

# 2017 3RD QUARTER REPORT

Report 2017

North Troy Quarry

Mill Creek, OK

Vulcan Materials Company

## VMC North Troy 2017 Monitoring Report

All volumes are in acre-feet.

	Total Groundwater Entering Pit	Total Stormwater Entering Pit	Total Pit Stormwater Diverted	Total Pit Water Diverted	Pit Water Sent To Holding Basin	Groundwater Augmentation	Streamwater Augmentation	Consumptive Use of Pit Water	Streamwater Pumped From Mill Creek	Groundwater Pumped From Wells	Total Annual Groundwater Allocation, Ac-ft
January-17	264.75	15.50	15.50	261.59	18.29	260.75	0.00	4.01	0.00	0.00	219.50
February-17	282.41	20.38	20.38	284.48	33.48	276.37	0.00	4.07	0.00	0.00	219.50
March-17	289.88	4.99	4.99	287.69	44.56	220.27	30.35	3.44	0.00	0.00	219.50
1st QTR Totals	837.04	40.87	40.87	833.76	96.33	757.39	30.35	11.53	0.00	0.00	N/A
April-17	290.81	12.17	12.17	296.13	9.02	304.77	0.00	4.49	0.00	0.00	219.50
May-17	253.78	105.92	105.92	248.01	46.74	263.71	45.88	5.68	0.00	0.00	219.50
June-17	372.93	9.57	9.57	373.55	49.96	341.65	0.00	9.59	0.00	0.00	219.50
2nd QTR Totals	917.53	127.66	127.66	917.69	105.72	910.12	45.88	19.76	0.00	0.00	N/A
July-17	345.72	43.67	43.67	343.75	0.00	389.70	0.00	10.08	0.00	0.00	219.50
August-17	357.85	36.64	36.64	360.38	40.17	362.59	0.00	11.20	0.00	0.07	219.50
September-17	354.51	24.03	24.03	355.84	32.16	313.45	36.43	9.69	0.00	0.00	219.50
3rd QTR Totals	1058.08	104.34	104.34	1059.97	72.33	1065.74	36.43	30.96	0.00	0.07	N/A
October-17	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
November-17	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
December-17	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
4th QTR Totals	#VALUE!	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
2017 Totals	#VALUE!	272.87	272.87	2811.42	274.38	2733.25	112.66	62.25	0.00	0.07	219.50

1st Qtr Notes

2nd Qtr Notes

3rd Qtr notes

4th Qtr

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# MILL CREEK 2017 AUGMENTATION and GAUGE DATA

Start Date	Start Time	Stop Date	Stop Time	Begin Reading	End Reading	Ac - Ft pumped	Mill Creek Stream gauge Reading		Time Read	Stream height	Stream flow
3/9/2017	9:45 AM	3/11/2017	2:30 PM	1292390000	1288520000	30.35	USGS	7331200	9:30 AM	6.18	3.04
5/8/2017	6:25 AM	5/10/2017	6:40 AM	1481730000	1489190000	45.88	USGS	7331200	6:00 AM	6.18	2.97
9/13/2017	6:45 AM	9/14/2017	5:55 PM	2015540000	2020900000	16.45	USGS	7331200	6:30 AM	6.1	4.08
9/15/2017	7:45 AM	9/15/2017	5:15 PM	2023600000	2024820000	3.74	USGS	7331200	7:30 AM	6.09	3.83
9/16/2017	3:10 PM	9/18/2017	8:20 AM	2029100000	2034390000	16.23	USGS	7331200	3:00 PM	6.08	3.6

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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)	53.91	subject to refinement	
Pit fringe (area drains to pit)	122.04	subject to refinement	
Drainage to Pit (total area)	175.95	subject to refinement	

Date	Precip. in.	Runoff, in.	Runoff, in.	Dailyaporation, in.	
1-Jul	0.04	0.04	0.00	0.24	Runoff formula
2-Jul	1.65	1.65	0.69	0.21	$Pe = (P-0.2S)^2/(P+0.8S)$
3-Jul	0.24	0.24	0.00	0.24	$S = (1000/CN)-10$
4-Jul	1.85	1.85	0.85	0.26	
5-Jul	0.75	0.75	0.00	0.23	Blue cells contain formulas
6-Jul		0.00	0.00	0.27	
7-Jul		0.00	0.00	0.28	
8-Jul	0.04	0.04	0.00	0.2	
9-Jul	1.27	1.27	0.00	0.26	
10-Jul		0.00	0.00	0.29	
11-Jul		0.00	0.00	0.33	
12-Jul		0.00	0.00	0.34	
13-Jul		0.00	0.00	0.28	
14-Jul		0.00	0.00	0.28	
15-Jul	0.20	0.20	0.00	0.24	
16-Jul		0.00	0.00	0.25	
17-Jul		0.00	0.00	0.28	
18-Jul		0.00	0.00	0.29	
19-Jul		0.00	0.00	0.29	
20-Jul		0.00	0.00	0.34	
21-Jul		0.00	0.00	0.35	
22-Jul	0.20	0.20	0.00	0.35	
23-Jul		0.00	0.00	0.28	
24-Jul		0.00	0.00	0.25	
25-Jul		0.00	0.00	0.29	
26-Jul		0.00	0.00	0.34	
27-Jul		0.00	0.00	0.36	
28-Jul		0.00	0.00	0.24	
29-Jul		0.00	0.00	0.31	
30-Jul		0.00	0.00	0.26	
31-Jul		0.00	0.00	0.24	
sum	6.24	6.24	1.54	8.67	
Volume, ac-ft		28.03	15.64		
Total Vol, ac-ft		43.67			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)	53.91	subject to refinement	
Pit fringe (area drains to pit)	122.04	subject to refinement	
Drainage to Pit (total area)	175.95	subject to refinement	

Date	Precip. in.	Runoff, in.	Runoff, in.	Dailyaporation, in.	
1-Aug	0.04	0.04	0.00	0.09	Runoff formula
2-Aug	0.04	0.04	0.00	0.18	$Pe = (P-0.2S)^2/(P+0.8S)$
3-Aug		0.00	0.00	0.23	$S = (1000/CN)-10$
4-Aug		0.00	0.00	0.27	
5-Aug		0.00	0.00	0.4	Blue cells contain formulas
6-Aug	1.27	1.27	0.00	0.23	
7-Aug	0.16	0.16	0.00	0.19	
8-Aug		0.00	0.00	0.23	
9-Aug		0.00	0.00	0.23	
10-Aug		0.00	0.00	0.24	
11-Aug	0.40	0.40	0.00	0.21	
12-Aug	0.32	0.32	0.00	0.13	
13-Aug	0.04	0.04	0.00	0.17	
14-Aug	0.39	0.39	0.00	0.17	
15-Aug	0.04	0.04	0.00	0.22	
16-Aug	0.04	0.04	0.00	0.16	
17-Aug	1.22	1.22	0.00	0.23	
18-Aug		0.00	0.00	0.25	
19-Aug		0.00	0.00	0.25	
20-Aug		0.00	0.00	0.23	
21-Aug		0.00	0.00	0.25	
22-Aug	1.06	1.06	0.00	0.26	
23-Aug	1.62	1.62	0.67	0.17	
24-Aug		0.00	0.00	0.16	
25-Aug		0.00	0.00	0.18	
26-Aug		0.00	0.00	0.18	
27-Aug		0.00	0.00	0.2	
28-Aug		0.00	0.00	0.22	
29-Aug		0.00	0.00	0.24	
30-Aug		0.00	0.00	0.25	
31-Aug		0.00	0.00	0.25	
sum	6.64	6.64	0.67	6.67	
Volume, ac-ft		29.83	6.81		
Total Vol, ac-ft		36.64			Pan Evaporation from Sulphur Mesonet

## 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)	53.91	subject to refinement	
Pit fringe (area drains to pit)	122.04	subject to refinement	
Drainage to Pit (total area)	175.95	subject to refinement	

Date	Precip. in.	Runoff, in.	Runoff, in.	Dailyaporation, in.	
1-Sep		0.00	0.00	0.2	Runoff formula
2-Sep		0.00	0.00	0.16	$Pe = (P-0.2S)^2/(P+0.8S)$
3-Sep		0.00	0.00	0.21	$S = (1000/CN)-10$
4-Sep		0.00	0.00	0.25	
5-Sep		0.00	0.00	0.22	Blue cells contain formulas
6-Sep		0.00	0.00	0.23	
7-Sep		0.00	0.00	0.2	
8-Sep		0.00	0.00	0.2	
9-Sep		0.00	0.00	0.22	Evap data from Sulphur Mesonet
10-Sep		0.00	0.00	0.21	
11-Sep		0.00	0.00	0.19	
12-Sep		0.00	0.00	0.16	
13-Sep		0.00	0.00	0.18	
14-Sep		0.00	0.00	0.25	
15-Sep		0.00	0.00	0.31	
16-Sep		0.00	0.00	0.29	
17-Sep	0.20	0.20	0.00	0.22	
18-Sep	0.04	0.04	0.00	0.18	
19-Sep		0.00	0.00	0.28	
20-Sep		0.00	0.00	0.29	
21-Sep		0.00	0.00	0.31	
22-Sep		0.00	0.00	0.24	
23-Sep		0.00	0.00	0.25	
24-Sep		0.00	0.00	0.24	
25-Sep		0.00	0.00	0.21	
26-Sep	0.04	0.04	0.00	0.09	
27-Sep	0.40	0.40	0.00	0.04	
28-Sep	2.17	2.17	1.10	0.04	
29-Sep		0.00	0.00	0.08	
30-Sep		0.00	0.00	0.15	
sum	2.85	2.85	1.10	6.08	
Volume, ac-ft		12.80	11.23		
Total Vol, ac-ft		24.03			Pan Evaporation from Sulphur Mesonet

NOV 27 2017

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	2,807	0.069	Base Products	2,016	0.049	Base Products	1,430	0.035
Coarse Aggregates	289,487	3.479	Coarse Aggregates	246,479	2.962	Coarse Aggregates	190,947	2.295
Fine Aggregates	7,388	0.235	Fine Aggregates	10,765	0.342	Fine Aggregates	12,310	0.391
	299,682	3.783		259,260	3.354		204,687	2.721

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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-17	277.09	15.50	3.16	18.29	258.80	0.00	0.00	2.50	1.51	0.00	0.00	0.00	0.00
February-17	304.86	20.38	-2.07	33.48	271.38	0.00	0.00	3.11	0.96	0.00	0.00	0.00	0.00
March-17	292.68	4.99	2.18	44.56	217.77	30.35	0.00	2.56	0.88	0.00	0.00	0.00	0.00
April-17	308.30	12.17	-5.31	9.02	299.28	0.00	0.50	2.84	1.15	0.00	0.00	0.00	0.00
May-17	353.93	105.92	5.77	46.74	261.32	45.88	0.65	3.79	1.25	0.00	0.00	0.00	0.00
June-17	383.12	9.57	-0.62	49.96	336.16	0.00	0.66	3.64	5.28	0.00	0.00	0.00	0.00
July-17	387.42	43.67	1.97	0.00	387.42	0.00	0.72	3.78	5.58	0.00	0.00	0.00	0.00
August-17	397.02	36.64	-2.53	40.17	356.85	0.00	0.55	3.35	7.29	0.00	0.00	0.07	0.00
September-17	379.87	24.03	-1.33	32.16	311.28	36.43	0.50	2.72	6.46	0.00	0.00	0.00	0.00
October-17		0.00					0.00	0.00		0.00	0.00		0.00
November-17		0.00					0.00	0.00		0.00	0.00		0.00
December-17		0.00					0.00	0.00		0.00	0.00		0.00

Pit Sump Volumes

	West Sump					905 Sump					New Freshwater Pond					Total 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	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	
January-17	11.432	125	325	3.16	0.24	4	50	50	0.00	0.01	4.29		750	0.00	0.00	0.25
February-17	13.649	125	325	-2.07	0.34	4	50	50	0.00	0.02	4.036		750	0.00	0.00	0.36
March-17	11.309	125	325	2.18	0.51	4	50	50	0.00	0.03	2.996		750	0.00	0.00	0.54
April-17	17.006	125	325	-5.31	0.47	4	50	50	0.00	0.03	4.603		750	0.00	0.00	0.50
May-17	10.822	125	325	5.77	0.61	4	50	50	0.00	0.04	5.104		750	0.00	0.00	0.65
June-17	11.483	125	325	-0.62	0.62	4	50	50	0.00	0.04	4.076		750	0.00	0.00	0.66
July-17	9.367	125	325	1.97	0.67	4	50	50	0.00	0.04	3.407		750	0.00	0.00	0.72
August-17	12.08	125	325	-2.53	0.52	4	50	50	0.00	0.03	4.015		750	0.00	0.00	0.55
September-17	13.501	125	325	-1.33	0.47	4	50	50	0.00	0.03	3.506		750	0.00	0.00	0.50
October-17		125	325		0.00	4	50	50	0.00	0.00			750		0.00	0.00
November-17		125	325		0.00	4	50	50	0.00	0.00			750		0.00	0.00
December-17		125	325		0.00	4	50	50	0.00	0.00			750		0.00	0.00

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