

## 2018 1st Quarter Report

Report 2018

North Troy Quarry

Mill Creek, OK

Vulcan Materials Company

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Oklahoma Water Resources Board

### VMC North Troy 2018 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-17	348.44	2.07	346.37	68.31	281.64	0.00	8.60	0.00	0.00	219.50
February-17	211.66	81.44	130.22	13.38	202.77	0.00	7.29	0.00	0.00	219.50
March-17	567.35	28.02	539.33	8.20	561.54	0.00	7.76	0.00	0.23	219.50
<b>1st QTR Totals</b>	<b>1127.45</b>	<b>111.53</b>	<b>1015.92</b>	<b>89.89</b>	<b>1045.95</b>	<b>0.00</b>	<b>23.64</b>	<b>0.00</b>	<b>0.23</b>	<b>N/A</b>
April-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
May-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
June-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
<b>2nd QTR Totals</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>N/A</b>
July-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
August-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
September-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
<b>3rd QTR Totals</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>N/A</b>
October-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
November-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
December-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.50
<b>4th QTR Totals</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>N/A</b>
<b>2017 Totals</b>	<b>1127.45</b>	<b>111.53</b>	<b>1015.92</b>	<b>89.89</b>	<b>1045.95</b>	<b>0.00</b>	<b>23.64</b>	<b>0.00</b>	<b>0.23</b>	<b>219.50</b>
<b>2017 Total (adj)</b>	<b>1127.45</b>	<b>111.53</b>	<b>1015.92</b>	<b>89.89</b>	<b>1045.95</b>	<b>0.00</b>	<b>23.64</b>	<b>0.00</b>	<b>0.23</b>	<b>219.50</b>

1st Qtr notes

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.



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	Composite RCN
CN (pit)	100	area with direct interception	
S (pit fringe)	1,363.96394	area draining into pit	
S (pit)	0	area with direct interception	
PA - Direct Interception (>95 ft deep)	103.45	subject to refinement	**
PA fringe (area drains to pit)	84.94	subject to refinement	**
Drainage to PA (total area)	188.39	subject to refinement	

Date	Precip. in.	Quarry area Runoff, in.	Fringe area Runoff, in.	Daily Evaporation, in.	
1-Jan		0.00	0.00	0.05	Runoff formula
2-Jan		0.00	0.00	0.03	Pe = (P-0.25)*2/(P+0.85)
3-Jan		0.00	0.00	0.07	S = (1000/CN)-10
4-Jan		0.00	0.00	0.05	
5-Jan		0.00	0.00	0.07	Blue cells contain formulas
6-Jan		0.00	0.00	0.11	
7-Jan	0.20	0.20	0.00	0.07	
8-Jan		0.00	0.00	0.07	
9-Jan		0.00	0.00	0.05	
10-Jan		0.00	0.00	0.08	
11-Jan		0.00	0.00	0.1	
12-Jan		0.00	0.00	0.09	
13-Jan		0.00	0.00	0.08	
14-Jan		0.00	0.00	0.12	
15-Jan		0.00	0.00	0.09	
16-Jan		0.00	0.00	0.05	
17-Jan		0.00	0.00	0.03	
18-Jan		0.00	0.00	0.11	
19-Jan		0.00	0.00	0.15	
20-Jan		0.00	0.00	0.17	
21-Jan		0.00	0.00	0.25	
22-Jan		0.00	0.00	0.19	
23-Jan		0.00	0.00	0.04	
24-Jan		0.00	0.00	0.08	
25-Jan		0.00	0.00	0.23	
26-Jan	0.04	0.04	0.00	0.11	
27-Jan		0.00	0.00	0.16	
28-Jan		0.00	0.00	0.09	
29-Jan		0.00	0.00	0.12	
30-Jan		0.00	0.00	0.17	
31-Jan		0.00	0.00	0.13	
sum	0.24	0.24	0.00	3.32	

Volume, ac-ft 2.87  
 Total Vol, ac-ft 2.87  
 Pan Evaporation from Sulphur Mesonet 8.88

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	Composite RCN
CN (pit)	100	area with direct interception	
S (pit fringe)	1,363.96394	area draining into pit	
S (pit)	0	area with direct interception	
PA - Direct Interception (>95 ft deep)	103.45	subject to refinement	**
PA fringe (area drains to pit)	84.94	subject to refinement	**
Drainage to PA (total area)	188.39	subject to refinement	

Date	Precip. in.	Quarry area Runoff, in.	Fringe area Runoff, in.	Daily Evaporation, in.	
1-Feb		0.00	0.00	0.10	Runoff formula
2-Feb		0.00	0.00	0.15	Pe = (P-0.25)*2/(P+0.85)
3-Feb		0.00	0.00	0.15	S = (1000/CN)-10
4-Feb		0.00	0.00	0.09	
5-Feb		0.00	0.00	0.05	Blue cells contain formulas
6-Feb		0.00	0.00	0.03	
7-Feb		0.00	0.00	0.1	
8-Feb		0.00	0.00	0.13	
9-Feb		0.00	0.00	0.17	
10-Feb		0.00	0.00	0.07	
11-Feb		0.00	0.00	0.08	
12-Feb		0.00	0.00	0.07	
13-Feb		0.00	0.00	0.06	
14-Feb		0.00	0.00	0.13	
15-Feb		0.00	0.00	0.19	
16-Feb		0.00	0.00	0.22	
17-Feb	0.28	0.28	0.00	0.14	
18-Feb		0.00	0.00	0.06	
19-Feb	0.16	0.16	0.00	0.09	
20-Feb	2.31	2.31	0.00	0.11	
21-Feb		0.00	0.00	0.02	
22-Feb	0.04	0.04	0.00	0.02	
23-Feb	1.83	1.83	0.83	0.02	
24-Feb	1.10	1.10	0.00	0.07	
25-Feb		0.00	0.00	0.13	
26-Feb		0.00	0.00	0.14	
27-Feb	1.39	1.39	0.50	0.04	
28-Feb	0.24	0.24	0.00	0.05	
sum	7.36	7.36	2.35	2.16	

Volume, ac-ft 81.36  
 Total Vol, ac-ft 81.44  
 Pan Evaporation from Sulphur Mesonet 19.88

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	Composite RCN
CN (pit)	100	area with direct interception	
S (pit fringe)	1,363.96394	area draining into pit	
S (pit)	0	area with direct interception	
PA - Direct Interception (>95 ft deep)	103.45	subject to refinement	**
PA fringe (area drains to pit)	84.94	subject to refinement	**
Drainage to PA (total area)	188.39	subject to refinement	

Date	Precip. in.	Quarry area Runoff, in.	Fringe area Runoff, in.	Daily Evaporation, in.	
1-Mar	0.04	0.04	0.00	0.14	Runoff formula
2-Mar		0.00	0.00	0.16	Pe = (P-0.25)*2/(P+0.85)
3-Mar		0.00	0.00	0.21	S = (1000/CN)-10
4-Mar		0.00	0.00	0.12	
5-Mar		0.00	0.00	0.22	Blue cells contain formulas
6-Mar		0.00	0.00	0.25	
7-Mar		0.00	0.00	0.15	
8-Mar		0.00	0.00	0.17	
9-Mar		0.00	0.00	0.25	
10-Mar		0.00	0.00	0.15	
11-Mar		0.00	0.00	0.22	
12-Mar		0.00	0.00	0.16	
13-Mar		0.00	0.00	0.16	
14-Mar		0.00	0.00	0.2	
15-Mar		0.00	0.00	0.34	
16-Mar		0.00	0.00	0.39	
17-Mar		0.00	0.00	0.19	
18-Mar		0.00	0.00	0.15	
19-Mar	0.43	0.43	0.00	0.27	
20-Mar		0.00	0.00	0.2	
21-Mar		0.00	0.00	0.18	
22-Mar		0.00	0.00	0.41	
23-Mar		0.00	0.00	0.25	
24-Mar		0.00	0.00	0.28	
25-Mar		0.00	0.00	0.09	
26-Mar	0.63	0.63	0.00	0.16	
27-Mar	1.19	1.19	0.00	0.04	
28-Mar	0.07	0.07	0.00	0.05	
29-Mar	0.14	0.14	0.00	0.13	
30-Mar		0.00	0.00	0.15	
31-Mar	0.75	0.75	0.00	0.22	
sum	3.26	3.26	0.00	5.98	

Volume, ac-ft 28.92  
 Total Vol, ac-ft 28.92  
 Pan Evaporation from Sulphur Mesonet 8.88

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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	348.44	2.07	0.11	68.31	280.12	0.00	0.48	2.98	5.14	0.00	0.00	0.00	0.00
February-17	211.66	81.44	-2.84	13.38	198.28	0.00	0.39	2.37	4.53	0.00	0.00	0.00	0.00
March-17	567.35	28.02	1.50	8.20	559.15	0.00	0.86	2.37	4.53	0.00	0.00	0.23	0.00
April-17		0.00					0.00	0.00		0.00	0.00		0.00
May-17		0.00					0.00	0.00		0.00	0.00		0.00
June-17		0.00					0.00	0.00		0.00	0.00		0.00
July-17		0.00					0.00	0.00		0.00	0.00		0.00
August-17		0.00					0.00	0.00		0.00	0.00		0.00
September-17		0.00					0.00	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					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-17	3.61	125	325	0.11	0.27	4	50	50	0.00	0.03	5.503	750	750	0.00	0.00	0.28	1.7	0.48
February-17	6.65	125	325	-2.84	0.21	4	50	50	0.00	0.01	5.65	750	750	0.00	0.00	0.23	1.7	0.39
March-17	5.04	125	325	1.50	0.47	4	50	50	0.00	0.03	5.31	750	750	0.00	0.00	0.50	1.7	0.86
April-17		125	325		0.00	4	50	50	0.00	0.00		750	750		0.00	0.00	1.7	0.00
May-17		125	325		0.00	4	50	50	0.00	0.00		750	750		0.00	0.00	1.7	0.00
June-17		125	325		0.00	4	50	50	0.00	0.00		750	750		0.00	0.00	1.7	0.00
July-17		125	325		0.00	4	50	50	0.00	0.00		750	750		0.00	0.00	1.7	0.00
August-17		125	325		0.00	4	50	50	0.00	0.00		750	750		0.00	0.00	1.7	0.00
September-17		125	325		0.00	4	50	50	0.00	0.00		750	750		0.00	0.00	1.7	0.00
October-17		125	325		0.00	4	50	50	0.00	0.00		750	750		0.00	0.00	1.7	0.00
November-17		125	325		0.00	4	50	50	0.00	0.00		750	750		0.00	0.00	1.7	0.00
December-17		125	325		0.00	4	50	50	0.00	0.00		750	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	2,374	0.058	Base Products	352	0.009	Base Products	352	0.009
Coarse Aggregates	198,801	2.389	Coarse Aggregates	160,194	1.925	Coarse Aggregates	160,194	1.925
Fine Aggregates	16,710	0.531	Fine Aggregates	13,594	0.432	Fine Aggregates	13,594	0.432
	217,885	2.978		174,140	2.366		174,140	2.366

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