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Vancouver, BC V7X 1K8

July 24, 2012

Mr. Steve Wilbur Victoria Gold Corp Cont. No.:VA12-01403

File No.:VA101-290/6-A.01



Dear Steve,

Re: Eagle Gold Project – Updated Site Water Balance Model

1. GENERAL

Knight Piésold Ltd. (KP) has completed an update to the monthly site water balance model for the Eagle Gold Project as part of the response to the June 2012 Supplementary Information Request (SIR) by YESAB. This letter should be read in conjunction with the technical memos by Tetra Tech (2012b and 2012d) in addressing the Information Requests (R1 and R2). Specifically, Information Requests R1 and R2 required that the Eagle Gold site water balance model be updated to clarify specific aspects associated with the heap leach facility (HLF) water balance, which is a key component of the site water balance. Tetra Tech was retained by Victoria Gold Corp. (VIT) to provide a heap leach facility design, which included the heap leach water balance, as part of the 2012 Feasibility Study (FS). KP has completed an integrated site water balance model that incorporates the heap leach facility water balance completed for the FS. Upon review of the YESAB Information Request some assumptions have been updated for the heap leach facility water balance model (Tetra Tech, 2012b).

The basic components of the Eagle Gold site water balance model remain unchanged from the site water balance outlined in the FS Water Management Plan (KP, 2012) and May 2012 SIR (Tetra Tech, 2012d) for the 92 million tonne HLF with the following modifications provided by Tetra Tech:

- A revised <u>minimum</u> operating capacity of 133,000 m³ for the in-heap pond to allow for storage of a minimum of 48 hours of leachate solution (nominal irrigation rate of 2770 m³/hr) during normal operation of the heap leach facility. Previously the model assumed the operating capacity of the in-heap pond would not exceed a <u>maximum</u> of 200,000 m³, which was based on the capacity to contain a 72 hour draindown volume (in the event of an emergency shutdown) and the snowmelt runoff volume based on the maximum average year snowpack (Tetra Tech 2012a).
- A maximum total draindown volume of rinse solution in the heap leach facility at closure of 1.7 million m³ (TetraTech 2012c). Previously the model assumed a maximum total draindown volume of 1.9 million m³.
- A predicted long-term drainage rate of approximately 5 m³/hr for seepage from the HLF after rinsing and the drainage / seepage has stabilized. Previously the model assumed a long term draindown rate of 4 m³/hr.

2. MODEL ASSUMPTIONS

General

A stochastic analysis was carried out on the monthly operational mine site water balance using the GoldSim© software package. The intent of the modelling was to estimate the magnitude and extent of any water surplus and/or deficit conditions for the HLF and the associated excess mine site runoff requiring treatment, over a range of possible climatic conditions. The modelling timeline includes two years of pre-production (Year -1 to -2), 9 years of operation (Year 1 to 9) at a nominal ore production rate of 29,500 metric tonnes per day (tpd) and approximately 14 years of active closure (Year 10 to 23), during which time the HLF goes through supplemental gold recovery, rinsing and draindown. Climate inputs, as well as the runoff coefficients for the undisturbed



basins, were based on the analyses completed by Stantec and included in the reports "Appendix 7: Eagle Gold Project - Environmental Baseline Report: 2010 Update for Climate" (Stantec, 2011a) and "Appendix 21: Eagle Gold Project - Surface Water Balance Model Report" (Stantec, 2011b). The potential variability of climatic conditions was addressed by using a stochastic version of the water balance model, which involved Monte Carlo type simulation techniques and the modelling of monthly climatic parameters as probability distributions, rather than simply as mean values.

The model is shown schematically on Figure 1 and incorporates the following major project components:

- Open pit
- Eagle Pup (EP) waste rock storage area (WRSA)
- Platinum Gulch (PG) waste rock storage area (WRSA)
- Heap Leach Facility (HLF)
- **EP Collection Pond**
- PG Collection Pond
- Mine Water Treatment Plant (MWTP)
- Events Ponds, and
- Lower Dublin South Pond (LDSP).

The project schedule assumed for the water balance model is summarized in Table 1. The calendar period presented in Table 1 is arbitrary and was assumed only for the purpose of the water balance model and does not reflect the actual Project scheduling as this is yet to be determined and based on a number of factors. Model assumptions and parameters are discussed in the following sections and summarized in Table 2, which also lists the relevant catchment areas for Project facilities.

Heap Leach Facility

In-Heap Pond

The current water balance was revised to reflect the normal operating storage capacity of the HLF, which still includes an allowance for snowmelt or an emergency shutdown. The HLF in-heap pond was modelled with the minimum operating capacity of approximately 133,000 m³, which accounts for the minimum operating volume of solution required to supply the gold recovery plant for 48 hours, as outlined in the technical memo "In-Heap Pond, Spillway and Events Ponds Sizing" (Tetra Tech, 2012a). The 48 hour period is based on engineer experience and provides a reasonable estimate at this time. In the on-going detailed design phase of the HLF, the actual operating volume of the in-heap pond will be refined to consider the actual risk scenarios and operational management decisions.

HLF Closure Draindown

At closure, the HLF draindown is assumed to commence in November of Year 12, based on the end of the HLF operational schedule in November of Year 9 (Tetra tech, 2012b) and three years of HLF closure that includes one year of supplemental gold recovery and two years of HLF rinsing. The variable draindown rate of residual leachate solution was based on the draindown curve provided by Tetra Tech (2012c), which assumes that all the draindown volume is removed from the heap with no recirculation of water back to the HLF. The revised total volume of draindown for the 92 million tonnes design is approximately 1.7 million m³, which has been optimized from the total draindown volume of 1.9 million m³ that was assumed for the FS water balance model (WBM). Further details of the updated draindown rate and total volume are outlined in technical memo "Seepage and Draindown Evaluation of the 92 Million Tonne Eagle Gold Project Heap Leach Facility - Baseline Conditions" (Tetra Tech, 2012c)



Operational Constraints

Similar to the FS WBM, operational rules were applied to the updated water balance to determine the design requirements (capacity and timing) for water management and treatment facilities. For the HLF and MWTP, the model utilized an optimized water management scenario to simulate the recycling of excess discharge from the HLF back to the HLF or Events ponds in that event that:

- The inflow in any month exceeds the design capacity of the MWTP of 600 m³/hr.
- The ratio of potential discharge from the MWTP versus Haggart Creek flow is greater than 1:10 (i.e. 1 part MWTP discharge to 10 parts Haggart Creek flow).

3. MODEL RESULTS

The predicted monthly inflow volumes to the MWTP for the median scenario, for the previous (FS WBM) and updated (2012 June SIR) water balance models, are presented on Figure 2. The results illustrate the 'managed' case, in which excess inflow to the MWTP is re-circulated back onto the HLF where it is temporarily delayed until there is sufficient capacity in the MWTP to treat it and/or there is sufficient flow in Haggart Creek to provide the required dilution for release (ratio of <= 1:10).

Operations

During the Operations phase (Years 1 to 9), the updated water balance model (red line labeled "2012 June SIR") and the FS WBM (blue dashed line) predict similar monthly inflow volumes. This is to be expected given that the revisions to the current model are more relevant to the closure phase of the heap leach facility.

For the Closure phase (Years 10 to 23), Figure 2 indicates that the updated model predicts comparable monthly MWTP inflow rates to the FS WBM. The periods of supplemental gold recovery (November of Year 9 to November of Year 10) and Year 15 (HLF draindown) are exceptions to this generalization.

During the supplemental gold recovery period, the heap is assumed to be in a surplus water condition as the net precipitation inputs exceed the moisture capacity of the stacked ore, as the area under active irrigation is assumed to be at the optimal moisture content for leaching. As a result a larger inflow volume to the MWTP is predicted compared to the preceding years of operations. The larger predicted MWTP inflow during this period for the updated model compared to the FS WBM can be attributed to the minimum storage capacity (133,000 m³) assumed for the in-heap pond compared to the maximum capacity (200,000 m³), therefore providing less attenuation of surplus water from the heap to the treatment plant.

Both models include the 'optimized' water management strategy, which simulates the recycling of excess water back onto the heap in the event that the predicted MWTP inflow volume exceeds the operating constraints, outlined previously under the model assumptions. Figure 2 illustrates the resulting managed MWTP inflows, and the effects of the management are particularly evident during Years 11 to 15 (during rinsing and initial draindown), when the inflows are shown to be controlled at the upper limits. In Year 15, the inflows drop off substantially in the updated model compared to the FS WBM. This is likely due to the updated draindown curve (Tetra Tech, 2012c) that predicts the draindown rate decreasing quicker to reach the long-term drainage rate of approximately 5 m³/hr.

4. REFERENCES

Knight Piésold Ltd. (2012). Victoria Gold Corporation, Eagle Gold Project – Feasibility Water Management Plan (Ref. no. VA101-290/5-1, Rev 2). April 18, 2012.



Stantec (2011a). Appendix 7: Eagle Gold Project - Environmental Baseline Report: 2010 Update for Climate.

Stantec (2011b). Appendix 21: Eagle Gold Project – Surface Water Balance Model Report. June 2011.

Tetra Tech (2012a). In-Heap Pond, Spillway and Events Ponds Sizing. February 9, 2012.

Tetra Tech (2012b). Eagle Gold Heap Leach Facility Water Balance - Revision 2. July 24, 2012

Tetra Tech (2012c). Seepage and Draindown Evaluation of the 92 Million Tonne Eagle Gold Project Heap Leach Facility – Baseline Conditions. July 24, 2012.

Tetra Tech (2012d). Eagle Gold Project Supplemental Information Report. May 2012

We trust that this analysis is suitable for your needs. If you have any questions, please contact the undersigned.

Yours truly,

KNIGHT PIESOLD LTD.

Signed:

Erin Rainey, P.Eng. Project Engineer

Reviewed:

Jaime Cathcart, Ph. D., P.Eng.

Specialist Hydrotechnical Engineer

Approved:

Ken Brouwer, P.Eng. Managing Director

Attachments:

Table 1 Rev 0 Water Balance Model Project Schedule

Table 2 Rev 0 Water Balance Input Parameters

Figure 1 Rev 0 Water Balance Schematic – Operations

Figure 2 Rev 0 Optimized Monthly Inflow to the Mine Water Treatment Plant – Median Conditions

/er



TABLE 1

VICTORIA GOLD CORP. EAGLE GOLD PROJECT

WATER BALANCE MODEL PROJECT SCHEDULE

Calandartima	Operational Mine Life (year) ¹	Print Jul/20/12 14:19:07 WBM 92 Mt				
Calendar time		Mine Phase	Period	Details		
01/01/2013	1		Mine start up in Mar 2013	MWTP online HLF ore stacking and irrigation starts EP WRSA and PG WRSA stacking starts		
01/01/2014	2					
01/01/2015	3					
01/01/2016	4	Operations				
01/01/2017	5	·				
01/01/2018	6					
01/01/2019	7			Mar 2019 - PG WRSA cover functional		
01/01/2020	8					
01/01/2021	9	Operations/Closure	End of ore production Nov 2021 HLF Gold Recovery begins			
01/01/2022	10		HLF Gold recovery/HLF Rinse	Nov 2022 - HLF rinse commences		
01/01/2023	11		HLF rinse			
01/01/2024	12		HLF rinse/draindown	Nov 2024 - HLF draindown commences HLF closure cover construction begins EP WRSA closure cover functional		
01/01/2025	13					
01/01/2026	14	Closure		Nov 2026 - Collection ponds (EP, PG, Lower Dublin South) discharge routed to passive treatment or DGDC		
01/01/2027	15					
01/01/2028	16		LII C drain days			
01/01/2029	17		HLF draindown			
01/01/2030	18					
01/01/2031	19					
01/01/2032	20					
01/01/2033	21					
01/01/2034	22	Doct of	osure monitoring	Jan 2034 - Events ponds and MWTP decommissioned Reclaimed HLF runoff/infiltration directed to Haggart Creek		
01/01/2035	23	Post-ci	osure monitoring	passive treatment systems		

NOTE:

^{1.} THE OPERATIONAL MINE LIFE PRESENTED IS ARBITRARILY ASSIGNED FOR THE WATER BALANCE COMPARISON, WITH YEAR 1 ASSUMED TO BE THE FIRST YEAR IN WHICH MINING OPERATIONS COMMENCES AND THEN CONTINUING TO THE END OF THE MODEL SIMULATION IN YEAR 23.

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TABLE 2

VICTORIA GOLD CORP. **EAGLE GOLD PROJECT**

WATER BALANCE INPUT PARAMETERS

COMPONENT	UNITS	WBM 92 Mt
General		
Ore Production	tpd	29,500
Operational mine life	years	8.75
Physical and Hydrometeorological		
Project Site Median Elevation (reference)	m	1,210
Mean Annual Precipitation	mm	577
Mean Annual Rainfall	mm	337
Mean Annual Snowfall	mm	240
Sublimation	%	20
Mean Annual Pond Evaporation	mm	439
Annual Evaporation (bare surface - Heap, Ore Stockpile)	mm	299
Runoff coefficients (proportion of annual precipitation)		
EP Waste Rock Storage Area	-	0.80
PG Waste Rock Storage Area		0.80
Open Pit footprint	-	0.80
Laydown area, truck shop (disturbed)	-	0.80
Infiltration Rates		
Waste Rock Storage Areas	%	80
Heap Leach Facility during operations	%	100
Capped surfaces (closure)	%	20
Total Facilities Areas - final footprint		
Eagle Pup WRSA	m ²	980,000
Platinum Gulch WRSA	m ²	410,000
HLF	m ²	1,135,000
Open Pit	m ²	810,000
Pond Capacities (normal operating capacity)		
Eagle Pup Collection Pond	m ³	25,000
Platinum Gulch Collection Pond	m ³	41,000
Lower Dublin North Pond	m ³	10,500
Lower Dublin South Pond	m ³	30,000
HLF - Events Pond 1 (downstream)	m ³	92,153
HLF - Events Pond 2 (upstream)	m ³	90,693
HLF - Heap Pond (normal operating capacity)	m ³	133,000
Heap Leach Facility		
Water Demand		
Solution Application Rate	m³/hr	2,770
Ore Moisture		
Initial moisture content	%	5
Leaching moisture content	%	13.3
Open Pit		
Drilling water requirements	m³/day	49
Sump capacity (operations)	m ³	49,000
Sump capacity (closure)	m ³	250,000
Waste Rock Storage Areas		
Waste rock dry density	tonnes/m ³	2
Waste rock moisture content	%	2

- NOTES:

 1. THE OPEN PIT SUMP CAPACITY AND DRILLING WATER REQUIREMENTS WERE BASED ON THE STANTEC (2011a) REPORT.
- 2. THE RUNOFF COEFFICIENTS SHOWN FOR THE MINE FACILITIES TAKE INTO ACCOUNT PRECIPITATION LOSSES DUE TO ACTUAL
- 3. THE INFILTRATION RATES SHOWN FOR THE MINE FACILITIES IS DEFINED ARE THE PORTION OF NET PRECIPITATION THAT INFILTRATES THROUGH THE FACILITIES AND/OR COVER, WITH THE REMAINDER OF THE NET PRECIPITATION ASSUMED TO BE SURFACE RUNOFF.
- 4. THE NORMAL OPERATING CAPACITY FOR THE PONDS SHOWN DOES NOT TAKE INTO ACCOUNT THE STORM WATER CAPACITY.

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