from the Licence approval date h. Additional Water for domestic and industrial use at the Marine Laydown Area may be sourced from the marine environment.	Sabina will confirm final water volumes in revised draft framework prior to final hearing.
2. The Licensee shall maximize to the greatest practical extent, the use of reclaim Water from the Tailings Storage Facility(s) for use in the mill.	
3. The Licensee shall not use streams as a Water source unless authorized and approved by the Board	NWB Standard Term and Condition
4. The Licensee shall maintain the Water Intakes to the satisfaction of the Inspector.	
5. The Licensee shall equip all Water intake hoses with a screen of an appropriate mesh size to ensure that fish are not entrained and shall withdraw Water at a rate such that fish do not become impinged on the screen.	NWB Standard Term and Condition
6. The Licensee shall not remove any material from below the ordinary High Water Mark of any Water body unless authorized by an Inspector or the Board.	NWB Standard Term and Condition
7. The Licensee shall provide the controls necessary to prevent erosion to the banks of any body of Water. Sediment and erosion control measures shall be implemented prior to and maintained during the operation to prevent entry of sediment into Water.	NWB Standard Term and Condition
Part F: Conditions Applying to Water Management	
1. The Board has approved, the Water Management Plan dated October 2017. The Licensee shall submit to the Board for review within sixty (60) days of approval of this Licence, a revised Water Management Plan. The revised Plan shall include the following: a. updated Saline Water Management plan appendix; and b. further detail respecting potential management and treatment options related to water quality in the effluent discharged from flooded pits and the downstream receiving environment.	a. Reflects commitment No. 6 from the NWB PHC/TM Decision b. Reflects commitment No. 3 from the NWB PHC/TM Decision
2. The Licensee shall carry out regular inspections of all Water management structures during periods of flow and the records be kept for review upon request of an Inspector. More frequent inspections may be required at the request of an Inspector. This information may be included in the Annual report required by Part B, Item 3.	NWB Standard Term and Condition

Proposed Terms	**Sabina** **Comments and Annotation**
3. (New) The Licensee shall submit to the Board sixty (60) days prior to annual Winter Ice Road construction an updated Technical Memorandum titled "Winter Ice Road Withdrawal Evaluation (February 2018) for approval of the Board. The memorandum will confirm bathymetry, depth, potential locations of possible water withdrawal, proposed volumes to be extracted and anticipated water level decreases. The memorandum may be submitted as an addendum appendix to the approved Water Management Plan.	The proposed wording reflects DFO TC 3.3 [In final draft, write out text]
4. (New) The Licensee shall submit to the Board sixty (60) days prior to initiation of dewatering a Dewatering Plan for review of the Board. The Plan may be submitted as an addendum appendix to the approved Water Management Plan.	The proposed wording reflects DFO TC 3.5 [In final draft, write out text]
5. (New) The Licensee shall submit to the Board for review with the Annual Report in accordance with Part B, Item 3, an updated Water and Load Balance Model as an appendix to the approved Water Management Plan. The updates are to take into account the following: a. updated 2017-2018 baseline data collection that takes into account seasonal variation; and b. updated hydrodynamic model	The proposed wording reflects Commitment No. 7 and 9 from the NWB PHC/TM Decision .
6. (New) The Water and Load Balance Model shall be reviewed periodically, to reflect key changes in operations and submit results for review with the Annual Report in accordance with Part B, Item 3 as appendix to the approved Water Management Plan.	
Part G: Conditions Applying to Waste Disposal and Management	
1. The Licensee shall provide at least three (3) days notice to the Inspector prior to any planned discharges from any Facilities. The notice shall include the estimated volume proposed for discharge and location.	
2. The Licensee shall perform all land applied discharges in a manner that prevents erosion at the point of discharge and downstream.	NWB Standard Term and Condition.
4. The Licensee shall implement the approved Landfill and Waste Management Plan.	
5. The Licensee shall not open burn plastics, wood treated with preservatives, electric wire, Styrofoam, asbestos or painted wood in order to prevent the deposition of Waste materials (e.g. products of incomplete combustion, leachate from contaminated ash residual, etc.) from impacting any surrounding Waters, unless otherwise approved by the Board.	NWB Standard Term and Condition
6. The Licensee shall implement the approved Incineration Management Plan.	
7. The Licensee is authorized to dispose of and contain all non-hazardous solid Wastes at the Landfill(s), or as otherwise approved by the Board.	
8. The Licensee shall implement the approved Hazardous Materials Management Plan.	
9. The Licensee shall implement the approved Borrow Pits and Quarry Management Plan.	
10. The Licensee shall backhaul and dispose of all hazardous Wastes, through the course of the operation at a licensed Waste disposal site in accordance with the Hazardous Waste Management Plan.	
11. The Licensee shall maintain records of all Waste backhauled and records of confirmation of proper disposal of backhauled Waste. These records shall be made available to an Inspector upon request.	NWB Standard Term and Condition
12. The Licensee shall implement the approved Landfarm Management Plan.	
13. The Licensee shall implement the approved Mine Waste Rock Management Plan and approved Ore Storage Management Plan.	
14. The Licensee shall submit to the Board for approval in writing, at least sixty (60) days prior to planned implementation, any changes that are contemplated to the geochemical confirmatory sampling and testing program or the criteria for using non- mineralized Waste Rock for construction as outlined in the approved Plans, approved as per PART G, Item 13, including a description of and justification for the change.	

<table>
<tr><th>Proposed Terms</th><th>Sabina
Comments and Annotation</th></tr>
<tr><td>15. The Licensee shall store all potentially acid generating rock temporarily at the underground laydown pads prior to ultimate disposal underground as mine backfill, or in the WRSAs or as otherwise approved by the Board.</td><td></td></tr>
<tr><td>16. All Waste Rock brought to the surface from underground shall be managed in accordance with the approved Plan(s) submitted under PART G, Item 13 as otherwise approved by the Board.</td><td></td></tr>
<tr><td>17. The Licensee shall operate and maintain all Waste management facilities to the satisfaction of the Inspector.</td><td>NWB Standard Term and Condition</td></tr>
<tr><td>18. All Water from the Pollution Control Ponds, and Sumps shall be directed to the Tailings Facility(s) or Tailings Storage Area, unless otherwise authorized by the Board.</td><td></td></tr>
<tr><td>19. The Licensee shall operate and maintain the Sumps associated with the site, in accordance with the following:
a. Water discharged from the Landfill Sump at monitoring station BRP-09, and BRP-29 shall not exceed the following Effluent quality limits: [See Sabina Comments]</td><td>Table 7.4-1. Proposed Landfill Seepage Monitoring Water Quality Criteria
<table><tr><th>Parameters</th><th>Maximum Average Concentration (mg/L)</th></tr><tr><td>pH</td><td>6.0 - 9.5</td></tr><tr><td>As</td><td>0.5</td></tr><tr><td>Cu</td><td>0.3</td></tr><tr><td>Pb</td><td>0.2</td></tr><tr><td>Ni</td><td>0.5</td></tr><tr><td>Zn</td><td>0.5</td></tr><tr><td>Total Suspended Solids</td><td>15</td></tr><tr><td>Oil and Grease</td><td>No visible sheen</td></tr></table></td></tr>
<tr><td>b. Water from the Landfill Sump that is acceptable for discharge under PART G, Item 23(a), may be discharged to the tundra or as designated by an Inspector;
c. Water discharged from the Landfarm Sump at monitoring station BRP-44, and BRP-51 shall not exceed the following Effluent quality limits: [See Sabina Comments]</td><td>Table 7.5-1. Proposed Landfarm Pooling Water Quality Discharge Criteria
<table><tr><th>Parameter</th><th>Maximum Average Concentration(mg/L)</th></tr><tr><td>pH</td><td>6.0 - 9.0</td></tr><tr><td>Total Suspended Solids</td><td>15</td></tr><tr><td>Oil and Grease</td><td>15 and no visible sheen</td></tr><tr><td>Benzene</td><td>0.370</td></tr><tr><td>Ethylbenzene</td><td>0.090</td></tr><tr><td>Toluene</td><td>0.002</td></tr><tr><td>Xylene</td><td>0.300</td></tr></table>Sources: Nunavut Water Board Water Licence No: 2AM-MRY1325 (2013); Back River technical comment DEIS-ECCC-TC-30</td></tr>
<tr><td>d. Water from the Landfarm Sump that is acceptable for discharge under PART G, Item 23(c) may be discharged to the tundra or as designated by an Inspector;
e. Water discharged from the Bulk Fuel Storage Facility secondary containment Sumps at monitoring stations BRP-15, BRP-43, and BRP-49 shall not exceed the following Effluent quality limits: [See Sabina Comments]</td><td>Takes into account Development Licence Part D, Item 3
<table><tr><th>Parameter</th><th>Maximum Average Concentration</th><th>Maximum Concentration of any Grab Sample</th></tr><tr><td>Benzene (µg/L)</td><td>370</td><td>370</td></tr><tr><td>Ethylbenzene (µg/L)</td><td>90</td><td>90</td></tr><tr><td>Toluene (µg/L)</td><td>2</td><td>2</td></tr><tr><td>Lead (mg/L)</td><td>0.1</td><td>0.1</td></tr><tr><td>Oil and Grease (mg/L)</td><td>5 and no visible sheen</td><td>5 and no visible sheen</td></tr><tr><td>Total Suspended Solids (mg/L)</td><td>15</td><td>30</td></tr><tr><td>pH</td><td>Between 6.0 and 9.5</td><td>Between 6.0 and 9.5</td></tr></table></td></tr>
</table>

Proposed Terms	**Sabina** **Comments and Annotation**
f. Water from the Fuel Storage and Containment Facility Sumps that is acceptable for discharge under PART G, Item 19 (e) may be discharged to the tundra or as designated by an Inspector; and g. Sump Water from the Landfill, Landfarm and Fuel Storage and Containment Facility that does not meet the criteria in PART G, Items 19 (a),(c) and (e) respectively shall be directed to Tailings Facility(s) and/or Tailings Storage Facility.	
19. The Licensee shall implement the approved Tailings Management Plan	
20. (NEW) The discharge of effluent from the TSF and/or Tailings Facility(s) at Umwelt or Goose Main during Operations is acceptable for discharge if Effluent criteria is met .	
21. (NEW) The Licensee is authorized to operate a Desalination plant.	
Part H: Conditions Applying to Modifications	
1. The Licensee may, without written consent from the Board, carry out Modifications to the Water Supply Facilities and Waste Disposal Facilities provided that such Modifications are consistent with the terms of this Licence and the following requirements are met: a. The Licensee has notified the Board of such proposed Modifications at least sixty (60) days prior to beginning the Modifications; b. Such Modifications do not place the Licensee in contravention of the Licence or the Act; c. Such Modifications are consistent with the applicable terms and conditions of the NIRB Project Certificate; d. The Board has not, within sixty (60) days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than sixty (60) days; and e. The Board has not rejected the proposed Modifications.	NWB Standard Term and Condition
2. Modifications for which any of the conditions referred to in Part G, Item 1 have not been met can be carried out only with approval from the Board.	NWB Standard Term and Condition
3. Applications for modifications shall contain: a. A description of the facilities and/or works to be constructed; b. The proposed location of the structure(s); c. Identification of any potential impacts to the receiving environment; d. A description of any monitoring required, including sampling locations, parameters measured, and frequencies of sampling; e. A proposed schedule for construction; f. Drawings of Engineered Structures stamped by a Professional Engineer, where applicable; and g. Proposed sediment and erosion control measures.	NWB Standard Term and Condition. Certain facilities would not make sense to have "stamped drawings"
4. The Licensee shall provide to the Board, within ninety (90) days of completion of the Modification, as-built plans and drawings of the Modifications referred to in this Part. These plans and drawings shall be stamped by an Engineer, where applicable.	NWB Standard Term and Condition
Part I: Conditions Applying to Contingency Planning	
1. The Licensee shall implement the Emergency Response Program including: Risk Management and Emergency Response Plan; Fuel Management Plan; and Spill Contingency Plan, as approved by the Board. The Licensee shall comply with the Plan(s) and any changes deemed significant shall require the submission and subsequent approval of the Board.	
2. The Licensee shall prevent any chemicals, petroleum products or unauthorized Wastes associated with the Project from entering Water.	NWB Standard Term and Condition
3. The Licensee shall provide secondary containment for fuel and chemical storage as required by applicable standards and acceptable industry practice.	NWB Standard Term and Condition

Proposed Terms	**Sabina** **Comments and Annotation**
4. The Licensee shall perform regular inspections in accordance with the approved Environmental Management and Protection Plan and Fuel Management Plan, of petroleum products storage and containment facilities, fuel tanks and connectors, for leaks and settlement and shall keep a written log of inspections to be made available to an Inspector upon request. More frequent inspections may be requested by an Inspector.	NWB Standard Term and Condition
5. The Licensee shall, report any unauthorized deposits or foreseeable unauthorized deposits of waste and/or discharges of Effluent in accordance of the Regulations.	NWB Standard Term and Condition
6. If the Licensee provides notification of Care and Maintenance under Part L, Item 2, the Licensee shall submit to the Board an Addendum to the Emergency Response Plan and the Spill Contingency Plan, detailing the changes in operations, personnel, responsibilities, availability of equipment and access to the site for assistance.	NWB Standard Term and Condition
Part J: Conditions Applying to General and Aquatic Effects Monitoring	
1. The Licensee shall install and maintain flow meters or other such devices, or implement suitable methods required for the measuring of Water use and Effluent discharge volumes, where such discharges are made to land or inland Waters, to be operated and maintained to the satisfaction of an Inspector.	NWB Standard Term and Condition
2. The Licensee shall undertake the Water Monitoring Program detailed in the tables of Schedule J or as may be directed by the Board after consulting with the Licensee and other interested parties.	NWB Standard Term and Condition
3. Water quality monitoring shall be carried out in accordance with the Quality Assurance/Quality Control Plan.	NWB Standard Term and Condition
4. The Licensee, in consultation with an Inspector, shall establish the locations and GPS coordinates for all monitoring stations referred to in Schedule J.	NWB Standard Term and Condition
5. The Licensee shall install and maintain, to the satisfaction of an Inspector, signs that identify monitoring stations. The signs shall be posted in English, Inuktitut, and Inuinnaqtun.	NWB Standard Term and Condition
6. Additional monitoring may be directed by the Board.	NWB Standard Term and Condition
7. All analyses shall be conducted as described in the most recent edition of "Standard Methods for the Examination of Water and Wastewater" or by other such methods approved by an Analyst.	NWB Standard Term and Condition
8. All compliance analyses shall be performed in an accredited laboratory.	
9. The Licensee shall measure and record all flow and volume measurements on a monthly basis, during Operations and during any use of Waters (unless otherwise stated): a. The volume of freshwater obtained from Big Lake; b. The volume of freshwater obtained from Goose Lake; c. The volume of freshwater obtained from proximal lakes for Winter Ice Road; d. The volume of freshwater obtained from Ponds (S1 and S2) and Lakes (3 and 4) at the Marine Laydown Area; e. The volume of reclaim water obtained from Tailings Storage Facility and Tailings Facility(s) for process water at the process plant; f. Tonnes of Waste Rock stored in the Waste Rock Storage Area(s) and at other locations approved by the Board during Construction, Operations and Closure; g. The volume of sewage sludge removed from the Sewage Treatment Plant and the locations or method of sewage sludge disposal during Construction, Operation and Closure; h. Report the data in accordance to Schedule B.	
10. The Licensee shall measure and record in tonnes including the location of disposal (temporary and permanent) for the following: a. The daily dry tonnes of tailings placed in the Tailings Storage Facility and Tailings Facility(s); and b. The monthly quantity of ore processed.	

Proposed Terms	**Sabina** **Comments and Annotation**
11. The Licensee shall undertake the Infill Geotechnical Characterization Program detailed in Schedule G or as may be directed by the Board after consulting with the Licensee and other interested parties	Reflects commitment made by Sabina in response to KIA-NWB-04

12. The Licensee shall undertake a geotechnical inspection annually between July and September, by a Geotechnical Engineer. The inspection shall be conducted in accordance with the Canadian Dam Safety Guidelines where applicable and take into account all major earthworks at the Goose Property, Marine Laydown Area and Winter Ice Road, where applicable, including:
a. Tailings Storage Facility and associated Ponds and Dams/Dykes;
b. Geotechnical instrumentation and associated monitoring data;
c. A description of geophysical and permafrost conditions at the project site;
d. Tailings Facility(s);
e. Open Pit Walls;
f. All weather access roads and culvert crossings;
g. Landfill(s);
h. Landfarm(s);
i. Fuel Storage Facilities;
j. Quarries and borrow pits;
k. Pollution Control Ponds (event ponds);
l. Sumps;
m. Underground mine openings;
n. Groundwater conditions underground;
o. Geotechnical Instrumentation;
p. Perimeter berms and collection Ponds;
q. Steam Diversions; and
r. Winter Ice Road routing.	

13. The Licensee shall submit to the Board for review, within ninety (90) days of completion of the geotechnical inspection in accordance with Part J, Item 12, the Geotechnical Engineer's inspection report. The report shall include a cover letter from the Licensee outlining an implementation plan addressing each of the Geotechnical Engineer's recommendations.	

14. The Licensee shall visually monitor and record observations in accordance with the approved Environmental Management and Protection Plan, to be made available to an Inspector upon request, during periods of discharge onto the tundra from:
a. Landfill Sump(s);
b. Landfarm Sump(s);
c. Bulk Fuel Storage Facilities Sump(s);
d. Sewage Treatment Plant Sump; and
e. Any other treated effluent water discharge Sump(s).	

15. The Licensee shall, within thirty (30) days following the month being reported, submit to the Board a monthly monitoring report in an electronic. The Report shall include the following: a. All data and information required by this Part and generated by the Monitoring Program in the Tables of Schedule J; b. An assessment of data to identify areas of non-compliance with regulated discharge parameters referred to in this Licence; and c. Reports should document conditions during spring freshet, major rain events, and periods of sustained precipitation should be monitored. Documented information can include flow measurements, photographs and notes.	

Proposed Terms	Sabina Comments and Annotation
Part K: Conditions Applying to General and Aquatic Effects Monitoring Plans	
1. The Licensee shall annually review the approved QA/QC Plan and modify the Plan as necessary.	
2. The Licensee shall submit to the Board for review sixty (60) days prior to triggering Aquatic Effects Monitoring requirements, an updated Aquatic Effects Management Plan. The updates are to take into account commitments made with respect to submissions received during the regulatory review of the Application.	
Part L: Conditions Applying to Abandonment, Reclamation and Closure	
1. The Licensee shall notify the Board in writing, at least sixty (60) days prior to any intent to achieve Recognized Closed Mine status.	NWB Standard Term and Condition
2. The Licensee shall notify the Board, a soon as practically possible, of any intent to enter into a Care and Maintenance Phase.	
3. The Licensee shall, upon providing notice to the Board as per PART L, Item 2, review all operational plans and submit revised Plans to reflect the Care and Maintenance status, to the Board for approval in writing, within three (3) months of providing notice.	
4. The Licensee shall provide to the Board in writing, at least thirty (30) days advanced notification of the initial start of Operations or change of Project Phase. Notification may be provided separately or in accordance with the monthly monitoring report as per PART J, Item 15.	
5. The Licensee shall implement the approved Interim Closure and Reclamation Plan and the addendum submitted in June 2018.	
6. The Licensee shall submit to the Board for approval at least twelve (12) months prior to the expected end of planned mining, a Final Closure and Reclamation Plan. The Final Closure and Reclamation Plan shall incorporate revisions, which reflect the pending closed status of the mine, and include: a. Soil Quality Remediation Objectives reflecting the applicable CCME Guidelines and the Government of Nunavut Environmental Guideline for Site Remediation; b. Environmental Site Assessment plans in accordance with the applicable Canadian Standards Association (CSA) criteria; and c. An evaluation of the human health and ecological risks associated with the Closure options proposed.	NWB Standard Term and Condition
7. The Licensee shall, should the Project remain, or be in Care and Maintenance, submit an updated estimate of total mine closure restoration liability, within twelve (12) months of entering Care and Maintenance and every three (3) years thereafter.	NWB Standard Term and Condition
8. The Licensee shall include, with the Plan submitted under PART L, Items 6, and 7, an updated estimate of the total mine closure restoration liability using the current version of RECLAIM, its equivalent or other similar method approved by the Board, in accordance with principles of the INAC "Mine Site Reclamation Policy for Nunavut" (2000).	NWB Standard Term and Condition
9. The Licensee shall, if not approved by the Board, revise the Plan(s) referred to in this Part and resubmit to the Board for approval within thirty (30) days of receiving notification of the Board's decision.	NWB Standard Term and Condition
10. The Licensee shall submit to the Board for approval, at least twelve (12) months prior to the start of Closure works, engineering drawings and specifications of the Tailings Storage Facility final cover system design.	NWB Standard Term and Condition
11. The Licensee shall complete all reclamation work in accordance with the Plan(s) referred to in this Part, as and when approved by the Board.	NWB Standard Term and Condition
12. The Licensee shall carry out progressive reclamation of any components of the project no longer required for the Licensee's operations.	NWB Standard Term and Condition
13. All roads and airstrips, if any, shall be re-graded to match natural contour to reduce erosion.	NWB Standard Term and Condition
14. The Licensee shall remove any culverts and restore the drainage to match the natural channel. Measures shall be implemented to minimize erosion and sedimentation.	NWB Standard Term and Condition

Proposed Terms	**Sabina** **Comments and Annotation**
15. In order to promote growth of vegetation and the needed microclimate for seed deposition, all disturbed surfaces shall be prepared by ripping, grading, or scarifying the surface to conform to the natural topography.	NWB Standard Term and Condition
16. Areas that have been contaminated by hydrocarbons from normal fuel transfer procedures shall be reclaimed to meet objectives as outlined in the Government of Nunavut's Environmental Guideline for Site Remediation, (2010 version or current version in place at the time of Reclamation).	NWB Standard Term and Condition
17. To the extent practical, the Licensee shall contour and stabilize all disturbed areas to a pre-disturbed state upon completion of work.	NWB Standard Term and Condition
SCHEDULE A: Definitions	
o Abandonment o Act o Acid Rock Drainage (ARD) o Adaptive Management o Analyst o Annually o Care and Maintenance o Commercial Operation o Deposit o Discharge o Domestic Waste o Engineer o Engineering Geologist o Engineered Structure o Freeboard o Frozen Core o Geotechnical Engineer o Grab Sample o Greywater o Ground Ice o Ground Water	NWB Standard Definitions

Proposed Terms	**Sabina** **Comments and Annotation**
o Inspector o Interim Closure and Reclamation Plan o Maximum Average Concentration o Metal Leaching o Mine Water o Monthly o Operator o Ore Stockpile o Progressive Reclamation o Quarterly o Sewage o Surface Drainage o Talik o Traditional Knowledge o Use o Waste o Waste Rock o Wastewater o Weekly	NWB Standard Definitions
o Acutely Lethal Effluent o Addendum o Amendment o Aquatic Effects Monitoring (AEMP) o Board o Canadian Council of Ministers of the Environment (CCME) o Chief Administrative Officer o Chief Executive Officer o Contact Water o Closure o Dam Safety Guidelines o Deleterious Substances o Domestic Waste o Effluent o Environmental Assessment o Final Discharge Point o Hazardous Waste o ICP Metal Scan	NWB Standard Definitions recently updated in 2AM-WTP1826

Proposed Terms	**Sabina** **Comments and Annotation**
o Maximum Monthly Mean o Minister o Modification o Monitoring Program o Non Contact Water o Nunavut Agreement o Operational Phase o Quality Assurance/Quality Control (QA/QC) o Reclamation o Recognized Closed Mine o Regulations o Seepage o Water	NWB Standard Definitions recently updated in 2AM-WTP1826
To be revised to reflect Back River Project specific requirements: o Airstrip o Bulk Fuel Storage Facility(s) o Construction o Desalination Plant o Dissolved Metals o Fresh Water Intake o Goose Property o Goose Property o Goose Main Tailings Facility o Incinerator o Landfarm o Landfill o Licence o Licensee o Marine Laydown Area o Metal Mining Effluent Regulations o Nutrients o Open Pits o Project	Project specific requirement definitions will be compiled for the revised Draft Water Licence Framework for submission prior to the Final Public Hearing.

Proposed Terms	**Sabina** **Comments and Annotation**
o Pollution Control Pond o Receiving Environment o Saline Water o Saline Water Pond o Sewage Treatment Plant o Tailings Storage Facility o TSF Containment Dam o TSF WRSA Pond o Total Metals o Underground Operations o Umwelt Tailings Facility o Waste Disposal Facilities o Waste Rock Storage Areas o Wastewater Treatment Plant o Water Management Ponds o Water Supply Facilities o Water Treatment Plant o Water Licence Application	Project specific requirement definitions will be compiled for the revised Draft Water Licence Framework for submission prior to the Final Public Hearing.
o Quarry or Quarries o Secondary Containment o Sump or Sumps o Winter Ice Road	To be taken from 2BC-BRP1819 To be taken from Development Licence
SCHEDULE B: General Conditions	Sabina notes NWB has recently streamlined "schedule" requirements under the WTP Licence as such Sabina as use the WTP licence foundation for recommended changes for the Draft Framework. To be taken where noted from 2AM-WTP1826:
The Annual Report referred to in Part B, Item 3, shall include:	
CONSTRUCTION 1. For the dikes, dams and structures constructed to withhold water or waste: a. An overview of methods and frequency used to monitor deformations, Seepage and geothermal responses; b. A comparison of measured versus predicted performance; c. A discussion of any unanticipated observations including changes in risk and mitigation measures implemented to reduce risk; d. As-built drawings of all mitigation works undertaken; e. Any changes in the design and/or as-built condition and respective consequences of any changes to safety, water balance and water quality; f. Data collected from instrumentation used to monitor earthworks and an interpretation of that data; g. A summary of maintenance work undertaken as a result of settlement or deformation of dikes and dams; and h. The monthly and annual quantities of Seepage from dikes and dams in cubic metres.	NWB Standard Term and Condition
WATER 2. Monthly and annual volume of fresh Water obtained from all sources 3. Summary of Winter Ice Road and Dewatering plans implemented in accordance with Part F, Item XX and Item XX, respectively. 4. Summary update of the Water and Load Balance results, if any	

Proposed Terms	Sabina Comments and Annotation
WASTE 5. Geochemical monitoring results including: a. Operational acid/base accounting and paste pH test work used for Waste Rock designation (PAG and NPAG rock); b. As-built volumes of Waste Rock used in construction and sent to the Waste Rock Storage Areas with estimated balance of acid generation to acid neutralization capacity in a given sample as well as metal toxicity; c. All monitoring data with respect to geochemical analyses on site and related to roads, and quarries; d. Leaching observations and tests on pit slope and dike exposure; and e. Any geochemical outcomes or observations that could imply or lead to environmental impact. 6. Volumes of Waste Rock used in construction and placed in the Waste Rock Storage Areas. 7. Volumes of ore stockpiled stored at site. 8. Summary of quantities and analysis of Seepage and runoff monitoring from the Tailing Storage Facility, Waste Rock Storage Area(s), Landfill(s), and associated dikes/berms. 9. A summary report of all general waste disposal activities including monthly and annual quantities in cubic metres of waste generated and location of disposal.	
SPILLS 10. A list and description of all unauthorized discharges including volumes, spill report line identification number and summaries of follow-up action taken.	NWB Standard Term and Condition:
MODIFICATIONS 11. A summary of Modifications and/or major maintenance work carried out on all Water and Waste-related structures and facilities.	NWB Standard Term and Condition:
MONITORING 12. The results and interpretation of the Monitoring Program in accordance with Part J and Schedule J. 13. The results of monitoring related to the Aquatic Effects Monitoring Program (AEMP) in accordance with Part K, Item 4.	
CLOSURE 14. A summary of any progressive Closure and Reclamation work undertaken, including photographic records of site conditions before and after completion of operations, and an outline of any work anticipated for the next year, including any changes to implementation and scheduling. 15. A summary of on-going field trials to determine effective capping thickness for the Waste Rock Storage Areas for the purpose of long term environmental protection. 16. An updated estimate of the current restoration liability based on Project development monitoring, results of restoration/revegetation research and any changes or modifications to the Appurtenant Undertaking.	NWB Standard Term and Condition:
PLANS/REPORTS/STUDIES 17. A summary of any studies requested by the Board that relate to Water use, Waste disposal or Reclamation, and a brief description of any future studies planned. 18. Where applicable, revisions as Addenda, with an indication of where changes have been made, for Plans, Reports, and Manuals. 19. An executive summary in English, Inuktitut and of all plans, reports, or studies conducted under this Licence.	NWB Standard Term and Condition:
GENERAL 20. A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector.	

Proposed Terms	**Sabina** **Comments and Annotation**
OTHER 21. A summary of public consultation and participation with local organizations and the residents of the nearby communities, including a schedule of upcoming community events and information sessions. 22. Any other details on Water use or Waste Disposal requested by the Board by November 1st of the year being reported.	
SCHEDULE D: Conditions Applying to Construction	
1. The Construction Monitoring Report referred to in Part D, Item 8 shall include: a. All final design and Construction drawings; b. A summary of Construction activities including photographic records before, during and after Construction; c. As built; d. Documentation and detailed explanation of field decisions reflecting any deviations from original Construction drawings and plans, and how such deviations may affect performance of engineered structures; e. Discussion of mitigation measures implemented during Construction and effectiveness of measures taken; f. Monitoring undertaken in compliance with Part D and/or Part J of the Licence; g. Blast vibration monitoring for quarrying activities carried out in close proximity to fish bearing waters; h. Monitoring for sediment release from Construction areas; and i. Monitoring and reporting on use of Water to manage dust emissions from crushing and Construction activity.	
SCHEDULE G: Conditions Applying to Waste Management and Waste Management Plans	
	Assumed all plans approved by the NWB (section may be revised pending final submission from Parties)
SCHEDULE J: Conditions Applying to General and Aquatic Effects Monitoring	Sabina notes NWB has recently streamlined "schedule" requirements under the WTP Licence as such Sabina as use the WTP licence foundation for recommended changes for the Draft Framework. To be taken where noted from 2AM-WTP1826:
TABLES - Table 1 Monitoring Groups	
	Attach tables from Appendix B of Water Management Plan for Type A Water Licence;
	Tables to be updated to reflect agreed upon commitments during the regulatory review process.
TABLES - Table 2 Monitoring Requirements	
	Attach tables from Appendix B of Water Management Plan for Type A Water Licence;
	Tables for Type A Licence to be updated to include BRP-S-01 to TBD; and BRP - 49 (To be taken from Development Licence Part J, Item 3)

Sabina
GOLD & SILVER CORP.

Final Hearing Closure Cost Estimate

SUMMARY OF COSTS

CAPITAL COSTS	COMPONENT NAME	COST	TOTAL LIABILITY
OPEN PIT	Umwelt	$50,425	$50,425
	Llama	$26,177	$26,177
	Echo	$25,934	$25,934
	Goose Main	$84,850	$84,850
QUARRY (under OPEN PIT TAB estimate)	Airstrip Quarry	$3,800	$3,800
UNDERGROUND MINE	Umwelt	$320,807	$320,807
	Llama	$103,656	$103,656
	Goose Main	$284,415	$284,415
	Echo	$96,206	$96,206
TAILINGS FACILITIES	TSF	$344,569	$344,569
ROCK PILE	Umwelt, Llama, Echo and TSF	$16,800,000	$16,800,000
BUILDINGS AND EQUIPMENT		$2,069,431	$2,069,431
CHEMICALS AND CONTAMINATED SOIL MANAGEMENT		$1,393,130	$1,393,130
SURFACE AND GROUNDWATER MANAGEMENT		$346,699	$346,699
INTERIM CARE AND MAINTENANCE		$952,619	$952,619
	SUBTOTAL: Capital Costs	**$22,902,715**	**$22,902,715**
	PERCENT OF SUBTOTAL		**100%**

INDIRECT COSTS		COST	TOTAL LIABILITY
MOBILIZATION/DEMOBILIZATION		$4,244,388	$4,244,388
POST-CLOSURE MONITORING AND MAINTENANCE		$7,568,243	$7,568,243
ENGINEERING	10%	$2,290,272	$2,290,272
PROJECT MANAGEMENT	5%	$1,145,136	$1,145,136
HEALTH AND SAFETY PLANS/MONITORING & QA/QC	1%	$229,027	$229,027
BONDING/INSURANCE	1%	$229,027	$229,027
CONTINGENCY	20%	$4,580,543	$4,580,543
MARKET PRICE FACTOR ADJUSTMENT	0%	$0	$0
	SUBTOTAL: Indirect Costs	**$20,286,636**	**$20,286,636**

TOTAL COSTS	**$43,189,351**	**$43,189,351**

5 **Open Pit Name:** **Umwelt** **Pit #** **1** **1** **Open Pit Name:**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	Total Cost	ACTIVITY/MATERIAL
CONTROL ACCESS								CONTROL ACCESS
Fence		m		#N/A	$0.00	$0	$0	Fence
Signs	Assumed	each	4	Sabina	$75.00	$300	$300	Signs
Berm at crest	Estimated for continous berm with 1m diameter boulders, no spacing between boulders - 0.52 m3/m - assumed 50 % done during Operations	m3	447	RR1H	$17.75	$7,940	$7,940	Berm at crest
Block roads	Temporary gate installation to allow water monitoring. It includes decommissioning of gate when no longer required. Exposed area after gate has been decommissioned will be blocked with boulders (exposed area along with block of roads with boulders included in berm cost above)	allow	1	Sabina	$5,000.00	$5,000	$5,000	Block roads
Other				#N/A	$0.00	$0	$0	Other
STABILITY STUDY								STABILITY STUDY
Conduct stability and setback study		allow	1	Sabina	$17,000.00	$17,000	$17,000	Conduct stability and setback study
STABILIZE SLOPES								STABILIZE SLOPES
Off-load crest, soil A		m3		#N/A	$0.00	$0	$0	Off-load crest, soil A
Off-load crest, soil B		m3		#N/A	$0.00	$0	$0	Off-load crest, soil B
Doze/trim overburden at crest		m3		#N/A	$0.00	$0	$0	Doze/trim overburden at crest
Drill & blast pit crest		m3		#N/A	$0.00	$0	$0	Drill & blast pit crest
Buttress slope		m3		#N/A	$0.00	$0	$0	Buttress slope
Other				#N/A	$0.00	$0	$0	Other
COVER/CONTOUR SLOPES								COVER/CONTOUR SLOPES
Place fill, soil A		m3		#N/A	$0.00	$0	$0	Place fill, soil A
Place fill, soil B		m3		#N/A	$0.00	$0	$0	Place fill, soil B
Rip rap		m3		#N/A	$0.00	$0	$0	Rip rap
Vegetate slopes		ha		#N/A	$0.00	$0	$0	Vegetate slopes
Vegetate pit floor		ha		#N/A	$0.00	$0	$0	Vegetate pit floor
Other				#N/A	$0.00	$0	$0	Other
CONSTRUCT DIVERSION DITCHES								CONSTRUCT DIVERSION DITCHES
Excavate ditches -soil		m3		#N/A	$0.00	$0	$0	Excavate ditches -soil
Excavate ditches -rock		m3		#N/A	$0.00	$0	$0	Excavate ditches -rock
Rip rap in channel base		m3		#N/A	$0.00	$0	$0	Rip rap in channel base
CONSTRUCT SPILLWAY								CONSTRUCT SPILLWAY
Excavate channel	200 m long, 6 m wide and 1 m deep	m3	1,200	SB1L	$4.30	$5,160	$5,160	Excavate channel
Concrete		m3		#N/A	$0.00	$0	$0	Concrete
Rip rap		m3	400	RR1H	$17.75	$7,100	$7,100	Rip rap
Other	Geotextile	m2	2,304	GSTL	$3.44	$7,925	$7,925	Other
RECLAIM QUARRIES								RECLAIM QUARRIES
Contour slopes		m3		#N/A	$0.00	$0	$0	Contour slopes
Place overburden		m3		#N/A	$0.00	$0	$0	Place overburden
Vegetate		m3		#N/A	$0.00	$0	$0	Vegetate
FLOOD PIT-Capital								FLOOD PIT-Captital
Remove stationary equipment (sump pumps) and Pipeline	Umwelt PF will be used to store tailings in Years 5 to 6 and it will then passively flood with site runoff and direct precipitation through the remainder of Operations and into the Closure Phase. Pipelines/pumps will be relocated for use in the other active pits (Llama Pit and Goose Main Pit) and removed to closure landfill once they are no longer needed	m		#N/A	$0.00	$0	$0	Remove stationary equipment (sump pumps) and Pipeline
Remove dewatering pipeline		m		#N/A	$0.00	$0	$0	Remove dewatering pipeline
Remove power lines		each		#N/A	$0.00	$0	$0	Remove power lines
Construct diversion ditches		m3		#N/A	$0.00	$0	$0	Construct diversion ditches
-Ditch, mat'l A		m3		#N/A	$0.00	$0	$0	-Ditch, mat'l A
-Ditch, mat'l B		m3		#N/A	$0.00	$0	$0	-Ditch, mat'l B
Construct embankment/dam		m3		#N/A	$0.00	$0	$0	Construct embankment/dam
Supply/install pump station		each		#N/A	$0.00	$0	$0	Supply/install pump station
Supply/install piping system		m		#N/A	$0.00	$0	$0	Supply/install piping system
Remove pump post-closure		each		#N/A	$0.00	$0	$0	Remove pump post-closure
Remove pipeline post-closure		m		#N/A	$0.00	$0	$0	Remove pipeline post-closure
FLOOD PIT-Annual Cost								FLOOD PIT-Annual Cost
Operate pumps (power)		m3		#N/A	$0.00	$0	$0	Operate pumps (power)
Maintain pump/pipeline		allow		#N/A	$0.00	$0	$0	Maintain pump/pipeline
Labour:fuel management, comissioning/decom		$/h		#N/A	$0.00	$0	$0	Labour:fuel management, comissioning/dec
Chemical addition, _____ kg/m3 of water		tonne		#N/A	$0.00	$0	$0	Chemical addition, _____ kg/m3 of water
Chemicals, purchase and shipping		tonne		#N/A	$0.00	$0	$0	Chemicals, purchase and shipping
Passive/biological additives		$/ha		#N/A	$0.00	$0	$0	Passive/biological additives
Passive additives purchase and shipping		tonne		#N/A	$0.00	$0	$0	Passive additives purchase and shipping
Other				#N/A	$0.00	$0	$0	Other
					Annual pumping costs		$0	
Number of years of pump flooding	passive pit flooding	years	0					Number of years of pump flooding
					Total pumping costs	$0	$0	
					Total	$50,425	$50,425	
					% of Total		100%	

Llama				Pit #	2	2	Open Pit Name:
Notes	**Units**	**Quantity**	**Cost Code**	**Unit Cost**	**Cost**	**Total Cost**	**ACTIVITY/MATERIAL**
							CONTROL ACCESS
	m		#N/A	$0.00	$0	$0	Fence
Assumed	each	4	Sabina	$75.00	$300	$300	Signs
Estimated for berm with 1m diameter boulders, no spacing between boulders - 0.52 m3/m; berm needed only where pit edge will not abute the final flooded lake footprint.	m3	218.4	RR1H	$17.75	$3,877	$3,877	Berm at crest
Temporary gate installation to allow water monitoring. It includes decommissioning of gate when no longer required. Exposed area after gate has been decommissioned will be blocked with boulders (exposed area along with block of roads with boulders included in berm cost above)	allow	1	Sabina	$5,000.00	$5,000	$5,000	Block roads
			#N/A	$0.00	$0	$0	Other
							STABILITY STUDY
	allow	1	Sabina	$17,000.00	$17,000	$17,000	Conduct stability and setback study
							STABILIZE SLOPES
	m3		#N/A	$0.00	$0	$0	Off-load crest, soil A
	m3		#N/A	$0.00	$0	$0	Off-load crest, soil B
	m3		#N/A	$0.00	$0	$0	Doze/trim overburden at crest
	m3		#N/A	$0.00	$0	$0	Drill & blast pit crest
	m3		#N/A	$0.00	$0	$0	Buttress slope
			#N/A	$0.00	$0	$0	Other
							COVER/CONTOUR SLOPES
	m3		#N/A	$0.00	$0	$0	Place fill, soil A
	m3		#N/A	$0.00	$0	$0	Place fill, soil B
	m3		#N/A	$0.00	$0	$0	Rip rap
	ha		#N/A	$0.00	$0	$0	Vegetate slopes
	ha		#N/A	$0.00	$0	$0	Vegetate pit floor
			#N/A	$0.00	$0	$0	Other
							CONSTRUCT DIVERSION DITCHES
	m3		#N/A	$0.00	$0	$0	Excavate ditches -soil
	m3		#N/A	$0.00	$0	$0	Excavate ditches -rock
	m3		#N/A	$0.00	$0	$0	Rip rap in channel base
							CONSTRUCT SPILLWAY
Spillway not required; will follow natural drainage to Umwelt Lake.	m3		#N/A	$0.00	$0	$0	Excavate channel
	m3		#N/A	$0.00	$0	$0	Concrete
	m3		#N/A	$0.00	$0	$0	Rip rap
			#N/A	$0.00	$0	$0	Other
							RECLAIM QUARRIES
	m3		#N/A	$0.00	$0	$0	Contour slopes
	m3		#N/A	$0.00	$0	$0	Place overburden
	m3		#N/A	$0.00	$0	$0	Vegetate
							FLOOD PIT-Captital
In Year 6, the exhausted Llama Pit will be converted to a wate reservoir. Water from the Saline Water Pond will be pumped into Llama Reservoir between Year 4 and Year 9. The Llama Reservoir will continue to passively flood with site runoff and direct precipitation through the remainder of Operations and into the Closure Phase. Pipelines/pumps will be relocated for use in the other active pits (Goose Main Pit and Echo Pit) and removed to closure.	m		#N/A	$0.00	$0	$0	Remove stationary equipment (sump pumps) and Pipeline
	m		#N/A	$0.00	$0	$0	Remove dewatering pipeline
	each		#N/A	$0.00	$0	$0	Remove power lines
	m3		#N/A	$0.00	$0	$0	Construct diversion ditches
	m3		#N/A	$0.00	$0	$0	-Ditch, mat'l A
	m3		#N/A	$0.00	$0	$0	-Ditch, mat'l B
	m3		#N/A	$0.00	$0	$0	Construct embankment/dam
	each		#N/A	$0.00	$0	$0	Supply/install pump station
	m		#N/A	$0.00	$0	$0	Supply/install piping system
	each		#N/A	$0.00	$0	$0	Remove pump post-closure
	m		#N/A	$0.00	$0	$0	Remove pipeline post-closure
							FLOOD PIT-Annual Cost
	m3		#N/A	$0.00	$0	$0	Operate pumps (power)
	allow		#N/A	$0.00	$0	$0	Maintain pump/pipeline
:on	$/h		#N/A	$0.00	$0	$0	Labour:fuel management, comissionin
	tonne		#N/A	$0.00	$0	$0	Chemical addition, _____ kg/m3 of wa
	tonne		#N/A	$0.00	$0	$0	Chemicals, purchase and shipping
	$/ha		#N/A	$0.00	$0	$0	Passive/biological additives
	tonne		#N/A	$0.00	$0	$0	Passive additives purchase and shippi
			#N/A	$0.00	$0	$0	Other
				Annual pumping costs	$0		
passive pit flooding	years	0					Number of years of pump flooding
				Total pumping costs	$0	$0	
				Total	$26,177	$26,177	
				% of Total		100%	

	Echo			Pit #	3	3
Notes	**Units**	**Quantity**	**Cost Code**	**Unit Cost**	**Cost**	**Total Cost**
	m		#N/A	$0.00	$0	$0
Assumed	each	4	Sabina	$75.00	$300	$300
Estimated for continous berm with 1m diameter boulders, no spacing between boulders - 0.52 m3/m assumed 50 % done during Operations	m3	204.75	RR1H	$17.75	$3,634	$3,634
Temporary gate installation to allow water monitoring. It includes decommissioning of gate when no longer required. Exposed area after gate has been decommissioned will be blocked with boulders (exposed area along with block of roads with boulders included in berm cost above)	allow	1	Sabina	$5,000.00	$5,000	$5,000
			#N/A	$0.00	$0	$0
	allow	1	Sabina	$17,000.00	$17,000	$17,000
	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
			#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	ha		#N/A	$0.00	$0	$0
	ha		#N/A	$0.00	$0	$0
			#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
Spillway not required; will follow natural drainage to Goose Lake.	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
			#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
Once mining of the Echo Pit concludes in Year 5 dewatering will continue until Year 9 (i.e., the end of Echo U/G mining) as the two mines will be connected. Starting in Year 10, Echo Pit will passively flood with site runoff and direct precipitation through the remainder of Operations and into the Closure Phase. Pipelines/pumps will be removed to closure landfi	m		#N/A	$0.00	$0	$0
	m		#N/A	$0.00	$0	$0
	each		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	each		#N/A	$0.00	$0	$0
	m		#N/A	$0.00	$0	$0
	each		#N/A	$0.00	$0	$0
	m		#N/A	$0.00	$0	$0
	m3		#N/A	$0.00	$0	$0
	allow		#N/A	$0.00	$0	$0
g/decor	$/h		#N/A	$0.00	$0	$0
ate	tonne		#N/A	$0.00	$0	$0
	tonne		#N/A	$0.00	$0	$0
	$/ha		#N/A	$0.00	$0	$0
n	tonne		#N/A	$0.00	$0	$0
			#N/A	$0.00	$0	$0
				Annual pumping costs	$0	
passive pit flooding	years	0				
				Total pumping costs	$0	$0
				Total	$25,934	$25,934
				% of Total		100%

Open Pit Name:	Goose Main				Pit #	4	4
ACTIVITY/MATERIAL	**Notes**	**Units**	**Quantity**	**Cost Code**	**Unit Cost**	**Cost**	**Total Cost**
CONTROL ACCESS							
Fence		m		#N/A	$0.00	$0	$0
Signs	Assumed	each	4	Sabina	$75.00	$300	$300
Berm at crest	Estimated for continous berm with 1m diameter boulders, no spacing between boulders - 0.52 m3/m - assumed 50 % done during Operations	m3	518.7	RR1H	$17.75	$9,207	$9,207
Block roads	Temporary gate installation to allow water monitoring. It includes decommissioning of gate when no longer required. Exposed area after gate has been decommissioned will be blocked with boulders (exposed area along with block of roads with boulders included in berm cost above)	allow	1	Sabina	$5,000.00	$5,000	$5,000
Other				#N/A	$0.00	$0	$0
STABILITY STUDY							
Conduct stability and setback study		allow	1	Sabina	$17,000.00	$17,000	$17,000
STABILIZE SLOPES							
Off-load crest, soil A		m3		#N/A	$0.00	$0	$0
Off-load crest, soil B		m3		#N/A	$0.00	$0	$0
Doze/trim overburden at crest		m3		#N/A	$0.00	$0	$0
Drill & blast pit crest		m3		#N/A	$0.00	$0	$0
Buttress slope		m3		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
COVER/CONTOUR SLOPES							
Place fill, soil A		m3		#N/A	$0.00	$0	$0
Place fill, soil B		m3		#N/A	$0.00	$0	$0
Rip rap		m3		#N/A	$0.00	$0	$0
Vegetate slopes		ha		#N/A	$0.00	$0	$0
Vegetate pit floor		ha		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
CONSTRUCT DIVERSION DITCHES							
Excavate ditches -soil		m3		#N/A	$0.00	$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0	$0
CONSTRUCT SPILLWAY							
Excavate channel	100 m long, 6 m wide and 1 m deep	m3	600	SB1L	$4.30	$2,580	$2,580
Concrete		m3		#N/A	$0.00	$0	$0
Rip rap		m3	200	RR1H	$17.75	$3,550	$3,550
Other	Geotextile	m2	1,152	GSTL	$3.44	$3,963	$3,963
RECLAIM QUARRIES							
Contour slopes		m3		#N/A	$0.00	$0	$0
Place overburden		m3		#N/A	$0.00	$0	$0
Vegetate		m3		#N/A	$0.00	$0	$0
FLOOD PIT-Captital							
Remove stationary equipment (sump pumps) and Pipeline	At closure, pump will be at top of TF and pipeline leads to WTP. Remove pipeline to closure landfill; dispose of fuel in diesel day tank and oil from pump and landfill cleaned pump.	m	4,325	Sabina	$10.00	$43,250	$43,250
Remove dewatering pipeline		m		#N/A	$0.00	$0	$0
Remove power lines		each		#N/A	$0.00	$0	$0
Construct diversion ditches		m3		#N/A	$0.00	$0	$0
-Ditch, mat'l A		m3		#N/A	$0.00	$0	$0
-Ditch, mat'l B		m3		#N/A	$0.00	$0	$0
Construct embankment/dam		m3		#N/A	$0.00	$0	$0
Supply/install pump station		each		#N/A	$0.00	$0	$0
Supply/install piping system		m		#N/A	$0.00	$0	$0
Remove pump post-closure		each		#N/A	$0.00	$0	$0
Remove pipeline post-closure		m		#N/A	$0.00	$0	$0
FLOOD PIT-Annual Cost							
Operate pumps (power)		m3		#N/A	$0.00	$0	$0
Maintain pump/pipeline		allow		#N/A	$0.00	$0	$0
Labour:fuel management, comissioning/decom		$/h		#N/A	$0.00	$0	$0
Chemical addition, _____ kg/m3 of water		tonne		#N/A	$0.00	$0	$0
Chemicals, purchase and shipping		tonne		#N/A	$0.00	$0	$0
Passive/biological additives		$/ha		#N/A	$0.00	$0	$0
Passive additives purchase and shipping		tonne		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
					Annual pumping costs	$0	
Number of years of pump flooding	passive pit flooding	years	0				
					Total pumping costs	$0	$0
					Total	$84,850	$84,850
					% of Total		100%

Quarry Name:	Airstrip Quarry				Quarry #	1	1
ACTIVITY/MATERIAL	**Notes**	**Units**	**Quantity**	**Cost Code**	**Unit Cost**	**Cost**	**Total Cost**
CONTROL ACCESS							
Fence		m		#N/A	$0.00	$0	$0
Signs		each		#N/A	$0.00	$0	$0
Berm at crest		m3		RB1H	$17.05	$0	$0
Block roads		allow		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
STABILITY STUDY							
Conduct stability and setback study	Not required for quarry	allow		#N/A	$0.00	$0	$0
STABILIZE SLOPES							
Off-load crest, soil A		m3		#N/A	$0.00	$0	$0
Off-load crest, soil B		m3		#N/A	$0.00	$0	$0
Doze/trim overburden at crest		m3		#N/A	$0.00	$0	$0
Drill & blast pit crest		m3		#N/A	$0.00	$0	$0
Buttress slope		m3		#N/A	$0.00	$0	$0
Other	Backhoe to pull down loose rock on bedrock backslope - assumed	hrs	20	exc-sL	$190.00	$3,800	$3,800
COVER/CONTOUR SLOPES							
Place fill, soil A		m3		#N/A	$0.00	$0	$0
Place fill, soil B		m3		#N/A	$0.00	$0	$0
Rip rap		m3		#N/A	$0.00	$0	$0
Vegetate slopes	Allow to revegetate naturally	ha		#N/A	$0.00	$0	$0
Vegetate pit floor		ha		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
CONSTRUCT DIVERSION DITCHES							
Excavate ditches -soil		m3		#N/A	$0.00	$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0	$0
CONSTRUCT SPILLWAY							
Excavate channel	Not required. Quarry base will be graded for sheet drainage.	m3		SB1L	$4.30	$0	$0
Concrete		m3		#N/A	$0.00	$0	$0
Rip rap		m3		RR1L	$13.50	$0	$0
Other		m2		GSTL	$3.44	$0	$0
RECLAIM QUARRIES							
Contour slopes	Quarry will not be flooded - development will occur below water level and the areas will be contoured to drain positively	m3		#N/A	$0.00	$0	$0
Place overburden		m3		#N/A	$0.00	$0	$0
Vegetate		m3		#N/A	$0.00	$0	$0
FLOOD PIT-Capital							
Remove stationary equipment (sump pumps) and Pipeline		m		#N/A	$0.00	$0	$0
Remove dewatering pipeline		m		#N/A	$0.00	$0	$0
Remove power lines		each		#N/A	$0.00	$0	$0
Construct diversion ditches		m3		#N/A	$0.00	$0	$0
-Ditch, mat'l A		m3		#N/A	$0.00	$0	$0
-Ditch, mat'l B		m3		#N/A	$0.00	$0	$0
Construct embankment/dam		m3		#N/A	$0.00	$0	$0
Supply/install pump station		each		#N/A	$0.00	$0	$0
Supply/install piping system		m		#N/A	$0.00	$0	$0
Remove pump post-closure		each		#N/A	$0.00	$0	$0
Remove pipeline post-closure		m		#N/A	$0.00	$0	$0
FLOOD PIT-Annual Cost							
Operate pumps (power)		m3		#N/A	$0.00	$0	$0
Maintain pump/pipeline		allow		#N/A	$0.00	$0	$0
Labour:fuel management, comissioning/decom		$/h		#N/A	$0.00	$0	$0
Chemical addition, _____ kg/m3 of water		tonne		#N/A	$0.00	$0	$0
Chemicals, purchase and shipping		tonne		#N/A	$0.00	$0	$0
Passive/biological additives		$/ha		#N/A	$0.00	$0	$0
Passive additives purchase and shipping		tonne		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
					Annual pumping costs	$0	
Number of years of pump flooding	No flooding	years	0				
					Total pumping costs	$0	$0
					Total	$3,800	$3,800
					% of Total		100%

4 **Underground Mine Name Umwelt** **UG Mine # 1** **1**

ACTIVITY/MATERIAL	Notes	Unit	Qty	Cost Code	Unit Cost	Cost	Total Cost
CONTROL ACCESS							
Fence		m		#N/A	$0.00	$0	$0
Signs		each		#N/A	$0.00	$0	$0
Block roads		m3		#N/A	$0.00	$0	$0
Berm		m3		#N/A	$0.00	$0	$0
Backfill Portal (NPAG waste rock plug)	At least 5 m deep into 5x4.5m portal and slope at least 2:1 outside of portal	m3	150	PORL	$18.80	$2,820	$2,820
Backfill portal #2		m3		#N/A	$0.00	$0	$0
Cap raise # 1	Concrete plug over 4m-dia. vent raise	m3	28	SRH	$2,132.00	$60,336	$60,336
Cap raise #2	Concrete plug over 4m-dia. vent raise	m3	28	SRH	$2,132.00	$60,336	$60,336
Cap shaft #1	Concrete plug over 4m-dia. fresh air vent	m3	28	SRH	$2,132.00	$60,336	$60,336
Cap shaft #2		m3		#N/A	$0.00	$0	$0
Backfill adits		m3		#N/A	$0.00	$0	$0
Backfill open stope		m3		#N/A	$0.00	$0	$0
Concrete cap over open stope		m3		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
REMOVE HAZARDOUS MATERIALS							
Remove hazardous materials, U/G labor	Two shifts with loader, incl. operator and fuel	manhour	20	load-s	$175.00	$3,500	$3,500
Remove/decontam. stationary & elect. equip		mandays		#N/A	$0.00	$0	$0
Remove/decontam. mobile equipment		each		#N/A	$0.00	$0	$0
Remove misc. haz. mat & explosives	Dispose of up to 1 week's inventory of explosives	kg	100	Sabina	$50.00	$5,000	$5,000
Decommission Pipeline	Clean Umwelt UG to SWP pipeline, decommission and landfill	m	1,200	Sabina	$10.00	$12,000	$12,000
INSTALL BULKHEADS							
Bulkheads to control water flow		each		#N/A	$0.00	$0	$0
Grout bulkhead		m3		#N/A	$0.00	$0	$0
FLOOD MINE							
Supply/install pump	UG mine is expected to be flooded in Year 10 and active flooding will take about a year, relocation of pipelines and flooding will occur as part of operations but cost is provided as a conservative approach	each		#N/A	$0.00	$0	$0
Relocate Pipeline	Move SWP-Llama UG pipeline discharge to Umwelt UG	m	800	Sabina	$10.00	$8,000	$8,000
Operate pumps to flood workings		m3	763,134	Sabina	$0.13	$98,480	$98,480
Decommission of pipeline				#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM							
Excavate/install sumps		m2		#N/A	$0.00	$0	$0
Install pumping wells		m3		#N/A	$0.00	$0	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0	$0
SPECIALIZED ITEMS							
Install water quality monitoring pipes		each		#N/A	$0.00	$0	$0
Install permanent pumping system		each		#N/A	$0.00	$0	$0
Assess underground stability	Rock mechanics inspection before closure	each	1	Sabina	$10,000.00	$10,000	$10,000
					Total	$320,807	$320,807
					% of Total		100%

Underground Mine Name Llama **UG Mine # 2** **2**

ACTIVITY/MATERIAL	Notes	Unit	Qty	Cost Code	Unit Cost	Cost	Total Cost
CONTROL ACCESS							
Fence		m		#N/A	$0.00	$0	$0
Signs		each		#N/A	$0.00	$0	$0
Block roads		m3		#N/A	$0.00	$0	$0
Berm		m3		#N/A	$0.00	$0	$0
Backfill Portal (NPAG waste rock plug)	At least 5 m deep into 5x4.5m portal and slope at least 2:1 outside of portal	m3	150	PORL	$18.80	$2,820	$2,820
Backfill portal #2		m3		#N/A	$0.00	$0	$0
Cap raise # 1	Concrete plug over 4m-dia. vent raise	LS	28	SRH	$2,132.00	$60,336	$60,336
Cap raise #2		m3		#N/A	$0.00	$0	$0
Cap shaft #1		m3		#N/A	$0.00	$0	$0
Cap shaft #2		m3		#N/A	$0.00	$0	$0
Backfill adits		m3		#N/A	$0.00	$0	$0
Backfill open stope		m3		#N/A	$0.00	$0	$0
Concrete cap over open stope		m3		#N/A	$0.00	$0	$0
Other							
REMOVE HAZARDOUS MATERIALS							
Remove hazardous materials, U/G labor	Two shifts with loader, incl. operator and fuel	manhour	20	load-s	$175.00	$3,500	$3,500
Remove/decontam. stationary & elect. equip		mandays		#N/A	$0.00	$0	$0
Remove/decontam. mobile equipment		each		#N/A	$0.00	$0	$0
Remove misc. haz. mat & explosives	Mining will cease before closure	kg		#N/A	$0.00	$0	$0
Decommission Pipeline	Clean Llama UG to SWP pipeline, decommission and landfill	m	2700	Sabina	$10.00	$27,000	$27,000
INSTALL BULKHEADS							
Bulkheads to control water flow		each		#N/A	$0.00	$0	$0
Grout bulkhead		m3		#N/A	$0.00	$0	$0
FLOOD MINE							
Supply/install pump	UG mine is expected to be flooded in Year 5 and active flooding will take about a year, relocation of pipelines and flooding will occur as part of operations	each		#N/A	$0.00	$0	$0
Supply/install piping system		m		#N/A	$0.00	$0	$0
Operate pumps to flood workings		m3		#N/A	$0.00	$0	$0
Decommission of pipelines				#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM							
Excavate/install sumps		m2		#N/A	$0.00	$0	$0
Install pumping wells		m3		#N/A	$0.00	$0	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0	$0
SPECIALIZED ITEMS							
Install water quality monitoring pipes		each		#N/A	$0.00	$0	$0
Install permanent pumping system		each		#N/A	$0.00	$0	$0
Assess underground stability	Rock mechanics inspection before closure	each	1	Sabina	$10,000.00	$10,000	$10,000
					Total	$103,656	$103,656
					% of Total		100%

Underground Mine Name **Goose Main** **UG Mine # 3** **3**

ACTIVITY/MATERIAL	Notes	Unit	Qty	Cost Code	Unit Cost	Cost	Total Cost
CONTROL ACCESS							
Fence		m		#N/A	$0.00	$0	$0
Signs		each		#N/A	$0.00	$0	$0
Block roads		m3		#N/A	$0.00	$0	$0
Berm		m3		#N/A	$0.00	$0	$0
Backfill Portal (NPAG waste rock plug)	At least 5 m deep into 5x4.5m portal and slope at least 2:1 outside of portal	m3	150	PORL	$18.80	$2,820	$2,820
Backfill portal #2		m3		#N/A	$0.00	$0	$0
Cap raise # 1	Concrete plug over 4m-dia. vent raise	LS	28	SRH	$2,132.00	$60,336	$60,336
Cap raise #2		m3		#N/A	$0.00	$0	$0
Cap shaft #1		m3		#N/A	$0.00	$0	$0
Cap shaft #2		m3		#N/A	$0.00	$0	$0
Backfill adits		m3		#N/A	$0.00	$0	$0
Backfill open stope		m3		#N/A	$0.00	$0	$0
Concrete cap over open stope		m3		#N/A	$0.00	$0	$0
Other							
REMOVE HAZARDOUS MATERIALS							
Remove hazardous materials, U/G labor	Two shifts with loader, incl. operator and fuel	manhour	20	load-s	$175.00	$3,500	$3,500
Remove/decontam. stationary & elect. equip		mandays		#N/A	$0.00	$0	$0
Remove/decontam. mobile equipment		each		#N/A	$0.00	$0	$0
Remove misc. haz. mat & explosives	Mining will cease before closure	kg		#N/A	$0.00	$0	$0
Decommission WTP - Goose Lake Pipeline	In Water Management tab	m		#N/A	$0.00	$0	$0
INSTALL BULKHEADS							
Bulkheads to control water flow		each		#N/A	$0.00	$0	$0
Grout bulkhead		m3		#N/A	$0.00	$0	$0
FLOOD MINE							
Supply/install pump	UG mine is expected to be flooded in Year 10 and active flooding will take about a year, relocation of pipelines and flooding will occur as progressive reclamation but cost is provided as a conservative approach	each		#N/A	$0.00	$0	$0
Supply/install piping system	Adjust pipe line to route to Goose UG in Year 10	m	4,500	Sabina	$12.78	$57,500	$57,500
Operate pumps to flood workings		m3	391,630	Sabina	$0.13	$52,259	$52,259
Decommission SWP to Goose UG pipeline		m	10,800	Sabina	$10.00	$108,000	$108,000
Other				#N/A	$0.00	$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM							
Excavate/install sumps		m2		#N/A	$0.00	$0	$0
Install pumping wells		m3		#N/A	$0.00	$0	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0	$0
SPECIALIZED ITEMS							
Install water quality monitoring pipes		each		#N/A	$0.00	$0	$0
Install permanent pumping system		each		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
					Total	$284,415	$284,415
					% of Total		100%

Underground Mine Name **Echo** **UG Mine # 4** **4**

ACTIVITY/MATERIAL	Notes	Unit	Qty	Cost Code	Unit Cost	Cost	Total Cost
CONTROL ACCESS							
Fence		m		#N/A	$0.00	$0	$0
Signs		each		#N/A	$0.00	$0	$0
Block roads		m3		#N/A	$0.00	$0	$0
Berm		m3		#N/A	$0.00	$0	$0
Backfill Portal (NPAG waste rock plug)	At least 5 m deep into 5x4.5m portal and slope at least 2:1 outside of portal	m3	150	PORL	$18.80	$2,820	$2,820
Backfill portal #2		m3		#N/A	$0.00	$0	$0
Cap raise # 1	Concrete plug over 4m-dia. vent raise	LS	28	SRH	$2,132.00	$60,336	$60,336
Cap raise #2		m3		#N/A	$0.00	$0	$0
Cap shaft #1		m3		#N/A	$0.00	$0	$0
Cap shaft #2		m3		#N/A	$0.00	$0	$0
Backfill adits		m3		#N/A	$0.00	$0	$0
Backfill open stope		m3	3,550	Sabina	$6.00	$21,300	$21,300
Concrete cap over open stope		m3		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
REMOVE HAZARDOUS MATERIALS							
Remove hazardous materials, U/G labor	One shift with loader, incl. operator and fuel	manhour	10	load-s	$175.00	$1,750	$1,750
Remove/decontam. stationary & elect. equip		mandays		#N/A	$0.00	$0	$0
Remove/decontam. mobile equipment		each		#N/A	$0.00	$0	$0
Remove misc. haz. mat & explosives	Mining will cease before closure	kg		#N/A	$0.00	$0	$0
Decommission Pipeline		m		#N/A	$0.00	$0	$0
INSTALL BULKHEADS							
Bulkheads to control water flow		each		#N/A	$0.00	$0	$0
Grout bulkhead		m3		#N/A	$0.00	$0	$0
FLOOD MINE							
Supply/install pump	Passive flooding of Echo UG in Year 10, complete flooding is expected to occur within a few months.	each		#N/A	$0.00	$0	$0
Supply/install piping system		each		#N/A	$0.00	$0	$0
Operate pumps to flood workings		m3		#N/A	$0.00	$0	$0
Decommission				#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM							
Excavate/install sumps		m2		#N/A	$0.00	$0	$0
Install pumping wells		m3		#N/A	$0.00	$0	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0	$0
SPECIALIZED ITEMS							
Install water quality monitoring pipes		each		#N/A	$0.00	$0	$0
Install permanent pumping system		each		#N/A	$0.00	$0	$0
Assess underground stability	Rock mechanics inspection before closure	each	1	Sabina	$10,000.00	$10,000	$10,000
					Total	$96,206	$96,206
					% of Total		100%

1 **Tailings Impoundment Name:** **TSF** **Pond # 1**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	Total Cost
CONTROL ACCESS							
Fence		m		#N/A	$0.00	$0	$0
Signs		each		#N/A	$0.00	$0	$0
Berm		m3		#N/A	$0.00	$0	$0
Block roads		m3		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
STABILIZE EMBANKMENT(S)							
Toe buttress, drainage layer		m3		#N/A	$0.00	$0	$0
Toe buttress, bulk fill		m3		#N/A	$0.00	$0	$0
Rip rap		m3		#N/A	$0.00	$0	$0
Vegetate		ha		#N/A	$0.00	$0	$0
Raise crest		m3		#N/A	$0.00	$0	$0
Flatten slopes		m3		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
COVER TAILINGS							
Grade/shape tailings surface		m3		#N/A	$0.00	$0	$0
Liner bedding		m3		#N/A	$0.00	$0	$0
Subgrade preparation - compact		m2		#N/A	$0.00	$0	$0
Supply geotextile/geosynthetic		m2		#N/A	$0.00	$0	$0
Install geotextile/geosynthetic		m2		#N/A	$0.00	$0	$0
Soil cover		m3		#N/A	$0.00	$0	$0
Rock cover	Included in the quantity for waste rock pile cover (5m of NPAG). See Rock Pile tab.	m3		#N/A	$0.00	$0	$0
TSF WRSA Pond Sediment Removal	Assumed 0.5 m of sediments in pond basin (26 ha) to be removed and placed in TSF WRSA	m3	13000	SBTH	$3.70	$48,100	$48,100
Vegetate	TSF WRSA Pond	m2	20	VHFL	$4,000.00	$80,000	$80,000
Other				#N/A	$0.00	$0	$0
BURY PAG ROCK							
Relocate PAG rock		m3		#N/A	$0.00	$0	$0
Place cover over PAG rock		m3		#N/A	$0.00	$0	$0
Raise crest of dam		m3		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
STABILIZE DECANT SYSTEM							
Excavate and replace		m3		#N/A	$0.00	$0	$0
Plug/backfill with concrete or clay		m3		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
REMOVE TAILINGS DISCHARGE							
Cyclones		m3		#N/A	$0.00	$0	$0
Pipe		m3		#N/A	$0.00	$0	$0
Remove reclaim barge		allow		#N/A	$0.00	$0	$0
CONSTRUCT DIVERSION DITCHES							
Excavate ditches -soil		m3		#N/A	$0.00	$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0	$0
Rip rap in channel base (liner)		m2		#N/A	$0.00	$0	$0
FLOOD TAILINGS							
Doze tailings to final contour		m3		#N/A	$0.00	$0	$0
Raise crest of dam		m3		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
UPGRADE SPILLWAY							
Excavate channel on TSF	Breach west end of dam to existing drainage reporting to Goose Main Pit; 100 m channel.	m3	11,000.0	Sabina	$7.30	$80,300	$80,300
Excavate channel, soil		m3		#N/A	$0.00	$0	$0
Concrete		m3		#N/A	$0.00	$0	$0
Rip rap		m3	7,000	RR1H	$17.75	$124,250	$124,250
Other	Geotextile	m2	2,860	GSTL	$3.44	$9,838	$9,838
CONSTRUCT SEEPAGE COLLECTION POND							
Excavate seepage collection pond		m3		#N/A	$0.00	$0	$0
Doze & spread excavated material		m3		#N/A	$0.00	$0	$0
Vegetate spread material		ha		#N/A	$0.00	$0	$0
Bedding layer		m3		#N/A	$0.00	$0	$0
Supply geomembrane		m2		#N/A	$0.00	$0	$0
Install geomembrane		m2		#N/A	$0.00	$0	$0
Erosion protection layer		m3		#N/A	$0.00	$0	$0
Breach seepage diversion berm		m3	285	Sabina	$7.30	$2,081	$2,081
INSTALL GROUNDWATER COLLECTION SYSTEM							
Excavate/install sumps		m3		#N/A	$0.00	$0	$0
Install pumping wells		m3		#N/A	$0.00	$0	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0	$0
SPECIALIZED ITEMS							
Install permanent instrumentation, supply & technican		each		#N/A	$0.00	$0	$0
Install permanent instrumentation, drilling		each		#N/A	$0.00	$0	$0
TREAT SEEPAGE - see "Water Management" and "Water Treatment"							
TREAT SUPERNATANT							
Pump water (to pit, U/G)		m3		#N/A	$0.00	$0	$0
Equipment maintenance and parts		allow		#N/A	$0.00	$0	$0
Supply reagents		tonne		#N/A	$0.00	$0	$0
					Annual treatment costs	$0	
Number of years of treatment		years	0				
					Total treatment costs	$0	$0
					Total	$344,569	$344,569
					% of Total		100%

* for construction of passive treatment system refer to "Water Management"

1 **Rock Pile Name:** **Umwelt, Llama, Echo and TSF**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	Total Cost
STABILIZE SLOPES							
Flatten slopes with dozer		m3		#N/A	$0.00	$0	$0
Flatten "bubble dump" areas		m3		#N/A	$0.00	$0	$0
Divert runon, ditch mat'l A		m3		#N/A	$0.00	$0	$0
Divert runon, ditch mat'l B		m3		#N/A	$0.00	$0	$0
Toe buttress, drain mat'l		m3		#N/A	$0.00	$0	$0
Toe buttress, fill mat'l A		m3		#N/A	$0.00	$0	$0
Toe buttress, fill mat'l B		m3		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
COVER ROCK PILE							
Subgrade preparation - doze surface		m3		#N/A	$0.00	$0	$0
Soil cover - excavate,haul,spread&compact		m3		#N/A	$0.00	$0	$0
Rock cover - excavate,haul & spread	Cover 4 rock piles: Umwelt, Llama, Echo and TSF. Note all WRSAs will be covered progressively by direct hauling NPAG during mining and will be completed by Year 6 in Operations. However, Sabina has included an allotment volume sufficient to cover 48 ha of waste rock (5m thick) or 67 ha of tailings (3.5m thick).	m3	2,400,000	RR3L	$7.00	$16,800,000	$16,800,000
Excavate downslope drainage channel & chute		m3		#N/A	$0.00	$0	$0
Rip rap drainage channel and chute		m3		#N/A	$0.00	$0	$0
Vegetate		ha		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
VERY LOW PERMEABILITY COVER (in addition to above)							
Liner subgrade preparation - compact		m2		#N/A	$0.00	$0	$0
Supply geomembrame		m2		#N/A	$0.00	$0	$0
Install geomembrane		m2		#N/A	$0.00	$0	$0
Protective cover - excavate,haul,spread&compact		m3		#N/A	$0.00	$0	$0
Vegetate		ha		#N/A	$0.00	$0	$0
Install infiltration/seepage instrumentation		allow		#N/A	$0.00	$0	$0
CONSTRUCT DIVERSION DITCHES							
Excavate ditches -soil		m3		#N/A	$0.00	$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0	$0
CONSTRUCT SEEPAGE COLLECTION POND							
Excavate seepage collection pond	See Water Management tab for berm breaching	m3		#N/A	$0.00	$0	$0
Doze & spread excavated material		m3		#N/A	$0.00	$0	$0
Vegetate spread material		ha		#N/A	$0.00	$0	$0
Bedding layer		m3		#N/A	$0.00	$0	$0
Supply geomembrane		m2		#N/A	$0.00	$0	$0
Install geomembrane		m2		#N/A	$0.00	$0	$0
Erosion protection layer		m3		#N/A	$0.00	$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM							
Excavate/install sumps		m3		#N/A	$0.00	$0	$0
Install pumping wells		m3		#N/A	$0.00	$0	$0
Install pumps/pipelines/power supply		allow		#N/A	$0.00	$0	$0
RELOCATE DUMPS							
Load, haul, dump or doze		m3		#N/A	$0.00	$0	$0
Add lime		tonne		#N/A	$0.00	$0	$0
Contour reclaimed area		ha		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
SPECIALIZED ITEMS							
Install ground temperature monitoring cables	Will be installed during Operations to meet opertional monitoring commitments	each		#N/A	$0.00	$0	$0
Install permanent instrumentation, drilling		each		#N/A	$0.00	$0	$0
TREAT ROCK PILE SEEPAGE - see "Water Management"							
HEAP LEACH SEEPAGE TREATMENT - Cyanide Detox							
Cyanide destruction water treatment pumping		m3		#N/A	$0.00	$0	$0
Reagents		tonnes		#N/A	$0.00	$0	$0
Electrician/mechanic to maintain treatment plant		allow		#N/A	$0.00	$0	$0
Equipment maintenance and parts		allow		#N/A	$0.00	$0	$0
					Annual treatment costs	$0	
Number of years of treatment		years	0				
					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
					Total	$16,800,000	$16,800,000
					% of Total		100%

* For construction of passive treatment system refer to "Water Management".

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

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	Total Cost
DISPOSE MOBILE EQUIPMENT							
Decontaminate and ship off-site		allow		#N/A	$0.00	$0	$0
Decontaminate and dispose on-site	Drive or transport to landfill; drain fluids; NPAG cover cost below	allow	1	Sabina	$20,000.00	$20,000	$20,000
Other				#N/A	$0.00	$0	$0
REMOVE BUILDINGS - see note below							
Accomodation Complex	Goose Admin: Kitchen/camp. Landfill building materials and pad	m2	1,980	BRS1L	$45.00	$89,100	$89,100
Process Facilities		m2	6,464	BRS1H	$65.00	$420,160	$420,160
Crusher		m2	1,630	BRS1H	$65.00	$105,950	$105,950
Power plant		m2	2,040	BRS1H	$65.00	$132,600	$132,600
Emergency power plant		m2	300	BRS1H	$65.00	$19,500	$19,500
Truck Shop/Office	Goose Admin building	m2	2,349	BRS1L	$45.00	$105,725	$105,725
Cold storage	Goose Admin building	m2	840	BRS1L	$45.00	$37,800	$37,800
Storage Facilites	Waste oil storage Goose Site	Lot	1	Sabina	$43,333.33	$43,333	$43,333
Storage Facility	Goose frieght storage	Lot	1	Sabina	$19,250.00	$19,250	$19,250
Water and Wastewater Treatment Facilities	Water treatment plant Goose Building	m2	647	BRS1L	$45.00	$29,115	$29,115
Sewage Treatment Plant	Remove hazardous materials and dispose of at licensed facility, landfill building materials	Lot	1	Sabina	$11,550.00	$11,550	$11,550
Fuel Tanks	Fuel storage and distribution Goose facility	Lot	1	Sabina	$154,000.00	$154,000	$154,000
Offices, Repair, Lab, Warehouse	MLA infrastructure Port Office	Units	5	Sabina	$2,340.00	$11,700	$11,700
Pipeline	MLA Infrastructure	m	10,000	Sabina	$10.00	$100,000	$100,000
Warehouse, Shops and Others	MLA Infrastructure. Includes: Incinerator and waste management, Warehouses, Genset, Maitenance shop, water storage, WTP/STP, camp/office, freaight storage area, waste area, fuel storage. Cost includes grade and contour pads, disposal at designated areas, remove hazard material when applicable.	LS	1	Sabina	$308,683.33	$308,683	$308,683
Freshwater intakes	pipes will be capped at substrate and left in place.	m2		#N/A	$0.00	$0	$0
Reclaim pumps		m2		#N/A	$0.00	$0	$0
Outfall & Diffuser		m2		#N/A	$0.00	$0	$0
Airstrip lighting, navigation, electrician		manhours	20	elecH	$95.00	$1,900	$1,900
Airstrip lighting, navigation, mechanical		manhours	20	mechH	$72.85	$1,457	$1,457
Break foundation slabs		m2		#N/A	$0.00	$0	$0
Consolidate & dump boneyard debris		m3		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
LANDFILL FOR DEMOLITION WASTE							
Place rock cover		m3	25,000	RR3L	$7.00	$175,000	$175,000
Place soil cover		m3		#N/A	$0.00	$0	$0
Vegetate		ha		#N/A	$0.00	$0	$0
GRADE AND CONTOUR PADS							
Accomodation Complex	Goose Admin: Kitchen/camp. no concrete foundation	ha	0.2	SCFYL	$4,300.00	$860	$860
Process Facilities	concrete foundation demolished to ground level	m2	6,464	BRCS	$6.00	$38,784	$38,784
Crusher	concrete foundation demolished to ground level	m2	1,630	BRCS	$6.00	$9,780	$9,780
Power plant	no concrete foundation	ha	0.3	SCFYL	$4,300.00	$1,290	$1,290
Emergency power plant	no concrete foundation	ha	0.10	SCFYL	$4,300.00	$430	$430
Truck Shop/Office	concrete foundation demolished to ground level	m2	2,349	BRCS	$6.00	$14,097	$14,097
Cold storage	no concrete foundation	ha	0.1	SCFYL	$4,300.00	$430	$430
Water and Wastewater Treatment Facilities	no concrete foundation	ha	0.1	SCFYL	$4,300.00	$430	$430
Sewage Treatment Plant	no concrete foundation	m2	33	BRCS	$6.00	$198	$198
Fuel Tanks	Fuel storage and distribution Goose facility; no concrete foundation	ha	2.2	SCFYL	$4,300.00	$9,460	$9,460
Warehouse, Shops and Other	MLA, includes all storage/laydown, Fual Tanks and camp area	ha	20	SCFYL	$4,300.00	$86,000	$86,000
Place rock cover		m3		#N/A	$0.00	$0	$0
Vegetate		ha		#N/A	$0.00	$0	$0
PUNCTURE LINED SUMPS							
Puncture liner and place soil cover		m3		#N/A	$0.00	$0	$0
RECLAIM ROADS							
Restore drainage, remove culverts haul road	Restore drainage including culverts; Roads will remain intact to facilitate long-term access.	m3	1,488	Sabina	$11.00	$16,368	$16,368
Remove bridges		each		#N/A	$0.00	$0	$0
Scarify and install water breaks		ha		#N/A	$0.00	$0	$0
Restore drainage airstrip		m3	1,020	Sabina	$12.00	$12,240	$12,240
Scarify laydown areas		ha		#N/A	$0.00	$0	$0
Scarify Winter Ice Roads	Fill sections on land - 8 km x 10 m wide = 8.0 ha	ha	8	SCFYH	$6,030.00	$48,240	$48,240
Vegetate	Potential vegetation of roads to include 8 ha of scarified WIR and nominal area of 3 ha for spill or other road remediation area.	ha	11	VHFL	$4,000.00	$44,000	$44,000
Other				#N/A	$0.00	$0	$0
SPECIALIZED ITEMS							
Dispose of misc. debris and laydown area refuse				#N/A	$0.00	$0	$0
					Total	$2,069,431	$2,069,431
					% of Total		100%

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	Total Cost
HAZARDOUS MATERIALS AUDIT							
Hazardous materials audit		mandays		#N/A	$0.00	$0	$0
Phase 1 audit		each	1	CS1L	$7,500.00	$7,500	$7,500
Phase 2 audit		each	1	CS2L	$50,000.00	$50,000	$50,000
BUILDING DECONTAMINATION & CONSOLIDATION OF HAZARDOUS MATERIALS							
Environmental technician/coordinator		mandays		#N/A	$0.00	$0	$0
Decontaminate: oil, fuel		mandays		#N/A	$0.00	$0	$0
Decontaminate maintenance shop		mandays		#N/A	$0.00	$0	$0
Decontaminate power plant		mandays		#N/A	$0.00	$0	$0
Decontaminate bulk fuel storage		mandays		#N/A	$0.00	$0	$0
Decontaminate ANFO plant		mandays		#N/A	$0.00	$0	$0
Decontaminate offices/warehouse/accom		mandays		#N/A	$0.00	$0	$0
Removal of asbestos siding on buildings		m2		#N/A	$0.00	$0	$0
Removal of friable asbestos on equipment		m2		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
HAZARDOUS MATERIALS REMOVAL							
Waste oils	Consume in a waste oil burner on-site	litre	10,000	ORL	$0.43	$4,300	$4,300
Waste fuel	Consume on-site to power an incinerator, or in a waste oil burner	litre	250,000	ORL	$0.43	$107,500	$107,500
Waste batteries	Assumed 10 20-kg batteries generated in the final year of closure	kg	200	PCRH	$2.50	$500	$500
Assay & environmental lab reagents		kg	500	PCRH	$2.50	$1,250	$1,250
Machine shop paints, solvents etc		litre	200	PCRH	$2.50	$500	$500
Glycol		litre	5,000	PCRH	$2.50	$12,500	$12,500
Process reagents		kg	130,000	PCRH	$2.50	$325,000	$325,000
WTP sludge from Water Treatment	Assumes off-site disposal for 7 years of treatment. If sludge passes leach tests, will consider on-site disposal.	kg	21,000	PCRH	$2.50	$52,500	$52,500
Nuclear sources		allow		#N/A	$0.00	$0	$0
Mobile Equipment	Remove hazardous waste from equipment not being salvaged, clean, landfill equipment	each	41	Sabina	$2,280.00	$93,480	$93,480
HAZARDOUS MATERIALS							
Transportation to disposal facility	Included in hazardous materials removal cost	allow		#N/A	$0.00	$0	$0
Disposal fees	Included in hazardous materials removal cost	allow		#N/A	$0.00	$0	$0
Other				#N/A	$0.00	$0	$0
CONTAMINATED SOILS							
Contam. soil investigation - Phase 1		LS	1	CS1L	$7,500.00	$7,500	$7,500
Contam. soil investigation - Phase 2		LS	1	CS2L	$50,000.00	$50,000	$50,000
CONTAMINATED SOIL REMOVAL							
Excavate and transport to onsite facility		m3	10,000	SB1H	$5.90	$59,000	$59,000
Manage hydrocarbon remediation at facility		m3	10,000	CSRL	$47.00	$470,000	$470,000
Reagents/stabilizing agent		m2		#N/A	$0.00	$0	$0
Excavate and transport to offsite facility		m3		#N/A	$0.00	$0	$0
Contour decontaminated area	Decommission 2 landfarms and confirmation soil sampling; estimated 6,000m3 at each of Goose and MLA sites.	m3	12,000	SB1L	$4.30	$51,600	$51,600
CONTAMINATED SOIL VERY LOW PERMEABILITY COVER							
Supply geomembrame, HDPE, ES3, GCL		m2		#N/A	$0.00	$0	$0
Upper and lower bedding layers		m3		#N/A	$0.00	$0	$0
Install geomembrane, HDPE, ES3, GCL		m2		#N/A	$0.00	$0	$0
Erosion protection layer		m3		#N/A	$0.00	$0	$0
Vegetate		m2		#N/A	$0.00	$0	$0
Install infiltration/seepage instrumentation		allow		#N/A	$0.00	$0	$0
Other	Operate 2 landfarms: 1 at Goose, 1 at MLA	allow	2	Sabina	$50,000.00	$100,000	$100,000
OTHER							
				#N/A	$0.00	$0	$0
					Total	$1,393,130	$1,393,130
					% of Total		100%

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

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Total Cost
BREACH DYKE EMBANKMENT						
Breach Llama Lake Diversion Berms		m3	665	#N/A	$7.30	$4,855
Breach Llama WRSA Diversion Berm		m3	95	#N/A	$7.30	$694
Breach Llama WRSA Containment Dam		m3	95	#N/A	$7.30	$694
Breach Primary Pond Containment Dam	Breach in Year 2 once Umwelt Pit mining compelte and starts as Umwelt Tailings Facility (TF); Primary Pond will water will gravity flow directly.	m3		#N/A	$0.00	$0
Breach Umwelt WRSA Containment Dam		m3	120	#N/A	$7.30	$876
Breach Umwelt WRSA Diversion Berm		m3	95	#N/A	$7.30	$694
Breach Echo WRSA Containment Dam		m3	190	#N/A	$7.30	$1,387
Breach Echo Diversion Berm (East and West)		m3	190	#N/A	$7.30	$1,387
Breach Echo WRSA Diversion Berm		m3	95	#N/A	$7.30	$694
Breach East Echo Containment Dam		m3	95	#N/A	$7.30	$694
Breach Goose Main Diversion Berm		m3	95	#N/A	$7.30	$694
Breach Ore Stockpile Diversion Berm and Containment Dam		m3	215	#N/A	$7.30	$1,570
Breach SWP Diversion Berms and Containment Dams		m3	430	#N/A	$8.00	$3,440
Remove Liner from all berms	Remove liner from all berms	m2	30,700	Sabina	$0.70	$21,490
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
REDIRECT RUNOFF/CONSTRUCT DIVERSION DITCHES						
Excavate ditches -soil		m3		#N/A	$0.00	$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		#N/A	$0.00	$0
BREACH DITCHES						
Excavate breaches		m3		#N/A	$0.00	$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		m3		#N/A	$0.00	$0
Remove pump		LS		#N/A	$0.00	$0
Remove pipelines		m		#N/A	$0.00	$0
DECOMISSION WATER RECLAIM BARGE						
Decomission reclaim barge from Goose Main TF		LS	1	Sabina	$10,000.00	$10,000
WATER CONTROL IN RECLAMATION QUARRY						
Install pumping system		LS		#N/A	$0.00	$0
Remove pumping system		m		#N/A	$0.00	$0
REMOVE PIPELINES						
Decommission Llama pump and pipeline		m	700	Sabina	$18.57	$13,000
Decomission WTP-Goose Lake pipeline		m	1,140	Sabina	$10.00	$11,400
Remove Umwelt Pond pump and pipeline		m	950	Sabina	$17.89	$17,000
Remove Primary Pond pump and pipeline		m	7,250	Sabina	$11.03	$80,000
Remove Echo WRSA Pond pump and pipeline		m	2,400	Sabina	$10.00	$24,000
Remove Echo NCW pond pump and pipeline		m	220	Sabina	$23.64	$5,200
Remove Ore Stockpile pump and pipline		m	4,550	Sabina	$10.00	$45,500
Decommission WTP pump and pipeline		m	7,520	Sabina	$10.90	$81,934
Decommission WTP		LS	1	Sabina	$19,500.00	$19,500
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	Treatment Plant will be constructed as part of operations	LS		#N/A	$0.00	$0
Build sludge containment facility		LS		#N/A	$0.00	$0
					Total	**$346,699**

For details of long-term/post-closure water treatment see "WATER TREATMENT" Worksheet"; costs included in this tab.

1 **Post Closure Water Treatment - Identified as long term/post-closure in 'Instructions' worksheet**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Total Cost
ADDITION OF REAGENTS TO WTP						
H2O2		kg		#N/A	$0.00	$0
lime		kg		#N/A	$0.00	$0
ferric sulphate		kg		#N/A	$0.00	$0
ferrous sulphate		kg		#N/A	$0.00	$0
flocculents		kg		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
LABOUR AND SUPPLIES						
Annual fuel		litres		#N/A	$0.00	$0
Annual power		kW-h		#N/A	$0.00	$0
Electrician/mechanic to maintain treatment plant		allow		#N/A	$0.00	$0
Equipment maintenance and parts		allow		#N/A	$0.00	$0
Misc. supplies, hoses, tools		allow		#N/A	$0.00	$0
Communications		allow		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
WATER MANAGEMENT						
Pump from Goose Main TF to WTP	7.5 Mm3 for treatment in total	m3	1,071,429	POCL	$0.12	$128,571
Treat water from Goose Main TF in WTP		m3	1,071,429	Sabina	$0.65	$696,429
Pump from WTP recirc. into Goose Main TF		m3	1,071,429	POCL	$0.12	$128,571
WTP WATER SAMPLING AND ANALYSES						
Sampling equipment		allow		#N/A	$0.00	$0
Analyses		allow		#N/A	$0.00	$0
Shipping to laboratory		allow		#N/A	$0.00	$0
Reporting		allow		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
SITE ACCESS						
Road maintenance (incl. snow removal)		allow		#N/A	$0.00	$0
Winter road tariff		allow		#N/A	$0.00	$0
Truck rental		allow		#N/A	$0.00	$0
Air support		allow		#N/A	$0.00	$0
				Annual water treatment costs		$953,572
Number of years of water treatment		years	7			
					Total	$6,675,003

1 **Interim Care and Maintenance**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Total Cost
INTERIM CARE & MAINTENANCE						
Camp operation	Caretaker and summer personnel	mandays	306	Sabina	110	$33,660
On-site staff	Caretaker and summer personnel	manhours	3,060	ENVCO	74.16	$226,930
extra personnel		manmonths		#N/A	0	$0
-electrician		manmonths		#N/A	0	$0
-mechanic		manmonths		#N/A	0	$0
annual fuel	Fuel for vehicles; fuel for pumping included in water treatment cos	litre	5,000	FCDH	1.39	$6,950
misc. supplies		allow	1	Sabina	20000	$20,000
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		#N/A	0	$0
SNP/AEMP water sampling & reporting	Sampling and lab costs	each	1	WSH	10000	$10,000
geotechnical assessment	Annual geotechnical inspectior	each	1	RPTH	20000	$20,000
interim water treatment	Captured under Water Treatment	each	1	#N/A	0	$0
other		each		#N/A	0	$0
				Annual	Interim C&M Cost	$317,540
Number of years of ICM		years	3		**Total**	$952,619

1

7 Years (Year 11 to 17)

ACTIVITY/MATERIAL - WATER TREATMENT	Notes	Units	Quantity	Cost Code	Unit Cost	Total Cost
MONITORING & INSPECTIONS						
Total geotechnical inspections (1 yearly)		year	-	#N/A	$0.00	$0
Waste Rock Piles		year		#N/A	$0.00	$0
Pit Walls		year		#N/A	$0.00	$0
WR GTC Monitoring		year		#N/A	$0.00	$0
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs		year		#N/A	$0.00	$0
Site water monitoring		each		#N/A	$0.00	$0
- Active closure and flooding		each		#N/A	$0.00	$0
- Post pit flooding		each		#N/A	$0.00	$0
Wildlife Effects Monitoring Program (WEMP)		year		#N/A	$0.00	$0
Terrestrial Animal Monitoring		year		#N/A	$0.00	$0
Vegetation Monitoring		each		#N/A	$0.00	$0
Maintain gravel road surface		each		#N/A	$0.00	$0
Maintain airstrip surface		each		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
COVER MAINTENANCE						
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						
Annual water treatment cost, from "Water Treatment"	Treatment for Closure Period (7 years)	LS	1	#N/A	$953,572	$953,572
Subtotal, Annual post-closure costs						$953,572
Discount rate for calculation of net present value of post-closure cost, %				3.00%		
Number of years of post-closure activity				7	years	
Present Value of payment stream						$5,941,022
Combined NPV of payment stream						**$7,568,243**

8 Years (Year 11 to 18)

ACTIVITY/MATERIAL - GEOTECHNICAL INSPECTIONS OF TSF	Notes	Units	Quantity	Cost Code	Unit Cost	Total Cost
MONITORING & INSPECTIONS						
Total geotechnical inspections (1 yearly)	Annual inspection of the TSF from Closure until embankment breaching in Year 18 (8 years).	year	1	RPTH	$20,000.00	$20,000
Waste Rock Piles		year		#N/A	$0.00	$0
Pit Walls		year		#N/A	$0.00	$0
WR GTC Monitoring		year		#N/A	$0.00	$0
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs		year		#N/A	$0.00	$0
Site water monitoring		each		#N/A	$0.00	$0
- Active closure and flooding		each		#N/A	$0.00	$0
- Post pit flooding		each		#N/A	$0.00	$0
Wildlife Effects Monitoring Program (WEMP)		year		#N/A	$0.00	$0
Terrestrial Animal Monitoring		year		#N/A	$0.00	$0
Vegetation Monitoring		each		#N/A	$0.00	$0
Maintain gravel road surface		each		#N/A	$0.00	$0
Maintain airstrip surface		each		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
COVER MAINTENANCE						
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						
Annual water treatment cost, from "Water Treatment"		LS		#N/A	$0.00	$0
Subtotal, Annual post-closure costs						$20,000
Discount rate for calculation of net present value of post-closure cost, %				3.00%		
Number of years of post-closure activity				8	years	
Present Value of payment stream						$140,394

					10 Years (Year 11 to 20)	
ACTIVITY/MATERIAL - WEMP and TERRESTRIAL	**Notes**	**Units**	**Quantity**	**Cost Code**	**Unit Cost**	**Total Cost**
MONITORING & INSPECTIONS						
Total geotechnical inspections (1 yearly)		year		#N/A	$0.00	$0
Waste Rock Piles		year		#N/A	$0.00	$0
Pit Walls		year		#N/A	$0.00	$0
WR GTC Monitoring		year		#N/A	$0.00	$0
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs*		year		#N/A	$0.00	$0
Site water monitoring		each		#N/A	$0.00	$0
- Active closure and flooding		each		#N/A	$0.00	$0
- Post pit flooding		each		#N/A	$0.00	$0
Wildlife Effects Monitoring Program (WEMP)	Aquatics - Non-contact water basins (10 years)	year	1	Sabina	$4,800.00	$4,800
Terrestrial Animal Monitoring	Terrestrial Animal Monitoring (10 years)	year	1	Sabina	$24,000.00	$24,000
Vegetation Monitoring		each		#N/A	$0.00	$0
Maintain gravel road surface		year		#N/A	$0.00	$0
Maintain airstrip surface		year		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
COVER MAINTENANCE						
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						
Annual water treatment cost, from "Water Treatment"		LS		#N/A	$0.00	$0
Subtotal, Annual post-closure costs						$28,800
Discount rate for calculation of net present value of post-closure cost, %				3.00%		
Number of years of post-closure activity				10	years	
Present Value of payment stream						$245,670

13 Years (Year 11 to 23)

ACTIVITY/MATERIAL - Monitoring & Maintenance	Notes	Units	Quantity	Cost Code	Unit Cost	Total Cost
MONITORING & INSPECTIONS						
Total geotechnical inspections (1 yearly)		year		#N/A	$0.00	$0
Waste Rock Piles	Annual inspection of WR piles from closure to post-closure (13 years)	year	1	Sabina	$8,300.00	$8,300
Pit Walls	Annual inspection of pit walls from closure to post-closure (13 years)	year	1	Sabina	$4,000.00	$4,000
WR GTC Monitoring	Umwelt, Llama, and TSF WRSA ground temp cable annual monitoring. No GTCs at Echo WRSA (13 years)	year	1	Sabina	$14,400.00	$14,400
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs	annual reporting, management plans, progress reports (13 years)	year	1	Sabina	$25,000.00	$25,000
Site water monitoring	All pits and WR piles closure and post closure monitoring (13 years)	year	1	Sabina	$9,120.00	$9,120
- Active closure and flooding		each		#N/A	$0.00	$0
- Post pit flooding		each		#N/A	$0.00	$0
Wildlife Effects Monitoring Program (WEMP)		year		#N/A	$0.00	$0
Terrestrial Animal Monitoring		year		#N/A	$0.00	$0
Vegetation Monitoring		each		#N/A	$0.00	$0
Maintain gravel road surface	maintence from closure to post-closure (13 years)	year	1	Sabina	$13,650.00	$13,650
Maintain airstrip surface	maintence from closure to post-closure (13 years)	year	1	Sabina	$3,900.00	$3,900
Other				#N/A	$0.00	$0
COVER MAINTENANCE						
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						
Annual water treatment cost, from "Water Treatment"		LS		#N/A	$0.00	$0
Subtotal, Annual post-closure costs						$78,370
Discount rate for calculation of net present value of post-closure cost, %				3.00%		
Number of years of post-closure activity				13	years	
Present Value of payment stream						$833,461

Beyond Post Closure (Long Term 1 to 5, 7, 10, 15, 25)

ACTIVITY/MATERIAL - Long Term Monitoring	Notes	Units	Quantity	Cost Code	Unit Cost	Total Cost
MONITORING & INSPECTIONS						
General Water Sampling and Stability Monitoring	long term general monitoring	year	1	Sabina	$40,000.00	$40,000
Waste Rock Piles		year		#N/A	$0.00	$0
Pit Walls		year		#N/A	$0.00	$0
WR GTC Monitoring		year		#N/A	$0.00	$0
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs		each	1	RPTH	$20,000.00	$20,000
Site water monitoring		year		#N/A	$0.00	$0
- Active closure and flooding		each		#N/A	$0.00	$0
- Post pit flooding		each		#N/A	$0.00	$0
Wildlife Effects Monitoring Program (WEMP)		year		#N/A	$0.00	$0
Terrestrial Animal Monitoring		year		#N/A	$0.00	$0
Vegetation Monitoring		each		#N/A	$0.00	$0
Maintain gravel road surface		year		#N/A	$0.00	$0
Maintain airstrip surface		year		#N/A	$0.00	$0
Other - Site Access	Float plane access	each	1	MWH	$9,100.00	$9,100
COVER MAINTENANCE						
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						
Annual water treatment cost, from "Water Treatment"		LS		#N/A	$0.00	$0
Subtotal, Annual post-closure costs						$69,100
Discount rate for calculation of net present value of post-closure cost, %				3.00%		
Number of years of post-closure activity			See Long Term	years		
Present Value of payment stream						$407,696

Annual Discout Rate:			3%		
Project Phase	**Project Year**	**Closure Year**	**Post-Closure Monitoring Year**	**Long Term Monitoring (GTCs, physical, water)**	
				One Time Cost	**Yearly Total NPV**
Operations	1				$0
	2				$0
	3				$0
	4				$0
	5				$0
	6				$0
	7				$0
	8				$0
	9				$0
	10				$0
Active Closure	11	1			$0
	12	2			$0
Passive Closure	13	3			$0
	14	4			$0
	15	5			$0
	16	6			$0
	17	7			$0
	18	8			$0
Post Closure	19	9	1	$69,100	$54,548
	20	10	2	$69,100	$52,959
	21	11	3	$69,100	$51,417
	22	12	4	$69,100	$49,919
	23	13	5	$69,100	$48,465
Beyond Post Closure	24	14	6		$0
	25	15	7	$69,100	$45,683
	26	16	8		$0
	27	17	9		$0
	28	18	10	$69,100	$41,807
	29	19	11		$0
	30	20	12		$0
	31	21	13		$0
	32	22	14		$0
	33	23	15	$69,100	$36,063
	34	24	16		$0
	35	25	17		$0
	36	26	18		$0
	37	27	19		$0
	38	28	20		$0
	39	29	21		$0
	40	30	22		$0
	41	31	23		$0
	42	32	24		$0
	43	33	25	$69,100	$26,834
			Net Present Value:		**$407,696**

1 Mobilization/Demobilization:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MOBILIZE HEAVY EQUIPMENT	Assumes mining equipment on abandoned mine site is operable and available.					
Light duty vehicles	Purchase pickups and Vans	each		#N/A	0	$0
Telehandlers	Purchase (standby)	each		#N/A	0	$0
Excavators	Purchase (320 Ex)	each		#N/A	0	$0
Dump trucks	Purchase 30T	each		#N/A	0	$0
Dozers	Purchase (D6T)	each		#N/A	0	$0
Grader	Purchase (140M)	each		#N/A	0	$0
Demolition shears	For a 320 Exc	each		#N/A	0	$0
Crane	Purchase	each		#N/A	0	$0
Loader	Purchase (966 Loader)	each		#N/A	0	$0
Manlifts	Ourchase (standby)	each		#N/A	0	$0
Small Equipment		LS		#N/A	0	$0
Compactor		each		#N/A	0	$0
MOBILIZE MISC. EQUIPMENT	Assumes mining equipment on abandoned mine site is operable and available.					
Pump shipping		each		#N/A	0	$0
Pipe shipping		m		#N/A	0	$0
Minor tools and equipment		allow		#N/A	0	$0
Truck tires		allow		#N/A	0	$0
Other				#N/A	0	$0
MOBILIZE CAMP						
Build 20 Person Camp	Goose Closure Camp	LS	1	Sabina	$19,250.00	$19,250
Build 20 Person Power Plant	Goose Closure Camp	LS	1	Sabina	$19,250.00	$19,250
Reclamation activities		allow		#N/A	0	$0
Long term reclamation activities (eg pump flooding)		allow		#N/A	0	$0
WORKER ACCOMODATIONS						
Camp operation		mandays	12,000	Sabina	$110.00	$1,320,000
Reclamation activities		manmonths		#N/A	0	$0
Long term reclamation activities (eg pump flooding)		manmonths		#N/A	0	$0
MOBILIZE FUEL						
Fuel freight - reclamation activities		litre		#N/A	0	$0
Fuel freight - long term reclamation activities		litre		#N/A	0	$0
Oil & Other		litre		#N/A	0	$0
Fuel freight accomodations		litre		#N/A	0	$0
GENERAL CONSTRUCTION INDIRECT						
Tooling, consumables, office & safety supplies	covered in Summary tab indirects	mandays		#N/A	0	$0
DEMOBILIZE 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		each		#N/A	0	$0
Light duty vehicles		km		#N/A	0	$0
Other		km		#N/A	0	$0
DEMOBILIZE CAMP						
Food and Freight		kg	27,600	Sabina	$12.00	$331,200
Freight		Lot	1	Sabina	$500,000.00	$500,000
Mobilization		tonnes	500	Sabina	$1,500.00	$750,000
MOBILZE & DEMOBILIZE WORKERS						
Crew travel time - inbound & outbound	16 manhours per rotation	manhours	6,864	lab-sh	$49.60	$340,454
Crew transportation - in& outbound from Yellowknife	28 day rotations - 12,000 man days - 2/3	each	286	Sabina	$572.46	$163,722
Crew transportation - in& outbound from south	28 day rotations - 12,000 man days - 1/3	each	143	Sabina	$1,122.46	$160,511
WINTER ROAD						
Construction and operation	Assumes construction and maintance of 2-160 km winter ice roads; once during Active Closure and once in approximately Year 18.	km	320	WRCL	$2,000.00	$640,000
Limited winter use		km		#N/A	0	$0
Winter road tarriff		km		#N/A	0	$0
					Total	**$4,244,388**

Sabina Closure Component Estimating

Code	Description	NOTES	EQUIPMENT NUMBER	ESTIMATE SOURCE DOCUMENT	Qty	Unit of Measure	Labour					Material		Fixed Equipment		Mobile Equip		Const Equip Use		Other		Total	
							Unit Man-hrs	Prod Fact	Total Man-hrs	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost
	Open Pit Closure																						
	Place Boulder Fence																						
	Umwelt Open Pit			x	1,635	m	0.06	1.00	98	95	9,320	-	-	-	-	-	-	175.00	17,168		-	16	26,487
	Echo open pit			x	750	m	0.06	1.00	45	95	4,275	-	-	-	-	-	-	175.00	7,875		-	16	12,150
	Goose open pit			x	1,900	m	0.06	1.00	114	95	10,830	-	-	-	-	-	-	175.00	19,950		-	16	30,780
	Llama open pit	Permieter needed only where pit edge will not abute the final flooded lake footprint. i.e. 400m length.		x	400	m	0.06	1.00	24	95	2,280	-	-	-	-	-	-	175.00	4,200		-	16	6,480
	Remove Pump and Pipeline																						
	Umwelt pit sump	Occurs during Operations		x	1,740	m	0.04	1.00	70	95	6,612	-	-	-	-	-	-	155.00	10,788		-	10.00	17,400
	Llama pit sump	Occurs during Operations		x	2,850	m	0.04	1.00	114	95	10,830	-	-	-	-	-	-	155.00	17,670		-	10.00	28,500
	Goose pit sump			x	4,325	m	0.04	1.00	173	95	16,435	-	-	-	-	-	-	155.00	26,815		-	10.00	43,250
	Echo pit sump	Occurs during Operations		x	820	m	0.04	1.00	33	95	3,116	-	-	-	-	-	-	155.00	5,084		-	10.00	8,200
	Breech Pits into Receiving Waters																						
	Umwelt open pit			x	1,200	m3	0.12	1.00	144		-	-	-	-	-	-	-	5.00	6,000		-	5.00	6,000
	Llama open pit	Natural drainage connection		x	-	m3	0.12	1.00	-		-	-	-	-	-	-	-	5.00	-		-	-	-
	Echo open pit	Natural drainage connection		x	-	m3	0.12	1.00	-		-	-	-	-	-	-	-	5.00	-		-	-	-
	Goose open pit			x	600	m3	0.12	1.00	72		-	-	-	-	-	-	-	5.00	3,000		-	5.00	3,000
	Landfill Mobile Equipment																						
	Goose Site Mobile Equipment			x	41	units	24.00	1.00	984	95	93,480	-	-	-	-	-	-	-	-		-	2,280	93,480
	Underground Closure																						
	Saline Water Pond (SWP) / WTP																						
	Relocate pipeline to Umwelt UG from Llama UG			x	800	m	0.04	1.00	32	95	3,040	-	-	-	-	-	-	155.00	4,960		-	10.00	8,000
	Dewater SWP to Umwelt UG			x	763,134	m3	1.00	1.00	153	95	14,535	-	-	-	-	-	-		-	0.11	83,945	0.13	98,480
	Decommission SWP to Umwelt UG pipeline			x	1,200	m	0.04	1.00	48	95	4,560	-	-	-	-	-	-	155.00	7,440		-	10.00	12,000
	Adjust pipeline to route to Llama UG	Completed during Operations		x	500	m	0.03	1.00	65	95	6,175	-	-	-	-	-	-		-		-	12.35	6,175
	Dewater SWP to Llama UG			x	324,234	m3		1.00	80	95	7,600	-	-	-	-	-	-		-	0.11	35,666	0.13	43,266
	Adjust pipeline to route to Goose UG			x	4,500	m	0.04	1.00	230	95	21,850	-	-	-	-	-	-	155.00	35,650		-	12.78	57,500
	Dewater SWP to Goose UG			x	391,630	m3		1.00	215	95	20,425	-	-	-	-	-	-		-	0.11	43,079	0.16	63,504
	Decommission SWP to Goose UG pipelines			x	10,800	m	0.04	1.00	432	95	41,040	-	-	-	-	-	-	155.00	66,960		-	10.00	108,000
	Breach SWP Diversion Berms and Containment Dams			x	430	m3	0.12	1.00	52		-	-	-	-	-	-	-	8.00	3,440		-	8.00	3,440
	Decomission WTP-Goose Lake pipeline			x	1,140	m	0.04	1.00	46	95	4,332	-	-	-	-	-	-	155.00	7,068		-	10.00	11,400
	Llama UG																						
	Decommission pipeline	Completed during Operations		x	2,700	m	0.04	1.00	108	95	10,260	-	-	-	-	-	-	155.00	16,740		-	10.00	27,000
	Umwelt portal																						
	Plug declines with waste rock			x	150	m3	0.05	1.00	8		-	-	-	-	-	-	-	6.00	900		-	6.00	900
	Llama portal																						
	Plug declines with waste rock			x	150	m3	0.05	1.00	8		-	-	-	-	-	-	-	6.00	900		-	6.00	900
	Goose portal																						
	Plug declines with waste rock			x	150	m3	0.05	1.00	8		-	-	-	-	-	-	-	6.00	900		-	6.00	900
	Echo portal																						
	Plug declines with waste rock			x	150	m3	0.05	1.00	8		-	-	-	-	-	-	-	6.00	900		-	6.00	900
	Umwelt vent/circular backfill raises																						
	Plug vent raises with concrete plug			x	1	LS	1.00	1.00	60		-	-	-	-	-	-	-	-	-		-	120,000	120,000
	Llama vent/circular backfill raises																						
	Plug vent raises with concrete plug			x	1	LS	1.00	1.00	60		-	-	-	-	-	-	-	-	-		-	50,000	50,000
	Goose vent/circular backfill raises																						
	Plug vent raises with concrete plug			x	1	LS	1.00	1.00	60		-	-	-	-	-	-	-	-	-		-	50,000	50,000
	Echo vent/circular backfill raises																						
	Plug vent raises with concrete plug			x	1	LS	1.00	1.00	60		-	-	-	-	-	-	-	-	-		-	50,000	50,000
	Echo crown pillar																						
	Plug UG stopes			x	3,550	m3	0.05	1.00	178		-	-	-	-	-	-	-	6.00	21,300		-	6.00	21,300
	Waste Rock Stockpiles and Landfills																						
	WR Pile Closure																						
	Cap and Slope WR Piles			x	2,400,000	m3	0.06	1.00	144,000		-	-	-	-	-	-	-	6.00	14,400,000		-	6.00	14,400,000
	Landfill Closure																						
	Cap and Reslope Landfills			x	25,000	m3	0.06	1.00	1,500		-	-	-	-	-	-	-	6.00	150,000		-	6.00	150,000
	Water Management Structures																						
	Llama Structures																						
	Breach Llama Lake Diversion Berms			x	665	m3	0.06	1.00	43		-	-	-	-	-	-	-	7.30	4,855		-	7.30	4,855
	Breach Llama WRSA Diversion Berm			x	95	m3	0.06	1.00	6		-	-	-	-	-	-	-	7.30	694		-	7.30	694
	Breach Llama WRSA Containment Dam				95	m3	0.06	1.00	6		-	-	-	-	-	-	-	7.30	694		-	7.30	694
	Decommission Llama pump and pipeline	24 hrs for pump		x	700	m	0.04	1.00	52	95	4,940	-	-	-	-	-	-	155.00	8,060		-	18.57	13,000
	Umwelt Structures																						
	Breach Primary Pond Containment Dam			x	200	m3	0.06	1.00	13		-	-	-	-	-	-	-	7.30	1,460		-	7.30	1,460
	Breach Umwelt WRSA Containment Dam			x	120	m3	0.06	1.00	8		-	-	-	-	-	-	-	7.30	876		-	7.30	876
	Breach Umwelt WRSA Diversion Berm			x	95	m3	0.06	1.00	6		-	-	-	-	-	-	-	7.30	694		-	7.30	694
	Remove Umwelt Pond pump and pipeline			x	950	m	0.04	1.00	68	95	6,460	-	-	-	-	-	-	155.00	10,540		-	17.89	17,000
	Remove Primary pond pump and pipeline			x	7,250	m	0.04	1.00	320	95	30,400	-	-	-	-	-	-	155.00	49,600		-	11.03	80,000
	Echo Structures																						
	Breach Echo WRSA Containment Dam			x	190	m3	0.06	1.00	12		-	-	-	-	-	-	-	7.30	1,387		-	7.30	1,387
	Breach Echo Diversion Berm (East and West)			x	190	m3	0.06	1.00	12		-	-	-	-	-	-	-	7.30	1,387		-	7.30	1,387
	Breach Echo WRSA Diversion Berm			x	95	m3	0.06	1.00	6		-	-	-	-	-	-	-	7.30	694		-	7.30	694
	Breach East Echo Containment Dam			x	95	m3	0.06	1.00	6		-	-	-	-	-	-	-	7.30	694		-	7.30	694

Sabina Closure Component Estimating

Code	Description	NOTES	EQUIPMENT NUMBER	ESTIMATE SOURCE DOCUMENT	Qty	Unit of Measure	Labour					Material		Fixed Equipment		Mobile Equip		Const Equip Use		Other		Total	
							Unit Man-hrs	Prod Fact	Total Man-hrs	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost
	Remove Echo WRSA Pond pump and pipeline			x	2,400	m	0.04	1.00	96	95	9,120	-	-	-	-	-	-	155.00	14,880		-	10.00	24,000
	Remove Echo NCW pond pump and pipeline			x	220	m	0.04	1.00	21	95	1,976	-	-	-	-	-	-	155.00	3,224		-	23.64	5,200
	Goose Structures																						
	Breach Goose Main Diversion Berm			x	95	m3	1.00	1.00	95		-	-	-	-	-	-	-	7.30	694		-	7.30	694
	TSF Structures																						
	Breach TSF Dam			x	11,000	m3	0.05	1.00	550		-	-	-	-	-	-	-	7.30	80,300		-	7.30	80,300
	Breach TSF WRSA Diversion Berm			x	285	m3	0.05	1.00	14		-	-	-	-	-	-	-	7.30	2,081		-	7.30	2,081
	Ore Stockpile Structures																						
	Remove pump and pipeline			x	4,550	m	0.04	1.00	182	95	17,290	-	-	-	-	-	-	155.00	28,210		-	10.00	45,500
	Breach Ore Stockpile Diversion Berm and Containment Dam			x	215	m3	0.06	1.00	13		-	-	-	-	-	-	-	7.30	1,570		-	7.30	1,570
	Buildings and Equipment																						
	Dissassembly - Goose Plant and Crusher																						
	Dismantle Plant			x	6,464	m2	1.00	1.00	3,200	95	304,000	-	-	-	-	-	-	100.00	106,667	-	-	63.53	410,667
	Dismantle Crushers			x	1,630	m2	1.00	1.00	800	95	76,000	-	-	-	-	-	-	100.00	26,667	-	-	62.99	102,667
	Dismantle Power Plant			x	2,040	m2	1.00	1.00	1,000	95	95,000	-	-	-	-	-	-	100.00	33,333	-	-	62.91	128,333
	Dismantle Emergency Power - Fuel			x	300	m2	1.00	1.00	150	95	14,250	-	-	-	-	-	-	100.00	5,000	-	-	64.17	19,250
	Dismantle Fuel Storage and Distribution			x	1	Lot	1.00	1.00	1,200	95	114,000	-	-	-	-	-	-	100.00	40,000	-	-	154,000	154,000
	Goose Admin Buildings																						
	Demolish Truck Shop/Office			x	2,349	m2	1.00	1.00	1,000	95	95,000	-	-	-	-	-	-	100.00	33,333	-	-	54.62	128,333
	Demolish Kitchen/Camp			x	1,980	m2	1.00	1.00	900	95	85,500	-	-	-	-	-	-	100.00	30,000	-	-	58.33	115,500
	Demolish Cold Storage			x	840	m2	1.00	1.00	150	95	14,250	-	-	-	-	-	-	100.00	5,000	-	-	22.92	19,250
	Demolish Waste/Waste Oil Storage			x	1	Lot	1.00	1.00	100		-	-	-	-	-	-	-	100.00	3,333	40,000	40,000	43,333	43,333
	Remove Freight Storage			x	1	Lot	1.00	1.00	150	95	14,250	-	-	-	-	-	-	100.00	5,000	-	-	19,250	19,250
	Demolish Water Treatment Plant			x	647	m2	8.00	1.00	100	95	9,500	-	-	-	-	-	-	100.00	3,333	-	-	19.84	12,833
	Demolish Sewage Treatment Plant			x	1	Lot	1.00	1.00	90	95	8,550	-	-	-	-	-	-	100.00	3,000	-	-	11,550	11,550
	MLA Infrastructure																						
	Demolish Port Office			x	5	Units	12.00	1.00	60	95	5,700	-	-	-	-	-	-	100.00	6,000	-	-	2,340	11,700
	Remove Pipelines			x	10,000	m	0.04	1.00	400	95	38,000	-	-	-	-	-	-	155.00	62,000	-	-	10.00	100,000
	Demolish Incinerator and Waste Management			x	1	Lot	1.00	1.00	50	95	4,750	-	-	-	-	-	-	100.00	5,000	-	-	9,750	9,750
	Demolish Warehuses			x	1	Lot	1.00	1.00	30	95	2,850	-	-	-	-	-	-	100.00	3,000	-	-	5,850	5,850
	Dismantle Genset			x	1	Lot	1.00	1.00	150	95	14,250	-	-	-	-	-	-	100.00	15,000	-	-	29,250	29,250
	Demolish Maintenance Shop			x	1	Lot	1.00	1.00	50	95	4,750	-	-	-	-	-	-	100.00	5,000	-	-	9,750	9,750
	Demolish Water Storage			x	1	Lot	1.00	1.00	50	95	4,750	-	-	-	-	-	-	100.00	5,000	-	-	9,750	9,750
	Demolish WTP/STP			x	1	Lot	1.00	1.00	50	95	4,750	-	-	-	-	-	-	100.00	5,000	-	-	9,750	9,750
	Demolish camp/offices			x	1	Lot	1.00	1.00	50	95	4,750	-	-	-	-	-	-	100.00	5,000	-	-	9,750	9,750
	Demolish freight storage area			x	1	Lot	1.00	1.00	50	95	4,750	-	-	-	-	-	-	100.00	5,000	-	-	9,750	9,750
	Demolish hazardous wate Area			x	1	Lot	1.00	1.00	50	95	4,750	-	-	-	-	-	-	100.00	5,000	-	-	9,750	9,750
	Dismantle Fuel Storage			x	1	Lot	1.00	1.00	1,600	95	152,000	-	-	-	-	-	-	100.00	53,333	-	-	205,333	205,333
	Goose Closure Camp																						
	Build 20 Person Camp			x	1	Lot	1.00	1.00	150	95	14,250	-	-		-	-	-	100.00	5,000		-	19,250	19,250
	Build 20 Person Power Plant			x	1	Lot	1.00	1.00	150	95	14,250	-	-		-	-	-	100.00	5,000		-	19,250	19,250
	Camp Operation	Over 13 years of Closure and Post-Closure		x	12,000	Man Days	1.00	1.00		-	-	-	-	-	-	-	-	-	-	110	1,320,000	110	1,320,000
	Roads and Airstrips																						
	Main Haulroad																						
	Maintain Road Surface			x	13	Yr	70.00	1.00	910	95	86,450	-	-	-	-	-	-	100.00	91,000		-	13,650	177,450
	Restore Drainage	Remove Culverts		x	1,488	m3	0.06	1.00	89		-	-	-	-	-	-	-	11.00	16,368		-	11.00	16,368
	Airstrips																						
	Maintain Airstrip Surface			x	13	Yr	20.00	1.00	260	95	24,700	-	-	-	-	-	-	100.00	26,000		-	3,900	50,700
	Restore Drainage			x	1,020	m3	0.06	1.00	61		-	-	-	-	-	-	-	12.00	12,240		-	12.00	12,240
	Water Treatment																						
	WTP Pipelines and Treatment Plant																						
	Pump from Goose Main TF to WTP	Pump and treat water in TF at WTP for 7 years, open water season		x	7,500,000	m3		1.00			-	-	-	-	-	-	-	-	-	0	825,000	0.11	825,000
	Treat water from Goose Main TF in TWP			x	7,500,000	m3		1.00	1,916		-	-	-	-	-	-	-	-	-	0	2,625,000	0.35	2,625,000
	Pump from WTP recirc. into Goose Main TF			x	7,500,000	m3		1.00	-		-	-	-	-	-	-	-	-	-	0	825,000	0.11	825,000
	Decommission WTP pump and pipeline			x	6,700	m	0.04	1.00	292	95	27,740	-	-	-	-	-	-	155.00	45,260		-	10.90	73,000
	Decommission WTP pump and return pipeline			x	820	m	0.04	1.00	57	95	5,396	-	-	-	-	-	-	155.00	8,804		-	17.32	14,200
	Decommission WTP			x	1	Lot		1.00	50	95	4,750	-	-	-	-	-	-	100.00	5,000		-	9,750	9,750
	Contaminated Soil																						
	Sitewide Investigation																						
	Site Investigation to estimate quantity of contaminated soil	Testpit program with excavator in all parking, fuel storage, washbays truck and maintenance shops and generator areas.		x	1	Lot	1.00	1.00			-	-	-	-	-	-	-	-	-		50,000	50,000	50,000
	Treatment																						
	Transport contaminated soil			x	10,000	m3	0.05	1.00	500		-	-	-	-	-	-	-	7.30	73,000		-	7.30	73,000
	Separation plant	Purchase seperation equipment		x	1	Lot	1.00	1.00			-	-	-	-	-	-	-	-	-		100,000	100,000	100,000
	Closure / Post-Closure Monitoring																						
	Geotechnical Inspections																						
	TSF embankments			x	8	Units	20.00	1.00	160		-	-	-	-	-	-	-	-	-	10,000	80,000	10,000	80,000
	WR piles			x	13	Units	20.00	1.00	260		-	-	-	-	-	-	-	-	-	8,300	107,900	8,300	107,900
	Pit walls			x	13	Units	20.00	1.00	260		-	-	-	-	-	-	-	-	-	4,000	52,000	4,000	52,000
	Ground Temperature Monitoring																						
	Umwelt WRSA GTC Monitoring after Closure	Monthly		x	13	Years	24.00	1.00	312	200	62,400	-	-	-	-	-	-	-	-		-	4,800	62,400
	LLama WRSA GTC Monitoring after Closure	Monthly		x	13	Years	24.00	1.00	312	200	62,400	-	-	-	-	-	-	-	-		-	4,800	62,400
	TSF WRSA GTC Monitoring after Closure	Monthly		x	13	Years	24.00	1.00	312	200	62,400	-	-	-	-	-	-	-	-		-	4,800	62,400
	WQ Monitoring - Closure																						
	Llama pit	Depends on Breech		x	13	Years	12.00	1.00	156	95	14,820	-	-	-	-	-	-	-	-		-	1,140	14,820
	Llama WR Pile			x	13	Years	12.00	1.00	156	95	14,820	-	-	-	-	-	-	-	-		-	1,140	14,820
	Umwelt pit	Depends on Breach		x	13	Years	12.00	1.00	156	95	14,820	-	-	-	-	-	-	-	-		-	1,140	14,820
	Umwelt WR Pile			x	13	Years	12.00	1.00	156	95	14,820	-	-	-	-	-	-	-	-		-	1,140	14,820

Sabina Closure Component Estimating

							Labour					Material		Fixed Equipment		Mobile Equip		Const Equip Use		Other		Total	
Code	Description	NOTES	EQUIPMENT NUMBER	ESTIMATE SOURCE DOCUMENT	Qty	Unit of Measure	Unit Man-hrs	Prod Fact	Total Man-hrs	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost	Unit Cost	Total Cost
	Echo pit	Depends on Breach		x	13	Years	12.00	1.00	156	95	14,820	-	-	-	-	-	-	-	-		-	1,140	14,820
	Echo WR pile			x	13	Years	12.00	1.00	156	95	14,820	-	-	-	-	-	-	-	-		-	1,140	14,820
	Goose pit	Depends on Breach		x	13	Years	12.00	1.00	156	95	14,820	-	-	-	-	-	-	-	-		-	1,140	14,820
	TSF WR Pile			x	13	Years	12.00	1.00	156	95	14,820	-	-	-	-	-	-	-	-		-	1,140	14,820
	Aquatic Effects monitoring																						
	Aquatic effects monitoring	Non-contact Water Basins		x	10	Years	60.00	1.00	600	80	48,000	-	-	-	-	-	-	-	-		-	4,800	48,000
	Terrestrial Animal Monitoring																						
	Terrestrial Animal Monitoring			x	10	Years	300.00	1.00	3,000	80	240,000	-	-	-	-	-	-	-	-		-	24,000	240,000
	Total Direct Costs																						24,471,385
	CONSTRUCTION INDIRECTS																						
	Freight & Transport																						
	Food & Freight	Total Mandays factored		x	27,600	kg		1.00		-	-				-		-		-	12	331,200	12	331,200
	Freight	Rental equip, offices, etc..		x	1	Lot	-	1.00	-	-	-	-	-	-	-	-	-	-	-	500,000	500,000	500,000	500,000
	Mobilization			x	500	Tonnes														1,500	750,000	1,500	750,000
	General Construction Indirects																						
	Site Services Labour			x	16,000	HRS	1.00	1.00	16,000	65	1,040,000	-	-	-	-	-	-	-	-	-	-	65.00	1,040,000
	Accomodations & Travel																						
	Camp Accomodations/Operation			x	12,000	Man Days	1.00	1.00		-	-		-	-	-	-	-	-	-	110	1,320,000	110	1,320,000
	Airfare & Transportation			x	429	Each	-	1.00		-	-	-	-	-	-	-	-	-	-	572	245,583	572	245,583
	Contractor Profit																						
	Total Component Estimate																						28,658,169

Unit Cost Table (for refining unit costs see "Estimator" worksheet)

Filter by unit

ITEM	Detail	COST CODE	UNITS	LOW $	HIGH $	SPECIFIED $	COMMENTS
Accomodation							
		ACCM	manday	100.00	175.00		
Buildings - Decontaminate							
	Asbestos	BDA	m2	25.60	51.20		Low: removal of asbestos siding & flooring; High: removal of insulated pipes,
Buildings - Remove							Unit costs are based on 3m high, single storey building. Scale areas accordir
	Wood	BRW	m2	27.50	41.00		
	Concrete	BRC	m2	40.00	65.00	6.00	Specified: puncture concrete foundation slabs
	Steel - teardown	BRS1	m2	45.00	65.00		
	Steel - for salvage	BRS2	m2	67.00	100.00		
Concrete work							
	Small pour	CSF	m3	426.50	639.75		Low: YK; High=1.5xLow
	Large pour	CLF	m3	353.50	530.25	2,130.00	Specified: concrete crown pillar
Contaminated Soils							
	ESA Phase 1	CS1	each	7500.00			Low: small, "clean" site
	ESA Phase 1	CS2	each	50000.00			Low: small, "clean" site
	Remediate on site	CSR	m3	47.00	146.00		
Dozing							
	doze rock piles	DR	m3	1.05	2.40		Low cost: doze crest off dump
	doze overburden/soil piles	DS	m3	0.95	3.80		High cost: push up to 300 m
Excavate Rock; Low Spec's and QA/QC							
	drill/blast/load/short haul	RB1	m3	11.40	17.05		Low:quarry operations for bulk fill
	drill/blast/load/long haul	RB2	m3	12.05	17.80		
	RB1 + spread and compact	RB3	m3	12.05	17.80		
	RB2 + spread and compact	RB4	m3	12.50	30.75		
	Specified activity	RBS	m3				
Excavate Rock; High Spec's and QA/QC							(e.g. ditch/spillway excavation)
	drill/blast/load/short haul	RC1	m3	12.05	17.80		Low:foundation excavation;High:spillway excavation
	drill/blast/load/long haul	RC2	m3	12.70	18.40		
	RC1 + spread and compact	RC3	m3	12.70	18.40		e,g, cover construction
	RC2 + spread and compact	RC4	m3	13.50	19.20		e,g, cover construction
	Specified activity	RCS	m3			175.00	Specified-drift excavation
Excavate Rip Rap							
	drill/blast/load/short haul/place	RR1	m3	13.50	17.75		High: quarry & place rip rap in channel
	drill/blast/load/long haul/place	RR2	m3	14.20	20.65		
	source is waste dump/short haul	RR3	m3	7.00			cost includes sorting
	source is waste dump/long haul	RR4	m3	7.60			
	Specified activity	RRS	m3				
Excavate Soil; Low Spec's and QA/QC							
	clear & grub	SBC	m2	3.40	5.00		
	excavate/load/short haul	SB1	m3	4.30	5.90		
	excavate/load/long haul	SB2	m3	4.60	7.30		
	SB1 + spread and compact	SB3	m3	5.10	8.90		Low: non-engineered; High:engineered
	SB2 + spread and compact	SB4	m3	5.50	11.00		Low: non-engineered; High:engineered
	Specified activity	SBS	m3	3.20	6.30		Low: rehandle waste rock dump by dozing; High:rehandle waste rock by hauli
	Tailings	SBT	m3	1.35	3.70	15.50	High:contour surface - wet or frozen; Specified:haul/place wet infill
Excavate Soil, High Spec's and QA/QC							
	excavate/load/short haul	SC1	m3	6.80	9.30		
	excavate/load/long haul	SC2	m3	7.10	11.75		
	SC1 + spread and compact	SC3	m3	8.90	14.20		Low: non-engineered; High:engineered
	SC2 + spread and compact	SC4	m3	9.30	23.20		Low: non-engineered; High:engineered (e.g. complex covers, low volume dan
	Specified activity	SCS	m3			18.80	Backfill adit with waste rock
Fence							
		FNC	m	13.55	203.00		
Fuel and Electricity							
	Fuel cost - gas	FCG	litre	1.05	1.40		
	Fuel cost - diesel	FCD	litre	0.99	1.39		
	Fuel mobilization	FCM	litre	0.22	0.42		High: winter road usage
	Electricity	FCE	kW-h	0.17	0.19	0.49	Low and High:Yellowknife; Specified:diesel generator
Geo-Synthetics							
	geotextile	GST	m2	3.44			Supply and install
	geogrid	GSG	m2	5.75			
	liner, HDPE	GSHDPE	m2	7.95			Supply and install; large quantity
	liner, ES3	GSES3	m2	20.20			FOB Yellowknife
	geosynthetic installation	GSI	m2	3.16	14.00		Low:geotextile; High:ES3 or HDPE
	bentonite soil ammendment	GSBA	tonne	308.30	348.50		FOB Edmonton, add shipping & mixing
Grouting (/m3 of rock grouted)							
		grout	m3	236.55	286.75		High: cement, FOB Yellowknife
Labour & Equipment Rates							
	Site manager	sman	$/hr	125.00	152.00		
	Supervisor	super	$/hr	52.00	91.84		
	Registered engineer	eng	$/hr	95.00	220.00		
	Environmental coordinator	envco	$/hr	74.16	130.00		
	Evironmental technologist	envtech	$/hr	36.00			
	Electrician	elec	$/hr	74.00	95.00		
	Journeyman - various	journey	$/hr	44.00	71.79		
	Labour - skilled	lab-s	$/hr	41.00	49.60		
	Labour - unskilled	lab-us	$/hr	31.00	43.98		
	Equipment operator	oper	$/hr	41.00	65.00		
	Heavy duty mechanic	mech	$/hr	49.00	72.85		
	Water treatment plant operator	oper-wt	$/hr	41.00	59.86		
	Security / first aid	safety	$/hr	36.00	66.97		
	Administative staff	admin	$/hr	38.00	57.89		

Unit Cost Table (for refining unit costs see "Estimator" worksheet)

Filter by unit

Equipment rates include operator and fuel						
Loader - 4 cu.yd (3.06m3)	load-s	$/hr	175.00			
Loader - 7 cu.yd (5.35m3)	load-l	$/hr	315.00			
Excavator - 26.76-30.84 tonnes	exc-s	$/hr	190.00			
Excavator - 68.95+tonnes	exc-l	$/hr	420.00			
Grader	grad	$/hr	190.00			
Dump truck off hwy 30-50 tonnes	truck-s	$/hr	225.00			
Dump truck off hwy 55-75 tonnes	truck-l	$/hr	300.00			
dozer, small	dozers	$/hr	205.00	260.00		
dozer, large	dozerl	$/hr	490.00	565.00		
smooth drum compactor	comp	$/hr	155.00			
scooptram, 6 yd3 bucket	scoop	$/hr	170.00			
flat bed truck with hiab	hiab	$/hr	155.00			
fuel truck	ftruck	$/hr	150.00			
water truck	wtruck	$/hr	58.00	150.00		
Mobilize Heavy Equipment						
Road access	MHER	kmtonne	3.40	10.25		
Air access	MHEA	kmtonne	12.00			cargo rate>500lb
Mobilize Camp						
Road access	MCR	each	50000.00			refurbish existing camp
Mobilize Workers						
flight	MW	each	4500.00	9100.00		Low:e.g. 8 passenger; High: Dash 7
Oil Removal						
oil removal	OR	litre	0.43	1.20		Low:waste oil heater; High: ship offsite
PCB Removal						
Remove from site	PCBR	litre	40.20	46.90		Low: shipping, handling & disposal from Yellowknife
Pipes, small (<6in dia.)						
remove/dispose on site	PSR	m	1.00	24.00		Low: remove/dispose on site; High: remove/re-use
supply	PSS	m	6.10	11.10		Low:supply; High:supply and ship
install	PSI	m	25.00			
Pipes, large (>6in dia.)						
remove/dispose on site	PLR	m	22.00	72.00		Low: remove/dispose on site; High: remove/re-use
supply	PLS	m	129.00	143.00		Low:supply; High:supply and ship
install	PLI	m	50.00			
Power Lines						
remove/dispose on site	POWR	m	25.50			
Process Chemicals						
Remove from site	PCR	kg	0.45	2.50		Low: shipping, handling & disposal from Yellowknife
Pumps						
Pump capital cost	PC	each	195000.00			
Pump shipping	PS	each	2500.00			
Pump operating cost	POC	m3	0.12			pump operating costs should be calculated based on pump capacity, fuel cost
Pump maintenance	PM	allow	25000.00			
Pump sand BackFill						
	PBF	m3	85.00	300.00		
Scarify - road/mine site						
	SCFY	ha	4300	6030	2150	
Shaft, Raise & Portal Closures						
Shaft & Raises	SR	m2	645.00	2132.00		Low:pre-cast concrete slabs, little site prep. Area=shaft+>1m all around
Portals	POR	m3	18.80	250.00	1200.00	Low:unit cost code SCS;High:excavate & backfill collapsed portal;Spec: instal
Site Inspection Report						
	RPT	each	10000.00	20000.00		
SpillWay - Clear						
	SW	each	3000.00	7000.00		
Survey/Instrumentation						
	SI	each	1800.00	3600.00		2 person crew
Treatment Plant - Construct						
Small (< 1000 m3/d)	TPS	lump sum	9000000	15000000		
Large (> 1000 m3/d)	TPL	lump sum	15000000	46000000		
Constructed Wetland	CWTS	ha	200000	300000		
Treatment Plant - Operate						
	TPO	m3	0.35	2.00		
Treatment Chemicals						
ferric sulphate	ferric	kg	1.19			
ferrous sulphate	ferrous	kg	1.32			
lime	lime	kg	0.56			
hydrogen peroxide, 35%	hperox	kg	1.50			
Sodium Metabisulfate	Nametab	kg	1.18			
Caustic soda, 50%	caustic	kg	0.74			
Sulfuric acid, 93%	sulfuric	kg	0.31			
flocculant	flocc	kg	6.00			
copper sulphate	copper	kg				
shipping	shipping	kg	0.20			
Vegetation						
Hydroseed, Flat	VHF	ha	4000.00			
Hydroseed, Sloped	VHS	ha	4500.00			
Veg. blanket/erosion mat	VB	ha	13000.00			
Tree planting	VT	ha	2600.00	6000.00		
Wetland species	VW	ha			47.72	Specified= /m3, Wetland Growth Media Substrate mixed and installed (sand, l
Water Sampling/Analysis/Reporting						
	WS	each	7000.00	10000.00		
Winter Road						
Construction	WRC	km	2000.00	11500.00		
Usage	WRU	kmtonne	0.29			

Unit Cost Estimator

1 Equipment Productivity Figures and Graphs have been reproduced from Caterpillar Performance Handbook - Edition 42

EXCAVATION

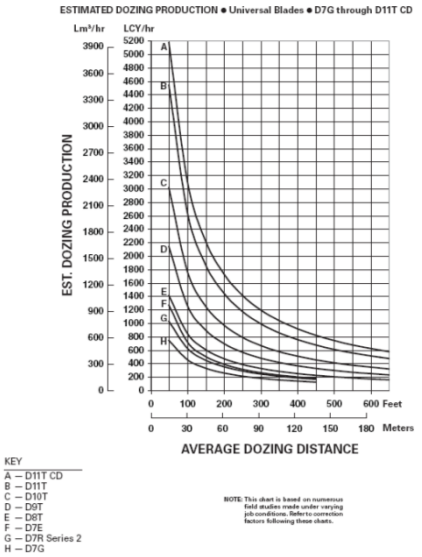
Productivity		
Machine Cat 336EL		
bucket capacity	3.16	m3
fill factor	75%	%
cycle time	45	seconds
operator skill	80%	%
machine availability	83%	%
altitude adjustment	100%	%
Hourly productivity	125.89	m3/hr
Operating Costs		
- Contractor		
Contractor hourly rate	$180.00	$/hr
Excavation cost - contractor rate	1.43	$/m3
- Owner		
ownership, daily		$/day
maintenance		$/hr
fuel		$/hr
consumables (cutters, tires)		$/hr
operator		$/hr
Owner hourly rate	$0.00	$/hr
Excavation cost - owner rate	$0.00	$/m3
Excavation cost - select contractor or owner rate (D22 or D31)		$/m3

HAUL AND DUMPING

Productivity		
Machine Cat 770		
truck capacity	25.1	m3
fill factor	80%	%
load time	6.0	min.
haul distance	1.5	km
average velocity	20.0	km/hr
haul time + return time	9.0	min.
wait time	0.5	min.
dump time	1.0	min.
cycle time	16.5	min.
machine availability	83%	%
altitude adjustment	100%	%
	13.7	ve. min/cycle
Hourly productivity	88.0	m3/hr
Operating Costs		
- Contractor		
Contractor hourly rate	$225.00	$/hr
Haul and Dump - contractor rate	2.56	$/m3
- Owner		
ownership, daily		$/day
maintenance		$/hr
fuel		$/hr
consumables (cutters, tires)		$/hr
operator		$/hr
Owner hourly rate	$0.00	$/hr
Haul/Dumping Cost - owner rate	$0.00	$/m3
Haul/Dumping Cost - select contractor or owner rate (I22 or I31		$/m3

SPREADING/DOZING

Productivity		
Machine Cat D8		
Estimate production using example curves provided or	600	m3/hr
equivalent from other supplier		
Correction factors (see table provided)		
operator skill	0.75	
material type, see table	0.80	
slot dozing	1.00	
side by side dozing	1.00	
visibility	1.00	
job efficiency	0.83	
altitude adjustment	1.00	
slope adjustment	1.00	
Hourly productivity	298.8	m3/hr
Operating Costs		
- Contractor		
Hourly rate - contractor supplied	$260.00	$/hr
Dozing - contractor rate	0.87	$/m3
- Owner		
ownership, daily		$/day
maintenance		$/hr
fuel		$/hr
consumables (cutters, tires)		$/hr
operator		$/hr
Owner hourly rate	$0.00	
Spreading/Dozing Cost - owner rate	$0.00	$/hr
Spreading/Dozing Cost - select contractor or owner rate (N22 or N31)		$/m3



KEY
A — D11T CD
B — D11T
C — D10T
D — D9T
E — D8T
F — D7E
G — D7R Series 2
H — D7G

NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors following these charts.

Excavator

	Cat 320	Cat 325B	Cat 375
heaped bucket capacity, m3	1.5	2.2	5.4
	Typical Cycle Times (seconds)		
easy digging, shallow digging, small swing angle	16	18	20
med. to hard digging, rocky soil, swing angle to 90 deg.	23	23	25
tough digging, sandstone, caliche, at max. machine depth, swing angle > 120 deg.	27	29	35

Material	Fill Factor (% of heaped bucket capacity
Moist loam or sandy clay	100 - 110
sand and gravel (not till)	95 - 110
hard tough clay	80 - 90
rock - will blasted	60 - 75
rock - poorly blasted	40 -60

Operator Skill	poor	average	good
Correction factor	0.6	0.75	1

Machine availability	poor	average	good
Correction factor	0.9	0.95	1

Trucking

	Cat 771 D	Cat 777D	Cat 789C
Truck capacity - heaped, m3	27.5	60.5	137

Dozing

JOB CONDITION CORRECTION FACTORS

	TRACK-TYPE TRACTOR
OPERATOR —	
Excellent	1.00
Average	0.75
Poor	0.60
MATERIAL —	
Loose stockpile	1.20
Hard to cut; frozen —	
with tilt cylinder	0.80
without tilt cylinder	0.70
Hard to drift; "dead" (dry, non-cohesive material) or very sticky material	0.80
Rock, ripped or blasted	0.60-0.80
SLOT DOZING	1.20
SIDE BY SIDE DOZING	1.15-1.25
VISIBILITY —	
Dust, rain, snow, fog or darkness	0.80
JOB EFFICIENCY —	
50 min/hr	0.83
40 min/hr	0.67
BULLDOZER*	
Adjust based on SAE capacity relative to the base blade used in the Estimated Dozing Production graphs.	
GRADES — See following graph.	

*NOTE: Angling blades and cushion blades are not considered production dozing tools. Depending on job conditions, the A-blade and C-blade will average 50-75% of straight blade production.