# *D5 SITE WATER BALANCE SUMMARY*

Knight Piésold CONSULTING

Management System Certified by: bsi ISO 9001 ISO 14001 ISO 45001 CERTIFIED

**March 2, 2021**

**Knight Piésold Ltd.**
1650 Main Street West
North Bay, Ontario
Canada, P1B 8G5
T +1 705 476 2165
E northbay@knightpiesold.com
www.knightpiesold.com

Ms. Tabatha Leblanc
Manager of Sustainability
Generation Mining
100 King Street West
Suite 7010, PO Box 70
Toronto, Ontario
Canada, M5X 1B1

Dear Tabatha,

## RE: Marathon Palladium Project - Site Water Balance Summary

## 1.0 INTRODUCTION

This letter provides a summary of the site wide water balance analysis for the Marathon Palladium Project (the Project) owned by Generation PGM Inc. (GenPGM). The Project will include open pits, a Mine Rock Storage Area (MRSA), crusher area, Process Plant, Process Solids Management Facility (PSMF), and Stormwater Management Pond (SWMP). The general site arrangement for the Project, including the PSMF layout, the location of the open pits and MRSA, watershed boundaries, and relevant infrastructure are shown on Drawing 110.

The water balance was prepared using the GoldSim (GoldSim Technology Group LLC, 2019) software package as part of the overall Project update for the Definitive Feasibility Study. The water balance model was developed to include the construction, operations, and closure phases of the Project. A stochastic analysis was completed to consider abnormally wet and dry precipitation conditions. Median (50$^{th}$ percentile), 5$^{th}$ percentile and 95$^{th}$ percentile precipitation conditions were evaluated.

The objectives of the water balance include:

- Confirm the required crest elevations for the PSMF storage cells and Water Management Pond (WMP)
- Confirm the operational distribution of water within the PSMF
- Provide an estimate of the volumes of water reporting to the PSMF, WMP and Hare Lake
- Confirm the required pumping capacities to transfer water from the open pits to the WMP
- Confirm the required pumping capacity to transfer water from the SWMP to the WMP
- Confirm the inflow volumes to the MRSA catch basins
- Confirm the required pumping capacity to transfer water from MRSA Stream 2 Catch Basin to the WMP
- Confirm the required pumping capacities to discharge water to Hare Lake
- Estimate reclaim water requirements during operations
- Estimate the time for filling of the open pits at closure
- Estimate water discharge volumes from the site during the post-closure phase

The water management strategy, analysis assumptions, methodology, and results of the water balance analysis are discussed below.

# 2.0 WATER MANAGEMENT STRATEGY

## 2.1 GENERAL

The water management strategy for the Project and the design and operating strategy for the PSMF has been developed by Knight Piésold (KP) in consultation with GenPGM. Contact water from the site will be primarily managed within the WMP of the PSMF. The PSMF will consist of three storage cells (Cell 1, Cell 2A, and Cell 2B) and the separate WMP. The storage cells will provide permanent and secure storage for process solids from the Process Plant. The PSMF embankments will be constructed in stages using non-Potentially Acid Generating (non-PAG) mine rock in order to provide the required process solids storage capacity for the ongoing mine development. Cell 1 and Cell 2A of the PSMF will be established and constructed to the Stage 1 elevations during the pre-operating period (Year -1). Cell 2B will be established during Year 3 of operations.

The WMP will be established on the east side of the PSMF and will be operated as the primary contact water management pond and reclaim water source for the Process Plant. The pond will be constructed during the pre-operating period (Year -2) and will initially be used as a storage pond for construction dewatering. Contact water from the Project site, including water from the open pits, MRSA, Process Plant, and PSMF will be transferred to the WMP. Water will be reclaimed to the Process Plant on an ongoing basis. Overflow from the WMP will be managed within Cell 1 of the PSMF. Excess water will be transferred from the WMP to a water treatment plant (located at the PSMF), treated as required, and discharged to Hare Lake via an HDPE pipeline and diffuser.

The MRSA is located along the east side of the open pits. Contract water from the MRSA will be collected in catch basins established in Sub-watershed 102 (Stream 2 Catch Basin) and Sub-watershed 103 (Stream 3 Catch Basin). The catch basins will be constructed prior to overburden stripping from the open pit areas (Year -2). Water collected in the catch basins will be pumped to the WMP via HDPE pipelines, the collection system will be sized to manage the 1 in 25 rainfall event (Environmental Design Storm; EDS). Periodically, the EDS may be exceeded and water will be routed from the MRSA catch basins via the overflow spillways to the Pic River. The overflow spillways have been sized to convey the 1 in 100-year rainfall event.

Surface water runoff and groundwater inflow reporting to the open pit will be transferred to Collection Pond 1 (CP1) located adjacent to the Run of Mine (ROM) stockpile. Water collected in CP1 will be conveyed to the WMP via HDPE pipelines. Water levels in waterbody L8 located to the northeast of the open pits will also be managed by pumping to CP1.

The required pipework and water management strategy for each project component are summarized in the following sections.

## 2.2 PIPEWORK

Pipelines required for site water management include the process solids pipelines, water reclaim pipeline, open pit dewatering pipelines, water transfer pipelines, WMP Pipeline, Hare Lake pipeline and MRSA pipelines. The pipelines are briefly described below and summarized on Table 1:

- **Process Solids Pipelines** - The Process Plant will produce Type 1 (non-PAG) and Type 2 (PAG) process solids. The process solids slurries will be conveyed to the PSMF via separate pipelines along the PSMF haul road. The Type 1 process solids will be deposited sub-aerially around the perimeter of

the storage cells (Cell 1, Cell 2A, and Cell 2B) Type 2 process solids will be deposited sub-aqueously within Cell 2A, and to the Central Pit during the last four years of operations.

- **PSMF Water Transfer Pipelines** - The water transfer pipelines will transfer water from Cell 2A and Cell 2B to Cell 1 and from Cell 1 to the WMP. The pipelines will be located on the access roads on the embankments between the PSMF storage cells. During later operations much of the water transfer between the PSMF cells will be by gravity via rockfill lined swales.
- **Reclaim Water Pipeline** - The reclaim water pipeline will recycle water from the WMP back to and for use in the Process Plant. The reclaim water pipeline will be installed along the PSMF haul road.
- **Open Pit Dewatering Pipelines** - The open pit dewatering pipelines will convey runoff water and groundwater collected within the open pits to CP1 adjacent to the ROM Stockpile. The open pit dewatering pipelines will be installed along the mine haul roads.
- **CP1 Transfer Pipeline** - The CP1 transfer pipeline will convey water transferred from the open pits and waterbody L8 to the WMP for use in the process circuit. The pipeline will be installed from CP1 to the WMP along the haul road.
- **SWMP Transfer Pipeline** - The SWMP transfer pipeline will transfer water from the SWMP to the WMP, or alternately to the Water Treatment Plant (WTP). The pipeline will be installed along the PSMF haul road.
- **WMP Transfer Pipeline** - The WMP transfer pipeline will transfer excess water from the WMP to the WTP. The pipeline will be located along the north abutment of the WMP west embankment.
- **Hare Lake Pipeline** - The Hare Lake pipeline will transfer water from the WTP to Hare Lake. The pipeline will be installed along a purpose-built pipeline access road to Hare Lake.
- **MRSA Water Transfer Pipelines** - Water collected in the Stream 3 Catch Basin (Sub-watershed 103) will be transferred to the Stream 2 Catch Basin (Sub-watershed 102). Water collected in the Stream 2 Catch Basin will be pumped to the WMP during normal operations.

## 2.3 PSMF WATER MANAGEMENT

The PSMF will be located approximately 1 km west of the Process Plant, as shown on Drawing 110. The PSMF will consist of three storage cells (Cell 1, Cell 2A, and Cell 2B) and the separate WMP.

The WMP and initial Cell 1 and Cell 2A embankments will be constructed during the pre-production period (Year -2 and -1) to manage contact water during construction and accumulate water needed for Process Plant commissioning and initial operations. Once in operations, the PSMF will provide storage for process solids as well as manage process and contact water from the site. The Cell 1 and Cell 2A embankments will be raised during Year 1 and Year 2 to provide additional process solids storage during Year 2 and Year 3 of operations. The Cell 2B starter embankment will be constructed in Year 3 and the Cell 2A and Cell 2B embankments will be raised in several stages between Year 4 and Year 12. The PSMF is primarily located in Sub-watersheds 105 and 106 with the east half of the WMP located in Sub-watershed 101.

The PSMF will include capacity to manage storm water and runoff water inflows under normal operating conditions. The EDS consisting of the 1 in 100-year 24-hour precipitation event and 30-day spring snowmelt (408 mm) will be contained within the PSMF without uncontrolled discharge to the environment. Excess water from the EDS will be discharged to Hare Lake via the WTP and Hare Lake pipeline.

Emergency overflow spillways have been included in the PSMF arrangement to manage storm events greater than the EDS. The PSMF spillways will be sized to convey the peak flow resulting from a 24-hour

Probable Maximum Precipitation (PMP; 328 mm) event, which has been selected as the Inflow Design Flood (IDF) for the PSMF.

Ten Seepage Collection Basins (SCBs) will be located around the perimeter of the PSMF. Near surface seepage and runoff collected in the SCBs will be pumped back to the PSMF storage cells and the WMP. Deep seepage within the bedrock foundations will report to the adjacent sub-watersheds.

Monitoring wells will be installed to monitor groundwater quality adjacent to the PSMF.

Key water management strategy criteria for the WMP and each of the PSMF storage cells are provided below:

- **Water Management Pond (WMP)**
  - Contact water will be transferred to the WMP from areas disturbed during the construction phase of the Project (Years -2 and -1).
  - Approximately 1.4 M $m^3$ of water will be accumulated in the WMP for commissioning the Process Plant and initial operations.
  - Process and runoff water collected in Cell 1, Cell 2A and Cell 2B will be transferred to the WMP during operations.
  - Runoff and groundwater collected in the open pits will be transferred to the WMP or Cell 1 during the pre-production period and throughout operations.
  - Runoff and contact water from around the Process Plant and mine services areas collected in the SWMP will be transferred to the WMP during operations.
  - Process water will be reclaimed from the WMP to the Process Plant throughout operations.
  - Excess water in the WMP will be treated and discharged to Hare Lake.
  - In the event that the WMP capacity is exceeded, water will flow into Cell 1 via an overflow swale on the crest of the divider embankment between the WMP and Cell 1.
  - The WMP will be decommissioned at closure, a portion of the WMP may remain in place post-closure to provide aquatic habitat.
- **Cell 1**
  - Cell 1 will be commissioned in Year -1 to accumulate approximately 1.5 million $m^3$ of water for commissioning the Process Plant and initial operations.
  - Type 1 process solids will be deposited in Cell 1 during the first three years of operations.
  - Process and runoff water will be transferred from Cell 1 to the WMP as required to supply the process circuit and remove excess water from the PSMF.
  - The operating pond volume in Cell 1 will fluctuate seasonally; however, the target operating pond for winter operations will be approximately 1.5 million $m^3$.
  - Runoff from Cell 2A and Cell 2B resulting from the IDF will be conveyed to Cell 1 via overflow swales.
  - A spillway will be installed on the Cell 1 west embankment to convey the IDF to Stream 6.
  - At closure, runoff from Cell 1 will be conveyed to Stream 6 via a Closure Swale.
- **Cell 2A**
  - Cell 2A will be commissioned in Year -1.
  - The normal operating pond volume in Cell 2A will be approximately 300,000 $m^3$. The operating pond will increase to approximately 500,000 $m^3$ during winter to facilitate the recycle of water to the WMP.
  - Type 2 process solids slurry will be deposited to Cell 2A until the end of year 10.

- Type 1 process solids slurry will be deposited to Cell 2A starting in Year 4 and will continue until the end of operations.
- Process and runoff water will be transferred to Cell 1 until the end of Year 3.
- Process and runoff water will be transferred from Cell 2A to Cell 2B starting in Year 4 until the end of Year 10.
- Process and runoff water will be transferred from Cell 2B to Cell 2A starting in Year 10 until the end of operations.
- An Overflow Swale will be installed on the divider berm between Cell 2A and Cell 1. Runoff resulting from the IDF will be conveyed to Cell 1.
- At closure, runoff from Cell 2A will be conveyed to Cell 1 via the closure swale.

- **Cell 2B**
  - Cell 2B will be commissioned in Year 3.
  - The normal operating pond volume in Cell 2B will range from approximately 300,000 $m^3$ during summer to 800,000 $m^3$ immediately following the spring melt. The target operating pond volume will be approximately 500,000 $m^3$ prior to the start of winter.
  - Type 1 process solids slurry will be deposited to Cell 2B starting in Year 4 until the end of operations.
  - Process and runoff water will be transferred from Cell 2A to Cell 2B until Year 10.
  - Process and runoff water will be transferred from Cell 2B to Cell 1 starting in Year 4 until the end of Year 10.
  - Process and runoff water will be conveyed from Cell 2B to Cell 2A via a swale starting in Year 10 until the end of operations.
  - An overflow swale will be installed on the divider berm between Cell 2B and Cell 1. Runoff resulting from the IDF will be conveyed to Cell 1.
  - At closure, runoff from Cell 2B will be conveyed to Cell 2A via a closure swale.

## 2.4 OPEN PIT WATER MANAGEMENT

Contact water from the open pit and primary crusher areas will be managed in Sub-watershed 102 with CP1 being established in the ROM stockpile area. Contact water collected in CP1 will include meteoric water runoff from the open pits, ROM Stockpile, primary crusher, haul roads and groundwater inflows to the open pits. The water level in waterbody L8, located to the north of the ROM Stockpile, will be controlled by pumping water to CP1. A pumping rate has been selected to maintain an average monthly water level in L8, consistent with pre-production conditions.

Sumps will be located in the bottom of each of the open pits. Water will be pumped from the open pit sumps to CP1. Water collected in CP1 will be pumped to the WMP via the CP1 transfer pipeline.

A diversion berm will be constructed at the height of land between Sub-watersheds 102 and 105 to the west of the South Pit. The L4/L5 waterbody located within Sub-watershed 105 has the potential to flow towards Sub-watershed 102 depending on beaver activity in the area. A diversion berm will maintain flow from the L4/L5 water body in Sub-watershed 105.

Type 2 mine rock will be placed in the South Pit starting in Year 7. Water transfer from the South Pit to the WMP will be reduced between Year 7 and Year 14 to maintain the water level below the mine rock placement elevation. The water level in the South Pit will be close to the target level (El. 271 m) for closure by the end of operations.

Type 2 process solids will be deposited into the Central Pit starting in Year 11 and continuing to the end of operations. The pumping capacity from the Central Pit and CP1 will be increased in Year 11 to meet the Process Plant reclaim water requirements. Water transfer from the Central Pit to the WMP will be reduced to maintain the Type 2 mine rock in saturated conditions.

## 2.5 MRSA CATCH BASIN WATER MANAGEMENT

The MRSA catch basins will collect contact water from the MRSA. Water collected in Stream 3 Catch Basin will be transferred to the Stream 2 Catch Basin. Water in the Stream 2 Catch Basin will be pumped to the WMP.

The catch basins have been sized to contain an EDS consisting of a 1 in 25-year 24-hr duration (rainfall event) without pumping and will provide a combined total storage capacity of approximately 159,000 $m^3$. Pumping will be required to reduce discharge via the overflow spillways during larger precipitation events. The overflow spillways have been sized to convey the 1 in 100-year rainfall event.

The catch basins will be operated to maintain a near empty state in order to maintain surge capacity within the collection system. It has been assumed that all of the water collected in the basins in a given month will be pumped to the WMP, and that there will be no net accumulation of water within the catch basins.

## 2.6 PLANT SITE WATER MANAGEMENT

Runoff from the Process Plant, truck shop / warehouse and aggregate plant areas will be collected in the SWMP. The SWMP will also provide tertiary containment for the Process Plant area and associated pipelines, ensuring that Sub-watershed 101 and the Pic River will be protected in the case of an unplanned event. The SWMP will be located in the upper portion of Sub-watershed 101 directly east of the WMP. Water collected in the SWMP will be transferred to the WMP or directly to the WTP for discharge to Hare Lake. The SWMP will provide temporary storage capacity for up to 600,000 $m^3$ of contact water.

## 2.7 CLOSURE

The overall water management strategy will be adapted during the final year of operations to prepare the site for closure (as shown on Figure 1). The water management strategy for the site during each phase of closure is briefly outlined below.

- **Pre-Closure and Late Operations:**
  - The South Pit will be filled with mine rock during mid to late operations.
  - Type 2 process solids will be deposited to the Central Pit during the last 3 years of operations.
  - Water transfer from the South Pit and Central Pit will be reduced such that the water level rises with the backfilling of the pits with mine rock and process solids. The water level within the mine rock voids in the South Pit will be at or near the final post closure water level prior to the end of operations.
- **Active Closure (Initial 5 years):**
  - Surface water runoff and seepage from the PSMF, MRSA and other mine infrastructure will be collected and transferred by pump and pipeline to the Central Pit. Once the Central Pit is filled, water will overflow into the North Pit.
  - Surface water management infrastructure (such as the SCBs, water management ponds, and MRSA catch basins) will remain in place during active closure.

  - Water quality will be monitored during the active closure period to confirm that surface water runoff and seepage from the PSMF, MRSA, and other mine infrastructure satisfies discharge water quality criteria prior to the end of the active closure period.

- **Passive Closure:**
  - Water management infrastructure will be decommissioned and removed once water quality objectives have been confirmed. This will include the removal of SCBs surrounding the PSMF, decommissioning the WWP and SWMP, and breaching and regrading of the Stream 2 and Stream 3 Catch Basins embankments and basins.
  - Surface water runoff from the PSMF revegetated surface will be directed to Cell 1 and conveyed to the Stream 6 (Sub-watershed 106) via a closure swale.
  - Runoff from the MRSA will be allowed to drain towards the Pic River via Stream 2 and Stream 3 (Sub-watersheds 102 and 103)
  - The North Pit will flood to the pit rim elevation within Sub-watershed 103. Once flooded outflow from the North Pit will be conveyed via the Stream 3 drainage through the base of the MRSA to the Pic River.

## 3.0 ANALYSIS ASSUMPTIONS

The design criteria are summarized in Table 2. Key design assumptions used in the water balance are as follows:

- The Type 1 process solids slurry will have an average solids content of approximately 55% (by weight) and the Type 2 process solids slurry will have an average solids content of approximately 22% (by weight).
- Construction of the WMP will be completed in October of Year -2. This will aid in construction water management and accumulation of water for commissioning the Process Plant.
- Initial lining of the PSMF Cell 1 embankments with HDPE geomembrane will be completed in Year -1 up to El. 320 m to accumulate water in Cell 1 for commissioning of the Process Plant.
- Commissioning of the Process Plant will occur in October of Year -1 and process solids will be deposited to Cell 1 starting in November of Year -1.
- Type 1 process solids will be deposited to Cell 1 for the first three years of operations. Type 1 process solids will be deposited to Cell 2A and Cell 2B starting in Year 4 until the end of operations.
- Type 2 process solids will be deposited to Cell 2A for the first 10 years of operations. Type 2 process solids will be discharged to the Central Pit starting in Year 11 until the end of operations.
- Storage capacity to contain the EDS (1 in 100 year 24 hour precipitation event and 30-day spring snowmelt; 408 mm) has been included in the PSMF water balance.
- A freeboard allowance has been included in the PSMF water balance to allow conveyance the IDF over the emergency overflow spillway without overtopping (wet freeboard).
- The embankment staging (i.e., crest elevation) has been calculated based on maintaining sufficient capacity to contain the EDS below the spillway invert.
- Excess water within the PSMF will be transferred to the WMP and subsequently discharged to Hare Lake.
- Sufficient pumping capacity will be in place to pump excess water from the WMP to Hare Lake. A pumping rate of 330 $m^3$/hr has been assumed, which is greater than the excess water discharge requirements under average precipitation conditions.

# 4.0 METHODOLOGY

## 4.1 WATER BALANCE

The water balance was developed using GoldSim (GoldSim Technology Group LLC, 2019) using daily time steps for a 23 year period (two years to develop baseline conditions, two years of preproduction, 14 years of operation and five years of closure). A stochastic analysis was competed using the long-term precipitation dataset developed for the Project to estimate the expected water reporting to each facility. The methodology is summarized as follows:

- A set of climate inputs were generated for the model using the long-term historical monthly precipitation values developed for the site. The model was run by incrementally stepping through the climate datasets by year for a 23-year duration for the entire record (i.e., from 1985 to 2019). Each run is identified as a realization. This method preserves the inherent cyclical nature of the climate record while simulating possible future conditions. For instance, the first realization was run using the 23-year precipitation dataset starting in 1985 (and ending in 2002); the second realization starting in 1986; the third realization starting in 1987; and so on. Starting in 1998 (realization 14), the 1985 values are added to the end of the data string (after year 2019); in year 2006 (realization 15), the 1985 and 1986 values are added to the end of the data string; and so on to generate the last few realizations. There are 35 realizations in total. This method generates a wide range of climate inputs and a corresponding range of predicted results for each month of the simulation.
- Runoff volumes (inputs) were calculated based on the catchment areas (some of which vary with time as the mine is developed), runoff coefficients, precipitation inputs, design criteria and assumptions previously listed.
- Groundwater inflow volumes (inputs) were estimated based on information provided by Stantec (2020a and 2020b).
- Evaporation volumes (outputs) were provided by Stantec (2020c) and based on the monthly Canadian climate normals for lake evaporation from the Rawson, Kempville and Ottawa weather stations. These volumes were applied to the pond surface areas for each day.
- Seepage rates (outputs) through the geomembrane-lined cells of the PSMF were estimated based on current guidelines related to the potential for defects and holes to develop in the liner.
- The model utilizes the process solids properties identified above, including the rate of deposition from the Process Plant, the density, the specific gravity, and the solids content to estimate the monthly volumes of water with the process solids slurry (input) and water retained in the voids (output).
- The model assumes that water collected in the SCBs is transferred to the PSMF cells and subsequently to the WMP for use as reclaim water.

A stochastic analysis was completed to consider abnormally wet and dry precipitation conditions. Median (50$^{th}$ percentile), 5$^{th}$ percentile and 95$^{th}$ percentile results were calculated and are discussed below. The 5$^{th}$ and 95$^{th}$ percentiles represent the estimate values that respectively have a 95% probability (dry conditions) and a 5% probability (wet conditions) of being exceeded in any year. The evaluated wet and dry conditions are similar to the 1 in 20-year dry and the 1 in 20-year wet precipitation conditions.

## 4.2 MRSA CATCH BASIN ASSESSMENT

The monthly timesteps evaluated in the site wide water balance were used to develop the site water management strategy and size the water transfer systems for the larger collection basins (i.e., open pits,

CP1, etc.). In order to confirm the storm water management requirements for the smaller MRSA Catch Basins with limited surge capacity, a more detailed assessment of storm water inflows was carried out.

An additional daily time stepped water balance model was developed in Excel® to evaluate shorter duration events for the MRSA catch basins including return period rainfall events and the spring freshet. The daily time step water balance was evaluated for the following:

- Management of the EDS which includes temporary storage and active pumping to transfer the 1 in 25-year 24-hour precipitation event and longer duration events to the PSMF. The rainfall values were derived from the climatic record using a Gumble distribution.
- A 1 in 5-year spring freshet with snowmelt.

The actual runoff rate from the MRSA during a spring freshet will depend on the staged development of the MRSA and characteristics of the placed mine rock. An approximate runoff hydrograph was derived from the available climate temperature records and a simplified degree day method for estimating snowmelt. (NRCS, 2004)

The inflow estimates to the MRSA catch basins were used to confirm the storm water management strategy and sizing of the water transfer systems.

# 5.0 RESULTS

## 5.1 GENERAL

The site-wide water balance flowsheets illustrating median (50$^{th}$ percentile) precipitation conditions for Year 6 are illustrated on Figures 1 and 2 and summarized in Table 3 through Table 6. The wet conditions (95$^{th}$ percentile) are summarized in Table 7 through Table 11. The dry conditions (5$^{th}$ percentile) summarized in Table 12 through Table 14. The key results by area are briefly discussed below.

## 5.2 MEDIAN CONDITIONS

The results from the water balance model for the site during 50$^{th}$ percentile precipitation conditions are summarized in Table 3 through Table 6, and illustrated on Figure 2 through Figure 9.

- **PSMF (Table 3)**
  - Buildup of an operating pond volume within the WMP and Cell 1 will be required towards the end of Year -1 to provide sufficient water for commissioning the Process Plant and initial operations.
  - Annual excess water discharge to Hare Lake via the WTP is predicted to range from approximately 0.6 million m$^3$ in Year 3 (during commissioning of Cell 2B) to 1.9 million m$^3$ in Year 10 (start of Type 2 process solids deposition to the Central Pit).
- **Open Pits (Table 4)**
  - The total surface runoff, direct precipitation and groundwater inflow reporting to the open pit area is estimated to be approximately 1.3 million m$^3$ per year prior to development and to about 2.4 million m$^3$ per year by end of mine life.
  - The annual water transfer volume from waterbody L8 would be approximately 200,000 m$^3$.
  - During years 11 through 13, the Central Pit would receive approximately 4.9 million m$^3$ per year of addition process water with the addition of the Type 2 process solids slurry.
  - Approximately 800,000 m$^3$ per year of the process water would be entrained in the void space of the settled process solids in the Central Pit.

- **MRSA (Table 5)**
  - The MRSA catch basins would collect approximately 800,000 $m^3$ of runoff water per year under median conditions.
- **Plant Site (Table 6)**
  - The SWMP volume will increase during freshet and be reduced during the summer months.
  - Water transfer from the SWMP to the WMP will average 450,000 $m^3$/year.

## 5.3 DRY CONDITIONS

The results from the water balance model for the site during 5$^{th}$ percentile dry conditions are summarized in Table 7 through Table 10.

- **PSMF Dry Conditions 5$^{th}$ Percentile (Table 7)**
  - Minimum operating pond volumes would occur during the summer months in Cell 1, the WMP and the SWMP.
  - A surplus of approximately 450,000 $m^3$ is projected in year 6 during dry conditions.
  - No excess water would be discharged to Hare Lake during 5$^{th}$ percentile dry conditions during most other dry years.
  - A maximum deficit of approximately 900,000 $m^3$ is projected if dry conditions occur during year 2 of operations. This deficit would be made up by reducing the active water pond volume within Cell 1 (which would normally range between 1.0 to 1.5 million $m^3$).
- **Open Pit Dry Conditions 5$^{th}$ Percentile (Table 8)**
  - The total surface runoff, direct precipitation, and ground water inflow into the Open Pit area would range from approximately 700,000 to 1.8 million $m^3$ per year.
  - The annual water transfer rate from waterbody L8 would be approximately 150,000 $m^3$.
- **MRSA Dry Conditions 5$^{th}$ Percentile (Table 9)**
  - The MRSA Catch Basins would collect approximately 550,000 $m^3$ of runoff per year during 5$^{th}$ percentile dry conditions.
- **Plant Site 5$^{th}$ Percentile (Table 10)**
  - The SWMP volume would be operated with a minimum pond volume during 5$^{th}$ percentile dry conditions.
  - Water transfer from the SWMP to the WMP would average 300,000 $m^3$/year during 5$^{th}$ percentile dry conditions.

## 5.4 WET CONDITIONS

The results from the water balance model for the site during 95$^{th}$ percentile wet conditions are summarized in Table 11 through Table 14

- **PSMF 95$^{th}$ Percentile (Table 11)**
  - Additional water would be temporarily managed within the PSMF during 95$^{th}$ percentile wet conditions (without discharge over the spillways) prior to being discharged to Hare Lake via the Hare Lake discharge pipeline.
  - It is estimated that up to 2.9 million $m^3$ of excess water would be discharged to Hare Lake.

- **Open Pit 95th Percentile (Table 12)**
  - The total surface runoff, direct precipitation, and groundwater inflow into the open pit area would be approximately 2.7 million $m^3$ per year by end of mine life during a 95th percentile wet year.
  - A peak monthly pumping rate of 130,000 $m^3$/month (180 $m^3$/hr) would be required to maintain the water level in waterbody L8 during a wet year freshet. The annual water transfer rate from water body L8 would be approximately 280,000 $m^3$.
- **MRSA 95th Percentile (Table 13)**
  - The MRSA catch basins would collect approximately 1.0 million $m^3$ of runoff water per year during 95th percentile wet conditions which would be pumped to the PSMF and managed without discharge to the Pic River.
  - Discharge to the Pic River is not expected during 95th percentile climate conditions, with exception of a potential discharge to the Pic River during freshet events in excess of a 1 in 5-year event. Potential discharge to the Pic River will be dependent on the rate of snowmelt and resulting hydrograph (refer to Section 5.5).
- **Plant Site Wet Conditions 95th Percentile (Table 14)**
  - The SWMP would approach a volume of about 650,000 $m^3$ during the 95th percentile wet conditions.
  - Water transfer from the SWMP to the WMP would range approximately 430,000 to 730,000 $m^3$/year during 95th percentile wet conditions.

## 5.5 MRSA FRESHET MANAGEMENT

The MRSA catch basins are sized to contain a combined volume of about 150,000 $m^3$, which is equivalent to a 1 in 25-year 24-day rainfall event. The spring runoff into the Stream 2 and Stream 3 Catch Basins during freshet is estimated to be approximately 440,000 $m^3$. As such pumping will be required to manage high volume events (such as a large freshet) to minimize discharge to the Pic River.

Based on the results of the daily time stepped water balance the MRSA (Figure 10 and Figure 11) it was determined that a 750 $m^3$/hr pumping rate from the Stream 2 Catch Basin to the PSMF would be sufficient to contain a 1 in 5-year spring freshet without discharge to the Pic River. This pumping rate is sufficient to manage runoff from a 30-day 1 in 25-year (96th percentile) rainfall event (Figure 12 and Figure 13).

During a 1 in 100 year 30-day rainfall event is estimated that approximately 10% of the runoff would be conveyed by the overflow spillways to the Pic River. During these conditions, the Pic River would be at the 1 in 100-year flood level.

## 5.6 CLOSURE

Closure of the mine site will include for the redirection of all collected site water to the open pits for a period of five years to allow for accelerated filling and monitoring of water quality (Figures 14 though 17). Water balance estimates for the closure period and comments on filling of the open pits are as follows:

- Filling of the North Pit would take approximately 40 years without additional water transfer to the open pits.
- Filling of the North Pit would be reduced to 30 years with water transfer during the proposed 5 year active closure period.
- The North Pit could fill in approximately 17 years with continued water transfer from the site.
- Annual runoff from the PSMF area to Sub-watershed 106 is estimated to be approximately 1.5 M $m^3$.
- Annual runoff from the MWP area to Sub-watershed 101 is estimated to be approximately 200,000 $m^3$.

- Annual runoff from the MRSA to Sub-watershed 102 and 103 (Stream 2 and Stream 3) is estimated to be approximately 800,000 $m^3$ and 300,000 $m^3$, respectively.

## 6.0 SUMMARY AND CONCLUSIONS

The conceptual site wide water balance was developed for median, wet (95$^{th}$ percentile) and dry (5$^{th}$ percentile) precipitation conditions. The following summary and conclusions are provided:

- Construction of the PSMF Cell 1 Stage 1 embankments would be required by October of Year -1 to allow sufficient water accumulation for commissioning of the Process Plant and initial operations.
- Under average operating conditions, the site will operate at a predicted surplus of up to 1.9 M $m^3$ which will require excess water to be discharged to Hare Lake. A water discharge rate of 330 $m^3$/hr over an eight-month discharge window (April to November) has been included in the model to provide for sufficient operational flexibility.
- A maximum deficit of approximately 900,000 $m^3$ is projected if dry conditions occur during year 2 of operations. This deficit would be made up by reducing the active water pond volume within Cell 1.
- It is estimated that up to 2.9 M $m^3$ of excess water would be discharged to Hare Lake via the Hare Lake discharge pipeline during wet conditions.
- Discharge to the Pic River is not anticipated during normal operating conditions including the 1 in 5-year freshet and/or a 1 in 25 year rainfall event. During a 1 in 100 year 30-day rainfall event it is estimated that approximately 10% of the runoff would be conveyed by the overflow spillways to the Pic River.

The input parameters, assumptions and design criteria utilized in this analysis may be further optimized during detailed design.

## 7.0 CLOSING

We trust that the information provided herein satisfies your current requirements. Please do not hesitate to contact the undersigned if you have any questions with regards to the site wide water balance.

Yours truly,
**Knight Piésold Ltd.**

<Original signed by>
LICENSED PROFESSIONAL ENGINEER
J. A. MCINTYRE
100125386
2021-03-02
PROVINCE OF ONTARIO

Prepared: <Original signed by>
Ryan Weir, P.Eng.
Project Engineer

Reviewed: <Original signed by>
Alex McIntyre, P.Eng.
Senior Engineer

Approval that this document adheres to the Knight Piésold Quality System: <Signatre removed>

**References:**

GoldSim Technology Group LLC, 2019. *GoldSim*. Version 12.1.2 #166. February 7. Seattle, Washington.

Stantec. 2020a. Email from Jonathan Keizer, *RE: GenPGM: Groundwater inflow rates to pits*. November 3.

Stantec. 2020b. Email from Jonathan Keizer, *RE: Marathon PGM Water*. December 17.

Stantec. 2020c. *Marathon Palladium Project - Environmental - Hydrology Updated Baseline Report - Draft*. October 14.

Natural Resources Conservation Service (NRCS). 2004, Part 630 Hydrology - National Engineering Handbook - Chapter 11 Snowmelt. Ref. No. 210-VI-NEH, July.

**Attachments:**

| | |
|---|---|
| Table 1 Rev 0 | Pump and Pipeline Summary |
| Table 2 Rev 0 | Criteria |
| Table 3 Rev 0 | Annual Balance - Process Solids Management Facility - 50$^{th}$ Percentile Results |
| Table 4 Rev 0 | Annual Balance - Open Pits - 50$^{th}$ Percentile Results |
| Table 5 Rev 0 | Annual Balance - Mine Rock Storage Area - 50$^{th}$ Percentile Results |
| Table 6 Rev 0 | Annual Balance - Stormwater Management Pond and Process Plant - 50$^{th}$ Percentile Results |
| Table 7 Rev 0 | Annual Balance - Process Solids Management Facility - 5$^{th}$ Percentile Results |
| Table 8 Rev 0 | Annual Balance - Open Pits - 5$^{th}$ Percentile Results |
| Table 9 Rev 0 | Annual Balance - Mine Rock Storage Area - 5$^{th}$ Percentile Results |
| Table 10 Rev 0 | Annual Balance - Stormwater Management Pond and Process Plant - 5$^{th}$ Percentile Results |
| Table 11 Rev 0 | Annual Balance - Process Solids Management Facility - 95$^{th}$ Percentile Results |
| Table 12 Rev 0 | Annual Balance - Open Pits - 95$^{th}$ Percentile Results |
| Table 13 Rev 0 | Annual Balance - Mine Rock Storage Area - 95$^{th}$ Percentile Results |
| Table 14 Rev 0 | Annual Balance - Stormwater Management Pond and Process Plant - 95$^{th}$ Percentile Results |
| Drawing 110 Rev 0 | Site Water Management Layout - Plan |
| Figure 1 Rev 0 | Conceptual Closure Watersheds |
| Figure 2 Rev 0 | Water Balance Flowsheet - PSMF Operations (Year 6) - 50$^{th}$ Percentile Precipitation |
| Figure 3 Rev 0 | Water Balance Flowsheet - Open Pit and MRSA Operations (Year 6) - 50$^{th}$ Percentile Precipitation |
| Figure 4 Rev 0 | Process Solids Management Facility - Cell 1 Summary Plots - 50$^{th}$ Percentile Precipitation |
| Figure 5 Rev 0 | Process Solids Management Facility - Cell 2A Summary Plots - 50$^{th}$ Percentile Precipitation |
| Figure 6 Rev 0 | Process Solids Management Facility - Cell 2B Summary Plots - 50$^{th}$ Percentile Precipitation |
| Figure 7 Rev 0 | Process Solids Management Facility - WMP Summary Plots - 50$^{th}$ Percentile Precipitation |
| Figure 8 Rev 0 | Mine Rock Storage Area Catch Basins - Summary Plots - 50$^{th}$ Percentile Precipitation |
| Figure 9 Rev 0 | Stormwater Management Pond - Summary Plots - 50$^{th}$ Percentile Precipitation |

| | |
|---|---|
| Figure 10 Rev 0 | Stream 2 Catch Basin 1 in 5 year Freshet Balance |
| Figure 11 Rev 0 | Stream 3 Catch Basin 1 in 5 year Freshet Balance |
| Figure 12 Rev 0 | Stream 2 Catch Basin 1 in 25 Year Rain Balance |
| Figure 13 Rev 0 | Stream 3 Catch Basin 1 in 25 Year Rain Balance |
| Figure 14 Rev 0 | Water Balance Flowsheet - PSMF - Active Closure (Year 17) - 50$^{th}$ Percentile Precipitation |
| Figure 15 Rev 0 | Water Balance Flowsheet - Open Pits and MRSA - Active Closure (Year 17) - 50$^{th}$ Percentile Precipitation |
| Figure 16 Rev 0 | Water Balance Flowsheet - PSMF Passive Closure (Year 21) - 50$^{th}$ Percentile Precipitation |
| Figure 17 Rev 0 | Water Balance Flowsheet - Open Pit and MRSA Passive Closure (Year 21) - 50$^{th}$ Percentile Precipitation |

Copy To: Drew Anwyll - Generation Mining
Rubin Wallin - WESC
Steve Haggarty - Haggarty Technical Services
Michelle Fraser, Sheldon Smith - Stantec
Brian Frasier, Ron Nicholson - Ecometrix
Paul Murphy - GMining

/atp

Knight Piésold CONSULTING

**TABLE 1**

**GENERATION MINING**
**MARATHON PALLADIUM PROJECT**

**SITE WATER BALANCE SUMMARY**
**PUMP AND PIPELINE SUMMARY**

Print Mar/02/21 11:13:12

| Item No. | From | To | System | Available Containment / Retention |
|---|---|---|---|---|
| **1.0** | **Process Plant - Process Solids Delivery and Water Reclaim** | | | |
| 1.1 | Mill | Cell 1 | Type I Process Solids Slurry - Pump and Pipeline | Pump tank capacity in Mill |
| 1.2 | Mill | Cell 2A | Type I Process Solids Slurry - Pump and Pipeline | Pump tank capacity in Mill |
| 1.3 | Mill | Cell 2A | Type II Process Solids Slurry - Pump and Pipeline | Pump tank capacity in Mill |
| 1.4 | Mill | Cell 2B | Type I Process Solids Slurry - Pump and Pipeline | Pump tank capacity in Mill |
| 1.5 | Stormwater Management Pond | Water Management Pond | Pump Vault and Water Transfer Pipeline | Total Storage Capacity: 600,000 $m^3$<br>Maximum Operating Pond Volume: 500,000 $m^3$ |
| 1.6 | Stormwater Management Pond | Water Treatment Plant / Hare Lake | Pump Vault and Water Transfer Pipeline | Total Storage Capacity: 600,000 $m^3$<br>Maximum Operating Pond Volume: 500,000 $m^3$ |
| 1.7 | Hare Lake Treatment Plant | Hare Lake Discharge | TBD | N/A |
| **2.0** | **PSMF - Water Management** | | | |
| 2.1 | Water Management Pond | Water Treatment Plant / Hare Lake | Pump Vault and Water Transfer Pipeline | Maximum Operating Volume: 1.5 M $m^3$<br>EDS: 1 in 100 year 7 day Rain on Snow Event. |
| 2.2 | Water Management Pond | Mill | Pump Vault and Water Transfer Pipeline | Maximum Operating Volume: 1.5 M $m^3$<br>EDS: 1 in 100 year 7 day Rain on Snow Event. |
| 2.3 | Seepage Collection Basin 1 | Water Management Pond | Pump Vault and Water Transfer Pipeline | One week of Seepage plus 1 in 2 year 24 hr Rain on Snow. |
| 2.4 | Seepage Collection Basin 2 | Cell 1 | Pump Vault and Water Transfer Pipeline | One week of Seepage plus 1 in 2 year 24 hr Rain on Snow. |
| 2.5 | Seepage Collection Basin 3 | Cell 1 | Pump Vault and Water Transfer Pipeline | One week of Seepage plus 1 in 2 year 24 hr Rain on Snow. |
| 2.6 | Seepage Collection Basin 4 | Cell 1 | Pump Vault and Water Transfer Pipeline | Sized to Contain 1 in 25 year Rainfall with pumping; Volume 25,000 m3 |
| 2.7 | Seepage Collection Basin 5 | Cell 2B | Pump Vault and Water Transfer Pipeline | One week of Seepage plus 1 in 2 year 24 hr Rain on Snow. |
| 2.8 | Seepage Collection Basin 6 | Cell 2B | Pump Vault and Water Transfer Pipeline | Sized to Contain 1 in 25 year Rainfall with pumping; Volume 11,000 m3 |
| 2.9 | Seepage Collection Basin 7 | Cell 2B | Pump Vault and Water Transfer Pipeline | One week of Seepage plus 1 in 2 year 24 hr Rain on Snow. |
| 2.10 | Seepage Collection Basin 8 | Cell 2A | Pump Vault and Water Transfer Pipeline | One week of Seepage plus 1 in 2 year 24 hr Rain on Snow. |
| 2.11 | Seepage Collection Basin 9 | Cell 2A | Pump Vault and Water Transfer Pipeline | One week of Seepage plus 1 in 2 year 24 hr Rain on Snow. |
| 2.12 | Seepage Collection Basin 10 | Cell 2A | Pump Vault and Water Transfer Pipeline | One week of Seepage plus 1 in 2 year 24 hr Rain on Snow. |
| 2.13 | Cell 1 | Water Management Pond | Floating Pump Barge during Early Operations/ Gravity Flow during Later Operations | 1 in 100 year 7 day Rain on Snow. |
| 2.14 | Cell 2A | Cell 1 | Floating Pump Barge during Early Operations/ Gravity Flow during Later Operations | 1 in 100 year 7 day Rain on Snow. |
| 2.15 | Cell 2B | Cell 1 | Floating Pump Barge during Early Operations/ Gravity Flow during Later Operations | 1 in 100 year 7 day Rain on Snow. |
| **3.0** | **Mine Site - Water Management** | | | |
| 3.1 | North Pit | Collection Pond 1 | Pump and Water Transfer Pipeline | Sump Sizing to be Confirmed by G Mining |
| 3.2 | Central Pit | Collection Pond 1 | Pump and Water Transfer Pipeline | Sump Sizing to be Confirmed by G Mining |
| 3.3 | Central Pit | WMP | Pump and Water Transfer Pipeline | Post Year 10 - In Pit Tailings Disposal |
| 3.4 | South Pit | Collection Pond 1 | Pump and Water Transfer Pipeline | Sump Sizing to be Confirmed by G Mining |
| 3.5 | L-8 Water Body | Collection Pond 1 | Pump Vault and Water Transfer Pipeline | TBD - based on acceptable level fluctuation for fish. |
| 3.6 | Collection Pond 1 | Water Management Pond | Pump Vault and Water Transfer Pipeline | 48 hour Capacity from Open Pits |
| 3.7 | Stream 3 Catch Basin | Stream 2 Catch Basin | Pump Vault and Water Transfer Pipeline | 1 in 25 year 24 hr rain. Evaluating increased storage capacity. |
| 3.8 | Stream 2 Catch Basin | Water Management Pond | Pump Vault and Water Transfer Pipeline | 1 in 25 year 24 hr rain. Evaluating increased storage capacity. |

I:\1\01\00446\09\A\Correspondence\NB20-00916 - Water Balance Summary\Final\[Table 1 and 2_MGP.xlsx]Table 1

**NOTES:**
1. THE WATER BALANCE MODEL CURRENTLY ROUTES ALL WATER THROUGH THE WMP, HOWEVER DURING OPERATIONS THE ABILITY TO ROUTE WATER DIRECTLY TO HARE LAKE FROM THE SWMP VIA THE WATER TREATMENT PLANT WILL BE MAINTAINED.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER NB20-00916 | BA | JAM |

Knight Piésold CONSULTING

**TABLE 2**

**GENERATION MINING**
**MARATHON PALLADIUM PROJECT**

**SITE WATER BALANCE SUMMARY**
**CRITERIA**

Print Mar/02/21 11:22:06

| Criteria | Units | Value | Basis |
|---|---|---|---|
| **General** | | | |
| Annual Rainfall | mm | 818 | Stantec 2020 Draft Hydromet Report |
| Annual Evaporation | mm | 518 | Stantec 2020 Draft Hydromet Report |
| Runoff Coefficients | | | |
| Undisturbed | % | 20 to 100 | Varies Seasonally |
| Pond | % | 100 | Typical Value |
| Open Pit | % | 100 | Groundwater inflow expected |
| PS Beach | % | 75 to 100 | Varies Seasonally |
| Road, Rockfill, and ROM stockpile | % | 50 to 100 | Varies Seasonally |
| Maximum Ice Thickness | mm | 1000 | Varies Seasonally |
| **Process Solids Management Facility** | | | |
| Catchment Area | | | |
| Cell 1 | ha | 87.6 | KP AutoCAD takeoff |
| Cell 2A | ha | 134.8 | KP AutoCAD takeoff |
| Cell 2B | ha | 117.7 | KP AutoCAD takeoff |
| WMP | ha | 47.7 | KP AutoCAD takeoff |
| Seepage Collection Basins | ha | 29.4 | KP AutoCAD takeoff - Includes Basins 1 to 10 |
| Storage | | | |
| Cell 1 | Million $m^3$ | 16.1 | KP |
| Cell 2A | Million $m^3$ | 28.7 | KP, Excludes Type II Waste Rock |
| Cell 2B | Million $m^3$ | 35.9 | KP, Excludes Type II Waste Rock |
| WMP | Million $m^3$ | 1.4 | KP |
| Total Process Solids Produced | Mtonnes | 117.7 | Gmining 03DEC2020 |
| Average Throughput | dtpa | 9,200,000 | Gmining 03DEC2020 |
| | dtpd | 25,205 | Gmining 03DEC2020 |
| Type 1 Process Solids | | | |
| Throughput | dtpd | 21,425 | 85% of Process Solids |
| Slurry % Solids by mass | % | 55% | Ausenco 21 OCT 2020 PFDs |
| Water With Slurry | $m^3$/day | 17,529 | Calculated |
| Settled Density | dt/$m^3$ | 1.6 | KP Estimate based on 2013 Lab Testing |
| Specific Gravity | n/a | 3.06 | 2013 SGS Testing (NB12-00238) |
| Type 2 Process Solids | | | |
| Throughput | dtpd | 3,781 | 15% of Process Solids |
| Slurry % Solids by mass | %mass | 22% | Ausenco 21 OCT 2020 PFDs |
| Water With Slurry | $m^3$/day | 13,405 | Calculated |
| Settled Density | dt/$m^3$ | 1.1 | KP Estimate based on 2013 Lab Testing |
| Specific Gravity | n/a | 3.20 | 2013 SGS Testing (NB12-00409) |
| Freeboard | | | |
| Cell 1 | m | 2 | KP Estimate, allows for flow over Spillway/Swale and Wave Run-up |
| Cell 2A | m | 2 | KP Estimate, allows for flow over Spillway/Swale and Wave Run-up |
| Cell 2B | m | 2 | KP Estimate, allows for flow over Spillway/Swale and Wave Run-up |
| WMP | m | 2 | KP Estimate, allows for flow over Spillway/Swale and Wave Run-up |
| Initial Construction Dates | | | |
| WMP | Year | -2 | KP |
| Cell 1 | Year | -1 | KP |
| Cell 2A | Year | -1 | KP |
| Cell 2B | Year | 3 | KP |
| Bedrock Seepage | | | |
| From WMP to 101 | $m^3$/day | 122 | Stantec Email - 10DEC2020 |
| From Cell 1 to 106 | $m^3$/day | 335 | Stantec Email - 03NOV2020 |
| From Cell 2B to 105 | $m^3$/day | 156 | Stantec Email - 03NOV2020 |
| **Process Plant** | | | |
| Total Water Requirement | $m^3$/day | 30,935 | Based on Process Solids Throughput |
| Reclaim Water | $m^3$/day | 25,367 | 82% of total, based on Ausenco 21 OCT 2020 PFDs |
| Fresh Water | $m^3$/day | 4,640 | 15% of total, based on Ausenco 21 OCT 2020 PFDs |
| Water With Ore | $m^3$/day | 928 | 3% of total, based on Ausenco 21 OCT 2020 PFDs |
| **Storm Water Management Pond (SWMP)** | | | |
| Catchment Area | ha | 129 | KP AutoCAD takeoff |
| Total Water Storage | $m^3$ | 650,000 | KP Estimate based on Gmining Road Alignment |
| Target Normal Operating Level | $m^3$ | 0 | Target empty operating conditions |
| **Mine Rock Storage Area** | | | |
| Catchment Area | | | |
| Stream 2 Catch Basin | ha | 111 | KP AutoCAD Takeoff - Includes east and west side of MRSA |
| Stream 3 Catch Basin | ha | 71 | KP AutoCAD Takeoff - Includes east and west side of MRSA |
| Storage | | | |
| Stream 2 Catch Basin | $m^3$ | 97,500 | Temporary containment of 1 in 25 year 24 rainfall event |
| Stream 3 Catch Basin | $m^3$ | 62,000 | Temporary containment of 1 in 25 year 24 rainfall event |
| **Open Pit** | | | |
| Catchment Areas | | | |
| L-8 | ha | 56.7 | KP AutoCAD Takeoff |
| Collection Pond 1 | ha | 0.0 | Negligible, accounted for in other areas |
| South Pit | ha | 201.3 | KP AutoCAD Takeoff |
| Central Pit | ha | 26.1 | KP AutoCAD Takeoff |
| North Pit | ha | 114.5 | KP AutoCAD Takeoff |
| Groundwater Inflow | | | |
| South Pit | $m^3$/day | 326 to 457 | Stantec 2020 draft estimate |
| Central Pit | $m^3$/day | 161 | Stantec 2020 draft estimate |
| North Pit | $m^3$/day | 294 to 509 | Stantec 2020 draft estimate |

I:\1\01\00446\09\A\Correspondence\NB20-00916 - Water Balance Summary\Final\[Table 1 and 2_MGP.xlsx]Table 2

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER NB20-00916 | BA | JAM |

Knight Piésold CONSULTING

**TABLE 3**

**GENERATION MINING**
**MARATHON PALLADIUM PROJECT**

**SITE WATER BALANCE SUMMARY**
**ANNUAL BALANCE - PROCESS SOLIDS MANAGEMENT FACILITY - 50TH PERCENTILE RESULTS**

Print Mar/02/21 11:50:06

| | MINE YEAR | MODEL YEAR | CALENDAR YEAR | PROCESS SOLIDS MANAGEMENT FACILITY (CELL 1, 2A, AND 2B) | | | | | | | | | | | | | WATER MANAGEMENT POND (WMP) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INPUTS | | | | | OUTPUTS | | | | | | | | INPUTS | | | | OUTPUTS | | | | | | | |
| | | | | RUNOFF & PRECIPITATION | WATER WITH SLURRY | TRANSFER FROM COLLECTION POND 1 | TRANSFER FROM CATCH BASIN 2 | SEEPAGE PUMPBACK SYSTEM | WATER ENTRAINED IN VOIDS | BEDROCK SEEPAGE TO SUB-WATERSHED 105 | BEDROCK SEEPAGE TO SUB-WATERSHED 106 | EMBANKMENT SEEPAGE | EVAPORATION | TRANSFER TO WMP | TO SUB-WATERSHED 106 | END OF YEAR STORAGE | RUNOFF & PRECIPITATION | SEEPAGE PUMPBACK SYSTEM | WATER TRANSFER FROM CELL 1 | WATER TRANSFER FROM SWMP | EVAPORATION | BEDROCK SEEPAGE TO SUB-WATERSHED 101 | EMBANKMENT SEEPAGE | TRANSFER TO CENTRAL PIT | RECLAIM TO MILL | EXCESS WATER DISCHARGE TO HARE LAKE | TO SUB-WATERSHED 101 | END OF YEAR STORAGE |
| | | | | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | (m3/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$/year) | ($m^3$) |
| PRE PRODUCTION | -4 | 1 | 2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| | -3 | 2 | 2021 | | | | | | | | | | | | | | | | | | | | | | | | |
| | -2 | 3 | 2022 | 0 | 0 | 218,099 | 107,682 | 0 | 0 | 0 | 0 | 0 | 0 | 325,781 | 0 | 0 | 78,428 | 0 | 325,781 | 171,455 | 41,815 | 44,561 | 2,129 | 0 | 0 | 0 | 0 | 487,159 |
| | -1 | 4 | 2023 | 233,379 | 247,040 | 958,028 | 446,321 | 93,427 | 84,312 | 0 | 102,452 | 29,795 | 4,116 | 857,520 | 0 | 900,000 | 298,550 | 6,719 | 857,520 | 78,353 | 100,145 | 44,561 | 2,129 | 0 | 239,629 | 0 | 0 | 1,341,836 |
| OPERATIONS | 1 | 5 | 2024 | 715,217 | 6,054,762 | 1,793,939 | 757,216 | 240,161 | 2,066,419 | 0 | 122,289 | 39,480 | 41,178 | 7,110,900 | 0 | 1,081,029 | 332,307 | 18,202 | 7,110,900 | 341,092 | 175,073 | 44,561 | 2,129 | 0 | 5,873,119 | 1,716,000 | 0 | 1,333,455 |
| | 2 | 6 | 2025 | 736,024 | 11,178,408 | 1,976,128 | 781,941 | 246,721 | 3,815,059 | 2,723 | 122,289 | 47,203 | 65,239 | 10,862,800 | 0 | 1,084,938 | 280,949 | 18,091 | 10,862,800 | 475,179 | 150,864 | 44,561 | 2,129 | 0 | 10,843,060 | 622,500 | 0 | 1,307,360 |
| | 3 | 7 | 2026 | 1,216,592 | 11,290,910 | 2,069,424 | 791,617 | 478,705 | 3,798,496 | 52,236 | 122,289 | 192,349 | 87,218 | 11,068,200 | 0 | 1,611,398 | 244,457 | 18,092 | 11,068,200 | 475,727 | 123,851 | 44,561 | 2,129 | 0 | 10,952,180 | 672,000 | 0 | 1,319,115 |
| | 4 | 8 | 2027 | 1,355,768 | 11,290,909 | 2,151,949 | 796,560 | 492,600 | 3,155,240 | 56,826 | 122,289 | 206,246 | 132,843 | 11,348,000 | 0 | 2,677,740 | 257,285 | 18,092 | 11,348,000 | 449,434 | 153,516 | 44,561 | 2,129 | 0 | 10,952,180 | 912,000 | 0 | 1,327,540 |
| | 5 | 9 | 2028 | 1,443,822 | 11,290,909 | 2,261,947 | 808,304 | 494,408 | 3,155,240 | 56,826 | 122,289 | 206,246 | 155,990 | 11,832,800 | 0 | 3,447,739 | 294,426 | 18,202 | 11,832,800 | 456,795 | 187,110 | 44,561 | 2,129 | 0 | 10,952,180 | 1,407,000 | 0 | 1,336,783 |
| | 6 | 10 | 2029 | 1,523,411 | 11,290,909 | 2,336,264 | 808,254 | 492,831 | 3,155,240 | 56,826 | 122,289 | 206,246 | 179,272 | 12,333,600 | 0 | 3,845,935 | 338,734 | 18,091 | 12,333,600 | 441,276 | 260,680 | 44,561 | 2,129 | 0 | 10,952,180 | 1,902,000 | 0 | 1,306,934 |
| | 7 | 11 | 2030 | 1,600,359 | 11,290,909 | 1,264,112 | 817,180 | 492,826 | 3,155,240 | 56,826 | 122,289 | 206,246 | 198,989 | 11,048,400 | 0 | 4,523,331 | 263,120 | 18,092 | 11,048,400 | 508,975 | 124,033 | 44,561 | 2,129 | 0 | 10,952,180 | 696,000 | 0 | 1,326,618 |
| | 8 | 12 | 2031 | 1,677,233 | 11,290,909 | 1,293,703 | 821,109 | 492,600 | 3,155,240 | 56,826 | 122,289 | 206,246 | 219,342 | 11,223,600 | 0 | 5,115,342 | 271,073 | 18,092 | 11,223,600 | 474,531 | 129,610 | 44,561 | 2,129 | 0 | 10,952,180 | 879,000 | 0 | 1,306,434 |
| | 9 | 13 | 2032 | 1,765,413 | 11,290,909 | 1,940,570 | 820,457 | 491,739 | 3,155,240 | 56,826 | 122,289 | 206,246 | 240,792 | 11,400,800 | 0 | 6,242,237 | 268,123 | 18,112 | 11,400,800 | 451,071 | 144,359 | 44,561 | 2,129 | 0 | 10,952,180 | 974,250 | 0 | 1,327,061 |
| | 10 | 14 | 2033 | 1,833,618 | 11,290,909 | 2,452,712 | 815,407 | 490,003 | 3,155,240 | 56,826 | 122,289 | 206,246 | 261,116 | 11,998,800 | 0 | 7,324,369 | 325,994 | 18,028 | 11,998,800 | 441,174 | 254,465 | 44,561 | 2,129 | 0 | 10,952,180 | 1,524,000 | 0 | 1,333,722 |
| | 11 | 15 | 2034 | 1,921,491 | 6,398,182 | 1,118,847 | 821,267 | 492,476 | 2,331,945 | 56,826 | 122,289 | 206,246 | 280,342 | 10,793,300 | 0 | 4,285,684 | 263,415 | 18,028 | 10,793,300 | 511,595 | 160,386 | 44,561 | 2,129 | 0 | 10,952,180 | 720,000 | 0 | 1,040,804 |
| | 12 | 16 | 2035 | 2,108,218 | 6,398,182 | 1,122,866 | 813,908 | 490,002 | 2,331,945 | 56,826 | 122,289 | 206,246 | 333,328 | 9,913,726 | 0 | 2,254,500 | 210,993 | 18,027 | 9,913,726 | 476,039 | 52,247 | 44,561 | 2,129 | 0 | 10,952,180 | 0 | 0 | 608,472 |
| | 13 | 17 | 2036 | 2,147,820 | 6,398,182 | 1,134,468 | 820,579 | 491,823 | 2,331,945 | 56,826 | 122,289 | 206,246 | 341,230 | 10,172,800 | 0 | 16,036 | 206,932 | 18,127 | 10,172,800 | 479,262 | 43,392 | 44,561 | 2,129 | 0 | 10,952,180 | 0 | 0 | 443,331 |
| | 14 | 18 | 2037 | 2,153,106 | 945,371 | 1,134,522 | 4,434 | 490,003 | 344,559 | 56,826 | 122,289 | 206,246 | 344,386 | 3,589,277 | 0 | 79,889 | 209,735 | 18,127 | 3,589,277 | 448,670 | 37,483 | 44,561 | 2,129 | 2,185,200 | 1,618,251 | 0 | 0 | 821,516 |
| CLOSURE | 15 | 19 | 2038 | 2,151,974 | 0 | 0 | 0 | 489,556 | 0 | 41,018 | 133,791 | 206,246 | 344,077 | 1,922,408 | 0 | 73,879 | 208,828 | 18,127 | 1,922,408 | 447,287 | 36,491 | 44,305 | 2,129 | 2,629,800 | 0 | 0 | 0 | 705,441 |
| | 16 | 20 | 2039 | 2,152,351 | 0 | 0 | 0 | 489,219 | 0 | 41,018 | 133,791 | 206,246 | 343,939 | 1,955,496 | 0 | 34,959 | 223,971 | 18,127 | 1,955,496 | 446,400 | 36,198 | 44,305 | 2,129 | 2,629,800 | 0 | 0 | 0 | 637,003 |
| | 17 | 21 | 2040 | 2,162,524 | 0 | 0 | 0 | 487,351 | 0 | 41,018 | 129,752 | 205,329 | 344,028 | 1,916,267 | 0 | 48,440 | 216,573 | 18,127 | 1,916,267 | 444,887 | 36,547 | 44,305 | 2,129 | 2,629,800 | 0 | 0 | 0 | 520,076 |
| | 18 | 22 | 2041 | 2,164,972 | 0 | 0 | 0 | 490,452 | 0 | 41,018 | 124,715 | 204,208 | 344,085 | 1,897,072 | 0 | 92,766 | 220,835 | 18,127 | 1,897,072 | 452,316 | 36,433 | 44,305 | 2,129 | 2,629,800 | 0 | 0 | 0 | 395,759 |
| | 19 | 23 | 2042 | 2,164,640 | 0 | 0 | 0 | 36,079 | 0 | 41,018 | 122,517 | 202,901 | 343,799 | 0 | 1,500,000 | 83,250 | 220,081 | 18,127 | 0 | 476,033 | 36,216 | 44,305 | 2,129 | 834,059 | 0 | 0 | 193,291 | 0 |
| | 20 | 24 | 2043 | 2,151,635 | 0 | 0 | 0 | 0 | 0 | 40,568 | 110,138 | 196,702 | 343,136 | 0 | 1,461,091 | 83,250 | 221,508 | | | | | | | | | | 221,508 | 0 |
| | 21 | 25 | 2044 | 2,162,118 | 0 | 0 | 0 | 0 | 0 | 41,018 | 101,099 | 196,572 | 343,076 | 0 | 1,480,353 | 83,250 | 218,228 | | | | | | | | | | 218,228 | 0 |
| | 22 | 26 | 2045 | 2,151,839 | 0 | 0 | 0 | 0 | 0 | 41,018 | 100,733 | 196,491 | 343,032 | 0 | 1,470,565 | 83,250 | 209,549 | | | | | | | | | | 209,549 | 0 |
| | 23 | 27 | 2046 | 2,151,851 | 0 | 0 | 0 | 0 | 0 | 41,018 | 100,733 | 196,485 | 343,027 | 0 | 1,470,588 | 83,250 | 205,170 | | | | | | | | | | 205,170 | 0 |
| | 24 | 28 | 2047 | 2,166,831 | 0 | 0 | 0 | 0 | 0 | 41,018 | 100,733 | 196,491 | 343,005 | 0 | 1,485,584 | 83,250 | 207,740 | | | | | | | | | | 207,740 | 0 |

I:\1\01\00446\09\A\Correspondence\NB20-00916 - Water Balance Summary\Final\[Summary Tables and Figures Rev 0.xlsx]Table 3 PSMF

**NOTES:**

1. VALUES PROVIDED REPRESENT 50TH PERCENTILE PRECIPITATION CONDITIONS.
2. CELLS HIGHLIGHTED IN GREY REPRESENT WATER THAT IS NOT COLLECTED AS PART OF THE SITE WATER MANAGEMENT STRATEGY.

| 0 | DMA/KP/ST | ISSUED WITH LETTER NB20-00916 | MDP | JMP |
|---|---|---|---|---|
| REV | DATE | DESCRIPTION | PREPD | REVD |

Knight Piésold CONSULTING

**TABLE 4**

**GENERATION MINING**
**MARATHON PALLADIUM PROJECT**

**SITE WATER BALANCE SUMMARY**
**ANNUAL BALANCE - OPEN PITS - 50TH PERCENTILE RESULTS**

Print Mar/02/21 13:48:22

| | MINE YEAR | MODEL YEAR | CALENDAR YEAR | NORTH PIT | | | | | CENTRAL PIT | | | | | | | | | | SOUTH PIT | | | | | | L-8 POND | | | COLLECTION POND 1 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INPUTS | | | OUTPUTS | | INPUTS | | | | | | | OUTPUTS | | | INPUTS | | | OUTPUTS | | | INPUTS | OUTPUTS | | INPUTS | OUTPUTS |
| | | | | RUNOFF & PRECIPITATION ($m^3$/year) | OVERFLOW FROM CENTRAL PIT ($m^3$/year) | GROUNDWATER INFLOW ($m^3$/year) | TRANSFER TO COLLECTION POND 1 ($m^3$/year) | OVERFLOW TO SUB-WATERSHED 103 ($m^3$/year) | RUNOFF & PRECIPITATION ($m^3$/year) | WATER WITH PROCESS SOLIDS SLURRY ($m^3$/year) | TRANSFER FROM STREAM 2 CATCHMENT BASIN ($m^3$/year) | TRANSFER FROM WMP ($m^3$/year) | OVERFLOW FROM SOUTH PIT ($m^3$/year) | INFLOW FROM L-8 ($m^3$/year) | GROUNDWATER INFLOW ($m^3$/year) | TRANSFER TO COLLECTION POND 1 ($m^3$/year) | OVERFLOW TO NORTH PIT ($m^3$/year) | WATER ENTRAINED IN VOIDS ($m^3$/year) | RUNOFF & PRECIPITATION ($m^3$/year) | ROM STOCKPILE RUNOFF ($m^3$/year) | GROUNDWATER INFLOW ($m^3$/year) | OVERFLOW TO CENTRAL PIT ($m^3$/year) | TRANSFER TO COLLECTION POND 1 ($m^3$/year) | BALANCE | RUNOFF & PRECIPITATION ($m^3$/year) | OUTFLOW TO CENTER PIT ($m^3$/year) | TRANSFER TO COLLECTION POND 1 ($m^3$/year) | INFLOW FROM OPEN PITS AND L-8 ($m^3$/year) | TRANSFER TO PSMF ($m^3$/year) |
| PRE PRODUCTION | -4 | 1 | 2020 | 445,583 | 0 | 0 | | 445,583 | 101,427 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 562,592 | 0 | 0 | 0 | | 562,592 | 220,701 | 0 | | 0 | |
| | -3 | 2 | 2021 | 433,934 | 0 | 0 | | 433,934 | 98,775 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 547,884 | 0 | 0 | 0 | | 547,884 | 214,931 | 0 | | 0 | |
| | -2 | 3 | 2022 | 449,285 | 0 | 0 | 22,464 | 426,821 | 99,789 | 0 | 0 | 0 | 0 | 0 | 0 | 24,564 | 0 | 0 | 603,289 | 20,248 | 0 | 0 | 171,070 | 452,467 | 214,923 | 0 | 0 | 218,099 | 218,099 |
| | -1 | 4 | 2023 | 475,659 | 0 | 0 | 95,132 | 380,527 | 112,925 | 0 | 0 | 0 | 0 | 0 | 0 | 88,655 | 0 | 0 | 710,585 | 63,656 | 0 | 0 | 774,241 | 0 | 214,685 | 0 | 0 | 958,028 | 958,028 |
| OPERATIONS | 1 | 5 | 2024 | 545,862 | 0 | 6,341 | 552,203 | 0 | 122,603 | 0 | 0 | 0 | 0 | 0 | 1,544 | 124,147 | 0 | 0 | 793,414 | 87,810 | 19,083 | 0 | 900,307 | 0 | 217,282 | 0 | 217,282 | 1,793,939 | 1,793,939 |
| | 2 | 6 | 2025 | 584,750 | 0 | 28,253 | 613,003 | 0 | 133,222 | 0 | 0 | 0 | 0 | 0 | 4,639 | 137,861 | 0 | 0 | 836,439 | 88,010 | 85,029 | 0 | 1,009,478 | 0 | 215,786 | 0 | 215,786 | 1,976,128 | 1,976,128 |
| | 3 | 7 | 2026 | 584,764 | 0 | 50,880 | 635,644 | 0 | 157,566 | 0 | 0 | 0 | 0 | 0 | 7,735 | 165,301 | 0 | 0 | 837,542 | 88,012 | 127,134 | 0 | 1,052,688 | 0 | 215,791 | 0 | 215,791 | 2,069,424 | 2,069,424 |
| | 4 | 8 | 2027 | 606,702 | 0 | 73,507 | 680,209 | 0 | 168,773 | 0 | 0 | 0 | 0 | 0 | 10,830 | 179,603 | 0 | 0 | 843,782 | 89,460 | 143,103 | 0 | 1,076,345 | 0 | 215,792 | 0 | 215,792 | 2,151,949 | 2,151,949 |
| | 5 | 9 | 2028 | 652,705 | 0 | 96,134 | 748,839 | 0 | 169,899 | 0 | 0 | 0 | 0 | 0 | 13,926 | 183,825 | 0 | 0 | 859,759 | 93,169 | 159,073 | 0 | 1,112,001 | 0 | 217,282 | 0 | 217,282 | 2,261,947 | 2,261,947 |
| | 6 | 10 | 2029 | 694,025 | 0 | 112,049 | 806,074 | 0 | 169,048 | 0 | 0 | 0 | 0 | 0 | 17,021 | 186,069 | 0 | 0 | 866,667 | 95,923 | 165,745 | 0 | 1,128,335 | 0 | 215,786 | 0 | 215,786 | 2,336,264 | 2,336,264 |
| | 7 | 11 | 2030 | 738,192 | 0 | 121,214 | 859,406 | 0 | 168,798 | 0 | 0 | 0 | 0 | 0 | 20,117 | 188,915 | 0 | 0 | 878,129 | 99,154 | 163,067 | 0 | 0 | 1,140,350 | 215,791 | 0 | 215,791 | 1,264,112 | 1,264,112 |
| | 8 | 12 | 2031 | 755,371 | 0 | 130,379 | 885,750 | 0 | 168,949 | 0 | 0 | 0 | 0 | 0 | 23,212 | 192,161 | 0 | 0 | 885,192 | 100,936 | 160,390 | 0 | 0 | 1,146,518 | 215,792 | 0 | 215,792 | 1,293,703 | 1,293,703 |
| | 9 | 13 | 2032 | 759,530 | 0 | 137,519 | 897,049 | 0 | 170,326 | 0 | 0 | 0 | 0 | 0 | 26,308 | 196,634 | 0 | 0 | 885,543 | 100,704 | 157,712 | 0 | 630,827 | 513,132 | 216,060 | 0 | 216,060 | 1,940,570 | 1,940,570 |
| | 10 | 14 | 2033 | 755,880 | 0 | 142,621 | 898,501 | 0 | 169,529 | 0 | 0 | 0 | 0 | 0 | 29,403 | 198,932 | 0 | 0 | 884,997 | 100,317 | 155,034 | 0 | 1,140,348 | 0 | 214,931 | 0 | 214,931 | 2,452,712 | 2,452,712 |
| | 11 | 15 | 2034 | 756,200 | 0 | 147,724 | 903,924 | 0 | 169,332 | 4,892,727 | 0 | 0 | 1,146,007 | 0 | 32,498 | 0 | 0 | 823,295 | 892,715 | 100,935 | 152,357 | 1,146,007 | | 0 | 214,923 | 0 | 214,923 | 1,118,847 | 1,118,847 |
| | 12 | 16 | 2035 | 755,127 | 0 | 152,827 | 907,954 | 0 | 169,412 | 4,892,727 | 0 | 0 | 1,141,260 | 0 | 35,594 | 0 | 0 | 823,295 | 891,300 | 100,281 | 149,679 | 1,141,260 | | 0 | 214,912 | 0 | 214,912 | 1,122,866 | 1,122,866 |
| | 13 | 17 | 2036 | 760,269 | 0 | 157,929 | 918,198 | 0 | 169,342 | 4,892,727 | 0 | 0 | 1,144,663 | 0 | 38,689 | 0 | 0 | 823,295 | 896,957 | 100,704 | 147,002 | 1,144,663 | | 0 | 216,270 | 0 | 216,270 | 1,134,468 | 1,134,468 |
| | 14 | 18 | 2037 | 756,559 | 0 | 163,032 | 919,591 | 0 | 169,384 | 724,256 | 0 | 0 | 1,140,238 | 0 | 41,785 | 0 | 0 | 121,647 | 895,597 | 100,317 | 144,324 | 1,140,238 | | 0 | 214,931 | 0 | 214,931 | 1,134,522 | 1,134,522 |
| CLOSURE | 15 | 19 | 2038 | 755,441 | 4,844,921 | 168,134 | 0 | 0 | 170,403 | 0 | 815,270 | 2,629,800 | 995,910 | 214,923 | 18,615 | 0 | 4,844,921 | 0 | 895,594 | 100,316 | 0 | 995,910 | 0 | 0 | 214,923 | 214,923 | 0 | 0 | 0 |
| | 16 | 20 | 2039 | 755,432 | 4,844,178 | 173,237 | 0 | 0 | 170,401 | 0 | 813,969 | 2,629,800 | 996,481 | 214,912 | 18,615 | 0 | 4,844,178 | 0 | 896,200 | 100,281 | 0 | 996,481 | 0 | 0 | 214,912 | 214,912 | 0 | 0 | 0 |
| | 17 | 21 | 2040 | 760,394 | 4,856,097 | 175,795 | 0 | 0 | 171,529 | 0 | 820,175 | 2,629,800 | 999,708 | 216,270 | 18,615 | 0 | 4,856,097 | 0 | 899,004 | 100,704 | 0 | 999,708 | 0 | 0 | 216,270 | 216,270 | 0 | 0 | 0 |
| | 18 | 22 | 2041 | 756,559 | 4,856,971 | 175,795 | 0 | 0 | 170,669 | 0 | 821,658 | 2,629,800 | 1,000,443 | 215,786 | 18,615 | 0 | 4,856,971 | 0 | 899,510 | 100,933 | 0 | 1,000,443 | 0 | 0 | 215,786 | 215,786 | 0 | 0 | 0 |
| | 19 | 23 | 2042 | 756,943 | 2,022,981 | 175,795 | 0 | 0 | 170,952 | 0 | 178,855 | 438,300 | 1,000,468 | 215,791 | 18,615 | 0 | 2,022,981 | 0 | 899,533 | 100,935 | 0 | 1,000,468 | 0 | 0 | 215,791 | 215,791 | 0 | 0 | 0 |
| | 20 | 24 | 2043 | 756,558 | 1,400,677 | 175,795 | 0 | 0 | 170,669 | 0 | 0 | 0 | 996,481 | 214,912 | 18,615 | 0 | 1,400,677 | 0 | 896,200 | 100,281 | 0 | 996,481 | 0 | 0 | 214,912 | 214,912 | 0 | 0 | 0 |
| | 21 | 25 | 2044 | 760,459 | 1,413,223 | 175,795 | 0 | 0 | 171,738 | 0 | 0 | 0 | 1,005,588 | 217,282 | 18,615 | 0 | 1,413,223 | 0 | 904,134 | 101,454 | 0 | 1,005,588 | 0 | 0 | 217,282 | 217,282 | 0 | 0 | 0 |
| | 22 | 26 | 2045 | 756,559 | 1,400,129 | 175,795 | 0 | 0 | 170,669 | 0 | 0 | 0 | 995,914 | 214,931 | 18,615 | 0 | 1,400,129 | 0 | 895,597 | 100,317 | 0 | 995,914 | 0 | 0 | 214,931 | 214,931 | 0 | 0 | 0 |
| | 23 | 27 | 2046 | 756,553 | 1,400,116 | 175,795 | 0 | 0 | 170,668 | 0 | 0 | 0 | 995,910 | 214,923 | 18,615 | 0 | 1,400,116 | 0 | 895,594 | 100,316 | 0 | 995,910 | 0 | 0 | 214,923 | 214,923 | 0 | 0 | 0 |
| | 24 | 28 | 2047 | 756,945 | 1,405,831 | 175,795 | 0 | 0 | 170,952 | 0 | 0 | 0 | 1,000,472 | 215,792 | 18,615 | 0 | 1,405,831 | 0 | 899,536 | 100,936 | 0 | 1,000,472 | 0 | 0 | 215,792 | 215,792 | 0 | 0 | 0 |



**NOTES:**

1. VALUES PROVIDED REPRESENT THE 50$^{TH}$ PERCENTILE PRECIPITATION CONDITIONS.
2. CELLS HIGHLIGHTED IN GREY REPRESENT WATER THAT IS NOT COLLECTED AS PART OF THE SITE WATER MANAGEMENT STRATEGY.

| # | DD/MMM/YY | ISSUED WITH LETTER NNNN-NNNN | NSP | JAK |
|---|---|---|---|---|
| REV | DATE | DESCRIPTION | PREP'D | RVW'D |

Knight Piésold CONSULTING

**TABLE 5**

**GENERATION MINING**
**MARATHON PALLADIUM PROJECT**

**SITE WATER BALANCE SUMMARY**
**ANNUAL BALANCE - MINE ROCK STORAGE AREA - 50TH PERCENTILE RESULTS**

Print Mar/02/21 11:53:38

| | MINE YEAR | MODEL YEAR | CALENDAR YEAR | STREAM 3 CATCH BASIN | | | | STREAM 2 CATCH BASIN | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INPUTS | OUTPUTS | | | INPUTS | | OUTPUTS | | | |
| | | | | RUNOFF & PRECIPITATION ($m^3$/year) | EVAPORATION ($m^3$/year) | WATER TRANSFER TO STREAM 2 CATCH BASIN ($m^3$/year) | TO PIC RIVER VIA SUB-WATERSHED 103 ($m^3$/year) | RUNOFF & PRECIPITATION ($m^3$/year) | WATER TRANSFER FROM STREAM 3 CATCH BASIN ($m^3$/year) | EVAPORATION ($m^3$/year) | STREAM 2 CATCH BASIN TO PSMF ($m^3$/year) | STREAM 2 CATCH BASIN TO CENTRAL PIT | TO PIC RIVER VIA SUB-WATERSHED 102 ($m^3$/year) |
| PRE PRODUCTION | -4 | 1 | 2020 | 275,769 | 0 | 0 | 275,769 | 431,517 | 0 | 0 | 0 | 0 | 431,517 |
| | -3 | 2 | 2021 | 268,559 | 0 | 0 | 268,559 | 420,236 | 0 | 0 | 0 | 0 | 420,236 |
| | -2 | 3 | 2022 | 269,064 | 18 | 0 | 269,046 | 430,727 | 0 | 29 | 107,682 | 0 | 323,045 |
| | -1 | 4 | 2023 | 269,649 | 18 | 0 | 269,631 | 446,321 | 0 | 31 | 446,321 | 0 | 0 |
| OPERATIONS | 1 | 5 | 2024 | 274,502 | 25 | 274,477 | 0 | 482,763 | 274,477 | 46 | 757,216 | 0 | 0 |
| | 2 | 6 | 2025 | 279,249 | 22 | 279,234 | 0 | 488,762 | 279,234 | 45 | 781,941 | 0 | 0 |
| | 3 | 7 | 2026 | 288,193 | 22 | 288,178 | 0 | 493,949 | 288,178 | 48 | 791,617 | 0 | 0 |
| | 4 | 8 | 2027 | 296,651 | 24 | 296,635 | 0 | 499,014 | 296,635 | 50 | 796,560 | 0 | 0 |
| | 5 | 9 | 2028 | 307,138 | 33 | 307,116 | 0 | 504,088 | 307,116 | 58 | 808,304 | 0 | 0 |
| | 6 | 10 | 2029 | 309,394 | 27 | 309,358 | 0 | 503,496 | 309,358 | 49 | 808,254 | 0 | 0 |
| | 7 | 11 | 2030 | 313,167 | 29 | 313,130 | 0 | 505,754 | 313,130 | 49 | 817,180 | 0 | 0 |
| | 8 | 12 | 2031 | 314,427 | 32 | 314,395 | 0 | 506,766 | 314,395 | 52 | 821,109 | 0 | 0 |
| | 9 | 13 | 2032 | 316,239 | 36 | 316,201 | 0 | 503,890 | 316,201 | 57 | 820,457 | 0 | 0 |
| | 10 | 14 | 2033 | 314,418 | 33 | 314,384 | 0 | 500,813 | 314,384 | 53 | 815,407 | 0 | 0 |
| | 11 | 15 | 2034 | 314,693 | 30 | 314,655 | 0 | 506,926 | 314,655 | 49 | 821,267 | 0 | 0 |
| | 12 | 16 | 2035 | 314,074 | 30 | 314,036 | 0 | 499,930 | 314,036 | 49 | 813,908 | 0 | 0 |
| | 13 | 17 | 2036 | 316,239 | 36 | 316,201 | 0 | 504,012 | 316,201 | 57 | 820,579 | 0 | 0 |
| | 14 | 18 | 2037 | 314,418 | 31 | 314,384 | 0 | 500,924 | 314,384 | 50 | 4,434 | 0 | 0 |
| CLOSURE | 15 | 19 | 2038 | 314,425 | 30 | 314,393 | 0 | 500,926 | 314,393 | 49 | 0 | 815,270 | 0 |
| | 16 | 20 | 2039 | 314,074 | 30 | 314,036 | 0 | 499,981 | 314,036 | 49 | 0 | 813,969 | 0 |
| | 17 | 21 | 2040 | 316,239 | 36 | 316,201 | 0 | 504,031 | 316,201 | 57 | 0 | 820,175 | 0 |
| | 18 | 22 | 2041 | 314,692 | 33 | 314,653 | 0 | 507,058 | 314,653 | 53 | 0 | 821,658 | 0 |
| | 19 | 23 | 2042 | 314,693 | 33 | 314,655 | 0 | 514,030 | 314,655 | 53 | 0 | 178,855 | 649,777 |
| | 20 | 24 | 2043 | 314,074 | | | 314,074 | 505,009 | | | | | 505,009 |
| | 21 | 25 | 2044 | 316,239 | | | 316,239 | 516,863 | | | | | 516,863 |
| | 22 | 26 | 2045 | 314,456 | | | 314,456 | 505,965 | | | | | 505,965 |
| | 23 | 27 | 2046 | 314,459 | | | 314,459 | 505,967 | | | | | 505,967 |
| | 24 | 28 | 2047 | 314,427 | | | 314,427 | 514,036 | | | | | 514,036 |

I:\1\01\00446\09\A\Correspondence\NB20-00916 - Water Balance Summary\Final\[Summary Tables and Figures Rev 0.xlsx]Table 5 MRSA

**NOTES:**

1. VALUES PROVIDED REPRESENT THE 50TH PERCENTILE PRECIPITATION CONDITIONS.
2. CELLS HIGHLIGHTED IN GREY REPRESENT WATER THAT IS NOT COLLECTED AS PART OF THE SITE WATER MANAGEMENT STRATEGY.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER NB20-00916 | MGP | JAM |

Knight Piésold CONSULTING

**TABLE 6**

**GENERATION MINING**
**MARATHON PALLADIUM PROJECT**

**SITE WATER BALANCE SUMMARY**
**ANNUAL BALANCE - STORMWATER MANAGEMENT POND AND PROCESS PLANT - 50TH PERCENTILE RESULTS**

Print Mar/02/21 11:56:13

| | MINE YEAR | MODEL YEAR | CALENDAR YEAR | STORMWATER MANAGEMENT POND | | | | | PROCESS PLANT | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INPUTS | OUTPUTS | | | | INPUTS | | OUTPUTS | | | |
| | | | | RUNOFF & PRECIPITATION ($m^3$/year) | EMBANKMENT SEEPAGE ($m^3$/year) | EVAPORATION ($m^3$/year) | WATER TRANSFER TO WMP ($m^3$/year) | TO SUB-WATERSHED 101 ($m^3$/year) | RECLAIM FROM WMP ($m^3$/year) | WATER WITH ORE ($m^3$/year) | WATER IN SLURRY TO CELL 1 ($m^3$/year) | WATER IN SLURRY TO CELL 2A ($m^3$/year) | WATER IN SLURRY TO CELL 2B ($m^3$/year) | WATER IN SLURRY TO CENTRAL PIT ($m^3$/year) |
| PRE PRODUCTION | -4 | 1 | 2020 | | | | | | | | | | | |
| | -3 | 2 | 2021 | | | | | | | | | | | |
| | -2 | 3 | 2022 | 172,340 | 886 | 0 | 171,456 | | | | | | | |
| | -1 | 4 | 2023 | 480,716 | 1,608 | 0 | 480,716 | 0 | 239,629 | 7,411 | 139,989 | 107,051 | 0 | 0 |
| OPERATIONS | 1 | 5 | 2024 | 481,823 | 1,608 | 658 | 341,088 | 0 | 5,873,119 | 181,643 | 3,431,032 | 2,623,730 | 0 | 0 |
| | 2 | 6 | 2025 | 479,767 | 1,608 | 6,312 | 475,176 | 0 | 10,843,060 | 335,352 | 6,334,431 | 4,843,977 | 0 | 0 |
| | 3 | 7 | 2026 | 478,604 | 1,608 | 3,780 | 475,728 | 0 | 10,952,180 | 338,727 | 5,894,561 | 4,892,727 | 503,622 | 0 |
| | 4 | 8 | 2027 | 479,933 | 1,608 | 4,848 | 449,436 | 0 | 10,952,180 | 338,727 | 0 | 4,892,727 | 6,398,182 | 0 |
| | 5 | 9 | 2028 | 485,463 | 1,692 | 7,008 | 456,792 | 0 | 10,952,180 | 338,727 | 0 | 4,892,727 | 6,398,182 | 0 |
| | 6 | 10 | 2029 | 485,671 | 1,728 | 13,452 | 441,276 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 7 | 11 | 2030 | 480,819 | 1,620 | 4,692 | 508,980 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 8 | 12 | 2031 | 479,252 | 1,608 | 4,944 | 474,528 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 9 | 13 | 2032 | 482,426 | 1,620 | 5,760 | 451,068 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 10 | 14 | 2033 | 482,777 | 1,692 | 15,888 | 441,168 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 11 | 15 | 2034 | 478,967 | 1,608 | 6,036 | 511,596 | 0 | 10,952,180 | 338,727 | 0 | 2,239,364 | 4,158,818 | 4,892,725 |
| | 12 | 16 | 2035 | 478,187 | 1,608 | 743 | 476,040 | 0 | 10,952,180 | 338,727 | 0 | 2,239,364 | 4,158,818 | 4,892,725 |
| | 13 | 17 | 2036 | 481,174 | 1,608 | 588 | 479,268 | 0 | 10,952,180 | 338,727 | 0 | 2,239,364 | 4,158,818 | 4,892,725 |
| | 14 | 18 | 2037 | 478,174 | 1,608 | 550 | 448,668 | 0 | 1,618,251 | 28,361 | 0 | 330,880 | 614,491 | 701,241 |
| CLOSURE | 15 | 19 | 2038 | 478,185 | 1,608 | 748 | 447,288 | 0 | | | | | | |
| | 16 | 20 | 2039 | 478,188 | 1,608 | 743 | 446,400 | 0 | | | | | | |
| | 17 | 21 | 2040 | 481,175 | 1,608 | 803 | 444,888 | 0 | | | | | | |
| | 18 | 22 | 2041 | 478,241 | 1,608 | 749 | 452,316 | 0 | | | | | | |
| | 19 | 23 | 2042 | 478,223 | 1,608 | 748 | 476,028 | 0 | | | | | | |
| | 20 | 24 | 2043 | 478,188 | | | | 478,188 | | | | | | |
| | 21 | 25 | 2044 | 481,454 | | | | 481,454 | | | | | | |
| | 22 | 26 | 2045 | 478,241 | | | | 478,241 | | | | | | |
| | 23 | 27 | 2046 | 478,223 | | | | 478,223 | | | | | | |
| | 24 | 28 | 2047 | 478,199 | | | | 478,199 | | | | | | |

I:\1\01\00446\09\A\Correspondence\NB20-00916 - Water Balance Summary\Final\[Summary Tables and Figures Rev 0.xlsx]Table 6 SWMP & Mill

**NOTES:**

1. VALUES PROVIDED REPRESENT THE 50TH PERCENTILE PRECIPITATION CONDITIONS.
2. CELLS HIGHLIGHTED IN GREY REPRESENT WATER THAT IS NOT COLLECTED AS PART OF THE SITE WATER MANAGEMENT STRATEGY.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER NB20-00916 | MGP | JAM |

Knight Piésold CONSULTING

**TABLE 7**

**GENERATION MINING**
**MARATHON PALLADIUM PROJECT**

**SITE WATER BALANCE SUMMARY**
**ANNUAL BALANCE - PROCESS SOLIDS MANAGEMENT FACILITY - 5TH PERCENTILE RESULTS**

Print Mar/02/21 11:58:17

| | | | | PROCESS SOLIDS MANAGEMENT FACILITY (CELL 1, 2A, AND 2B) | | | | | | | | | | | | | WATER MANAGEMENT POND (WMP) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INPUTS | | | | | OUTPUTS | | | | | | | | INPUTS | | | | OUTPUTS | | | | | | | |
| | MINE YEAR | MODEL YEAR | CALENDAR YEAR | RUNOFF & PRECIPITATION ($m^3$/year) | WATER WITH SLURRY ($m^3$/year) | TRANSFER FROM COLLECTION POND 1 ($m^3$/year) | TRANSFER FROM CATCH BASIN 2 | SEEPAGE PUMPBACK SYSTEM ($m^3$/year) | WATER ENTRAINED IN VOIDS ($m^3$/year) | BEDROCK SEEPAGE TO SUB-WATERSHED 105 ($m^3$/year) | BEDROCK SEEPAGE TO SUB-WATERSHED 106 ($m^3$/year) | EMBANKMENT SEEPAGE ($m^3$/year) | EVAPORATION ($m^3$/year) | TRANSFER TO WMP ($m^3$/year) | TO SUB-WATERSHED 106 ($m3$/year) | RUNOFF & PRECIPITATION ($m^3$/year) | SEEPAGE PUMPBACK SYSTEM ($m^3$/year) | WATER TRANSFER FROM CELL 1 ($m^3$/year) | WATER TRANSFER FROM SWMP ($m^3$/year) | EVAPORATION ($m^3$/year) | BEDROCK SEEPAGE TO SUB-WATERSHED 101 ($m^3$/year) | EMBANKMENT SEEPAGE ($m^3$/year) | TRANSFER TO CENTRAL PIT ($m^3$/year) | RECLAIM TO MILL ($m^3$/year) | EXCESS WATER DISCHARGE TO HARE LAKE ($m^3$/year) | TO SUB-WATERSHED 101 ($m^3$/year) |
| OPERATIONS | 1 | 5 | 2024 | 490,227 | 6,054,762 | 1,022,879 | 518,136 | 177,118 | 2,066,419 | 0 | 122,289 | 39,480 | 40,971 | 5,968,295 | 0 | 155,226 | 13,217 | 5,968,295 | 262,058 | 56,737 | 44,561 | 2,129 | 0 | 5,873,119 | 422,250 | 0 |
| | 2 | 6 | 2025 | 507,573 | 11,178,408 | 1,109,490 | 530,801 | 180,239 | 3,815,059 | 1,556 | 122,289 | 44,046 | 64,962 | 10,436,782 | 0 | 149,698 | 13,133 | 10,436,782 | 331,094 | 40,957 | 44,561 | 2,129 | 0 | 10,843,060 | 0 | 0 |
| | 3 | 7 | 2026 | 840,022 | 11,290,910 | 1,166,415 | 542,558 | 387,551 | 3,798,496 | 50,476 | 122,289 | 184,663 | 86,513 | 10,544,997 | 0 | 140,523 | 13,133 | 10,544,997 | 327,893 | 27,676 | 44,561 | 2,129 | 0 | 10,952,180 | 0 | 0 |
| | 4 | 8 | 2027 | 936,666 | 11,290,909 | 1,199,730 | 552,019 | 403,026 | 3,155,240 | 56,826 | 122,289 | 206,246 | 131,980 | 10,541,602 | 0 | 140,153 | 13,144 | 10,541,602 | 328,265 | 24,294 | 44,561 | 2,129 | 0 | 10,952,180 | 0 | 0 |
| | 5 | 9 | 2028 | 1,000,002 | 11,290,909 | 1,245,300 | 561,722 | 404,234 | 3,155,240 | 56,826 | 122,289 | 206,246 | 155,218 | 10,544,548 | 0 | 149,397 | 13,217 | 10,544,548 | 330,166 | 38,458 | 44,561 | 2,129 | 0 | 10,952,180 | 0 | 0 |
| | 6 | 10 | 2029 | 1,051,874 | 11,290,909 | 1,258,882 | 564,638 | 402,785 | 3,155,240 | 56,826 | 122,289 | 206,246 | 178,225 | 11,022,598 | 0 | 168,617 | 13,133 | 11,022,598 | 314,713 | 73,191 | 44,561 | 2,129 | 0 | 10,952,180 | 447,000 | 0 |
| | 7 | 11 | 2030 | 1,105,563 | 11,290,909 | 492,405 | 571,233 | 402,785 | 3,155,240 | 56,826 | 122,289 | 206,246 | 198,332 | 10,545,343 | 0 | 149,331 | 13,133 | 10,545,343 | 334,329 | 43,266 | 44,561 | 2,129 | 0 | 10,952,180 | 0 | 0 |
| | 8 | 12 | 2031 | 1,158,166 | 11,290,909 | 500,350 | 574,713 | 403,026 | 3,155,240 | 56,826 | 122,289 | 206,246 | 218,554 | 10,542,424 | 0 | 149,538 | 13,144 | 10,542,424 | 328,946 | 35,182 | 44,561 | 2,129 | 0 | 10,952,180 | 0 | 0 |
| | 9 | 13 | 2032 | 1,222,429 | 11,290,909 | 517,358 | 577,722 | 404,234 | 3,155,240 | 56,826 | 122,289 | 206,246 | 239,826 | 10,577,555 | 0 | 144,632 | 13,217 | 10,577,555 | 298,026 | 34,560 | 44,561 | 2,129 | 0 | 10,952,180 | 0 | 0 |
| | 10 | 14 | 2033 | 1,269,136 | 11,290,909 | 835,997 | 574,099 | 402,785 | 3,155,240 | 56,826 | 122,289 | 206,246 | 259,964 | 10,586,204 | 0 | 146,741 | 13,133 | 10,586,204 | 291,921 | 39,129 | 44,561 | 2,129 | 0 | 10,952,180 | 0 | 0 |
| | 11 | 15 | 2034 | 1,323,298 | 6,398,182 | 3,078,970 | 574,149 | 402,785 | 2,331,945 | 56,826 | 122,289 | 206,246 | 279,090 | 10,544,463 | 0 | 150,535 | 13,133 | 10,544,463 | 328,120 | 37,381 | 44,561 | 2,129 | 0 | 10,952,180 | 0 | 0 |
| | 12 | 16 | 2035 | 1,459,932 | 6,398,182 | 3,082,068 | 574,874 | 403,026 | 2,331,945 | 56,826 | 122,289 | 206,246 | 332,492 | 10,540,132 | 0 | 137,634 | 13,144 | 10,540,132 | 328,266 | 20,306 | 44,561 | 2,129 | 0 | 10,952,180 | 0 | 0 |
| | 13 | 17 | 2036 | 1,178,903 | 6,398,182 | 3,043,380 | 467,519 | 377,697 | 2,331,945 | 56,826 | 122,289 | 206,246 | 339,595 | 10,600,157 | 0 | 117,760 | 11,933 | 10,600,157 | 289,163 | 20,143 | 44,561 | 2,129 | 0 | 10,952,180 | 0 | 0 |
| | 14 | 18 | 2037 | 1,490,585 | 945,371 | 439,281 | 3,144 | 400,711 | 344,559 | 56,826 | 112,083 | 203,760 | 304,065 | 3,344,810 | 0 | 141,913 | 11,933 | 3,344,810 | 272,468 | 35,110 | 44,256 | 2,115 | 2,071,392 | 1,618,251 | 0 | 0 |
| CLOSURE | 15 | 19 | 2038 | 1,479,034 | 0 | 0 | 0 | 396,856 | 0 | 41,018 | 100,758 | 198,430 | 284,301 | 1,697,862 | 0 | 139,570 | 11,933 | 1,697,862 | 304,751 | 27,066 | 37,087 | 1,783 | 2,088,180 | 0 | 0 | 0 |
| | 16 | 20 | 2039 | 1,490,001 | 0 | 0 | 0 | 395,895 | 0 | 40,913 | 99,722 | 196,789 | 287,437 | 1,324,642 | 0 | 139,359 | 11,933 | 1,324,642 | 300,181 | 19,812 | 34,722 | 1,669 | 1,719,912 | 0 | 0 | 0 |
| | 17 | 21 | 2040 | 1,498,534 | 0 | 0 | 0 | 397,211 | 0 | 40,800 | 99,779 | 196,333 | 290,979 | 1,512,189 | 0 | 140,402 | 11,933 | 1,512,189 | 288,291 | 24,480 | 36,363 | 1,720 | 1,890,252 | 0 | 0 | 0 |
| | 18 | 22 | 2041 | 1,490,012 | 0 | 0 | 0 | 395,552 | 0 | 41,018 | 100,738 | 197,804 | 289,740 | 1,468,288 | 0 | 139,128 | 11,933 | 1,468,288 | 255,293 | 27,100 | 36,347 | 1,715 | 1,809,480 | 0 | 0 | 0 |
| | 19 | 23 | 2042 | 1,490,075 | 0 | 0 | 0 | 31,047 | 0 | 41,018 | 99,082 | 196,380 | 284,085 | 0 | 0 | 134,908 | 11,933 | 0 | 310,083 | 21,670 | 33,721 | 1,621 | 1,620 | 0 | 0 | 0 |
| | 20 | 24 | 2043 | 1,501,192 | 0 | 0 | 0 | 0 | 0 | 37,649 | 97,507 | 180,503 | 275,122 | 0 | 910,411 | 131,440 | | | | | | | | | | 131,440 |
| | 21 | 25 | 2044 | 1,498,570 | 0 | 0 | 0 | 0 | 0 | 37,312 | 88,626 | 176,975 | 273,973 | 0 | 921,684 | 134,884 | | | | | | | | | | 134,884 |
| | 22 | 26 | 2045 | 1,490,129 | 0 | 0 | 0 | 0 | 0 | 37,312 | 98,376 | 179,322 | 277,248 | 0 | 897,871 | 133,641 | | | | | | | | | | 133,641 |
| | 23 | 27 | 2046 | 1,490,004 | 0 | 0 | 0 | 0 | 0 | 35,964 | 93,453 | 172,752 | 276,333 | 0 | 911,502 | 134,760 | | | | | | | | | | 134,760 |
| | 24 | 28 | 2047 | 1,489,942 | 0 | 0 | 0 | 0 | 0 | 37,536 | 88,628 | 177,911 | 276,036 | 0 | 909,831 | 133,408 | | | | | | | | | | 133,408 |

I:\1\01\00446\09\A\Correspondence\NB20-00916 - Water Balance Summary\Final\[Summary Tables and Figures Rev 0.xlsx]Table 7 PSMF Dry

**NOTES:**
1. VALUES PROVIDED REPRESENT 5TH PERCENTILE PRECIPITATION CONDITIONS.
2. CELLS HIGHLIGHTED IN GREY REPRESENT WATER THAT IS NOT COLLECTED AS PART OF THE SITE WATER MANAGEMENT STRATEGY.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02/MAR/21 | ISSUED WITH LETTER NB20-00916 | MGP | JAM |

Knight Piésold CONSULTING

**TABLE 8**

**GENERATION MINING**
**MARATHON PALLADIUM PROJECT**

**SITE WATER BALANCE SUMMARY**
**ANNUAL BALANCE - OPEN PITS - 5TH PERCENTILE RESULTS**

Print Mar/02/21 12:50:09

| | MINE YEAR | MODEL YEAR | CALENDAR YEAR | NORTH PIT | | | | | CENTRAL PIT | | | | | | | | | | SOUTH PIT | | | | | L-8 POND | | | COLLECTION POND 1 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INPUTS | | | OUTPUTS | | INPUTS | | | | | | | OUTPUTS | | | INPUTS | | | OUTPUTS | | INPUTS | OUTPUTS | | INPUTS | OUTPUTS |
| | | | | RUNOFF & PRECIPITATION ($m^3$/year) | OVERFLOW FROM CENTRAL PIT ($m^3$/year) | GROUNDWATER INFLOW ($m^3$/year) | TRANSFER TO COLLECTION POND 1 ($m^3$/year) | OVERFLOW TO STREAM 3 CATCH BASIN ($m^3$/year) | RUNOFF & PRECIPITATION ($m^3$/year) | WATER WITH PROCESS SOLIDS SLURRY ($m^3$/year) | TRANSFER FROM STREAM 2 CATCHMENT BASIN ($m^3$/year) | TRANSFER FROM WMP ($m^3$/year) | OVERFLOW FROM SOUTH PIT ($m^3$/year) | INFLOW FROM L-8 ($m^3$/year) | GROUNDWATER INFLOW ($m^3$/year) | TRANSFER TO COLLECTION POND 1 ($m^3$/year) | OVERFLOW TO NORTH PIT ($m^3$/year) | WATER ENTRAINED IN VOIDS ($m^3$/year) | RUNOFF & PRECIPITATION ($m^3$/year) | ROM STOCKPILE RUNOFF ($m^3$/year) | GROUNDWATER INFLOW ($m^3$/year) | OVERFLOW TO CENTRAL PIT ($m^3$/year) | TRANSFER TO COLLECTION POND 1 ($m^3$/year) | RUNOFF & PRECIPITATION ($m^3$/year) | OUTFLOW TO CENTER PIT ($m^3$/year) | TRANSFER TO COLLECTION POND 1 ($m^3$/year) | INFLOW FROM OPEN PITS AND L-8 ($m^3$/year) | TRANSFER TO PSMF ($m^3$/year) |
| OPERATIONS | 1 | 5 | 2024 | 375,173 | 0 | 6,341 | 381,514 | 0 | 84,246 | 0 | 0 | 0 | 0 | 0 | 1,544 | 85,790 | 0 | 0 | 560,551 | 62,142 | 19,083 | 0 | 641,776 | 149,895 | 0 | 149,895 | 1,258,975 | 1,258,975 |
| | 2 | 6 | 2025 | 404,121 | 0 | 28,253 | 432,374 | 0 | 92,362 | 0 | 0 | 0 | 0 | 0 | 4,639 | 97,001 | 0 | 0 | 580,604 | 61,779 | 85,029 | 0 | 727,412 | 148,750 | 0 | 148,750 | 1,405,537 | 1,405,537 |
| | 3 | 7 | 2026 | 404,128 | 0 | 50,880 | 455,008 | 0 | 108,732 | 0 | 0 | 0 | 0 | 0 | 7,735 | 116,467 | 0 | 0 | 581,360 | 61,780 | 127,134 | 0 | 770,274 | 148,749 | 0 | 148,749 | 1,490,498 | 1,490,498 |
| | 4 | 8 | 2027 | 419,482 | 0 | 73,507 | 492,989 | 0 | 116,459 | 0 | 0 | 0 | 0 | 0 | 10,830 | 127,289 | 0 | 0 | 585,972 | 62,937 | 143,103 | 0 | 792,012 | 148,904 | 0 | 148,904 | 1,561,194 | 1,561,194 |
| | 5 | 9 | 2028 | 451,589 | 0 | 96,134 | 547,723 | 0 | 117,127 | 0 | 0 | 0 | 0 | 0 | 13,926 | 131,053 | 0 | 0 | 597,331 | 65,489 | 159,073 | 0 | 821,893 | 149,895 | 0 | 149,895 | 1,650,564 | 1,650,564 |
| | 6 | 10 | 2029 | 478,291 | 0 | 112,049 | 590,340 | 0 | 116,507 | 0 | 0 | 0 | 0 | 0 | 17,021 | 133,528 | 0 | 0 | 601,715 | 67,375 | 165,745 | 0 | 834,835 | 148,750 | 0 | 148,750 | 1,707,453 | 1,707,453 |
| | 7 | 11 | 2030 | 507,632 | 0 | 121,214 | 628,846 | 0 | 116,513 | 0 | 0 | 0 | 0 | 0 | 20,117 | 136,630 | 0 | 0 | 609,684 | 69,643 | 163,067 | 0 | 0 | 148,749 | 0 | 148,749 | 914,225 | 914,225 |
| | 8 | 12 | 2031 | 521,432 | 0 | 130,379 | 651,811 | 0 | 116,643 | 0 | 0 | 0 | 0 | 0 | 23,212 | 139,855 | 0 | 0 | 614,705 | 70,964 | 160,390 | 0 | 0 | 148,904 | 0 | 148,904 | 940,570 | 940,570 |
| | 9 | 13 | 2032 | 524,642 | 0 | 137,519 | 662,161 | 0 | 117,586 | 0 | 0 | 0 | 0 | 0 | 26,308 | 143,894 | 0 | 0 | 619,927 | 71,267 | 157,712 | 0 | 0 | 149,895 | 0 | 149,895 | 955,950 | 955,950 |
| | 10 | 14 | 2033 | 522,049 | 0 | 142,621 | 664,670 | 0 | 117,242 | 0 | 0 | 0 | 581,297 | 0 | 29,403 | 727,942 | 0 | 0 | 618,053 | 70,851 | 155,034 | 581,297 | 0 | 148,750 | 0 | 148,750 | 1,541,362 | 1,541,362 |
| | 11 | 15 | 2034 | 522,265 | 0 | 147,724 | 669,989 | 0 | 116,868 | 4,892,727 | 0 | 0 | 843,042 | 0 | 32,498 | 0 | 0 | 823,295 | 619,833 | 70,852 | 152,357 | 843,042 | 0 | 148,749 | 0 | 148,749 | 818,738 | 818,738 |
| | 12 | 16 | 2035 | 522,254 | 0 | 152,827 | 675,081 | 0 | 116,927 | 4,892,727 | 0 | 0 | 842,432 | 0 | 35,594 | 0 | 0 | 823,295 | 621,789 | 70,964 | 149,679 | 842,432 | 0 | 148,904 | 0 | 148,904 | 823,985 | 823,985 |
| | 13 | 17 | 2036 | 411,842 | 0 | 157,929 | 569,771 | 0 | 116,898 | 4,892,727 | 0 | 0 | 702,260 | 0 | 38,689 | 0 | 0 | 823,295 | 499,597 | 55,661 | 147,002 | 702,260 | 0 | 132,536 | 0 | 132,536 | 702,307 | 702,307 |
| | 14 | 18 | 2037 | 522,798 | 0 | 163,032 | 685,830 | 0 | 116,954 | 724,256 | 0 | 0 | 839,780 | 0 | 41,785 | 0 | 0 | 121,647 | 624,605 | 70,851 | 144,324 | 839,780 | 0 | 148,750 | 0 | 148,750 | 834,580 | 834,580 |
| CLOSURE | 15 | 19 | 2038 | 520,118 | 4,417,782 | 168,134 | 0 | 0 | 117,750 | 0 | 815,270 | 2,629,800 | 690,226 | 146,121 | 18,615 | 0 | 4,417,782 | 0 | 619,807 | 70,419 | 0 | 690,226 | 0 | 146,121 | 146,121 | 0 | 0 | 0 |
| | 16 | 20 | 2039 | 522,786 | 4,424,979 | 173,237 | 0 | 0 | 118,282 | 0 | 813,969 | 2,629,800 | 695,441 | 148,872 | 18,615 | 0 | 4,424,979 | 0 | 624,592 | 70,849 | 0 | 695,441 | 0 | 148,872 | 148,872 | 0 | 0 | 0 |
| | 17 | 21 | 2040 | 525,798 | 4,436,632 | 175,795 | 0 | 0 | 118,935 | 0 | 820,175 | 2,629,800 | 699,235 | 149,872 | 18,615 | 0 | 4,436,632 | 0 | 628,076 | 71,159 | 0 | 699,235 | 0 | 149,872 | 149,872 | 0 | 0 | 0 |
| | 18 | 22 | 2041 | 522,798 | 4,432,564 | 175,795 | 0 | 0 | 118,285 | 0 | 821,658 | 2,629,800 | 695,456 | 148,750 | 18,615 | 0 | 4,432,564 | 0 | 624,605 | 70,851 | 0 | 695,456 | 0 | 148,750 | 148,750 | 0 | 0 | 0 |
| | 19 | 23 | 2042 | 522,810 | 1,598,275 | 175,795 | 0 | 0 | 118,287 | 0 | 178,855 | 438,300 | 695,469 | 148,749 | 18,615 | 0 | 1,598,275 | 0 | 624,617 | 70,852 | 0 | 695,469 | 0 | 148,749 | 148,749 | 0 | 0 | 0 |
| | 20 | 24 | 2043 | 525,484 | 986,997 | 175,795 | 0 | 0 | 118,821 | 0 | 0 | 0 | 700,689 | 148,872 | 18,615 | 0 | 986,997 | 0 | 629,406 | 71,283 | 0 | 700,689 | 0 | 148,872 | 148,872 | 0 | 0 | 0 |
| | 21 | 25 | 2044 | 525,807 | 986,507 | 175,795 | 0 | 0 | 118,930 | 0 | 0 | 0 | 699,090 | 149,872 | 18,615 | 0 | 986,507 | 0 | 627,967 | 71,123 | 0 | 699,090 | 0 | 149,872 | 149,872 | 0 | 0 | 0 |
| | 22 | 26 | 2045 | 522,814 | 980,968 | 175,795 | 0 | 0 | 118,282 | 0 | 0 | 0 | 695,321 | 148,750 | 18,615 | 0 | 980,968 | 0 | 624,506 | 70,815 | 0 | 695,321 | 0 | 148,750 | 148,750 | 0 | 0 | 0 |
| | 23 | 27 | 2046 | 522,810 | 983,749 | 175,795 | 0 | 0 | 118,287 | 0 | 0 | 0 | 695,469 | 151,378 | 18,615 | 0 | 983,749 | 0 | 624,617 | 70,852 | 0 | 695,469 | 0 | 151,378 | 151,378 | 0 | 0 | 0 |
| | 24 | 28 | 2047 | 522,786 | 981,086 | 175,795 | 0 | 0 | 118,282 | 0 | 0 | 0 | 695,441 | 148,748 | 18,615 | 0 | 981,086 | 0 | 624,592 | 70,849 | 0 | 695,441 | 0 | 148,748 | 148,748 | 0 | 0 | 0 |

I:\1\01\00446\09A\Correspondence\NB20-00916 - Water Balance Summary\Final\[Summary Tables and Figures Rev 0.xlsx]Table 8 OpenPits Dry

**NOTES:**
1. VALUES PROVIDED REPRESENT THE 5TH PERCENTILE PRECIPITATION CONDITIONS.
2. CELLS HIGHLIGHTED IN GREY REPRESENT WATER THAT IS NOT COLLECTED AS PART OF THE SITE WATER MANAGEMENT STRATEGY.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR21 | ISSUED WITH LETTER NB20-00916 | MGP | JAM |

Knight Piésold CONSULTING

**TABLE 9**

**GENERATION MINING**
**MARATHON PALLADIUM PROJECT**

**SITE WATER BALANCE SUMMARY**
**ANNUAL BALANCE - MINE ROCK STORAGE AREA - 5TH PERCENTILE RESULTS**

Print Mar/02/21 12:51:25

| | MINE YEAR | MODEL YEAR | CALENDAR YEAR | STREAM 3 CATCH BASIN | | | | STREAM 2 CATCH BASIN | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INPUTS | OUTPUTS | | | INPUTS | | OUTPUTS | | | |
| | | | | RUNOFF & PRECIPITATION ($m^3$/year) | EVAPORATION ($m^3$/year) | WATER TRANSFER TO STREAM 2 CATCH BASIN ($m^3$/year) | TO PIC RIVER VIA SUB-WATERSHED 103 ($m^3$/year) | RUNOFF & PRECIPITATION ($m^3$/year) | WATER TRANSFER FROM STREAM 3 CATCH BASIN ($m^3$/year) | EVAPORATION ($m^3$/year) | STREAM 2 CATCH BASIN TO PSMF ($m^3$/year) | STREAM 2 CATCH BASIN TO CENTRAL PIT | TO PIC RIVER VIA SUB-WATERSHED 102 ($m^3$/year) |
| OPERATIONS | 1 | 5 | 2024 | 189,601 | 9 | 189,589 | 0 | 328,570 | 189,589 | 16 | 518,136 | 0 | 0 |
| | 2 | 6 | 2025 | 192,108 | 7 | 192,098 | 0 | 338,702 | 192,098 | 14 | 530,801 | 0 | 0 |
| | 3 | 7 | 2026 | 197,299 | 6 | 197,290 | 0 | 345,126 | 197,290 | 13 | 542,558 | 0 | 0 |
| | 4 | 8 | 2027 | 202,698 | 5 | 202,688 | 0 | 349,200 | 202,688 | 13 | 552,019 | 0 | 0 |
| | 5 | 9 | 2028 | 208,885 | 11 | 208,869 | 0 | 352,685 | 208,869 | 20 | 561,722 | 0 | 0 |
| | 6 | 10 | 2029 | 212,500 | 9 | 212,487 | 0 | 352,101 | 212,487 | 16 | 564,638 | 0 | 0 |
| | 7 | 11 | 2030 | 217,504 | 8 | 217,493 | 0 | 353,763 | 217,493 | 15 | 571,233 | 0 | 0 |
| | 8 | 12 | 2031 | 219,821 | 8 | 219,809 | 0 | 354,927 | 219,809 | 15 | 574,713 | 0 | 0 |
| | 9 | 13 | 2032 | 221,010 | 13 | 220,993 | 0 | 356,758 | 220,993 | 22 | 577,722 | 0 | 0 |
| | 10 | 14 | 2033 | 219,578 | 10 | 219,564 | 0 | 354,558 | 219,564 | 17 | 574,099 | 0 | 0 |
| | 11 | 15 | 2034 | 219,581 | 8 | 219,568 | 0 | 354,603 | 219,568 | 15 | 574,149 | 0 | 0 |
| | 12 | 16 | 2035 | 219,821 | 8 | 219,809 | 0 | 355,087 | 219,809 | 15 | 574,874 | 0 | 0 |
| | 13 | 17 | 2036 | 180,366 | 12 | 180,355 | 0 | 287,185 | 180,355 | 21 | 467,519 | 0 | 0 |
| | 14 | 18 | 2037 | 219,578 | 10 | 219,564 | 0 | 354,705 | 219,564 | 17 | 3,144 | 0 | 0 |
| CLOSURE | 15 | 19 | 2038 | 217,074 | 8 | 217,062 | 0 | 351,278 | 217,062 | 16 | 0 | 568,324 | 0 |
| | 16 | 20 | 2039 | 219,573 | 6 | 219,561 | 0 | 354,696 | 219,561 | 10 | 0 | 574,247 | 0 |
| | 17 | 21 | 2040 | 220,783 | 14 | 220,765 | 0 | 356,520 | 220,765 | 24 | 0 | 577,261 | 0 |
| | 18 | 22 | 2041 | 219,578 | 10 | 219,564 | 0 | 354,704 | 219,564 | 17 | 0 | 574,251 | 0 |
| | 19 | 23 | 2042 | 219,581 | 8 | 219,568 | 0 | 359,500 | 219,568 | 17 | 0 | 177,491 | 401,560 |
| | 20 | 24 | 2043 | 222,080 | | | 222,080 | 362,855 | | | | | 362,855 |
| | 21 | 25 | 2044 | 220,698 | | | 220,698 | 361,187 | | | | | 361,187 |
| | 22 | 26 | 2045 | 219,497 | | | 219,497 | 359,362 | | | | | 359,362 |
| | 23 | 27 | 2046 | 219,581 | | | 219,581 | 359,513 | | | | | 359,513 |
| | 24 | 28 | 2047 | 219,573 | | | 219,573 | 359,499 | | | | | 359,499 |

I:\1\01\00446\09\A\Correspondence\NB20-00916 - Water Balance Summary\Final\[Summary Tables and Figures Rev 0.xlsx]Table 9 MRSA Dry

**NOTES:**

1. VALUES PROVIDED REPRESENT THE 5TH PERCENTILE PRECIPITATION CONDITIONS.
2. CELLS HIGHLIGHTED IN GREY REPRESENT WATER THAT IS NOT COLLECTED AS PART OF THE SITE WATER MANAGEMENT STRATEGY.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER NB20-00916 | MGP | JAM |

Knight Piésold CONSULTING

**TABLE 10**

**GENERATION MINING**
**MARATHON PALLADIUM PROJECT**

**SITE WATER BALANCE SUMMARY**
**ANNUAL BALANCE - STORMWATER MANAGEMENT POND AND PROCESS PLANT - 5TH PERCENTILE RESULTS**

Print Mar/02/21 12:53:28

| | | | | STORMWATER MANAGEMENT POND | | | | | PROCESS PLANT | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INPUTS | OUTPUTS | | | | INPUTS | | OUTPUTS | | | |
| | MINE YEAR | MODEL YEAR | CALENDAR YEAR | RUNOFF & PRECIPITATION ($m^3$/year) | EMBANKMENT SEEPAGE ($m^3$/year) | EVAPORATION ($m^3$/year) | WATER TRANSFER TO WMP ($m^3$/year) | TO SUB-WATERSHED 101 ($m^3$/year) | RECLAIM FROM WMP ($m^3$/year) | WATER WITH ORE ($m^3$/year) | WATER IN SLURRY TO CELL 1 ($m^3$/year) | WATER IN SLURRY TO CELL 2A ($m^3$/year) | WATER IN SLURRY TO CELL 2B ($m^3$/year) | WATER IN SLURRY TO CENTRAL PIT ($m^3$/year) |
| OPERATIONS | 1 | 5 | 2024 | 332,102 | 1,428 | 22 | 262,056 | 0 | 5,873,119 | 181,643 | 3,431,032 | 2,623,730 | 0 | 0 |
| | 2 | 6 | 2025 | 329,667 | 1,440 | 113 | 331,092 | 0 | 10,843,060 | 335,352 | 6,334,431 | 4,843,977 | 0 | 0 |
| | 3 | 7 | 2026 | 329,626 | 1,428 | 100 | 327,888 | 0 | 10,952,180 | 338,727 | 5,894,561 | 4,892,727 | 503,622 | 0 |
| | 4 | 8 | 2027 | 329,998 | 1,428 | 100 | 328,260 | 0 | 10,952,180 | 338,727 | 0 | 4,892,727 | 6,398,182 | 0 |
| | 5 | 9 | 2028 | 332,200 | 1,548 | 113 | 330,168 | 0 | 10,952,180 | 338,727 | 0 | 4,892,727 | 6,398,182 | 0 |
| | 6 | 10 | 2029 | 330,499 | 1,560 | 1,099 | 314,712 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 7 | 11 | 2030 | 329,627 | 1,536 | 102 | 334,332 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 8 | 12 | 2031 | 329,999 | 1,500 | 100 | 328,944 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 9 | 13 | 2032 | 332,120 | 1,428 | 113 | 298,032 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 10 | 14 | 2033 | 329,731 | 1,584 | 101 | 291,924 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 11 | 15 | 2034 | 329,722 | 1,452 | 101 | 328,116 | 0 | 10,952,180 | 338,727 | 0 | 2,239,364 | 4,158,818 | 4,892,725 |
| | 12 | 16 | 2035 | 329,999 | 1,428 | 98 | 328,260 | 0 | 10,952,180 | 338,727 | 0 | 2,239,364 | 4,158,818 | 4,892,725 |
| | 13 | 17 | 2036 | 290,691 | 1,428 | 106 | 289,164 | 0 | 10,952,180 | 338,727 | 0 | 2,239,364 | 4,158,818 | 4,892,725 |
| | 14 | 18 | 2037 | 329,628 | 1,428 | 99 | 272,472 | 0 | 1,618,251 | 28,361 | 0 | 330,880 | 614,491 | 701,241 |
| CLOSURE | 15 | 19 | 2038 | 324,052 | 1,428 | 99 | 304,752 | 0 | | | | | | |
| | 16 | 20 | 2039 | 329,888 | 1,428 | 72 | 300,180 | 0 | | | | | | |
| | 17 | 21 | 2040 | 332,027 | 1,428 | 111 | 288,288 | 0 | | | | | | |
| | 18 | 22 | 2041 | 329,628 | 1,428 | 99 | 255,288 | 0 | | | | | | |
| | 19 | 23 | 2042 | 329,627 | 1,428 | 99 | 310,080 | 0 | | | | | | |
| | 20 | 24 | 2043 | 329,888 | | | | 329,888 | | | | | | |
| | 21 | 25 | 2044 | 332,027 | | | | 332,027 | | | | | | |
| | 22 | 26 | 2045 | 329,628 | | | | 329,628 | | | | | | |
| | 23 | 27 | 2046 | 335,203 | | | | 335,203 | | | | | | |
| | 24 | 28 | 2047 | 329,622 | | | | 329,622 | | | | | | |

I:\1\01\00446\09\A\Correspondence\NB20-00916 - Water Balance Summary\Final\[Summary Tables and Figures Rev 0.xlsx]Table 10 SWMP & Mill

**NOTES:**

1. VALUES PROVIDED REPRESENT THE 50TH PERCENTILE PRECIPITATION CONDITIONS.
2. CELLS HIGHLIGHTED IN GREY REPRESENT WATER THAT IS NOT COLLECTED AS PART OF THE SITE WATER MANAGEMENT STRATEGY.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER NB20-00916 | MGP | JAM |

Knight Piésold CONSULTING

**TABLE 11**

**GENERATION MINING**
**MARATHON PALLADIUM PROJECT**

**SITE WATER BALANCE SUMMARY**
**ANNUAL BALANCE - PROCESS SOLIDS MANAGEMENT FACILITY - 95TH PERCENTILE RESULTS**

Print Mar/02/21 12:55:21

| | | | | PROCESS SOLIDS MANAGEMENT FACILITY (CELL 1, 2A, AND 2B) | | | | | | | | | | | | WATER MANAGEMENT POND (WMP) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INPUTS | | | | | OUTPUTS | | | | | | | INPUTS | | | | OUTPUTS | | | | | | | |
| | MINE YEAR | MODEL YEAR | CALENDAR YEAR | RUNOFF & PRECIPITATION ($m^3$/year) | WATER WITH SLURRY ($m^3$/year) | TRANSFER FROM COLLECTION POND 1 ($m^3$/year) | TRANSFER FROM CATCH BASIN 2 | SEEPAGE PUMPBACK SYSTEM ($m^3$/year) | WATER ENTRAINED IN VOIDS ($m^3$/year) | BEDROCK SEEPAGE TO SUB-WATERSHED 105 ($m^3$/year) | BEDROCK SEEPAGE TO SUB-WATERSHED 106 ($m^3$/year) | EMBANKMENT SEEPAGE ($m^3$/year) | EVAPORATION ($m^3$/year) | TRANSFER TO WMP ($m^3$/year) | TO SUB-WATERSHED 106 ($m3$/year) | RUNOFF & PRECIPITATION ($m^3$/year) | SEEPAGE PUMPBACK SYSTEM ($m^3$/year) | WATER TRANSFER FROM CELL 1 ($m^3$/year) | WATER TRANSFER FROM SWMP ($m^3$/year) | EVAPORATION ($m^3$/year) | BEDROCK SEEPAGE TO SUB-WATERSHED 101 ($m^3$/year) | EMBANKMENT SEEPAGE ($m^3$/year) | TRANSFER TO CENTRAL PIT ($m^3$/year) | RECLAIM TO MILL ($m^3$/year) | EXCESS WATER DISCHARGE TO HARE LAKE ($m^3$/year) | TO SUB-WATERSHED 101 ($m^3$/year) |
| OPERATIONS | 1 | 5 | 2024 | 892,513 | 6,054,762 | 1,975,560 | 952,859 | 293,449 | 2,066,419 | 0 | 122,289 | 39,480 | 42,336 | 8,234,933 | 0 | 563,197 | 22,886 | 8,234,933 | 430,243 | 337,262 | 44,561 | 2,129 | 0 | 5,873,119 | 2,994,188 | 0 |
| | 2 | 6 | 2025 | 923,803 | 11,178,408 | 2,090,209 | 976,153 | 303,744 | 3,815,059 | 4,689 | 122,289 | 52,454 | 65,831 | 11,638,215 | 0 | 442,726 | 22,781 | 11,638,215 | 595,477 | 288,449 | 44,561 | 2,129 | 0 | 10,843,060 | 1,521,000 | 0 |
| | 3 | 7 | 2026 | 1,557,642 | 11,290,910 | 2,165,099 | 1,002,179 | 562,060 | 3,798,496 | 54,560 | 122,289 | 198,707 | 87,898 | 12,026,472 | 0 | 472,280 | 23,019 | 12,026,472 | 602,444 | 337,345 | 44,561 | 2,129 | 0 | 10,952,180 | 1,788,000 | 0 |
| | 4 | 8 | 2027 | 1,767,833 | 11,290,909 | 2,251,353 | 1,029,076 | 569,347 | 3,155,240 | 56,826 | 122,289 | 206,246 | 133,744 | 12,888,858 | 0 | 625,677 | 22,544 | 12,888,858 | 545,387 | 407,596 | 44,561 | 2,129 | 0 | 10,952,180 | 2,676,000 | 0 |
| | 5 | 9 | 2028 | 1,788,368 | 11,290,909 | 2,266,848 | 1,019,309 | 573,244 | 3,155,240 | 56,826 | 122,289 | 206,246 | 157,069 | 12,711,531 | 0 | 549,528 | 22,890 | 12,711,531 | 608,922 | 409,439 | 44,561 | 2,129 | 0 | 10,952,180 | 2,484,562 | 0 |
| | 6 | 10 | 2029 | 1,905,414 | 11,290,909 | 2,288,601 | 1,021,586 | 570,014 | 3,155,240 | 56,826 | 122,289 | 206,246 | 180,755 | 12,936,730 | 0 | 580,089 | 22,786 | 12,936,730 | 579,099 | 418,334 | 44,561 | 2,129 | 0 | 10,952,180 | 2,701,500 | 0 |
| | 7 | 11 | 2030 | 1,997,078 | 11,290,909 | 1,057,063 | 1,030,450 | 569,945 | 3,155,240 | 56,826 | 122,289 | 206,246 | 199,859 | 12,065,700 | 0 | 497,845 | 22,781 | 12,065,700 | 722,826 | 319,032 | 44,561 | 2,129 | 0 | 10,952,180 | 1,991,250 | 0 |
| | 8 | 12 | 2031 | 2,092,798 | 11,290,909 | 1,068,356 | 1,035,523 | 571,231 | 3,155,240 | 56,826 | 122,289 | 206,246 | 220,376 | 12,113,033 | 0 | 479,361 | 22,782 | 12,113,033 | 609,881 | 308,437 | 44,561 | 2,129 | 0 | 10,952,180 | 1,917,750 | 0 |
| | 9 | 13 | 2032 | 2,202,397 | 11,290,909 | 1,733,583 | 1,040,692 | 573,244 | 3,155,240 | 56,826 | 122,289 | 206,246 | 241,691 | 12,780,781 | 0 | 575,943 | 22,890 | 12,780,781 | 564,471 | 410,965 | 44,561 | 2,129 | 0 | 10,952,180 | 2,534,250 | 0 |
| | 10 | 14 | 2033 | 2,287,964 | 11,290,909 | 2,179,461 | 1,034,721 | 570,014 | 3,155,240 | 56,826 | 122,289 | 206,246 | 262,548 | 13,155,705 | 0 | 636,723 | 22,786 | 13,155,705 | 535,914 | 419,008 | 44,561 | 2,129 | 0 | 10,952,180 | 2,933,250 | 0 |
| | 11 | 15 | 2034 | 2,391,812 | 6,398,182 | 3,572,277 | 1,034,796 | 569,945 | 2,331,945 | 56,826 | 122,289 | 206,246 | 281,553 | 12,069,597 | 0 | 545,846 | 22,781 | 12,069,597 | 728,400 | 362,254 | 44,561 | 2,129 | 0 | 10,952,180 | 2,005,500 | 0 |
| | 12 | 16 | 2035 | 2,623,754 | 6,398,182 | 3,575,558 | 1,035,738 | 571,231 | 2,331,945 | 56,826 | 122,289 | 206,246 | 333,769 | 11,409,722 | 0 | 401,199 | 22,782 | 11,409,722 | 671,104 | 197,937 | 44,561 | 2,129 | 0 | 10,952,180 | 1,308,000 | 0 |
| | 13 | 17 | 2036 | 2,669,514 | 6,398,182 | 3,592,542 | 1,040,907 | 573,244 | 2,331,945 | 56,826 | 122,289 | 206,246 | 341,866 | 11,056,411 | 0 | 339,185 | 22,890 | 11,056,411 | 617,302 | 124,918 | 44,561 | 2,129 | 0 | 10,952,180 | 912,000 | 0 |
| | 14 | 18 | 2037 | 2,676,311 | 945,371 | 442,080 | 6,738 | 570,014 | 344,559 | 56,826 | 122,289 | 206,246 | 344,853 | 3,046,807 | 0 | 511,451 | 22,890 | 3,046,807 | 605,001 | 336,008 | 44,561 | 2,129 | 2,185,200 | 1,618,251 | 0 | 0 |
| CLOSURE | 15 | 19 | 2038 | 2,676,006 | 0 | 0 | 0 | 569,945 | 0 | 41,018 | 133,791 | 206,246 | 344,861 | 1,846,356 | 0 | 620,330 | 22,890 | 1,846,356 | 605,731 | 419,073 | 44,305 | 2,129 | 2,629,800 | 0 | 0 | 0 |
| | 16 | 20 | 2039 | 2,677,808 | 0 | 0 | 0 | 569,543 | 0 | 41,018 | 133,791 | 206,246 | 345,400 | 1,849,620 | 0 | 614,436 | 22,890 | 1,849,620 | 608,361 | 419,073 | 44,305 | 2,129 | 2,629,800 | 0 | 0 | 0 |
| | 17 | 21 | 2040 | 2,687,675 | 0 | 0 | 0 | 571,403 | 0 | 41,018 | 133,791 | 206,246 | 345,471 | 1,841,024 | 0 | 614,512 | 22,890 | 1,841,024 | 616,881 | 419,073 | 44,305 | 2,129 | 2,629,800 | 0 | 0 | 0 |
| | 18 | 22 | 2041 | 2,675,968 | 0 | 0 | 0 | 568,910 | 0 | 41,018 | 133,791 | 206,246 | 345,308 | 1,850,098 | 0 | 609,120 | 22,890 | 1,850,098 | 613,199 | 419,073 | 44,305 | 2,129 | 2,629,800 | 0 | 0 | 0 |
| | 19 | 23 | 2042 | 2,675,736 | 0 | 0 | 0 | 38,472 | 0 | 41,018 | 133,791 | 205,428 | 344,960 | 0 | 0 | 590,078 | 22,890 | 0 | 620,208 | 419,073 | 44,305 | 2,129 | 438,300 | 0 | 0 | 0 |
| | 20 | 24 | 2043 | 2,677,638 | 0 | 0 | 0 | 0 | 0 | 41,018 | 133,791 | 203,846 | 344,577 | 0 | 1,954,406 | 480,118 | | | | | | | | | | 480,118 |
| | 21 | 25 | 2044 | 2,688,010 | 0 | 0 | 0 | 0 | 0 | 41,018 | 133,791 | 203,846 | 344,439 | 0 | 1,964,916 | 356,013 | | | | | | | | | | 356,013 |
| | 22 | 26 | 2045 | 2,676,529 | 0 | 0 | 0 | 0 | 0 | 41,018 | 133,791 | 203,846 | 344,363 | 0 | 1,953,511 | 260,122 | | | | | | | | | | 260,122 |
| | 23 | 27 | 2046 | 2,676,583 | 0 | 0 | 0 | 0 | 0 | 41,018 | 133,791 | 203,846 | 344,290 | 0 | 1,953,638 | 260,000 | | | | | | | | | | 260,000 |
| | 24 | 28 | 2047 | 2,678,108 | 0 | 0 | 0 | 0 | 0 | 41,018 | 133,791 | 203,846 | 343,799 | 0 | 1,955,654 | 260,025 | | | | | | | | | | 260,025 |

I:\1\01\00446\09\A\Correspondence\NB20-00916 - Water Balance Summary\Final\[Summary Tables and Figures Rev 0.xlsx]Table 11 PSMF Wet

**NOTES:**
1. VALUES PROVIDED REPRESENT 5$^{TH}$ PERCENTILE PRECIPITATION CONDITIONS.
2. CELLS HIGHLIGHTED IN GREY REPRESENT WATER THAT IS NOT COLLECTED AS PART OF THE SITE WATER MANAGEMENT STRATEGY.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR21 | ISSUED WITH LETTER NB20-00916 | MGP | JAM |

Knight Piésold CONSULTING

**TABLE 12**

**GENERATION MINING**
**MARATHON PALLADIUM PROJECT**

**SITE WATER BALANCE SUMMARY**
**ANNUAL BALANCE - OPEN PITS - 95TH PERCENTILE RESULTS**

Print Mar/02/21 12:57:15

| | MINE YEAR | MODEL YEAR | CALENDAR YEAR | NORTH PIT | | | | | CENTRAL PIT | | | | | | | | | | SOUTH PIT | | | | | L-8 POND | | | COLLECTION POND 1 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INPUTS | | | OUTPUTS | | INPUTS | | | | | | | OUTPUTS | | | INPUTS | | | OUTPUTS | | INPUTS | OUTPUTS | | INPUTS | OUTPUTS |
| | | | | RUNOFF & PRECIPITATION ($m^3$/year) | OVERFLOW FROM CENTRAL PIT ($m^3$/year) | GROUNDWATER INFLOW ($m^3$/year) | TRANSFER TO COLLECTION POND 1 ($m^3$/year) | OVERFLOW TO STREAM 3 CATCH BASIN ($m^3$/year) | RUNOFF & PRECIPITATION ($m^3$/year) | WATER WITH PROCESS SOLIDS SLURRY ($m^3$/year) | TRANSFER FROM STREAM 2 CATCHMENT BASIN ($m^3$/year) | TRANSFER FROM WMP ($m^3$/year) | OVERFLOW FROM SOUTH PIT ($m^3$/year) | INFLOW FROM L-8 ($m^3$/year) | GROUNDWATER INFLOW ($m^3$/year) | TRANSFER TO COLLECTION POND 1 ($m^3$/year) | OVERFLOW TO NORTH PIT ($m^3$/year) | WATER ENTRAINED IN VOIDS ($m^3$/year) | RUNOFF & PRECIPITATION ($m^3$/year) | ROM STOCKPILE RUNOFF ($m^3$/year) | GROUNDWATER INFLOW ($m^3$/year) | OVERFLOW TO CENTRAL PIT ($m^3$/year) | TRANSFER TO COLLECTION POND 1 ($m^3$/year) | RUNOFF & PRECIPITATION ($m^3$/year) | OUTFLOW TO CENTER PIT ($m^3$/year) | TRANSFER TO COLLECTION POND 1 ($m^3$/year) | INFLOW FROM OPEN PITS AND L-8 ($m^3$/year) | TRANSFER TO PSMF ($m^3$/year) |
| OPERATIONS | 1 | 5 | 2024 | 684,740 | 0 | 6,341 | 691,081 | 0 | 153,594 | 0 | 0 | 0 | 0 | 0 | 1,544 | 155,138 | 0 | 0 | 1,011,489 | 110,619 | 19,083 | 0 | 1,141,191 | 280,608 | 0 | 280,608 | 2,268,018 | 2,268,018 |
| | 2 | 6 | 2025 | 733,001 | 0 | 28,253 | 761,254 | 0 | 167,531 | 0 | 0 | 0 | 0 | 0 | 4,639 | 172,170 | 0 | 0 | 1,046,872 | 110,223 | 85,029 | 0 | 1,242,124 | 279,185 | 0 | 279,185 | 2,454,733 | 2,454,733 |
| | 3 | 7 | 2026 | 741,773 | 0 | 50,880 | 792,653 | 0 | 196,956 | 0 | 0 | 0 | 0 | 0 | 7,735 | 204,691 | 0 | 0 | 1,059,438 | 111,312 | 127,134 | 0 | 1,297,884 | 282,403 | 0 | 282,403 | 2,577,631 | 2,577,631 |
| | 4 | 8 | 2027 | 791,874 | 0 | 73,507 | 865,381 | 0 | 224,086 | 0 | 0 | 0 | 0 | 0 | 10,830 | 234,916 | 0 | 0 | 1,108,872 | 120,185 | 143,103 | 0 | 1,372,160 | 275,974 | 0 | 275,974 | 2,748,431 | 2,748,431 |
| | 5 | 9 | 2028 | 805,053 | 0 | 96,134 | 901,187 | 0 | 207,800 | 0 | 0 | 0 | 0 | 0 | 13,926 | 221,726 | 0 | 0 | 1,062,386 | 115,458 | 159,073 | 0 | 1,336,917 | 280,655 | 0 | 280,655 | 2,740,485 | 2,740,485 |
| | 6 | 10 | 2029 | 859,286 | 0 | 112,049 | 971,335 | 0 | 208,223 | 0 | 0 | 0 | 0 | 0 | 17,021 | 225,244 | 0 | 0 | 1,082,628 | 120,167 | 165,745 | 0 | 1,368,540 | 279,249 | 0 | 279,249 | 2,844,368 | 2,844,368 |
| | 7 | 11 | 2030 | 909,176 | 0 | 121,214 | 1,030,390 | 0 | 208,230 | 0 | 0 | 0 | 0 | 0 | 20,117 | 228,347 | 0 | 0 | 1,096,282 | 124,210 | 163,067 | 0 | 0 | 279,189 | 0 | 279,189 | 1,537,926 | 1,537,926 |
| | 8 | 12 | 2031 | 932,966 | 0 | 130,379 | 1,063,345 | 0 | 208,598 | 0 | 0 | 0 | 0 | 0 | 23,212 | 231,810 | 0 | 0 | 1,105,000 | 126,408 | 160,390 | 0 | 0 | 279,193 | 0 | 279,193 | 1,574,348 | 1,574,348 |
| | 9 | 13 | 2032 | 936,845 | 0 | 137,519 | 1,074,364 | 0 | 209,846 | 0 | 0 | 0 | 0 | 0 | 26,308 | 236,154 | 0 | 0 | 1,112,507 | 126,966 | 157,712 | 0 | 1,372,542 | 280,655 | 0 | 280,655 | 2,963,715 | 2,963,715 |
| | 10 | 14 | 2033 | 933,122 | 0 | 142,621 | 1,075,743 | 0 | 209,376 | 0 | 0 | 0 | 0 | 0 | 29,403 | 238,779 | 0 | 0 | 1,110,278 | 126,346 | 155,034 | 0 | 1,391,658 | 279,249 | 0 | 279,249 | 2,985,429 | 2,985,429 |
| | 11 | 15 | 2034 | 933,445 | 0 | 147,724 | 1,081,169 | 0 | 210,880 | 4,892,727 | 0 | 0 | 1,391,909 | 0 | 32,498 | 0 | 0 | 823,295 | 1,113,205 | 126,347 | 152,357 | 1,391,909 | 0 | 279,189 | 0 | 279,189 | 1,360,358 | 1,360,358 |
| | 12 | 16 | 2035 | 934,238 | 0 | 152,827 | 1,087,065 | 0 | 208,993 | 4,892,727 | 0 | 0 | 1,392,770 | 0 | 35,594 | 0 | 0 | 823,295 | 1,116,683 | 126,408 | 149,679 | 1,392,770 | 0 | 279,193 | 0 | 279,193 | 1,366,258 | 1,366,258 |
| | 13 | 17 | 2036 | 938,123 | 0 | 157,929 | 1,096,052 | 0 | 209,164 | 4,892,727 | 0 | 0 | 1,398,193 | 0 | 38,689 | 0 | 0 | 823,295 | 1,124,225 | 126,966 | 147,002 | 1,398,193 | 0 | 280,655 | 0 | 280,655 | 1,376,707 | 1,376,707 |
| | 14 | 18 | 2037 | 934,283 | 0 | 163,032 | 1,097,315 | 0 | 209,298 | 724,256 | 0 | 0 | 1,391,729 | 0 | 41,785 | 0 | 0 | 121,647 | 1,121,059 | 126,346 | 144,324 | 1,391,729 | 0 | 279,249 | 0 | 279,249 | 1,376,564 | 1,376,564 |
| CLOSURE | 15 | 19 | 2038 | 934,289 | 5,201,284 | 168,134 | 0 | 0 | 210,994 | 0 | 815,270 | 2,629,800 | 1,247,416 | 279,189 | 18,615 | 0 | 5,201,284 | 0 | 1,121,069 | 126,347 | 0 | 1,247,416 | 0 | 279,189 | 279,189 | 0 | 0 | 0 |
| | 16 | 20 | 2039 | 934,765 | 5,200,718 | 173,237 | 0 | 0 | 211,101 | 0 | 813,969 | 2,629,800 | 1,248,040 | 279,193 | 18,615 | 0 | 5,200,718 | 0 | 1,121,632 | 126,408 | 0 | 1,248,040 | 0 | 279,193 | 279,193 | 0 | 0 | 0 |
| | 17 | 21 | 2040 | 938,331 | 5,214,376 | 175,795 | 0 | 0 | 211,913 | 0 | 820,175 | 2,629,800 | 1,253,218 | 280,655 | 18,615 | 0 | 5,214,376 | 0 | 1,126,252 | 126,966 | 0 | 1,253,218 | 0 | 280,655 | 280,655 | 0 | 0 | 0 |
| | 18 | 22 | 2041 | 934,283 | 5,207,720 | 175,795 | 0 | 0 | 210,993 | 0 | 821,658 | 2,629,800 | 1,247,405 | 279,249 | 18,615 | 0 | 5,207,720 | 0 | 1,121,059 | 126,346 | 0 | 1,247,405 | 0 | 279,249 | 279,249 | 0 | 0 | 0 |
| | 19 | 23 | 2042 | 934,289 | 2,377,141 | 175,795 | 0 | 0 | 210,994 | 0 | 178,855 | 438,300 | 1,247,416 | 282,961 | 18,615 | 0 | 2,377,141 | 0 | 1,121,069 | 126,347 | 0 | 1,247,416 | 0 | 282,961 | 282,961 | 0 | 0 | 0 |
| | 20 | 24 | 2043 | 934,765 | 1,756,949 | 175,795 | 0 | 0 | 211,101 | 0 | 0 | 0 | 1,248,040 | 279,193 | 18,615 | 0 | 1,756,949 | 0 | 1,121,632 | 126,408 | 0 | 1,248,040 | 0 | 279,193 | 279,193 | 0 | 0 | 0 |
| | 21 | 25 | 2044 | 938,331 | 1,764,401 | 175,795 | 0 | 0 | 211,913 | 0 | 0 | 0 | 1,253,218 | 280,655 | 18,615 | 0 | 1,764,401 | 0 | 1,126,252 | 126,966 | 0 | 1,253,218 | 0 | 280,655 | 280,655 | 0 | 0 | 0 |
| | 22 | 26 | 2045 | 934,283 | 1,756,262 | 175,795 | 0 | 0 | 210,993 | 0 | 0 | 0 | 1,247,405 | 279,249 | 18,615 | 0 | 1,756,262 | 0 | 1,121,059 | 126,346 | 0 | 1,247,405 | 0 | 279,249 | 279,249 | 0 | 0 | 0 |
| | 23 | 27 | 2046 | 934,289 | 1,756,214 | 175,795 | 0 | 0 | 210,994 | 0 | 0 | 0 | 1,247,416 | 279,189 | 18,615 | 0 | 1,756,214 | 0 | 1,121,069 | 126,347 | 0 | 1,247,416 | 0 | 279,189 | 279,189 | 0 | 0 | 0 |
| | 24 | 28 | 2047 | 934,765 | 1,756,949 | 175,795 | 0 | 0 | 211,101 | 0 | 0 | 0 | 1,248,040 | 279,193 | 18,615 | 0 | 1,756,949 | 0 | 1,121,632 | 126,408 | 0 | 1,248,040 | 0 | 279,193 | 279,193 | 0 | 0 | 0 |

I:\1\01\00446\09A\Correspondence\NB20-00916 - Water Balance Summary\Final\[Summary Tables and Figures Rev 0.xlsx]Table 12 OpenPits Wet

**NOTES:**
1. VALUES PROVIDED REPRESENT THE 5TH PERCENTILE PRECIPITATION CONDITIONS.
2. CELLS HIGHLIGHTED IN GREY REPRESENT WATER THAT IS NOT COLLECTED AS PART OF THE SITE WATER MANAGEMENT STRATEGY.

| 0 | 02MAR21 | ISSUED WITH LETTER NB20-00916 | MGP | JAM |
|---|---|---|---|---|
| REV | DATE | DESCRIPTION | PREPD | RVWD |

Knight Piésold CONSULTING

**TABLE 13**

**GENERATION MINING**
**MARATHON PALLADIUM PROJECT**

**SITE WATER BALANCE SUMMARY**
**ANNUAL BALANCE - MINE ROCK STORAGE AREA - 95TH PERCENTILE RESULTS**

Print Mar/02/21 12:58:57

| | MINE YEAR | MODEL YEAR | CALENDAR YEAR | STREAM 3 CATCH BASIN | | | | STREAM 2 CATCH BASIN | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INPUTS | OUTPUTS | | | INPUTS | | OUTPUTS | | | |
| | | | | RUNOFF & PRECIPITATION ($m^3$/year) | EVAPORATION ($m^3$/year) | WATER TRANSFER TO STREAM 2 CATCH BASIN ($m^3$/year) | TO PIC RIVER VIA SUB-WATERSHED 103 ($m^3$/year) | RUNOFF & PRECIPITATION ($m^3$/year) | WATER TRANSFER FROM STREAM 3 CATCH BASIN ($m^3$/year) | EVAPORATION ($m^3$/year) | STREAM 2 CATCH BASIN TO PSMF ($m^3$/year) | STREAM 2 CATCH BASIN TO CENTRAL PIT ($m^3$/year) | TO PIC RIVER VIA SUB-WATERSHED 102 ($m^3$/year) |
| OPERATIONS | 1 | 5 | 2024 | 354,525 | 40 | 354,489 | 0 | 603,500 | 354,489 | 69 | 952,859 | 0 | 0 |
| | 2 | 6 | 2025 | 357,008 | 36 | 356,958 | 0 | 615,629 | 356,958 | 70 | 976,153 | 0 | 0 |
| | 3 | 7 | 2026 | 369,846 | 38 | 369,810 | 0 | 632,440 | 369,810 | 75 | 1,002,179 | 0 | 0 |
| | 4 | 8 | 2027 | 373,536 | 40 | 373,504 | 0 | 655,630 | 373,504 | 77 | 1,029,076 | 0 | 0 |
| | 5 | 9 | 2028 | 384,120 | 51 | 384,065 | 0 | 635,340 | 384,065 | 88 | 1,019,309 | 0 | 0 |
| | 6 | 10 | 2029 | 388,239 | 48 | 388,187 | 0 | 634,242 | 388,187 | 80 | 1,021,586 | 0 | 0 |
| | 7 | 11 | 2030 | 394,873 | 51 | 394,818 | 0 | 636,830 | 394,818 | 80 | 1,030,450 | 0 | 0 |
| | 8 | 12 | 2031 | 398,099 | 53 | 398,042 | 0 | 638,223 | 398,042 | 81 | 1,035,523 | 0 | 0 |
| | 9 | 13 | 2032 | 400,070 | 59 | 400,005 | 0 | 641,141 | 400,005 | 90 | 1,040,692 | 0 | 0 |
| | 10 | 14 | 2033 | 397,490 | 53 | 397,432 | 0 | 638,028 | 397,432 | 81 | 1,034,721 | 0 | 0 |
| | 11 | 15 | 2034 | 397,493 | 53 | 397,435 | 0 | 638,097 | 397,435 | 81 | 1,034,796 | 0 | 0 |
| | 12 | 16 | 2035 | 398,099 | 53 | 398,042 | 0 | 638,472 | 398,042 | 81 | 1,035,738 | 0 | 0 |
| | 13 | 17 | 2036 | 400,070 | 59 | 400,005 | 0 | 641,391 | 400,005 | 90 | 1,040,907 | 0 | 0 |
| | 14 | 18 | 2037 | 397,490 | 53 | 397,432 | 0 | 638,255 | 397,432 | 81 | 6,738 | 0 | 0 |
| CLOSURE | 15 | 19 | 2038 | 397,493 | 53 | 397,435 | 0 | 638,262 | 397,435 | 81 | 0 | 1,035,616 | 0 |
| | 16 | 20 | 2039 | 398,099 | 53 | 398,042 | 0 | 638,574 | 398,042 | 81 | 0 | 1,036,535 | 0 |
| | 17 | 21 | 2040 | 400,070 | 59 | 400,005 | 0 | 641,431 | 400,005 | 90 | 0 | 1,041,346 | 0 |
| | 18 | 22 | 2041 | 397,490 | 53 | 397,432 | 0 | 638,254 | 397,432 | 81 | 0 | 1,035,605 | 0 |
| | 19 | 23 | 2042 | 392,418 | 79 | 392,353 | 0 | 646,389 | 392,353 | 81 | 0 | 174,410 | 864,251 |
| | 20 | 24 | 2043 | 397,503 | | | 397,503 | 646,707 | | | | | 646,707 |
| | 21 | 25 | 2044 | 399,506 | | | 399,506 | 649,580 | | | | | 649,580 |
| | 22 | 26 | 2045 | 397,490 | | | 397,490 | 646,383 | | | | | 646,383 |
| | 23 | 27 | 2046 | 397,493 | | | 397,493 | 646,390 | | | | | 646,390 |
| | 24 | 28 | 2047 | 397,503 | | | 397,503 | 646,707 | | | | | 646,707 |

I:\1\01\00446\09\A\Correspondence\NB20-00916 - Water Balance Summary\Final\[Summary Tables and Figures Rev 0.xlsx]Table 13 MRSA Dry Wet

**NOTES:**

1. VALUES PROVIDED REPRESENT THE 5TH PERCENTILE PRECIPITATION CONDITIONS.
2. CELLS HIGHLIGHTED IN GREY REPRESENT WATER THAT IS NOT COLLECTED AS PART OF THE SITE WATER MANAGEMENT STRATEGY.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER NB20-00916 | MGP | JAM |

Knight Piésold CONSULTING

**TABLE 14**

**GENERATION MINING**
**MARATHON PALLADIUM PROJECT**

**SITE WATER BALANCE SUMMARY**
**ANNUAL BALANCE - STORMWATER MANAGEMENT POND AND PROCESS PLANT - 95TH PERCENTILE RESULTS**

Print Mar/02/21 13:00:47

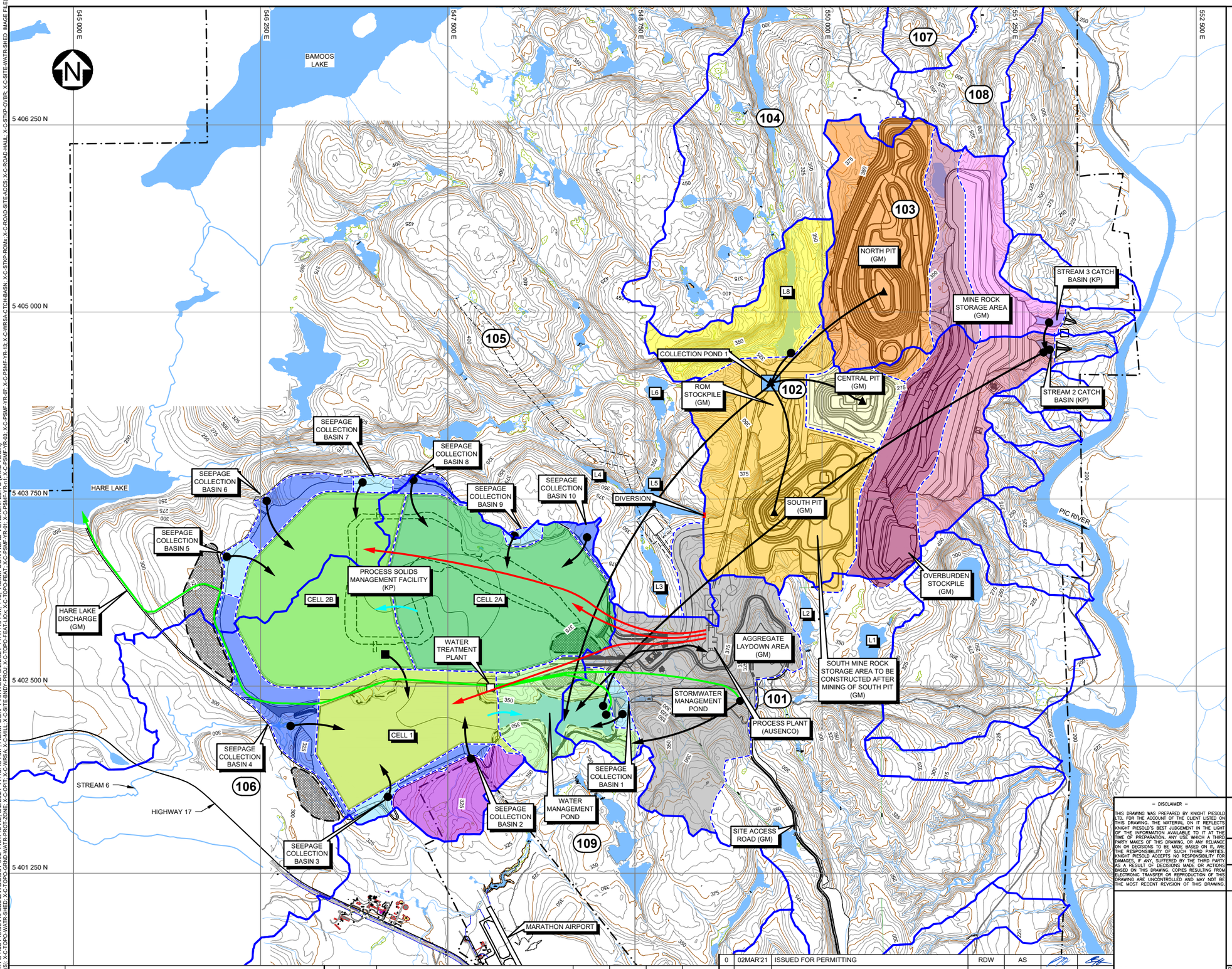
| | MINE YEAR | MODEL YEAR | CALENDAR YEAR | STORMWATER MANAGEMENT POND | | | | | PROCESS PLANT | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INPUTS | OUTPUTS | | | | INPUTS | | OUTPUTS | | | |
| | | | | RUNOFF & PRECIPITATION ($m^3$/year) | EMBANKMENT SEEPAGE ($m^3$/year) | EVAPORATION ($m^3$/year) | WATER TRANSFER TO WMP ($m^3$/year) | TO SUB-WATERSHED 101 ($m^3$/year) | RECLAIM FROM WMP ($m^3$/year) | WATER WITH ORE ($m^3$/year) | WATER IN SLURRY TO CELL 1 ($m^3$/year) | WATER IN SLURRY TO CELL 2A ($m^3$/year) | WATER IN SLURRY TO CELL 2B ($m^3$/year) | WATER IN SLURRY TO CENTRAL PIT ($m^3$/year) |
| OPERATIONS | 1 | 5 | 2024 | 622,691 | 1,668 | 4,116 | 430,248 | 0 | 5,873,119 | 181,643 | 3,431,032 | 2,623,730 | 0 | 0 |
| | 2 | 6 | 2025 | 628,299 | 1,656 | 21,156 | 595,476 | 0 | 10,843,060 | 335,352 | 6,334,431 | 4,843,977 | 0 | 0 |
| | 3 | 7 | 2026 | 634,943 | 1,788 | 20,004 | 602,448 | 0 | 10,952,180 | 338,727 | 5,894,561 | 4,892,727 | 503,622 | 0 |
| | 4 | 8 | 2027 | 627,880 | 1,788 | 21,156 | 545,388 | 0 | 10,952,180 | 338,727 | 0 | 4,892,727 | 6,398,182 | 0 |
| | 5 | 9 | 2028 | 635,319 | 2,040 | 23,220 | 608,928 | 0 | 10,952,180 | 338,727 | 0 | 4,892,727 | 6,398,182 | 0 |
| | 6 | 10 | 2029 | 629,499 | 2,004 | 23,808 | 579,096 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 7 | 11 | 2030 | 629,618 | 2,124 | 24,420 | 722,820 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 8 | 12 | 2031 | 626,760 | 1,908 | 23,808 | 609,876 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 9 | 13 | 2032 | 635,210 | 1,788 | 23,232 | 564,468 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 10 | 14 | 2033 | 629,855 | 1,980 | 25,536 | 535,908 | 0 | 10,952,180 | 338,727 | 0 | 7,132,091 | 4,158,818 | 0 |
| | 11 | 15 | 2034 | 628,923 | 2,124 | 25,200 | 728,400 | 0 | 10,952,180 | 338,727 | 0 | 2,239,364 | 4,158,818 | 4,892,725 |
| | 12 | 16 | 2035 | 622,015 | 1,800 | 11,508 | 671,100 | 0 | 10,952,180 | 338,727 | 0 | 2,239,364 | 4,158,818 | 4,892,725 |
| | 13 | 17 | 2036 | 624,611 | 1,608 | 8,496 | 617,304 | 0 | 10,952,180 | 338,727 | 0 | 2,239,364 | 4,158,818 | 4,892,725 |
| | 14 | 18 | 2037 | 621,816 | 1,776 | 15,108 | 605,004 | 0 | 1,618,251 | 28,361 | 0 | 330,880 | 614,491 | 701,241 |
| CLOSURE | 15 | 19 | 2038 | 622,316 | 2,112 | 21,516 | 605,736 | 0 | | | | | | |
| | 16 | 20 | 2039 | 620,213 | 2,124 | 24,924 | 608,364 | 0 | | | | | | |
| | 17 | 21 | 2040 | 623,223 | 2,124 | 29,592 | 616,884 | 0 | | | | | | |
| | 18 | 22 | 2041 | 618,264 | 2,124 | 33,624 | 613,200 | 0 | | | | | | |
| | 19 | 23 | 2042 | 623,491 | 2,124 | 33,912 | 620,208 | 0 | | | | | | |
| | 20 | 24 | 2043 | 618,014 | | | | 618,014 | | | | | | |
| | 21 | 25 | 2044 | 621,855 | | | | 621,855 | | | | | | |
| | 22 | 26 | 2045 | 618,139 | | | | 618,139 | | | | | | |
| | 23 | 27 | 2046 | 618,001 | | | | 618,001 | | | | | | |
| | 24 | 28 | 2047 | 618,014 | | | | 618,014 | | | | | | |

I:\1\01\00446\09\A\Correspondence\NB20-00916 - Water Balance Summary\Final\[Summary Tables and Figures Rev 0.xlsx]Table 14 SWMP & Mill Wet

**NOTES:**

1. VALUES PROVIDED REPRESENT THE 50TH PERCENTILE PRECIPITATION CONDITIONS.
2. CELLS HIGHLIGHTED IN GREY REPRESENT WATER THAT IS NOT COLLECTED AS PART OF THE SITE WATER MANAGEMENT STRATEGY.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER NB20-00916 | MGP | JAM |




**PSMF SEEPAGE COLLECTION BASIN CATCHMENT AREAS:**

**PSMF CATCHMENT AREAS:**

**OPEN PIT CATCHMENT AREAS:**

**STORMWATER MANAGEMENT POND CATCHMENT AREA:**

**MINE ROCK STORAGE AREA CATCH BASIN CATCHMENT AREAS:**

**DIVERTED TO SUB-WATERSHED 109**

**LEGEND:**

- WATER
- WETLANDS
- ROAD
- STREAM / RIVER / DRAINAGE
- PROPERTY BOUNDARY
- SUB-WATERSHED BOUNDARY
- 101 SUB-WATERSHED NUMBER
- WATER MANAGEMENT CATCHMENT AREA
- SUBMERSIBLE PUMP / DECANT
- FLOATING PUMP BARGE
- WATER TREATMENT PLANT
- PORTABLE PUMP
- DIVERSION
- WATER TRANSFER PIPELINE
- PROCESS SOLIDS PIPELINE
- EXCESS WATER DISCHARGE PIPELINE
- GRAVITY OVERFLOW
- DIVERSION DITCH

**NOTES:**

1. COORDINATE GRID IS UTM (NAD27) ZONE 16 N AND IS IN METRES.
2. CONTOUR INTERVAL IS 5 METRES.
3. ALL DIMENSIONS ARE IN MILLIMETRES AND ELEVATIONS ARE IN METRES, UNLESS NOTED OTHERWISE.

**ISSUED FOR PERMITTING**

SCALE A: 250 125 0 250 500 750 1000 1250 m



Knight Piésold CONSULTING

GENERATION MINING

# MARATHON PALLADIUM PROJECT

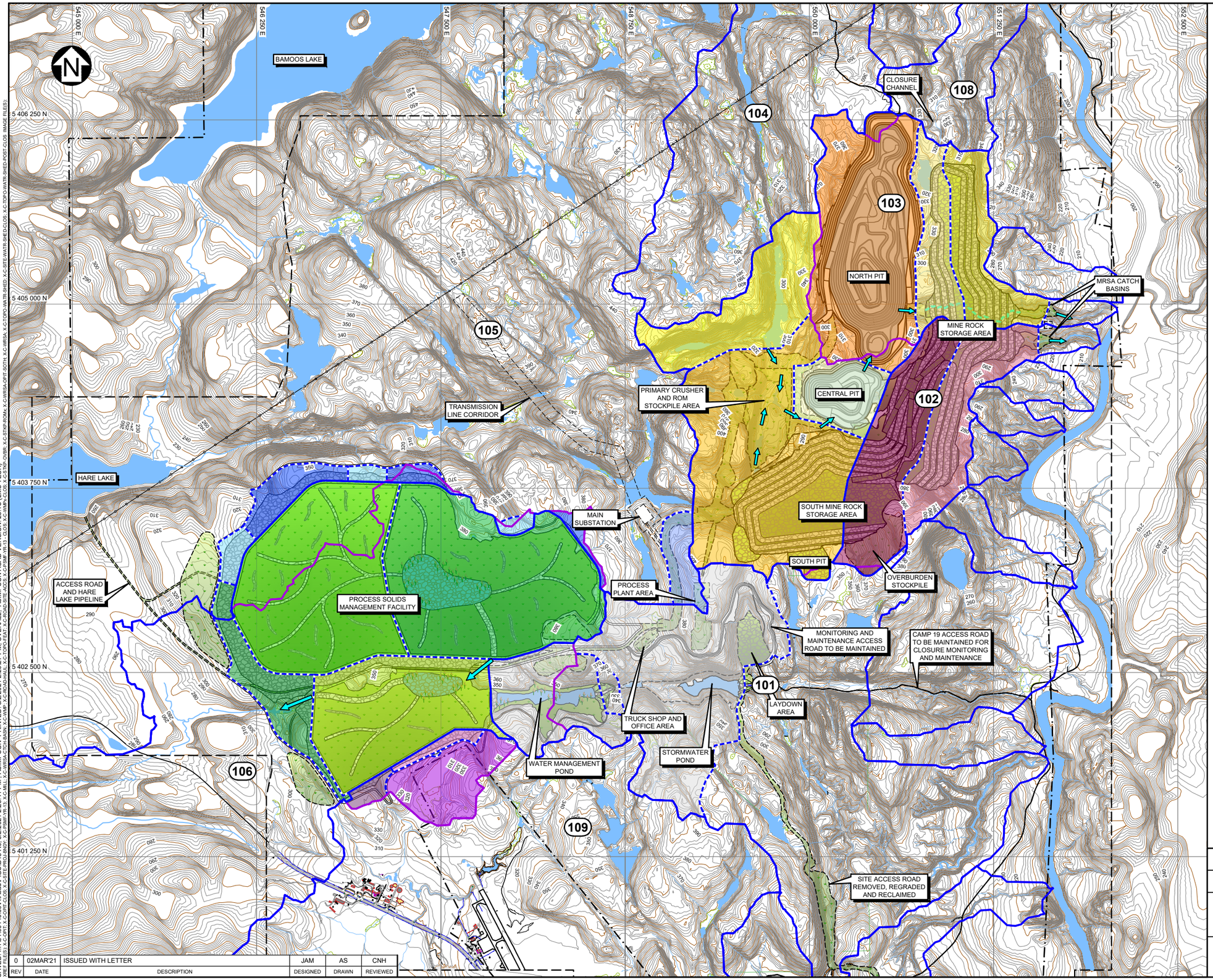
## SITE WATER MANAGEMENT LAYOUT PLAN

| P/A NO. | DRAWING NO. | REVISION |
|---|---|---|
| NB101-446/9 | 110 | 0 |

| DRG. NO. | DESCRIPTION |
|---|---|
| REFERENCE DRAWINGS | |

| REV | DATE | DESCRIPTION | DESIGNED | DRAWN | REVIEWED | APPROVED |
|---|---|---|---|---|---|---|
| REVISIONS | | | | | | |

| REV | DATE | DESCRIPTION | DESIGNED | DRAWN | REVIEWED | APPROVED |
|---|---|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED FOR PERMITTING | RDW | AS | | |
| REVISIONS | | | | | | |




**REPORTS TO SUB-WATERSHED 105:**

**REPORTS TO SUB-WATERSHED 106:**

**REPORTS TO SUB-WATERSHED 103:**

**REPORTS TO SUB-WATERSHED 109:**

**REPORTS TO SUB-WATERSHED 102:**

**REPORTS TO SUB-WATERSHED 101:**

**LEGEND:**

- WATER
- WETLAND
- RECLAIMED ROCKFILL (CREST AND BENCHES)
- ROCKFILL SLOPE
- RECLAIMED AREA
- PROJECT BOUNDARY
- LIMIT OF DETAILED TOPOGRAPHY
- CLOSURE WATER FLOW DIRECTION
- ROCKFILL WIND BREAK
- CLOSURE SWALE AND WATER FLOW DIRECTION
- ACCESS ROAD - MAINTAINED
- ACCESS ROAD - RECLAIMED
- PRE DEVELOPMENT WATERSHED BOUNDARY
- POST CLOSURE WATERSHED BOUNDARY

**NOTES:**

1. COORDINATE GRID IS UTM (NAD27) ZONE 16 N AND IS IN METRES.
2. CONTOUR INTERVAL IS 2 METRES. DETAILED TOPOGRAPHY BASED ON NORDMIN PROJECT BASEMAP (JULY 4, 2011). REGIONAL CONTOURS ARE BASED ON LAND INFORMATION ONTARIO (OCTOBER, 2011).
3. ALL DIMENSIONS ARE IN MILLIMETRES AND ELEVATIONS ARE IN METRES, UNLESS NOTED OTHERWISE.
4. PRE DEVELOPMENT WATERSHED PROVIDED BY STANTEC (NOV 2, 2020).

SCALE A: 250 125 0 250 500 750 1000 1250 m

GENERATION MINING

MARATHON PALLADIUM PROJECT

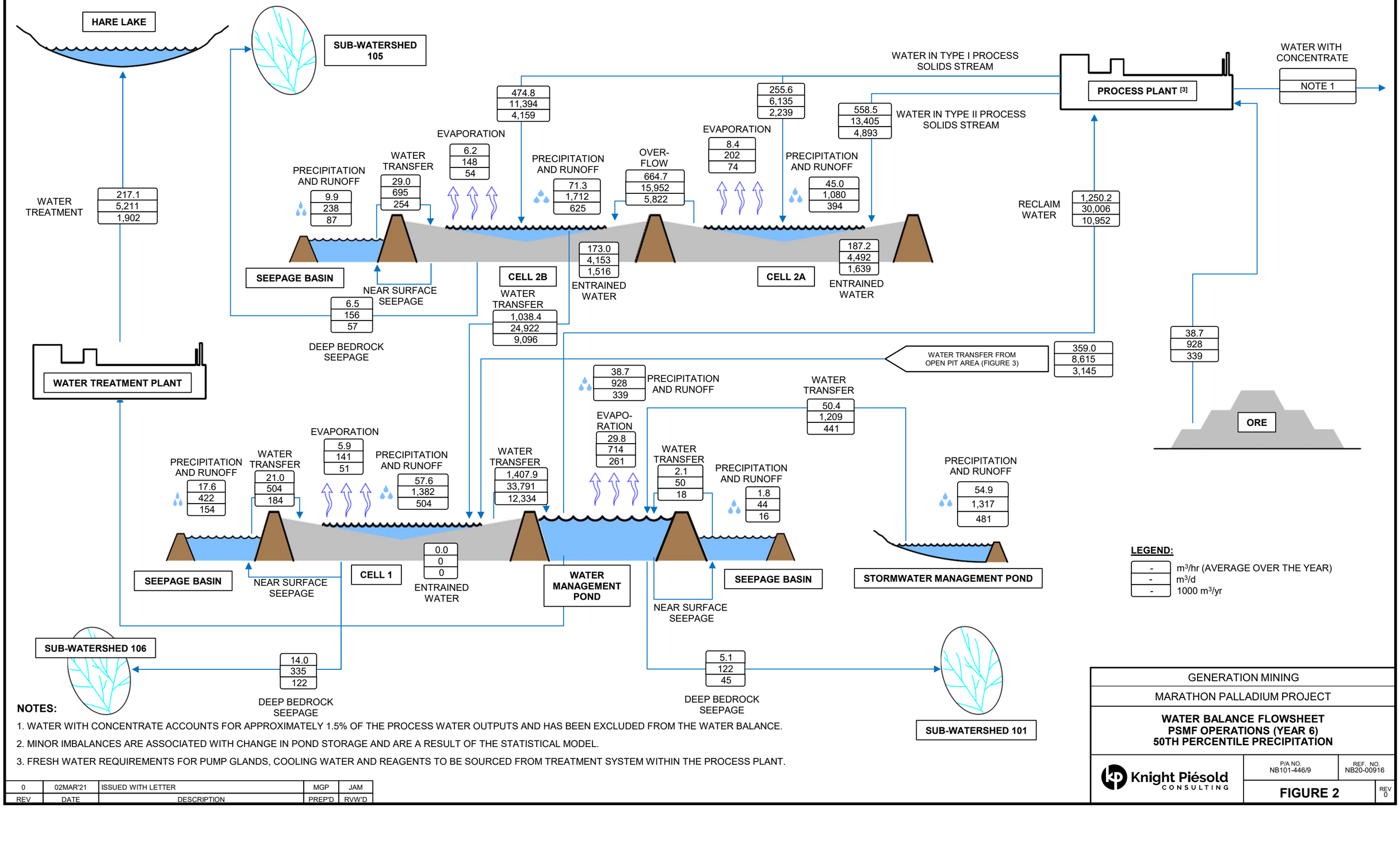
**CONCEPTUAL CLOSURE WATERSHED**

| REV | DATE | DESCRIPTION | DESIGNED | DRAWN | REVIEWED |
|---|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | JAM | AS | CNH |

Knight Piésold CONSULTING

P/A NO. NB101-446/9 | REF NO. NB20-00916

**FIGURE 1** | REV 0




**NOTES:**

1. WATER WITH CONCENTRATE ACCOUNTS FOR APPROXIMATELY 1.5% OF THE PROCESS WATER OUTPUTS AND HAS BEEN EXCLUDED FROM THE WATER BALANCE.
2. MINOR IMBALANCES ARE ASSOCIATED WITH CHANGE IN POND STORAGE AND ARE A RESULT OF THE STATISTICAL MODEL.
3. FRESH WATER REQUIREMENTS FOR PUMP GLANDS, COOLING WATER AND REAGENTS TO BE SOURCED FROM TREATMENT SYSTEM WITHIN THE PROCESS PLANT.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | MGP | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**WATER BALANCE FLOWSHEET**
**PSMF OPERATIONS (YEAR 6)**
**50TH PERCENTILE PRECIPITATION**

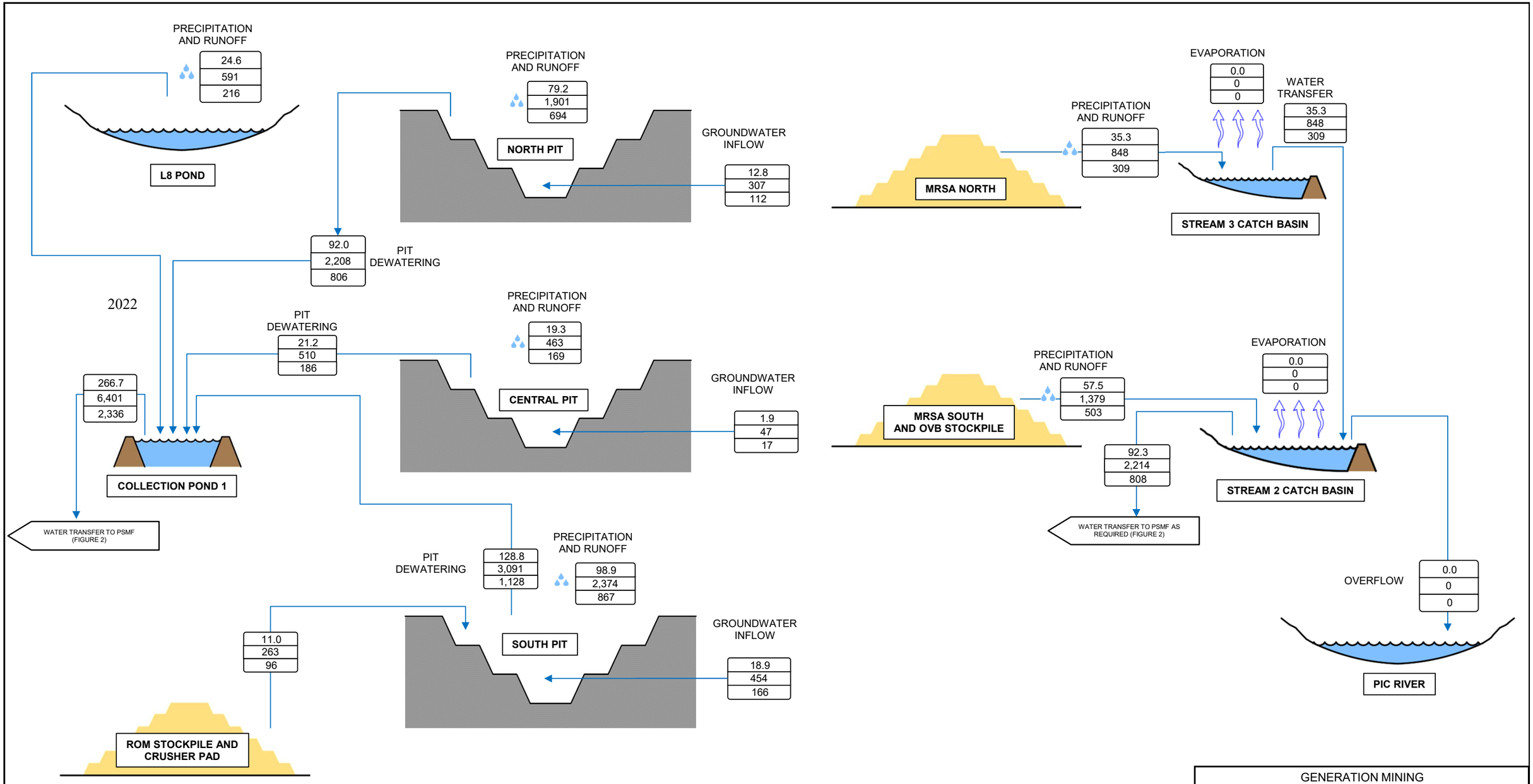
Knight Piésold CONSULTING

P/A NO. NB101-446/9

REF. NO. NB20-00916

**FIGURE 2**

REV 0




**NOTES:**

1. MINOR IMBALANCES ARE ASSOCIATED WITH CHANGE IN POND STORAGE AND ARE A RESULT OF THE STATISTICAL MODEL.

**LEGEND:**

| | |
|---|---|
| - | $m^3$/hr (AVERAGE OVER THE YEAR) |
| - | $m^3$/d |
| - | 1,000 $m^3$/yr |

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | MGP | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**WATER BALANCE FLOWSHEET**
**OPEN PIT AND MRSA OPERATIONS (YEAR 6)**
**50TH PERCENTILE PRECIPITATION**

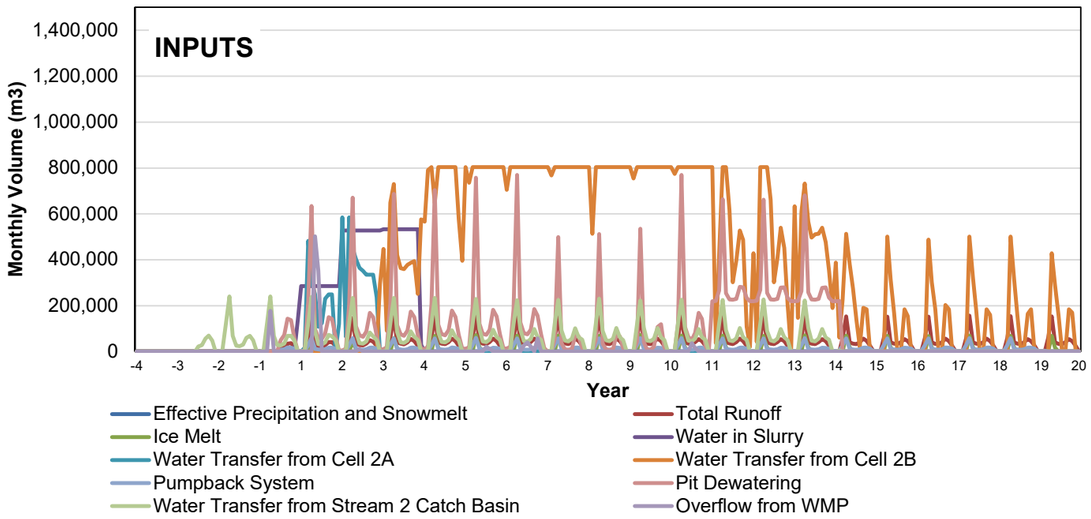
Knight Piésold CONSULTING

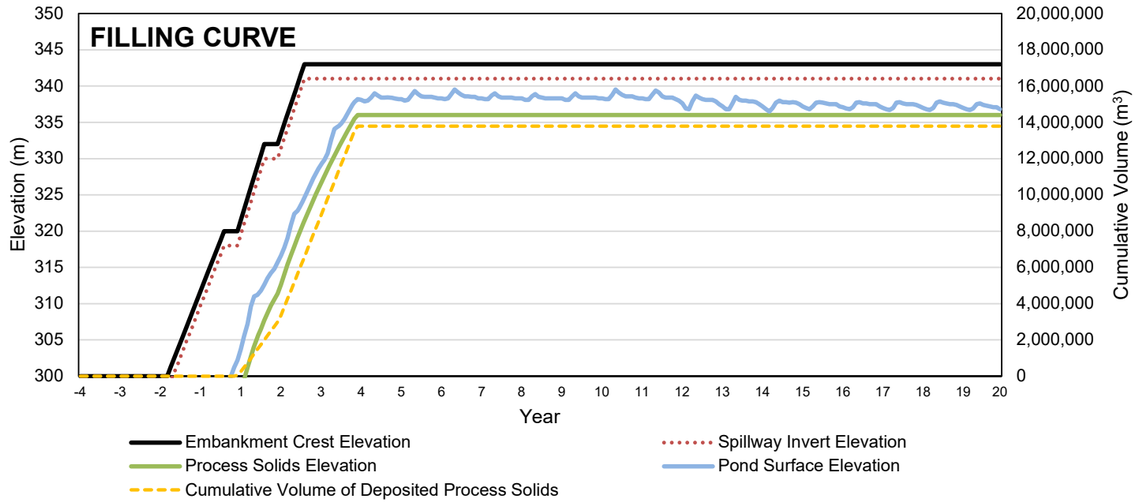
P/A NO. NB101-446/9

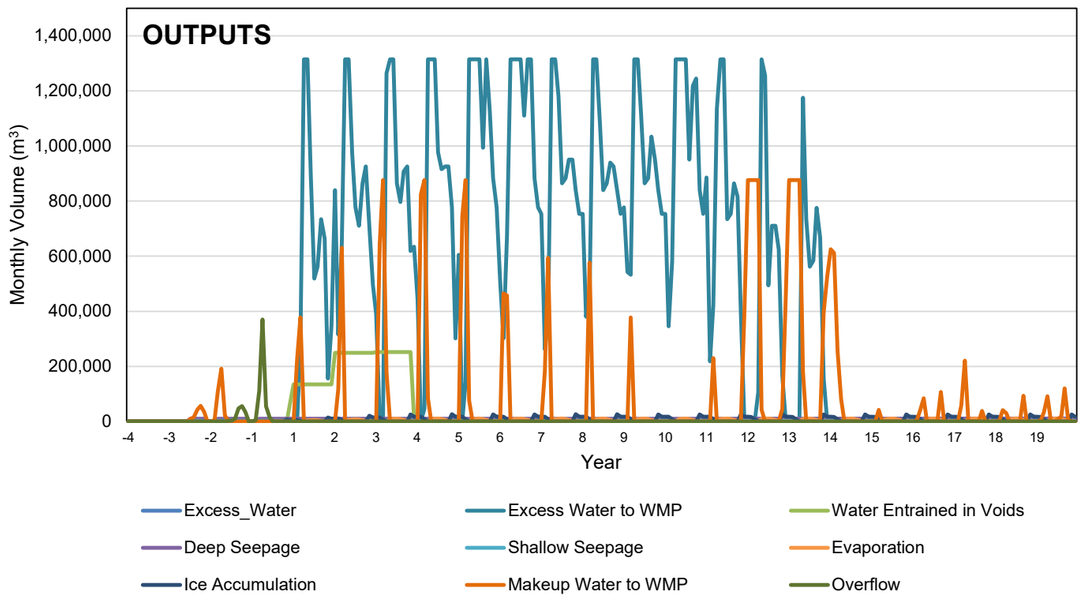
REF. NO. NB20-00916

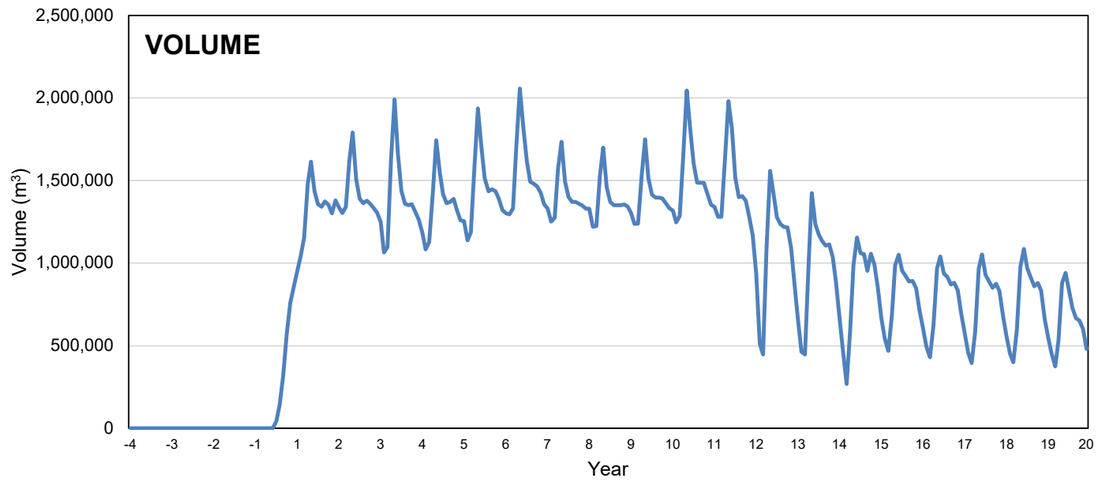
**FIGURE 3**

REV 0




**NOTES:**

1. VALUES PROVIDED REPRESENT 50TH PERCENTILE PRECIPITATION CONDITIONS.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | MGP | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**PROCESS SOLIDS MANAGEMENT FACILITY**
**CELL 1 SUMMARY PLOTS**
**50TH PERCENTILE PRECIPITATION**

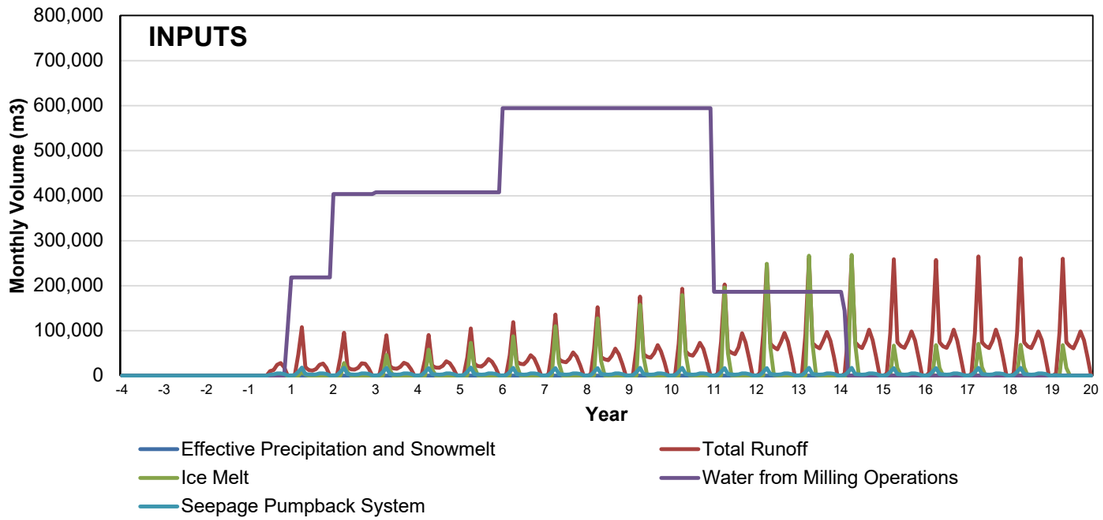
Knight Piésold CONSULTING

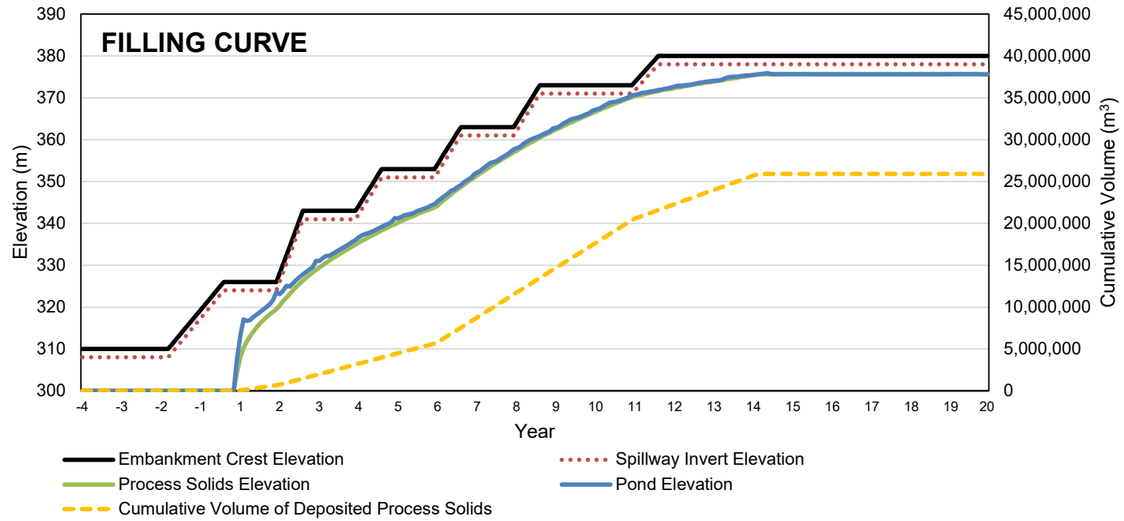
P/A NO. NB101-446/9

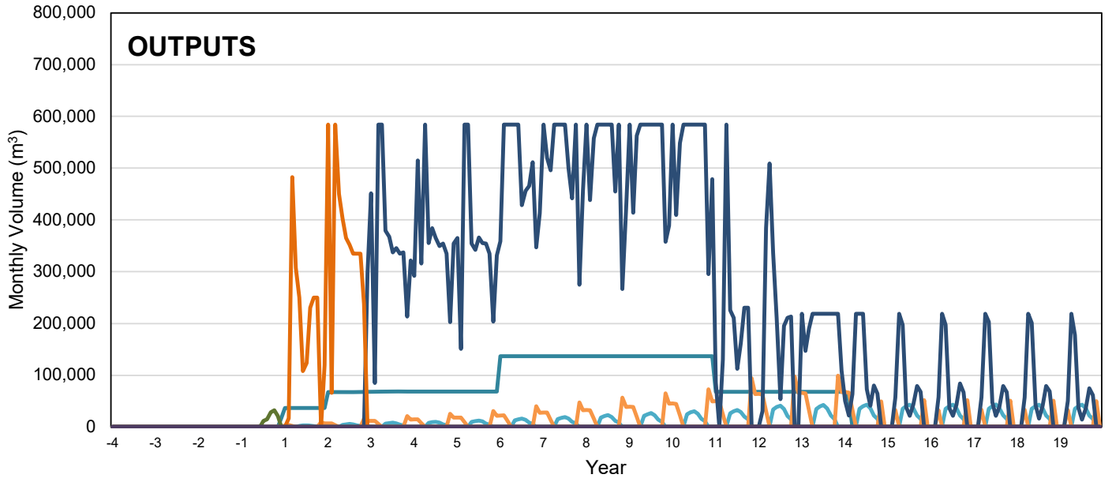
REF. NO. NB20-00916

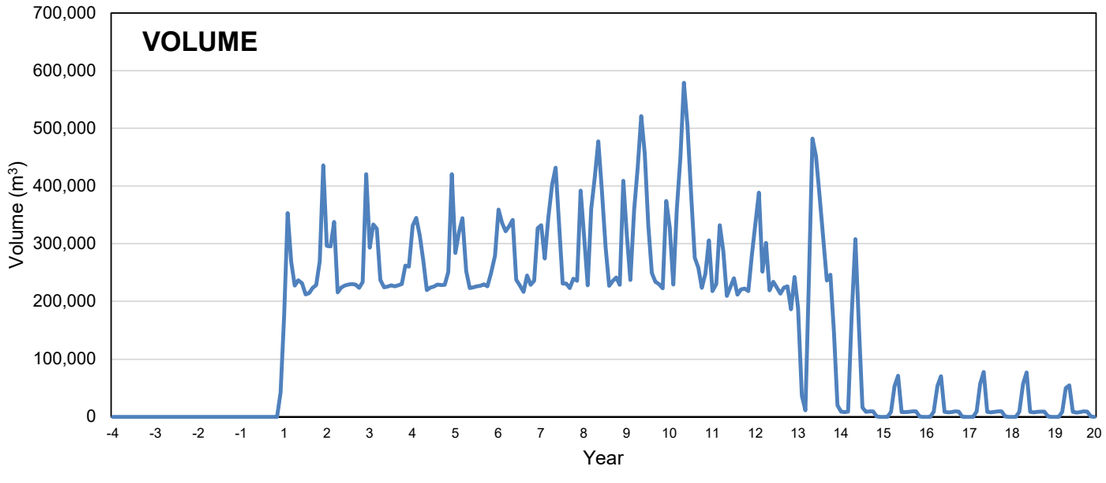
**FIGURE 4**

REV 0




**NOTES:**

1. VALUES PROVIDED REPRESENT 50TH PERCENTILE PRECIPITATION CONDITIONS.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | MGP | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**PROCESS SOLIDS MANAGEMENT FACILITY**
**CELL 2A SUMMARY PLOTS**
**50TH PERCENTILE PRECIPITATION**

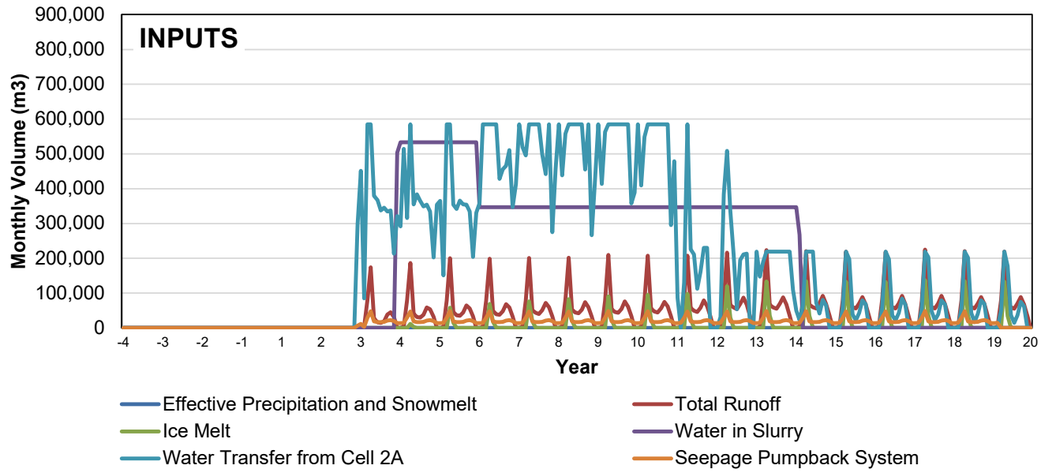
Knight Piésold CONSULTING

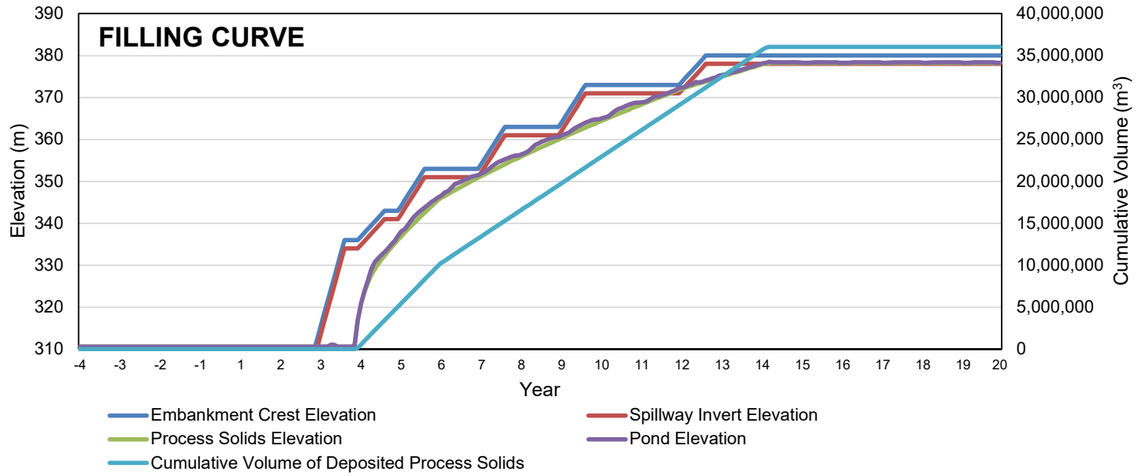
P/A NO. NB101-446/9

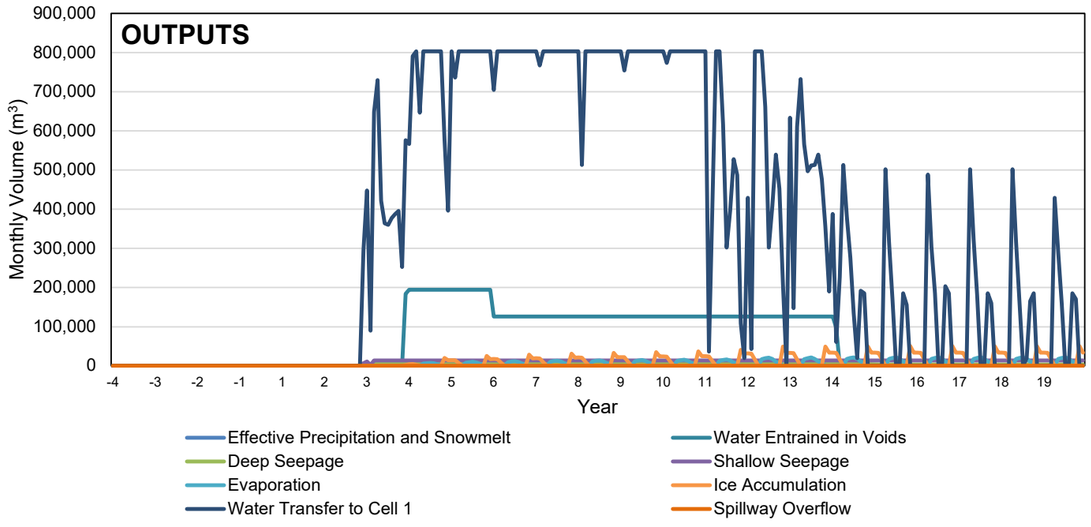
REF. NO. NB20-00916

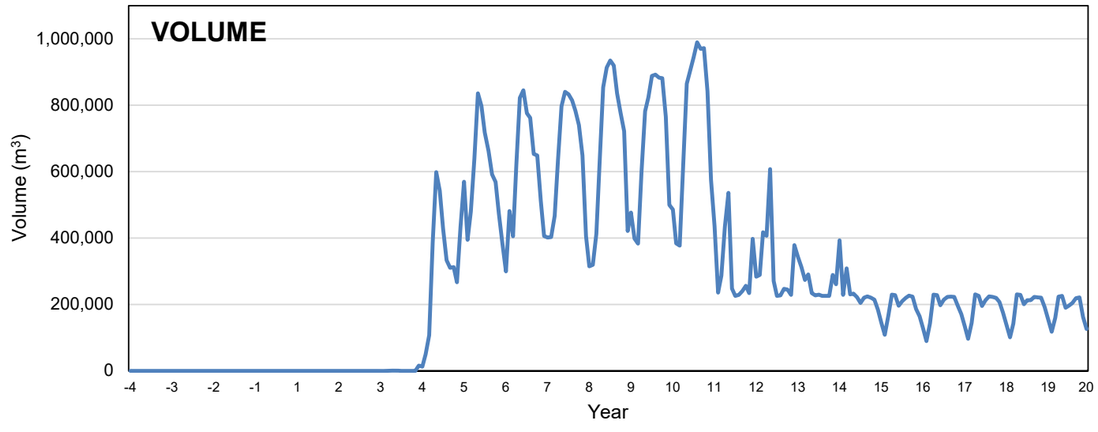
**FIGURE 5**

REV 0




**NOTES:**

1. VALUES PROVIDED REPRESENT 50TH PERCENTILE PRECIPITATION CONDITIONS.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | MGP | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**PROCESS SOLIDS MANAGEMENT FACILITY**
**CELL 2B SUMMARY PLOTS**
**50TH PERCENTILE PRECIPITATION**

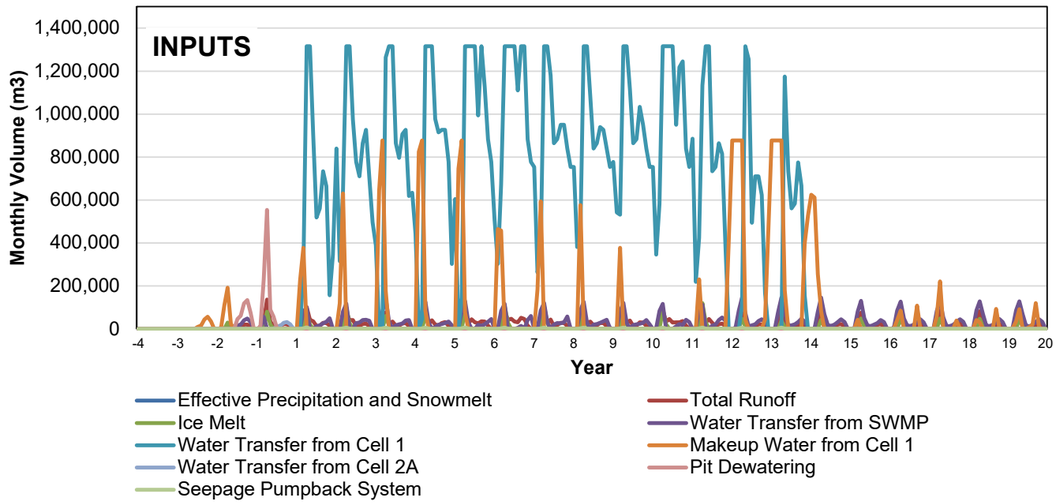
Knight Piésold CONSULTING

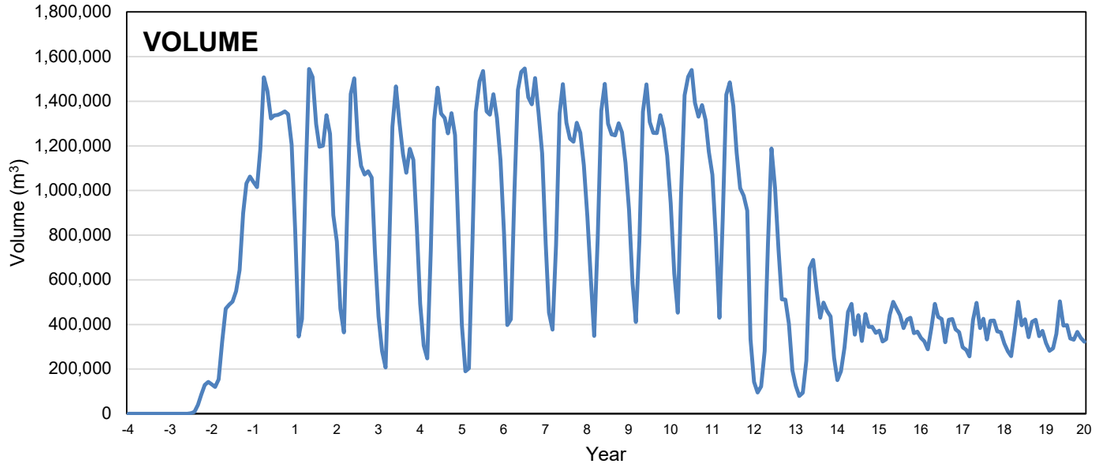
P/A NO. NB101-446/9

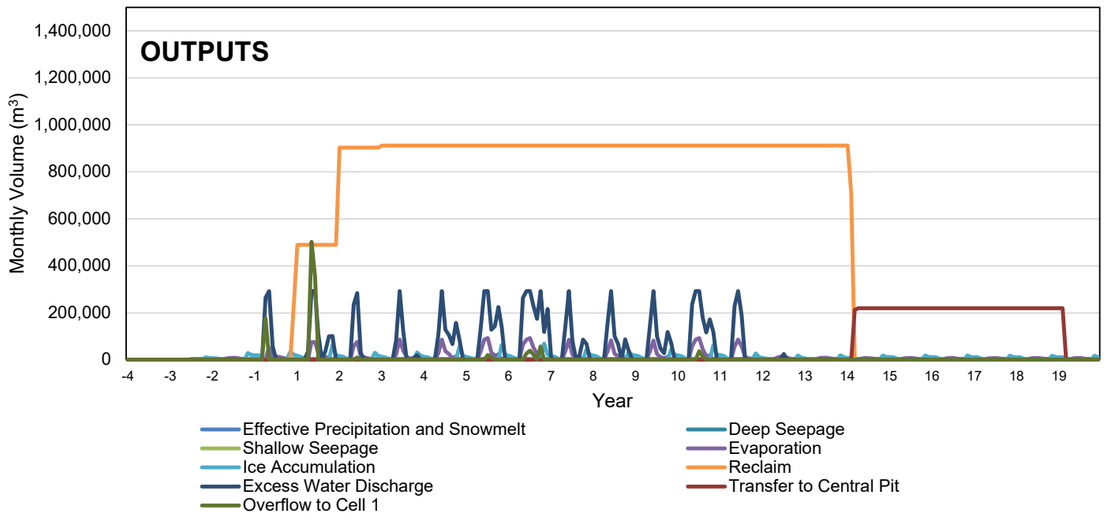
REF. NO. NB20-00916

**FIGURE 6**

REV 0




**NOTES:**

1. VALUES PROVIDED REPRESENT 50TH PERCENTILE PRECIPITATION CONDITIONS.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | MGP | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**PROCESS SOLIDS MANAGEMENT FACILITY**
**WATER MANAGEMENT POND SUMMARY PLOTS**
**50TH PERCENTILE PRECIPITATION**

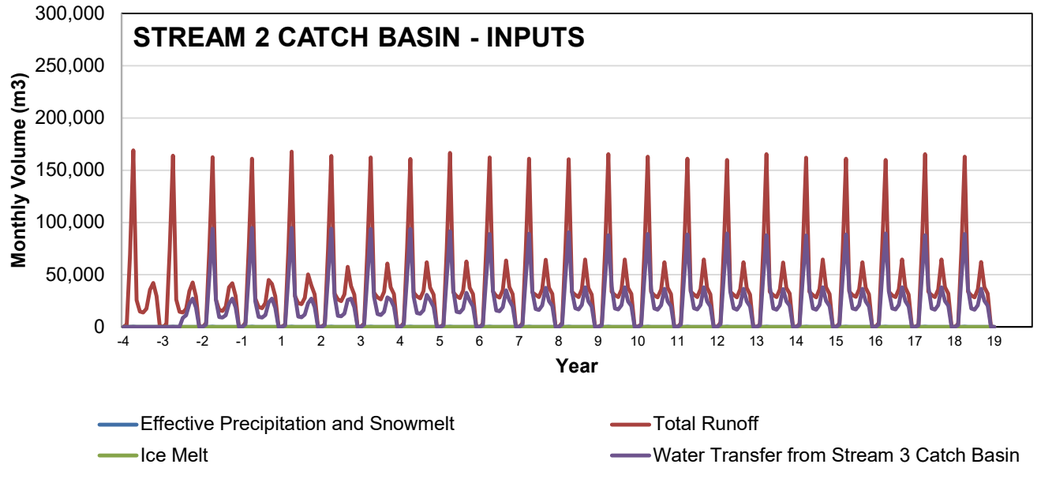
Knight Piésold CONSULTING

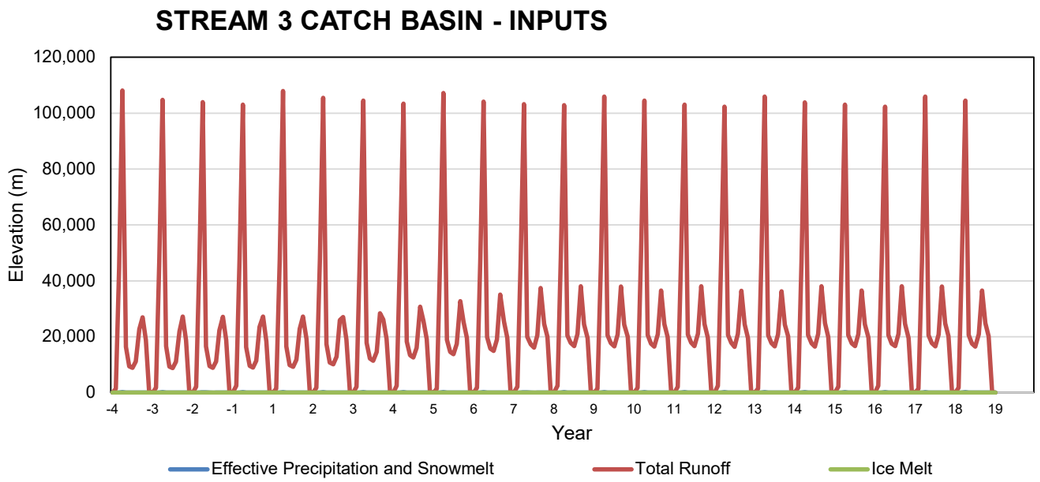
P/A NO. NB101-446/9

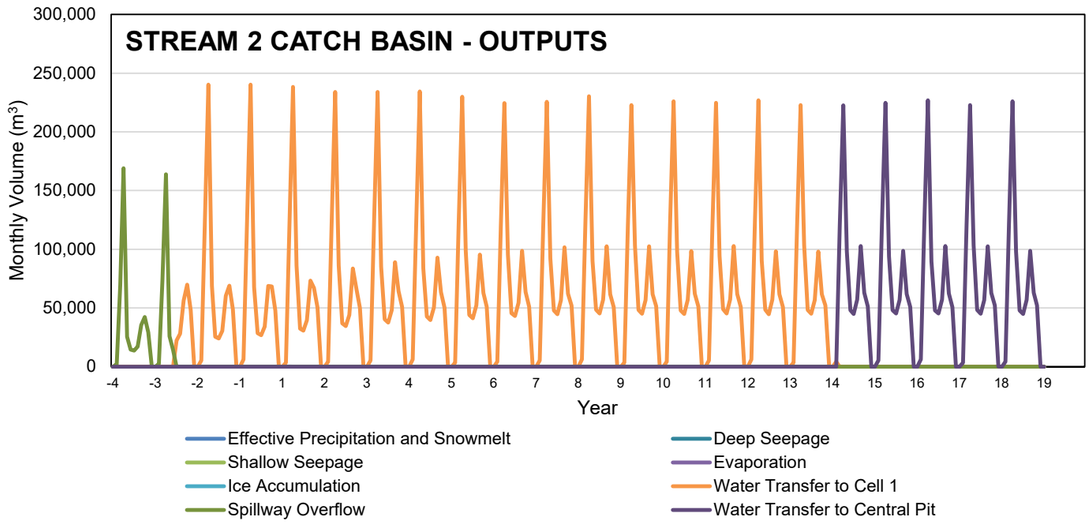
REF. NO. NB20-00916

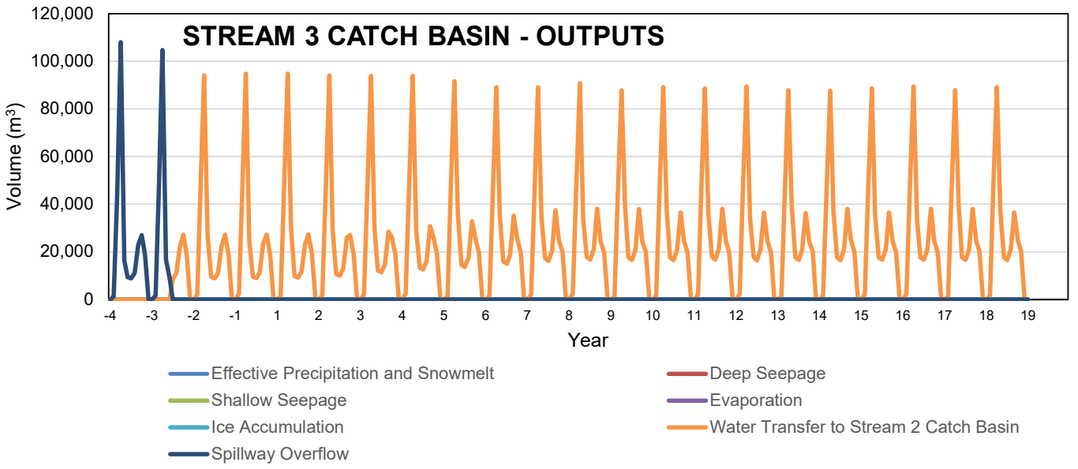
**FIGURE 7**

REV 0




**NOTES:**

1. VALUES PROVIDED REPRESENT 50TH PERCENTILE PRECIPITATION CONDITIONS.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | MGP | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**MINE ROCK STORAGE AREA CATCH BASINS**
**SUMMARY PLOTS**
**50TH PERCENTILE PRECIPITATION**

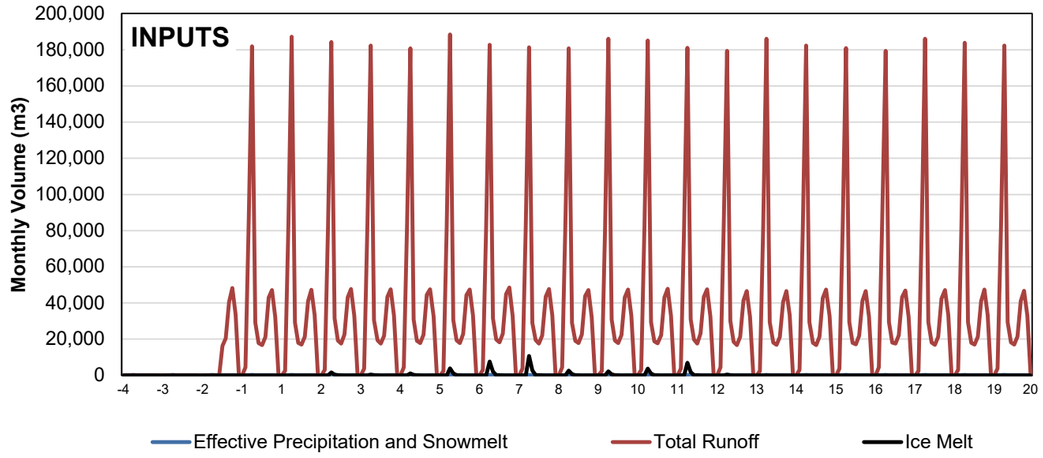
Knight Piésold CONSULTING

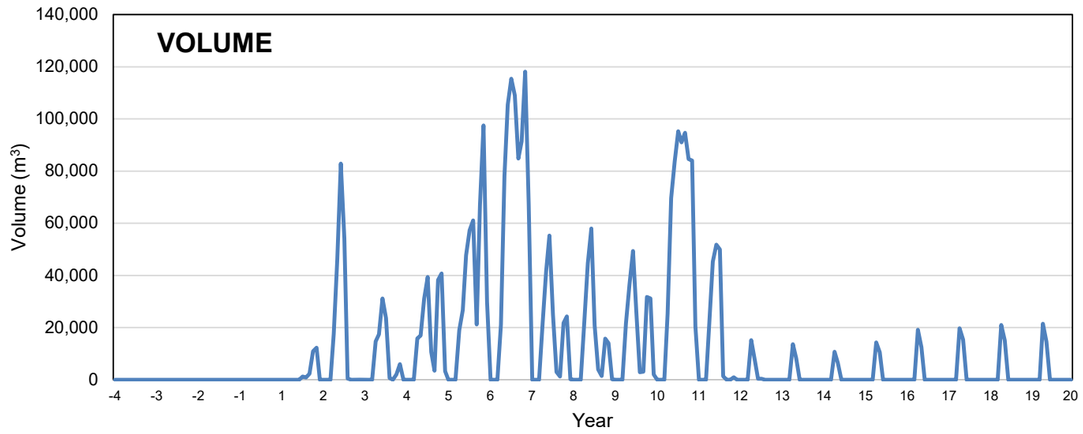
P/A NO. NB101-446/9

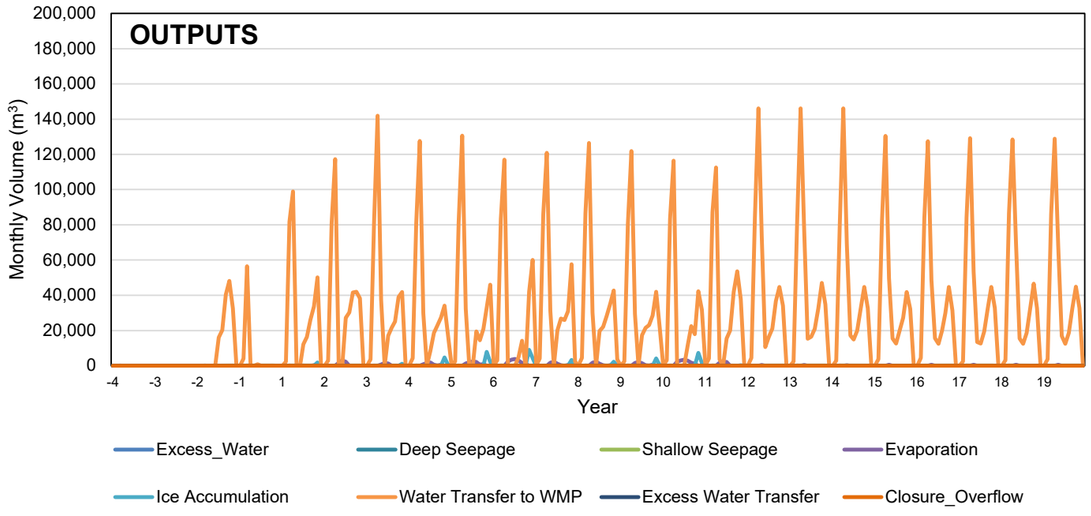
REF. NO. NB20-00916

**FIGURE 8**

REV 0




**NOTES:**

1. VALUES PROVIDED REPRESENT 50TH PERCENTILE PRECIPITATION CONDITIONS.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | MGP | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**STORMWATER MANAGEMENT POND**
**SUMMARY PLOTS**
**50TH PERCENTILE PRECIPITATION**

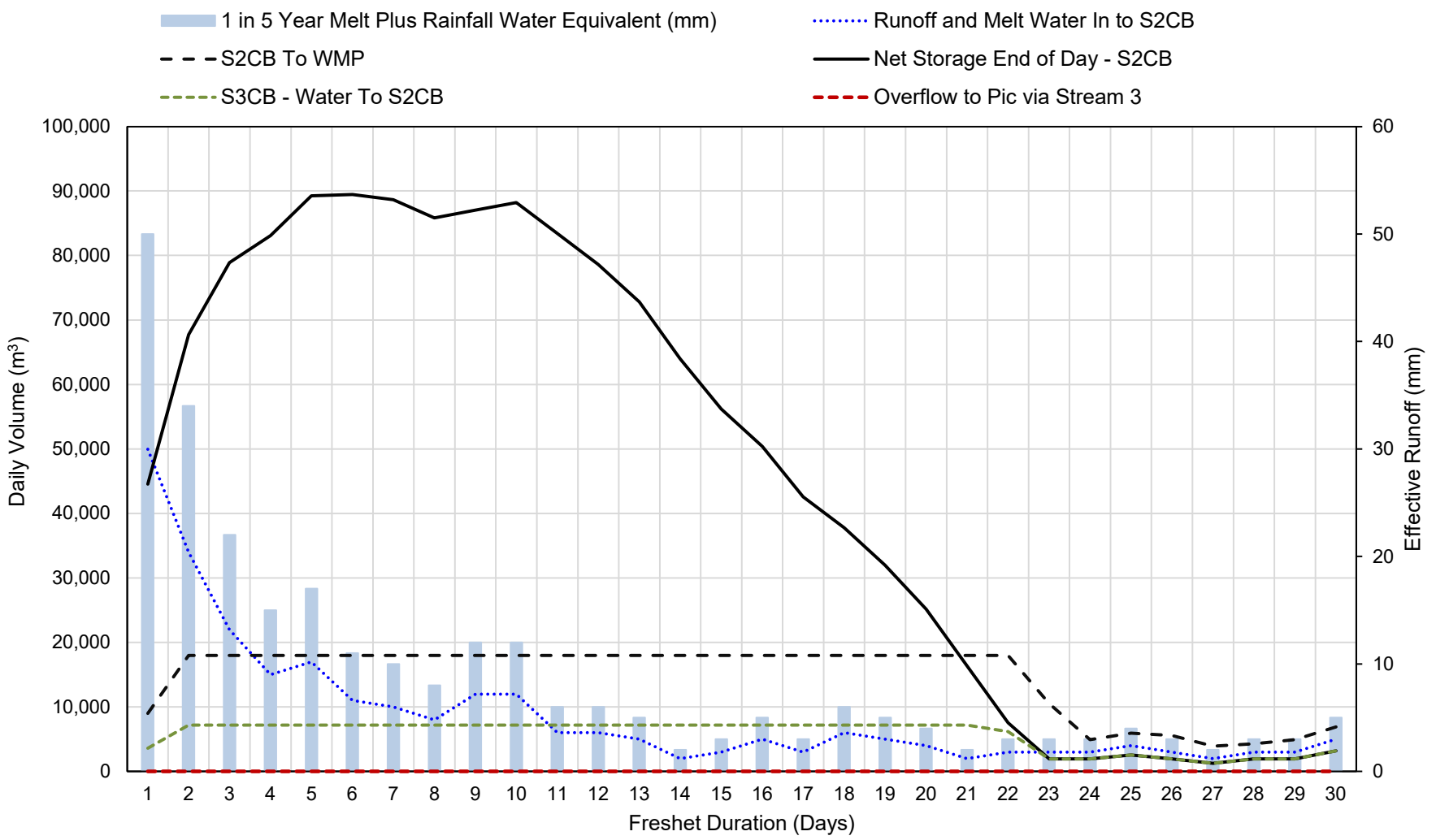
Knight Piésold CONSULTING

P/A NO. NB101-446/9

REF. NO. NB20-00916

**FIGURE 9**

REV 0




**NOTES:**

1. SNOWMELT HAS BEEN ESTIMATED BASED ON DEGREE DAY METHOD AND HISTORICAL CLIMATE RECORDS.
2. PUMPS ASSUMED TO START 12 HOURS AFTER ONSET OF FRESHET.
3. PUMPING RATE SELECTED AS 750 m3/hr IN ORDER TO MAINTAIN A MAXIMUM POND VOLUME UNDER 97,500 m3

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | BA | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**STREAM 2 CATCH BASIN**
**1 IN 5 YEAR FRESHET BALANCE**

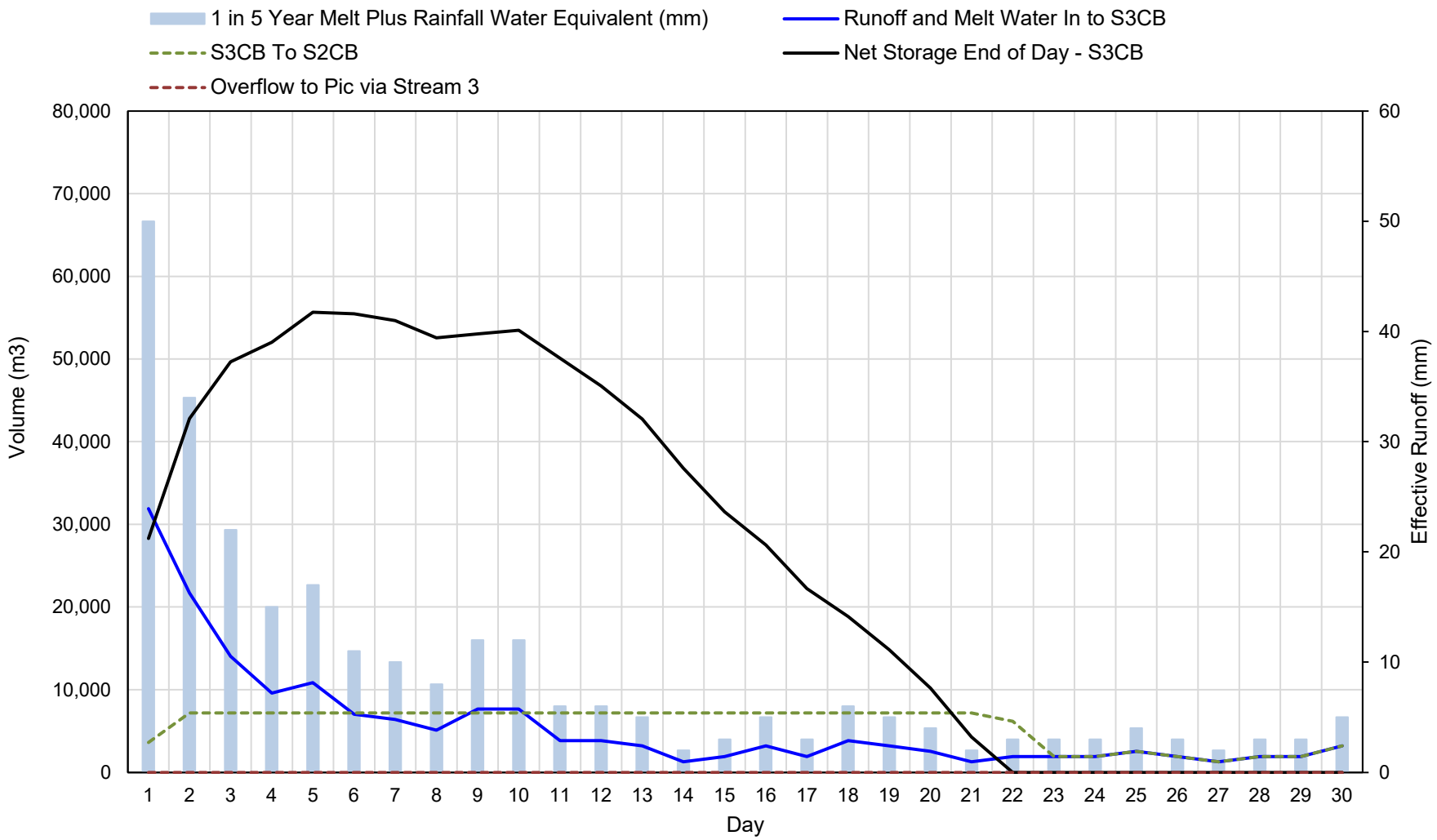
Knight Piésold CONSULTING

P/A NO. NB101-446/9

REF. NO. NB21-00916

**FIGURE 10**

REV 0




**NOTES:**

1. SNOWMELT HAS BEEN ESTIMATED BASED ON DEGREE DAY METHOD AND HISTORICAL CLIMATE RECORDS.
2. PUMPS ASSUMED TO START 12 HOURS AFTER ONSET OF FRESHET.
3. PUMPING RATE SELECTED AS 300 m3/hr IN ORDER TO MAINTAIN A MAXIMUM POND VOLUME UNDER 62,000 m3

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | BA | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**STREAM 3 CATCH BASIN**
**1 IN 5 YEAR FRESHET BALANCE**

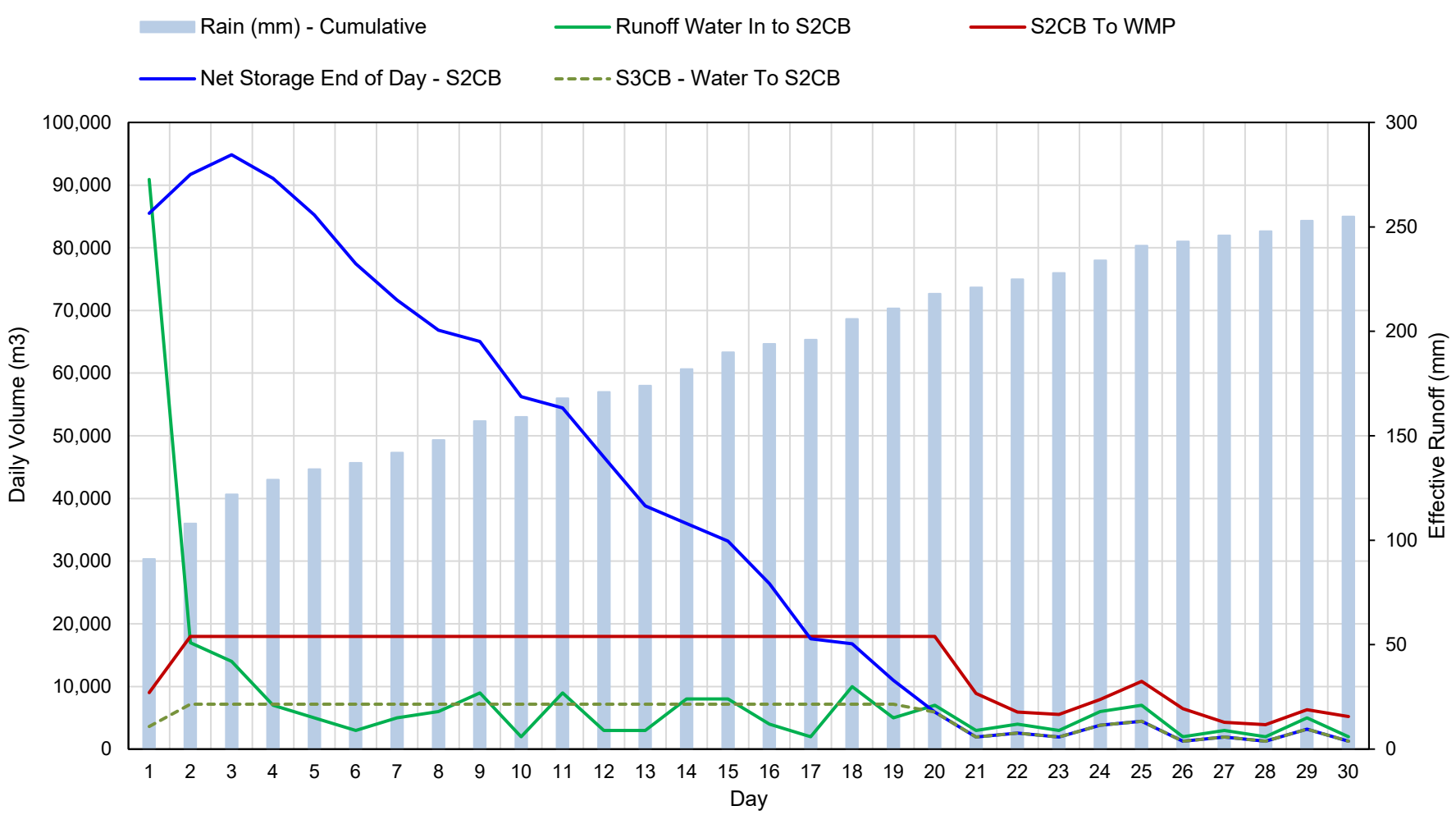
Knight Piésold CONSULTING

P/A NO. NB101-446/9

REF. NO. NB21-00916

**FIGURE 11**

REV 0




**NOTES:**

1. PEAK RAINFALL HAS BEEN ESTIMATED BASED HISTORICAL CLIMATE RECORDS.
2. DAILY RAINFALL HYDROGRAPH HAS BEEN DEVELOPED ASSUMING A PEAK 1 DAY STORM, DEVELOPING INTO AN A PEAK 2 DAY EVENT, INTO 3 DAY EVENT AND ONWARDS.
3. PUMPS ASSUMED TO START 12 HOURS AFTER ONSET OF STORM.
4. PUMPING RATE SELECTED AS 750 m3/hr IN ORDER TO MAINTAIN A MAXIMUM POND VOLUME UNDER 97,500 m3

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | BA | JAM |

GENERATION MINING

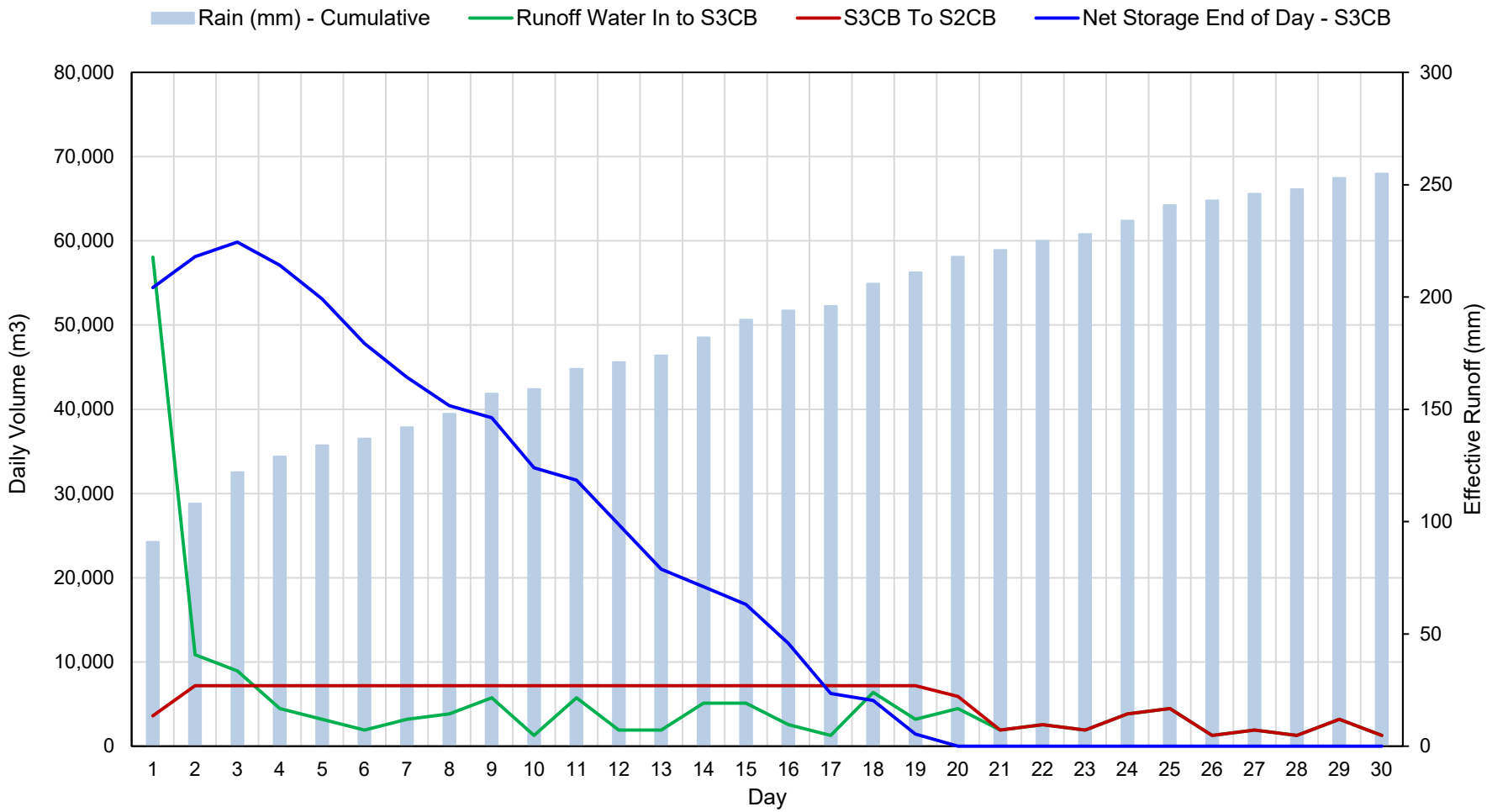
MARATHON PALLADIUM PROJECT

**STREAM 2 CATCH BASIN**
**1 IN 25 YEAR RAIN BALANCE**

Knight Piésold CONSULTING

| P/A NO. | REF. NO. |
|---|---|
| NB101-446/9 | NB21-00916 |

**FIGURE 12** REV 0




**NOTES:**

1. PEAK RAINFALL HAS BEEN ESTIMATED BASED HISTORICAL CLIMATE RECORDS.
2. DAILY RAINFALL HYDROGRAPH HAS BEEN DEVELOPED ASSUMING A PEAK 1 DAY STORM, DEVELOPING INTO AN A PEAK 2 DAY EVENT, INTO 3 DAY EVENT AND ONWARDS.
3. PUMPS ASSUMED TO START 12 HOURS AFTER ONSET OF STORM.
4. PUMPING RATE SELECTED AS 300 m3/hr IN ORDER TO MAINTAIN A MAXIMUM POND VOLUME UNDER 62,000 m3

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | BA | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**STREAM 3 CATCH BASIN**
**1 IN 25 YEAR RAIN BALANCE**

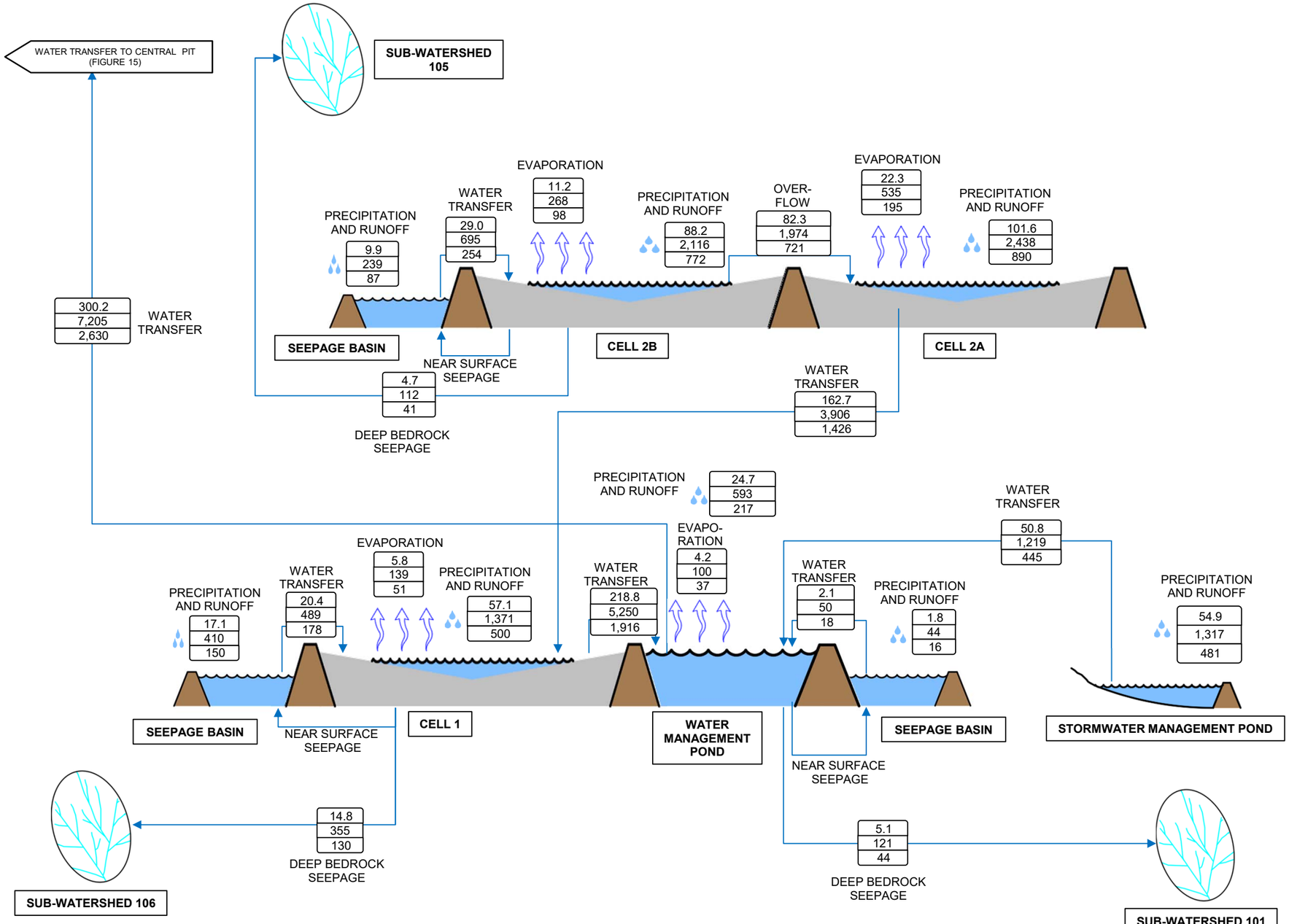
Knight Piésold CONSULTING

P/A NO. NB101-446/9

REF. NO. NB21-00916

**FIGURE 13**

REV 0




**LEGEND:**

| | |
|---|---|
| - | $m^3$/hr (AVERAGE OVER THE YEAR) |
| - | $m^3$/d |
| - | 1000 $m^3$/yr |

**NOTES:**

1. MINOR IMBALANCES ARE ASSOCIATED WITH CHANGE IN POND STORAGE AND ARE A RESULT OF THE STATISTICAL MODEL.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | MGP | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**WATER BALANCE FLOWSHEET**
**PSMF ACTIVE CLOSURE (YEAR 17)**
**50TH PERCENTILE PRECIPITATION**

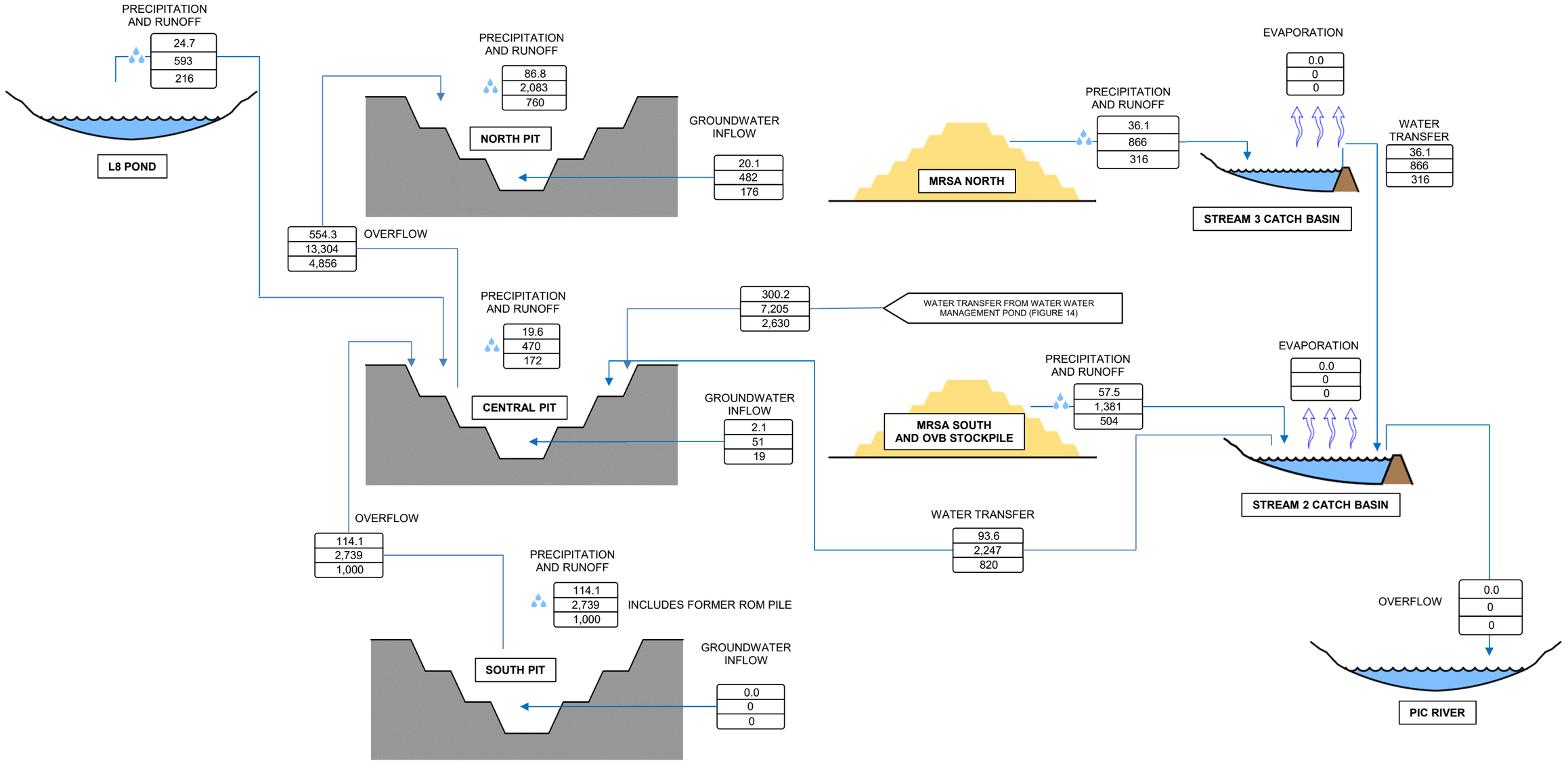
Knight Piésold CONSULTING

P/A NO. NB101-446/9

REF. NO. NB20-00916

**FIGURE 14**

REV 0




**NOTES:**

1. MINOR IMBALANCES ARE ASSOCIATED WITH CHANGE IN POND STORAGE AND ARE A RESULT OF THE STATISTICAL MODEL.

**LEGEND:**

| | |
|---|---|
| - | $m^3$/hr (AVERAGE OVER THE YEAR) |
| - | $m^3$/d |
| - | 1,000 $m^3$/yr |

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | MGP | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**WATER BALANCE FLOWSHEET**
**OPEN PIT AND MRSA ACTIVE CLOSURE (YEAR 17)**
**50TH PERCENTILE PRECIPITATION**

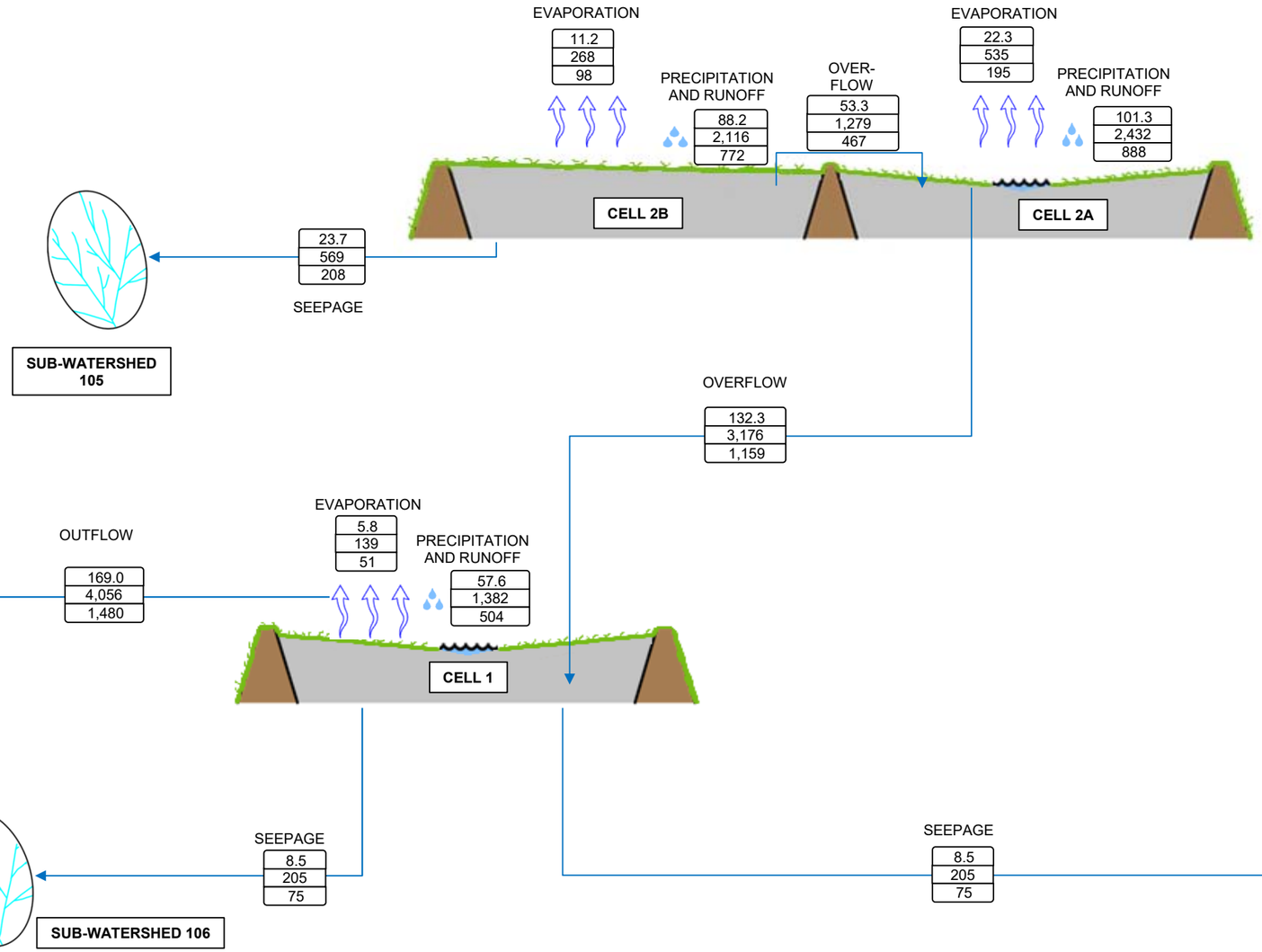
Knight Piésold CONSULTING

P/A NO. NB101-446/9

REF. NO. NB20-00916

**FIGURE 15**

REV 0




**LEGEND:**

| | |
|---|---|
| - | $m^3/hr$ (AVERAGE OVER THE YEAR) |
| - | $m^3/d$ |
| - | 1000 $m^3/yr$ |

**NOTES:**

1. MINOR IMBALANCES ARE ASSOCIATED WITH CHANGE IN POND STORAGE AND ARE A RESULT OF THE STATISTICAL MODEL.

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | MGP | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**WATER BALANCE FLOWSHEET**
**PSMF PASSIVE CLOSURE (YEAR 21)**
**50TH PERCENTILE PRECIPITATION**

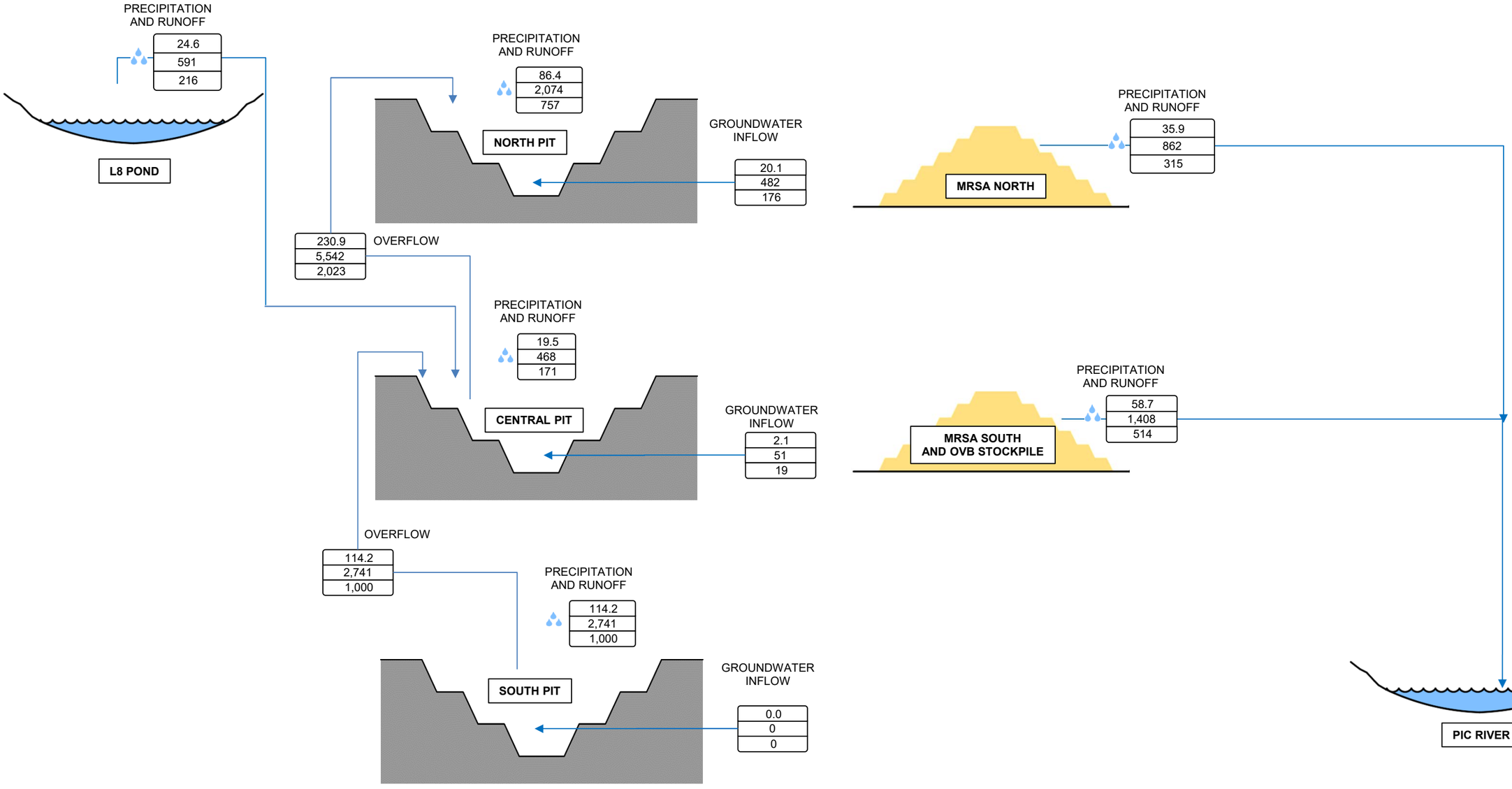
Knight Piésold CONSULTING

P/A NO. NB101-446/9

REF. NO. NB20-00916

**FIGURE 16**

REV 0




**NOTES:**

1. MINOR IMBALANCES ARE ASSOCIATED WITH CHANGE IN POND STORAGE AND ARE A RESULT OF THE STATISTICAL MODEL.

**LEGEND:**

| | |
|---|---|
| - | $m^3$/hr (AVERAGE OVER THE YEAR) |
| - | $m^3$/d |
| - | 1,000 $m^3$/yr |

| REV | DATE | DESCRIPTION | PREP'D | RVW'D |
|---|---|---|---|---|
| 0 | 02MAR'21 | ISSUED WITH LETTER | MGP | JAM |

GENERATION MINING

MARATHON PALLADIUM PROJECT

**WATER BALANCE FLOWSHEET**
**OPEN PIT AND MRSA PASSIVE CLOSURE (YEAR 21)**
**50TH PERCENTILE PRECIPITATION**

Knight Piésold CONSULTING

P/A NO. NB101-446/9

REF. NO. NB20-00916

**FIGURE 17**

REV 0