

# ICR TREATMENT STUDY ANALYSIS

## Base Analysis and Data Review Comments

<b>Treatment Study ID</b>	1047
<b>Study Protocol</b>	GAC Pilot treatment study
<b>Plant ICR Number</b>	312
<b>PWS Name</b>	Hillsborough County Water Department
<b>City, State, Zip</b>	Hillsborough, FL 33602

These are general comments that do not need to be responded to directly.

### Major comments:

None

### General Comments:

1. Poor control of DCAA and TCAA precursors. During Run #1, 10 minute EBCT effluent SDS-DCAA exceeds GAC influent SDS-DCAA after 20 days of operation, and effluent formed levels remain at about 100 percent of influent levels throughout the remainder of the run (115 days). An early peak of SDS-DCAA occurred after 30 days during the 20 minute EBCT run, and effluent levels after the peak ranged between 50 and 100 percent of influent formed concentrations. Similar results obtained for SDS-TCAA. (50 percent TOC breakthrough reached in <20 days of operation for the 10 minute EBCT contactor.)
2. For Run #1, report text indicates bromide range between 2.1 and 6.9  $\mu\text{g/L}$  (page 8) while Figure 6 plots GAC influent bromide concentration in units of mg/L, ranging from 0.021 to 0.069 mg/L. Bromide data listed in data collection spreadsheets ranges from 2.1 to 6.9  $\mu\text{g/L}$ .
3. GAC influent SUVA values high: 3.1 L/mg-m.

### Outlier Data:

Four outliers removed.

**Cell:** A1

**Comment:** 1047-SAS.xls 2/13/00 12:45

All curve fits reviewed and approved. See below for log of refit datasets.

**Cell:** C3

**Comment:** 1047-10-01 - Run 1 (BDCM) 2/13/00 12:17

Original value (CoefA0) = 0 New value = 8.7541

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

1047-10-01 - Run 1 (BDCM) 2/13/00 12:19

Original value (CoefA0) = 8.7541 New value = -0.3913

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** D3

**Comment:** 1047-10-01 - Run 1 (BDCM) 2/13/00 12:17

Original value (CoefAf) = 43.2 New value = 27.5704

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

1047-10-01 - Run 1 (BDCM) 2/13/00 12:19

Original value (CoefAf) = 27.5704 New value = 13.2654

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** E3

**Comment:** 1047-10-01 - Run 1 (BDCM) 2/13/00 12:17

Original value (CoefB) = 20 New value = 4.5801

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

1047-10-01 - Run 1 (BDCM) 2/13/00 12:19

Original value (CoefB) = 4.5801 New value = 259.7408

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** F3

**Comment:** 1047-10-01 - Run 1 (BDCM) 2/13/00 12:17

Original value (CoefD) = 0.09 New value = 0

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

1047-10-01 - Run 1 (BDCM) 2/13/00 12:19

Original value (CoefD) = 0 New value = 0.313

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** J3

**Comment:** 1047-10-01 - Run 1 (BDCM) 2/13/00 12:17

Original value (S) = 0 New value = 0

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

1047-10-01 - Run 1 (BDCM) 2/13/00 12:19

Original value (S) = 0 New value = 0

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** C10

**Comment:** 1047-10-01 - Run 1 (DCAA) 2/13/00 12:17  
Original value (CoefA0) = -0.9401 New value = -18.1192  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** D10

**Comment:** 1047-10-01 - Run 1 (DCAA) 2/13/00 12:17  
Original value (CoefAf) = 70.05 New value = 79.1854  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** E10

**Comment:** 1047-10-01 - Run 1 (DCAA) 2/13/00 12:17  
Original value (CoefB) = 35.0994 New value = 1.3663  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** F10

**Comment:** 1047-10-01 - Run 1 (DCAA) 2/13/00 12:17  
Original value (CoefD) = 0.1463 New value = 0.0065  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** J10

**Comment:** 1047-10-01 - Run 1 (DCAA) 2/13/00 12:17  
Original value (S) = 0 New value = 0  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** C16

**Comment:** 1047-10-01 - Run 1 (MCAA) 2/13/00 12:22  
Original value (CoefA0) = -0.1219 New value = 1.0915  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** D16

**Comment:** 1047-10-01 - Run 1 (MCAA) 2/13/00 12:22  
Original value (CoefAf) = 32.7 New value = 528.8176  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** E16

**Comment:** 1047-10-01 - Run 1 (MCAA) 2/13/00 12:22  
Original value (CoefB) = 68.9169 New value = 3860.9782  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** F16

**Comment:** 1047-10-01 - Run 1 (MCAA) 2/13/00 12:22  
Original value (CoefD) = 0.0876 New value = 0.0319  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** J16

**Comment:** 1047-10-01 - Run 1 (MCAA) 2/13/00 12:22  
Original value (S) = 0 New value = 0  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** C24

**Comment:** 1047-10-02 - Run 3 (BCAA) 2/13/00 12:30  
Original value (CoefA0) = 2.415 New value = 4.1501  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D24

**Comment:** 1047-10-02 - Run 3 (BCAA) 2/13/00 12:30  
Original value (CoefAf) = 4.83 New value = 5.0559  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E24

**Comment:** 1047-10-02 - Run 3 (BCAA) 2/13/00 12:30  
Original value (CoefB) = 10 New value = 19.9484  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F24

**Comment:** 1047-10-02 - Run 3 (BCAA) 2/13/00 12:30  
Original value (CoefD) = 0.15 New value = 1.1312  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J24

**Comment:** 1047-10-02 - Run 3 (BCAA) 2/13/00 12:30  
Original value (S) = -0.017 New value = -0.0406  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C31

**Comment:** 1047-10-02 - Run 3 (DBCM) 2/13/00 12:29  
Original value (CoefA0) = 2.1767 New value = 1.9096  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** D31

**Comment:** 1047-10-02 - Run 3 (DBCM) 2/13/00 12:29  
Original value (CoefAf) = 0 New value = 5.6005  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** E31

**Comment:** 1047-10-02 - Run 3 (DBCM) 2/13/00 12:29  
Original value (CoefB) = 10 New value = 19.9731  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** F31

**Comment:** 1047-10-02 - Run 3 (DBCM) 2/13/00 12:29  
Original value (CoefD) = 0.1476 New value = 0  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** J31

**Comment:** 1047-10-02 - Run 3 (DBCM) 2/13/00 12:29  
Original value (S) = 0 New value = 0  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** C37

**Comment:** 1047-10-02 - Run 3 (MBAA) 2/13/00 12:10

Original value (CoefA0) = 0 New value = 2.5312  
Fewer than 6 points above MRL. Step function applied.

**Cell:** D37

**Comment:** 1047-10-02 - Run 3 (MBAA) 2/13/00 12:10  
Original value (CoefAf) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** E37

**Comment:** 1047-10-02 - Run 3 (MBAA) 2/13/00 12:10  
Original value (CoefB) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** F37

**Comment:** 1047-10-02 - Run 3 (MBAA) 2/13/00 12:10  
Original value (CoefD) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** J37

**Comment:** 1047-10-02 - Run 3 (MBAA) 2/13/00 12:10  
Original value (S) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** K37

**Comment:** 1047-10-02 - Run 3 (MBAA) 2/13/00 12:10  
Original value (t0) = 0 New value = 22.0208  
Fewer than 6 points above MRL. Step function applied.

**Cell:** C40

**Comment:** 1047-10-02 - Run 3 (TCAA) 2/13/00 12:31  
Original value (CoefA0) = 0 New value = 17.754  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** D40

**Comment:** 1047-10-02 - Run 3 (TCAA) 2/13/00 12:31  
Original value (CoefAf) = 32.8 New value = 7.7033  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** E40

**Comment:** 1047-10-02 - Run 3 (TCAA) 2/13/00 12:31  
Original value (CoefB) = 10 New value = 8339.9933  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** F40

**Comment:** 1047-10-02 - Run 3 (TCAA) 2/13/00 12:31  
Original value (CoefD) = 0.15 New value = 0.7875  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** J40

**Comment:** 1047-10-02 - Run 3 (TCAA) 2/13/00 12:31  
Original value (S) = 0 New value = 0

Peak curve fit with  $S = 0$ . Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** C96

**Comment:** 1047-20-01 - Run 2 (DBAA) 2/13/00 12:27

Original value (CoefA0) = 0.0579 New value = -1.3265

Poor peak curve fit. Data was refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** D96

**Comment:** 1047-20-01 - Run 2 (DBAA) 2/13/00 12:27

Original value (CoefAf) = 1.1623 New value = 2.2507

Poor peak curve fit. Data was refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** E96

**Comment:** 1047-20-01 - Run 2 (DBAA) 2/13/00 12:27

Original value (CoefB) = 32.9014 New value = 1.1235

Poor peak curve fit. Data was refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** F96

**Comment:** 1047-20-01 - Run 2 (DBAA) 2/13/00 12:27

Original value (CoefD) = 0.0967 New value = 0.0761

Poor peak curve fit. Data was refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** J96

**Comment:** 1047-20-01 - Run 2 (DBAA) 2/13/00 12:27

Original value (S) = -0.0087 New value = 0

Poor peak curve fit. Data was refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** C97

**Comment:** 1047-20-01 - Run 2 (DBCM) 2/13/00 12:24

Original value (CoefA0) = -0.71 New value = -5.8409

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D97

**Comment:** 1047-20-01 - Run 2 (DBCM) 2/13/00 12:24

Original value (CoefAf) = 12.9 New value = 38.4578

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E97

**Comment:** 1047-20-01 - Run 2 (DBCM) 2/13/00 12:24

Original value (CoefB) = 8.313 New value = 5.8414

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F97

**Comment:** 1047-20-01 - Run 2 (DBCM) 2/13/00 12:24

Original value (CoefD) = 0.0419 New value = 0.0336

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J97

**Comment:** 1047-20-01 - Run 2 (DBCM) 2/13/00 12:24

Original value (S) = 0 New value = -0.1009

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C104

**Comment:** 1047-20-01 - Run 2 (MCAA) 2/13/00 12:26  
Original value (CoefA0) = 0 New value = 1.7575  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** D104

**Comment:** 1047-20-01 - Run 2 (MCAA) 2/13/00 12:26  
Original value (CoefAf) = 7.02 New value = 4.2808  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** E104

**Comment:** 1047-20-01 - Run 2 (MCAA) 2/13/00 12:26  
Original value (CoefB) = 20 New value = 21.8041  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** F104

**Comment:** 1047-20-01 - Run 2 (MCAA) 2/13/00 12:26  
Original value (CoefD) = 0.15 New value = 0.0155  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** J104

**Comment:** 1047-20-01 - Run 2 (MCAA) 2/13/00 12:26  
Original value (S) = 0 New value = 0  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** C118

**Comment:** 1047-20-02 - Run 4 (DBAA) 2/13/00 12:36  
Original value (CoefA0) = 0.0303 New value = -0.1212  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D118

**Comment:** 1047-20-02 - Run 4 (DBAA) 2/13/00 12:36  
Original value (CoefAf) = 1.6507 New value = 2.2668  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E118

**Comment:** 1047-20-02 - Run 4 (DBAA) 2/13/00 12:36  
Original value (CoefB) = 9.2005 New value = 171.0421  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F118

**Comment:** 1047-20-02 - Run 4 (DBAA) 2/13/00 12:36  
Original value (CoefD) = 0.1484 New value = 0.7133  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J118

**Comment:** 1047-20-02 - Run 4 (DBAA) 2/13/00 12:36  
Original value (S) = -0.0091 New value = -0.0506  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C122

**Comment:** 1047-20-02 - Run 4 (HAA5) 2/13/00 12:34  
Original value (CoefA0) = -3.6929 New value = -31.1862  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D122

**Comment:** 1047-20-02 - Run 4 (HAA5) 2/13/00 12:34  
Original value (CoefAf) = 53.3847 New value = 105.7053  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E122

**Comment:** 1047-20-02 - Run 4 (HAA5) 2/13/00 12:34  
Original value (CoefB) = 5.659 New value = 2.2776  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F122

**Comment:** 1047-20-02 - Run 4 (HAA5) 2/13/00 12:34  
Original value (CoefD) = 0.0736 New value = 0.0446  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J122

**Comment:** 1047-20-02 - Run 4 (HAA5) 2/13/00 12:34  
Original value (S) = 0 New value = -0.9221  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C123

**Comment:** 1047-20-02 - Run 4 (HAA6) 2/13/00 12:37  
Original value (CoefA0) = -5.9143 New value = -33.9436  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D123

**Comment:** 1047-20-02 - Run 4 (HAA6) 2/13/00 12:37  
Original value (CoefAf) = 61.2349 New value = 111.4641  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E123

**Comment:** 1047-20-02 - Run 4 (HAA6) 2/13/00 12:37  
Original value (CoefB) = 4.4556 New value = 2.1509  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F123

**Comment:** 1047-20-02 - Run 4 (HAA6) 2/13/00 12:37  
Original value (CoefD) = 0.0696 New value = 0.0472  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J123

**Comment:** 1047-20-02 - Run 4 (HAA6) 2/13/00 12:37  
Original value (S) = 0 New value = -0.9828  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C131

**Comment:** 1047-20-02 - Run 4 (TOX) 2/13/00 12:39



Original value (CoefA0) = -68.5304 New value = 27.5968  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D131

**Comment:** 1047-20-02 - Run 4 (TOX) 2/13/00 12:39  
Original value (CoefAf) = 390 New value = 903.2824  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E131

**Comment:** 1047-20-02 - Run 4 (TOX) 2/13/00 12:39  
Original value (CoefB) = 3.4893 New value = 137.3097  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F131

**Comment:** 1047-20-02 - Run 4 (TOX) 2/13/00 12:39  
Original value (CoefD) = 0.0462 New value = 0.0971  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J131

**Comment:** 1047-20-02 - Run 4 (TOX) 2/13/00 12:39  
Original value (S) = 0 New value = -5.7647  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C132

**Comment:** 1047-20-02 - Run 4 (TSUVA) 2/13/00 12:33  
Original value (CoefA0) = -1.8912 New value = -0.1024  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** D132

**Comment:** 1047-20-02 - Run 4 (TSUVA) 2/13/00 12:33  
Original value (CoefAf) = 5.6736 New value = 2.7562  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** E132

**Comment:** 1047-20-02 - Run 4 (TSUVA) 2/13/00 12:33  
Original value (CoefB) = 1.1516 New value = 739.3166  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** F132

**Comment:** 1047-20-02 - Run 4 (TSUVA) 2/13/00 12:33  
Original value (CoefD) = 0.0416 New value = 1.0239  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** J132

**Comment:** 1047-20-02 - Run 4 (TSUVA) 2/13/00 12:33  
Original value (S) = 0 New value = 0  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

## ICR Information

ID / ICR#: FL6290388 / 312  
 ICR Contact: Bob Tisdale  
 Phone No.: (813) 272-5977  
 Period: 4/27/98 - 8/11/98 (106 days)

## Design Information

Design TOC: 3.3 mg/L  
 Col Diameter: 146.1 mm

Full-Scale GAC Size: 8x16 US Std Mesh  
 Full-Scale particle dia.: 1.770 mm  
 Meas Dry Bed Density: 450.0 kg/m3

## Water Quality Summary

Influent	Mean	SD	Count	Min/Max
TOC	3.0	0.2	17	2.8 - 3.5
pH	7.5	0.1	16	7.3 - 7.7
UV254	0.094	0.004	17	0.090 - 0.105
SUVA	3.13	0.15	17	2.8 - 3.4
Bromide	42	16	16	21 - 69
SDS-TOX	326	69	12	260 - 520
SDS-THM4	85	12	13	61 - 99
SDS-HAA6	76	18	13	55 - 111
Ammonia	0.36	0.03	16	0.29 - 0.42

## Cumulative SDS Conditions

	Mean	SD	Count	Min/Max
Res (0)	1.58	0.39	46	0.42 - 2.60
Temp	27.6	2.0	48	24.5 - 30.3
pH	7.5	0.2	47	7.0 - 7.7
Time	24.1	0.5	50	24.0 - 26.0

## Comments:

## Chart Legend:

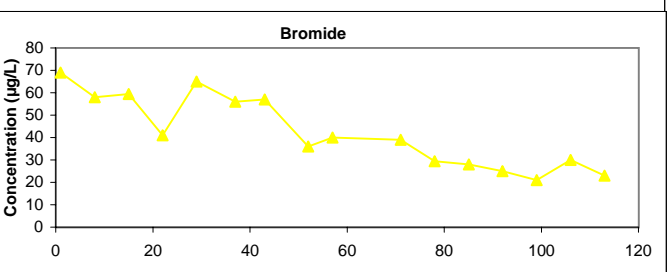
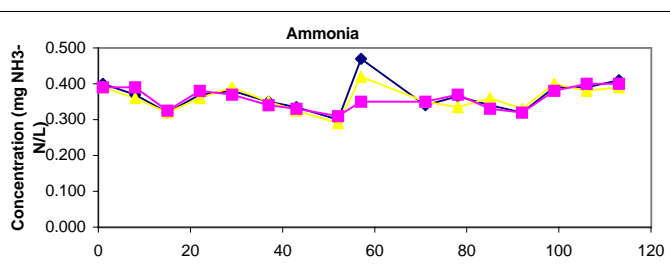
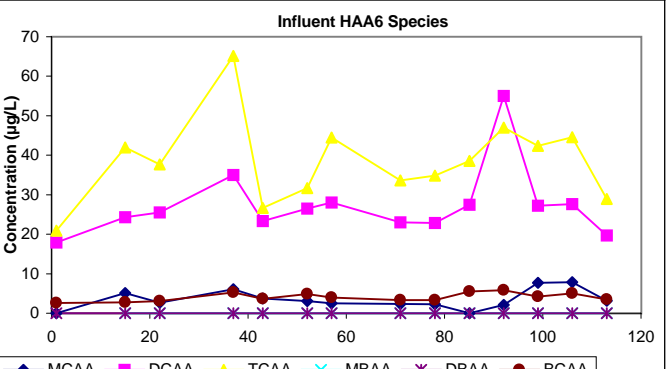
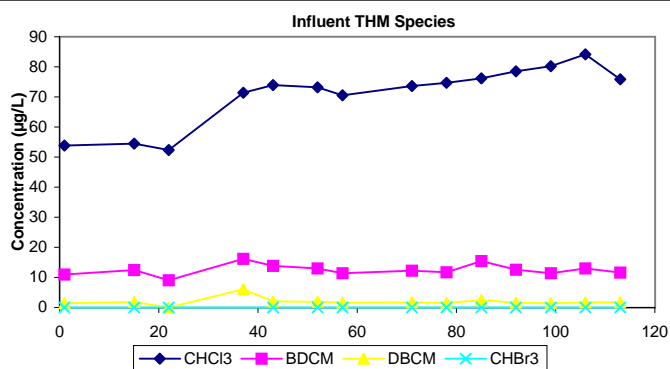
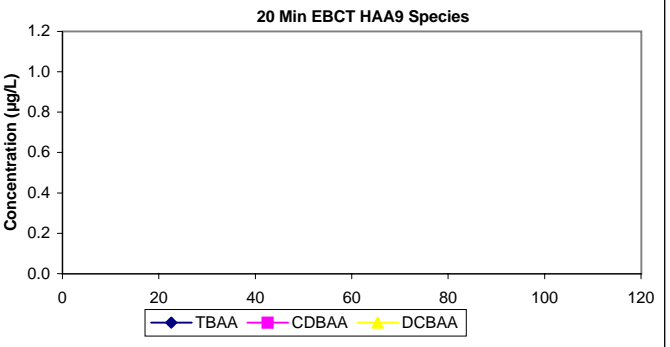
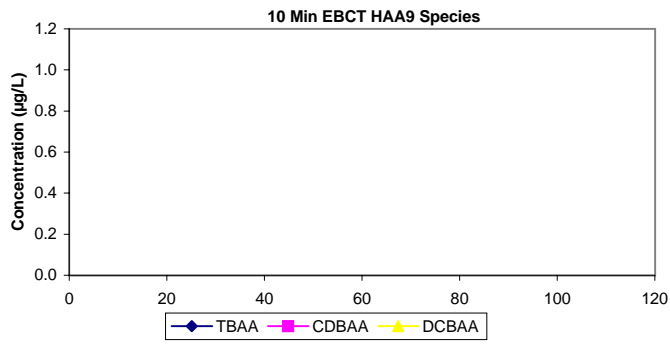
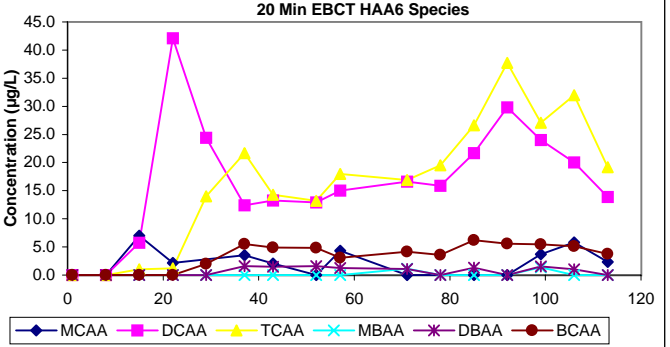
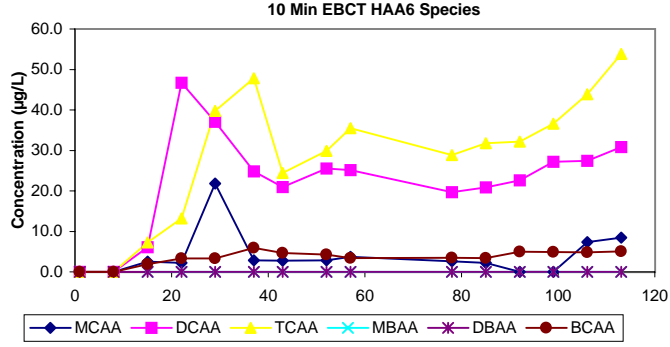
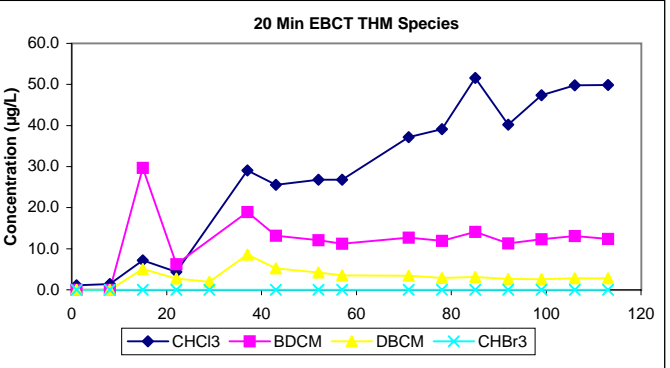
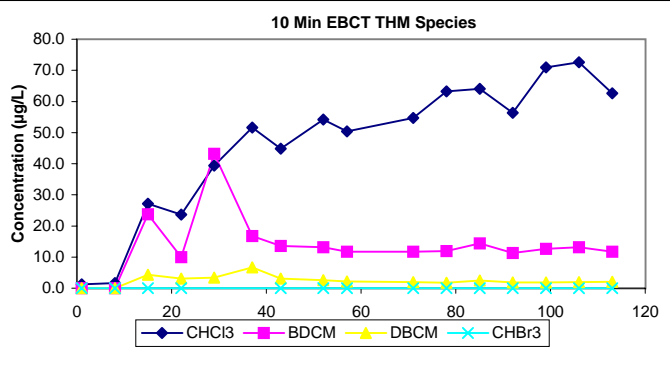
10 Min EBCT  
 20 Min EBCT  
 Influent

Effluent	10 Min EBCT	(113 days)	20 Min EBCT	(113 days)
Effluent pH	7.5	0.1	15	7.3 - 7.6
Effluent Temp	25.6	0.5	16	24.6 - 26.2

## Water Quality Parameter Graphs



Water Quality Parameter Graphs (Continued)



## ICR Information

ID / ICR#: FL6290388 / 312  
 ICR Contact: Bob Tisdale  
 Phone No.: (813) 272-5977  
 Period: 9/13/98 - 11/12/98 (60 days)

## Design Information

Design TOC: 3.3 mg/L  
 Col Diameter: 146.1 mm

Full-Scale GAC Size: 8x16 US Std Mesh  
 Full-Scale particle dia.: 1.770 mm  
 Meas Dry Bed Density: 450.0 kg/m3

## Water Quality Summary

Influent	Mean	SD	Count	Min/Max
TOC	3.0	0.1	15	2.8 - 3.3
pH	7.5	0.1	15	7.2 - 7.6
UV254	0.093	0.004	15	0.085 - 0.099
SUVA	3.08	0.15	15	2.7 - 3.3
Bromide	39	10	14	26 - 57
SDS-TOX	304	66	15	220 - 470
SDS-THM4	83	17	15	62 - 118
SDS-HAA6	81	18	15	46 - 107
Ammonia	0.36	0.02	15	0.30 - 0.39

## Cumulative SDS Conditions

	Mean	SD	Count	Min/Max
Res (0)	1.59	0.38	45	0.38 - 2.45
Temp	27.0	1.0	45	24.1 - 28.3
pH	7.5	0.1	45	7.4 - 7.7
Time	24.0	0.0	45	24.0 - 24.0

Comments:

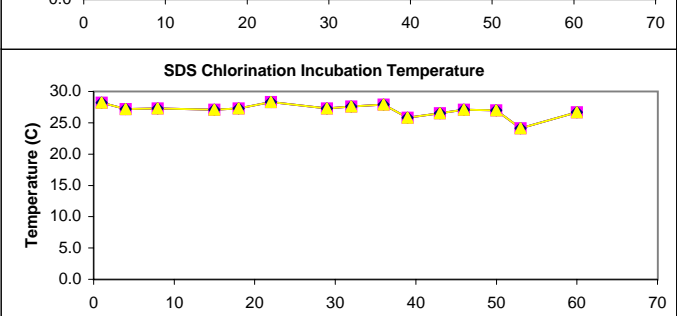
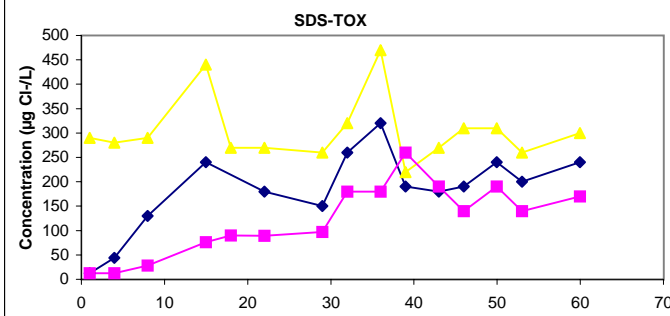
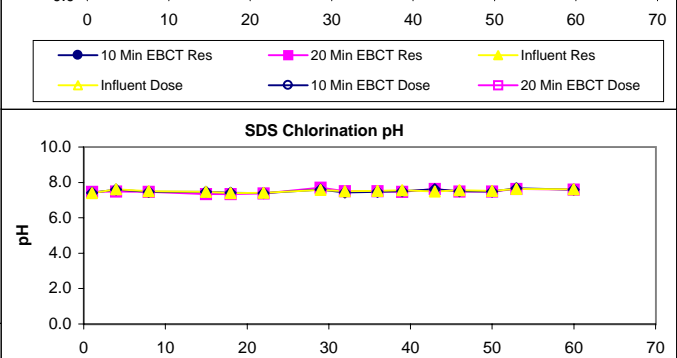
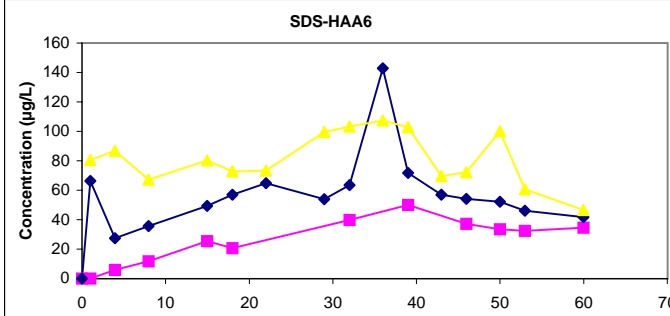
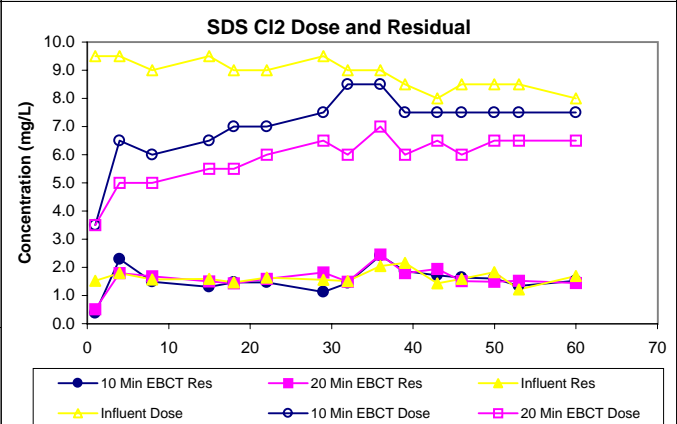
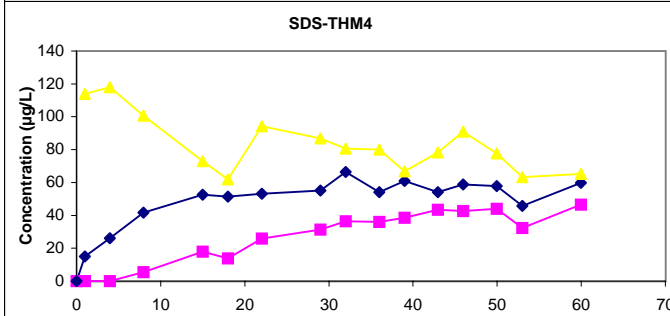
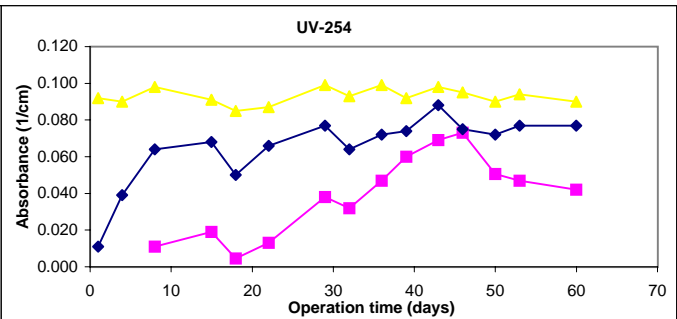
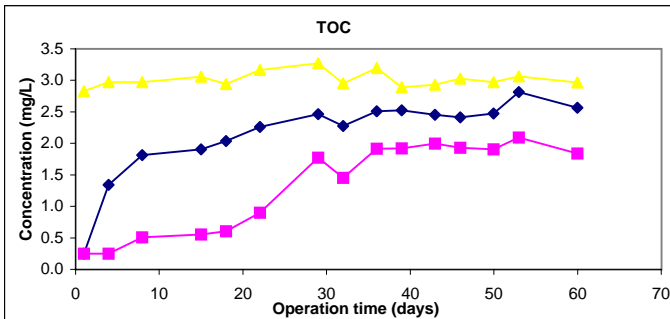
## Chart

Legend:

10 Min EBCT  
 20 Min EBCT  
 Influent

Effluent	10 Min EBCT	(60 days)	20 Min EBCT	(60 days)
Effluent pH	7.4	0.1	7.2	7.5
Effluent Temp	25.8	0.2	26.0	26.2

## Water Quality Parameter Graphs



Water Quality Parameter Graphs (Continued)

