

2021 2nd 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	0.00	0.00	0.00	0.00	0.00	0.00	3.17	0.00	0.00	219.50
August-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
September-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
3rd QTR Totals	0.00	0.00	0.00	0.00	0.00	0.00	3.17	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	3486.17	202.09	3284.08	761.54	2746.73	0.00	33.58	0.00	0.00	219.50
2020 Total (adj)	3486.17	202.09	3284.08	761.54	2746.73	0.00	33.58	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

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											
August 2021	No water Pumped to Mill creek											
September 2021	No water Pumped to Mill creek											
October 2021	No water Pumped to Mill creek											
November 2021	No water Pumped to Mill creek											
December 2021	No water Pumped to Mill creek											
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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April 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.	Quarry area Runoff, in.	Fringe area Runoff, in.	Daily vaporation, in.
1-Apr	0.00	0.00	0.00	0.19
2-Apr	0.00	0.00	0.00	0.28
3-Apr	0.00	0.00	0.00	0.31
4-Apr	0.00	0.00	0.00	0.13
5-Apr	0.00	0.00	0.00	0.3
6-Apr	0.00	0.00	0.00	0.26
7-Apr	0.00	0.00	0.00	0.25
8-Apr	1.21	1.21	0.00	0.28
9-Apr	0.00	0.00	0.00	0.21
10-Apr	0.00	0.00	0.00	0.23
11-Apr	0.00	0.00	0.00	0.29
12-Apr	0.00	0.00	0.00	0.27
13-Apr	0.00	0.00	0.00	0.35
14-Apr	0.00	0.00	0.00	0.06
15-Apr	1.62	1.62	0.67	0.1
16-Apr	0.00	0.00	0.00	0.03
17-Apr	0.00	0.00	0.00	0.18
18-Apr	0.00	0.00	0.00	0.18
19-Apr	0.00	0.00	0.00	0.24
20-Apr	0.00	0.00	0.00	0.16
21-Apr	0.00	0.00	0.00	0.17
22-Apr	0.00	0.00	0.00	0.15
23-Apr	0.00	0.00	0.00	0.1
24-Apr	0.00	0.00	0.00	0.1
25-Apr	0.00	0.00	0.00	0.26
26-Apr	0.00	0.00	0.00	0.3
27-Apr	0.06	0.06	0.00	0.13
28-Apr	2.58	2.58	1.45	0.04
29-Apr	0.49	0.49	0.00	0.15
30-Apr	0.00	0.00	0.00	0.27
sum	5.96	5.96	2.12	5.97
Volume, ac-ft		55.13	13.60	
Total Vol, ac-ft		68.73		

Pan Evaporation from Sulphur Mesonet

May 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.	Quarry area Runoff, in.	Fringe area Runoff, in.	Daily vaporation, in.
1-May		0.00	0.00	0.09
2-May	0.02	0.02	0.00	0.2
3-May	1.59	1.59	0.65	0.27
4-May	0.21	0.21	0.00	0.14
5-May		0.00	0.00	0.22
6-May		0.00	0.00	0.27
7-May		0.00	0.00	0.33
8-May		0.00	0.00	0.34
9-May		0.00	0.00	0.29
10-May	0.13	0.13	0.00	0.1
11-May	0.35	0.35	0.00	0.07
12-May	0.01	0.01	0.00	0.1
13-May		0.00	0.00	0.17
14-May		0.00	0.00	0.21
15-May		0.00	0.00	0.29
16-May	0.89	0.89	0.00	0.08
17-May		0.00	0.00	0.23
18-May	0.13	0.13	0.00	0.1
19-May	0.01	0.01	0.00	0.16
20-May	0.14	0.14	0.00	0.1
21-May	0.42	0.42	0.00	0.13
22-May	0.15	0.15	0.00	0.08
23-May	0.07	0.07	0.00	0.12
24-May	0.22	0.22	0.00	0.1
25-May	0.36	0.36	0.00	0.1
26-May		0.00	0.00	0.22
27-May	0.98	0.98	0.00	0.18
28-May	0.01	0.01	0.00	0.22
29-May		0.00	0.00	0.27
30-May		0.00	0.00	0.2
31-May	1.08	1.08	0.00	0.06
sum	6.77	6.77	0.65	5.44
Volume, ac-ft		62.62	4.15	
Total Vol, ac-ft		66.78		

Pan Evaporation from Sulphur Mesonet

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June 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.	Quarry area Runoff, in.	Fringe area Runoff, in.	Daily Evaporation, in.
1-Jun		0.00	0.00	0.19
2-Jun		0.00	0.00	0.07
3-Jun		0.00	0.00	0.16
4-Jun		0.00	0.00	0.24
5-Jun	0.44	0.44	0.00	0.26
6-Jun	0.14	0.14	0.00	0.09
7-Jun		0.00	0.00	0.17
8-Jun		0.00	0.00	0.18
9-Jun		0.00	0.00	0.27
10-Jun		0.00	0.00	0.25
11-Jun		0.00	0.00	0.24
12-Jun	1.16	1.16	0.00	0.29
13-Jun		0.00	0.00	0.24
14-Jun		0.00	0.00	0.29
15-Jun		0.00	0.00	0.29
16-Jun		0.00	0.00	0.29
17-Jun		0.00	0.00	0.29
18-Jun		0.00	0.00	0.3
19-Jun		0.00	0.00	0.31
20-Jun		0.00	0.00	0.35
21-Jun	0.40	0.40	0.00	0.13
22-Jun		0.00	0.00	0.29
23-Jun		0.00	0.00	0.32
24-Jun		0.00	0.00	0.37
25-Jun		0.00	0.00	0.4
26-Jun		0.00	0.00	0.18
27-Jun	0.89	0.89	0.00	0.26
28-Jun	0.14	0.14	0.00	0.2
29-Jun	0.10	0.10	0.00	0.22
30-Jun		0.00	0.00	0.24
		0.00	0.00	
sum	3.27	3.27	0.00	7.38
Volume, ac-ft		30.25	0.00	
Total Vol, ac-ft		30.25		

Runoff formula
 $P_e = (P - 0.2S)^2 / (P + 0.8S)$
 $S = (1000/CN) - 10$
 Blue cells contain form
 Rainfall Data for 6/1-6/9 taken from
 Mill Creek stream gage due to
 weather station malfunction.

Pan Evaporation from Sulphur Mesonet

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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		0.00				0.00	0.00	3.17		0.00	0.00	0.00	0.00
August-20		0.00				0.00	0.00	0.00		0.00	0.00	0.00	0.00
September-20		0.00				0.00	0.00	0.00		0.00	0.00	0.00	0.00
October-20		0.00				0.00	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	0.00	0.00
December-20		0.00				0.00	0.00	0.00		0.00	0.00	0.00	0.00

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Settling Cell Evaporation and Infiltration

	F02 East						F02 West						F03/F04 South Settling Cell								Total Evaporation, ac-ft	Total Infiltration, ac- ft
	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	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	200	435	0.41	22.00	0.03	0.59	0.48	2.39		
February-20	50	330	0.00	0.00	0.08	0.00	50	350	0.07	14.00	0.22	3.12	200	435	0.36	14.00	0.03	0.37	0.43	3.49		
March-20	50	330	0.20	23.00	0.08	1.88	50	350	0.00	0.00	0.22	0.00	200	435	1.07	24.00	0.03	0.64	1.28	2.52		
April-20	50	330	0.00	0.00	0.08	0.00	50	350	0.20	24.00	0.22	5.35	200	435	0.99	23.00	0.03	0.61	1.19	5.96		
May-20	50	330	0.17	23.00	0.08	1.88	50	350	0.00	0.00	0.22	0.00	200	435	0.91	23.00	0.03	0.61	1.08	2.50		
June-20	50	330	0.00		0.08	0.00	50	350	0.25	21.00	0.22	4.68	200	435	1.23	21.00	0.03	0.56	1.48	5.24		
July-20	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00		
August-20	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00		
September-20	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00		
October-20	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00		
November-20	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00		
December-20	50	330	0.00		0.08	0.00	50	350	0.00		0.22	0.00	200	435	0.00		0.03	0.00	0.00	0.00		

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April Shipments			May Shipments			June Shipments		
	Tons Shipped	Ac-ft of water shipped		Tons Shipped	Ac-ft of water shipped		Tons Shipped	Ac-ft of water shipped
Base Products	7,013	0.172	Base Products	2,864	0.070	Base Products	2,987	0.073
Coarse			Coarse			Coarse		
Aggregates	230,922	2.775	Aggregates	254,004	3.053	Aggregates	212,497	2.554
Fine			Fine			Fine		
Aggregates	11,480	0.365	Aggregates	13,637	0.433	Aggregates	18,554	0.589
	249,415	3.312		270,505	3.556		234,038	3.217

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