

Quarterly Report 2016  
 North Troy Quarry  
 Mill Creek, OK  
 Vulcan Materials Company

1st QTR

VMC North Troy 2016 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-16	343.14	1.26	1.20	330.36	53.06	241.05	39.75	4.10	0.00	0.00	219.50
February-16	303.78	16.79	10.79	314.86	51.53	263.89	65.67	6.65	0.00	0.00	219.50
March-16	270.82	27.14	27.14	267.20	5.80	348.12	122.45	8.71	0.00	1.48	219.50
1st QTR Totals	817.74	45.19	45.18	812.42	110.39	853.05	227.01	18.46	0.00	1.48	N/A
April-16											219.50
May-16											219.50
June-16											219.50
July-16											N/A
2nd QTR Totals											219.50
August-16											219.50
September-16											219.50
3rd QTR Totals											N/A
October-16											219.50
November-16											219.50
December-16											219.50
4th QTR Totals											N/A
2016 Totals											219.50

1st Qtr Notes

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PIT RUNOFF ASSUMPTIONS	
Hydrologic Soil Group	D
Land Use	Gravel road
A/C Condition	II (level)
CN (p1 fringe)	88
CN (p2)	100
S (p1 fringe)	1.36383636
S (p2)	0
P1 Direct Interception (1-95 R depth)	53.91
P1 fringe (area drains to pit)	122.04
Drainage to Pit (total area)	175.95

Date	Precip. in.	Quarry area Runoff, in.	Fringe area Runoff, in.	Daily Evaporation, in.
1 Feb	0.00	0.00	0.00	0.15
2 Feb	0.00	0.00	0.00	0.15
3 Feb	0.00	0.00	0.00	0.15
4 Feb	0.00	0.00	0.00	0.08
5 Feb	0.00	0.00	0.00	0.13
6 Feb	0.00	0.00	0.00	0.07
7 Feb	0.00	0.00	0.00	0.13
8 Feb	0.00	0.00	0.00	0.28
9 Feb	0.00	0.00	0.00	0.17
10 Feb	0.00	0.00	0.00	0.2
11 Feb	0.00	0.00	0.00	0.16
12 Feb	0.00	0.00	0.00	0.15
13 Feb	0.00	0.00	0.00	0.18
14 Feb	0.00	0.00	0.00	0.11
15 Feb	0.00	0.00	0.00	0.16
16 Feb	0.00	0.00	0.00	0.2
17 Feb	0.00	0.00	0.00	0.2
18 Feb	0.00	0.00	0.00	0.33
19 Feb	0.00	0.00	0.00	0.18
20 Feb	0.00	0.00	0.00	0.22
21 Feb	0.00	0.00	0.00	0.15
22 Feb	0.00	0.00	0.00	0.25
23 Feb	1.84	1.84	0.84	0.08
24 Feb	0.00	0.00	0.00	0.17
25 Feb	0.00	0.00	0.00	0.13
26 Feb	0.00	0.00	0.00	0.14
27 Feb	0.00	0.00	0.00	0.2
28 Feb	0.00	0.00	0.00	0.25
29 Feb	0.00	0.00	0.00	0.24
30 Feb	0.00	0.00	0.00	0.00
Sum	1.84	1.84	1.84	4.99
Volume, ac-ft		6.37	6.52	
Total Vol, ac-ft		16.78		

Pan Evaporation from Sulphur Mesonet

Blue cells contain formulas

Runoff formula  
 $R = (P - 0.25) - 2(P - 0.85)$   
 $S = (1000/CN) - 10$

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PIT RUNOFF ASSUMPTIONS	
Hydrologic Soil Group	D
Land Use	gravel road
AMC Condition	II (ave)
CN (pit fringe)	66
CN (pit)	100
S (pit fringe)	1.563636364
S (pit)	0
Pit - Direct Interception (>95 ft deep)	53.91
Pit fringe (area drains to pit)	122.04
Drainage to Pit (total area)	175.95

Date	Precip. in.	Quarry area		Fringe area		Daily Evaporation, in.
		Runoff, in.	Runoff, in.	Runoff, in.	Runoff, in.	
1-Mar	0.18	0.00	0.18	0.00	0.15	0.15
2-Mar	0.00	0.00	0.00	0.00	0.24	0.24
3-Mar	0.00	0.00	0.00	0.00	0.16	0.16
4-Mar	0.00	0.00	0.00	0.00	0.18	0.18
5-Mar	0.00	0.00	0.00	0.00	0.2	0.2
6-Mar	0.00	0.00	0.00	0.00	0.25	0.25
7-Mar	1.60	1.60	1.60	0.85	0.08	0.08
8-Mar	1.26	1.26	1.26	0.00	0.04	0.04
9-Mar	0.17	0.17	0.17	0.00	0.05	0.05
10-Mar	0.00	0.00	0.00	0.00	0.11	0.11
11-Mar	0.37	0.37	0.37	0.00	0.1	0.1
12-Mar	0.00	0.00	0.00	0.00	0.16	0.16
13-Mar	0.01	0.01	0.01	0.00	0.25	0.25
14-Mar	0.00	0.00	0.00	0.00	0.27	0.27
15-Mar	0.00	0.00	0.00	0.00	0.23	0.23
16-Mar	0.00	0.00	0.00	0.00	0.23	0.23
17-Mar	0.54	0.54	0.54	0.00	0.23	0.23
18-Mar	0.47	0.47	0.47	0.00	0.08	0.08
19-Mar	0.00	0.00	0.00	0.00	0.2	0.2
20-Mar	0.00	0.00	0.00	0.00	0.16	0.16
21-Mar	0.00	0.00	0.00	0.00	0.22	0.22
22-Mar	0.00	0.00	0.00	0.00	0.35	0.35
23-Mar	0.03	0.03	0.03	0.00	0.4	0.4
24-Mar	0.00	0.00	0.00	0.00	0.24	0.24
25-Mar	0.00	0.00	0.00	0.00	0.2	0.2
26-Mar	0.00	0.00	0.00	0.00	0.27	0.27
27-Mar	0.00	0.00	0.00	0.00	0.15	0.15
28-Mar	0.00	0.00	0.00	0.00	0.21	0.21
29-Mar	0.00	0.00	0.00	0.00	0.32	0.32
30-Mar	0.38	0.38	0.38	0.00	0.16	0.16
31-Mar	0.00	0.00	0.00	0.00	0.22	0.22
sum	4.56	4.56	4.56	6.65	6.65	6.65
Volume, ac-ft		20.49				
Total Vol, ac-ft		27.14				

Pan Evaporation from Sulphur Mesonet

Runoff formula  
 $P_o = (P - 0.2S)^2 / (P + 0.8S)$   
 $S = (10000/CN) - 10$

Blue cells co

Monthly Water Data, ac-ft

	Water Diverted From PM	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 2002-402	North Well Permit 20060301A
January-15	331.62	1.26	12.78	53.08	238.77	38.79	1.79	1.43	0.69	0.00	0.00	0.00	0.00
February-15	331.65	16.76	-11.06	51.53	258.15	65.67	3.40	2.36	0.89	0.00	0.00	0.00	0.00
March-15	294.31	27.14	3.62	5.90	345.62	122.45	4.11	3.55	1.04	0.00	0.00	1.48	0.00
April-15										0.00	0.00	0.00	0.00
May-15										0.00	0.00	0.00	0.00
June-15										0.00	0.00	0.00	0.00
July-15										0.00	0.00	0.00	0.00
August-15										0.00	0.00	0.00	0.00
September-15										0.00	0.00	0.00	0.00
October-15										0.00	0.00	0.00	0.00
November-15										0.00	0.00	0.00	0.00
December-15										0.00	0.00	0.00	0.00

Pit Sump Volumes

	West Sump				805 Sump				New Freshwater Pond						
	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	Total Evaporation, ac-ft
January-15	5.535	125	325	12.78	0.20	4	50	50	50	0.01	5.408	475	750	-19.88	1.76
February-15	17.412	125	325	-11.06	0.36	4	50	50	50	0.02	5.018	475	750	3.17	3.40
March-15	13.53	125	325	3.62	0.47	4	50	50	50	0.03	5.818	475	750	-8.55	4.11
April-15		125	325			4	50	50	50			475	750		
May-15		125	325			4	50	50	50			475	750		
June-15		125	325			4	50	50	50			475	750		
July-15		125	325			4	50	50	50			475	750		
August-15		125	325			4	50	50	50			475	750		
September-15		125	325			4	50	50	50			475	750		
October-15		125	325			4	50	50	50			475	750		
November-15		125	325			4	50	50	50			475	750		
December-15		125	325			4	50	50	50			475	750		

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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	1,689	0.041	3,340	0.082	4,180	0.102
Coarse Aggregates	84,066	1.011	140,298	1.686	230,465	2.770
Fine Aggregates	11,670	0.317	18,501	0.588	21,444	0.681
	97,655	1.428	162,138	2.356	256,089	3.564

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