

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

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

	Quarry area	Fringe area	Daily
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Date	Precip, in.	Runoff, in.	Runoff, in.	Evaporation, in.
1-Jul	0.20	0.20	0.00	0.18
2-Jul	0.76	0.76	0.00	0.115
3-Jul	0.00	0.00	0.00	0.155
4-Jul	0.00	0.00	0.00	0.237
5-Jul	0.00	0.00	0.00	0.207
6-Jul	0.00	0.00	0.00	0.25
7-Jul	0.00	0.00	0.00	0.257
8-Jul	0.00	0.00	0.00	0.271
9-Jul	0.03	0.03	0.00	0.149
10-Jul	0.00	0.00	0.00	0.232
11-Jul	0.00	0.00	0.00	0.288
12-Jul	0.00	0.00	0.00	0.285
13-Jul	0.00	0.00	0.00	0.28
14-Jul	0.00	0.00	0.00	0.141
15-Jul	0.00	0.00	0.00	0.249
16-Jul	0.49	0.49	0.00	0.108
17-Jul	0.91	0.91	0.00	0.031
18-Jul	0.00	0.00	0.00	0.065
19-Jul	0.00	0.00	0.00	0.097
20-Jul	0.00	0.00	0.00	0.207
21-Jul	0.00	0.00	0.00	0.215
22-Jul	0.00	0.00	0.00	0.206
23-Jul	0.00	0.00	0.00	0.181
24-Jul	0.00	0.00	0.00	0.224
25-Jul	0.00	0.00	0.00	0.243
26-Jul	0.00	0.00	0.00	0.259
27-Jul	0.00	0.00	0.00	0.247
28-Jul	0.12	0.12	0.00	0.163
29-Jul	0.00	0.00	0.00	0.188
30-Jul	1.19	1.19	0.00	0.052
31-Jul	0.02	0.02	0.00	0.052
sum	3.72	3.72	0.00	5.83

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

Blue cells contain formulas

5.834

Volume, ac-ft 16.71 0.00
Total Vol, ac-ft 16.71

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

	Quarry area	Fringe area	Daily
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Date	Precip, in.	Runoff, in.	Runoff, in.	Evaporation, in.
1-Aug	0.00	0.00	0.00	0.16
2-Aug	0.00	0.00	0.00	0.19
3-Aug	0.00	0.00	0.00	0.25
4-Aug	0.00	0.00	0.00	0.24
5-Aug	0.00	0.00	0.00	0.24
6-Aug	0.00	0.00	0.00	0.29
7-Aug	0.00	0.00	0.00	0.27
8-Aug	0.00	0.00	0.00	0.23
9-Aug	0.00	0.00	0.00	0.27
10-Aug	0.00	0.00	0.00	0.23
11-Aug	0.00	0.00	0.00	0.28
12-Aug	0.00	0.00	0.00	0.28
13-Aug	0.00	0.00	0.00	0.25
14-Aug	0.00	0.00	0.00	0.28
15-Aug	0.00	0.00	0.00	0.33
16-Aug	0.00	0.00	0.00	0.22
17-Aug	0.00	0.00	0.00	0.28
18-Aug	0.00	0.00	0.00	0.28
19-Aug	0.00	0.00	0.00	0.25
20-Aug	0.00	0.00	0.00	0.35
21-Aug	0.00	0.00	0.00	0.37
22-Aug	0.00	0.00	0.00	0.42
23-Aug	0.00	0.00	0.00	0.39
24-Aug	0.00	0.00	0.00	0.37
25-Aug	0.00	0.00	0.00	0.33
26-Aug	0.00	0.00	0.00	0.29
27-Aug	0.00	0.00	0.00	0.28
28-Aug	0.00	0.00	0.00	0.3
29-Aug	0.30	0.30	0.00	0.18
30-Aug	0.22	0.22	0.00	0.28
31-Aug	0.00	0.00	0.00	0.35
sum	0.52	0.52	0.00	8.73

Runoff formula
 $Pe = (P - 0.2S)^2 / (P + 0.8S)$
 $S = (1000 / CN) - 10$
 Blue cells contain formulas
 weather station data corrupt
 Data pulled from USGS mill creek
 gauge and Suphur evap. Mesonet station

8.73

Volume, ac-ft	2.34	0.00
Total Vol, ac-ft	2.34	

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	Quarry area		Fringe area	Daily
	Precip, in.	Runoff, in.	Runoff, in.	Evaporation, in.
1-Sep	0.00	0.00	0.00	0.44
2-Sep	0.00	0.00	0.00	0.33
3-Sep	0.00	0.00	0.00	0.35
4-Sep	0.00	0.00	0.00	0.4
5-Sep	0.00	0.00	0.00	0.3
6-Sep	0.32	0.32	0.00	0.1
7-Sep	0.00	0.00	0.00	0.15
8-Sep	0.00	0.00	0.00	0.21
9-Sep	0.00	0.00	0.00	0.39
10-Sep	0.06	0.06	0.00	0.41
11-Sep	0.08	0.08	0.00	0.1
12-Sep	0.44	0.44	0.00	0.09
13-Sep	0.00	0.00	0.00	0.17
14-Sep	0.00	0.00	0.00	0.11
15-Sep	0.01	0.01	0.00	0.12
16-Sep	0.00	0.00	0.00	0.18
17-Sep	0.00	0.00	0.00	0.19
18-Sep	0.33	0.33	0.00	0.11
19-Sep	0.00	0.00	0.00	0.21
20-Sep	0.00	0.00	0.00	0.2
21-Sep	0.00	0.00	0.00	0.19
22-Sep	0.00	0.00	0.00	0.24
23-Sep	0.00	0.00	0.00	0.25
24-Sep	0.00	0.00	0.00	0.25
25-Sep	0.00	0.00	0.00	0.21
26-Sep	0.00	0.00	0.00	0.2
27-Sep	0.00	0.00	0.00	0.22
28-Sep	0.00	0.00	0.00	0.15
29-Sep	0.00	0.00	0.00	0.19
30-Sep	0.00	0.00	0.00	0.24
		0.00	0.00	
sum	1.24	1.24	0.00	6.70
Volume, ac-ft		5.57	0.00	
Total Vol, ac-ft		5.57		

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

Evap data from Sulphur Mesonet

Blue cells contain formulas

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	25,278	0.619	Base Products	380	0.009	Base Products	4,677	0.115
Coarse			Coarse			Coarse		
Aggregates	142,418	1.712	Aggregates	50,568	0.608	Aggregates	138,539	1.665
Fine			Fine			Fine		
Aggregates	45,654	1.451	Aggregates	17,735	0.563	Fine Aggregates	23,027	0.732
	213,350	3.781		68,683	1.181		166,243	2.511

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-14	176.18	1.98	1.49	26.91	149.27	0.00	1.76	2.04	0.00	0.00	0.00	0.09	0.00
February-14	149.92	1.21	-0.94	0.00	149.92	0.00	1.59	1.87	0.50	0.00	0.00	0.00	0.00
March-14	201.32	3.05	4.93	0.00	201.32	0.00	2.79	3.73	0.64	0.00	0.00	0.07	0.00
April-14	188.05	8.00	2.11	49.37	138.68	0.00	4.27	3.17	0.41	0.00	0.00	0.00	0.00
May-14	182.75	9.88	-11.26	23.14	159.61	0.00	4.42	3.87	0.40	0.00	0.00	0.00	0.00
June-14	200.92	51.30	7.16	0.00	200.92	0.00	4.47	3.25	0.06	0.00	0.00	0.17	0.00
July-14	181.62	16.71	2.20	24.86	156.76	0.00	4.46	3.78	0.34	0.00	0.00	0.00	0.00
August-14	150.44	2.34	0.93	0.00	150.44	0.00	6.67	1.18	0.61	0.00	0.00	0.00	0.00
September-14	132.05	5.57	-2.14	28.57	103.48	0.00	5.12	2.51	0.50	0.00	0.00	0.86	0.00
October-14	160.59	77.88	2.34	22.40	138.19	0.00	4.39	1.56	0.99	0.00	0.00	0.00	0.00
November-14		0.00					0.00	0.00		0.00	0.00		0.00
December-14		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-14	17.634	125	325	1.49	0.20	4	50	50	0.00	0.01	3	475	750	0.00	1.76	1.97			
February-14	18.64	125	325	-0.94	0.18	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	0.68	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		125	325		0.00	4	50	50	0.00	0.00		475	750		0.00	0.00			
December-14		125	325		0.00	4	50	50	0.00	0.00		475	750		0.00	0.00			