

23

**MMM North Troy 2013 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, Acre-ft
January-13	127.55	4.80	4.90	130.26	47.05	48.41	42.20	4.39	0.00	0.00	594.72
February-13	111.70	16.71	16.71	110.55	32.13	48.51	51.62	4.68	0.00	0.00	594.72
March-13	136.29	7.32	7.32	143.14	0.00	152.64	0.00	7.01	0.00	0.12	594.72
1st QTR Totals	375.54	28.83	28.83	383.89	79.18	249.55	93.82	16.06	0.00	0.12	N/A
April-13	134.72	9.39	9.39	128.77	0.00	138.16	0.00	7.15	0.00	0.00	594.72
May-13	130.37	58.76	58.76	129.41	46.80	148.85	0.00	6.65	0.00	0.00	594.72
June-13	150.01	22.82	22.82	149.80	0.00	197.27	0.00	10.30	0.00	0.17	594.72
2nd QTR Totals	415.10	90.87	90.87	407.08	46.80	482.28	0.00	24.11	0.00	0.17	N/A
July-13	149.98	30.88	30.88	158.64	35.02	154.61	0.00	10.45	0.00	0.00	594.72
August-13	155.18	7.46	7.46	156.43	0.00	161.82	0.00	9.19	0.00	0.00	594.72
September-13	153.87	5.53	5.53	152.46	0.00	157.88	0.00	9.98	0.00	0.09	594.72
3rd QTR Totals	459.00	43.87	43.87	467.54	35.02	474.42	0.00	28.61	0.00	0.09	N/A
October-13											594.72
November-13											594.72
December-13											594.72
4th QTR Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
2013 Totals	1249.64	163.87	163.87	1259.47	160.89	1208.25	93.82	68.77	0.00	0.38	594.72



August Precipitation/Evaporation Data

PIT RUNOFF ASSUMPTIONS	
Hydrologic Soil Group	D
Land Use	gravel road
AMC Condition	II (ave)
CN (pit fringe)	88
CN (pit)	100
S (pit fringe)	1.363636
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, in	Quarry area		Runoff, in	Evaporation, in	Daily
		Runoff, in	Evaporation, in			
1-Aug	0.00	0.00	0.00	0.3	0.3	Runoff formula
2-Aug	0.00	0.00	0.00	0.3	0.3	Runoff formula
3-Aug	0.00	0.00	0.00	0.3	0.3	Pe = (P-0.2S)*2/(P+0.8S)
4-Aug	0.00	0.00	0.00	0.3	0.3	S = (1000/CN)-10
5-Aug	0.00	0.00	0.00	0.3	0.3	Blue cells contain formulas
6-Aug	0.00	0.00	0.00	0.3	0.3	
7-Aug	0.00	0.00	0.00	0.3	0.3	
8-Aug	0.02	0.02	0.00	0.3	0.3	Evaporation Data for 8/1-8/8 estimated
9-Aug	0.31	0.31	0.00	0.204	0.204	using OWRB average daily evaporation rate
10-Aug	0.00	0.00	0.00	0.211	0.211	Weather station replaced.
11-Aug	0.00	0.00	0.00	0.231	0.231	
12-Aug	0.67	0.67	0.00	0.172	0.172	
13-Aug	0.11	0.11	0.00	0.131	0.131	
14-Aug	0.00	0.00	0.00	0.165	0.165	
15-Aug	0.00	0.00	0.00	0.206	0.206	
16-Aug	0.55	0.55	0.00	0.177	0.177	
17-Aug	0.00	0.00	0.00	0.19	0.19	
18-Aug	0.00	0.00	0.00	0.205	0.205	
19-Aug	0.00	0.00	0.00	0.226	0.226	
20-Aug	0.00	0.00	0.00	0.23	0.23	
21-Aug	0.00	0.00	0.00	0.245	0.245	
22-Aug	0.00	0.00	0.00	0.229	0.229	
23-Aug	0.00	0.00	0.00	0.19	0.19	
24-Aug	0.00	0.00	0.00	0.224	0.224	
25-Aug	0.00	0.00	0.00	0.235	0.235	
26-Aug	0.00	0.00	0.00	0.211	0.211	
27-Aug	0.00	0.00	0.00	0.187	0.187	
28-Aug	0.00	0.00	0.00	0.194	0.194	
29-Aug	0.00	0.00	0.00	0.221	0.221	
30-Aug	0.00	0.00	0.00	0.246	0.246	
31-Aug	0.00	0.00	0.00	0.251	0.251	
Volume, ac-ft	1.66	0.00	0.00	7.18	7.18	7.181
Total Vol, ac-ft	7.48	0.00	0.00	7.48	7.48	

July Precipitation/Evaporation Data

PIT RUNOFF ASSUMPTIONS	
Hydrologic Soil Group	D
Land Use	gravel road
AMC Condition	II (ave)
CN (pit fringe)	88
CN (pit)	100
S (pit fringe)	1.363636
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	Quarry area		Daily
	Precip. in, in	Runoff, in	
1-Jul	0.00	0.00	0.3
2-Jul	0.00	0.00	0.3
3-Jul	0.00	0.00	0.3
4-Jul	0.00	0.00	0.3
5-Jul	0.00	0.00	0.3
6-Jul	0.00	0.00	0.3
7-Jul	0.00	0.00	0.3
8-Jul	0.00	0.00	0.3
9-Jul	0.00	0.00	0.3
10-Jul	0.00	0.00	0.3
11-Jul	0.00	0.00	0.3
12-Jul	0.00	0.00	0.3
13-Jul	0.00	0.00	0.3
14-Jul	0.69	0.69	0.00
15-Jul	1.27	1.27	0.00
16-Jul	0.22	0.22	0.00
17-Jul	0.00	0.00	0.3
18-Jul	0.00	0.00	0.3
19-Jul	0.02	0.02	0.00
20-Jul	0.00	0.00	0.3
21-Jul	0.00	0.00	0.3
22-Jul	0.00	0.00	0.3
23-Jul	0.00	0.00	0.3
24-Jul	1.02	1.02	0.00
25-Jul	0.00	0.00	0.3
26-Jul	1.80	1.80	0.81
27-Jul	0.00	0.00	0.3
28-Jul	0.00	0.00	0.3
29-Jul	0.00	0.00	0.3
30-Jul	0.05	0.05	0.00
31-Jul	0.00	0.00	0.3
Volume, ac-ft	5.07	0.81	9.30
Total Vol, ac-ft	22.78	8.21	
	30.98		

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

Blue cells contain formulas

Evaporation Data for July estimated using OWRB average daily evaporation rate

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	21,964	0.538	26,414	0.647	53,176	1.302
Coarse Aggregates	161,170	1.937	94,450	1.135	173,142	2.081
Fine Aggregates	4,837	0.154	49,218	1.564	49,295	1.566
	187,971	2.629	170,082	3.346	275,613	4.949

Monthly Water Data, ac-ft

	Water Diversified From Pit	Storm Water Entering Pit	Net Sump Volume Change	Groundwater Bent 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-13	135.15	4.90	-2.71	47.05	45.91	42.20	1.45	2.95	0.00	0.00	0.00	0.00	0.00
February-13	127.27	16.71	1.13	32.13	43.52	51.62	1.89	2.77	0.00	0.00	0.00	0.00	0.00
March-13	150.47	7.32	-4.89	0.00	150.47	0.00	2.90	3.98	0.55	0.00	0.00	0.12	0.00
April-13	138.16	9.39	5.89	0.00	138.16	0.00	3.52	3.63	0.00	0.00	0.00	0.00	0.00
May-13	193.65	64.24	6.97	46.90	146.05	0.00	4.18	2.26	0.22	0.00	0.00	0.00	0.00
June-13	197.27	47.47	9.21	0.00	197.27	0.00	6.68	3.32	0.11	0.00	0.00	0.17	0.00
July-13	189.63	50.98	-4.69	35.02	154.61	0.00	7.11	2.63	0.72	0.00	0.00	0.00	0.00
August-13	161.62	5.39	-1.25	0.00	161.62	0.00	5.49	3.35	0.56	0.00	0.00	0.00	0.00
September-13	157.99	5.53	1.40	0.00	157.99	0.00	4.47	4.95	0.55	0.00	0.00	0.09	0.00
October-13	166.18	17.44	2.89	0.00	166.18	0.00	0.00	3.40	0.06	0.00	0.00	0.00	0.00
November-13			3.61										
December-13			0.91										

Pit Sump Volumas

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				
5.518	125	325	2.71	0.16	4	50	50	0.00	0.01	4.702	475	750	39.72	1.43	1.67				
4.289	125	325	1.41	0.27	4	50	50	0.00	0.01	3.609	475	750	8.94	1.69	2.12				
11.641	125	325	4.88	0.33	4	50	50	0.00	0.02	5.617	475	750	18.09	2.95	3.25				
5.263	125	325	5.95	0.36	4	50	50	0.00	0.02	7.444	475	750	11.11	3.14	3.52				
4.227	125	325	0.91	0.42	4	50	50	0.00	0.03	2.924	475	750	28.37	3.73	4.18				
4.005	125	325	0.71	0.70	4	50	50	0.00	0.04	4.161	475	750	13.78	6.13	6.69				
13.32	125	325	8.69	0.72	4	50	50	0.00	0.04	2.571	475	750	18.69	8.54	7.13				
14.664	125	325	1.25	0.56	4	50	50	0.00	0.04	2.12	475	750	13.43	3.80	5.49				
13.158	125	325	1.40	0.43	4	50	50	0.00	0.03	3.762	475	750	30.77	4.00	4.47				
10.063	125	325	2.89	0.00	4	50	50	0.00	0.00		475	750	0.00	0.00					
	125	325	9.38		4	50	50	0.23			475	750	0.00						
	125	325	0.00	0.00	4	50	50	0.00	0.00		475	750	0.00	0.00					

September Precipitation/Evaporation Data

PIT RUNOFF ASSUMPTIONS	
Hydrologic Soil Group	D
Land Use	gravel road
AMC Condition	II (ave)
CN (pit fringe)	88
CN (pit)	100
S (pit fringe)	1.363636
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	Quarry area			Daily
	Precip, in	Runoff, in	Evaporation, in	
1-Sep	0.00	0.00	0.229	Runoff formula
2-Sep	0.00	0.00	0.187	Pe = (P-0.2S) <sup>2</sup> /(P+0.8S)
3-Sep	0.00	0.00	0.242	S = (1000/CN)-10
4-Sep	0.00	0.00	0.216	Blue cells contain formulas
5-Sep	0.00	0.00	0.225	
6-Sep	0.00	0.00	0.207	
7-Sep	0.00	0.00	0.209	
8-Sep	0.00	0.00	0.24	
9-Sep	0.00	0.00	0.243	
10-Sep	0.00	0.00	0.238	
11-Sep	0.00	0.00	0.207	
12-Sep	0.25	0.25	0.00	0.136
13-Sep	0.04	0.04	0.00	0.158
14-Sep	0.02	0.02	0.00	0.201
15-Sep	0.00	0.00	0.00	0.182
16-Sep	0.00	0.00	0.00	0.196
17-Sep	0.01	0.01	0.00	0.194
18-Sep	0.00	0.00	0.00	0.17
19-Sep	0.01	0.01	0.00	0.176
20-Sep	0.17	0.17	0.00	0.04
21-Sep	0.00	0.00	0.00	0.214
22-Sep	0.00	0.00	0.00	0.196
23-Sep	0.00	0.00	0.00	0.204
24-Sep	0.00	0.00	0.00	0.262
25-Sep	0.00	0.00	0.00	0.194
26-Sep	0.00	0.00	0.00	0.238
27-Sep	0.00	0.00	0.00	0.212
28-Sep	0.73	0.73	0.00	0.064
29-Sep	0.00	0.00	0.00	0.177
30-Sep	0.00	0.00	0.00	0.187
Volume, ac-ft	1.23	0.00	0.00	5.84
Total Vol, ac-ft	5.53	0.00	0.00	5.53