

4th Quarter Report 2014 & Annual Report 2014
 Vulcan Materials Company - North Troy Quarry
 Mill Creek, Oklahoma

VMC North Troy 2014 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-14	175.70	1.98	1.98	174.21	26.91	151.66	0.00	3.80	0.00	0.09	594.72
February-14	147.76	1.21	1.21	148.70	0.00	154.41	0.00	3.96	0.00	0.00	594.72
March-14	203.20	3.05	3.05	198.27	0.00	204.25	0.00	7.17	0.00	0.07	594.72
1st QTR Totals	526.66	6.24	6.24	521.18	26.91	510.32	0.00	14.92	0.00	0.16	N/A
April-14	182.17	8.00	8.00	180.05	49.37	138.68	0.00	7.84	0.00	0.00	594.72
May-14	161.61	9.88	9.88	172.87	23.14	159.61	0.00	8.69	0.00	0.00	594.72
June-14	156.78	51.30	51.30	149.62	0.00	200.92	0.00	7.78	0.00	0.17	594.72
2nd QTR Totals	500.56	69.18	69.18	502.54	72.51	499.21	0.00	24.32	0.00	0.17	N/A
July-14	167.11	16.71	16.71	164.91	24.86	156.76	0.00	8.58	0.00	0.00	594.72
August-14	149.03	2.34	2.34	148.10	0.00	150.44	0.00	8.46	0.00	0.00	594.72
September-14	124.34	5.57	5.57	126.48	28.57	103.48	0.00	8.13	0.00	0.86	594.72
3rd QTR Totals	440.48	24.62	24.62	439.49	53.43	410.68	0.00	25.16	0.00	0.86	N/A
October-14	85.05	77.88	77.88	82.71	22.40	138.19	0.00	6.95	0.00	0.00	594.72
November-14	169.81	7.01	7.01	160.86	0.00	167.87	0.00	2.90	0.00	0.00	594.72
December-14	175.32	5.21	5.21	187.45	34.06	158.60	0.00	2.99	0.00	1.32	594.72
4th QTR Totals	430.18	90.10	90.10	431.02	56.46	464.66	0.00	12.84	0.00	1.32	N/A
2014 Totals	1897.88	190.14	190.14	1894.23	209.31	1884.87	0.00	77.25	0.00	2.51	594.72

4th Quarter Report 2014 & Annual Report 2014
 Vulcan Materials Company - North Troy Quarry
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Pit Sump Volumes

	West Sump				905 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	Evaporation, ac-ft	Total Evaporation, ac-ft
January-14	17.634	125	325	1.49	0.22	4	50	50	0.00	0.01	3	475	750	0.00	1.76	1.97
February-14	16.64	125	325	-0.84	0.15	4	50	50	0.00	0.01	3	475	750	0.00	1.59	1.78
March-14	13.352	125	325	4.93	0.32	4	50	50	0.00	0.02	3	475	750	0.00	2.79	3.13
April-14	11.085	125	325	2.11	0.43	4	50	50	0.00	0.03	3	475	750	0.00	3.81	4.27
May-14	23.158	125	325	-11.26	0.45	4	50	50	0.00	0.03	4,311	475	750	-10.72	3.94	4.42
June-14	15.481	125	325	7.16	0.45	4	50	50	0.00	0.03	5,682	475	750	-11.21	3.99	4.47
July-14	13.118	125	325	2.20	0.45	4	50	50	0.00	0.03	4,516	475	750	9.54	3.98	4.46
August-14	12.126	125	325	0.93	0.65	4	50	50	0.00	0.04	6,865	475	750	-19.21	5.95	6.67
September-14	14.416	125	325	-2.14	0.52	4	50	50	0.00	0.03	6,097	475	750	6.28	4.57	5.12
October-14	11.908	125	325	2.34	0.45	4	50	50	0.00	0.03	5,543	475	750	4.53	3.92	4.39
November-14	2.31	125	325	8.95	0.02	4	50	50	0.00	0.00	8,147	475	750	-21.30	0.18	0.20
December-14	15.316	125	325	-12.13	0.01	4	50	50	0.00	0.00	5,955	475	750	17.97	0.05	0.06

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
January-14	50	330	0.08	22.00	0.08	1.80	50	350	0.00	0.00	0.22	0.00	200	435	0.43	22.00	0.03	0.59
February-14	50	330	0.00	0.00	0.08	0.08	50	350	0.08	18.00	0.22	4.01	200	435	0.39	18.00	0.03	0.48
March-14	50	330	0.13	27.00	0.08	2.21	50	350	0.00	0.00	0.22	0.00	200	435	0.68	27.00	0.03	0.72
April-14	50	330	0.00	0.00	0.08	0.08	50	350	0.19	23.00	0.22	5.13	200	435	0.83	23.00	0.03	0.61
May-14	50	330	0.18	25.00	0.08	2.05	50	350	0.00	0.00	0.22	0.00	200	435	0.96	25.00	0.03	0.67
June-14	50	330	0.00	0.00	0.08	0.08	50	350	0.20	25.00	0.22	5.57	200	435	0.97	25.00	0.03	0.67
July-14	50	330	0.16	25.00	0.08	2.05	50	350	0.00	0.00	0.22	0.00	200	435	0.97	25.00	0.03	0.67
August-14	50	330	0.00	0.00	0.08	0.08	50	350	0.29	22.00	0.22	4.90	200	435	1.45	22.00	0.03	0.59
September-14	50	330	0.21	22.00	0.08	1.80	50	350	0.00	0.00	0.22	0.00	200	435	1.12	22.00	0.03	0.59
October-14	50	330	0.00	0.00	0.08	0.08	50	350	0.19	24.00	0.22	5.35	200	435	0.96	24.00	0.03	0.64
November-14	50	330	0.01	19.00	0.08	1.56	50	350	0.00	0.00	0.22	0.00	200	435	0.04	19.00	0.03	0.51
December-14	50	330	0.00	0.00	0.08	0.08	50	350	0.00	0.00	0.22	0.00	200	435	0.01	21.00	0.03	0.56

October 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	Quarry area		Fringe area		Daily Evaporation, in.
	Precip, in.	Runoff, in.	Precip, in.	Runoff, in.	
1-Oct	0.00	0.00	0.00	0.00	0.31
2-Oct	0.03	0.03	0.00	0.00	0.23
3-Oct	0.00	0.00	0.00	0.00	0.17
4-Oct	0.00	0.00	0.00	0.00	0.19
5-Oct	0.00	0.00	0.00	0.00	0.17
6-Oct	0.18	0.18	0.00	0.00	0.19
7-Oct	0.00	0.00	0.00	0.00	0.25
8-Oct	4.66	4.66	3.35	0.00	0.21
9-Oct	0.00	0.00	0.00	0.00	0.24
10-Oct	1.75	1.75	0.77	0.00	0.21
11-Oct	0.14	0.14	0.00	0.00	0.05
12-Oct	0.00	0.00	0.00	0.00	0.16
13-Oct	1.26	1.26	0.00	0.00	0.1
14-Oct	0.00	0.00	0.00	0.00	0.22
15-Oct	0.00	0.00	0.00	0.00	0.13
16-Oct	0.00	0.00	0.00	0.00	0.23
17-Oct	0.00	0.00	0.00	0.00	0.2
18-Oct	0.00	0.00	0.00	0.00	0.18
19-Oct	0.00	0.00	0.00	0.00	0.15
20-Oct	0.00	0.00	0.00	0.00	0.14
21-Oct	0.00	0.00	0.00	0.00	0.13
22-Oct	0.00	0.00	0.00	0.00	0.13
23-Oct	0.00	0.00	0.00	0.00	0.17
24-Oct	0.00	0.00	0.00	0.00	0.17
25-Oct	0.00	0.00	0.00	0.00	0.19
26-Oct	0.00	0.00	0.00	0.00	0.28
27-Oct	0.00	0.00	0.00	0.00	0.25
28-Oct	0.00	0.00	0.00	0.00	0.25
29-Oct	0.00	0.00	0.00	0.00	0.14
30-Oct	0.00	0.00	0.00	0.00	0.16
31-Oct	0.00	0.00	0.00	0.00	0.15
sum	8.02	8.02	4.12	0.00	5.75

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

Blue cells contain formulas

Volume, ac-ft 36.03 41.85
 Total Vol, ac-ft 77.88

November 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

	Quarry area	Fringe area	Daily
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Date	Precip, in.	Runoff, in.	Runoff, in.	Evaporation, in.
1-Nov	0.00	0.00	0.00	0.009
2-Nov	0.00	0.00	0.00	0.008
3-Nov	0.00	0.00	0.00	0.005
4-Nov	0.01	0.01	0.00	0.012
5-Nov	0.01	0.01	0.00	0.0044
6-Nov	0.00	0.00	0.00	0.011
7-Nov	0.00	0.00	0.00	0.01
8-Nov	0.00	0.00	0.00	0.011
9-Nov	0.00	0.00	0.00	0.0105
10-Nov	0.00	0.00	0.00	0.0125
11-Nov	0.00	0.00	0.00	0.007
12-Nov	0.00	0.00	0.00	0.004
13-Nov	0.00	0.00	0.00	0.005
14-Nov	0.09	0.09	0.00	0.00471
15-Nov	0.13	0.13	0.00	0.0045
16-Nov	0.00	0.00	0.00	0.0158
17-Nov	0.00	0.00	0.00	0.006
18-Nov	0.00	0.00	0.00	0.072
19-Nov	0.00	0.00	0.00	0.007
20-Nov	0.33	0.33	0.00	0.0066
21-Nov	0.00	0.00	0.00	0.005
22-Nov	0.51	0.51	0.00	0.0058
23-Nov	0.28	0.28	0.00	0.0016
24-Nov	0.06	0.06	0.00	0.001
25-Nov	0.04	0.04	0.00	0.005
26-Nov	0.03	0.03	0.00	0.001
27-Nov	0.02	0.02	0.00	0.003
28-Nov	0.02	0.02	0.00	0.005
29-Nov	0.02	0.02	0.00	0.0065
30-Nov	0.01	0.01	0.00	0.005125
		0.00	0.00	
sum	1.56	1.56	0.00	0.27

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

Blue cells contain formulas

Volume, ac-ft 7.01 0.00
 Total Vol, ac-ft 7.01

December 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

	Quarry area	Fringe area	Daily
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Date	Precip, in.	Runoff, in.	Runoff, in.	Evaporation, in.
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1-Dec	0.00	0.00	0.00	0.002
2-Dec	0.05	0.05	0.00	0.002
3-Dec	0.05	0.05	0.00	0.001
4-Dec	0.02	0.02	0.00	0.00187
5-Dec	0.01	0.01	0.00	0.001
6-Dec	0.00	0.00	0.00	0.002
7-Dec	0.00	0.00	0.00	0.001
8-Dec	0.00	0.00	0.00	0.004
9-Dec	0.01	0.01	0.00	0.005
10-Dec	0.00	0.00	0.00	0.003
11-Dec	0.01	0.01	0.00	0.0016
12-Dec	0.02	0.02	0.00	0.001
13-Dec	0.01	0.01	0.00	0.002
14-Dec	0.15	0.15	0.00	0.001
15-Dec	0.11	0.11	0.00	0.004
16-Dec	0.02	0.02	0.00	0.003
17-Dec	0.05	0.05	0.00	0.001
18-Dec	0.16	0.16	0.00	0.001
19-Dec	0.17	0.17	0.00	0.001
20-Dec	0.08	0.08	0.00	0.001
21-Dec	0.03	0.03	0.00	0.001
22-Dec	0.02	0.02	0.00	0.001
23-Dec	0.00	0.00	0.00	0.003
24-Dec	0.00	0.00	0.00	0.003
25-Dec	0.00	0.00	0.00	0.003
26-Dec	0.03	0.03	0.00	0.006
27-Dec	0.15	0.15	0.00	0.001
28-Dec	0.01	0.01	0.00	0.001
29-Dec	0.00	0.00	0.00	0.002
30-Dec	0.00	0.00	0.00	0.004
31-Dec	0.00	0.00	0.00	0.003
sum	1.16	1.16	0.00	0.07

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

Blue cells contain formulas

Volume, ac-ft	5.21	0.00
Total Vol, ac-ft	5.21	

4th Quarter Report 2014 & Annual Report 2014
 Vulcan Materials Company - North Troy Quarry
 Mill Creek, Oklahoma

October Shipments			November Shipments			December Shipments		
	Tons Shipped	Ac-ft of water shipped		Tons Shipped	Ac-ft of water shipped		Tons Shipped	Ac-ft of water shipped
Base Products	318	0.008	Base Products	1,144	0.028	Base Products	1,703	0.042
Coarse Aggregates	103,812	1.248	Coarse Aggregates	157,319	1.891	Coarse Aggregates	188,971	2.271
Fine Aggregates	9,690	0.308	Fine Aggregates	10,628	0.338	Fine Aggregates	9,315	0.296
	113,820	1.563		169,090	2.256		199,989	2.609