



## ASSESSMENT REPORT TITLE PAGE AND SUMMARY

**TITLE OF REPORT:** Technical Report & Preliminary Economic Assessment on the Red Mountain Gold Property

**TOTAL COST: \$66,440**

**AUTHOR(S):** Ben Mossman, Lyn Jones, Robert Baldwin

**SIGNATURE(S):** *Ben Mossman*

**NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):** N/A

**STATEMENT OF WORK EVENT NUMBER(S)/DATE(S):**

**YEAR OF WORK:** 2012

**PROPERTY NAME:** Red Mountain Gold Property

**CLAIM NAME(S)** 512985, 512991, 512997, 512998, 513000, 513002, 513003, 513005, 513007, 513008, 513009, 513011, 513014, 513017, 513019, 5130220, 513021, 513022, 513023, 513024, 513025, 513027, 513028, 513029, 513030, 513031, 513032, 513033, 513035, 513037, 513039, 513040, 513041, 513042, 513045, 513046, 513054, 513056, 513128, 513130, 513662, 513663, 513680, 513682, 513683

**COMMODITIES SOUGHT:** Gold, Silver

**MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN:** 103P086

**MINING DIVISION:** Skeena

**NTS / BCGS:** 103P/13 / 103P.092

**LATITUDE:** 55° 56' 29"N

**LONGITUDE:** 129°59'17"W

**UTM Zone:** 9      **EASTING:** 452,450

**NORTHING:** 6,250,325

**OWNER(S):** Seabridge Gold Inc.

**MAILING ADDRESS:** 106 Front St. East Suite 400 Toronto Ontario M5A 1E1

**OPERATOR(S)** Banks Island Gold Ltd.

**MAILING ADDRESS:** 300-1055 W Hastings St. Vancouver BC V6E 2E9

**REPORT KEYWORDS** (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude.

**REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:**

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (in metric units)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo interpretation			
GEOFYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for ...)			
Soil			
Silt			
Rock			
Other			
DRILLING (total metres, number of holes, size, storage location)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling / Assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale/area)			
PREPATORY / PHYSICAL			
Line/grid (km)			
Topo/Photogrammetric (scale, area)			
Legal Surveys (scale, area)			
Road, local access (km)/trail			
Trench (number/metres)			
Underground development (metres)			
Other			
<b>TOTAL COST</b>			\$66,440

**TECHNICAL REPORT & PRELIMINARY ECONOMIC ASSESSMENT  
ON THE  
RED MOUNTAIN GOLD PROPERTY**

**BC Geological Survey  
Assessment Report  
33200**

*Located near Stewart, BC*

55°56'29"N, 129°59'17"W

NTS 103P/13

BCGS 103P.092

Skeena Mining Division

Mineral Tenures: 512985, 512991, 512997, 512998, 513000, 513002, 513003, 513005, 513007, 513008, 513009, 513011, 513014, 513017, 513019, 5130220, 513021, 513022, 513023, 513024, 513025, 513027, 513028, 513029, 513030, 513031, 513032, 513033, 513035, 513037, 513039, 513040, 513041, 513042, 513045, 513046, 513054, 513056, 513128, 513130, 513662, 513663, 513680, 513682, 513683

Assessment work includes: Compilation of previous exploration work, NI 43-101 compliant Resource Calculation, Preliminary Economic Assessment, and recommendations.

Operator: Banks Island Gold Ltd.

Owner: Seabride Gold Inc.

Prepared by: Robert Baldwin, P.Eng., Baldwin Mine Consulting

Lyn Jones, P.Eng., ConsuMet Ltd.

Benjamin Mossman, P.Eng

**Effective Date: June 14th, 2012**

**Report Submitted: July 1, 2012**

## DATE AND SIGNATURE

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The undersigned prepared the foregoing Technical Report entitled *Technical Report & Preliminary Economic Assessment on the Red Mountain Gold Property*. The effective date of this Technical Report is June 14, 2012. The format and content of this report are intended to conform to form 43-101F1 of National Instrument 43-101 of the Canadian Securities Administrators.

Signed:

*“Signed and Sealed”*

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Robert Baldwin, P.Eng.  
Baldwin Mine Consulting  
June 14<sup>th</sup>, 2012

Signed:

*“Signed and Sealed”*

---

Lyn Jones, P.Eng.  
Consumet Ltd.  
June 14<sup>th</sup>, 2012

## CERTIFICATE OF AUTHOR

---

I, Robert D. Baldwin, P.Eng., do hereby certify that:

1. I am an Independent Mining Consultant located at 341 Candy Lane, Campbell River, BC V9W 7Y8.
2. This certificate applies to the Technical Report entitled “Technical Report and Preliminary Economic Assessment on the Red Mountain Gold Property” dated June 14, 2012.
3. I am a graduate of the University of British Columbia (1993) with a B.A.Sc. degree in Geological Engineering. I have practiced in the fields of mine engineering, geological engineering, mine geology, and resource estimation in my profession continuously for 19 years since my graduation.
4. I am a Professional Engineer registered with the Association of Professional Engineers and Geoscientists of the Province of British Columbia (#30610) and Professional Engineers Ontario (#100039779).
5. I have not received, nor do I expect to receive, any interest, directly or indirectly, in the subject property or securities of Banks Island Gold Ltd.
6. I have read the definition of “qualified person” set out in *National Instrument 43-101* and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I am a “qualified person” for the purposes of NI 43-101.
7. I am responsible for the entirety of the Technical Report entitled “Technical Report and Preliminary Economic Assessment on the Red Mountain Gold Property” dated June 14, 2012.
8. I am independent of the issuer, Banks Island Gold Ltd, as described in Section 1.5 of NI 43-101.
9. I have not had any prior involvement with the Red Mountain Gold Property.
10. I have read NI 43-101, including Form 43-101F1, and this Technical Report has been prepared in compliance with that Instrument.
11. As of the date of this certificate, to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make this Technical Report not misleading.
12. I consent to the filing of this Technical Report with any stock exchange or other regulatory authority, and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of this Technical Report.

Dated this 14th day of June, 2012.

*“Signed and sealed”*

---

Robert Baldwin, P.Eng.  
Baldwin Mine Consulting

I, Lyn Jones, P.Eng., do hereby certify that:

1. I am a Principal Metallurgist with ConuMet Ltd. with a business address at 651 Walkerfield Avenue, Peterborough, ON, K9J 4W1.
2. This certificate applies to the Technical Report entitled "Technical Report & Preliminary Economic Assessment on the Red Mountain Gold Property" dated June 14, 2012.
3. I am a graduate of the University of British Columbia (1998) with an M.A.Sc. degree in Metals and Materials Engineering. I have practiced my profession continuously, in the areas of metallurgical testwork management, design engineering, and process consulting, since then.
4. I am a Professional Engineer registered with Professional Engineers Ontario (#100067095).
5. I have not received, nor do I expect to receive, any interest, directly or indirectly, in the subject property or securities of Banks Island Gold Ltd.
6. I have read the definition of "qualified person" set out in *National Instrument 43-101* and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I am a "qualified person" for the purposes of NI 43-101.
7. I have not visited the Red Mountain Gold Property.
8. I am responsible for Sections 13.0, 17.0, 21.1.3, 21.2.1.8, and 26.2 of the Technical Report entitled "Technical Report & Preliminary Economic Assessment on the Red Mountain Gold Property" dated June 14, 2012.
9. I am independent of the issuer, Banks Island Gold Ltd, as described in Section 1.5 of NI 43-101.
10. I have not had any prior involvement with the Red Mountain Gold Property.
11. I have read NI 43-101, including Form 43-101F1, and this Technical Report has been prepared in compliance with that Instrument.
12. As of the date of this certificate, to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make this Technical Report not misleading.
13. I consent to the filing of this Technical Report with any stock exchange or other regulatory authority, and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of this Technical Report.

Dated this 14th day of June, 2012.

*"Signed and sealed"*

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Lyn Jones, P.Eng.  
ConuMet Ltd.

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## **1.0 SUMMARY**

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### **1.1 INTRODUCTION**

This Technical Report was prepared for Banks Island Gold Ltd. to provide a Preliminary Economic Assessment on the Red Mountain Gold Property (“Property”). Resource estimation and the Preliminary Economic Assessment work was undertaken in compliance with National Instrument 43-101, Standards of Disclosure for Mineral Projects.

The purpose of the Report is to consolidate all historical documents and information, provide guidance for a development program, provide engineering designs and calculations, provide recommendations, and support the disclosure of mineral resources estimation for Banks Island Gold Ltd.

Mr. Robert Baldwin, P.Eng., served as the Independent Qualified Person responsible for preparation and supervision of the Technical Report, preparation of mineral resource estimates, engineering designs and calculations, and recommendations. Mr. Lyn Jones, P.Eng., served as the Independent Qualified Person responsible for the engineering designs, calculations, and recommendations related to mineral processing and metallurgical testing.

Mr. Baldwin intends to perform a site visit to the Red Mountain Gold Property at first opportunity once the snow has melted. The site visit is currently scheduled for the month of July 2012.

### **1.2 PROPERTY DESCRIPTION**

The Red Mountain Gold Property is located in the Skeena Mining Division in northwestern British Columbia. The Property is located approximately 18km east-southeast of the town of Stewart in the large area identified as “Nisga’a traditional lands”.

The Red Mountain Gold Property consists of 47 mineral claims (941 cells) totaling 17,125 hectares. No significant factors or risks are known to exist which would affect access, title, or the right or ability to perform work on the Property.

### **1.3 OWNERSHIP**

Banks Island Gold Ltd. has had an active interest in the Red Mountain Gold Property since January of 2012 and presently holds an option agreement with Seabridge Gold Inc., the recorded owner of the Red Mountain claims. Subject to certain details,

Banks Island Gold Ltd. must pay Seabridge \$11,000,000 to earn a 100% interest in the Property.

Currently there is a \$1,000,000 cash reclamation bond posted by Seabridge with the BC provincial government against the Red Mountain Property which must be replaced by Banks Island Gold Ltd. once acquisition of the property is completed.

Through various agreements, future production from the claims containing the known mineralization on the Red Mountain Gold Property is subject to a 1.0% NSR royalty payable to Barrick Gold Corporation (“Barrick”) and to a 2.5% NSR royalty payable to Wotan. Additionally, the payment of an annual minimum royalty of \$50,000 to Wotan is applicable.

#### **1.4 GEOLOGY AND MINERALIZATION**

Red Mountain is located near the western margin of the Stikine terrain in the Intermontane Belt. The age of intrusive rocks in the Red Mountain region range from Late Triassic to Eocene. Early to Middle Jurassic plutons, named the Goldslide Intrusions, appear to be closely related to the gold mineralization at Red Mountain. The Red Mountain mineral zones lie at the core of the Bitter Creek antiform, a northwest-southeast trending structure.

The Goldslide Porphyry is a hornblend-biotite quartz porphyry intrusion underlying most of the Red Mountain cirque. Alteration is strong and widespread throughout the Property, and brittle faulting has affected all rock units at Red Mountain.

Known mineralized zones with calculated resources on the Red Mountain Gold Property include the Marc Zone, AV Zone, JW Zone, and 141 Zone. Additional mineralized zones and showings are also present across the Property.

The gold mineralization at Red Mountain is tentatively assigned to the British Columbia Geological Survey’s (“BCGS”) mineral deposit profile L01: Porphyry Subvolcanic Cu-Au-Ag Deposit.

The mineralized zones at Red Mountain consist of crudely tabular, northwesterly trending, and moderately to steeply southwesterly dipping gold bearing iron sulphide stockworks. The stockwork zones consist of pyrite veins which typically carry gold grades ranging from 3 gpt to greater than 100 gpt. Mineralized zones are steeply dipping with widths varying from 5m to 40m, heights varying from 60m to 200m, and strike lengths varying from 75m to 200m.



## **1.5 EXPLORATION**

All exploration work on the Red Mountain Gold Property is historic and has been undertaken by previous operators. To date, Banks Island Gold Ltd. has not performed any exploration work on the Red Mountain Gold Property and no significant exploration work has been completed on the Property since 1996.

Red Mountain has an extensive history of exploration work completed between 1989 and 1996 by various operators. Historic exploration on the Red Mountain Gold Property consisted of surface prospecting, underground bulk sampling, geological mapping, geophysical surveys, geochemical surveys, surface and underground diamond drilling, and underground drifting.

The extensive exploration by previous operators has led to partial delineation of a significant gold deposit on the Red Mountain Gold Property.

Banks Island Gold Ltd. plans to implement an exploration program as a component of the planned feasibility study.

## **1.6 MINERAL RESOURCE ESTIMATE**

Mr. Robert Baldwin, Professional Engineer and experienced mine geologist, has prepared the mineral resource modeling, calculations, and estimations presented in this Report. The mineral resources for the Red Mountain Gold Property were estimated in conformity with generally accepted Canadian Institute of Mining, Metallurgy, and Petroleum “Estimation of Mineral Resources and Mineral Reserves Best Practices” guidelines and are reported in accordance with Canadian Securities Administrators’ National Instrument 43-101. Mr. Baldwin is independent of the project owner, Banks Island Gold Ltd.

Utilizing a block model estimation methodology, the *Measured*, *Indicated*, and *Inferred* Mineral Resource at Red Mountain have been calculated and are presented in Table 1-1. Both gold and silver values have been used in resource calculations. The four mineralized zones included in the resource estimation are Marc, AV, JW, and 141 Zones. Readers are cautioned that mineral resources that are not mineral reserves do not have demonstrated economic viability.

**Table 1-1 Red Mountain Consolidated Mineral Resource Statement**

ZONE	Measured			Indicated			Inferred		
	Tonnes	Au Grade (gpt)	Ag Grade (gpt)	Tonnes	Au Grade (gpt)	Ag Grade (gpt)	Tonnes	Au Grade (gpt)	Ag Grade (gpt)
<i>Marc</i>	737,000	9.2	36	123,000	8.3	35	3,000	8.1	32
<i>AV</i>	326,000	8.0	23	250,000	8.1	23	175,000	8.4	24
<i>JW</i>	75,000	6.2	10	100,000	6.0	7	315,000	5.4	5
<i>141</i>							314,000	3.8	8
<b>Total</b>	<b>1,138,000</b>	<b>8.7</b>	<b>31</b>	<b>473,000</b>	<b>7.7</b>	<b>23</b>	<b>807,000</b>	<b>5.4</b>	<b>10</b>

Mineral reserve estimates are not possible at Red Mountain at this time. *Inferred* Mineral Resources are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves.

## 1.7 PRELIMINARY ECONOMIC ASSESSMENT

Based on the Mineral Resource calculated for the Red Mountain Gold Property, a Preliminary Economic Assessment has been prepared.

**The minable resource used in preparation of the Preliminary Economic Assessment is partially based on an *Inferred* Resource. The preliminary assessment is preliminary in nature and includes *Inferred* Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves.**

Where the words “ore” or “orebody” are used, it is for convenience purposes only. There is no certainty that the results and conclusions presented in this preliminary assessment will be realized.

The Preliminary Economic Assessment indicated that the current Movable Resource at Red Mountain may support an underground mining operation, termed Red Mountain Project, producing a gold/silver dore for shipment to a refinery.

### 1.7.1 MINE PLAN

The current mining methods proposed for the Red Mountain Project are transverse open stoping methods with the use of cemented paste fill for the Marc, AV, and 141 Zones and longitudinal longhole retreat method for the JW Zone.

Proposed access to the underground Red Mountain Project will be provided by a 7,190m adit, at a grade of +15%, from the Bitter Creek Mill site. Based on the current mineral resource estimate, mine production is planned to be 657,000 tonnes per year (1800tpd) over a mine life of 52 months.

### 1.7.2 *RECOVERY METHODS*

The proposed method of gold and silver recovery from the Red Mountain Gold Property consists of conventional crushing and milling, followed by froth flotation and CIL cyanidation of the flotation concentrate.

### 1.7.3 *INFRASTRUCTURE*

A 14km access road from Highway 37A to the Bitter Creek Mill Site requires significant repairs and reconstruction. A 14km transmission line is planned to be constructed to connect the mine and mill to the BC Hydro electrical grid.

The Bitter Creek Mill Site is planned to be located on a gently sloping terrace at the planned portal location of the Bitter Creek Mine Adit. Water supply for the mill will be from groundwater, reclaimed water from the settling ponds, and fresh water from Bitter Creek.

The planned tailings storage facility is proposed to be located immediately south of the Bitter Creek Mill Site. A minor valley created by a series of outcrop knobs is located in this area which creates an excellent area for tailings storage. This valley only has minor inflows from a branch of Otter Creek, which is completely separate from the large flows of Bitter Creek.

The minor valley below the planned tailings facility allows an ideal location for the construction of two settling ponds.

All non-acid generating waste produced from the development of the Bitter Creek Adit will be utilized in the construction of the tailings dams. Any potentially acid generating waste will be placed inside the tailings facility.

Pre-production development from the Red Mountain Decline will likely generate PAG waste, which will require an engineered waste dump in order to mitigate any problems with potential acid rock drainage.

BC Hydro maintains a 138kV transmission line which runs along Highway 37A to Stewart, BC. It is intended that a 14km transmission line will be built by the company to connect the Bitter Creek Mill site to the BC Hydro electrical grid.

#### 1.7.4 *MARKETING*

The Red Mountain Project will produce gold/silver dore for shipment to a precious metal refinery. There are currently no contracts in place or under negotiation for refining of dore produced at Red Mountain. Refining terms assumed in this Report are within standard industry norms.

#### 1.7.5 *PERMITTING AND ENVIRONMENTAL*

The Red Mountain Project will require a formal review under the BC Environmental Assessment Act prior to being issued a Mines Act permit. The Environmental Assessment review process was initiated in 1996 by a previous Property owner but was subsequently withdrawn. The Environmental Assessment information is available for future use.

Currently, Seabridge holds an exploration permit (MX-1-422), with associated \$1M environmental bond, on the Red Mountain Gold Property.

The most important waste management issue for the Red Mountain Project is the prevention and control of ARD from the tailings and any potentially acid generating rock which is produced during mine development or operation. Potentially acid generating tailings will be sent underground and utilized as cemented paste backfill material to provide support for mining adjacent longhole stopes and to create nearly impermeable material to reduce the acid generating potential. All non-acid generating material will be sent to the tailings pond.

Annual site environmental monitoring is required as a condition of the current exploration permit. During proposed operations, an environmental monitoring program will also be implemented.

The mine closure concept is to meet water quality objectives without ongoing treatment for acid rock drainage. The structures on the Red Mountain Gold Property will be decommissioned and removed from the site upon completion of mining.

The cost of closure and reclamation has not been estimated in this Report. It is assumed that the salvage values from mill, mobile and stationary equipment will be adequate to pay for the cost of closure and reclamation.

#### 1.7.6 *REVENUE PER TONNE*

At a base case gold price of \$1,360 CDN/oz, the net revenue per tonne mined after process recovery, refining charges, and royalties is \$219 CDN/tonne. Net revenue per tonne for the base and current price scenarios are displayed in Table 1-2.

**Table 1-2 Net Revenue per Tonne**

	Au Price \$CDN/oz	Ag Price \$CDN/oz	Net Revenue per tonne (\$CDN/t)
Base Case	<b>\$1,360</b>	\$27	<b>\$219</b>
Current Prices	<b>\$1,700</b>	\$34	<b>\$288</b>

### 1.7.7 CAPITAL AND OPERATING COSTS

The estimated capital cost from feasibility through to commercial production is estimated at \$162,671,000, including cost contingencies. A summary of estimated capital costs are presented in Table 1-3.

Capital expenditures related to design, permitting, construction, and commissioning of the Red Mountain Gold Mine are modeled to occur in a 3-Year pre-production period. All expenditures that are expected to occur after commercial production has commenced are treated as operating costs.

**Table 1-3 Capital Cost Summary**

<b>CAPITAL COST SUMMARY</b>	
FEASIBILITY STUDY	\$6,477,000
ROAD BUILDING & POWER TRANSMISSION	\$8,386,000
MOBILE EQUIPMENT	\$16,560,000
MINE STATIONARY EQUIPMENT	\$2,383,000
MINE DEVELOPMENT & CONSTRUCTION	\$39,271,000
SURFACE STRUCTURES	\$8,488,000
BACKFILL PLANT	\$7,000,000
MILL EQUIPMENT & CONSTRUCTION	\$53,979,000
COST CONTINGENCY	\$20,127,000
	<b>\$162,671,000</b>

Based on the production schedule and expected operating costs, a working capital requirement of \$11,000,000 is anticipated. This is adequate to cover all operating costs expected for the first three months of production.

Operating costs have been estimated at \$206,789,000 over the current 52 month mine life averaging \$72.68 per tonne milled. A summary of operating costs are displayed in Table 1-4.

**Table 1-4 Operating Cost Summary**

<i>OPERATING COST SUMMARY</i>		
	<b>Total Cost</b>	<b>Cost per tonne</b>
<b><u>MINING &amp; SURFACE</u></b>		
MATERIALS	\$12,090,000	\$4.25
BACKFILL BINDER	\$24,107,000	\$8.47
LUBE, TIRES, & PARTS	\$12,096,000	\$4.25
MINE ELECTRICITY	\$2,639,000	\$0.93
DIESEL FUEL	\$9,592,000	\$3.37
AVALANCHE CONTROL	\$2,603,000	\$0.91
MINE AIR HEATING	\$1,445,000	\$0.51
MINE, MAINTENANCE & SURFACE LABOUR	\$49,750,000	\$17.49
	<b>\$114,322,000</b>	<b>\$40.18</b>
<b><u>MILL</u></b>		
LABOUR	\$26,857,000	\$9.44
SAFETY, SPARES, & ELECTRICAL	\$7,824,000	\$2.75
MILL ELECTRICITY	\$5,861,000	\$2.06
REAGENTS	\$12,973,000	\$4.56
BALLS & LINERS	\$4,353,000	\$1.53
PIPING, LUBRICANTS, ASSAY	\$854,000	\$0.30
	<b>\$58,722,000</b>	<b>\$20.64</b>
<b><u>MANAGEMENT, TECHNICAL &amp; SUPERVISION</u></b>		
STAFF SALARIES	\$15,885,000	\$5.58
STAFF INCENTIVES	\$2,542,000	\$0.89
	<b>\$18,427,000</b>	<b>\$6.48</b>
<b><u>CONTINGENCY (8%)</u></b>	<b>\$15,318,000</b>	<b>\$5.38</b>
<b>TOTAL OPERATING COSTS</b>	<b>\$206,789,000</b>	<b>\$72.68</b>

1.7.8 ECONOMIC ASSESSMENT

An economic analysis on a pre-tax basis was performed based on the schedule, revenues, and costs presented in this Report. The financial summary is presented in Table 1-5.

Table 1-5 Financial Summary

<b>FINANCIAL SUMMARY (PRETAX)</b>			
	BASE CASE	CURRENT PRICE	
PRICE OF GOLD	1,360	1,700	\$CDN/oz
MINE LIFE	52		months
TOTAL ORE MINED	2,845,000		Tonnes
GOLD PRODUCTION	474,382		oz
SILVER PRODUCTION	1,233,405		oz
GOLD EQ* PRODUCTION	<b>499,050</b>		oz Au <sub>eq</sub>
AVERAGE ANNUAL PRODUCTION	115,246		oz Au <sub>eq</sub> / year
OPERATING COST PER OZ	\$459	\$471	\$CDN/oz Au <sub>eq</sub>
TOTAL REVENUE	678,709,000	848,386,000	\$CDN
TOTAL OPERATING COST	206,789,000	206,789,000	\$CDN
ROYALTIES PAYABLE	22,505,000	28,444,000	\$CDN
OPERATING CASH FLOW	<b>449,415,000</b>	<b>613,153,000</b>	\$CDN
CAPITAL COST	162,671,000	162,671,000	\$CDN
PROPERTY ACQUISITION	11,000,000	11,000,000	\$CDN
INCOME AFTER CAPITAL	<b>275,744,000</b>	<b>439,482,000</b>	\$CDN
NPV(8%)	<b>\$155,398,000</b>	<b>\$264,134,000</b>	\$CDN
NPV(5%)	\$192,779,000	\$318,980,000	\$CDN
NPV(0%)	\$275,744,000	\$439,482,000	\$CDN
IRR	43%	63%	
PAYBACK ON CAPITAL	14	11	months

*\*Gold Equivalent calculated by converting silver to gold at ratio of 1:50*

The projected revenue value per tonne is presented on a Net Smelter Return basis. The Net Present Value (NPV) of the project was calculated on a pretax basis with discount rates of 8% and 5% per year, for both the base case and current price scenarios. Working capital of \$11,000,000 and Environmental Bonding of \$5,000,000 supplied on a 100% equity basis is assumed. Table 1-5 summarizes the NPV and IRR calculations.

A total of \$11,000,000 in payments are assumed to be payable to Seabridge Gold for acquisition of the Property, which is taken into account in the economic assessment.

The NPV is highly sensitive to changes in the price of gold and the ore grade but significantly less sensitive to changes in operating costs. It is important to note that variations in the ore grade reflect a change in the insitu grade of the orebody itself and not increased or decreased dilution from mining. In addition, there is potential for expansion of minable resources at Red Mountain with a resulting increase in the mine life.

## **1.8 INTERPRETATIONS AND CONCLUSIONS**

The Red Mountain Gold Property is an advanced development stage gold property and a mineral property of merit. Important mineralized zones containing gold values are present on the Property. Further exploration and development work is warranted and recommended on the Property.

The Preliminary Economic Assessment presented in this Report indicates that an underground gold mining operation at Red Mountain may be viable. The economic assessment contemplates an 1800tpd mine producing gold/silver dore onsite. At the base case price assumption, CDN\$1360/oz gold, the pre-tax NPV (8%) is estimated at \$155,398,000 with an IRR of 43%.

Significant uncertainties and risks related to mineral processing, infrastructure, environmental, and mineral resource exist and detailed geological, engineering, and environmental studies will be required to advance the Red Mountain Project design to a feasibility level.

## **1.9 RECOMMENDATIONS**

The preliminary economic assessment presented in this Report indicates an underground gold mining operation at Red Mountain may be viable. It is the recommendation of the author's report that the project be advanced towards a pre-feasibility or feasibility level study.

A feasibility level study is recommended at an estimated cost of \$6,477,000. The recommended work is comprised of a diamond drilling program with a budgeted cost of \$4.2M and engineering and environmental studies at a cost of \$2.3M. Table 1-6 details the recommended feasibility studies.

Diamond drilling is required to bring the current *Inferred* Mineral Resources into the *Measured* and *Indicated* Mineral Resource categories. Detailed metallurgical testwork is required to verify the assumptions and designs presented in this Report



and advanced fieldwork and engineering is required for road design, electrical transmission lines, foundations, tailings facilities, and structures.

**Table 1-6 Feasibility Study Recommendations**

<b><i>DIAMOND DRILLING PROGRAM</i></b>	
Heavy Lift Helicopter	\$330,000
Drift Rehab & Dewatering	\$545,000
Equipment Rental	\$64,000
Mining Contractor Profit	\$121,800
Ventilation & Pumping	\$23,000
Diamond Drilling(13,000m)	\$2,600,000
Camp	\$302,000
Geological Staff	\$191,000
	\$4,177,000
<b><i>ENGINEERING &amp; ENVIRONMENTAL</i></b>	
Metallurgical Testing	\$350,000
Baseline Review & Studies	\$300,000
EA pre-application	\$250,000
Road & Powerline Engineering	\$350,000
Tailings & Geotechnical	\$400,000
ARD Studies	\$250,000
Mine & Mill Engineering	\$400,000
	\$2,300,000

## **2.0 INTRODUCTION**

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### **2.1 INTRODUCTION**

This Technical Report, with inclusion of a Preliminary Economic Assessment (PEA), was prepared for Banks Island Gold Ltd. to provide a review of the potential economic viability of underground mining and mineral processing for multiple mineralized zones of the Red Mountain Mineral Property (Property). Resource estimation work was undertaken in compliance with Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Mineral Resource and Mineral Reserve definitions that are referred to in National Instrument (NI) 43-101 Standards of Disclosure for Mineral Projects. This Technical Report has been prepared in compliance with the requirements of Form 43-101.F1.

### **2.2 TERMS OF REFERENCE**

The purpose of the Technical Report is to consolidate all historical documents and information pertaining to Red Mountain Gold Property, provide guidance for a development program, provide engineering designs and calculations, provide recommendations, and support the disclosure of mineral resources estimation for Banks Island Gold Ltd.

Mr. Robert Baldwin, P.Eng., served as the Independent Qualified Person responsible for preparation and supervision of the Technical Report, preparation of mineral resource estimates, engineering designs and calculations, and recommendations. Mr. Lyn Jones, P.Eng., served as the Independent Qualified Person responsible for the engineering designs, calculations, and recommendations related to mineral processing and metallurgical testing. Specifically, Mr. Lyn Jones, P.Eng., prepared and is responsible for Section 13: Mineral Processing and Metallurgical Testing, Section 17: Recovery Methods, and Section 21.1.3: Milling Capital and Operating Costs of the Report.

All units in this Report are based on the International System of Units (SI), except for some units which are deemed industry standards such as troy ounces (oz) and historical values for which the units are stated accordingly.

All historical data and records were provided by Banks Island Gold Ltd. The information and technical documents listed in Section 27: References were utilized during the preparation of this Report. Specific references are included throughout the text of the Report.

## **2.3 SITE VISIT**

Mr. Robert Baldwin, P.Eng., did not undertake a personal inspection of the Red Mountain Gold Property due to the seasonal weather conditions present at site during the writing of this Technical Report. The Red Mountain Property is covered in snow and is subject to winter weather conditions typically until July. Mr. Baldwin did not believe that a site visit to the Red Mountain Property during winter would allow beneficial information regarding the Property to be obtained.

Mr. Baldwin intends to perform a site visit on the Red Mountain Gold Property at first opportunity. The site visit is currently scheduled for the month of July 2012.

Mr. Lyn Jones, P.Eng., did not undertake a personal inspection of the Red Mountain Gold Property as the preliminary economic assessment of the mineral processing and metallurgical testing, for which Mr. Jones was responsible, was limited to research of historic documents and application of present technology.

## 2.4 GLOSSARY

This Report uses many abbreviations and acronyms common in the mining industry, most of which are defined in the body of the text. Further explanations are listed in the following glossary.

Canadian	CDN
Canadian dollar	\$
Canadian Institute of Mining, Metallurgy, and Petroleum	CIM
copper	Cu
cubic feet per minute	cfm
feet	ft
gold	Au
grams	g
hectare	ha
hour / hours	hr / hrs
Internal Rate of Return	IRR
iron	Fe
kilometre	km
kilowatt	kW
kilowatt hour	kWhr
lead	Pb
load haul dump	LHD
life of mine	LOM
megapascal	MPa
metre	m
metric tonne (1000 kg)	t
National Topographic System	NTS
Net Smelter Return	NSR
Net Present Value	NPV
parts per billion	ppb
potential acid-generating	PAG
pounds	lbs
qualified persons	QP
rock mass rating	RMR
rock quality designation	RQD
silver	Ag
specific gravity	SG
sulphur	S
ton (2000 lbs)	ton
Tonne (2204.6 lbs or 1000kg)	T
tonnes per day	tpd
Troy ounce	oz
Universal Transverse Mercator	UTM
zinc	Zn

### **3.0 RELIANCE ON OTHER EXPERTS**

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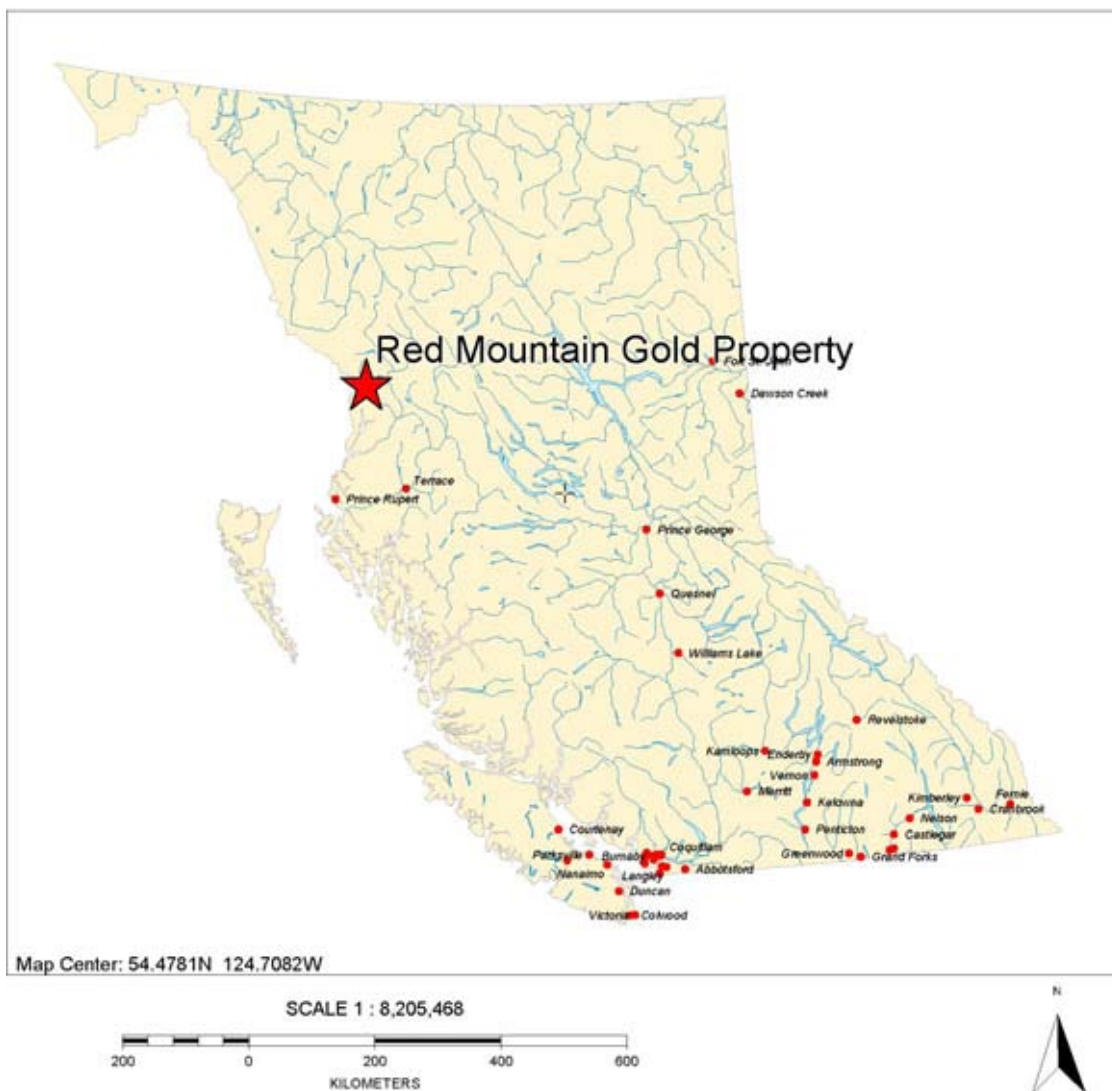
Mr. Robert Baldwin, P.Eng., and Mr. Lyn Jones, P.Eng., utilized the available database of historical data and reports for the Red Mountain Gold Property in conducting the technical review. The information and technical documents listed in Section 27: References of this Report were utilized during the preparation of this Report. Specific references are included throughout the text of this Report. The authors of the Technical Report carefully reviewed all the available information and exercised reasonable diligence in checking, confirming, and reviewing this information. For the purposes of this Report, information and data contained in the historical database is considered reliable by the authors.

## 4.0 PROPERTY DESCRIPTION AND LOCATION

### 4.1 PROJECT LOCATION

The 17,125 hectare Red Mountain Gold Property is located in the Skeena Mining Division near the town of Stewart in northwestern British Columbia, as shown on the overview map in Figure 4-1. The Property is located approximately 18km east-northeast of the town of Stewart (55°56'29"N, 129°59'17"W) between the Cambria Ice Field and the Bromley Glacier at elevations ranging between 500m and 2,000m. The Property, on NTS map sheets 103P/13 and 104A/4, is centred on 55°59'4"N, 129°45'37"W. Additionally, the UTM coordinates are 452,450 E, 6,250,325 N in Zone 9 (NAD 83).

Figure 4-1 Property Location Overview, Red Mountain Gold Property



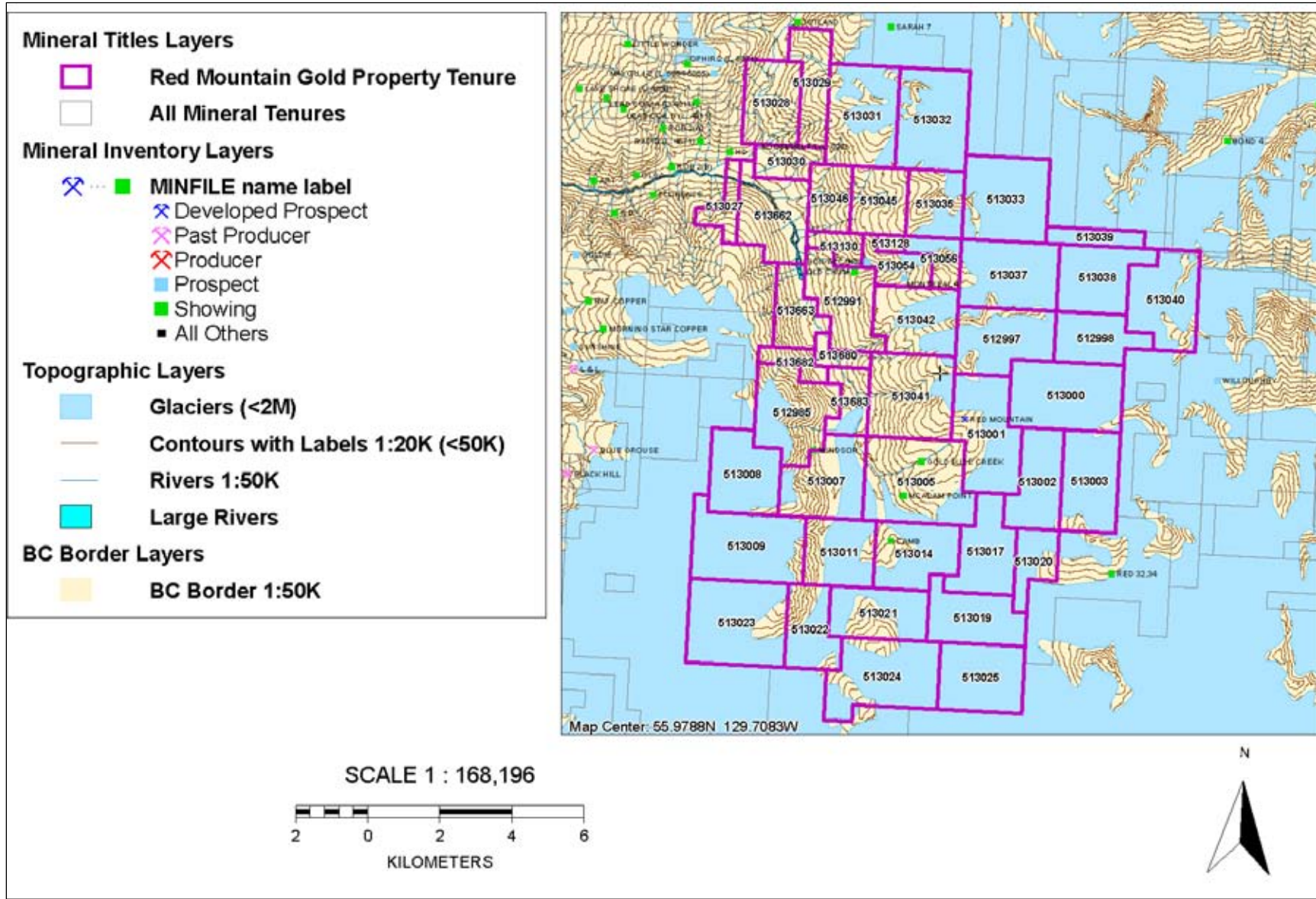
## **4.2 PROPERTY DESCRIPTION**

The Red Mountain Gold Property consists of 47 mineral claims (941 cells) totaling 17,125 hectares as shown in Figure 4-2 and detailed in Table 4-1. The recorded owner of the claims is Seabridge Gold Inc. The Property boundaries are located along claim limits as determined by the BC map staking system.

The Red Mountain mineral claims are due to expire from good standing between the 11<sup>th</sup> of July 2012 and the 19<sup>th</sup> of January 2013. The specific expiration date for each claim is detailed in Table 4-1. Under the BC Mineral Tenure Act, Banks Island Gold Ltd. can maintain the located mineral claims in good standing by filing assessment work in the amount of \$8.00 per hectare per year.

No significant factors or risk are known to exist which would affect access, title, or the right or ability to perform work on the Property.

Figure 4-2 Claim Boundary and Mineralized Zones, Red Mountain Mineral Property





**Table 4-1 Red Mountain Gold Property Mineral Tenures**

RED MOUNTAIN GOLD PROPERTY: MINERAL TENURES					Date:	02-Mar-12				
					Tenures:	47				
OWNER:	Seabridge Gold Inc.	100.00%			Cells:	941				
BC CLIENT NO.	145264				Area (ha):	17125.204				
MINING DIVISION:	Skeena									
LOCATION:	Northwest British Columbia, 18km East-Northeast of Stewart, BC									
MAP NO.	NTS:	103P/13, 104A/4			GEOGRAPHIC COORDINATES:			55°59'4"N, 129°45'37"W		
	BCGS:	103P092, 104A002			UTM COORDINATES (NAD 83, ZONE 9):			452,450 E, 6,250,325 N		
Tenure Number	Tenure Type	Claim Name	% Held	BCGS Map Number	Issue Date	Good To Date	Cells	Status	Area (ha)	Yearly Work Requirement
512985	Mineral		100%	103P092	2005/may/19	2012/jul/15	27	GOOD	488.80	\$3,910.38
512991	Mineral		100%	103P092	2005/may/19	2012/sep/26	23	GOOD	416.154	\$3,329.23
512997	Mineral		100%	103P092	2005/may/19	2012/aug/12	25	GOOD	452.432	\$3,619.46
512998	Mineral		100%	103P092	2005/may/19	2012/aug/12	17	GOOD	307.647	\$2,461.18
513000	Mineral		100%	103P092	2005/may/19	2012/jul/15	32	GOOD	579.305	\$4,634.44
513001	Mineral		100%	103P092	2005/may/19	2012/sep/16	29	GOOD	525.127	\$4,201.02
513002	Mineral		100%	103P092	2005/may/19	2012/jul/15	20	GOOD	362.257	\$2,898.06
513003	Mineral		100%	103P092	2005/may/19	2012/jul/15	24	GOOD	434.699	\$3,477.59
513005	Mineral		100%	103P092	2005/may/19	2012/jul/11	37	GOOD	670.206	\$5,361.65
513007	Mineral		100%	103P092	2005/may/19	2012/sep/23	25	GOOD	452.776	\$3,622.21
513008	Mineral		100%	103P092	2005/may/19	2012/sep/16	23	GOOD	416.515	\$3,332.12
513009	Mineral		100%	103P092	2005/may/19	2012/sep/08	33	GOOD	597.805	\$4,782.44
513011	Mineral		100%	103P092	2005/may/19	2012/sep/08	20	GOOD	362.383	\$2,899.06
513014	Mineral		100%	103P092	2005/may/19	2012/sep/02	22	GOOD	398.677	\$3,189.42
513017	Mineral		100%	103P092	2005/may/19	2012/sep/16	21	GOOD	380.539	\$3,044.31
513019	Mineral		100%	103P092	2005/may/19	2012/aug/12	20	GOOD	380.734	\$3,045.87
513020	Mineral		100%	103P092	2005/may/19	2012/jul/15	11	GOOD	199.338	\$1,594.70
513021	Mineral		100%	103P092	2005/may/19	2012/aug/12	21	GOOD	380.738	\$3,045.90
513022	Mineral		100%	103P092	2005/may/19	2012/sep/08	17	GOOD	308.159	\$2,465.27
513023	Mineral		100%	103P092	2005/may/19	2012/sep/08	35	GOOD	634.389	\$5,075.11
513024	Mineral		100%	103P092	2005/may/19	2012/aug/12	32	GOOD	580.53	\$4,644.24
513025	Mineral		100%	103P092	2005/may/19	2012/aug/12	24	GOOD	435.383	\$3,483.06
513027	Mineral		100%	104A002	2005/may/19	2012/sep/26	7	GOOD	126.577	\$1,012.62
513028	Mineral		100%	104A002	2005/may/19	2012/sep/15	16	GOOD	361.393	\$2,891.14
513029	Mineral		100%	104A002	2005/may/19	2012/sep/15	14	GOOD	289.073	\$2,312.58
513030	Mineral		100%	104A002	2005/may/19	2012/sep/15	11	GOOD	162.691	\$1,301.53
513031	Mineral		100%	104A002	2005/may/19	2012/sep/15	30	GOOD	542.145	\$4,337.16
513032	Mineral		100%	104A002	2005/may/19	2012/sep/15	30	GOOD	542.161	\$4,337.29
513033	Mineral		100%	104A002	2005/may/19	2012/sep/24	30	GOOD	542.426	\$4,339.41
513035	Mineral		100%	104A002	2005/may/19	2012/jul/15	16	GOOD	289.308	\$2,314.46
513037	Mineral		100%	103P092	2005/may/19	2012/aug/12	28	GOOD	506.513	\$4,052.10
513038	Mineral		100%	103P092	2005/may/19	2012/aug/12	22	GOOD	397.977	\$3,183.82
513039	Mineral		100%	104A002	2005/may/19	2012/sep/14	7	GOOD	126.596	\$1,012.77
513040	Mineral		100%	103P092	2005/may/19	2012/sep/21	26	GOOD	470.395	\$3,763.16
513041	Mineral		100%	103P092	2005/may/19	2012/sep/23	30	GOOD	543.126	\$4,345.01
513042	Mineral		100%	103P092	2005/may/19	2012/sep/26	23	GOOD	416.2	\$3,329.60
513045	Mineral		100%	104A002	2005/may/19	2012/jul/15	16	GOOD	289.307	\$2,314.46
513046	Mineral		100%	104A002	2005/may/19	2012/jul/15	12	GOOD	216.972	\$1,735.78
513054	Mineral		100%	104A002	2005/may/19	2013/jan/19	10	GOOD	180.89	\$1,447.12
513056	Mineral		100%	104A002	2005/may/19	2012/jul/15	8	GOOD	144.704	\$1,157.63
513128	Mineral		100%	104A002	2005/may/20	2013/jan/19	2	GOOD	36.173	\$289.38
513130	Mineral		100%	104A002	2005/may/20	2013/jan/19	6	GOOD	108.522	\$868.18
513662	Mineral		100%	104A002	2005/may/31	2012/sep/26	24	GOOD	434.001	\$3,472.01
513663	Mineral		100%	103P092	2005/may/31	2012/sep/16	14	GOOD	253.327	\$2,026.62
513680	Mineral		100%	103P092	2005/may/31	2012/sep/06	5	GOOD	90.495	\$723.96
513682	Mineral		100%	103P092	2005/may/31	2012/sep/02	6	GOOD	108.596	\$868.77
513683	Mineral		100%	103P092	2005/may/31	2012/sep/23	10	GOOD	181.046	\$1,448.37
<b>TOTAL</b>	<b>47</b>						<b>941</b>		<b>17125.2</b>	<b>\$137,001.63</b>

### 4.3 AGREEMENTS

Banks Island Gold Ltd. has had an active interest in the Red Mountain Gold Property since January of 2012 and presently holds an option agreement with Seabridge Gold Inc. The Option Agreement dated the 12th of June 2012, outlines the obligations that Banks Island Gold Ltd. must fulfill to earn 100% interest in the Property.

Banks Island Gold has paid \$550,000 and issued 4,000,000 common shares to Seabridge Gold as of June 12<sup>th</sup>, 2012, the date of definitive Option Agreement for the acquisition of the Red Mountain Gold Project. The terms of the option agreement contemplate that the Company may earn a 100% interest in the Project from Seabridge by making the payments to Seabridge as detailed below:

- \$450,000 cash payment on or before December 15<sup>th</sup> 2012.
- \$1,500,000 cash payment on or before August 2<sup>nd</sup> 2013.
- \$9,500,000 cash payment on or before January 2<sup>nd</sup> 2015.

### 4.4 ENVIRONMENTAL LIABILITIES

Currently there is a \$1,000,000 cash reclamation bond posted by Seabridge with the provincial government against the Red Mountain Property. The bond was reduced from \$1,500,000 to \$1,000,000 in 2002 and can be recovered pending the remediation of certain environmental issues, which include the following:

- Reclamation and closure of approximately 50,000 tonnes of development waste rock that may be potentially acid generating.
- Closure of the decline portal.
- Removal of the camp and equipment from the site.

A field investigation was completed by SRK in August 2009 and the findings are detailed in the report entitled *Red Mountain Property 2009 Field Investigations Assessment Report* (SRK, 2010). The general site conditions as of 2009 are summarized as follows:

- Plywood structure restricting access to the underground workings was observed to be in good condition.
- Condition of the small waste rock dump pile has not changed from previous inspections.
- The mechanics' shop was in a similar condition as observed in 2008. The plywood door coverings had been removed from the four sea containers.
- The three horizontal fuel tanks were emptied in 2007.

- Significant rehabilitation would be required to put the crusher back into service, if required.
- The appearance of the crushed ore pile revealed isolated rusty brown-stained clasts in a mass of fresh to slightly tarnished crushed rock with massive disseminated sulphides. The crushed ore pile remained similar to that previously observed.
- No water ponding was evident in the lined collection basin at the south end of the main waste rock dump.
- The Cirque Camp area was subject to a significant reclamation effort in August 2008. The former camp area was observed to consist of a uniformly-graded area of exposed mineral soil and the area was generally free of demolition debris.
- The black horizontal fuel tank was dipped and contained 82.5cm of fuel (roughly 4210L).
- The metal quonset-style helicopter hangar was in reasonable condition at the time of inspection and remains in place.
- The two mobile trucks and empty skid-mounted 500L fuel tank remained at the drill laydown area. Minor wood debris was scattered on the steep slope below the drill laydown area, as previously observed (SRK, 2010).

The Red Mountain PEA completed by SRK (SRK, 2008) indicated that a loss of fuel from one of the fuel storage tanks in the service area of the portal had occurred due to a leak from the tank. There was no evidence to suggest a surface spill but it was assumed that the fuel had percolated into the underlying bedrock. The regulators were informed of the leakage and were satisfied with the response

No other environmental liabilities are known at this time.

According to a reclamation plan filed with the Ministry of Energy and Mines in February of 2004, the bond is sufficient to cover the reclamation costs on the Property. As stated in the Red Mountain PEA completed by SRK (SRK, 2008), regulators have expressed interest in updating the reclamation plan to reflect current costs as the reclamation costs have likely increased due to the increased costs of fuel and contractor rates.

## 4.5 PERMITS

Currently, Seabridge holds an exploration permit (MX-1-422), with associated \$1M environmental bond, on the Red Mountain Gold Property. Transfer of the exploration permit to Banks Island Gold Ltd. is possible by means of the *Option Agreement*; however, direct application and postage of bond by Banks Island Gold will likely be a more direct process to obtaining approval for exploration work.

A formal review under the BC Environmental Assessment Act is required in British Columbia for any proposed new mine that exceed the threshold criteria described in

the Mine Project Thresholds for BCEAA. In accordance with the approving authority, the British Columbia Ministry of Energy, Mines and Petroleum Resources, an Environmental Assessment (EA) Certificate from the Environmental Assessment Office must be obtained prior to being issued a Mines Act permit.

## 4.6 ROYALTIES

The Red Mountain Gold Property is 100% owned by Seabridge Gold Inc. The Property is subject to the payment of production royalties and, on the key Wotan Resources Corp. (“Wotan”) claim group, to the payment of an annual minimum royalty of \$50,000.

Two separate production royalties, totaling 3.5% net smelter return (“NSR”), are applicable to the Wotan claims, which contain the known Red Mountain mineralized zones. The royalties include a 1.0% NSR payable to Barrick Gold Corporation (“Barrick”) and a 2.5% NSR payable to Wotan.

Upon sale of the Property to Royal Oak in 1995, Barrick was granted its 1.0% NSR royalty on all of the then existing claims. Bond Gold Canada Inc. (“Bond Gold”) assembled most of the existing Red Mountain Property package in 1989 by way of three option agreements (Wotan, Krohman, and Harkley Agreements) which were subsequently exercised and the claims purchased by Bond Gold’s successor, Lac Minerals (“Lac”). The agreements each provide for NSR royalties and one of them, the Wotan agreement, has an area of influence.

### 4.6.1 UNDERLYING AGREEMENTS

The principal agreements governing the Red Mountain Gold Property are listed below in chronological order.

#### PWC Agreement

Agreement of Purchase and Sale dated the 17<sup>th</sup> of December 1999 between Price Waterhouse Coopers (“PWC”), in its capacity as interim receiver of Royal Oak Mines (“Royal Oak”), and North American Metals Corporation (“NAMC”); and Bill of Sale dated the 7<sup>th</sup> of February 2000 between PWC and NAMC.

Pursuant to these agreements, NAMC purchased all of Royal Oak’s rights and interests, and assumed all of Royal Oak’s obligations.

#### Barrick Agreement

Asset Purchase and Royalty Agreement dated the 17<sup>th</sup> of August 1995 between 1091064 Ontario Limited (“1091064”), Royal Oak, and Barrick. The agreement was further amended by a Consent Agreement dated the 3<sup>rd</sup> of February 2000 among NAMC, Barrick, and 1091064.

Under the 1995 agreement, Royal Oak purchased its interest in Red Mountain from 1091064 (a wholly-owned Barrick subsidiary) and granted 1091064 (Barrick) an uncapped 1.0% NSR royalty on production from the Property. Through the

agreement, 1091064 is also entitled to receive an additional \$10.00 per ounce cash production payment on all gold produced from the Property in excess of 1,850,000 ounces.

#### Wotan Agreement

Agreement dated the 26<sup>th</sup> of July 1989 between Bond Gold Canada Inc. (“Bond Gold”) and Wotan (Dino Cremonese) granting Bond Gold an option to acquire seven mineral claims. The agreement was further amended by a Notice and Agreement dated 10 February 2000 between NAMC, Wotan, and Cremonese.

Banks Island Gold is obligated to pay Wotan an uncapped 2.5% NSR royalty on production from seven historic claims (Oro I–VI and Hrothgar, which contain the known Red Mountain Gold Property) and from any other properties within a 2 km area of influence extending from the boundaries of the claims. In 2005, Claim Oro III was abandoned, while the other six claims were renamed as claims 513005, 513001, 513017, 513041, 513007, and 513683. An annual advance royalty of \$50,000 is due by October 31<sup>st</sup> of each year. All minimum royalties paid from inception are deductible, once production is attained, against the NSR production royalty amount otherwise payable.

#### Krohman Agreement

Agreement dated the 9<sup>th</sup> of September 1989 between Bond Gold, Greg Sinitsin, and Darcy Krohman to option 11 claims, as amended by (1) an assignment and release dated the 21<sup>st</sup> of March 1990 between Bond and Greg Sinitsin; (2) a letter agreement between Lac and Darcy Krohman dated the 24<sup>th</sup> of September 1992; and (3) a Notice and Agreement dated the 10<sup>th</sup> of February 2000 between NAMC and Darcy Krohman.

Banks Island Gold is obligated to pay Krohman a 1.0% NSR royalty on production from 11 historic Bon Accord claims, of which some have been abandoned in 2005 and the remaining comprise portions of claims 513130 and 513128. The royalty may be purchased at any time for \$500,000.

#### Harkley Agreement

Option Agreement dated the 26<sup>th</sup> of September 1989 between Bond, Harkley Silver Mines Ltd. (“Harkley Silver”), Stephen Fegen, and Wesley Scott. The agreement was further amended by a letter agreement dated the 30<sup>th</sup> of September 1992 between Lac Minerals (“Lac”) and Harkley Silver and a Notice and Agreement dated the 10<sup>th</sup> of February 2000 between NAMC and Harkley Silver.

Harkley Silver holds an uncapped 3.0% NSR royalty on production from 24 historic claims (Kim 1-14, Pam 1-2, Montreal No. 1-8) of which some have been abandoned in 2005 and the remaining comprise portions of claims 513054, 512991, and 513042.

## **5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**

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### **5.1 ACCESSIBILITY**

The Red Mountain Gold Property is situated in steep, rugged terrain near the Alaska – BC border, approximately 18km east-northeast of Stewart, BC. Glacial ice is present year round at elevations greater than 600m. The Property lies between the Cambria Ice Field to the east and the Bromley Glacier to the south.

The Property is accessible by helicopter from Stewart with a flight time of 10 to 15 min. A 13km road access was developed along the Bitter Creek valley from Highway 37A (at a junction 14km northeast of Stewart) to the Hartley Gulch-Otter Creek area by Lac Minerals in 1994. Currently, this road is passable for only a few kilometres from the highway. The remainder is inaccessible as sections have been subject to washout or landslide activity.

### **5.2 PHYSIOGRAPHY**

The topography in the Red Mountain area is extremely steep and rugged, with elevations ranging from 500 m to over 2,100 m above sea level. The mineralized zones are located under the summit of Red Mountain at elevations between 1,600m and 2,000m. Alpine glaciers are abundant and surround the property on three sides. Lower elevations are forested, with the tree line occurring at approximately 1,300 m. All current on-site infrastructure lies above the tree line in alpine terrain.

### **5.3 CLIMATE**

The Red Mountain Gold Property is located in the Coastal Mountain-heather Alpine (CMA) Zone of the British Columbia's Ministry of Forests and Range Biogeoclimatic Ecosystem Classification (BC Ministry of Forests and Range, 2006). Climatic conditions at Red Mountain are dictated primarily by its altitude (1,742m above sea level) and proximity to the Pacific Ocean.

#### **5.3.1 PRECIPITATION**

Precipitation is significant in all months, with the wettest month usually being October. Over one-third of the annual precipitation falls as snow, even at sea level. At higher elevations, snow fall may occur year round. Precipitation measurements taken at the Stewart Airport are considered to be representative of precipitation at

the Red Mountain site. The data collected between 1974 and 1992 indicate yearly precipitation averages of approximately 188 cm with the bulk of precipitation during fall and winter months.

### 5.3.2 *TEMPERATURE*

Temperatures at Red Mountain are moderated year-round by the coastal influence. Data was collected on site between June 1993 and June 1994. The data collected indicated an average temperature of 0.1°C, with temperatures ranging from -25°C in the winter and 20°C in summer.

### 5.3.3 *RELATIVE HUMIDITY*

Due to the proximity of the Pacific Coast, the relative humidity is generally high year-round. The relative humidity through 1993 and 1994 ranged from 67.5% to 89.4% with an average of 78.4% based upon the one-hour average relative humidity values.

### 5.3.4 *WIND*

Windy conditions are frequent at Red Mountain where hourly average wind speeds regularly exceed 10 m/s and instantaneous wind speeds in excess of 30 m/s have been observed. Measurements taken to date are from more sheltered locations than the top of the ridge where significantly higher wind speeds are expected. Windy conditions add a significant wind chill factor at most times of year.

## 5.4 **OPERATING SEASON**

The heavy snowfall and steep terrain present a challenging combination for infrastructure development and mine management. Blizzard conditions are frequent in the immediate area around the Red Mountain Gold Property during the winter and avalanches pose a threat in the Bitter Creek Valley and in the upper Bear River Valley, through which the Highway 37A corridor passes.

Surface exploration and infrastructure construction is limited to the summer season. Following construction and establishment of infrastructure, year-round underground activities would be possible.



## **5.5 INFRASTRUCTURE**

The District of Stewart, located 18km west-southwest of the Red Mountain Gold Property, has a population of approximately 700. The nearby center of Terrace (approximately 310km by road from Stewart) has an area population of about 15,500, while Smithers (approximately 330km from Stewart) has a population of 6,000 and a trading area population of 20,000.

The town of Stewart has a paved airstrip, a small hospital, an RCMP detachment and a variety of retail businesses including restaurants and hotels. There is a charter helicopter hanger in town. There is no regularly scheduled air service to Stewart.

Stewart is situated at the head of the Portland Canal, a 120 km long fjord that remains ice-free year-round. This has allowed operation of Stewart Bulk Terminals, which has been serving the Pacific Northwest since 1993. Their dock has a capacity of 800 tph. Contracts previously undertaken by the Stewart Bulk Terminals include handling ore or concentrate from Homestake Mine, Snip Mine, Eskay Creek, and Huckleberry Mine.

Power is available by an electrical transmission line that runs along Highway 37A at the junction with the Bitter Creek Access Road. The proposed power supply is detailed in Section 18: Project Infrastructure of this Report.

Water is available underground and from groundwater sources and creeks adjacent to the Red Mountain Gold Property.

There are suitable locations identified for the site infrastructure, rock storage locations, and tailings facilities in the Bitter Creek Valley. The locations and pertinent details of the site infrastructure are located in Section 18: Project Infrastructure of this Report.

Some exploration and supporting personnel may be recruited from the adjacent communities. Skilled professionals not available in local communities could be transported from more distant centers to the Property.

## **5.6 SURFACE RIGHTS**

The Red Mountain project resides on Crown land and no private property lies within the operating plan area. Exploration permit (MX-1-422), issued to Seabridge, currently exists on the Property, while a mining lease from the Crown would be required for mining operations.

## **6.0 HISTORY**

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### **6.1 EARLY HISTORY**

Prospecting and small-scale mining took place near Red Mountain, in the Bitter Creek Valley, as early as 1900 and persisted intermittently through the first half of the 20<sup>th</sup> century. At this time, the Red Mountain Gold Property was covered with glacial ice. The glacier has since retreated, exposing large portions of the summit and surrounding bedrock.

Porphyry molybdenum and copper occurrences in the immediate Red Mountain area were explored in the 1960's and 1970's. In 1965, a molybdenum and native gold showing was discovered at McAdam Point (Erin Showing) on the south side of Red Mountain. Additional small molybdenum showings were subsequently located and explored in the central cirque of Red Mountain. Significant gold values (up to 37 gpt) were obtained in 1973 from Lost Mountain (R.H.S. claims). Gold exploration at Red Mountain then ceased as it was generally regarded as a setting favorable for porphyry style molybdenum mineralization.

### **6.2 BOND GOLD**

In 1987 evaluation of the Red Mountain area for gold potential commenced. The Wotan claims were staked in 1988 by local prospectors and optioned to Bond Gold in 1989. That year, Bond Gold began gold exploration of the Red Mountain Property by initiating a drill program on the Marc Zone.

From 1989 to 1991 Bond carried out exploration programs including 17,638 metres of diamond drilling, surface mapping and sampling, and airborne EM and magnetic surveys.

### **6.3 LAC MINERALS**

In 1991, Lac Minerals acquired 100% interest of the Red Mountain Property through the acquisition of Bond Gold. Lac Minerals completed further surface drilling on the Marc, AV, JW, AV Tails, and 141 Zones from 1991 to 1994, totaling 48,000 metres. Underground exploration of the Marc Zone was conducted in 1993 and 1994 by utilizing a 1,700 m production-sized decline, which included a total of 38,600 metres of diamond drilling. An intensive environmental baseline data collection and assessment was undertaken 1993 and 1994 to support a feasibility study produced in 1994.

#### **6.4 BARRICK GOLD / ROYAL OAK**

In September 1994, Barrick acquired Lac Minerals and the Red Mountain Property assets. Barrick later sold the project to Royal Oak in August 1995. Royal Oak extended the underground development by 305m, undertook a drill program seeking extensions to the known deposits which included 22 surface holes and 15 underground holes, completed a drill program on nearby targets, and worked on plans for the development of the Red Mountain project. In 1996, lacking funds for exploration, Royal Oak ceased all activity at Red Mountain. In 1999, Royal Oak went into receivership and Price Waterhouse Coopers (PWC) was appointed to dispose of the Red Mountain Gold Property.

#### **6.5 NORTH AMERICAN METALS CORP.**

In 2000, NAMC purchased the Red Mountain Property from PWC. NAMC completed a comprehensive review of the Red Mountain project and validation of the geological and environmental database. NAMC also carried out geological work including the re-logging of a substantial quantity of drill core in order to produce an improved resource estimation model. Additional metallurgical testing investigated the possibility of producing a saleable gold-bearing pyrite concentrate. An access road route was designed from the end of the existing road to the site. NAMC also met with local and provincial officials to discuss the project, its history and some possible new development scenarios.

#### **6.6 SEABRIDGE**

In February of 2002, Seabridge acquired 100% interest in the Red Mountain Property through an agreement with NAMC. Seabridge also acquired the mineral exploration permit on the Property (MX-1-422) and a related \$1.5 million cash reclamation fund lodged with the British Columbia Ministry of Mines. Seabridge commissioned the first Independent NI43-101 compliant Technical Report on the Red Mountain Gold Project (Craig, 2002) along with various site investigations, database reviews, and engineering studies.

#### **6.7 HISTORICAL MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES**

Historical resource calculations and estimates for the Red Mountain Gold Property are available in geological reports commissioned by Seabridge. These historical mineral resource estimates were prepared after implementation of NI 43-101 and

uses mineral resource categories which are compliant to current NI 43-101 standards.

Mr. D. L. Craig, P.Geo, prepared a mineral resource estimate for the Marc, AV, and JW Zones effective March 4<sup>th</sup>, 2002 for Seabridge titled “Red Mountain Project, British Columbia, Canada Technical Report”. Historic Mineral Resources estimated for the Marc, AV, and JW Zones prepared for Seabridge Gold at Red Mountain using a 1.0 g/t gold cut-off grade are displayed in Table 6-1.

**Table 6-1 Marc, AV, & JW Historic Mineral Resource Statement – D.L. Craig 2002**

ZONE	Measured			Indicated			Inferred		
	Tonnes	Au Grade (gpt)	Ag Grade (gpt)	Tonnes	Au Grade (gpt)	Ag Grade (gpt)	Tonnes	Au Grade (gpt)	Ag Grade (gpt)
<i>Marc</i>	715,000	8.9	39	21,000	9.1	26			
<i>AV</i>	542,000	6.9	21	316,000	6.9	21	1,000	10.5	41
<i>JW</i>							345,000	7.4	12
<b>Total</b>	<b>1,257,000</b>	<b>8.0</b>	<b>31</b>	<b>337,000</b>	<b>7.0</b>	<b>22</b>	<b>346,000</b>	<b>7.4</b>	<b>12</b>

Mr. Deptuck, P.Geo, SRK Consulting, prepared a mineral resource estimate for the 132 and 141 Zones effective January 2005 in the technical report titled “Mineral Resource Estimation Zones 132 and 141, Red Mountain Gold Project, British Columbia”. Historic Mineral Resources estimated for the 132 and 141 Zones prepared for Seabridge Gold at Red Mountain using a 1.0 g/t gold cut-off grade are displayed in Table 6-2.

**Table 6-2 132 and 141 Zones Historic Mineral Resource Statement – SRK 2005**

ZONE	Measured			Indicated			Inferred		
	Tonnes	Au Grade (gpt)	Ag Grade (gpt)	Tonnes	Au Grade (gpt)	Ag Grade (gpt)	Tonnes	Au Grade (gpt)	Ag Grade (gpt)
<b>132</b>							1,295,000	2.9	2
<b>141</b>							434,000	3.3	7
<b>Total</b>							<b>1,729,000</b>	<b>3.0</b>	<b>3.3</b>

Historical resource estimates for the Red Mountain Gold Property are no longer relevant as they are replaced by the current estimates presented in this Report. Banks Island Gold Ltd. is not treating these historical resource estimates as current mineral resources.

## **6.8 HISTORICAL PRODUCTION**

There have been no commercial mining operations on the Red Mountain Gold Property.

## **7.0 GEOLOGICAL SETTING AND MINERALIZATION**

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### **7.1 GEOLOGICAL SETTING**

#### *7.1.1 REGIONAL GEOLOGY*

The regional geology of the Red Mountain area has been described by Greig et al. (1994), Alldrick (1993), Rhys et al (1995), Craig (2001), and Craig (2002). The following geological description is drawn from the above listed sources.

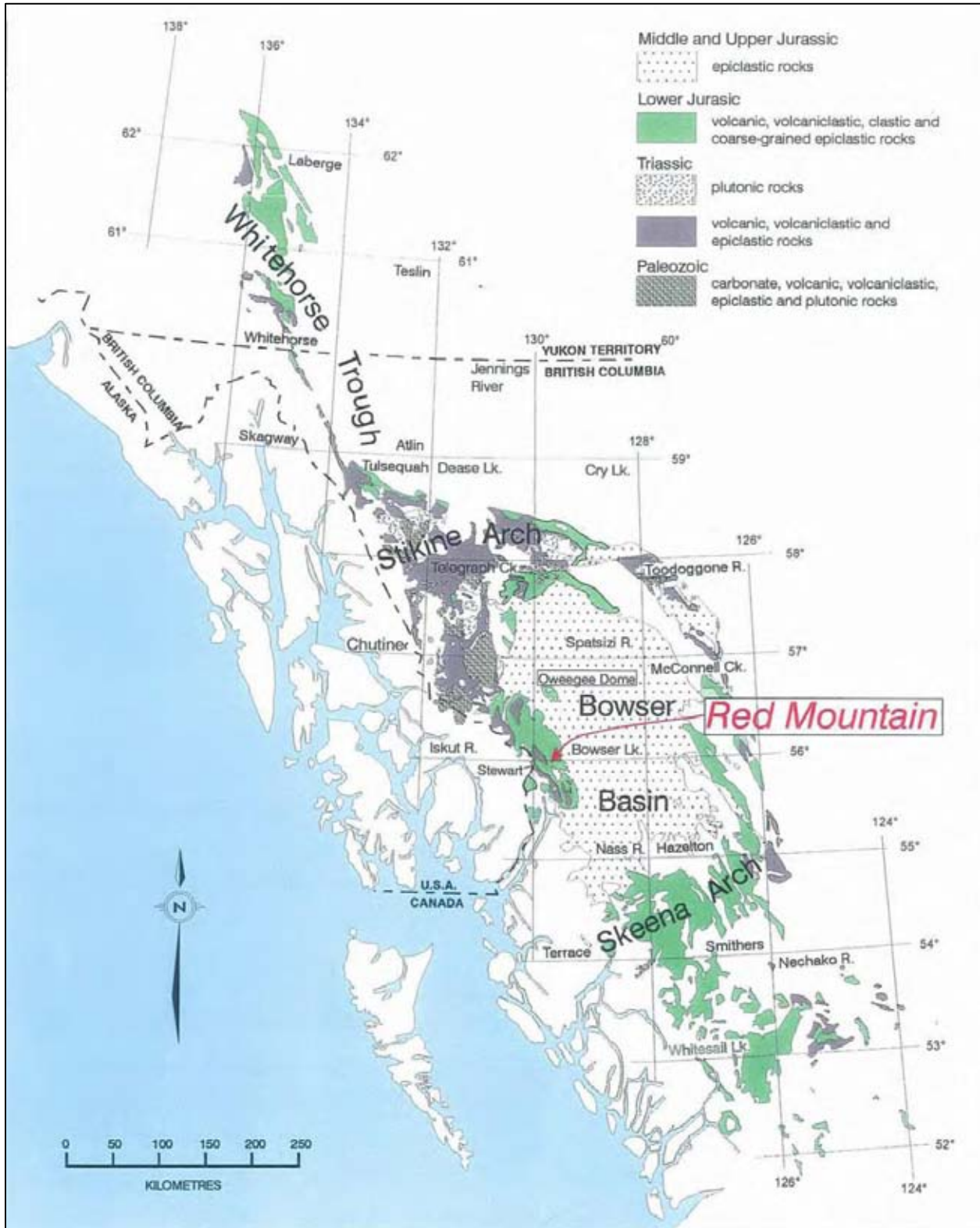
Red Mountain is located near the western margin of the Stikine terrain in the Intermontane Belt. The Stikinia Belt comprises three primary stratigraphic elements: Middle and Upper Triassic clastic rocks of the Stuhini Group, Lower and Middle Jurassic volcanic and clastic rocks of the Hazelton Group, and Upper Jurassic sedimentary rocks of the Bowser Lake Group. Mineralogy suggests that the regional metamorphic grade is probably lower greenschist facies.

The age of intrusive rocks in the Red Mountain region range from Late Triassic to Eocene. Early to Middle Jurassic plutons, named the Goldslide Intrusions, appear to be closely related to the gold mineralization at Red Mountain. Eocene intrusions of the Coast Plutonic Complex occur to the west and south of Red Mountain and are associated with high-grade silver-lead-zinc occurrences.

Red Mountain lies along the western edge of a complex northwest trending structural culmination formed during the Cretaceous era. The Red Mountain mineral zones lie at the core of the Bitter Creek antiform, a northwest-southeast trending structure created during this deformation event (Greig, 2000). During the Tertiary era the area at Red Mountain was subject to extensional block faulting.

A regional geological map prepared of Red Mountain is displayed in Figure 7-1.

**Figure 7-1 Structural and Stratigraphic Setting of Gold Mineralization at Red Mountain (Greig et al., 1994)**



### 7.1.2 PROPERTY GEOLOGY

The Stuhini Group sedimentary rocks outcrop across approximately two-thirds of the mapped area. This group of rocks is the oldest of those found on the Red Mountain Gold Property and are comprised of Middle to Upper Triassic mudstones, siltstones, and cherts. The Stuhini Group rocks grade upward into Lower Jurassic Hazelton Group clastic and volcanoclastic rocks, which outcrop in the northeastern portion of the map area. Rocks of both groups are folded about axes that plunge towards 345° and dip steeply to the southwest.

The Goldslide intrusions underlying Red Mountain have been segregated into two phases, Goldslide (FHx) and Hillside (FHBp). Both phases have dioritic compositions. The Goldslide rocks have been noted to crosscut the Hillside Porphyry suggesting the Hillside Porphyry is the older phase (Sieb 1995).

The Hillside Porphyry occurs near the summit of Red Mountain and is a medium grained hornblende and plagioclase-phyric porphyry. The Hillside Porphyry contains rafts of the sedimentary rocks.

The Goldslide Porphyry is a hornblend-biotite quartz porphyry intrusion underlying most of the Red Mountain cirque.

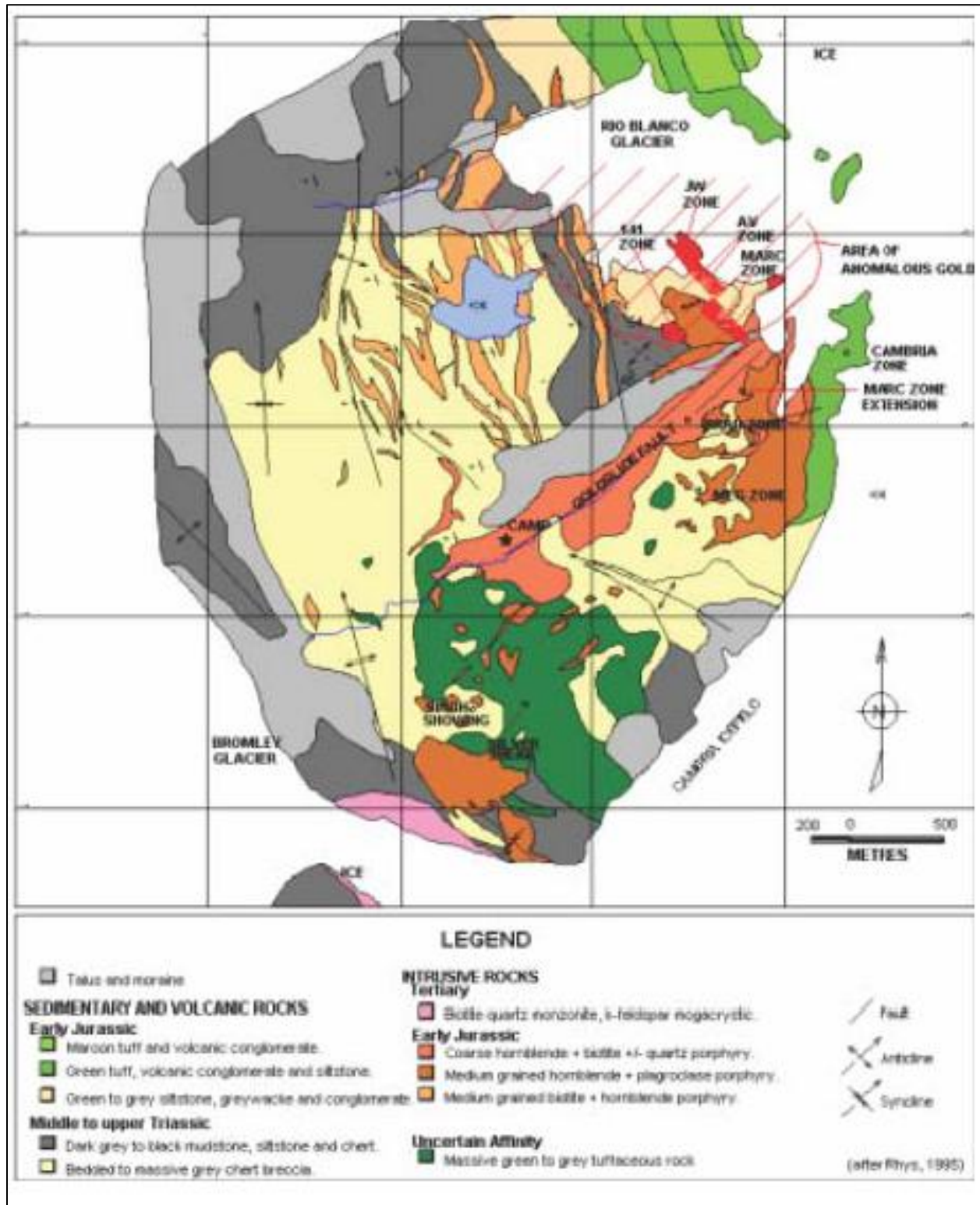
Alteration is strong and widespread throughout the Property. All pre-Tertiary rocks have been hydrothermally altered. The sediments and intrusives display similar alteration assemblages. Alteration minerals observed include quartz, K-feldspar, tourmaline, sericite, chlorite, and pyrite. Red Mountain was named for an extensive rusty gossan covering 12 to 15 square kilometers of area.

Brittle faulting has affected all rock units at Red Mountain. Rhys et al. (1995) recognized two phases of faulting, northeast striking, steeply northwesterly dipping faults and north to northwest trending faults. Faults of the former group are those that offset the mineralized zones, such as the Rick Fault.

A property scale geological map of the Red Mountain area is displayed in Figure 7-2.



Figure 7-2 Geology of the Red Mountain Gold Property (Rhys et al., 1995)



## 7.2 MINERALIZATION

The mineralized zones at Red Mountain consist of crudely tabular, northwesterly trending, and moderately to steeply southwesterly dipping gold bearing iron sulphide stockworks.

Four important mineralized zones exist at Red Mountain, which include the Marc, AV, JW, and 141 Zones.

The Marc Zone outcrops at an approximate elevation of 1900m, located 300m southeast of the summit of Red Mountain. The Marc Zone dips moderately to steeply to the southwest and is primarily restricted to the altered Hillside Porphyry unit. The Marc Zone ranges from 5m to 40m in width, is approximately 80m in height, and is 200m in strike length.

The AV Zone is northwest of the Marc Zone and represents a displaced continuation of the Marc Zone across the steep, northwest dipping semi-brittle Rick fault. Total displacement is approximately 100m. The AV Zone exhibits similar grades, characteristics, and lithological setting as the Marc Zone. The AV Zone ranges from 5m to 30m in width, is approximately 70m in height, and is 185m in strike length.

The JW Zone is the most northwesterly of the ore zones at Red Mountain. Its southeastern end starts to develop where the gold values in the AV Zone diminish and is located approximately 50m below the AV Zone. The Goldslide Porphyry appears to step down at this point causing the AV Zone gold values to abate and concentrate in the JW Zone at a lower elevation. The JW Zone is distinctly different from the AV and Marc Zones with lower gold grades in general and a tabular, narrower, and shallower dipping shape. The JW Zone dips at approximately 43° to the southwest, is approximately 10m in width, 200m in height, and 120m in strike length.

The 141 Zone is located 200m southwest of the Marc and AV Zones at approximately the same elevation. The 141 Zone is primarily hosted by altered sediments and sits within an embayment of the Hillside Porphyry. Based on drilling to date, the 141 Zone is approximately 30m in width, 60m in height, and 75m in strike length.

The stockwork zones are developed primarily within the Hillside porphyry and to a lesser extent in rafts of sedimentary and volcanoclastic rocks. Although locally anomalous gold values are present within the Goldslide porphyry, significant auriferous sulphide stockwork zones have not been located in this rock unit, which generally lies less than 100 meters below the mineralized zones.

The stockwork zones consist of pyrite microveins, coarse-grained pyrite veins, irregular coarse-grained pyrite masses, and breccia matrix pyrite hosted in the Hillside porphyry. Pyrite is the predominant sulphide; however, pyrrhotite is locally important. Vein widths vary from 0.1cm to approximately 80cm, and widths of 1cm

to 3cm are most common. The veins are variably spaced, average 2 to 10 per meter, and are often heavily fractured or brecciated with infillings of fibrous quartz and calcite (Craig, 2002).

The pyrite veins typically carry gold grades ranging from 3 gpt to greater than 100 gpt. Gold occurs in grains of native gold, electrum, petzite, and a variety of gold tellurides and sulphosalts (Barnett, 1991). These mineral grains, which are typically 0.5 to 15 microns in size, occur along cracks in pyrite grains within quartz and calcite filled fractures in pyrite veins and to a lesser extent as inclusions within pyrite grains (Craig, 2002).

Sericite-pyrite-carbonate-quartz alteration is intimately associated with the gold enriched mineralized zones. The mineralized zones are typically bleached due to extensive sericite development.

The stockwork zones are surrounded by a widespread zone of disseminated pyrite and pyrrhotite alteration which is responsible for the extensive gossan for which Red Mountain is noted. The zones are also partially surrounded by a halo of light red-colored sphalerite. Sphalerite comprises 0.5% to 4.0% of the rock and generally is more abundant in the footwall portions of the zones. The relationship between this sphalerite and the gold bearing pyrite stockworks is unclear (Craig, 2002).

## **8.0 DEPOSIT TYPES**

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### **8.1 OVERVIEW**

The Red Mountain Gold Property is currently classified by the British Columbia Geological Survey (“BCGS”) as a Porphyry Subvolcanic Cu-Au-Ag deposit (L01). Highlights of this model are presented below.

### **8.2 MINERAL DEPOSIT PROFILE**

A summary of the BCGS mineral L01: Porphyry Subvolcanic Cu-Au-Ag deposit mineral deposit profile is provided by Panteleyev (1995).

#### Capsule Description

Pyritic veins, stockworks, and breccias in subvolcanic intrusive bodies with stratabound to discordant massive pyritic replacements, veins, stockworks, disseminations, and related hydrothermal breccias in country rocks. These deposits are located near or above porphyry Cu hydrothermal systems and commonly contain pyritic auriferous polymetallic mineralization with Ag sulphosalt and other As and Sb-bearing minerals.

#### Tectonic Setting

Volcano-plutonic belts in island arcs and continental margins, along with continental volcanic arcs. Subvolcanic intrusions are abundant. Extensional tectonic regimes allow high-level emplacement of the intrusions, but compressive regimes are also permissive.

#### Depositional Environment / Geological Setting

Uppermost levels of intrusive systems and their adjoining fractured and permeable country rocks, and commonly in volcanic terrains with eroded stratovolcanoes. Subvolcanic domes and flow-dome complexes can also be mineralized; their uppermost parts are exposed without much erosion.

#### Age of Mineralization

Mainly Tertiary, a number of older deposits have also been identified.

#### Host / Associated Rock Types

Subvolcanic (hypabyssal) stocks, rhyodacite, and dacite flow-dome complexes with fine to coarse-grained quartz-phyric intrusions are common. Dike swarms and other small subvolcanic intrusions are likely to be present. Country rocks range widely in

character and age. Where coeval volcanic rocks are present, they range from andesite to rhyolite in composition and occur as flows, breccias, and pyroclastic rocks with related erosion products (epiclastic rocks).

#### Deposit Form

Stockworks and closely-spaced to sheeted sets of sulphide-bearing veins in zones within intrusions and as structurally controlled and stratabound or bedding plane replacements along permeable units and horizons in host rocks. Veins and stockworks form in transgressive hydrothermal fluid conduits that can pass into pipe-like and planar breccias. Breccia bodies are commonly tens of metres and, rarely, a few hundred metres in size. Massive sulphide zones can pass outward into auriferous pyrite-quartz-sericite veins and replacements.

#### Texture / Structure

Sulphide and sulphide-quartz veins and stockworks. Open space filling and replacement of matrix in breccia units. Bedding and lithic clast replacements by massive sulphide, disseminations and veins. Multiple generations of veins and hydrothermal breccias are common. Pyrite is dominant and quartz is minor to absent in veins.

#### Ore Mineralogy (Principal and Subordinate)

Pyrite, commonly as auriferous pyrite, chalcopyrite, tetrahedrite/tennantite; enargite/luzonite, covellite, chalcocite, bornite, sphalerite, galena, arsenopyrite, argentite, sulphosalts, gold, stibnite, molybdenite, wolframite or scheelite, pyrrhotite, marcasite, realgar, hematite, tin and bismuth minerals. Depth zoning is commonly evident with pyrite-rich deposits containing enargite near surface, passing downwards into tetrahedrite/tennantite plus chalcopyrite and then chalcopyrite in porphyry intrusions at depth.

#### Gangue Mineralogy (Principal and Subordinate)

Pyrite, sericite, quartz, kaolinite, alunite, and jarosite (mainly in supergene zone).

#### Alteration Mineralogy

Pyrite, sericite, quartz, kaolinite, dickite, pyrophyllite, andalusite, diaspore, corundum, tourmaline, alunite, anhydrite, barite, chalcedony, dumortierite, lazulite (variety scorzalite), rutile, and chlorite. Tourmaline as schorlite (a black Fe-rich variety) can be present locally. It is commonly present in breccias with quartz and variable amounts of clay minerals. Late quartz-alunite veins may occur.

#### Weathering

Weathering of pyritic zones can produce limonitic blankets containing abundant jarosite, goethite, and, locally, alunite.

### Genetic Model

These deposits represent a transition from porphyry copper to epithermal conditions with a blending and blurring of porphyry and epithermal characteristics. Mineralization is related to robust, evolving hydrothermal systems derived from porphyritic, subvolcanic intrusions. Vertical zoning and superimposition of different types of ores is typical due, in large part, to overlapping stages of mineralization. Ore fluids with varying amounts of magmatic-source fluids have temperatures generally greater than those of epithermal systems, commonly in the order of 300°C and higher. Fluid salinities are also relatively high, commonly more than 10 weight percent NaCl-equivalent and rarely in the order of 50 % and greater.

### Associated Deposit Types

Porphyry Cu-Au±Mo (L04), epithermal Au-Ag commonly both high-sulphidation (H04) and low-sulphidation (H05) pyrite-sericite-bearing types, and auriferous quartz-pyrite veins, enargite massive sulphide also known as enargite gold.

## **9.0 EXPLORATION**

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### **9.1 INTRODUCTION**

All exploration work on the Red Mountain Gold Property has been undertaken by previous operators. Banks Island Gold has not completed any exploration work on the Property to date and no significant exploration work has been completed on the Property since 1996.

Extensive diamond drilling has been completed at Red Mountain by previous operators and is described in Section 10 of this Report. Exploration activities on the Property included prospecting, underground bulk sampling, and geological, geophysical, and geochemical surveys.

### **9.2 GEOPHYSICAL SURVEYS**

Following the discovery of the Red Mountain mineralized zones, geophysical orientation surveys were conducted over the known mineralized zones to determine its geophysical signature and aid in interpretation of a 5,220 line km Aerodat airborne geophysical survey flown over the Property in 1989. Follow-up geophysical surveys between 1990 and 1993 included ground based magnetometer, electromagnetic, and induced polarization surveys, in addition to down-hole UTEM and MELIS EM surveys (SRK, 2003).

The Marc Zone was found to be characterized by a distinct airborne magnetic low. Ground based horizontal loop EM, UTEM, MELIS, and IP surveys were successful in the discovery of several locally auriferous pyrrhotite stockwork zones such as the GY Zone and other base metal mineralization such as the UTEM zone (SRK, 2003).

Mineralized drill intercepts generally produce weak to moderate “in hole” responses; however, the Marc Zone style mineralization may not be sufficiently conductive to generate strong off-hole responses (SRK, 2003).

In general, geophysical techniques were successful in delineating widespread sulphide mineralization but have failed to discriminate smaller high grade zones from the larger more extensive disseminated sulphide alteration (SRK, 2003).

### **9.3 MINOR GOLD SHOWINGS**

Previous exploration work at Red Mountain has resulted in the discovery of several showings in and around the Red Mountain Cirque. A summary of the known showings is presented as follows.

**9.3.1 BRAD ZONE**

The Brad Zone is located in Goldslide Creek, approximately 400m southwest of the Marc Zone. The Brad Zone contains stockwork style of mineralization consisting of disseminated pyrite and pyrite stringers. A grab sample from surface showing visible gold assayed 204gpt Au and channel samples returned 11.7gpt Au over 1.5m and 1.1gpt Au over 1.5m. The Brad Zone was tested with 6 diamond drill holes with the best intercepts grading 2.1gpt Au over 7.5m and 7.2gpt Au over 1.5m.

**9.3.2 MCEX ZONE**

The MCEX Zone is located approximately 350m southeast of the Marc Zone and sampling of 4.5gpt Au, 4.3gpt Ag, and 0.35% Cu over 9m was obtained. Grab samples 40m south yielded an average of 15.4gpt Au, 14.8gpt Ag, and 0.78% Cu.

**9.3.3 DARB ZONE**

The Darb Zone is a gossanous area located in the centre of the Red Mountain Cirque approximately 250m southwest of the Brad Zone. Significant results include 7gpt Au over 1.5m and 10.5gpt Au over 1.5m.

**9.3.4 CORNICA ZONE**

The Cornica Zone is located 300m east of the Marc Zone and consists of abundant pyrite filled fractures. Values of up to 11.6gpt Au over narrow widths were obtained from 11 samples taken.



## **10.0 DRILLING**

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Banks Island Gold Ltd. has not completed any diamond drilling at the Red Mountain Project to date. All diamond drilling on the Red Mountain Gold Property has been completed by previous operators. The author of this Technical Report is satisfied that diamond drilling was undertaken in a professional manner and data from previous operators is accurate and reliable for the purposes of this Report.

### **10.1 HISTORICAL DRILLING**

Extensive diamond drilling was undertaken by previous operators from 1989 to 1996. A total of 134,807m of diamond drilling in a total of 466 surface and underground diamond drill holes have been completed to date.

#### **10.1.1 MINE GRID ORIENTATION**

All data in the Red Mountain drillhole database is based on a local mine grid where the north direction has been rotated 45° to the west of True North. Mine grid north is therefore parallel to the trend of the mineralized zones, in order for vertical sections to be cut perpendicular to the trend of the mineralization.

All work for the current resource calculation has used mine grid coordinates and orientations.

#### **10.1.2 SURFACE DRILLING PROGRAMS**

Surface diamond drilling programs were carried out by Falcon Drilling Ltd. of Prince George, B.C., from 1989 to 1991; and by J.T. Thomas Diamond Drilling Ltd. of Smithers, B.C., from 1992 to 1994. Both contractors used equipment suitable for producing BQTK diameter core. The 1996 surface diamond drilling program was conducted by Britton Brothers Diamond Drilling Ltd. of Smithers, B.C., using equipment suitable for production of BQTK and NQ diameter core (Craig, 2002).

Approximately 42% of the 80 surface holes were drilled parallel to the mine grid section lines at an orientation of 90°. Thirty-five percent were drilled at either 135° or 315° mine grid, which was parallel to the section orientation from 1989 to late 1992. The remaining 23% of the surface holes were drilled at off-section orientations. Inclinations for the holes ranged from -45° to -90° (Craig, 2002).

Sectional spacing for the surface drilling is 25 meters for the Marc Zone and 25 to 50 meters for the AV and JW Zones.

### 10.1.3 UNDERGROUND DRILLING PROGRAMS

Underground drilling programs in 1993 and 1994 were carried out by J.T. Thomas Diamond Drilling Ltd. of Smithers, B.C. As with the surface drilling, they used equipment suitable for producing BQTW and NQ diameter core. Roughly 81% of the underground holes were drilled parallel to the section lines, with 42% oriented at 90° mine grid and 39% oriented at 270° mine grid. The remaining holes were drilled at off-section orientations. A majority of the holes were drilled in fans on section with the inclination of the holes varying from +87° to -89° (Craig, 2002).

Sectional spacing for the underground drilling is 25 meters for the Marc Zone and 25 to 50 meters for the AV and JW Zones.

### 10.1.4 GENERAL DRILLING PROCEDURES

General drilling procedures for the 1993 and 1994 Lac Minerals drilling programs are outlined in Smit (2001). Mr. Smit, P.Geo., was the project geologist at this time (Craig, 2002).

With respect to drill control, a drill geologist sited the drill setups, aligned the drills, and visited each drill one or more times a day. Continuous monitoring was done to note any drilling problems and ensure that good core handling practices were maintained by all drill crews (Craig, 2002).

All drill holes were surveyed. For surface drillholes, a survey was taken for azimuth and dip while the rods were still in the hole, where possible. If the drill was moved beforehand, a piece of drill stem was placed inside the casing down the hole to get a collar azimuth and dip, as collars were left in place. Underground surveying was completed every one to two weeks. If the drill was no longer at a drill setup, a rod was put down the drillhole to obtain an azimuth and dip. As rock conditions underground were good, there was typically a snug fit of the rod within the abandoned hole (Craig, 2002).

Most or all of the pre-1993 collars were resurveyed by Lac and the collar locations from the new surveying were used in the database. Pre-1993 survey co-ordinates are likely on file if a comparison between old and new survey results is required; however, surveying in 1993 and 1994 was routinely checked and co-ordinates are assumed to be accurate (Craig, 2002).

### 10.1.5 DOWNHOLE SURVEYS

With the exception of the 1989 drill holes and a few of the 1990 drill holes, which utilized acid dip tests, all holes contained within the resource area have Sperry Sun

surveys. From 1990 to 1992 the Sperry readings were collected every 91.4 m (300 ft). During 1993 and 1994, downhole orientations were ideally surveyed at 15 m (50 ft) depth and then every 60 m (200 ft), although variations from this occurred. Short underground holes generally had one survey near the bottom. The drill geologist generally aided in the Sperry Sun surveying. Sperry Sun photographs were read by the geologist and then checked in the Stewart office. All photographs were kept. Survey readings that were suspect were not used (Craig, 2002).

## **11.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY**

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All drillhole sampling, analyses, and security have been performed by previous operators. It is the author's opinion that sample preparation, analyses, and security used by previous operators is adequate and reliable for the purposes of this Report.

### **11.1 HISTORICAL SAMPLE PREPARATION**

Sample preparation by previous operators was performed under the supervision of experienced and accredited geologists.

Drill core was typically logged onsite at Red Mountain and then transported to a company owned storage warehouse and yard in Stewart. Sections of drill core were selected for assaying by visual mineralization guides. Sampled intervals were typically 1.5m and locally 1.0m and adjusted to accommodate geological contacts. Core intervals were sawn into halves using a diamond core saw. One half of the core was sent for assay and the remaining half stored in the Stewart warehouse.

### **11.2 HISTORICAL ANALYTICAL PROCEDURES**

#### **11.2.1 ANALYTICAL PROCEDURES**

##### 1989 to 1992

In the years prior to 1993, Bond Gold and Lac Minerals used Mineral Environments Laboratories of North Vancouver, BC ("Min-En") for the assaying of all drill core samples at Red Mountain. Min-En followed routine sample preparation techniques. Pulps were analyzed for gold and silver using a fire assay technique with an Atomic Absorption (AA) finish on a 30g sample. If the gold assay result was greater than 17 gpt, the pulp was re-assayed with a gravimetric finish (Craig, 2002).

During this period, routine check assays were performed by Bondar-Clegg Laboratories, of North Vancouver, BC. Approximately 10.8% of the Min-En samples were submitted to Bondar-Clegg for check assays. Bondar-Clegg followed routine sample preparation techniques. Pulps were analyzed for gold and silver using a fire assay technique with an atomic absorption (AA) finish on a 30g sample. If the gold assay result was greater than 7 gpt the pulp was re-assayed with a gravimetric finish (Craig, 2002).

##### 1993 to 1994

In the years of 1993 and 1994, Lac Minerals used Eco-Tech Laboratories located in Stewart, BC ("Eco-Tech") for assay of all surface and underground samples. Eco-Tech

performed routine gold and silver fire assays with an Atomic Absorption finish. Samples grading >10 gpt Au were re-analyzed with a gravimetric finish and total metallic assays were performed on material grading >30 gpt Au (Craig, 2002).

During this period, routine check assays were performed by Chemex Labs of North Vancouver, BC. Approximately 12.9% of the Eco-Tech samples were submitted to Chemex for check assays. Chemex followed routine sample preparation techniques. Pulps were analyzed for gold and silver using a fire assay technique with an Atomic Absorption finish on a 30g sample. If the gold assay result was greater than 10 gpt the pulp was re-assayed with a gravimetric finish and total metallic assays were performed on material grading >30 gpt Au (Craig, 2002).

### 1996

In 1996, the Royal Oak geologist used Eco-Tech Laboratories of British Columbia for assaying of all surface and underground samples.

#### 11.2.2 *CHECK ASSAYING RESULTS*

In general, check assays are generally in good agreement with the original assays. During the 1989 to 1992 period, check assays on pulps averaged approximately 8% higher for gold values than the original assays. During the 1993 to 1994 period, check assays on pulp grades averaged approximately 1.7% higher than the primary assays (Craig, 2002).

#### 11.2.3 *YEAR 2000 – CHECK ASSAYING PROGRAM*

In 2000 North American Metals Corp re-assayed 167 pulps and 30 reject samples from the previous drill core samples. Chemex performed fire assay with a gravimetric finish for gold values.

North American Metals Corp reported the re-assayed mean gold values for pulps were 6.3% less than the original assays and the re-assayed mean gold values for rejects were 8.2% less than the original assays (Craig, 2002).

## **11.3 HISTORICAL QUALITY CONTROL & ASSURANCE**

### *11.3.1 STANDARDS*

#### 1989 to 1992

Information during this period regarding the insertion of standards or blind duplicates is limited. Bond Gold apparently inserted an in-house gold standard from Kirkland Lake material with pulps in the 1990 check samples; however, this data is not available (Craig, 2002).

#### 1993

In 1993 Lac Minerals inserted CANMET gold standards with diamond core samples. Initially, these standards were inserted in 1 of every 10 samples; however, there were periods of time in 1993 where no standards were used due to lack of material (Craig, 2002).

#### 1994

In 1994 Lac Minerals inserted gold standards specially prepared from Red Mountain mineralized material with diamond core samples. Standards were inserted in 1 of every 20 samples (Craig, 2002).

### *11.3.2 DUPLICATES*

A number of duplicate samples, primarily from 1994 underground drill holes, were submitted from the 2<sup>nd</sup> half of mineralized drill core. A very good correspondence between original pulp values with duplicate pulp analyses was observed from duplicate sampling (Craig, 2002).

## **12.0 DATA VERIFICATION**

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### **12.1 INTRODUCTION**

The author of this Report reviewed reports, drill logs, and databases prepared by previous operators during preparation of this Technical Report. A discussion of historical data verification procedures is discussed below.

The author of this Report is satisfied that the historical data for the Red Mountain project is adequate and reliable for the purposes of this Report.

### **12.2 HISTORICAL DATA VERIFICATION**

#### **12.2.1 ELECTRONIC DATA VERIFICATION – NORTH AMERICAN METALS CORP**

Lac Minerals collected electronic information during 1993 to 1994. North America Metals Corp undertook the creation of a Microsoft Access database that held all of the site exploration and environmental work in 2000 and hired Adrian Bray, who worked on the project for both Bond and LAC, to assist in compiling the database and perform queries for accuracy and correctness. Questionable items were checked against original paper copies for accuracy (Craig, 2002).

#### **12.2.2 DRILL ASSAY CROSS VALIDATION – LAC MINERALS**

In 1994, four short drill holes were drilled on section 1275N to test for variance within the stockwork zone over a spatial difference of 1.0 m. The objective of the testing was to saw the core in half and assay both sides to test for variance in the selection of core halves. Variance in assay between the two halves was found to be normal for a gold deposit (Craig, 2002).

#### **12.2.3 METALLURGICAL COMPOSITES – NORTH AMERICAN METALS CORP**

North American Metals Corp prepared five composites taken from the quarter sawn drill core, which were assayed and compared to the original assays from the related drill core. Results from all samples were reported to compare favorably to historic drill core assays (Craig, 2002).

## 13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

### 13.1 INTRODUCTION

Metallurgical testwork on samples from the Red Mountain Property near Stewart BC was conducted in 1994 at Brenda Process Labs and again by Beattie Consulting in 2001. In addition, a grindability study was completed by H.R. MacPherson Consultants Ltd in 1994.

The objective of these studies was to optimize the Red Mountain process flowsheet to provide maximum gold and silver recoveries. Whereas previous flowsheets have included whole ore fine grinding followed by CIL/CIP cyanidation, the process route recommended here is to produce a sulfide concentrate for fine grinding and subsequent CIL cyanidation. While there is some additional loss of cyanide recoverable gold in the flotation tailings, this method offers the following advantages over the whole-ore cyanidation flowsheet:

- Reduced plant capital costs in the areas of fine grinding and cyanidation.
- Lower operating costs associated with milling power and cyanide consumption.
- Low-sulfide and coarse particle size flotation tailings for surface deposition.

#### 13.1.1 BRENDA PROCESS TECHNOLOGY, 1994

Composite samples representing the Marc, AV, and JW Zones were submitted for testwork at Brenda Process Technology in Kelowna, BC in 1994 (Brenda, 1994). The samples consisted mainly of assay rejects that were air-dried and then crushed to - 10 mesh.

Direct cyanidation of the composite samples revealed that the contained gold and silver was amenable to extraction by this method, to a varying degree. Table 13-1 provides a summary of the head assays and predicted precious metal extractions from the testwork in the 1994 program.

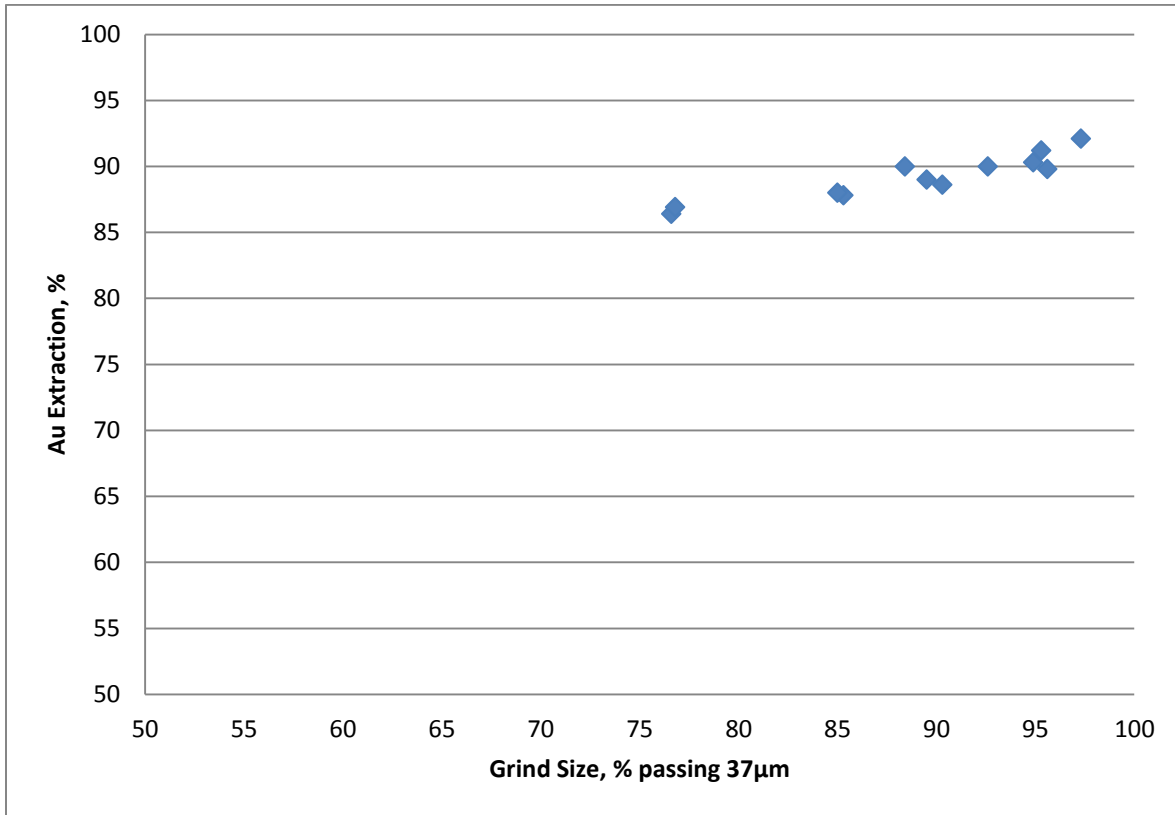
**Table 13-1 Head Assays and Predicted Precious Metal Extractions (Brenda, 1994)**

Composite	Head Assays, g/t		Residue Assays, g/t		Extractions, %	
	Au	Ag	Au	Ag	Au	Ag
Marc Zone	12.5	47.6	1.30	7.0	89.6	85.3
AV Zone	7.90	24.6	1.25	7.0	84.3	71.5
JW Zone	10.7	20.6	0.77	3.0	92.8	85.4



For all of the composites, grind size was determined to be a key factor influencing metal extraction, with a particle size distribution of 90% passing 37µm recommended for all ores. Figure 13-1 illustrates the effect of finer grinding on gold extraction for the Marc Zone composite.

**Figure 13-1 Effect of Grind Size on Cyanide Leach Gold Extraction**



Similar results were achieved with the JW Zone composite, whereas the AV Zone composite showed disappointing results with fine grinding reaching only 68% gold extraction at a particle size distribution of 95% passing 37µm. Mineralogical examination of leach residues revealed that the losses were due to the presence of gold and silver tellurides in the AV Zone sample.

Gold extractions were found to improve significantly with higher lime additions. Up to 20 kg/t of lime was added, raising the pH above 12, which was speculated to improve the oxidation rate of the tellurides and reduce the fouling of gold surfaces with tellurium and antimony. The combination of fine grinding, high lime addition, and oxygen sparging increased the gold extraction to over 84%.

Settling tests were conducted on finely ground leach feed with a particle size distribution of 90% passing 38µm. Without flocculent addition, settling was observed to be very poor. Settling improved significantly with the addition of 40-60

gpt of the anionic polyacrylamide flocculent Percol E-10 (now Magnafloc 10). Final compaction densities of 48-52% were achieved.

CIP loading tests were carried out in a six-stage continuous circuit. Pre-loaded and attritioned carbon was used for this testwork in order to be representative of well-used carbon and results indicated good loading characteristics of 10kg/t Au and 8 kg/t Ag. At the same time copper and zinc recovery to the carbon was found to be low.

Barren tailings from the CIP testwork were submitted for cyanide destruction testing by the SO<sub>2</sub>/Air process at INCO Exploration and Technical Services Inc. Soluble copper was found to vary between mineralized zones, with the Marc Zone resulting in only 50ppm copper and requiring additional catalyst addition in the form of copper sulfate. Overall, the process was reported to be effective in reducing pulp cyanide concentrations below 1ppm at pH 8.5 and with an SO<sub>2</sub> addition of 5.5 g/g CN<sub>WAD</sub>.

Leach residue filtration testing resulted in filtration rates that were very low in comparison to other materials due to rapid blinding of the filter media and cake. Desliming prior to filtration was attempted as a means to reduce blinding, but a significant improvement did not result, as the deslimed product still did not contain enough coarse material (>50µm) in order to generate a permeable cake.

Scoping level flotation testwork was carried out on selected samples to evaluate the response of the contained precious metals to concentration by this method. Rougher gold recoveries ranged from 80.2% to 91.6% for a bulk sulfide concentrate. Preliminary cyanidation tests were conducted on the rougher concentrates, yielding mixed results. However, for the three tests on non-AV concentrate, ground to a P<sub>80</sub> of less than 25µm, the average gold extraction was 94.0%. The AV Zone concentrate sample was run at a lower than optimal pH of 11.5, but still resulted in 85.8% gold extraction.

Additional flotation work was conducted to evaluate the potential for recovering sulfur from the leach residue in order to generate a low-sulfide tailings for surface disposal. Three rougher flotation tests were run that resulted in 85% to 90% sulfur recovery to a rougher concentrate representing 32% to 38% of the mass. Despite the high mass yield, the resulting low-sulfide tailings still exceeded 1.0% S<sub>Total</sub> and subsequent ABA testing indicated that they retained a net acid generating potential.

### 13.1.2 *MACPHERSON GRINDABILITY STUDY, 1994*

A grindability study consisting of Bond Work Index tests and Aerofall 18" mill test were carried out by A.R. MacPherson Consultants in May 1994 (MacPherson, 1994). Two ore types, labeled as 1D and 28A, were used for the testing.

Both samples yielded similar results for work index testing, with an average BRWI of 19.1 kWh/tonne and an average BBWI of 18.0 kWh/tonne. The two samples were blended for the Aerofall test which generated an autogenous work index of 19.1 kWh/tonne.

The report characterizes the ore as being “very hard, fairly resistant to impact breakage, and not very abrasive”. Based on the results of the testwork, two grinding systems were proposed consisting of either SAG/Ball milling or SAG/Ball/Tower milling, in order to reach the target grind P<sub>90</sub> of 37 microns.

### 13.1.3 BEATTIE CONSULTING, 2001

In 2001 a flotation testwork program was carried out at Process Research Associates in Vancouver, under the direction of Beattie Consulting (Beattie, 2001). For this study, composite samples representing the Marc Zone and the AV Zone were prepared from ¼ core samples from the Red Mountain Gold Property. The objective of the study was to evaluate flotation as a potential means of producing a saleable gold concentrate and to reduce the acid-generating potential of the plant tailings.

The first phase of the program looked at three Marc Zone composite samples using a conventional rougher approach of grinding to a P<sub>80</sub> of 100-160µm and floating with PAX, A208, and MIBC at a natural pH of ~8.0. This was followed up by a two-step scavenger float including copper sulfate activation and sulfidization using sodium sulfide (Na<sub>2</sub>S). Both the rougher and scavenger concentrates were subjected to two stages of cleaning using PAX and MIBC under natural pH conditions. Results of this testwork are presented in Table 13-2.

**Table 13-2 Flotation Results for the Marc Zone Composites 1, 2, and 3**

Composite	Test #	Grind P <sub>80</sub> (µm)	Calculated Head			Rougher+Scav Recovery			2nd Cleaner Conc.	
			Au (g/t)	Ag (g/t)	S (%)	Au (%)	Ag (%)	S (%)	Au Grade (g/t)	Au Rec. (%)
Comp 1	F4	108	8.65	28.0	12.7	92.4	92.0	98.8	34.0	87.0
Comp 2	F5	156	8.20	63.8	8.7	81.4	77.9	96.8	34.3	67.6
Comp 3	F6	161	9.45	45.7	8.8	91.1	87.0	97.5	38.8	85.5

Both Comp 1 and Comp 3 demonstrated good gold recovery to the rougher concentrate. For Comp 2, the lower recovery was attributed to a higher portion of

the gold being associated with non-sulfides in this sample. Comp 2 was also the smallest of the three composites, representing only 5 metres of core from one drill hole.

Cleaning of the rougher concentrates resulted in potentially saleable concentrate grades, albeit with some loss of recovery. Regrinding the rougher concentrate prior to cleaner flotation improved the grades to between 50 gpt Au and 80 gpt Au, although it also allowed unacceptably high losses to the first cleaner tailings.

The second phase of the testwork examined the flotation of two overall zone composites; the first combining samples from 7 drill holes in the Marc Zone, and the second combining samples from 5 drill holes in the AV Zone. Head assay results for the two composites are presented in Table 13-3. The analysis indicates that the second phase composites were significantly higher in gold and sulfur as compared to the earlier samples.

**Table 13-3 Head Assays for the Marc Zone and AV Zone Composites**

Composite	Assayed Head		
	Au	Ag	S
	(g/t)	(g/t)	(%)
<b>Marc Zone</b>	13.25	51.8	10.4
<b>AV Zone</b>	15.07	21.5	13.6

The flotation conditions applied to the new composites followed on from those developed in the earlier work. Optimization was carried out on reagent dosages, grind size, and circuit configuration. Table 13-4 presents the results of selected flotation tests at varying primary grind size.

**Table 13-4 Flotation Results for the Marc Zone Composites 1, 2, and 3**

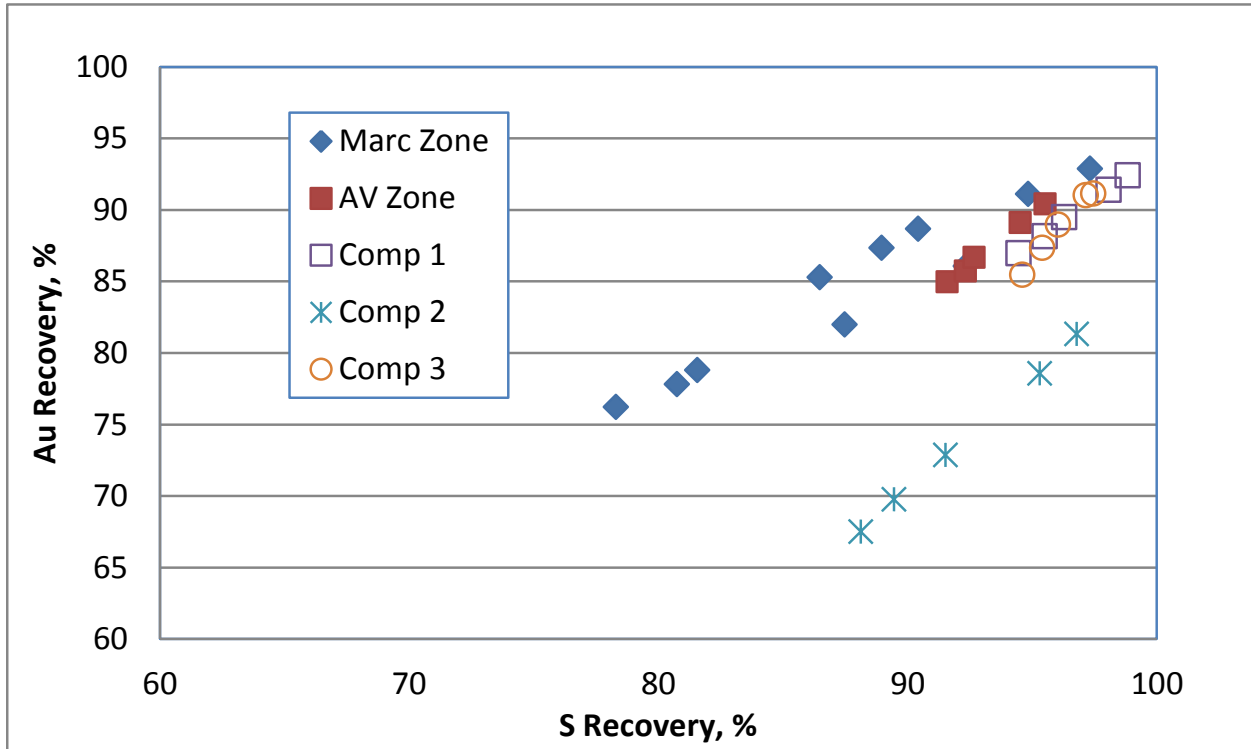
Test No.	Zone Comp.	Grind	Concentrate Assay			Rougher+Scav Recovery			
		P <sub>80</sub> (µm)	Au (g/t)	Ag (g/t)	S (%)	Au (%)	Ag (%)	S (%)	Mass (%)
<b>F10</b>	Marc	98	41.1	186	39.0	89.4	88.5	95.4	25.0
<b>F7</b>	Marc	147	41.9	159	36.5	91.9	86.5	95.5	28.4
<b>F19</b>	Marc	189	37.5	154	32.9	88.5	87.6	94.7	29.4
<b>F9</b>	Marc	204	37.7	147	33.1	89.5	86.7	94.2	28.3
<b>F12</b>	AV	104	38.7	59.8	37.6	92.2	90.1	97.3	33.1
<b>F11</b>	AV	138	38.3	56.8	37.8	92.8	87.3	96.5	33.6
<b>F20</b>	AV	160	37.6	50.2	34.3	91.0	87.6	97.4	34.3
<b>F8</b>	AV	182	36.8	54.3	35.8	94.8	79.2	98.4	39.2

For both the Marc and AV Zone composites, there appears to be minimal influence on recovery within the range of grind sizes tested. Note that tests F7 and F8 show slightly higher recoveries due to a second scavenger stage being added as compared to the other tests.

The results favour rougher flotation at a coarse grind size and high mass pull. Grinding to a P<sub>80</sub> of ~100µm showed some improvement in gangue rejection for the Marc Zone sample, but not for the AV Zone. Higher rougher concentrate grades were achieved in the second phase of the work because of the higher head grade of the ore and, specifically, the higher ratio of gold to sulfur in the zone composites.

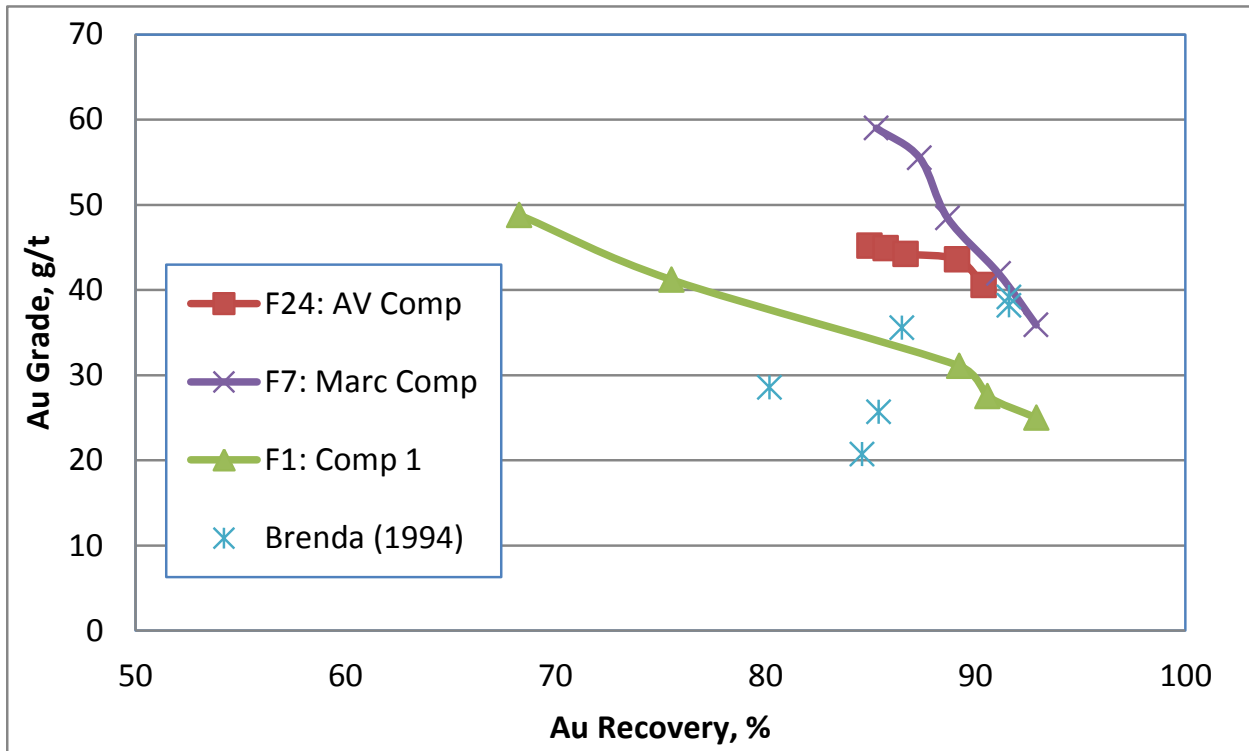
The relationship between sulfur and gold in the rougher/scavenger circuit is presented in Figure 13-2. A clear trend is evident for all samples tested. The results are also fairly consistent between samples, with the exception of Comp2 which was speculated to contain a quantity of non-sulfide associated gold.

Figure 13-2 Effect of Sulfur Recovery on Gold Recovery for the Beattie Study Composites



Several cleaner flotation tests were carried out to upgrade the concentrate and reduce the overall mass recovery to the final product. A regrind step was included in selected tests, without success. Similarly, the option of bypassing a portion of the initial rougher concentrate directly to the final product was investigated, but proved to be ineffective. Overall, the AV Zone composite responded slightly better to cleaning than the Marc Zone; however, both resulted in high gold losses whenever the mass and sulfur recovery dropped. The grade recovery curves for some of the cleaner tests are shown in Figure 13-3.

Figure 13-3 Grade-Recovery Curves for Selected Cleaner Tests



The higher grade Marc Zone and AV Zone composites produce higher grade rougher concentrates in the range of 40 gpt Au, but the recovery drops off significantly even approaching 45 gpt Au. In comparison, Figure 13-3 illustrates that the cleaner losses for the lower grade Comp 1 show a similar trend. Rougher grade-recovery points for the testwork at Brenda Process Technologies is shown for comparison, and indicates the improvements in flotation recovery achieved in the 2001 study, particularly at the lower head grades.

**Figure 13-4 Relationship between Head Grade and Concentrate Grade for Red Mountain Deposit Samples**

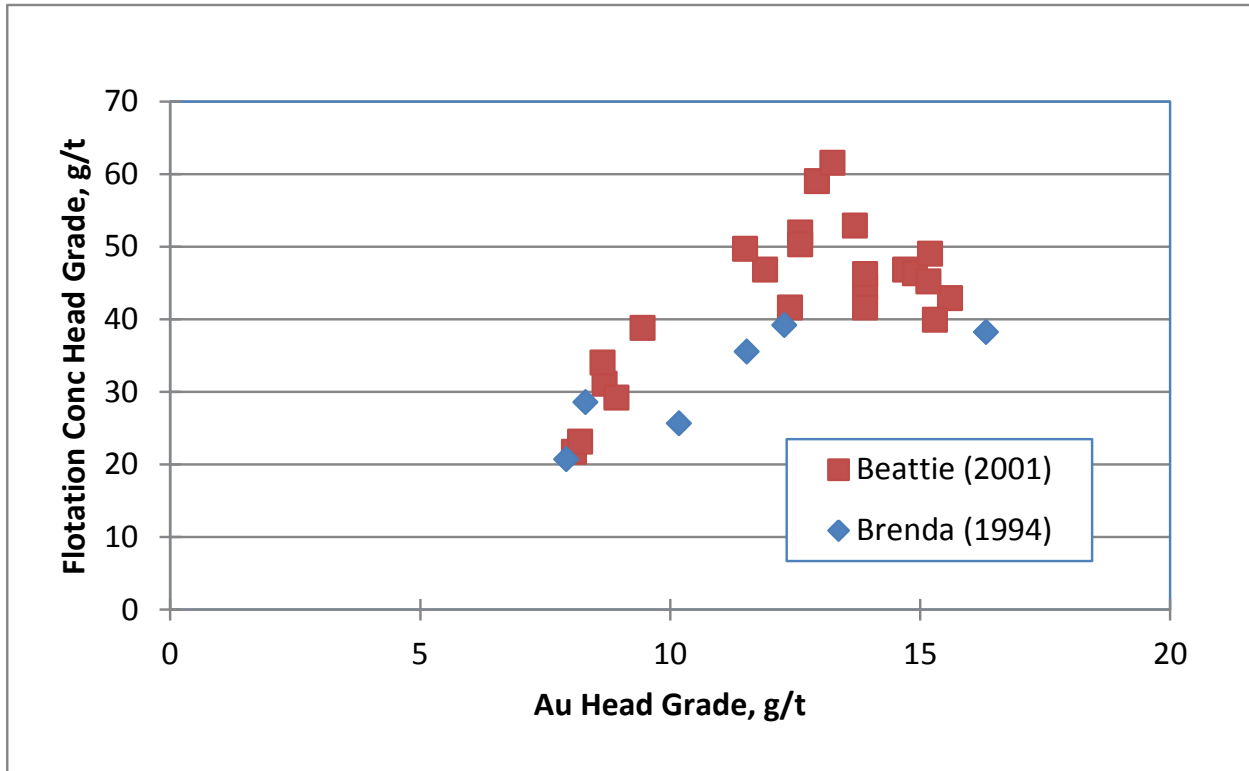


Figure 13-4 presents a scatter plot of gold head grade versus concentrate grade for all of the flotation tests completed on Red Mountain Gold Property samples. The graph indicates a general trend towards higher concentrate grades with increasing head grade. Furthermore, it illustrates the difficulties realized in achieving 40 gpt concentrate threshold with feed material grading less than 10 gpt Au.

Cyanidation tests were conducted on flotation tailings samples and indicated that roughly two-thirds of the contained gold in the tailings was cyanide recoverable. Unfortunately, no cyanidation tests were completed on the flotation concentrates.

Three core samples from this program were submitted for Bond Ball Work Index determination at a screen size of #100. The average of these three tests was 19.1 kWh/t.

Minor element analysis of selected Marc and AV Zone concentrates was conducted by ICP. Results indicated slightly elevated levels of arsenic on the order of 0.15%. All other parameters were below typical penalty limits.

Static settling tests were carried out on tailings from tests F23 and F24 and indicated that at a grind size  $P_{80}$  of  $\sim 175\mu\text{m}$  good unit area loading rates, on the order of  $0.14\text{m}^2/\text{tpd}$ , could be achieved with only 5.5 gpt Percol 156 anionic flocculant



addition. Filtration testing on the Marc and AV Zone concentrates indicated good filtering properties with a final cake moisture as low as 5.6%.

Waste stability testwork was carried out in the form of a modified SWEP test and ABA testing. For the leaching test, all elements of concern were found to be well below the allowable limit. The ABA tests indicated that the tailings for both zones were potentially acid generating if the entire contained sulfide is converted to acid. The samples used for this work contained ~1.0% S. The report indicates that the sulfur grade would have to be 0.46% or less in order to be net neutralizing. This level of sulfur recovery was achieved in a number of the earlier tests in the program.

#### 13.1.4 METALLURGICAL PROJECTION

The proposed flowsheet for the processing plant consists of a conventional SAG/Ball milling circuit to generate a flotation feed product  $P_{80}$  of ~160 $\mu$ m. The flotation circuit would produce a primary concentrate to be reground and cyanide leached, as well as a sulfide bearing scavenger concentrate to be combined with the leach residue for paste backfill.

The flowsheet offers the following benefits as compared to the whole ore cyanidation or direct ship concentrate options:

- Coarser primary grind reduces milling capital and operating costs in the SAG/Ball mill circuit.
- Regrinding of flotation concentrate to a  $P_{80}$  of 25 $\mu$ m is easier to achieve with the lower mass yield and softer sulfide-rich primary concentrate, improving extractions and kinetics over whole-ore leaching.
- Scavenger flotation circuit has the potential to generate a low-sulfide, non-acid generating tailings stream.
- Flexibility to increase flotation recovery by processing scavenger concentrate through the CIL plant.
- Minimal losses in cleaner flotation compared to direct ship concentrate option.

Stage gold and silver recoveries for each mineral zone were estimated based on the available flotation and cyanidation data summarized in the previous sections. Table 13-5 provides a summary of these estimates by zone, as well as overall recoveries for the deposit based on a weighted average from each zone.

**Table 13-5 Flotation Results for the Marc Zone Composites 1, 2, and 3**

Zone	Tonnes	Head Grade, g/t		Flotation Recovery		CN Recovery		Overall Recovery	
		Au	Ag	Au	Ag	Au	Ag	Au	Ag
<b>Marc</b>	862,883	9.05	35.77	89.0	84.0	92.0	86.0	81.9	72.2
<b>AV</b>	751,707	8.14	23.25	91.0	86.0	90.0	82.0	81.9	70.5
<b>JW</b>	490,985	5.65	6.01	89.0	84.0	94.0	86.0	83.7	72.2
<b>141</b>	313,780	3.77	8.02	89.0	84.0	92.0	86.0	81.9	72.2
<b>Total</b>	<b>2,419,355</b>	<b>7.39</b>	<b>22.24</b>	<b>89.7</b>	<b>84.7</b>	<b>91.7</b>	<b>84.7</b>	<b>82.2</b>	<b>71.7</b>

Flotation recoveries for the Marc and AV Zones are taken from the test results presented in the Beattie (2001) report. Estimates for the JW and 141 Zones are based on the results of the Marc Zone and will need to be confirmed in future testwork. Cyanidation estimates are based on the results of the Brenda (1994) report, with the exception of the 141 Zone, which is based on the results from the Marc Zone and will also require confirmation.

The estimated recoveries were used to generate the metallurgical projection presented in Table 13-6. Note that the Primary Concentrate is included in Table 13-6 for reference, although it is not a final product.

**Table 13-6 Metallurgical Projection for the Red Mountain Project**

Stream	Mass Yield (%)	Grade			Distribution		
		Au (g/t)	Ag (g/t)	S (%)	Au (%)	Ag (%)	S (%)
<b>Feed</b>	100.00	7.39	22.24	8.00	100.0	100.0	100.0
<b>Primary Concentrate</b>	30.00	22.1	62.7	25.3	89.7	84.6	95.0
<b>Gold/Silver Dore</b>	0.01	45717	120000	0.0	82.2	71.7	0.0
<b>CIL Tailings</b>	29.99	1.84	9.60	25.3	7.5	12.9	95.0
<b>Scavenger Concentrate</b>	10.00	1.48	6.67	2.40	2.0	3.0	3.0
<b>Flotation Tailings</b>	60.00	1.02	4.58	0.27	8.3	12.3	2.0

## **14.0 MINERAL RESOURCE ESTIMATES**

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### **14.1 INTRODUCTION**

Mr. Robert Baldwin, Professional Engineer and experienced mine geologist, has prepared the mineral resource modeling, calculations, and estimations presented in this Report. Mr. Baldwin is independent of the project owner, Banks Island Gold Ltd.

There are no known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other issues which will materially affect the mineral resource calculations that are presented in this Report.

Consideration to potential mining methods and metallurgical processes was used in preparation of this mineral resource estimate. Specific mineralized zones included in this estimate were considered for their viability of applying underground mining methods. Infrastructure and other relevant factors relating to the ability of the resource to potentially be exploited were considered as part of the resource calculations.

Mineral resources for the Red Mountain Gold Project have been estimated for the mineralized zones that were historically named the Marc, AV, JW, and 141 Zones. The present naming convention for the mineralized zones remains the same.

### **14.2 DATABASE**

Historic drilling data was compiled from historic drillhole logs and a historic Gemcom database. This data was compiled, corrected, and imported into a MineSight Torque database. The database was formatted and imported into MineSight 3D software for geological modeling and interpretation. MineSight 3D is commercial and industry accepted geology software. A total of 466 holes containing 49,771 gold assays, as well as silver and base metal assays, are included in the Red Mountain drillhole database.

### **14.3 MINERALIZED ZONE MODELING**

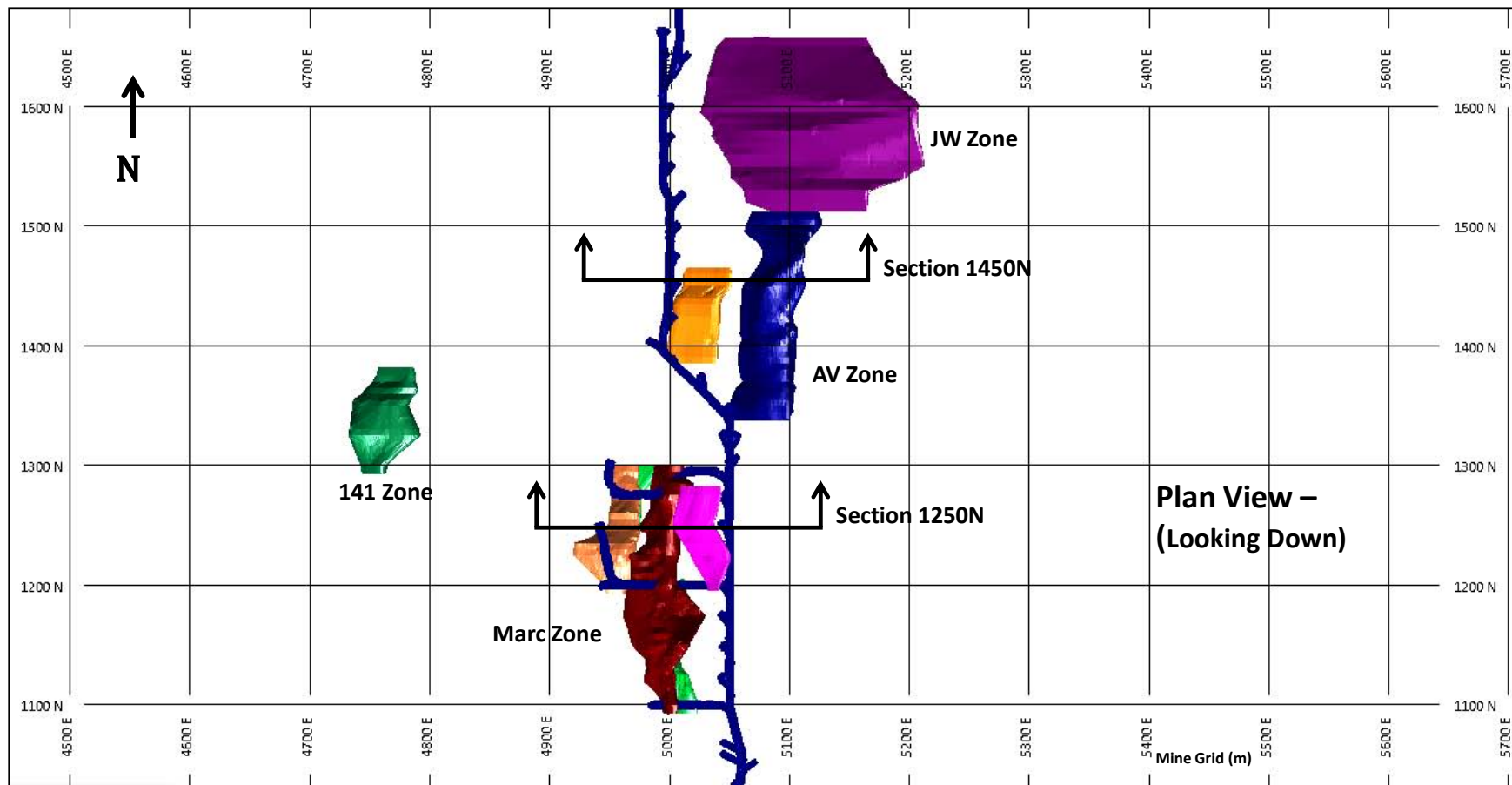
An iterative process was used to prepare a model of the mineralized zones within the Red Mountain Gold Property. The main mineralized zones at Red Mountain include the Marc, AV, JW, and 141 Zones, which are displayed in Figure 14-1. All data from the Red Mountain Gold Property had previously been transposed onto a mine grid with mine grid north being parallel to the strike of the mineralization. Vertical east-west sections were created every 25 m across the mineralization and mineralized outlines were generated on each section, as shown in Figures 14-2 and

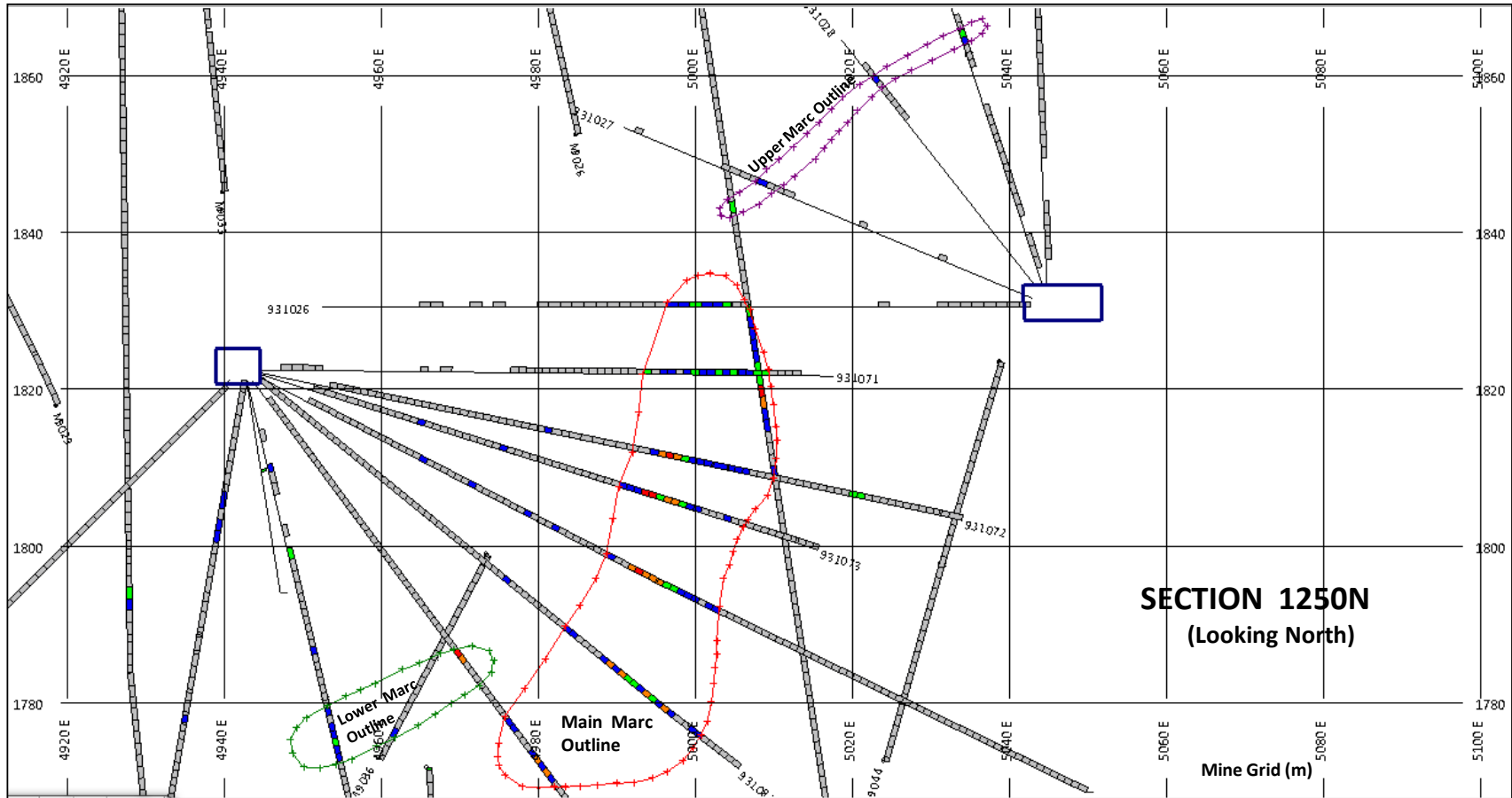
14-3. The outlines were combined across sections to create primary solids for each mineralized zone. The primary solids were sliced a second time on a tighter spacing, 5 m vertical east-west sections, and each section was adjusted to better fit the drillhole data. The 5 m section outlines were combined into secondary solids. The secondary solids were reviewed at 5 m elevations to ensure continuity and further adjusted in the three-dimensional model to accurately match the drillholes.

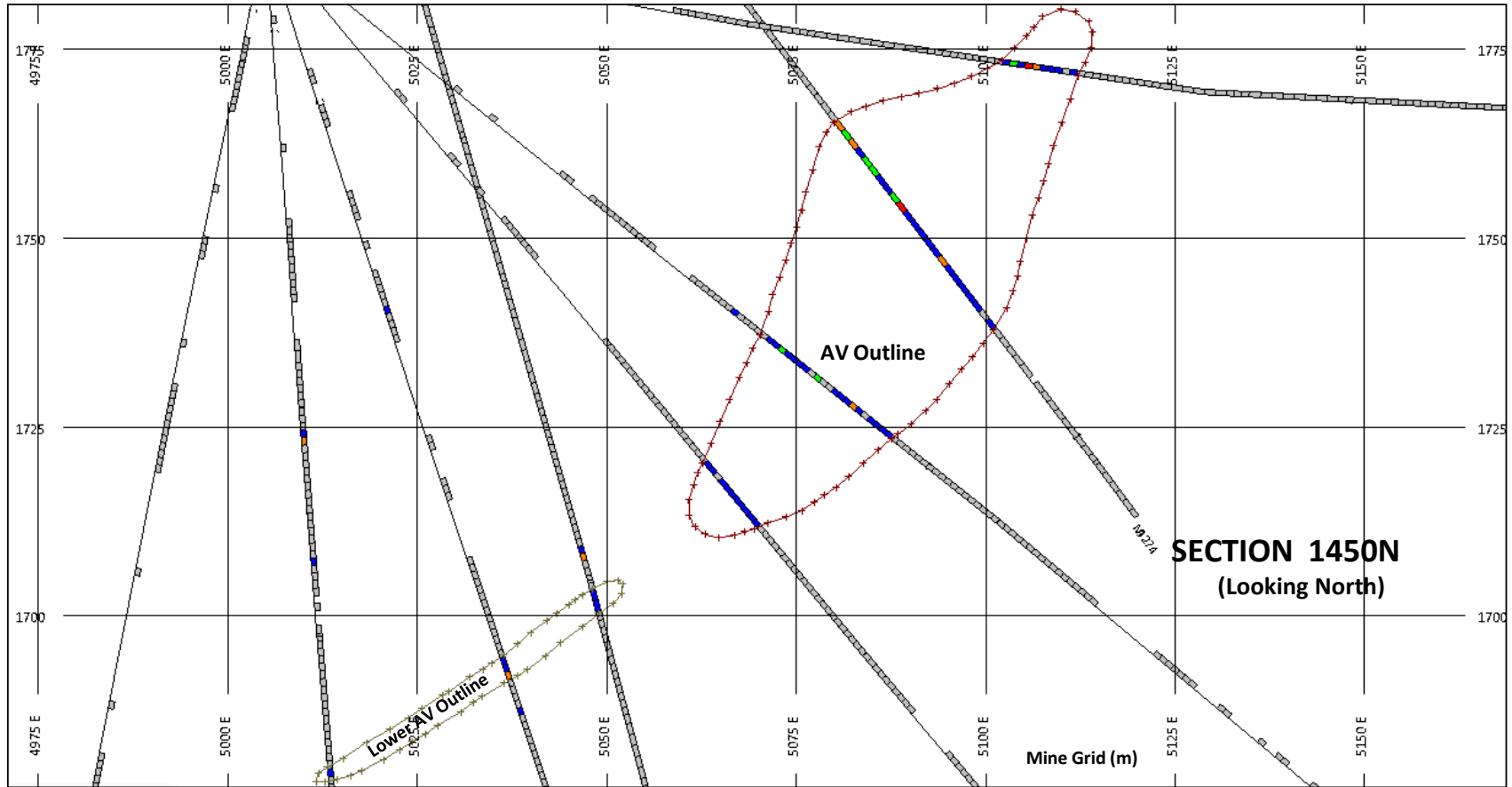
Using the described geologic modeling methodology, nine mineralized solids were created and were assigned lens codes of 100 through 108, as detailed in Table 14-1. The diamond drillhole assay intervals were then coded with the appropriate lens code where they pierced the mineralized solids. A total of 167 holes were coded, containing 2,519 gold assays and 2262 silver assays.

**Table 14-1 Lens Codes Assigned to Modeled Mineralized Zones**

Lens Code	Modelled Zone
100	Main Marc Zone
101	Footwall Marc Lens
102	Upper Marc Lens
103	Lower Marc Lens
104	Bottom Marc Lens
105	AV Zone
106	JW Zone
107	141 Zone
108	Lower AV Lens







#### 14.4 RESOURCE ESTIMATION METHOD

A Minesight 3D block model was used to estimate the mineral resource, utilizing a block size of 4m × 4m × 4m. Geologic blocks were coded for the topography, mineralized solid lens code, and percentage of the block within the mineralized solid.

Composites were created using Minesight Torque. Composite lengths of 4m were chosen, while honoring the lens codes from the drillholes. There were 2519 coded samples, all of which contained a gold assay and 2262 of which contained a silver assay. The remaining 257 samples without a silver assay value were assigned a silver assay value of zero before creating composites. This results in a conservative under-reporting of the silver grade which is most noticeable in the JW zone, where approximately half of the coded samples did not contain a silver assay.

Block Interpolation was completed using the following parameters:

- Grades were interpolated into the block model using an inverse distance cubed interpolation.
- The search ellipse used was 50 meters in the x, y, and z directions (a sphere).
- The minimum number of composites required was 1 and the maximum number of composites allowed was 25, including no more than 10 from any one hole.
- The search was limited to matching lens codes. This eliminated the higher grade cores of the main mineralized zones from unduly influencing the lower grade mineralized lenses.

The mineral resource classification was interpolated into the block model using the following criteria:

- All blocks were given a default code of *Inferred*.
- If a block had had its grade interpolated from a minimum of 4 composites from at least 2 different holes, and the closest hole was no more than 15m away, it was upgraded to *Indicated*.
- If a block had had its grade interpolated from a minimum of 6 composites from at least 3 different holes, and the closest hole was no more than 10m away, it was upgraded to *Measured*.

The 141 zone has only 9 holes that intersect the mineralization. With erratic assays and low drill density, adequate modeling is impossible. Therefore, the entire 141 resource has been classified as *Inferred*.



## 14.5 SPECIFIC GRAVITY

An average specific gravity for the mineralized zones at Red Mountain Gold Property was calculated based on the database of 49,771 assays. A mineralization criterion of 3 grams per tonne was identified and the database was sorted to isolate all assays that contained mineralization. There were 2289 assays that met the mineralization criteria; while only 1043 of the assays had measured values for specific gravity. The vast majority of the measured values were within the AV and Marc zones, which had averages of 3.00 and 2.95 respectively. An overall average specific gravity of 2.98 was determined from the measured historic values. This value was used for resource calculation of the Marc, AV, JW, and 141 Zones in this Report.

## 14.6 CAPPING

The cutting of high gold assays was performed before resource inventory calculations were made. To determine an acceptable criterion for cutting of high assays, all assays over 3 gpt gold were compiled for all mineralized zones at the Red Mountain Gold Property and the 98<sup>th</sup> percentile of gold and silver assays were calculated as shown in Table 14-1.

**Table 14-2 98<sup>th</sup> Percentile of Assays over 3 Grams per Tonne Gold**

Area	# of Samples	Samples in 98 <sup>th</sup> Percentile	Value (gpt Au) of 98 <sup>th</sup> Percentile	Value (gpt Ag) of 98 <sup>th</sup> Percentile
Overall	2289	2243	70	348

Based on the calculated value of the 98<sup>th</sup> percentile, all assays above the 98<sup>th</sup> percentile were cut to the calculated value before composites for resource blocks were made.

The effect of the assay capping on the calculated resource is displayed in Table 14-2. The effect on the grade of the resource is most pronounced in the AV Zone where the resource gold grade drops from 12.4 gpt to 8.1 gpt when assays are cut to the 98<sup>th</sup> percentile. Overall, the *Measured* and *Indicated* resource grade drops from 10.4 g/t to 8.4 g/t with the use of assay capping. This is equal to a cut of 20% in gold grade.

**Table 14-3 Red Mountain Resource Calculation with Uncapped and Capped Assays**

Resource Class	Zone	Tonnes	Grade (gpt) Au CUT	Grade (gpt) Au UNCUT	Grade (gpt) Ag CUT	Grade (gpt) Ag UNCUT
Measured & Indicated	MARC	860,000	9.1	10.0	35.8	41.3
	AV	576,000	8.1	12.4	23.1	23.3
	JW	176,000	6.1	6.1	8.5	8.5
<b>Total</b>		<b>1,612,000</b>	<b>8.4</b>	<b>10.4</b>	<b>28.3</b>	<b>31.3</b>
Inferred	MARC	3,000	8.1	9.4	32.3	37.6
	AV	175,000	8.4	12.1	23.8	24.3
	JW	315,000	5.4	5.4	4.6	4.6
	141	314,000	3.8	4.2	8.0	8.0
<b>Total</b>		<b>807,000</b>	<b>5.4</b>	<b>6.4</b>	<b>10.2</b>	<b>10.3</b>

#### 14.7 CUT OFF GRADES

The use of cut-off grades was not employed in this mineral resource calculation. All blocks within the modeled mineralized solids, regardless of grade, were used in the resource estimate.

#### 14.8 MINERAL RESOURCE CLASSIFICATION

The mineral resources at the Red Mountain Gold Property are differentiated into the *Measured*, *Indicated*, and *Inferred* categories. The *Measured* and *Indicated* resources for the Red Mountain Gold Property total 1,600,000 tonnes at a cut grade of 8.4 gpt gold and 28 gpt silver, as shown in Table 14-3. The *Inferred* resources total 807,000 tonnes at a cut grade of 5.4gpt gold and 10gpt silver. Readers are cautioned that mineral resources that are not mineral reserves do not have demonstrated economic viability.

**Table 14-4 Red Mountain Consolidated Mineral Resource Statement**

ZONE	Measured			Indicated			Inferred		
	Tonnes	Au Grade (gpt)	Ag Grade (gpt)	Tonnes	Au Grade (gpt)	Ag Grade (gpt)	Tonnes	Au Grade (gpt)	Ag Grade (gpt)
<i>Marc</i>	737,000	9.2	36	123,000	8.3	35	3,000	8.1	32
<i>AV</i>	326,000	8.0	23	250,000	8.1	23	175,000	8.4	24
<i>JW</i>	75,000	6.2	10	100,000	6.0	7	315,000	5.4	5
<i>141</i>							314,000	3.8	8
<b>Total</b>	<b>1,138,000</b>	<b>8.7</b>	<b>31</b>	<b>473,000</b>	<b>7.7</b>	<b>23</b>	<b>807,000</b>	<b>5.4</b>	<b>10</b>

Note: Au grades are cut to 70gpt and Ag grades are cut to 348gpt

## **15.0 MINERAL RESERVE ESTIMATES**

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Mineral reserve estimates are not possible at Red Mountain at this time. Mineral resources that are not mineral reserves do not have demonstrated economic viability.

*Inferred* Mineral Resources are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves.

## **16.0 MINING METHODS**

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### **16.1 INTRODUCTION**

Based on the mineral resource calculated for the Red Mountain Gold Project, a Preliminary Economic Assessment has been prepared.

The Preliminary Economic Assessment indicates that the current Movable Resource at Red Mountain may support a significant underground mining operation producing gold and silver dore for shipment to a refinery.

A production rate of 657,000 tonnes per year (1800tpd) is contemplated in this economic assessment. Based on a movable resource of 2,845,000 tonnes, a mine life of 52 months is possible.

A Preliminary Economic Assessment does not support an estimate of mineral reserves. Either a Pre-feasibility Study or Feasibility Study is required to support an estimate of Mineral Reserves. Where the words "ore" or "orebody" are used, it is for convenience purposes only.

### **16.2 MINABLE RESOURCE CALCULATION**

A movable resource at Red Mountain for the purposes of this Preliminary Economic Assessment has been estimated based on the mineral resource calculated in Section 14 of this Report.

Mining dilution estimates were prepared based on expected ground conditions, ore geometry, and planned mining methods. Detailed mine blocks were prepared for the Marc and AV Zones, taking into account practical mining shapes using longhole drill and blast methods. Mine planning focused on near total recovery of the current mineral resource. Planned internal dilution of 15% was assumed for all zones at Red Mountain and external dilution of 5% was assumed, for a total of 20% mining dilution. Mining dilution was assumed to grade 0.5gpt gold and 1.6gpt silver.

A mining recovery of 98% was used to account for ore lost in normal mining operations. Such ore losses include un-mined ore left in walls and ore left in draw points. Dilution and mining recovery estimates by mineralized zone are displayed in Table 16-1.

**Table 16-1 Minable Resource Calculation by Mineralized Zone**

Zone	INSITU			Mining		DILUTED		
	Tonnes	Au Grade (gpt)	Ag Grade (gpt)	Dilution	Recovery	Tonnes	Au Grade (gpt)	Ag Grade (gpt)
Marc	863,000	9.1	36	20%	98%	1,015,000	7.8	30.7
AV	752,000	8.1	23	20%	98%	884,000	7.0	20.1
JW	491,000	5.7	6	20%	98%	577,000	4.9	5.4
141	314,000	3.8	8	20%	98%	369,000	3.3	7.1
<b>Total</b>	<b>2,420,000</b>	<b>7.4</b>	<b>22</b>	<b>20%</b>	<b>98%</b>	<b>2,845,000</b>	<b>6.4</b>	<b>19</b>

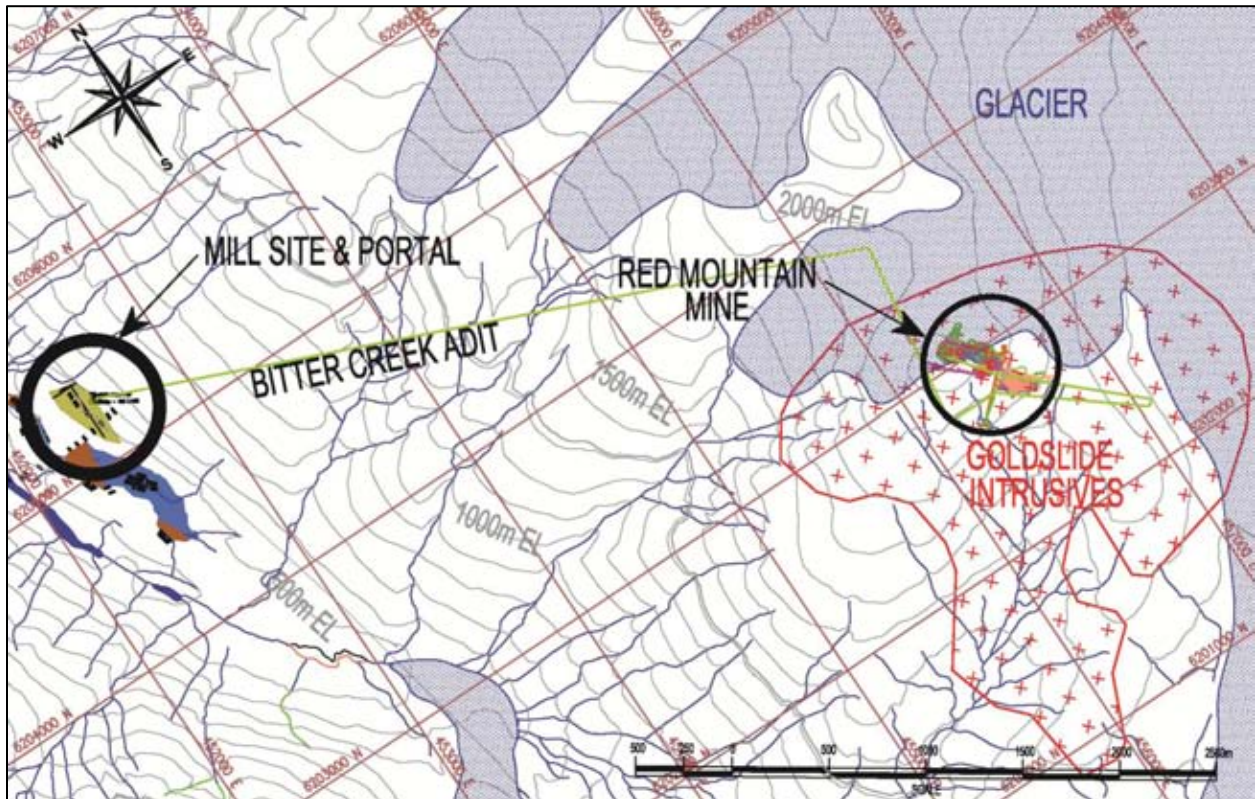
**The minable resource used in preparation of the Preliminary Economic Assessment is partially based on an *Inferred* Resource. The preliminary assessment is preliminary in nature and includes *Inferred* Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves. There is no certainty that the results and conclusions presented in this preliminary assessment will be realized.**

### 16.3 MINE LAYOUT

#### 16.3.1 BITTER CREEK ADIT

Access to the Red Mountain Mine will be provided by a 7,190m adit from the Bitter Creek Mill site. The adit will be driven at a grade of +15% and have dimensions of 5m x 5m. The Bitter Creek Adit Portal is planned at an elevation of 520m and will intersect the lowest development of the Red Mountain Mine at an elevation of 1595m. The Bitter Creek Adit will provide access and an exploration platform over a large area of the Goldslide Intrusives which host the known mineralized zones at Red Mountain. Figure 16-1 displays an overview of the Bitter Creek Adit in relation to the planned Red Mountain Mine and the Goldslide Intrusives

Figure 16-1 Overview Map – Bitter Creek Adit



### 16.3.2 RED MOUNTAIN MINE

The mineralized zones at Red Mountain will be accessed by levels and a ramp system driven in the footwall of the zones. Level spacing in the Marc, AV, and 141 Zones is typically 20m to 24m and 14m in the JW Zone. Mine workings will originate from the existing Red Mountain Decline at an elevation of 1866m and will connect to the Bitter Creek Adit at the bottom of the JW Ramp at an elevation of 1595m.

A 595m main orepass will be constructed to move broken ore from the Red Mountain Mine to the lower leg of the Bitter Creek Adit, where it will be trucked to the Bitter Creek Mill site.

An underground shop and backfill batch plant will be located central to the Red Mountain zones on the 1740 Level of the mine.

Figure 16-2 displays a long section of the planned mine layout and Figure 16-3 displays a 3D isometric view of the planned mine layout.

Figure 16-2 Long Section – Red Mountain Mine

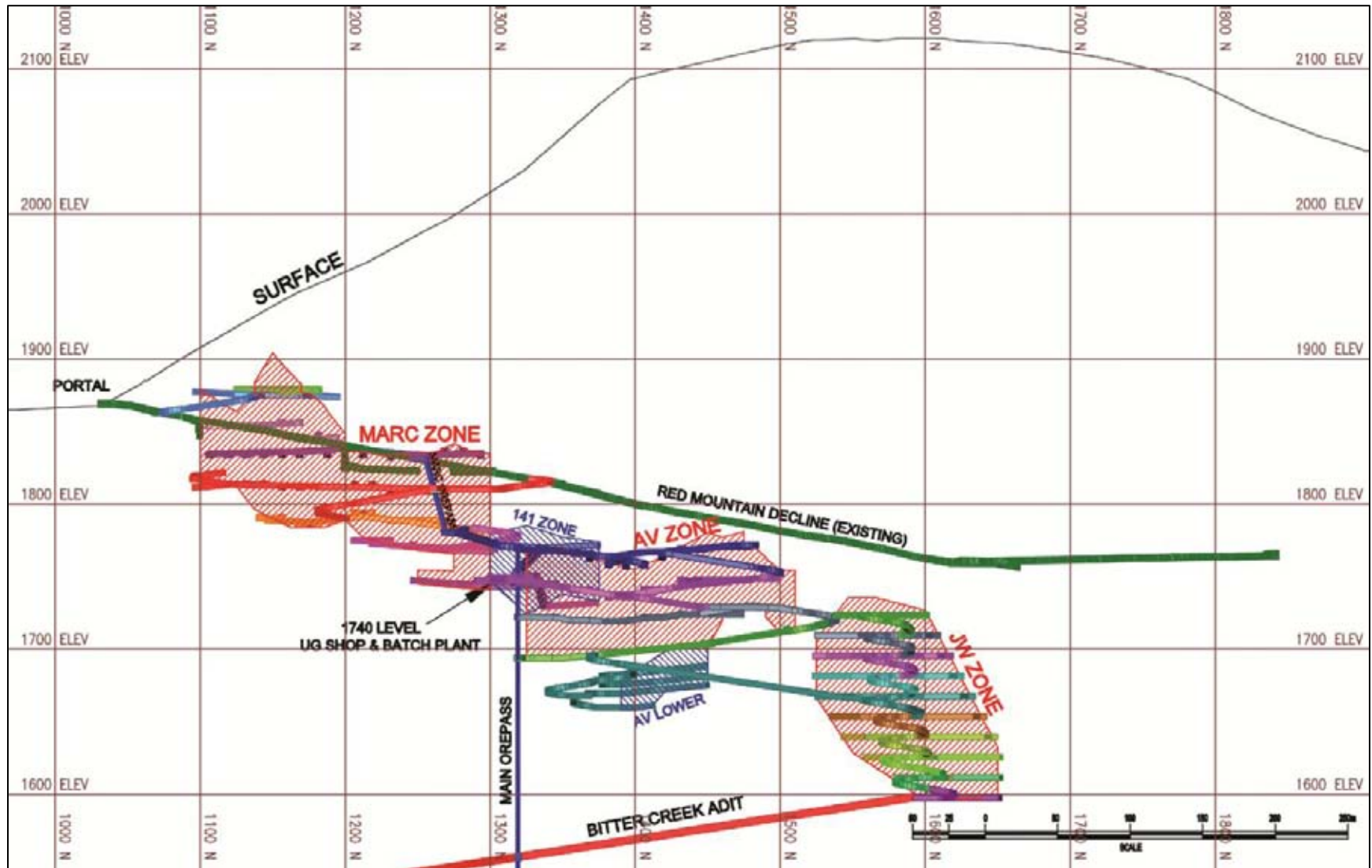
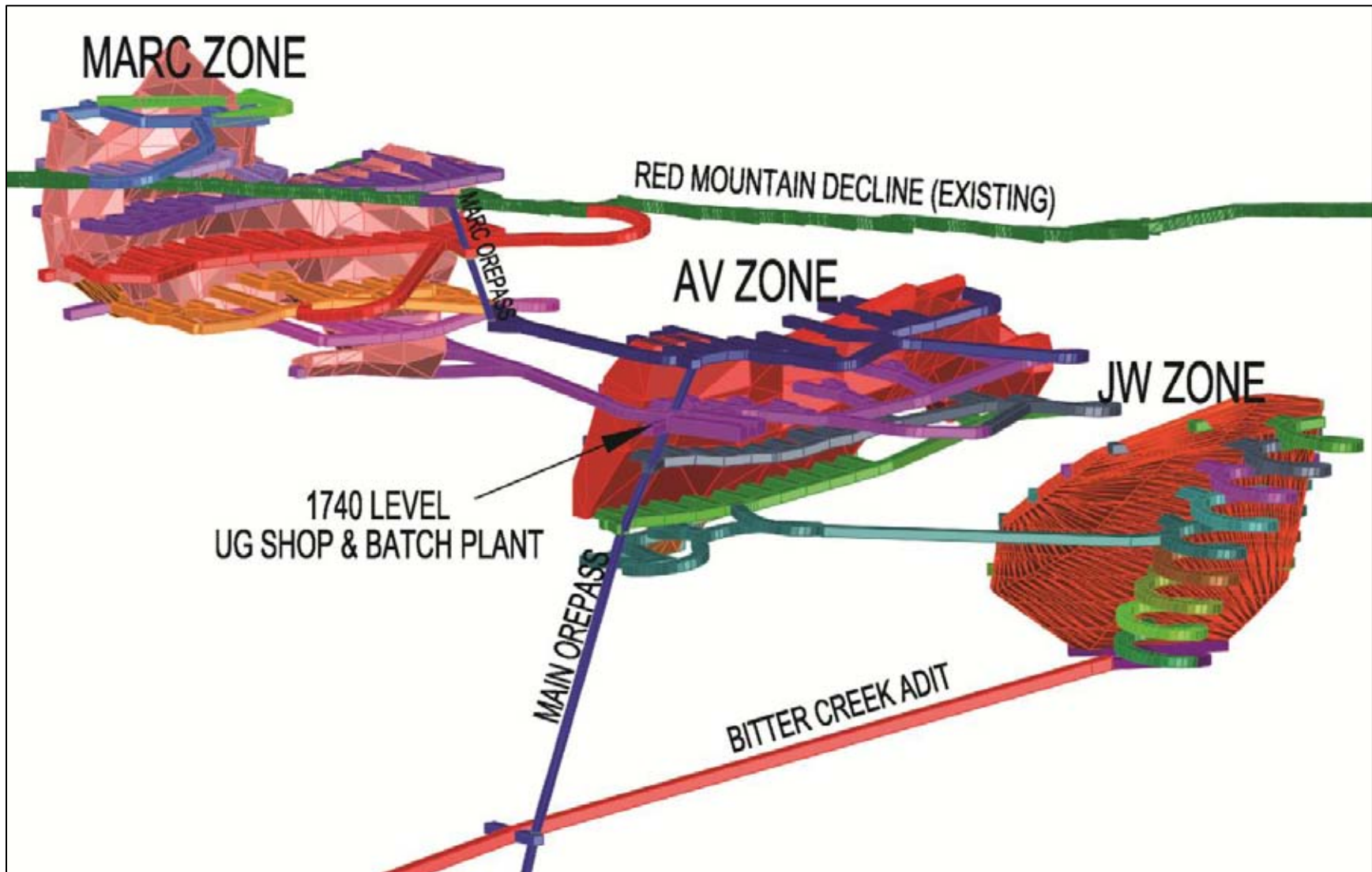




Figure 16-3 Isometric View – Red Mountain Mine

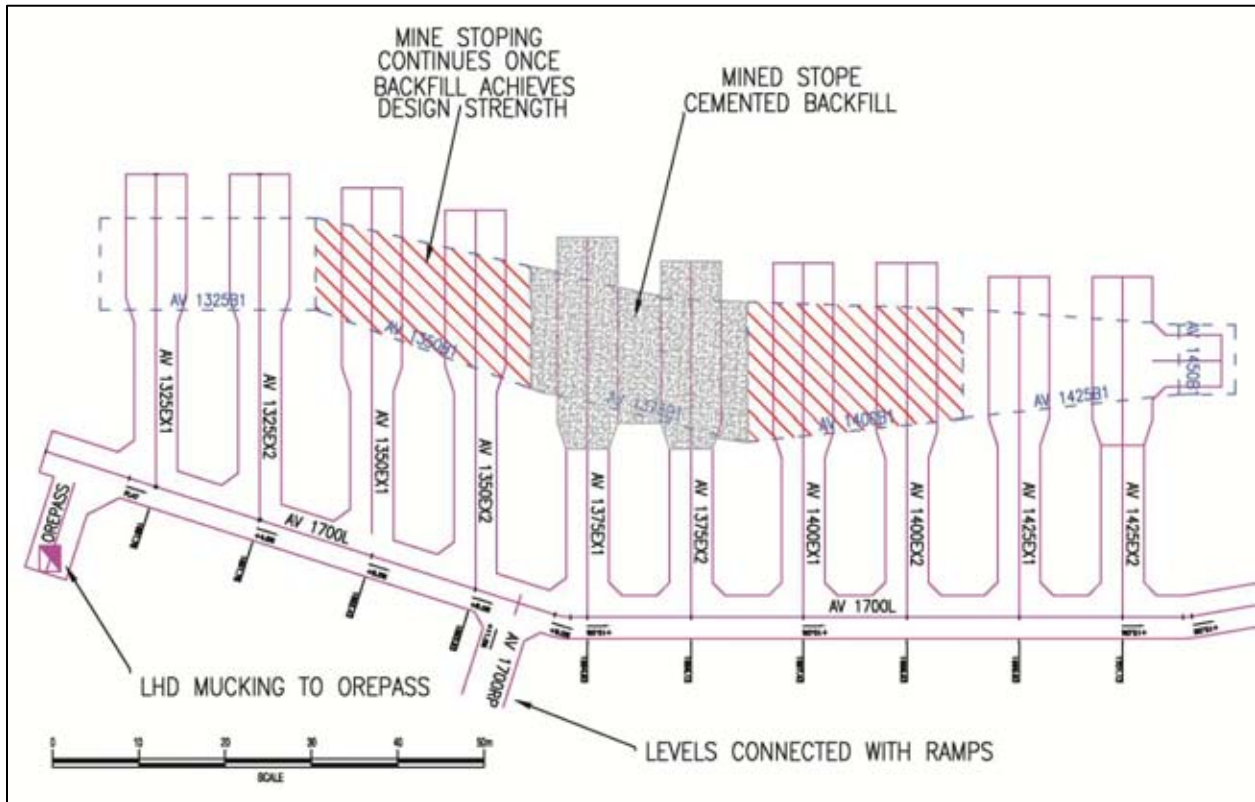


**16.4 MINING METHOD – MARC, AV, & 141 ZONES**

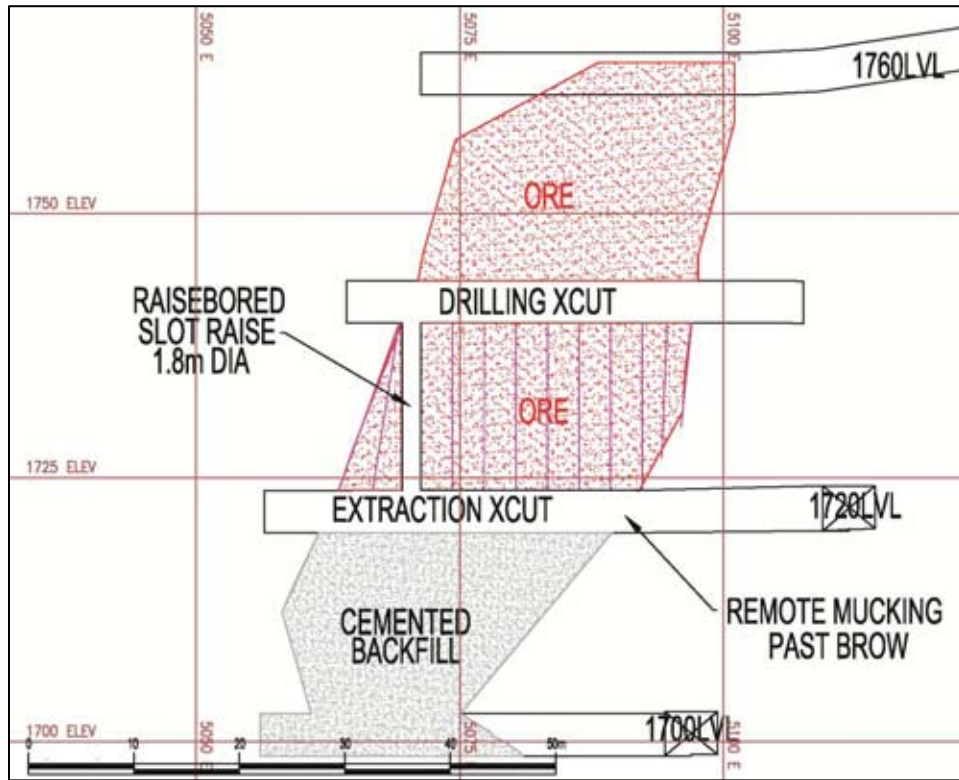
The Marc, AV, and 141 Zones are similar in dimension and orientation. These three zones range from 15m to 60m in width, 100m to 200m in strike length, and 60m to 100m in height, with a dip of 70°. Production for these zones is planned to be undertaken using transverse open stoping methods with the use of cemented backfill.

Stopes are generally sized at 25m in strike length by 25m in height. Crosscuts will be driven at 12m spacing from level drifts in the footwall of the zone. The crosscuts will provide drilling platforms and drawpoints for ore extraction. A company owned raise bore will develop 1.8m diameter slot raises in each stope and production drilling will be completed using parallel and ring drilling techniques. When mining of a stope is completed it will be backfilled with rock and cemented pastefill. Mining will then continue with adjacent stopes, both along strike and above the backfilled stope. Figure 16-4 displays a plan view of a typical level layout in the AV Zone. Figure 16-5 displays a cross section through the AV Zone showing the mining sequence.

**Figure 16-4 Plan View 1700LVL AV Zone – Transverse Longhole Mining Method**



**Figure 16-5 Cross Section AV Zone – Transverse Longhole Mining Method**



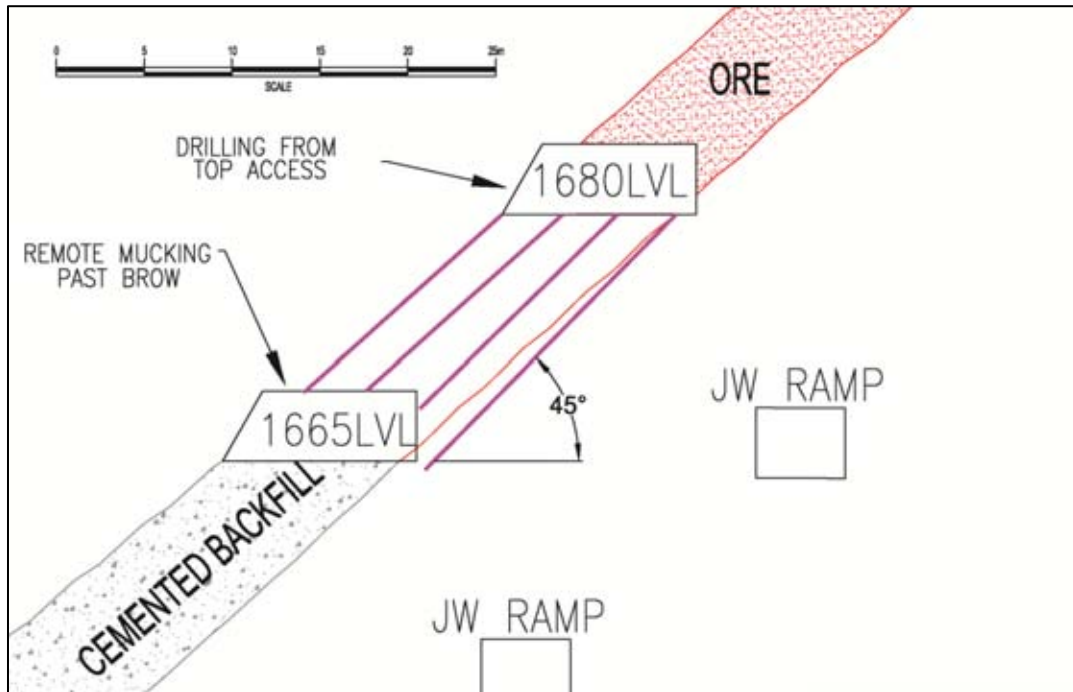
**16.5 MINING METHOD – JW Zone**

The JW Zone has an average width of 7m and dips between 40° to 50°. A longitudinal longhole retreat method is planned for the JW Zone.

Ore levels will be driven at 14m vertical spacing from a footwall ramp. Drifts will be driven near full width of the ore with typical dimensions of 8m wide x 4m high. Level accesses from the ramp will be located near the mid-point of each level and stoping will commence at the end of the level and move towards the access.

Mined stopes will be backfilled with cemented pastefill to limit open ground. Once a stope is filled, the stope immediately above will be mined by drilling from the upper level and remote mucking on the backfilled stope below. Figure 16-6 displays a cross section of the JW Zone showing the planned mining sequence.

**Figure 16-6 Cross Section JW Zone – Longitudinal Retreat Mining Method**



## 16.6 MINE GEOTECHNICAL

A geotechnical analysis of the Red Mountain Gold Project was conducted by Klohn-Crippen Consultants Ltd. (Klohn) and is detailed in the historical report entitled 1994 Underground Geomechanics Assessment (Klohn, 1994). The geotechnical analysis consisted of compiling geotechnical data from diamond drill logs and structural data from geotechnical mapping on surface and along the existing Red Mountain Decline, including the three underground cross-cuts into the Marc Zone. The Klohn Report (1994) is a preliminary assessment of the underground geomechanics for mine design at Red Mountain.

Rock types are similar between the four zones at Red Mountain. Mine development in the Marc, AV, JW, and 141 Zones will be almost exclusively in a hornblende granodiorite / andesite sub-volcanic porphyry intrusion. The rockmass data from the Red Mountain Decline was compared to the information from core logs to provide confidence in the interpretation of ground conditions throughout the Marc and AV Zones. Since the existing underground development does not extend to the JW and 141 Zones, there is a lower level of confidence in estimating ground conditions for these zones. However, the ground conditions for the JW and 141 Zones are assumed to be similar to the Marc and AV Zones due to the close proximity of the mineralized

zones and since the zones are contained within the same intrusive body (Klohn, 1994).

#### *16.6.1 MINE GEOTECHNICAL SUMMARY*

Based on the Klohn Report (1994), review of drillhole logs, and experience in similar types of ground, the following preliminary conclusions have been made about ground conditions at Red Mountain:

- The majority of mine development will be in the granodiorite / andesite sub-volcanic porphyry intrusion with a generally good rock mass rating and adequate jointing orientation. Ground support requirements in development drifts will include pattern bolting and screening.
- Ground related problems due to high stress are generally not expected to be a problem as the depth of mining is relatively shallow (less than 500m) and the rock quality is generally good (Klohn, 1994).
- The stopes will be mined in a sequence from the lowest level of each mineral zone progressing upwards.
- Permanent entry-type excavations will include ground support that is corrosion resistant to handle the additional loads due to changes in the stress conditions over the life of the mine.
- Modern ground support techniques will likely allow efficient support of mine development headings at Red Mountain. Ground support requirements in development drifts will include pattern bolting and screening with minor use of shotcrete where required.
- The interaction of the joint sets observed at Marc Zone may lead to the formation of wedges in the back which will require monitoring and potentially extra support.
- The cemented backfill is assumed to be sufficient to be considered a supporting element for adjacent longhole stoping.
- Water inflow at Red Mountain is expected, however there is no information currently available to assume unusually high water inflows.

#### *16.6.2 LONGHOLE STOPE STABILITY*

The current mining method proposed at Red Mountain is mechanized sublevel stoping with cemented paste backfill. Transverse longhole stoping is proposed for the Marc, AV, and 141 Zones and longitudinal longhole stoping is proposed for the JW Zone.

In general, the rockmass of the Red Mountain mineralized zones are considered 'good' according to the CSIR Rock Mass Rating system by Bieniawski (1973). Rock

mass classifications for the hanging wall, ore, and footwall are summarized in Table 16-2 (Klohn, 1994) for both the RMR system and the Q tunneling index of the NGI rock mass classification system by Barton et al. (1974).

**Table 16-2 Rock Mass Classification Summary for Marc Zone**

<b>MARC ZONE</b>	<b>RMR</b> (Bieniawski, 1973)	<b>Q</b> (Barton et al., 1974)	<b>ROCK CLASS</b>
Hanging Wall	68	12.5	Fair - Good
Footwall	77	20	Good
Ore	80	45	Good

Estimated geotechnical parameters for the granodiorite / andesite sub-volcanic porphyry intrusion (hanging wall) and mineralization (back) at Red Mountain are detailed in Table 16-3. The geotechnical parameters have been estimated conservatively.

**Table 16-3 Modified Stability Graph Factors (Conservative Case)**

	Dip of Zone (Degrees)	Modified Rock Quality Index - Q'	Rock Stress - Factor A	Joint Orientation Adjustment - Factor B	Gravity Adjustment - Factor C	Stability Number - N'
Back (Ore)	0	45	0.67	0.2	2.00	12.06
Hanging Wall	58 - 90	12.5	0.67	0.2	4.82	8.07
Hanging Wall	25 - 40	12.5	0.67	0.2	2.56	4.29

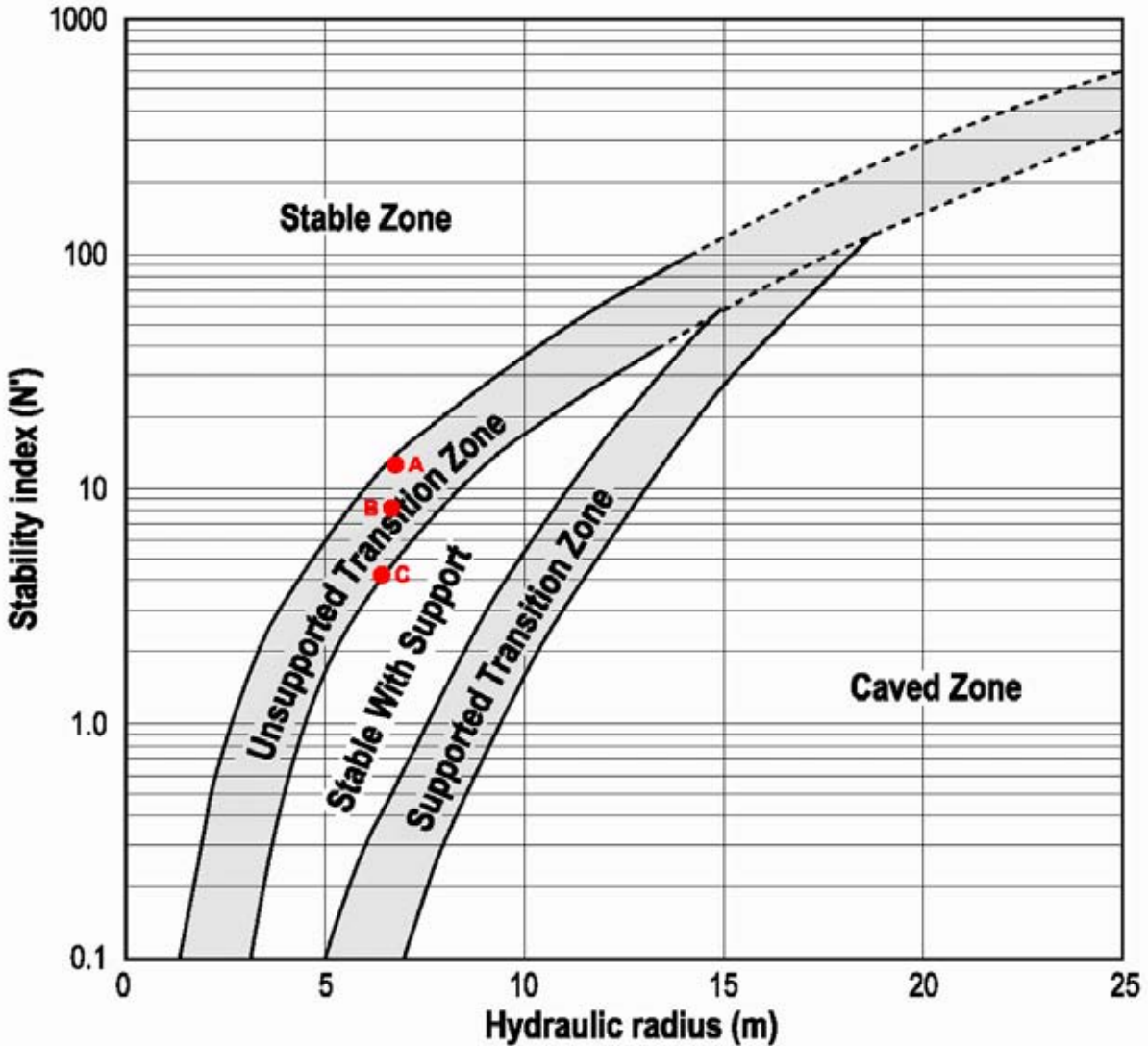
Based on the Modified Stability Graph from Potvin (1988) and for a maximum stope length of 25m, the guidelines for maximum stope heights are inferred and detailed in Table 16-4.

**Table 16-4 Maximum Stope Height Guidelines**

	Stability Number N'	Stope Length	Max. Hydraulic Radius (Unsupported Transition Zone)	Max. Stope Height (Along Dip)	Max. Stope Design Hydraulic Radius	Max. Stope Height (Along Dip)	Max. Stope Design Plotted
Back (Ore)	12.06	25m	9m	64.3m	6.8m	30m	A
Hanging Wall - Steeply Dipping	8.07	25m	7.9m	42.9m	6.7m	30m	B
Hanging Wall - Shallow Dipping	4.29	25m	6.4m	26.2m	6.4m	26m	C

Stopes at Red Mountain were designed to plot in the *Unsupported Transition Zone* of the Modified Stability Graph as shown in Figure 16-7. Based on the geological information collected to date and for the purposes of this preliminary economic assessment, the mining methods proposed at Red Mountain are suitable for the ground conditions anticipated.

Figure 16-7 Red Mountain Stopes Plotted on the Modified Stability Graph (From Potvin, 1988)



## 16.7 ORE HAULAGE

Broken ore in stopes will be moved to the orepass system using 6yard LHD's. The main orepass is located at the south end of the AV Zone and is a total distance of 483m to the truck loading chute at the Bitter Creek Adit. A grizzly and rockbreaker will be installed to prevent oversize material from bridging in the Main Orepass.

All mined ore from the AV Zone will be deposited directly into the main orepass. The Marc Zone will have a short orepass and broken ore will be moved from the Marc Zone orepass to the Main Orepass at the AV Zone over a distance of 80m using



LHD's. Ore mined from the JW Zone will be moved to the main orepass using 30 tonne underground haul trucks.

The main orepass will have a storage capacity of approximately 3,500 tonnes. A truck loading chute at the bottom of the orepass will enable the quick loading of haul trucks at the Bitter Creek Adit for transport to the Bitter Creek Mill. Loaded trucks will travel a distance of 5,300m at a grade of -15% to the primary crusher at the Bitter Creek Mill site. High powered, 800hp, underground haul trucks with payload capacities of 55 tonnes will be utilized. Two trucks on dayshift and one truck on nightshift will be required to move 1800 tonnes of ore per day.

## **16.8 MINE DEVELOPMENT**

Mine development will be undertaken by a six man crew per shift utilizing modern Twin Boom Hydraulic Jumbos, 6y LHD's, ANFO loader, scissor lift, and mechanized bolter. Assumed productivity is 12m of advance per day.

Total development for the life of mine is estimated at 10,580m, of which 4,340m will be development in ore. Mine development has been designed at a maximum grade of 15% and a minimum ramp radius of 15m. Drifts in waste are designed at 5m in width by 4m in height. Drifts in ore were typically designed 7m in width by 4m in height.

## **16.9 MINE BACKFILL**

Stopes are planned to be backfilled with a combination of cemented paste fill and un-cemented waste rock derived from mine development. Cemented backfill is required as part of the mining method in order to maintain stable ground conditions during mining and to provide a mucking floor for subsequent stopes.

It is estimated that 1,056 tonnes per day of backfill will be required to support mining operations. Backfill will consist of 275tpd of rockfill and 771tpd of cemented pastefill. Table 16-5 displays a summary of backfill requirements.

**Table 16-5 Backfill Requirement Summary**

<b>BACKFILL SUMMARY</b>	
Mining Rate (tpd)	1,798
Density of Ore (t/m <sup>3</sup> )	3
Density of Backfill (t/m <sup>3</sup> )	1.8
Percent of Stopes Filled	97%
Backfill Required (tpd)	1,046
Rock Backfill (tpd)	275
Cemented Paste Fill (tpd)	771

### 16.9.1 PASTE FILL DISTRIBUTION

Paste fill will be comprised of total sulphide tailings from the mill flotation circuits. It will be necessary to pump thickened tailing from the Bitter Creek Mill Site through the adit for 5,220m to a vertical borehole where paste fill will be pumped 480m to a batch plant on the 1740 Level of the mine.

In order to keep line pressures within reasonable limits, thickened tailings will have relatively high water content of approximately 35%. Cement binder will be added in a batch plant located underground after thickened tailings have been pumped to the mine elevation. Cemented paste fill will then be distributed to the mining areas where fill is required. It will be necessary to transport approximately 46t of cement to the batch plant via the Bitter Creek Adit each day of production.

The backfill placement crew will be comprised of 2 miners and 1 batch plant operator per shift. The backfill crew will be supported by the mines timbermen and logistics personnel.

### 16.9.2 BACKFILL STRENGTH REQUIREMENTS

Testing and evaluation of the paste backfill criteria was conducted in 1994 by Lakefield Research and Bharti Engineering (Rescan, 1994). In order to provide a stable vertical fill wall, 25m in length by 30m in height, Baharti recommended final design strength for backfill of 0.82MPa. Testing on whole tailings showed that the addition of 6% Portland cement as binder would achieve this design strength at pulp densities of 67% solids.

## **16.10 MINE VENTILATION**

Total mine ventilation requirements are estimated at 300kcfm. Mine ventilation is designed to intake at the Bitter Creek Adit and exhaust from the Red Mountain Decline portal. The main fan will be located at the Red Mountain Decline Portal.

Strong natural ventilation pressures are expected during winter months due to the heating of air as ventilation upcasts through the mine workings. Natural ventilation pressure will work with the main fan throughout the year except for only the hottest days of the summer.

Based on a total mine airflow of 300kcfm and zero natural ventilation pressure, a 700hp main fan will be required to operate at a pressure of 11.7" W.G.

A mine air heater will be located at the Bitter Creek Adit to heat air to +1°C during winter months to avoid freezing of service lines.

## **16.11 MINE MOBILE & STATIONARY EQUIPMENT**

Mobile and stationary equipment to sustain a production rate of 1800tpd over 4 years has been estimated and is detailed in Section 21.2 of this Report.

## **17.0 RECOVERY METHODS**

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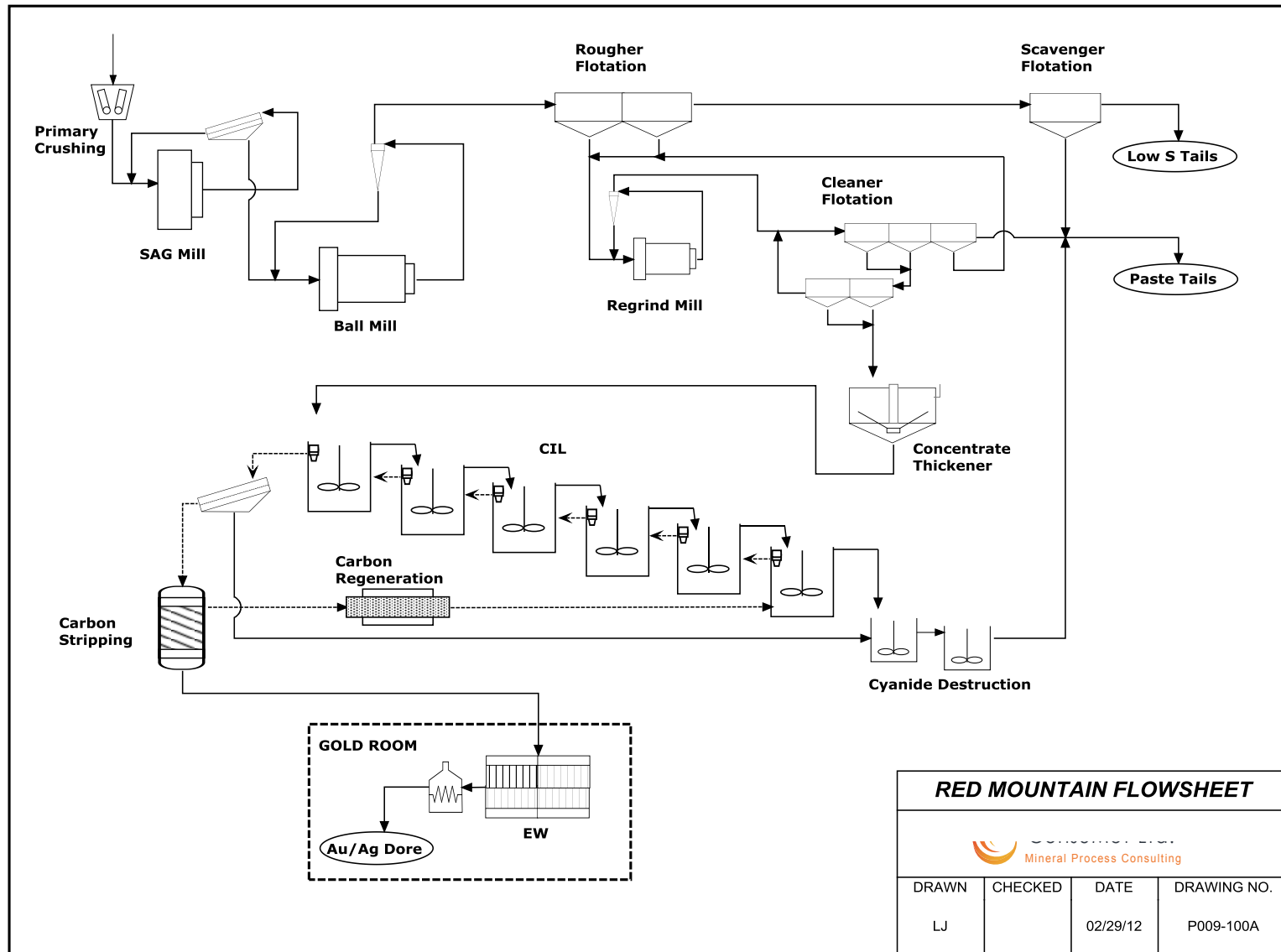
### **17.1 INTRODUCTION**

The proposed method of gold and silver recovery from the Red Mountain Gold Property consists of conventional crushing and milling, followed by froth flotation and CIL cyanidation of the flotation concentrate. The following section describes the flowsheet, design criteria, and process description for an 1800 tpd processing plant.

### **17.2 PROCESS FLOWSHEET**

From the testwork conducted, a flowsheet was developed consisting of primary crushing, SAG and ball mill grinding, froth flotation, carbon-in-leach cyanidation, carbon elution, and gold electrowinning. A schematic of the proposed flowsheet is presented in Figure 17-1.

Figure 17-1 Flowsheet for the Red Mountain Processing Plant



### 17.3 DESIGN CRITERIA

Based on the available testwork, a set of preliminary plant design criteria was developed which provides the specific unit operation process details required for equipment sizing and selection. A summary of the key process design criteria is presented in Table 17-1.

**Table 17-1 Summary of Process Design Criteria**

Parameter	Design Data
Au Head Grade	7.39 gpt
Ag Head Grade	22.2 gpt
S <sub>total</sub> Head Grade	8.0 %
SAG Mill Feed Size, F <sub>100</sub>	200 mm
SAG Mill Transfer Size, T <sub>100</sub>	1 mm
Primary Grind size, P <sub>80</sub>	160 µm
Rougher/Scavenger Float Time	45 min
1 <sup>st</sup> Cleaner Flotation Time	24 min
2 <sup>nd</sup> Cleaner Flotation Time	18 min
Regrind Size, P <sub>80</sub>	20-25 µm
Mass Recovery to Final Conc	30 %
Mass Recovery to Scavenger Conc	10 %
Au Recovery to Final Float Conc	89.7 %
Ag Recovery to Final Float Conc	84.7 %
CIL Residence Time	48 hrs
CIL Au Stage Recovery	91.7 %
CIL Ag Stage Recovery	84.7 %
Overall Au Recovery	82.2 %
Overall Ag Recovery	71.7 %

### 17.4 PROCESS DESCRIPTION

The parameters used to design a new gold concentrator for the Red Mountain Gold Project near Stewart, BC, for the base-case operating scenario of 1800 tpd are described in the following section.

Note that the fundamental design criteria has been developed using limited testwork, and as a result should be considered preliminary.

#### 17.4.1 PROCESS SUMMARY

The Red Mountain concentrator is designed as a 54,000 tonne per month plant. Mine haul trucks will tip into a primary jaw crusher station which is designed for 86%

availability. Surge capacity between the mill and crusher/mine is handled by a ~1500 tonne stockpile.

Material is drawn off the stockpile using apron feeders. SAG mill feed control will consist of variable speed feeders and mill feed size distribution measurement. The SAG mill discharge classification is achieved as follows:

- Trommel screen (40mm) directs oversize to a series of recycle conveyors and allows undersize to gravitate to the SAG mill discharge sump.
- Trommel screen undersize material is further classified by a vibrating screen which cuts at 1 mm, with oversize recycling back to the SAG mill, undersize feeding forward to the ball mill circuit.

Scalping screen undersize flows by gravity to the ball milling circuit. The ball mill operates in closed circuit with a cyclone cluster. The cyclones cut at a  $P_{80}$  of ~160  $\mu\text{m}$ , providing the required liberation for effective flotation.

The cyclone overflow reports to the feed box of the rougher flotation circuit. The rougher/scavenger flotation plant consists of twelve trough cells in series. Each cell will have independent air flow control.

Rougher flotation concentrate is reground in a tower mill to an 80% passing size of 20 $\mu\text{m}$ . The tower mill operates in closed circuit with a cyclone cluster. Cyclone overflow reports to the 1<sup>st</sup> Cleaner feed box.

The 1<sup>st</sup> Cleaner/Scavenger circuit consists of eight trough cells in series. 1<sup>st</sup> Cleaner/Scavenger tailings are fed by gravity into the rougher scavenger concentrate pump box. The 2<sup>nd</sup> cleaner circuit consists of four trough cells in series.

2<sup>nd</sup> Cleaner concentrate is dewatered in a 12m diameter, high rate thickener. The thickener overflow is pumped through a filter press to recover any contained value in the slimes. The thickener underflow is pumped to the carbon-in-leach (CIL) circuit.

The CIL circuit consists of six identical 280m<sup>3</sup> tanks. The tanks are used for cyanide leaching in the presence of activated carbon.

Loaded carbon recovered from the leach circuit is stripped by a ZADRA process circuit, acid washed, and regenerated in a rotary kiln. Gold is recovered through electrowinning, sludge filtering, and a melt furnace.

Reagents are stored, mixed, and distributed from a central reagents area. Frother, collector, and promoter are pumped from the reagents area to head tanks in the flotation section from where peristaltic reagent pumps accurately dose to the process. Lime is dosed at 10% strength and thus requires dosing from a ring main. Cyanide mixing and storage is handled in a separate area with dosing directly to the CIL circuit using peristaltic pumps.

## 17.4.2 DETAILED PROCESS DESCRIPTION

### 17.4.2.1 CRUSHING

Ore is delivered to the primary tip location by 55 tonne haul trucks at a frequency averaging less than 2 trucks per hour. Peak delivery rate is assumed to be 110 dmtph. Ore is discharged directly into the primary crusher throat. This area is served by a hydraulic rock breaker to handle oversize rocks.

The primary crusher can accept 400mm top size and will run with a 200mm open side setting. Grizzly oversize enters the crusher and discharges by gravity after crushing into surge pocket. An apron feeder is used to withdraw crushed ore from the surge pocket onto a short sacrificial conveyor. The conveyor discharges onto the main stockpile feed conveyor, which in turn feeds up to the crushed ore stockpile.

The crushed ore stockpile provides a live capacity approximately equivalent to 18 hours of plant production. Ore is withdrawn from the stockpile via two lined discharge chutes and two apron feeders (one operating, one standby). Each apron feeder is variable speed and capable of providing the entire mill feed rate. Each apron feeder discharges by means of a discharge chute onto the SAG mill feed conveyor.

Spillage and run-off in both the primary crusher building and the stockpile feeders tunnel is pumped to surface for re-processing. The primary crusher is served by an overhead maintenance crane of 5 tonne capacity.

### 17.4.2.2 SAG MILLING

From the stockpile discharge feeder, ore reports the mill feed conveyor. This conveyor discharges via head chute and into the mill feed hopper. The SAG mill feed material size distribution will be monitored and/or controlled using a high speed camera system (WIPFRAG or equivalent).

The SAG mill is a 20' diameter by 6' long, grate discharge, semi-autogenous grinding mill. Slurry and pebbles exit the mill after passing through the mill discharge grate and pebble ports onto a trommel screen fixed to the mill discharge trunnion. Trommel screen oversize material is directed by chute onto the SAG mill pebble conveyor for re-cycling. Trommel screen undersize gravitates into the mill discharge sump where it is further diluted with water. From the discharge sump, coarse slurry is pumped to the SAG mill scalping screen via a distributor box. Screen undersize slurry gravitates via the screen underpan through a sampling plant to the ball mill circuit. Screen oversize material gravitates via the oversize chute back to the SAG mill for re-grinding.



SAG mill slurry spillage is collected in a drive-in sump and then returned to process by a submersible slurry pump.

The milling area (SAG and Ball) is served by a common overhead crane. Relining is achieved using the common relining machine.

SAG mill grinding media is stored in a ball bunker located along the mill feed belt. The bunker is served with a small spillage pump and a ball loading crane and magnet. Balls are added to mill feed via a ball loading chute.

#### 17.4.2.3 BALL MILLING

After SAG milling, the particle size is further reduced to 80% -160  $\mu\text{m}$  by conventional, closed circuit milling, in a 12' diameter by 14' long overflow discharge ball mill.

The SAG mill scalping screen undersize reports to the ball mill discharge sump, whereupon it is combined with dilution water and ball mill discharge before being pumped to the cyclone classification cluster. The cluster consists of five 380mm cyclones, 4 operating, and 1 standby.

Cyclone underflow gravitates to the feed chute of the ball mill. The cyclone overflow reports to a linear trash screen for removal of tramp material prior to flotation. The screened cyclone overflow stream gravitates to the flotation circuit. The stream of woodchips and tramp plastic from the linear screen is dewatered by a woodchip sieve bend before being dumped in a storage area.

The screened cyclone overflow reports to a sampling station that consists of a sampling launder and an automatic sampler. Spillage contained in the ball mill area is pumped to the mill discharge sump for re-treatment.

Ball mill grinding media is delivered to the plant in bulk and is stored in the ball mill ball bunker. The ball bunker is serviced by a crawl and electric hoist arrangement allowing balls to be lifted into a kibble using the ball loading magnet and tipped into the mill via a ball loading chute.

#### 17.4.2.4 ROUGHER FLOTATION

Screened cyclone overflow serves as feed to the rougher flotation section. The rougher/scavenger bank consists of ten 500  $\text{ft}^3$  trough cells, operating in series. Flotation air to each cell is supplied by flotation blowers via a low pressure manifold. Pulp level is maintained by modulating dart valves.

Rougher concentrate is collected in a common launder from the first eight cells in the bank and pumped to the regrind mill feed inlet. Scavenger concentrate is collected in a common launder from the last two cells in the bank and pumped to the paste plant. Tailings from the final scavenger cell report to a sampling launder, primary sampler, and then the rougher/scavenger tailings tank where it is pumped to the tailings dam.

Spillage in the rougher section is collected in a common sump and pumped back into the first rougher cell using a submersible spillage pump.

#### 17.4.2.5 CLEANER FLOTATION

The 1<sup>st</sup> Cleaner/Scavenger bank consists of eight 300 ft<sup>3</sup> trough cells in series. Flotation air is supplied from a low pressure manifold and pulp level is maintained by modulating dart valves.

1<sup>st</sup> Cleaner concentrate is collected from the first six cells in a common launder and pumped to the 2<sup>nd</sup> Cleaner feed box. The 1<sup>st</sup> Cleaner Scavenger concentrate is collected from the last two cells in the bank into a common launder and gravitates to the regrind mill pump box. Cleaner Scavenger tails slurry gravitates via a sampling launder and sampler to the Rougher Scavenger concentrate pump box.

The 2<sup>nd</sup> Cleaner bank consists of four 300 ft<sup>3</sup> trough cells in series. Flotation air is supplied from a low pressure manifold and is flow controlled by modulating valves and vent-captor type flow meters. Pulp level is maintained by modulating dart valves.

2<sup>nd</sup> Cleaner concentrate is collected in a common launder and pumped to the concentrate thickener. The 2<sup>nd</sup> Cleaner tails flow by gravity into the 1<sup>st</sup> Cleaner feed box.

The Cleaner area spillage is collected in bermed areas and directed into the cleaner area spillage pump, which pumps back to the 1<sup>st</sup> Cleaner feed box.

#### 17.4.2.6 ROUGHER CONCENTRATE REGRIND

Rougher concentrate is fed to a 375kW tower regrind mill feed inlet. The mill discharge is pumped to a cluster of seven 228mm cyclones (6 operating, 1 standby). Cyclone overflow, with a target P<sub>80</sub> of 20 µm, flows by gravity to the concentrate thickener, while the cyclone underflow gravitates to the mill feed inlet.

A spillage pump is used to pump the contents of the area sump back into the regrind mill.

#### 17.4.2.7 CONCENTRATE THICKENER

2<sup>nd</sup> Cleaner concentrate is pumped to the concentrate thickener sampling box and sampler before entering the concentrate thickener for dewatering. This thickener is equipped with rake lift, bed level detection and bed mass monitoring. Thickener overflow gravitates to the spraywater tank for recycling, while the thickener underflow is withdrawn from the cone by a centrifugal underflow pump and pumped forward to the CIL section.

Thickener area spillage is recovered by pumping back to the concentrate thickener.

#### 17.4.2.8 CIL CYANIDATION

Thickened final concentrate is pumped to a circuit of six 280 m<sup>3</sup> mechanically agitated, Carbon-In-Leach (CIL) cyanidation tanks. The tanks are maintained under constant pH control using lime addition and cyanide concentration is monitored and target levels achieved through operator controlled peristaltic pumps. Slurry is advanced from one tank to the next using interstage screens and carbon is moved counter-currently using carbon transfer pumps to minimize attrition.

Final screened discharge from the last tank in the CIL circuit is fed to cyanide destruction. Loaded carbon from CIL tank #1 is pumped to the safety screen feed box which feeds the safety screen. The screen oversize is transferred by chute to the elution circuit. Safety screen undersize is returned to the CIL circuit.

CIL area spillage is recovered by pumping back to the pre-aeration tank.

#### 17.4.2.9 ELUTION

Loaded carbon from the CIL circuit is treated to recover gold and regenerate carbon in the Elution area. Loaded carbon is transferred on a batch basis from a storage tank to the elution column to be acid washed and stripped using hot caustic solution (ZADRA process).

The pregnant strip solution is pumped to the electrowinning cell where gold, silver, and contaminants are recovered as sludge. The sludge is dewatered in a filter press, and transferred to the gold room for final upgrading to dore bar by mercury retort and melt furnace. The barren solution from the filter press is recycled to the strip solution holding tank.

Barren carbon is removed from the stripping column and fed by rotary valve to the regeneration kiln.

Spillage in the elution area is pumped back into the process at the operator's discretion.

#### 17.4.2.10 CYANIDE DESTRUCTION

CIL tailings from the final leach tank flow by gravity into the cyanide destruction circuit consisting of two agitated 10 m<sup>3</sup> tanks. Cyanide destruction is achieved by the Inco SO<sub>2</sub>-air process, using sodium metabisulfite in the presence of a copper sulphate catalyst.

Overflow from the second cyanide destruction tank reports to the Scavenger concentrate pump box and then is pumped to the paste plant.

Spillage in the cyanide destruction area is pumped back into the first cyanide destruction tank.

#### 17.4.2.11 SERVICES

Overflow water is recovered from the concentrate thickener into the spray water tank from where it is pumped via an inline filter to the process water tank. Filter backwash is piped to the CIL circuit for re-processing.

Process water is stored in an insulated 80 m<sup>3</sup> tank and is distributed to the plant by the process water pump. Plant hosing/flushing water is provided by the hose-down water supply pumps.

The process water tank is also used to feed the diesel powered fire water pump from a separate offtake.

Clean water is piped into the plant from wells and stored in the plant clean water tank. From the storage tank, water is pumped around the plant for use as reagent mixing water, slurry pump gland seal water and as required for mill lubrication and system cooling.

Plant and instrument air is provided by two compressors. Air quality is maintained by a filter. Instrument air is dried using a refrigeration drier. An air receiver is provided for compressed and instrument air lines, to allow for surges in demand.

Low pressure air is supplied to the flotation plant and CIL circuit by two separate blowers. The blowers are fixed speed, with manifold pressure controlled by a modulating valve on an exhaust line.

#### 17.4.2.12 REAGENTS

##### Collector - PAX

Potassium amyl xanthate (PAX) pellets are delivered to site in 1-tonne bags and stored in the reagent storage area. Bags are added to the mixing tank via the reagent area hoist and collector loading chute. Collector is mixed to 10% solution strength within the tank, and then transferred to the storage tank, ready for distribution.

From the storage tank, collector solution is continuously pumped to the collector head tank which in turn overflows back to the mixing tank. Peristaltic hose pumps meter collector solution to several addition points throughout the plant.

Reagent spillage is pumped to the tailings tank for disposal on the tailings dam.

##### Collector – A208

Liquid collector A208 is delivered to site in 1m<sup>3</sup> totes. As delivered A208 is pumped directly to the dosing points by dedicated peristaltic pumps.

##### Frother - MIBC

Liquid Methyl Isobutyl Carbinol (MIBC) is delivered to site in 1m<sup>3</sup> totes. As delivered MIBC is pumped directly to the dosing points by dedicated peristaltic pumps.

##### Flocculant – Magnafloc 10

Flocculant powder is delivered to site in 1-tonne bags and stored in the reagent storage area. Bags are lifted by the reagent area crane and added to the flocculant powder hopper. Powder is withdrawn by the flocculant screw feeder and blown through a venturi to a wetting head located on top of the mechanically agitated mixing tank.

From the mixing tank, mixed flocculant can be fed forward to the storage tanks, or recycled back into the mixing tank to aid mixing.

From the storage tank, flocculant is pumped directly to the concentrate thickener.

##### PH Modifier – Calcium Hydroxide

Lime (calcium hydroxide) is delivered to the plant in 1 tonne bulk bags and loaded into the lime hopper. Dry lime is metered from the hopper into the agitated mixing tank by a screw feeder and mixing plate. Mixed lime slurry at 10% solids is pumped to an agitated dosing tank. A circulation pump supplies lime to the CIL circuit via a ring main.

### Gold Lixiviant – Sodium Cyanide

Sodium Cyanide (NaCN) powder is delivered to site in 1-tonne bags and stored in a bermed, secure, storage area. Bags are added to the mixing tank via the reagent area hoist and loading chute. NaCN is mixed to 10% solution strength within the tank, and then transferred to the dosing tank for distribution.

From the dosing tank, cyanide solution is continuously pumped through a ring main with several dosing points in the CIL area.

### Elution Reagents – NaOH and HCl

Reagents in the elution section consist of 50% strength caustic solution (NaOH) and concentrated hydrochloric acid (HCl). Both are delivered to the plant in 44 gallon drums and metered into the process directly, using drum pumps.

### Cyanide Destruction Reagents – Sodium Metabisulfite and Copper Sulfate

Powdered Sodium Metabisulfite ( $\text{Na}_2\text{S}_2\text{O}_3$ ) is delivered to the plant in 25kg bags, 40 bags to a pallet. The bags are emptied into the agitated mixing tank via a feed chute. Mixed metabisulfite solution at 10% concentration is pumped to a dosing tank. A peristaltic pump delivers the solution to the cyanide destruction circuit.

Powdered Copper Sulfate ( $\text{CuSO}_4$ ) is delivered to the plant in 25kg bags, 40 bags to a pallet. The bags are emptied into the agitated mixing tank via a feed chute. Mixed copper sulfate solution at 10% concentration is pumped to a dosing tank. A peristaltic pump delivers the  $\text{CuSO}_4$  solution to the cyanide destruction circuit.

## 18.0 PROJECT INFRASTRUCTURE

### 18.1 INTRODUCTION

The Red Mountain Gold Project is located 28km by road from the town and port of Stewart, British Columbia. A 14km access road from Highway 37A to the Bitter Creek Mill site will require significant repairs and reconstruction. A 14km transmission line is planned to be constructed to connect the mine and mill to the BC Hydro electrical grid. Figure 18-1 displays the Project location and major infrastructure in relation to Stewart, BC.

Figure 18-1 Project Infrastructure Overview



### 18.2 BITTER CREEK ACCESS ROAD

The junction of the Bitter Creek Access road at Highway 37A is 13km east of Stewart BC. A 14km all-weather gravel access road is planned to access the Bitter Creek Mill Site from the highway.

Lac Minerals completed preliminary construction of the access road in 1994. However, the road work has created unstable cut and fill slopes that have sloughed and eroded in certain areas. Other sections of the road have fallen into disrepair from lack of maintenance over the last 18 years. Significant upgrading and repairs will be required to make the access road suitable for industrial use (Golder, 2000).

Snow avalanches and slides can be expected along much of the Bitter Creek Access Road. A three person avalanche team, including an expert in the field, will be onsite from December through March when heavy snowfall is expected. The team will have helicopter support when required and be responsible for monitoring of snowfall, conditions, and initiating avalanche control measures.

There are five major stream crossings along the route. Bridges over four of these will require a span of over 20m and will be constructed from steel girders with wood decking. Five of the bridge crossings will incorporate designs to allow the removal of the bridge during avalanche control. A photo of the existing road at Hartley Gulch Creek is displayed in Figure 18-2.

**Figure 18-2 Road Crossing of Hartley Gulch Creek**





Access along the Bitter Creek road will be restricted to authorized vehicles only. A security gate will be located at the junction of Highway 37A and vehicles will maintain radio communication while on the road. Control of the road is especially important during avalanche control activities.

### **18.3 PORT OF STEWART**

Stewart is located on the head of the Portland Canal on the Pacific Ocean. Stewart is a salt water port supporting a barge terminal and bulk commodity loader and it is linked to the province via paved highway to major transportation routes. Stewart also possesses an excessive amount of hydro power available for industrial use.

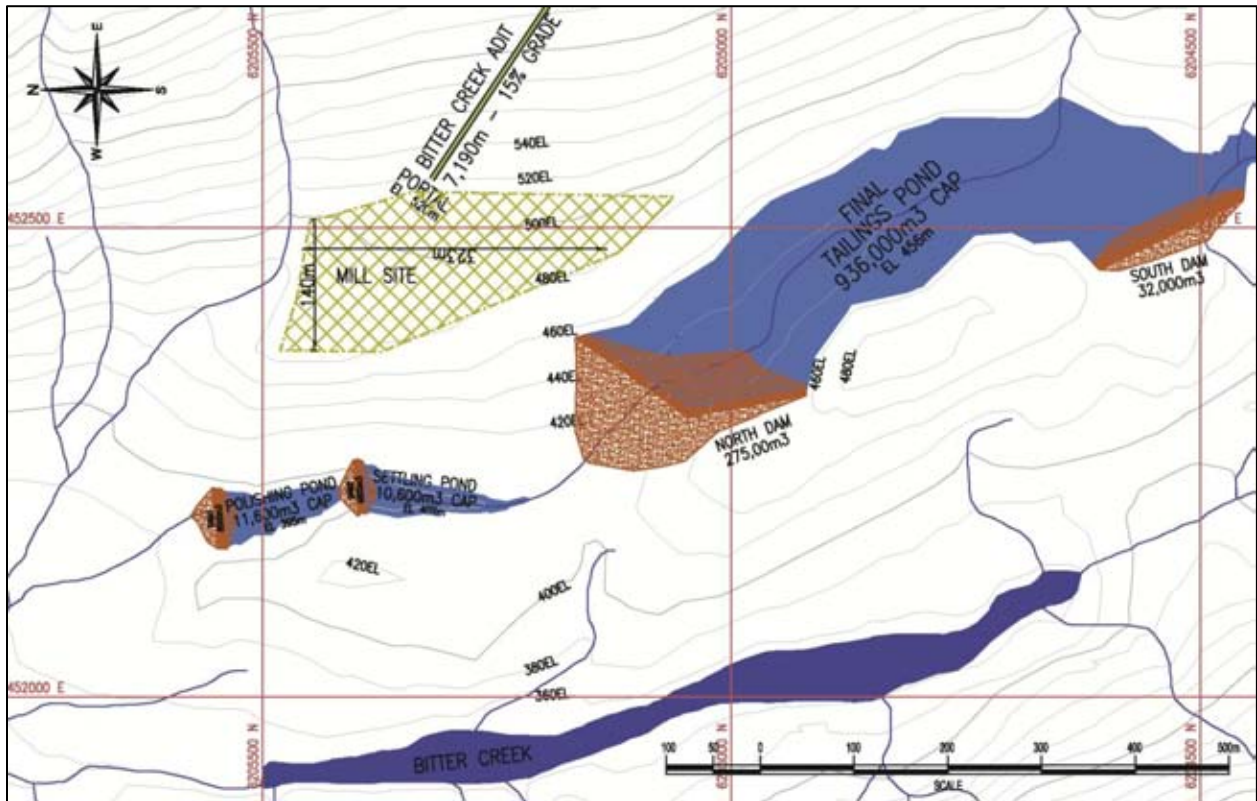
Two deep sea facilities are in operation, Stewart Bulk Terminals and the District of Stewart log storage and handling facility. Space for considerable expansion exists at both facilities.

Stewart is an ice free port with a wet marine climate that allows year round port operations. Stewart has lower terminal handling costs and port charges than competing mineral shipping ports. Stewart also has the capacity to significantly expand its shipping volume of mineral concentrates.

### **18.4 BITTER CREEK MILL SITE**

The Bitter Creek Mill site is planned to be located on a gently sloping terrace at the planned portal location of the Bitter Creek Mine Adit. The area for mill and surface structures is approximately 325m x 140m. Water supply for the mill will be from groundwater, reclaimed water from the settling ponds, and fresh water from Bitter Creek.

Figure 18-3 Bitter Creek Mill Site



## 18.5 TAILINGS FACILITY

The planned tailings storage facility is proposed to be located immediately south of the Bitter Creek Mill Site. A minor valley created by a series of outcrop knobs is located in this area which creates an excellent area for tailings storage. This valley only has minor inflows from a branch of Otter Creek, which is completely separate from the large flows of Bitter Creek.

The creek branch will be diverted around the proposed tailings facility and a dam will be built across the north and south sides of the valley. The dams will require approximately 307,000m<sup>3</sup> of material (552,000t) for construction and provide a tailings storage capacity of 936,000m<sup>3</sup> (1,680,000t). At the planned production rate of 1,800tpd this would allow a capacity of 54 months, which is sufficient for the current mine life of 52 months.

The northern dam will require the bulk of the material (275,000m<sup>3</sup>) and have a final height of approximately 36m and a crest length of approximately 200m. It is assumed that the outside dam wall will have a slope of 2H:1V and the inside wall a slope of 1.5H:1V.

The dam design will incorporate a low permeability core composed of till or sandy material and bounded by filter zones. The shells of the dams would consist of mine development rock. Detailed geotechnical studies are required to finalize the tailings facility design.

## **18.6 SETTling PONDS**

The minor valley below the planned tailings facility allows an ideal location for the construction of settling ponds. Two settlement ponds with total capacity of 22,000m<sup>3</sup> water storage would require 18,000m<sup>3</sup> of construction material.

## **18.7 WASTE DUMPS**

### *18.7.1 BITTER CREEK ADIT*

The development of the Bitter Creek Adit will generate approximately 613,000 tonnes of waste. It is assumed that the majority of this material will be non-acid generating. All non-acid generating waste will be utilized in the construction of the tailings dams. Any potentially acid generating waste will be placed inside the tailings facility.

### *18.7.2 RED MOUNTAIN*

Pre-production development from the Red Mountain Decline is estimated to generate 136,000 tonnes of PAG waste. The majority of this waste must be placed in the Red Mountain cirque. An engineered waste dump will be required. In order to mitigate any problems with acid rock drainage, a liner and earth cover may be required.

## **18.8 ELECTRICAL POWER**

BC Hydro maintains a 138kV transmission line which runs along Highway 37A to Stewart, BC. It is intended that a 14km transmission line will be built by the company to connect the Bitter Creek Mill site to the BC Hydro electrical grid.

It is anticipated that the mine and mill will have a demand of approximately 7MW with a loading factor of 75%.

For the purposes of this Report, the design assumes a 138/34.5 kV transformer at the junction of the Bitter Creek Access Road and Highway 37A with a 34.5kV transmission line to the Bitter Creek Mill Site.

The transmission line will follow the Bitter Creek Access Road and will have sufficient height to enable an additional 2m to 3m of ground clearance to address snow accumulations resulting from avalanches. The majority of the structures will be located so that only the conductor will span across the worst avalanche area which are generally narrow in nature (Hayward, 1994).

A detailed study by BC Hydro will be necessary to determine the cost of any Basic Transmission Extensions (BTE) that may be required as well as any System Reinforcements that may be necessary. This Report assumes a BTE cost of \$750,000 with no significant System Reinforcements.

## 19.0 MARKET STUDIES AND CONTRACTS

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The Red Mountain Project will produce gold/silver dore for shipment to a precious metal refinery. There are currently no contracts in place or under negotiation for refining of dore produced at Red Mountain. Refining terms assumed in this Report are within standard industry norms.

### 19.1 METAL PRICE ASSUMPTIONS

Two metal price scenarios were used in this preliminary economic assessment. The approximate 3-year rolling average price of gold as of March 29<sup>th</sup>, 2012 at \$1,360 CDN per Troy Ounce (oz) was used as the base case and an alternate case used the current price of gold at \$1,700CDN/oz. The metal prices for the base and current price scenarios are displayed in Table 19-1.

The price of silver was based on a price conversion to gold of 1:50.

**Table 19-1 Metal Price Assumptions**

	Au Price \$CDN/oz	Ag Price \$CDN/oz
Base Case	<b>\$1,360</b>	\$27
Current Prices	<b>\$1,700</b>	\$34

### 19.2 NET REVENUE PER TONNE

Based on the average grade of the minable resource of 6.4gpt Au and 19gpt Ag, the Net Revenue per Tonne can be calculated.

Net Smelter Return royalties are assumed at 3.5%. This is the combined royalty payable under the Wotan and Barrick Agreements. Metallurgical recovery is assumed at 82.2% for Au and 71.7% for Ag. Payable metal from the refiner is assumed at 99% for gold and 98% for silver.

Based on a gold price of \$1,360 CDN/oz the net revenue per tonne mined after process recovery, refining charges, and royalties is \$219 CDN/tonne. Net revenue per tonne for the base and current price scenarios are displayed in Table 19-2.

**Table 19-2 Net Revenue per Tonne**

	Au Price \$CDN/oz	Ag Price \$CDN/oz	Net Revenue per tonne (\$CDN/t)
Base Case	<b>\$1,360</b>	\$27	<b>\$219</b>
Current Prices	<b>\$1,700</b>	\$34	<b>\$288</b>

## **20.0 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL / COMMUNITY IMPACT**

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### **20.1 MINE PERMITTING**

Currently, Seabridge holds an exploration permit (MX-1-422), with associated \$1M environmental bond, on the Red Mountain Gold Property. Exploration work conducted by Banks Island Gold Ltd. would require additional application and an associated bond.

The Red Mountain Project triggers a formal review under the British Columbia Environmental Assessment Act. In accordance with the approving authority, an Environmental Assessment (EA) Certificate must be obtained prior to being issued a Mines Act Permit. A Mines Act Permit, from the BC Ministry of Mines, and an Environmental Management Permit, from the BC Ministry of Environment is required for commercial production. Various baseline studies to support the permit application have been undertaken by various former Property operators.

Upon project approval, a number of permits from various government agencies may also be required. No technical difficulties are anticipated for obtaining these permits. A reclamation bond is required to be deposited to the government on the issuance of permits. It is anticipated that the cost of the bond will increase from the \$1,000,000 that is already withheld.

Royal Oak Mines Inc., a previous Property owner, entered into the Environmental Assessment review process in 1996 and it was subsequently withdrawn from the process due to financial difficulty. In 2000, SRK prepared a report entitled *Review of Baseline Studies at Red Mountain* (SRK *a*, 2000) which presented the results of a review of the baseline studies that were completed, identified gaps in the information, and recommended further data and analysis that would be required to support a project application. The results of SRK's review are summarized in Table 2-1. An additional review of the baseline data is recommended due to possible increased standards and expectations since the 2000 review by SRK.

**Table 20-1 Summary of SRK Recommendations for Project EA Application (SRK a, 2000)**

Baseline Component	Additional Tasks to Complete Data Review	Requirements for Project Application Report	Additional Studies that <u>may</u> be required for Project Report (EIS)
Water Quality	<ul style="list-style-type: none"> <li>• Make straightforward corrections to existing database.</li> <li>• Add 2000 samples and field notes to database.</li> <li>• Contact Rescan and Royal Oak staff to see if additional field notes are available to clarify issues discussed in text.</li> </ul>	<ul style="list-style-type: none"> <li>• Add missing 1990 to 1992 data to database.</li> <li>• Add detection limits to database.</li> <li>• Make additional corrections, as noted in text.</li> <li>• Interpret and Present Data in format suitable for review.</li> </ul>	<ul style="list-style-type: none"> <li>• Periodic monitoring of waste piles, underground discharge and key baseline stations.</li> <li>• Additional monitoring of any new stations associated with new project plans.</li> <li>• Incorporate baseline data into a dilution model.</li> </ul>
Climate	<ul style="list-style-type: none"> <li>• Locate and compile missing data referenced in data files.</li> <li>• Make straightforward corrections to database, such as removing invalid data and date corrections.</li> <li>• Determine where earlier snow course data was collected.</li> </ul>	<ul style="list-style-type: none"> <li>• Add missing data to database.</li> <li>• Interpret and Present Data in format suitable for review.</li> <li>• Investigate feasibility and costs for installing a new weather station that has a better chance of collecting reasonable data.</li> </ul>	<ul style="list-style-type: none"> <li>• Depends on project specific guidelines.</li> <li>• Climate monitoring, particularly during winter months may be required to meet the requirement of providing continuous coverage.</li> </ul>
Hydrology	<ul style="list-style-type: none"> <li>• Locate and compile missing data referenced in project files.</li> </ul>	<ul style="list-style-type: none"> <li>• Interpret and present available data in format suitable for review.</li> </ul>	<ul style="list-style-type: none"> <li>• Depends on ability to develop regional correlations and on the Project Specific Guidelines.</li> <li>• Additional flow data may be required, particularly during winter and spring months.</li> <li>• A dilution model will be useful for impact assessment.</li> </ul>
Hydrogeology	<ul style="list-style-type: none"> <li>• Continue to record static water level in mine at any opportunity. Add this data to database.</li> </ul>	<ul style="list-style-type: none"> <li>• Interpret and present available data in format suitable for review.</li> </ul>	<ul style="list-style-type: none"> <li>• Depends on Project Specific Guidelines.</li> <li>• Limited structural mapping may be needed to demonstrate integrity of surrounding bedrock.</li> </ul>
Wildlife and Vegetation	<ul style="list-style-type: none"> <li>• Consider adopting an incidental sightings record.</li> </ul>	<ul style="list-style-type: none"> <li>• Refine presentation of data to incorporate new guidelines and evaluation criteria.</li> </ul>	<ul style="list-style-type: none"> <li>• Depends on Project Specific Guidelines.</li> </ul>
Fisheries	<ul style="list-style-type: none"> <li>• Contact Rescan to determine approximate costs for completing an additional year of baseline studies (Similar to 1994).</li> </ul>	<ul style="list-style-type: none"> <li>• Refine presentation of data to incorporate new guidelines and evaluation criteria.</li> </ul>	<ul style="list-style-type: none"> <li>• Depends on Project Plans and Project Specific Guidelines.</li> <li>• An additional year of baseline studies will likely be required.</li> </ul>
ARD/ML	<ul style="list-style-type: none"> <li>• Determine whether metal data was collected as part of Scott Frostad's thesis study.</li> <li>• Complete letter report on paste pH survey and recent road samples.</li> </ul>	<ul style="list-style-type: none"> <li>• Interpret and present available information on road cuts, waste rock, and process waste samples.</li> </ul>	<ul style="list-style-type: none"> <li>• Further testing of tailings sample, including kinetic tests.</li> <li>• Water Quality Predictions associated with various disposal options.</li> </ul>
Terrain Stability Assessment		<ul style="list-style-type: none"> <li>• Outline plans for completing studies.</li> </ul>	<ul style="list-style-type: none"> <li>• Terrain stability assessment along road corridor will be required.</li> </ul>
SocioEconomics		<ul style="list-style-type: none"> <li>• Outline plans for completing studies.</li> </ul>	<ul style="list-style-type: none"> <li>• Depends on project specific guidelines.</li> </ul>
Culture and Heritage		<ul style="list-style-type: none"> <li>• Outline plans for completing studies.</li> </ul>	<ul style="list-style-type: none"> <li>• Depends on project specific guidelines.</li> <li>• Culture/heritage issues are not expected to be significant. However, a mitigation plan for road construction may be required.</li> </ul>



## **20.2 LAND CAPABILITY AND USE**

Gold was first discovered at Red Mountain in 1965 and mineral exploration in the area dates back to the late 19<sup>th</sup> century. The region has a rich history of mining which includes past and present operations such as Premier Gold Mine, Dolly Varden Silver Mine, Eskay Creek, and Snip.

Forestry production in the Red Mountain area is limited by steep terrain, climatic conditions, and thin, infertile soil. Poor regional forestry values, low timber quality and long haulage distances combine to limit the economic viability of timber harvesting in the Stewart-Alice Arm area. Agriculture potential in the study area is also limited by poor soil conditions, marketing restrictions, and short growing seasons (Royal Oak, 1996).

Hunting and trapping activities in the area are carried out by a small number of guide-outfitters and residents. Bitter Creek Valley does not provide suitable habitats for beaver or muskrat, nor food resources for otter or mink; therefore, trapping in the area would be non-productive.

### **20.2.1 VEGETATION**

The majority of the Red Mountain Project site lies within the alpine area above the local treeline, which occurs at approximately 1300m in the Coastal Mountain-heather Alpine biogeoclimatic zone. The Bitter Creek valley contains two major biogeoclimatic zones, namely the Coastal Western Hemlock along the valley floor and the Mountain Hemlock at mid-elevations (BC Ministry of Forest and Range Kalum Wall Map, 2008).

Most of the land within the alpine is occupied by glaciers or recently exposed bare rock. Treeline trees are mostly mountain hemlock, yellow-cedar, and subalpine fir. In the alpine, vegetation is made up of low-growing, evergreen dwarf shrubs (BC Ministry of Forest and Range, 2006).

The Coastal Western Hemlock landscape at low elevations in the Bitter Creek Valley is dominated by shallow organic and morainal surficial materials. Characteristic vegetation includes coastal muskeg and stunted coniferous forests of western hemlock, western red cedar, yellow cedar, amabilis fir, and shore pine (BC Ministry of Forest Bro 31, 1999).

The Mountain Hemlock zone is considered subalpine lands and is present at mid-elevations in the Bitter Creek Valley. This landscape is characterized by dense, closed-canopy forest at lower elevations, transitioning to open parkland, heath and meadow at higher elevations. The dominant tree species include Mountain Hemlock, Amabilis Fir, and Yellow Cedar. The understory is characterized by

interspersed sedge and mountain heather shrubs (BC Ministry of Forest Bro51, 1997).

Some clearing of timber will be required for construction of infrastructure. This is roughly estimated to be 2.5 hectares of timber clearing over the entire project.

#### **20.2.2 WILDLIFE**

The wildlife species present within the proposed Red Mountain project area and adjacent habitats include black bear, grizzly bear, wolf, and mountain goat. Smaller furbearers present in the region may include marten, red squirrel, and the hoary marmot. In the unforested area surrounding the immediate project site the presence of these furbearers is limited. In addition to smaller passerines, bird species that inhabit the area include rock ptarmigan, blue grouse, and ruffed grouse (Royal Oak, 1996).

#### **20.2.3 FISHERIES AND AQUATIC RESOURCES**

Bitter Creek is located within the Red Mountain Project Area and converges with Bear River near Highway 37A, downstream of the project site. Bear River contains a majority of the known fisheries resources in the project area, which include coho salmon, pink salmon, chum salmon, sockeye salmon, and trout.

Fish resource and fish habitat studies conducted in 1993 indicated that there is limited usage and available fish habitat in Bitter Creek. Dolly Varden was the main fish species to use Bitter Creek and the lower reaches of Roosevelt Creek (Royal Oak, 1996).

### **20.3 SOCIO-ECONOMIC IMPACTS**

The overall impacts to the town of Stewart, nearby communities and the province are expected to be beneficial. The larger communities of Terrace and Smithers have more than adequate facilities and infrastructure to absorb potential impacts of project development, particularly as these are expected to revolve around company and employee purchases of goods and services. Stewart is likely to experience the most direct impacts from project development as a result of the expected increase in residents and company expenditures.

Stewart has, in general, more than sufficient facilities and infrastructure to accommodate the potential increase in residents. Services provided by government agencies, communication and media, commercial operations and transportation

would continue to adequately serve an increased population. Power, water supply, solid waste management services, and community services and infrastructure currently available in Stewart are more than adequate to provide for a population increase. Stewart is served by an elementary and a secondary school, both of which are operating well below capacity. The Stewart Health Care Centre provides complete health services and is designed to accommodate a community of up to 5,000 residents.

## **20.4 FIRST NATIONS LAND USE**

The Red Mountain Project falls outside the settled land claim of the Nisga'a band but lies within the much larger areas identified as "Nisga'a traditional lands." Historical correspondence with the Nisga'a has not identified any issues of concern with respect to potential mine development.

## **20.5 ENVIRONMENTAL STUDIES**

Environmental studies at the Red Mountain Gold Property were completed at various times by different operators. In general, data collection occurred between 1990 and 1992 by Hallam Knight and Piesold for Bond Gold, in 1993 and 1994 by Rescan for Lac Minerals, and in 1996 and 1997 by Royal Oak. Subsequently, there have been many engineering and environmental studies that have utilized this data. The historic environmental database was utilized for initiating an Environmental Assessment in 1996 by Royal Oak as detailed in Section 20.1: Mine Permitting of this Report. The environmental studies included sampling and assessment of water quality, climate, hydrology, hydrogeology, wildlife and vegetation, fisheries, ARD/ML, terrain stability, socioeconomics, and culture and heritage. There are no known environmental issues that could impact the Red Mountain Project.

## **20.6 SITE MONITORING AND MANAGEMENT**

### **20.6.1 WASTE ROCK AND TAILINGS DISPOSAL**

The main waste management issue for the Red Mountain Project is the prevention and control of ARD from the tailings and any potentially acid generating rock which is produced during mine development or operation.

The Red Mountain Project will create both waste rock from mine development and tailings as a byproduct of mineral processing. As detailed in Table 13-6, 40% of the tailings (CIL Tailings & Scavenger Concentrate) will be sent underground and utilized as cemented paste backfill material. The tailings to be sent underground will be

potentially acid generating material and contain approximately 25% sulphur content. The tailings will be converted to cemented paste backfill to provide support for mining adjacent longhole stopes and to create nearly impermeable material to reduce the acid generating potential. The remaining 60% flotation tailings, non-acid generating material, will be sent to the tailings pond and will contain approximately 0.27% sulphur content, as estimated in Table 13-6.

Construction of a tailing impoundment in the Bitter Creek Valley, south of the Bitter Creek Mill Site, and displayed on Figure 18-3 is being evaluated as a tailing management option for the Red Mountain project. The proposed tailings impoundment is detailed in Section 18.5: Tailings Facility.

It is currently planned to create permanent rockpiles on surface for the majority of development rock with portions used as underground backfill, road construction, and road maintenance. Barren rock will be monitored for acid generating potential. As required, potentially acid generating barren rock will be transported and placed underground in completed stopes.

#### 20.6.2 *EXISTING STOCK PILES*

There is an existing pile of mine development waste on the ridge near the Red Mountain Portal. Project data indicates that 90,000 tonnes are currently stored there; specifically, there are 5,000 tonnes adjacent to the portal and 85,000 tonnes stored 250m south of the portal. SRK verified that the amount is in general agreement with the volume of the existing underground excavation (SRK, 2003).

In 2000, SRK visually inspected the waste rock storage pile. The waste rock was very fresh in appearance, with little sign of oxidation or secondary mineral accumulation. From acid base accounting data, the waste rock contained high amounts of sulphide. Carbonate veining was also observed in many of the rocks. Field tests completed on the waste rock pile indicate that the cold climatic conditions at Red Mountain site provide an important control on the rate of sulphide oxidation. Leachate from crib tests constructed in 1996 had neutral pH's and moderate sulphate levels. Paste pH's in the seven year old waste pile were also neutral. In contrast, humidity cell tests completed on similar materials produced acidic leachate within several weeks of testing (SRK *b*, 2000).

In March 2002, NAMC submitted a revised reclamation plan to the BC Ministry of Energy and Mines. The revisions from the original reclamation plan, filed by Royal Oak in 1996, proposed treatment of the 90,000 tonnes of waste material by in-place recontouring rather than placing the material underground (NAMC, 2002). The NAMC revised reclamation plan was approved by the BC Ministry of Energy and Mines in April 2002 (BC MEM, 2002).

### 20.6.3 *SITE MONITORING*

As a condition of the Mineral and Coal Exploration Activities & Reclamation Permit No. MX-1-422 (BC MEM, 2002), Seabridge is required to complete annual monitoring activities to document conditions at the Red Mountain site, including:

- Collection and analysis of seep and crib drainage samples.
- Monitoring of dump weathering.
- Documenting general site conditions.

Through the Option Agreement, responsibility of the annual monitoring work is transferred to Banks Island Gold.

During proposed operations, an environmental monitoring program will be implemented. Details of the monitoring program will be determined in further studies.

### 20.6.4 *WATER MANAGEMENT*

Potential water sources consist of underground drainage, mill process water, runoff from the waste rock stockpile, and decant from the tailings storage facility.

Water stored in the tailings facility will be decanted to a series of settling ponds, as detailed in Section 18.6: Settling Ponds and illustrated in Figure 18-3. Following settling of solids, a portion of the water will be reused in the processing plant. The remainder of the water will be discharged to the environment.

Cyanide destruction of tailings from the flotation concentrate will be conducted before disposal underground as cemented paste backfill.

Following further studies and if required, a water treatment plant will be utilized to treat mine drainage water and, if necessary, the runoff from stockpiles of waste rock and water released from the settling ponds.

## **20.7 DECOMMISSIONING AND RECLAMATION PROGRAM**

The mine closure concept is to meet water quality objectives without ongoing treatment for acid rock drainage. This will be achieved by placing all of the potentially acid generating tailings and most of the PAG waste rock underground in the form of cemented paste backfill. Following closure, the underground mine will be allowed to flood and the mine portals and ventilation raises will be collapsed or blocked. To seal the portal, a permanent concrete plug will be installed to prevent outflow of mine water. The Red Mountain Portal will be sealed to protect against surface water entering the mine. Any potentially acid generating mine waste left on surface at the Red Mountain Cirque will be stored in an engineered lined facility, sloped, and capped to prevent potential acid generation problems.

The structures on the Red Mountain Gold Property will be decommissioned and removed from the site upon completion of mining. All explosives, explosive magazines, fuel, and fuel containers will also be removed from the site at closure.

Concrete slabs, footings and retaining walls will be taken apart by drilling and blasting or with a hydraulic excavator outfitted with a rock-breaker. The concrete fragments will be placed underground.

After removal of the process building, equipment, and foundations, a soil sampling program will be conducted to determine if there are any contaminants in the immediate vicinity.

Bridges will be removed from the mine roads. Additionally, all culverts will be removed from the roads and cross ditched for drainage. Organic material will be spread on the road surface and the road will be re-vegetated as required.

The cost of closure and reclamation has not been estimated in this Report. It is assumed that the salvage values from mill, mobile and stationary equipment will be adequate to pay for the cost of closure and reclamation.

## 21.0 CAPITAL AND OPERATING COSTS

### 21.1 OPERATING COSTS ESTIMATE

Based on the mine design and schedule, an estimate of operating costs has been derived. Costs are based on productivities, labour, and material costs obtained from supplier and contractor quotes, cost data from other mines, first principle calculations, and experience.

#### 21.1.1 OPERATING COST SUMMARY

Operating costs have been estimated at \$206,789,000 over the current 52 month mine life averaging \$72.68 per tonne milled. A summary of operating costs are displayed in Table 12-1.

**Table 21-1 Operating Cost Summary**

<i>OPERATING COST SUMMARY</i>		
	<b>Total Cost</b>	<b>Cost per tonne</b>
<b><u>MINING &amp; SURFACE</u></b>		
MATERIALS	\$12,090,000	\$4.25
BACKFILL BINDER	\$24,107,000	\$8.47
LUBE, TIRES, & PARTS	\$12,096,000	\$4.25
MINE ELECTRICITY	\$2,639,000	\$0.93
DIESEL FUEL	\$9,592,000	\$3.37
AVALANCHE CONTROL	\$2,603,000	\$0.91
MINE AIR HEATING	\$1,445,000	\$0.51
MINE, MAINTENANCE & SURFACE LABOUR	\$49,750,000	\$17.49
	<b>\$114,322,000</b>	<b>\$40.18</b>
<b><u>MILL</u></b>		
LABOUR	\$26,857,000	\$9.44
SAFETY, SPARES, & ELECTRICAL	\$7,824,000	\$2.75
MILL ELECTRICITY	\$5,861,000	\$2.06
REAGENTS	\$12,973,000	\$4.56
BALLS & LINERS	\$4,353,000	\$1.53
PIPING, LUBRICANTS, ASSAY	\$854,000	\$0.30
	<b>\$58,722,000</b>	<b>\$20.64</b>
<b><u>MANAGEMENT, TECHNICAL &amp; SUPERVISION</u></b>		
STAFF SALARIES	\$15,885,000	\$5.58
STAFF INCENTIVES	\$2,542,000	\$0.89
	<b>\$18,427,000</b>	<b>\$6.48</b>
<b><u>CONTINGENCY (8%)</u></b>		
	<b>\$15,318,000</b>	<b>\$5.38</b>
<b>TOTAL OPERATING COSTS</b>	<b>\$206,789,000</b>	<b>\$72.68</b>

21.1.2 MINING & SURFACE

21.1.2.1 MATERIALS

Materials required for underground mine development include explosives, ground support, service piping, ventilation ducting, electrical, and communication cables. Total material costs per meter of advance is estimated at \$940/m. Ground support is assumed to consist of screen on the back and ribs with 8' resin rebar on a 1.2m spacing. Explosives are assumed to consist of 70% ANFO and 30% semi-gelatin with the use of NONEL detonators.

Materials required for mine production include explosives and detonators which are estimated at \$0.76 per tonne mined. Explosives are assumed to consist of 60% ANFO and 40% bulk emulsion with the use of NONEL detonators.

21.1.2.2 BACKFILL BINDER

Backfill binder is assumed to consist of Ordinary Portland Cement delivered to Stewart in 1.8t bags. Table 21-2 displays assumptions used for the calculation of the cost of backfill binder.

**Table 21-2 Backfill Binder Summary**

<b>BACKFILL BINDER SUMMARY</b>	
CEMENTED BACKFILL REQUIRED (tpd)	773
BACKFILL BINDER CONTENT (%)	6%
BINDER COST (\$/tonne)	\$329
BINDER REQUIRED PER DAY(tonnes)	46

21.1.2.3 LUBE, TIRES, & PARTS

The costs for lube, tires, and parts have been estimated based on assumed operating hours for each piece of mobile and stationary equipment as detailed in Section 21.2 of this Report.



21.1.2.4 MINE ELECTRICITY

The cost of mine electricity is based on the BC Hydro Industrial electricity rates and expected usage by the mine and surface. Table 21-3 displays assumptions used for the calculation of the cost of mine electricity.

**Table 21-3 Mine & Surface Electricity**

<b><i>MINE &amp; SURFACE ELECTRICITY</i></b>	
COST OF ELECTRICITY (\$/kWh)	\$0.047
MINE & SURFACE USAGE (kWh/day)	32,919
MINE & SURFACE DEMAND (MW)	2.3

21.1.2.5 DIESEL FUEL

The costs for diesel fuel has been estimated based on assumed operating hours for each piece of mobile equipment as detailed in Section 21.2. Table 21-4 displays assumptions used for the calculation of the cost diesel fuel.

**Table 21-4 Mine & Surface Diesel Fuel**

<b><i>MINE &amp; SURFACE DIESEL FUEL</i></b>	
COST OF DIESEL (\$/liter)	\$1.16
MINE & SURFACE USAGE (liters/day)	3,517

21.1.2.6 AVALANCHE CONTROL

A full time avalanche control team of three will be required for four months of the year to ensure safety and access to the mill site. Table 21-5 displays a summary of costs per season for avalanche control.

**Table 21-5 Avalanche Control**

<b>AVALANCHE CONTROL</b>		
AVALANCHE CONTRACTOR	\$153,000	per season
HELICOPTER SUPPORT	\$448,000	per season
	\$601,000	per season

#### 21.1.2.7 MINE AIR HEATING

During winter months it will be necessary to heat mine ventilation air to prevent freezing of mine services. The use of a direct-fire natural gas mine air heater is assumed. Table 21-6 displays assumptions used for the calculation of the cost of mine air heating.

**Table 21-6 Mine Air Heating**

<b>MINE AIR HEATING</b>		
Airflow	300,000	cfm
Temperature	1	°C
Winter Temp	-25	°C
Months Heating per year	4	
Heating Requirement	16,848,000	BTU/hr
Heating Requirement	17.8	GJ/hr
Total heating	51,876	GJ
LNG Cost per GJ	6.43	\$/GJ

#### 21.1.2.8 MINE, MAINTENANCE, & SURFACE LABOUR

Labour requirements for the mine, maintenance, and surface crews have been estimated based on rates and schedules set out in Table 21-8. A loading factor of 1.45 has been assumed based on payroll burden, benefits, and incentives as shown in Table 21-7.

**Table 21-7 Payroll Loading Factor**

<b>PAYROLL LOADING FACTOR</b>	
Payroll Burden	15%
Payroll Benefits	10%
Payroll Incentive	20%
Loading Factor	1.45

**Table 21-8 Mine, Maintenance, & Surface Crew Summary**

<b>MINE - Rotation - 12hr shifts</b>					
	Hourly Rate	Loaded Rate	Men per shift	Shifts per day	Total Men
Mine Supervisors	\$40	\$58	1.0	2	2
Jumbo Driller	\$38	\$55	1.0	2	2
LHD operator	\$32	\$46	2.0	2	4
Haul truck driver	\$27	\$39	1.5	2	3
UG truck driver	\$32	\$46	1.0	1	1
Bolter operator	\$35	\$51	1.0	2	2
Ground Support /Services	\$35	\$51	2.0	2	4
Timbermen	\$32	\$46	2.0	1	2
Production Drilling	\$38	\$55	1.5	2	3
Explosive loading	\$35	\$51	2.0	1	2
Logistics	\$30	\$44	1.0	2	2
Backfill	\$35	\$51	2.0	2	4
Batch Plant Operator	\$30	\$44	1.0	2	2
Novice miners	\$25	\$36	2.0	2	4
			<b>21</b>		<b>37</b>
<b>MAINTENANCE - Rotation - 12hr shifts</b>					
	Hourly Rate	Loaded Rate	Men per shift	Shifts per day	Total Men
UG Maintenance Foreman	\$40	\$58	1.0	2	2
UG Mechanics	\$35	\$51	4.0	2	8
Surface Maintenance	\$35	\$51	2.0	1	2
Electricians	\$36	\$52	2.0	2	4
			<b>9.0</b>		<b>16</b>
<b>SURFACE - 12hr shifts</b>					
	Hourly Rate	Loaded Rate	Men per shift	Shifts per day	Total Men
Road Maintenance	\$30	\$44	3.0	1	3
Heavy Equipment operator	\$30	\$44	1.0	2	2
Labourer	\$25	\$36	2.0	2	4
			<b>6.0</b>		<b>9</b>

### 21.1.3 MILLING

The process plant operating cost estimate is estimated at \$20.64 per tonne. A breakdown of these costs, by major area, is provided in Table 21-9.

**Table 21-9 Operating Cost Estimate for the Processing Plant**

<i>MILL OPERATING COST SUMMARY</i>		
	<b>Total Cost</b>	<b>Cost per tonne</b>
LABOUR	\$26,857,000	\$9.44
SAFETY, SPARES, & ELECTRICAL	\$7,824,000	\$2.75
MILL ELECTRICITY	\$5,861,000	\$2.06
REAGENTS	\$12,973,000	\$4.56
BALLS & LINERS	\$4,353,000	\$1.53
PIPING, LUBRICANTS, ASSAY	\$854,000	\$0.30
<b>TOTAL MILL OPERATING COSTS</b>	<b>\$58,722,000</b>	<b>\$20.64</b>

Details of the estimating methods in each of the major cost areas are presented as follows.

#### 21.1.3.1 LABOUR

Labour costs represent the largest single component of the plant operating cost at approximately 46% of the total. Labour costs in the process plant have been calculated using typical plant staffing levels. Pay scales are based on database rates. The plant schedule is assumed to be 12 hour shifts, with two shifts at the site and two shifts on leave at all times. Estimated labour breakdowns are given in Table 21-10.

**Table 21-10 Process Plant Labour Cost Summary**

<b>PROCESS PLANT LABOUR COSTS</b>							
<b>MANAGEMENT</b>	<b>No</b>	<b>Shifts</b>	<b>Total</b>	<b>Basic Sal.</b>	<b>Benefits</b>	<b>Total /person</b>	<b>Total</b>
PLANT MANAGER	1	1	1	\$107,328	\$28,030	\$135,358	\$135,358
MET CLERK	1	1	1	\$50,981	\$14,428	\$65,408	\$65,408
GENERAL FOREMAN	1	1	1	\$96,148	\$25,331	\$121,479	\$121,479
METALLURGICAL ENGINEER	1	1	1	\$96,148	\$25,331	\$121,479	\$121,479
PLANT METALLURGIST	1	2	2	\$69,316	\$18,854	\$88,170	\$176,340
<b>Sub Total</b>			6				<b>\$620,066</b>
<b>PLANT OPERATION</b>							
SHIFT FOREMAN	1	4	4	\$84,968	\$22,632	\$107,600	\$430,400
CONTROL ROOM OPERATORS	2	4	8	\$78,931	\$21,175	\$100,105	\$800,844
PLANT OPERATORS	3	4	12	\$71,552	\$19,393	\$90,945	\$1,091,345
REAGENT OPERATORS	1	4	4	\$71,552	\$19,393	\$90,945	\$363,782
LABOURERS	3	4	12	\$53,681	\$15,075	\$68,756	\$825,070
<b>Sub Total</b>			40				<b>\$3,511,441</b>
<b>MAINTENANCE</b>							
MAINTENANCE LEAD	1	4	4	\$83,850	\$22,362	\$106,212	\$424,849
MILLWRIGHT	1	2	2	\$78,260	\$21,013	\$99,273	\$198,545
ELECTRICIAN	1	2	2	\$83,850	\$22,362	\$106,212	\$212,424
INSTRUMENT TECHNICIAN	1	2	2	\$71,999	\$19,502	\$91,501	\$183,002
<b>Sub Total</b>			10				<b>\$1,018,821</b>
<b>LABORATORY</b>							
CHIEF CHEMIST	1	1	1	\$93,912	\$24,791	\$118,703	\$118,703
CHEMIST	1	2	2	\$85,192	\$22,686	\$107,878	\$215,755
ANALYTICAL	1	4	4	\$69,763	\$18,962	\$88,725	\$354,899
SAMPLER	1	4	4	\$54,111	\$15,183	\$69,294	\$277,178
<b>Sub Total</b>			11				<b>\$966,535</b>
<b>Total</b>			<b>67</b>				<b>\$6,116,863</b>

In total, the mill is estimated to require a total complement of 67 persons at an annual cost of \$6,116,863, or \$9.44 per tonne.

### 21.1.3.2 SAFETY, MAINTENANCE SPARES, AND ELECTRICAL

Safety equipment and supplies are estimated to cost \$115,000 annually, representing \$0.18 per tonne of ore processed. Costs in this area include training, monitoring equipment, first aid supplies, and personal protective equipment.

An estimate for maintenance spares is made as a percentage of the mechanical supply cost in each process area. The cost includes transportation, but the labour costs for replacement, installation, and maintenance are included in the labour allowance shown earlier in this section. Overall, maintenance spares cost is estimated to be 8.4% of the mechanical equipment supply cost, or approximately \$2.39 per tonne of ore processed.

Electrical spares and supplies are estimated at \$0.18 per tonne of ore processed.

### 21.1.3.3 MILL ELECTRICITY

Electricity supply represents a significant operating cost, accounting for approximately 10% of the overall total. A summary of the cost calculation is presented in Table 21-11.

**Table 21-11 Process Plant Electricity Cost Estimate**

<b>MILL POWER COST</b>		
	<b>Units</b>	<b>Estimate</b>
TOTAL CONNECTED POWER	kW	4,704
LOAD FACTOR	%	80.1%
ESTIMATED POWER CONSUMED	kW	3,766
ANNUAL RUNNING TIME	h	7,750
ANNUAL CONSUMPTION	MWh	29,190
COST PER MWh	\$	45.7
TOTAL COST	\$/YEAR	\$1,333,998
	\$/tonne	\$2.06

The total connected power is taken from the mechanical equipment list, with load factors applied for each piece of equipment. A power supply rate of \$45.70/MWh

has been estimated from current published BC Hydro rates. This equates to an annual operating cost of \$1,333,998, or \$ 2.06 per tonne of ore treated.

#### 21.1.3.4 REAGENTS

Reagent costs are estimated using unit costs from vendors and consumption rates from the lab testwork. A summary of the costs for each reagent is presented in Table 21-12. The total reagent cost amounts to \$4.46 per tonne of mill feed, or approximately 22% of the total operating cost for the plant. It should be noted that sodium cyanide alone represents more than half of the cost of reagents.

**Table 21-12 Summary of Estimated Reagent Operating Costs**

<i>PROCESS PLANT REAGENT COSTS</i>		
Reagent	Annual Cost	Per Tonne Cost
PAX	\$361,487	\$0.56
A208	\$132,192	\$0.20
MIBC	\$118,302	\$0.18
CuSO <sub>4</sub>	\$246,857	\$0.38
LIME	\$262,440	\$0.41
NaCN	\$1,656,288	\$2.56
ACTIVATED CARBON	\$39,036	\$0.06
NaOH	\$13,900	\$0.02
FLOCCULANT	\$45,360	\$0.07
Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	\$59,098	\$0.09
HCl	\$18,954	\$0.03
<b>Total</b>	<b>\$2,953,913</b>	<b>\$4.56</b>

#### 21.1.3.5 BALLS AND LINERS

The cost of grinding balls and crusher/mill liners are estimated using quoted supply rates and consumption estimates from previous projects as shown in Table 21-13.

**Table 21-13 Grinding Media Operating Costs**

<b>GRINDING MEDIA COST ESTIMATE</b>		
	<b>Annual Cost</b>	<b>Cost per tonne</b>
<b>BALLS</b>		
SAG MILL	\$198,450	\$0.31
BALL MILL	\$396,900	\$0.61
REGRIND MILL	\$31,752	\$0.05
<b>LINERS</b>		
PRIMARY CRUSHER	\$87,627	\$0.14
SAG MILL	\$146,262	\$0.23
BALL MILL	\$92,825	\$0.14
REGRIND MILL	\$37,130	\$0.06
<b>Total Cost</b>	<b>\$1,981,893</b>	<b>\$2.50</b>

#### 21.1.3.6 PIPING, LUBRICANTS, AND ASSAY LAB

Additional minor allowances for variable operating cost are as follows:

- Assay lab consumables – \$0.20 per tonne of ore processed.
- Piping supply – \$0.08 per tonne of ore processed.
- Lubricants – \$0.02 per tonne of ore processed.

#### 21.1.4 MANAGEMENT, TECHNICAL, & SUPERVISION STAFF

Management, technical staff, and supervisors are assumed to be based in Stewart, BC and be paid on a salary basis. Salaries have been estimated at a premium to average salaries in the mining industry with extra incentives to encourage staff to relocate to Stewart, BC. Table 21-14 displays assumptions used for the calculation of the cost staff.



**Table 21-14 Management, Technical, & Supervision Staff Summary**

<b>SALARY STAFF - Stewart Based</b>					
	<b>Base Salary</b>	<b>Loaded Salary</b>	<b>Quantity</b>	<b>Annual Incentives</b>	<b>Annual Cost</b>
<b>General Manager</b>	\$190,000	\$275,500	1	\$38,000	\$275,500
<b>Mine Manager</b>	\$160,000	\$232,000	1	\$32,000	\$232,000
Chief Engineer	\$150,000	\$217,500	1	\$30,000	\$217,500
<i>Senior Engineer</i>	\$120,000	\$174,000	1	\$24,000	\$174,000
<i>Planning Engineer</i>	\$110,000	\$159,500	2	\$44,000	\$319,000
<i>Chief Surveyor</i>	\$95,000	\$137,750	1	\$19,000	\$137,750
<i>Surveyor</i>	\$80,000	\$116,000	2	\$32,000	\$232,000
Chief Geologist	\$140,000	\$203,000	1	\$28,000	\$203,000
<i>Senior Geologist</i>	\$120,000	\$174,000	1	\$24,000	\$174,000
<i>Mine Geologist</i>	\$105,000	\$152,250	2	\$42,000	\$304,500
<b>Environmental Manager</b>	\$110,000	\$159,500	1	\$22,000	\$159,500
Environmental Technician	\$90,000	\$130,500	1	\$18,000	\$130,500
<b>Surface Manager</b>	\$110,000	\$159,500	1	\$22,000	\$159,500
<b>Maintenance Manager</b>	\$150,000	\$217,500	1	\$30,000	\$217,500
<b>Admin Manager</b>	\$105,000	\$152,250	1	\$21,000	\$152,250
Health & Safety	\$105,000	\$152,250	1	\$21,000	\$152,250
<i>First Aid Attendant</i>	\$85,000	\$123,250	4	\$68,000	\$493,000
Human Resources	\$80,000	\$116,000	1	\$16,000	\$116,000
Accountant	\$80,000	\$116,000	1	\$16,000	\$116,000
<i>Purchaser</i>	\$75,000	\$108,750	1	\$15,000	\$108,750
Warehouseman	\$50,000	\$72,500	2	\$20,000	\$145,000
Admin Assistants	\$50,000	\$72,500	2	\$20,000	\$145,000
			<b>30</b>	<b>\$602,000</b>	<b>\$4,364,500</b>

## 21.2 CAPITAL COST ESTIMATE

An estimate has been prepared for capital expenses required to prepare the mine for operations and for equipment require to mine and process 1800 tonnes per day of ore.

Capital expenditures related to design, permitting, construction, and commissioning of the Red Mountain Gold Mine are modeled to occur in a 3-Year pre-production period.

All expenditures that are expected to occur after commercial production has commenced are treated as operating costs.

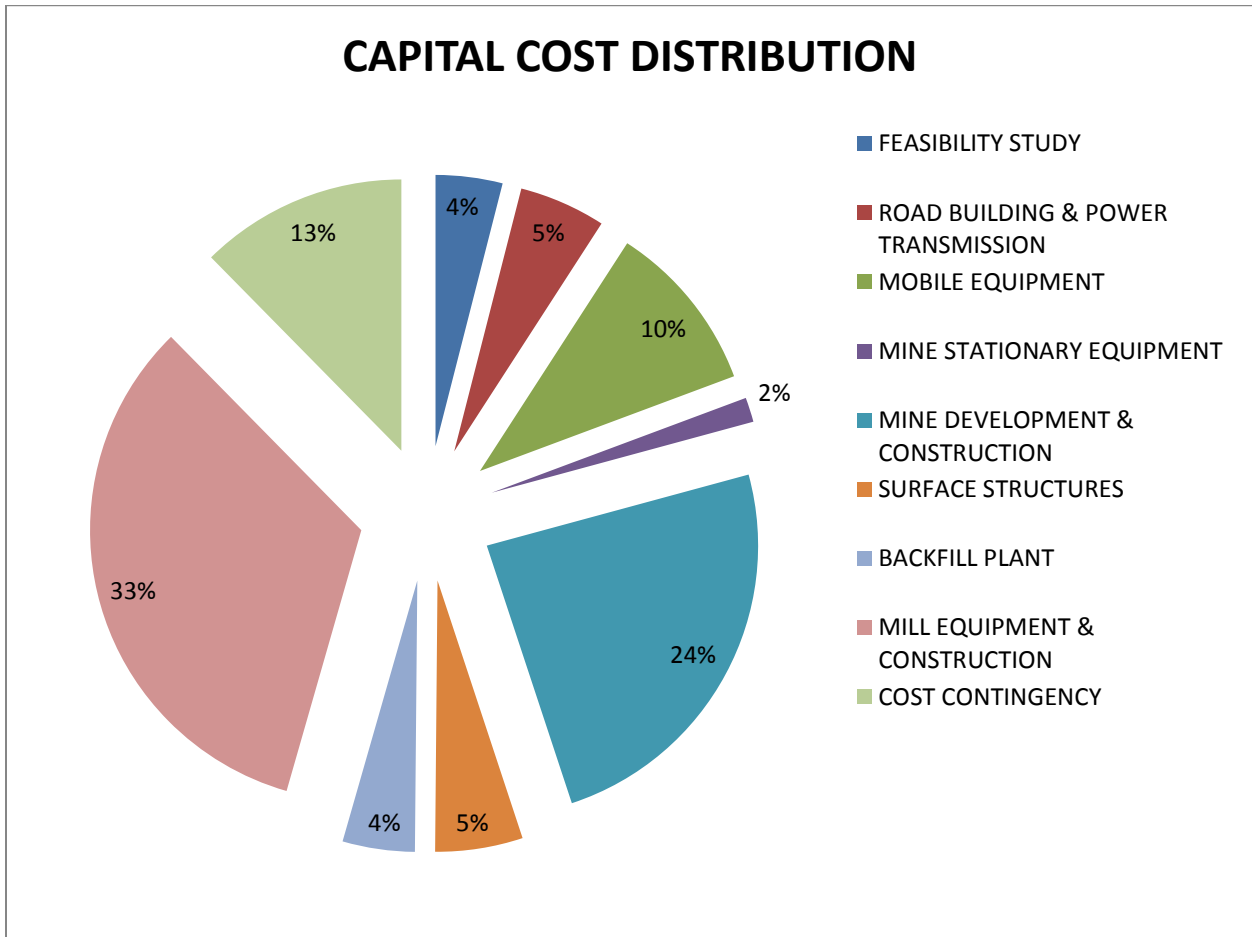
### 21.2.1 CAPITAL COST SUMMARY

The estimated capital cost from feasibility through to commercial production is estimated at \$162,671,000 including cost contingencies. A summary of estimated capital costs are presented in Table 21-15 and displayed in Figure 21-1.

**Table 21-15 Capital Cost Summary**

<b>CAPITAL COST SUMMARY</b>	
FEASIBILITY STUDY	\$6,477,000
ROAD BUILDING & POWER TRANSMISSION	\$8,386,000
MOBILE EQUIPMENT	\$16,560,000
MINE STATIONARY EQUIPMENT	\$2,383,000
MINE DEVELOPMENT & CONSTRUCTION	\$39,271,000
SURFACE STRUCTURES	\$8,488,000
BACKFILL PLANT	\$7,000,000
MILL EQUIPMENT & CONSTRUCTION	\$53,979,000
COST CONTINGENCY	\$20,127,000
	<b>\$162,671,000</b>

Figure 21-1 Capital Cost Distribution



#### 21.2.1.1 FEASIBILITY STUDY

In order to complete a feasibility study it will be necessary to complete a 13,000m diamond drill program at Red Mountain. The objective of the drill program is to upgrade the resources in the JW, 132, and 141 Zones from inferred to indicated category and procure a representative sample for metallurgical, ARD, and paste backfill testing.

In order to complete the drilling program, it will be necessary to dewater and rehabilitate the existing decline at the top of Red Mountain. A mining contractor will be utilized to dewater, check scale, and rescreen 670m of the existing decline. A Sikorsky S64 helicopter will be utilized to lift mining equipment from Hwy 37A near Stewart to the Red Mountain portal site and a temporary exploration camp will be established. Table 21-16 displays details of the costs associated with the diamond drilling program.

**Table 21-16 Capital Cost – Feasibility Study – Diamond Drilling Program**

<b>DIAMOND DRILLING PROGRAM</b>	
Heavy Lift Helicopter	\$330,000
Drift Rehab & Dewatering	\$545,000
Equipment Rental	\$64,000
Mining Contractor Profit	\$121,800
Ventilation & Pumping	\$23,000
Diamond Drilling(13,000m)	\$2,600,000
Camp	\$302,000
Geological Staff	\$191,000
	<b>\$4,177,000</b>

Detailed engineering and environmental studies are required to advance the project to feasibility. Previous operators have completed a number of studies on the Property, including an extensive environmental baseline study, which will augment the studies required. Table 21-17 displays details of the costs associated with the engineering and environmental studies.

**Table 21-17 Capital Cost – Feasibility Study – Engineering and Environmental**

<b>ENGINEERING &amp; ENVIRONMENTAL</b>	
Metallurgical Testing	\$350,000
Baseline Review & Studies	\$300,000
EA pre-application	\$250,000
Road & Powerline Engineering	\$350,000
Tailings & Geotechnical	\$400,000
ARD Studies	\$250,000
Mine & Mill Engineering	\$400,000
	<b>\$2,300,000</b>

#### 21.2.1.2 ROAD BUILDING & POWER TRANSMISSION

The 14km Bitter Creek Access Road from Highway 37A to the Red Mountain mill site will require significant upgrades and repairs. The road crosses five streams which will require bridges. Road construction is scheduled for the summer of Year 2. The estimated capital cost of the Bitter Creek Access Road is displayed in Table 12-18.

**Table 21-18 Capital Cost – Bitter Creek Access Road**

<b>BITTER CREEK ACCESS ROAD</b>	
Excavation	\$1,720,400
Culverts & Drainage	\$178,500
Road Surfacing	\$40,800
Slope Stability	\$741,625
Bridges	\$1,316,650
	<b>\$3,998,000</b>

A 14km power transmission line will be required to connect the Red Mountain Mill to the BC Hydro Transmission grid at Highway 37A. Based on a power demand of 7MW and a 34.5kV transmission line, the estimated capital cost of the transmission line is presented in Table 21-19.

**Table 21-19 Capital Cost – Power Transmission Line**

<b>POWER TRANSMISSION LINE</b>	
Transmission line 34.5kv, wood poles	\$3,262,500
BC Hydro - Electrical Substation	\$375,000
BC Hydro - Basic Transmission Extension	\$750,000
	<b>\$4,387,500</b>

### 21.2.1.3 MOBILE EQUIPMENT

A fleet of underground mobile equipment capable of the planned production rate of 1,800tpd and development advance of 12m/day has been selected with an estimated capital cost as displayed in Table 21-20. All estimates are based on new equipment.

**Table 21-20 Capital Cost – Underground Mobile Equipment**

<b>UNDERGROUND MOBILE EQUIPMENT</b>			
	Unit Cost	# of Units	Capital Cost
UG Haul Truck - Adit	\$1,500,000	2	\$3,000,000
UG Personnel Carrier	\$280,000	1	\$280,000
UG Crane Truck	\$280,000	1	\$280,000
UG Grader	\$270,000	1	\$270,000
LHD - Development	\$782,000	1	\$782,000
LHD - Production	\$782,000	2	\$1,564,000
Truck - Production	\$565,000	1	\$565,000
Jumbo	\$900,000	2	\$1,800,000
Jumbo Drifter& feed	\$100,000	4	\$400,000
Jacklegs & Stoppers	\$6,500	6	\$39,000
Production Drills	\$360,000	2	\$720,000
Raise Bore with Crawler	\$1,580,000	1	\$1,580,000
Shotcrete Skid Mounted	\$80,000	1	\$80,000
Bolter	\$766,000	1	\$766,000
Anfo Loader	\$370,000	1	\$370,000
Scissor Lift	\$265,000	2	\$530,000
UG Crane Truck	\$280,000	1	\$280,000
Kubota Tractors	\$50,000	4	\$200,000
			<b>\$13,506,000</b>

A surface fleet of mobile equipment to perform road maintenance, earthworks, and crew and freight transport from Stewart has been selected with an estimated capital cost as displayed in Table 21-21. All estimates are based on new equipment.

**Table 21-21 Capital Cost – Surface Mobile Equipment**

<b><i>SURFACE MOBILE EQUIPMENT</i></b>			
	Unit Cost	# of Units	Capital Cost
Hydraulic Excavator	\$560,000	1	\$560,000
Bulldozer	\$433,000	1	\$433,000
Road Grader	\$453,000	1	\$453,000
Wheel loader	\$244,000	1	\$244,000
Articulated 4x4 Truck	\$520,000	1	\$520,000
Roller Compactor	\$140,000	1	\$140,000
Pickup Trucks	\$26,000	8	\$208,000
Bus	\$52,000	1	\$52,000
Forklift 4x4	\$164,000	1	\$164,000
Tractor	\$250,000	1	\$250,000
Flat Bed Trailer	\$30,000	1	\$30,000
			<b>\$3,054,000</b>

21.2.1.4 MINE STATIONARY EQUIPMENT

Stationary equipment required for mine services have been specified and estimated as displayed in Table 21-22.

**Table 21-22 Capital Cost – Mine Stationary Equipment**

<b><i>MINE STATIONARY EQUIPMENT</i></b>			
	Unit Cost	# of Units	Capital Cost
Rock-breaker & Grizzly	\$160,000	1	\$160,000
Truck loading Chute	\$140,000	1	\$140,000
Compressor	\$182,000	1	\$182,000
Spare compressor	\$75,000	1	\$75,000
Main Substation	\$260,000	1	\$260,000
Mine Electrical Substation	\$126,000	1	\$126,000
Mine Electrical Substation	\$41,000	2	\$82,000
Backup Generator	\$200,000	1	\$200,000
Mine Heater	\$300,000	1	\$300,000
Spare Mine Heater	\$160,000	1	\$160,000
Main Fan	\$260,000	1	\$260,000
Aux Vent Fans	\$10,000	12	\$120,000
Aux Vent Fans	\$9,200	5	\$46,000
Adit Development Fans	\$20,000	6	\$120,000
Pumps, Main Sump	\$21,000	4	\$84,000
Pumps, Face	\$8,500	8	\$68,000
			<b>\$2,383,000</b>

21.2.1.5 MINE DEVELOPMENT & CONSTRUCTION

Development and construction of the underground mine will take place over a period of 2 Years. A summary of estimated mine development and construction costs are presented in Table 21-23.

**Table 21-23 Capital Cost – Mine Development & Construction**

<b><i>MINE DEVELOPMENT &amp; CONSTRUCTION</i></b>	
Bitter Creek Adit	\$25,034,000
Orepass & Service Holes	\$2,119,000
Pre-production development	\$7,624,000
Earthworks - Tailings & Mill Site	\$669,000
Mine Commissioning	\$3,825,000
	<b>\$39,271,000</b>

Bitter Creek Adit and Earthworks

The first stage of development is related to the driving of a 7,220m adit from the mill site at the Bitter Creek Valley to the bottom of the planned JW Ramp connecting to the Red Mountain underground development. Daily advance of the Bitter Creek Adit is estimated at 12m per day by blasting three, 4m rounds per day. Including ancillary development of 722m, a total duration of 22 months is required to complete the Bitter Creek Adit.

The development crew will advance all permanent mine service lines with the drifting. This includes backfill, water, air, and drain piping, along with electrical, central blast, and leaky feeder cables.

During the summer months of the adit development, the surface excavation crew will prepare the Bitter Creek mill site and construct the initial tailings and settling pond dams.

Red Mountain Mine Development

Development of the Red Mountain workings to connect to the Bitter Creek Adit will take place over two, 4 month summer seasons. The mobilization of mining equipment to the Red Mountain portal using a Sikorsky S64 helicopter will be required. Total pre-production mine development of 2,189m is required to prepare the mine for commercial production, including connection to the Bitter Creek Adit, initial stope development, and underground mechanics shop.

A contracted raise bore will bore an orepass system totaling 533m to connect Bitter Creek Adit to the Red Mountain Mine workings.



A grizzly, rock breaker, and truck loading chute will be installed on the orepass and the main ventilation fan will be installed at the Red Mountain portal.

Until the Bitter Creek Adit is connected to the Red Mountain Decline, development crews will be housed in a temporary work camp on Red Mountain with helicopter support available for the duration to move men and materials from Bitter Creek to Red Mountain.

Mine Commissioning

A two month period before commencement of commercial production for mine commissioning has been assumed. During this period the cost of the full production staff, underground, and surface crews has been allocated to capital costs. During this period a drilled inventory of ore will be prepared, crews will be oriented to their tasks, and final construction and commissioning tasks will be completed.

21.2.1.6 SURFACE STRUCTURES

Surface structures required at the Bitter Creek mill site for service of the mine have been estimated as new conventionally constructed permanent buildings. Staff and employee housing located in Stewart will be either purchased or built new. Cost estimates for surface structures are displayed in Table 21-24.

**Table 21-24 Capital Cost – Surface Structures**

<b><i>SURFACE STRUCTURES</i></b>	
<b><u>Stewart</u></b>	
<i>Staff Housing</i>	\$2,400,000
<i>Employee Housing</i>	\$3,000,000
<b><u>Bitter Creek</u></b>	
<i>Surface Shop</i>	\$436,000
<i>Warehouse</i>	\$514,000
<i>Covered Storage</i>	\$220,000
<i>Office &amp; Dry</i>	\$930,000
<i>Emergency Accommodation</i>	\$500,000
<i>Gasoline Fuel Tank</i>	\$18,000
<i>Diesel Fuel Tank</i>	\$70,000
<i>LNG Fuel Tank</i>	\$400,000
	<b>\$8,488,000</b>

### 21.2.1.7 BACKFILL PLANT

The cost of the paste backfill plant is estimated at \$7,000,000. This cost includes pumps, tanks, filters, mixer, and plant. The cost of backfill distribution piping and underground excavation has been included in Section 21.2.1.5: Mine Development and Construction.

### 21.2.1.8 MILL EQUIPMENT & CONSTRUCTION

The capital cost estimate for the processing plant is based on the proposed flowsheet as described in Section 17 of this Report. Nominal throughput for the plant is 1800 tpd. Table 21-25 provides a summary of the capital costs for the plant.

**Table 21-25 Summary of Process Plant Capital Costs**

<i><b>PROCESS PLANT</b></i>	
Civil & Earthworks	\$6,081,604
Mechanicals - Supply	\$18,504,826
Mechanicals - Installation	\$3,996,000
Structural - Supply	\$1,714,862
Structural - Installation	\$1,007,547
Platework - Supply	\$1,907,829
Platework - Installation	\$995,465
Piping	\$2,501,121
Electrical & Instrumentation	\$3,910,600
Buildings	\$4,996,303
Indirects	\$8,362,848
	\$53,979,000
Contingency	\$6,842,000
	\$60,821,000

The total direct cost for the process plant is \$45,616,155. Indirect costs total \$8,362,848, with the main sub components being the EPCM contract (\$5,473,939), consumables and spares (\$1,375,276), and site establishment (\$912,323). A contingency equivalent to 15% of the direct costs has also been included.

The estimation method for processing plant described in this study is presented below.

### Mechanical Equipment

- Estimated costs for major mechanical equipment (i.e. mills, conveyors, crusher, thickener, etc.) were taken from budget quotes from recent projects and from database information.
- Major equipment masses (for installation costing) were provided by vendors or taken from database information. Smaller equipment masses were estimated using recent project data.
- An installation rate (per tonne) for each piece of mechanical equipment was based on an estimate of man-hours required and rates from similar projects in BC.
- Mechanical equipment erection rates were modified according to mass: light (< 5 tonnes), medium (6 to 50 tonnes), and heavy items (> 51 tonnes).
- Transportation costs for each piece of equipment using recent quotations for 20' and 40' containers. All equipment shipped trans-continently is assumed to be packed in 40' containers. Transportation cost per item assumes a percentage of container volume, and thus respective cost.

### Civil Works

- An estimate of civil works costs was made by factoring from the mechanical equipment cost based on recent projects of similar size and scope.

### Structural

- An estimate of structural costs was made by factoring from the mechanical equipment supply cost based on recent projects of similar size and scope.
- The direct cost includes transportation to site.
- Erection costs are factored from the structural supply cost.

### Platework

- An estimate of platework costs was made by factoring from the mechanical equipment supply cost based on recent projects of similar size and scope.
- The direct cost includes transportation to site.
- Erection costs are factored from the platework supply cost.

### Piping

- Factored using database information from other studies.
- The direct cost includes transportation to site and installation.

### Electrical and Instrumentation

- Factored using database information from other studies.
- The direct cost includes transportation to site and installation.

Building Costs

- Factored using database information from other studies.
- The direct cost includes transportation to site and installation.

21.2.1.9 CAPITAL COST CONTINGENCY

A contingency of 15% has been added to the direct capital costs for the project.

21.2.2 SALVAGE AND RECLAMATION

Total salvage value of mobile and stationary equipment is assumed to offset the cost of dismantling and removing equipment from site, reclamation, and closure of the site once mining operations are complete.

The low use of equipment on average, the purchase of new equipment, and ease of access to markets due to the projects location to the port of Stewart, will likely allow significant salvage values to be achieved.

Reclamation details are discussed in Section 20 of this Report.

21.2.3 WORKING CAPITAL

Based on the production schedule and expected operating costs, a working capital requirement of \$11,000,000 is anticipated. This is adequate to cover all operating costs expected for the first three months of production.

21.2.4 ACQUISITION COSTS

A total of \$11,000,000 in payments are assumed to be payable to Seabridge Gold for acquisition of the Property.

## **22.0 ECONOMIC ANALYSIS**

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### **22.1 TAXES**

The economic analysis has been completed on a pre-tax basis.

Under the Canadian mining taxation regime, federal income tax is levied on a mining operation's taxable income, generally being net of operating expenses, depreciation allowance on capital assets, and the deduction of exploration and pre-production development costs. Provincial income taxes are based on the same (or similar) taxable income.

#### **22.1.1 FEDERAL AND BRITISH COLUMBIA INCOMES TAXES**

Under mandated reductions, the federal corporate income tax rate for 2012 is projected to be 15.0%.

The British Columbia provincial tax has two rates for calculation of income tax. Given the income projected by this Preliminary Economic Assessment, the low rate can be effectively ignored and the high rate used for tax estimation. The high income tax rate is 10% as of January 2012, levied on taxable income as calculated for federal purposes.

The combined federal and provincial income tax rate is estimated at approximately 25%.

### **22.2 ECONOMIC ANALYSIS**

An economic analysis on a pre-tax basis was performed based on the schedule, revenues, and costs presented in this Report. The Net Present Value (NPV) of the project, calculated on a pretax basis with discount rates of 8% and 5% per year, for base case and current price scenarios was calculated. Working Capital of \$11,000,000 and Environmental Bonding of \$5,000,000 supplied on a 100% equity basis is assumed.

Table 22-1 displays a financial summary for both base and current price scenarios and Table 22-2 details revenues and costs by the year in which they are realized or incurred.

**Table 22-1 Financial Summary**

<b>FINANCIAL SUMMARY (PRETAX)</b>			
	BASE CASE	CURRENT PRICE	
PRICE OF GOLD	1,360	1,700	\$CDN/oz
MINE LIFE	52		months
TOTAL ORE MINED	2,845,000		Tonnes
Gold Production	474,382		oz
Silver Production	1,233,405		oz
Gold Eq* Production	<b>499,050</b>		oz Au <sub>eq</sub>
Average annual production	115,246		oz Au <sub>eq</sub> / year
Operating Cost per oz	\$459	\$471	\$CDN/oz Au <sub>eq</sub>
TOTAL REVENUE	678,709,000	848,386,000	\$CDN
TOTAL OPERATING COST	206,789,000	206,789,000	\$CDN
ROYALTIES PAYABLE	22,505,000	28,444,000	\$CDN
OPERATING CASH FLOW	<b>449,415,000</b>	<b>613,153,000</b>	\$CDN
CAPITAL COST	162,671,000	162,671,000	\$CDN
PROPERTY ACQUISITION	11,000,000	11,000,000	\$CDN
INCOME AFTER CAPITAL	<b>275,744,000</b>	<b>439,482,000</b>	\$CDN
NPV(8%)	\$155,398,000	\$264,134,000	\$CDN
NPV(5%)	\$192,779,000	\$318,980,000	\$CDN
NPV(0%)	\$275,744,000	\$439,482,000	\$CDN
IRR	43%	63%	
PAYBACK ON CAPITAL	14	11	months
<i>*Gold Equivalent calculated by converting silver to gold at ratio of 1:50</i>			

**Table 22-2 Financial Summary by Year - Base Case**

	PRE-PRODUCTION			PRODUCTION					TOTAL
	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	
TOTAL MANPOWER ONSITE (# of men)									
MINE DEVELOPMENT (m)				4380	4380	1817			10,577
ORE MINED & MILLED (t)				657,000	657,000	657,000	657,000	217,000	2,845,000
MILLED GOLD HEAD GRADE (gpt)				8.2	7.0	7.2	4.1	3.3	0.0
MILLED SILVER HEAD GRADE (gpt)				25	28	22	6	7	0.0
GOLD PRODUCED (oz)				140,954	120,327	123,889	70,477	18,736	474,382
SILVER PRODUCED (oz)				371,058	415,585	328,840	83,117	34,806	1,233,405
GOLD EQ PRODUCED (oz)				148,375	128,638	130,466	72,139	19,432	499,050
<b>GROSS REVENUE</b>				201,790,000	174,948,000	177,433,000	98,109,000	26,427,000	\$678,707,000
<b>ROYALTIES</b>				5,813,000	6,123,000	6,210,000	3,434,000	925,000	\$22,505,000
<b>NET REVENUE</b>				195,977,000	168,825,000	171,223,000	94,675,000	25,502,000	\$656,202,000
<b>OPERATING COSTS</b>									
<b>VARIABLE COSTS</b>									
<b>MINE &amp; SURFACE</b>									
MATERIALS				\$4,613,000	\$4,613,000	\$2,204,000	\$496,000	\$164,000	12,090,000
BACKFILL BINDER				\$5,567,000	\$5,567,000	\$5,567,000	\$5,567,000	\$1,839,000	24,107,000
LUBE, TIRES, & PARTS				\$2,793,000	\$2,793,000	\$2,793,000	\$2,793,000	\$923,000	12,095,000
MINE ELECTRICITY				\$609,000	\$609,000	\$609,000	\$609,000	\$201,000	2,637,000
DIESEL FUEL				\$2,215,000	\$2,215,000	\$2,215,000	\$2,215,000	\$732,000	9,592,000
<b>MILL</b>									
MILL ELECTRICITY				\$1,353,000	\$1,353,000	\$1,353,000	\$1,353,000	\$447,000	5,859,000
REAGENTS				\$2,996,000	\$2,996,000	\$2,996,000	\$2,996,000	\$990,000	12,974,000
BALLS & LINERS				\$1,005,000	\$1,005,000	\$1,005,000	\$1,005,000	\$332,000	4,352,000
PIPING, LUBRICANTS, ASSAY				\$197,000	\$197,000	\$197,000	\$197,000	\$65,000	853,000
<b>TOTAL VARIABLE COST</b>				\$21,348,000	\$21,348,000	\$18,939,000	\$17,231,000	\$5,693,000	84,559,000
<b>FIXED COSTS</b>									
<b>MINE &amp; SURFACE</b>									
MANAGEMENT, TECHNICAL, AND SUPERVISION				\$4,364,500	\$4,364,500	\$4,219,869	\$4,118,000	\$1,360,131	18,427,000
LABOUR - MINE, MAINTENANCE & SURFACE				\$12,950,000	\$12,950,000	\$11,017,000	\$9,647,000	\$3,186,000	49,750,000
AVALANCHE CONTROL				\$601,000	\$601,000	\$601,000	\$601,000	\$199,000	2,603,000
MINE AIR HEATING				\$334,000	\$334,000	\$334,000	\$334,000	\$110,000	1,446,000
<b>MILL</b>									
LABOUR - MANAGEMENT, OPERATION, MAINTENANCE				\$6,202,000	\$6,202,000	\$6,202,000	\$6,202,000	\$2,048,000	26,856,000
SAFETY, SPARES, AND ELECTRICAL				\$1,807,000	\$1,807,000	\$1,807,000	\$1,807,000	\$597,000	7,825,000
<b>TOTAL FIXED COST</b>				\$26,258,500	\$26,258,500	\$24,180,869	\$22,709,000	\$7,500,131	106,907,000
<b>OPERATING COST CONTINGENCY (8%)</b>				\$3,537,000	\$3,537,000	\$3,537,000	\$3,537,000	\$1,168,000	15,316,000
<b>TOTAL OPERATING COSTS</b>				\$51,143,500	\$51,143,500	\$46,656,869	\$43,477,000	\$14,361,131	206,782,000
<b>CASH FLOW AFTER OPERATING COSTS</b>				\$144,833,500	\$117,681,500	\$124,566,131	\$51,198,000	\$11,140,869	449,420,000
<b>CAPITAL COSTS</b>									
FEASIBILITY STUDY	\$6,477,000								6,477,000
ROAD BUILDING & POWER TRANSMISSION	\$8,386,000								8,386,000
MOBILE EQUIPMENT		\$6,209,000	\$10,351,000						16,560,000
STATIONARY EQUIPMENT		\$605,200	\$1,777,800						2,383,000
MINE DEVELOPMENT - ADIT		\$12,517,000	\$12,517,000						25,034,000
MINE COMMISSIONING			\$3,825,000						3,825,000
PRE-PRODUCTION DEVELOPMENT - RED MOUNTAIN		\$3,812,000	\$3,812,000						7,624,000
OREPASS RAISE BORING			\$2,119,000						2,119,000
EARTHWORKS - TAILINGS FACILITY & SITE PREPATION		\$334,500	\$334,500						669,000
SURFACE STRUCTURES			\$8,488,000						8,488,000
PASTE BACKFILL PLANT			\$7,000,000						7,000,000
MILL			\$53,979,000						53,979,000
CAPITAL COST CONTINGENCY	\$2,229,000	\$3,522,000	\$14,376,000						20,127,000
<b>TOTAL CAPITAL COSTS</b>	\$17,092,000	\$26,999,700	\$118,579,300						162,671,000
<b>PROPERTY ACQUISITION PAYMENTS</b>	\$-1,500,000		\$-9,500,000						\$-11,000,000
<b>PRETAX NET INCOME</b>	\$-18,592,000	\$-26,999,700	\$-128,079,300	\$144,833,500	\$117,681,500	\$124,566,131	\$51,198,000	\$11,140,869	275,749,000
<b>CUMULATIVE NET INCOME</b>	\$-18,592,000	\$-45,591,700	\$-173,671,000	\$-28,837,500	\$88,844,000	\$213,410,131	\$264,608,131	\$275,749,000	
<b>WORKING CAPITAL</b>									
1st QUARTER OPERATING COSTS				\$-13,000,000				\$13,000,000	
ENVIRONMENTAL BOND				\$-5,000,000				\$5,000,000	
<b>TOTAL WORKING CAPITAL &amp; BONDING</b>	\$0	\$0	\$0	\$-18,000,000	\$0	\$0	\$0	\$18,000,000	
<b>CASH FLOW AFTER WORKING CAPITAL</b>	\$-18,592,000	\$-26,999,700	\$-128,079,300	\$126,833,500	\$117,681,500	\$124,566,131	\$51,198,000	\$29,140,869	275,749,000

### 22.2.1 SENSITIVITY ANALYSIS

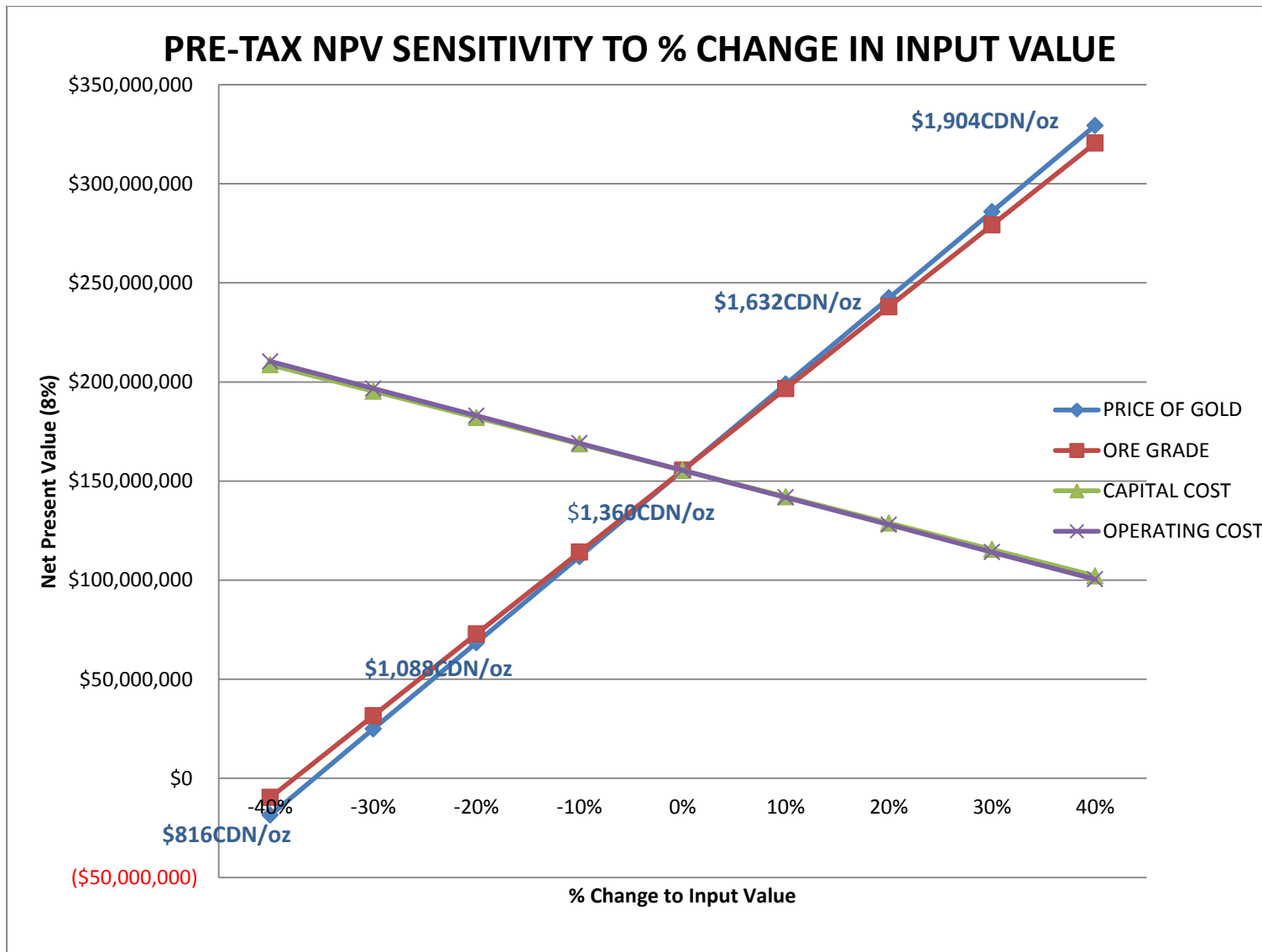
An analysis was performed to determine the sensitivity of the NPV (8%) to changes in key input parameters. Gold price, ore grade, capital cost, and operating cost were varied from -60% to +140% and the resulting NPV (8%) was calculated. The results of this analysis are displayed in Table 22-3 and Figure 22-1. The project economics are highly sensitive to changes in the price of gold and the ore grade but significantly less sensitive to changes in operating costs. It is important to note that variations in the ore grade reflect a change in the insitu grade of the orebody itself and not increased or decreased dilution from mining.



**Table 22-3 NPV Sensitivity to % Change in Input Value – Base Case**

<b>NPV (8%) SENSITIVITY TO % CHANGE IN INPUT VALUE</b>									
	-40%	-30%	-20%	-10%	0%	10%	20%	30%	40%
<b>PRICE OF GOLD</b>	(\$18,582,000)	\$24,914,000	\$68,408,000	\$111,904,000	\$155,398,000	\$198,893,000	\$242,388,000	\$285,884,000	\$329,378,000
<b>ORE GRADE</b>	(\$9,695,000)	\$31,578,000	\$72,852,000	\$114,125,000	\$155,398,000	\$196,670,000	\$237,944,000	\$279,217,000	\$320,491,000
<b>CAPITAL COST</b>	\$208,640,000	\$195,329,000	\$182,019,000	\$168,708,000	\$155,398,000	\$142,087,000	\$128,776,000	\$115,466,000	\$102,155,000
<b>OPERATING COST</b>	\$210,343,000	\$196,655,000	\$182,967,000	\$169,085,000	\$155,398,000	\$141,710,000	\$128,022,000	\$114,140,000	\$100,452,000
<b>VALUE AFTER % CHANGE IN INPUT VALUE</b>									
	-40%	-30%	-20%	-10%	0%	10%	20%	30%	40%
<b>PRICE OF GOLD (\$CDN/oz)</b>	\$816	\$952	\$1,088	\$1,224	\$1,360	\$1,496	\$1,632	\$1,768	\$1,904
<b>ORE GRADE (g/T)</b>	3.8	\$4	5.1	5.7	6.4	7.0	7.6	8.3	8.9
<b>CAPITAL COST</b>	\$97,602,600	\$113,869,700	\$130,136,800	\$146,403,900	\$162,671,000	\$178,938,100	\$195,205,200	\$211,472,300	\$227,739,400
<b>OPERATING COST</b>	\$124,073,400	\$144,752,300	\$165,431,200	\$186,110,100	\$206,789,000	\$227,467,900	\$248,146,800	\$268,825,700	\$289,504,600

Figure 22-1 NPV Sensitivity to % Change in Input Value – Base Case



## **23.0 ADJACENT PROPERTIES**

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There are no adjacent properties considered relevant to the Red Mountain Gold Property for the purposes of this Technical Report.

## **24.0 OTHER RELEVANT DATA AND INFORMATION**

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No other data or information is deemed relevant to this Technical Report.

## 25.0 INTERPRETATION AND CONCLUSIONS

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The Red Mountain Gold Property is an advanced development stage gold property and a mineral property of merit. Important mineralized zones containing gold values are present on the Property. Further exploration and development work is warranted and recommended on the Property.

The Preliminary Economic Assessment presented in this report indicates that an underground gold mining operation at Red Mountain may be viable. The economic assessment contemplates an 1800tpd mine producing gold/silver dore onsite. At the base case price assumption of CDN\$1360/oz gold, the pre-tax NPV (8%) is estimated at \$155,398,000 with an IRR of 43%.

**The minable resource used in preparation of this preliminary assessment is partially based on an *Inferred* Resource. The preliminary assessment is preliminary in nature and includes *Inferred* Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves. There is no certainty that the results and conclusions presented in this preliminary assessment will be realized.**

Significant uncertainties and risks related to mineral processing, infrastructure, environmental, and mineral resource exist and detailed geological, engineering, and environmental studies will be required to advance the Red Mountain project design to a feasibility level.

Detailed metallurgical testwork is required to verify the assumptions and designs presented in this report. Diamond drilling is required to bring the current *Inferred* Mineral Resources into the Measured and Indicated Categories and advanced fieldwork and engineering is required for road design, electrical transmission lines, foundations, tailings facilities, and structures.

## 26.0 RECOMMENDATIONS

At base case gold prices of CDN\$1360/oz, the preliminary economic assessment presented in this report indicates an underground gold mining operation at Red Mountain may be viable. It is the recommendation of the author that the project be advanced towards a pre-feasibility or feasibility level study.

A feasibility level study is recommended at an estimated cost of \$6,477,000. The recommended work is comprised of a diamond drilling program with a budgeted cost of \$4.2M and engineering and environmental studies at a cost of \$2.3M. Table 26-1 details the recommended feasibility studies.

**Table 26-3 Feasibility Study Recommendations**

<b>DIAMOND DRILLING PROGRAM</b>	
Heavy Lift Helicopter	\$330,000
Drift Rehab & Dewatering	\$545,000
Equipment Rental	\$64,000
Mining Contractor Profit	\$121,800
Ventilation & Pumping	\$23,000
Diamond Drilling(13,000m)	\$2,600,000
Camp	\$302,000
Geological Staff	\$191,000
	\$4,177,000
<b>ENGINEERING &amp; ENVIRONMENTAL</b>	
Metallurgical Testing	\$350,000
Baseline Review & Studies	\$300,000
EA pre-application	\$250,000
Road & Powerline Engineering	\$350,000
Tailings & Geotechnical	\$400,000
ARD Studies	\$250,000
Mine & Mill Engineering	\$400,000
	\$2,300,000

### 26.1 DIAMOND DRILLING PROGRAM

In order to calculate mineral reserves in a future feasibility level study, current Inferred Resources must be upgraded to the Measured or Indicated resource categories. A diamond drilling program of 12,475m is recommended to achieve this goal. This diamond drilling program will also provide a representative sample for detailed metallurgical testing.

1. Infill diamond drilling on both the AV and the JW zones on 25 meter sections, as well as infill diamond drilling on currently drilled sections such that drillhole spacing does not exceed 25m, with the intent of upgrading the current inferred resources to indicated. A total of 76 holes are expected to be required, totaling 12,475m.
2. Targeted diamond drilling between the AV and the AV Lower zones to determine if and where they might be connected, as well as to increase the indicated resource.
3. Infill diamond drilling in and around the current 141 inferred resource to allow the model to be refined, as well as to upgrade the current inferred resource from the inferred to indicated category.
4. All samples from further drilling should have gold as well as silver assays, and include S.G. measurements.

## **26.2 METALLURGICAL TESTING**

Metallurgical testwork is required in the following areas:

1. A new Master Composite sample should be generated that is representative the Red Mountain deposit for flowsheet confirmation testing. The new composite should be used to optimize the target grind sizes, flotation time, reagent dosages, and cyanidation conditions.
2. Additional composite samples, representing each of the first two years of operation, as well as any discrete domains (Marc, AV, JW, etc.), should be generated to confirm the flowsheet and evaluate the variability in the deposit.
3. A grindability study should be conducted to confirm the grinding parameters for mill sizing and also to evaluate the variability in hardness in the deposit. Testwork to include Crushing Index, Bond Rod Work Index, Bond Ball Work Index, Abrasion Index, and SMC or SPI SAG mill testing.
4. The opportunity for additional gold recovery through very fine grinding of the concentrate, i.e. < 20µm, may exist and should be investigated further.
5. Settling testwork, consisting of flocculant screening and static settling tests, is required in order to properly size the concentrate thickener.
6. Additional CIL testwork is required to accurately determine cyanide consumption and carbon loading rates.
7. Further cyanide destruction testing is needed to properly characterize the reagent consumptions and operating parameters under the new flowsheet.
8. ABA testing of flotation tailings is required in order to develop a target sulfide concentration for generating a NAG tailings product.

A trade-off study is suggested to compare the incremental increase in gold recovery realized through cyanidation of the scavenger concentrate versus the higher capital

and operating costs associated with a larger throughput to the regrind and CIL circuits.

Mineralogical characterization of gold and silver deportment in the flotation and cyanidation tailings is recommended in order to confirm that the flowsheet recoveries have been optimized.

### **26.3 ENGINEERING STUDIES**

Detailed engineering studies should be undertaken for the Bitter Creek Access Road and the transmission line to connect to the BC Hydro transmission grid. Geotechnical studies should be undertaken at the proposed tailing facility at the Bitter Creek Mill Site and detailed testing is required to mitigate and manage any Acid Rock Drainage problems that may be encountered at Red Mountain.

### **26.4 ENVIRONMENTAL STUDIES**

Compilation of historical environmental baseline work should be undertaken. Baseline environmental sampling should be continued and the historic data supplemented to allow the project to enter into the British Columbia environmental assessment process.



## 27.0 ITEMIZED COST STATEMENT

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### Red Mountain Technical Report - Feb 1 -March 30 2012

	Hours	Rate	Total Cost
Ben Mossman, P.Eng	200	\$ 80	\$16,000
Robert Baldwin, P.Eng	250	\$ 80	\$20,000
Tessa Brinkman	180	\$ 60	\$10,800
Lyn Jones, P.Eng	164	\$ 110	\$18,040
			<u>\$64,840</u>

### Red Mountain Assessment Report - July 2012

	Hours	Rate	Total Cost
Ben Mossman, P.Eng	20	\$ 80	\$1,600
			<u>\$1,600</u>

**Total Expenses on Red Mountain Mineral  
Property** **\$66,440**

## 28.0 REFERENCES

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