

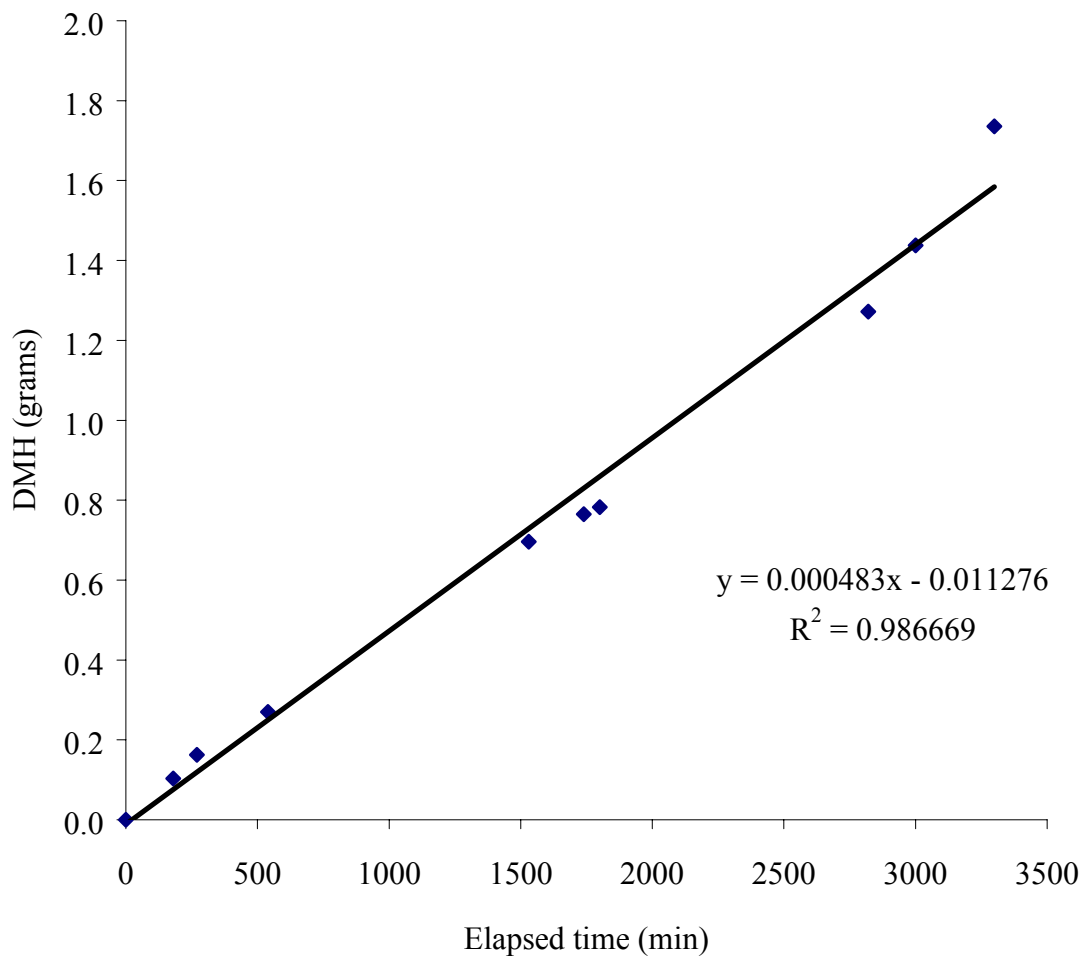
## APPENDIX F

### Continuous System 6: Synthetic Bangladesh Groundwater Contaminated with As (III) and As (V)

HPLC Data Compilation.....	130
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Continuous System 6: HPLC Data									
Time	Elapsed Time	Peak Area	Conc. (M)	Avg. Conc. (M)	S	Summary			
						Conc. (M)	Conc. (M)	Conc. (M)	Grams/annear
2/28/03 11:30 AM	0	218.61984	1.49E-04	1.49E-04	2.7E-07	0.00E+00	0.000	0	
	0	218.01825	1.49E-04			1.07E-04	0.107	0.1034	
2/28/03 1:30 PM	180	150.99605	1.07E-04	1.07E-04	3.3E-07	1.12E-04	0.112	0.1625	
	270	150.25926	1.06E-04			9.30E-05	0.093	0.2701	
2/28/03 3:30 PM	540	158.52963	1.12E-04	1.12E-04	4.5E-07	8.46E-05	0.085	0.6963	
	1740	159.5406	1.12E-04			8.17E-05	0.082	0.7652	
2/28/03 8:00 PM	540	128.90054	9.28E-05	9.30E-05	2.0E-07	8.08E-05	0.081	0.7827	
	1530	129.35545	9.31E-05			8.38E-05	0.084	1.2719	
3/1/03 12:30 PM	1530	116.4041	8.49E-05	8.46E-05	5.0E-07	8.91E-05	0.089	1.4379	
	1740	115.28543	8.42E-05			9.77E-05	0.098	1.7356	
3/1/03 4:00 PM	1740	111.38814	8.18E-05	8.17E-05	5.4E-08				
	1800	111.26802	8.17E-05			8.08E-05	2.1E-07		
3/1/03 5:00 PM	1800	110.10216	8.10E-05	8.08E-05	2.1E-07				
	2820	109.64233	8.07E-05			8.38E-05	6.0E-07		
3/2/03 10:00 AM	2820	115.30864	8.42E-05	8.42E-05	6.0E-07				
	3000	113.96672	8.34E-05			8.91E-05	6.6E-07		
3/2/03 1:00 PM	3000	122.23042	8.86E-05	8.86E-05	6.6E-07				
	3300	123.70357	8.95E-05			9.77E-05	7.0E-07		
3/2/03 6:00 PM	3300	137.49611	9.82E-05	9.77E-05	7.0E-07				
		135.91684	9.72E-05						

### Continuous System 6: DMH Appearance



Continuous System 6: Chemiluminescence Data		
Elapsed Time (Min)	Conc. (mM)	grams BCDMH
0	0.4417	4.268
180	0.0368	4.673
270	0.0407	4.669
540	0.0338	4.676
1530	0.0398	4.670
1740	0.0484	4.662
1800	0.0476	4.662
2820	0.0343	4.676
3000	0.0415	4.669
3300	0.0410	4.669

Turner Designs: TD-20/20 Luminometer Ver. 2020-1E 1098	
Delay Time: (sec)	2
Integrate Time: (sec)	4
Number of Replicates:	1
Sensitivity Level %:	1
Standard Reading:	1.76
Injection Volume #1: (ul)	50
Injection Volume #2: (ul)	50
Average Blank:	0.143
Mode:	STD

The following tables contain the continuous stream data. Each column represents a series of luminescence readings, taken every 0.2 seconds. Five series of measurements (5 columns) were taken from each sample. The first number in the columns represents the blank sample that was obtained prior to the addition of the BCDMH briquette. The instrument was programmed to collect measurements for four seconds with a two second delay. The peak maximums, usually seen around 0.6 seconds were averaged. Average peak maximums and BCDMH concentrations are seen below each sample

Continuous System 6 (pg 1 of 6)									
0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143
0.874	1.272	0.572	2.866	0.572	0.337	0.871	2.761	0.597	0.35
0.956	1.341	0.654	2.688	0.64	0.419	0.953	2.61	0.679	0.446
728.4	2060	2070	1578	1406	548.8	558.4	610.4	732.6	847.1
4143	3742	3012	3258	3906	3060	3269	3045	2696	3029
820.2	882.6	788.6	836	720.9	605.3	585.4	566.4	553.3	605.6
742.7	733.8	716.9	750.6	657.3	540.2	523.8	504.4	498.1	543.4
671	660.9	647.4	676.3	596.7	484.1	470.4	450.5	451.3	488.5
604.4	595.3	582.1	607.4	539.6	433.3	421	402.1	407	438.8
544.5	537.1	523.9	545.9	487.7	386.3	376.9	358.9	367.4	394.2
490.5	485.2	471.5	490.7	441.3	346	337.5	320.9	331.8	354.5
442.1	438.6	424.6	441.3	399.3	310.5	302.5	286.9	299.8	318.7
398.8	396.6	382.6	397.1	361.4	278.2	271.3	256.8	271.1	286.9
359.8	358.7	344.7	357.6	327.4	249.7	243.4	230	245.3	257.9
324.6	324.6	310.9	321.9	296.4	224.3	218.8	206.2	221.8	232.2
293.3	294.2	280.4	290.1	268.6	201.3	196.4	184.9	201	209.2
264.8	266.4	252.7	261.2	243.7	180.8	176.4	165.7	181.8	188.4
239.3	241.7	228.3	235.4	220.9	162.7	158.3	148.7	164.6	169.8
216.2	219.2	206	212.4	200.3	146	142.4	133.1	149.3	153.1
195.3	199.2	186	191.2	181.9	131.2	127.9	125.6	135.1	138.1
176.7	180.8	167.9	172.5	164.9	124.1	121	113.6	128.5	124.4
159.7	164.3	151.4	155.5	149.8	112.4	109.6	102.5	116.9	118.2
144.3	149.2	136.9	140.4	136	101.7	99.09	92.56	106.7	107.4
130.6	135.8	123.7	126.7	123.4	91.96	89.6	83.63	97.13	97.39
124	129.4	117.8	120.5	118.1	83.22	81.1	75.56	88.5	88.38
112.9	118.3	107.3	109.7	108	75.33	73.39	68.33	80.64	80.16
102.7	108.5	97.49	99.59	98.58	68.26	66.46	61.8	73.47	72.78
93.42	99.21	88.63	90.47	90	61.83	60.2	55.94	67	66.1
85	90.79	80.59	82.25	82.2	56.02	54.51	50.62	61.14	60.06
77.38	83.17	73.34	74.82	75.08	50.8	49.42	45.86	55.75	54.54
70.48	76.21	66.73	68.07	68.65	46.11	44.79	41.54	50.8	49.6
Samp1 r0	Samp2 r0	Samp3 r0	Samp4 r0	Samp5 r0	Samp6 r0	Samp7 r0	Samp8 r0	Samp9 r0	Samp10 r0
2/28/2003 11:30					2/28/2003 13:30				
Average Peak Max			3612.2		Average Peak Max			3019.8	
BCDMH Conc. (mM)			0.04418		BCDMH Conc. (mM)			0.03681	

Continuous System 6 (pg 2 of 6)

0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143
1.04	4.629	0.627	0.834	1.934	1.201	0.97	0.4	0.644	0.59	
1.109	4.34	0.696	0.902	2.03	1.269	1.038	0.481	0.712	0.671	
676.2	856	903.6	946.8	718.8	423.6	356.2	271	252	718.4	
3925	3356	3327	2864	3186	2920	2936	2698	2699	2646	
663.5	608.7	599.9	557.3	563.2	514.4	509.2	464.3	424.2	429	
602.4	548.2	530.4	500.9	504.8	463.2	434.9	420.8	388.3	394.2	
541.9	491.9	476.8	449.6	455.4	420.9	397.3	384	356	361.1	
485.9	440	427.4	402.4	409.6	382.2	362.9	348.8	325.8	330.1	
435.6	393.6	383.4	360.4	368.9	345.6	331	317.4	297.6	300.8	
390.3	352.1	343.9	322.7	332.1	313.6	302.5	288.6	272.1	274.5	
349.9	315.3	308.7	289.2	299.1	284.8	276.7	262.6	249	250.9	
313.9	282.3	277.4	259.2	269.4	259.1	253.1	239.3	227.6	229.2	
281.8	252.9	249.1	232.3	243.1	235.8	231.4	217.9	208.4	209.2	
252.9	226.8	223.8	208.1	218	214.6	211.9	198.3	190.7	191.3	
227.1	203.5	201.3	186.7	196.6	195.7	194	180.7	174.8	174.7	
204	182.3	181.2	167.5	177.4	178	177.7	164.7	160.1	159.8	
183.2	163.6	162.8	150.2	160.1	162.3	162.8	150.1	146.5	146	
164.5	146.9	146.6	134.8	144.7	147.7	149.3	136.8	134.1	133.5	
147.7	131.8	132	127	130.4	134.6	136.5	124.6	123	122.1	
132.9	124.4	125	114.8	123.9	122.7	125.4	119.6	118.5	117.6	
125.4	112.5	113.4	103.6	112.7	117.8	120.8	109.8	109.3	108.3	
113.7	101.6	102.7	93.54	102.3	108.1	111.5	100.5	100.6	99.5	
102.7	91.71	92.97	84.45	92.91	99.01	102.7	92.14	92.64	91.41	
92.87	82.83	84.26	76.26	84.36	90.67	94.7	84.42	85.34	84.02	
83.99	74.87	76.41	68.9	76.64	83.12	87.28	77.42	78.61	77.23	
76.04	67.72	69.27	62.29	69.65	76.2	80.46	71.01	72.42	71.05	
68.79	61.26	62.88	56.29	63.32	69.92	74.21	65.14	66.75	65.35	
62.3	55.44	57.09	50.89	57.55	64.12	68.51	59.76	61.53	60.1	
56.43	50.16	51.84	45.99	52.34	58.85	63.24	54.82	56.72	55.29	
51.16	45.41	47.08	41.62	47.59	53.99	58.36	50.33	52.3	50.91	
Samp11 r	Samp12 r	Samp13 r	Samp14 r	Samp15 r	Samp16 r	Samp17 r	Samp18 r	Samp19 r	Samp20 r	
2/28/2003 15:30					2/28/2003 20:00					
Average Peak Max				3331.6	Average Peak Max				2779.8	
BCDMH Conc. (mM)				0.04069	BCDMH Conc. (mM)				0.03383	

Continuous System 6 (pg 3 of 6)

0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	
2.939	0.446	1.487	0.597	0.474	2.739	0.813	0.882	0.226	4.037		
3.007	0.501	1.542	0.693	0.556	2.602	0.882	0.95	0.267	3.49		
126.9	582.2	855.4	901.4	508	745.8	46.77	66.2	669.1	433.9		
3675	2842	2896	3474	3422	4659	4643	4874	2987	2599		
495.6	484.5	470.4	470	462.7	488	472.2	448.3	477.7	454.7		
449.7	438.2	419.3	422.6	419	434.6	422.1	402.2	424.9	404		
401.3	395.5	379.9	382.6	379.6	391.3	378.5	360	379.6	359.5		
359.7	355.6	343.3	348	343.3	351.8	338.8	322.1	339	319.2		
330.7	319.5	310.5	312.9	310.7	316.9	303.3	288.3	303.3	283.4		
292.7	286.9	280.6	283.1	279.8	285.3	271.7	258.3	271.9	251.5		
264	257.9	253.8	256.6	253	257.2	243.3	231.5	242.2	223.6		
240.4	231.9	229.7	232.5	229.2	232.1	218.2	207.5	217.1	198.6		
217.2	208.4	208.1	210.9	207.9	209.4	195.8	186.3	194.4	176.4		
196.4	187.6	188.4	191.2	188.4	189.2	175.6	167.4	174.5	157.1		
177.2	168.7	170.6	173.4	170.6	171	157.9	150.2	156.5	139.6		
160.3	151.8	154.8	157.5	154.8	154.3	141.8	134.9	140.1	124		
144.9	136.7	140.3	142.7	140.3	139.3	127.3	127.3	125.7	116.6		
131.2	123	127.1	129.6	127.2	125.9	120.4	115.2	118.8	104.6		
124.7	116.9	121.2	123.7	121.3	119.9	109.1	104.1	107.4	93.63		
113.6	106.1	110.7	113.1	110.8	109.3	98.53	94.12	96.97	83.85		
103.4	96.07	100.9	103.2	101	99.26	89.02	85.14	87.19	75.19		
94.05	87.06	91.99	94.18	91.99	90.26	80.53	77.06	78.72	67.38		
85.68	78.93	83.87	86.01	83.87	82.05	72.85	69.74	71.12	60.43		
77.97	71.56	76.56	78.53	76.47	74.68	65.93	63.13	64.28	54.24		
71.09	64.96	69.83	71.75	69.75	67.94	59.67	57.19	58.1	48.67		
64.79	58.93	63.74	65.54	63.61	61.87	54.03	51.78	52.52	43.69		
59.05	53.51	58.16	59.89	58	56.34	48.93	46.95	47.51	39.23		
53.85	48.57	53.11	54.71	52.9	51.28	44.3	42.52	42.99	35.2		
49.14	44.11	48.47	50	48.27	46.68	40.16	38.53	38.87	31.65		
44.84	40.08	44.26	45.66	44.03	42.53	36.38	34.89	35.2	28.4		
Samp21	r1 Samp22	r1 Samp23	r1 Samp24	r1 Samp25	r1 Samp26	r1 Samp27	r1 Samp28	r1 Samp29	r1 Samp30	r1	
3/1/2003 12:30					3/1/2003 16:00						
Average Peak Max				3261.8	Average Peak Max				3952.4		
BCDMH Conc. (mM)				0.03982	BCDMH Conc. (mM)				0.04841		

Continuous System 6 (pg 4 of 6)

0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143
0.198	0.225	6.135	5.577	0.048	0.593	0.839	0.334	1.084	0.307
0.279	0.293	5.468	4.964	0.089	0.607	0.839	0.389	1.07	0.375
1721	832.5	490.4	1112	532.3	447.8	471.8	620.7	4.996	177.1
4835	4514	4214	2955	2911	2886	3016	2710	2900	2583
469.6	438.5	447.2	433.9	403.4	376.1	367.8	352.8	351.3	336.5
424.8	398.3	400.3	392.1	364.1	335.3	332.4	318.7	308.4	304.6
387.3	359.2	363.3	356.8	330.9	303	300.2	288.2	279.5	276
352.3	326.4	329.7	324.5	300.8	273.6	270.3	260	253.7	249.6
320.7	296.7	299.5	295.1	273.3	246.9	243.4	234.9	230.6	226.2
293	270.1	272.3	268.7	248.3	223	219.1	212.1	209.6	205
266.8	245.8	247.8	244.5	226	201.4	197.3	191.6	190.5	185.9
243.4	224.1	225.7	222.7	205.6	180.7	178	173.4	173.4	169
222.5	204.5	205.6	203.1	187.1	163.3	160.3	156.8	157.9	153.2
203.2	186.5	187.4	185.2	170.2	147.8	144.5	141.5	143.7	139.3
185.2	170.2	170.8	169.1	154.7	133.6	130.3	128.2	130.9	126.5
169.7	155.3	155.8	154.4	141.1	127	123.5	121.9	125.2	120.8
155	141.7	141.9	140.8	128.3	115.8	112.2	111.1	114.9	110.5
141.9	129.4	129.4	128.6	122.9	105.3	101.8	101.1	105.1	100.9
130	124.2	124.2	123.5	112.7	95.82	92.37	91.91	96.22	92.11
125.1	114.2	114.1	113.6	103.1	87.26	83.8	83.64	88.13	84.13
115.3	104.8	105.5	104.2	94.41	79.48	76.08	76.12	80.76	76.83
106	96.18	96.71	95.59	86.43	72.39	69.05	69.27	74.01	70.21
97.61	88.31	88.7	87.77	79.16	65.96	62.72	63.09	67.82	64.17
89.82	81.12	81.39	80.59	72.51	60.12	56.97	57.41	62.19	58.64
82.73	74.5	74.69	74	66.43	54.78	51.74	52.07	56.97	53.59
76.18	68.43	68.58	67.97	60.86	49.94	47.01	47.4	52.26	48.97
70.2	62.94	62.94	62.44	55.74	45.52	42.71	43.18	47.93	44.73
64.7	57.84	57.75	57.38	51.09	41.5	38.82	39.32	43.93	40.89
59.63	53.17	53.04	52.75	46.82	37.85	35.26	35.79	40.29	37.38
55	48.88	48.68	48.47	42.9	34.54	32.01	32.59	36.93	34.13
Samp31 r	Samp32 r	Samp33 r	Samp34 r	Samp35 r	Samp36 r	Samp37 r	Samp38 r	Samp39 r	Samp40 r
3/1/2003 17:00					3/1/2003 17:00				
Average Peak Max			3885.8		Average Peak Max			2819	
BCDMH Conc. (mM)			0.04758		BCDMH Conc. (mM)			0.03431	



Continuous System 6 (pg 5 of 6)

0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143	0.143
2.393	0.625	0.776	0.556	0.392	0.294	0.457	0.485	2.285	0.416	
2.407	0.68	0.831	0.639	0.474	0.403	0.539	0.539	2.312	0.444	
190.7	186.6	540.2	143.5	107.7	23.07	1608	250.8	346.8	396.2	
2697	3536	3540	3516	3695	7024	5724	5573	3563	3578	
479	480	457.8	464.1	476	1216	715	586.4	509.9	507.2	
425.4	428.4	403.2	418.5	427.9	1128	655.6	532.4	458.9	459.7	
380.2	402.2	364.6	378	383.5	1039	601.5	485.6	416.1	413.7	
340.3	351.5	329.1	341.1	345.8	959.6	550.2	442.1	377.8	374	
305.3	315.4	296.8	307.7	311.6	886.6	501.7	402.9	342.6	338	
274.1	284.2	267.2	276.2	281.2	819.8	462.8	367.4	310.8	304.8	
246.1	256.2	241.2	249.4	253.2	758.2	424.6	335.3	282.2	274.2	
221.2	231.3	217.6	225.6	228	701.8	389.8	305.9	256.3	248.4	
199	208.9	196.8	203.9	206.1	649.8	357.6	279.4	232.8	224.9	
179.3	188.9	177.6	184.5	186.1	601.8	328.5	255.4	211.6	204	
161.2	170.8	160.6	167	168.1	557.6	300.4	233.4	192.5	184.9	
145.3	154.4	145.3	151.1	151.9	516.8	275.9	213.2	175.1	167.4	
130.8	139.6	131.4	136.6	137.4	478.9	253.6	195.3	159	151.9	
124.1	126.4	124.8	123.7	124.2	444	232.8	177.3	144.6	137.8	
112.8	120.4	113.7	118	118.3	411.6	214	163.6	131.5	124.7	
102.3	109.8	103.4	107.6	107.9	381.9	196.9	149.5	125.7	119.1	
93.44	99.91	94.02	97.92	98.05	354.1	180.8	136.9	115.1	108.8	
84.68	90.93	85.52	89.09	89.19	328.5	166.1	125	105.2	99.21	
76.92	82.84	77.87	81.09	81.1	304.8	152.7	120.4	96.14	90.44	
69.88	75.48	70.88	73.85	73.78	282.7	140.5	110.9	87.87	82.43	
63.49	68.81	64.54	67.27	67.09	262.3	129	101.8	80.33	75.18	
57.7	62.72	58.8	61.28	61.05	243.2	125.2	93.54	73.45	68.57	
52.48	57.24	53.59	55.8	55.54	225.8	114.9	85.98	67.18	62.58	
47.72	52.19	48.82	50.85	50.58	209.4	106.1	78.99	61.48	57.06	
43.39	47.64	44.52	46.3	46.01	194.2	97.94	72.61	56.23	52.07	
39.49	43.49	40.58	42.2	41.87	180.3	90.43	66.76	51.44	47.52	
Samp94 r	Samp95 r	Samp96 r	Samp97 r	Samp98 r	Samp149	Samp150	Samp151	Samp152	Samp153	
3/2/2003 13:00					5:00 PM					
Average Peak Max			3396.8		Average Peak Max			5092.4		
BCDMH Conc. (mM)			0.0415		BCDMH Conc. (mM)			0.06258		

Continuous System 6 (pg 6 of 6)

0.143	0.143	0.143	0.143	0.143
0.813	0.609	3.545	0.267	0.95
0.882	0.663	3.395	0.322	1.005
742.9	1756	914.5	803.6	898.9
3648	3712	2426	3747	3257
528.9	513.7	528.5	523.2	533.1
473.5	463.2	465.7	472.2	472.5
425	417.1	416.3	424.5	425.5
380.6	375.1	373.8	380.9	382.2
341	336.9	336.4	341.8	343.5
306.3	303.1	303.1	306.9	308.8
275.3	272.8	273.1	275.8	277.7
247.7	245.5	246.3	248	250.1
222.9	220.9	222.3	223.1	225.3
200.8	199.1	200.5	200.7	203.2
180.8	179.5	180.8	180.6	183.3
162.8	162	163.4	162.6	165.3
146.4	145.9	147.5	146.2	148.9
132	131.7	133.1	131.7	134.4
125	124.8	126.4	124.6	127.4
113.4	113.4	115	113	115.8
102.7	102.8	104.5	101.5	105
93.09	93.34	94.98	91.39	95.29
84.25	84.72	86.32	82.76	86.57
76.81	76.91	78.45	74.98	78.48
69.57	69.77	71.39	67.94	71.3
63.05	63.41	64.92	61.57	64.77
57.14	57.59	59.11	55.83	58.89
51.76	52.36	53.77	50.62	53.55
46.94	47.62	48.96	45.89	48.66
42.52	43.27	44.59	41.64	44.25
Samp154	Samp155	Samp156	Samp157	Samp158
6:00 PM				
Average Peak Max			3358	
BCDMH Conc. (mM)			0.04102	

Continuous System 6: Decomposition of 4.71 gram BCDMH  
Briquette

