

2020 1st Quarter Report

Report 2020

North Troy Quarry

Mill Creek, OK

Vulcan Materials Company

VMC North Troy 2020 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	496.67	46.86	449.81	13.87	485.41	0.00	2.82	0.00	0.00	219.50
February-20	519.93	25.35	494.59	50.67	474.50	0.00	2.75	0.00	0.00	219.50
March-20	729.44	71.60	657.84	59.38	672.67	0.00	4.36	0.00	0.00	219.50
1st QTR Totals	1746.04	143.81	1602.23	123.92	1632.57	0.00	9.93	0.00	0.00	N/A
April-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
May-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
June-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
2nd QTR Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
July-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	0.00	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	1746.04	143.81	1602.23	123.92	1632.57	0.00	9.93	0.00	0.00	219.50
2020 Total (adj)	1746.04	143.81	1602.23	123.92	1632.57	0.00	9.93	0.00	0.00	219.50

1st Qtr notes

2nd Qtr notes

3rd Qtr notes

4th Qtr notes

*

Production well electric issue - unable pump / no sample

(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 2020 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 2020	No water Pumped to Mill creek					0.00						
February 2020	No water Pumped to Mill creek					0.00						
March 202	No water Pumped to Mill creek					0.00						
April 2020						0.00						
May 2020						0.00						
June 2020						0.00						
July 2020						0.00						
August 2020						0.00						
September 2020						0.00						
October 2020						0.00						
November 2020						0.00						
December 2020						0.00						
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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North Troy Monthly Water Data Sheet

Rows 11-57 - Precipitation Data

Rows 60-76 - Water Data

Rows 70-84 - Pit Sump Volumes

Rows 91-105 - Settling Cell Evaporation

Rows 107-144 - Monthly Shipments

Rows 146-164 - Product Moisture Content

January 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)	1.363636364	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-Jan	0.00	0.00	0.00	0.17
2-Jan	0.00	0.00	0.00	0.29
3-Jan	0.00	0.00	0.00	0.1
4-Jan	0.00	0.00	0.00	0.12
5-Jan	0.00	0.00	0.00	0.1
6-Jan	0.00	0.00	0.00	0.19
7-Jan	0.00	0.00	0.00	0.16
8-Jan	0.00	0.00	0.00	0.27
9-Jan	0.00	0.00	0.00	0.12
10-Jan	2.10	0.00	0.00	0.24
11-Jan	0.04	0.00	0.00	0.18
12-Jan	0.00	0.00	0.00	0.26
13-Jan	0.00	0.00	0.00	0.14
14-Jan	0.00	0.00	0.00	0.08
15-Jan	0.00	0.00	0.00	0.04
16-Jan	0.08	0.00	0.00	0.05
17-Jan	0.48	0.00	0.00	0.04
18-Jan	0.04	0.00	0.00	0.12
19-Jan	0.00	0.00	0.00	0.13
20-Jan	0.00	0.00	0.00	0.14
21-Jan	0.00	0.00	0.00	0.15
22-Jan	0.48	0.00	0.00	0.05
23-Jan	0.28	0.00	0.00	0.08
24-Jan	0.00	0.00	0.00	0.2
25-Jan	0.00	0.00	0.00	0.28
26-Jan	0.04	0.00	0.00	0.35
27-Jan	0.80	0.00	0.00	0.1
28-Jan	0.00	0.00	0.00	0.31
29-Jan	0.00	0.00	0.00	0.18
30-Jan	0.00	0.00	0.00	0.07
31-Jan	0.00	0.00	0.00	0.17
sum	4.14	0.00	0.00	4.89
Volume, ac-ft		16.13	0.00	
Total Vol, ac-ft		16.13	0.00	

Pan Evaporation from Sulphur Mesonet

February 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)	1.36363636	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-Feb	0.00	0.00	0.00	0.1
2-Feb	0.00	0.00	0.00	0.21
3-Feb	0.00	0.00	0.00	0.2
4-Feb	0.79	0.79	0.00	0.04
5-Feb	0.28	0.28	0.00	0.02
6-Feb	0.08	0.08	0.00	0.05
7-Feb	0.00	0.00	0.00	0.07
8-Feb	0.00	0.00	0.00	0.12
9-Feb	0.12	0.12	0.00	0.1
10-Feb	0.38	0.38	0.00	0.08
11-Feb	0.04	0.04	0.00	0.07
12-Feb	1.03	1.03	0.00	0.03
13-Feb	0.00	0.00	0.00	0.09
14-Feb	0.00	0.00	0.00	0.1
15-Feb	0.00	0.00	0.00	0.14
16-Feb	0.00	0.00	0.00	0.08
17-Feb	0.00	0.00	0.00	0.16
18-Feb	0.00	0.00	0.00	0.18
19-Feb	0.00	0.00	0.00	0.14
20-Feb	0.04	0.04	0.00	0.11
21-Feb	0.00	0.00	0.00	0.08
22-Feb	0.00	0.00	0.00	0.18
23-Feb	0.00	0.00	0.00	0.08
24-Feb	0.00	0.00	0.00	0.07
25-Feb	0.00	0.00	0.00	0.13
26-Feb	0.00	0.00	0.00	0.09
27-Feb	0.00	0.00	0.00	0.14
28-Feb	0.00	0.00	0.00	0.16
		0.00	0.00	0.25
		0.00	0.00	
sum	2.74	2.74	0.00	3.25
Volume, ac-ft		25.45	0.00	
Total Vol, ac-ft		25.45	0.00	

Pan Evaporation from Sulphur Mesonet

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March 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)	1.363636364	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-Mar	0.00	0.00	0.00	0.17
2-Mar	0.00	0.00	0.00	0.29
3-Mar	0.00	0.00	0.00	0.1
4-Mar	0.16	0.16	0.00	0.12
5-Mar	0.00	0.00	0.00	0.1
6-Mar	0.00	0.00	0.00	0.19
7-Mar	0.00	0.00	0.00	0.16
8-Mar	0.00	0.00	0.00	0.27
9-Mar	0.28	0.28	0.00	0.12
10-Mar	0.00	0.00	0.00	0.24
11-Mar	0.00	0.00	0.00	0.18
12-Mar	0.00	0.00	0.00	0.26
13-Mar	1.43	1.43	0.53	0.14
14-Mar	0.64	0.64	0.00	0.05
15-Mar	0.00	0.00	0.00	0.04
16-Mar	0.20	0.20	0.00	0.05
17-Mar	0.16	0.16	0.00	0.04
18-Mar	1.38	1.38	0.50	0.12
19-Mar	1.47	1.47	0.56	0.13
20-Mar	0.00	0.00	0.00	0.14
21-Mar	0.00	0.00	0.00	0.15
22-Mar	0.24	0.24	0.00	0.05
23-Mar	0.04	0.04	0.00	0.08
24-Mar	0.00	0.00	0.00	0.2
25-Mar	0.00	0.00	0.00	0.28
26-Mar	0.00	0.00	0.00	0.35
27-Mar	0.00	0.00	0.00	0.1
28-Mar	0.00	0.00	0.00	0.31
29-Mar	0.00	0.00	0.00	0.18
30-Mar	0.64	0.64	0.00	0.07
31-Mar	0.00	0.00	0.00	0.17
sum	6.64	6.64	1.59	4.85
Volume, ac-ft		61.42	10.18	
Total Vol, ac-ft		71.60		

Pan Evaporation from Sulphur Mesonet

Runoff formula
 $Pe = (P - 0.2S)^2 / (P + 0.8S)$
 $S = (1000/CN) - 10$

Blue cells co

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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	496.67	46.86	-3.05	13.87	482.80	0.00	0.69	1.85	0.28	0.00	0.00	0.00	0.00
February-20	519.93	25.35	0.00	50.67	469.26	0.00	0.46	1.28	1.01	0.00	0.00	0.00	0.00
March-20	729.44	71.60	0.00	59.38	670.06	0.00	0.69	2.76	0.92	0.00	0.00	0.00	0.00
April-20		0.00				0.00	0.00	0.00		0.00	0.00		0.00
May-20		0.00				0.00	0.00	0.00		0.00	0.00		0.00
June-20		0.00				0.00	0.00	0.00		0.00	0.00		0.00
July-20		0.00				0.00	0.00	0.00		0.00	0.00		0.00
August-20		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
October-20		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
December-20		0.00				0.00	0.00	0.00		0.00	0.00		0.00

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Pit Sump Volumes

	West Sump						905 Sump					New Freshwater Pond					Pit area		
	Month End Depth-to- Water, Ft	Width, Ft	Length, Ft	Sump Volume Change, Ac-ft	Evaporation, ac- ft	Month End Depth-to-Water, Ft	Width, Ft	Length, Ft	Sump Volume Change, Ac-ft	Evaporation, ac-ft	Month End Depth-to- Water, Ft	Width, Ft	Length, Ft	Pond Volume Change, Ac-ft	Evaporation, ac-ft	Total Evaporation, ac-ft	Acres	Evaporation, ac-ft	
January-20	7	125	325	-3.05	0.38	4	50	50	0.00	0.02	4		750	0.00	0.00	0.40	1.7	0.69	
February-20	7	125	325	0.00	0.25	4	50	50	0.00	0.02	4		750	0.00	0.00	0.27	1.7	0.46	
March-20	7	125	325	0.00	0.38	4	50	50	0.00	0.02	4		750	0.00	0.00	0.40	1.7	0.69	
April-20		125	325	0.00	0.00	4	50	50	0.00	0.00			750		0.00	0.00	1.7	0.00	
May-20		125	325	0.00	0.00	4	50	50	0.00	0.00			750		0.00	0.00	1.7	0.00	
June-20		125	325	0.00	0.00	4	50	50	0.00	0.00			750		0.00	0.00	1.7	0.00	
July-20		125	325	0.00	0.00	4	50	50	0.00	0.00			750		0.00	0.00	1.7	0.00	
August-20		125	325	0.00	0.00	4	50	50	0.00	0.00			750		0.00	0.00	1.7	0.00	
September-20		125	325	0.00	0.00	4	50	50	0.00	0.00			750		0.00	0.00	1.7	0.00	
October-20		125	325	0.00	0.00	4	50	50	0.00	0.00			750		0.00	0.00	1.7	0.00	
November-20		125	325	0.00	0.00	4	50	50	0.00	0.00			750		0.00	0.00	1.7	0.00	
December-20		125	325	0.00	0.00	4	50	50	0.00	0.00			750		0.00	0.00	1.7	0.00	

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January Shipments			February Shipments			March Shipments		
	Tons Shipped	Ac-ft of water shipped		Tons Shipped	Ac-ft of water shipped		Tons Shipped	Ac-ft of water shipped
Base Products	3,648	0.089	Base Products	2,601	0.064	Base Products	1,372	0.034
Coarse			Coarse			Coarse		
Aggregates	129,981	1.562	Aggregates	99,647	1.198	Aggregates	225,401	2.709
			Fine					
Fine Aggregates	6,315	0.201	Aggregates	611	0.019	Fine Aggregates	431	0.014
	139,944	1.852		102,859	1.281		227,204	2.756

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