

EXHIBIT / FOOT NOTE

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From: [Jennifer Schonlau](#)
 To: [Michelle Griffin](#)
 Subject: Seepage Calculation
 Date: Monday, November 8, 2021 3:57:26 PM

Hi Michelle,

Please see information below from NewFields regarding the seepage calculation in the EDR. Let me know if you have any questions.

Thank you!

The 74 gpm seepage calculation estimate was a preliminary estimate completed in June 2019 to conservatively size the CTFS reclaim pond to provide flexibility during operations not closure. This was before Piteau performed the infiltration modeling. The calculation is based on the assumption that the difference of water content between native ore in the pit and the CTFS stack would seep out from the facility in just 109 years. In reality it will take thousands or millions of years to reach the original moisture content with the low permeability tailings material. The seepage water volume at 74gpm for 7 days is 746,900 gallons or 3% of the total storage capacity of the pond at freeboard. If we use the latest Piteau modeled infiltration rate of 0.02 gpm then the seepage water volume after 7 days is 700 gallons or 0.003% of the total storage capacity of the pond at freeboard.

The calculation for the seepage calculation is below.

**Thacker Pass
 10-Year Clay Tailings Filter Stack Average Seepage Rate**

Description	Value	Unit	Comment
Initial Tailings moisture content (wet basis)	32.9%	%	Mw/(Mw+Ms)
Initial Tailings moisture content (dry basis)	49.1	%	Mw/(Ms)
Final Tailings moisture content (wet basis)	16	%	ore natural moisture content (worst case)
Final Tailings moisture content (dry basis)	19.0	%	calc
Approximate tailings dry density	70	lbs/ft3	Estimated from lab compaction curves
Approximate tailings wet density	104.3	lbs/ft3	calc
Approximate tailings wet density	1.41	tons/cy	calc
10-year CTFS volume	75,000,000	CY	From volume calculation based on LNC production
10-year CTFS volume	2,025,000,000	ft3	calc
Total Wet Tailings Tonnes for first 10 years	94,735,472	wet tonnes	Provided by LNC
Total Mass of Dry Solids	63,552,290	dry tonnes	Provided by LNC
Total Mass of Water in CTFS	31,183,182	tonnes	calc
Estimated Mass of Residual Water in CTFS	15,157,676	tonnes	calc
Estimated Mass of Seepage Water that will drain away to reach Steady State moisture content	16,025,506	tonnes	calc
Estimated Mass of Seepage Water that will drain away to reach Steady State moisture content	35,320,216,282	lbs	calc
Estimated Mass of Seepage Water that will drain away to reach Steady State moisture content	566,029,107	ft3	calc
Estimated Mass of Seepage Water that will drain away to reach Steady State moisture content	4,233,897,721	gallons	calc
Area of 10-year CTFS	18,000,000	ft2	Approximate 10-year pad area
Average Height of CTFS	113	ft	Volume of pad divided by the area
Permeability of CTFS	0.000001	cm/sec	NewFields Lab Testing
Time for water to travel average height of heap	57,150,000	minutes	calc
Estimated average seepage flow rate	74	gpm	calc

Completed by Matt Haley on June 26, 2019

Input
 Output

The calculation for the Reclaim Pond #1 sizing is below:

**Thacker Pass
 Clay Tailings Filter Stack
 Reclaim Pond #1 Sizing**

Process Solution Storage Requirement		
Average Underdrain Flow Rate due to Seepage	74	gpm
Average Underdrain Flow Rate due to Seepage	106,700	gal/day

Required Draindown Storage Time	7	days
Total Process Solution Storage Requirement	746,900	gal

Precipitation Inputs		
Design Storm, P - 100 year/24 hour storm	2.48	in

Phase 1 - Stormwater Runoff Estimate - 100 year/24 hour storm						
Pad Area Description	Area, A (ft ²)	Curve Number	S Value (in)	Initial Abstraction, I _a (in)	Runoff, Q (in)	Runoff (gal)
			$1000/CN-10$	$0.2 \times S$	$Q = (P - I_a)^2 / ((P - I_a) + S)$	$Q_{gal} = Q \times A \times 7.4805/12$
Filtered Tailings Area ¹	14,000,000	94	0.64	0.13	1.85	16,147,820
Exposed Liner	4,000,000	100	0.00	0.00	2.48	6,183,880
Direct Precipitation on Pond	250,000	-	-	-	2.48	386,500
Total Stormwater Runoff						22,718,200

Required Pond Capacity at Freeboard	23,465,100	gal
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