

2022 3rd Quarter Report

Report 2022

North Troy Quarry
 Mill Creek, OK
 Vulcan Materials Company

VMC North Troy 2022 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-22	599.84	4.07	595.77	3.47	601.12	0.00	4.06	0.00	0.00	219.50
February-22	338.68	8.60	330.08	8.53	332.32	0.00	3.56	0.00	0.00	219.50
March-22	747.52	14.71	732.81	21.60	732.65	0.00	5.26	0.00	0.00	219.50
1st QTR Totals	1686.04	27.38	1658.66	33.60	1666.09	0.00	12.88	0.00	0.00	N/A
April-22	663.40	22.29	641.11	24.83	640.99	0.00	5.88	0.00	0.00	219.50
May-22	615.50	55.32	560.18	88.87	532.11	0.00	5.71	0.00	0.00	219.50
June-22	624.70	29.21	595.49	61.53	565.67	0.00	5.80	0.00	0.00	219.50
2nd QTR Totals	1903.60	106.83	1796.77	175.23	1738.76	0.00	17.39	0.00	0.00	N/A
July-22	605.00	2.78	602.23	67.00	543.99	0.00	8.02	0.00	0.00	219.50
August-22	628.10	10.73	617.37	56.10	574.50	0.00	8.96	0.00	0.00	219.50
September-22	712.00	3.15	708.86	37.00	680.74	0.00	11.31	0.00	0.00	219.50
3rd QTR Totals	1945.10	16.65	1928.45	160.10	1799.22	0.00	28.29	0.00	0.00	N/A
October-22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
November-22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
December-22	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
2022 Totals	5534.74	150.86	5383.88	368.93	5204.07	0.00	58.56	0.00	0.00	219.50
2022 Total (adj)	5534.74	150.86	5383.88	368.93	5204.07	0.00	58.56	0.00	0.00	219.50

1st Qtr notes Production well electric issue - unable pump / no sample

2nd Qtr notes

3rd Qtr notes Meter malfunction

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 2022 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 2022	No water Pumped to Mill creek					0.00					
February 2022	No water Pumped to Mill creek					0.00					
March 2022	No water Pumped to Mill creek					0.00					
April 2022	No water Pumped to Mill creek										
May 2022	No water Pumped to Mill creek										
June 2022	No water Pumped to Mill creek										
July 2022	No water Pumped to Mill creek										
August 2022	No water Pumped to Mill creek										
September 2022	No water Pumped to Mill creek										
October 2022											
November 2022											
December 2022											
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	Quarry area Precip, in.	Fringe area Runoff, in.	Daily Runoff, in.	Daily Evaporation, in.
1-Jul	0.00	0.00	0.00	0.35
2-Jul	0.00	0.00	0.00	0.34
3-Jul	0.00	0.00	0.00	0.29
4-Jul	0.00	0.00	0.00	0.46
5-Jul	0.00	0.00	0.00	0.48
6-Jul	0.00	0.00	0.00	0.48
7-Jul	0.00	0.00	0.00	0.47
8-Jul	0.16	0.16	0.00	0.38
9-Jul	0.00	0.00	0.00	0.35
10-Jul	0.00	0.00	0.00	0.33
11-Jul	0.00	0.00	0.00	0.36
12-Jul	0.00	0.00	0.00	0.36
13-Jul	0.00	0.00	0.00	0.42
14-Jul	0.00	0.00	0.00	0.39
15-Jul	0.00	0.00	0.00	0.36
16-Jul	0.00	0.00	0.00	0.39
17-Jul	0.00	0.00	0.00	0.39
18-Jul	0.00	0.00	0.00	0.37
19-Jul	0.00	0.00	0.00	0.5
20-Jul	0.00	0.00	0.00	0.21
21-Jul	0.02	0.02	0.00	0.11
22-Jul	0.00	0.00	0.00	0.35
23-Jul	0.00	0.00	0.00	0.44
24-Jul	0.00	0.00	0.00	0.46
25-Jul	0.00	0.00	0.00	0.47
26-Jul	0.00	0.00	0.00	0.49
27-Jul	0.00	0.00	0.00	0.49
28-Jul	0.00	0.00	0.00	0.43
29-Jul	0.00	0.00	0.00	0.24
30-Jul	0.03	0.03	0.00	0.21
31-Jul	0.09	0.09	0.00	0.27
sum	0.30	0.30	0.00	11.64
Volume, ac-ft	2.78	0.00		
Total Vol, ac-ft	2.78			

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

Blue cells contain formulas

Pan Evaporation from Sulphur Mesonet Rainfall data

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	Quarry area Precip, in.	Fringe area Runoff, in.	Daily Runoff, in.	Daily Evaporation, in.
1-Aug	0.00	0.00	0.00	0.3
2-Aug	0.00	0.00	0.00	0.49
3-Aug	0.00	0.00	0.00	0.53
4-Aug	0.00	0.00	0.00	0.41
5-Aug	0.00	0.00	0.00	0.47
6-Aug	0.00	0.00	0.00	0.46
7-Aug	0.00	0.00	0.00	0.42
8-Aug	0.00	0.00	0.00	0.35
9-Aug	0.00	0.00	0.00	0.31
10-Aug	0.00	0.00	0.00	0.3
11-Aug	0.00	0.00	0.00	0.34
12-Aug	0.00	0.00	0.00	0.31
13-Aug	0.00	0.00	0.00	0.37
14-Aug	0.00	0.00	0.00	0.36
15-Aug	0.00	0.00	0.00	0.33
16-Aug	0.00	0.00	0.00	0.3
17-Aug	0.00	0.00	0.00	0.17
18-Aug	0.00	0.00	0.00	0.21
19-Aug	0.01	0.01	0.00	0.25
20-Aug	0.00	0.00	0.00	0.27
21-Aug	0.99	0.99	0.00	0.08
22-Aug	0.01	0.01	0.00	0.18
23-Aug	0.00	0.00	0.00	0.17
24-Aug	0.00	0.00	0.00	0.18
25-Aug	0.00	0.00	0.00	0.25
26-Aug	0.00	0.00	0.00	0.23
27-Aug	0.00	0.00	0.00	0.26
28-Aug	0.00	0.00	0.00	0.34
29-Aug	0.15	0.15	0.00	0.3
30-Aug	0.00	0.00	0.00	0.2
31-Aug	0.00	0.00	0.00	0.22
sum	1.16	1.16	0.00	9.36
Volume, ac-ft	10.73	0.00		
Total Vol, ac-ft	10.73			

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

Blue cells contain formulas

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	Quarry area Precip, in.	Fringe area Runoff, in.	Daily Runoff, in.	Daily Evaporation, in.
1-Sep	0.04	0.04	0.00	0.11
2-Sep	0.00	0.00	0.00	0.25
3-Sep	0.00	0.00	0.00	0.27
4-Sep	0.30	0.30	0.00	0.16
5-Sep	0.00	0.00	0.00	0.18
6-Sep	0.00	0.00	0.00	0.22
7-Sep	0.00	0.00	0.00	0.3
8-Sep	0.00	0.00	0.00	0.24
9-Sep	0.00	0.00	0.00	0.24
10-Sep	0.00	0.00	0.00	0.24
11-Sep	0.00	0.00	0.00	0.25
12-Sep	0.00	0.00	0.00	0.21
13-Sep	0.00	0.00	0.00	0.29
14-Sep	0.00	0.00	0.00	0.36
15-Sep	0.00	0.00	0.00	0.36
16-Sep	0.00	0.00	0.00	0.34
17-Sep	0.00	0.00	0.00	0.34
18-Sep	0.00	0.00	0.00	0.38
19-Sep	0.00	0.00	0.00	0.3
20-Sep	0.00	0.00	0.00	0.31
21-Sep	0.00	0.00	0.00	0.27
22-Sep	0.00	0.00	0.00	0.27
23-Sep	0.00	0.00	0.00	0.3
24-Sep	0.00	0.00	0.00	0.32
25-Sep	0.00	0.00	0.00	0.32
26-Sep	0.00	0.00	0.00	0.24
27-Sep	0.00	0.00	0.00	0.28
28-Sep	0.00	0.00	0.00	0.35
29-Sep	0.00	0.00	0.00	0.33
30-Sep	0.00	0.00	0.00	0.28
31-Sep			0.00	0.00
sum	0.34	0.34	0.00	8.31
Volume, ac-ft	3.15	0.00		
Total Vol, ac-ft	3.15			

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

Blue cells contain formulas

Evap data from Sulphur Mesonet

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-22	599.84	4.07	0.00	3.47	596.38	0.00	0.42	3.03	0.61	0.00	0.00	0.00	0.00
February-22	338.68	8.60	0.00	8.53	330.15	0.00	0.49	2.71	0.37	0.00	0.00	0.00	0.00
March-22	747.52	14.71	0.00	21.60	725.91	0.00	0.85	3.95	0.46	0.00	0.00	0.00	0.00
April-22	663.40	22.29	0.00	24.83	638.60	0.00	1.74	3.77	0.37	0.00	0.00	0.00	0.00
May-22	615.50	55.32	0.00	88.87	526.62	0.00	1.80	3.52	0.39	0.00	0.00	0.00	0.00
June-22	624.70	29.21	0.00	61.53	563.17	0.00	2.01	3.29	0.50	0.00	0.00	0.00	0.00
July-22	605.00	2.78	0.00	67.00	538.00	0.00	2.61	3.06	2.35	0.00	0.00	0.00	0.00
August-22	628.10	10.73	0.00	56.10	572.00	0.00	2.10	3.90	2.96	0.00	0.00	0.00	0.00
September-22	712.00	3.15	0.00	37.00	675.00	0.00	1.86	3.88	5.57	0.00	0.00	0.00	0.00
October-22		0.00				0.00	0.00	0.00		0.00	0.00		0.00
November-22		0.00				0.00	0.00	0.00		0.00	0.00		0.00
December-22		0.00				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					FO3/FO4 South Settling Cell								
	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	Total Evaporation, ac-ft	Total Infiltration, ac-ft
January-22	50	330	0.00		0.08	0.00	50	350	0.10	19.00	0.22	4.23	200	435	0.49	19.00	0.03	0.51	0.59	4.74
February-22	50	330	0.11	20.00	0.08	1.64	50	350	0.00		0.22	0.00	200	435	0.57	20.00	0.03	0.53	0.68	2.17
March-22	50	330	0.00	0.00	0.08	0.00	50	350	0.20	27.00	0.22	6.02	200	435	1.00	27.00	0.03	0.72	1.20	6.74
April-22	50	330	0.24	22.00	0.08	1.80	50	350	0.00		0.22	0.00	200	435	1.29	22.00	0.03	0.59	1.54	2.39
May-22	50	330	0.00		0.08	0.00	50	350	0.27	22.00	0.22	4.90	200	435	1.34	22.00	0.03	0.59	1.61	5.49
June-22	50	330	0.28	23.00	0.08	1.88	50	350	0.00		0.22	0.00	200	435	1.49	23.00	0.03	0.61	1.78	2.50
July-22	50	330	0.00		0.08	0.00	50	350	0.39	24.00	0.22	5.35	200	435	1.94	24.00	0.03	0.64	2.33	5.99
August-22	50	330	0.30	23.00	0.08	1.88	50	350	0.00		0.22	0.00	200	435	1.56	23.00	0.03	0.61	1.85	2.50
September-22	50	330	0.00		0.08	0.00	50	350	0.28	23.00	0.22	5.13	200	435	1.38	23.00	0.03	0.61	1.66	5.74
October-22	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-22	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-22	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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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 Products Coarse	351	0.009	Base Products Coarse	64	0.002	Base Products Coarse	832	0.020
Aggregates Fine	235,954	2.836	Aggregates Fine	299,115	3.595	Aggregates Fine	288,317	3.465
Aggregates	6,780	0.215	Aggregates	9,506	0.302	Aggregates	12,327	0.392
	243,085	3.060		308,685	3.899		301,476	3.877

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