

## 2021 3rd Quarter Report

Report 2021

North Troy Quarry

Mill Creek, OK

Vulcan Materials Company

### VMC North Troy 2021 Monitoring Report

All volumes are in acre-feet.

	All Water Pumped	Total Stormwater Entering Pit note(a)	Total Groundwater Diverted	Pit Water Sent To Holding Basin	Groundwater Augmentation	Streamwater Augmentation	Defined Elements of Consumptive Use of Pit Water	Streamwater Pumped From Mill Creek	Groundwater Pumped From Wells	Total Annual Groundwater Allocation, Ac-ft
January-20	406.35	9.90	396.45	73.22	335.52	0.00	3.77	0.00	0.00	219.50
February-20	470.74	5.00	465.75	103.24	370.99	0.00	2.32	0.00	0.00	219.50
March-20	604.39	21.44	582.95	146.69	460.21	0.00	4.71	0.00	0.00	219.50
1st QTR Totals	1481.48	36.34	1445.14	323.15	1166.72	0.00	10.79	0.00	0.00	N/A
April-20	552.65	68.73	483.92	185.24	373.37	0.00	6.93	0.00	0.00	219.50
May-20	840.84	66.78	774.06	94.83	748.52	0.00	5.71	0.00	0.00	219.50
June-20	611.20	30.25	580.95	158.32	458.12	0.00	6.97	0.00	0.00	219.50
2nd QTR Totals	2004.69	165.75	1838.94	438.39	1580.01	0.00	19.62	0.00	0.00	N/A
July-20	756.02	49.10	706.92	11.97	750.35	0.00	7.52	0.00	0.00	219.50
August-20	173.58	59.58	114.00	59.54	122.99	0.00	6.44	0.00	0.00	219.50
September-20	1113.55	26.76	1086.79	81.54	1040.29	0.00	6.51	0.00	0.00	219.50
3rd QTR Totals	2043.15	135.44	1907.71	153.05	1913.63	0.00	20.47	0.00	0.00	N/A
October-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
November-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
December-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
4th QTR Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
2020 Totals	5529.32	337.53	5191.79	914.59	4660.36	0.00	50.88	0.00	0.00	219.50
2020 Total (adj)	5529.32	337.53	5191.79	914.59	4660.36	0.00	50.88	0.00	0.00	219.50

1st Qtr notes      Production well electric issue - unable pump / no sample  
                          New pond - transducer offline

2nd Qtr notes

3rd Qtr notes      Weather station offline - battery reset

4th Qtr notes

(a)      Total Stormwater = Volume of precipitation that falls into producing mine pit and volume of precipitation that falls onto producing mine and flows over the land surface into the mine pit.

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# MILL CREEK 2021 AUGMENTATION and GAUGE DATA

Start Date	Start Time	Stop Date	Stop Time	Begin Reading	End Reading	Augmentation Ac - Ft pumped	Stormwater Pumped AF	Mill Creek Stream gauge Reading		Time Read	Stream height	Stream flow
January 2021	No water Pumped to Mill creek					0.00						
February 2021	No water Pumped to Mill creek					0.00						
March 2021	No water Pumped to Mill creek					0.00						
April 2021	No water Pumped to Mill creek					0.00						
May 2021	No water Pumped to Mill creek					0.00						
June 2021	No water Pumped to Mill creek					0.00						
July 2021	No water Pumped to Mill creek					0.00						
August 2021	No water Pumped to Mill creek					0.00						
September 2021	No water Pumped to Mill creek					0.00						
October 2021												
November 2021												
December 2021												
					Total	0.00						

0.00 Pumped to Mill Creek  
0.00 Augmented to Mill Creek  
Stormwater collected entering pit  
0 Stormwater pumped to Mill Creek

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July Precipitation/Evaporation Data

PIT RUNOFF ASSUMPTIONS			
Hydrologic Soil Group	D		
Land Use	gravel road		
AMC Condition	II (ave)		
CN (pit fringe)	88	area draining into pit	
CN (pit)	100	area with direct interception	
S (pit fringe)	1.363636	area draining into pit	
S (pit)	0	area with direct interception	
Pit - Direct Interception (>95 ft deep)	111.00	subject to refinement	**
Pit fringe (area drains to pit)	77.00	subject to refinement	**
Drainage to Pit (total area)	188.00	subject to refinement	

Date	Precip, in.	Runoff, in.	Runoff, in.	Evaporation, in.	
1-Jul	0.25	0.25	0.00	0.19	Runoff formula
2-Jul	0.05	0.05	0.00	0.14	Pe = (P-0.2S)^2/(P+0.8S)
3-Jul	0.00	0.00	0.00	0.25	S = (1000/CN)-10
4-Jul	0.00	0.00	0.00	0.26	
5-Jul	0.00	0.00	0.00	0.2	Blue cells contain formulas
6-Jul	0.40	0.40	0.00	0.23	
7-Jul	1.47	1.47	0.56	0.23	
8-Jul	0.00	0.00	0.00	0.27	
9-Jul	0.00	0.00	0.00	0.29	
10-Jul	0.42	0.42	0.00	0.24	
11-Jul	0.01	0.01	0.00	0.26	
12-Jul	0.00	0.00	0.00	0.24	
13-Jul	0.00	0.00	0.00	0.27	
14-Jul	0.00	0.00	0.00	0.3	
15-Jul	0.00	0.00	0.00	0.3	
16-Jul	0.24	0.24	0.00	0.21	
17-Jul	0.01	0.01	0.00	0.25	
18-Jul	1.22	1.22	0.00	0.25	
19-Jul	0.85	0.85	0.00	0.25	
20-Jul	0.00	0.00	0.00	0.25	
21-Jul	0.00	0.00	0.00	0.21	
22-Jul	0.00	0.00	0.00	0.25	
23-Jul	0.00	0.00	0.00	0.27	
24-Jul	0.00	0.00	0.00	0.3	
25-Jul	0.00	0.00	0.00	0.28	
26-Jul	0.00	0.00	0.00	0.28	
27-Jul	0.00	0.00	0.00	0.2	
28-Jul	0.00	0.00	0.00	0.26	
29-Jul	0.00	0.00	0.00	0.26	
30-Jul	0.00	0.00	0.00	0.23	
31-Jul	0.00	0.00	0.00	0.28	
sum	4.92	4.92	0.56	7.78	7.7
Volume, ac-ft	45.51	3.59			
Total Vol, ac-ft	49.10				Pan Evaporation from Sulphur Mesonet

August Precipitation/Evaporation Data

PIT RUNOFF ASSUMPTIONS			
Hydrologic Soil Group	D		
Land Use	gravel road		
AMC Condition	II (ave)		
CN (pit fringe)	88	area draining into pit	
CN (pit)	100	area with direct interception	
S (pit fringe)	1.363636	area draining into pit	
S (pit)	0	area with direct interception	
Pit - Direct Interception (>95 ft deep)	111.00	subject to refinement	**
Pit fringe (area drains to pit)	77.00	subject to refinement	**
Drainage to Pit (total area)	188.00	subject to refinement	

Date	Precip, in.	Runoff, in.	Runoff, in.	Evaporation, in.	
1-Aug	0.00	0.00	0.00	0.2	Runoff formula
2-Aug	0.00	0.00	0.00	0.31	Pe = (P-0.2S)^2/(P+0.8S)
3-Aug	0.00	0.00	0.00	0.23	S = (1000/CN)-10
4-Aug	0.00	0.00	0.00	0.19	
5-Aug	1.65	1.65	0.69	0.17	Blue cells contain formulas
6-Aug	0.00	0.00	0.00	0.28	
7-Aug	0.00	0.00	0.00	0.31	
8-Aug	0.00	0.00	0.00	0.33	
9-Aug	0.00	0.00	0.00	0.35	
10-Aug	0.00	0.00	0.00	0.36	
11-Aug	0.00	0.00	0.00	0.37	
12-Aug	0.00	0.00	0.00	0.34	
13-Aug	0.00	0.00	0.00	0.28	
14-Aug	0.01	0.01	0.00	0.13	
15-Aug	0.00	0.00	0.00	0.23	
16-Aug	0.14	0.14	0.00	0.21	
17-Aug	2.47	2.47	1.36	0.11	
18-Aug	0.16	0.16	0.00	0.15	
19-Aug	0.59	0.59	0.00	0.1	
20-Aug	0.00	0.00	0.00	0.31	
21-Aug	0.00	0.00	0.00	0.29	
22-Aug	0.00	0.00	0.00	0.26	
23-Aug	0.00	0.00	0.00	0.28	
24-Aug	0.00	0.00	0.00	0.29	
25-Aug	0.00	0.00	0.00	0.28	
26-Aug	0.00	0.00	0.00	0.24	
27-Aug	0.00	0.00	0.00	0.25	
28-Aug	0.00	0.00	0.00	0.25	
29-Aug	0.00	0.00	0.00	0.2	
30-Aug	0.00	0.00	0.00	0.23	
31-Aug	0.00	0.00	0.00	0.21	
sum	5.02	5.02	2.05	7.74	7.74
Volume, ac-ft	46.44	13.14			
Total Vol, ac-ft	59.58				Pan Evaporation from Sulphur Mesonet
					Rainfall data

September Precipitation/Evaporation Data

PIT RUNOFF ASSUMPTIONS			
Hydrologic Soil Group	D		
Land Use	gravel road		
AMC Condition	II (ave)		
CN (pit fringe)	88	area draining into pit	
CN (pit)	100	area with direct interception	
S (pit fringe)	1.363636	area draining into pit	
S (pit)	0	area with direct interception	
Pit - Direct Interception (>95 ft deep)	111.00	subject to refinement	
Pit fringe (area drains to pit)	77.00	subject to refinement	
Drainage to Pit (total area)	188.00	subject to refinement	

Date	Precip, in.	Runoff, in.	Runoff, in.	Evaporation, in.	
1-Sep	0.00	0.00	0.00	0.22	Runoff formula
2-Sep	0.00	0.00	0.00	0.23	Pe = (P-0.2S)^2/(P+0.8S)
3-Sep	0.00	0.00	0.00	0.27	S = (1000/CN)-10
4-Sep	0.49	0.49	0.00	0.28	
5-Sep	0.00	0.00	0.00	0.19	Blue cells contain form
6-Sep	0.00	0.00	0.00	0.23	
7-Sep	0.00	0.00	0.00	0.25	
8-Sep	0.00	0.00	0.00	0.24	
9-Sep	0.00	0.00	0.00	0.22	Evap data from Sulphur Mesonet
10-Sep	0.00	0.00	0.00	0.26	
11-Sep	0.00	0.00	0.00	0.31	
12-Sep	0.00	0.00	0.00	0.23	
13-Sep	0.00	0.00	0.00	0.22	
14-Sep	0.00	0.00	0.00	0.22	
15-Sep	0.00	0.00	0.00	0.18	
16-Sep	0.00	0.00	0.00	0.19	
17-Sep	0.00	0.00	0.00	0.18	
18-Sep	0.00	0.00	0.00	0.2	
19-Sep	0.00	0.00	0.00	0.21	
20-Sep	0.00	0.00	0.00	0.27	
21-Sep	0.00	0.00	0.00	0.3	
22-Sep	0.00	0.00	0.00	0.21	
23-Sep	0.00	0.00	0.00	0.17	
24-Sep	0.00	0.00	0.00	0.17	
25-Sep	0.00	0.00	0.00	0.15	
26-Sep	0.00	0.00	0.00	0.24	
27-Sep	0.00	0.00	0.00	0.26	
28-Sep	0.12	0.12	0.00	0.22	
29-Sep	0.00	0.00	0.00	0.2	
30-Sep	1.75	1.75	0.77	0.11	
sum	2.36	2.36	0.77	6.63	
Volume, ac-ft	21.83	4.93			
Total Vol, ac-ft	26.76				Pan Evaporation from Sulphur Mesonet
					Rainfall data

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Monthly Water Data, ac-ft

	Water Diverted From Pit	Storm Water Entering Pit	Net Sump Volume Change	Groundwater Sent To Holding Basin	Groundwater Sent To Infiltration Areas	Groundwater Used For Stream Augmentation	Evaporation	Moisture Content of Product Shipped	Water Truck Usage	Misc Pit Water Use On Site	Misc Pit Water Use Off Site	Production Well Permit 2002-602	North Well Permit 20060601A
January-20	406.35	9.90	0.00	73.22	333.13	0.00	0.35	3.12	0.30	0.00	0.00	0.00	0.00
February-20	470.74	5.00	0.00	103.24	367.50	0.00	0.31	1.04	0.97	0.00	0.00	0.00	0.00
March-20	604.39	21.44	0.00	146.69	457.69	0.00	0.91	2.95	0.84	0.00	0.00	0.00	0.00
April-20	552.65	68.73	0.00	185.24	367.41	0.00	1.34	3.31	2.28	0.00	0.00	0.00	0.00
May-20	840.84	66.78	0.00	94.83	746.02	0.00	1.22	3.56	0.94	0.00	0.00	0.00	0.00
June-20	611.20	30.25	0.00	158.32	452.88	0.00	1.65	3.22	2.10	0.00	0.00	0.00	0.00
July-20	756.02	49.10	0.00	11.97	744.05	0.00	1.73	3.68	2.12	0.00	0.00	0.00	0.00
August-20	173.58	59.58	0.00	59.54	114.04	0.00	1.74	2.89	1.81	0.00	0.00	0.00	0.00
September-20	1113.55	26.76	0.00	81.54	1032.01	0.00	1.49	3.61	1.41	0.00	0.00	0.00	0.00
October-20		0.00					0.00	0.00		0.00	0.00		0.00
November-20		0.00					0.00	0.00		0.00	0.00		0.00
December-20		0.00					0.00	0.00		0.00	0.00		0.00

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## Settling Cell Evaporation and Infiltration

	FO2 East						FO2 West					
	Width, Ft	Length, Ft	Evaporation, ac-ft	Number of Production Days	Infiltration Rate, Ac-ft/day	Total Infiltration, Ac-ft	Width, Ft	Length, Ft	Evaporation, ac-ft	Number of Production Days	Infiltration Rate, Ac-ft/day	Total Infiltration, Ac-ft
January-20	50	330	0.08	22.00	0.08	1.80	50	350	0.00	0.00	0.22	0.00
February-20	50	330	0.00	0.00	0.08	0.00	50	350	0.07	14.00	0.22	3.12
March-20	50	330	0.20	23.00	0.08	1.88	50	350	0.00	0.00	0.22	0.00
April-20	50	330	0.00	0.00	0.08	0.00	50	350	0.20	24.00	0.22	5.35
May-20	50	330	0.17	23.00	0.08	1.88	50	350	0.00	0.00	0.22	0.00
June-20	50	330	0.00	0.00	0.08	0.00	50	350	0.25	21.00	0.22	4.68
July-20	50	330	0.24	19.00	0.08	1.56	50	350	0.26	19.00	0.22	4.23
August-20	50	330	0.24	27.00	0.08	2.21	50	350	0.26	27.00	0.22	6.02
September-20	50	330	0.21	25.00	0.08	2.05	50	350	0.22	25.00	0.22	5.57
October-20	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00
November-20	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00
December-20	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00

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July Shipments			August Shipments			September Shipments		
	Tons Shipped	Ac-ft of water shipped		Tons Shipped	Ac-ft of water shipped		Tons Shipped	Ac-ft of water shipped
Base			Base			Base		
Products	3,841	0.094	Products	2,067	0.051	Products	1,367	0.033
Coarse			Coarse			Coarse		
Aggregates	244,037	2.933	Aggregates	200,749	2.413	Aggregates	272,656	3.277
Fine			Fine			Fine		
Aggregates	20,461	0.650	Aggregates	13,519	0.430	Aggregates	9,388	0.298
	268,339	3.677		216,335	2.893		283,411	3.609

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