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Appendix B1

Report: *Site Wide Water Balance Model Update*

TECHNICAL MEMORANDUM

DATE September 2, 2010 **PROJECT No.** 10-1428-0004/3000

TO Mr. Stéphane Robert
Agnico-Eagle Mines Limited Meadowbank Division **DOC No.** 1092 Ver. 0

FROM Ryan Mason and Dan Walker **EMAIL** RYMason@golder.com; Dan_Walker2@golder.com

SITE WIDE WATER BALANCE MODEL UPDATE, MEADOWBANK GOLD PROJECT, NUNAVUT

1.0 INTRODUCTION

At the request of Agnico-Eagle Mines Ltd. (AEM), this technical memorandum presents an update to the site wide water balance for the Meadowbank Gold Project, Nunavut. The update was completed in order to evaluate mine water supply and storage requirements over the live of mine in response to an updated mine plan for the project and operational variations related to freshwater use within the mill process early in the mine life.

2.0 BACKGROUND

Details of the site wide water balance for the Meadowbank Project are provided in *Meadowbank Gold Project Updated Water Management Plan* (AEM, July 2009; Doc. No. 833). The model was developed to assist in the evaluation of the maximum operating storage volume of the contact water management infrastructure under average year climate conditions over the life the mine and under closure conditions. The model focuses specifically on contact water management infrastructure and areas that have been physically or chemically affected by mining activities.

The following summarizes the changes made to the model described in Doc. No. 833:

- Dewatering
  - North Portage Arm dewatering water levels and rates updated to reflect observed values to June 2010; and
  - Estimated Bay-Goose dewatering volume not meeting TSS discharge criteria directed to the Portage Attenuation Pond for treatment prior to release to Third Portage Lake (3PL).
- Updated Mine Plan
  - Portage Pit active life January 2009 (Year -1; model month 27) to December 2015 (Year 6, model month 110);
  - Goose Island Pit active life January 2014 (Year 5, model month 87) to December 2017 (Year 8, model month 134); and
  - Vault Pit active life January 2015 (Year 6, model month 99) to December 2019 (Year 10, model month 158).

- Mill Processing
  - Active life January 2010 (Year 1, model month 39) to December 2019 (Year 10, model month 158);
  - Process rate at mill start up (% of 8,500 tonne/day target):
    - January 2010 = 0%;
    - February 2010 = 15%;
    - March 2010 = 67%;
    - April 2010 = 69%;
    - May 2010 = 67%;
    - June 2010 = 85%;
    - July 2010 = 75%;
    - August 2010 = 80%;
    - September 2010 = 85%;
    - October 2010 = 90%;
    - November 2010 = 95%; and
    - December 2010 onwards = 100%.
  - Tailings slurry solids content of 35% January through December 2010 (Year 1, model months 39 to 50), and 50.8% January 2011 (Year 2, model month 51) onwards;
  - Minimum freshwater water make-up rate to process of 125.8 m^3/hr prorated in 2010 following process rate at mill start up presented above; and
  - Maximum reclaim pumping rate of 400 m^3/hr.
- Tailings Storage Facility (TSF)
  - In-situ tailings water content of 72% January through December 2010 (Year 1, model months 39 to 50), and 40% January 2011 (Year 2, model month 51) onwards;
  - Active life January 2010 (Year 1 model month 39) to December 2019 (Year 10, model month 158); and
  - Maximum reclaim treatment rate of 15,000 m^3/day starting May 2017 (Year 8, model month 127) increasing to 25,000 m^3/day starting December 2019 (Year 10, model month 158).
- Rock Storage Facilities (RSFs)
  - Portage RSF active life January 2009 (Year -1, model month 27) to December 2015 (Year 6, model month 110);
  - Vault RSF active life January 2015 (Year 6, model month 110) to December 2019 (Year 10, model month 158); and

  - Portage Pit rock storage life January 2013 (Year 4, model month 87) to December 2017 (Year 8, model month 134).

- Attenuation and Reclaim Ponds
  - Make-up water to process sourced from 3PL; no process water make-up sourced from the Portage Attenuation Pond;
  - Water reporting to the Portage and Goose Island pits directed to the Reclaim Pond until January 2011 (Year 2, model month 51); then to the Attenuation Pond until the Reclaim and Attenuation Ponds combine;
  - Truck wash bay water requirement of 300,000 m^3/year added starting July 2010 (Year 1, model month 45); water sourced from 3PL and discharged to Reclaim Pond;
  - Treated sewage water sent to Reclaim Pond via Tear Drop Lake until the end of mining in Portage Pit (December 2015, Year 6, model month 110); and
  - Dust control water sourced from freshwater at a rate of 15,000 m^3/year (3,000 m^3/month May to September) and 5,000 m^3/year (1,000 m^3/month May to September) for Portage and Vault mining areas, respectively.
- Open Pits
  - Estimated groundwater and dike inflows and seepage rates reporting to pits redistributed based on the updated mine plan;
  - Portage Pit reflooding period January 2016 (Year 7, model month 111) to August 2023 (Year 14, model month 203);
  - Goose Island Pit reflooding period January 2018 (Year 10, model month 135) to August 2023 (Year 14, model month 203);
  - Vault Pit reflooding period January 2020 (Year 11, model month 159) to August 2025 (Year 16, model month 226);
  - Tear Drop Lake diverted to Portage Pit starting January 2016 (Year 7, model month 111) and Goose Island Pit starting January 2018 (Year 9, model month 135) to assist with pit reflooding;
  - Redirection of water from 3PL to Portage and Goose Island pits starting January 2018 (Year 9, model month 135) to assist with pit reflooding; and
  - Redirection of water from Wally Lake to Vault Pit starting February 2020 (Year 11, model month 160) to assist with pit reflooding.

3.0 UPDATED MODEL RESULTS

The results of the updated site water balance are summarized in Table 1 attached and in the flow logic diagrams presented on Figures 1 to 13. The results for mine years -1 (2009), 1 (2010), 2 (2011), 4 (2013), 6 (2015), 8 (2017), 10 (2019), and 12 (2021) are presented to coincide with key periods in the mine development plan with respect to water management. Time series of key water management facilities are presented on Figures 14 to 21.

3.1 Portage Area

Dewatering of the Second Portage Lake Arm directly to 3PL commenced in March 2009 (Year -1, model month 29) and continued until July 2009 (Year -1, model month 33) when TSS levels precluded direct discharge without further treatment (Figure 15). Decant of the remaining dewatering volume commenced in October 2009 (Year -1, model month 36) with the installation of two TSS treatment systems for a combined maximum treatment capacity of 1,920 m^3/hr. The available TSS treatment capacity is estimated to be sufficient to complete decanting of the remaining water volume, including transfers from Bay-Goose Dike dewatering, by July 2011 (Year 2, model month 57) without the need for additional TSS management.

Dewatering of the Second Portage Arm will isolate three main basins:

- A north basin which will be used for tailings storage and a reclaim pond during the first 3.5 years of mill operations (Years 1 to 4; 2010 to 2013) (Figure 14);
- A central basin which will be used as an attenuation pond during the first 3.5 years of mill operations (2010 to 2013, Years 1 to 4), and for tailings storage and reclaim pond thereafter (Figure 15); and
- An east basin within which Portage Pit mining operations will be completed.

Under the current mine plan, the Tailings Storage Facility (TSF) will ultimately comprise the north and central basins and will be isolated from the east basin through the construction of the Central Dike.

In accordance with the existing mine water management plan (Doc. No. 833), the updated model results shown on Figure 15 assume that the Portage Attenuation Pond will be operated to minimize the amount of water stored within the facility during the open water season. This will facilitate the construction of the Central Dike and maximize the storage capacity available for the spring freshet reporting from the pond tributary area. Based on this approach, 500,000 m^3 to $7.8x10^6$ m^3 of water will be decanted annually to 3PL from the Portage Attenuation Pond during its operation (2010 to 2013, Years 1 to 4).

Based on the updated water balance model results shown on Figures 14 and 15, the water volume within the Reclaim Pond is expected to increase over the mine life. This is a variation from the water management plan presented in Doc. No. 833, which indicated a relatively constant reclaim pond water volume of approximately 800,000 m^3 and $4.2x10^6$ m^3, for Years 1 to 4 (2010 to 2013) and 6 to 9 (2015 to 2018), respectively. This variation is attributed to:

- Comparatively lower tailings slurry solids content in Year 1 (*i.e.,* an increase in the amount of water being sent to the TSF from process);
- The maximum reclaim rated limited to 400 m^3/hr,

- An increase in the minimum freshwater process rate (*i.e.,* a reduction in reclaim water demand to process) to 125.8 m^3/hr;
- The addition of truck washbay water; and
- Redirection of Portage and Goose Island pit water (2010, Year 1 only) and Tear Drop Lake Water from the Attenuation Pond to the Reclaim Pond.

Nevertheless, the TSF is still predicted to have sufficient capacity to store all excess water (once reclaim demands are satisfied) reporting to the Reclaim Pond during mine operations (Figures 14 and 15) providing that reclaim treatment is in place by May 2017 (Year 8, model month 127). This differs from the water management plan presented in Doc. No. 833 which indicated that reclaim water treatment would not be required until the end of mine life. A reclaim treatment rate of 15,000 m^3/day, expanding to 25,000 m^3/day at the end of mine life, has been assumed for the updated water balance model, with the treated effluent being discharged to the Portage Pit Lake. It is noted that the treatment and discharge of excess Reclaim Pond water to the Portage Pit Lake may occur as early as January 2016 (Year 7, model month 111), if required. In accordance with Doc. No. 833, the proposed water treatment strategy for reclaim pond water should be reviewed and updated as required throughout the mine life based on observed reclaim water quality and storage volumes.

As described in Doc. No. 833, the model assumes average year climate conditions. Extreme events were not incorporated into the model as it was assumed that the following contact water management contingencies would be in place:

1) The contact water management infrastructure will be designed, sized and operated to intercept and contain extreme event run-off from the mine affected areas.

2) Following the construction of the Stormwater Dike across 2PL Arm in 2010 (Year 1), the Reclaim Pond basin would have the capacity to store up to $6.5x10^6$ m^3 of water if necessary. In 2013 (Year 4), the Portage Attenuation and Reclaim ponds combine, and tailings deposition will begin in the TSF south cell. Following construction of the Central Dike to elevation 150 masl, the TSF would have an approximate water storage capacity of $12.0x10^6$ m^3.

3) The Portage Attenuation Pond has a capacity of approximately $2.8X10^6$ m^3 to El. 116 masl (the bathymetric divide between the main and east basins) and should accommodate the storage needs until the Portage Attenuation and Reclaim ponds combine in 2013 (Year 4). Under the updated water management strategy, attenuation water is monitored, treated (if necessary) and released to 3PL until the ponds combine. If required, additional capacity within the Portage Attenuation Pond basin could be obtained through the construction of the Central Dike prior to 2013 (Year 4).

4) Any excess contact water would be directed to the TSF or to open pits if available for temporary storage prior to recycle, re-use, and/or treatment (if necessary) and release to the environment. Upon completion of pit operations, excess water would be directed to the pit lakes to assist with reflooding.

Based on the above, the uncontrolled release of contact water to the neighbouring lakes during mine life is not anticipated.

The modeled process water rates over the life of mine are presented on Figure 16. As indicated, excess freshwater make-up to process is required in 2010 (Year 1, model months 39 to 50) to provide for mill start-up,

and due to the comparatively lower tailings slurry solids content (*i.e.,* greater amount of water required for process) and limit on maximum reclaim pumping capacity. With the increase in tailings slurry solid content in January 2011 (Year 2, model month 51) onwards, the total process water demand drops, and the modeled reclaim rate is dictated by the minimum process freshwater requirement (*i.e.,* approximately 91,900 m^3/mon) rather than reclaim water availability or pumping capacity.

Under the previous version of the water balance model described in Doc. No. 833, freshwater make-up water requirements to process were satisfied in part using Portage Attenuation Pond transfers in 2010 to 2013 (Years 1 to 4). Owing to water quality (TSS) and logistic concerns, it is understood that the use of Portage Attenuation Pond water is not currently planned, and freshwater make-up to process will be sourced entirely from 3PL. The estimated freshwater requirements from all modeled sources are presented on Figure 17 and Table 1. As indicated, the annual freshwater requirement to process in 2010 (Year 1) is slightly greater than the remaining years owing to the process water requirements described above; however the total annual freshwater requirement from all sources modeled is comparable at approximately 1.43 to 1.45x10^6 m^3/yr prior to diversion of 3PL water to assist with pit flooding in 2018 (Year 9).

Flooding of the Portage Pit via diversion of Tear Drop Lake water and groundwater and dike seepage and runoff collection is assumed to commence in January 2016 (Year 7, model month 111), while the discharge of treated reclaim pond water to the flooding pit is assumed to begin June 2017 (Year 8, model month 128). Flooding via controlled discharge from 3PL will not commence until January 2018 (Year 9, model month 135) when Goose Island Pit operations cease, and will continue at an average annual rate of approximately 4.88x10^6 m^3/yr (pumped June through September) through 2023 (Year 14, Figures 18 and 19). In accordance with Doc. No. 833, the average annual discharge rate from 3PL was set to accommodate all of the Portage and Goose Island pit inflows and tributary area runoff, the mill site runoff, and reclaim pond treatment discharge over an eight year period (assuming average annual conditions). A reduction in the estimated average annual (4.88x10^6 m^3/yr from 5.28x10^6 m^3/yr) and total (29.3x10^6 m^3 from 42.2x10^6 m^3) 3PL water requirement for Portage and Goose Island pit flooding is realized under the updated mine plan due to the greater proportion of pit inflows, tributary area runoff, Tear Drop Lake diversions, and treated reclaim water being sent to the pit within the eight year flooding period. As described in Doc. No. 833, the estimated reflooding volumes within the Goose Island and Portage pit dike areas, including the mined out pits, is approximately 12.7x10^6 m^3 and 42.9x10^6 m^3, respectively, for a total reflooding volume of approximately 55.6x10^6 m^3.

An annual total freshwater requirement of 1.45x10^6 m^3/yr is greater than the currently licensed value of 700,000 m^3 from all sources including explosives mixing (Nunavut Water Board Water Licence No. 2AM-MEA0815 Type “A” dated June 9, 2008). As indicated in Table 1, the estimated water discharges to 3PL in 2010 to 2012 (Years 1 to 3) exceed the freshwater demands during the same period. In 2014 to 2017 (Years 5 to 8), approximately 750,000 m^3/year of additional water will be required from 3PL (assuming Vault dust control water sourced from 3PL) in comparison to the licensed conditions. However, the diversion of 3PL water to assist with pit reflooding has been delayed 3 years from 2015 (Year 6) to 2018 (Year 9) under the updated mine plan (*i.e.,* total freshwater demand in Years 6 to 8 are less than modeled previously), and the modeled average annual reflooding requirement from 3PL has been reduced by approximately 400,000 m^3/year. Given the above, and the relatively large surface area and volume of 3PL (approximately 33 km^2 and 446x10^6 m^3, respectively; Golder, 2006. *Bathymetric Surveys Meadowbank Project Nunavut*, Doc. 309, Ver. O, dated 24 November, 2006), a total annual freshwater requirement of 1.45x10^6 m^3/yr is expected to have minimal impact on 3PL water levels relative to anticipated levels under the previous mine plan and current license conditions.

3.2 Vault Area

Vault Lake dewatering and mining operations within the Vault Pit commence in 2014 (Year 5) and 2015 (Year 6), respectively (Table 1, Figure 20). The existing TSS treatment capacity on site for the dewatering of Second Portage Arm is estimated to be sufficient to complete dewatering of Vault Lake by January 2015 (Year 6, model month 99) without the need for the additional TSS management.

During mining operations, Vault Pit and RSF runoff will be redirected to the Vault Attenuation Pond prior to treatment (if necessary) and discharge to Wally Lake. In accordance with Doc. No. 833, the Vault Attenuation Pond was assumed to be operated such that the annual volume of water collected within the pond on a hydrologic year basis (Oct. 1 through Sept. 30) would be decanted during the open water period between June and September (Figure 20). This limits the amount of water that will be stored over the winter period and maximizes the storage capacity available for the spring freshet from the pond tributary area.

Flooding of the Vault Pit and Attenuation Pond via controlled discharge from Wally Lake is assumed to commence February 2020 (Year 11, model month 160) and continue at an average annual rate of approximately 4.0×10^6 m^3/yr (pumped June through September) through 2025 (Year 16, Figure 21). The estimated average annual and total (24.2×10^6 m^3) Wally Lake water requirement for pit flooding is the same as was presented in Doc. No. 833. The estimated reflooding volume within the Vault Dike, including the mined-out pit, is approximately 26.9×10^6 m^3.

4.0 CLOSURE

We trust the above information meets with your requirements. If additional information is required, please do not hesitate to contact us.

GOLDER ASSOCIATES LTD.

ORIGINAL SIGNED

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ORIGINAL SIGNED AND SEALED

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DRW/RM/rs/aw

Attachments: Table 1: Updated Water Balance Model Summary
Figures 1 to 21

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Table 1: Updated Water Balance Model Summary

	Year -1		Year 1		Year 2		Year 4		Year 6		Year 8		Year 10		Year 12	
	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow
	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year
Reclaim Pond (Mine Year 1 to 4)																
Pumped from Wash Bay			150,000		300,000		125,000									
Treated Sewage from Tear Drop Lake			28,927		0		0									
Pumped from Goose Pit					0		0									
Pumped from Portage Pit			709,600		0		0									
Tails Storage Runoff & Seepage			2,480,600		1,834,200		735,400									
Other Areas Runoff			568,900		95,200		0									
Rock Storage Runoff			18,300		24,400		0									
Direct Precipitation			44,000		44,500		39,500									
Direct Evaporation				53,600		52,000		47,900								
Decant to Attenuation								2,750,000								
Reclaim Water to Mill				2,667,100		1,796,200		898,100								
Sub-Total			4,000,327	2,720,700	2,298,300	1,848,200	899,900	3,696,000								
Change in Storage			**1,279,627**		**450,100**		**(2,976,100)**									
Stormwater Attenuation Pond (Reclaim Pond Mine Year 4 to 9)																
Pumped from Wash Bay							175,000		300,000		300,000		300,000			
Treated Sewage from Tear Drop Lake	28,927		0				28,927		28,927							
Pumped from Goose Pit					2,282,797		348,400		985,200		1,009,300					
Pumped from Portage Pit	344,700		0		792,916		966,400		1,061,700							
East Dike to Attenuation	3,467,833		161,104													
Bay-Goose Dike Construction			1,095,760													
Rock Storage Runoff	7,717						24,400		24,400		82,700		82,700		82,700	
Other Areas Runoff	113,900		225,200		355,800		373,600		328,100		517,500		124,300		329,000	
Decant from Reclaim Pond							2,750,000									
Tails Storage Runoff & Seepage							1,167,700		1,932,600		1,953,800		1,965,700			
Direct Precipitation	108,700		27,200		300		27,700		37,400		31,400		6,200			
Direct Evaporation		128,200		28,500		200		60,000		45,400		37,200		6,700		
Reclaim Water to Mill								898,100		1,796,200		1,796,200		1,796,200		
Dewater to Third Portage		9,294,600														
Decant to Third Portage Lake		2,892,200		7,811,900		3,461,231		510,100								
Treatment to Portage Pit												3,652,500		2,832,300		205,800
Treatment to Goose Pit														2,832,300		205,800
Sub-Total	4,071,777	12,315,000	1,509,264	7,840,400	3,431,813	3,461,431	5,862,127	1,468,200	4,698,327	1,841,600	3,894,700	5,485,900	2,478,900	7,467,500	411,700	411,600
Change in Storage	**(8,243,223)**		**(6,331,136)**		**(29,618)**		**4,393,927**		**2,856,727**		**(1,591,200)**		**(4,988,600)**		**100**	
Mill Water Balance																
Ore Water			74,500		107,900		107,900		107,900		107,900		107,900		0	
Reclaim Water			2,667,100		1,796,200		1,796,200		1,796,200		1,796,200		1,796,200		0	
Process Freshwater from Third Portage			1,236,700		1,102,800		1,102,800		1,102,800		1,102,800		1,102,800		0	
Tailings Transport Water				3,978,400		3,006,800		3,006,800		3,006,800		3,006,800		3,006,800		0
Sub-Total			3,978,300	3,978,400	3,006,900	3,006,800	3,006,900	3,006,800	3,006,900	3,006,800	3,006,900	3,006,800	3,006,900	3,006,800	0	0
Balance			**(100)**		**100**		**100**		**100**		**100**		**100**		**0**	

Note: Based on mine year.

Table 1: Updated Water Balance Model Summary (continued)

	Year -1		Year 1		Year 2		Year 4		Year 6		Year 8		Year 10		Year 12	
	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow
	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year
Goose Island Pit (Reflooding begins Mine Year 9)																
Direct Precipitation											0		25,700		76,400	
Other Area Runoff					0		0		0		0		159,100		133,600	
Goose Island Pit Runoff & Seepage					239,500		348,400		985,200		1,009,300		751,300		495,900	
Treated from Reclaim Pond											0		2,832,300		205,800	
Pumped from Third Portage											0		360,000		360,000	
Dewater to Third Portage						2,282,797										
Treated Sewage from Tear Drop Lake													14,464		14,464	
Pumped to Reclaim (to Mine Year 4)						0		0								
Pumped to Attenuation/Reclaim						2,282,797		348,400		985,200		1,009,300		0		
Evaporation												0		31,800		99,300
Sub-Total					239,500	4,565,594	348,400	348,400	985,200	985,200	1,009,300	1,009,300	4,142,864	31,800	1,286,164	99,300
Change in Storage					**(4,326,094)**		**0**		**0**		**0**		**4,111,064**		**1,186,864**	
Portage Pit (Reflooding begins Mine Year 7)																
Direct Precipitation											28,400		100,400		143,000	
Other Area Runoff											234,500		138,400		134,300	
Portage Runoff and Seepage	344,700		709,600		792,900		966,400		1,061,700		2,147,900		919,500		504,700	
Treated from Reclaim Pond											3,652,500		2,832,300		205,800	
Pumped from Third Portage													4,520,000		4,520,000	
Treated Sewage from Tear Drop Lake											28,927		14,464		14,464	
Pumped to Reclaim (to Mine Year 4)				709,600		0		0								
Pumped to Attenuation/Reclaim		344,700		0		792,916		966,400		1,061,700						
Evaporation												38,200		124,000		177,400
Sub-Total	344,700	344,700	709,600	709,600	792,900	792,916	966,400	966,400	1,061,700	1,061,700	6,092,227	38,200	8,525,064	124,000	5,522,264	177,400
Change in Storage	**0**		**0**		**(16)**		**0**		**0**		**6,054,027**		**8,401,064**		**5,344,864**	
Vault Water Attenuation Pond (Reflooding begins Mine Year 11)																
Vault Pit Runoff & Seepage									28,300		48,900		48,900			
Rock Storage Runoff									24,600		52,600		52,600		178,200	
Other Areas Runoff									489,500		378,000		378,000		570,400	
Direct Runoff									3,800		3,400		3,400		35,600	
Pumped from Wally Lake															4,040,000	
Direct Evaporation										9,300		8,000		8,000		46,700
Decant to Wally Lake										537,000		474,800		474,800		
Sub-Total									546,200	546,300	482,900	482,800	482,900	482,800	4,824,200	46,700
Change in Storage									**(100)**		**100**		**100**		**4,777,500**	

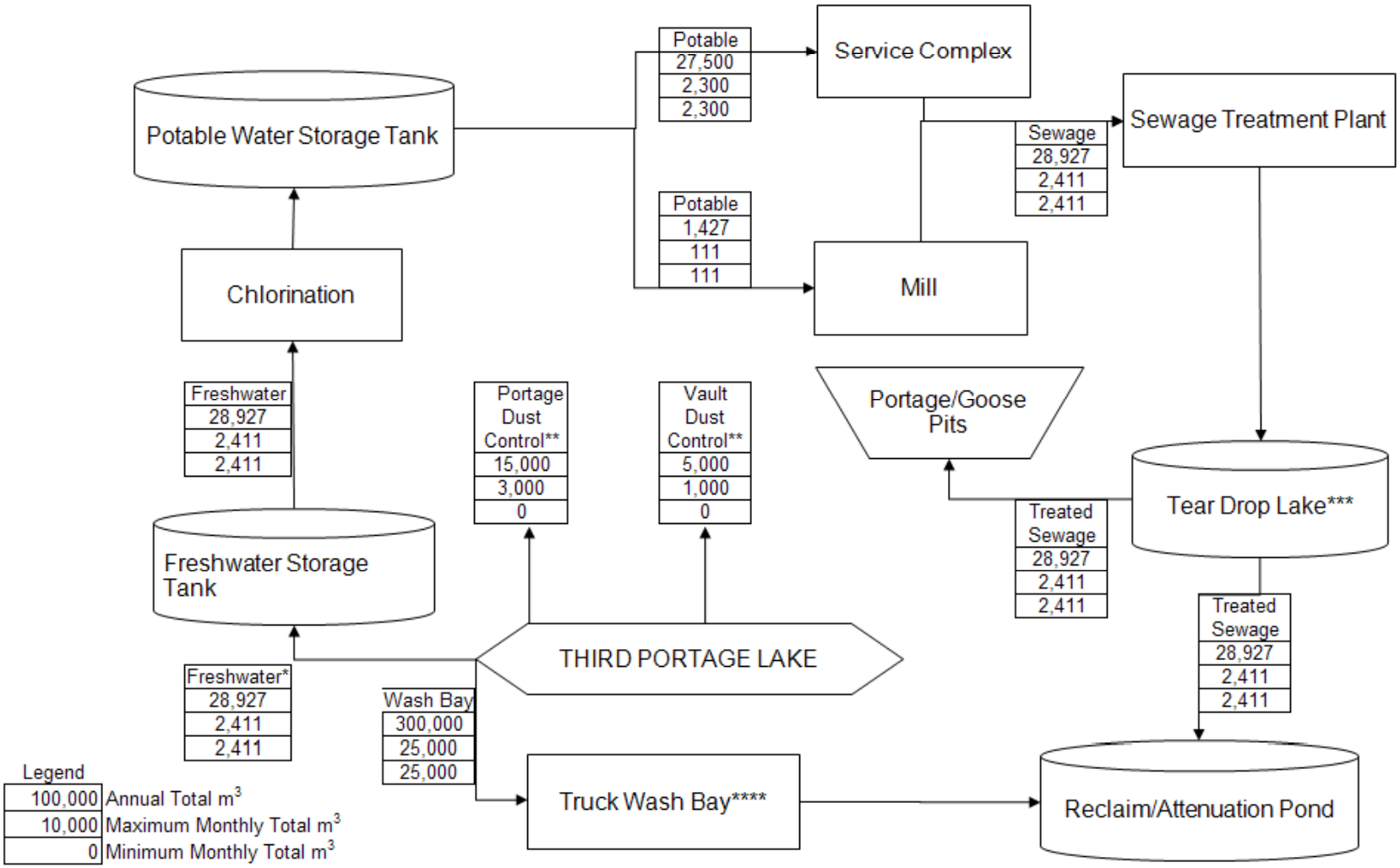
Note: Based on mine year.

Table 1: Updated Water Balance Model Summary (continued)

	Year -1		Year 1		Year 2		Year 4		Year 6		Year 8		Year 10		Year 12	
	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow	inflow	outflow
	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year	m³/year
Third Portage Lake																
Freshwater to Process				1,236,728		1,102,764		1,102,764		1,102,764		1,102,764		1,102,764		0
Potable Freshwater		28,927		28,927		28,927		28,927		28,927		28,927		28,927		28,927
Wash Bay Water				150,000		300,000		300,000		300,000		300,000		300,000		0
Dust Control to Portage		15,000		15,000		15,000		15,000		15,000		15,000		15,000		0
Dust Control to Vault										5,000		5,000		5,000		0
Pumped to Goose Pit														360,000		360,000
Pumped to Portage Pit														4,520,000		4,520,000
Dewater from Attenuation	9,294,600															
Decant from Attenuation Treatment	2,892,200		7,811,900		3,461,231		510,100									
Dewater from Bay-Goose Dike					2,282,797											
Sub-Total	12,186,800	43,927	7,811,900	1,430,655	5,744,028	1,446,691	510,100	1,446,691	0	1,451,691	0	1,451,691	0	6,331,691	0	4,908,927
Change in Storage	**12,142,873**		**6,381,245**		**4,297,337**		**(936,591)**		**(1,451,691)**		**(1,451,691)**		**(6,331,691)**		**(4,908,927)**	
Wally Lake																
Decant from Attenuation									537,000		474,800		474,800			
Pumped to Vault Lake																4,040,000
Sub-Total									537,000	0	474,800	0	474,800	0	0	4,040,000
Change in Storage									**537,000**		**474,800**		**474,800**		**(4,040,000)**	

Note: Based on mine year.

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 1 to 13.ppt



* Freshwater requirements for milling process circuit not shown for clarity (see Figures 2-8)

** Dust control for Portage (3,000 m^3 per month May through September Mine Year 1 through 10) and Vault (1000 m^3 per month May through September Mine Year 6 through 10). Represents a model sink

*** Treated sewage water directed (via Tear Drop Lake) to Reclaim Pond mine years 1 and 4 to 6, to Attenuation Pond years 2 to 4, and Portage/Goose Pits in mine year 7 onwards to assist with pit flooding.

**** Wash Bay Water directed to Reclaim Pond

PROJECT

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

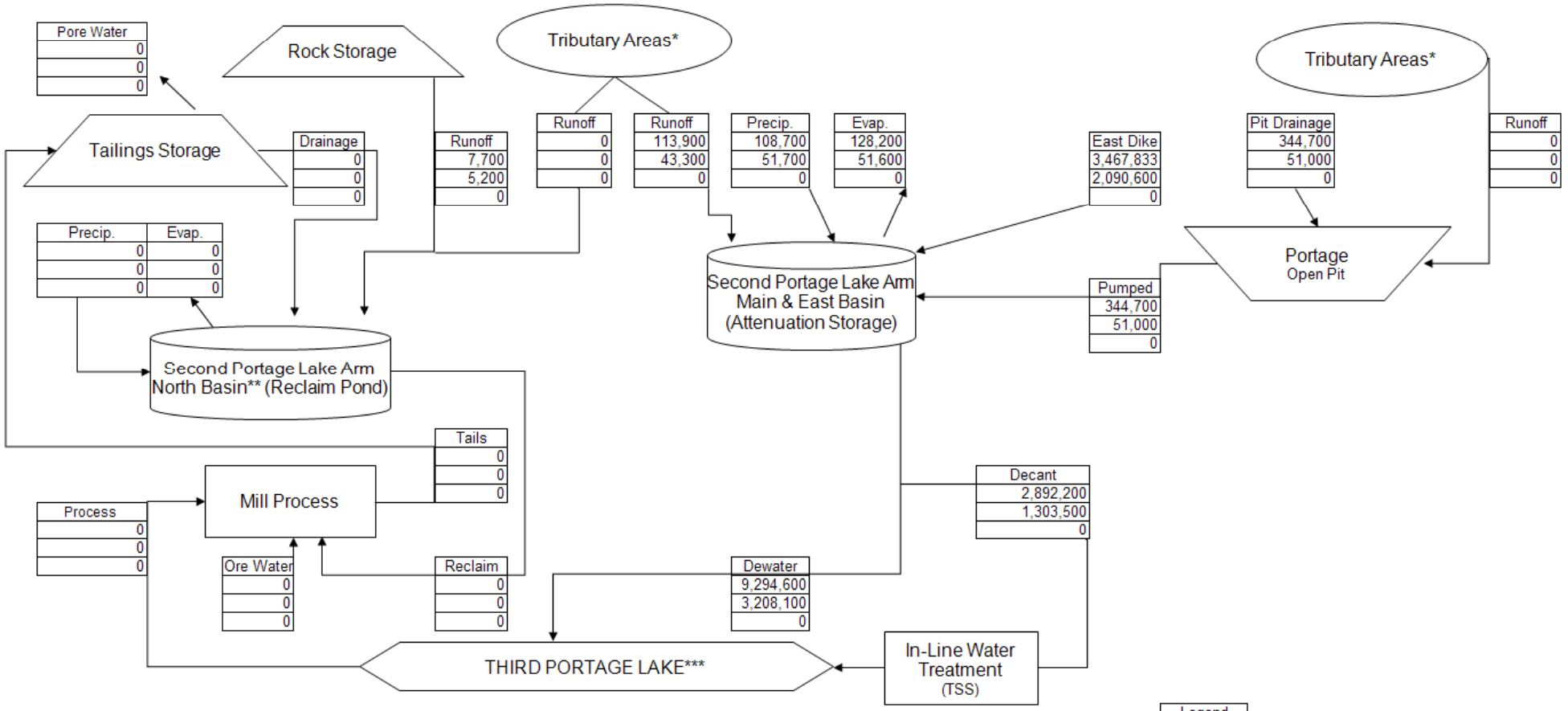
TITLE

POTABLE WATER BALANCE

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10	FIGURE 1	
CHECK				
REVIEW				

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 1 to 13.ppt



* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.
** Transfers to Second Portage Lake Arm from Sewage Treatment via Tear Drop Lake not shown for clarity (See Figure 1)
*** Freshwater withdrawals from Third Portage Lake for potable water (3.3 m^3/h) not shown for clarity (See Figure 1)

Legend	
100,000	Annual Total m^3
10,000	Maximum Monthly Total m^3
0	Minimum Monthly Total m^3
----------	if required

PROJECT

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

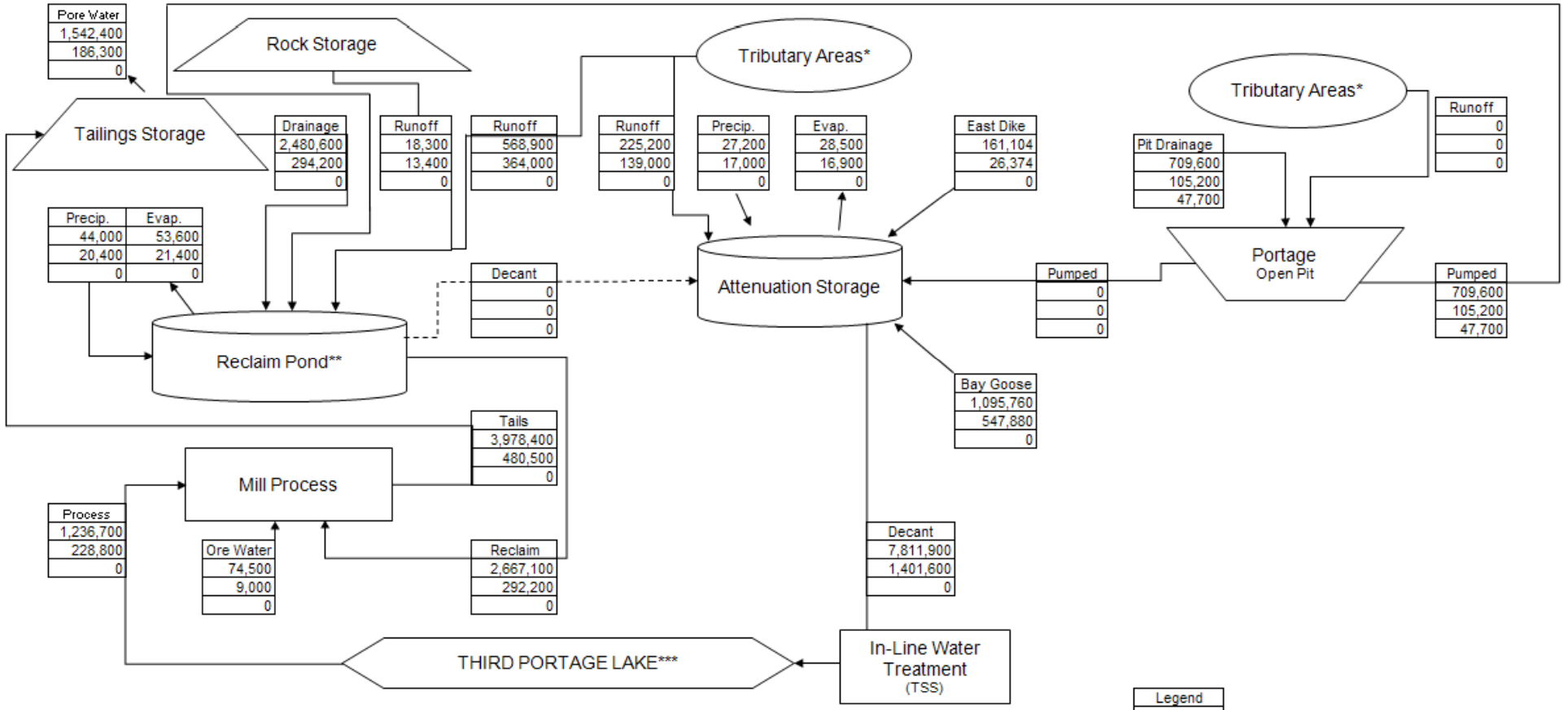
TITLE

PORTAGE LOGIC DIAGRAM YEAR -1 (2009)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10	FIGURE 2	
CHECK				
REVIEW				

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 1 to 13.ppt



* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.

** Transfers of treated sewage (via Tear Drop Lake) and truck washbay water to the Reclaim Pond not shown for clarity. See Figure 1.

*** Freshwater withdrawal for potable water (3.3 m^3/h), dust control (3,000 m^3/month for May through September) and truck washbay water not shown for clarity. See Figure 1.

Legend	
100,000	Annual Total m^3
10,000	Maximum Monthly Total m^3
0	Minimum Monthly Total m^3
---------	if required

PROJECT

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE

PORTAGE LOGIC DIAGRAM YEAR 1 (2010)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
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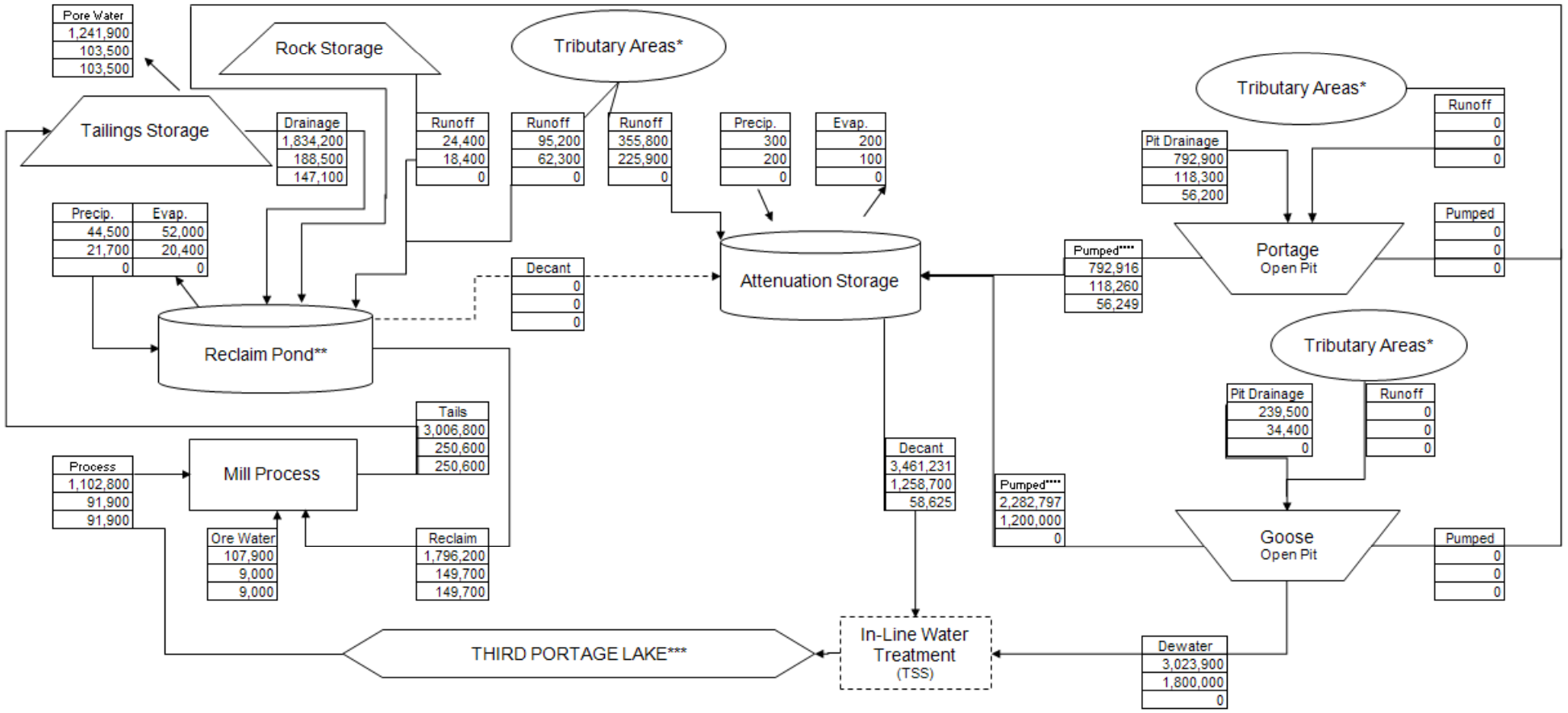
REVIEW				

FIGURE 3

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 1 to 13.ppt



* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.

** Transfers of treated sewage (via Tear Drop Lake) and truck washbay water to the Reclaim Pond not shown for clarity. See Figure 1.

*** Freshwater withdrawal for potable water (3.3 m^3/h), dust control (3,000 m^3/month for May through September) and truck washbay water not shown for clarity. See Figure 1.

**** Pumped water from Goose Pit to Attenuation includes dewatering volume that requires TSS treatment prior to decant to 3PL

Legend	
100,000	Annual Total m^3
10,000	Maximum Monthly Total m^3
0	Minimum Monthly Total m^3
- - - - - - - -	if required

PROJECT

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE

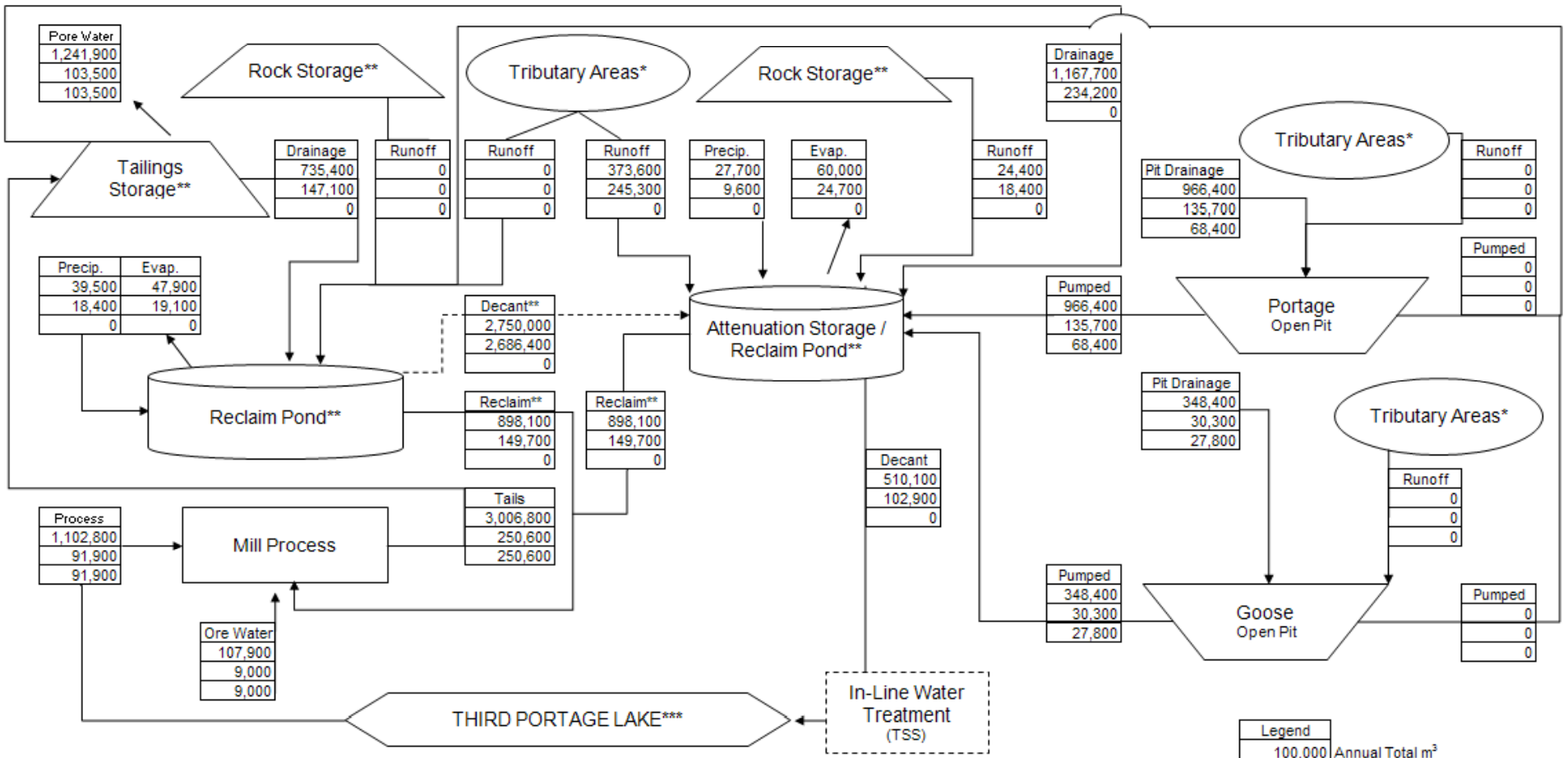
PORTAGE LOGIC DIAGRAM YEAR 2 (2011)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
CHECK				
REVIEW				

FIGURE 4

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 1 to 13.ppt



* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.

** Reclaim Pond and Attenuation storage start to combine Mine Year 4. Reclaim from Attenuation Storage, Tailings Drainage, and Rock Storage Runoff to Attenuation occurs once Reclaim Pond is closed. Decant from Attenuation Storage occurs until ponds start to combine. Transfers of treated sewage (via Tear Drop Lake) and truck washbay water to the Reclaim Pond not shown for clarity. See Figure 1.

*** Freshwater withdrawal for potable water (3.3 m^3/h), dust control (3,000 m^3/month for May through September) and truck washbay water not shown for clarity. See Figure 1.

PROJECT

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE

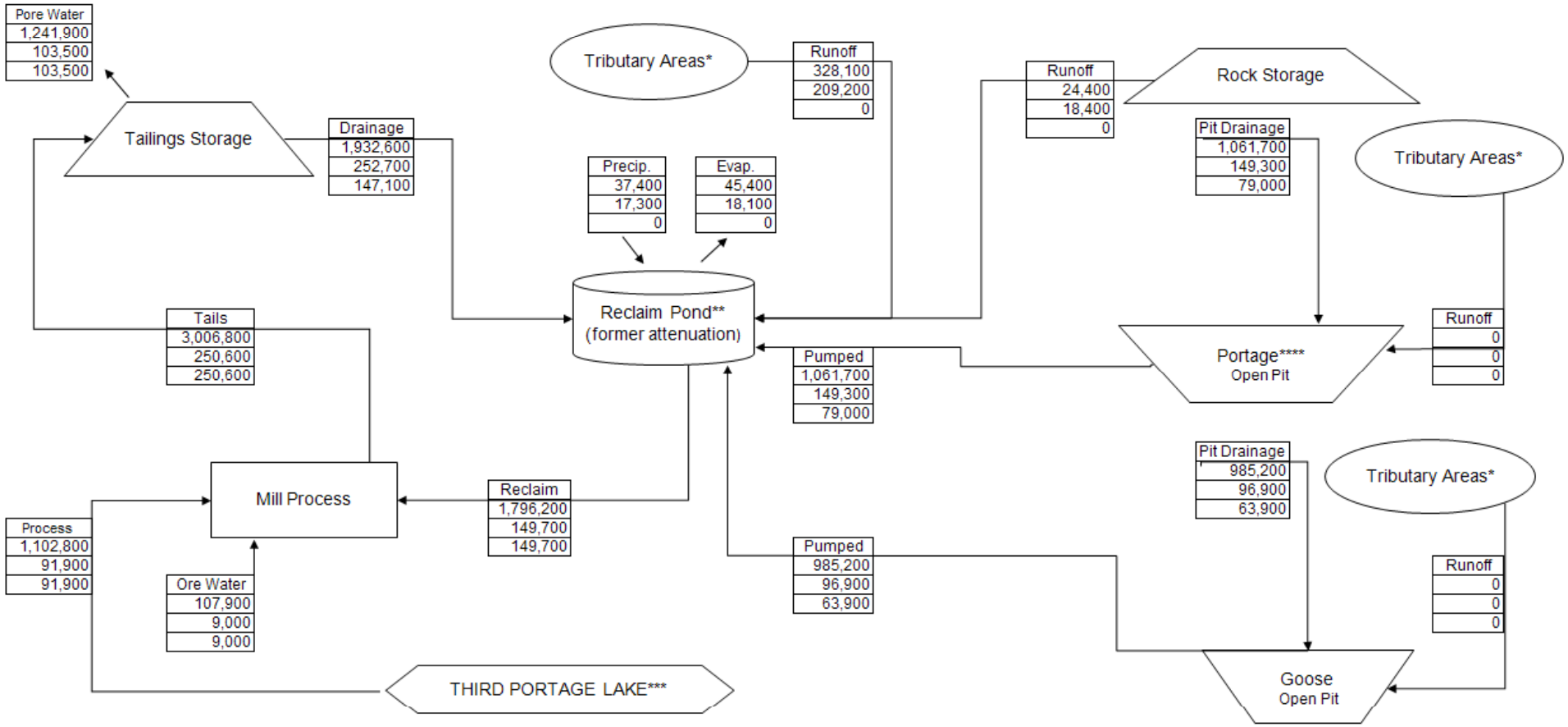
PORTAGE LOGIC DIAGRAM YEAR 4 (2013)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092		
DESIGN	DRW	24AUG10	SCALE NTS		REV. 0
CADD	DRW	24AUG10			
CHECK					
REVIEW					

FIGURE 5

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 1 to 13.ppt



* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.

** Transfers of treated sewage to the Reclaim Pond or Portage Pit (via Tear Drop Lake), and truck wash bay water to the Reclaim Pond not shown for clarity. See Figure 1.

*** Freshwater withdrawal for potable water (3.3 m^3/h), dust control (3,000 m^3/month for May through September) and truck washbay water not shown for clarity. See Fig 1.

**** Cessation of mining operations in Portage Pit occurs in Mine Year 6. In Mine Year 7 pumping of Portage Pit water to Reclaim Pond ceases & redirection of Tear Drop Lake water (incl. treated sewage) to Portage Pit commences to assist with pit flooding.

Legend	
100,000	Annual Total m^3
10,000	Maximum Monthly Total m^3
0	Minimum Monthly Total m^3
-------	if required

PROJECT

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE

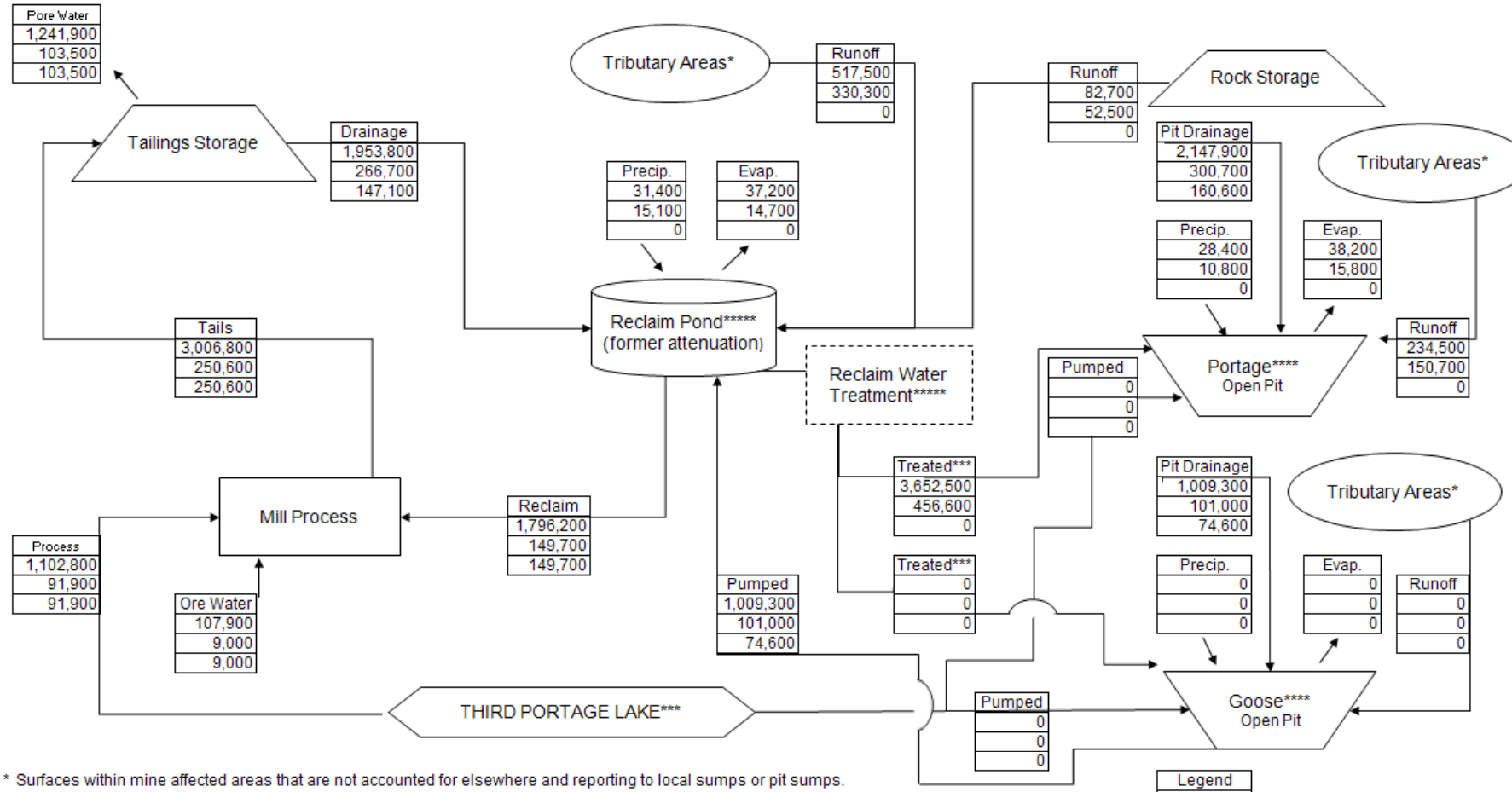
PORTAGE LOGIC DIAGRAM YEAR 6 (2015)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
CHECK				
REVIEW				

FIGURE 6

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 1 to 13.ppt



* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.

** Transfers of treated sewage to the Portage Pit (via Tear Drop Lake) and truck wash bay water to the Reclaim Pond not shown for clarity. See Figure 1.

*** Freshwater withdrawal for potable water (3.3 m^3/h), dust control (3,000 m^3/month for May through September) and truck washbay water not shown for clarity. See Fig 1.

**** Cessation of mining operations in Portage Pit and Goose Pit, occurs in Mine Years 6 and 8, respectively. Commencement of transfers from Third Portage Lake to assist with pit flooding occurs in Mine Year 9. Redirection of Tear Drop Lake water to Portage Pit commences in Mine Year 7.

***** Treatment of Reclaim Pond water begins in Mine Year 8. Treated water assumed to be discharged to Portage Pit in Mine Year 8 and then in equal proportions to the Portage and Goose Island pits in Mine Year 9 onwards.

Legend	
100,000	Annual Total m^3
10,000	Maximum Monthly Total m^3
0	Minimum Monthly Total m^3
-------	if required

PROJECT

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

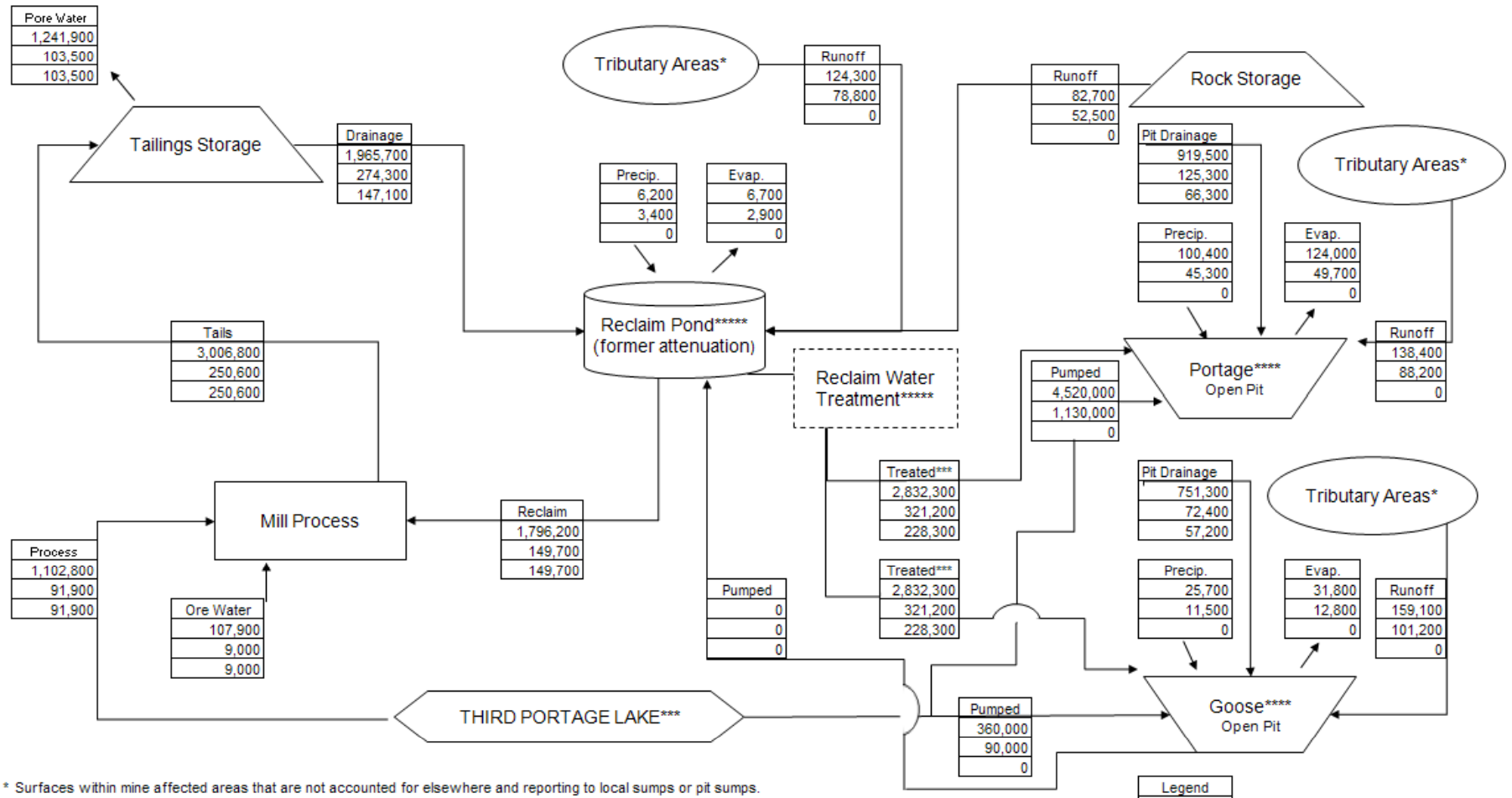
TITLE

PORTAGE LOGIC DIAGRAM YEAR 8 (2017)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092		
DESIGN	DRW	24AUG10	SCALE NTS		REV. 0
CADD	DRW	24AUG10	FIGURE 7		
CHECK					
REVIEW					

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 1 to 13.ppt



* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.

** Transfers of treated sewage to the Portage Pit (via Tear Drop Lake) and truck wash bay water to the Reclaim Pond not shown for clarity. See Figure 1.

*** Freshwater withdrawal for potable water (3.3 m^3/h), dust control (3,000 m^3/month for May through September) and truck washbay water not shown for clarity. See Fig 1.

**** Cessation of mining operations in Portage Pit and Goose Pit, occurs in Mine Years 6 and 8, respectively. Commencement of transfers from Third Portage Lake to assist with pit flooding occurs in Mine Year 9. Redirection of Tear Drop Lake water to Portage Pit commences in Mine Year 7.

***** Treatment of Reclaim Pond water begins in Mine Year 8. Treated water assumed to be discharged to Portage Pit in Mine Year 8 and then in equal proportions to the Portage and Goose Island pits in Mine Year 9 onwards.

PROJECT

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE

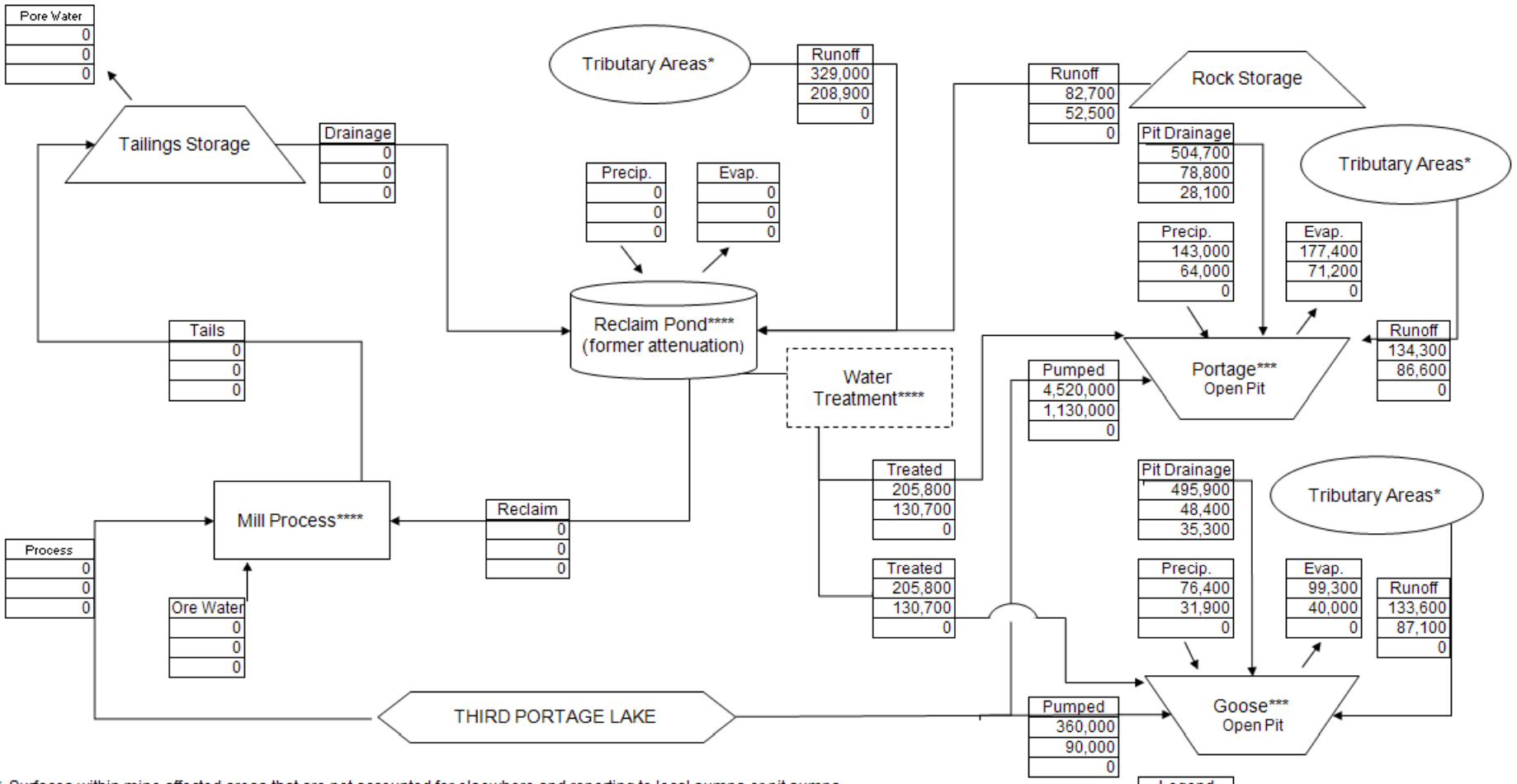
PORTAGE LOGIC DIAGRAM YEAR 10 (2019)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
CHECK				
REVIEW				

FIGURE 8

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 1 to 13.ppt



* Surfaces within mine affected areas that are not accounted for elsewhere and reporting to local sumps or pit sumps.

** Transfers of treated sewage to the Portage Pit (via Tear Drop Lake) and truck wash bay water to the Reclaim Pond not shown for clarity. See Figure 1.

*** Cessation of mining operations in Portage Pit and Goose Pit, occurs in Mine Years 6 and 8, respectively. Commencement of transfers from Third Portage Lake to assist with pit flooding occurs in Mine Year 9. Redirection of Tear Drop Lake water to Portage Pit commences in Mine Year 7.

**** Mill operations and truck wash bay cease in Mine Year 10. Treatment of Reclaim Pond water begins in Mine Year 8. Treated water assumed to be discharged to Portage Pit in Mine Year 8 and then in equal proportions to the Portage and Goose Island pits in Mine Year 9 onwards.

PROJECT

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

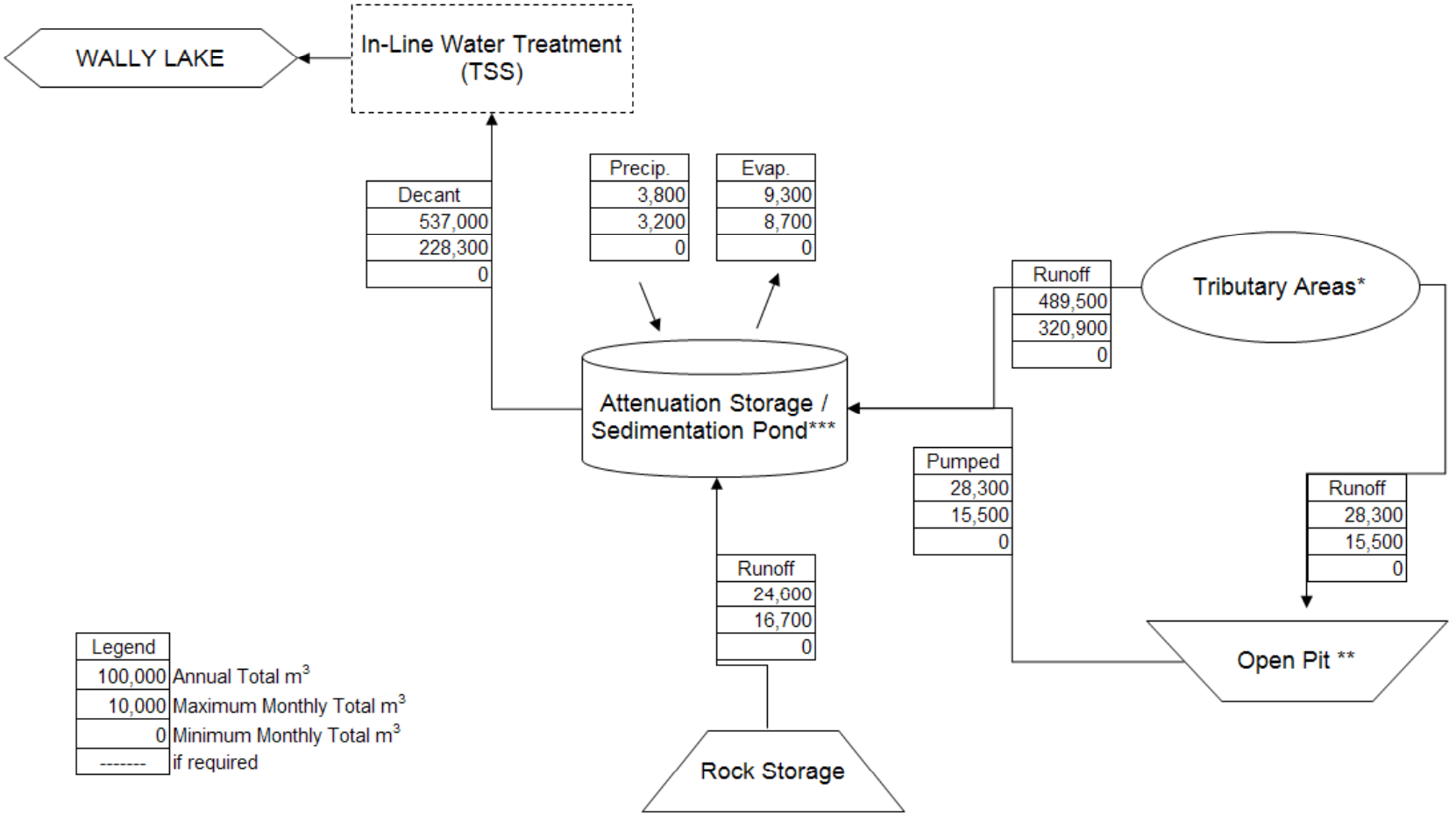
TITLE

PORTAGE LOGIC DIAGRAM YEAR 12 (2021)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
CHECK			**FIGURE 9**	
REVIEW				

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 1 to 13.ppt



* Surfaces within mine affected areas that are not accounted for elsewhere reporting to local sumps or pit sumps.

** Vault Pit Mining commences Mine Year 6

*** Freshwater withdrawal for dust control (1,000 m^3/month for May through September Mine Year 6 through 10) not shown for clarity. See Fig 1.

PROJECT

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

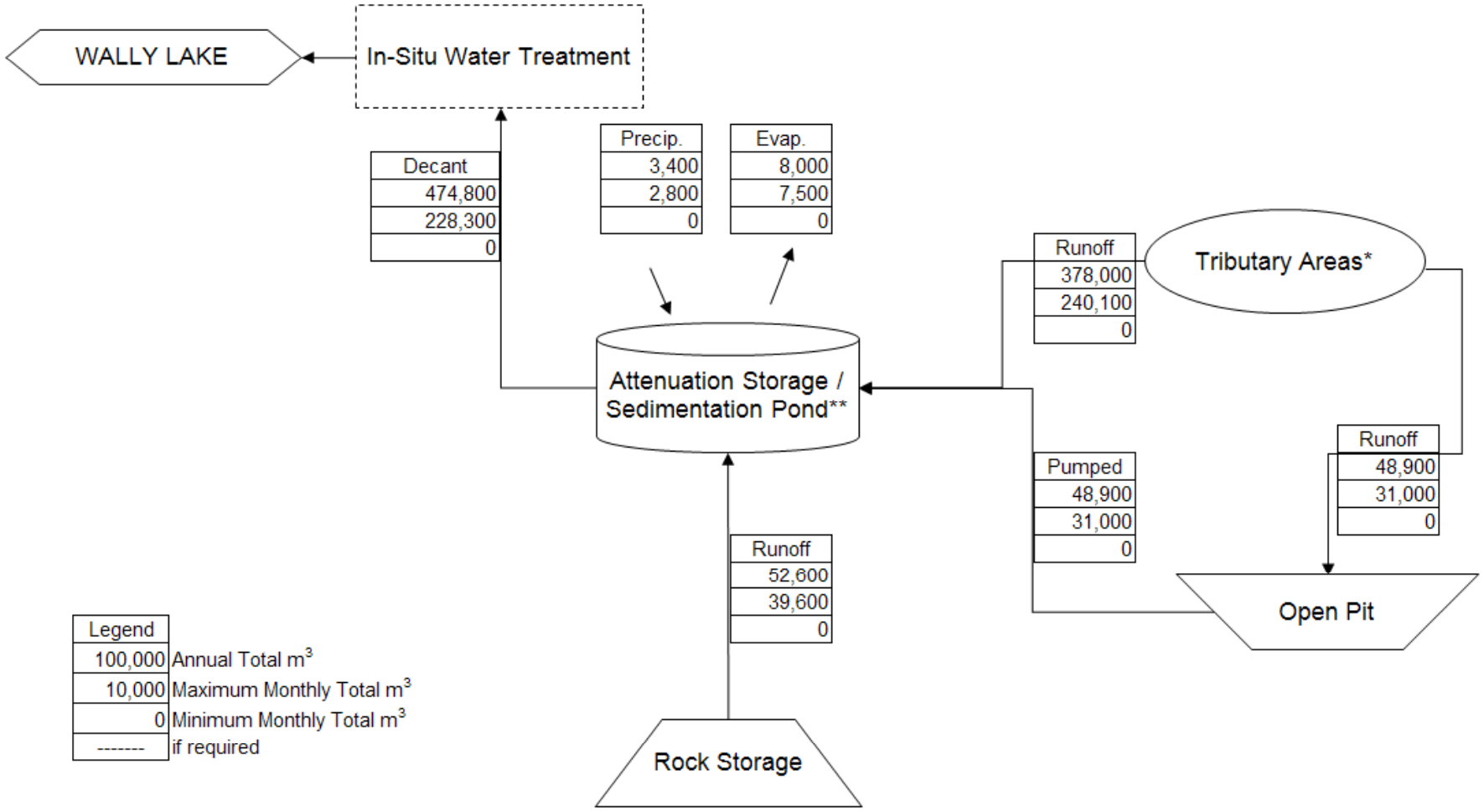
TITLE

VAULT LOGIC DIAGRAM YEAR 6 (2015)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
CHECK			**FIGURE 10**	
REVIEW				

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 1 to 13.ppt



* Surfaces within mine affected areas that are not accounted for elsewhere reporting to local sumps or pit sumps.

** Freshwater withdrawal for dust control (1,000 m^3/month for May through September Mine Year 6 through 10) not shown for clarity. See Fig 1.

PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

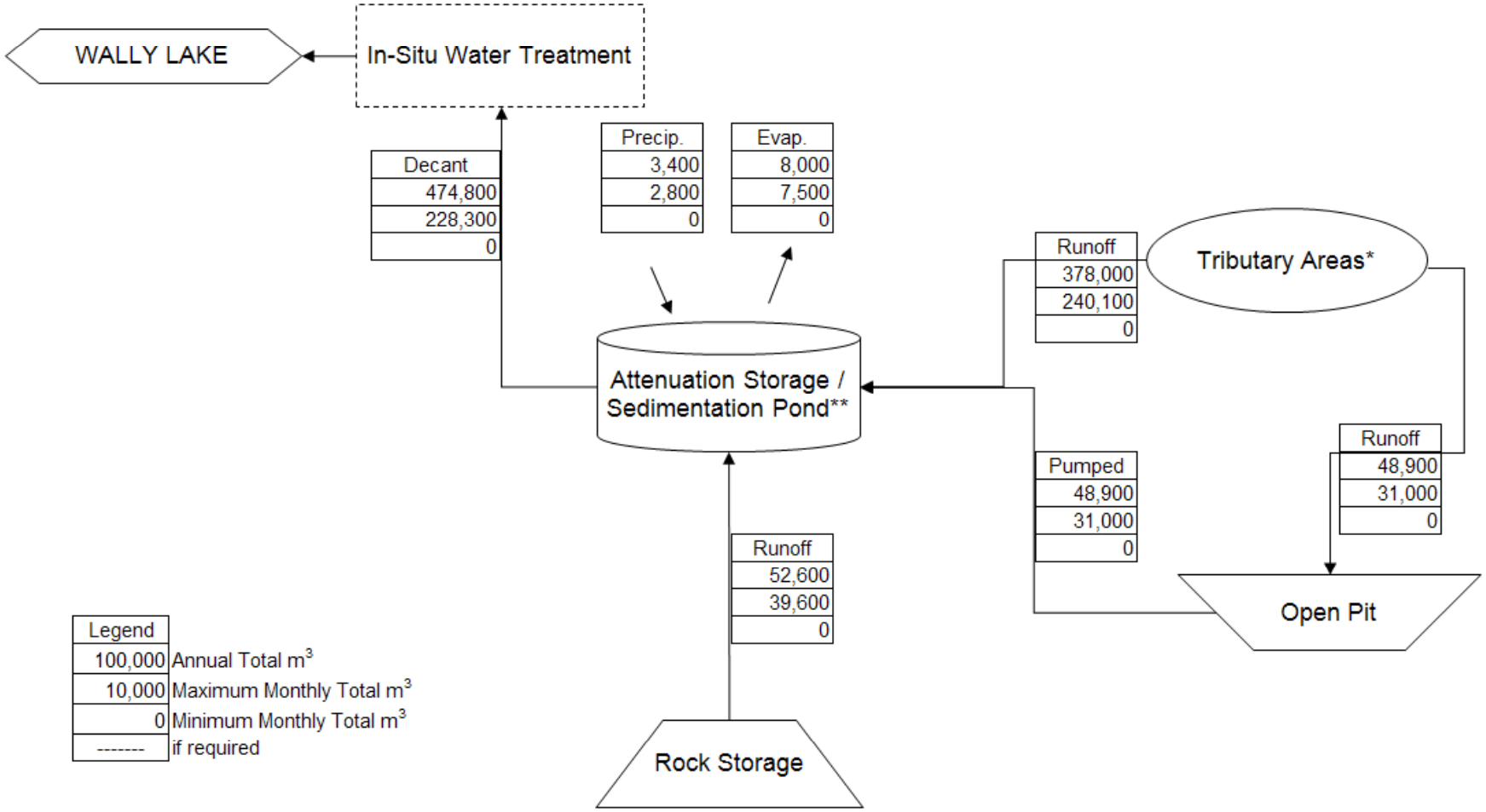
TITLE

VAULT LOGIC DIAGRAM YEAR 8 (2017)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
CHECK				
REVIEW				

FIGURE 11



* Surfaces within mine affected areas that are not accounted for elsewhere reporting to local sumps or pit sumps.

** Freshwater withdrawal for dust control (1,000 m^3/month for May through September Mine Year 6 through 10) not shown for clarity. See Fig 1.

PROJECT

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

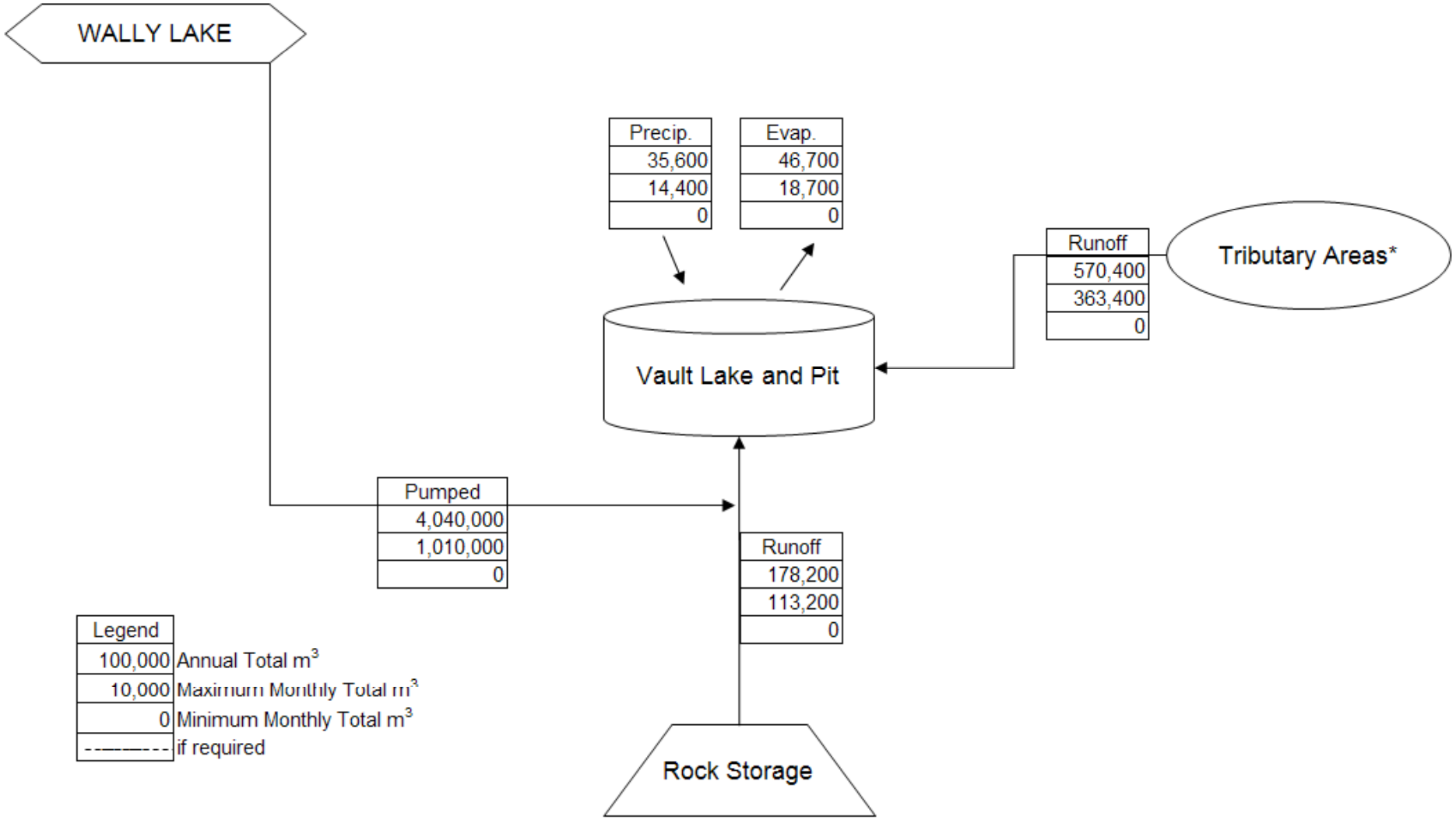
TITLE

VAULT LOGIC DIAGRAM YEAR 10 (2019)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
CHECK				
REVIEW				

FIGURE 12



* Surfaces within mine affected areas that are not accounted for elsewhere reporting to local sumps or pit sumps.

PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE

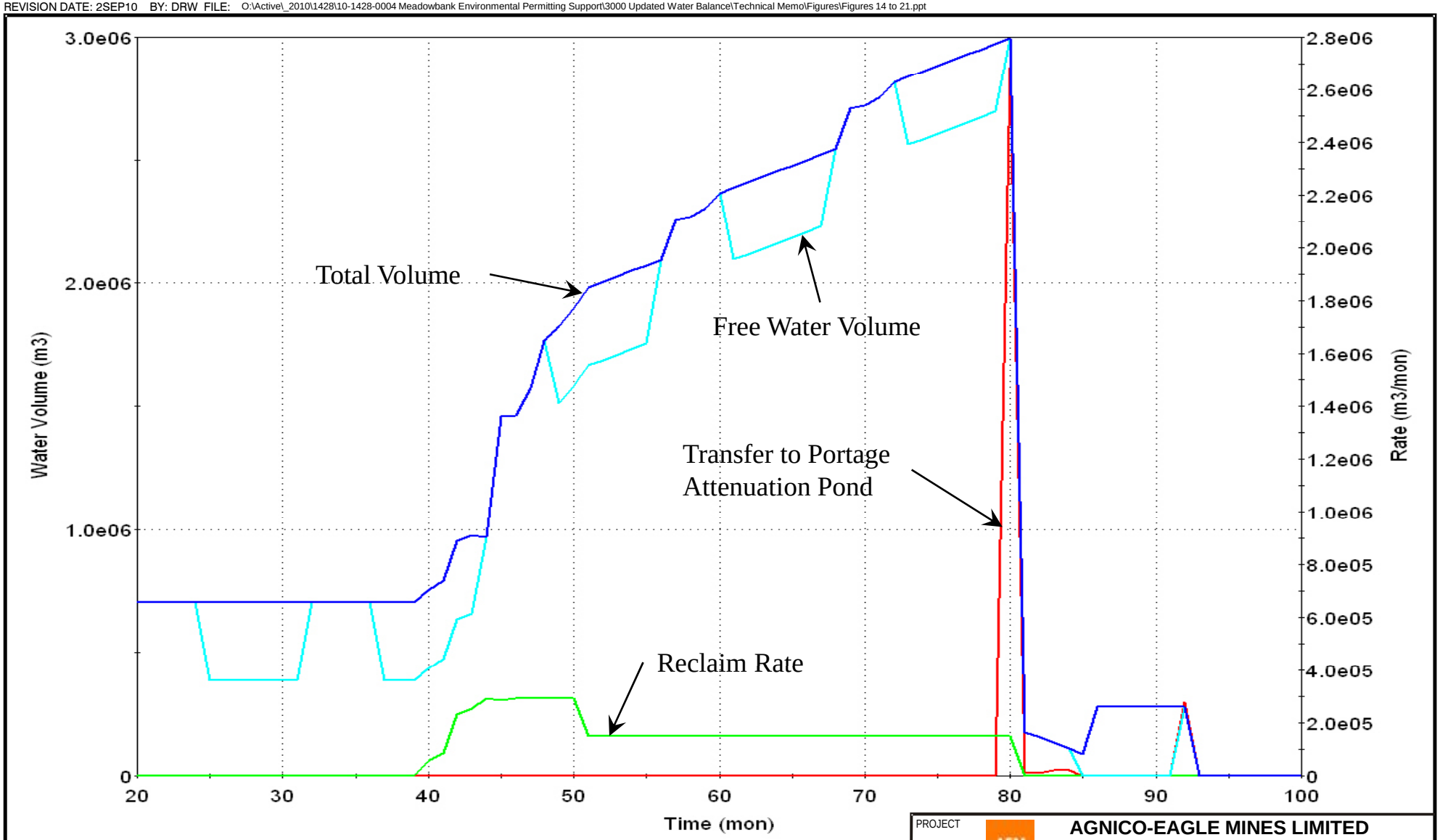
VAULT LOGIC DIAGRAM YEAR 12 (2021)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
CHECK				
REVIEW				

FIGURE 13

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 14 to 21.ppt



PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE

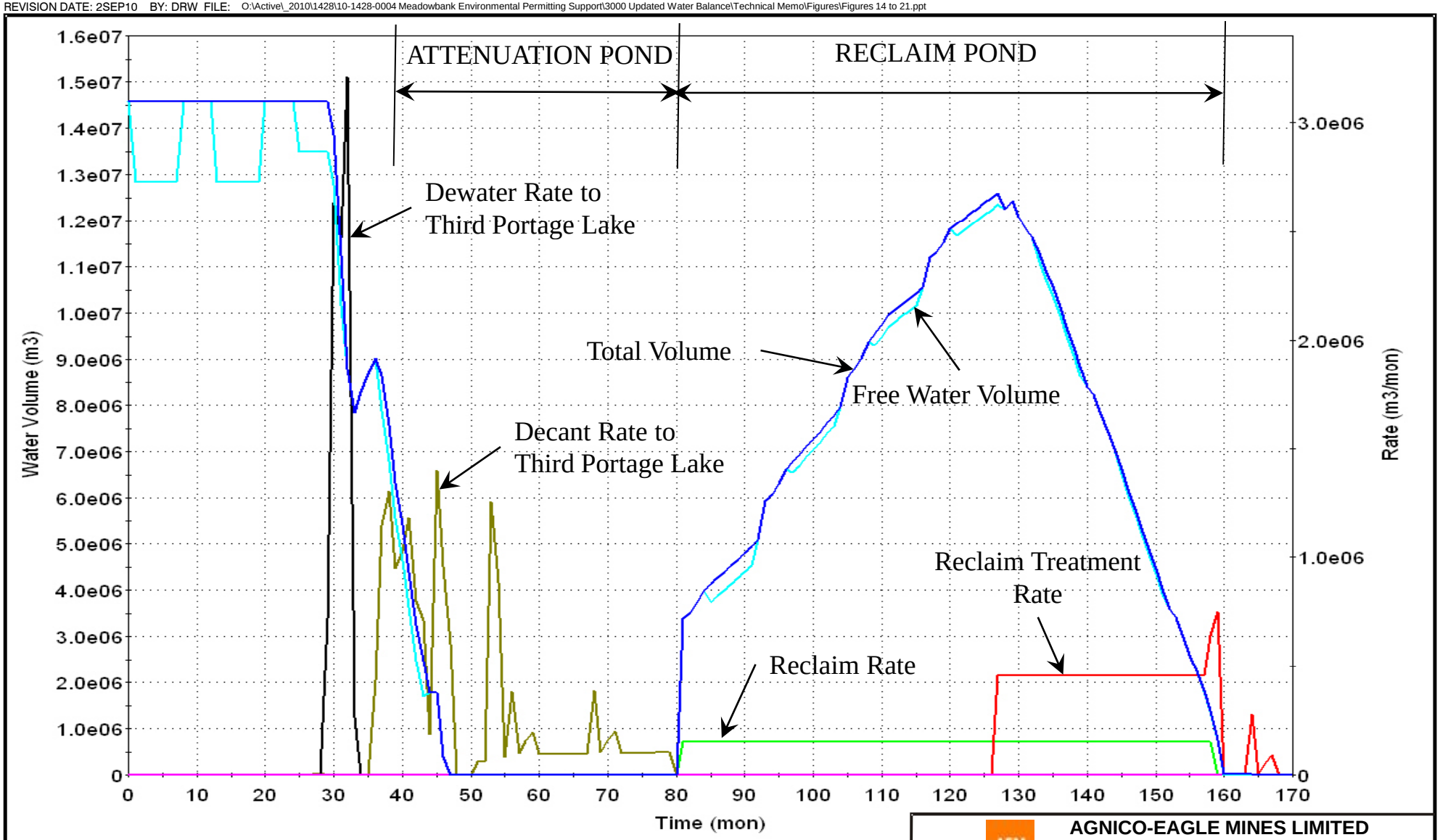
PORTAGE RECLAIM POND YEAR 1 TO 4 (2010 TO 2013)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
CHECK				
REVIEW				

FIGURE 14

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 14 to 21.ppt



PROJECT AEM **AGNICO-EAGLE MINES LIMITED**
MEADOWBANK GOLD PROJECT
NUNAVUT

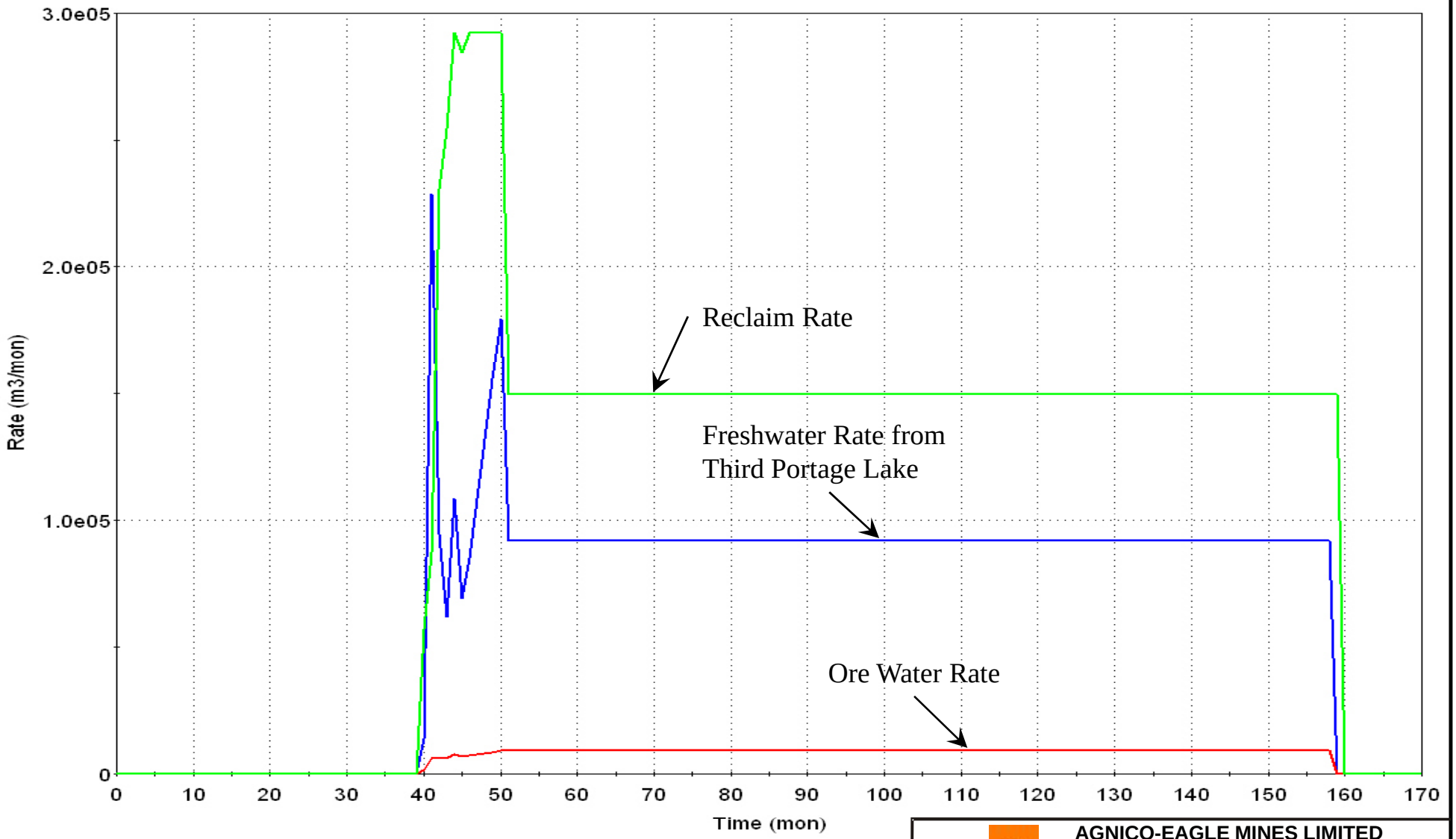
TITLE **PORTAGE ATTENUATION POND (YEAR 1 TO 4) (2010 TO 2013) AND RECLAIM POND (YEAR 4 TO 10) (2013 TO 2019)**

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
CHECK				
REVIEW				

FIGURE 15

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 14 to 21.ppt



PROJECT

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE

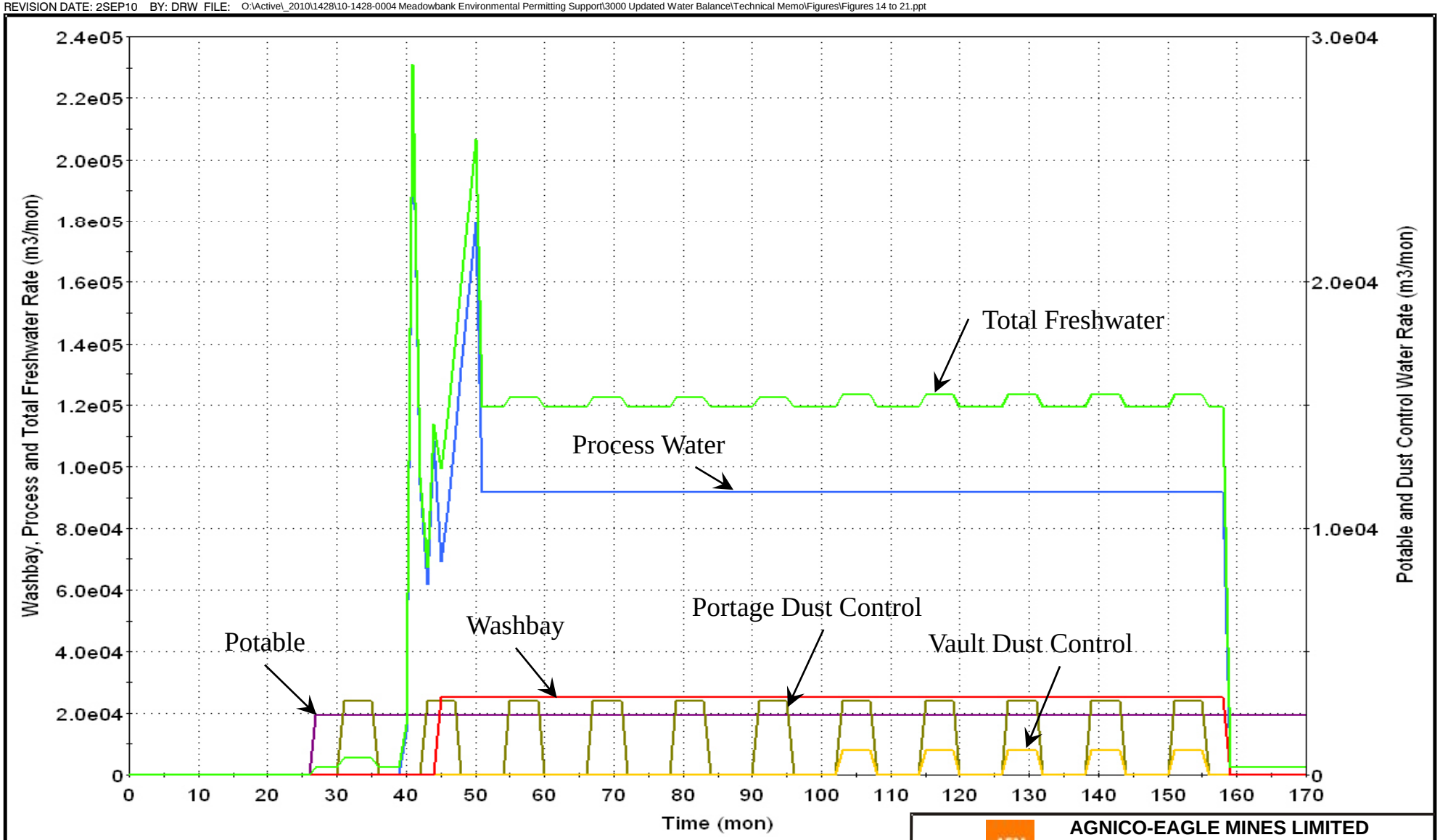
PROCESS WATER TO MILL

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
CHECK				
REVIEW				

FIGURE 16

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 14 to 21.ppt



PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE

FRESHWATER REQUIREMENTS

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
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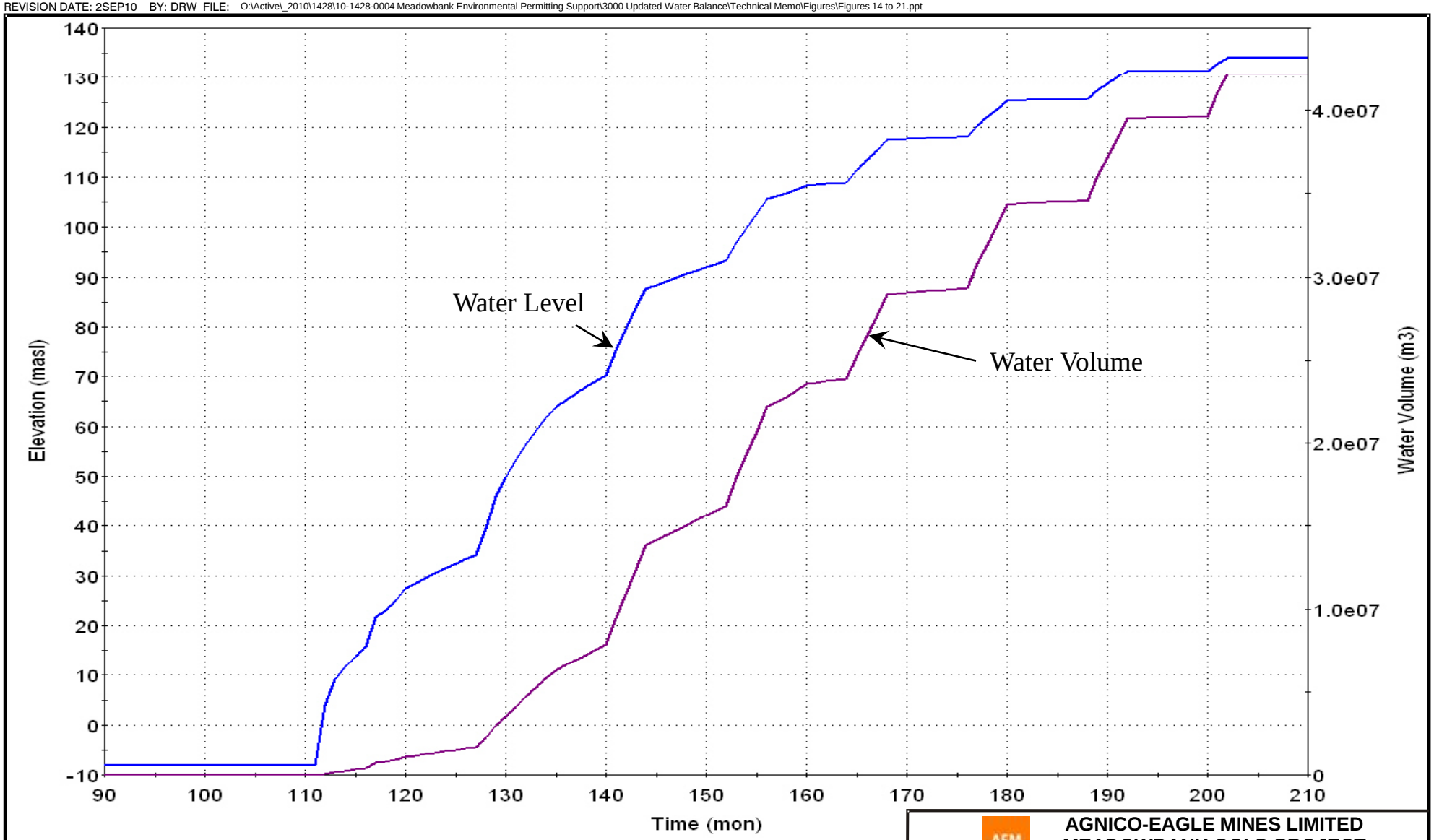
REVIEW				

FIGURE 17

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 14 to 21.ppt



PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE

PORTAGE PIT LAKE WATER LEVEL AND VOLUME (YEAR 7 to 14) (2016 to 2023)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
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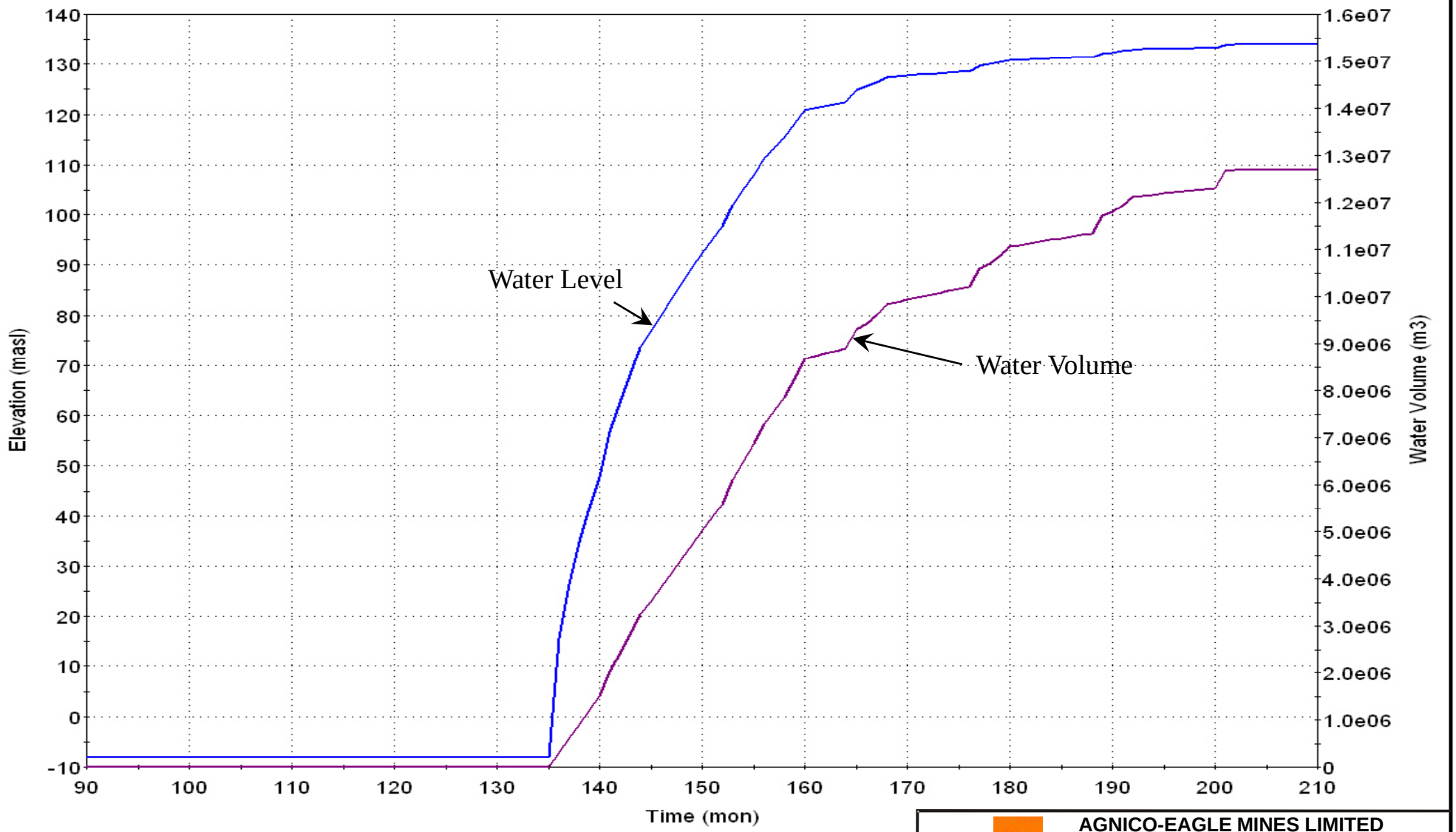
REVIEW				

FIGURE 18

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 14 to 21.ppt



PROJECT AEM **AGNICO-EAGLE MINES LIMITED**
MEADOWBANK GOLD PROJECT
NUNAVUT

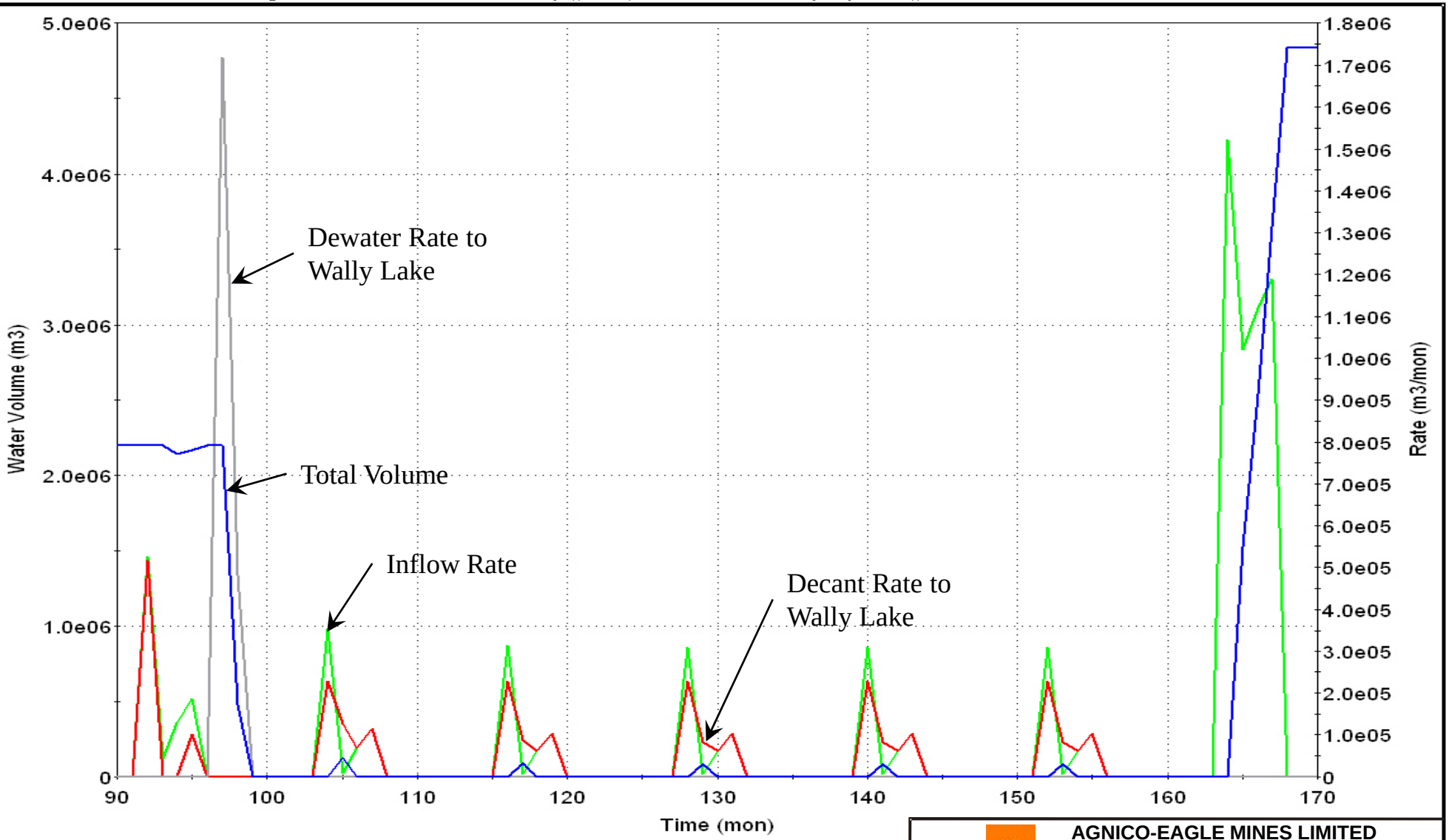
TITLE **GOOSE ISLAND PIT LAKE**
WATER LEVEL AND VOLUME
(YEAR 9 to 14) (2018 to 2023)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
CHECK				
REVIEW				

FIGURE 19

REVISION DATE: 2SEP10 BY: DRW FILE: O:\Active_2010\1428\10-1428-0004 Meadowbank Environmental Permitting Support\3000 Updated Water Balance\Technical Memo\Figures\Figures 14 to 21.ppt



PROJECT

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE

VAULT ATTENUATION POND (YEAR 6 TO 10) (2015 TO 2019)

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CADD	DRW	24AUG10		
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FIGURE 20

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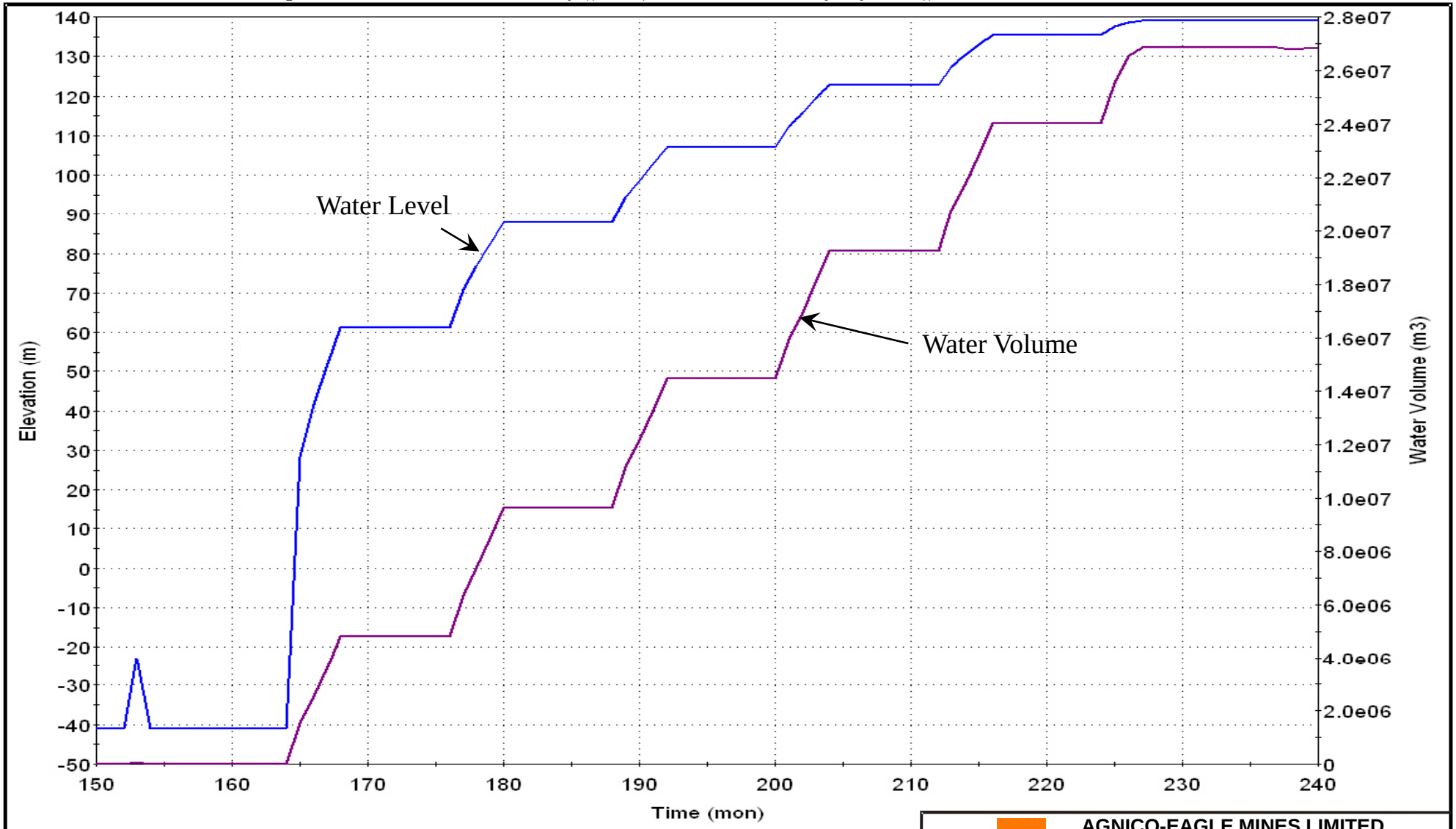

PROJECT

AEM

AGNICO-EAGLE MINES LIMITED
MEADOWBANK GOLD PROJECT
NUNAVUT

TITLE

VAULT PIT LAKE
WATER LEVEL AND VOLUME
(YEAR 11 to 16) (2020 to 2025)

Golder Associates

PROJECT No. 10-1428-0004			FILE No. Doc. No. 1092	
DESIGN	DRW	24AUG10	SCALE NTS	REV. 0
CADD	DRW	24AUG10		
CHECK				
REVIEW				

FIGURE 21